

December 11, 1997

Tennessee Valley Authority  
ATTN: Mr. O. J. Zeringue  
Chief Nuclear Officer and  
Executive Vice President  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: MEETING SUMMARY - BROWNS FERRY NUCLEAR PLANT, DOCKET NOS. 50-259,  
50-260, AND 50-296

Dear Mr. Zeringue:

On December 5, 1997, the NRC staff met in the Region II office with representatives of Tennessee Valley Authority's (TVA) Browns Ferry Nuclear Plant. The purpose of this meeting was for TVA to discuss the results of their self-assessment in the areas of operations, maintenance, engineering, and plant support. Enclosure 1 is a list of the individuals who attended the meeting, and Enclosure 2 contains a copy of the material supplied by the licensee 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.: 50-259, 50-260, and 50-296  
License Nos.: DPR-33, DPR-52, and DPR-68

Enclosures: 1. List of Attendees  
2. Handout Material

cc w/encs: (See page 2)



9712310225 971211  
PDR ADOCK 05000259  
P PDR

JE45

cc: Senior Vice Pres.  
Nuclear Operations  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. J. A. Bailey, 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 Assurance  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. M. J. Burzynski, Manager  
Nuclear Licensing  
Tennessee Valley Authority  
4J Blue Ridge  
1101 Market Street  
Chattanooga, TN 37402-2801

Mr. C. M. Crane, 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. K. W. Singer, 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: (See page 3)

TVA

3

Distribution:

J. R. Johnson, RII  
M. S. Lesser, RII  
S. E. Sparks, RII  
F. J. Hebdon, NRR  
A. W. De Agazio, NRR  
W. C. Bearden, RII  
C. F. Smith, RII  
D. H. Thompson, RII  
L. S. Mellen, RII  
E. D. Testa, RII  
PUBLIC

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

OFFICE	DRP/DTT						
SIGNATURE	<i>[Signature]</i>						
NAME	ESparks:vys						
DATE	12/ 10 /97	12/ /97	12/ /97	12/ /97	12/ /97	12/ /97	12/ /97
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

DOCUMENT NAME: G:\BR6.BF\NM1205.SUM



## LIST OF ATTENDEES

### NRC

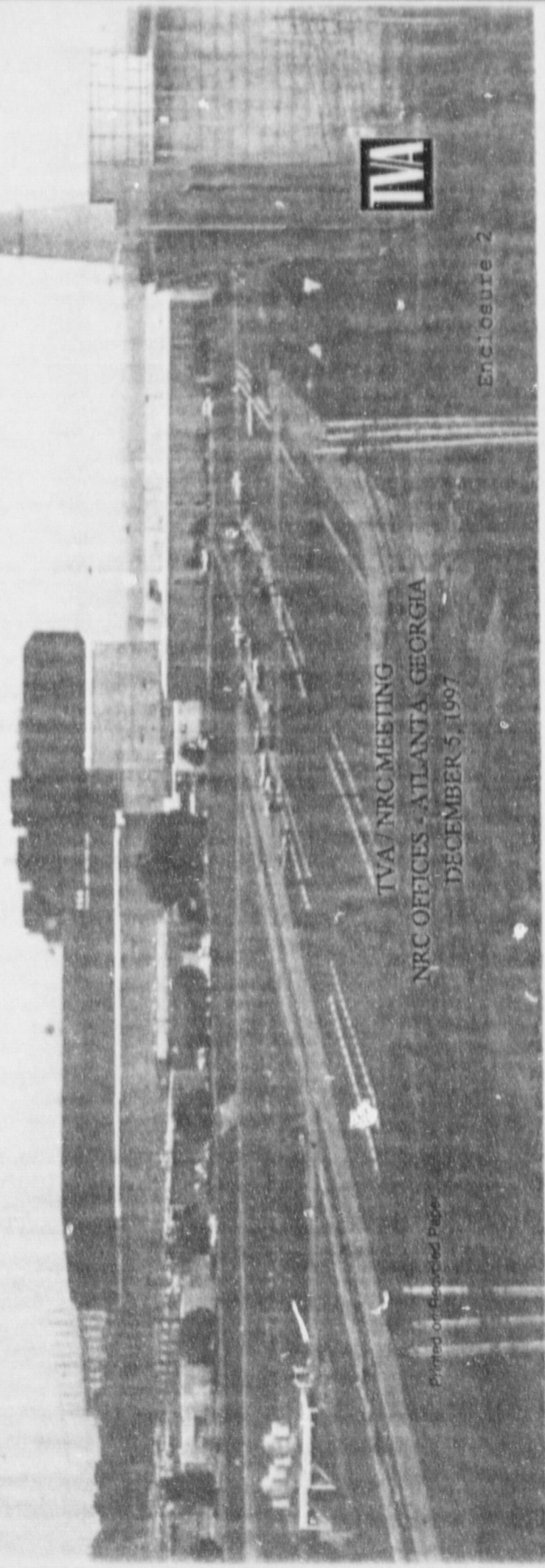
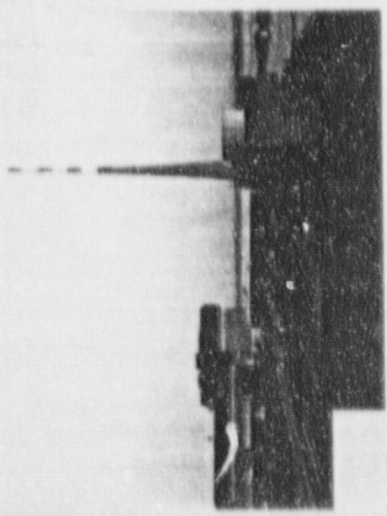
B. S. Mallett, Acting Deputy Regional Administrator, Region II (RII)  
J. R. Johnson, Director, Division of Reactor Projects (DRP), RII  
L. R. Plisco, Deputy Director, DRP, RII  
C. A. Casto, Deputy Director, Division of Reactor Safety (DRS), RII  
H. O. Christensen, Chief, Engineering Branch, DRS, RII  
W. C. Bearden, Reactor Inspector, DRS, RII  
L. D. Wert, Senior Resident Inspector, Browns Ferry, DDRP, RII  
S. E. Sparks, Project Engineer, DRP, RII  
F. J. Hebdon, Director, Project Directorate II-3, Office of Nuclear Reactor Regulation (Telecon)

### Licensee Attendees:

C. Crane, Site Vice President  
K. Singer, Plant Manager  
R. Jones, Assistant Plant Manager  
J. Johnson, Site Quality Manager  
T. Abney, Licensing and Industry Affairs Manager  
D. Nye, Site Engineering Manager



