PERFORMANCE INDICATORS FOR OPERATING COMMERCIAL NUCLEAR POWER REACTORS
Report for Third Quarter 1990
Data through September 1990

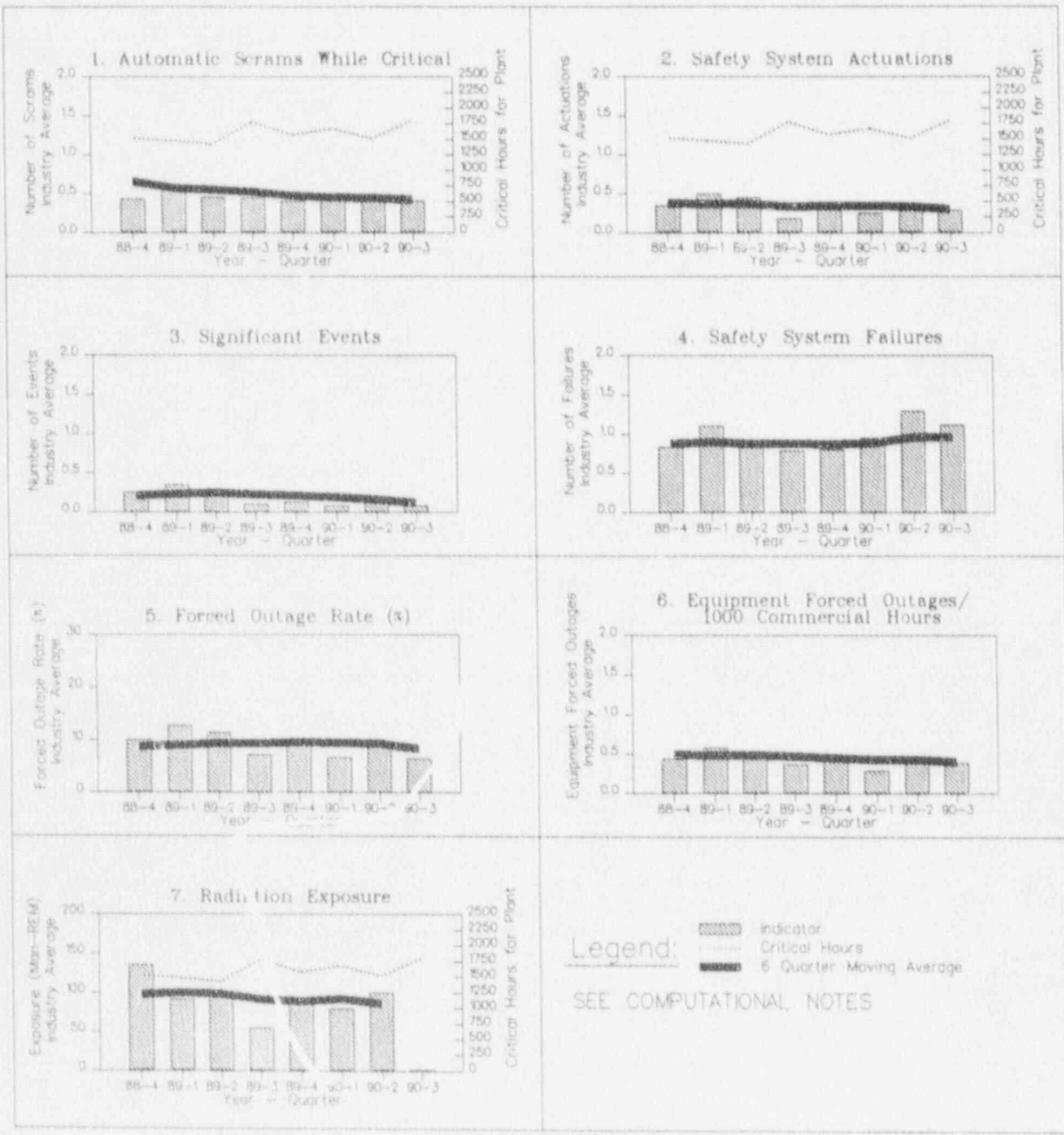
OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

PART I

U.S. NUCLEAR REGULATORY COMMISSION

FIGURE 1

Summaries of the industry averages, with a six quarter moving average trend line, are shown in Figure 1 for the fourth quarter of 1988, 1989, and the first three quarters of 1990.



Computational Notes o. Industry Averages:

Industry averages of the Performance Indicators (PIs) are computed for the nuclear units discussed in this report. All data including industry averages for the last quarter are preliminary and subject to revision. Such revisions result from changes to monthly operating reports submitted by utilities, updates to radiation exposure data, and continuing quality checks on the data.

Adjustments to Industry Averages

Certain plants are excluded from the calculations of industry averages as follows:

Plants in extended shutdown where commission approval is required for either restart or operation above low power are excluded from the calculations for the entire period of extended shutdown for all PIs except collective radiation exposure. Radiation exposure can be significant during outages, hence the industry average for collective radiation exposure does include periods where a plant is in an extended shutdown.To avoid distorting the industry average forced outage rate (a single plant can add almost a full percentage point to the industry average), that calculation will exclude the q rters at the start and end of the extended shutdown. All other PIs will include those quarters.

Rancho Seco ceased commercial operation on June 6, 1989 and will be excluded from all performance indicator calculations after the second quarter 1989.

Fort St. Vrain ceased all operations on August 18, 1989, and will be excluded from all performance indicator calculations after the third quarter 1989.

A tabular listing of these excluded plants and the calendar quarters for adjusting PI calculations are presented below:

PLANT	EXCLUDED PERIOD FOR FORCED OUTAGE RATE	EXCLUDED PERIOD FOR OTHER PIs
Browns Ferry 1	Entire Period	Entire Period
Browns Ferry 2	Entire Period	Entire Period
Browns Ferry 3	Entire Period	Entire Period
Fort St. Vrain	After 89-3	After 89-3
Peach Bottom 2	* Through 89-2	* Through 89-1
Peach Bottom 3	* Through 89-4	* Through 89-3
Pilgrim	* Through 88-4	* Through 88-4
Rancho Seco	After 89-2	After 89-2
Seabrook	* Through 89-2	* Through 89-1
Sequoyah 1	* Through 88-4	* Through 88-3

* Extended shutdown began prior to 88-4

Performance Indicator Definitions (See Part II for the detailed definitions)

AUTOMATIC SCRAMS WHILE CRITICAL

The number of unplanned automatic reactor scrams while the reactor is critical.

SAFETY SYSTEM ACTUATIONS

The number of engineered safety feature actuations involving either Emergency Core Cooling Systems (ECCS) or Emergency AC power systems (Diesel Generators).

SIGNIFICANT EVENTS

Events identified by the NRC as being significant as a result of detailed screening.

SAFETY SYSTEM FAILURES

Any event or condition that could prevent the fulfillment of the safety function of any of 26 Safety Systems, subsystems, or components reported pursuant to 10CFR50.73.

FORCED OUTAGE RATE

The number of forced outage hours divided by the sum of the forced outage hours and the generator on-line hours. Beginning with the first quarter 1989 report the industry average forced outage rate is higher than the values reflected in earlier reports, primarily due to a reclassification of an extended scheduled outage by the Nine Mile Point Unit licensee (by letter dated March 14, 1989). Beginning with the second quarter 1989 report, the computation of industry average forced outage rate conforms to NUREG-0020 in reflecting an initial commercial operation date for Clinton Unit 1 of November 24, 1987.

Beginning with the third quarter 1989 report, the industry average for forced outages rate is the total numbe. of forced outage hours divided by the sum of the total forced outage hours and the total generator on-line hours.

EQUIPMENT FORCED OUTAGES per 1000 COMMERCIAL HOURS

The average number of equipment forced outages experienced per 1000 hours of commercial operation. Beginning with the first quarter 1989 report, the industry average for equipment forced outages per thousand commercial hours is the total number of equipment forced outages divided by the total number of commercial hours for the industry. The industry average equipment forced outage per thousand commercial hours is somewhat lower than the comparable periods in the AEOD Annual Report, and the 1988 PI reports due to this computational change. The initial commercial operation date for Clinton Unit 1 is November 24, 1987.

COLLECTIVE RADIATION EXPOSURE

The total radiation dose accumulated by unit personnel. With the exception of Indian Point and Millstone unit values at multi unit sites are obtained by dividing the station total by the number of units contributing to the exposure. The Indian Point and Millstone sites report individual unit values. This indicator is identical to the one used by INPO.

UNITED STATES
NUCLEAR REGULATORY COMMISSION

ANNOUNCEMENT NO. 200

DATE: November 28, 1989

TO: All NRC EMPLOYEES

SUBJECT: REVISED GUIDANCE ON THE USE OF PERFORMANCE INDICATORS

This announcement revises the earlier guidance of NRC Announcement 30, dated February 5, 1988, regarding the use of the results of the NRC Performance Indicator Program. All NRC employees shall adhere to the following guidance.

The Performance Indicator Program provides an additional view of operational performance and enhances our ability to recognize areas of poor and/or declining safety performance of operating plants. However, it is only a tool and is to be used in conjunction with other tools, such as the results of routine and special inspections and the systematic assessment of licensee performance (SALP) program, for providing input to NRC management decisions regarding the need to adjust plant-specific regulatory programs.

It should be recognized that performance indicators have limitations and are subject to misinterpretation. Therefore, caution is warranted in the interpretation and use of the data. The application of performance indicators for purposes and in manners other than those stated above will be counter to the NRC objective of ensuring operational safety. To avoid such situations, the following specific directives are provided:

1. The Performance Indicator Program for operating reactors is a single, coordinated, overall NRC program under the direction of AEOD. NRC offices other than AEOD should not deviate from the NRC program without written permission of the EDO or the Director, AEOD.

2. Performance indicators are intended as a tool for senior NRC management to monitor trends in overall performance for a given plant. The performance indicators for a given plant should be viewed as a set. When viewed as a set, the performance indicators provide an additional measure of plant operational performance. However, they should not be used in communications with licensees as a measure of performance level.

3. Performance indicators are intended to be one of several tools for use by senior NRC management in decision-making regarding plant-specific regulatory programs. Senior management in each NRC office should have access to performance indicators for their assigned unit(s). Performance indicators are not to be overemphasized in relation to other measures of safety performance. For this reason, no regulatory action should be taken on the basis of Performance Indicator Program results alone.

4. Performance indicators do not provide a valid basis for ranking individual nuclear power plants and should not be presented in such a way as to imply "problem facility" status for individual plants.

5. The Performance Indicator Program is separate and distinct from the SALP program, although it is recognized that the indicators have relationships in varying degrees to SALP functional areas. Indicators, such as failures of a plant's safety systems or frequent forced outages due to equipment failures, may be symptomatic of safety problems. Thus, the staff may recognize events and failures captured by certain indicators in SALP discussions and reports, but these SALP references are to be based on the underlying causes of poor performance and not on the results of the Performance Indicator Program, either individually or as a set. Regional Administrators should ensure that our decision-making process adheres to this guidance, especially in SALP discussions and documentation.

6. NRC senior management should bear in mind when evaluating performance indicator results that the indicators are assessment tools that aid in identification of unanticipated performance, and that the underlying causes should be carefully assessed, evaluated, and understood (factoring in other available information).

7. Quarterly compilations of Performance Indicator Program results should be placed in the Public Document Room following dissemination to NRC management and the Commission.

It should be recognized that in conducting reviews, inspections, and evaluations of plants, it is often necessary to rely on plant data. Such information has been routinely used in our SALP, safety evaluation reports, and technical evaluation reports. The foregoing policy is not intended to change this process.

NRC staff must be sensitive to inappropriate pressure from any source which causes licensee personnel at individual nuclear power plants to "manage the indicators" or to take any actions that are contrary to plant safety because of performance indicators, individually or as a set (such as inhibiting reactor trips). Any such instances should be promptly communicated to appropriate licensee management and brought to NRC management attention.

James M. Taylor
Acting Executive Director
for Operations

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PART I

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Part I

ANALYSIS OF THE PERFORMANCE INDICATOR DATA THROUGH SEPTEMBER 1990

1. INTRODUCTION

This U.S. Nuclear Regulatory Commission (NRC) report presents performance indicator data through September 1990 for 111 operating reactors. Rancho Seco ceased commercial operations in June 1989, and Fort St. Vrain ceased all operations in August 1989. Therefore, performance indicator data are included for Rancho Seco only through June 1989, and for Fort St. Vrain only through September 1989. There are eight indicators in the NRC Performance Indicator Program for Operating Commercial Nuclear Power Plants: (1) automatic scrams while critical, (2) safety system actuations, (3) significant events (4) safety system failures, (5) forced outage rate, (6) equipment forced outages/1000 commercial hours, (7) collective radiation exposure, and (8) cause code trends.

The performance indicator data are extracted from Licensee Event Reports (LER) submitted in accordance with 10 CFR 50.73, immediate notifications to the NRC Operations Center in accordance with 10 CFR 50.72, monthly operating reports in accordance with plant technical specifications, and screening of operating experience by NRC staff. Radiation exposure data are obtained from INPO. The charts for each plant are provided in Part I of the report, and the tables are provided in Part II.

2. BACKGROUND

Since May 1986, an interoffice task group has been working to develop an overall NRC program for using quantitative indicators of nuclear power plant safety performance. In July and August of 1986, the group conducted a trial program for 50 plants with 17 prospective performance indicators. For the most part, this trial program used data through calendar year 1984. The group then selected eight performance indicators to be recommended as the best set for initial implementation. One of these, corrective maintenance backlog, was deleted by the staff following consideration of industry comments.

In October 1986, a prototype report was prepared by expanding the trial program data to 100 operating reactors and including the data through the first half of 1986. The staff's recommended program, the task group report, and the prototype report were documented in SECY-86-317, Performance Indicators, dated October 28, 1986. The Commission was briefed on the staff's recommended program in November 1986, and approved the implementation of the program in December 1986, instructing the staff to delete the enforcement action index from the set of indicators. The Staff proposal for use of cause codes as a performance indicator was documented in SECY-89-046 and SECY-89-211. Through Staff Requirements Memoranda (SRM) dated March 15, 1989 and August 10, 1989, the Commission approved cause trends as a new performance indicator.

Since February 1987, the performance indicator reports have been provided to the senior management on a quarterly basis. The third quarter 1990 issue of the quarterly report contains data through September 1990.

3. DEFINITIONS OF INDICATORS

The performance indicator data presented in this report are categorized utilizing specific definitions. Summary definitions for each category are provided in the following sections. Detailed definitions are contained in Part II of this report.

3.1 Automatic Scrams While Critical (Scrams)

These are the unplanned automatic scrams (Reactor Protection System Logic Actuations) while the reactor is critical. This Performance Indicator (PI) is similar to another indicator, Unplanned Automatic Scrams While Critical, used by the Institute of Nuclear Power Operations (INPO). In addition, the number of automatic scrams from above 15% power per 1000 commercial hours and the number of automatic scrams while critical below 15% power are monitored.

3.2 Safety System Actuations (SSA)

This indicator includes manual and automatic actuations (Safety System Logic Actuations) of Emergency Core Cooling Systems (ECCS), as well as actuations of emergency AC power systems due to loss of power to a vital bus. This PI is similar to another indicator, Unplanned Safety System Actuations, used by INPO. This indicator is used for plants that have received an operating license.

3.3 Significant Events (SE)

These events are identified by detailed screening of operating experience by NRC staff. They include degradation of important safety equipment; unexpected plant response to a transient; a major transient; a scram with complications, and degradation of fuel integrity, primary coolant pressure boundary, or important associated structures. This indicator is used for plants that have received an operating license.

3.4 Safety System Failures (SSF)

This indicator includes any event or condition that could prevent the fulfillment of the safety function of structures or systems. Twenty-six safety systems, subsystems, and components are monitored for plants that have received an operating license.

3.5 Forced Outage Rate (FOR)

This indicator is identical to the one used by INPO and in the NRC Gray Book (NUREG-0020). It is the number of forced outage hours divided by the sum of forced outage hours and generator on-line hours. This indicator is used only for plants that are in commercial operation.

3.6 Equipment Forced Outages Per 1000 Commercial Hours (EFO)

This PI is the inverse of the mean time between forced outages caused by equipment failures. The mean time is equal to the number of hours the reactor is commercial in a period divided by the number of forced outages caused by equipment failures in that period. This indicator is used only for plants that are in commercial operation.

3.7 Collective Radiation Exposure

This indicator is the total radiation dose accumulated by unit personnel. With the exception of Indian Point and Millstone, unit values at multi-unit sites are obtained by dividing the station total by the number of units contributing to the exposure. The Indian Point and Millstone sites report individual unit values. This indicator is identical to the one used by INPO and is used only for plants that have completed one full calendar year of commercial operation.

3.8 Cause Code Trends

The cause code indicator captures the plant's trends for licensed operator errors, other personnel errors, equipment failures (electronic piece-part or environmental-related failures), design/construction/installation/fabrication problems, administrative control problems, and maintenance problems.

3.9 Additional Notes

Part II of this report provides brief descriptions of each performance indicator event for the fourth quarter of 1989, and the first, second, and third quarters of 1990. Part II also provides a tabular listing of PIs, cause codes and critical hours by quarter for each plant. In addition, overall industry summary tables provide the raw data, the moving average for the most recent two quarters (two-quarter period), and the moving average for the most recent six quarters (six-quarter period) for each performance indicator (except moving averages for collective radiation exposure and cause codes) for each plant.

The data for this report were obtained from NRC sources and were reviewed by NRC personnel in Headquarters and the Regions for completeness and accuracy. Data on collective radiation exposure were obtained from INPO. Data for the most recent quarter, along with the other data, will be reviewed again in preparation for the next quarterly report, to ensure that late information, if any, is taken into account. Errata for changes in data from the last report are provided in Part II.

4. DISPLAY OF PERFORMANCE INDICATOR DATA

The performance indicator data are presented in this report on charts and tables as discussed in the following sections.

4.1 Quarterly Data

Figures 4.1 through 4.113 provide detailed plant analysis charts of the quarterly data for each indicator for each plant. These charts also include the plant's critical hours to present a picture of the plant's operating history, industry six quarter moving average values[1] to provide a comparative performance level, and the six-quarter moving averages to show trends. Bar charts of older plants include the older plant mean values; charts for newer plants[2] include both the newer plant and the older plant mean values. These charts give detailed illustrations of the indicator data at given plants. In addition, a cause code trend window provides a graphical depiction of the trends in the six quarter moving averages of the cause codes for each plant.

4.2 Plant Summaries

Figures 4.1 through 4.113 consist of two bar charts that provide profiles of each plant's performance indicator trends and the corresponding performance indicator values.[3] The left chart of each figure shows the number of standard deviations by which the moving average for the most recent two-quarter period varies from the plant's own moving average for the current six-quarter period. The right chart of each figure shows the number of standard deviations by which the plant's moving average for the most recent six quarters (current six-quarter period) varies from the industry mean.

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1. Industry mean values for safety system failures and collective radiation exposure are computed separately for boiling water reactors and pressurized water reactors. The industry average for Ft. St. Vrain includes all older plants.

2. New plants are plants that have not completed the first full calendar year of operation after full power operating license issuance.

3. For cause codes, Figures 4.1 through 4.113 reflect trends only.

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4.3 PLANT SUMMARIES AND QUARTERLY DATA FIGURES

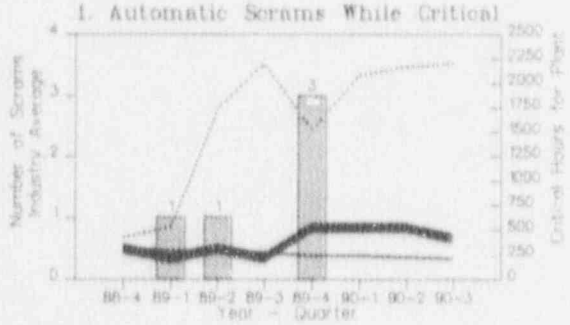
FIGURE 4.1

ARKANSAS 1

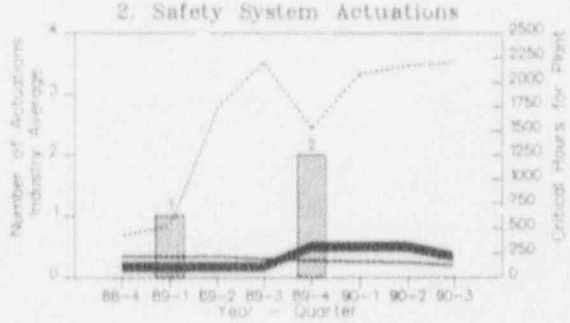
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

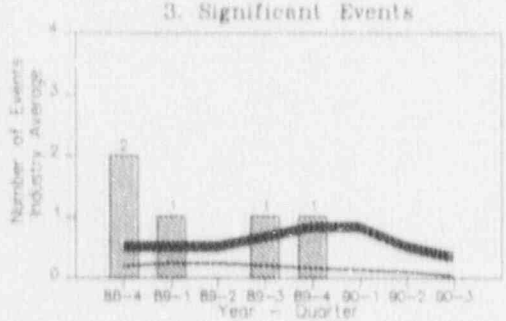
1. Automatic Scrams While Critical



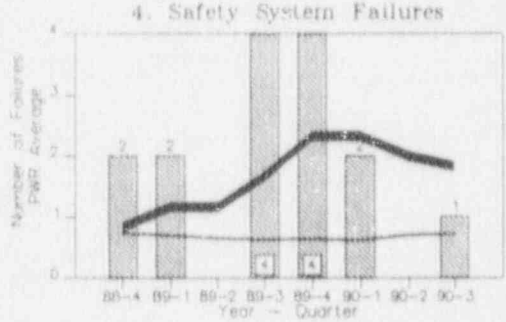
2. Safety System Actuations



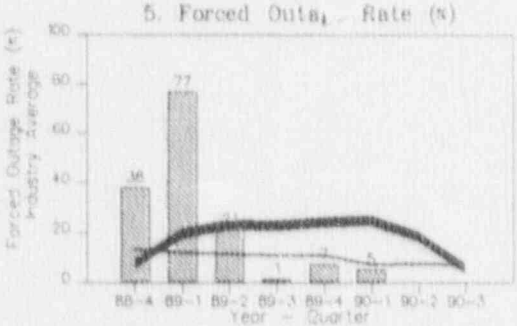
3. Significant Events



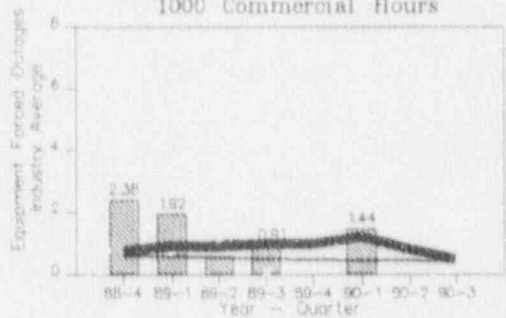
4. Safety System Failures



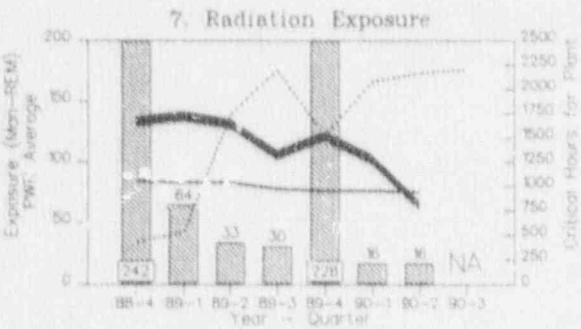
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

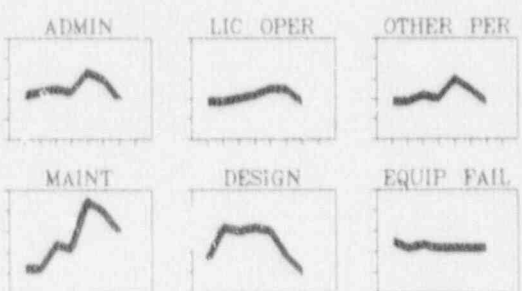


FIGURE 4.1

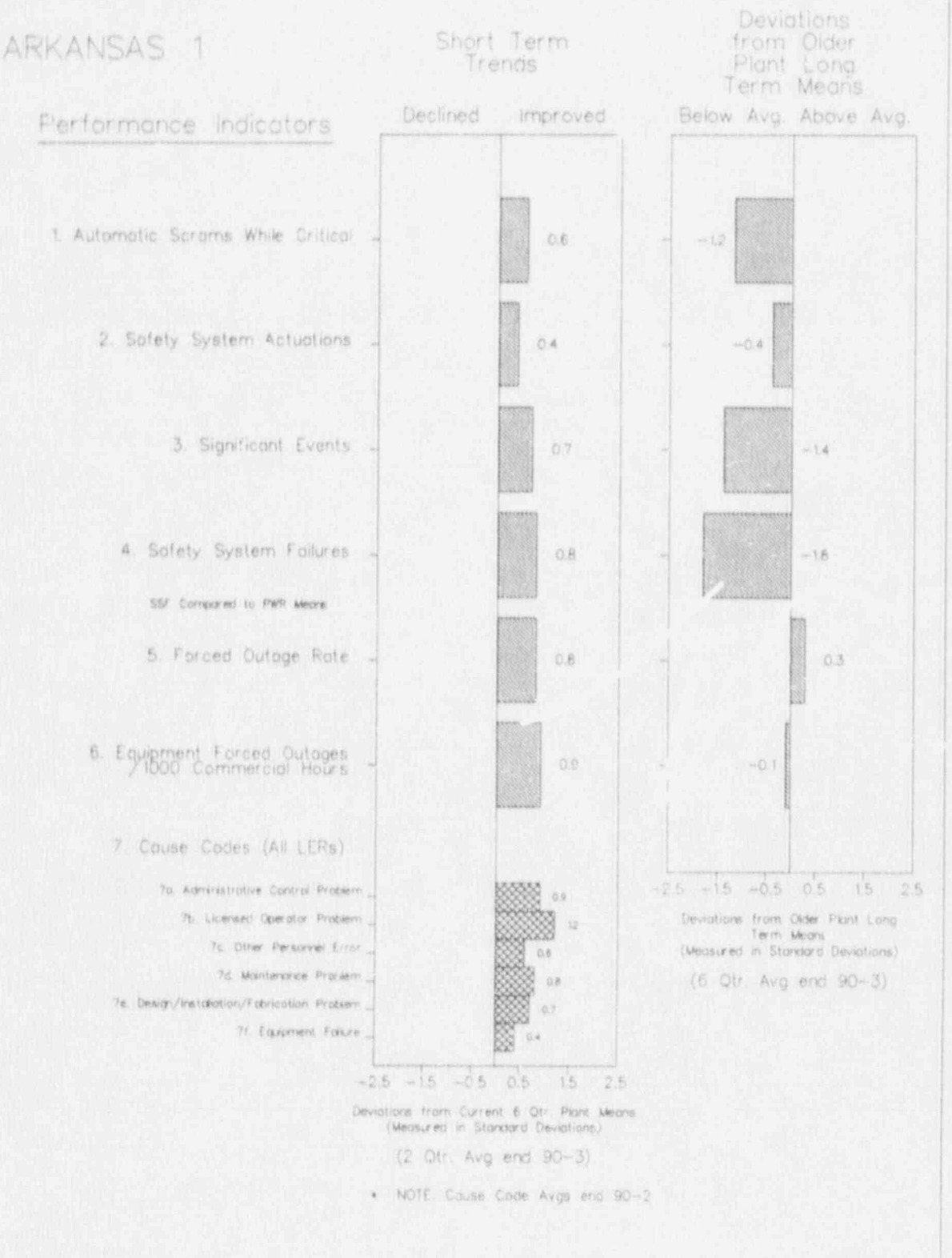

ARKANSAS 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-1.2
2. Safety System Actuations
0.4
-0.4
3. Significant Events
0.7
-1.4
4. Safety System Failures
0.8
-1.8
SSF Compared to PWR Means
5. Forced Outage Rate
0.8
0.3
6. Equipment Forced Outages /1000 Commercial Hours
0.0
-0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
1.2
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

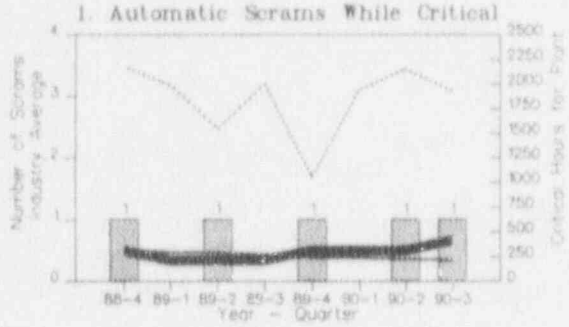
FIGURE 4.2

ARKANSAS 2

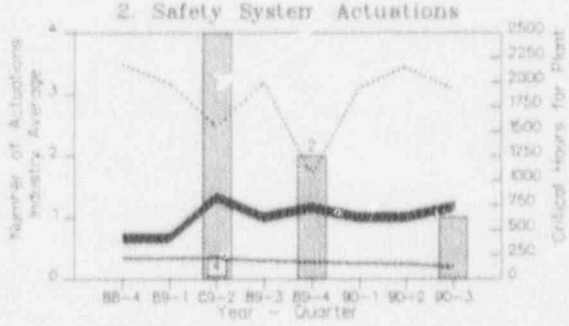
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

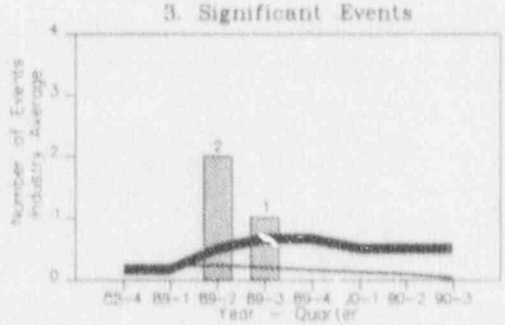
1. Automatic Scrams While Critical



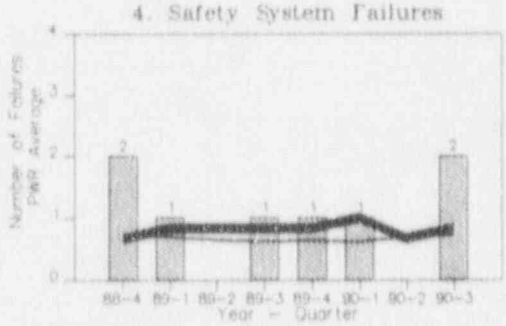
2. Safety System Actuations



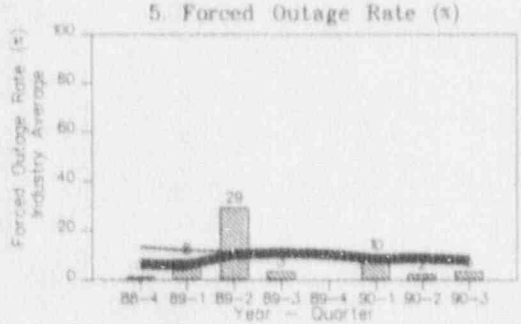
3. Significant Events



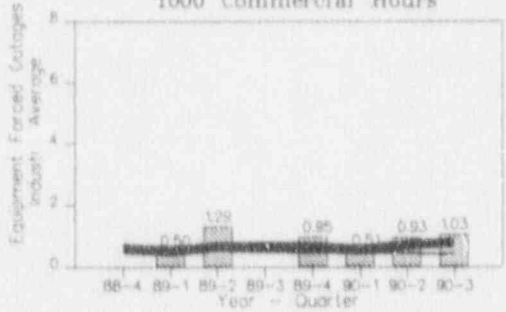
4. Safety System Failures



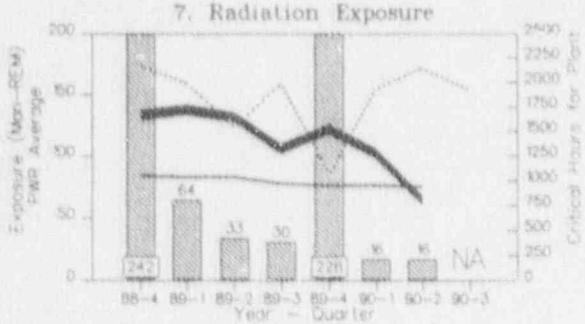
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

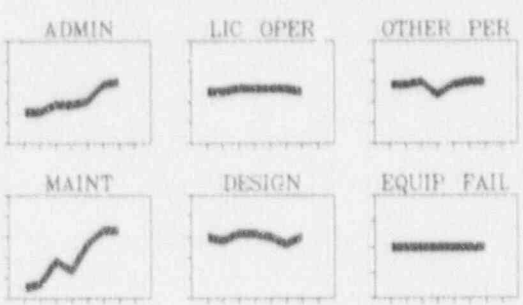


FIGURE 4.2

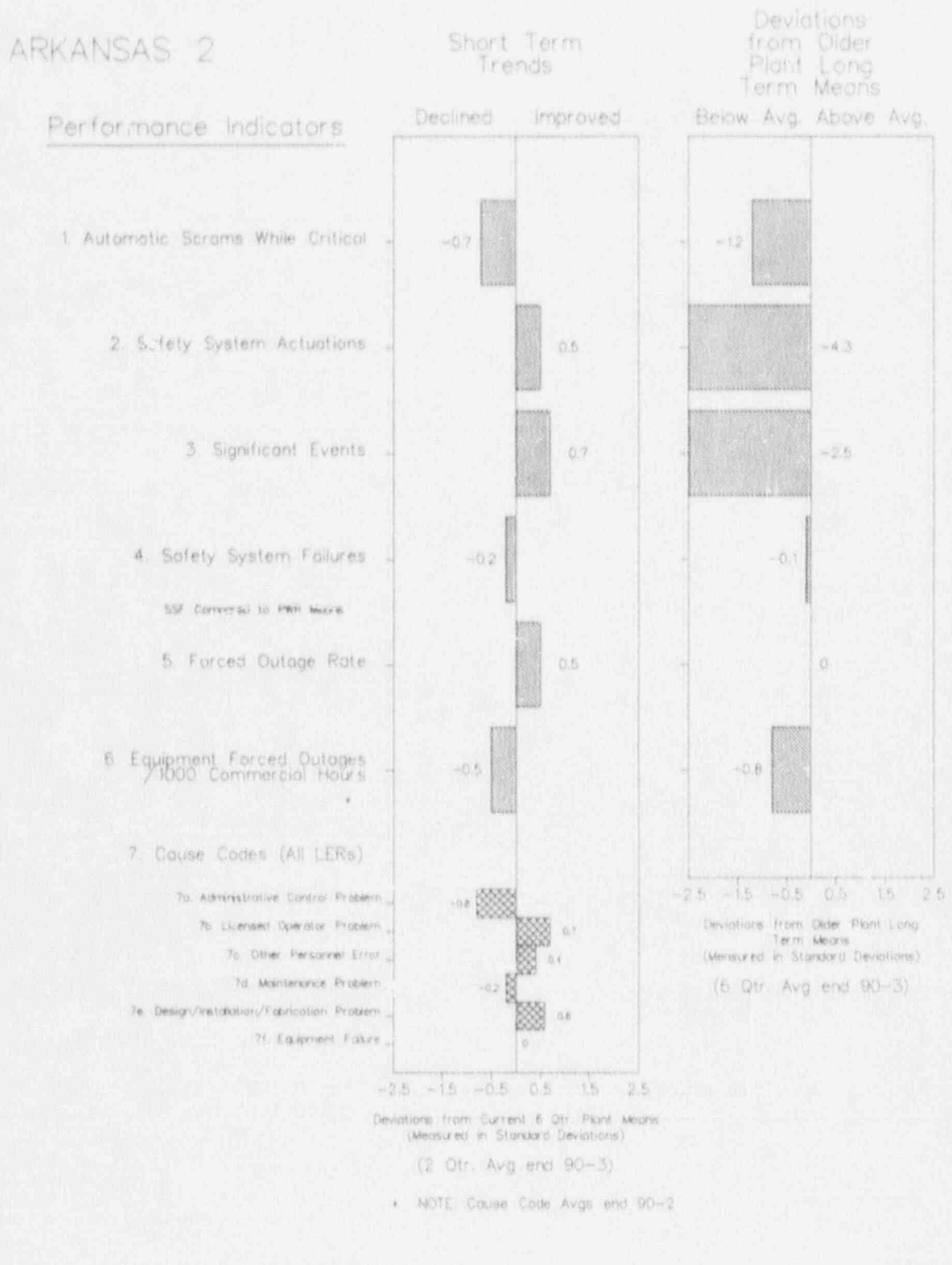

ARKANSAS 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.7
-1.2
2. Safety System Actuations
0.5
-4.3
3. Significant Events
0.7
-2.5
4. Safety System Failures
-0.2
-0.1
SSF Converted to PWR Model
5. Forced Outage Rate
0.5
0
6. Equipment Forced Outages /1000 Commercial Hours *
-0.5
-0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0.4
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

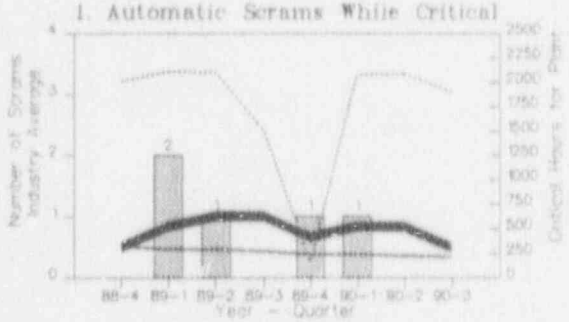
FIGURE 4.3

BEAVER VALLEY 1

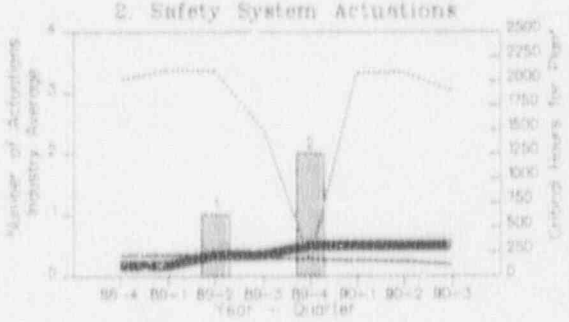
88-4 to 90-3

Legend:
- Indicator
- Older Plant 8 qtr Moving Average
- Critical Hours
- 8 Quarter Moving Average (Long Term Trends)

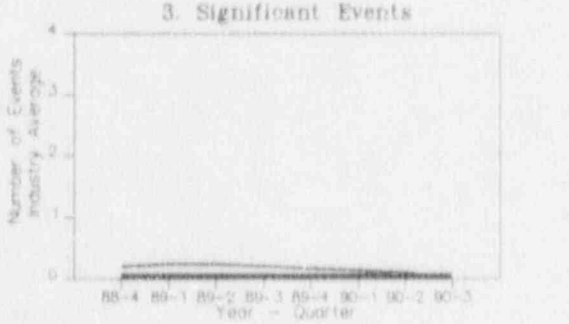
1. Automatic Scrams While Critical



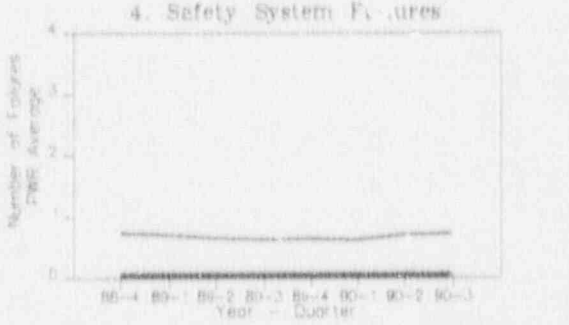
2. Safety System Actuations



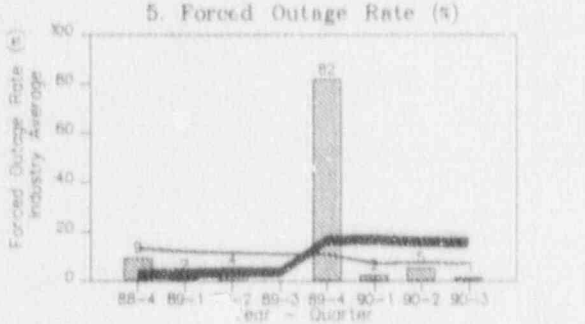
3. Significant Events



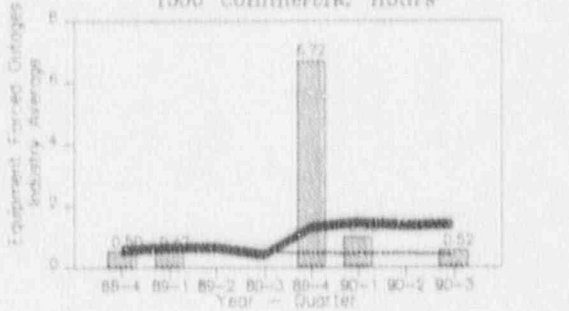
4. Safety System Failures



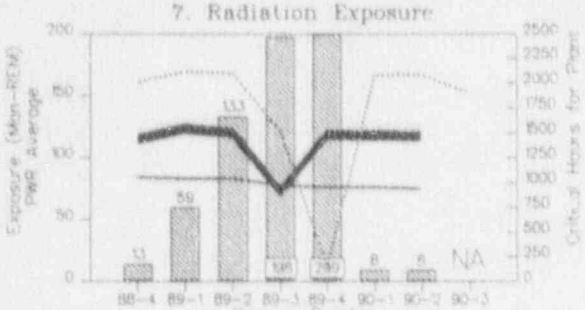
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

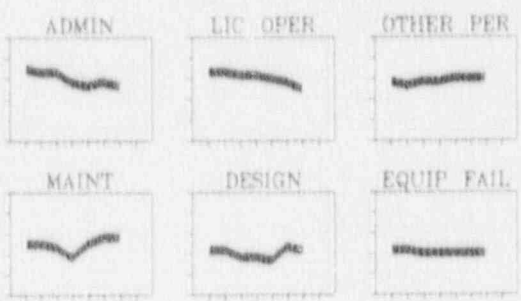


FIGURE 4.3

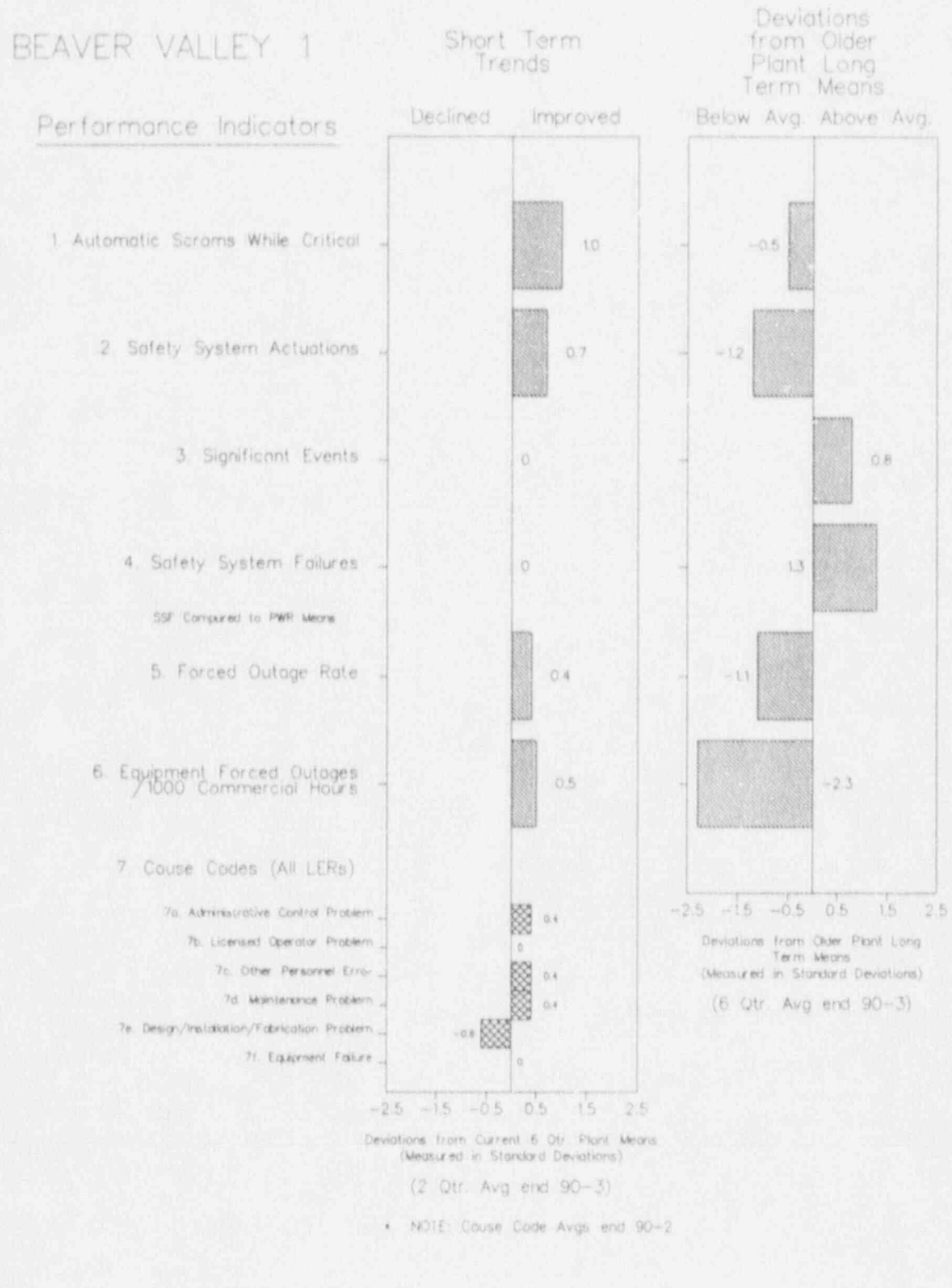

BEAVER VALLEY 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-0.5
2. Safety System Actuations
0.7
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
0
1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
-1.1
6. Equipment Forced Outages /1000 Commercial Hours
0.5
-2.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.4
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

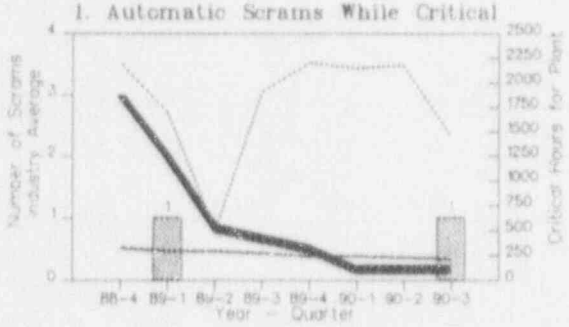
FIGURE 4.4

BEAVER VALLEY 2

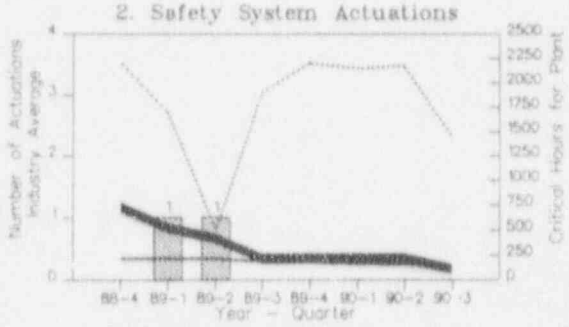
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

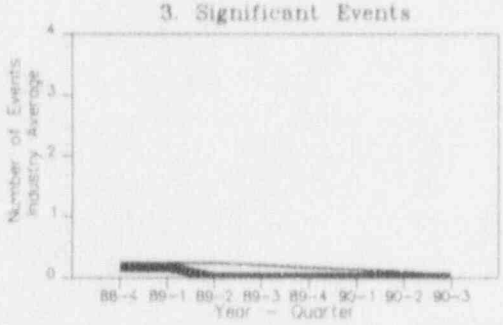
1. Automatic Scrams While Critical



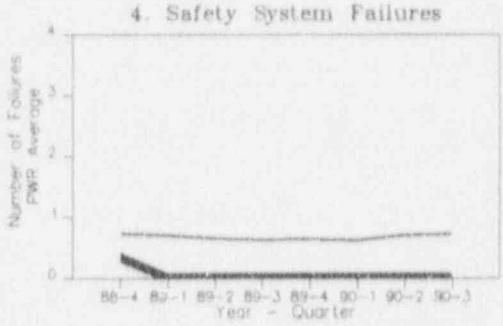
2. Safety System Actutations



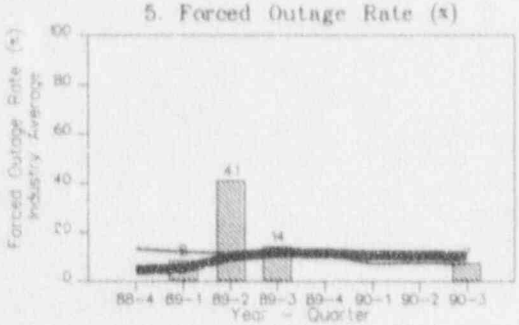
3. Significant Events



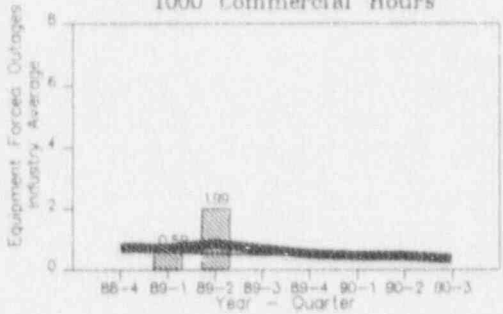
4. Safety System Failures



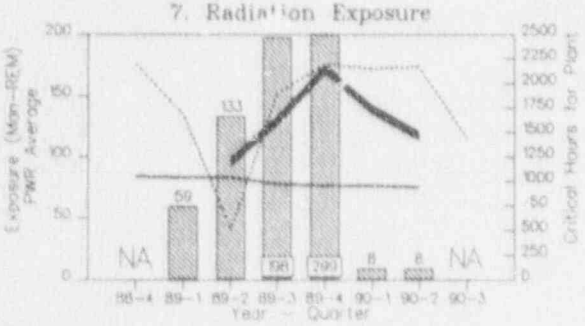
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

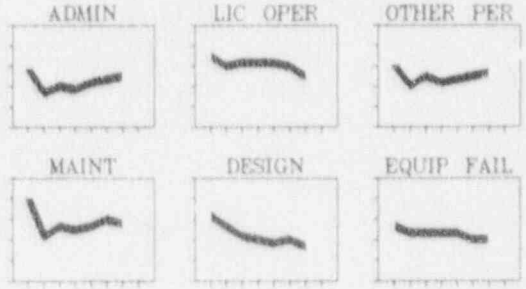


FIGURE 4.4

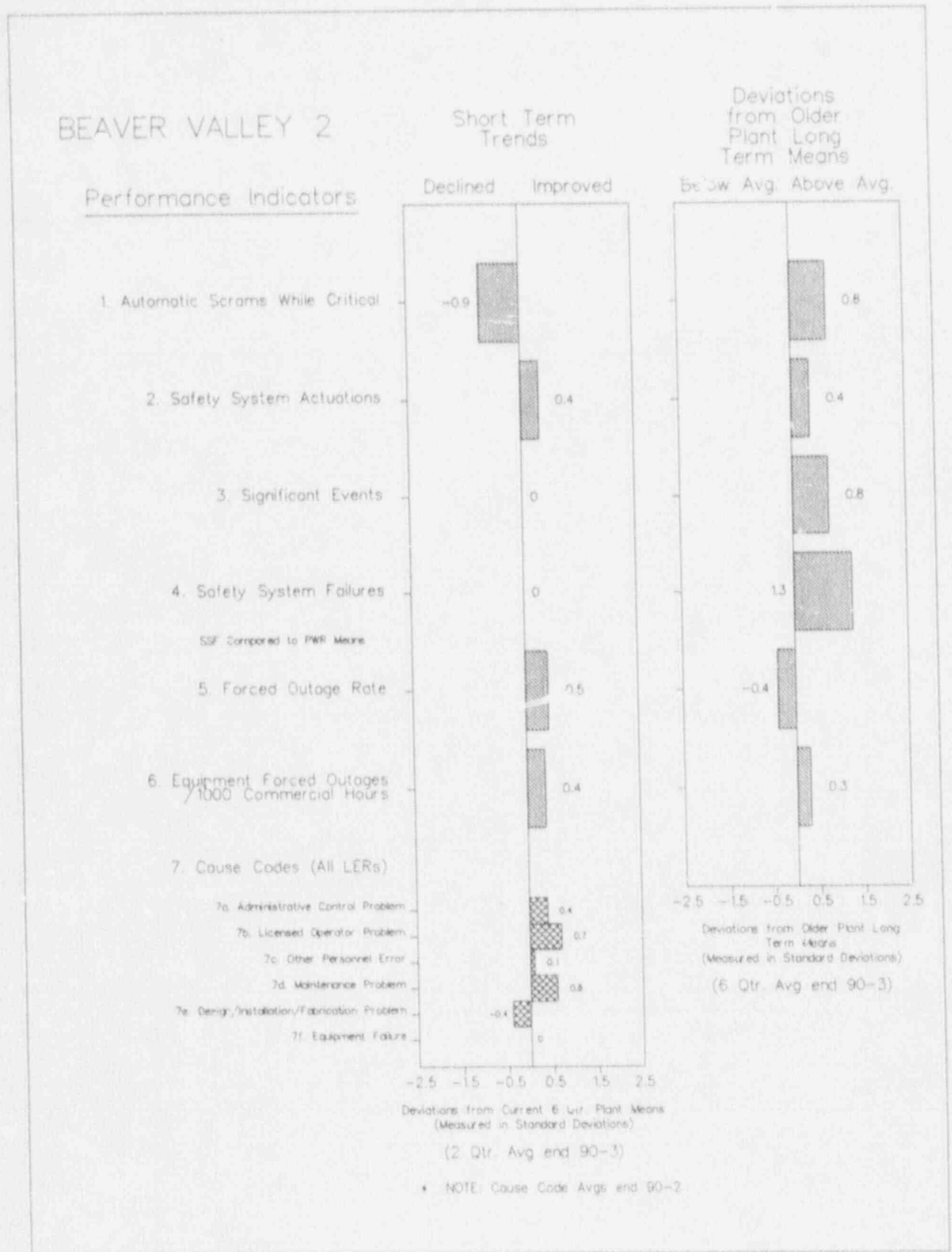

BEAVER VALLEY 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0
1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
-0.4
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.4
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0.1
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

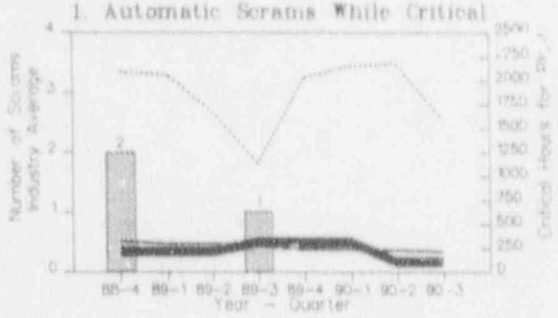
FIGURE 4.5

BIG ROCK POINT

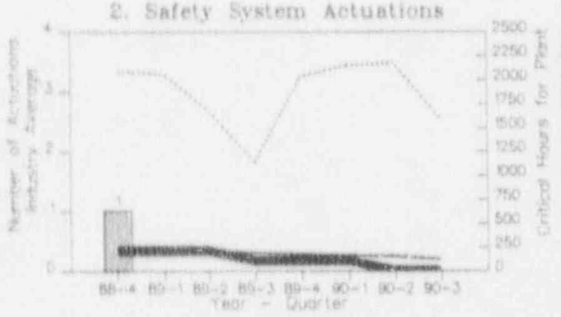
88-4 to 90-3

Legend:
- Indicator
- Other Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

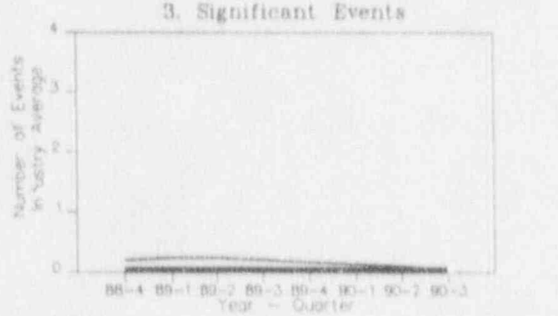
1. Automatic Scrams While Critical



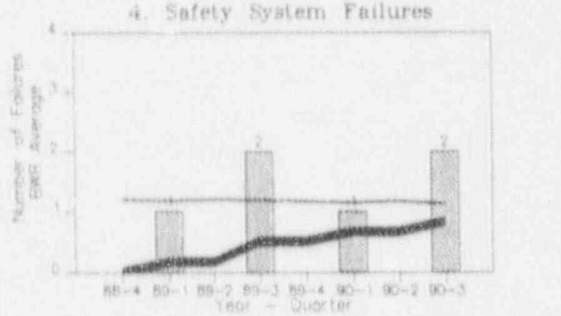
2. Safety System Actuations



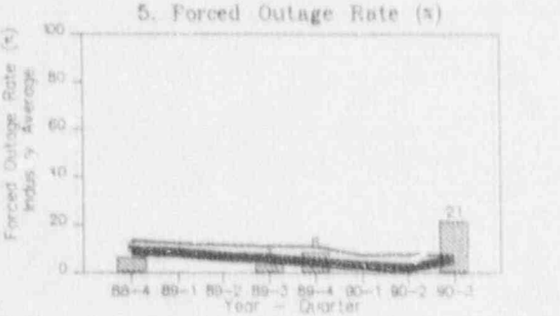
3. Significant Events



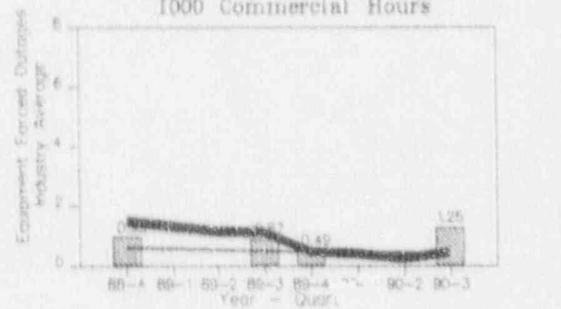
4. Safety System Failures



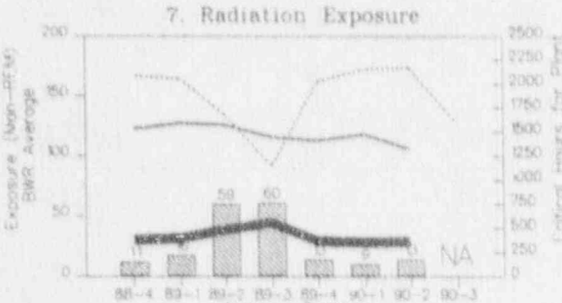
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

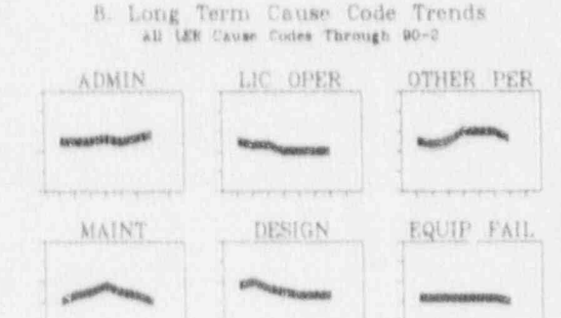


FIGURE 4.5

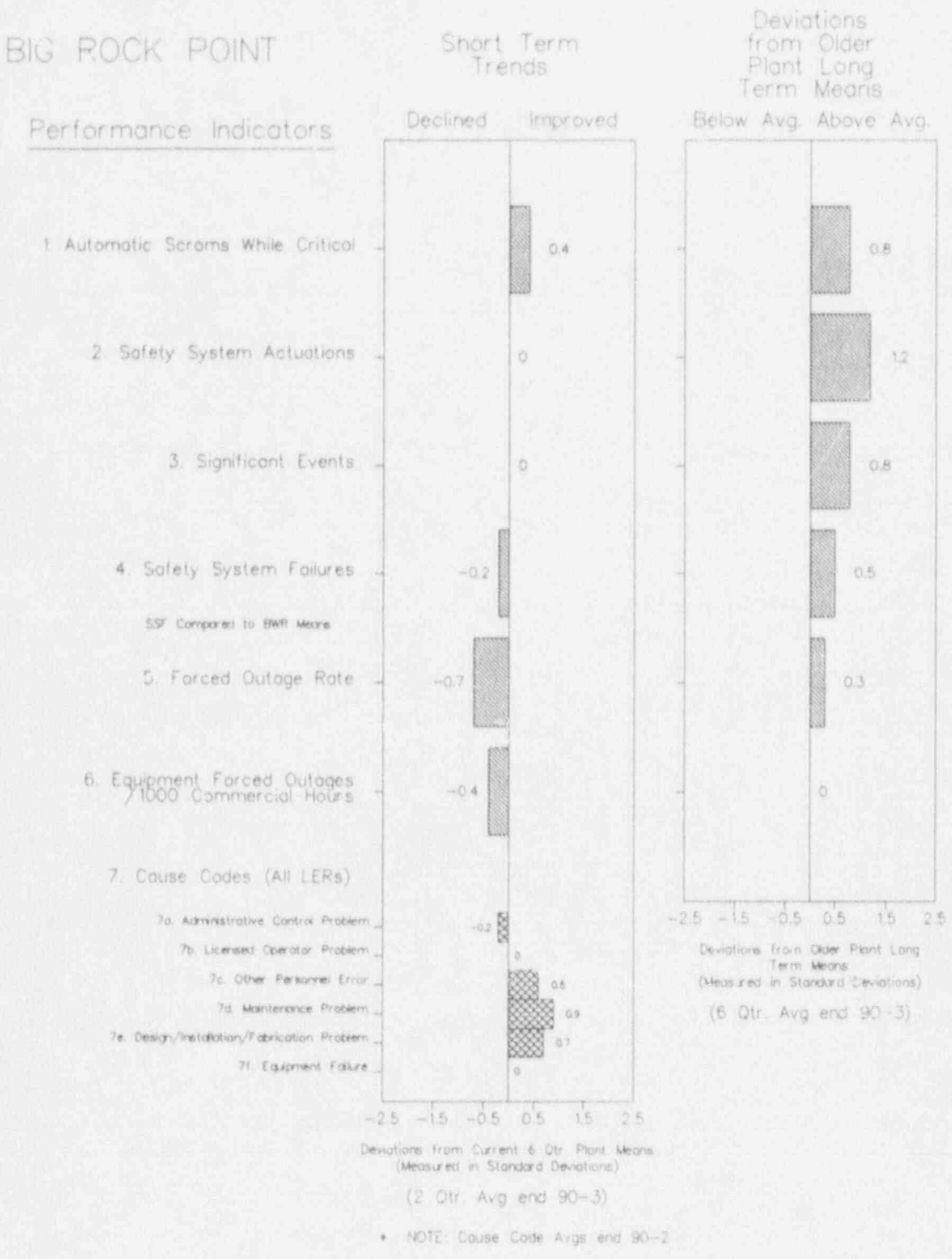

BIG ROCK POINT
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.2
0.5
SSF Compared to BWR Means
5. Forced Outage Rate
-0.7
0.3
6. Equipment Forced Outages /1000 Commercial Hours
-0.4
0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

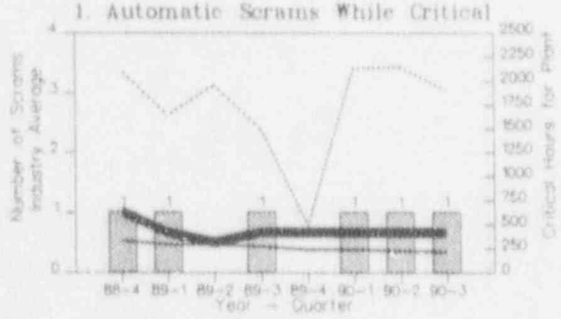
FIGURE 4.6

BRAIDWOOD 1

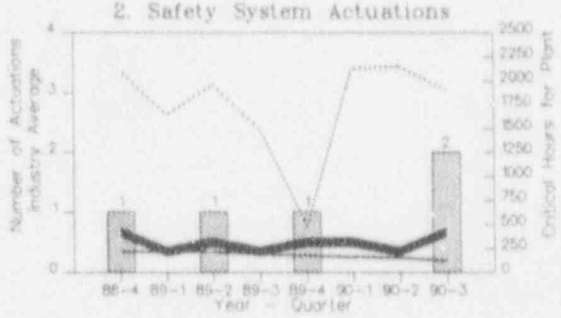
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

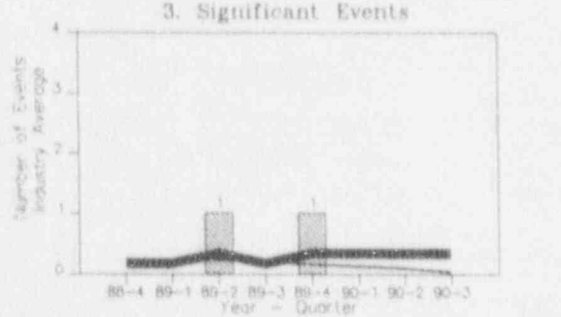
1. Automatic Scrams While Critical



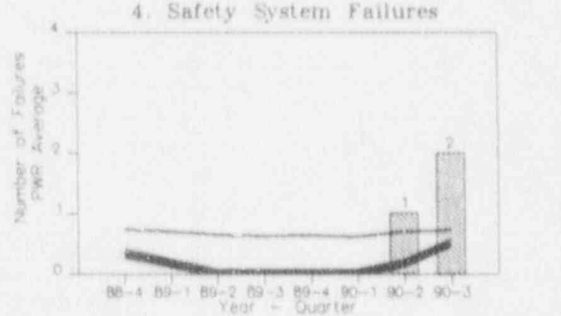
2. Safety System Actuations



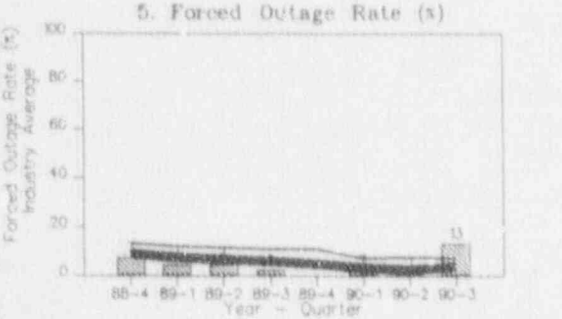
3. Significant Events



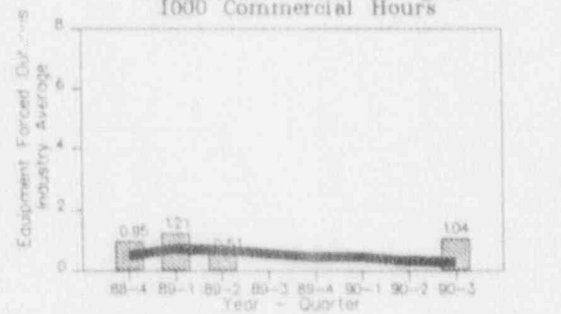
4. Safety System Failures



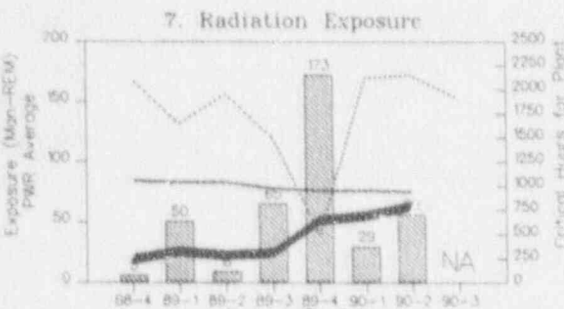
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

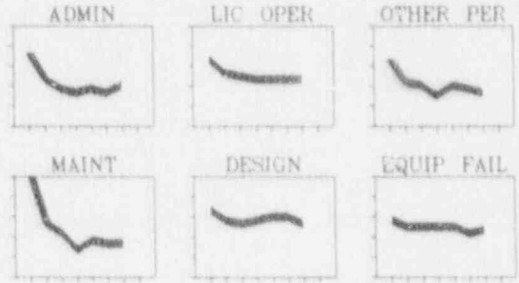


FIGURE 4.6

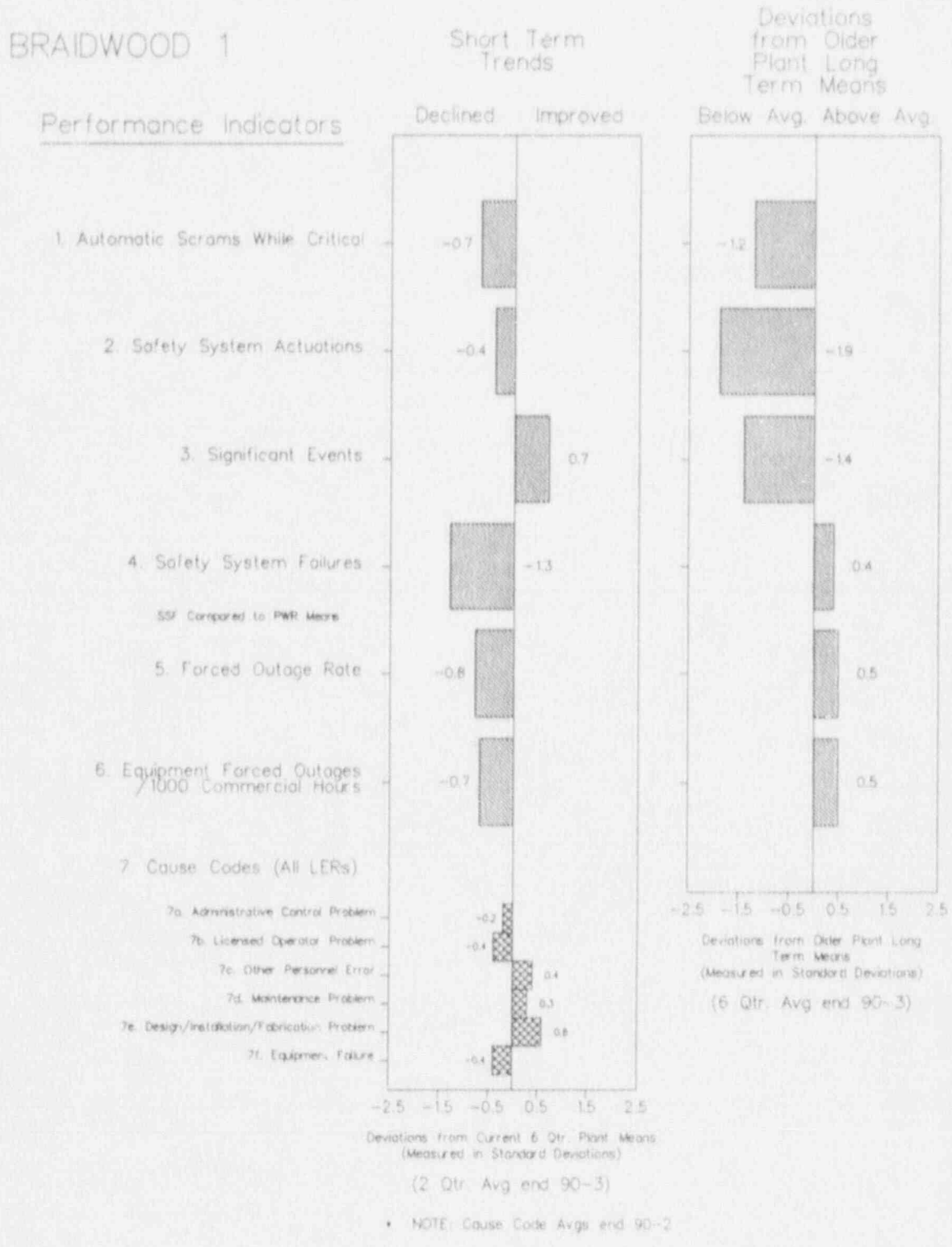

BRAIDWOOD 1
Short Term Trends
Deviations from Older Plant Long Term Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.7
-1.2
2. Safety System Actuations
-0.4
-1.9
3. Significant Events
0.7
-1.4
4. Safety System Failures
-1.3
0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.8
0.5
6. Equipment Forced Outages /1000 Commercial Hours
-0.7
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
-0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

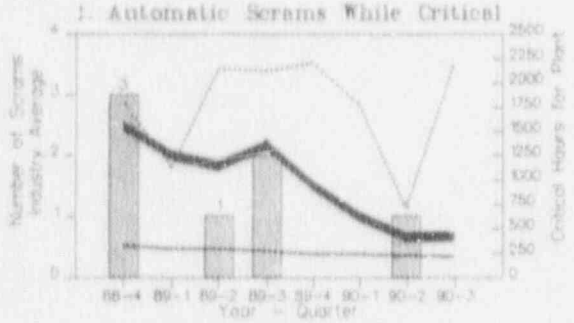
FIGURE 4.7

BRAIDWOOD 2

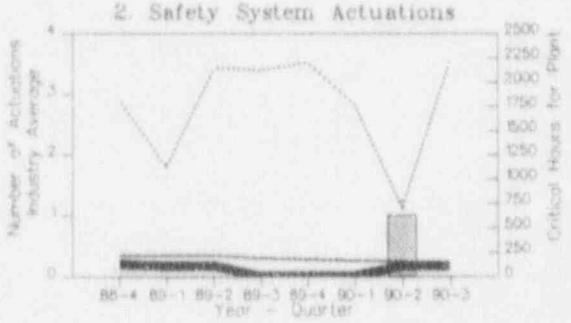
88-4 to 90-3

Legend:
- indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

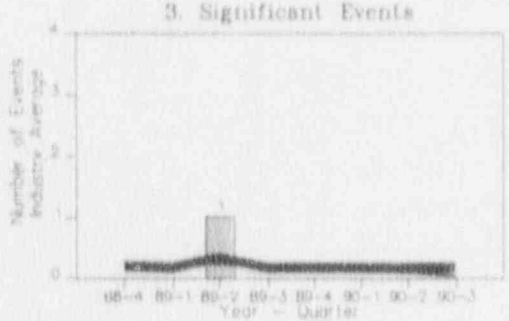
1. Automatic Scrams While Critical



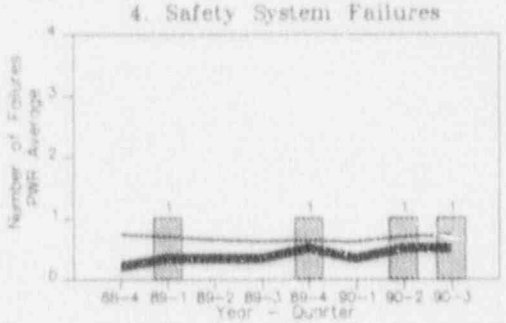
2. Safety System Actuations



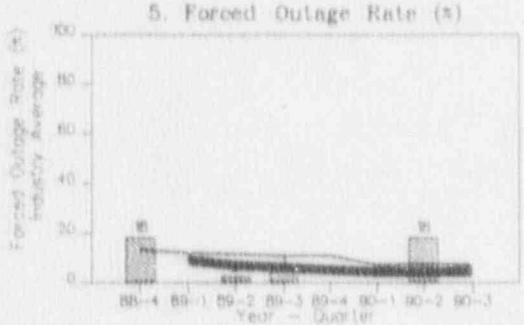
3. Significant Events



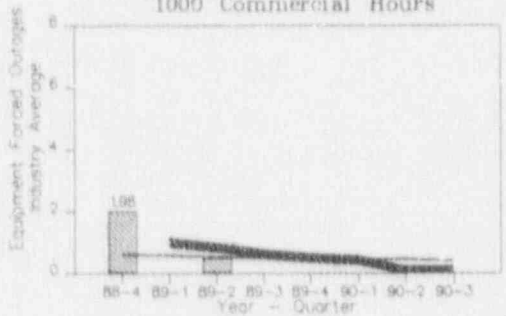
4. Safety System Failures



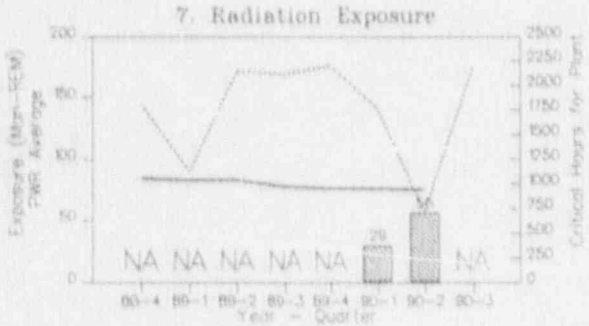
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

