

November 7, 1996

Tennessee Valley Authority  
ATTN: Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: MEETING SUMMARY - BROWNS FERRY NUCLEAR PLANT, DOCKET  
NOS. 50-260, 50-296

Dear Mr. Kingsley:

On November 5, 1996, the NRC staff met at the Browns Ferry Nuclear Plant with representatives of the Tennessee Valley Authority's Browns Ferry Nuclear Plant staff. The purpose of this meeting was to discuss the results of the Systematic Assessment of Licensee Performance Report. Enclosure 1 is a list of the individuals who attended the meeting, and Enclosure 2 contains a copy of the material supplied by the NRC at the meeting.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10 Code of Federal Regulations, a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

**Original Signed by**  
**M. S. Lesser**

Mark S. Lesser, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Docket Nos. 50-260, 50-290  
License Nos. DPR-52, DPR-68

Enclosures: 1. List of Attendees  
2. Handout Material

cc w/encls: (See page 2)

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cc w/encls:

Mr. O. J. Zeringue, Senior Vice Pres.  
Nuclear Operations  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Dr. Mark O. Medford, Vice Pres.  
Engineering and Technical Services  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. R. R. Baron, General Manager  
Nuclear Licensing  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. P. Salas, Manager  
Licensing & Industry Affairs  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. R. D. Machon, Site Vice President  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P. O. Box 2000  
Decatur, AL 35602

Mr. T. E. Abney, Manager  
Licensing and Industry Affairs  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P. O. Box 2000  
Decatur, AL 35609

Mr. E. Preston, Plant Manager  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P. O. Box 2000  
Decatur, AL 35609

General Counsel  
Tennessee Valley Authority  
ET 10H  
400 West Summit Hill Drive  
Knoxville, TN 37902

Chairman  
Limestone County Commission  
310 West Washington Street  
Athens, AL 35611

State Health Officer  
Alabama Dept. of Public Health  
434 Monroe Street  
Montgomery, AL 36130-1701

Distribution w/encls: (See page 3)

Distribution w/encls:

- E. W. Merschoff, RII
- M. S. Lesser, RII
- F. J. Hebdon, NRR
- J. F. Williams, NRR
- S. E. Sparks, RII
- H. L. Whiterer, RII
- C. F. Smith, RII
- D. H. Thompson, RII
- J. H. Moorman, RII
- E. D. Testa, RII
- PUBLIC

NRC Senior Resident Inspector  
 U.S. Nuclear Regulatory Commission  
 10833 Shaw Road  
 Athens, AL 35611

OFFICE	DRP/RII					
SIGNATURE	<i>S. Sparks</i>					
NAME	S. Sparks:vyg					
DATE	11 / 6 / 96	11 / / 96	11 / / 96	11 / / 96	11 / / 96	11 / / 96
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

## LIST OF ATTENDEES

### NRC

- S. D. Ebnetter, Regional Administrator, Region II (RII)
- J. P. Jaudon, Deputy Director, Division of Reactor Safety, RII
- M. S. Lesser, Branch Chief, Division of Reactor Projects (DRP) Branch 6, RII
- M. J. Morgan, Acting Senior Resident Inspector, Branch 6, DRP, RII
- J. F. Williams, Senior Licensing Project Manager, Office of Nuclear Reactor Regulation
- K. M. Clark, Public Affairs Officer, RII

### Licensee Attendees:

- O. D. Kingsley, President, TVA Nuclear and Chief Nuclear Officer
- M. O. Medford, Vice President, Engineering and Technical Services
- R. D. Machon, Site Vice President
- R. R. Baron, General Manager, Nuclear Assurance and Licensing
- K. W. Singer, Maintenance and Modifications Manager
- H. L. Williams, Site Engineering Manager
- T. Shriver, Site Nuclear Assurance and Licensing Manager
- R. G. Jones, Operations Manager
- C. M. Crane, Assistant Plant Manager
- S. G. Bugg, Acting Manager, Radiological Control and Chemistry
- T. Johnson, Browns Ferry Communications
- K. W. Whittenburg, TVA Communications