Tennessee Valley Authority  
Browns Ferry Nuclear Plant  
Plant Status



TVA/NRC MEETING  
NRC OFFICES - ATLANTA, GEORGIA  
DECEMBER 5, 1997

Enclosure 2

Printed on Recycled Paper

# **AGENDA**

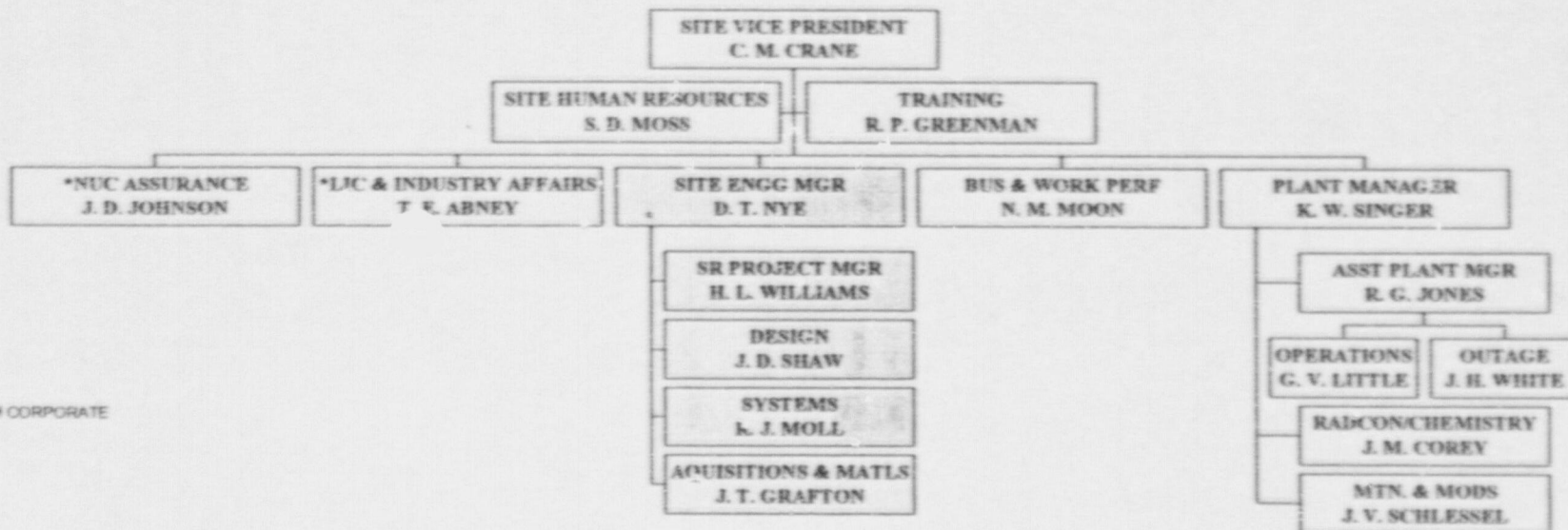
<b>Introduction</b>	<b>Chris Crane</b>
<b>Site Organization</b>	<b>Chris Crane</b>
<b>Plant Performance</b>	<b>Chris Crane</b>
<b>Department Self-Assessments</b>	
– <b>Operations</b>	<b>R. G. Jones</b>
– <b>Engineering</b>	<b>David Nye</b>
– <b>Maintenance</b>	<b>Karl Singer</b>
– <b>Plant Support</b>	<b>Karl Singer</b>
<b>Plant Material Condition</b>	<b>R. G. Jones</b>
<b>Unit 2 Cycle 9 Refueling Outage</b>	<b>Karl Singer</b>
<b>Regulatory Issues</b>	<b>Tim Abney</b>
<b>QA Overview</b>	<b>Jimmy Johnson</b>
<b>Conclusion/Open Discussion</b>	<b>Chris Crane</b>

# **INTRODUCTION**

- **Update of Organizational Changes**
- **Overview of Plant Performance**
- **Discuss Self Assessment Results and Focus Areas**



# SITE ORGANIZATION



\*MATRIX FROM CORPORATE

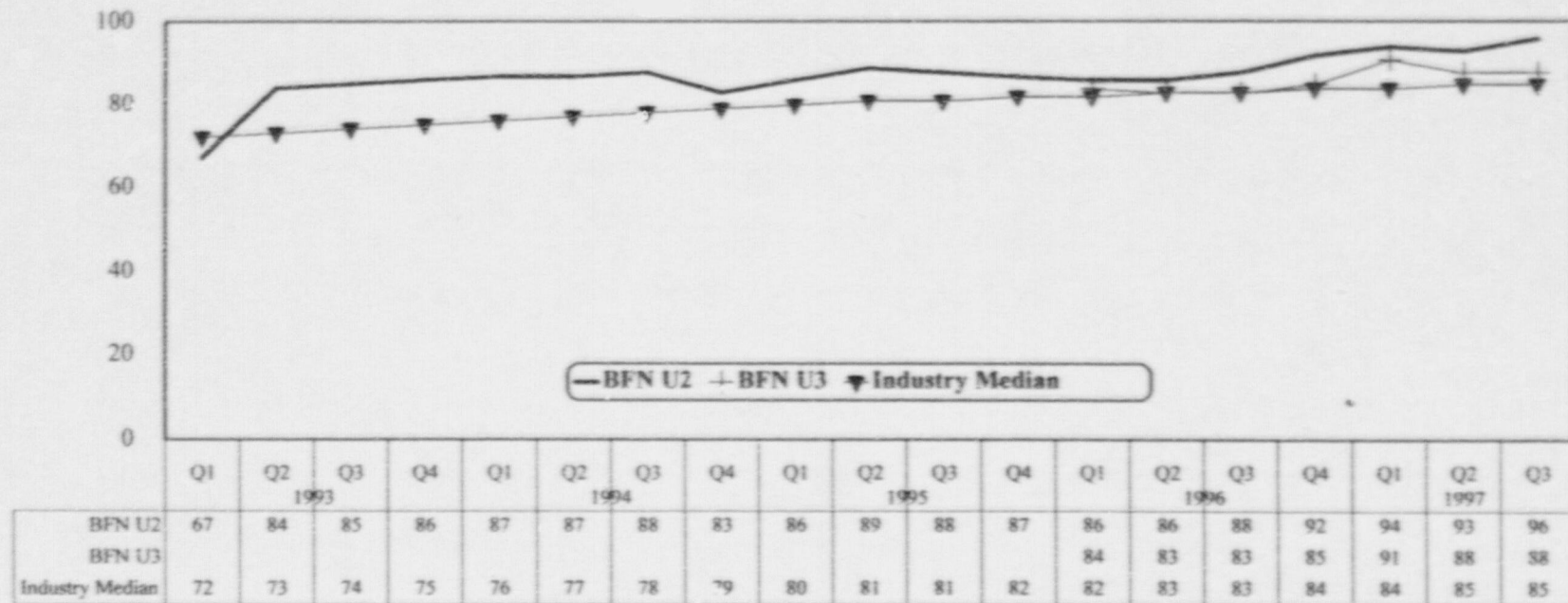
11/12/97

Chris Crane

## **PLANT PERFORMANCE**

- **Overall Strong Plant Performance**
- **1996 SALP Report**
  - **Continue to Build on Strengths**
  - **Effectively Addressed Challenges**