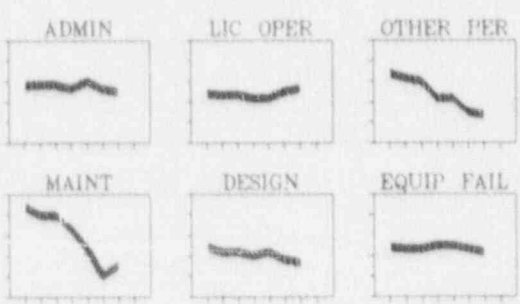


FIGURE 4.7

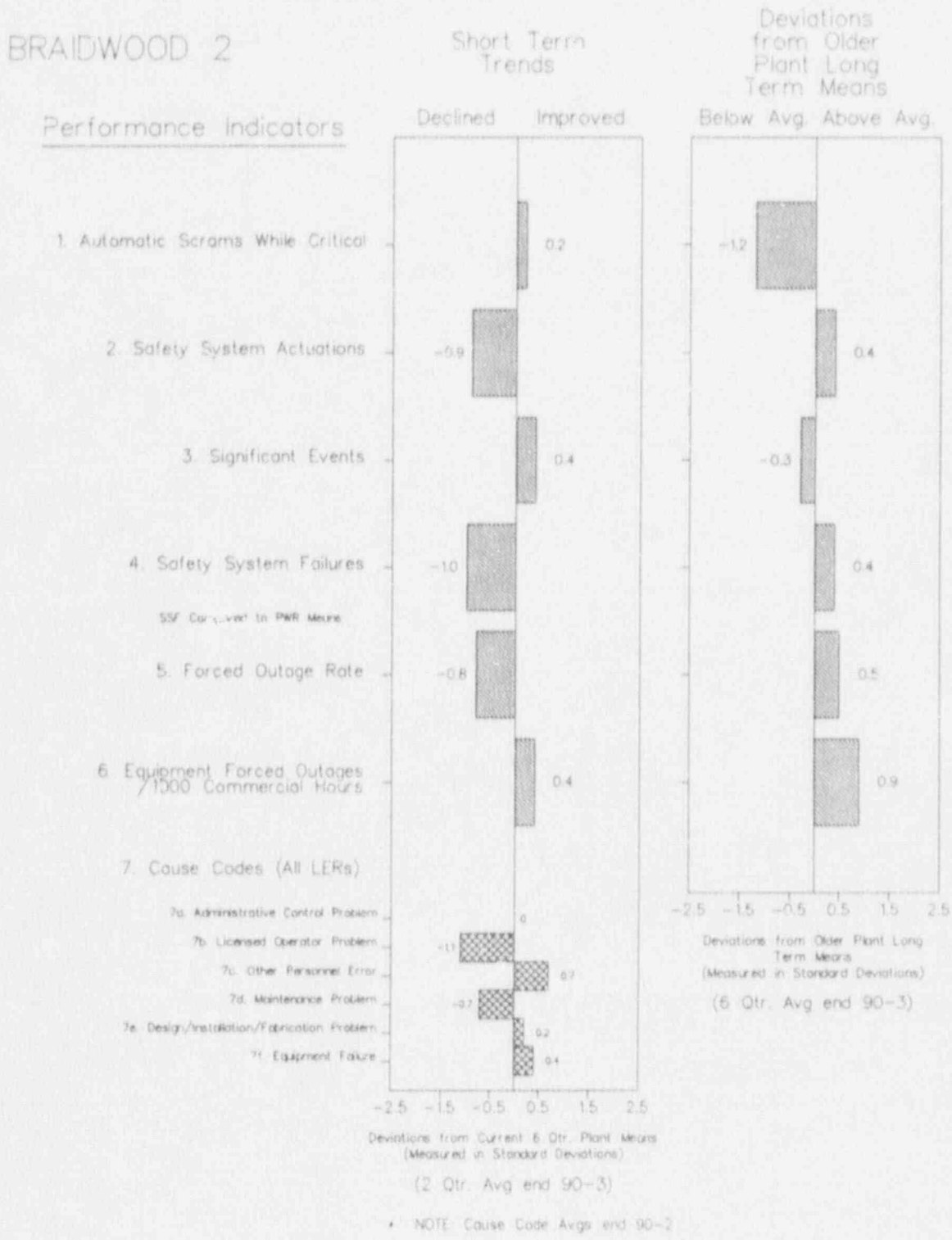

BRAIDWOOD 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Corrected to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.2
-0.9
0.4
-1.0
-0.8
0.4
0
-1.1
0.7
-0.7
0.2
0.4
-1.2
0.4
-0.3
0.4
0.5
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

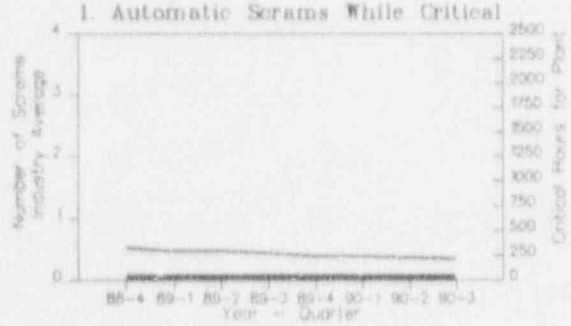
FIGURE 4.8

BROWNS FERRY 1

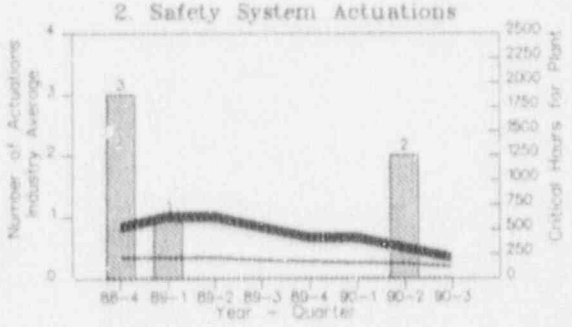
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

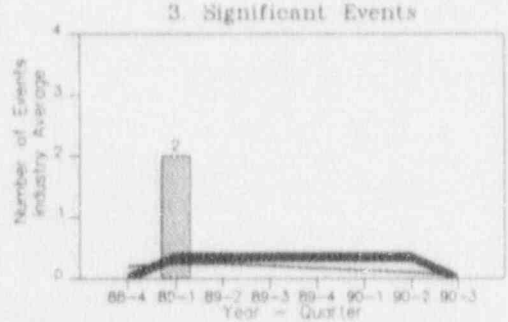
1. Automatic Scrams While Critical



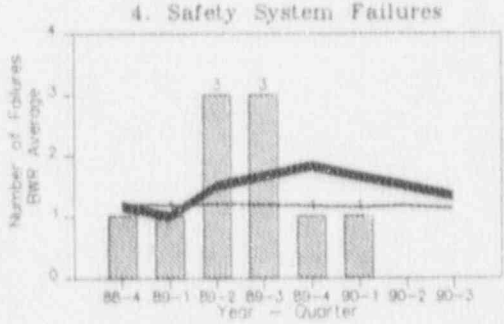
2. Safety System Actuations



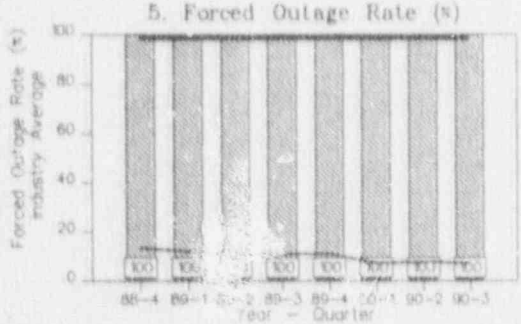
3. Significant Events



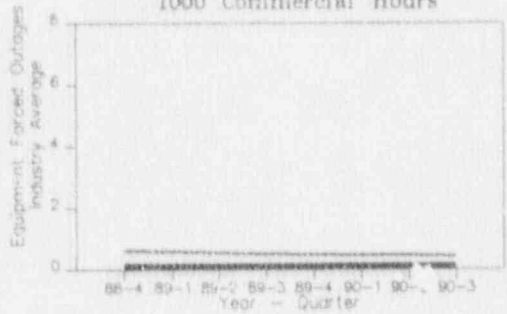
4. Safety System Failures



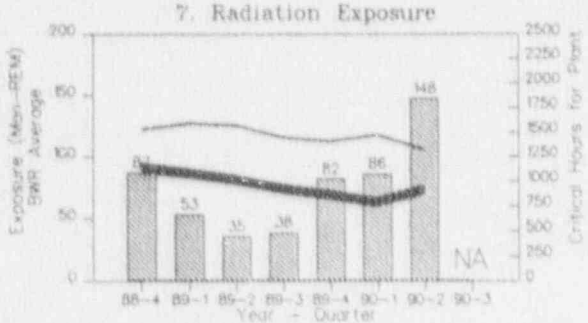
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

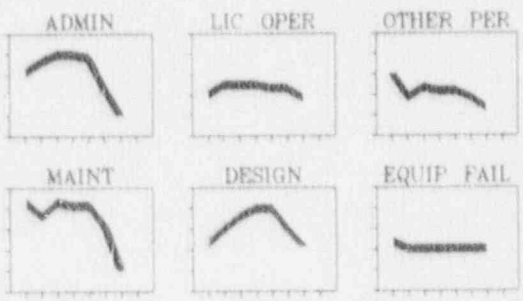


FIGURE 4.8

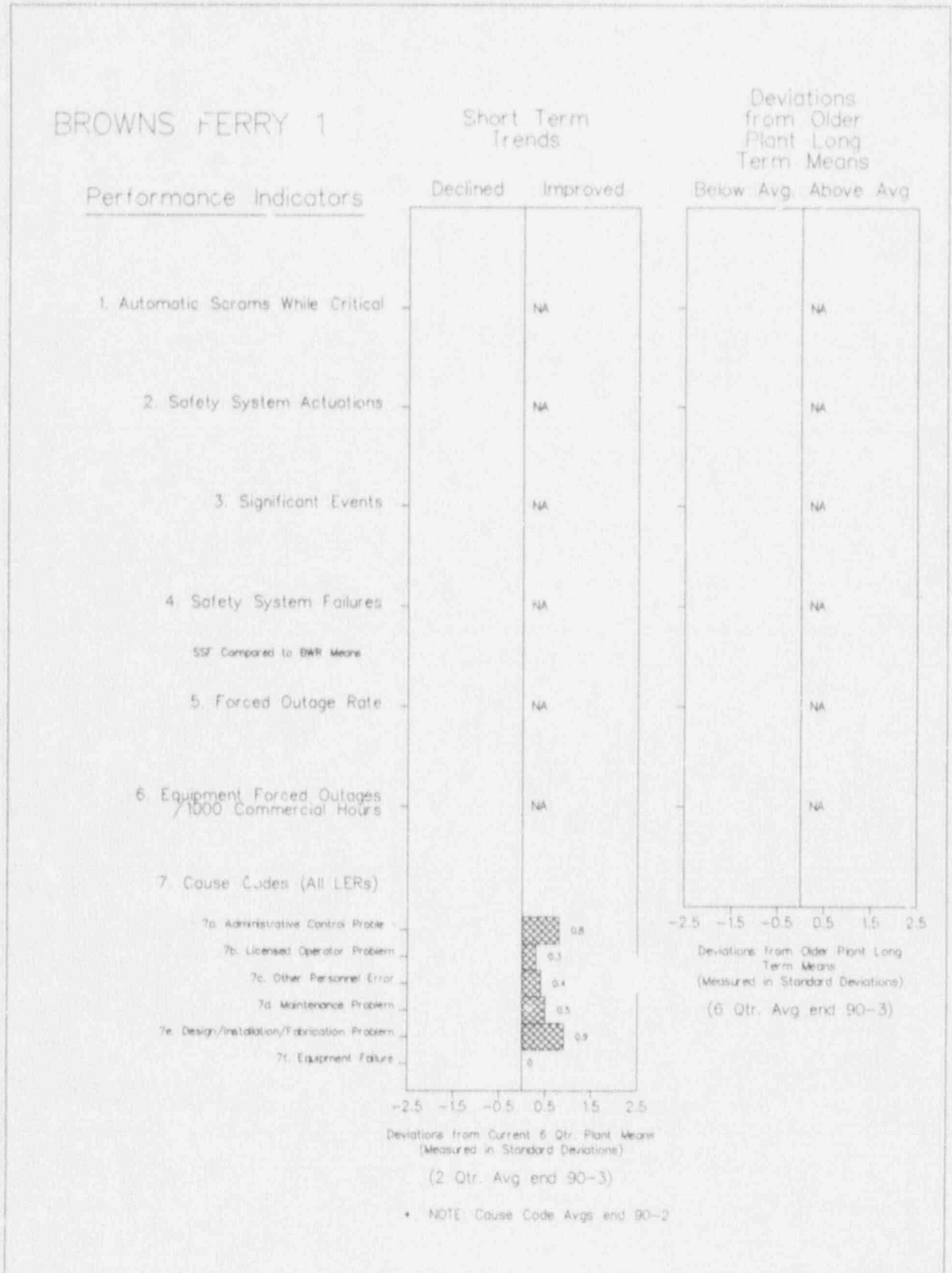

BROWNS FERRY 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Commercial Hours
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.8
0.3
0.4
0.5
0.9
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

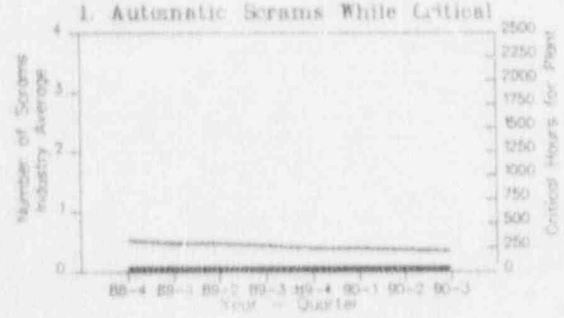
FIGURE 4.9

BROWNS FERRY 2

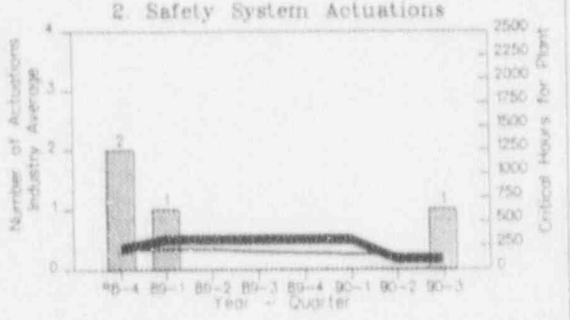
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

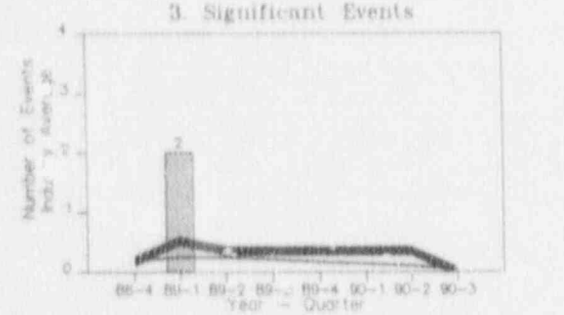
1. Automatic Scrams While Critical



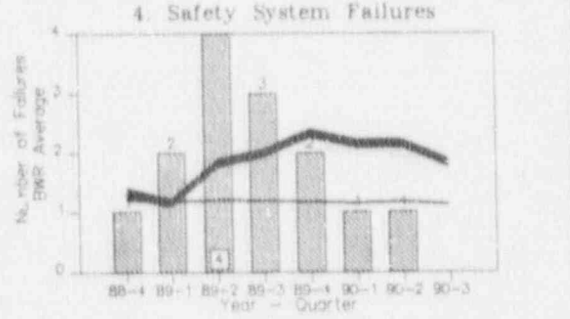
2. Safety System Actuations



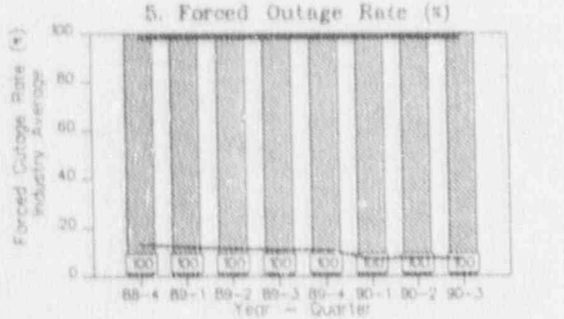
3. Significant Events



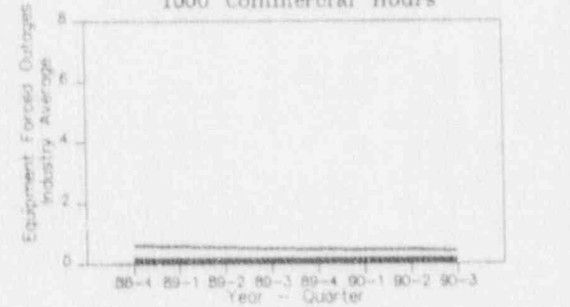
4. Safety System Failures



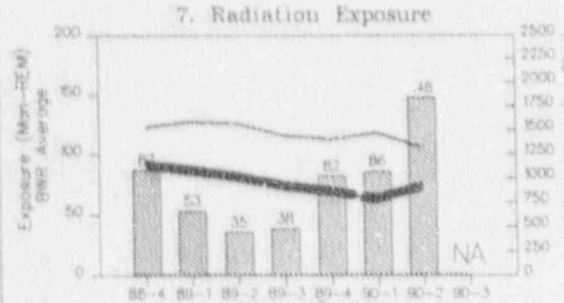
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

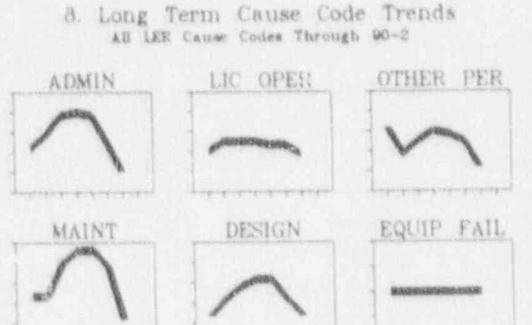


FIGURE 4.9

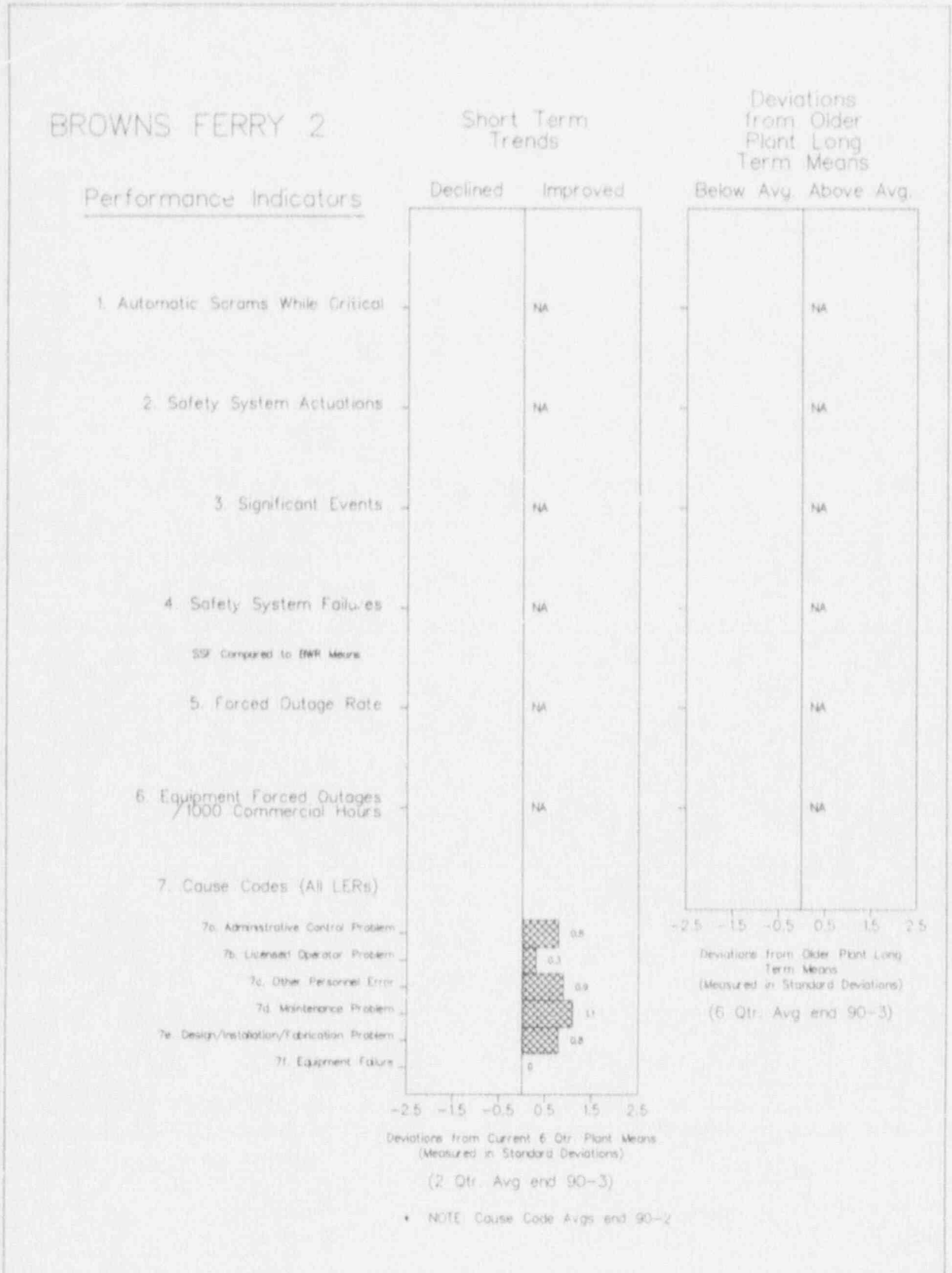

BROWNS FERRY 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
2. Safety System Actuations
NA
3. Significant Events
NA
4. Safety System Failures
NA
SSF Compared to BWR Means
5. Forced Outage Rate
NA
6. Equipment Forced Outages /1000 Commercial Hours
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.3
7c. Other Personnel Error
0.9
7d. Maintenance Problem
1.1
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE Cause Code Avgs end 90-2

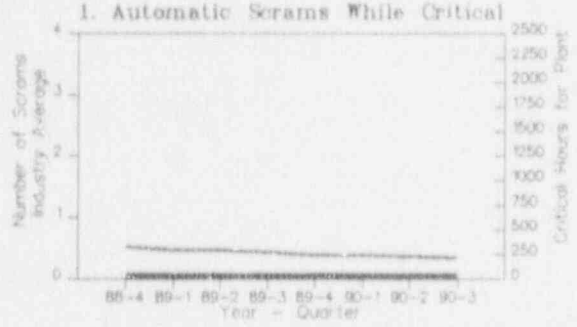
FIGURE 4.10

BROWNS FERRY 3

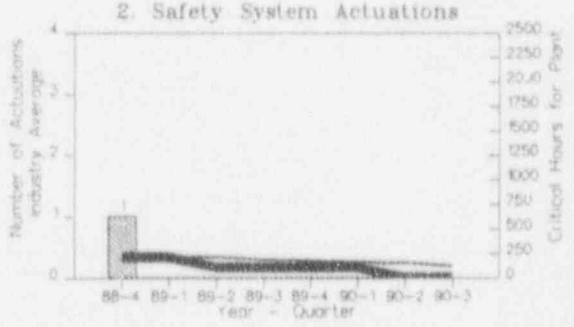
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

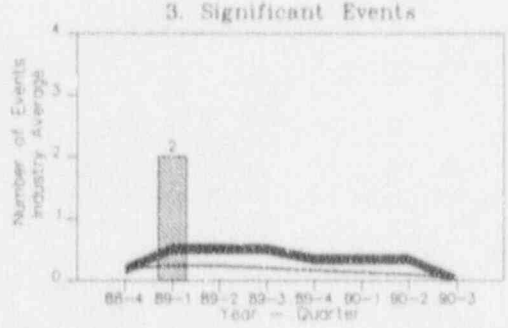
1. Automatic Scrams While Critical



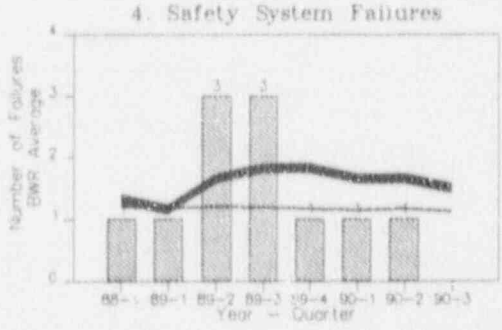
2. Safety System Actuations



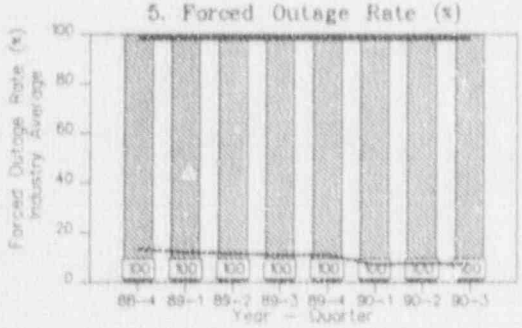
3. Significant Events



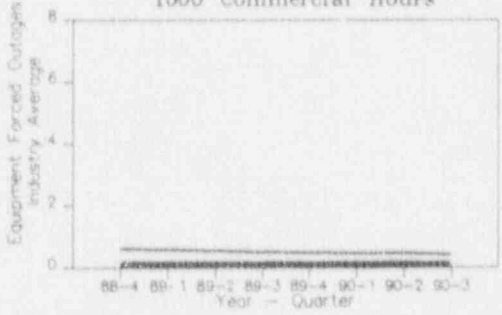
4. Safety System Failures



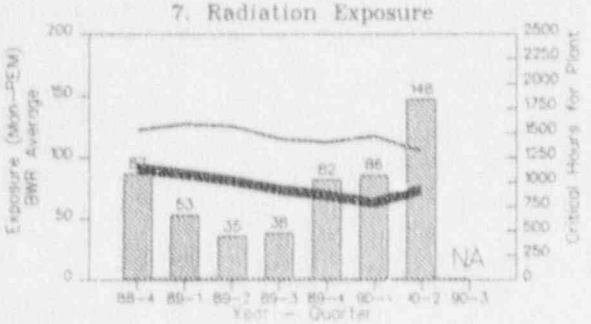
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

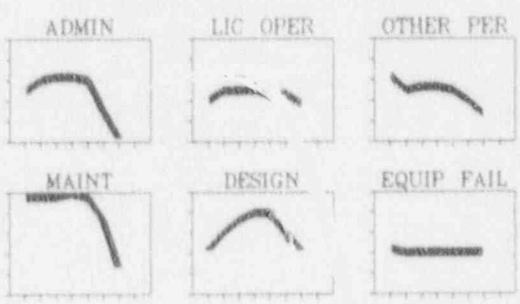


FIGURE 4.10

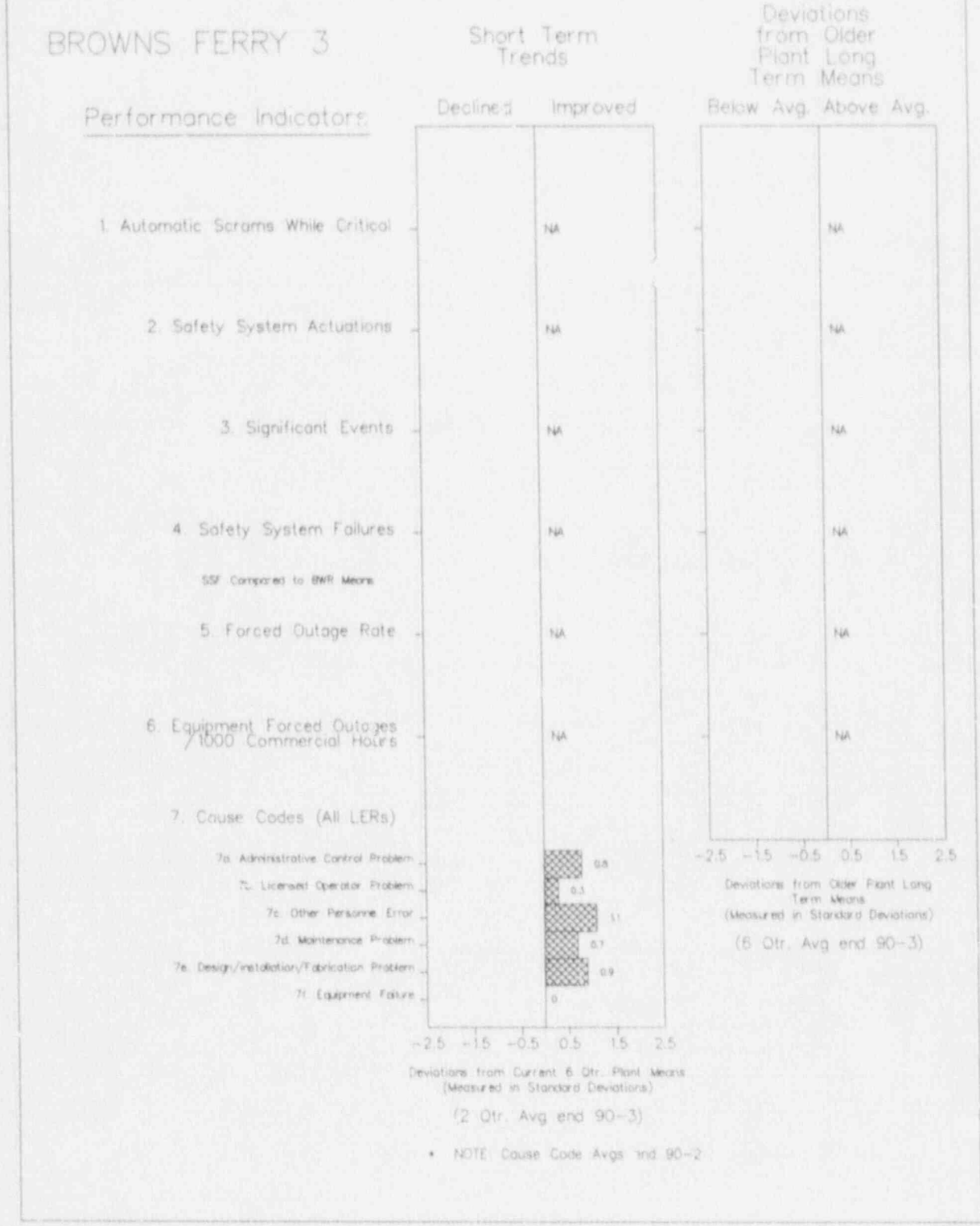

BROWNS FERRY 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.8
0.3
1.1
0.7
0.9
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

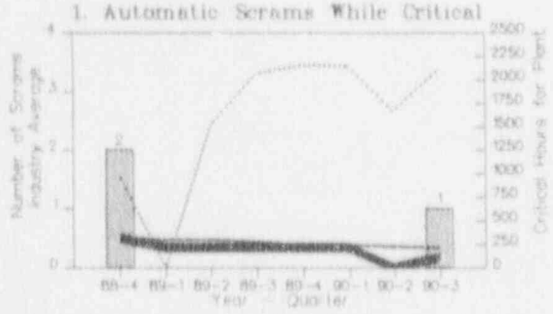
FIGURE 4.11

BRUNSWICK 1

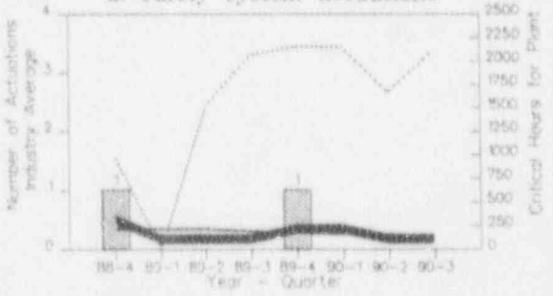
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

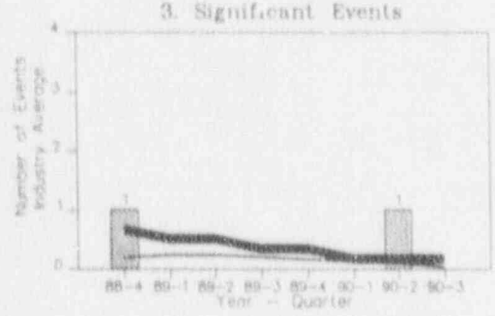
1. Automatic Scrams While Critical



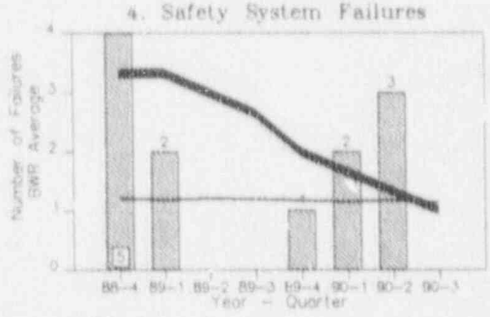
2. Safety System Actuations



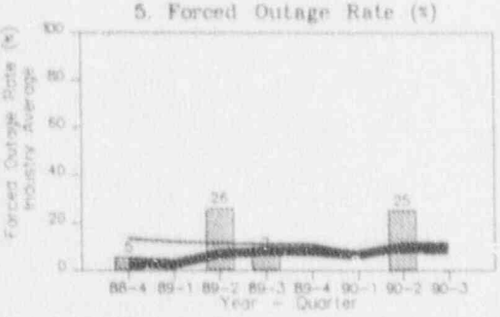
3. Significant Events



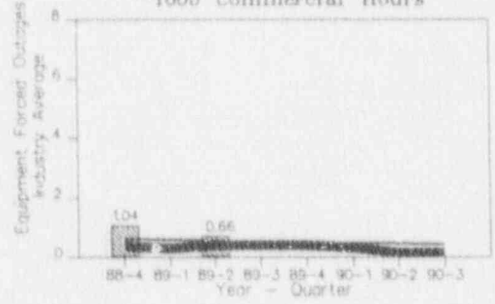
4. Safety System Failures



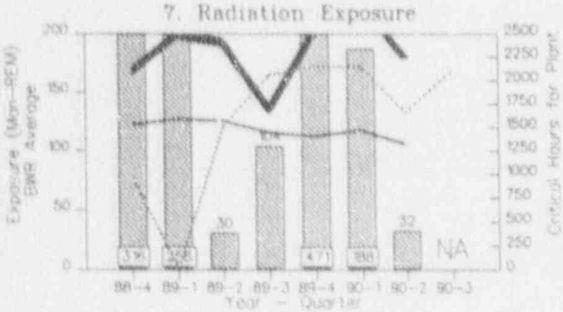
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

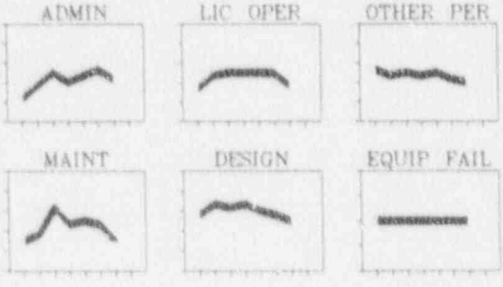


FIGURE 4.11

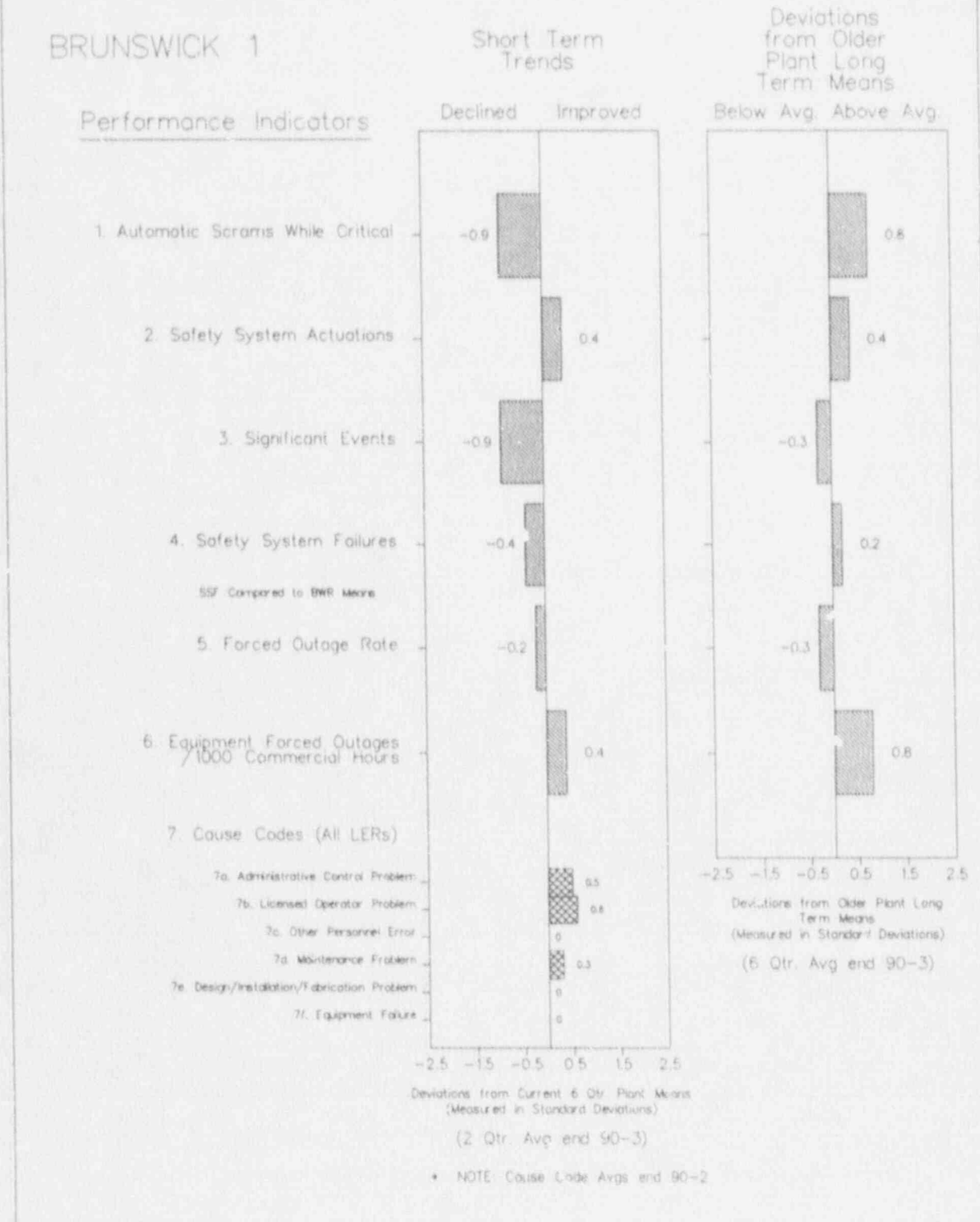

BRUNSWICK 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.9
-0.3
4. Safety System Failures
-0.4
0.2
SSF Compared to BWR Means
5. Forced Outage Rate
-0.2
-0.3
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
0
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

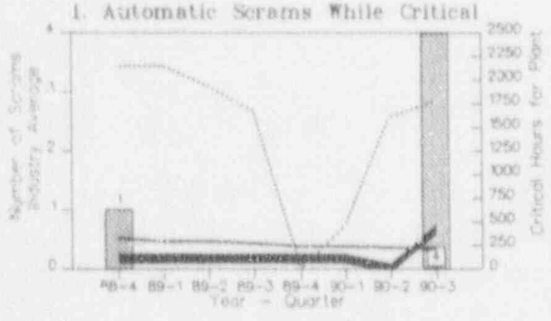
FIGURE 4.12

BRUNSWICK 2

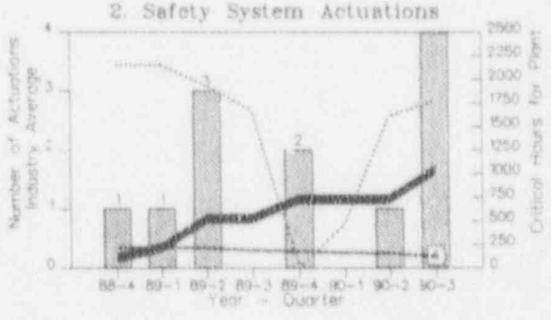
88-4 to 90-3

Legend.
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

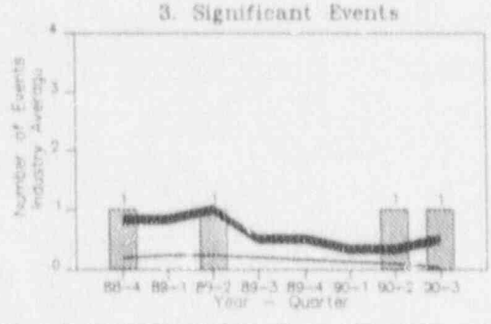
1. Automatic Scrams While Critical



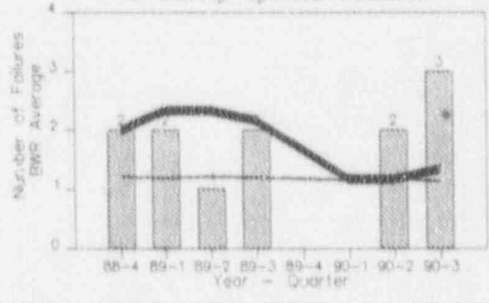
2. Safety System Actutations



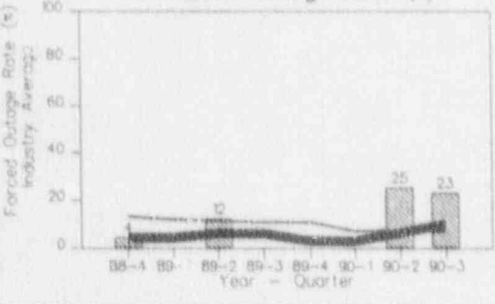
3. Significant Events



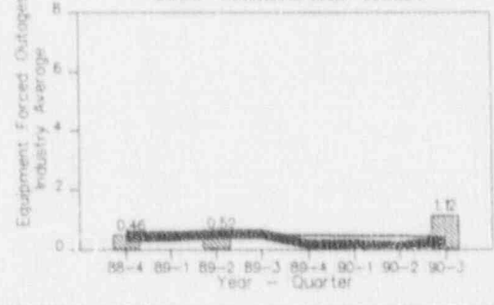
4. Safety System Failures



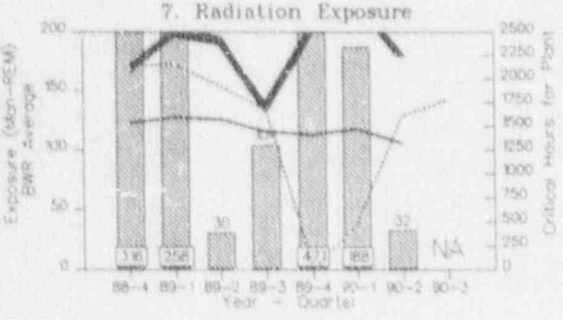
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

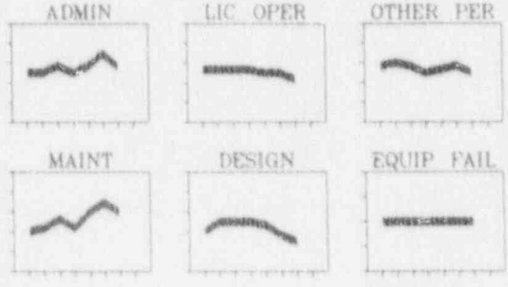


FIGURE 4.12

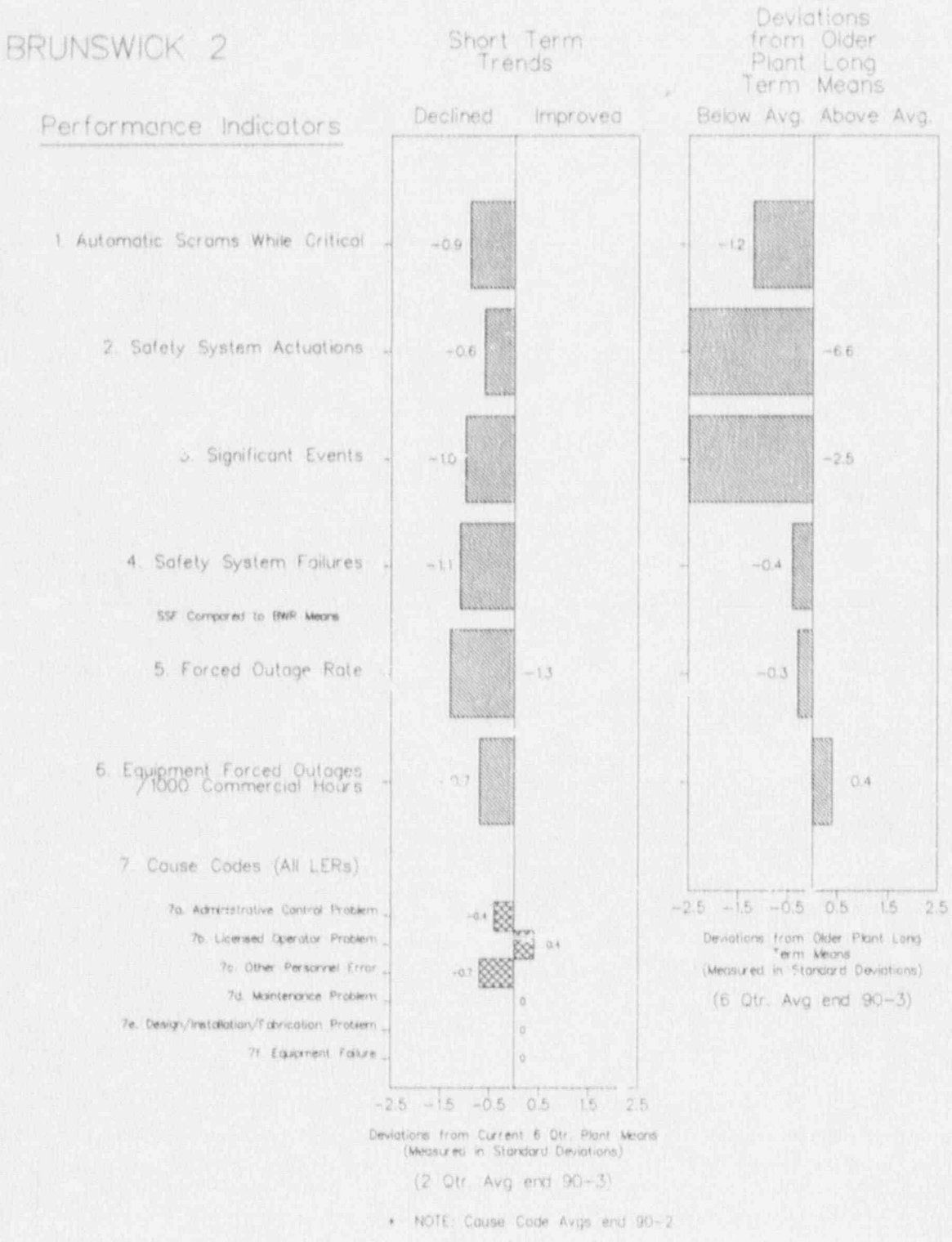

BRUNSWICK 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.9
-0.6
-1.0
-1.1
-1.3
-0.7
-0.4
0.4
-0.7
0
0
0
-1.2
-6.6
-2.5
-0.4
-0.3
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

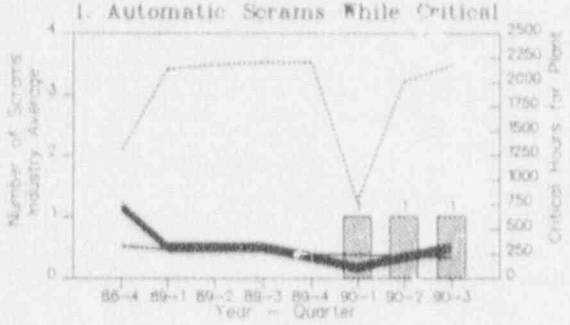
FIGURE 4.13

BYRON 1

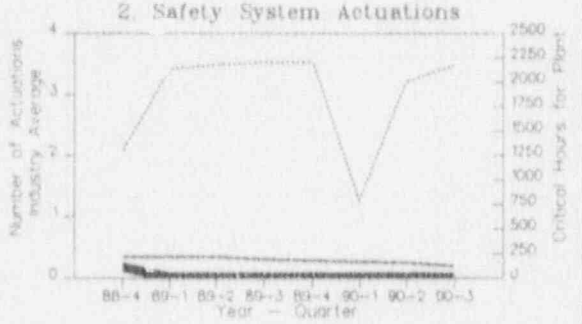
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

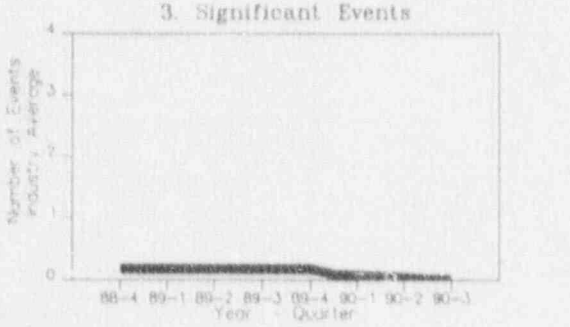
1. Automatic Scrams While Critical



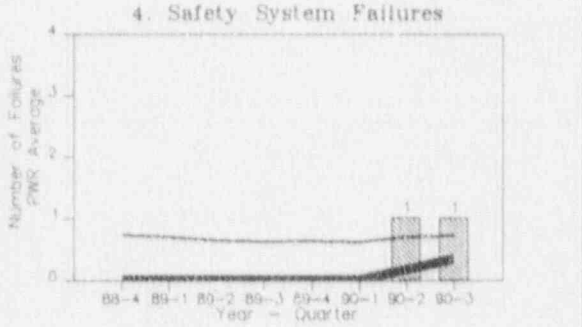
2. Safety System Actuations



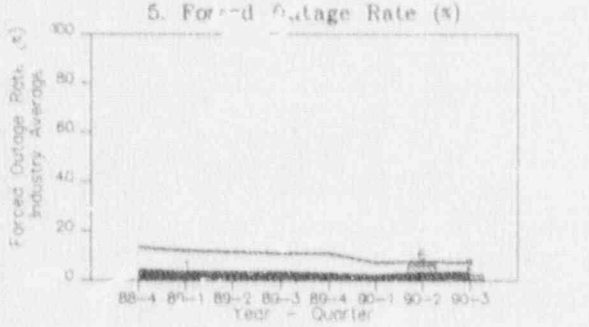
3. Significant Events



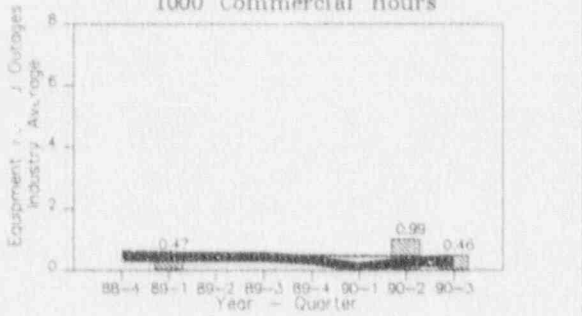
4. Safety System Failures



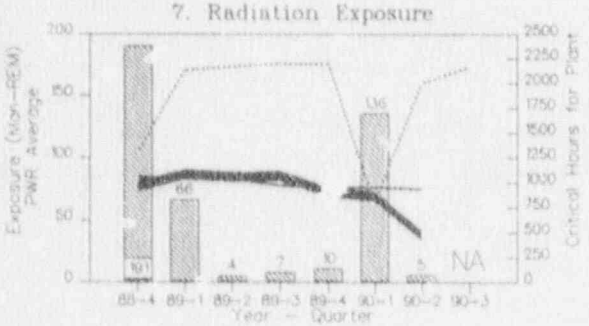
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

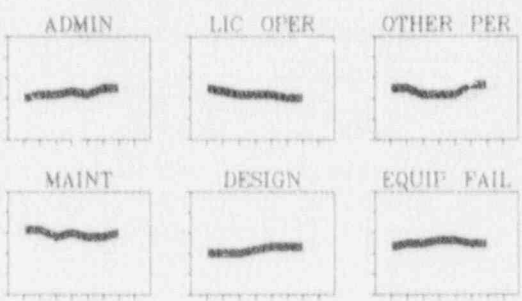


FIGURE 4.13

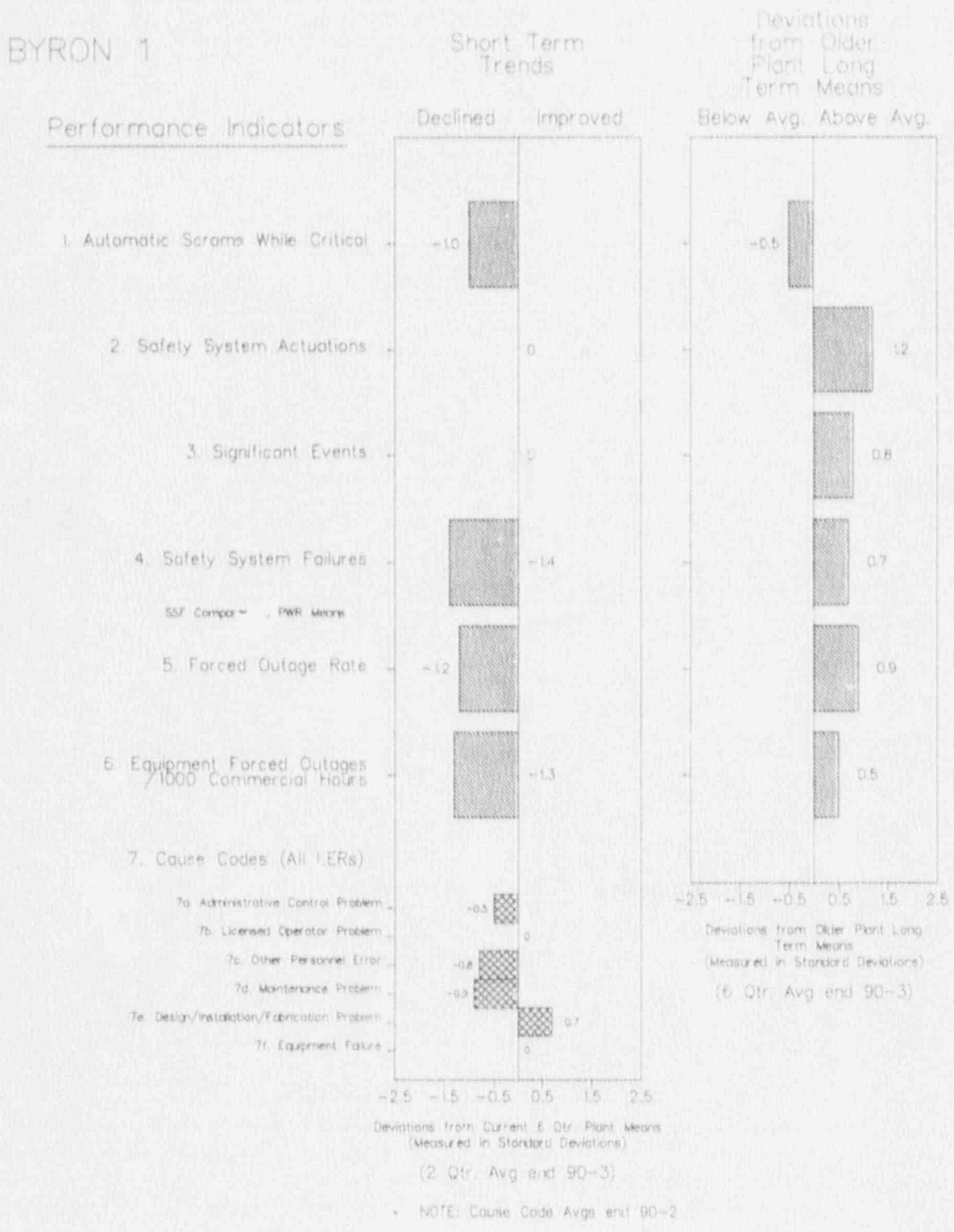

BYRON 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compar ~ , PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-1.0
0
0
-1.4
-1.2
-1.3
-0.5
0
-0.8
-0.9
0.7
0
-0.5
1.2
0.8
0.7
0.9
0.5
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

FIGURE 4.14

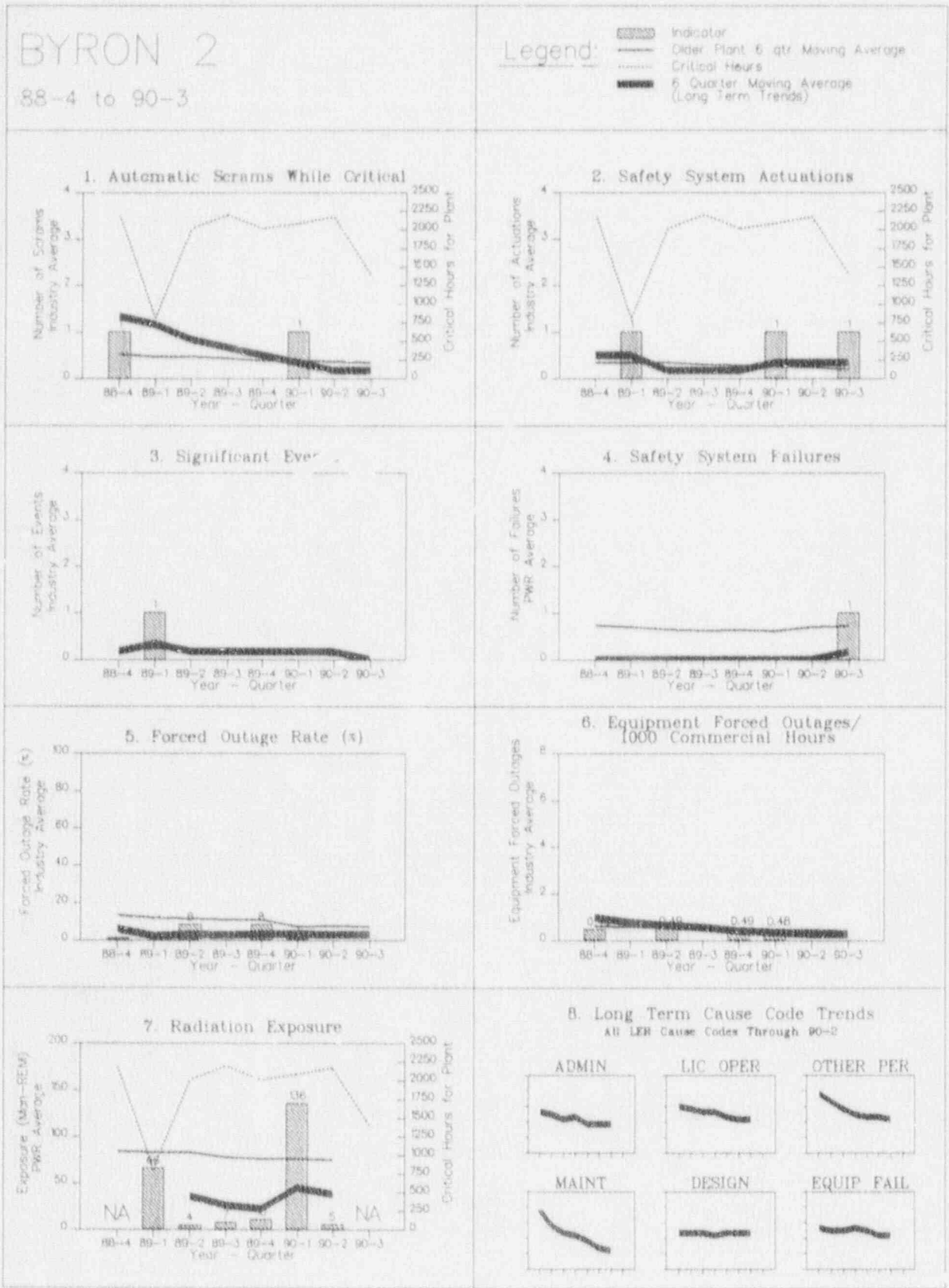

BYRON 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Ever
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.14

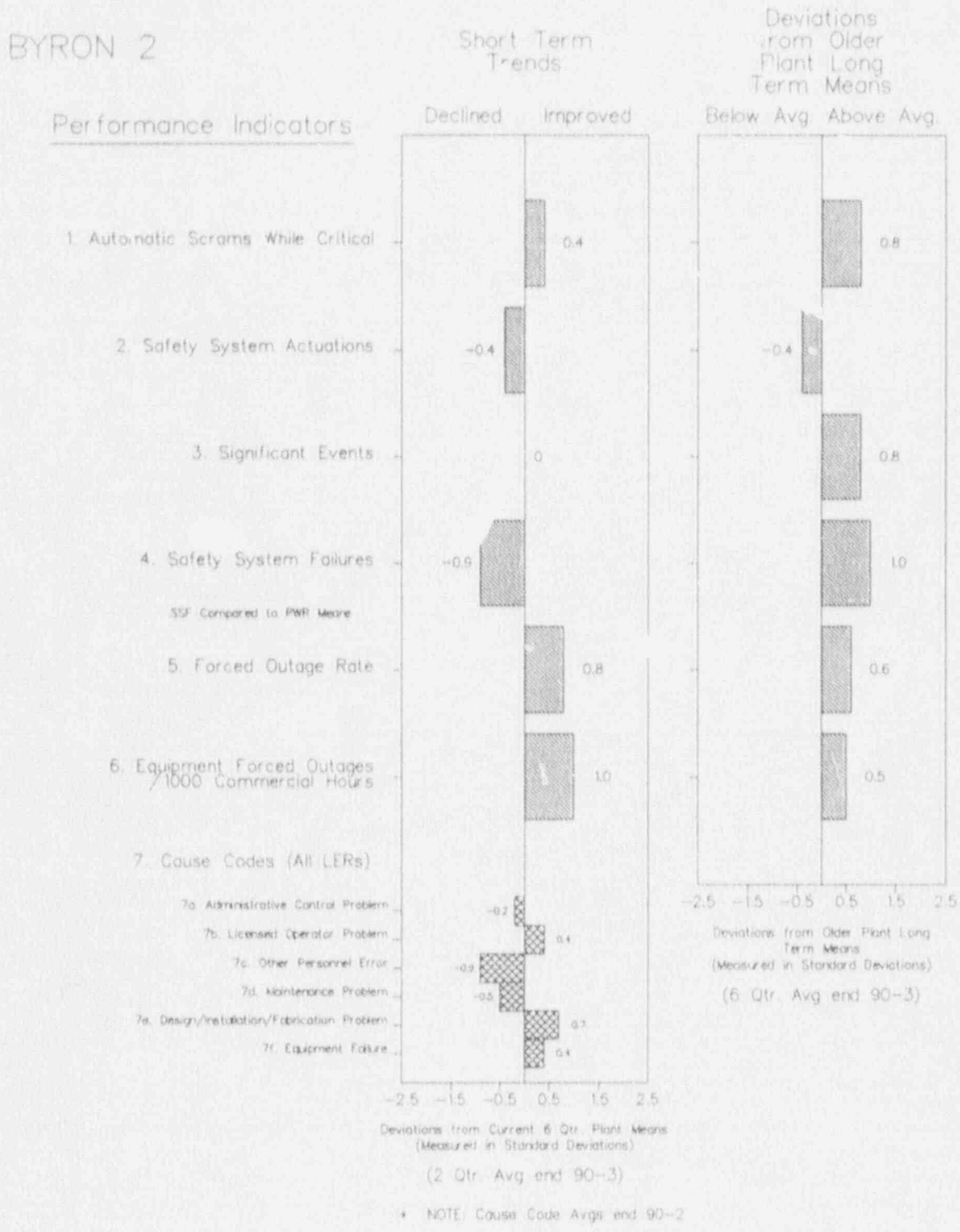

BYRON 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
-0.4
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.9
1.0
SSF Compared to PWR Mean
5. Forced Outage Rate
0.8
0.6
6. Equipment Forced Outages /1000 Commercial Hours
1.0
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
-0.9
7d. Maintenance Problem
-0.5
7e. Design/Installation/Fabrication Problem
0.3
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

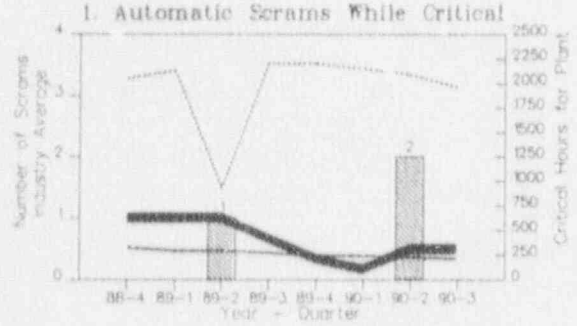
FIGURE 4.15

CALLAWAY

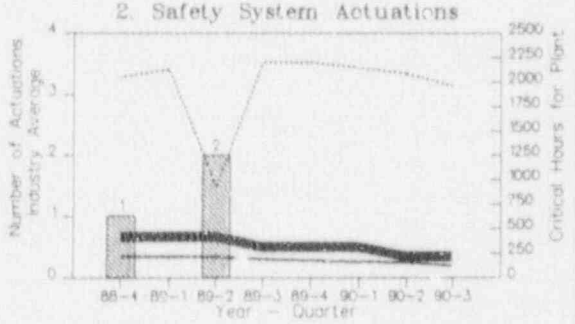
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr. Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

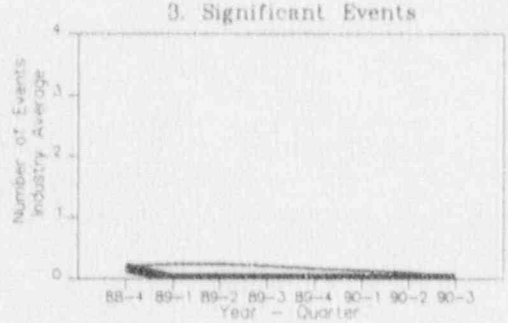
1. Automatic Scrams While Critical



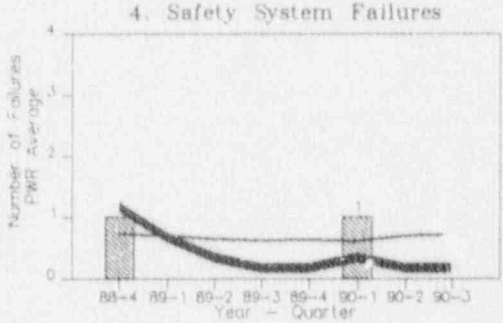
2. Safety System Actuations



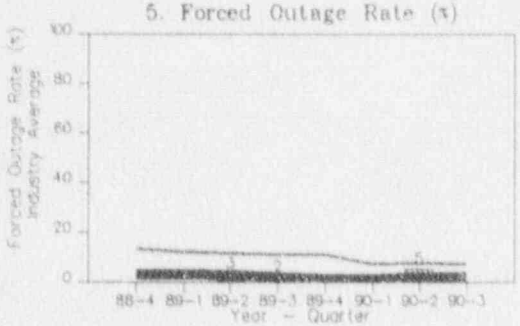
3. Significant Events



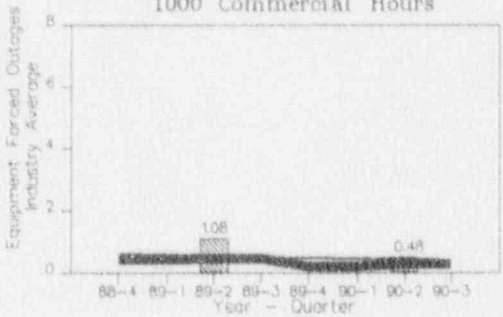
4. Safety System Failures



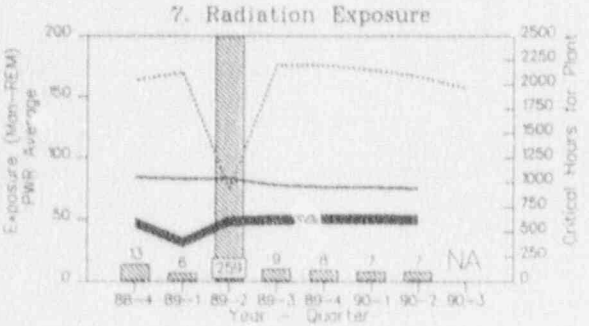
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

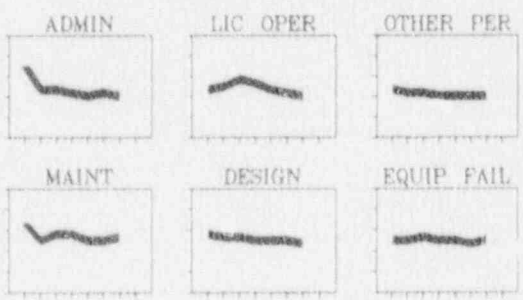


FIGURE 4.15

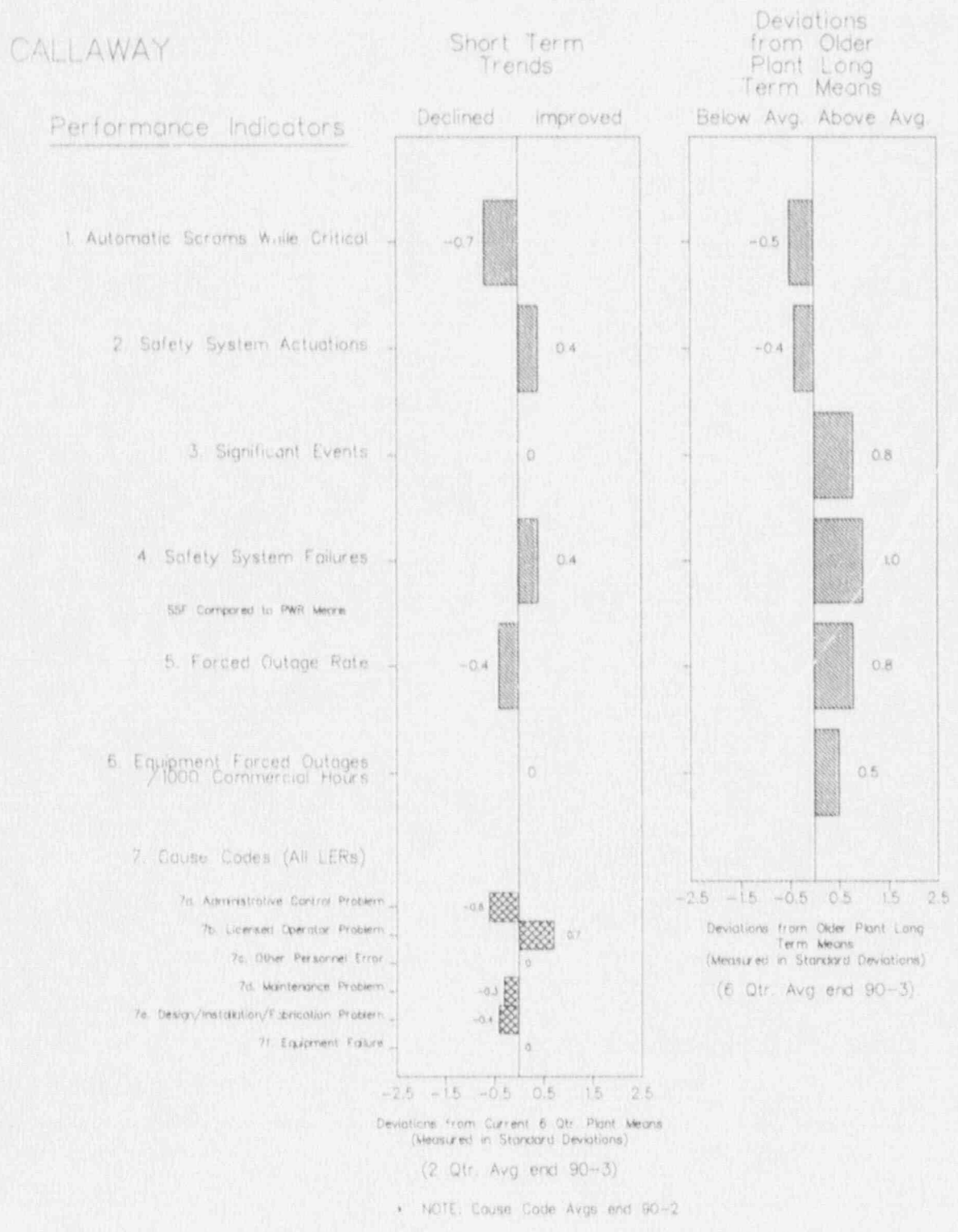

CALLAWAY
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.7
-0.5
2. Safety System Actuations
0.4
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
0.4
1.0
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
0.8
6. Equipment Forced Outages /1000 Commercial Hours
0
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.16