### Other Attendees:

- H. E. Hicks, Jr., Morgan County Emergency Management Agency
- S. Guerrero, Jr., Alabama Emergency Management Agency
- P. W. Williams, Alabama Emergency Management Agency
- M. Cash, Alabama Radiational Control
- T. Taylor-Back, Alabama Radiational Control
- H. Frost, Lawrence County Emergency Management
- R. Yelverton, Limestone County Emergency Management
- K. Parton, Huntsville-Madison County Emergency Management Agency
- R. Adams, Florence/Lauderdale Emergency Management Agency
- M. K. Williams, Florence/Lauderdale Emergency Management Agency



**SYSTEMATIC ASSESSMENT OF  
LICENSEE PERFORMANCE  
(SALP)**

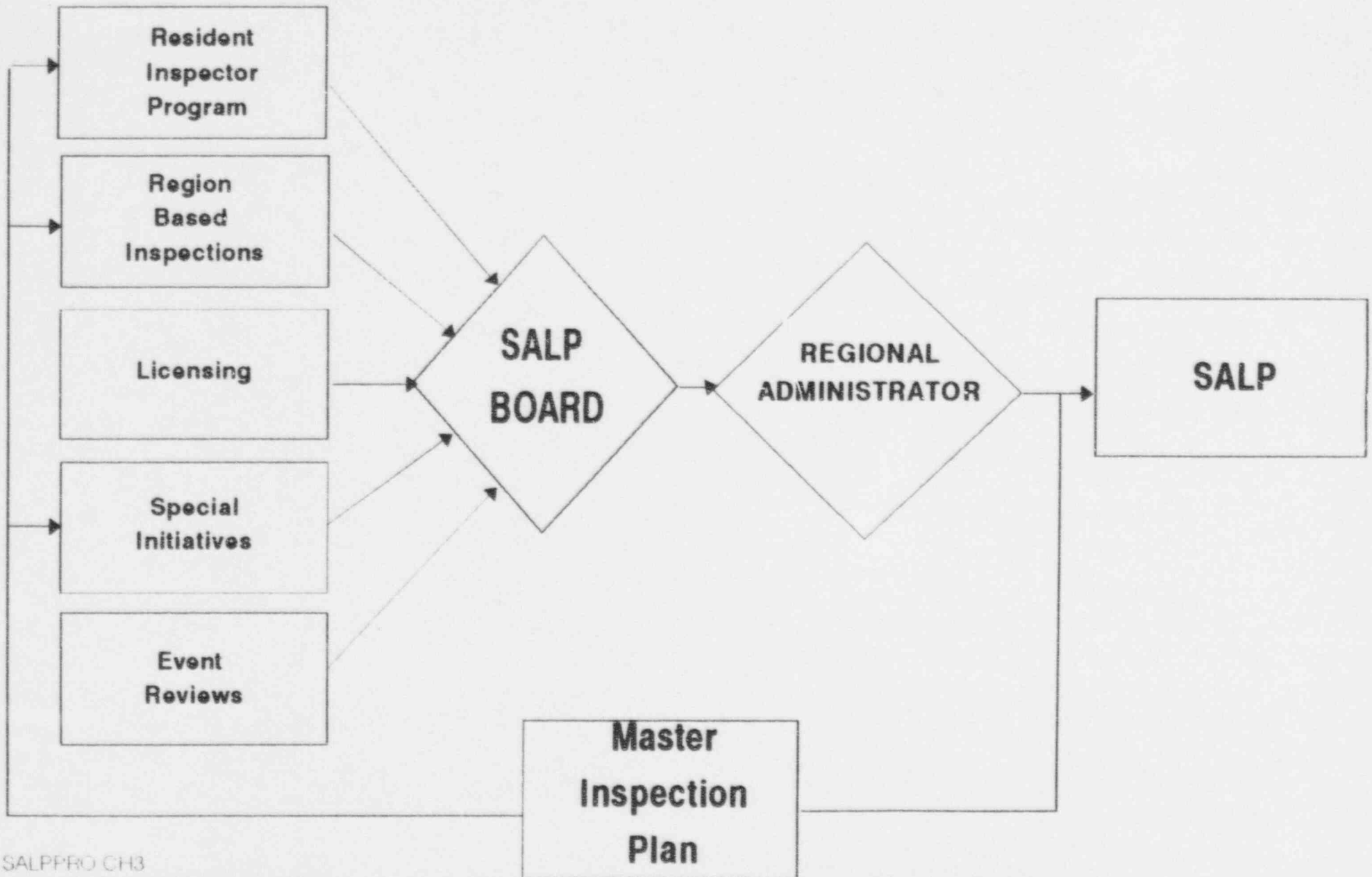
**BROWNS FERRY NUCLEAR PLANT  
UNITS 2&3**