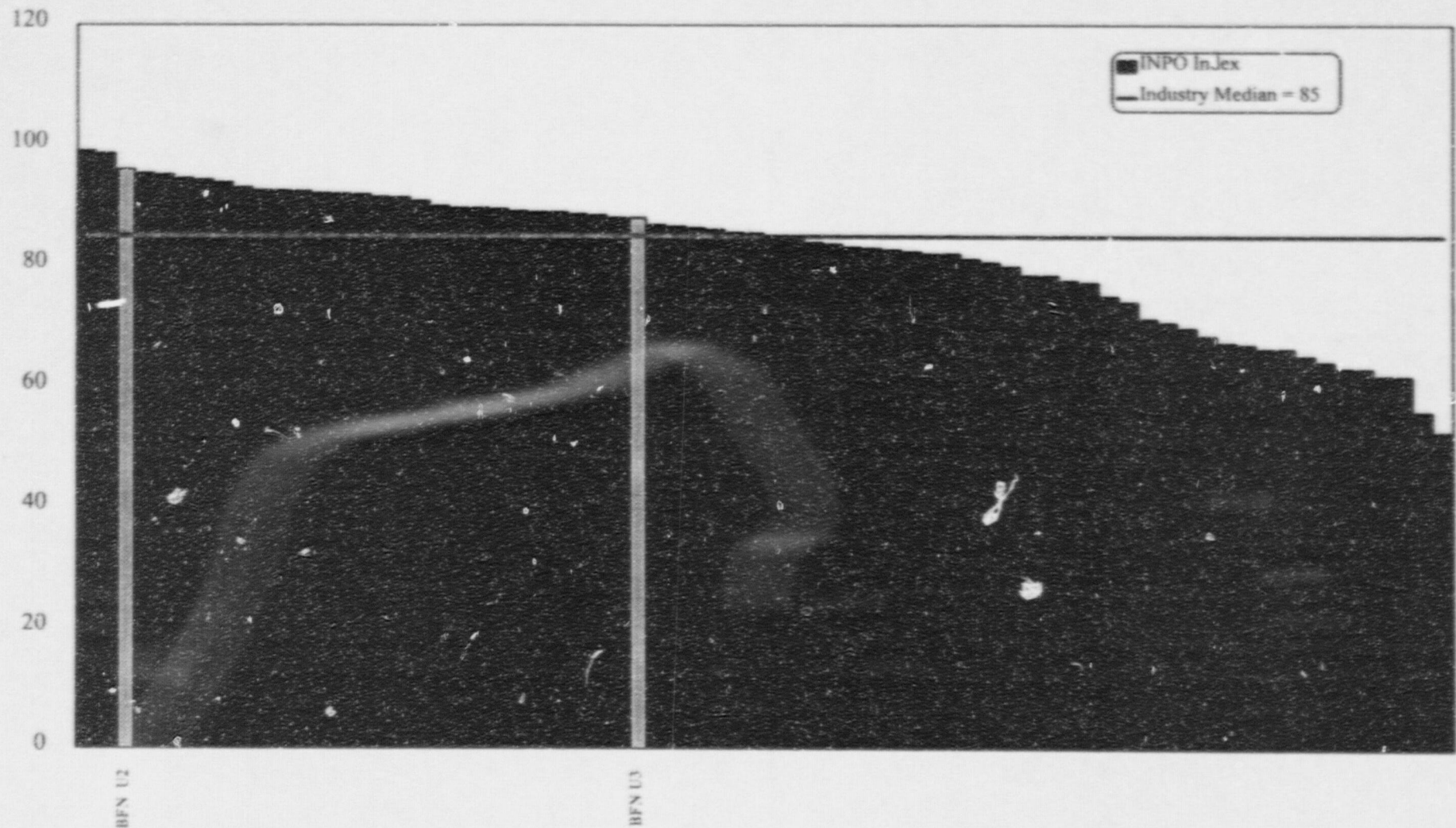
# PLANT PERFORMANCE INPO PERFORMANCE INDEX



Performance Indicator	BFN UNIT 2 (9/30/97)			BFN UNIT 3 (9/30/97)		
	Value	% Max	Index	Value	% Max	Index
Unit Capability Factor	92.3	100.0	16.0	91.66	100.0	16.0
Unplanned Capability loss Factor	2.08	86.1	10.3	2.38	84.1	10.1
Unplanned Automatic Scrams	1.27	93.3	7.5	1.44	89.0	7.1
HPCI/RCIC System Availability	0.013	100.0	10.0	0.0102	100.0	10.0
RHR System Availability	0.003	100.0	10.0	0.0053	100.0	10.0
Emergency AC System Availability	0.012	95.0	9.5	0.013	92.5	9.3
Thermal Performance	99.7	85.0	5.1	99.8	90.0	5.4
Fuel Reliability	5	100.0	8.0	7579	0.0	0.0
Chemistry Index	1.02	100.0	7.0	1.02	100.0	7.0
Collective Radiation Exposure	225	95.0	7.6	120	100.0	8.0
Industrial Safety Accident Rate	0	100.0	5.0	0	100.0	5.0
Weighted Index			96			88



## PLANT PERFORMANCE INPO INDEX 2nd QUARTER DATA

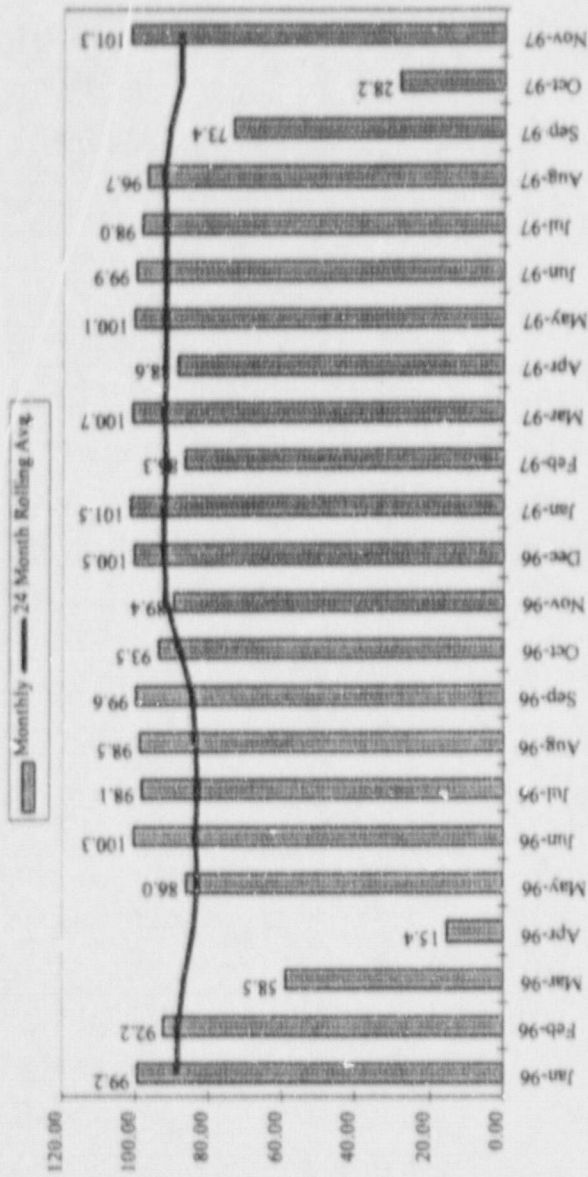


Industry data through 6/30/97. BFN data through 9/30/97.