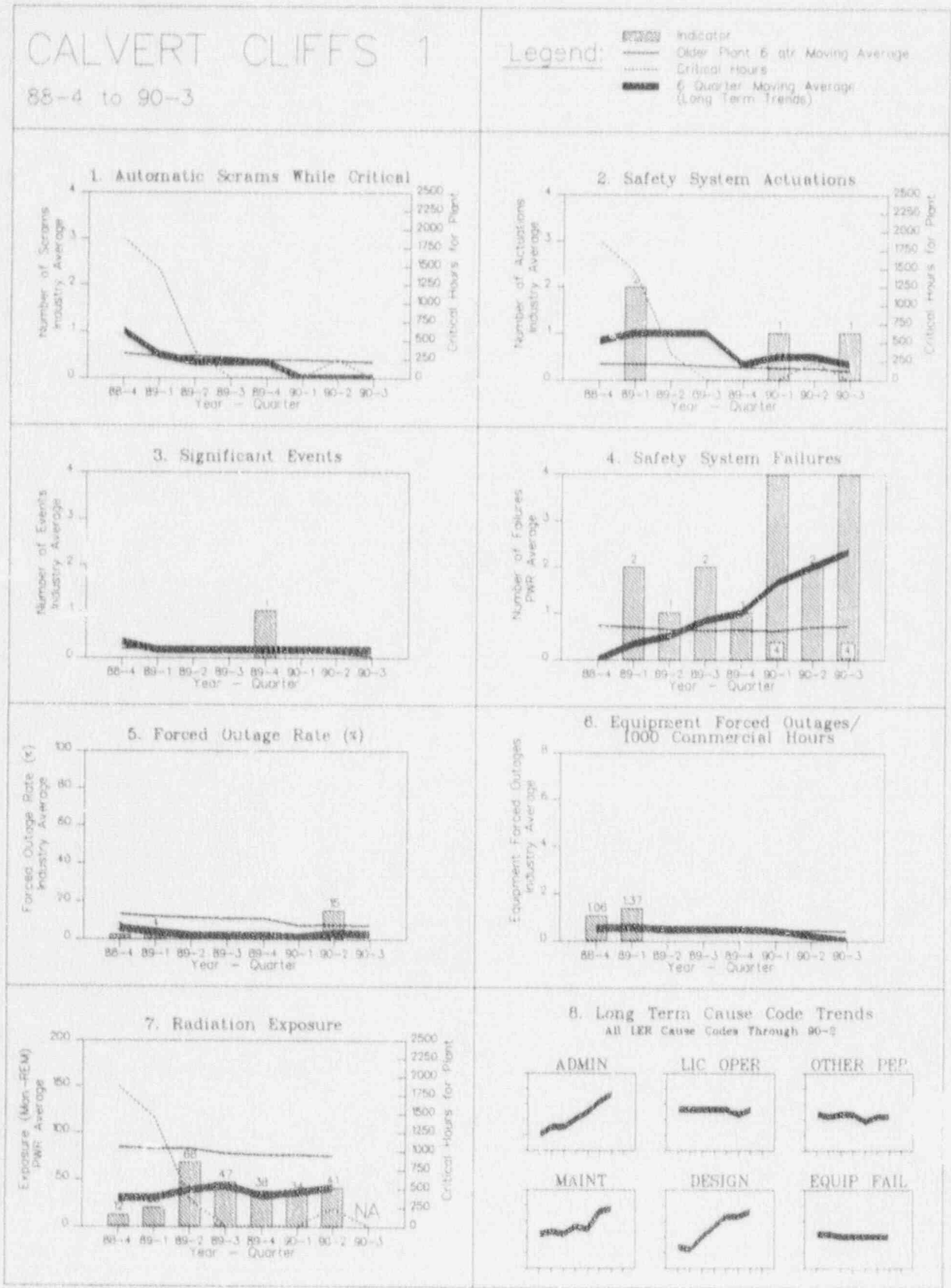

CALVERT CLIFFS 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.16

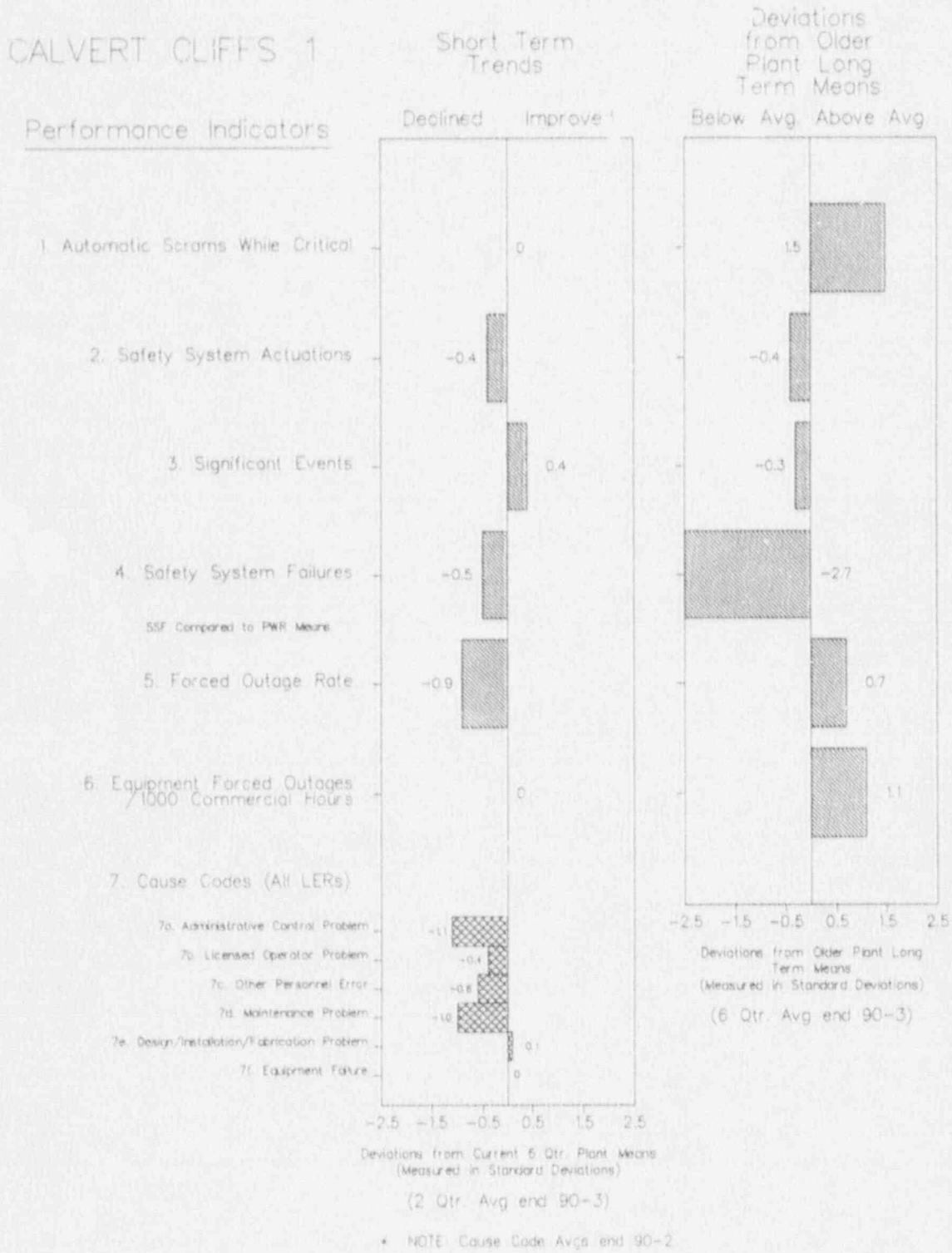

CALVERT CLIFFS 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
-0.4
0.4
-0.5
-0.9
0
-1.1
-0.4
-0.6
-1.0
0.1
0
1.5
-0.4
-0.3
-2.7
0.7
1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

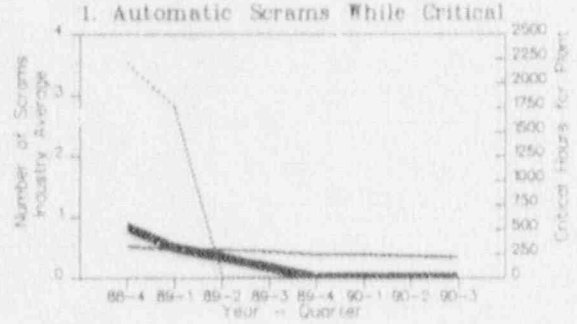
FIGURE 4.17

CALVERT CLIFFS 2

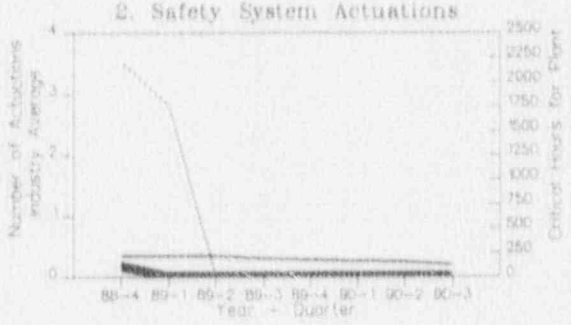
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

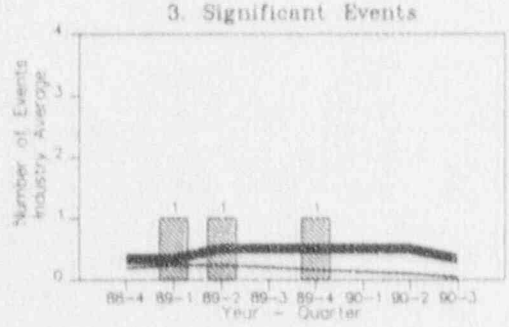
1. Automatic Scrams While Critical



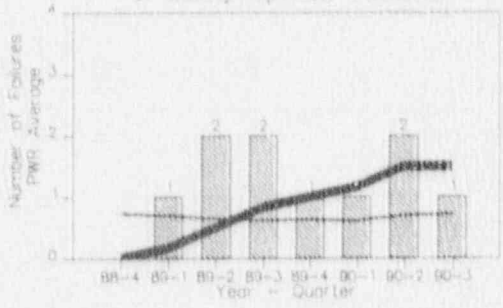
2. Safety System Actuations



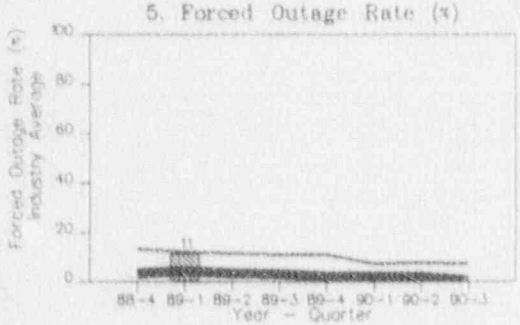
3. Significant Events



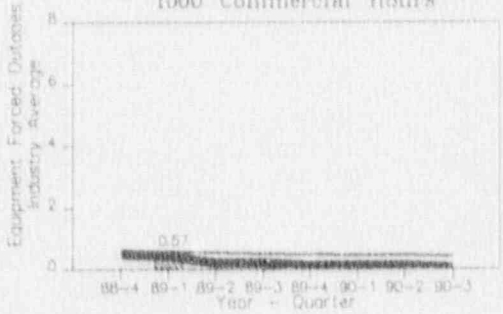
4. Safety System Failures



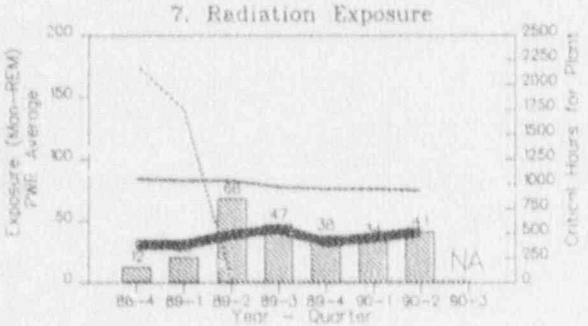
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

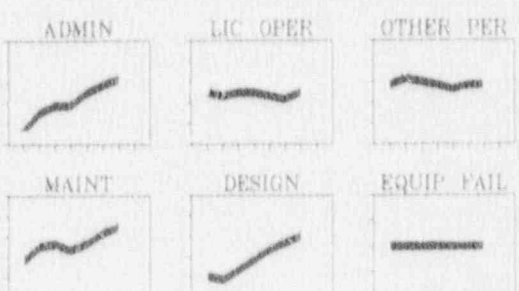


FIGURE 4.17

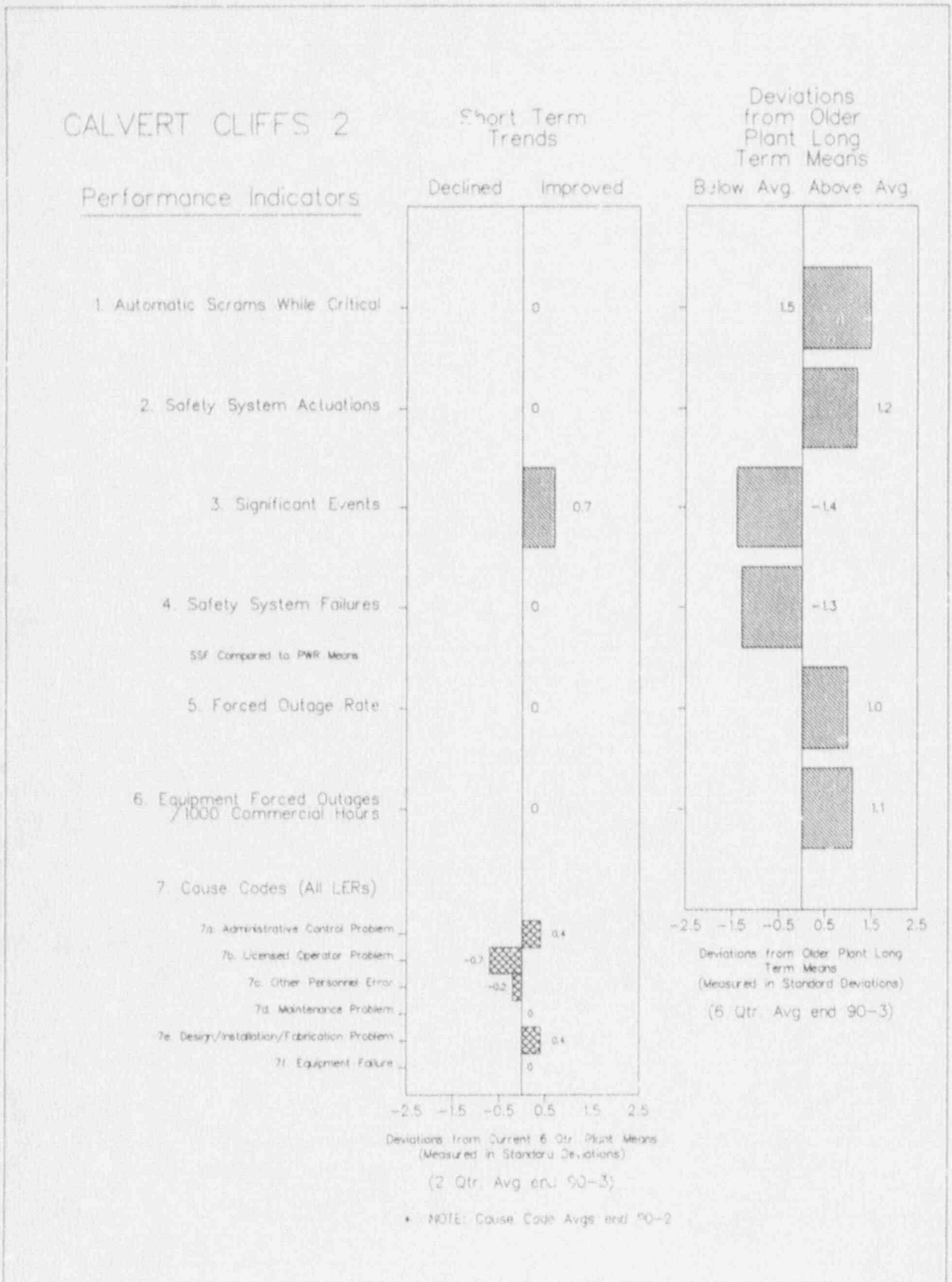

CALVERT CLIFFS 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
0
1.2
3. Significant Events
0.7
-1.4
4. Safety System Failures
0
-1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0
1.0
6. Equipment Forced Outages /1000 Commercial Hours
0
1.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.4
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

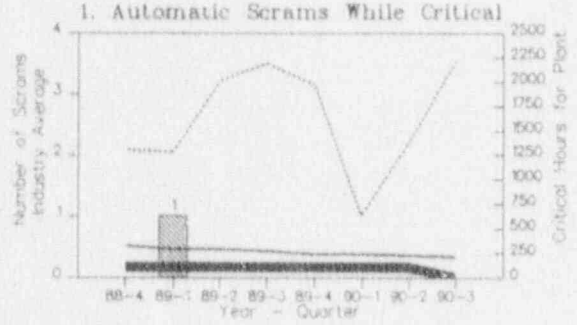
FIGURE 4.18

CATAWBA 1

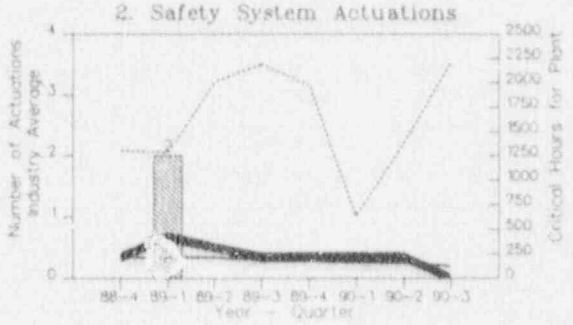
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr. Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

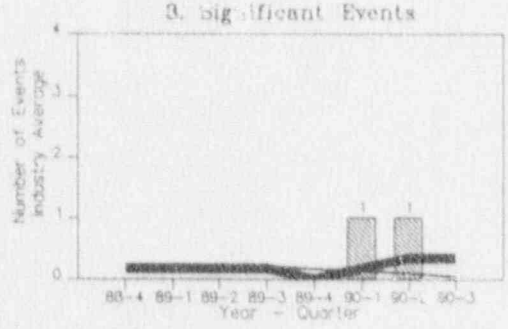
1. Automatic Scrams While Critical



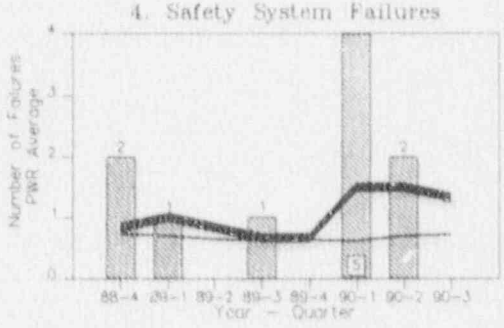
2. Safety System Actuations



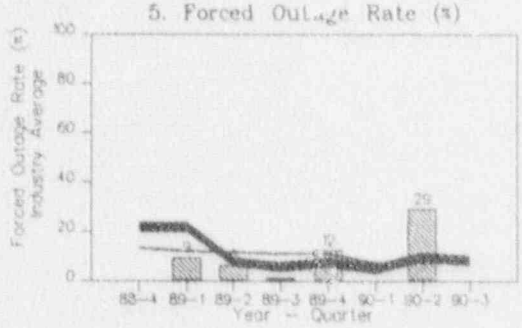
3. Significant Events



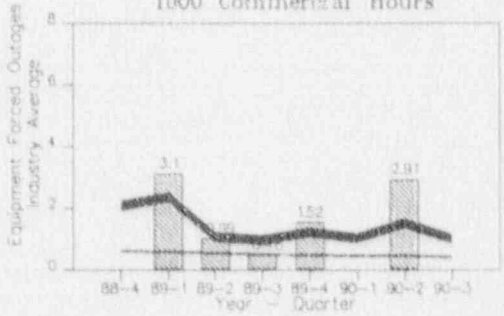
4. Safety System Failures



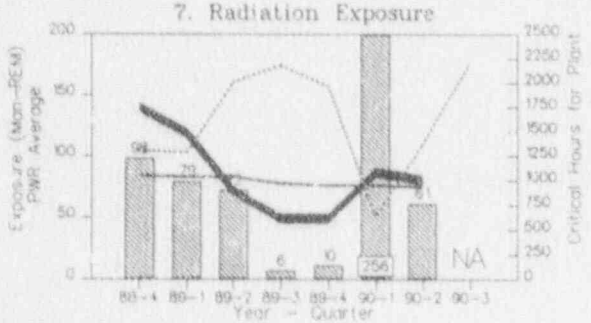
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

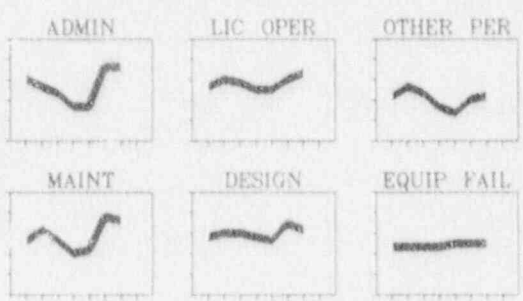


FIGURE 4.18

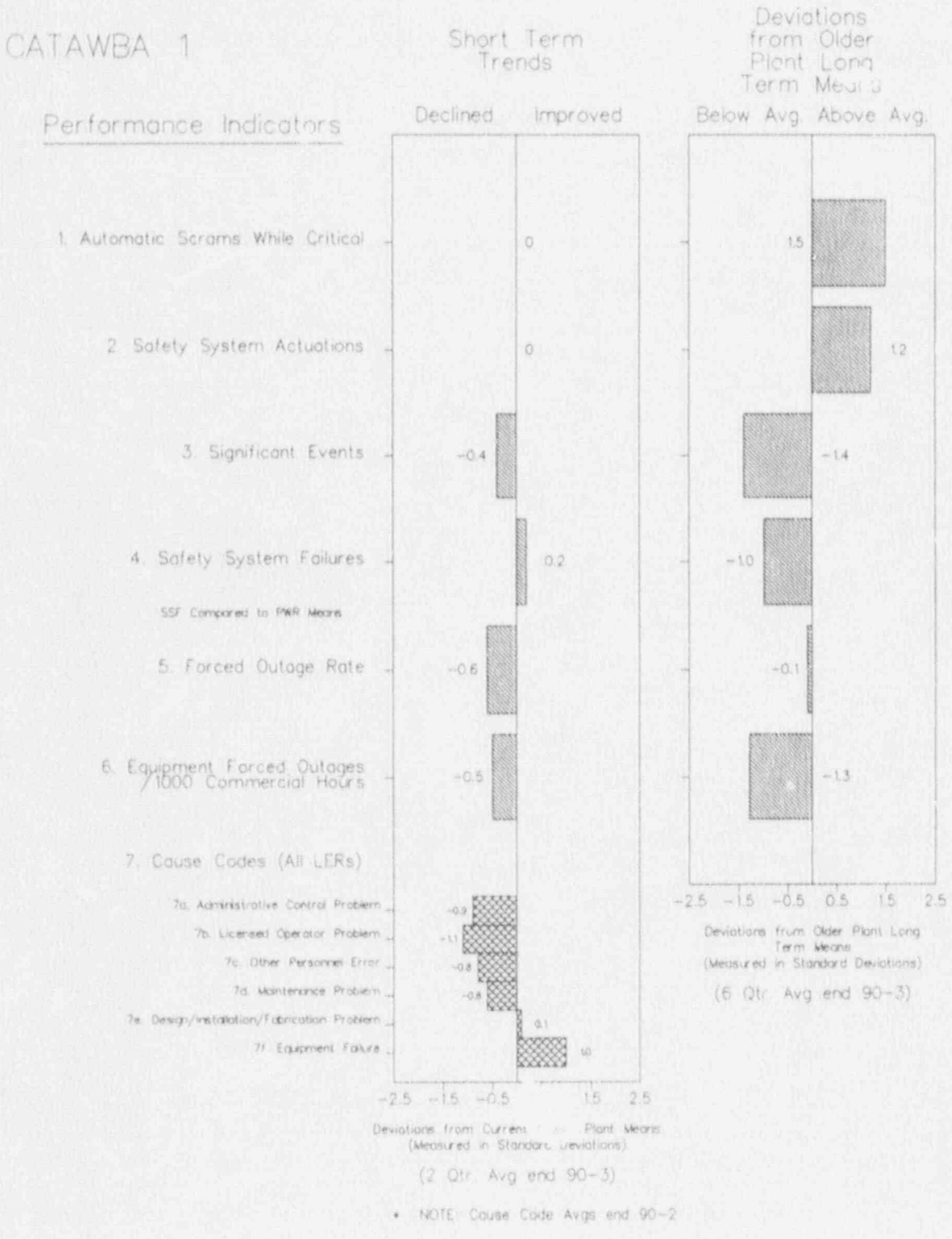
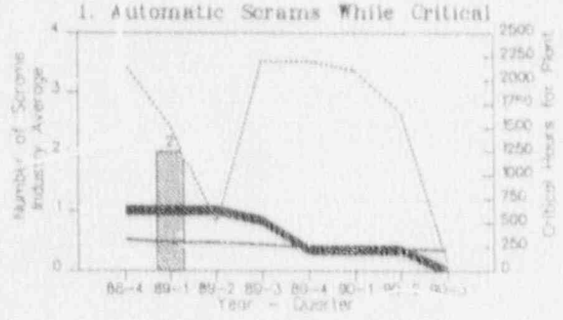

CATAWBA 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
0
1.2
3. Significant Events
-0.4
-1.4
4. Safety System Failures
0.2
-1.0
SSF Compared to PWR Means
5. Forced Outage Rate
-0.6
-0.1
6. Equipment Forced Outages /1000 Commercial Hours
-0.5
-1.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.9
7b. Licensed Operator Problem
-1.1
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-0.8
7e. Design/Installation/Fabrication Problem
0.1
7f. Equipment Failure
.10
-2.5 -1.5 -0.5 1.5 2.5
Deviations from Current Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

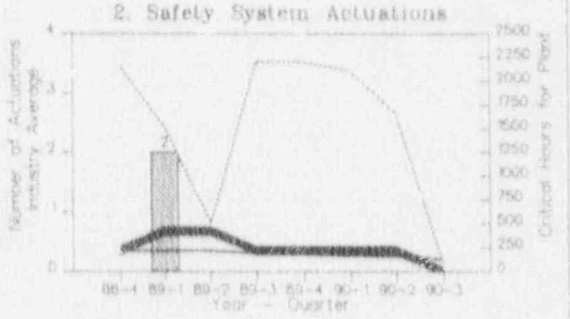
FIGURE 4.19

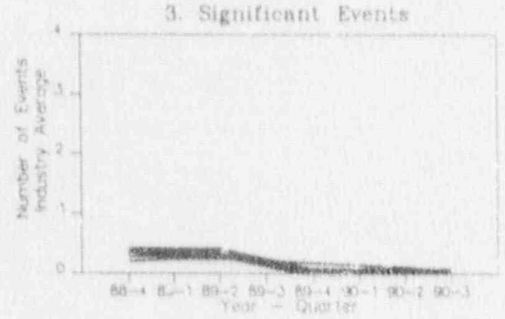
CATAWBA 2

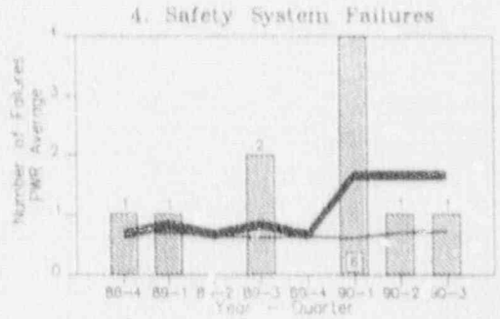
88-4 to 90-3

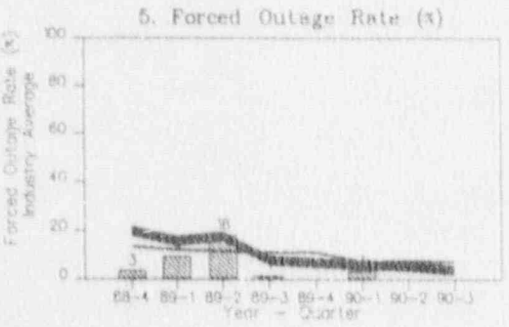
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

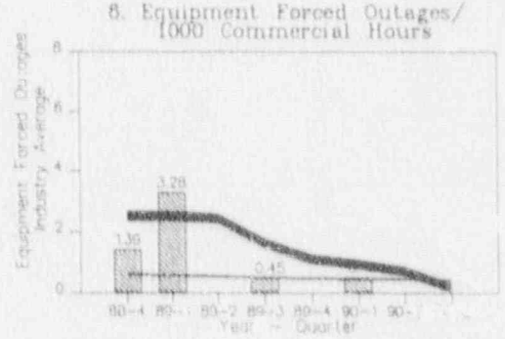


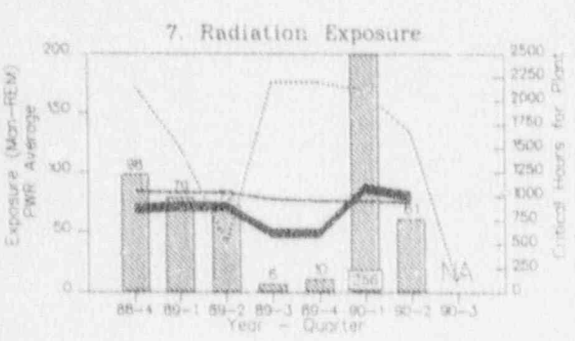












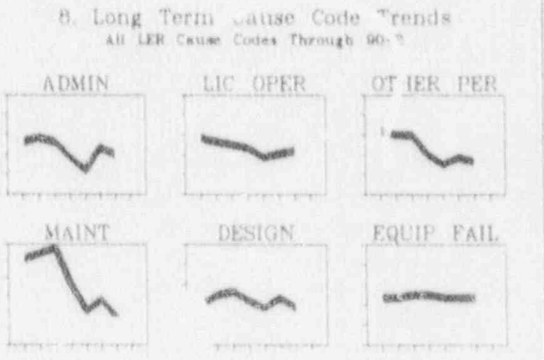


FIGURE 4.19

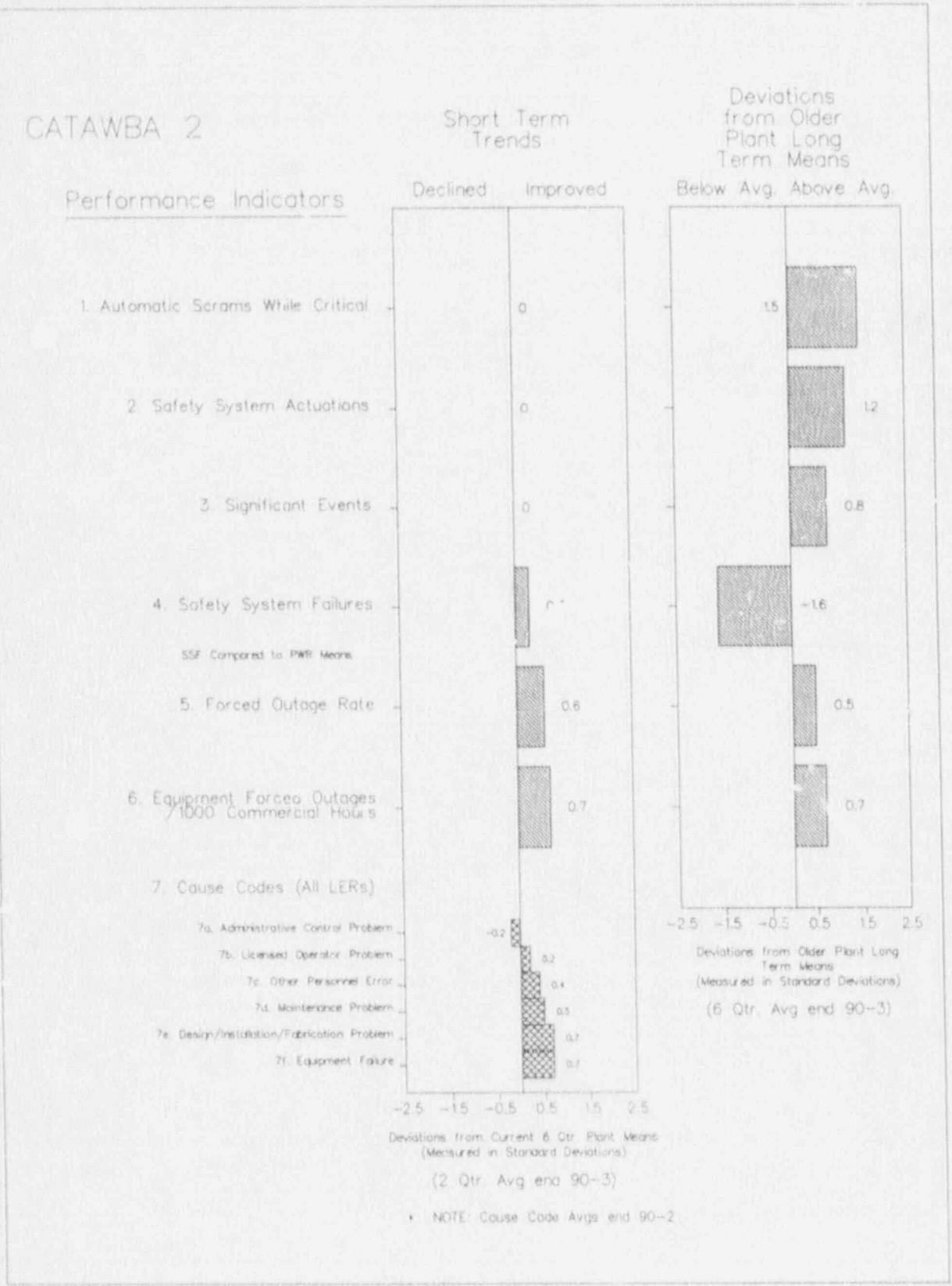
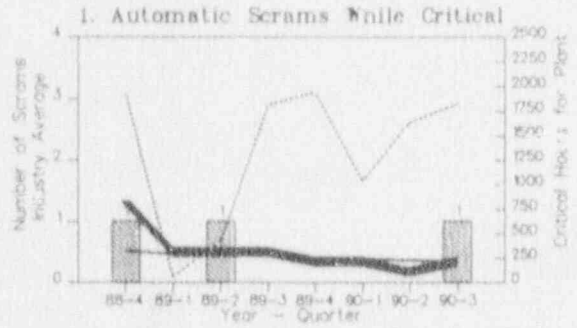

CATAWBA 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
*
-1.6
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.5
6. Equipment Forced Outages /1000 Commercial Hours
0.7
0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0.2
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

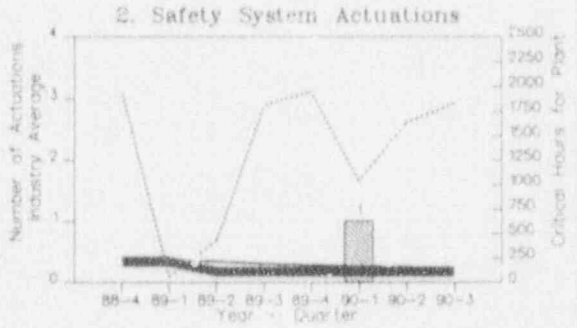
FIGURE 4.20

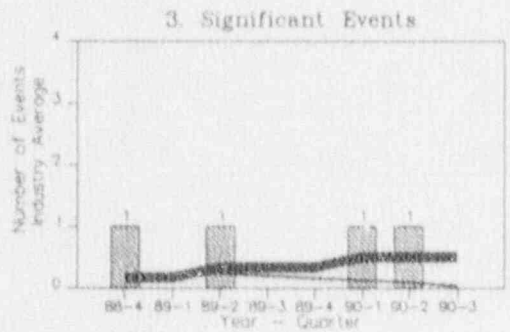
CLINTON 1

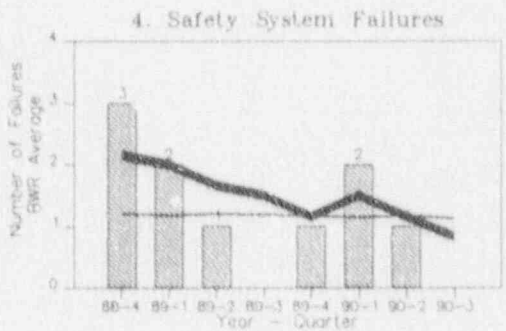
88-4 to 90-3

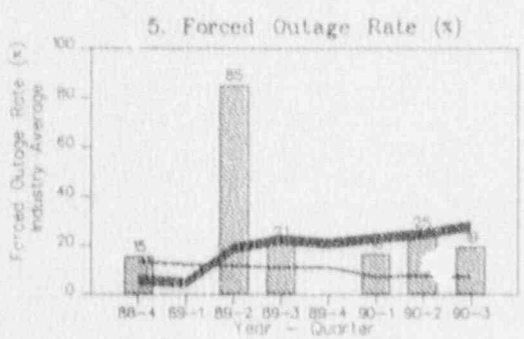
Legend:
- Indicator
- Older Plant 6 q.r. Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

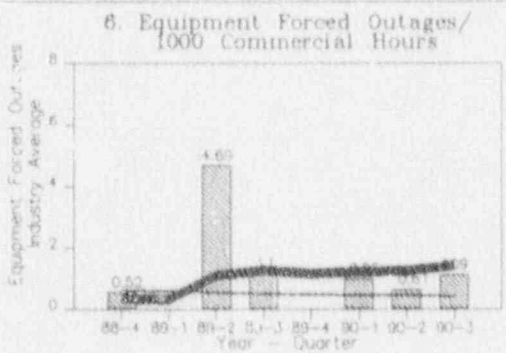


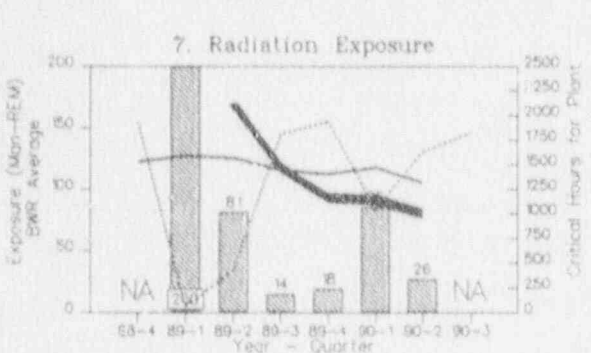












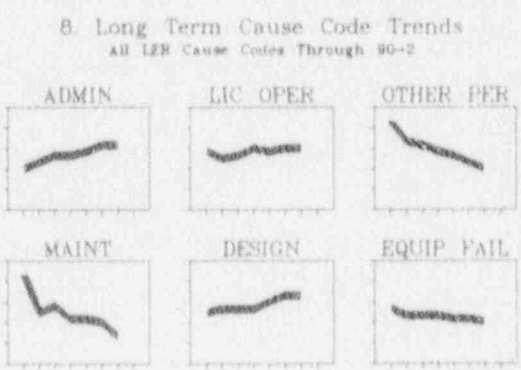


FIGURE 4.20

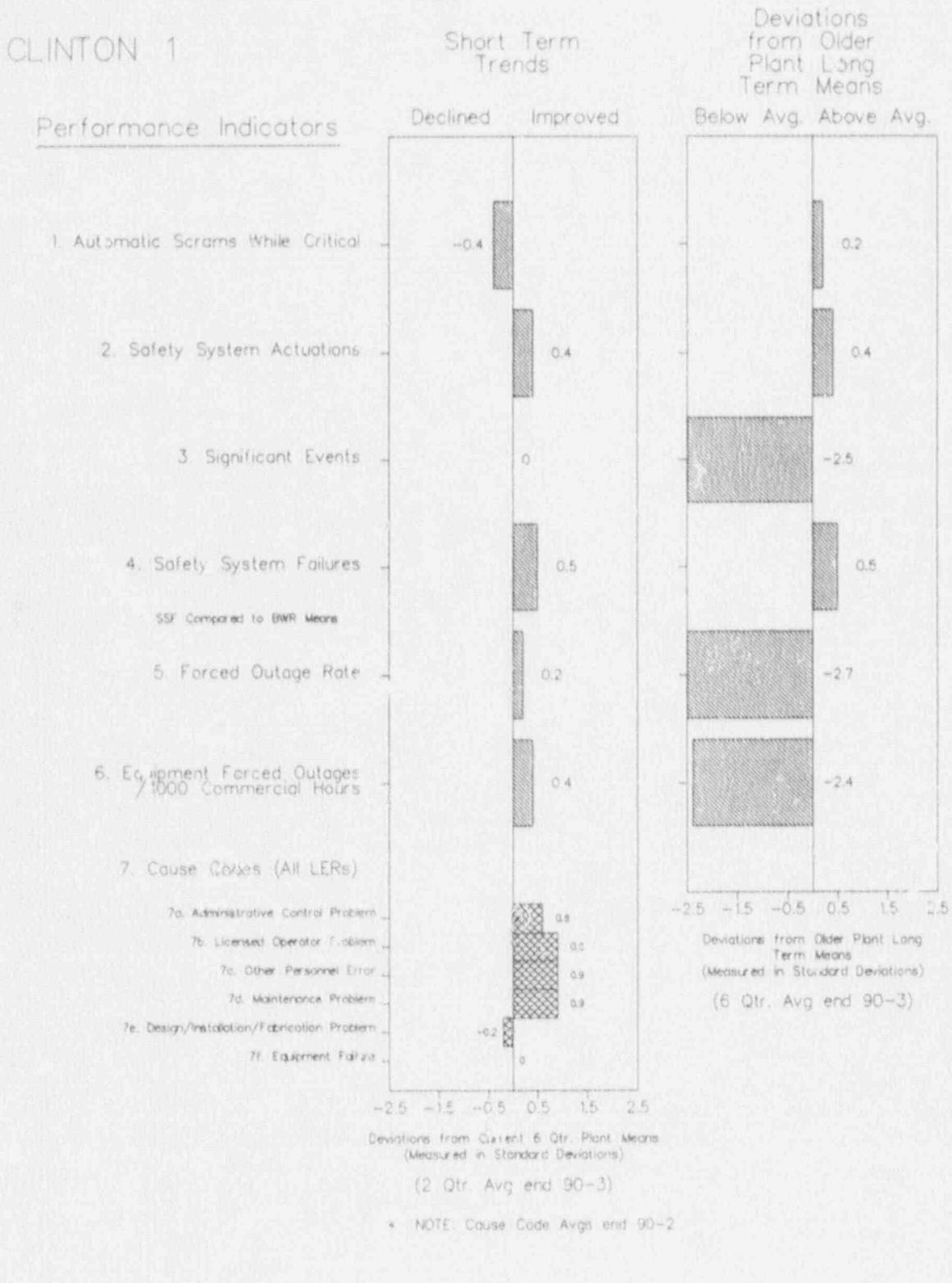

CLINTON 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
0.2
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
-2.5
4. Safety System Failures
0.5
0.5
SSF Compared to BWR Means
5. Forced Outage Rate
0.2
-2.7
6. Equipment Forced Outages / 1000 Commercial Hours
0.4
-2.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.0
7c. Other Personnel Error
0.9
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
-0.2
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

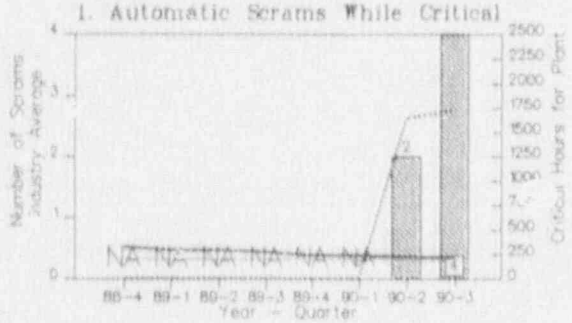
FIGURE 4.21

COMANCHE PEAK 1

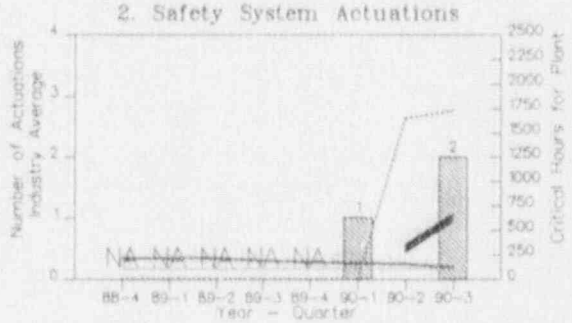
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Newer Plant Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

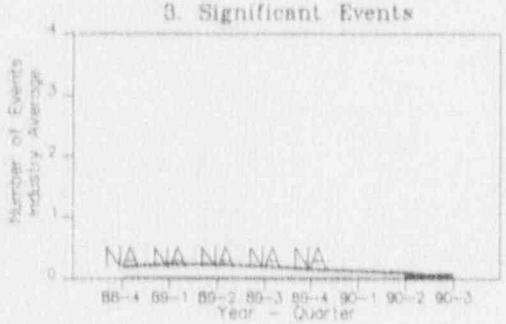
1. Automatic Scrams While Critical



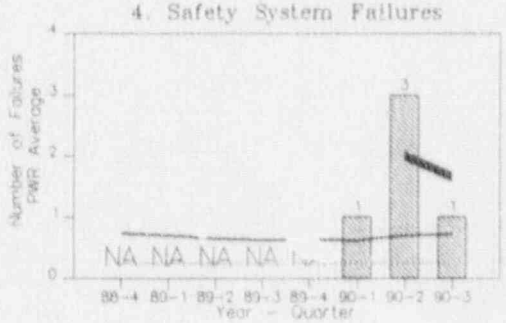
2. Safety System Actuations



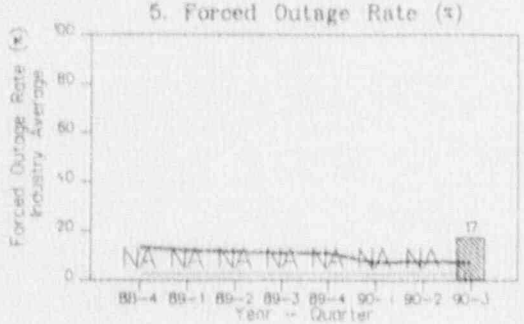
3. Significant Events



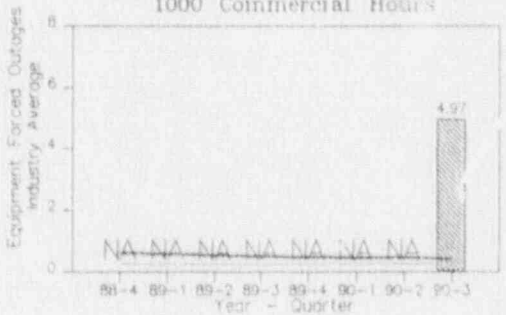
4. Safety System Failures



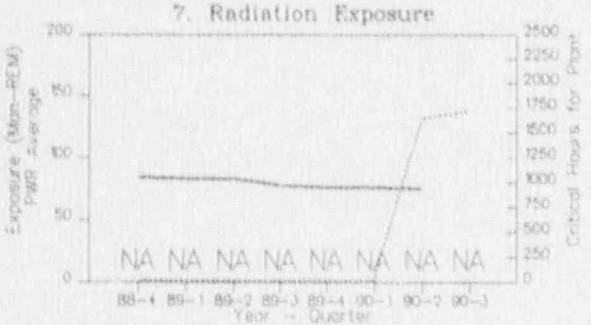
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

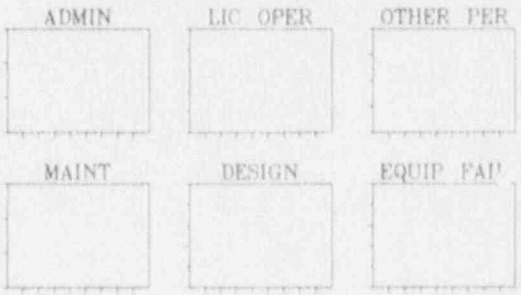


FIGURE 4.21

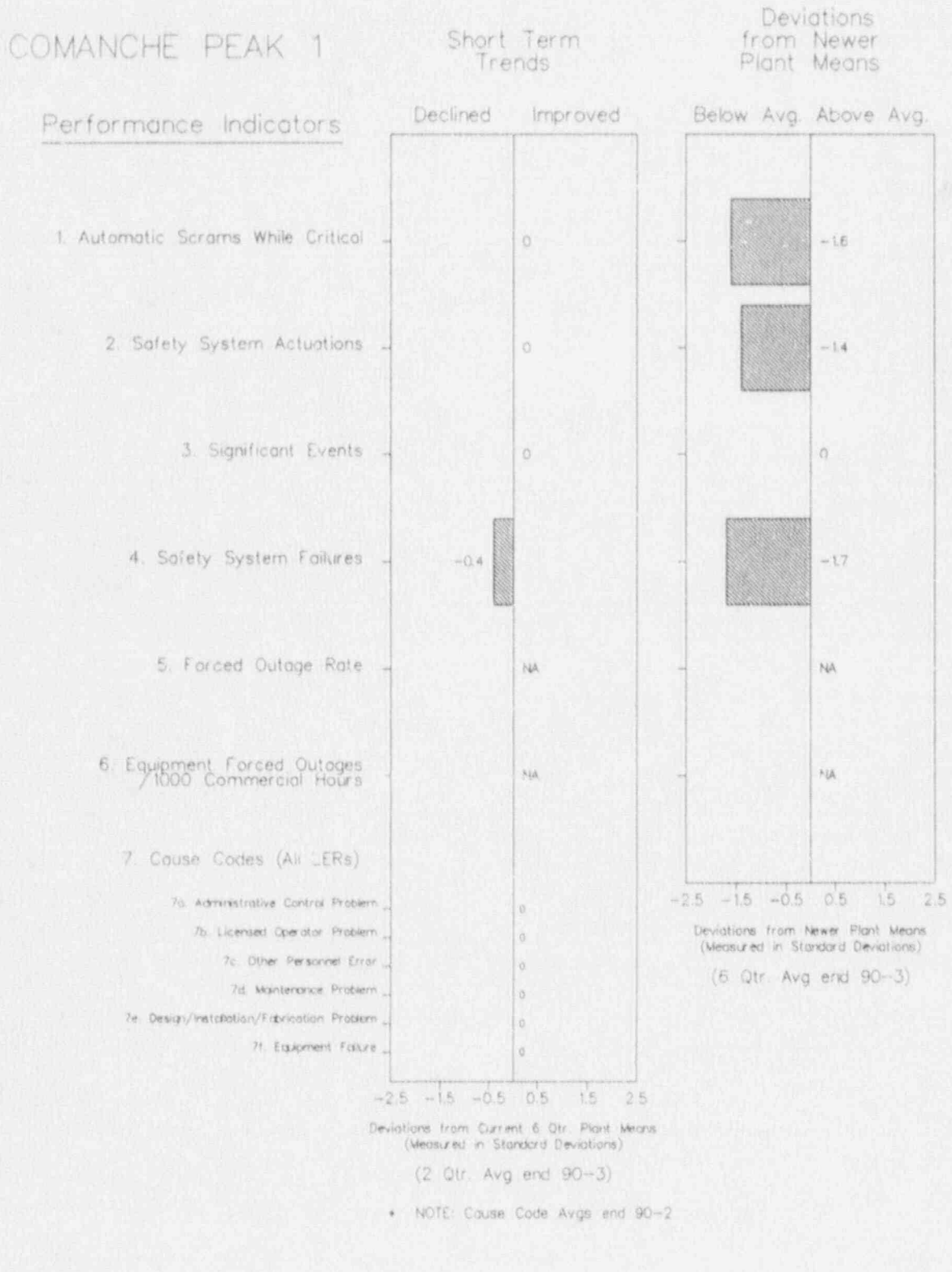

COMANCHE PEAK 1
Short Term Trends
Deviations from Newer Plant Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
-0.4
NA
-1.6
-1.4
-1.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Newer Plant Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

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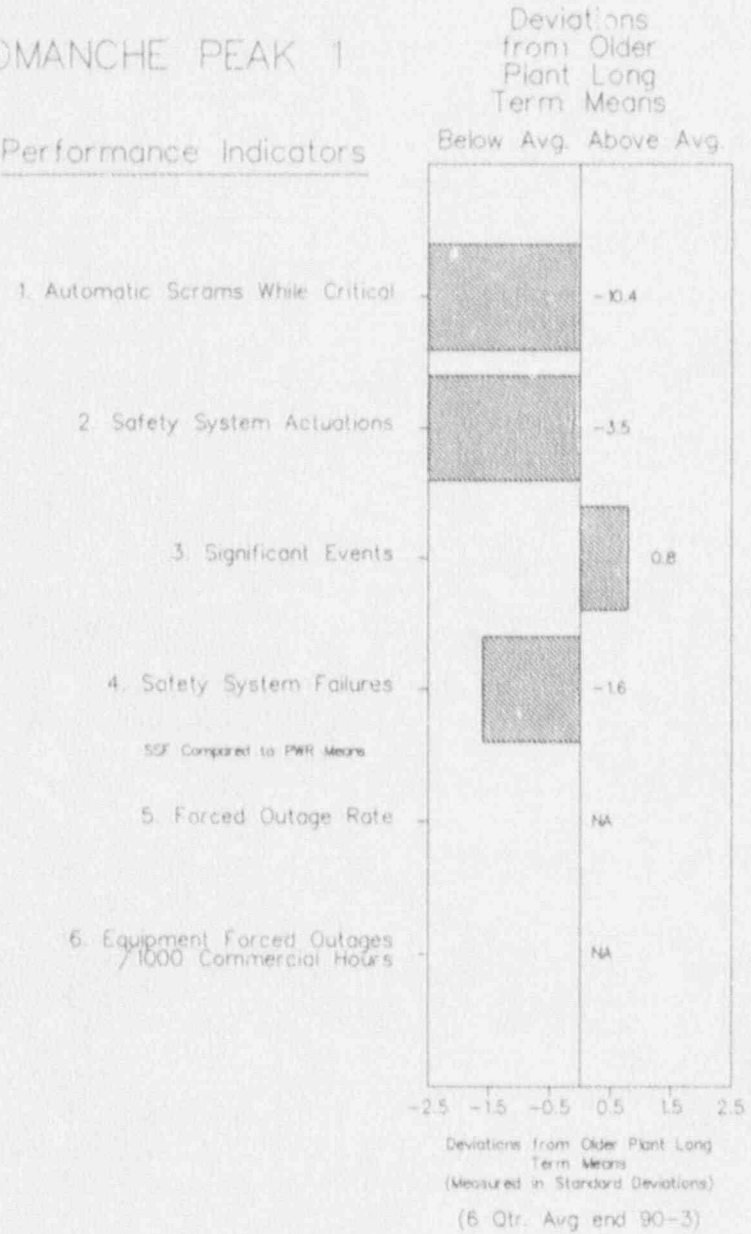
FIGURE 4.21

Note: This is a comparison of COMANCHE PEAK 1 (a newer plant) against older plant means.

COMANCHE PEAK 1

Performance Indicators



(6 Qtr. Avg end 90-3)

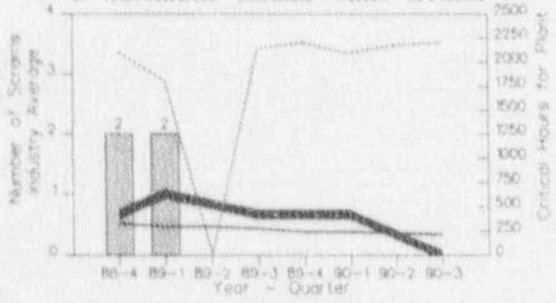
FIGURE 4.22

COOK 1

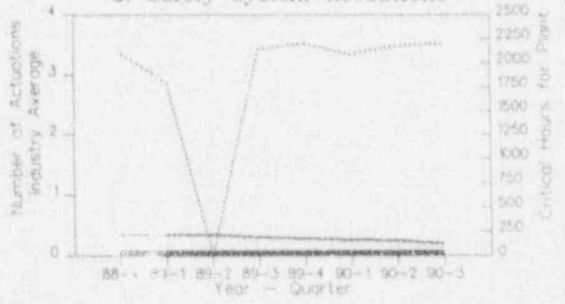
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

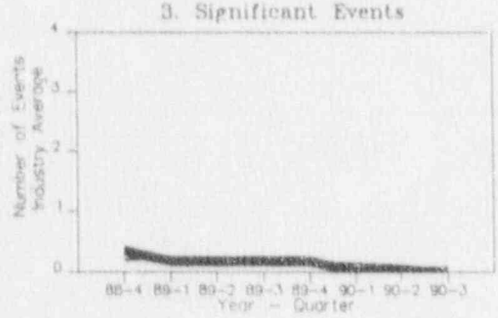
1. Automatic Scrams While Critical



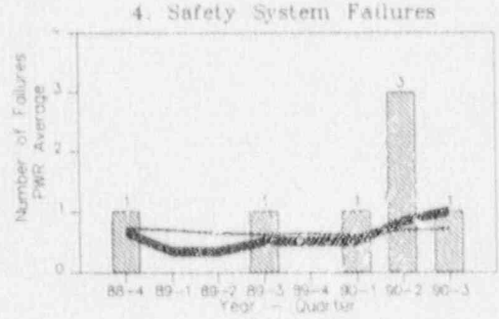
2. Safety System Actuations



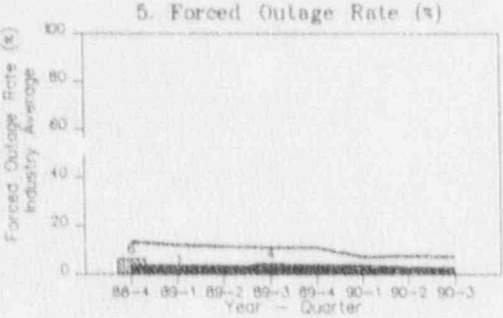
3. Significant Events



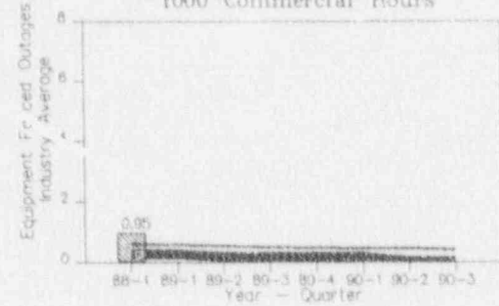
4. Safety System Failures



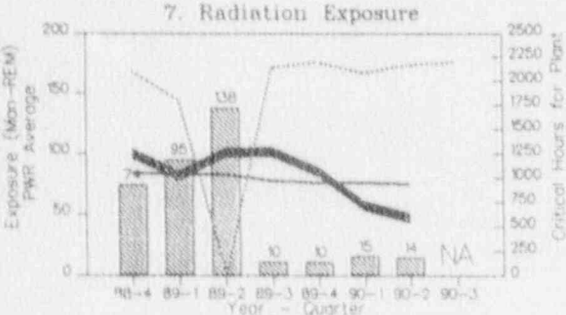
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

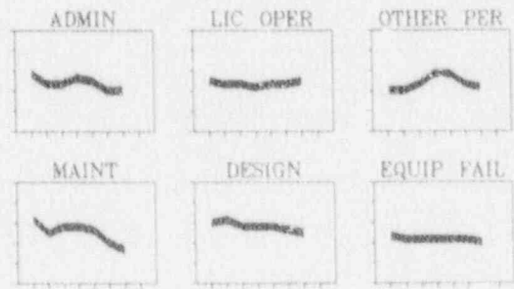
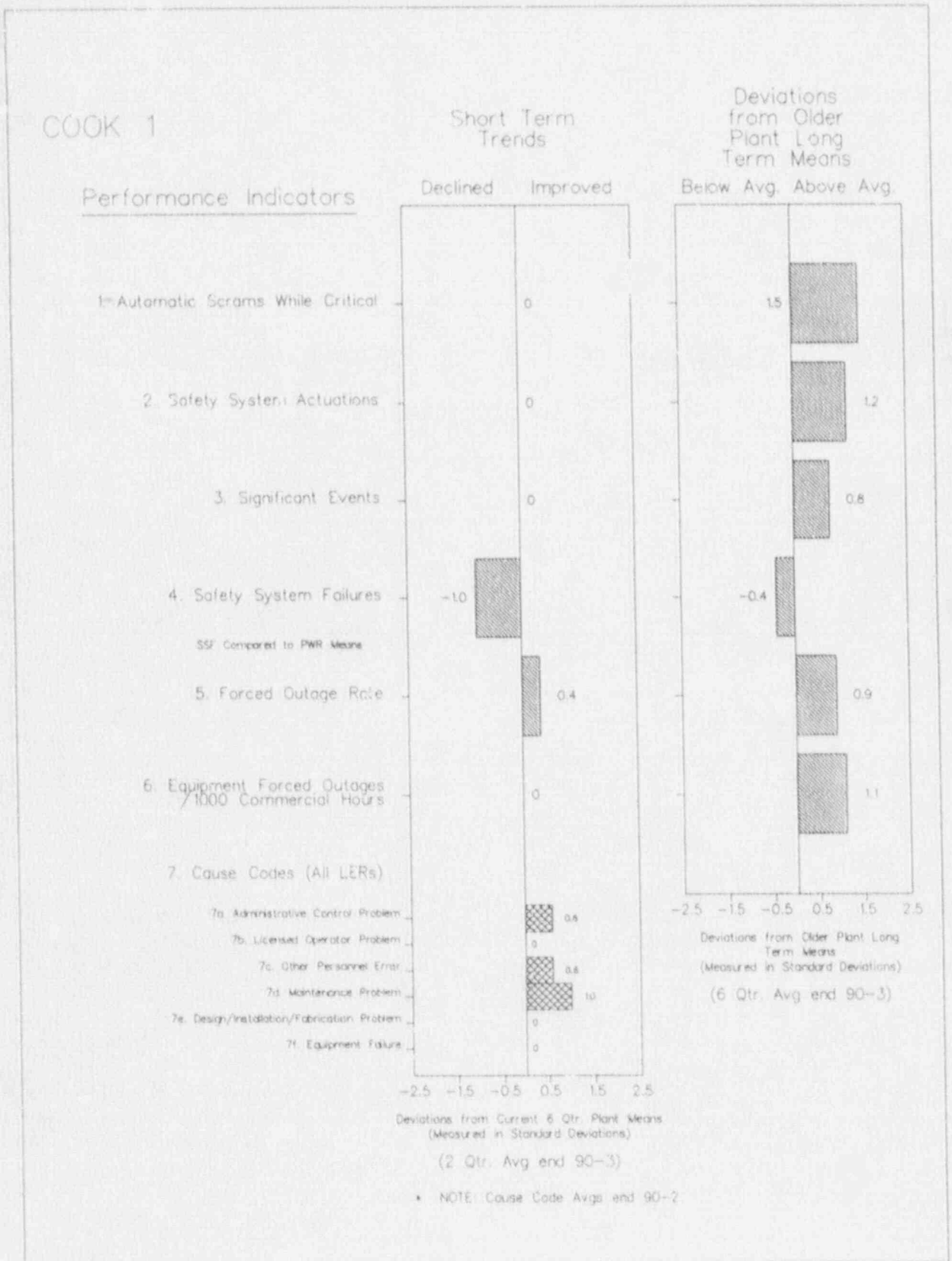


FIGURE 4.22


COOK 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
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7a. Administrative Control Problem
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7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
0
0
-1.0
0.4
0
0.6
0
0.8
1.0
0
0
1.5
1.2
0.8
-0.4
0.9
1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

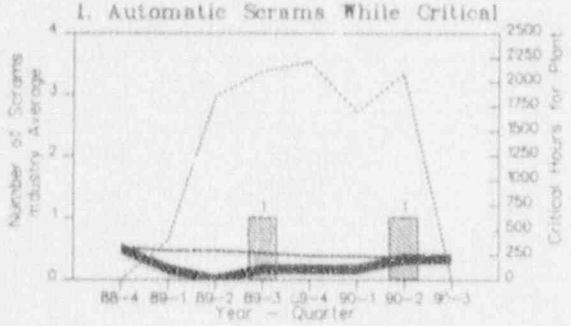
FIGURE 4.23

COOK 2

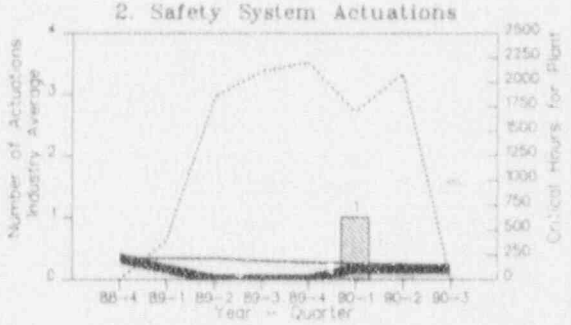
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

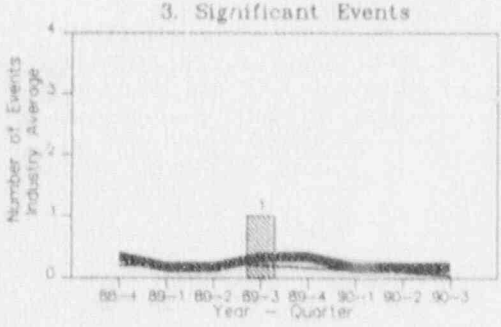
1. Automatic Scrams While Critical



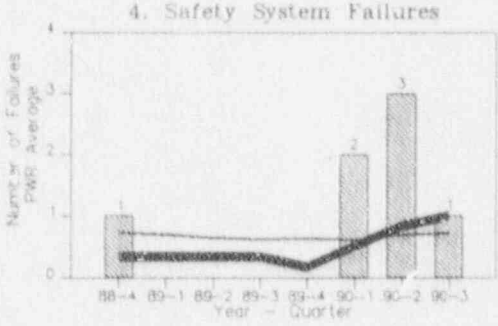
2. Safety System Actuations



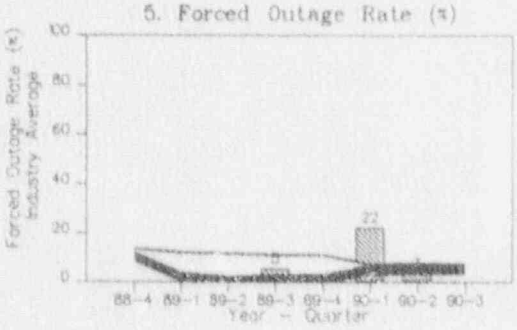
3. Significant Events



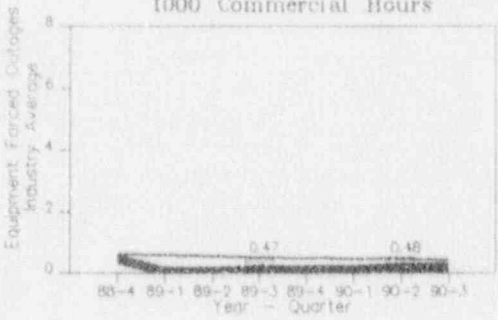
4. Safety System Failures



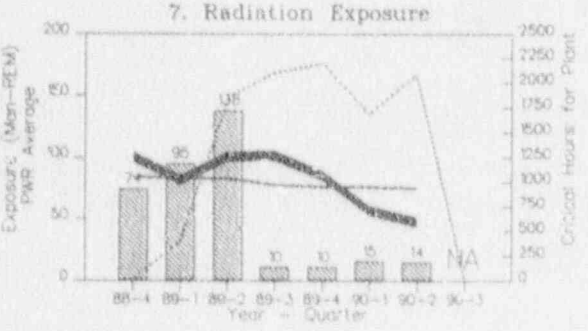
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

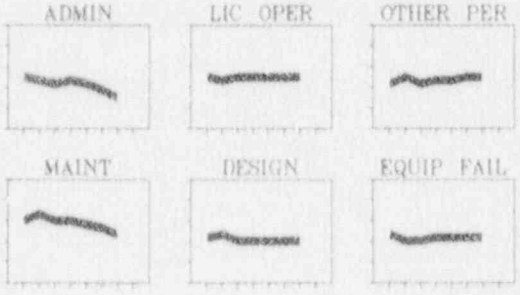


FIGURE 4.23

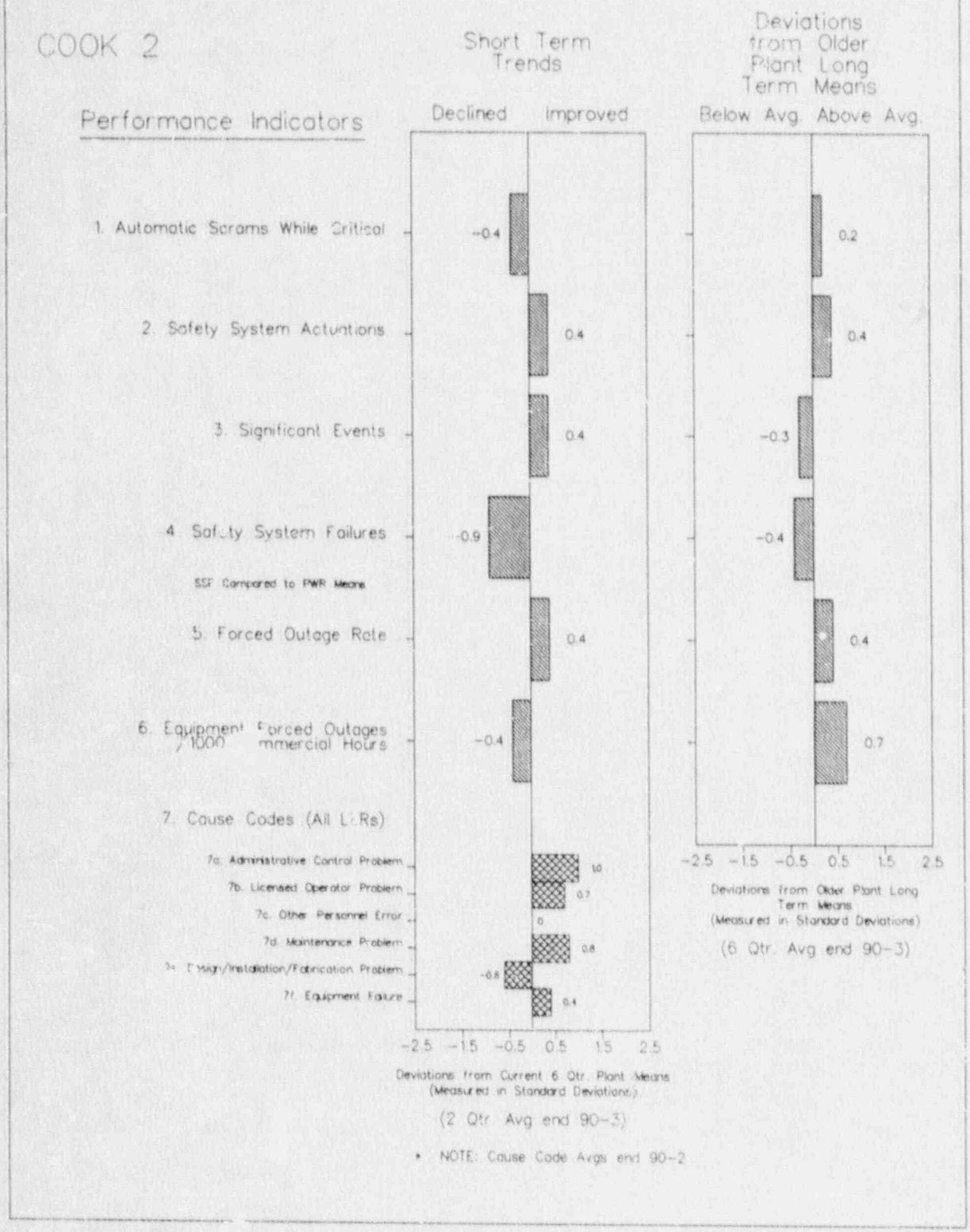

COOK 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
0.4
0.4
-0.9
0.4
-0.4
1.0
0.7
0
0.8
-0.8
0.4
0.2
0.4
-0.3
-0.4
0.4
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

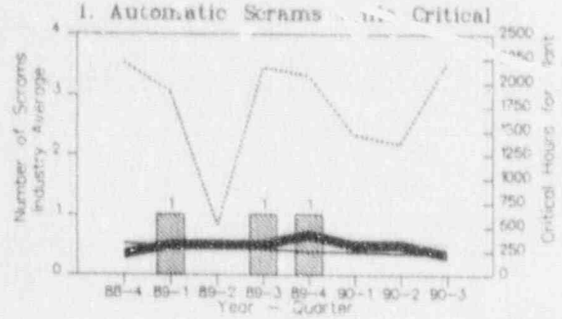
FIGURE 4.24

COOPER STATION

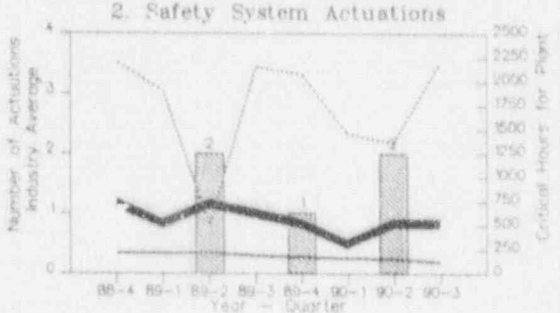
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

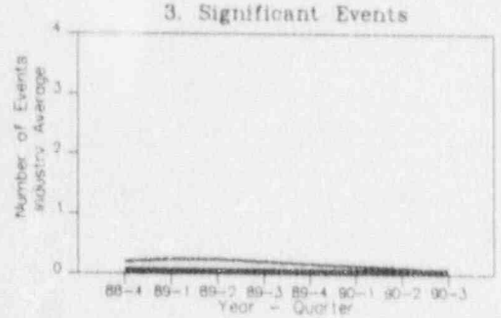
1. Automatic Scrams While Critical



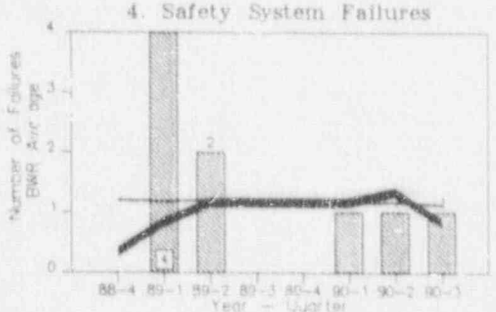
2. Safety System Actuations



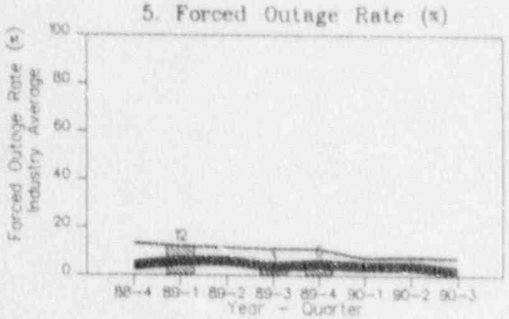
3. Significant Events



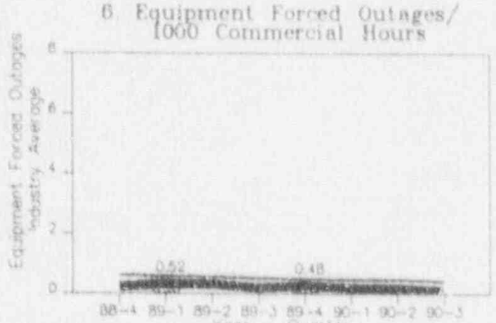
4. Safety System Failures



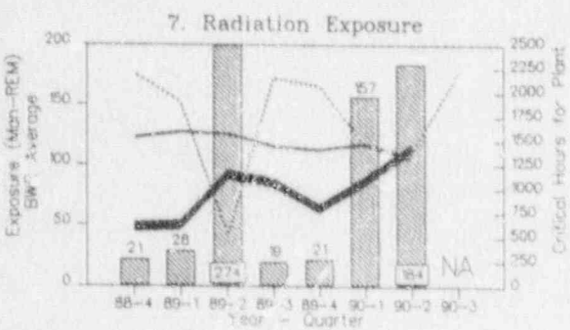
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