**APPRAISAL PERIOD: March 19, 1995 through  
September 7, 1996**

**PRESENTATION  
November 5, 1996**

Enclosure 2

# SALP PROCESS



# BROWNS FERRY NUCLEAR PLANT

## SALP BOARD MEMBERS

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- JOHNS JAUDON: Acting Deputy Director  
Division of Reactor Projects  
Region II
- BRUCE MALLET: Director  
Division of Nuclear Materials Safety  
Region II
- FRED HEBDON: Director  
Project Directorate II-3  
Office of Nuclear  
Reactor Regulation

# PLANT OPERATIONS

## CATEGORY 1

### STRENGTHS:

- STRONG MANAGEMENT INVOLVEMENT
- OPERATOR KNOWLEDGE AND PERFORMANCE DURING PLANT MANEUVERS
- EXCELLENT OVERALL PERFORMANCE DURING UNIT 3 STARTUP TESTING AND EFFECTIVE TRANSITION TO DUAL UNIT OPERATION
- PLANT MANAGEMENT WAS RESPONSIVE TO CHALLENGES IDENTIFIED IN THE PREVIOUS SALP REPORT:
  - CONTROL ROOM PROFESSIONALISM
  - OPERATIONAL CONTROLS DURING SHUTDOWN CONDITIONS



CHALLENGES:

- QUALITY OF SOME SAFETY ASSESSMENTS AND EVALUATIONS
- CONTINUED IMPROVEMENTS IN SELF-ASSESSMENTS

# MAINTENANCE

## CATEGORY 2

### STRENGTHS:

- PLANNING HIGH RISK MAINTENANCE ACTIVITIES
- LOW BACKLOGS MAINTAINED DURING UNIT 3 RESTART
- IN-SERVICE INSPECTION PROCEDURES AND EXAMINATIONS
- OUTAGE MAINTENANCE ACTIVITIES WELL COORDINATED WITH ACTIVE SUPERVISORY INVOLVEMENT
- SAFETY SYSTEM AVAILABILITY
- UNIT 3 POWER ASCENSION TESTING

## CHALLENGES:

- IN-SERVICE TESTING AND POST-MAINTENANCE TESTING
- PROCEDURE ADHERENCE AND ATTENTION TO DETAIL
- CONTROLS AND SUPERVISION OVER ACTIVITIES
- EQUIPMENT DEFICIENCIES NOT SCHEDULED FOR RESOLUTION AND MAINTENANCE DURING OUTAGES
- EQUIPMENT FAILURES CAUSED SOME PLANT TRIPS AND TRANSIENTS

# ENGINEERING

## CATEGORY 2

### STRENGTHS:

- RESOURCES COMMITTED TO UPGRADE PLANT PROGRAMS, PROCEDURES, AND FACILITIES
- EFFORTS TO IMPROVE THE LICENSING BASIS HAVE IDENTIFIED LONG-STANDING PROBLEMS
- QUALITY MONITORING PROGRAM

## CHALLENGES:

- ENGINEERING SUPPORT TO OPERATIONS AND MAINTENANCE
- MODIFICATION TESTING TO CONFIRM TECHNICAL AND REGULATORY REQUIREMENTS
- IMPROVED IMPLEMENTATION OF 10 CFR 50.59

# PLANT SUPPORT

## CATEGORY 1

### STRENGTHS:

- RADIOLOGICAL CONTROL PROGRAM
- ENVIRONMENTAL MONITORING AND EFFLUENT CONTROLS
- EXCELLENT PLANT CHEMISTRY PROGRAMS
- EMERGENCY PREPAREDNESS
- IMPROVED SECURITY SYSTEM AND DETECTION
- REDUCED NUMBER OF FIRE PROTECTION COMPENSATORY ACTIONS
- THOROUGH SELF-ASSESSMENTS