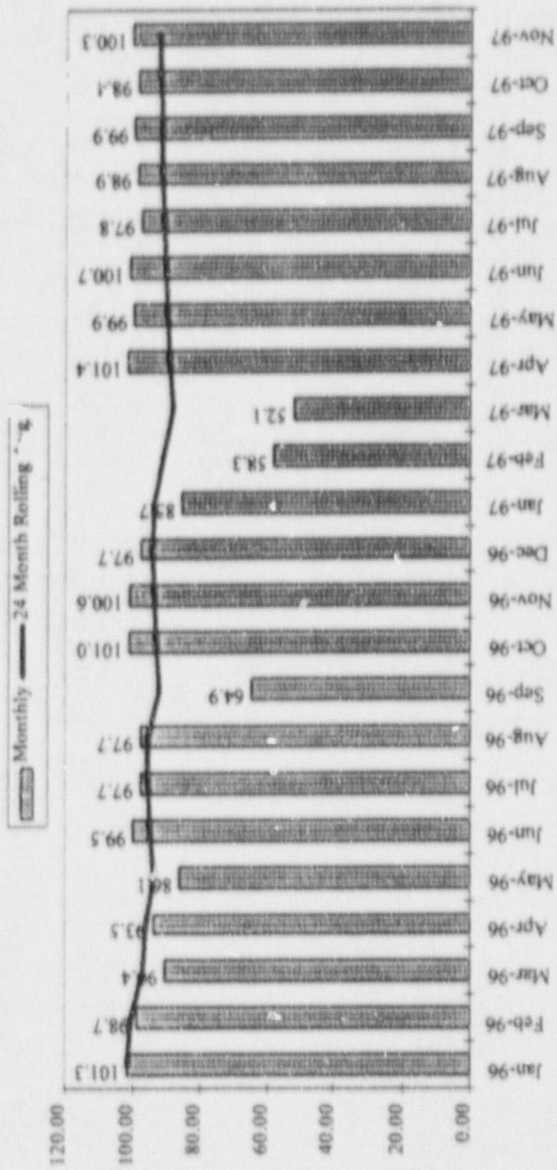
Chris Crane

# PLANT PERFORMANCE

Unit 2 Net Capacity Factor



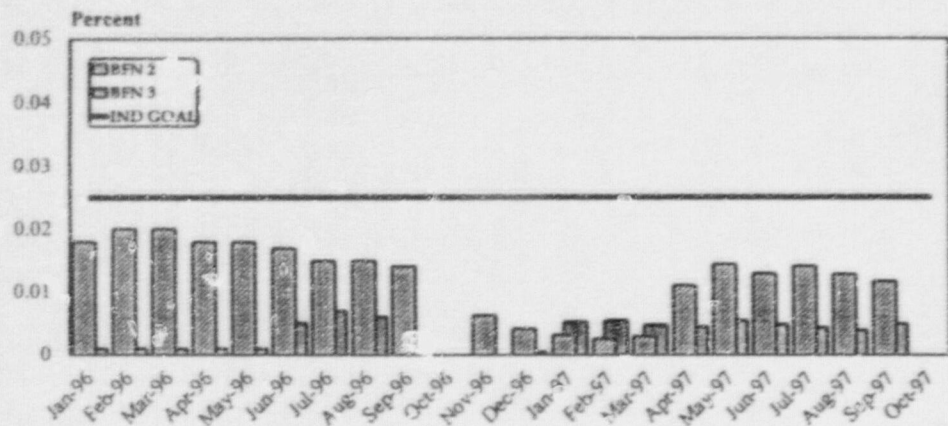
Unit 3 Net Capacity Factor



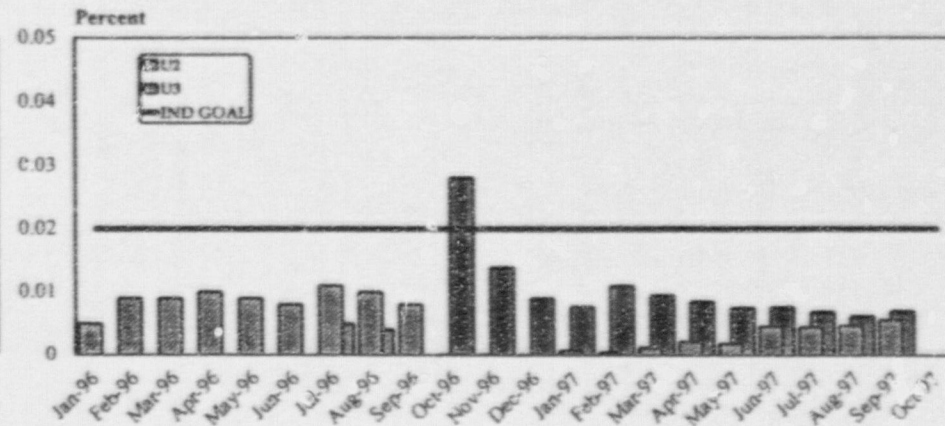
Chris Crane

# PLANT PERFORMANCE SYSTEMS UNAVAILABILITY

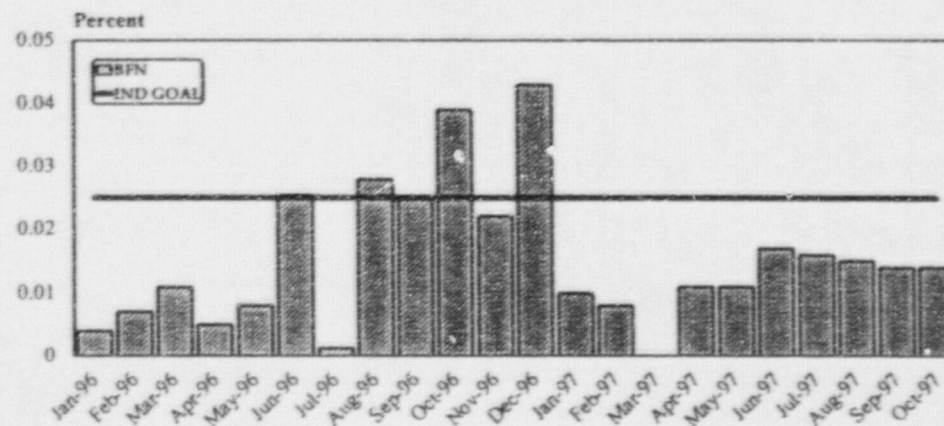
## HPCI/RCIC UNAVAILABILITY



## RHR UNAVAILABILITY



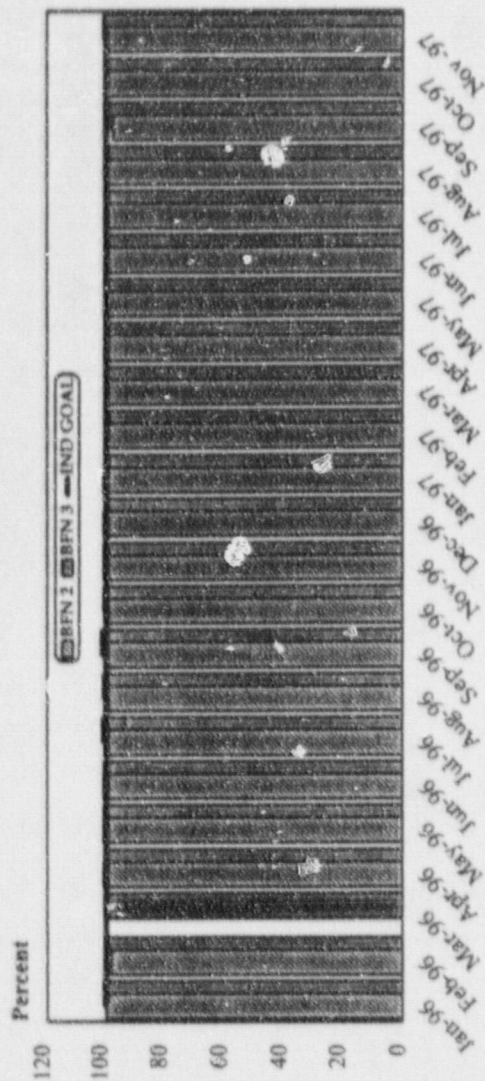
## EMERGENCY AC SYSTEM UNAVAILABILITY



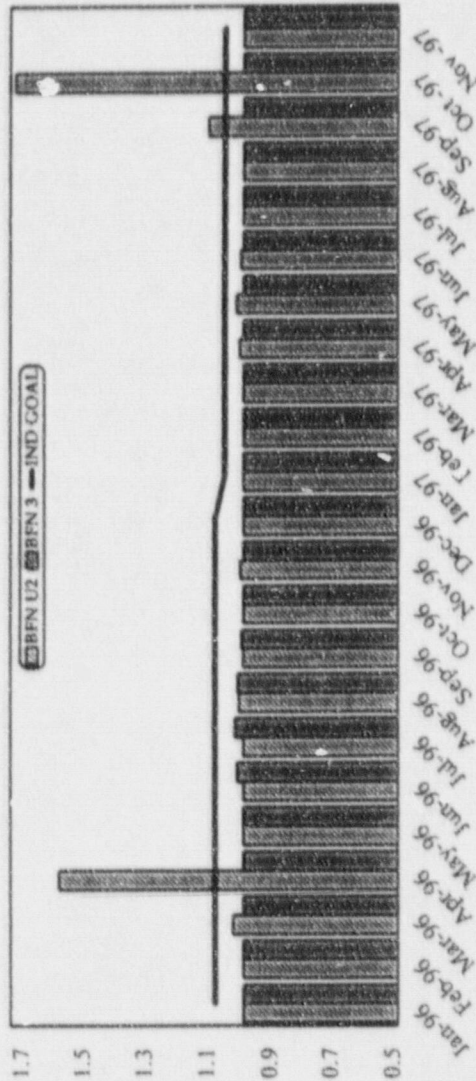


# PLANT PERFORMANCE

## THERMAL PERFORMANCE



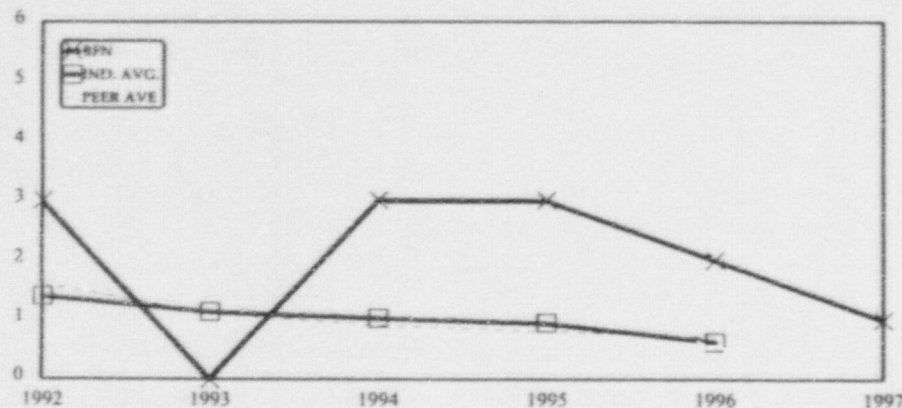
## CHEMISTRY INDEX



Chris Crane