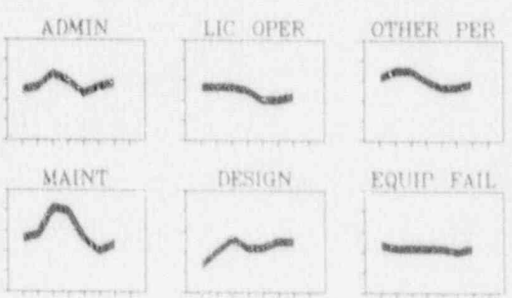


FIGURE 4.24

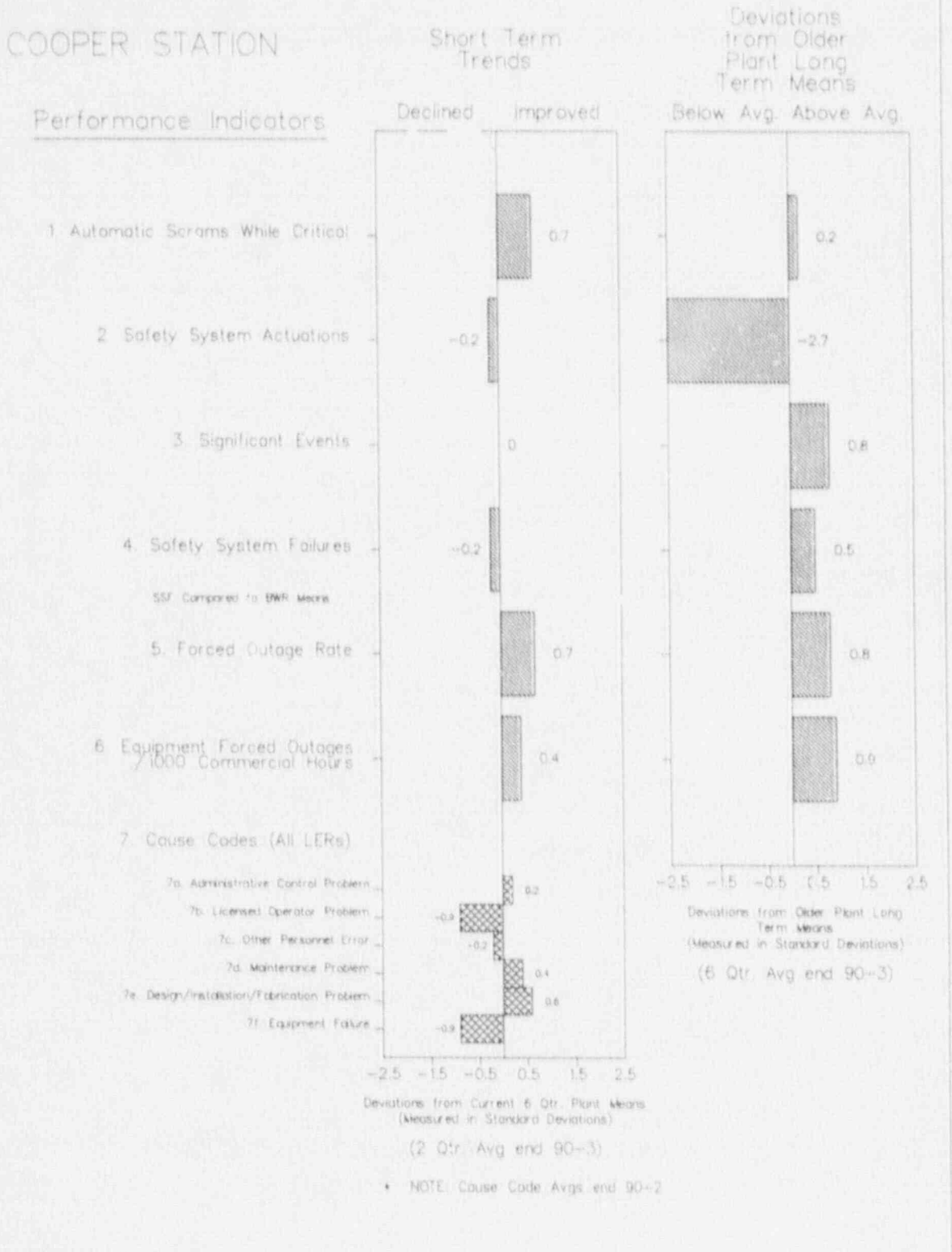

COOPER STATION
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
-0.2
-2.7
3. Significant Events
0
0.8
4. Safety System Failures
-0.2
0.5
SSF Compared to BWR Means
5. Forced Outage Rate
0.7
0.8
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
-0.9
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
0.6
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

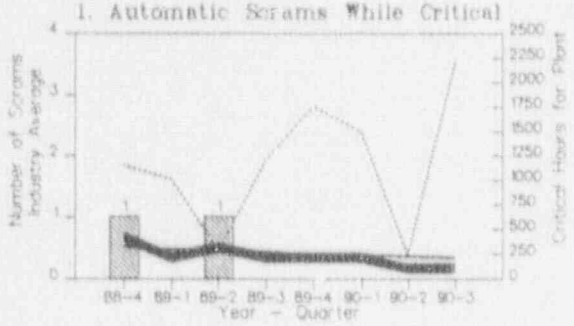
FIGURE 4.25

CRYSTAL RIVER 3

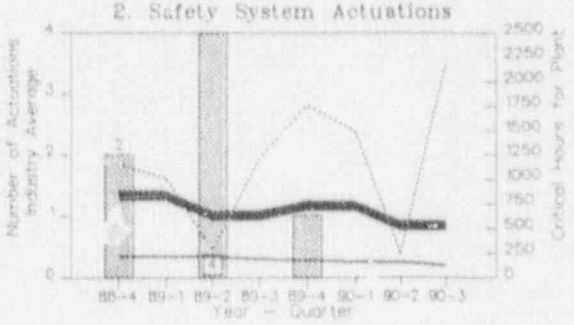
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

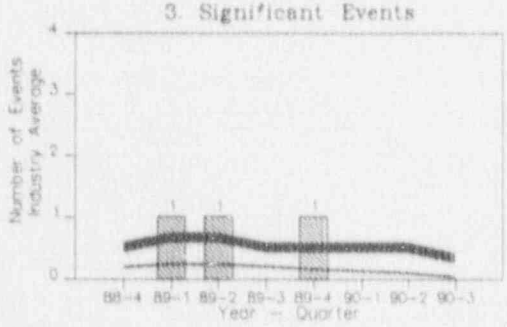
1. Automatic Scrams While Critical



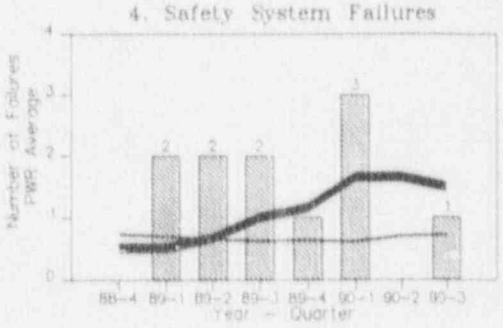
2. Safety System Actuations



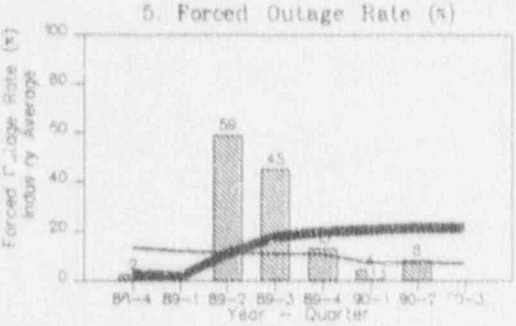
3. Significant Events



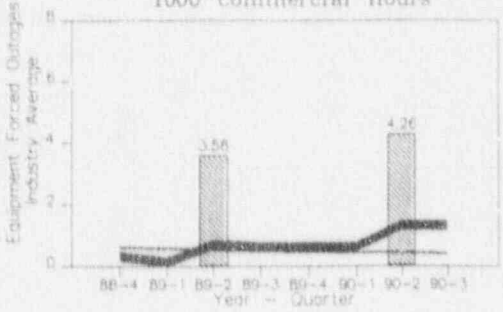
4. Safety System Failures



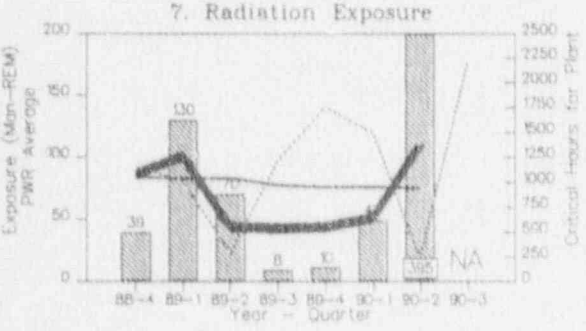
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

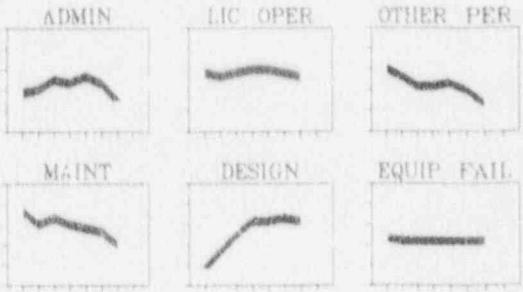


FIGURE 4.25

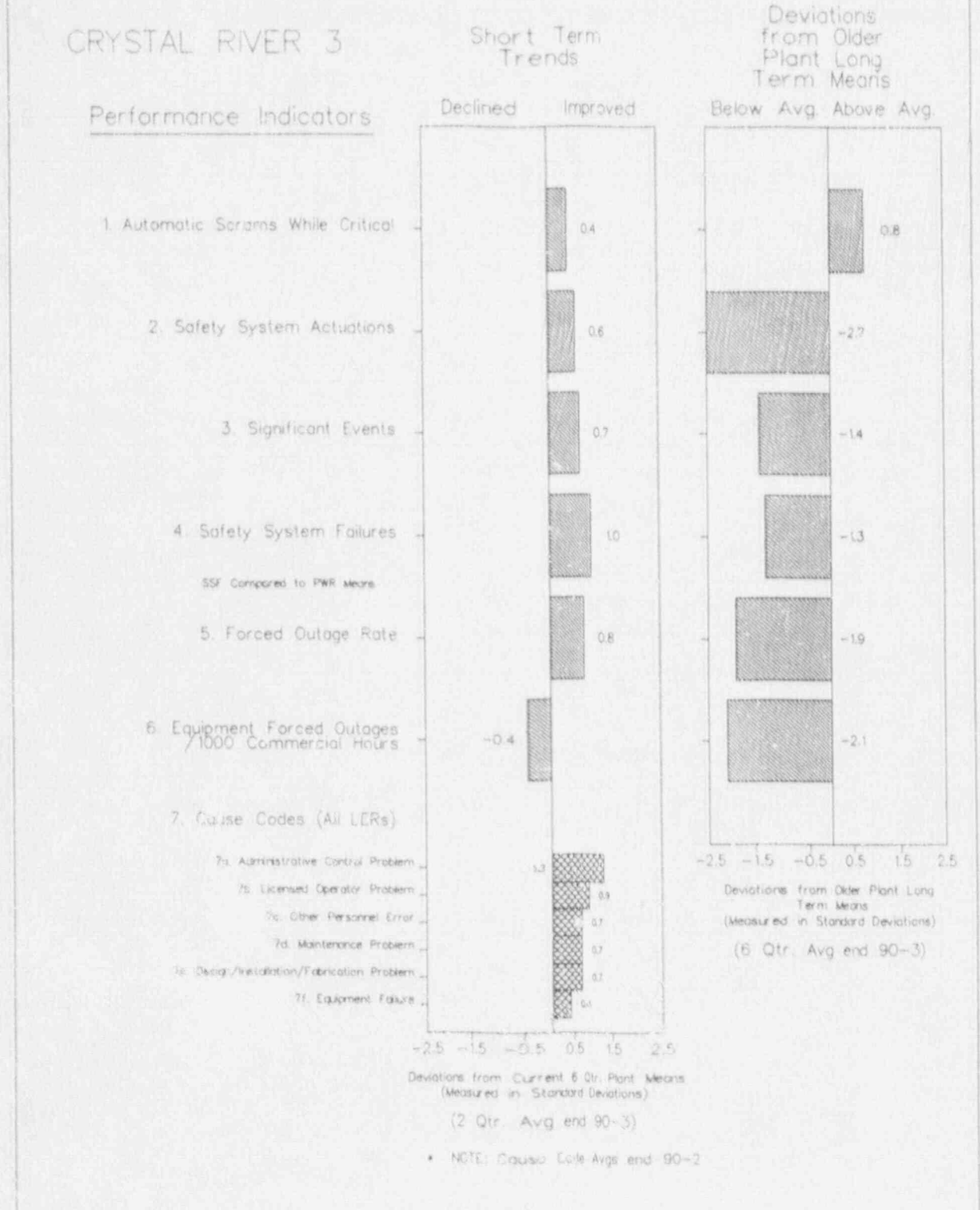

CRYSTAL RIVER 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0.6
-2.7
3. Significant Events
0.7
-1.4
4. Safety System Failures
1.0
-1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.8
-1.9
6. Equipment Forced Outages /1000 Commercial Hours
-0.4
-2.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.3
7b. Licensed Operator Problem
0.9
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.26

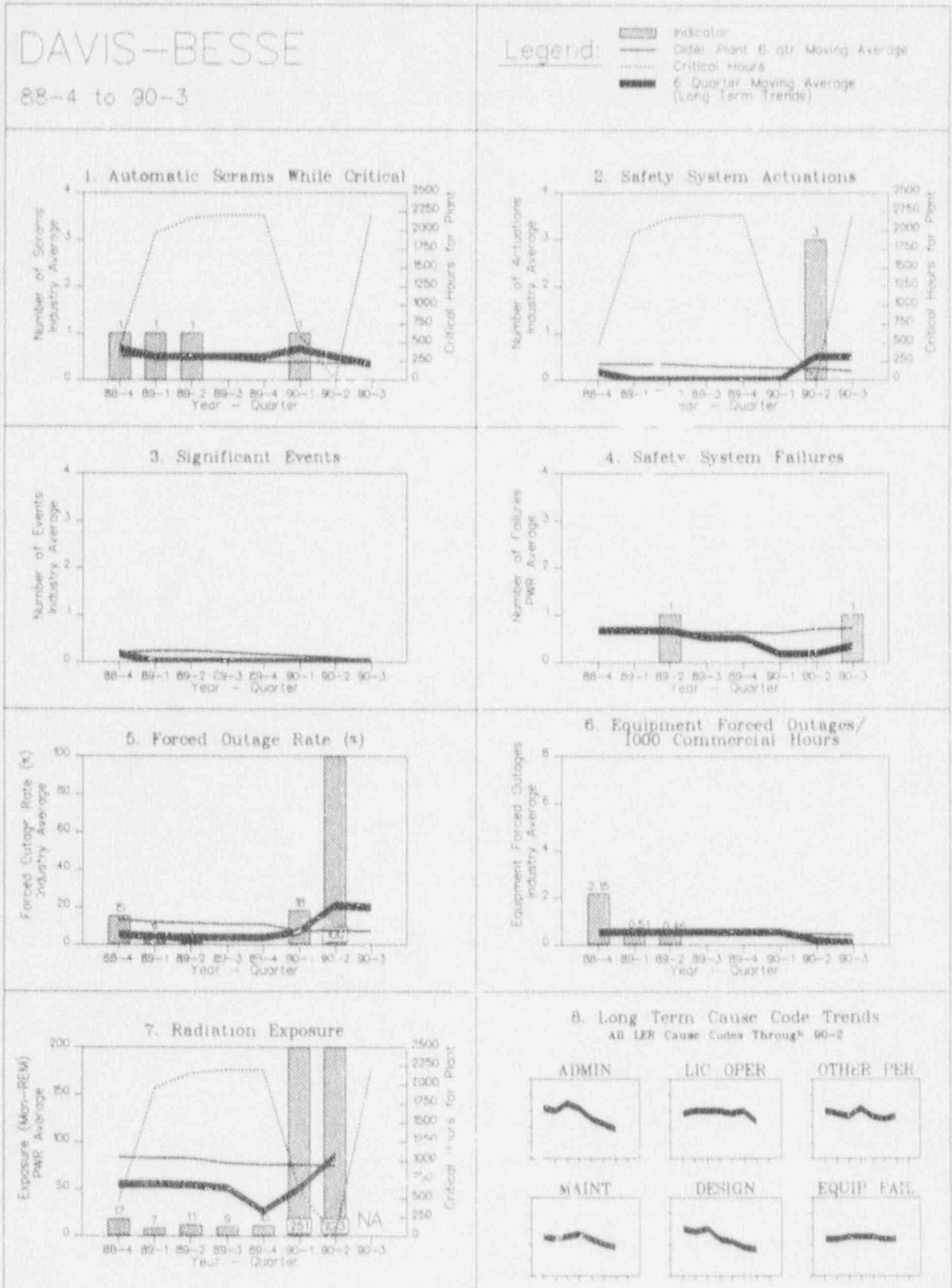

DAVIS-BESSE
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.26

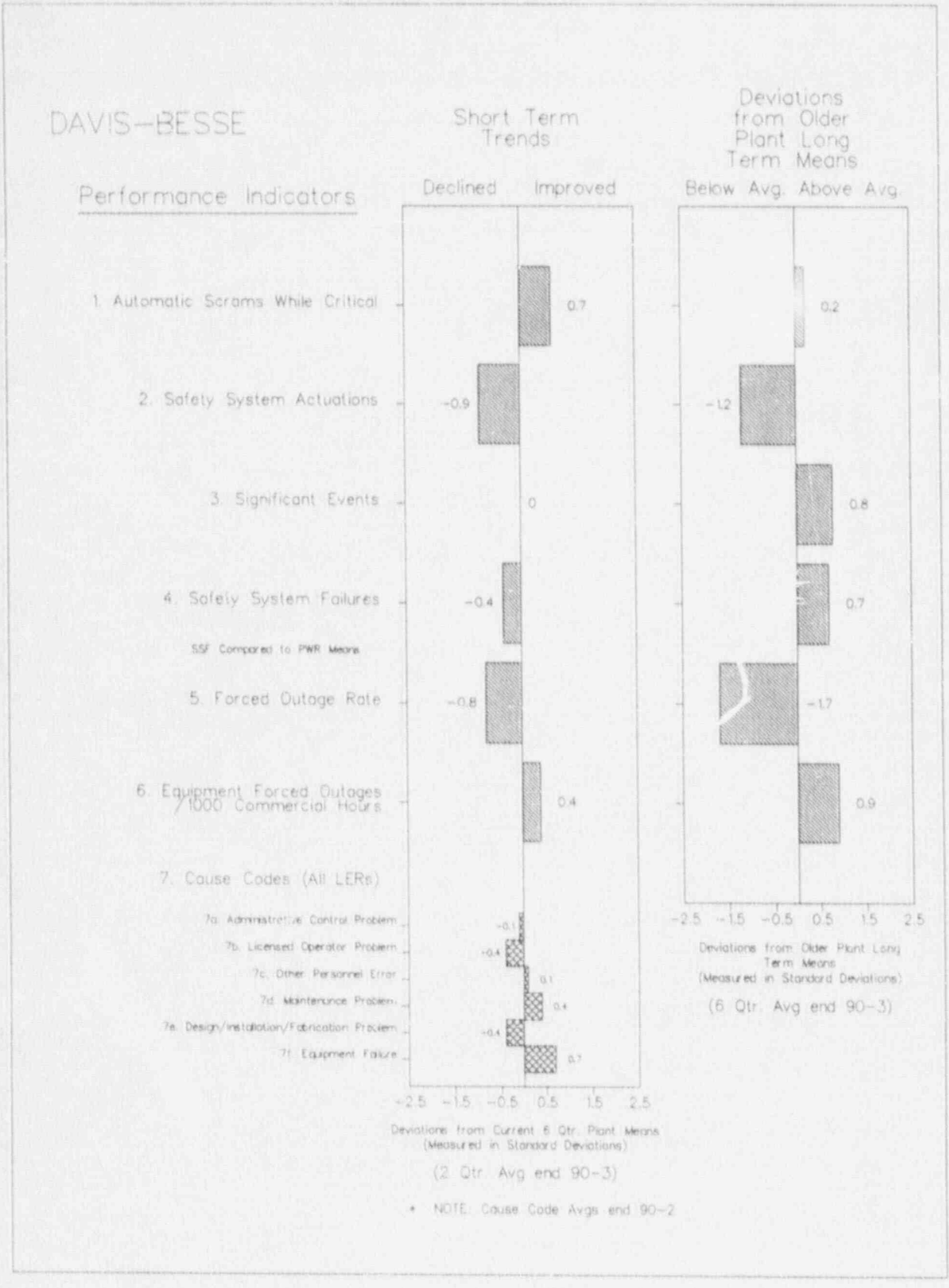

DAVIS–BESSE
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
-0.9
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.8
-1.7
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
0.1
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

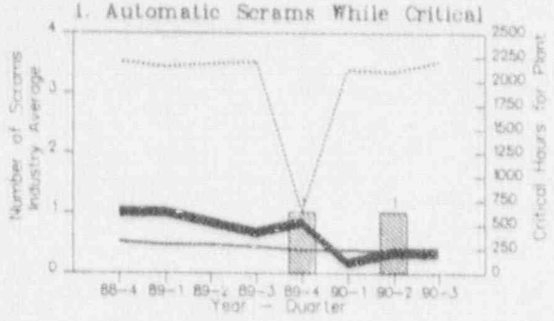
FIGURE 4.27

DIABLO CANYON 1

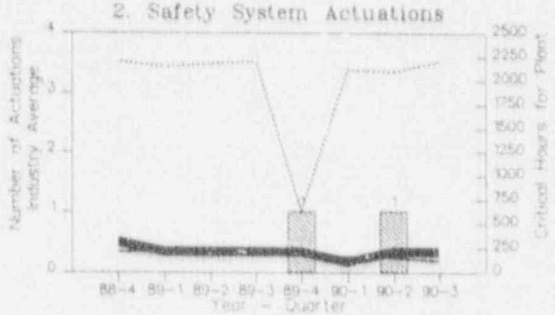
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

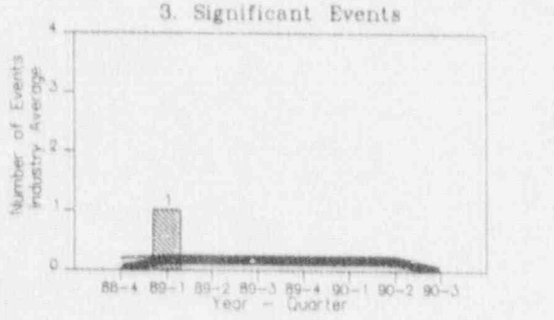
1. Automatic Scrams While Critical



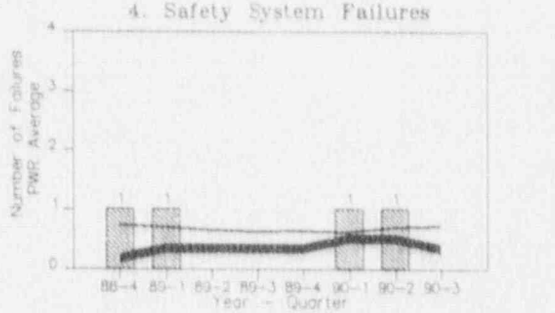
2. Safety System Actuations



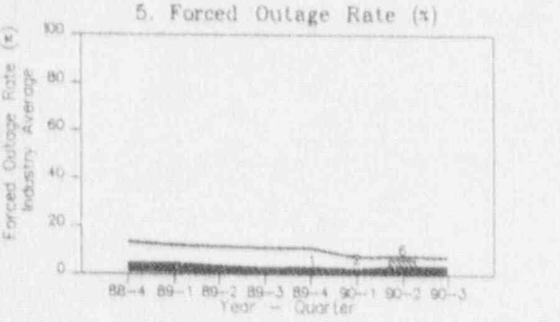
3. Significant Events



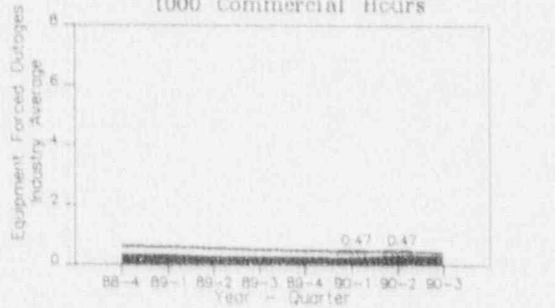
4. Safety System Failures



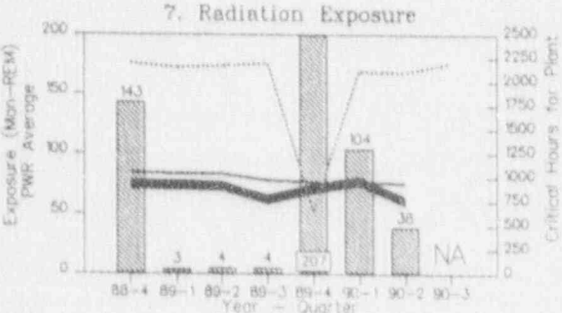
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

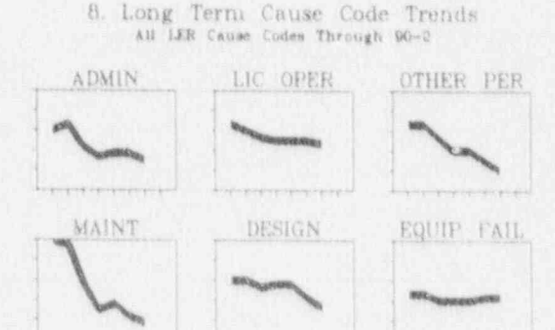


FIGURE 4.27

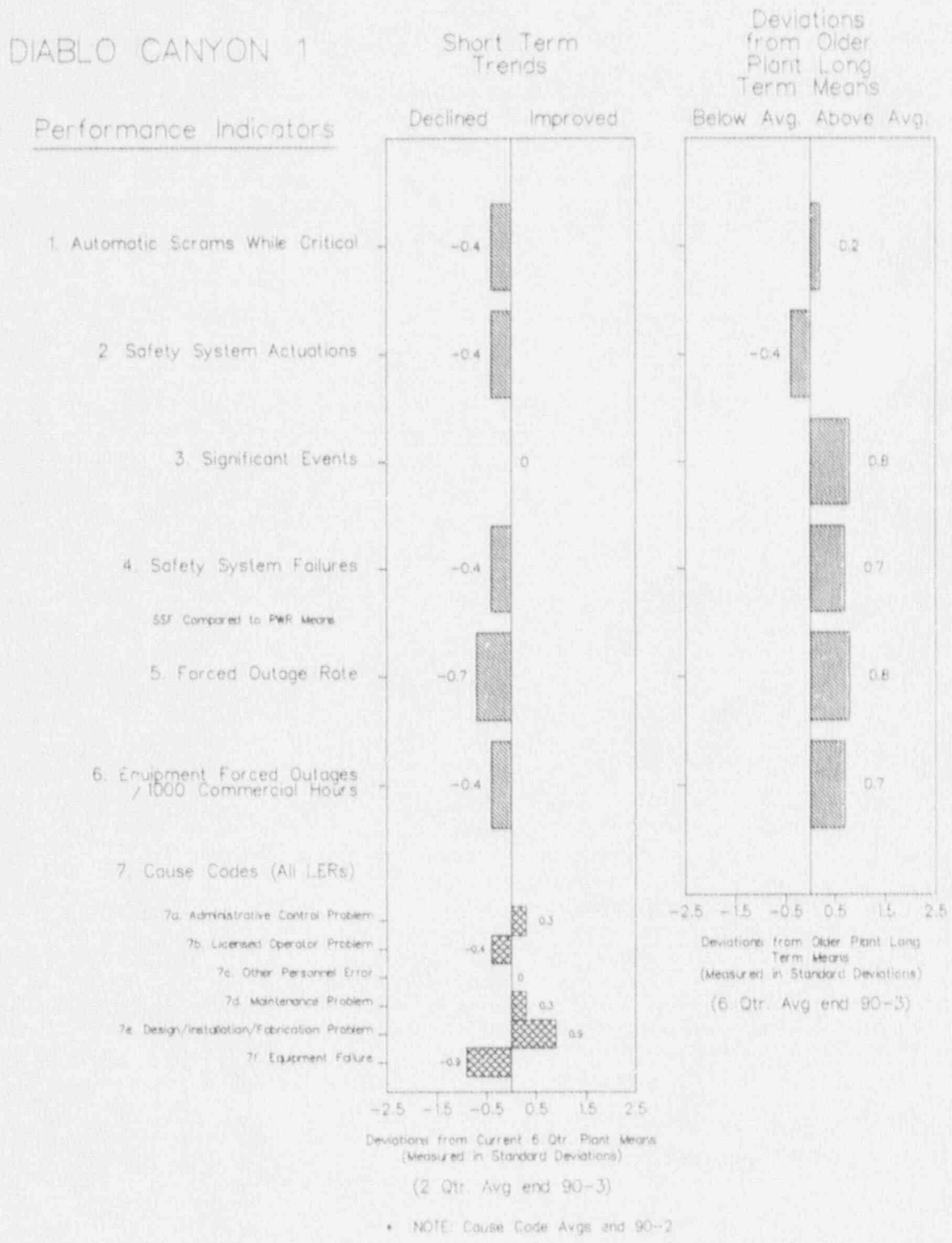
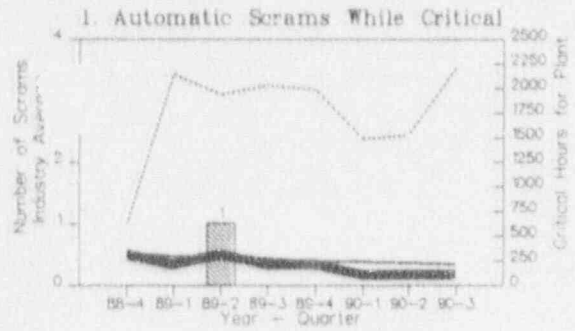

DIABLO CANYON 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
-0.4
0
-0.4
-0.7
-0.4
0.3
-0.4
0
0.3
0.9
-0.9
0.2
-0.4
0.8
0.7
0.8
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

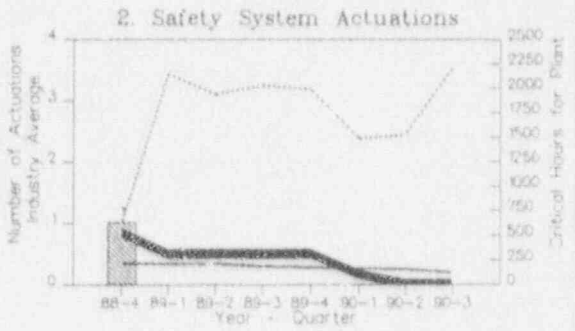
FIGURE 4.28

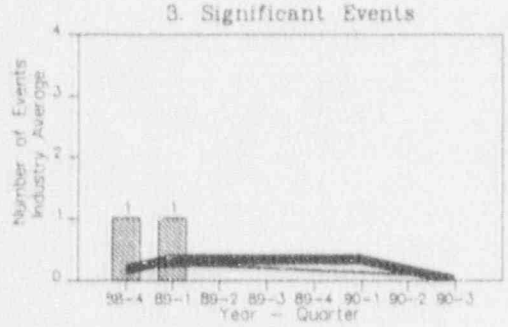
DIABLO CANYON 2

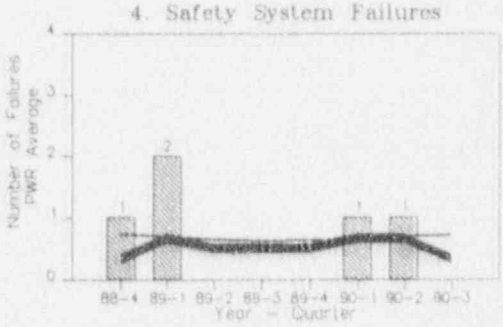
88-4 to 90-3

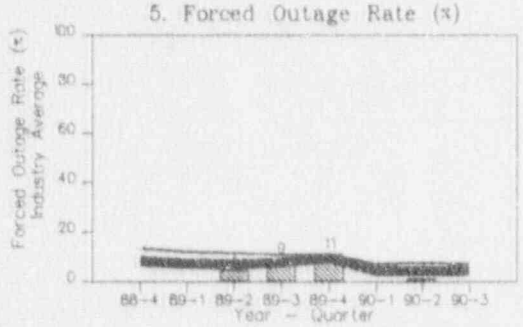
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

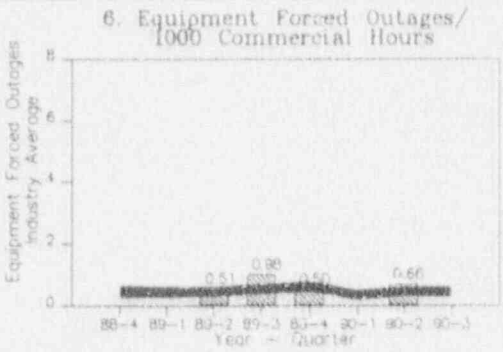


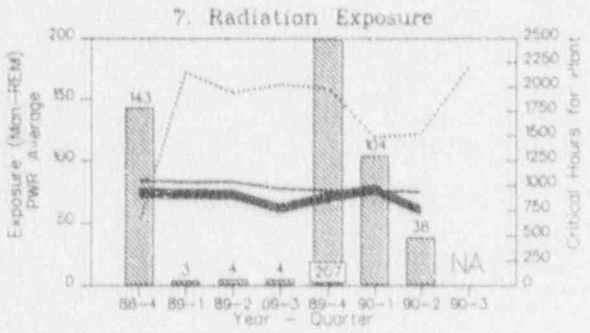












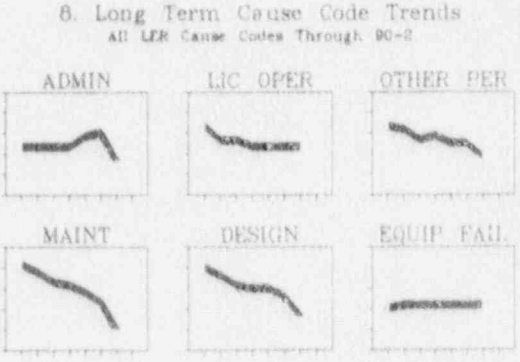


FIGURE 4.28

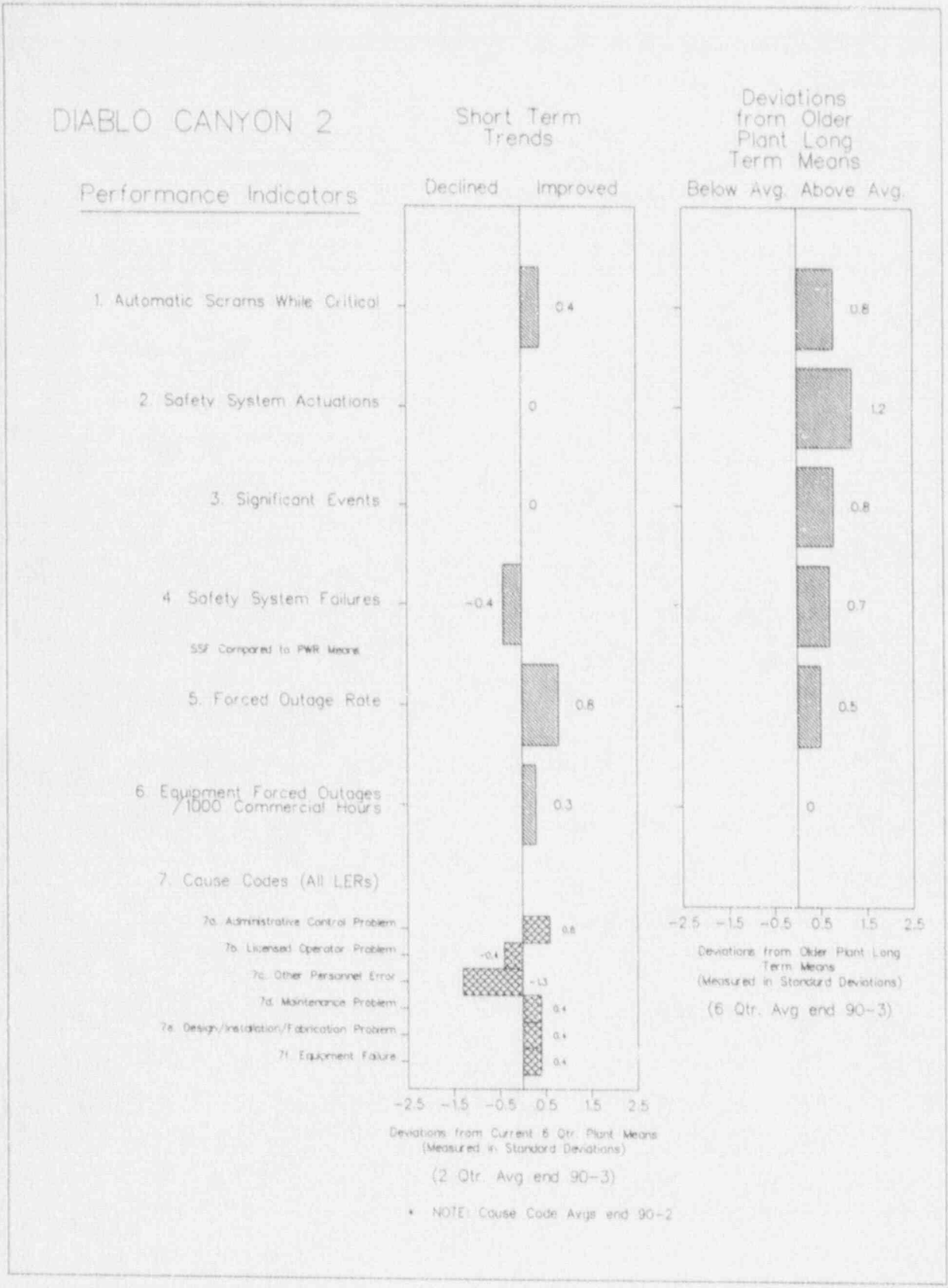
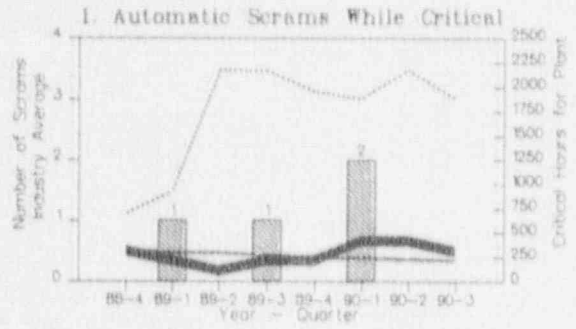

DIABLO CANYON 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.8
0.5
6. Equipment Forced Outages /1000 Commercial Hours
0.3
0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
-1.3
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

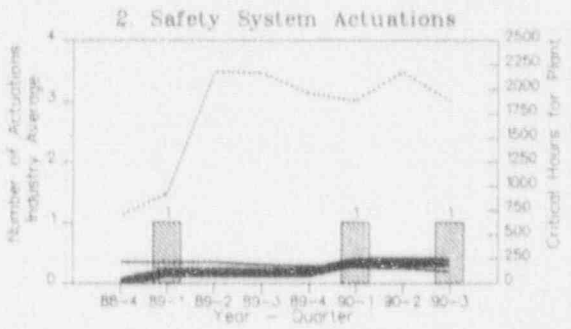
FIGURE 4.29

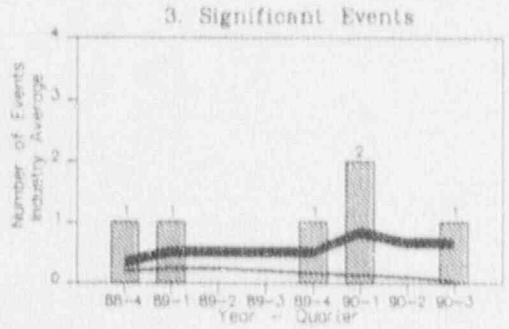
DRESDEN 2

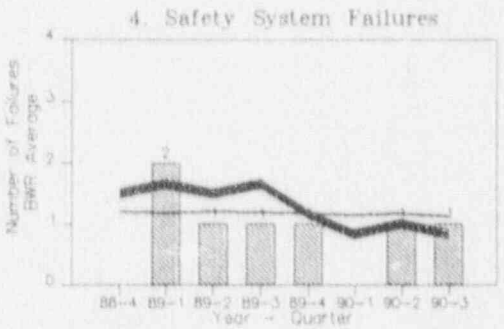
88-4 to 90-3

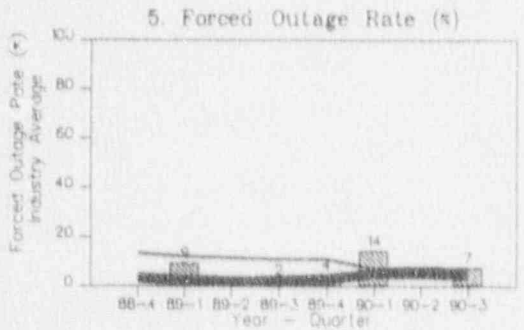
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

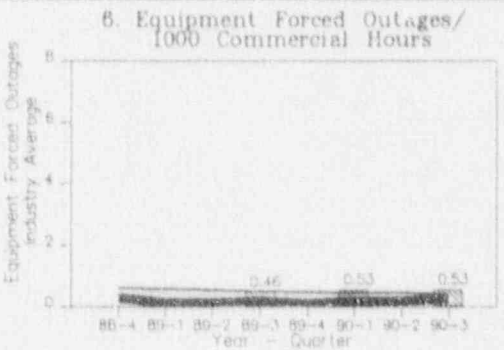


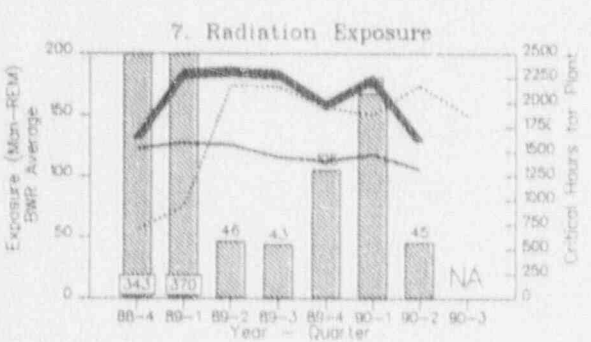












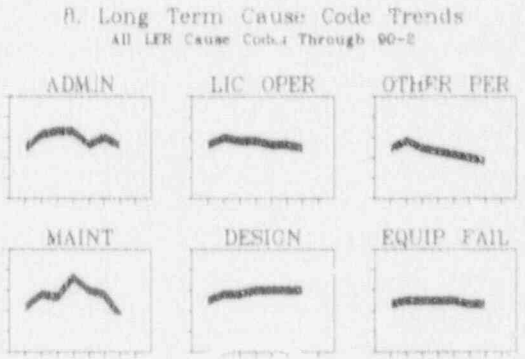


FIGURE 4.29

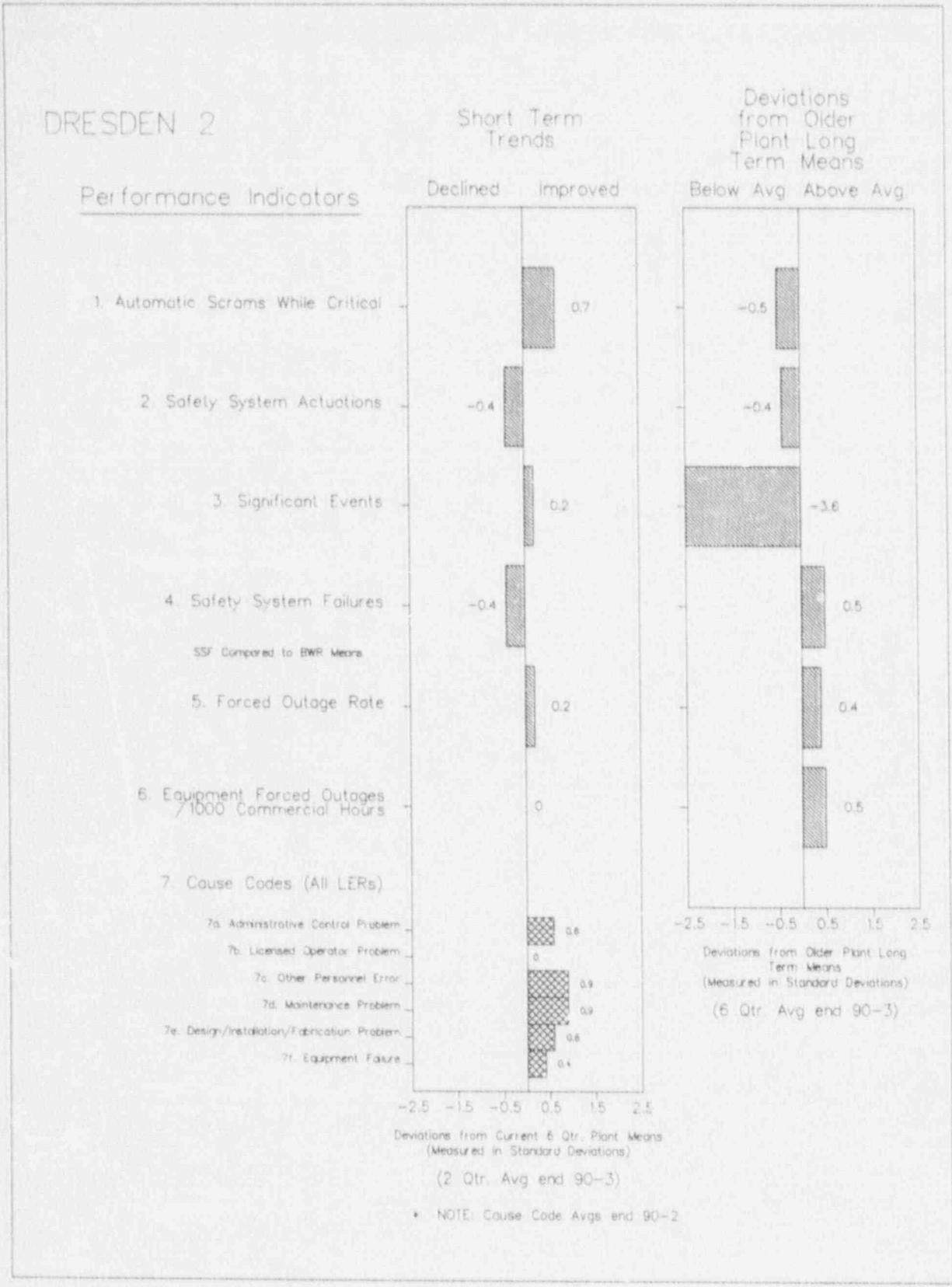

DRESDEN 2
Short Term Trends
Deviations from Older Plant Long Term Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-0.5
2. Safety System Actuations
-0.4
-0.4
3. Significant Events
0.2
-3.6
4. Safety System Failures
-0.4
0.5
SSF Compared to BWR Means
5. Forced Outage Rate
0.2
0.4
6. Equipment Forced Outages /1000 Commercial Hours
0
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.6
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.9
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

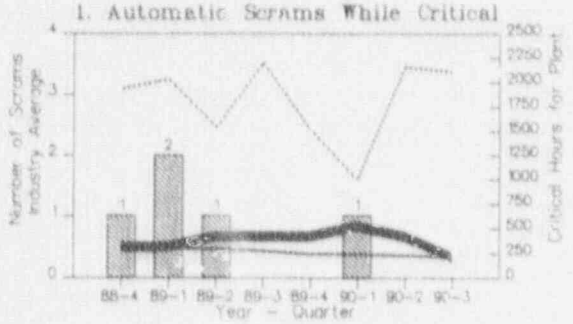
FIGURE 4.30

DRESDEN 3

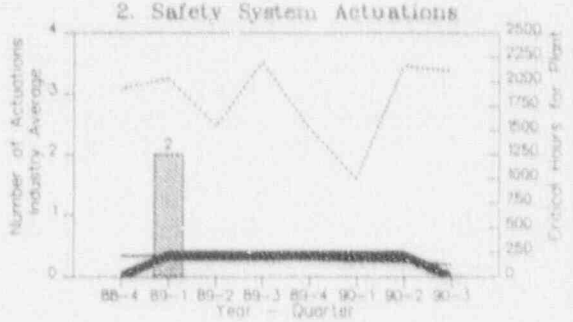
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

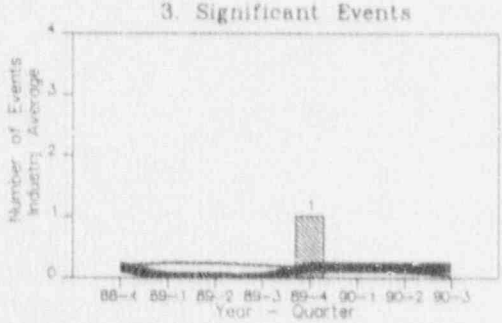
1. Automatic Scrams While Critical



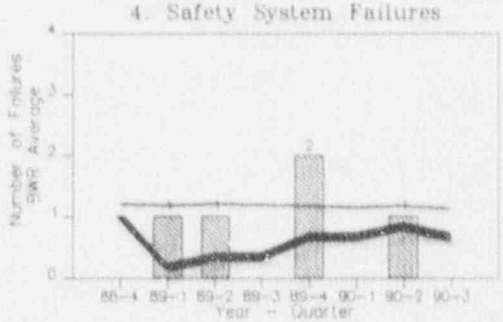
2. Safety System Actuations



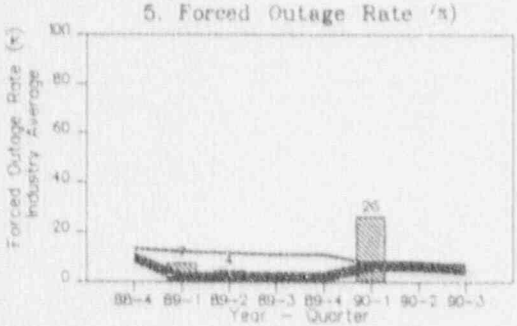
3. Significant Events



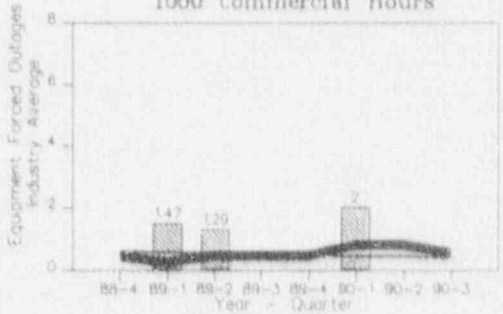
4. Safety System Failures



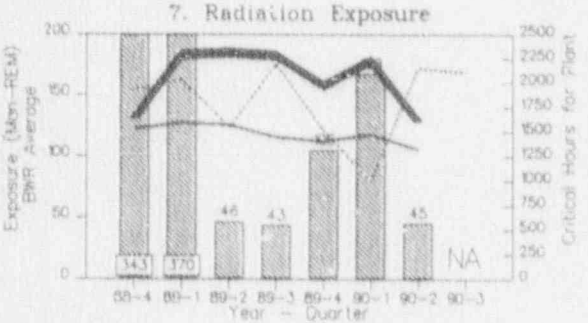
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

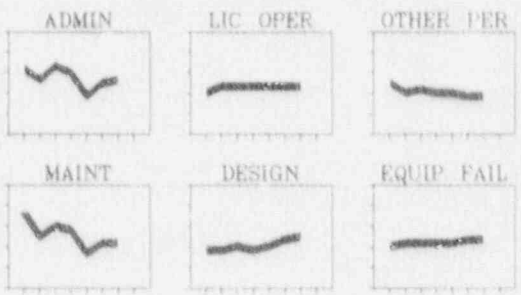


FIGURE 4.30

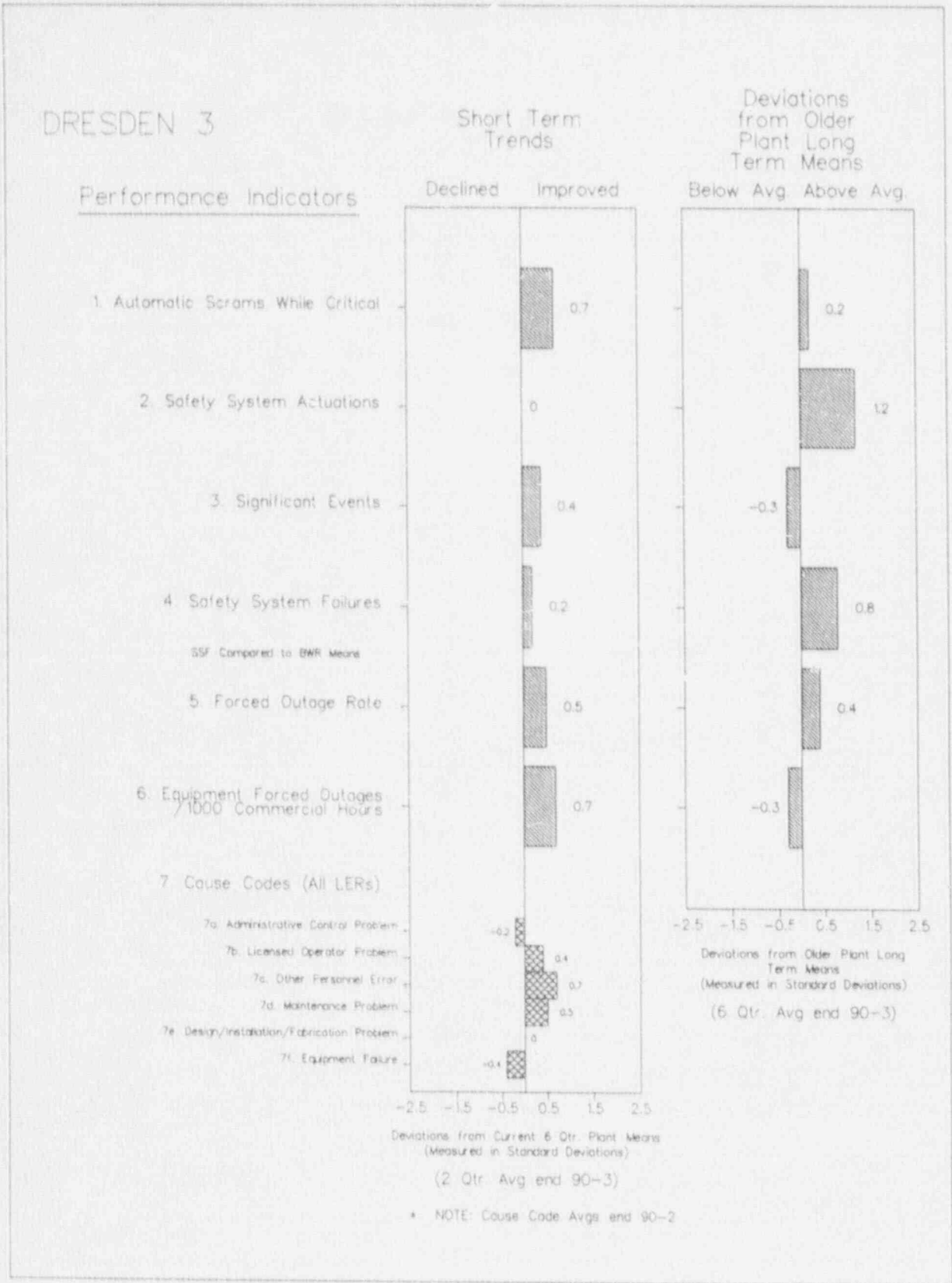

DRESDEN 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0.4
-0.3
4. Safety System Failures
0.2
0.8
SSF Compared to BWR Means
5. Forced Outage Rate
0.5
0.4
6. Equipment Forced Outages /1000 Commercial Hours
0.7
-0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
-0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.31

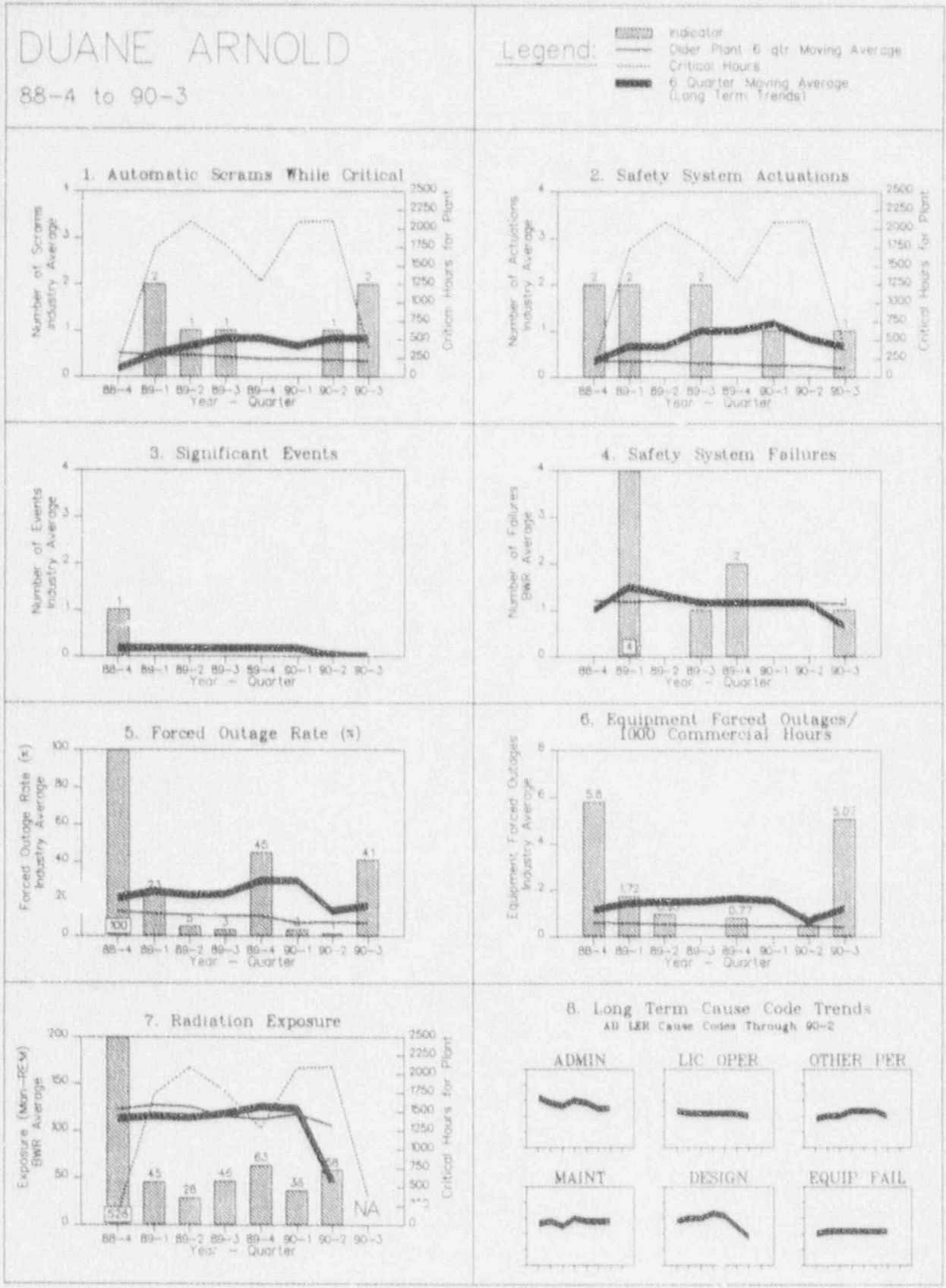

DUANE ARNOLD
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.31

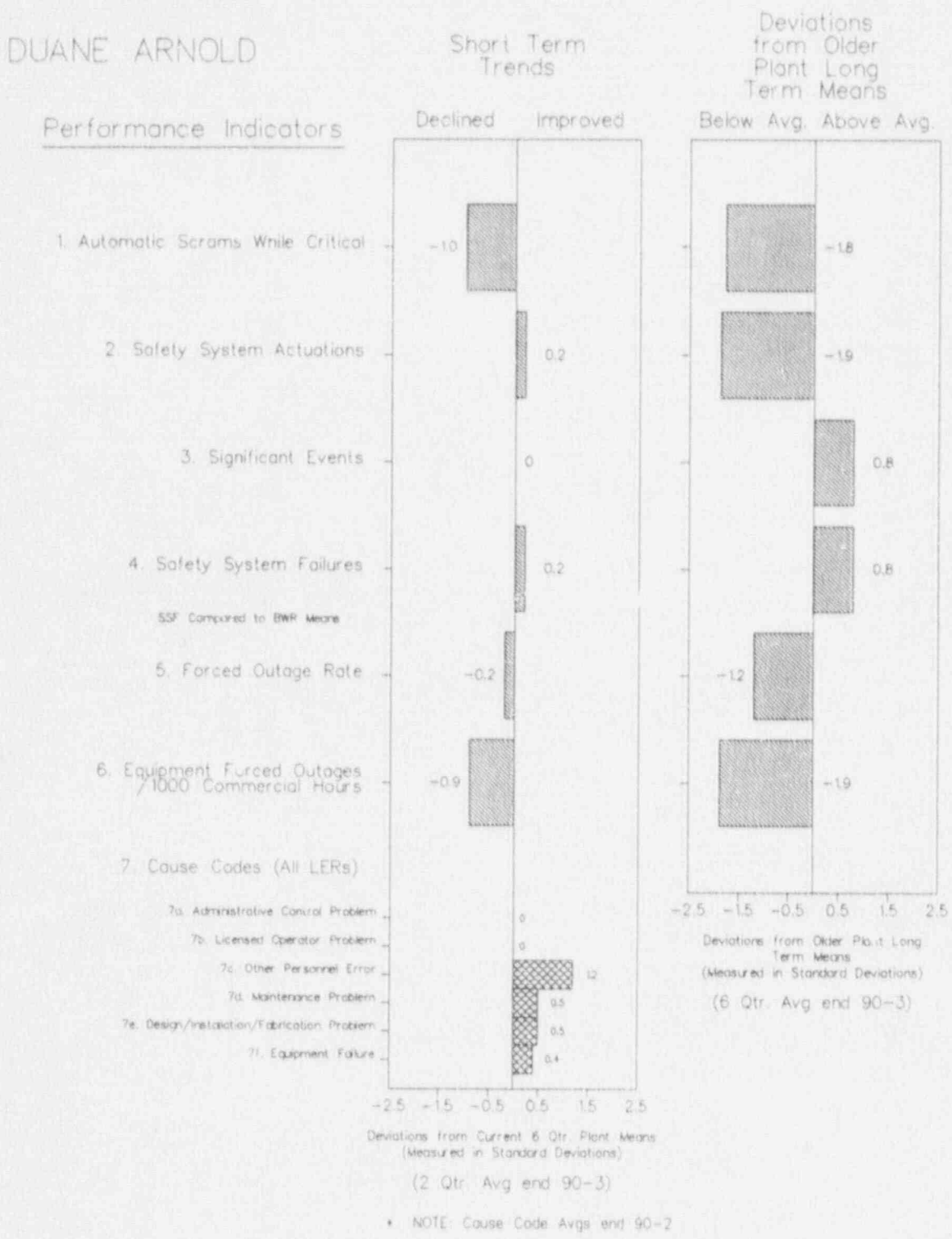
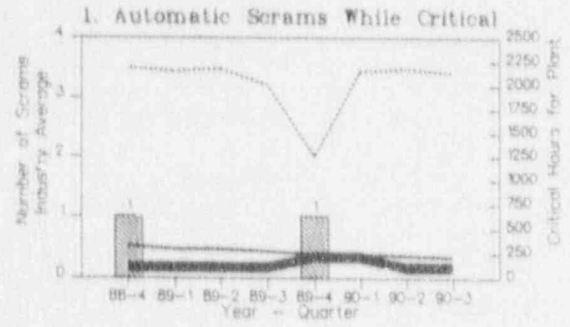

DUANE ARNOLD
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.0
-1.8
2. Safety System Actuations
0.2
-1.9
3. Significant Events
0
0.8
4. Safety System Failures
0.2
0.8
SSF Compared to BWR Means
5. Forced Outage Rate
-0.2
-1.2
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
-1.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0
7c. Other Personnel Error
1.2
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
0.5
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

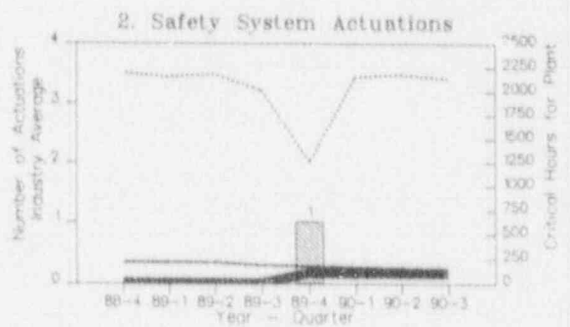
FIGURE 4.32

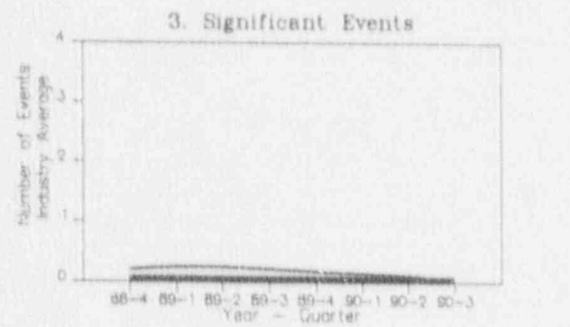
FARLEY 1

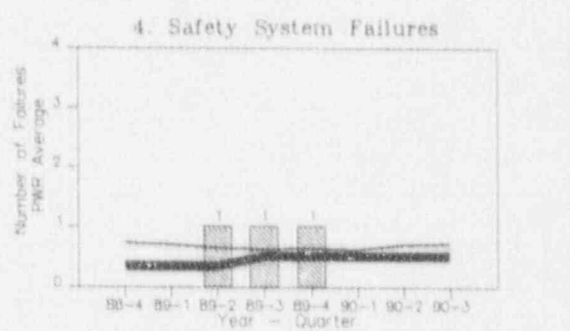
88-4 to 90-3

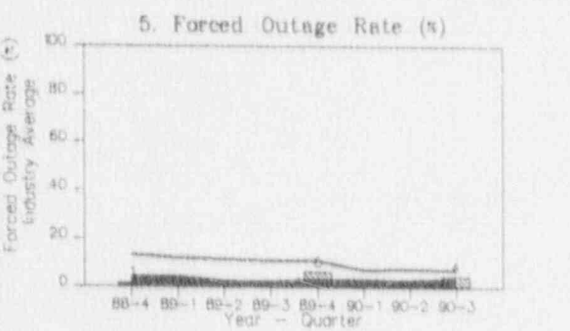
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

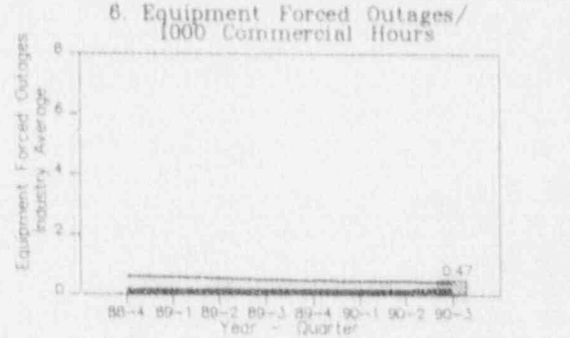


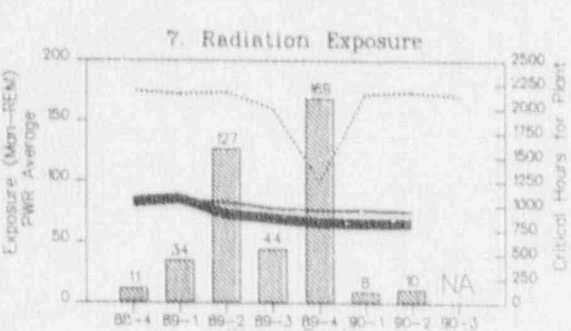












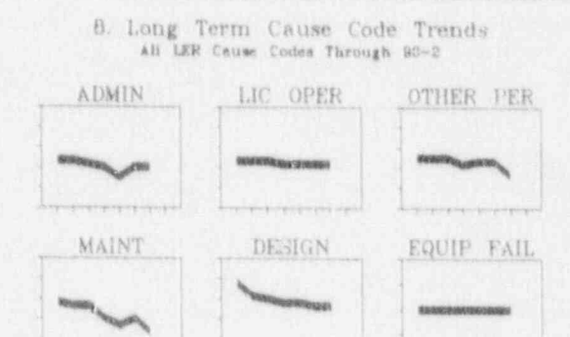


FIGURE 4.32

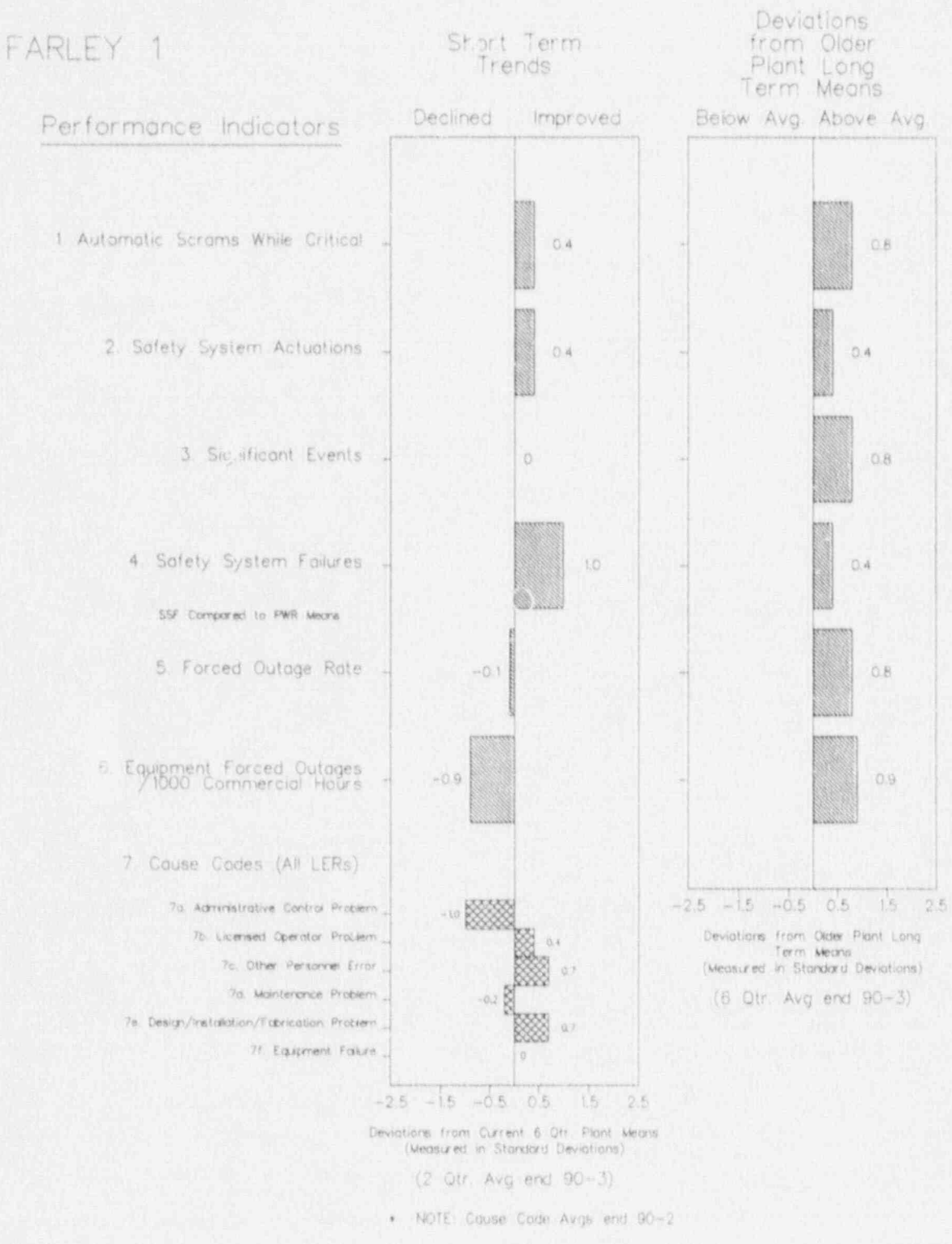

FARLEY 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
1.0
0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.1
0.8
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.0
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.7
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.33

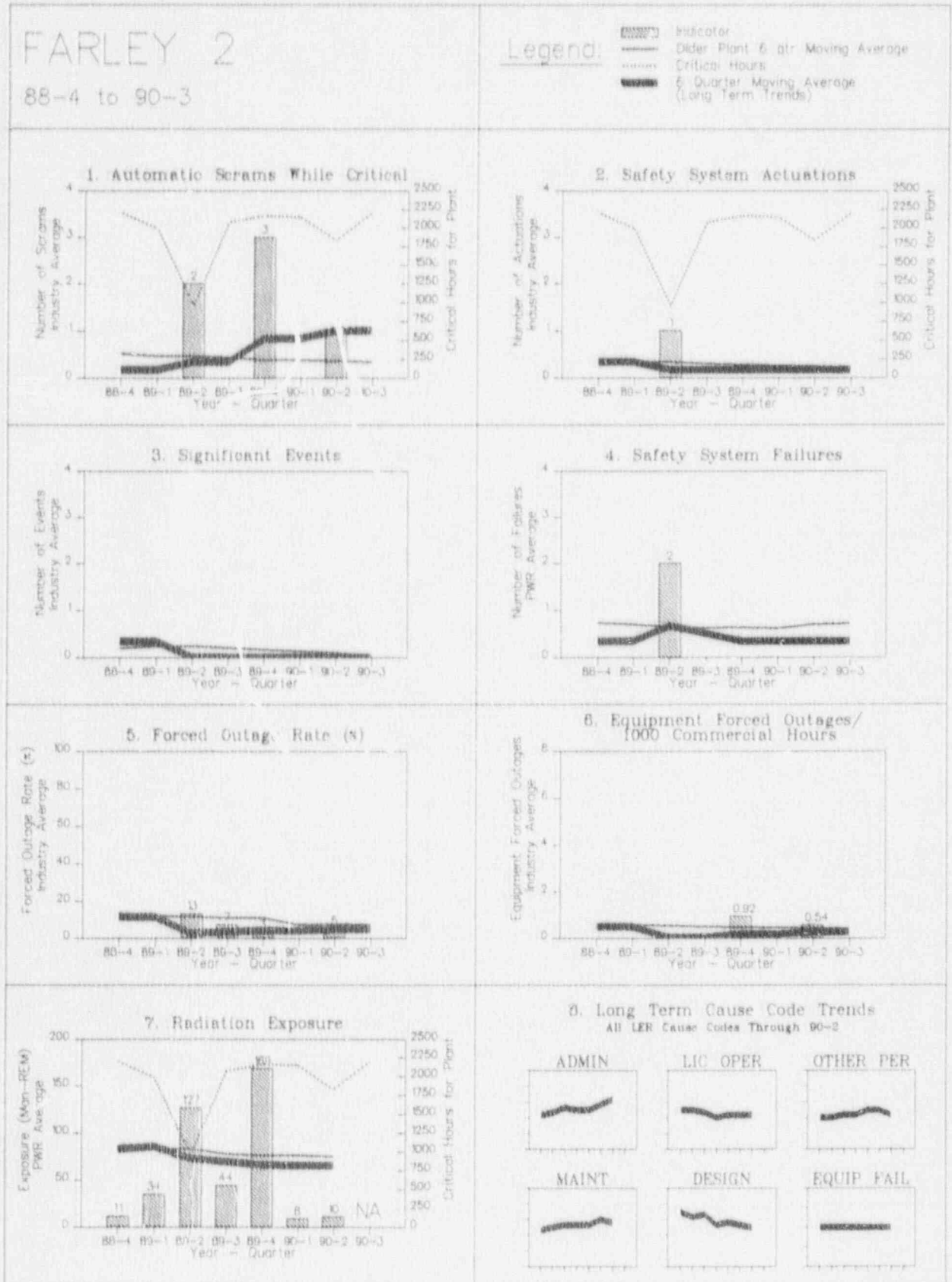

FARLEY 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
0.92
0.54
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.33