### CHALLENGES:

- CONTINUOUS AIR MONITOR MAINTENANCE

# BROWNS FERRY NUCLEAR PLANT - UNITS 2&3

## SALP RATING SUMMARY

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<b>FUNCTIONAL AREA</b>	<b>RATING THIS PERIOD</b>	<b>RATING LAST PERIOD</b>
<b>PLANT OPERATIONS</b>	<b>1</b>	<b>2</b>
<b>MAINTENANCE</b>	<b>2</b>	<b>2</b>
<b>ENGINEERING</b>	<b>2</b>	<b>2</b>
<b>PLANT SUPPORT</b>	<b>1</b>	<b>1</b>

October 16, 1996

Tennessee Valley Authority  
ATTN: Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE (SALP)  
BROWNS FERRY NUCLEAR PLANT (REPORT NOS. 50-260/96-99 AND  
50-296/96-99)

Dear Mr. Kingsley:

The NRC Systematic Assessment of Licensee Performance (SALP) has been completed for your Browns Ferry facility. The facility was evaluated for the period of March 19, 1995, through September 7, 1996. The results of the evaluation are documented in the enclosed SALP report. This report will be discussed with you at a public meeting to be held at the Browns Ferry site at 10:00 a.m., Central Time, on November 5, 1996.

The SALP process assesses licensee performance in four functional areas: Operations, Maintenance, Engineering and Plant Support. Your performance in Operations improved to a superior level, and the overall conduct in the area of Plant Support was superior. The functional areas of Engineering and Maintenance continued at the good level.

Operations was characterized by improved performance in corrective action program implementation, self-assessments, control room professionalism and shutdown controls. An effective transition was made to dual unit operations.

Maintenance performance during outages, planning, and problem identification was good. Unit 3 systems were thoroughly tested during startup. Weaknesses were identified with in-service testing, post-maintenance testing and procedure adherence.

Engineering was characterized by continued good performance toward committing resources to upgrade plant programs and facilities. Weaknesses were identified in support to operations and maintenance which resulted in equipment problems, inadequate safety assessments and testing problems.

In the area of Plant Support, there was continued superior performance in radiological controls, emergency preparedness, security and fire protection.

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Additionally, quality assurance effectively provided oversight review of plant activities and anticipated potential problems areas. Self-assessments for Plant Support were thorough while improving in other functional areas.

In accordance with Section 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

I look forward to discussing this assessment with you.

Sincerely,

(Original signed by S. D. Ebnetter)

Stewart D. Ebnetter  
Regional Administrator

Docket Nos. 50-260, 50-296  
License Nos. DPR-52, DPR-68

Enclosure: SALP Browns Ferry Report

cc w/encl: (See page 3)

cc w/encl:

Mr. O. J. Zeringue, Senior Vice President  
Nuclear Operations  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Dr. Mark O. Medford, Vice Pres.  
Engineering and Technical Services  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. R. R. Baron, General Manager  
Nuclear Licensing  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. P. Salas, Manager  
Licensing & Industry Affairs  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. R. D. Machon, Site Vice President  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P. O. Box 2000  
Decatur, AL 35602

Mr. T. E. Abney, Manager  
Licensing and Industry Affairs  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
P. O. Box 2000  
Decatur, AL 35609

TVA Representative  
Tennessee Valley Authority  
One Massachusetts Avenue  
Suite 300  
Washington, DC 20001

General Counsel  
Tennessee Valley Authority  
ET 10H  
400 West Summit Hill Drive  
Knoxville, TN 37902

Chairman  
Limestone County Commission  
310 West Washington Street  
Athens, AL 35611

State Health Officer  
AL Dept. of Public Health  
434 Monroe Street  
Montgomery, AL 36130-1701

INPO

Distribution w/encl: (See page 4)

## SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE REPORT

### BROWNS FERRY NUCLEAR PLANT

50-260/96-99 AND 50-296/96-99

#### I. BACKGROUND

The SALP Board convened on September 25, 1996, to assess the nuclear safety performance of the Browns Ferry Nuclear Plant for the period March 19, 1995, through September 7, 1996. The Board was conducted in accordance with Management Directive 8.6, "Systematic Assessment of Licensee Performance." Board members were J. P. Jaudon (Board Chairperson), Acting Deputy Director, Division of Reactor Projects; B. S. Mallett, Director, Division of Nuclear Materials Safety; and F. J. Hebdon, Director, Project Directorate II-3, Office of Nuclear Reactor Regulation. This assessment was reviewed and approved by the Regional Administrator.