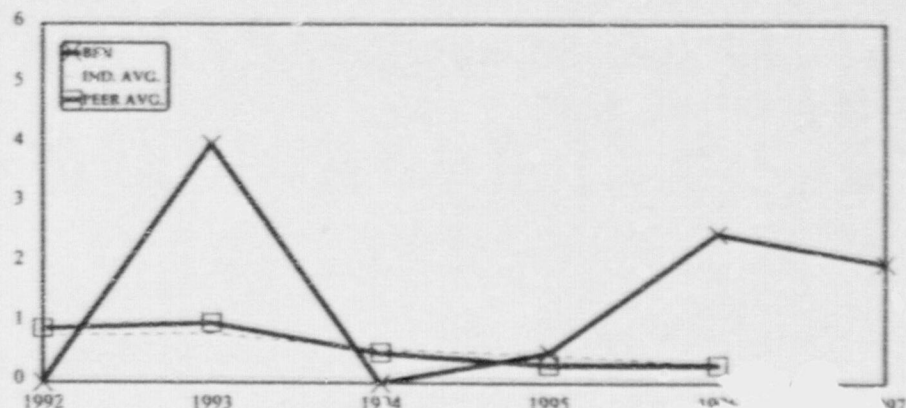
# PLANT PERFORMANCE AEOD INDICATORS

## AUTOMATIC SCRAMS



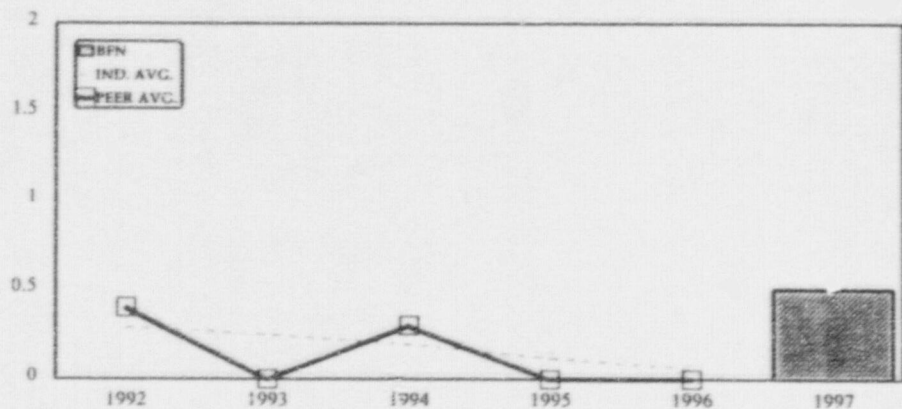
Note: Industry Data through 1996  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Per Unit (Data through 11/30/97)

## SAFETY SYSTEM ACTUATION



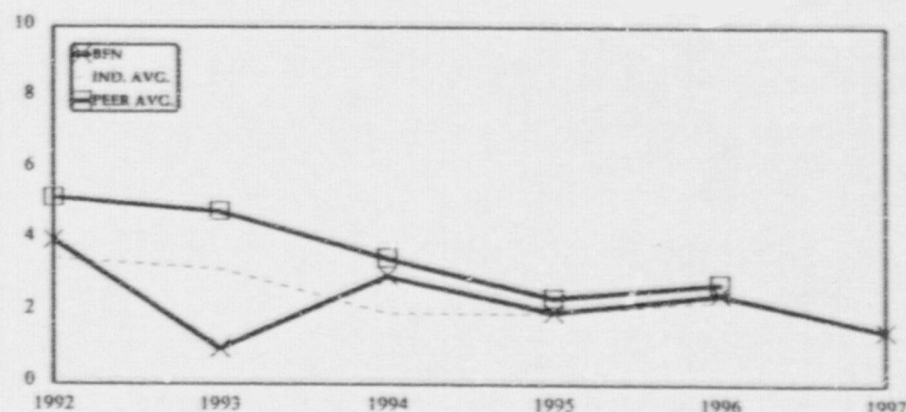
Note: Industry Data through 1996  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Per Unit (Data through 11/30/97)

## SIGNIFICANT EVENTS



Note: Industry Data through 1995  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Per Unit (Data through 11/30/97)