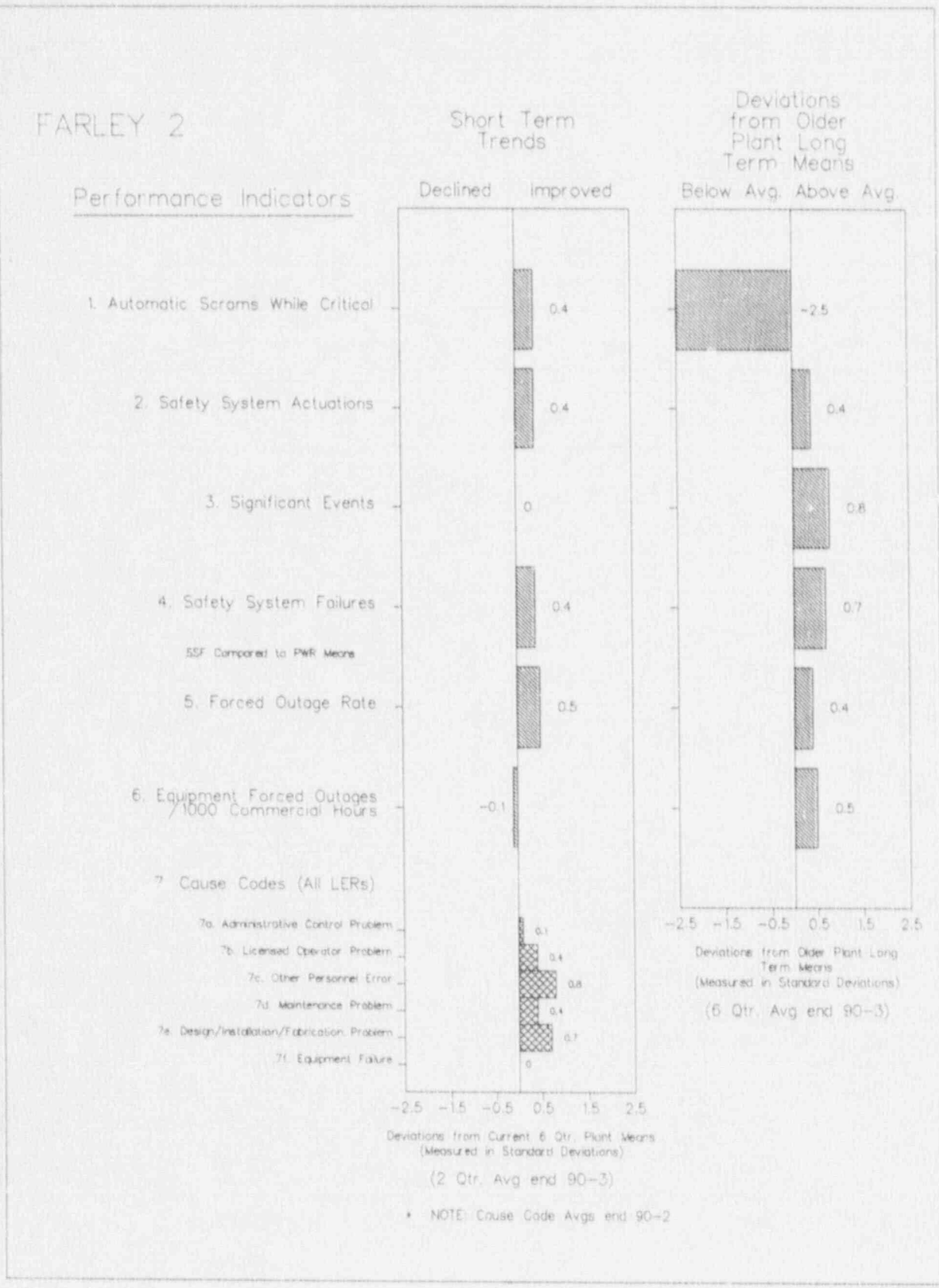

FARLEY 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
-2.5
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
0.4
6. Equipment Forced Outages /1000 Commercial Hours
-0.1
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.1
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.8
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.34

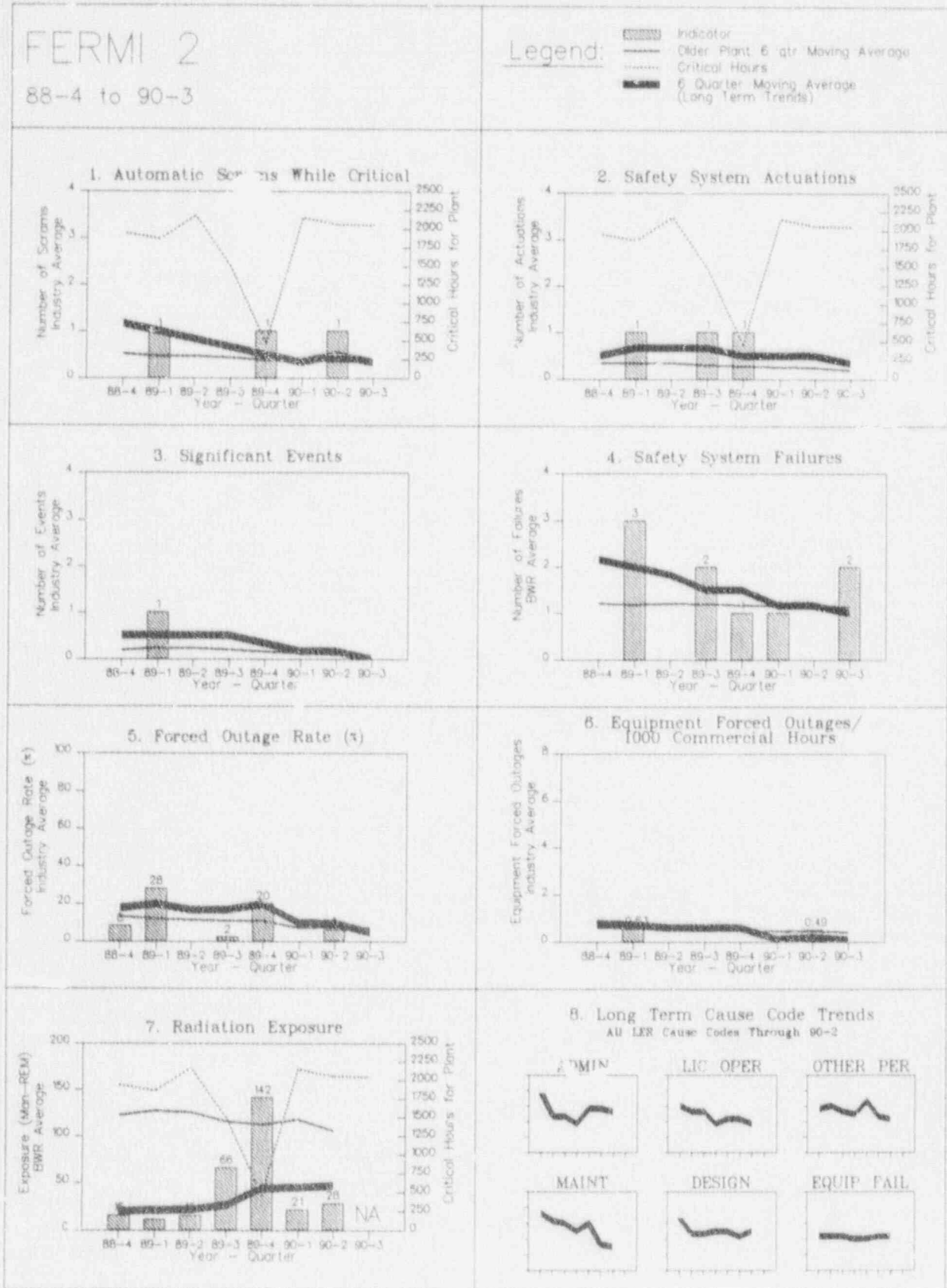

FERMI 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.34

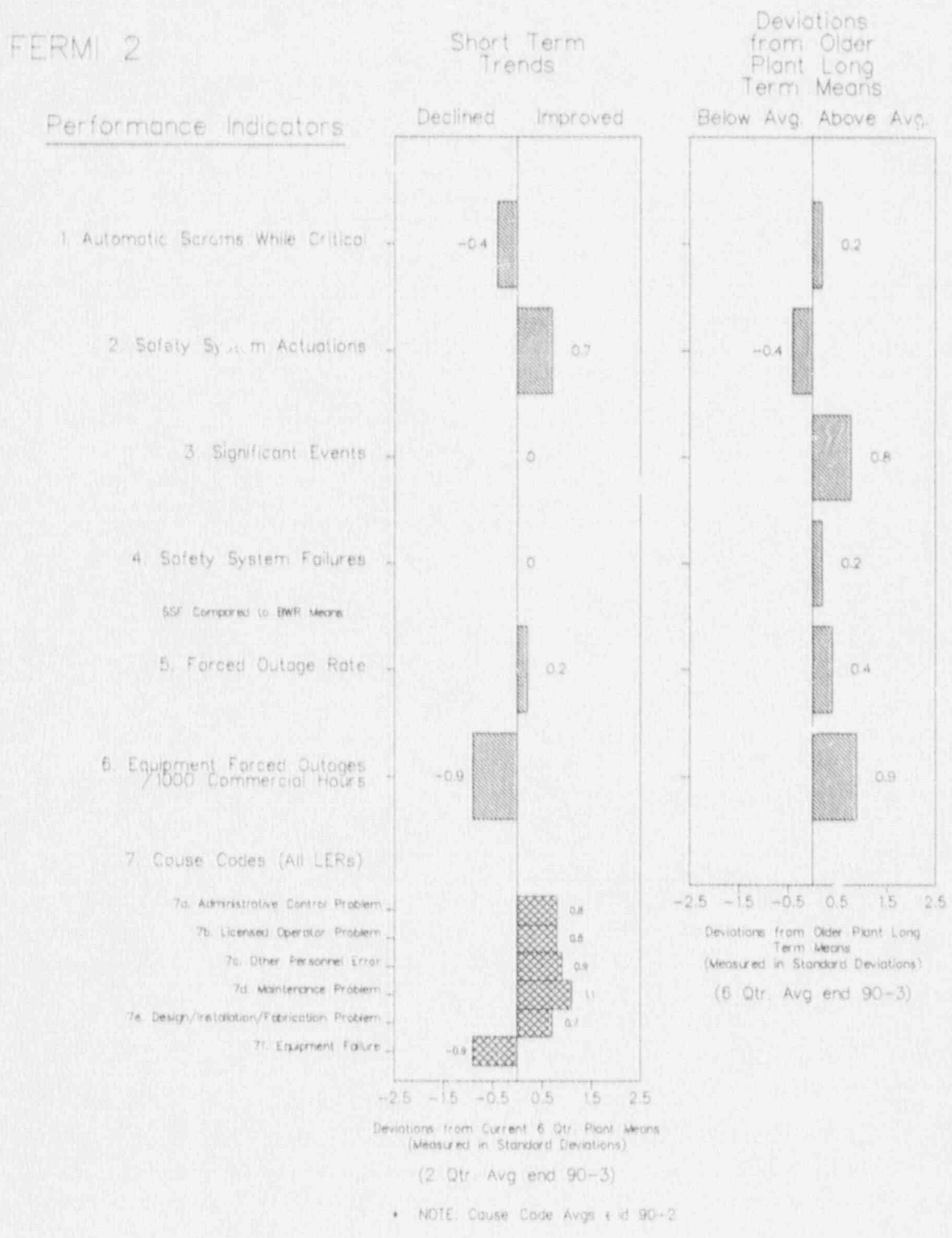

FERMI 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
0.7
0
0
0.2
-0.9
0.8
0.8
0.9
1.1
0.7
-0.9
0.2
-0.4
0.8
0.2
0.4
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

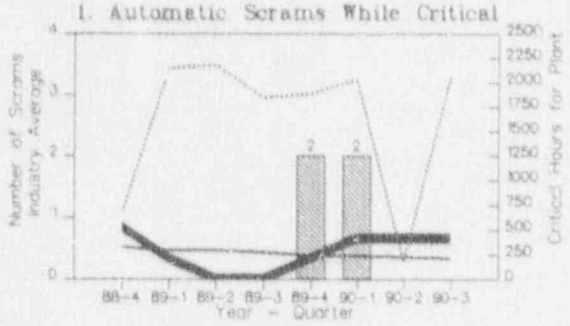
FIGURE 4.35

FITZPATRICK

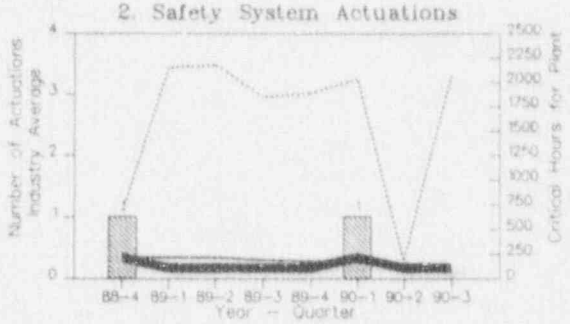
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

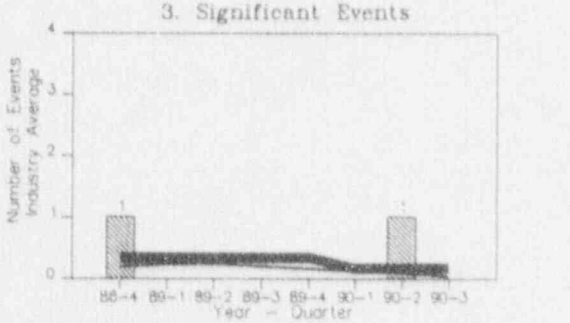
1. Automatic Scrams While Critical



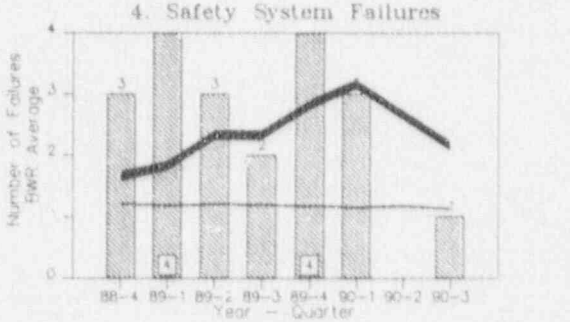
2. Safety System Actuations



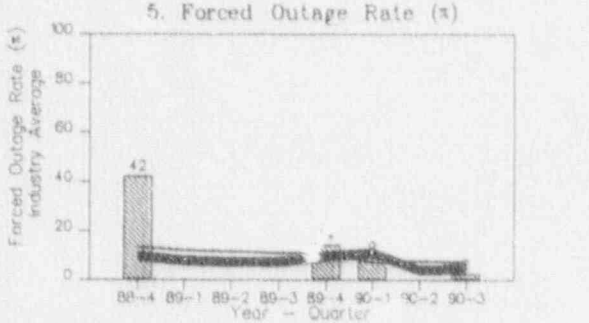
3. Significant Events



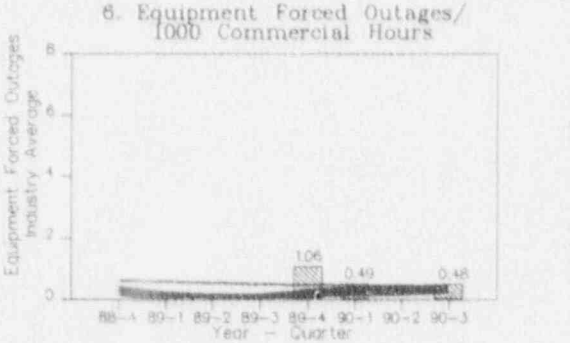
4. Safety System Failures



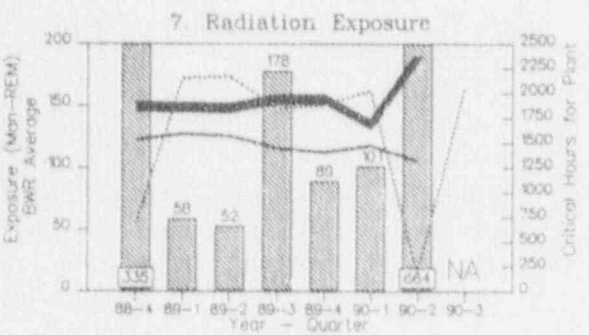
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

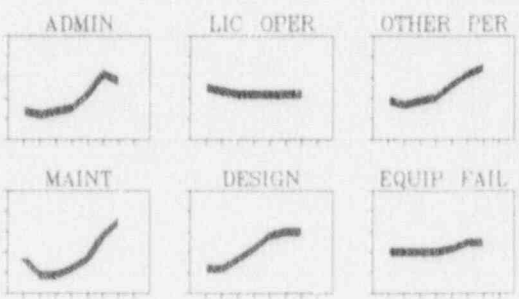


FIGURE 4.35

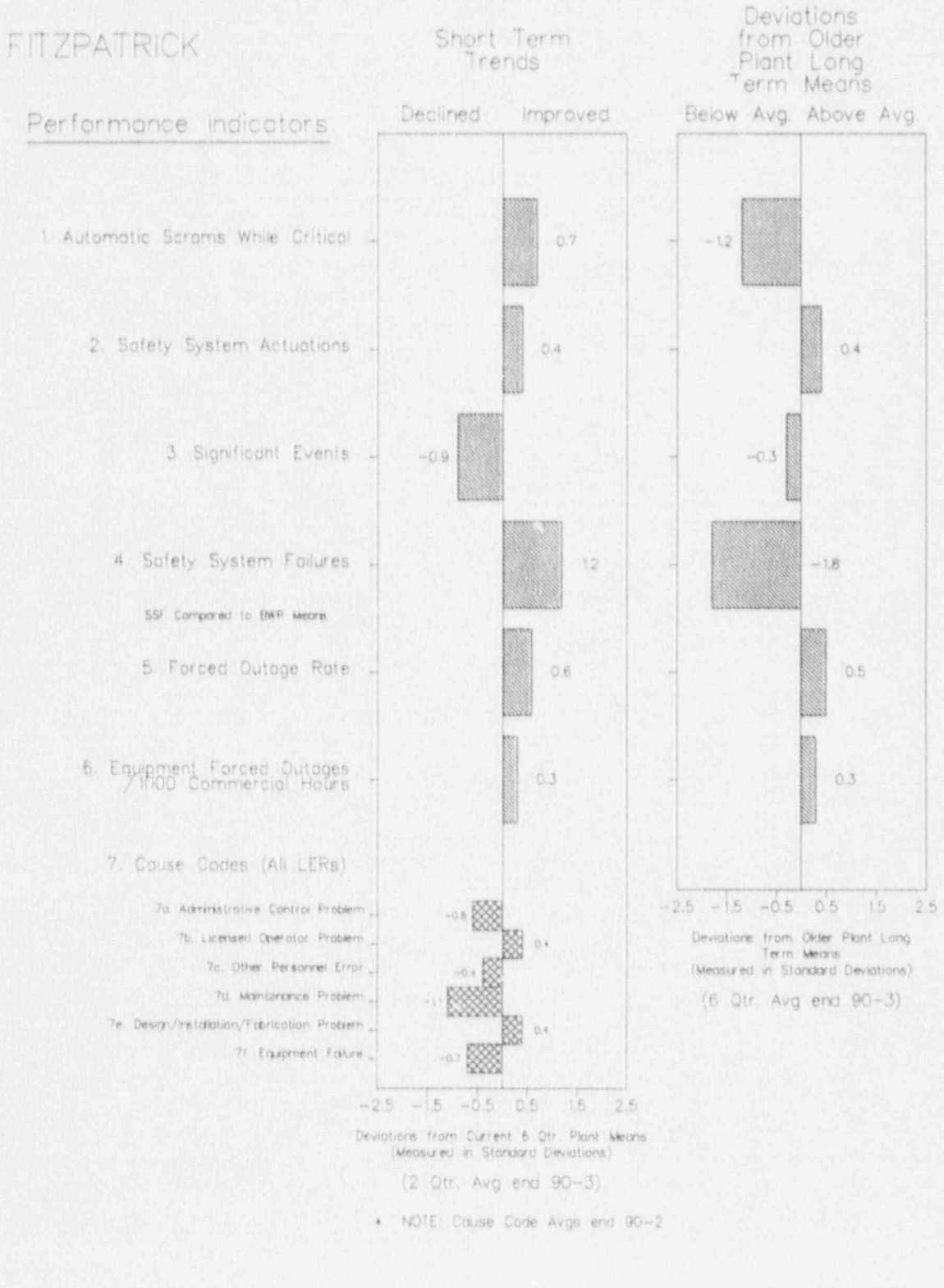
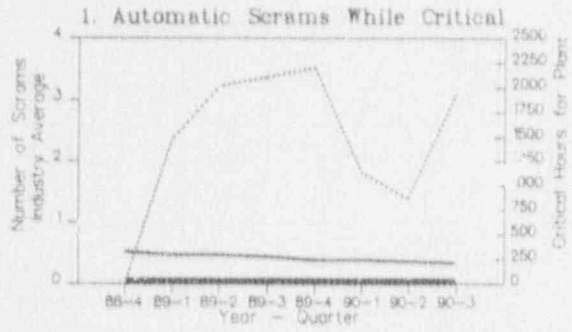

FITZPATRICK
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-1.2
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.9
-0.3
4. Safety System Failures
1.2
-1.8
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
0.5
6. Equipment Forced Outages /1000 Commercial Hours
0.3
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
-0.4
7d. Maintenance Problem
-1.1
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
-0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)

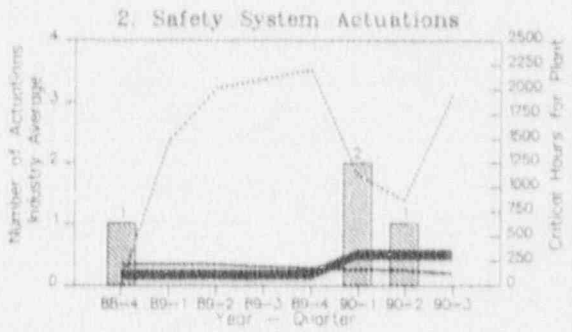
FIGURE 4.36

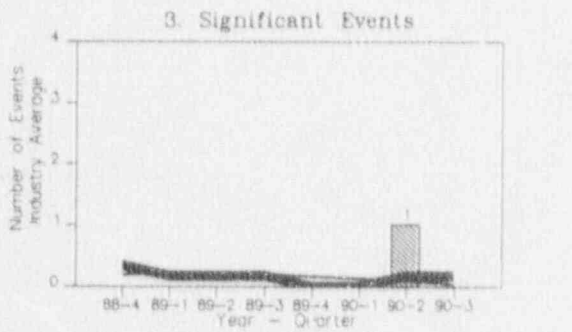
FORT CALHOUN

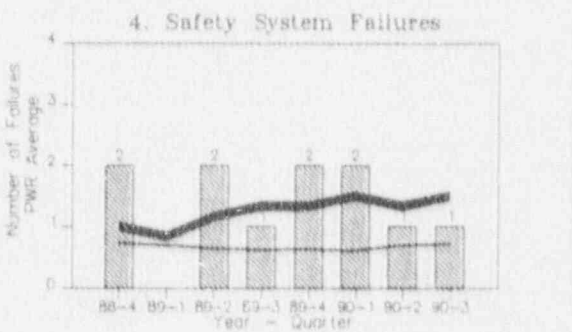
88-4 to 90-3

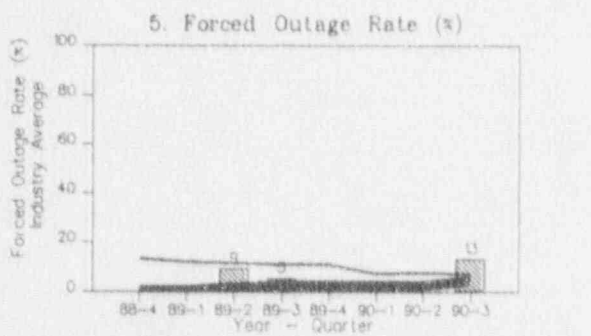
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

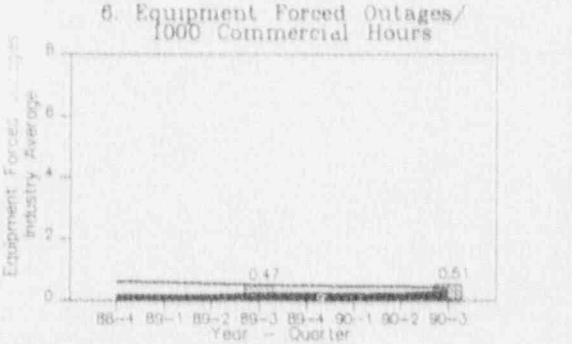


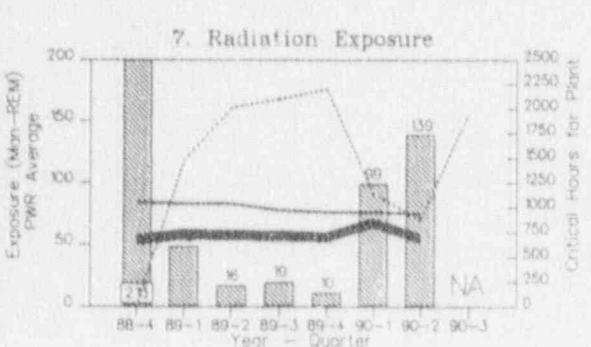












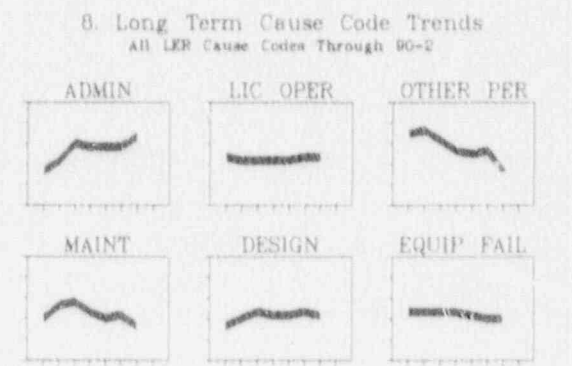
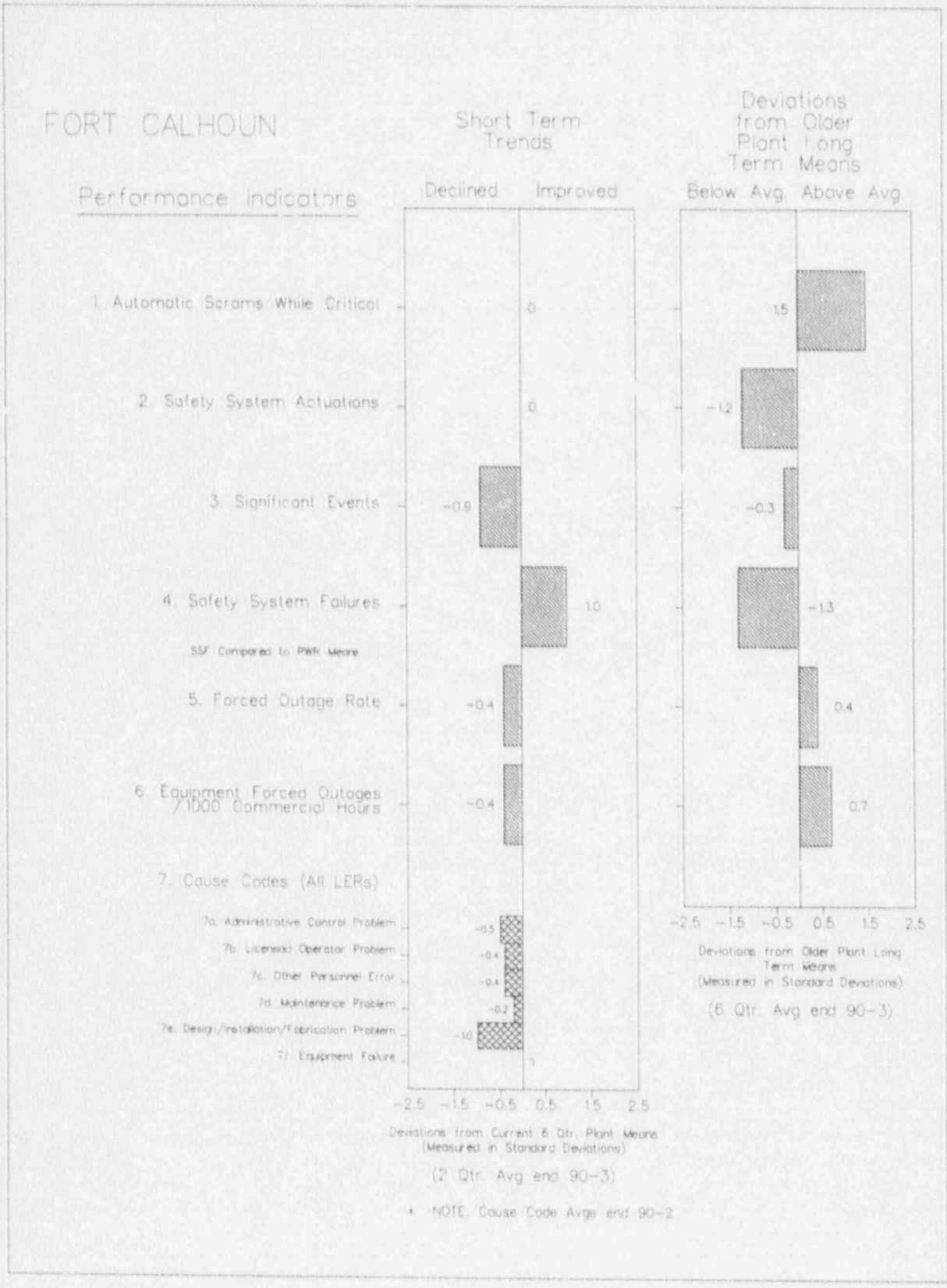


FIGURE 4.36



* NOTE: Cause Code Avgs. end 90-2

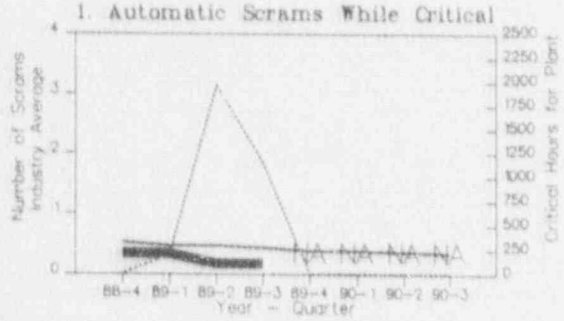
FIGURE 4.37

FORT ST. VRAIN

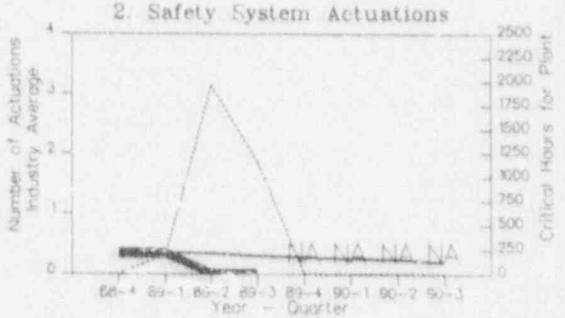
88-4 to 90-3

Legend:
- Indicator
- Other Plants' 4 qtr Moving Average
- Critical Hours
- 8 Quarter Moving Average (Long Term Trends)

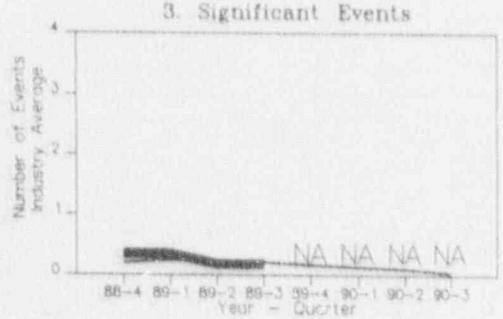
1. Automatic Scrams While Critical



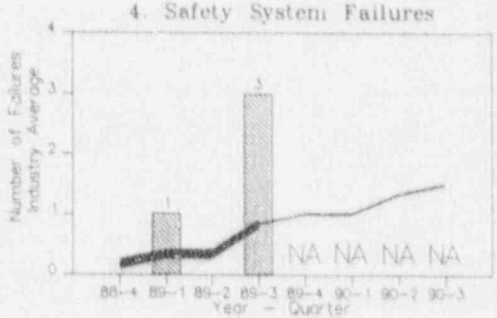
2. Safety System Actuations



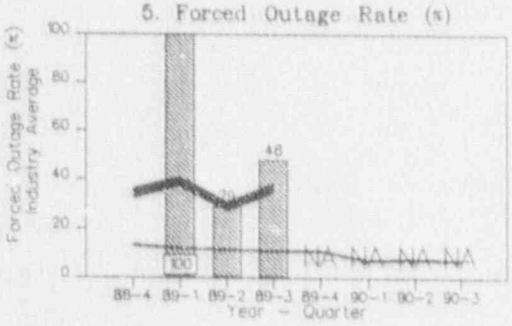
3. Significant Events



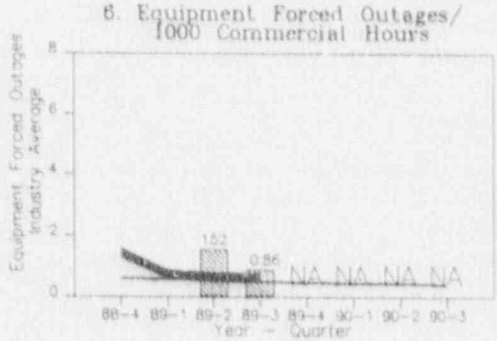
4. Safety System Failures



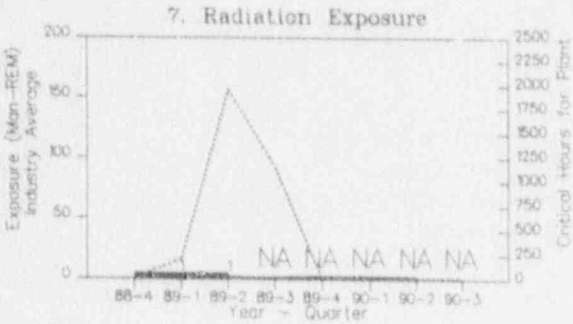
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



Because cause code data is not collected for Fort St. Vrain, the cause code trend windows have been deleted.

FIGURE 4.37

FORT ST. VRAIN

Fort St. Vrain ceased all operations in August 1989. Therefore performance indicator data for Fort St. Vrain is included only through September 1989.

FIGURE 4.3B

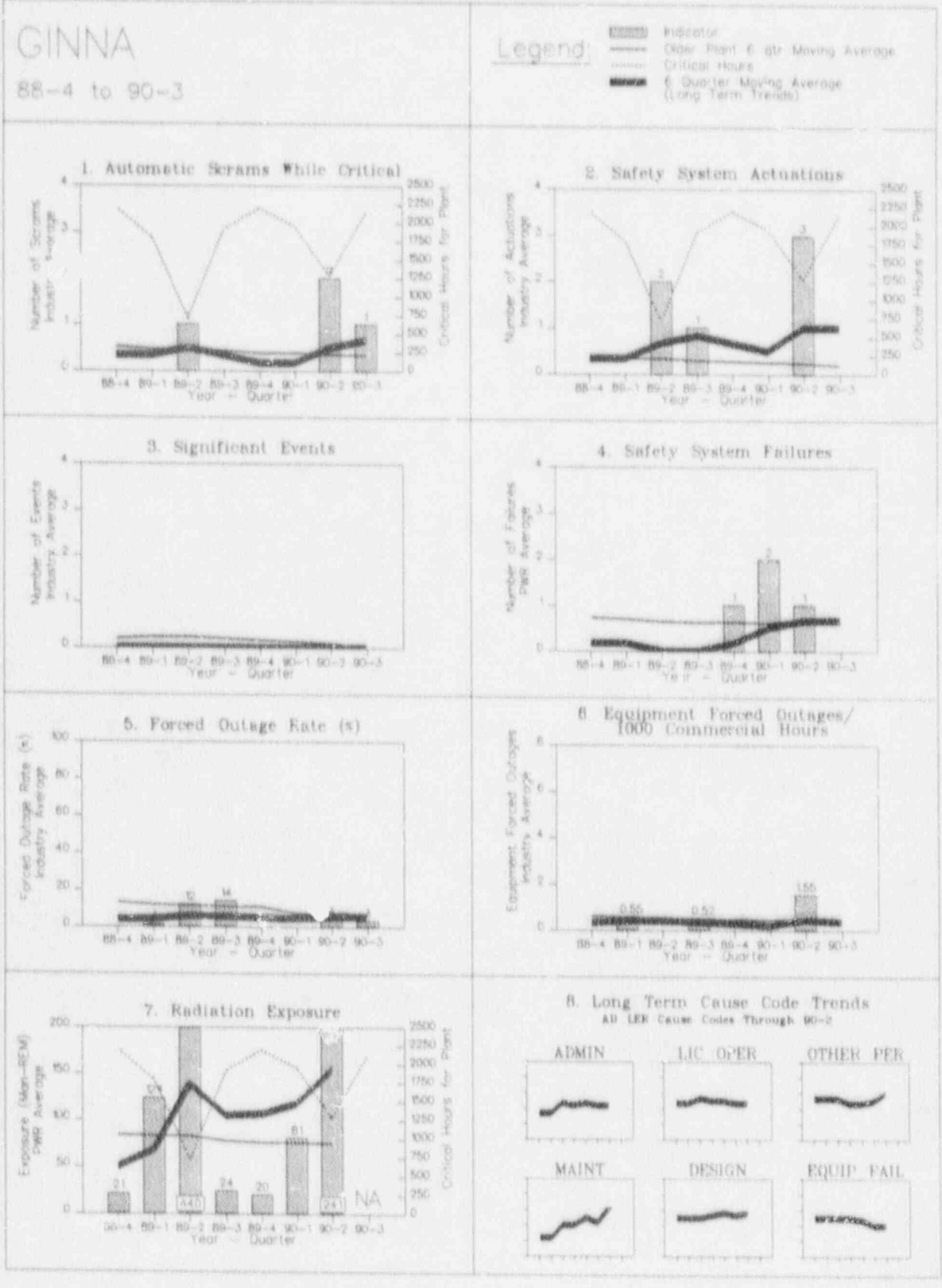

GINNA
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours For Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours For Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours For Plant
Year - Quarter
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.3B

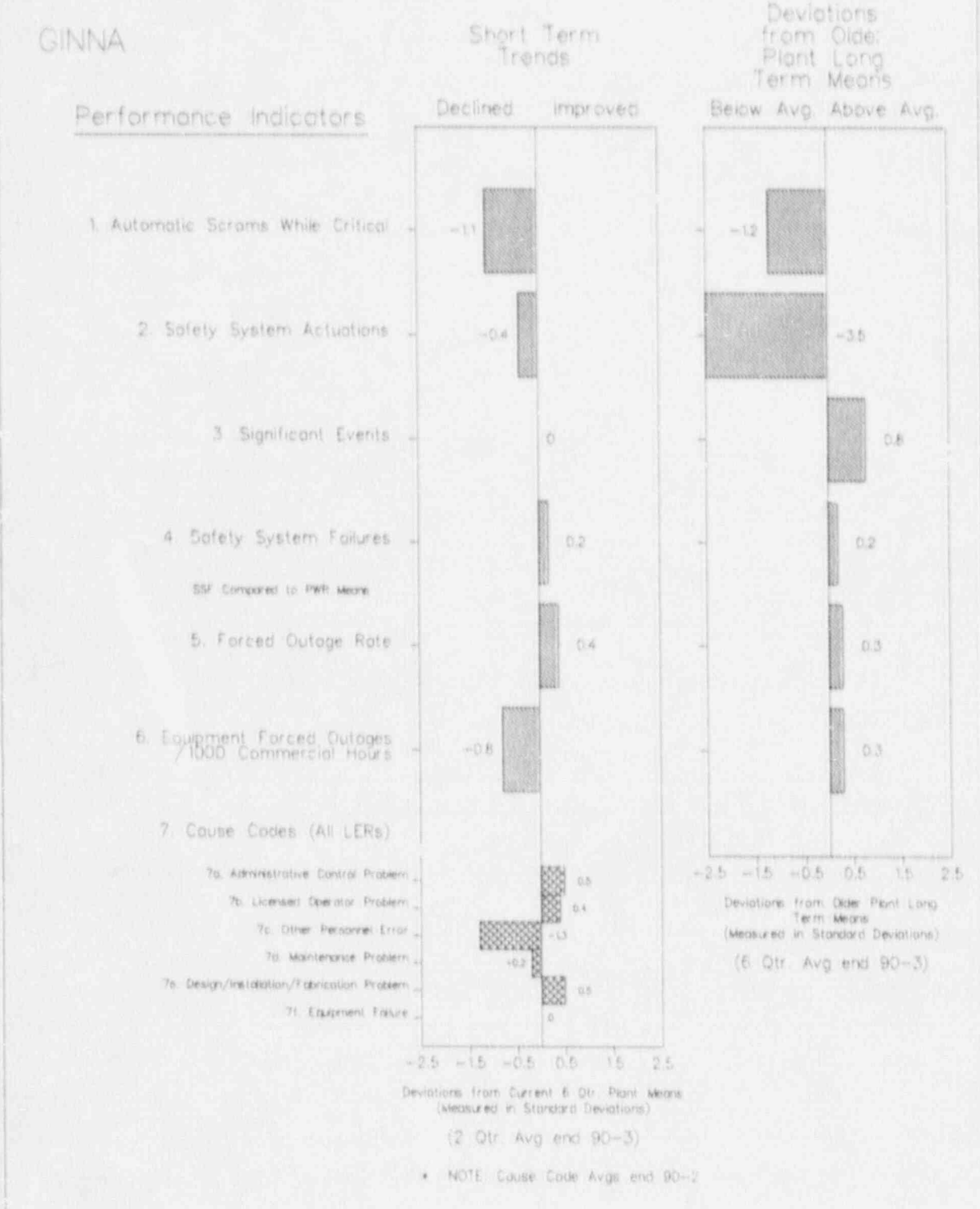

GINNA
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Oldest Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-1.1
-0.4
0
0.2
0.4
-0.8
0.5
0.4
-0.3
+0.2
0.5
0
-1.2
-3.5
0.8
0.2
0.3
0.3
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Oldest Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

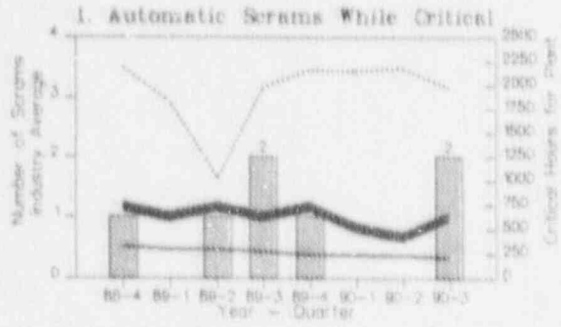
FIGURE 4.39

GRAND GULF

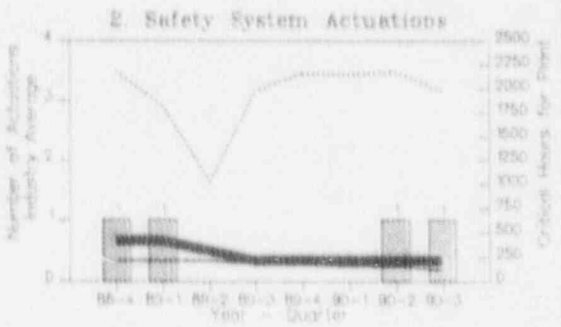
88-4 to 90-3

Legend:
- Histogram
- Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

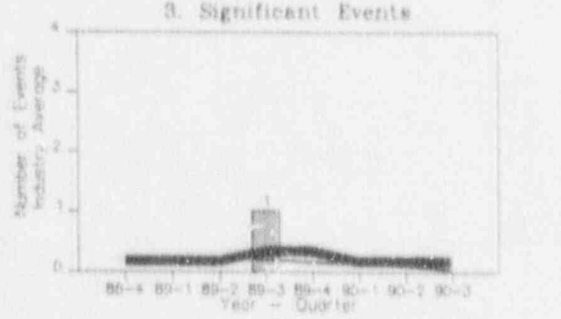
1. Automatic Scrams While Critical



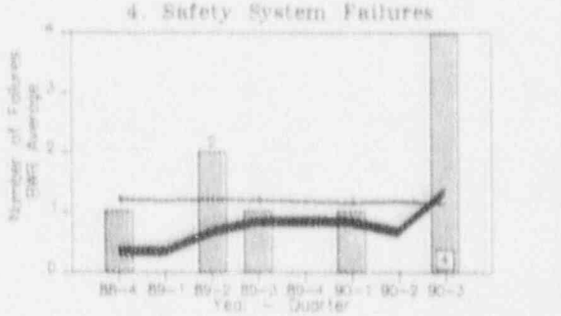
2. Safety System Actuations



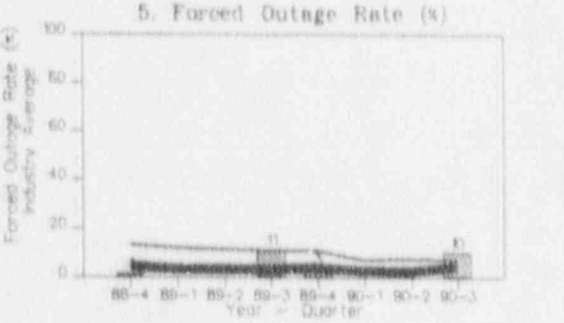
3. Significant Events



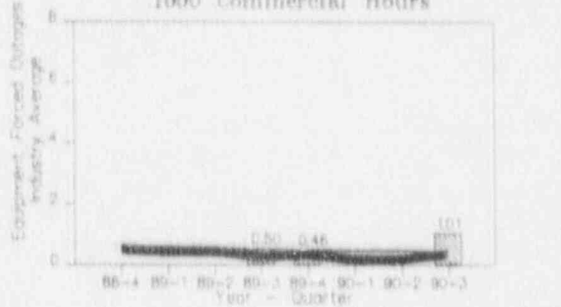
4. Safety System Failures



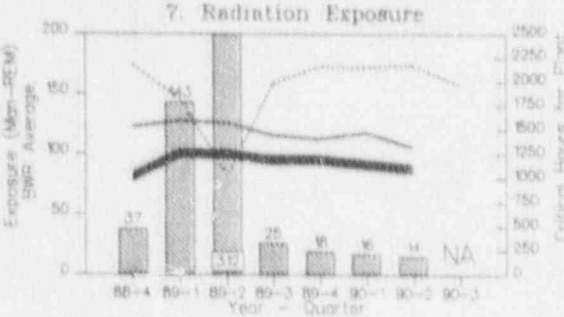
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

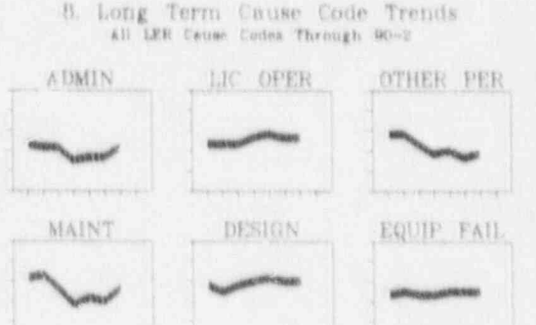


FIGURE 4.39

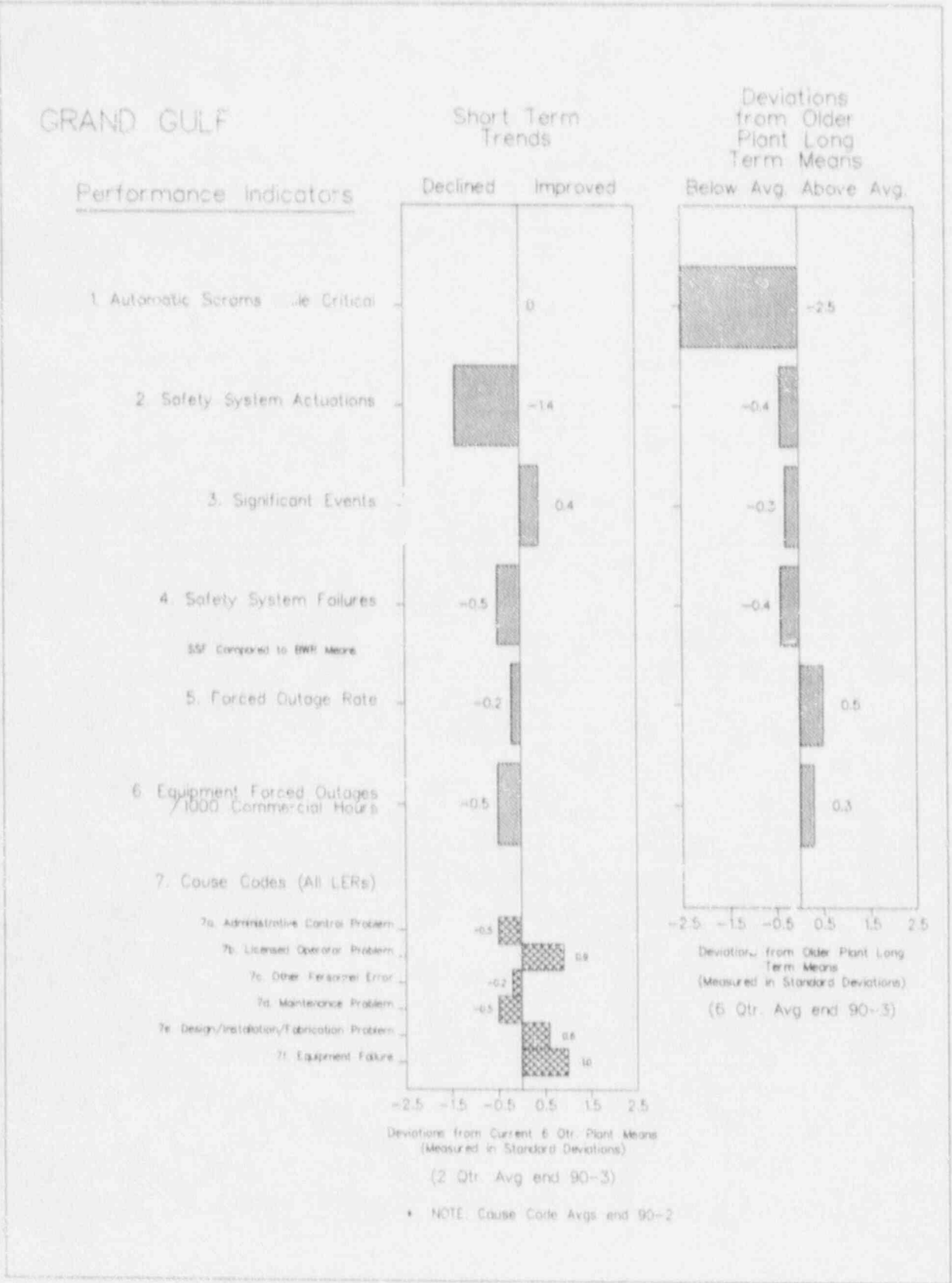

GRAND GULF
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams ...le Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Couse Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
-1.4
0.4
-0.5
-0.2
-0.5
-0.5
0.9
-0.2
-0.5
0.8
1.0
-2.5
-0.4
-0.3
-0.4
0.5
0.3
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.40

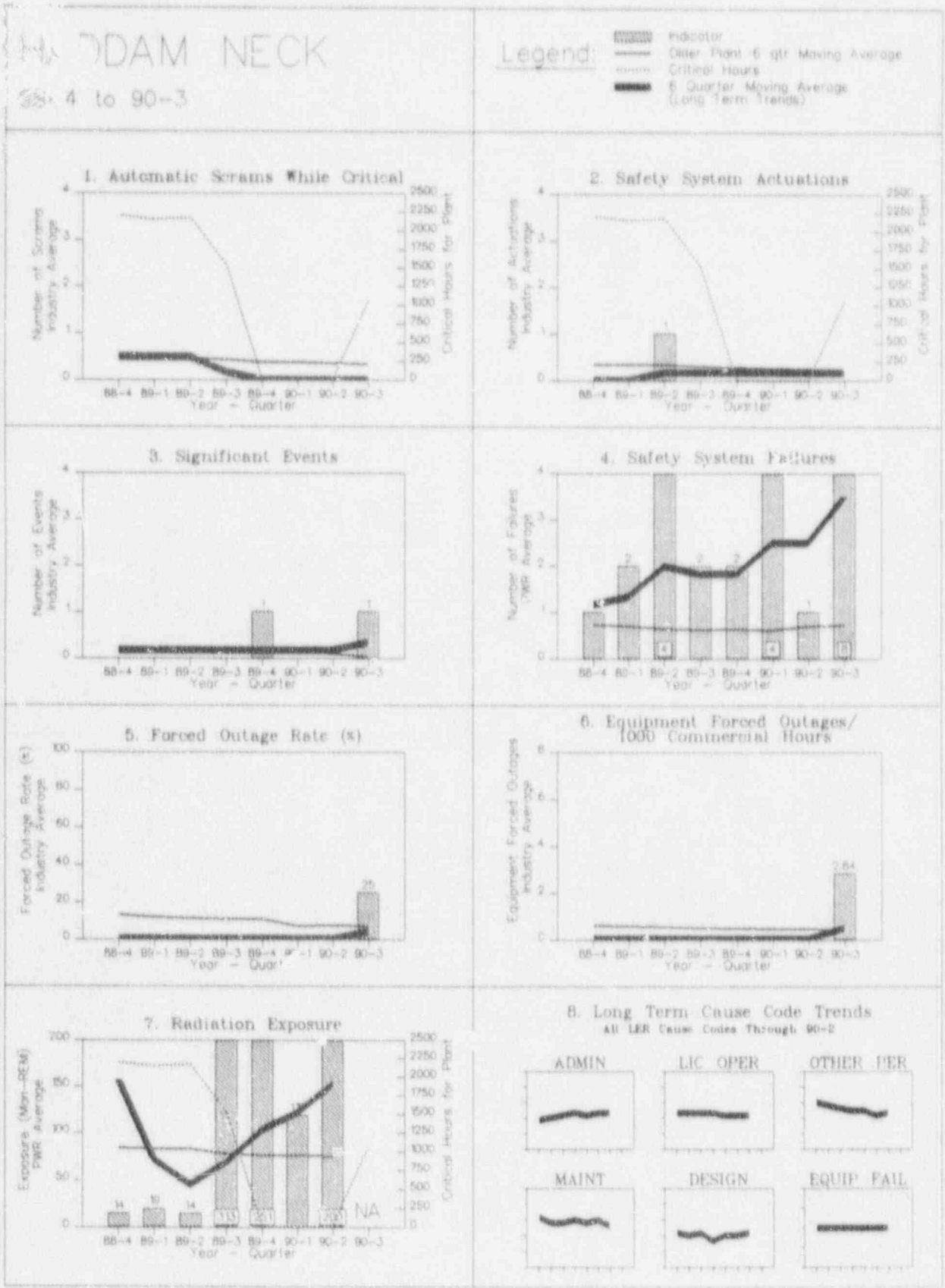

DAM NECK
4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.40

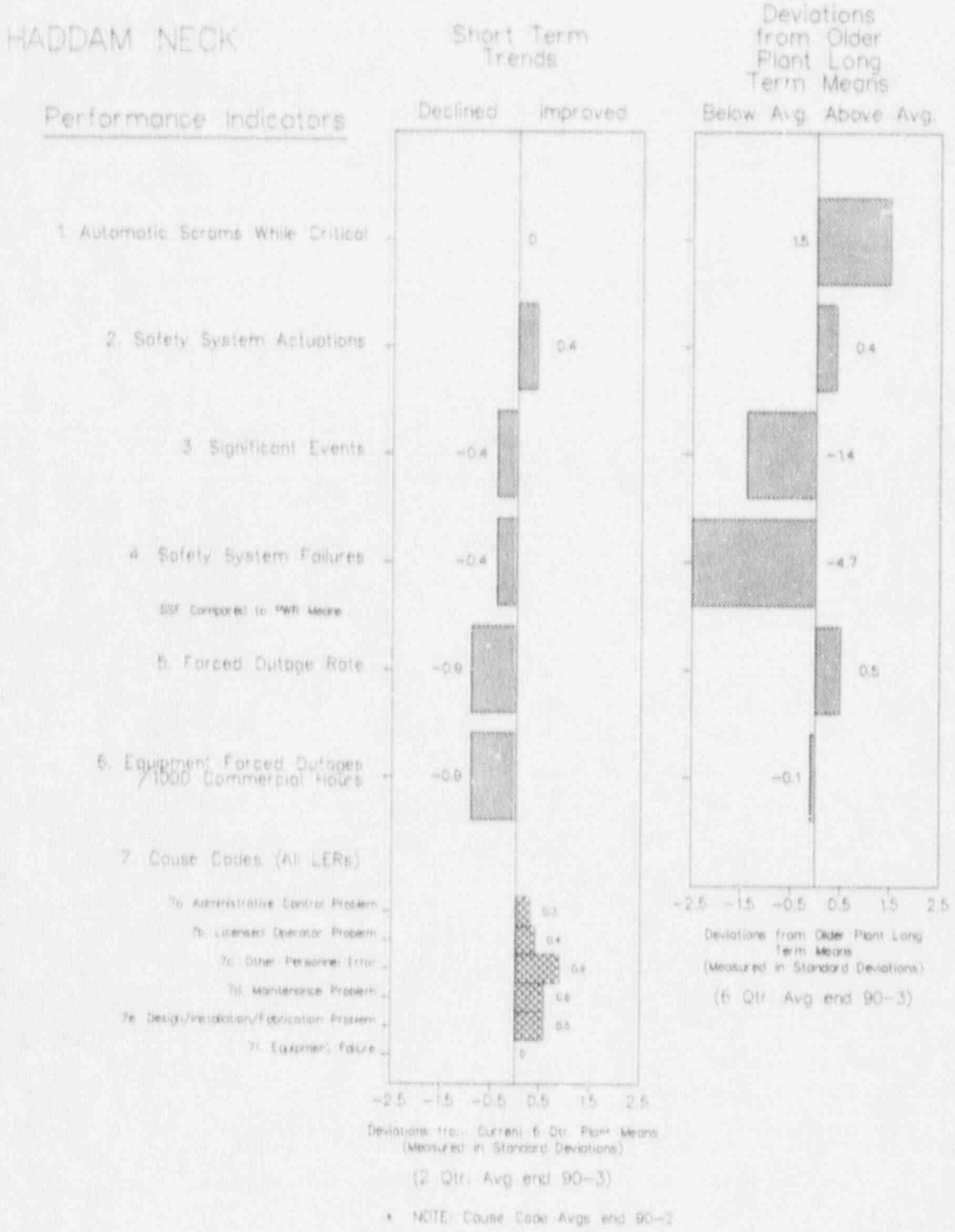

HADDAM NECK
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
0.4
-0.4
-0.4
-0.9
-0.9
0.3
0.4
0.9
0.8
0.5
0
1.5
0.4
-1.4
-4.7
0.5
-0.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.41

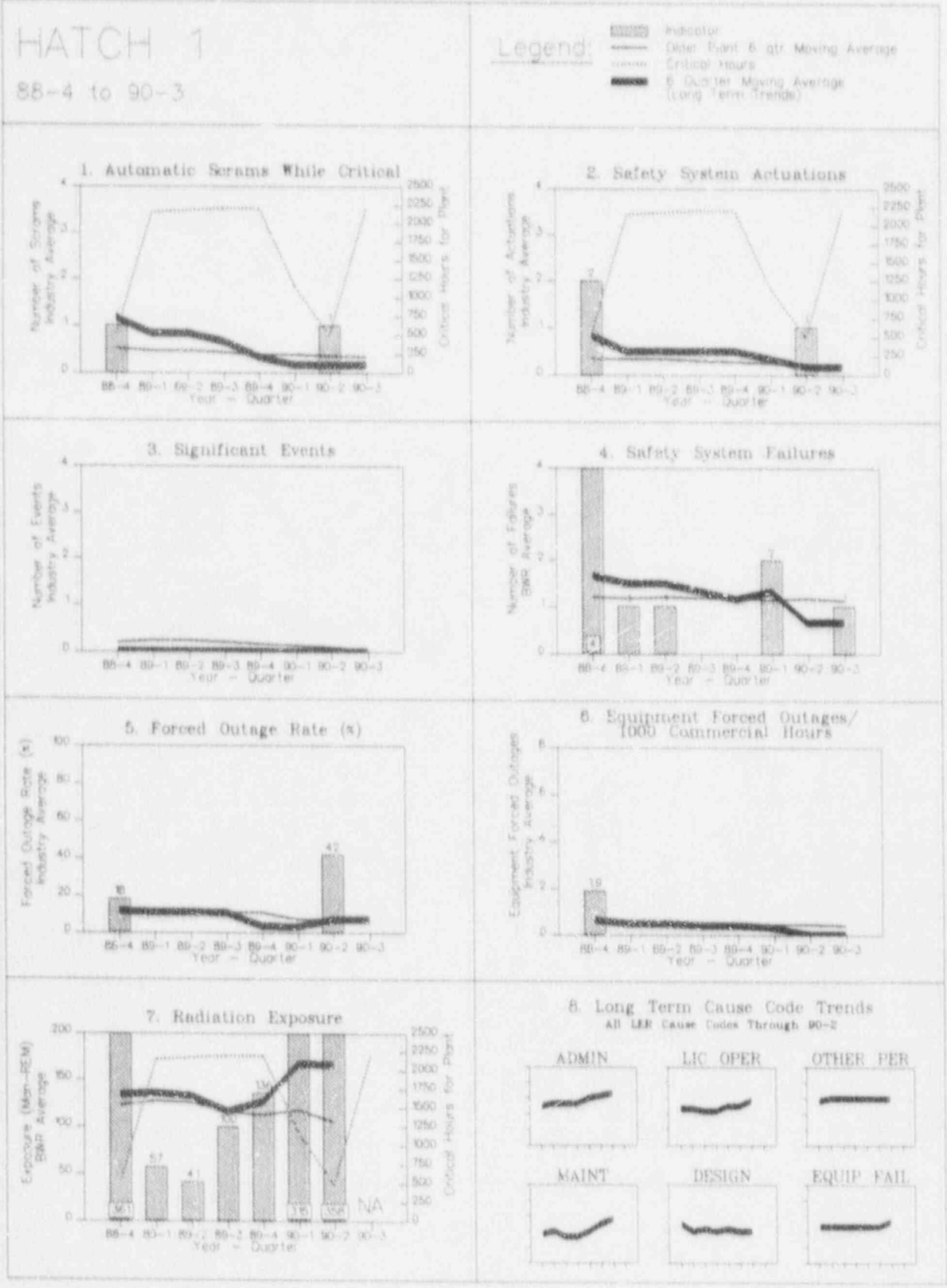

HATCH 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr. Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.41

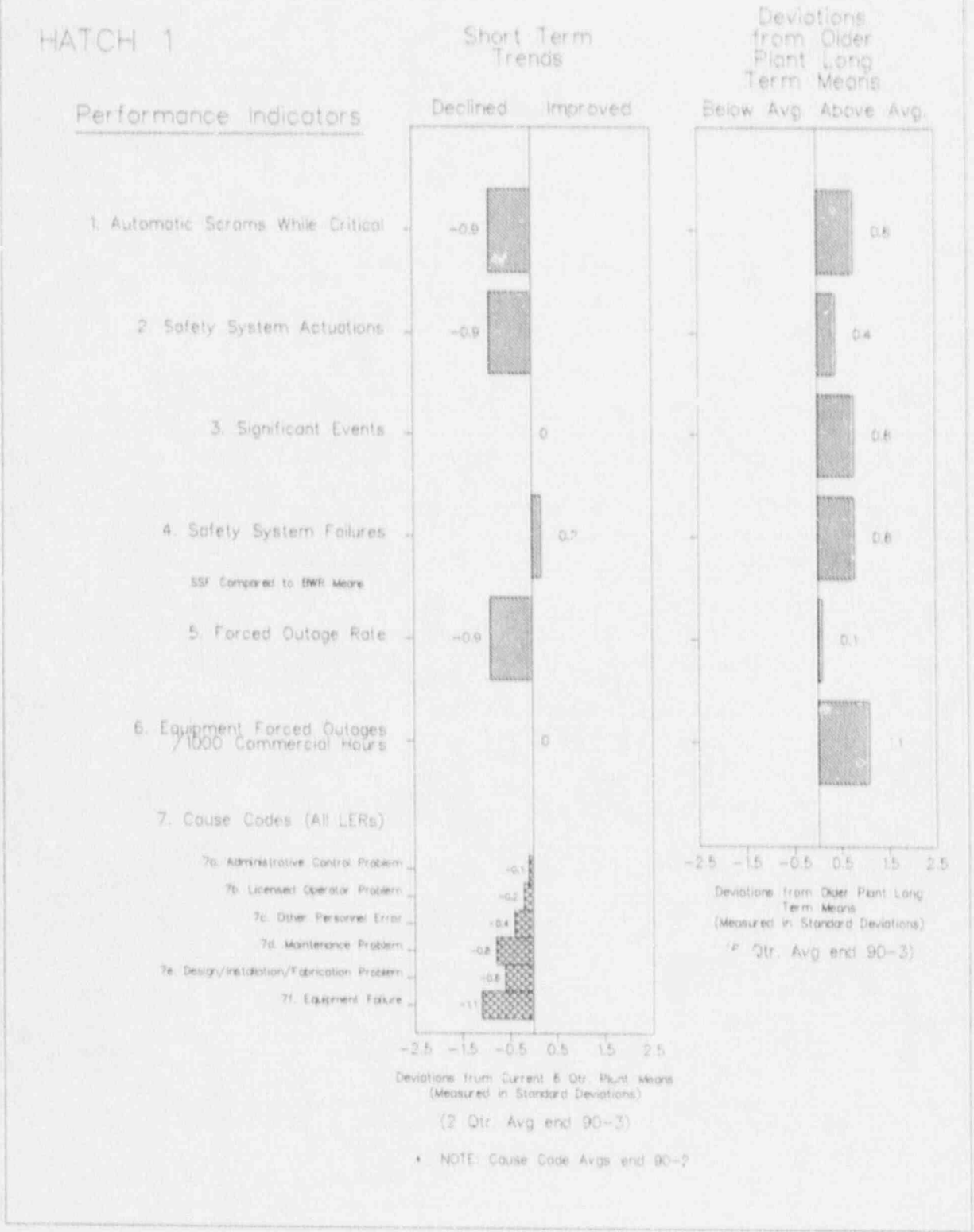

HATCH 1
Short Term Trends
Deviations from Older Plant Long Term Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.8
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0.7
0.8
SSF Compared to BWR Means
5. Forced Outage Rate
-0.9
0.1
6. Equipment Forced Outages /1000 Commercial Hours
0
1.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
-0.2
7c. Other Personnel Error
-0.4
7d. Maintenance Problem
-0.8
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
-1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.42

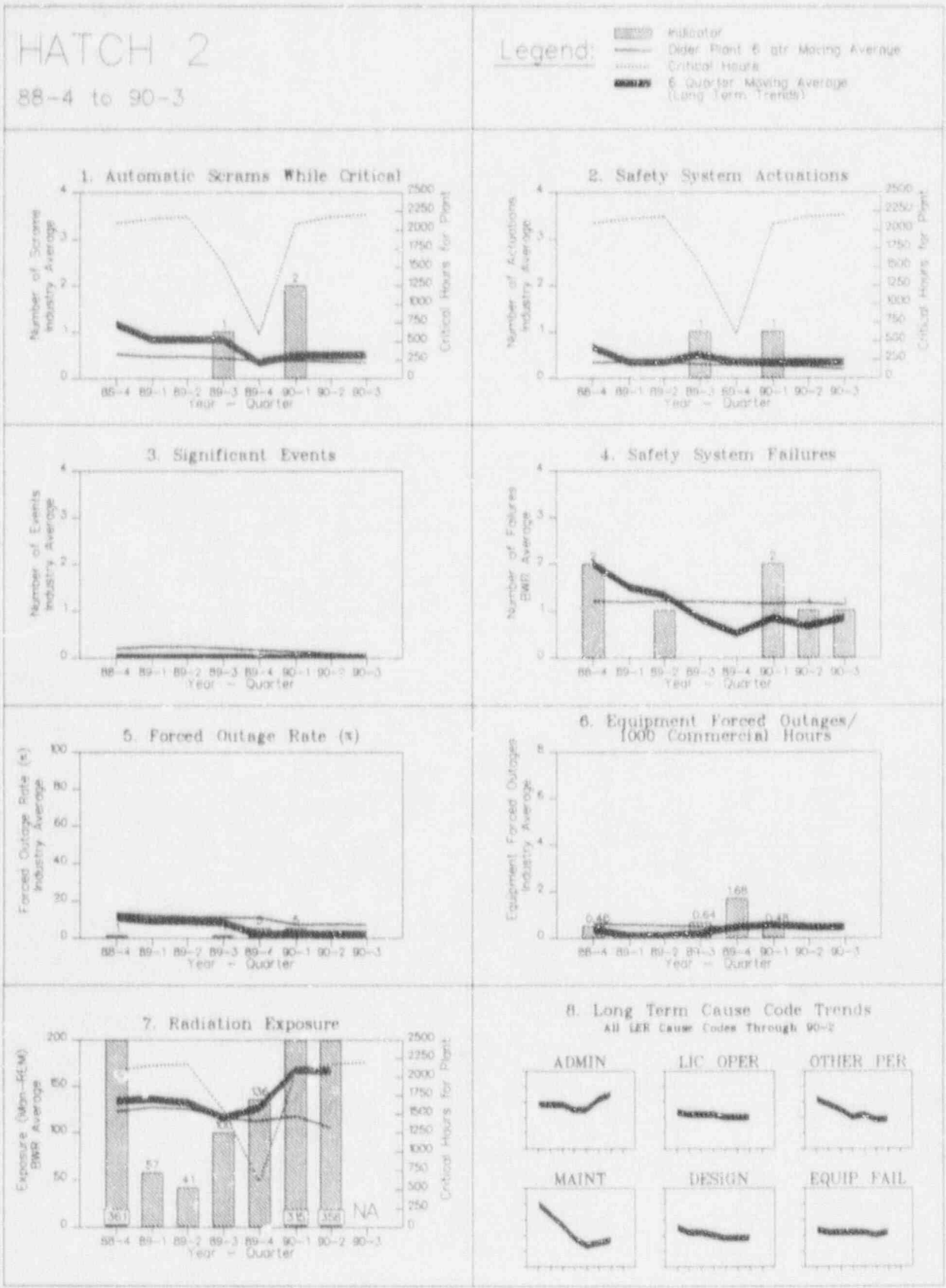

HATCH 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
0.46
0.64
1.68
0.48
Year - Quarter
7. Radiation Exposure
Exposure (Man-rem) BWR Average
Critical Hours for Plant
361
57
41
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.42

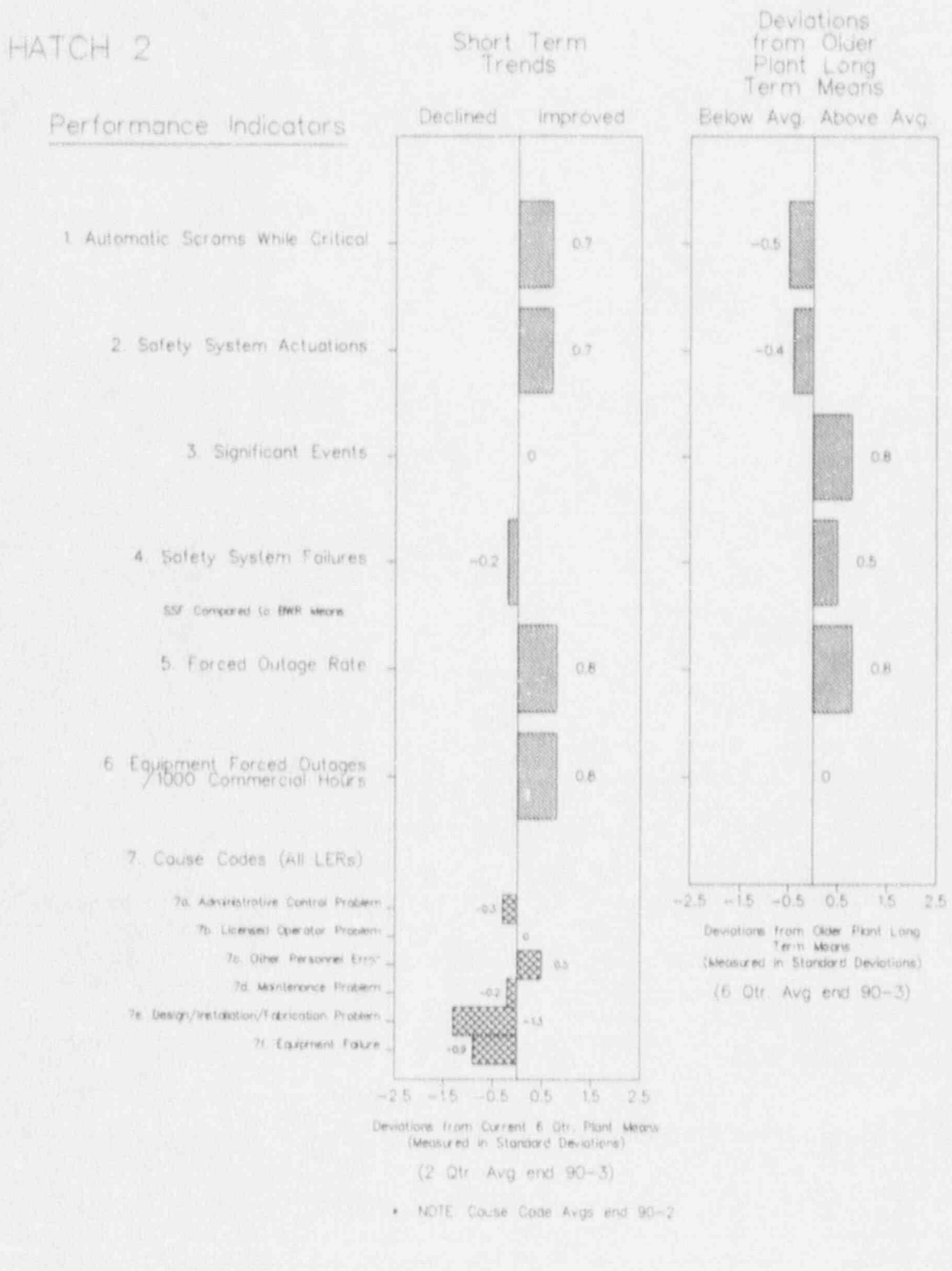

HATCH 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-0.5
2. Safety System Actuations
0.7
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.2
0.5
SSF Compared to BWR Means
5. Forced Outage Rate
0.8
0.8
6. Equipment Forced Outages /1000 Commercial Hours
0.8
0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error*
0.3
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
-1.3
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.43