#### II. PLANT OPERATIONS

This functional area addresses the control and execution of activities directly related to operating the facility. It includes activities such as startup, power operation, plant shutdown, and response to transients. It also includes initial and requalification training programs for licensed operators.

Overall performance in the plant operations area was superior throughout this assessment period. Strong management involvement in all aspects of plant operation, including day-to-day operational activities, was clearly evident. Management policies and expectations for operations were effectively communicated to the plant staff.

Operator knowledge and performance during plant maneuvers were superior throughout the period. This was demonstrated by handling plant transients effectively and proper implementation of the emergency responses for reactor trips and off-normal conditions. Responses by the Operations' staff were decisive and conservative. Particularly noteworthy were the excellent overall performance during Unit 3 startup testing and effective transition to dual unit operation.

Plant management has been responsive to challenges identified in the previous SALP report. Potential distractions in control room operations were addressed such that control room professionalism is now considered a strength. Three-part communications by the control room staff, improved control room logs, and an emphasized managerial role of the shift supervisor have contributed to improvements in this area. In addition, operational controls during shutdown conditions have been strengthened.

Enclosure

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Improvements were also noted in self-assessment capabilities. These include critical external assessments, the implementation of an internal self-assessment program conducted by all Operations department management, and an increased emphasis to lower the threshold of Operations' generated problem evaluation reports.

Deficiencies were identified with the quality of some safety assessments and evaluations, indicating a need for a more questioning attitude. In addition, there were occasional examples of operator inattention to detail which resulted in component mispositions.

The Plant Operations area is rated Category 1.

### III. MAINTENANCE

This functional area addresses activities associated with diagnostic, predictive, preventive, and corrective maintenance of structures, systems, and components. It also includes all surveillance testing, in-service inspection and other tests associated with equipment and system operability.

Management involvement in maintenance was good. Maintenance activities which presented a potential risk to reliable operations were recognized, received management attention and were thoroughly evaluated for contingencies. Personnel performance was generally good. Errors due to inattention to detail caused one reactor trip and several safety equipment actuations. Continued attention is indicated in procedure adherence. Controls and supervision over some activities were not always effective, and on several occasions this adversely impacted safety equipment.

Routine maintenance was effectively planned and scheduled using a twelve week rolling schedule. The licensee effectively merged Unit 3 maintenance into the existing site program and effectively controlled backlogs within established goals. Preventive maintenance was adequately implemented, although difficulties occurred in completing some activities within specified intervals. Online maintenance was formally evaluated to consider risk and the impact of simultaneous activities. Corrective maintenance was performed well in most cases. However, some activities were not performed on safety systems during planned outages and inappropriately scheduled shortly after a startup.

Outage maintenance activities were well coordinated with active supervisory involvement. Department morning meetings were effective in establishing priorities and safety focus. A good interface with Operations and Engineering was demonstrated with "Fix it Now" teams, which were used for troubleshooting and repairs that did not involve modifications or major components.

Maintenance personnel continued to be effective at problem identification and implementation of the corrective action program. Immediate problem resolution of degraded equipment was good, although the need for scope expansion was not always recognized. Strong emphasis was placed on independent assessments by quality assurance and third parties. Departmental self-assessments were initiated toward the end of the SALP period and improved in quality.

Safety system availability was high, and was maintained at or above licensee established goals. Equipment failures caused some plant trips and transients.

In-service inspection procedures were well written and appropriate. Examinations were effectively completed by qualified personnel. Surveillance testing was effectively performed in accordance with requirements. Overall, procedures were observed to be good and personnel were knowledgeable. The Unit 3 power ascension testing program was effectively implemented. Equipment was thoroughly tested and exercised to demonstrate readiness of operation. Some in-service pump and valve tests were not correctly implemented because of inadequate procedures or inadequate understanding. Some weaknesses were found in post-maintenance testing, and the process was found to be complex. Improvement of in-service testing and post-maintenance testing is considered to be a challenge.