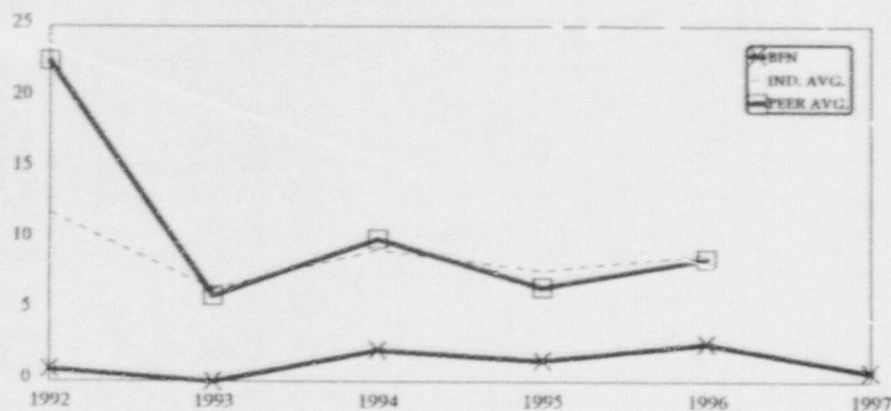
## SAFETY SYSTEM FAIL



Note: Industry Data through 1996  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Per Unit (Data through 11/30/97)

# PLANT PERFORMANCE AEOD INDICATORS

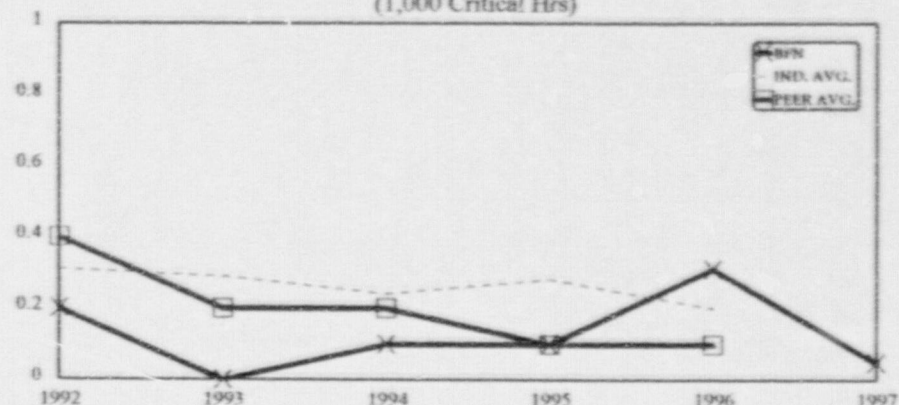
## FORCED OUTAGE RATE



Note: Industry Avg. Data through 1996  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Site Data (through 11/30/97)

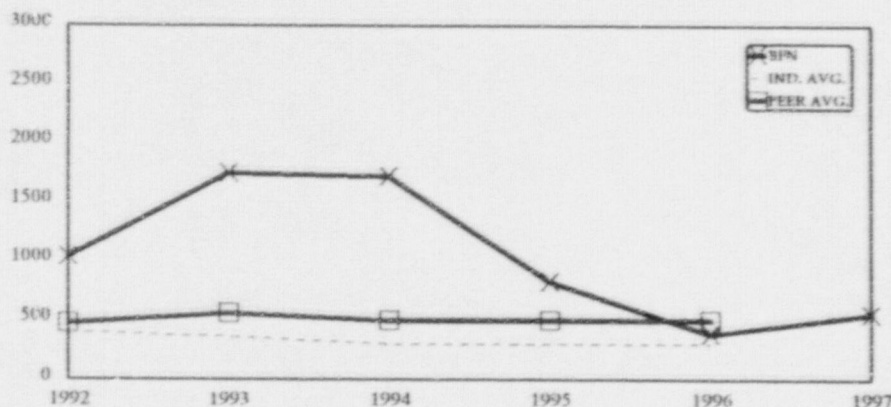
## EQUIPMENT FORCED OUTAGE RATE

(1,000 Critical Hrs)



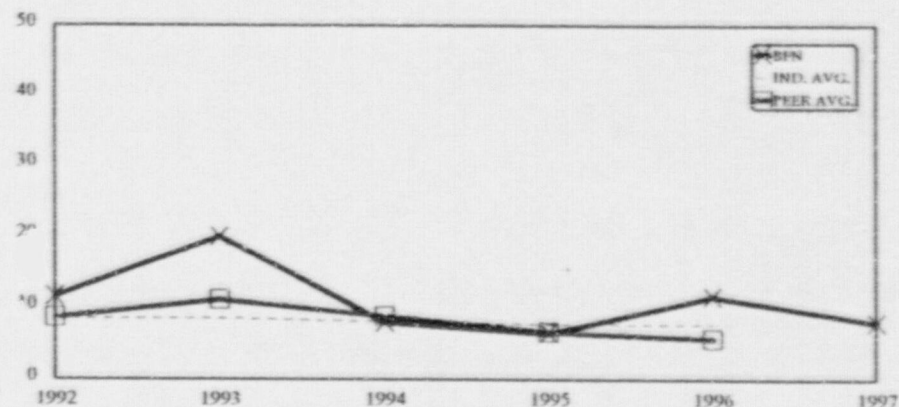
Note: Industry Data through 1996  
BFN data 1992, 1993, 1994, 1995, is Unit 2 only.  
1996 and 1997 Site Data (through 11/30/97)

## COLLECTIVE RADIATION EXPOSURE



Note: Industry Data through 1996  
Site Data is through 11/30/97

## ALLEGATIONS

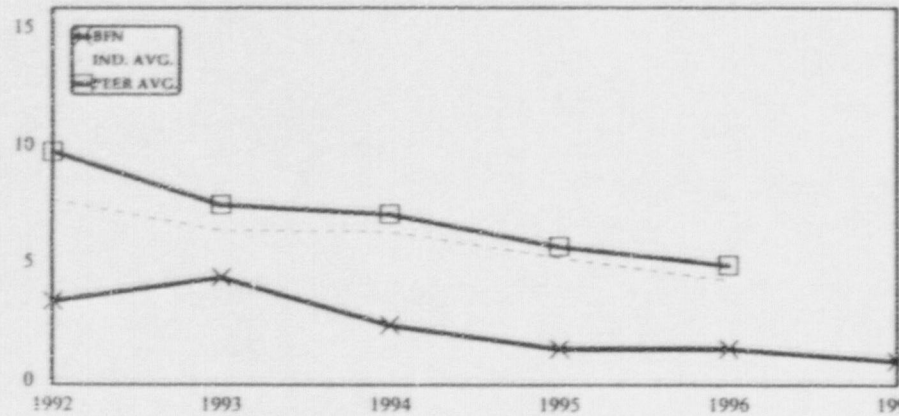


Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)