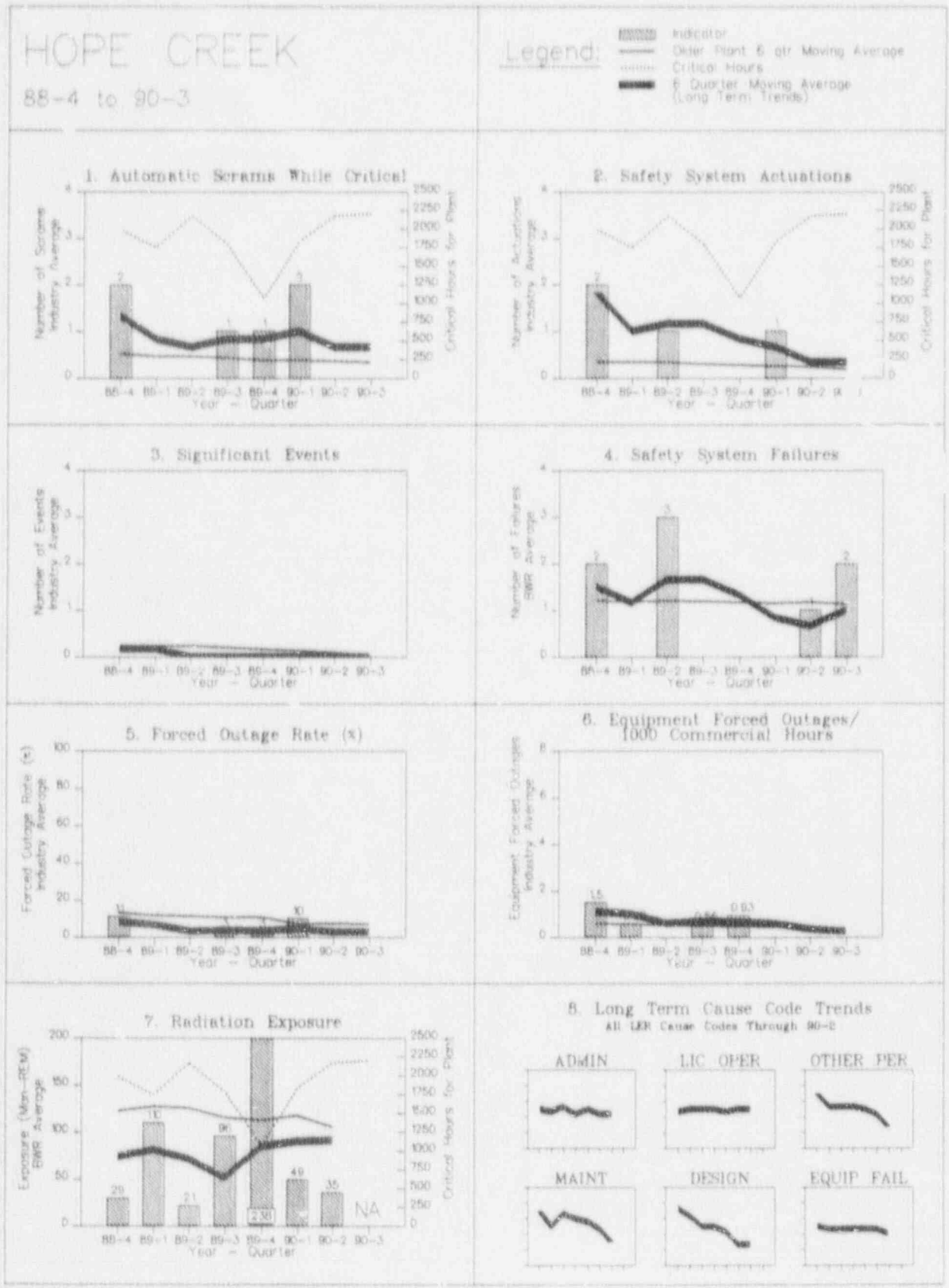

HOPE CREEK
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.43

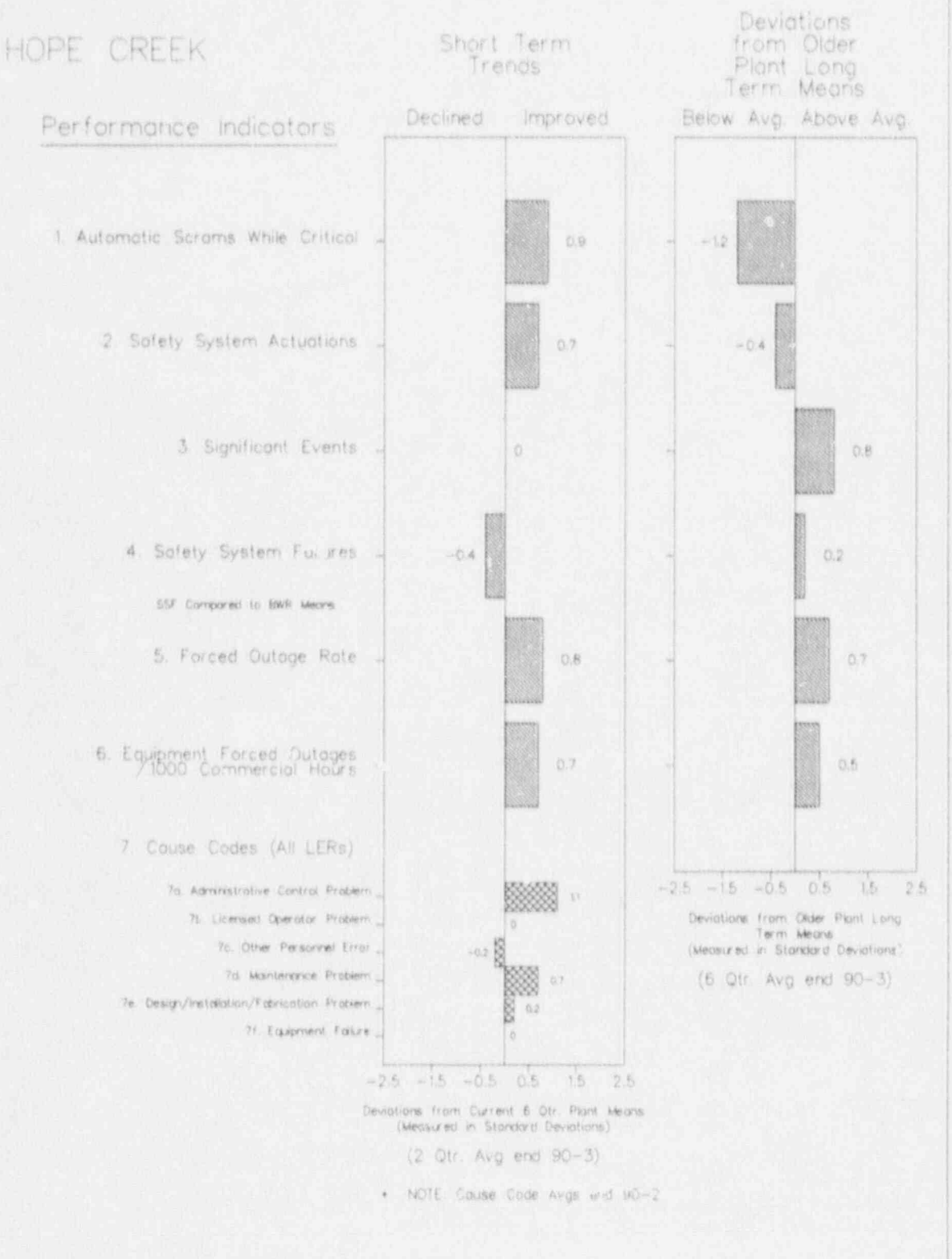

HOPE CREEK
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
-1.2
2. Safety System Actuations
0.7
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
0.2
SSF Compared to BWR Means
5. Forced Outage Rate
0.8
0.7
6. Equipment Forced Outages /1000 Commercial Hours
0.7
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.1
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

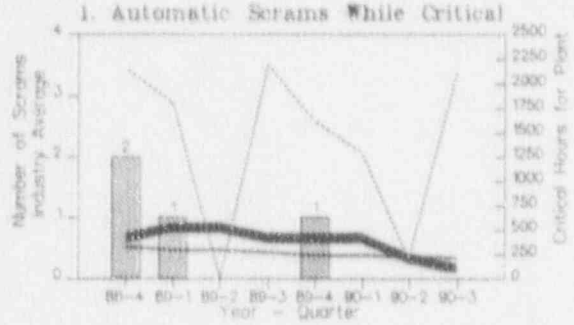
FIGURE 4.44

INDIAN POINT 2

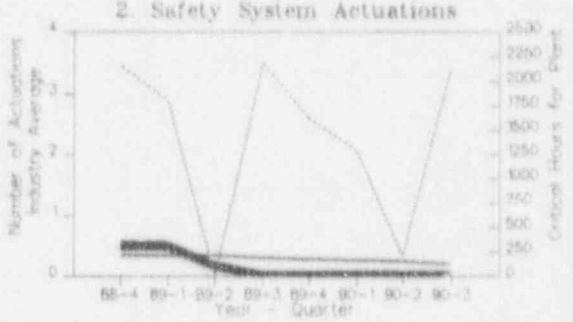
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

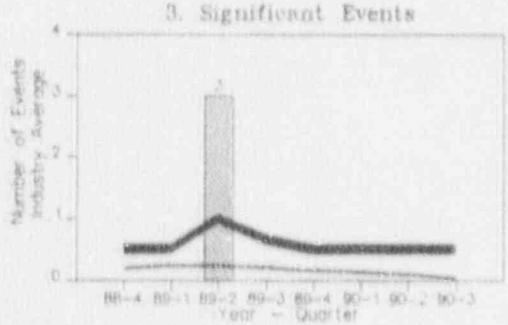
1. Automatic Scrams While Critical



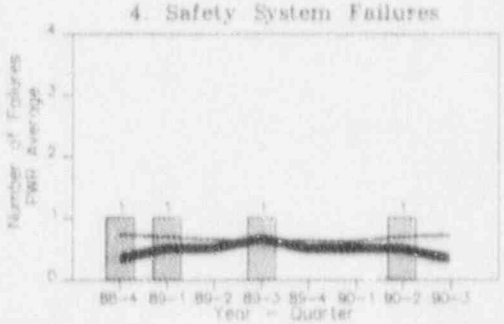
2. Safety System Actuations



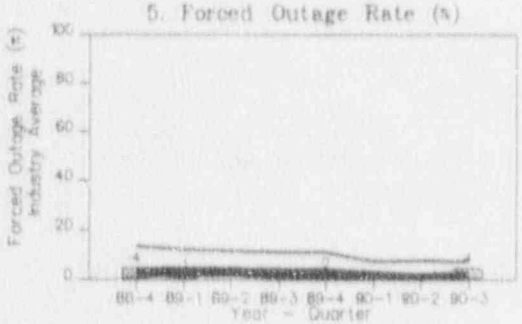
3. Significant Events



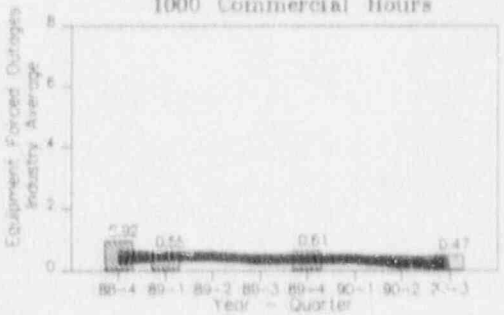
4. Safety System Failures



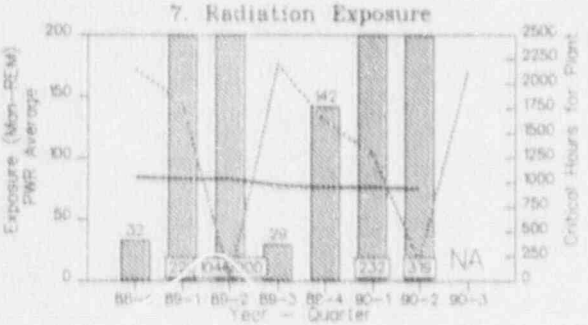
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

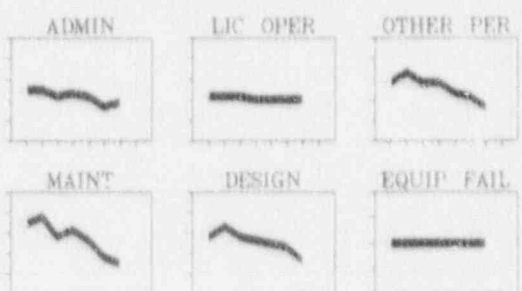


FIGURE 4.44

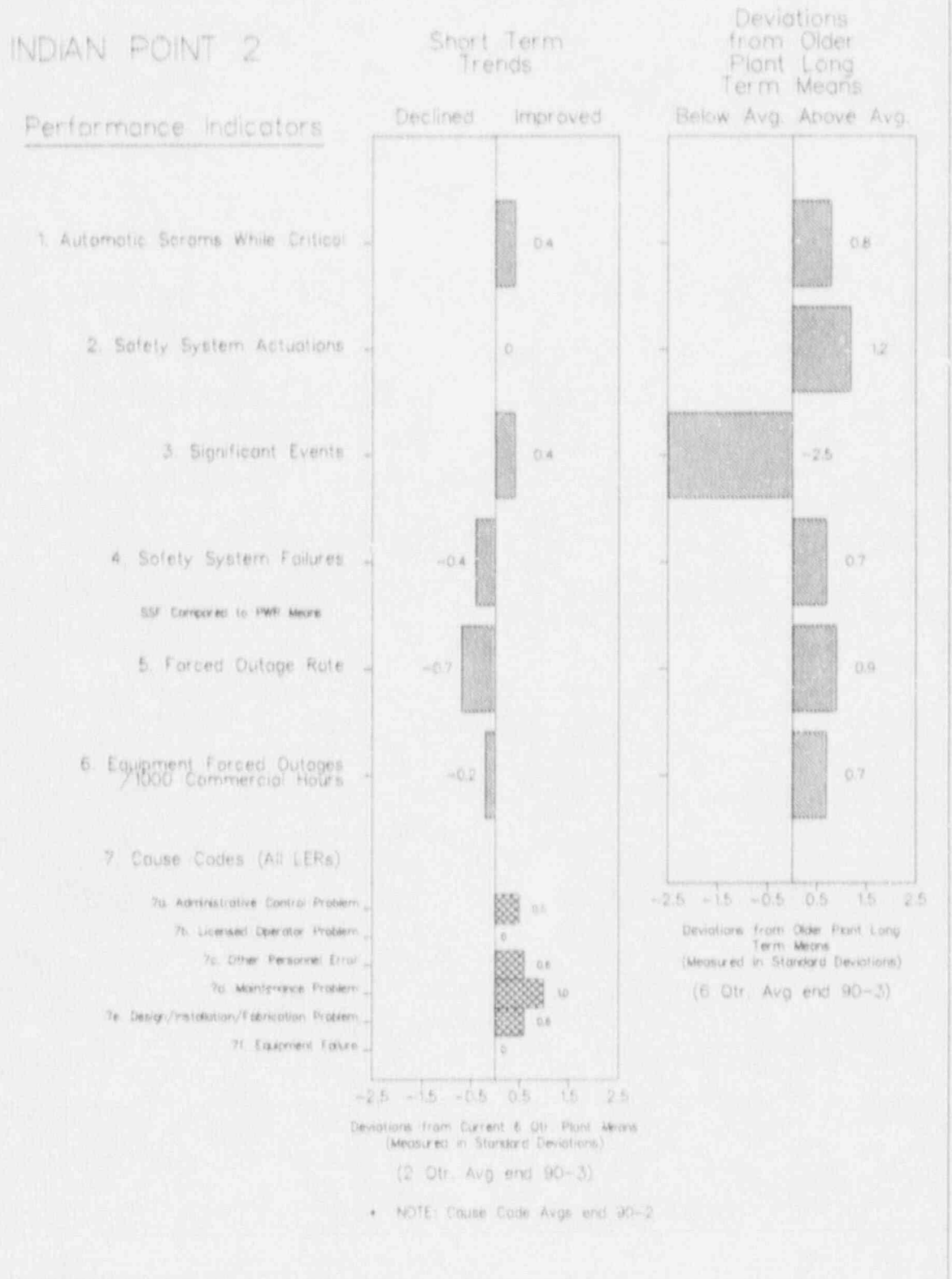

INDIAN POINT 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
0.4
-2.5
4. Safety System Failures
-0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.7
0.9
6. Equipment Forced Outages /1000 Commercial Hours
-0.2
0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.5
7d. Maintenance Problem
1.0
7e. Design/Installation/Fabrication Problem
0.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

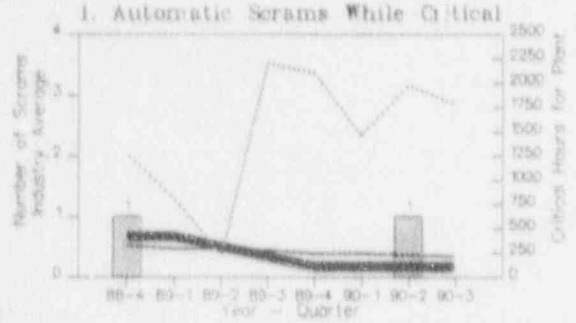
FIGURE 4.45

INDIAN POINT 3

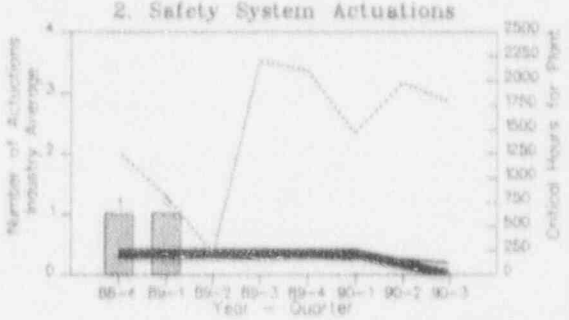
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

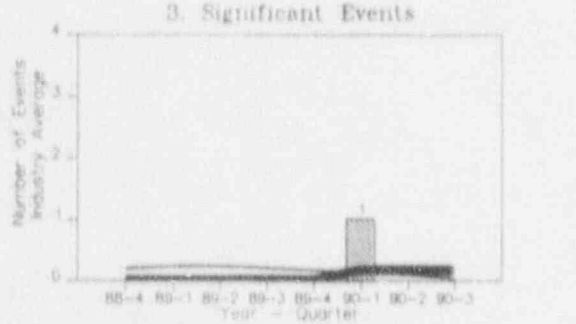
1. Automatic Scrams While Critical



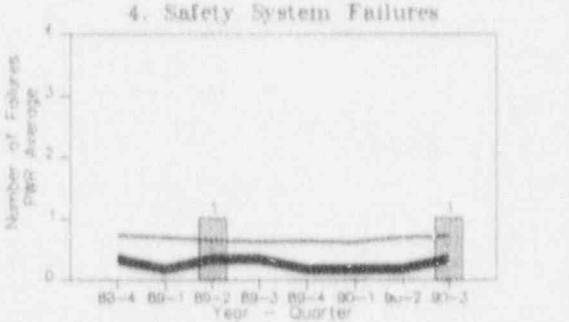
2. Safety System Actuations



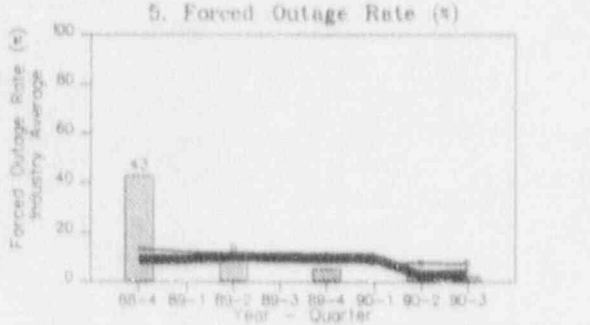
3. Significant Events



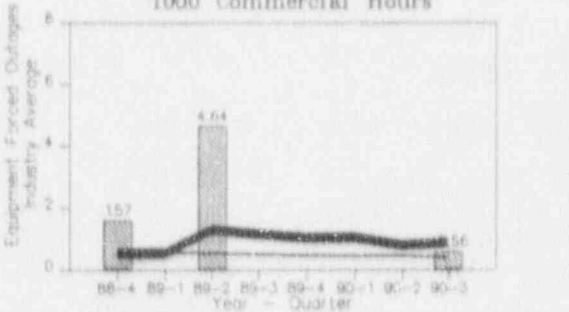
4. Safety System Failures



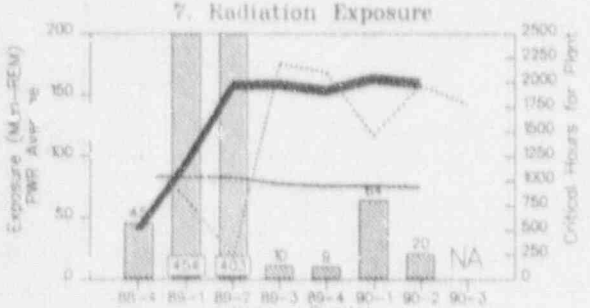
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

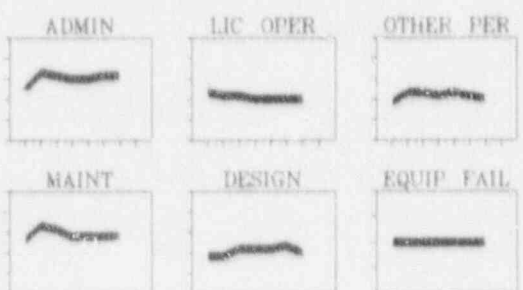


FIGURE 4.45

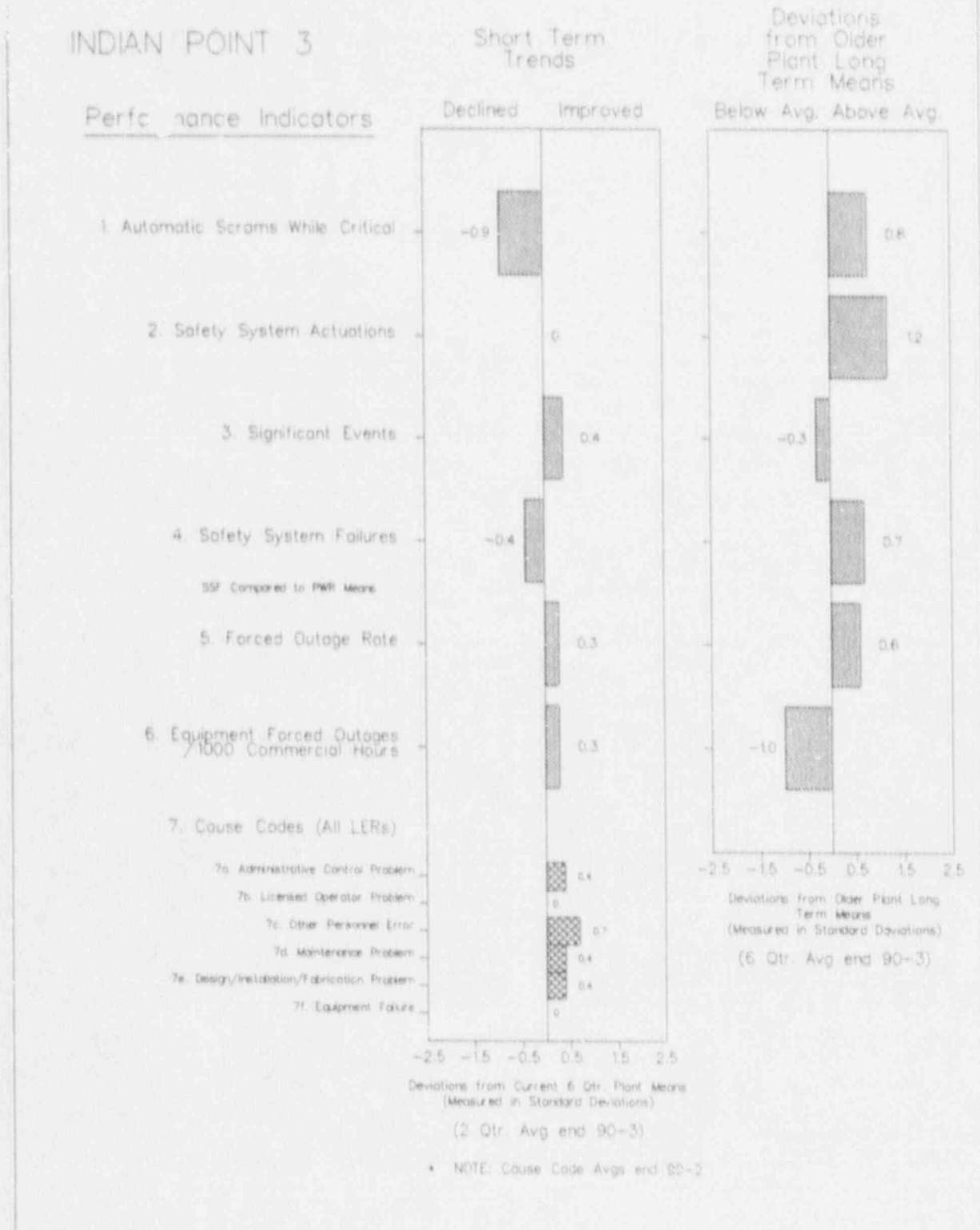

INDIAN POINT 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.9
0
0.4
-0.4
0.3
0.3
0.4
0
0.7
0.4
0.4
0
0.8
1.2
-0.3
0.7
0.6
-1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 88-2

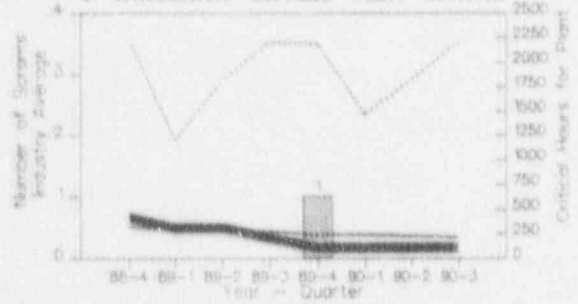
FIGURE 4.46

KEWAUNEE

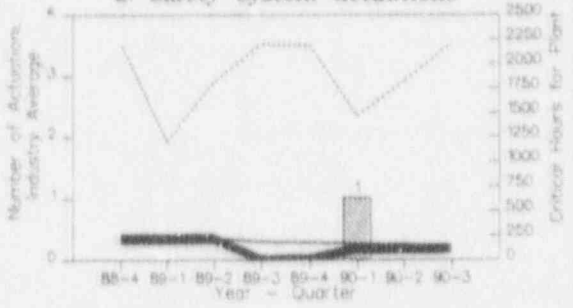
88-4 to 90-3

Legend:
- Indicator
- Other Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

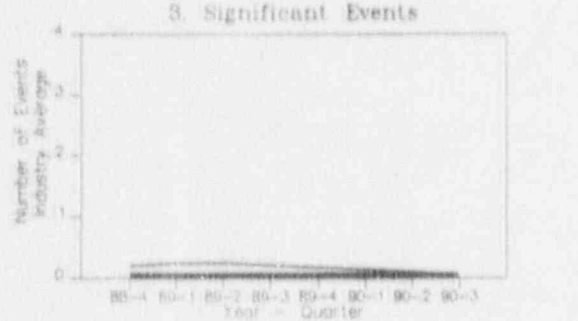
1. Automatic Scrams While Critical



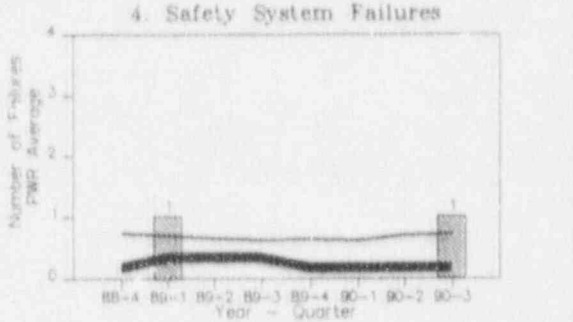
2. Safety System Actuations



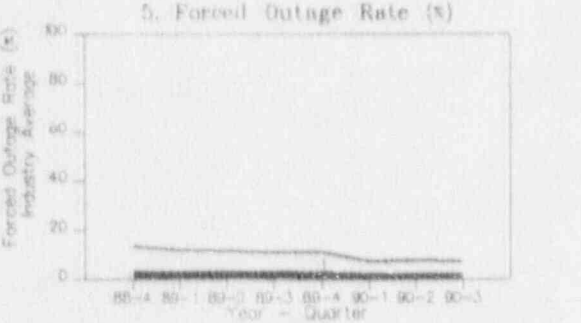
3. Significant Events



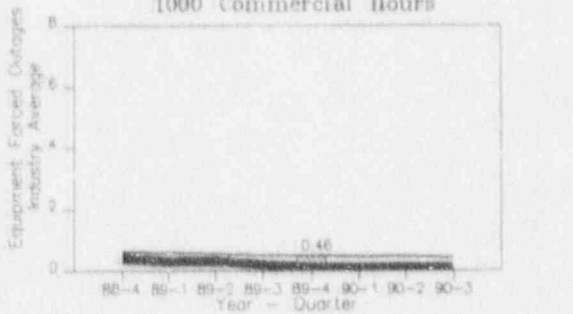
4. Safety System Failures



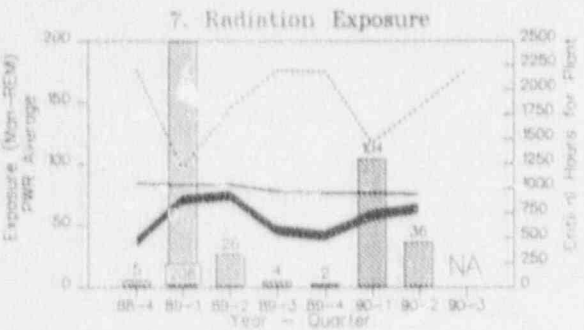
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

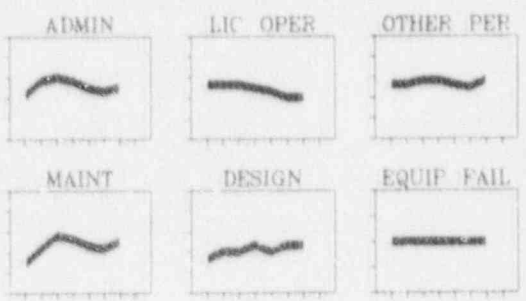
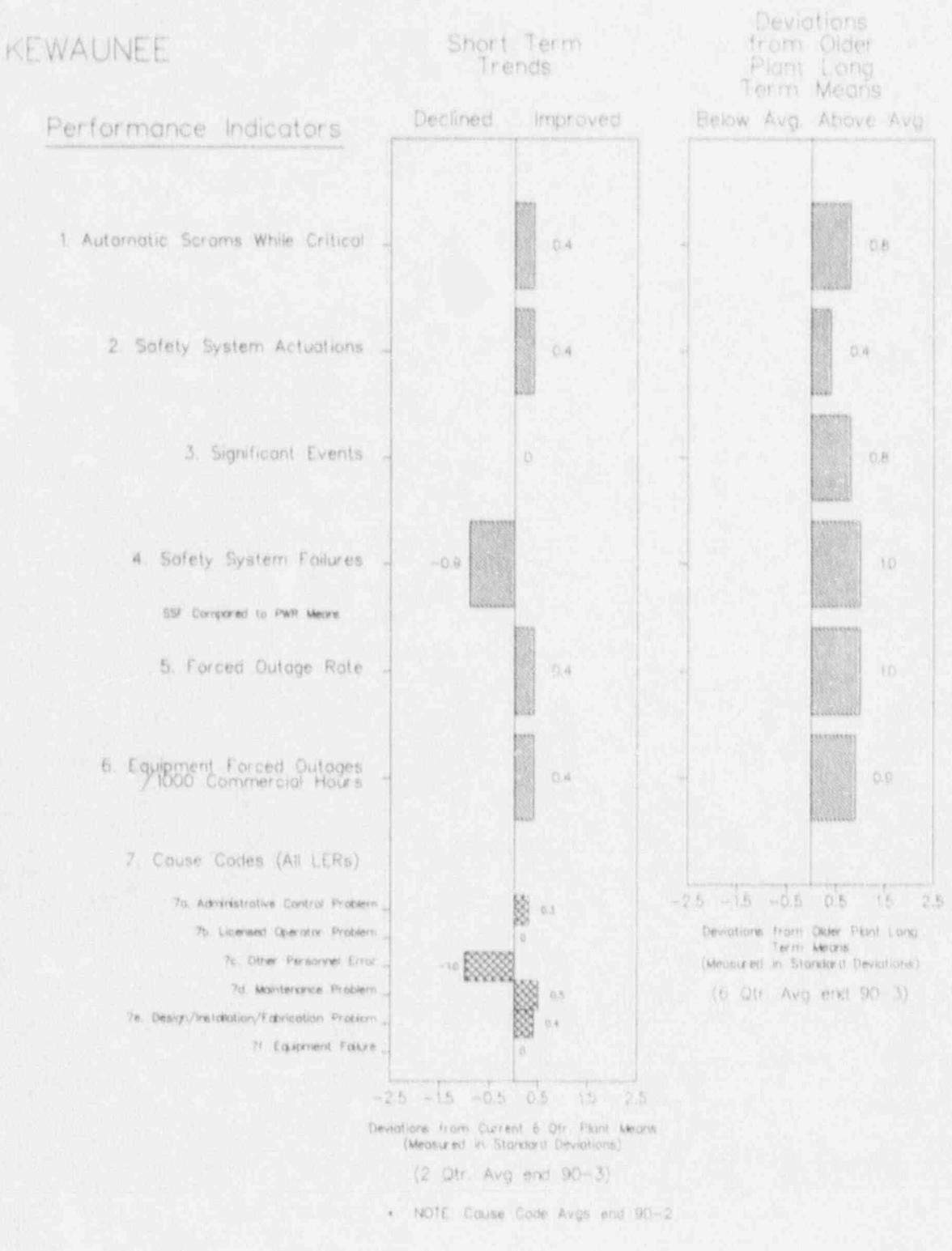


FIGURE 4.46



* NOTE: Cause Code Avgs end 90-2

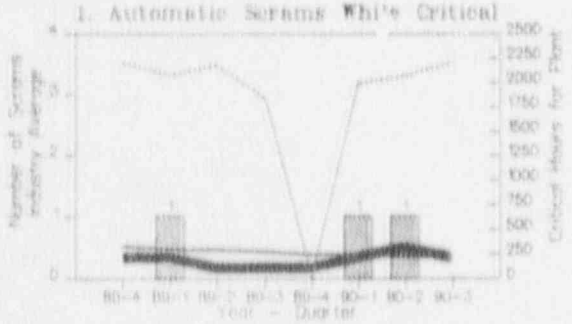
FIGURE 4.47

LASALLE 1

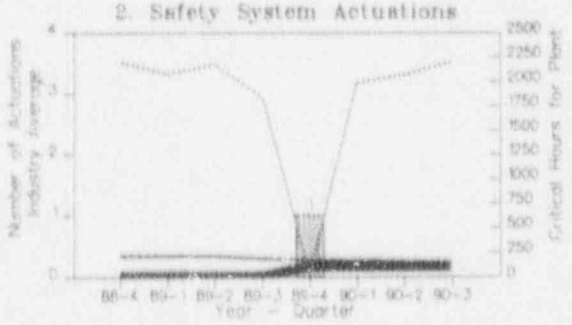
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

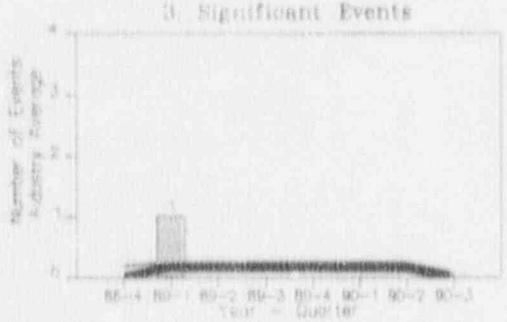
1. Automatic Scrams While Critical



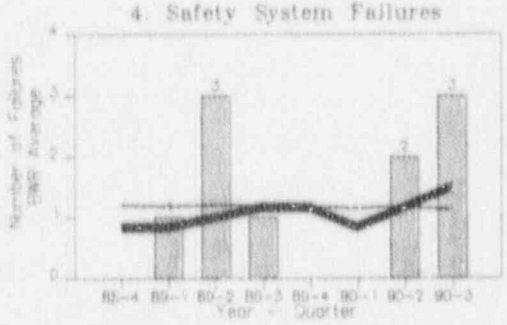
2. Safety System Actuations



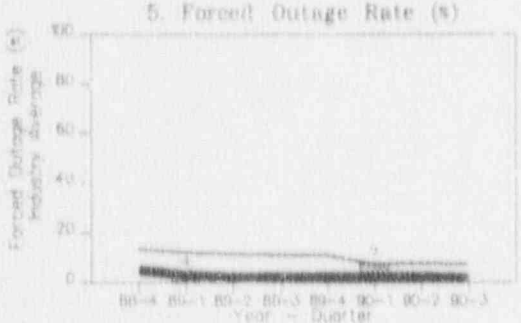
3. Significant Events



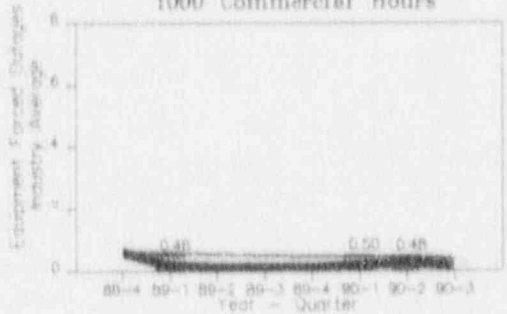
4. Safety System Failures



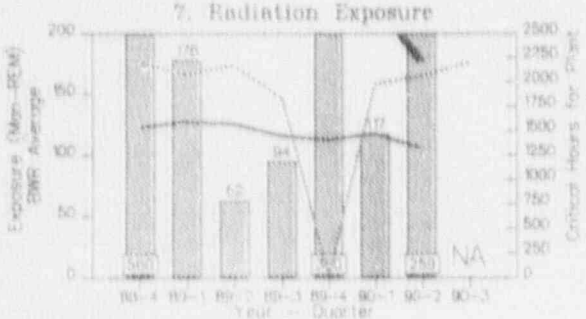
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

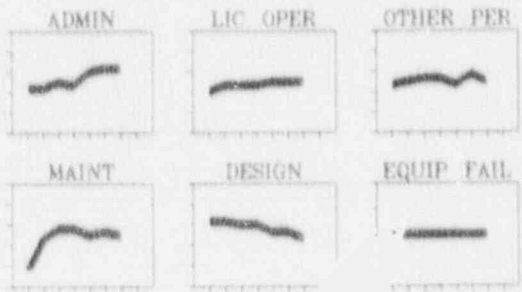


FIGURE 4.47

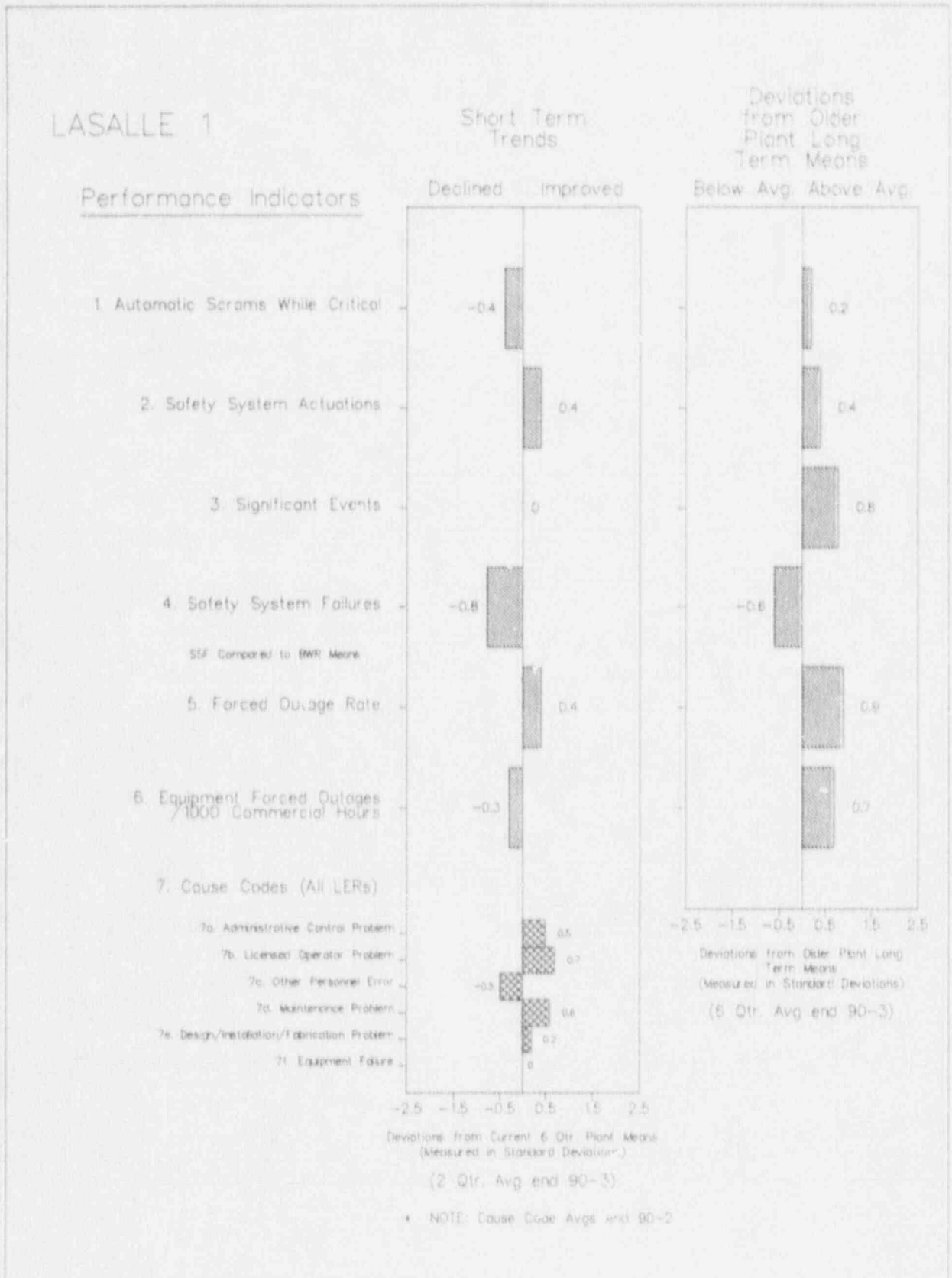

LASALLE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
0.4
0
-0.8
0.4
-0.3
0.5
0.7
-0.5
0.6
0.2
0
0.2
0.4
0.8
-0.6
0.9
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.48

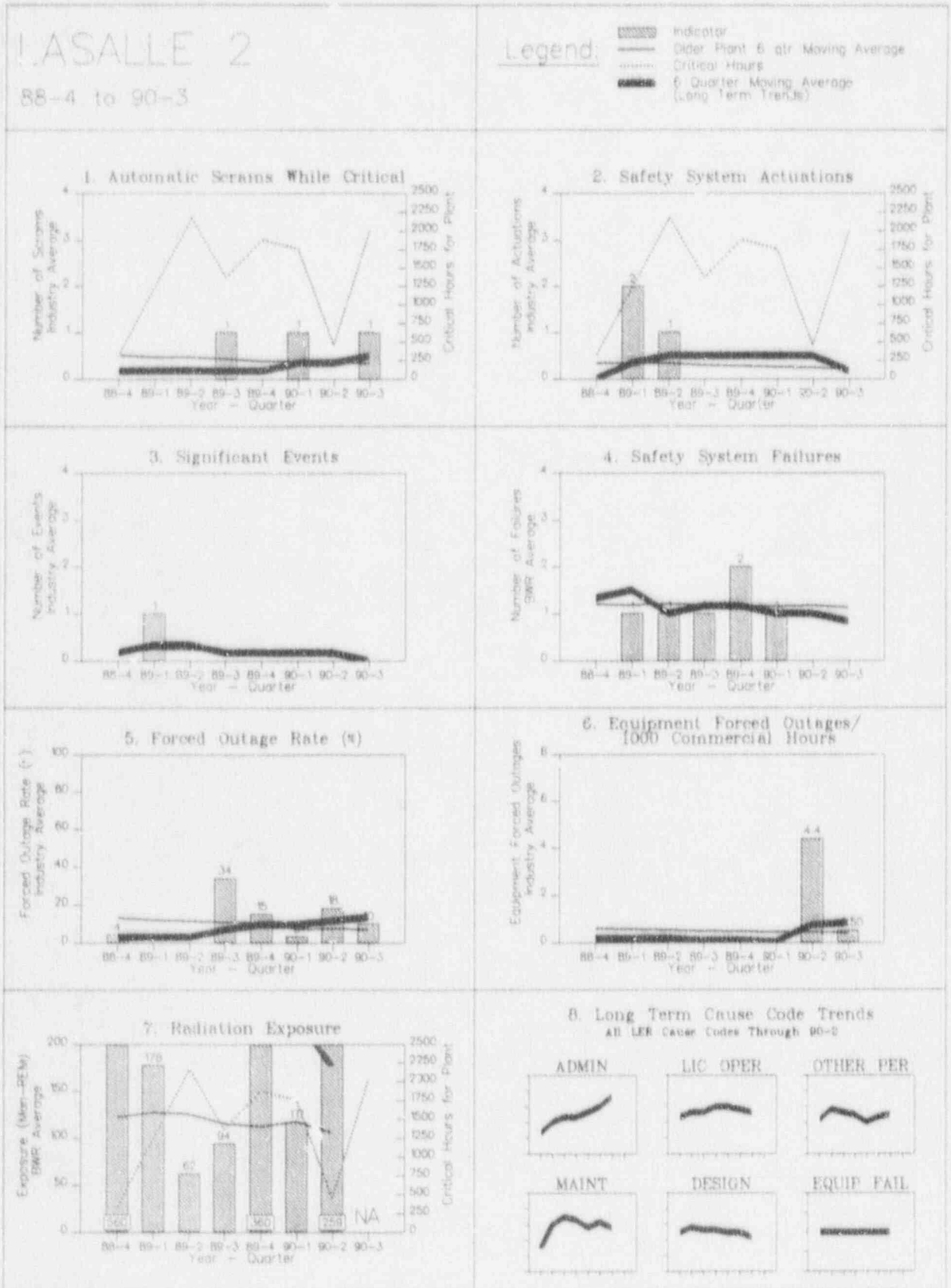
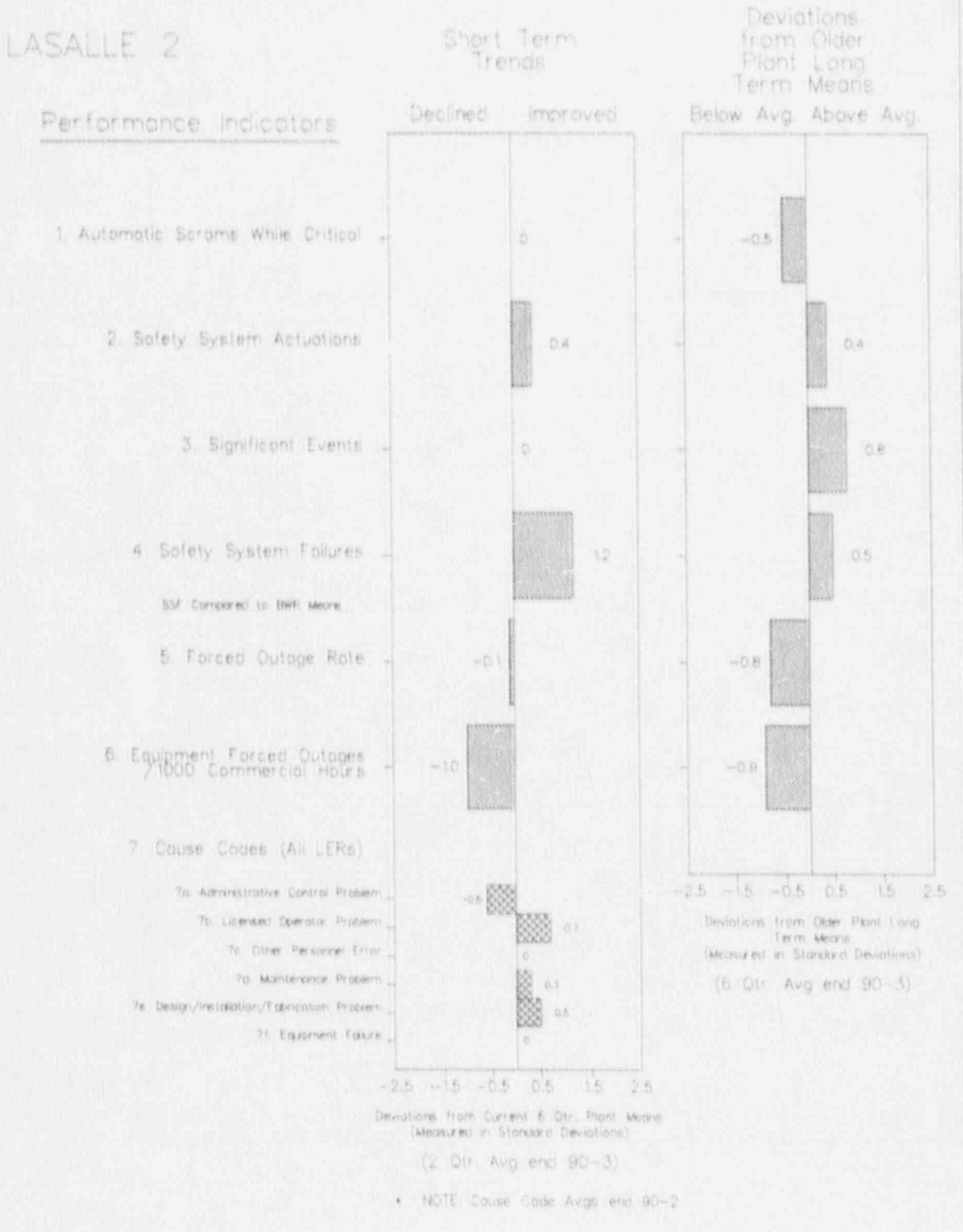

LASALLE 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.4B



* NOTE: Cause Code Avgs end 90-2

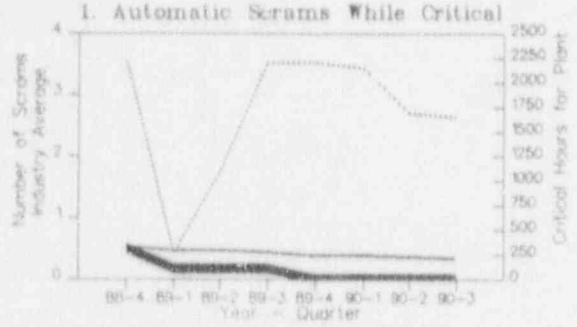
FIGURE 4.49

LIMERICK 1

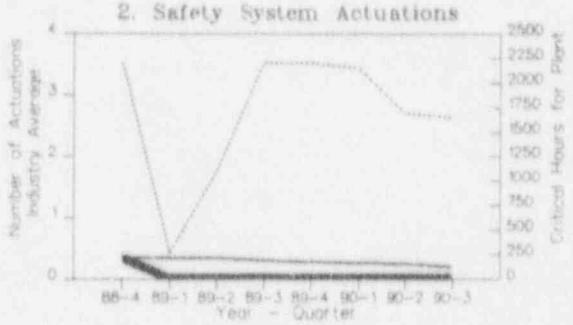
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

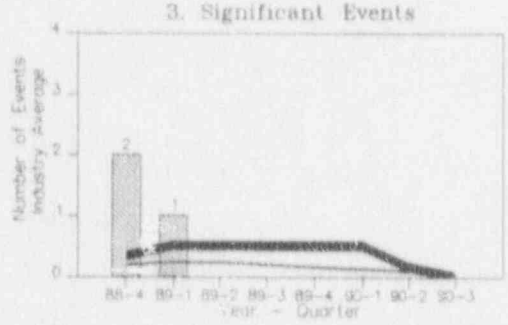
1. Automatic Scrams While Critical



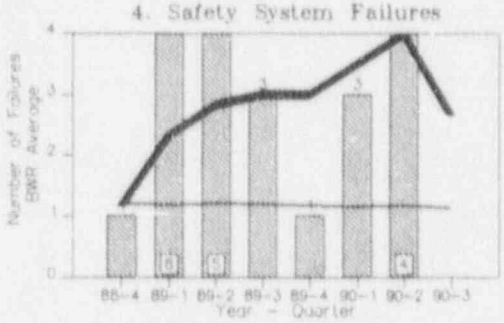
2. Safety System Actuations



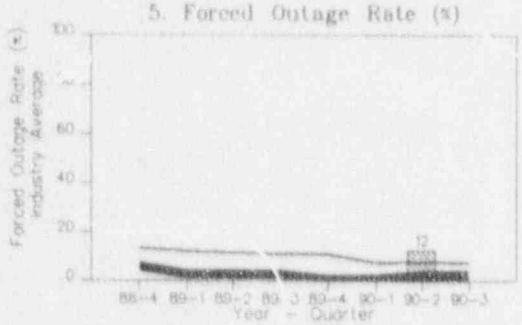
3. Significant Events



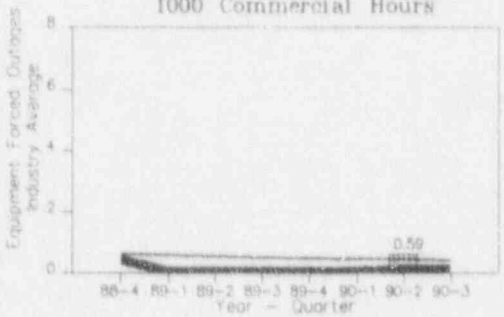
4. Safety System Failures



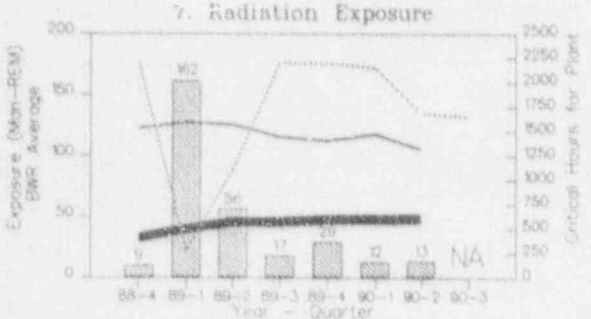
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

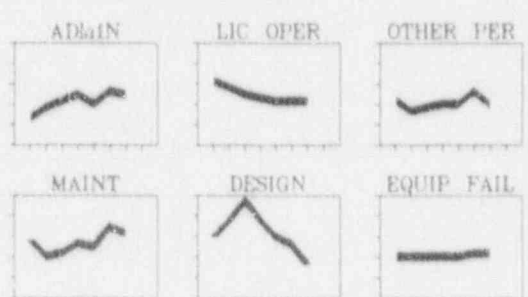


FIGURE 4.49

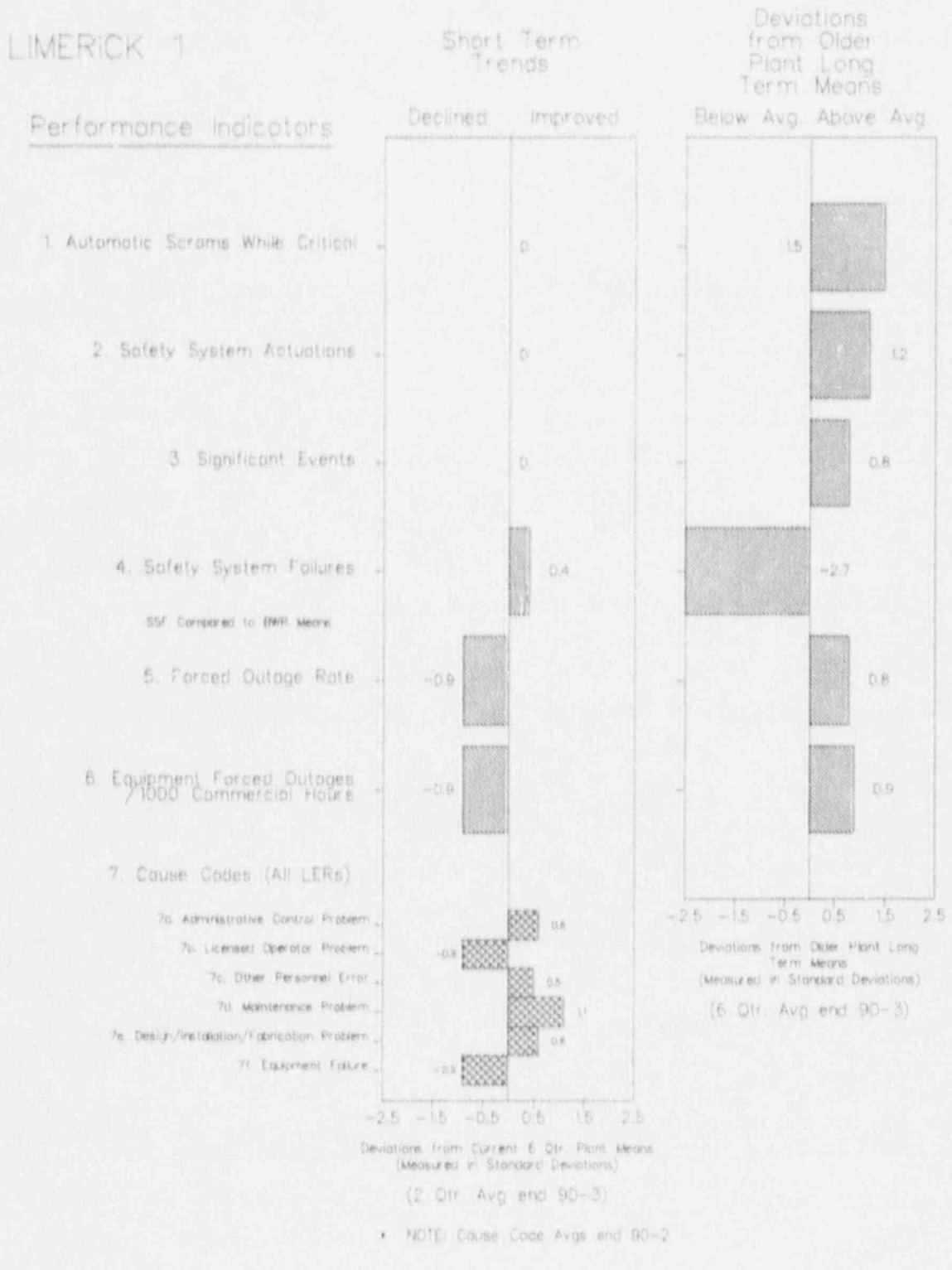

LIMERICK 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
0.4
-2.7
SSF Compared to BWR Means
5. Forced Outage Rate
-0.9
0.8
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.6
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.5
7d. Maintenance Problem
1.1
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(8 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

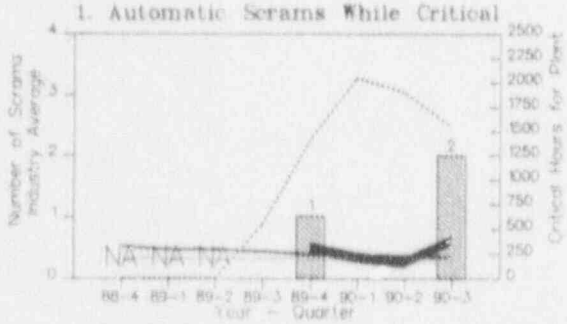
FIGURE 4.50

LIMERICK 2

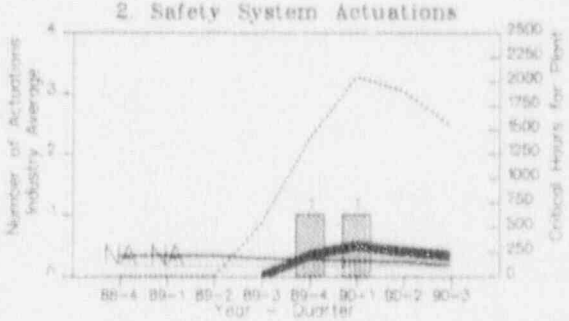
88-4 to 90-3

Legend:
- Indicator
- Older Plant 8 qtr Moving Average
- Newer Plant Average
- Critical Hours
- 5 Quarter Moving Average (Long Term Trends)

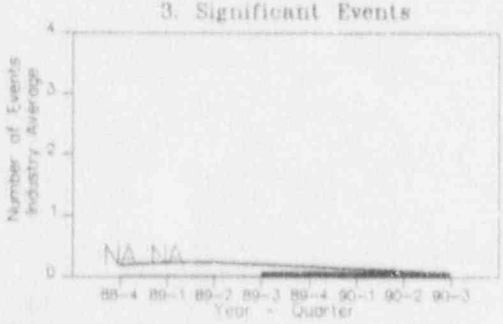
1. Automatic Scrams While Critical



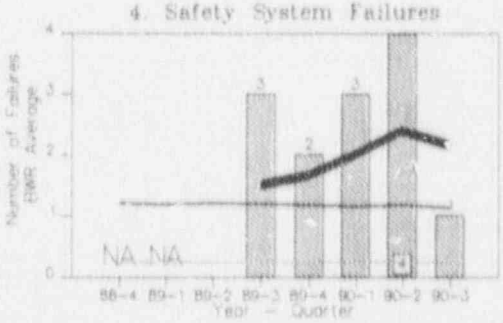
2. Safety System Actuations



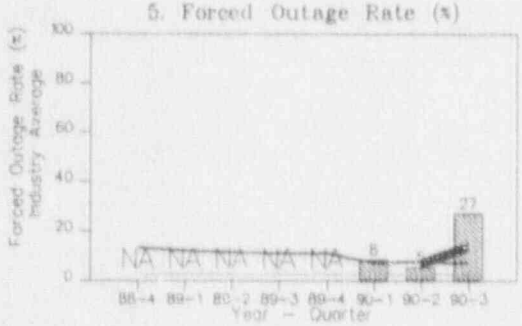
3. Significant Events



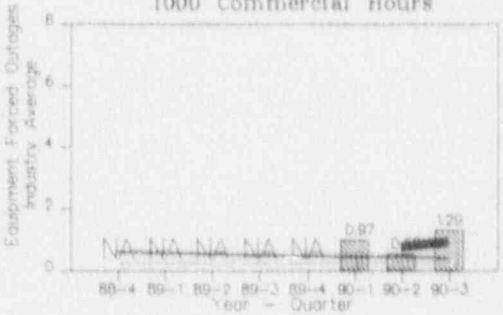
4. Safety System Failures



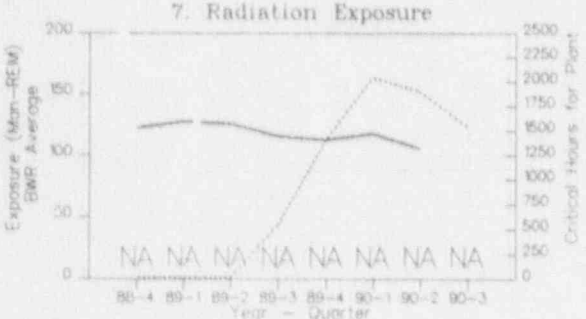
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

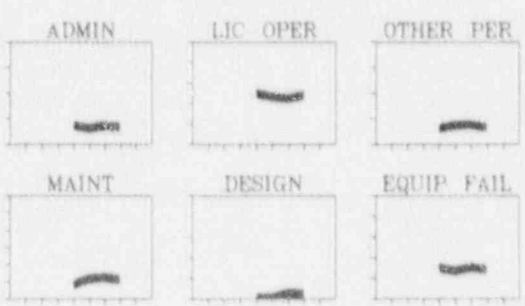


FIGURE 4.50

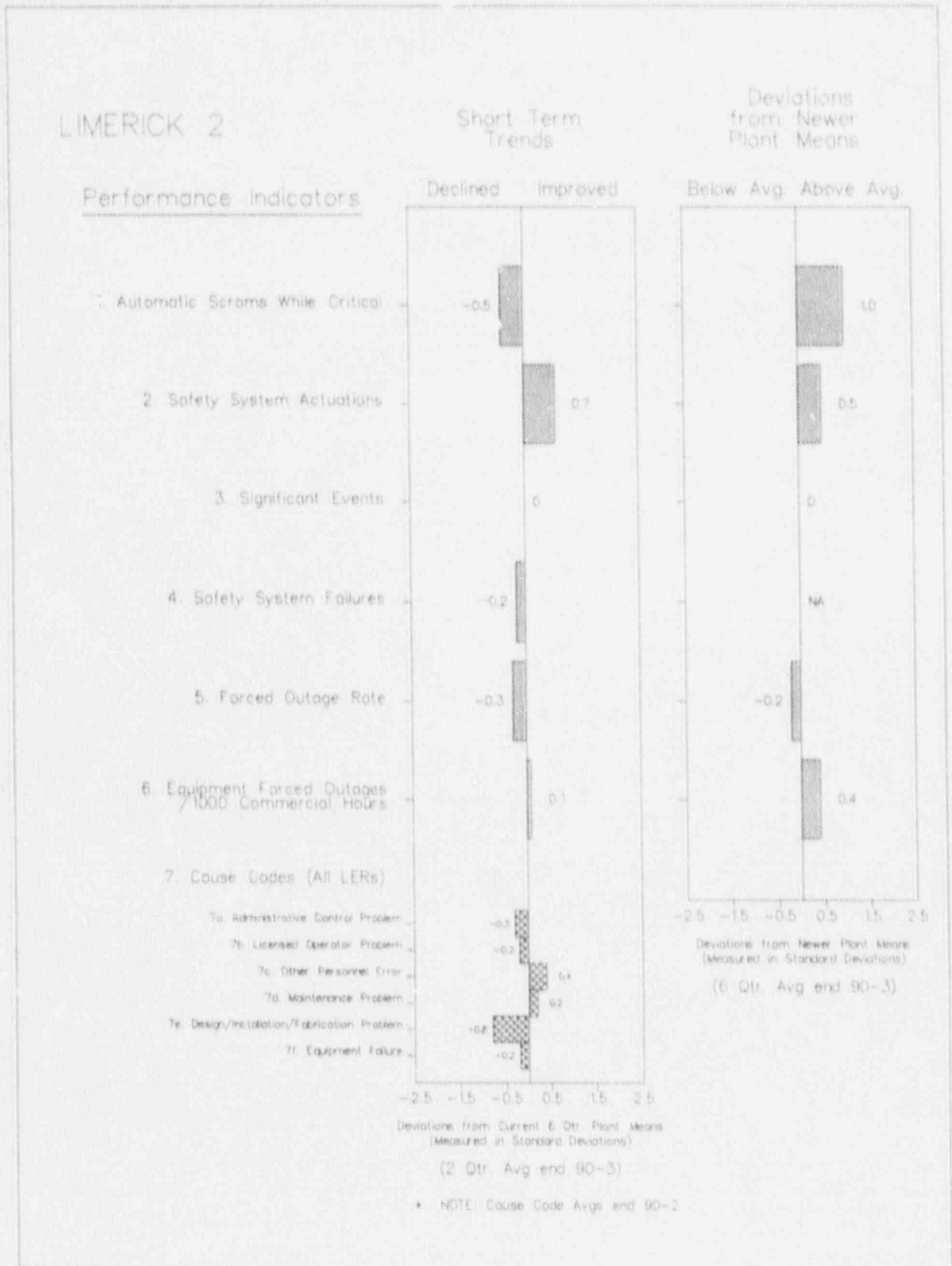

LIMERICK 2
Short Term Trends
Deviations from Newer Plant Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.5
1.0
2. Safety System Actuations
0.7
0.5
3. Significant Events
0
0
4. Safety System Failures
-0.2
NA
5. Forced Outage Rate
-0.3
-0.2
6. Equipment Forced Outages / 1000 Commercial Hours
0.1
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
-0.6
7f. Equipment Failure
-0.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

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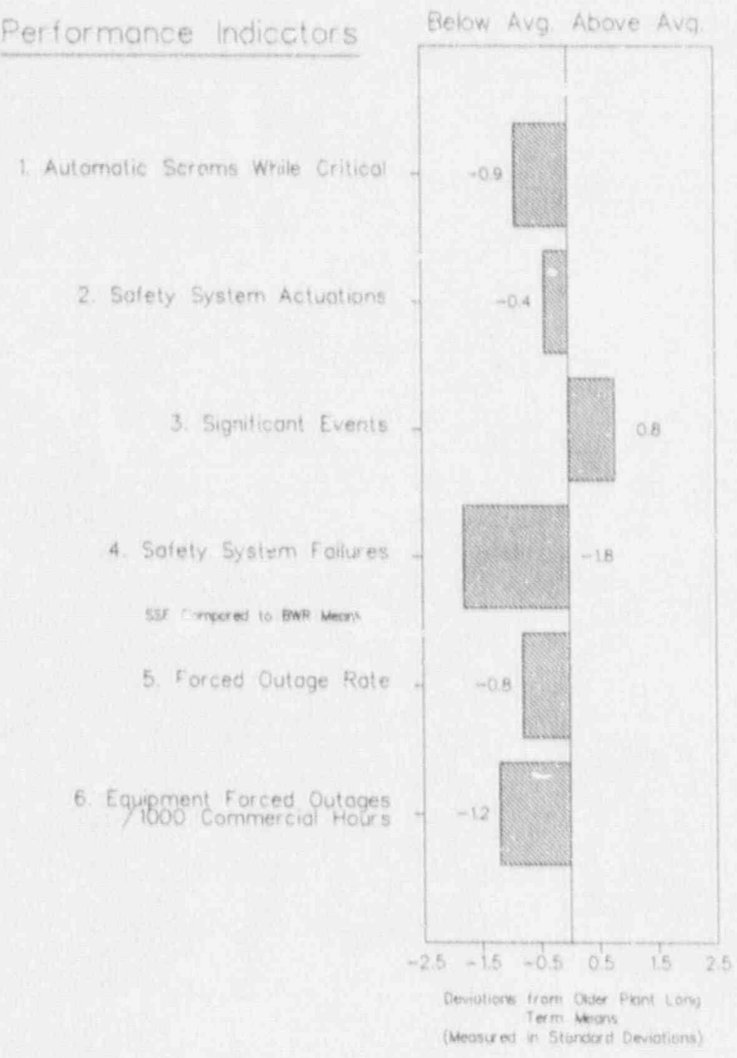
FIGURE 4.50

Note: This is a comparison of LIMERICK 2 (a newer plant) against older plant means.