The Maintenance area is rated Category 2.

#### IV. ENGINEERING

This functional area addresses activities associated with the design of plant modifications, engineering support for operations, maintenance, surveillance, and licensing activities.

Plant management has committed significant resources to upgrading plant programs, procedures, and facilities. Considerable efforts have been made to improve reliability and functionality of key plant equipment. Engineering reviews have improved plant procedures and operational flexibility.

Efforts to improve the analytic and licensing basis have been effective in identifying long-standing problems which otherwise would not have been recognized. Prompt action was taken to correct the deficiencies. Probabilistic safety analyses have been updated beyond licensing commitments and have been incorporated into routine planning.

The quality monitoring program made effective use of outside reviews and has taken the initiative to review performance comprehensively in areas of significant regulatory interest.

Engineering support to operations and maintenance has not been fully effective. Plant transients have resulted from ineffective assessment and resolution of problems. Resolution of equipment issues needs to be improved to avoid repetitive problems which unnecessarily reduce equipment availability.

Major modifications generally made effective use of comprehensive review and testing of systems, as evidenced by the successful restart of Unit 3. However, after Unit 3 restart, emphasis shifted to smaller scope modifications and testing, which do not have comparable, broad programmatic requirements. Engineering personnel and processes have not always ensured effective and thorough implementation of technical and regulatory requirements. This problem was illustrated by difficulties observed in developing appropriate tests to confirm adequacy of modifications or to fulfill test requirements. Design personnel have not always considered actual plant process conditions or all relevant regulatory requirements in analyses.

Problems have been identified with site implementation of 10 CFR 50.59, which permits certain facility changes to be made without prior NRC review and approval. The site 10 CFR 50.59 program did not clearly implement all regulatory requirements. Further, instances have been observed where inadequate safety assessments have been performed. Recent safety assessments have lacked complete documentation of critical thought processes.

Plant management has taken steps to address these problems, including additional engineering management review of design changes, review of procedures, and inclusion of systems engineers in design review. Site engineering also recently completed a lengthy reorganization.

The Engineering area is rated Category 2.

#### V. PLANT SUPPORT

This functional area assesses activities related to the plant support function, including radiological controls, radioactive effluents and waste, plant chemistry, emergency preparedness, security, fire protection and housekeeping.

The licensee exercised strong radiological controls throughout the assessment period. As a result of proactive management, radiation dose to individuals and for specific work units on site remained well within regulatory limits and goals. Planned initiatives significantly reduced radiation source terms to As Low As Reasonably Achievable. The program to control the spread of radioactive contamination was successful in achieving very low levels of individual and facility areas of contamination. Aggressive environmental monitoring and effluent controls maintained plant radioactive material releases well below regulatory limits. Radioactive waste was processed with attention to dose and contamination and reducing volume to external burial.

Radiation monitoring instrumentation performance was generally good, with some attention needed to continuous air monitors used to assess environmental radiation levels in the plant.

Plant chemistry programs were excellent in control of parameters within standards and in support of plant operations. Laboratory assessment capabilities and staff qualifications were maintained at a level above that required by the NRC.

The emergency preparedness performance was superior. Management and staff exhibited timely and technically sound responses during exercises and actual events. The licensee was aggressive in maintaining equipment, facilities and individual response capabilities at a level well above minimum regulatory requirements. Lessons learned were utilized to improve performance.

Plant security system and detection performance improved from the previous assessment period. Control of safeguards information and fitness-for-duty programs remained at a high level of performance throughout the assessment period. Qualifications of staff and training continued to be strengths in the program. The licensee was proactive in looking for and implementing tools to improve performance and reduce compensatory measures.

Fire protection was good with timely and effective steps taken to address emergent issues. Fire brigade qualifications and response performance were program strengths. Fire protection systems and equipment were in good condition as a result of management support. The licensee was proactive in examining ways to improve performance. Implementation of compensatory fire watches during maintenance and modification work was not always at the expected level of performance.

Housekeeping controls and attention remained successful in keeping frequently accessed areas clean and free of hazards.

Self-assessments and audits in all areas were thorough and contributed significantly to strong performance. Management and staff were diligent in identifying and correcting problems during the period.

The Plant Support area is rated Category 1.