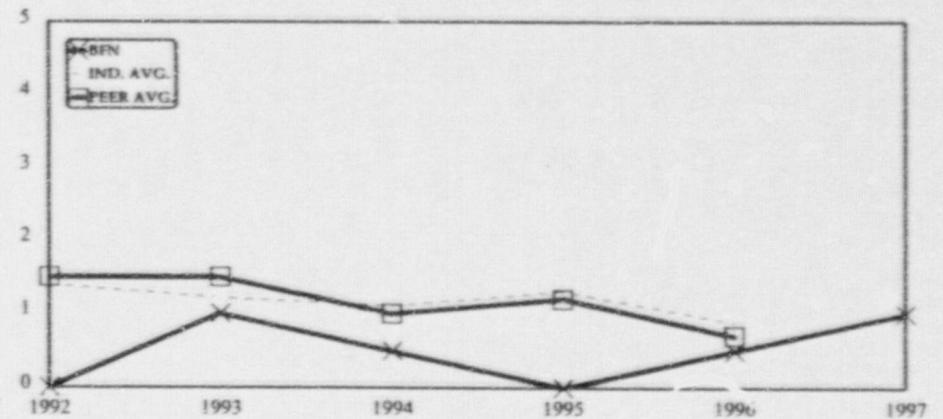
# PLANT PERFORMANCE AEOD INDICATORS

## ADMINISTRATIVE CONTROL PROBLEMS



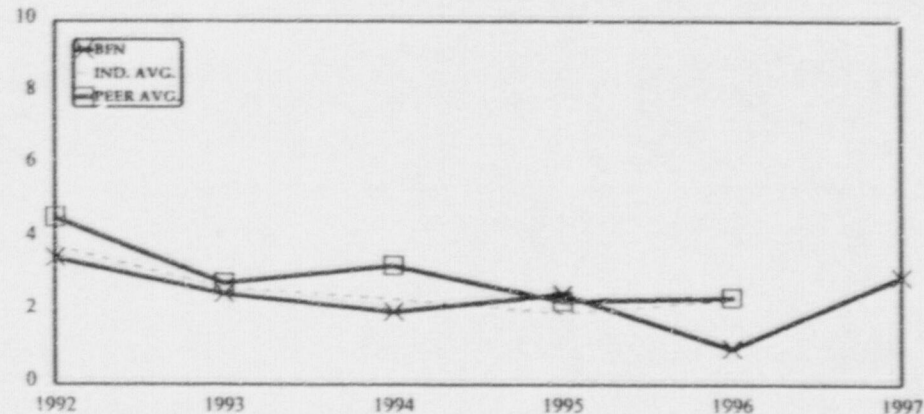
Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)

## LICENSED OPERATOR ERRORS



Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)

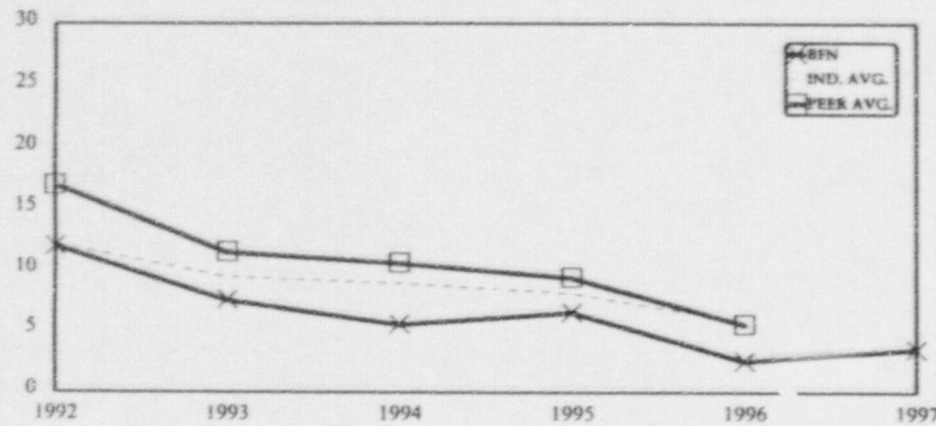
## OTHER PERSONNEL ERRORS



Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)

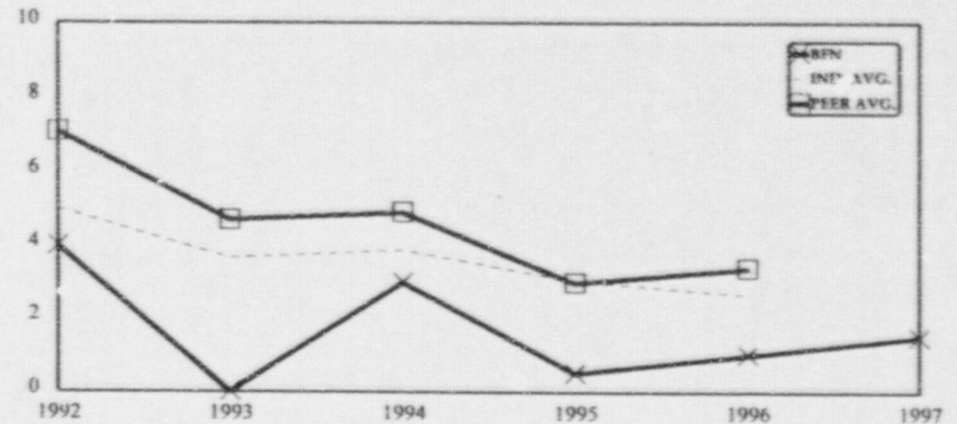
# PLANT PERFORMANCE AEOD INDICATORS

## MAINTENANCE PROBLEMS



Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)

## DESIGN PROBLEMS



Note: Industry Data through 1996  
BFN Per Unit (Data through 11/30/97)

## **DEPARTMENT SELF ASSESSMENTS OPERATIONS**

- **Strengths/Accomplishments**
  - AUO Rounds
  - Management Involvement with Training
  - Operations Procedures Enhancement
  - Control Room Command and Control
  - Expanded Self Assessment Program
  
- **Focus Area**
  - Status Control
  - AUO Rounds
  - Human Performance



## **DEPARTMENT SELF ASSESSMENTS (CONT.) ENGINEERING**

- **Strengths/Accomplishments**
  - Resolution of Long Standing Equipment Problems
  - Prioritization of Equipment Upgrades
  - Maintenance Rule Implementation
  - Improvement in 10 CFR 50.59 Implementation
  - Improved Support to Operations and Maintenance
    - Fire Protection
    - Security
    - Flow Accelerated Corrosion Program
  - Operability Evaluations
  
- **Focus Areas**
  - Equipment Troubleshooting
  - Root Cause Analysis
  - Human Performance

## DEPARTMENT SELF ASSESSMENTS (CONT.)

### MAINTENANCE

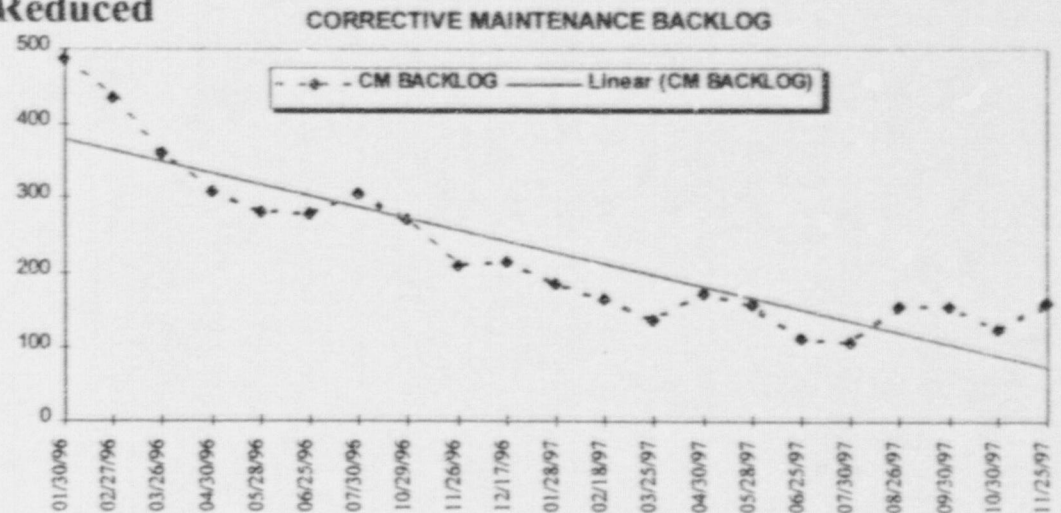
- Strengths/Accomplishments

- Enhanced Self Assessment Program
- Corrective Maintenance Backlogs Reduced

- Post Maintenance Testing
- Safety System Unavailability Below Industry Goals
- Deficiencies in Conduct of Maintenance Reduced
- Troubleshooting
- Outage Activities Effectively Managed