LIMERICK 2

Performance Indicctors



(6 Qtr. Avg. end 90-3)

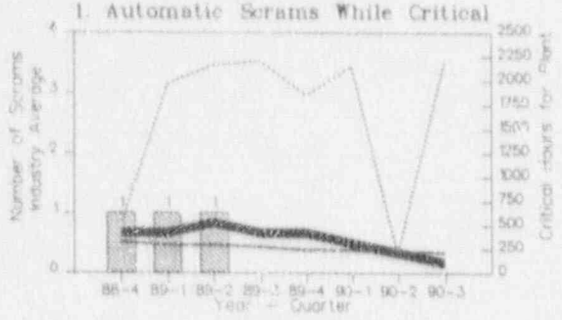
FIGURE 4.51

MAINE YANKEE

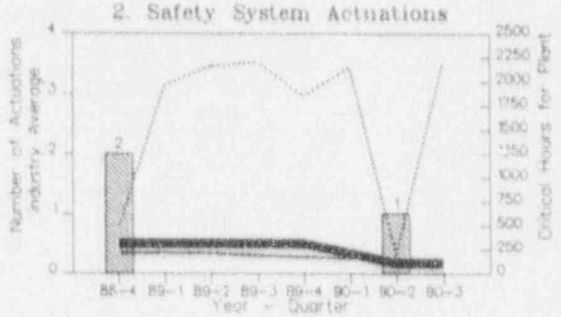
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

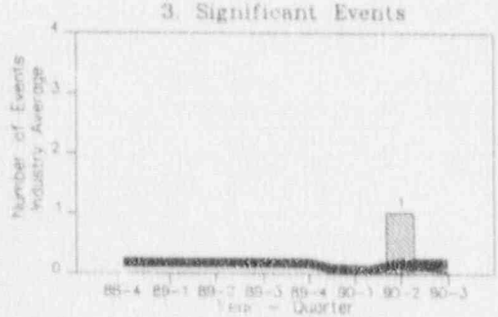
1. Automatic Scrams While Critical



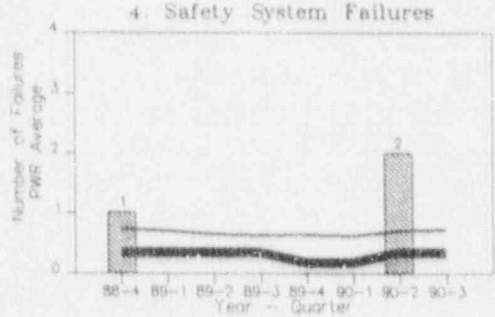
2. Safety System Actuations



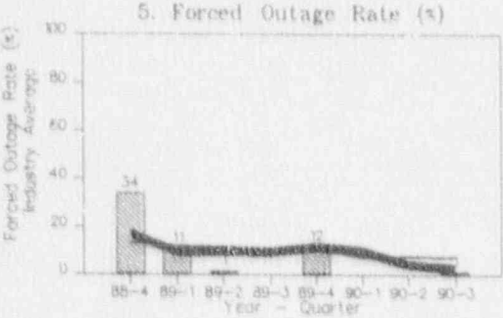
3. Significant Events



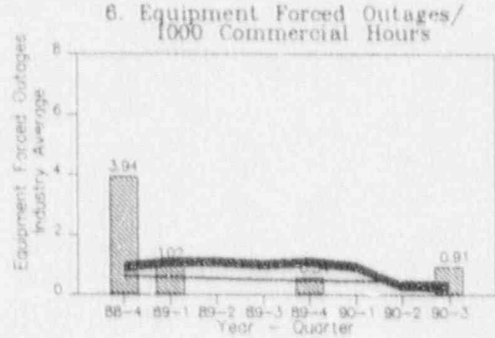
4. Safety System Failures



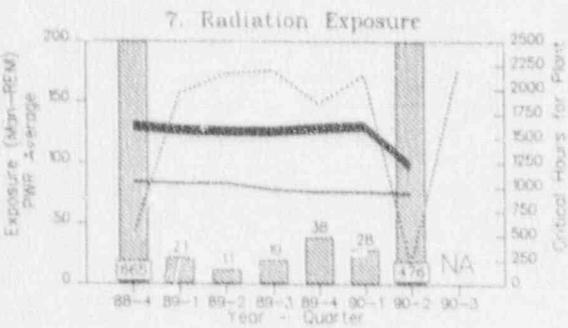
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

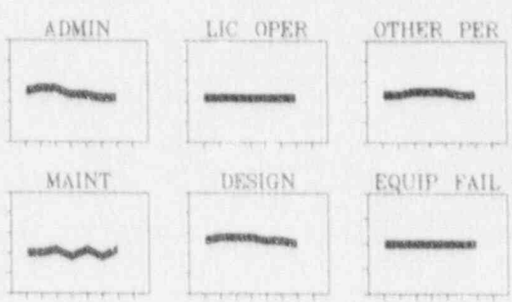


FIGURE 4.51

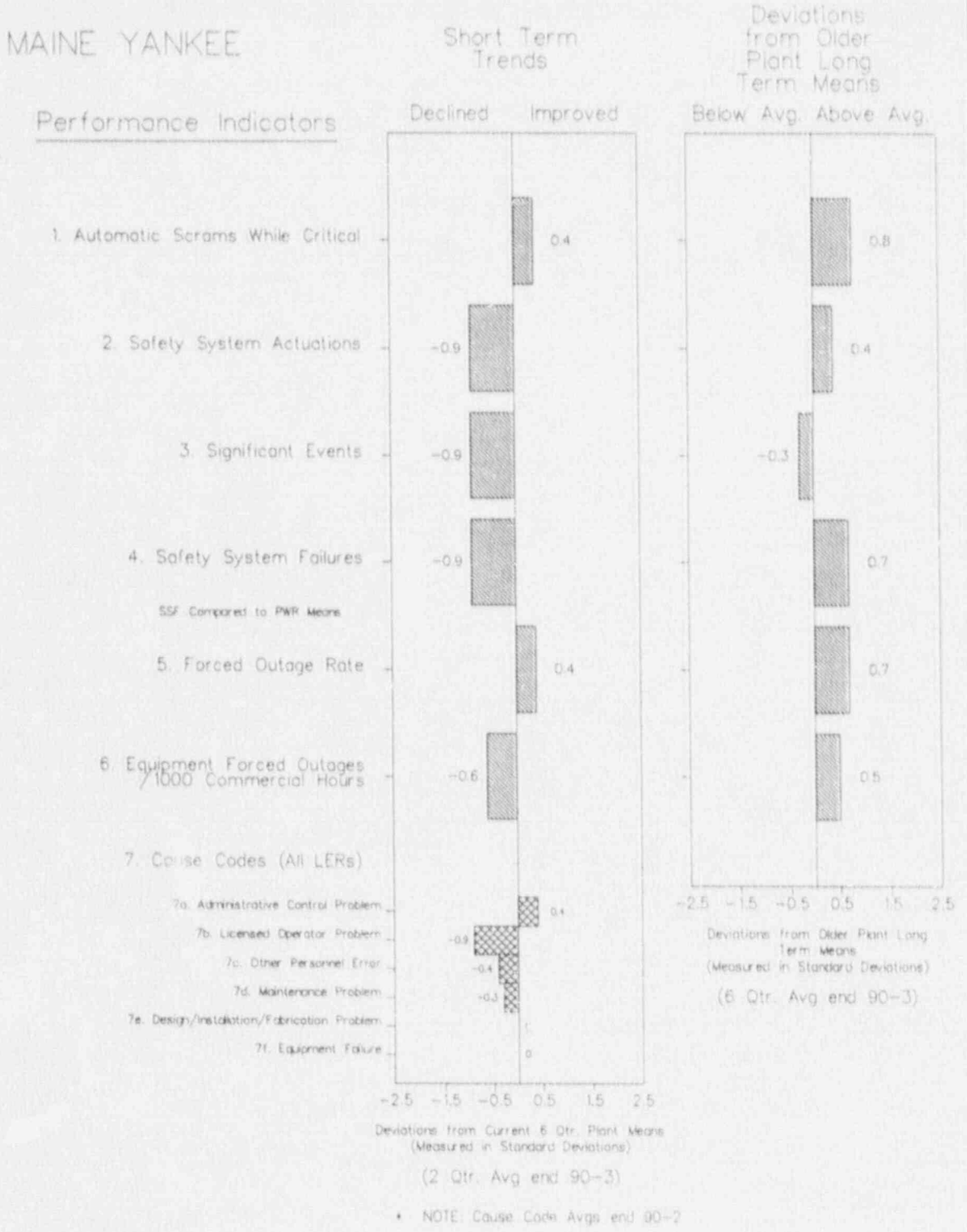

MAINE YANKEE
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
-0.9
0.4
3. Significant Events
-0.9
-0.3
4. Safety System Failures
-0.9
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
0.7
6. Equipment Forced Outages /1000 Commercial Hours
-0.6
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.1
7b. Licensed Operator Problem
-0.9
7c. Other Personnel Error
-0.4
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

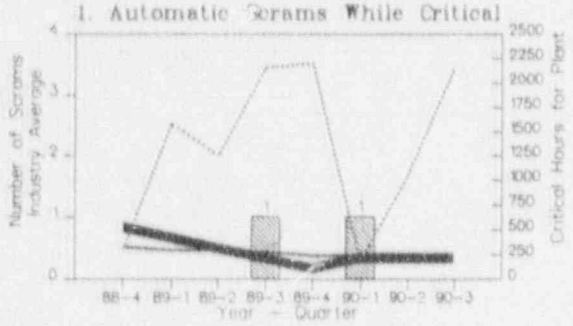
FIGURE 4.52

MCGUIRE 1

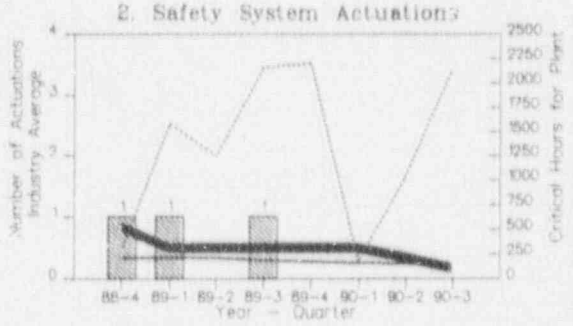
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

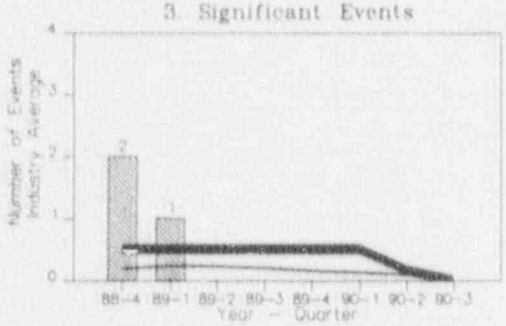
1. Automatic Scrams While Critical



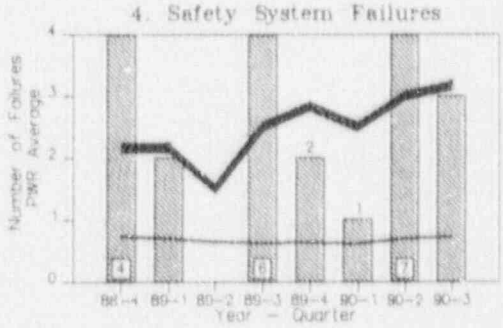
2. Safety System Actuations



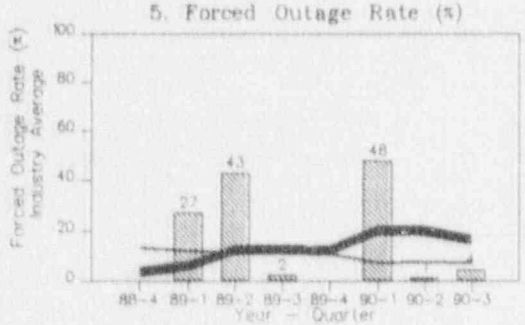
3. Significant Events



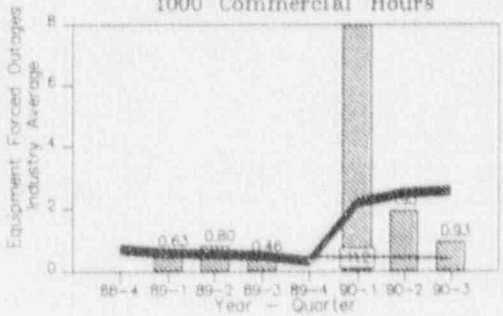
4. Safety System Failures



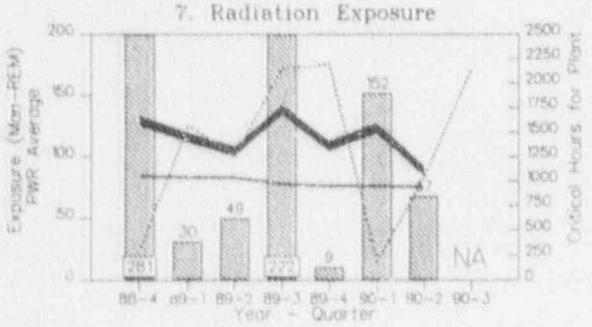
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

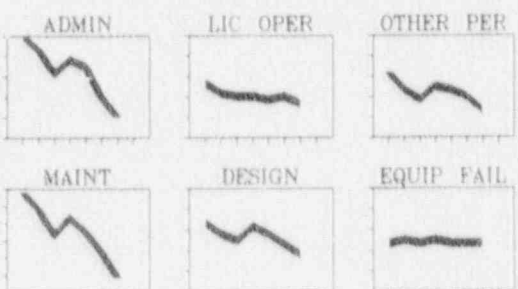
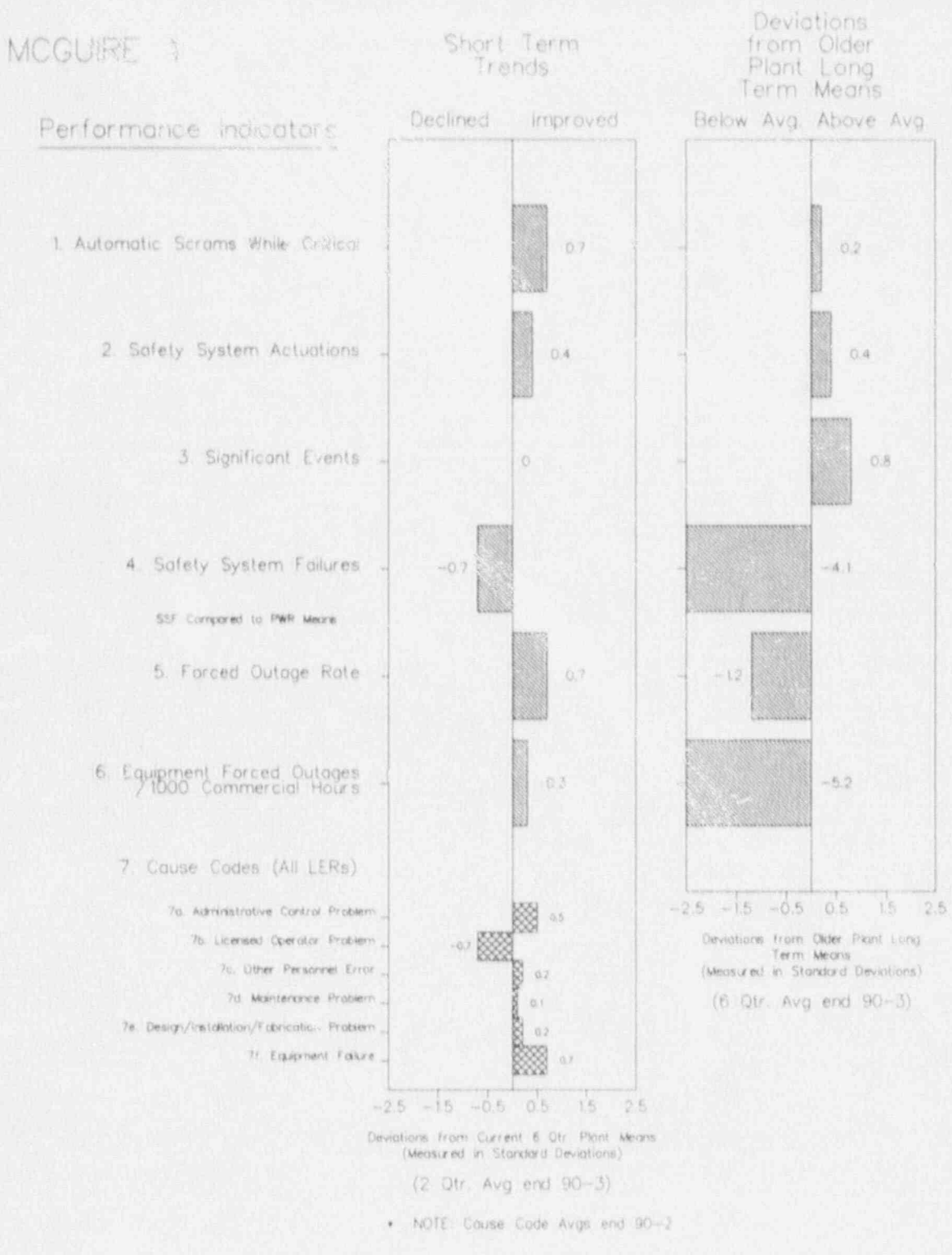


FIGURE 4.52



* NOTE: Cause Code Avgs. end 90-2

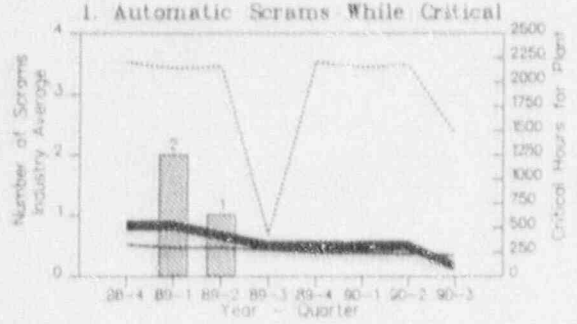
FIGURE 4.53

MCGUIRE 2

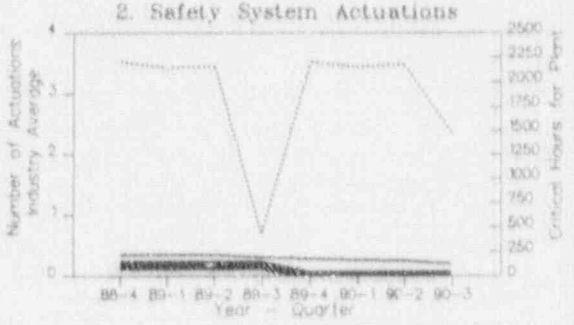
88-4 to 90-3

Legend:
- Indicator
- Older Plant 8 qtr Moving Average
- Critical Hours
- 8 Quarter Moving Average (Long Term Trends)

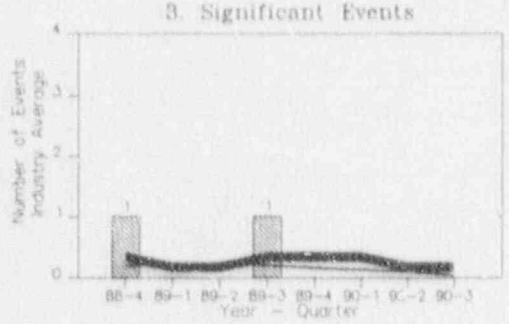
1. Automatic Scrams While Critical



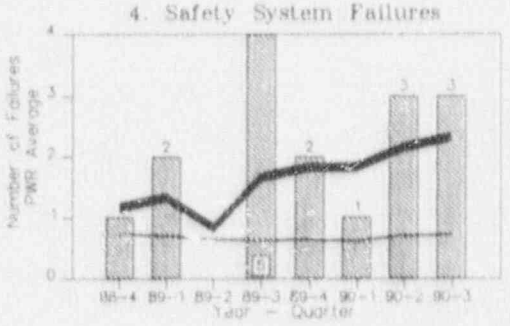
2. Safety System Actuations



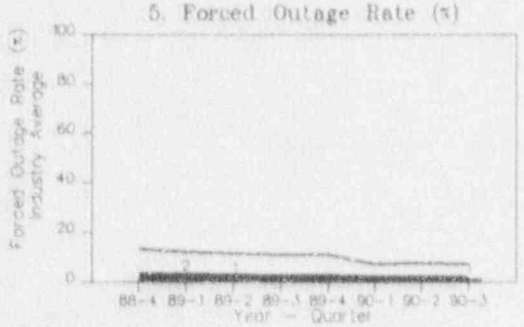
3. Significant Events



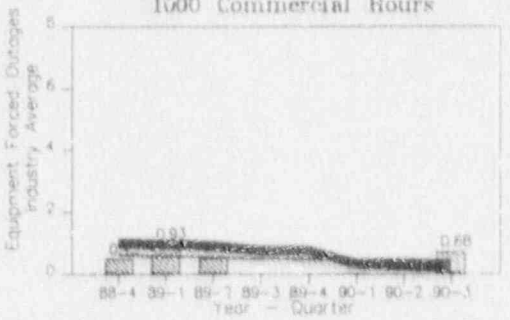
4. Safety System Failures



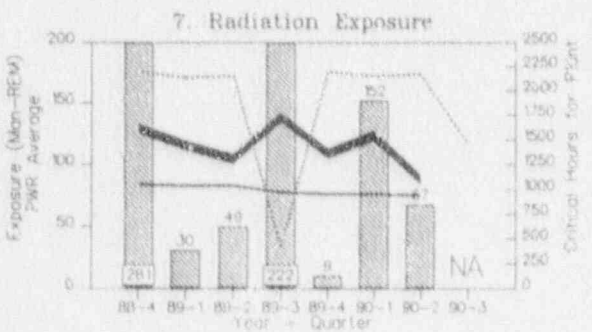
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

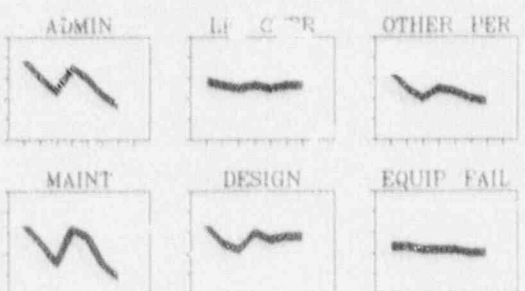


FIGURE 4.53

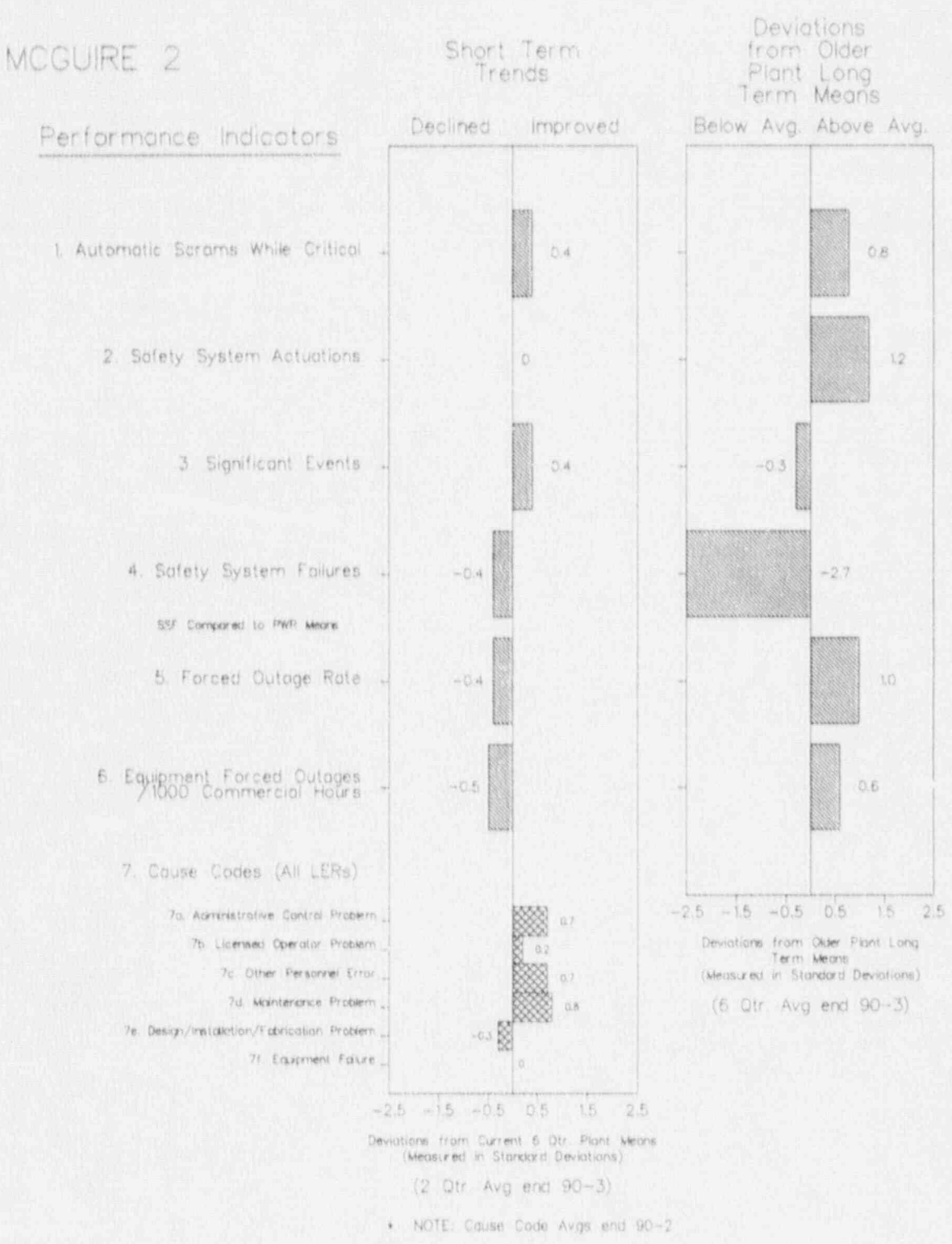
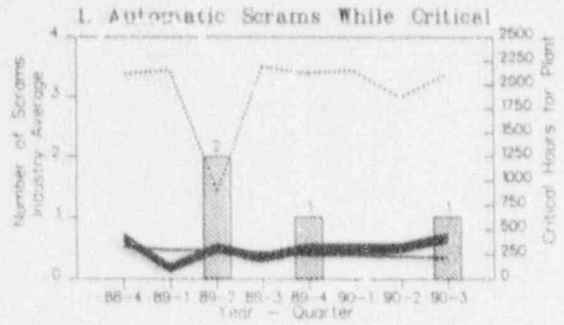

MCGUIRE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
0.4
-0.3
4. Safety System Failures
-0.4
-2.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
1.0
6. Equipment Forced Outages /1000 Commercial Hours
-0.5
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
0.2
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
-0.3
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
+ NOTE: Cause Code Avgs end 90-2

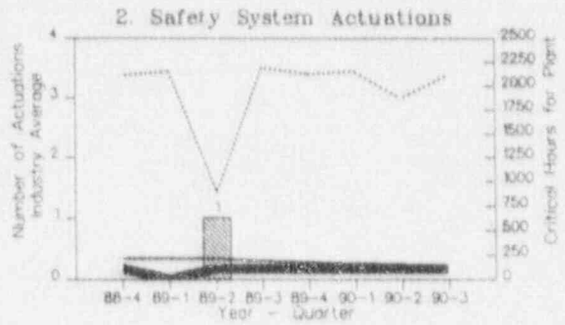
FIGURE 4.54

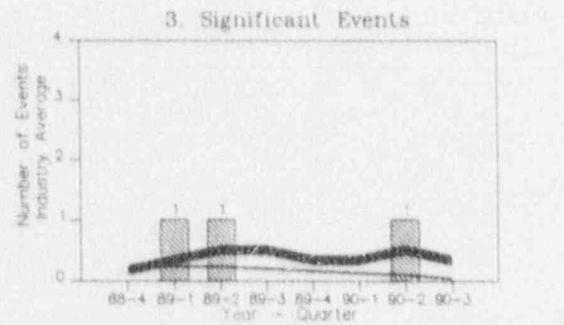
MILLSTONE 1

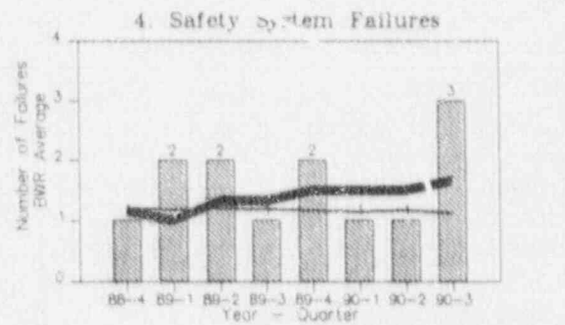
88-4 to 90-3

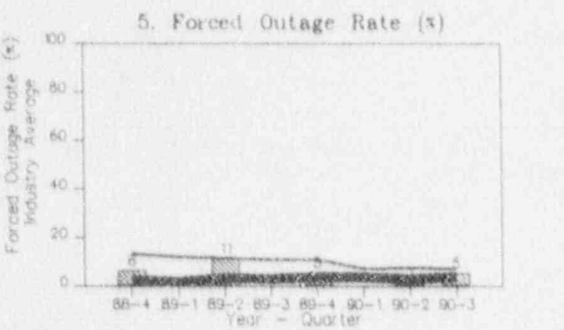
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

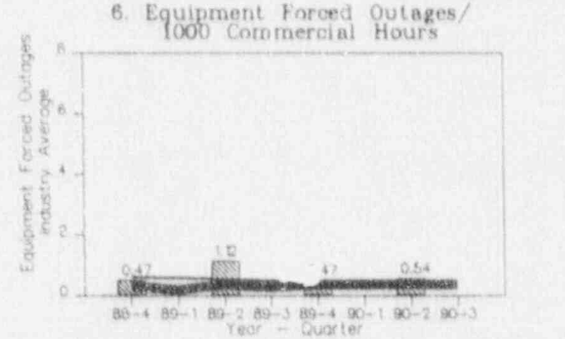


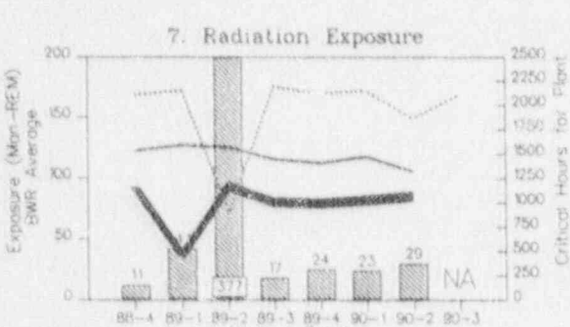












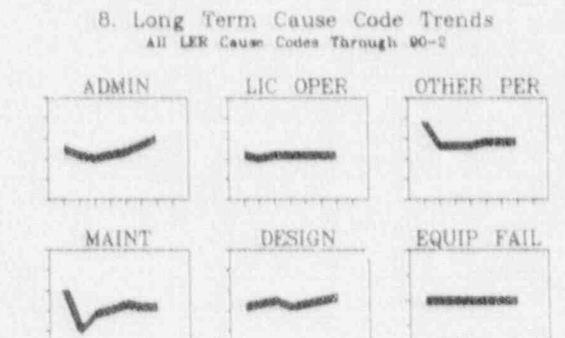


FIGURE 4.54

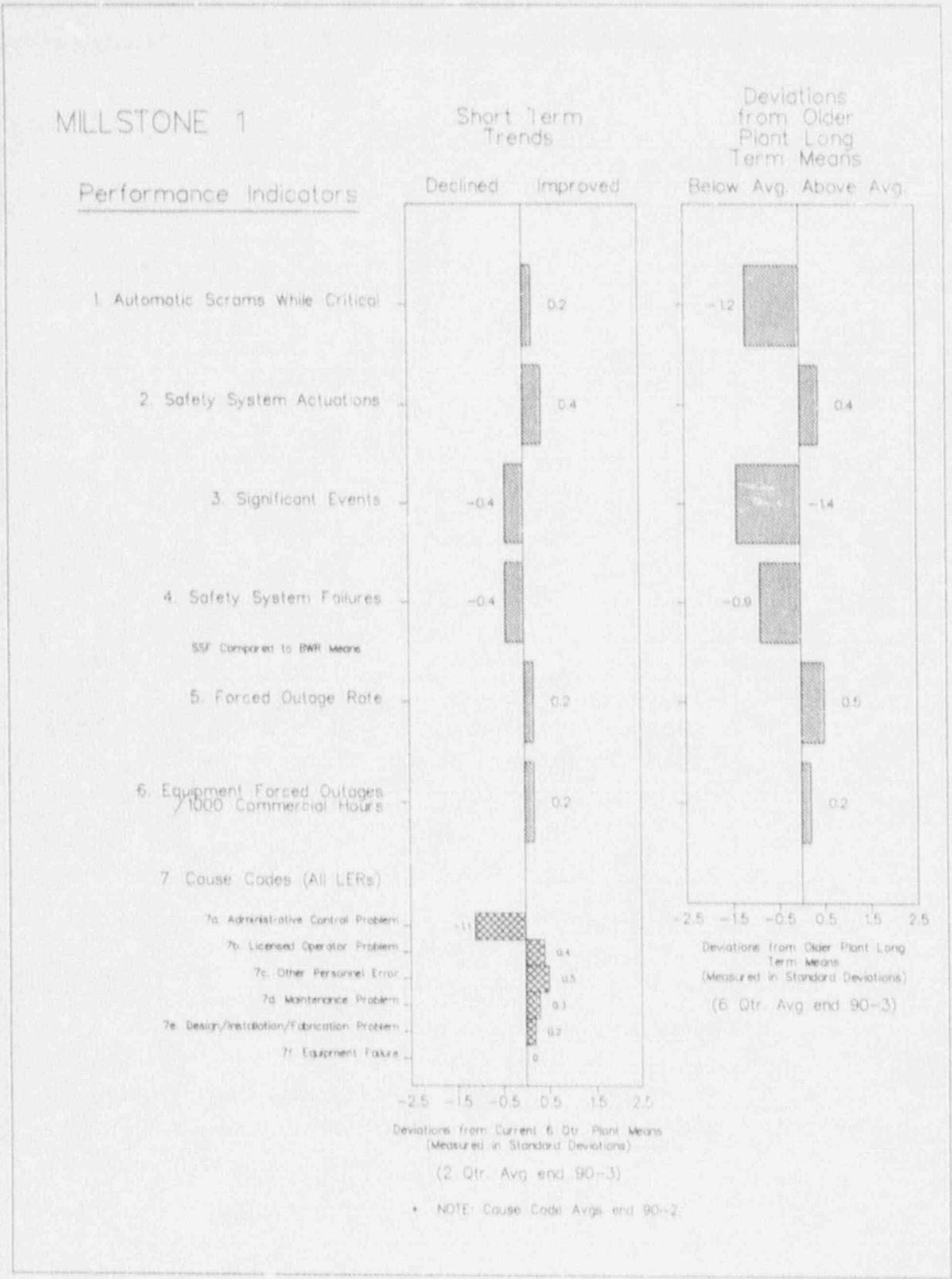

MILLSTONE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.2
-1.2
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.4
-1.4
4. Safety System Failures
-0.4
-0.9
SSF Compared to BWR Means
5. Forced Outage Rate
0.2
0.5
6. Equipment Forced Outages /1000 Commercial Hours
0.2
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.1
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.5
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

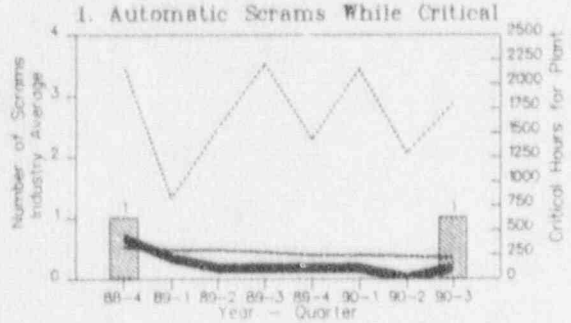
FIGURE 4.55

MILLSTONE 2

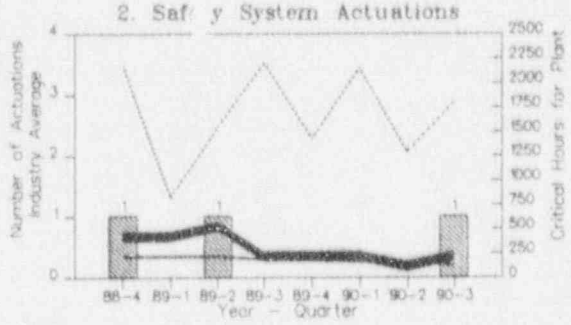
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

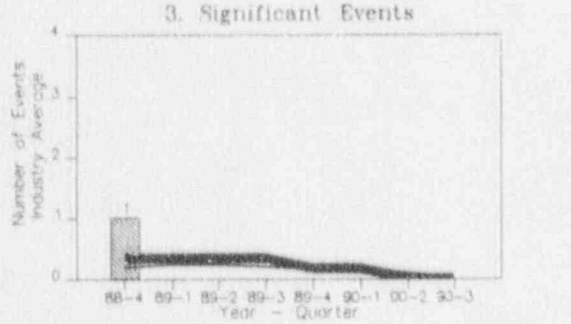
1. Automatic Scrams While Critical



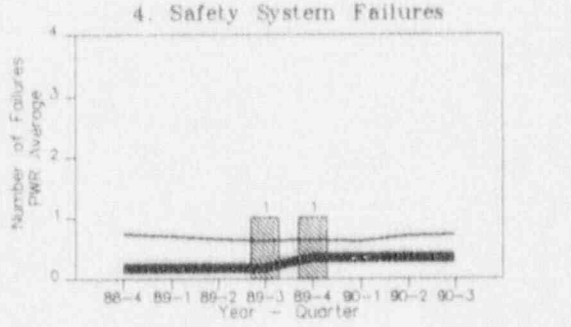
2. Safety System Actuations



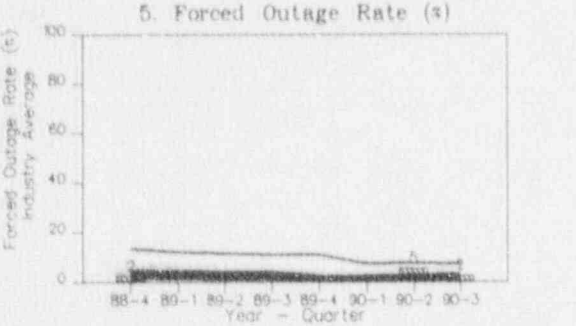
3. Significant Events



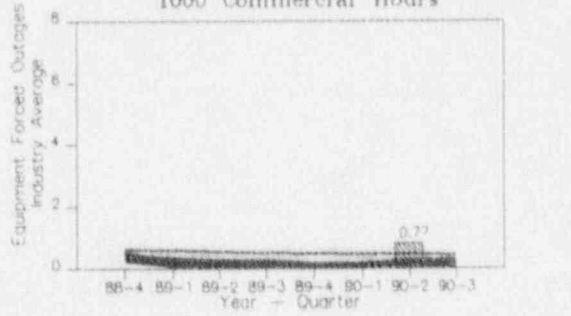
4. Safety System Failures



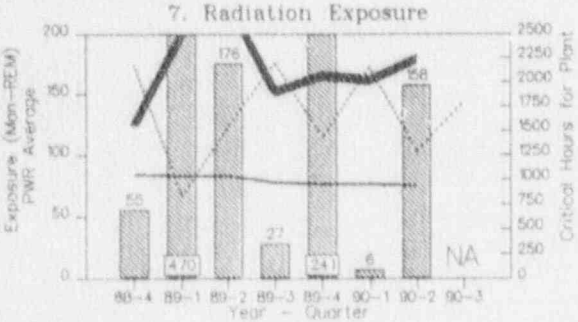
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

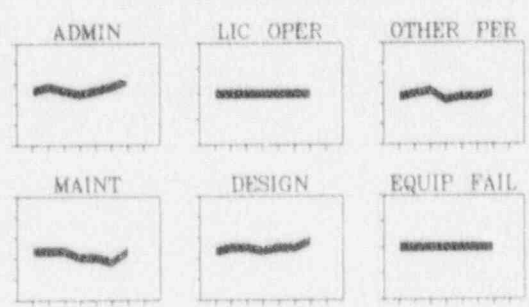


FIGURE 4.55

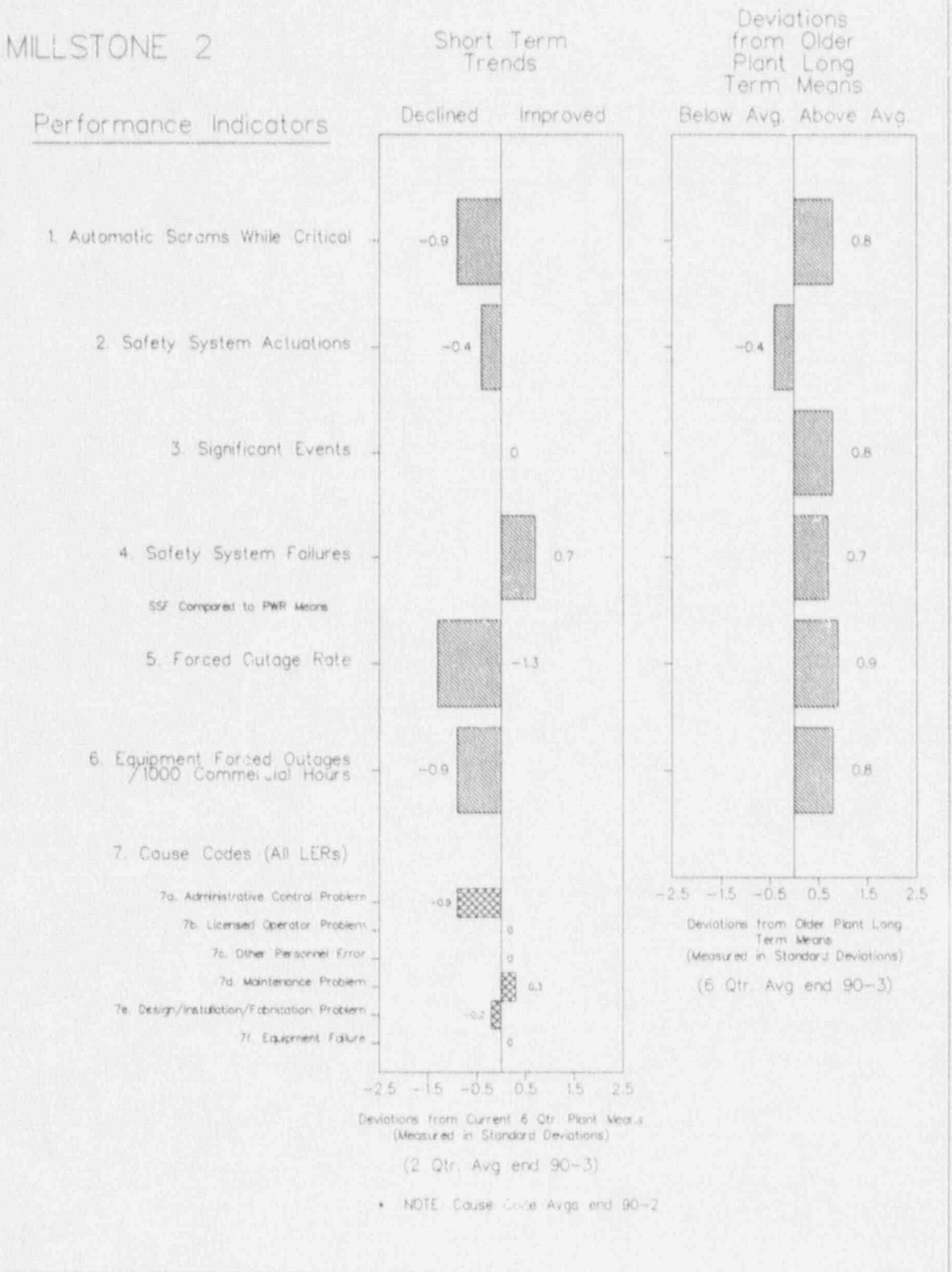
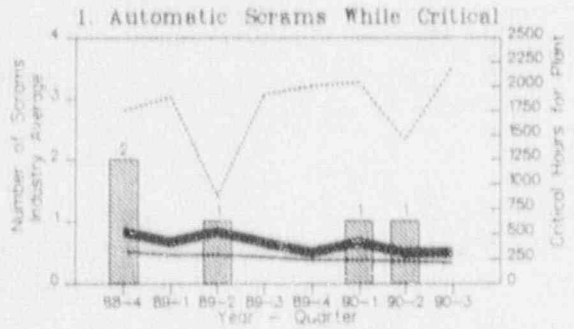

MILLSTONE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.9
-0.4
0
0.7
-1.3
-0.9
-0.9
0
0
0.3
-0.2
0
0.8
-0.4
0.8
0.7
0.9
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

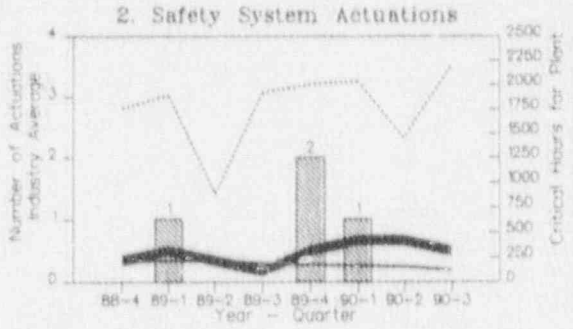
FIGURE 4.56

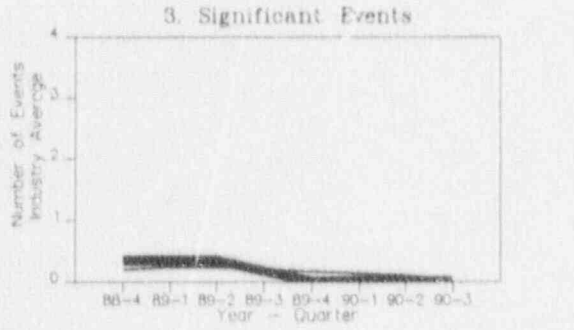
MILLSTONE 3

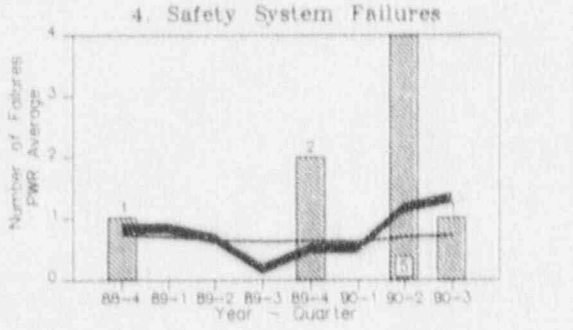
88-4 to 90-3

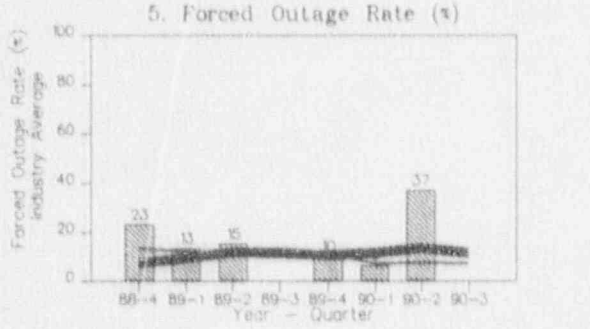
Legend:
- Indicator
- Oiger Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

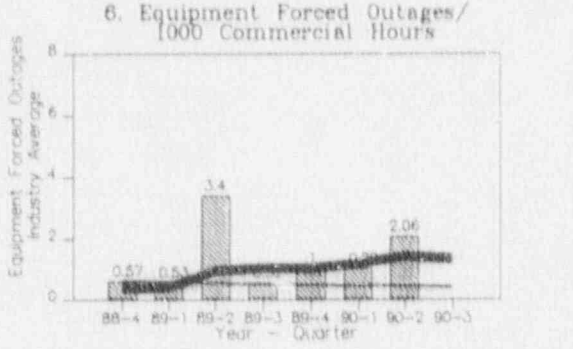


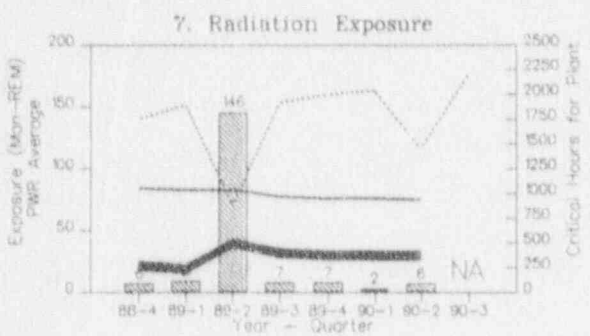












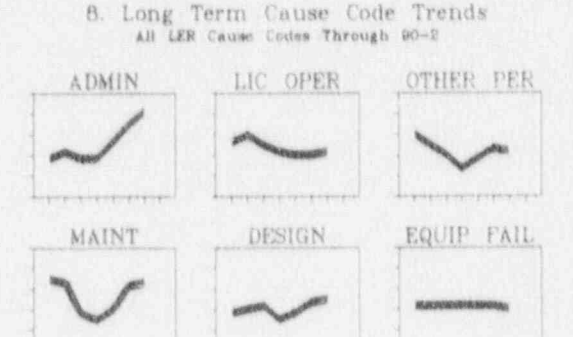


FIGURE 4.56

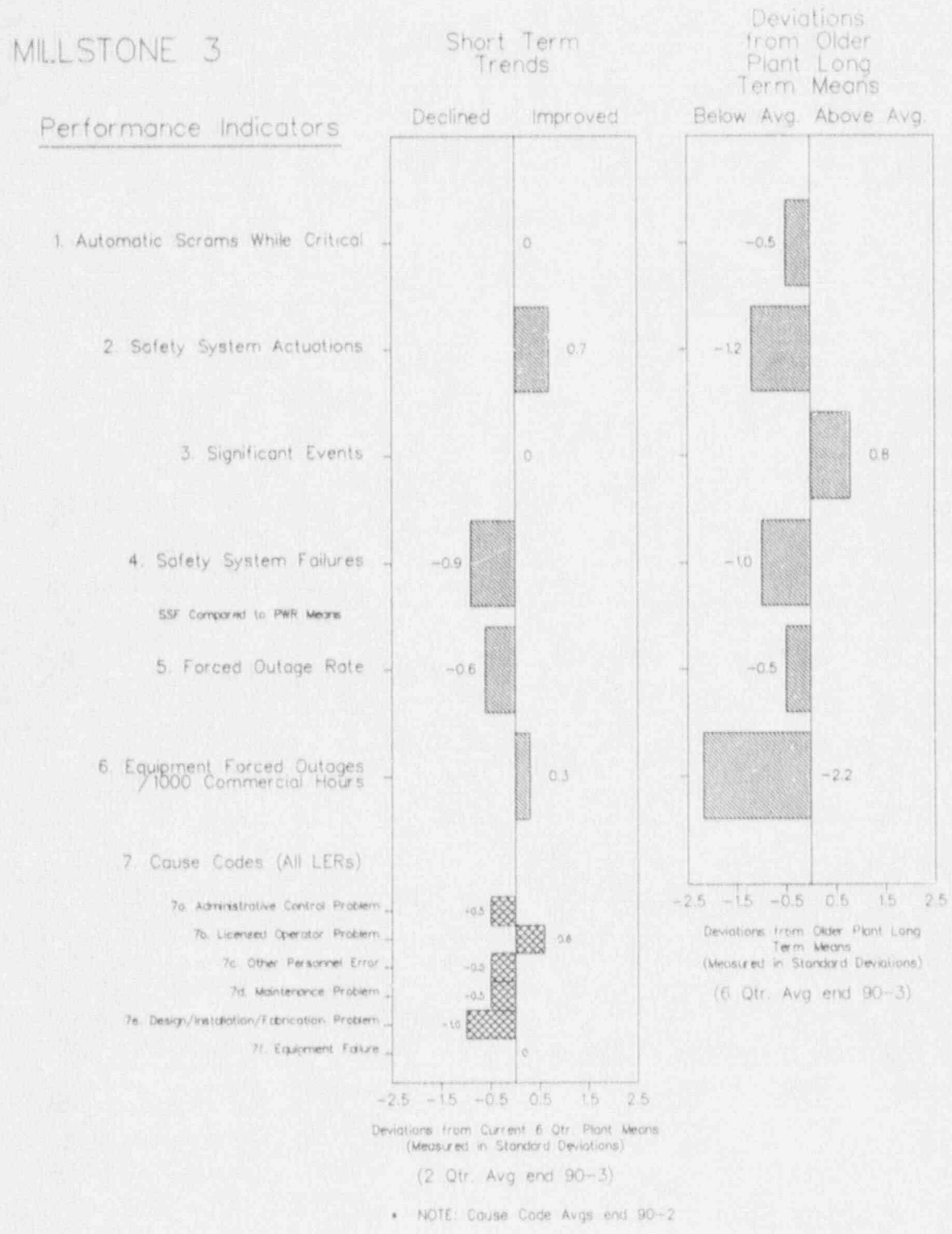
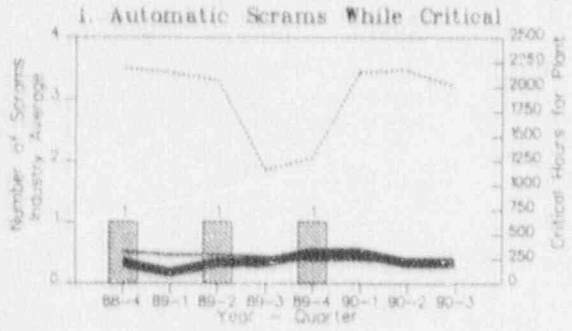

MILLSTONE 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.5
2. Safety System Actuations
0.7
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.9
-1.0
SSF Compared to PWR Means
5. Forced Outage Rate
-0.6
-0.5
6. Equipment Forced Outages / 1000 Commercial Hours
0.3
-2.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.5
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
-0.5
7d. Maintenance Problem
-0.5
7e. Design/Installation/Fabrication Problem
-1.0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

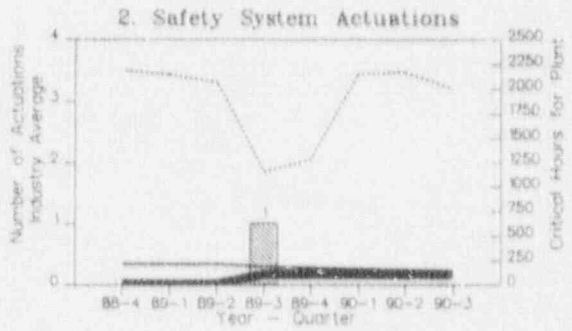
FIGURE 4.57

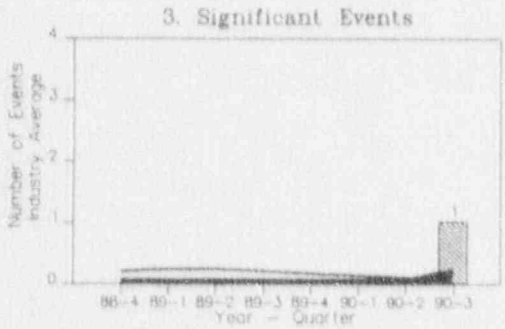
MONTICELLO

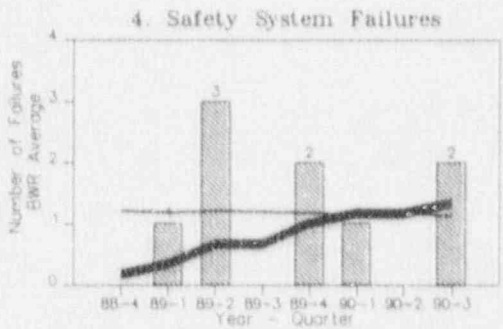
88-4 to 90-3

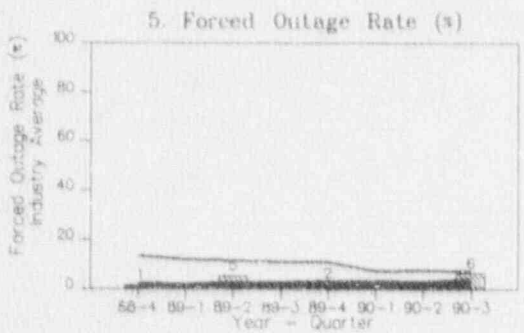
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

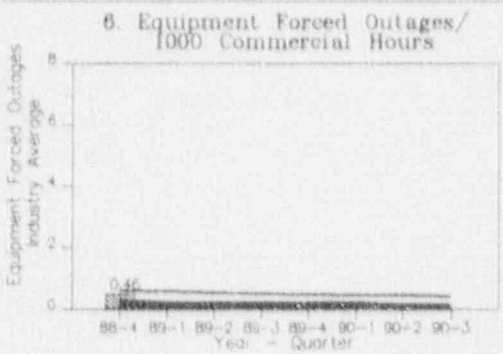


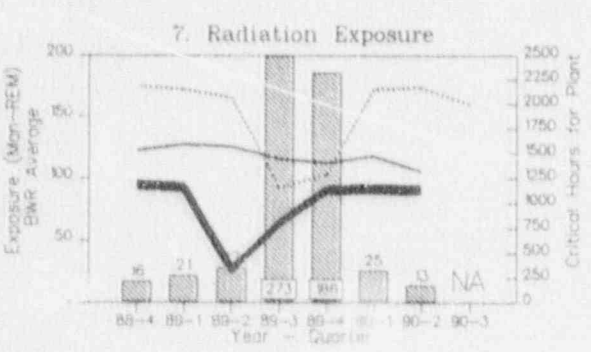












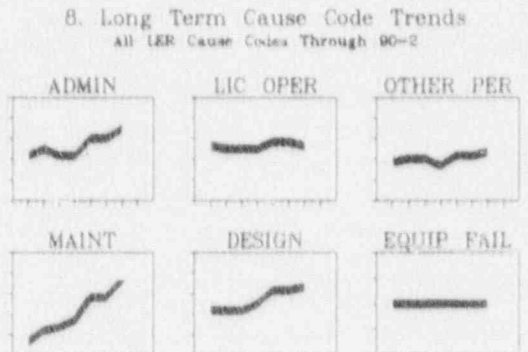


FIGURE 4.57

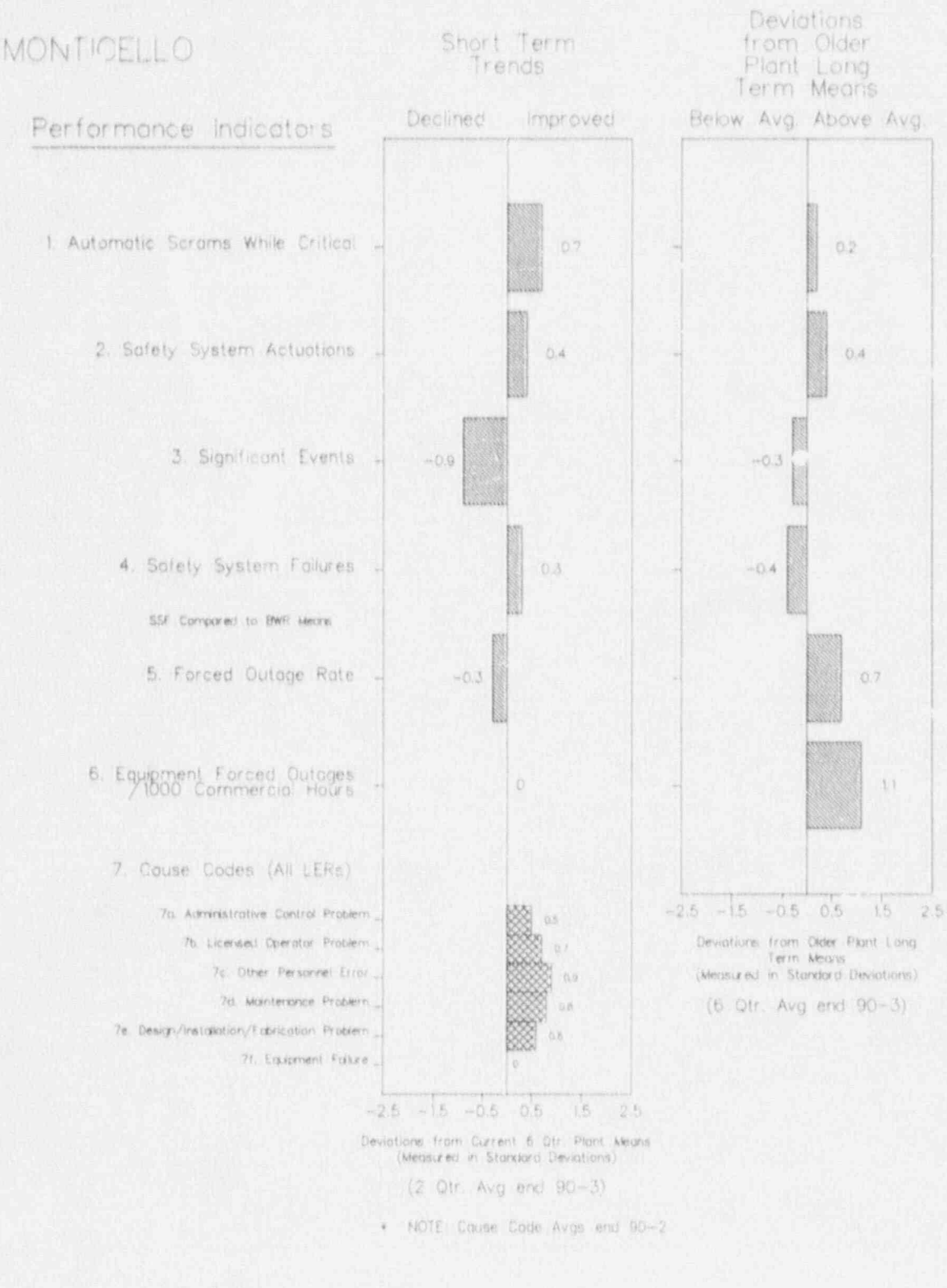

MONTICELLO
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.9
-0.3
4. Safety System Failures
0.3
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
-0.3
0.7
6. Equipment Forced Outages /1000 Commercial Hours
0
1.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.5
0.7
0.9
0.8
0.6
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

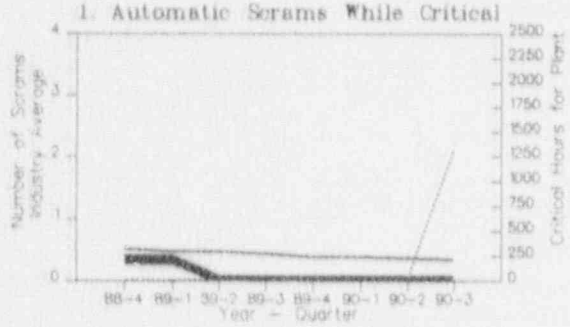
FIGURE 4.58

NINE MILE PT. 1

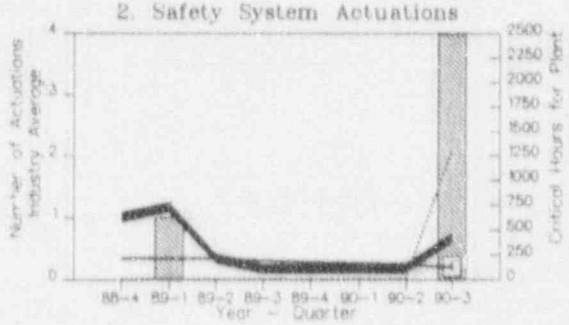
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

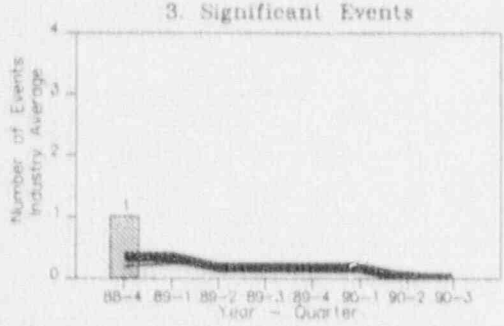
1. Automatic Scrams While Critical



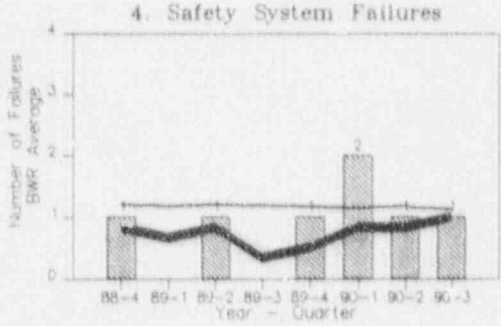
2. Safety System Actuations



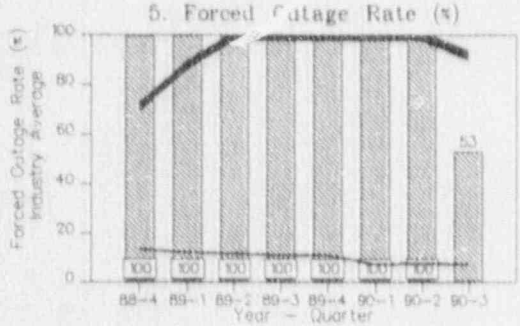
3. Significant Events



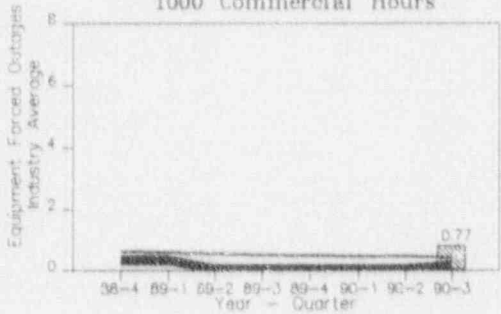
4. Safety System Failures



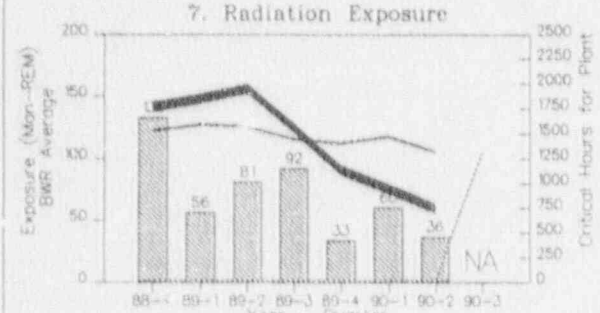
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

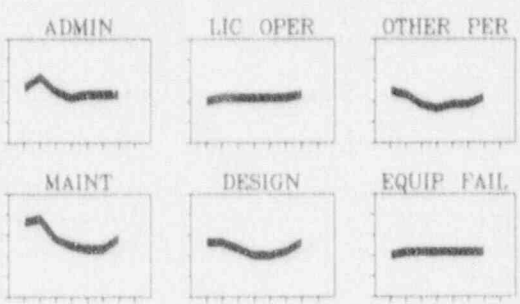


FIGURE 4.55

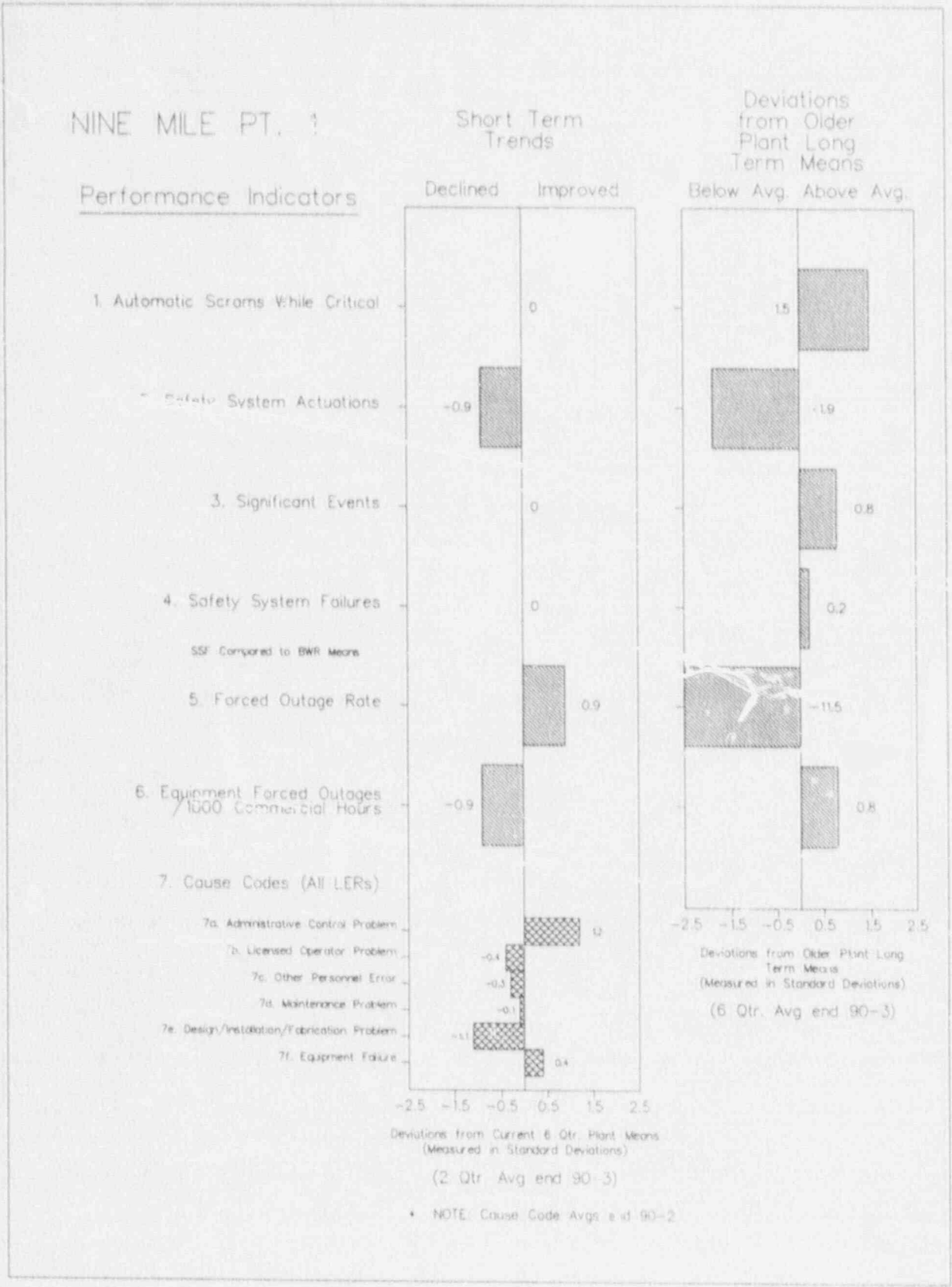

NINE MILE PT. 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
-0.9
-1.9
3. Significant Events
0
0.8
4. Safety System Failures
0
0.2
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
-11.5
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.2
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
-0.5
7d. Maintenance Problem
-0.1
7e. Design/Installation/Fabrication Problem
-1.1
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. e.id 90-2

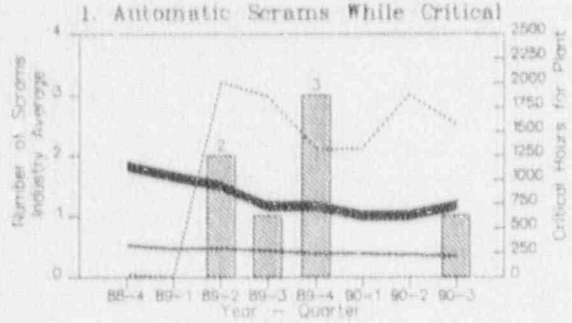
FIGURE 4.59

NINE MILE PT. 2

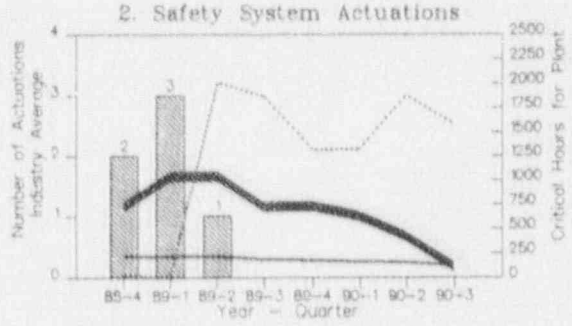
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

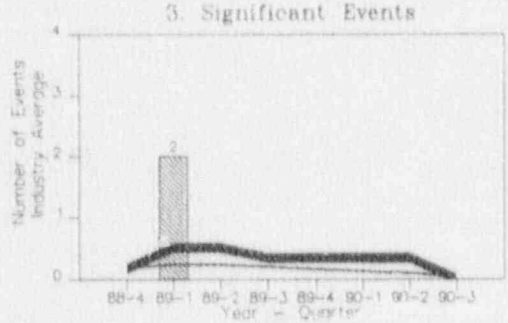
1. Automatic Scrams While Critical



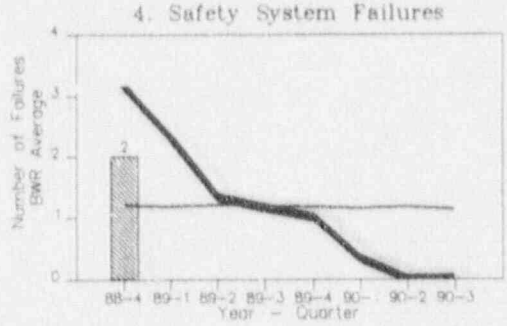
2. Safety System Actuations



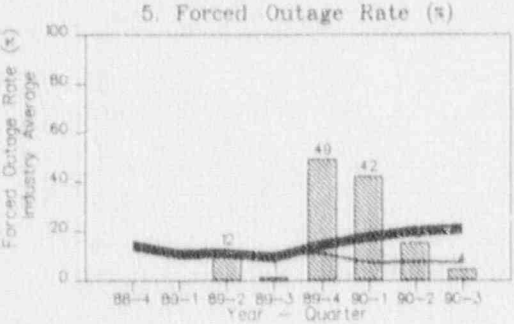
3. Significant Events



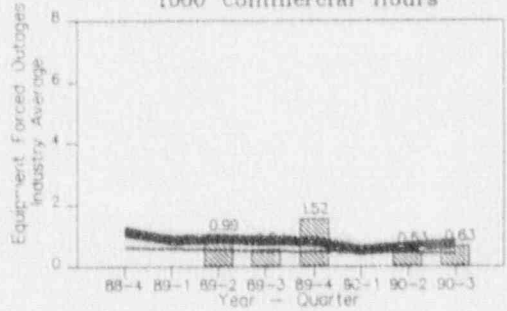
4. Safety System Failures



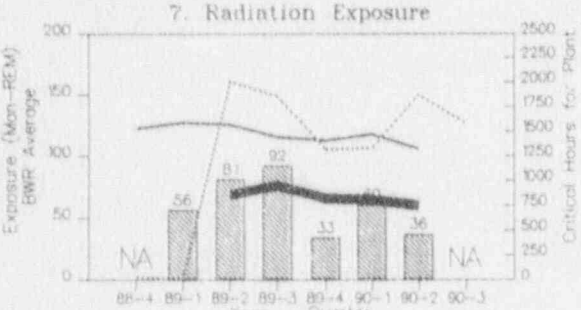
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

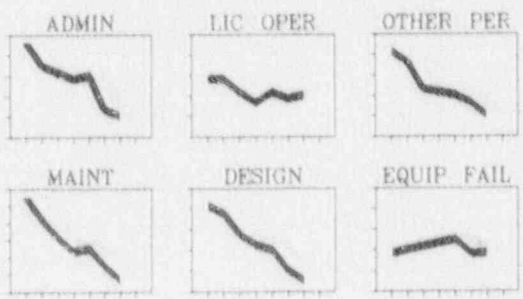


FIGURE 4.59

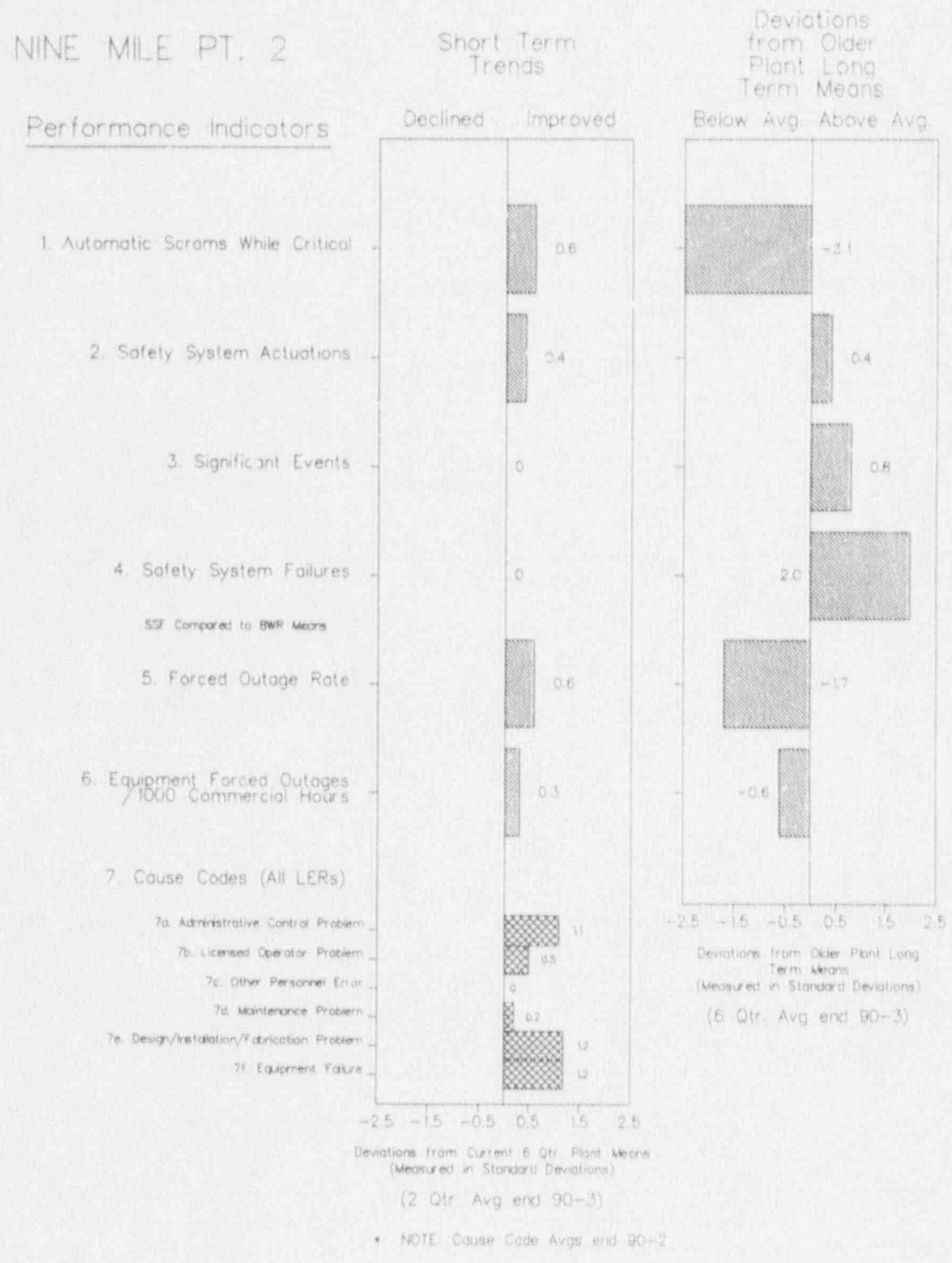
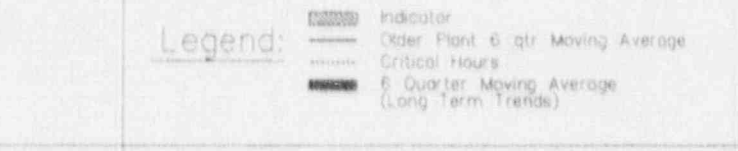
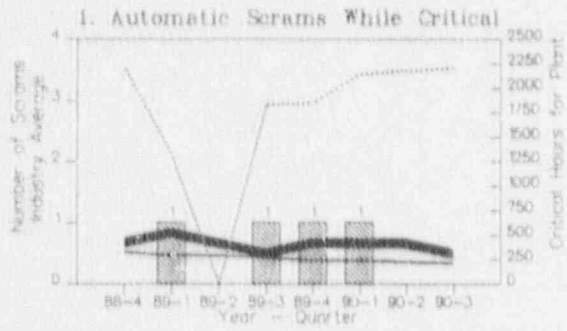

NINE MILE PT. 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-3.1
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0
2.0
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
-1.7
6. Equipment Forced Outages /1000 Commercial Hours
0.3
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.1
7b. Licensed Operator Problem
0.5
7c. Other Personnel Error
0
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
1.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