- Focus Areas

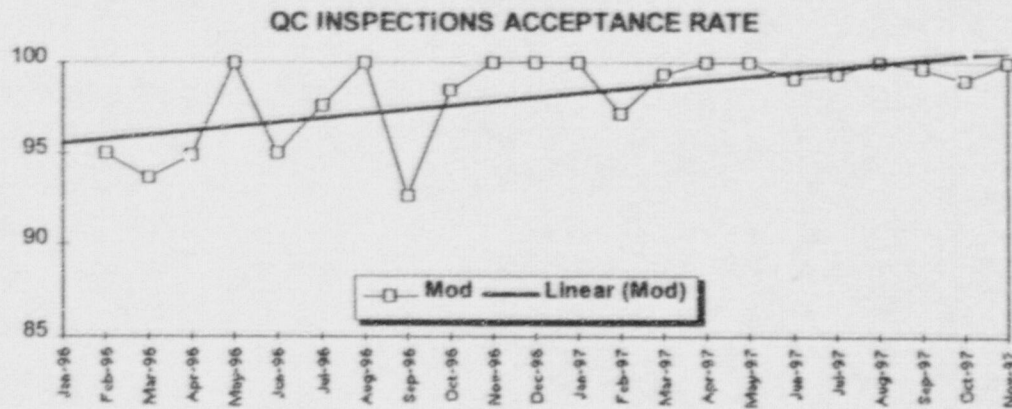
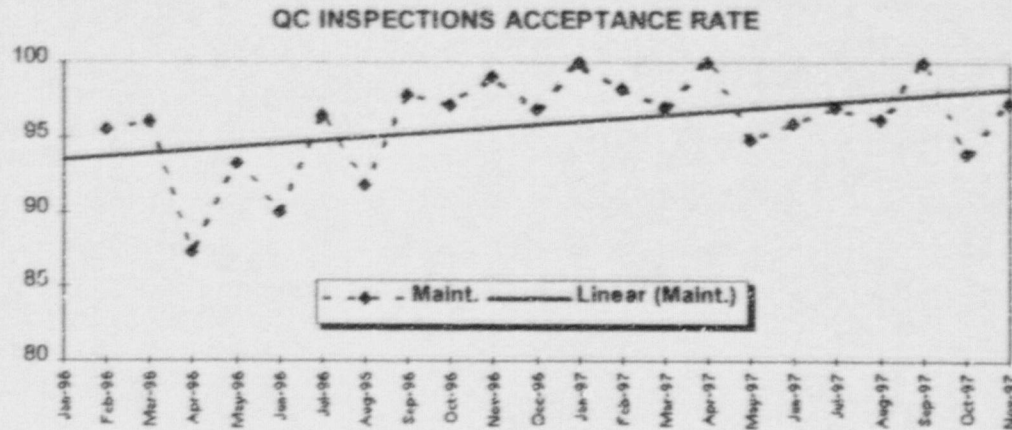
- Foreign Material Exclusion
- Work Order Planning
- Human Performance
- Simplification of Procedures





## DEPARTMENT SELF ASSESSMENTS (CONT.)

### MAINTENANCE





## **DEPARTMENT SELF ASSESSMENTS (CONT.)**

### **PLANT SUPPORT**

- **Strengths/Accomplishments**

- **Reduction of Environmental Non-Compliances**
- **Effective Use of Decontamination Techniques**
- **Radwaste Volume Below INPO Year 2000 Goals**
- **Chemistry Performance Indicators Excellent**
- **Routine Fire Watches Eliminated**
- **Successful REP and Security Drills**
- **Security Hardware Improvements**

- **Focus Areas**

- **Radchem Self-Assessment Program**
- **Chemistry Procedures Upgrade**

## **PLANT MATERIAL CONDITION**

- **Equipment Upgrades**
  - Additional Control Air Compressor
  - Power Range Neutron Monitoring System
  - ECCS ATU Power Supply
  - Pressure Switches for Main Steam Relief Valves
  - Condensate Bypass Valves (FCV-2-190)
  - ECCS Suction Strainers (Unit 2)
  - Advanced Liquid Radwaste Processing System (Thermax)
  - Scram Solenoid Pilot Valves
  - FAC Piping
  - Reactor Water Cleanup System
- **Equipment Condition**
  - Significant Leaks Reduced from 50 Last Year to 20
  - Oil Leak Reduction Program
  - Operator Workarounds
  - Control Room Deficiencies
- **Unit 3 Fuel**

## UNIT 2 CYCLE 9 REFUELING OUTAGE

<u>ACCOMPLISHMENTS</u>	<u>ORIGINAL SCOPE</u>	<u>COMPLETION</u>	<u>PERCENT</u>
– Corrective Maintenance Activities	274	272	99
– Maintenance Support Activities	272	272	100
– Preventive Maintenance Activities	565	562	99
– Modification Workplans/Work Order	289	306	100
– Work Orders Breakage	NA	344	100
– Temporary Leak Repairs Removed	10	10	100
– TACFs Removed	2	2	100
– Control Room Deficiencies	50	71	100
– Operator Work Arounds	8	8	100

### SUCCESES

	<u>GOAL</u>	<u>ACTUAL</u>
– Total Man Rem	342.9	280 (Projected based on TLD results)
– TVA Recordable Injuries	0	0

### UNFAVORABLE EVENTS

- One ESF During Testing of SRV Pressure Switches

Karl Singer



## **REGULATORY ISSUES**

- **FSAR Review**
- **Electronic FSAR**
- **Licensing Initiatives**
  - **Improved Standard Technical Specification Conversion**
  - **Power Uprate**
  - **24-Month Operating Cycle**
- **Licensing Submittal Quality**

# **QUALITY ASSURANCE OVERVIEW**

## **STRENGTHS/ACCOMPLISHMENTS**

- **Assessment/Audit Program**
  - **Focused Assessments Based on Indicators**
  - **Site QA Vertical Slice Assessments**
  - **Site QA Monthly Assessment of Line Self-Assessments**
  - **Special Assessments**
  - **Outage**
  - **Corporate QA Vertical Slice Audits**
- **Corrective Action Program Status**
  - **Four Levels of PERs**
  - **MRC Reviews all Initiated PERs**
  - **MRC Reviews A, B, and selected “C” Corrective Actions**
  - **Electronic PER Implementation**
- **QA Conclusion**



## CONCLUSION AND OPEN DISCUSSION