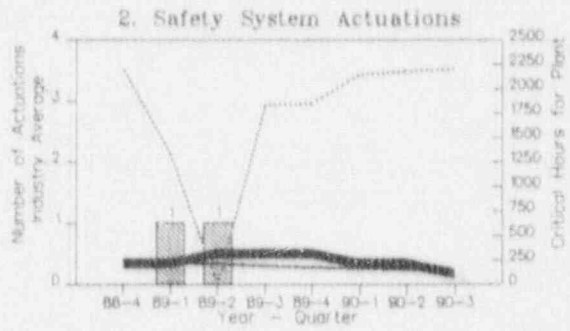
FIGURE 4.60

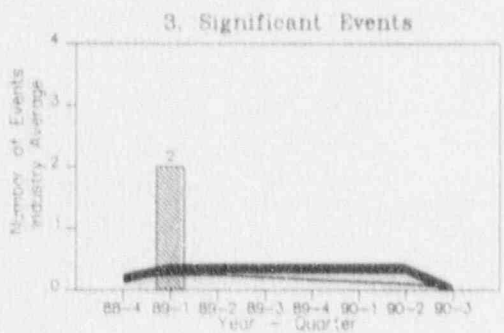
NORTH ANNA 1

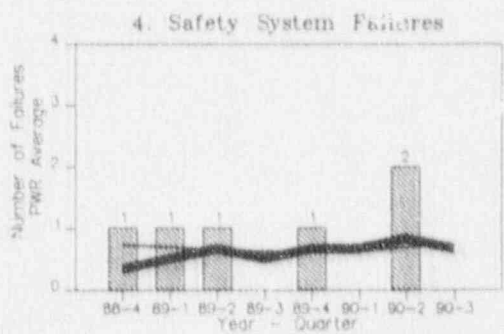
88-4 to 90-3

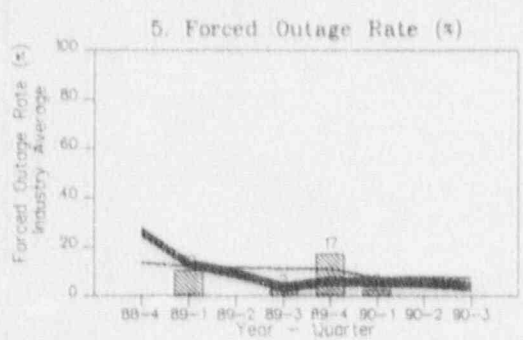


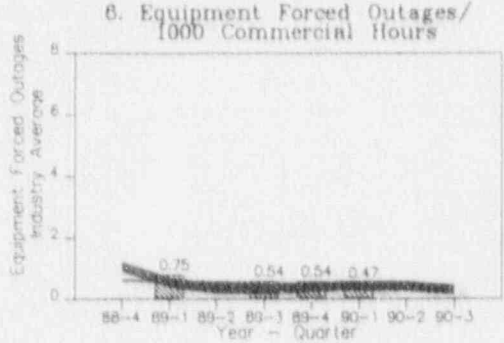


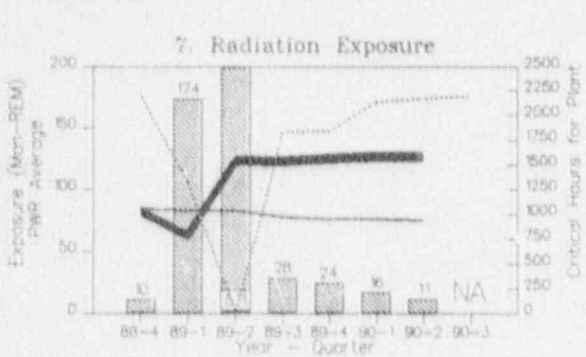












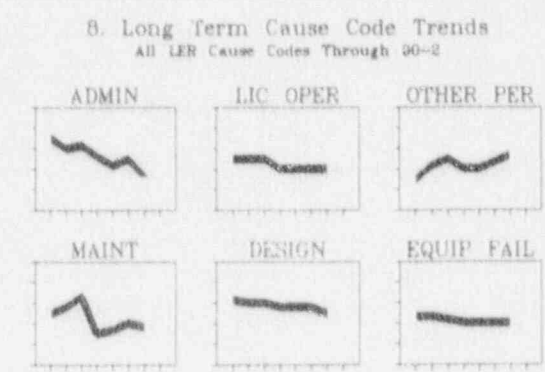


FIGURE 4.60

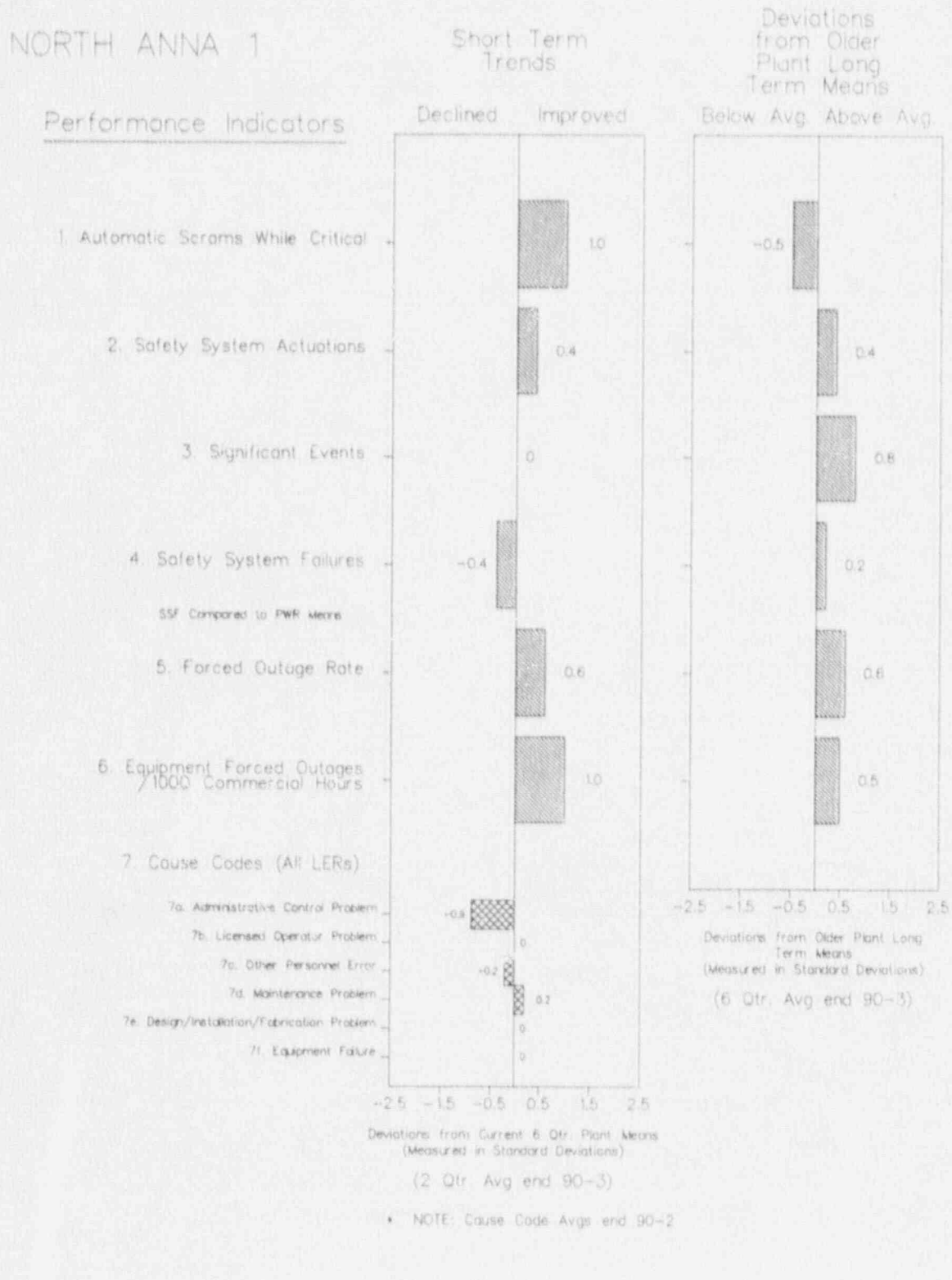

NORTH ANNA 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg
1. Automatic Scrams While Critical
1.0
-0.5
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.6
6. Equipment Forced Outages /1000 Commercial Hours
1.0
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

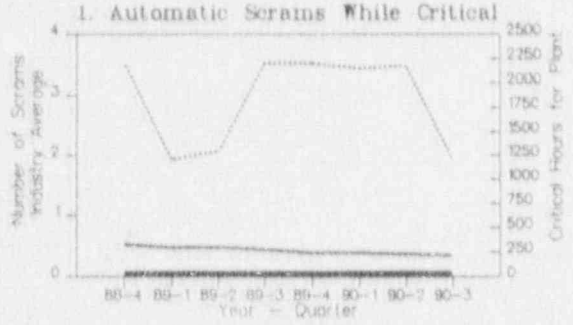
FIGURE 4.61

NORTH ANNA 2

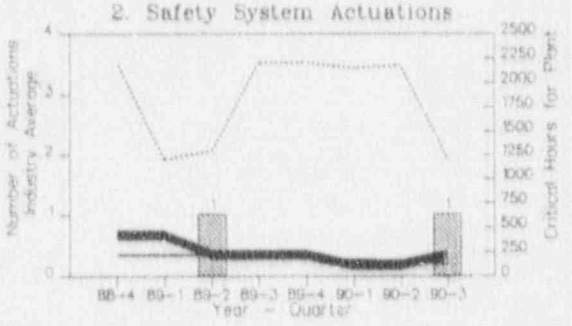
88-4 to 90-3

Legend:
- Indicator
- Oper. Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

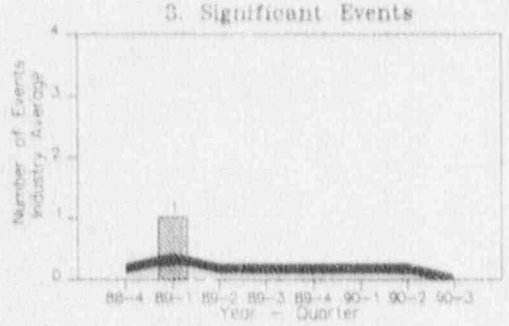
1. Automatic Scrams While Critical



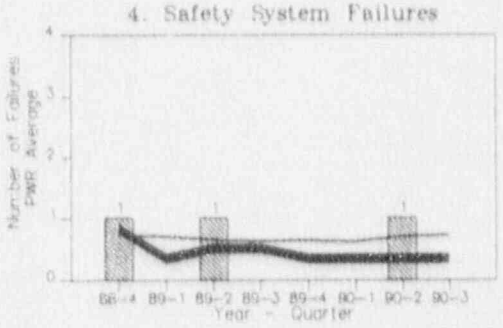
2. Safety System Actuations



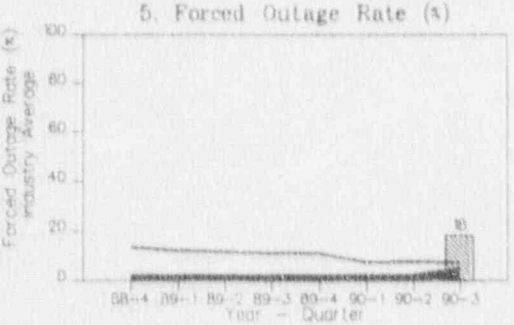
3. Significant Events



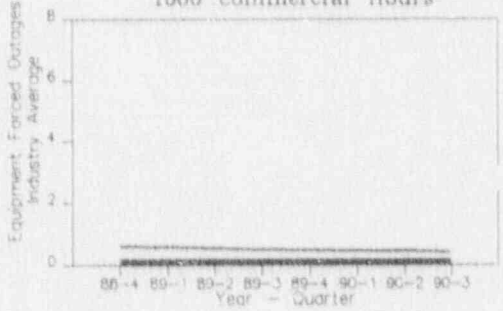
4. Safety System Failures



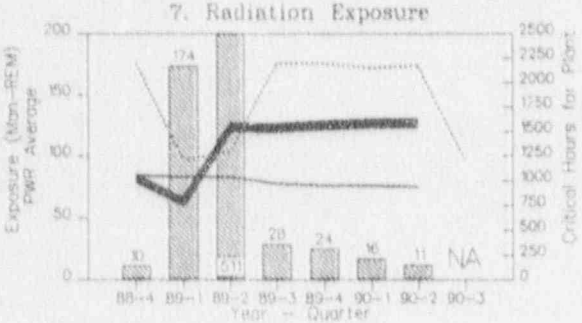
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

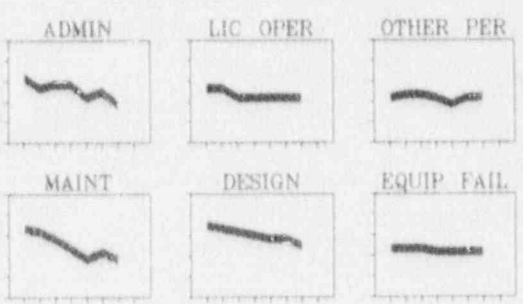


FIGURE 4.61

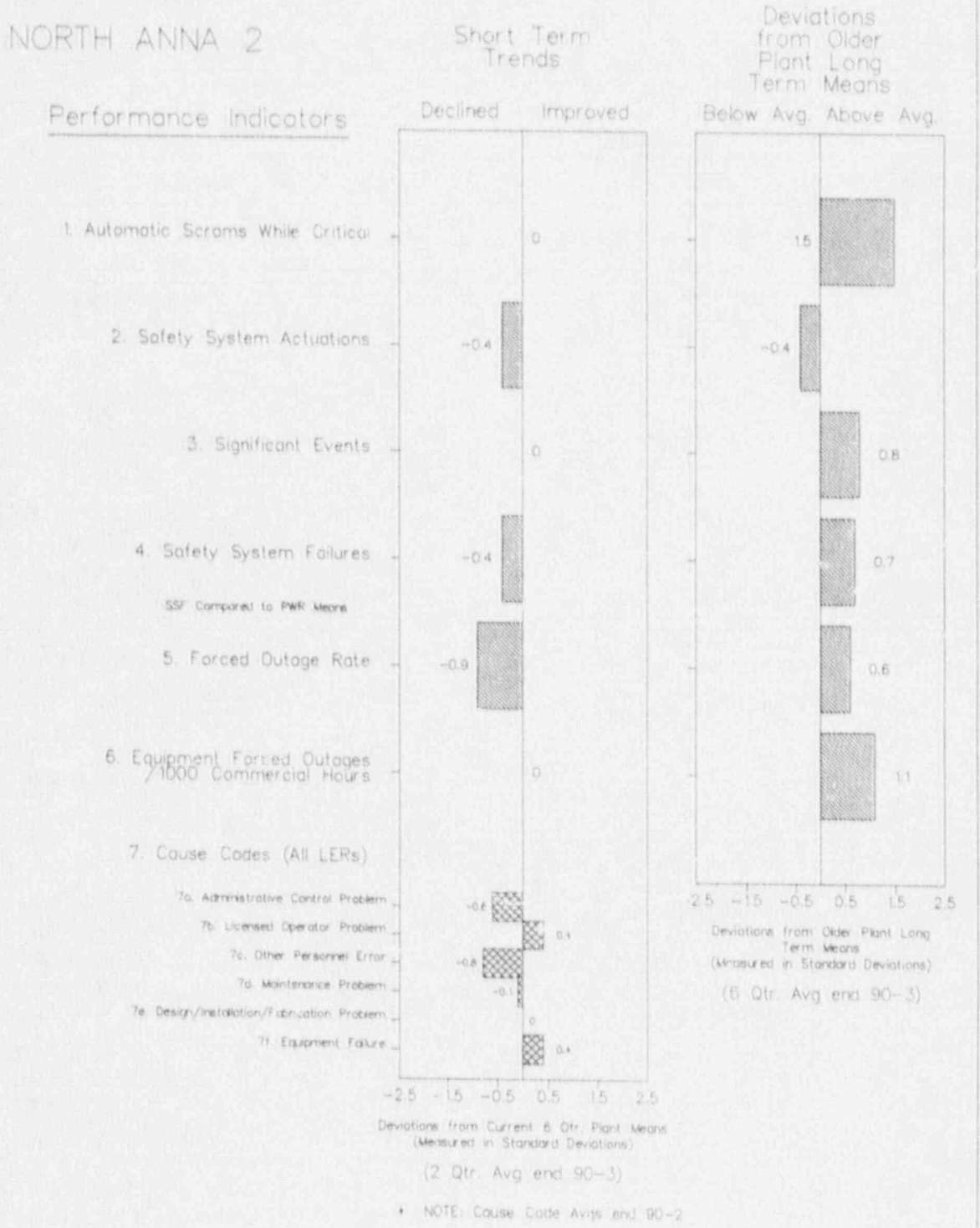

NORTH ANNA 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
-0.4
0
-0.4
-0.9
0
-0.6
0.4
-0.8
-0.1
0
0.4
1.5
-0.4
0.8
0.7
0.6
1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

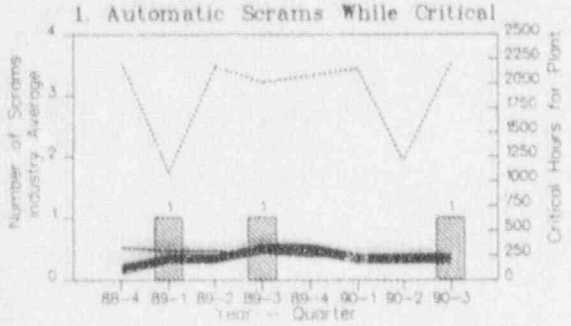
FIGURE 4.62

OCONEE 1

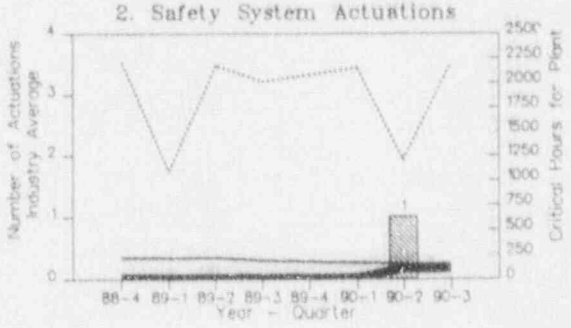
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

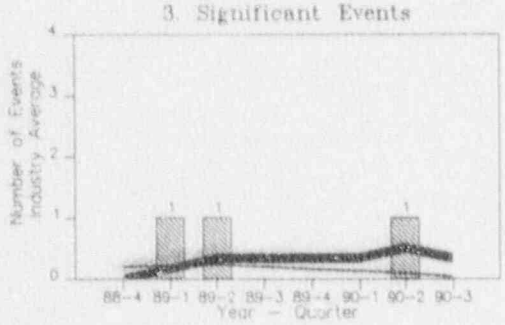
1. Automatic Scrams While Critical



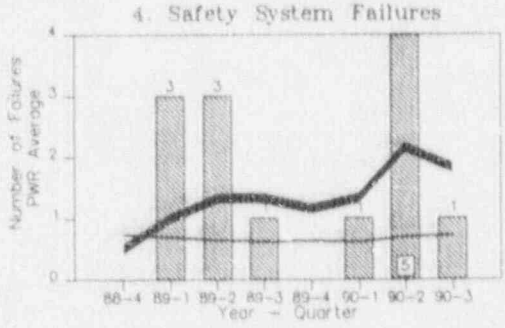
2. Safety System Actuations



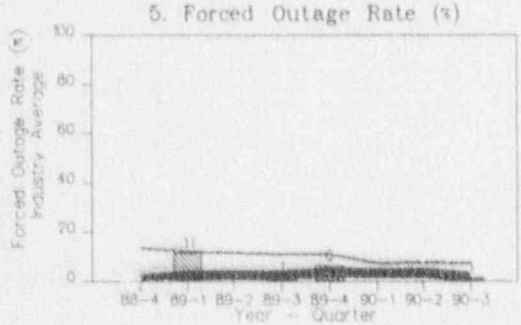
3. Significant Events



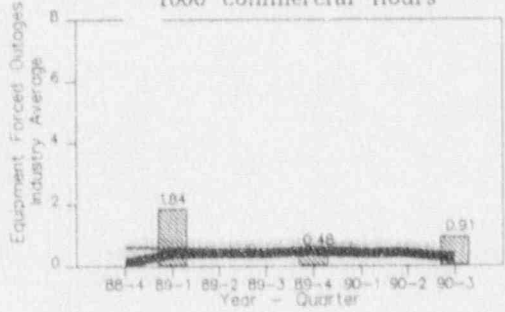
4. Safety System Failures



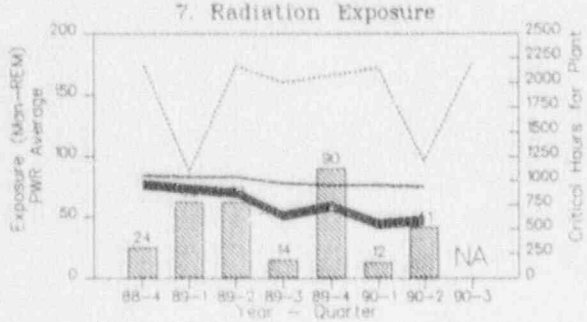
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

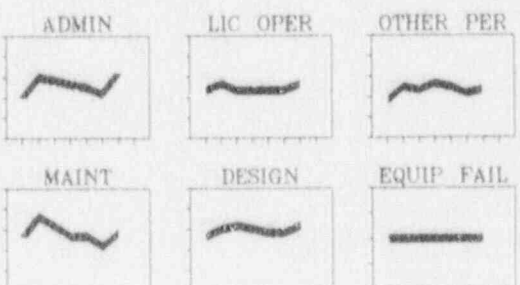


FIGURE 4.62

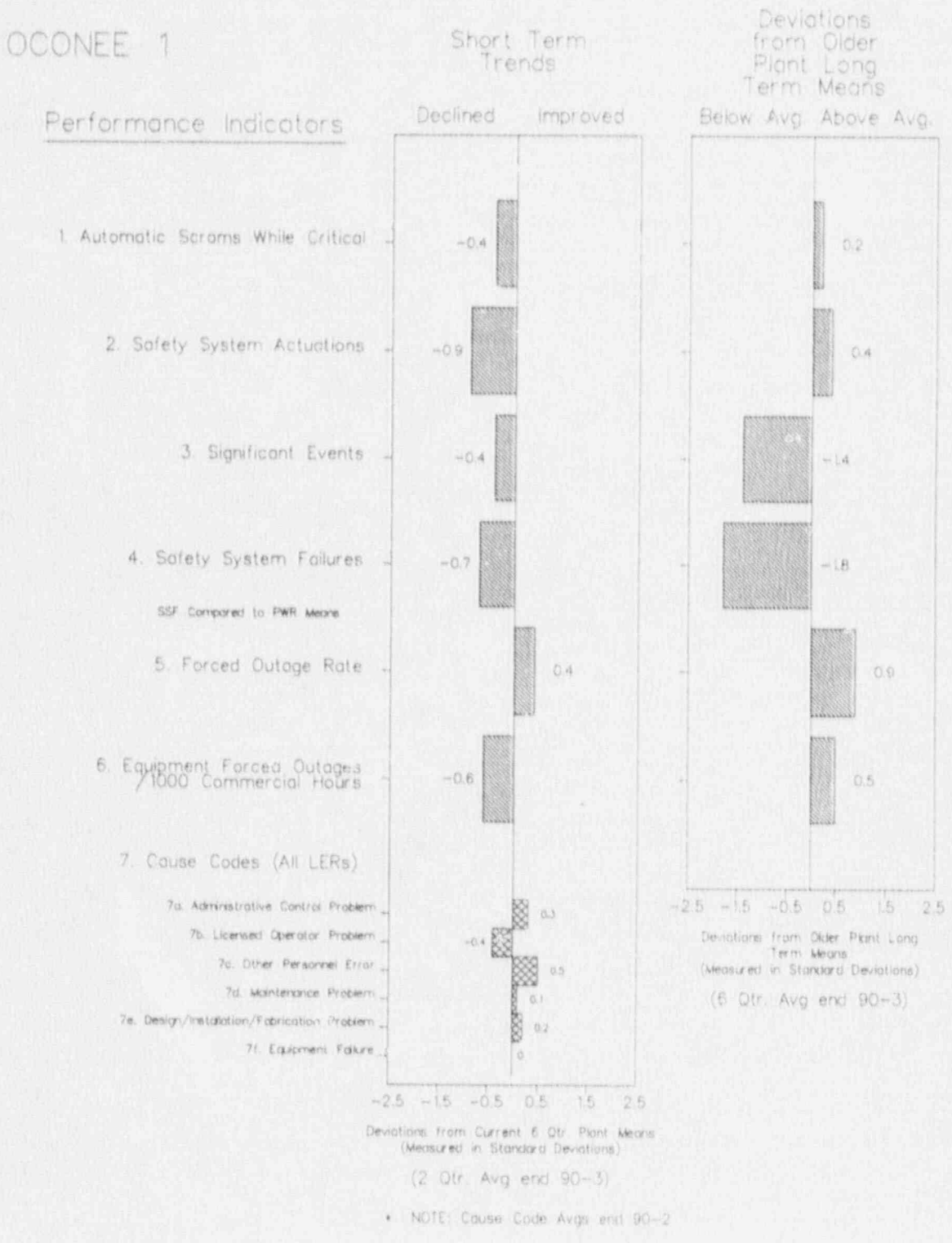

OCONEE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
-0.9
-0.4
-0.7
0.4
-0.6
0.3
-0.4
0.5
0.1
0.2
0
0.2
0.4
-1.4
-1.8
0.9
0.5
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.63

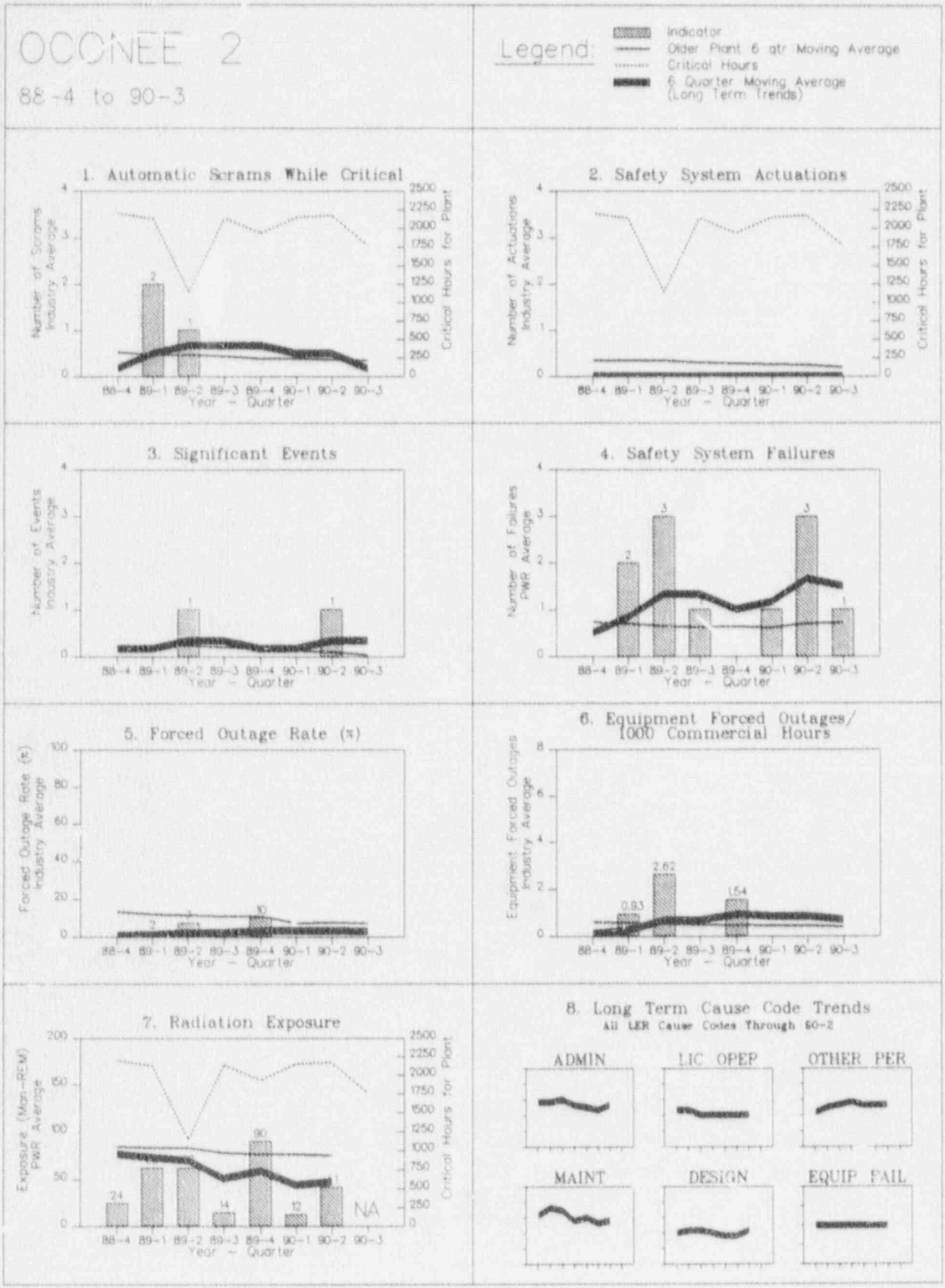

OCONEE 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
0.93
2.62
1.54
7. Radiation Exposure
Exposure (Man-REM) PWR Average
24
14
90
12
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.63

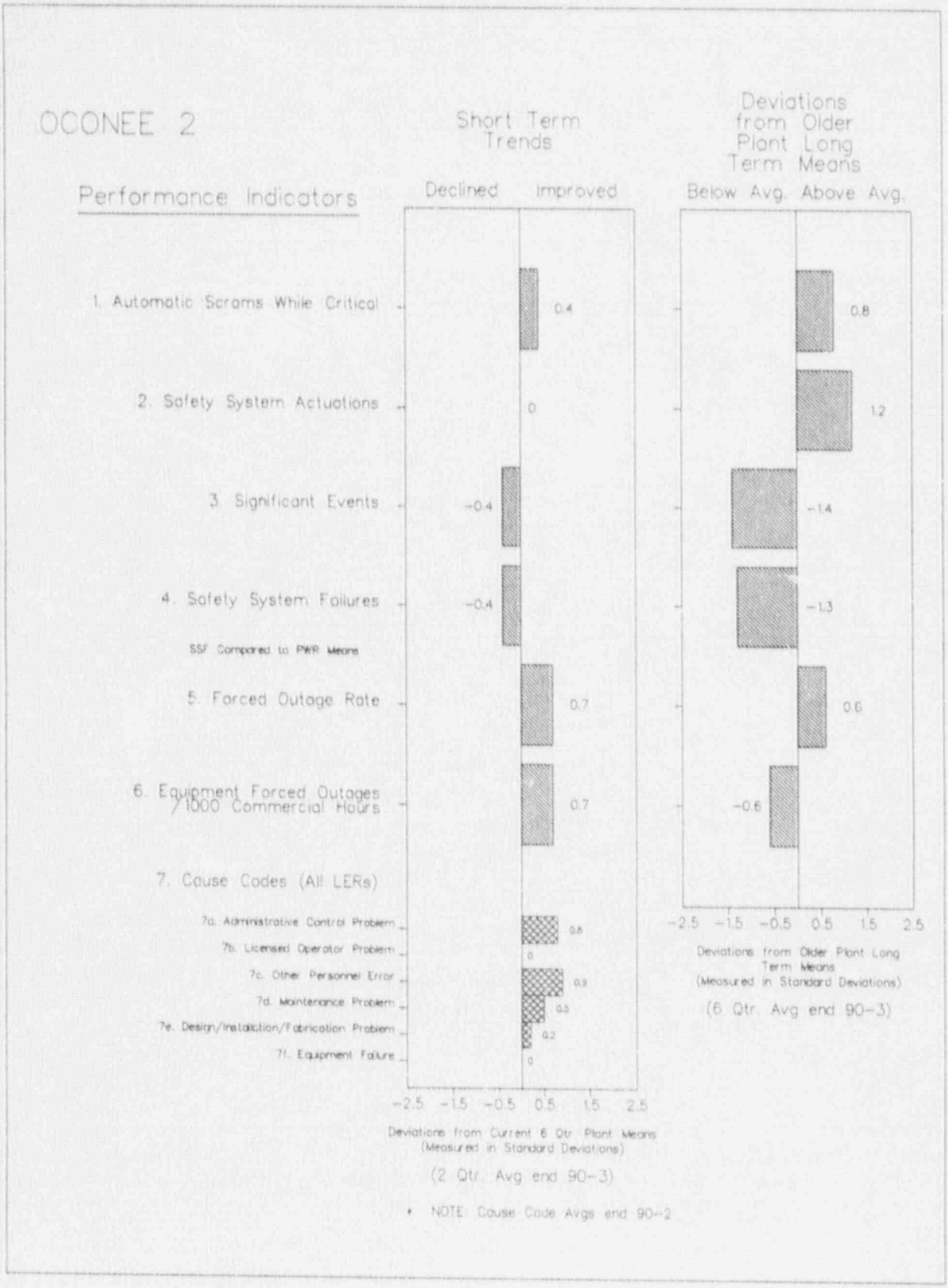
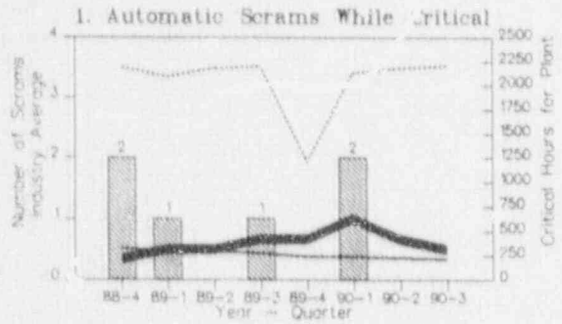

OCONEE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
-0.4
-1.4
4. Safety System Failures
-0.4
-1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
0.6
6. Equipment Forced Outages /1000 Commercial Hours
0.7
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.9
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

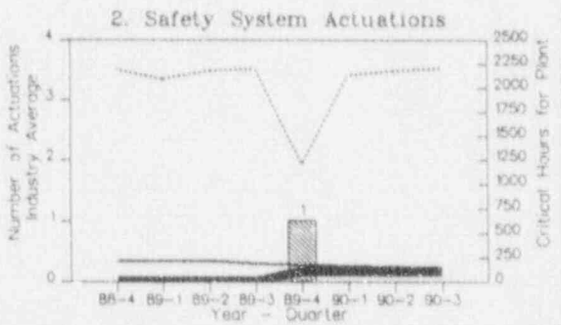
FIGURE 4.64

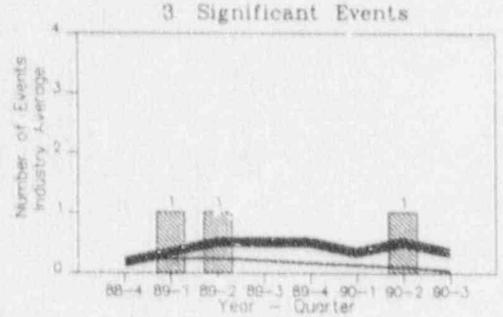
OCONEE 3

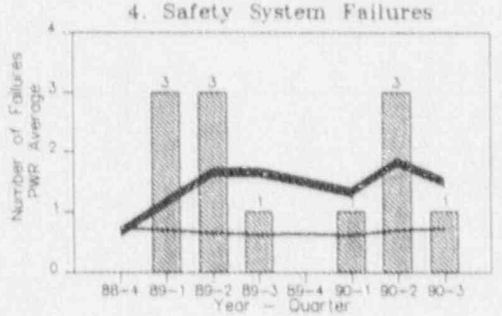
88-4 to 90-3

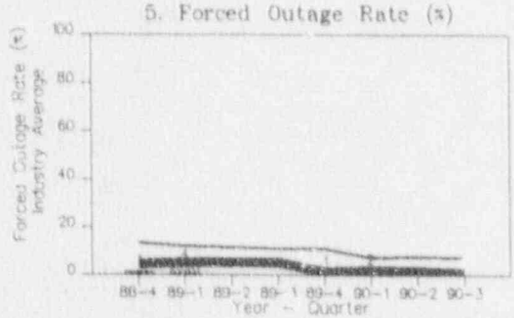
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

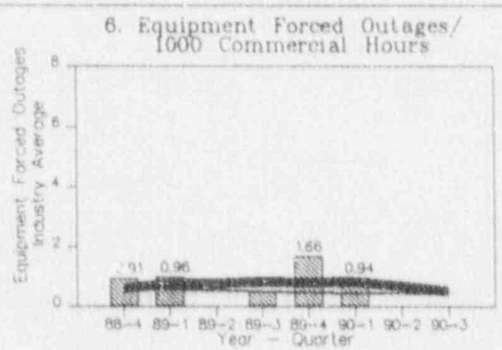


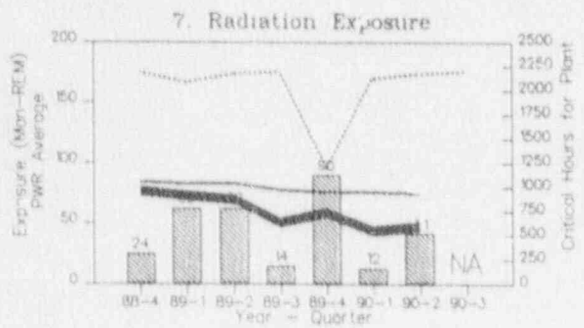












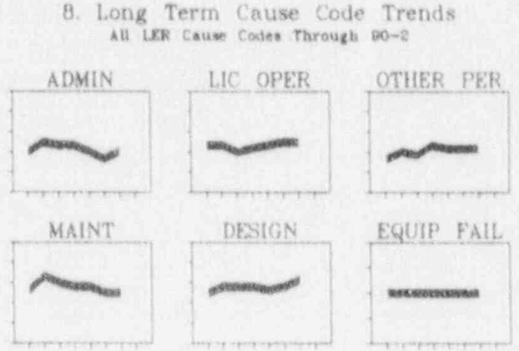


FIGURE 4.E4

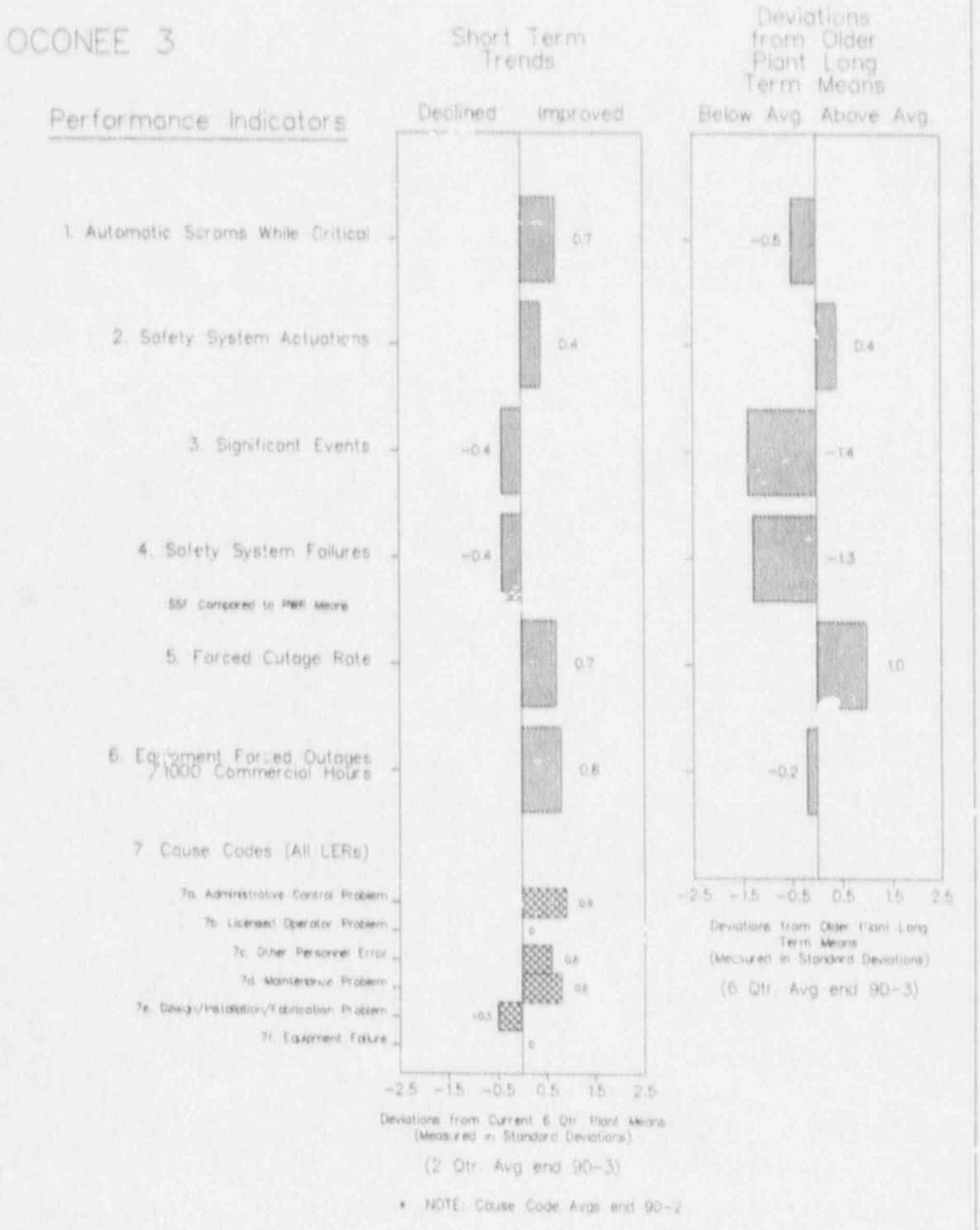

OCONEE 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-0.5
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.4
-1.4
4. Safety System Failures
-0.4
-1.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
1.0
6. Equipment Forced Outages / 1000 Commercial Hours
0.8
-0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
-0.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

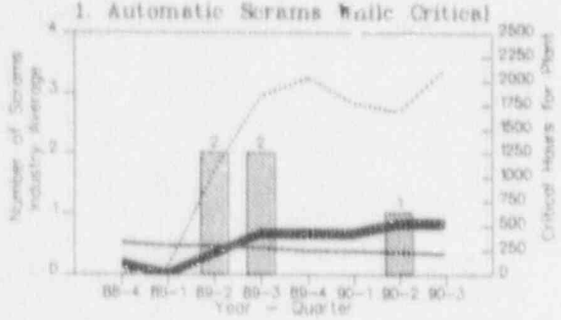
FIGURE 4.65

OYSTER CREEK

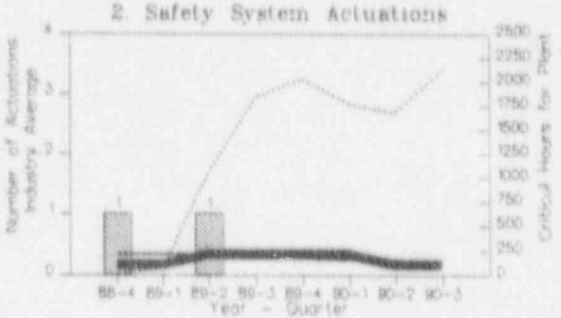
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

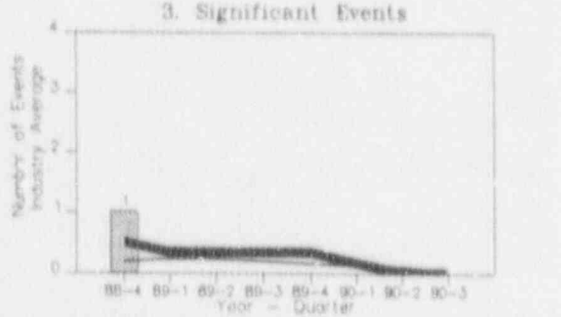
1. Automatic Scrams While Critical



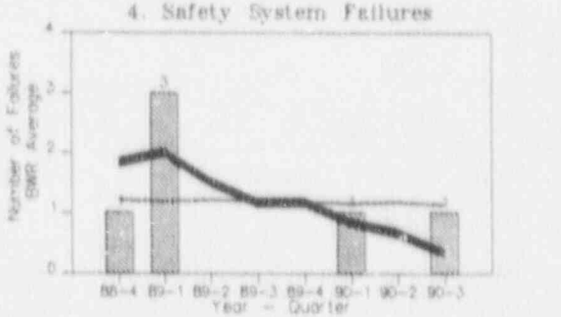
2. Safety System Actuations



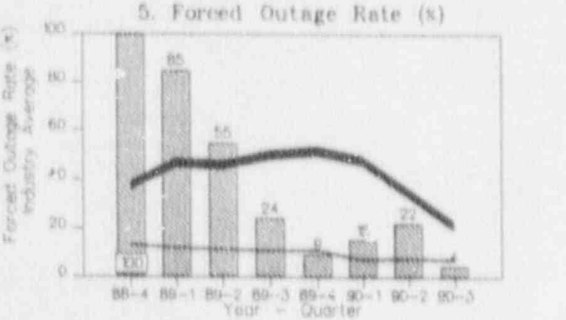
3. Significant Events



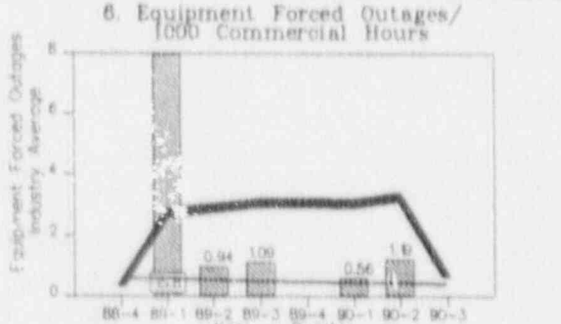
4. Safety System Failures



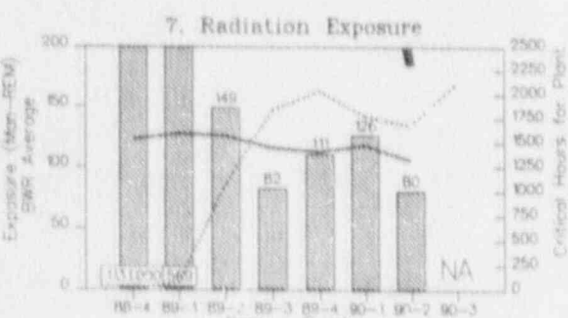
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Co. s Through 90-2

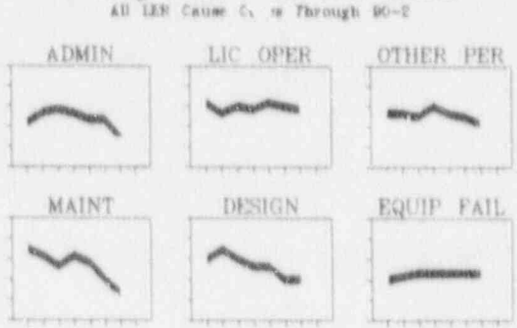


FIGURE 4.65

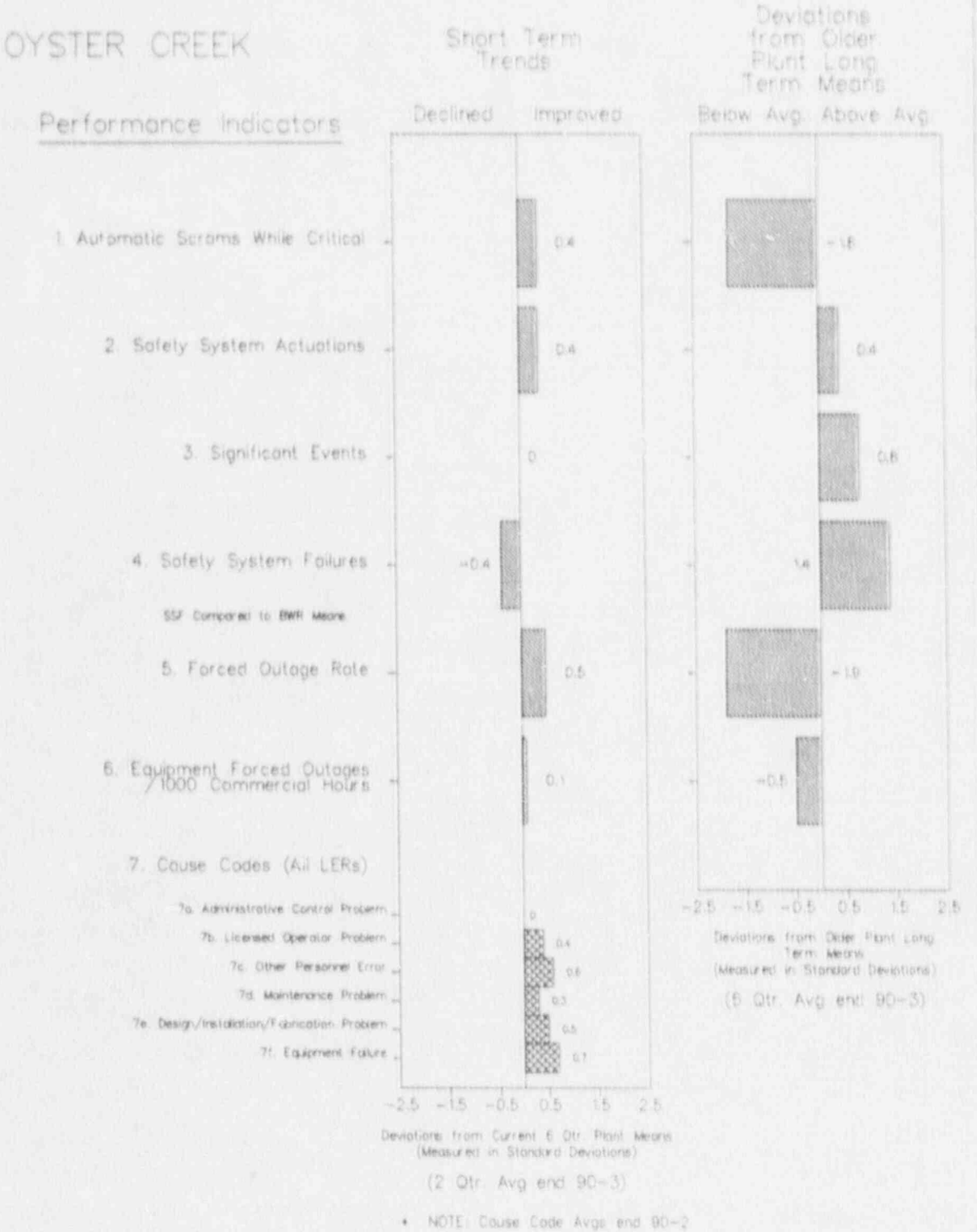

OYSTER CREEK
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
-1.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
1.4
SSF Compared to BWR Means
5. Forced Outage Rate
0.5
-1.0
6. Equipment Forced Outages /1000 Commercial Hours
0.1
-0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
0.4
0.6
0.3
0.5
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.66

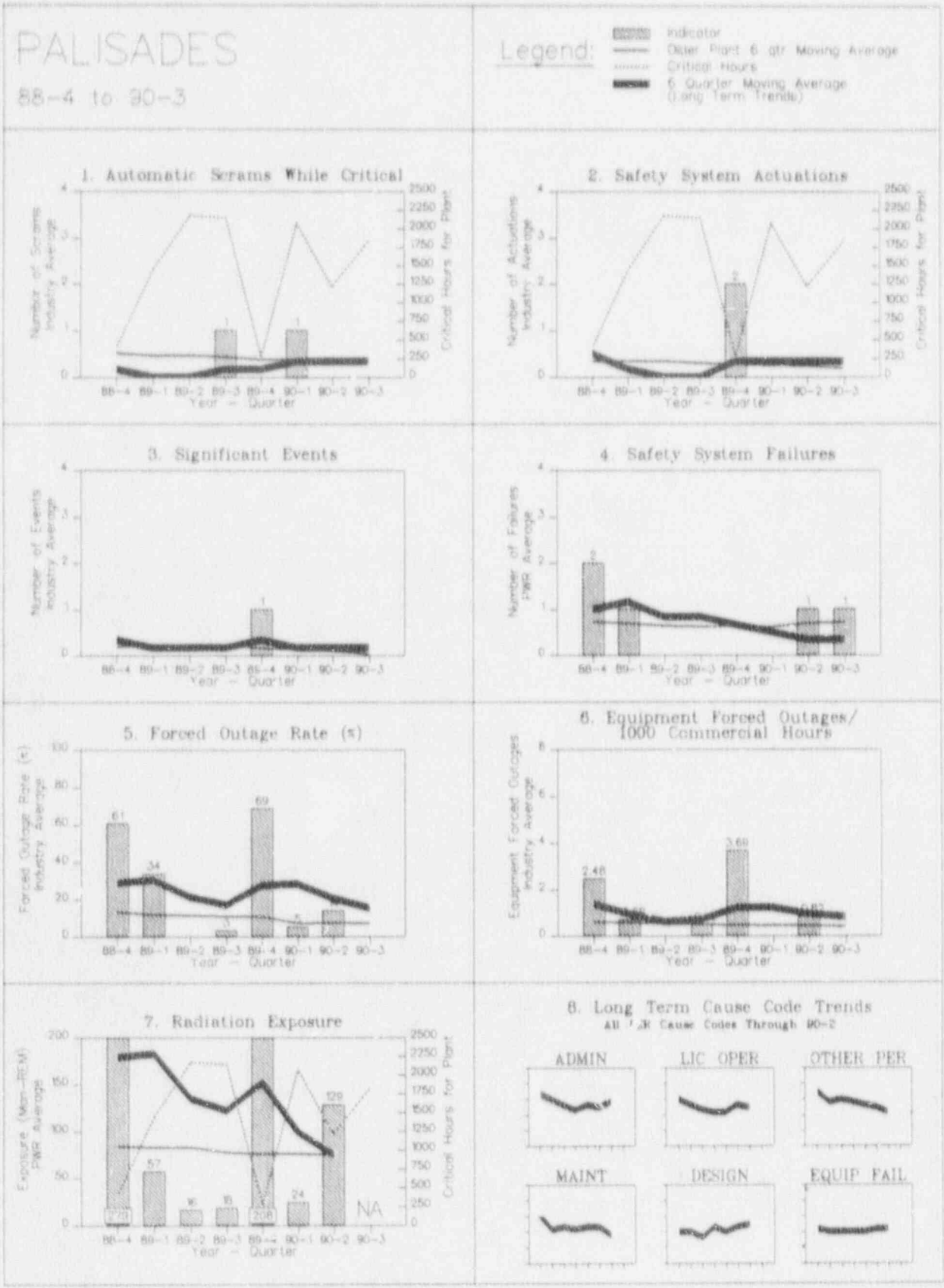

PALISADES
88-4 to 90-3
Legend:
Indicator
Other Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Long Term Cause Code Trends
All PJR Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.66

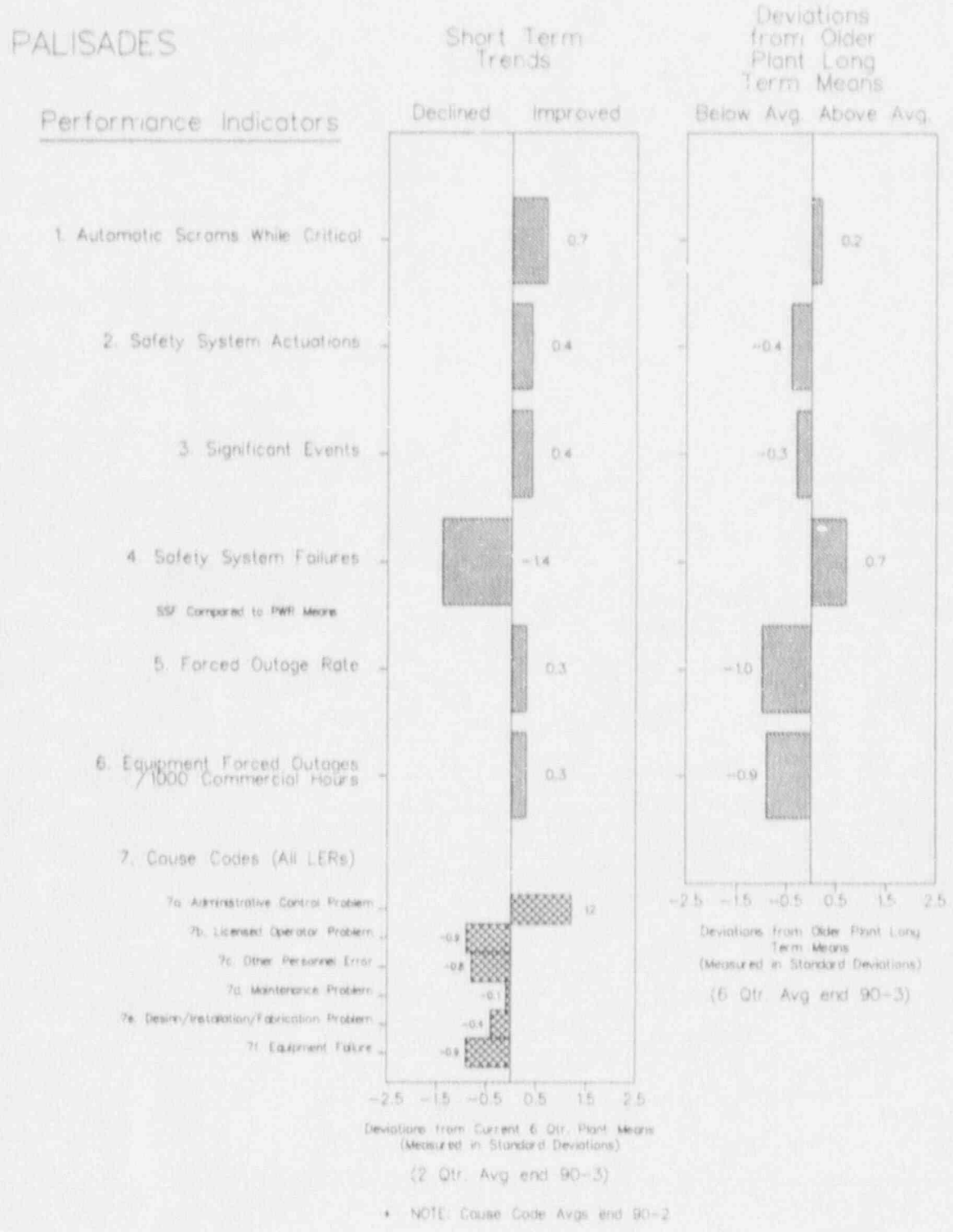

PALISADES
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.7
0.4
0.4
-1.4
0.3
0.3
1.2
-0.9
-0.8
-0.1
-0.4
-0.9
0.2
-0.4
-0.3
0.7
-1.0
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)

FIGURE 4.57

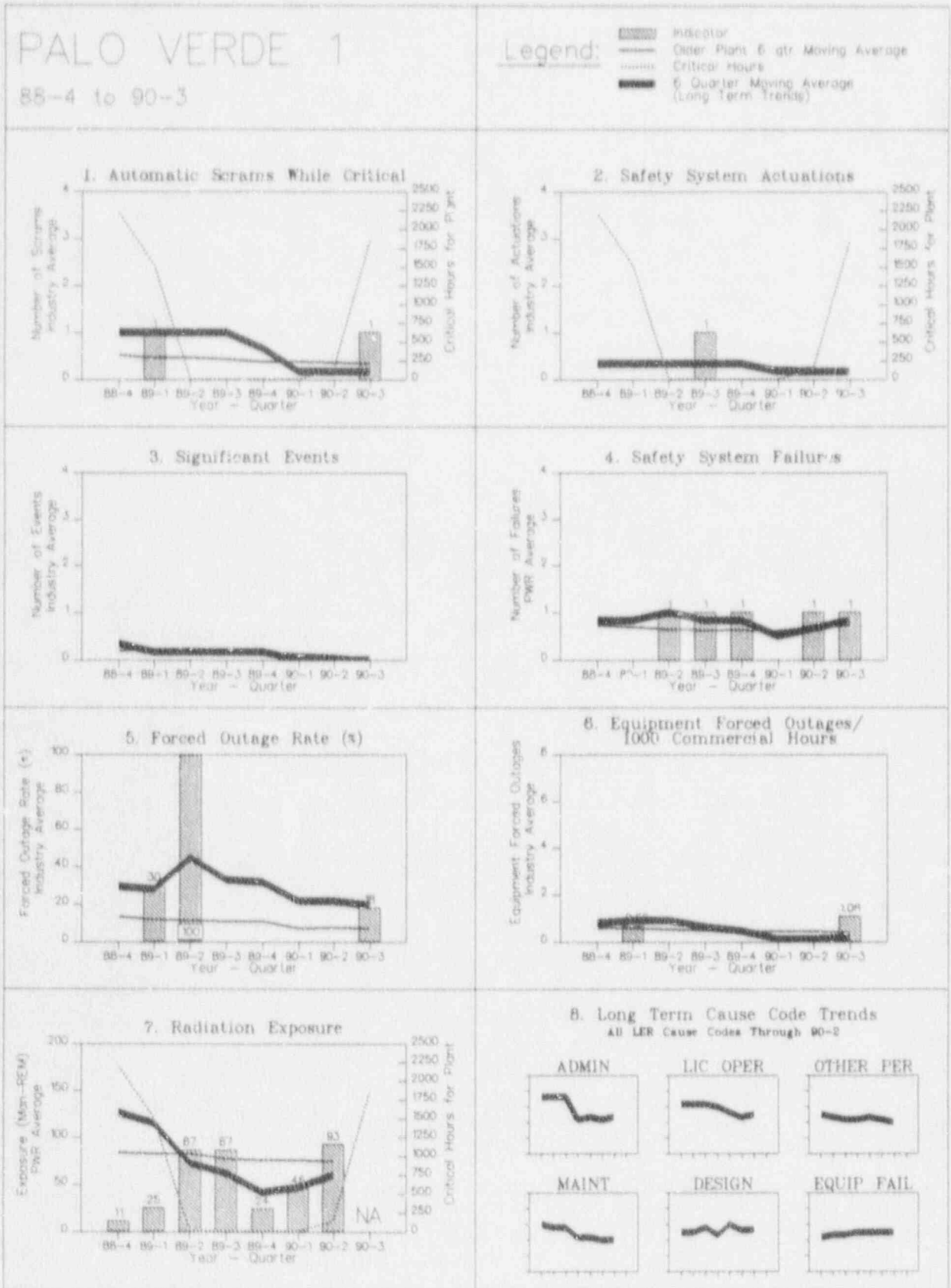

PALO VERDE 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.67

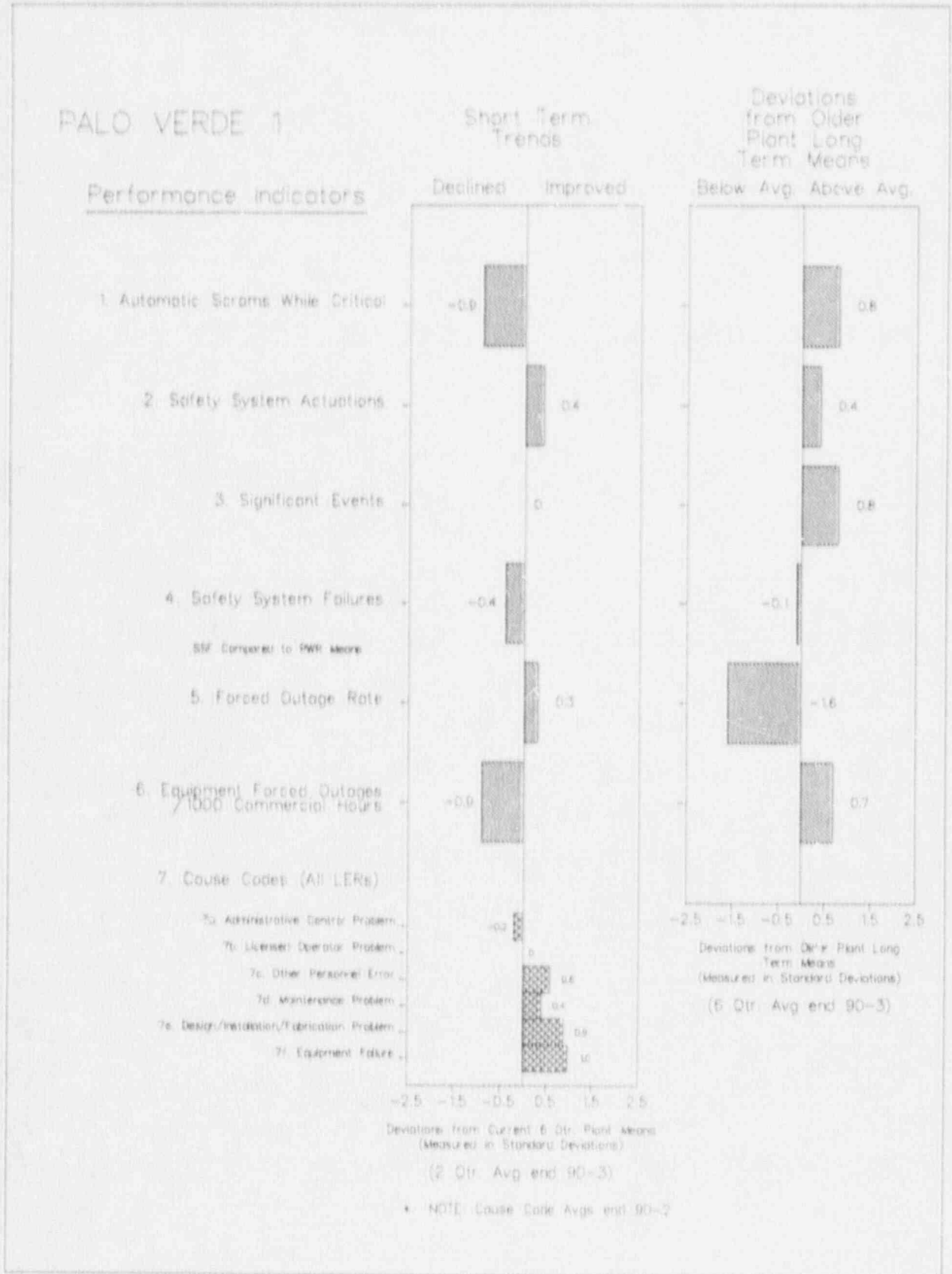
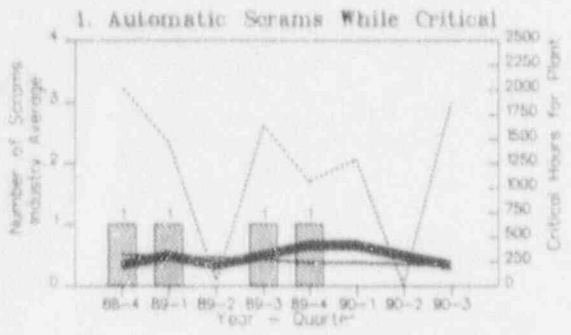

PALO VERDE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
-0.1
SSF Compared to PWR Means
5. Forced Outage Rate
0.3
-1.6
6. Equipment Forced Outages / 1000 Commercial Hours
-0.9
0.7
7. Cause Codes (All LERs)
7a. Administrative, Generic Problem
-0.2
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
0.9
7f. Equipment Failure
1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(8 Qtr. Avg. ending 90-3)
* NOTE: Cause Code Avgs. ending 90-2

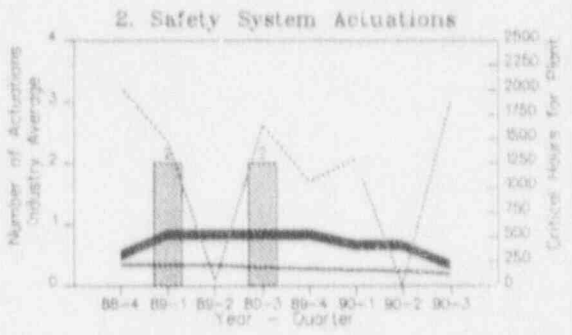
FIGURE 4.68

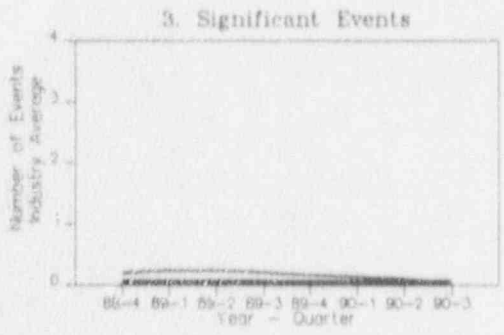
PALO VERDE 2

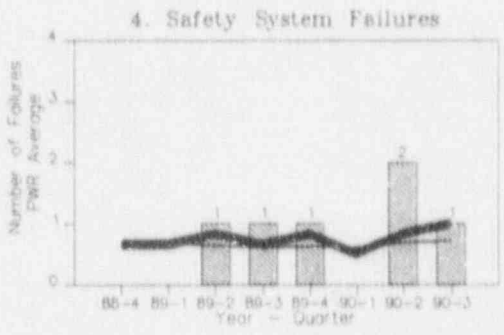
88-4 to 90-3

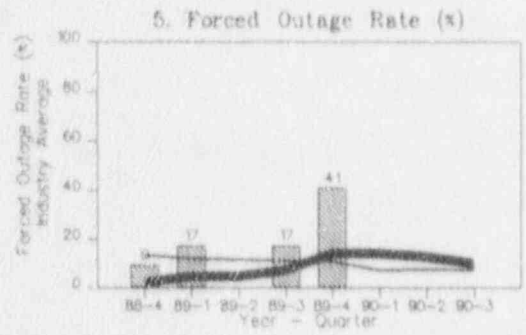
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

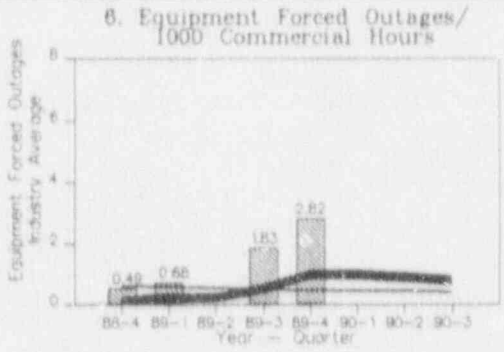


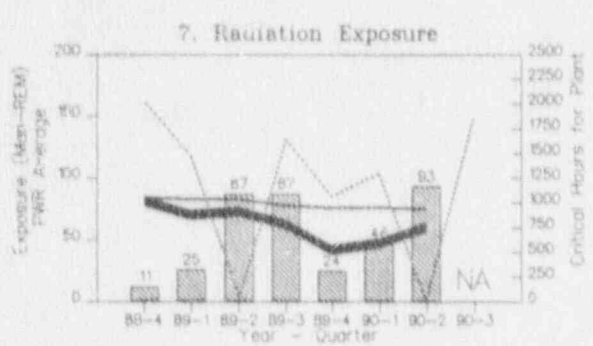












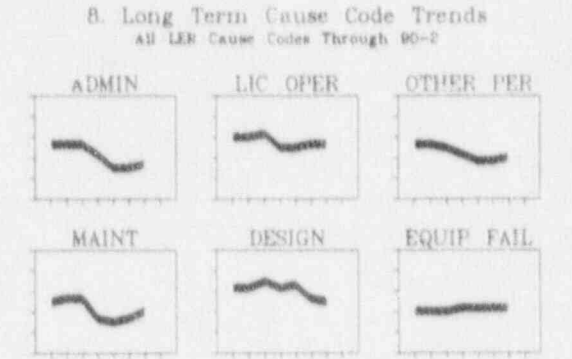


FIGURE 4.6B

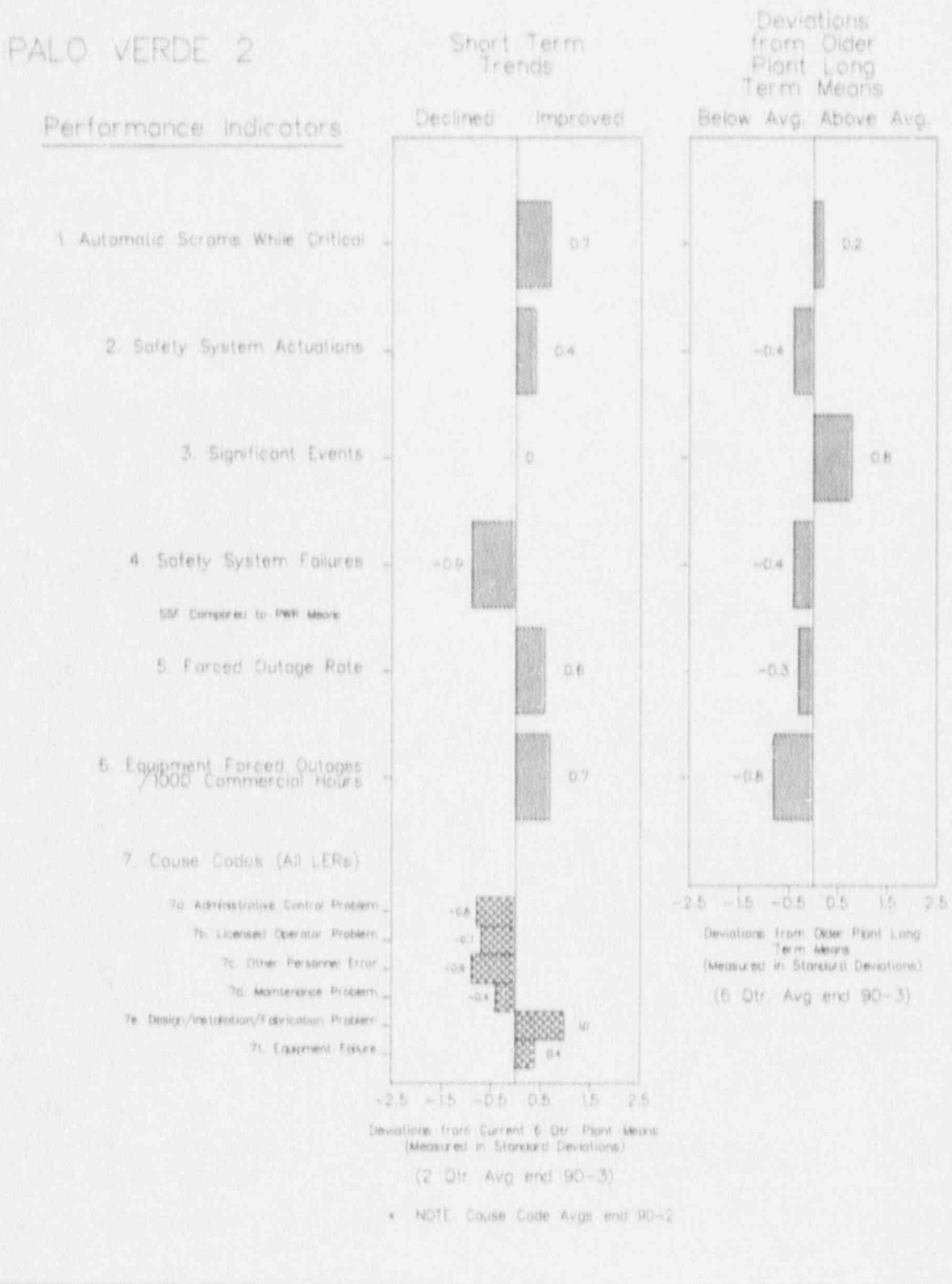

PALO VERDE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0.4
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.9
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
-0.3
6. Equipment Forced Outages /1000 Commercial Hours
0.7
-0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-0.4
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.69

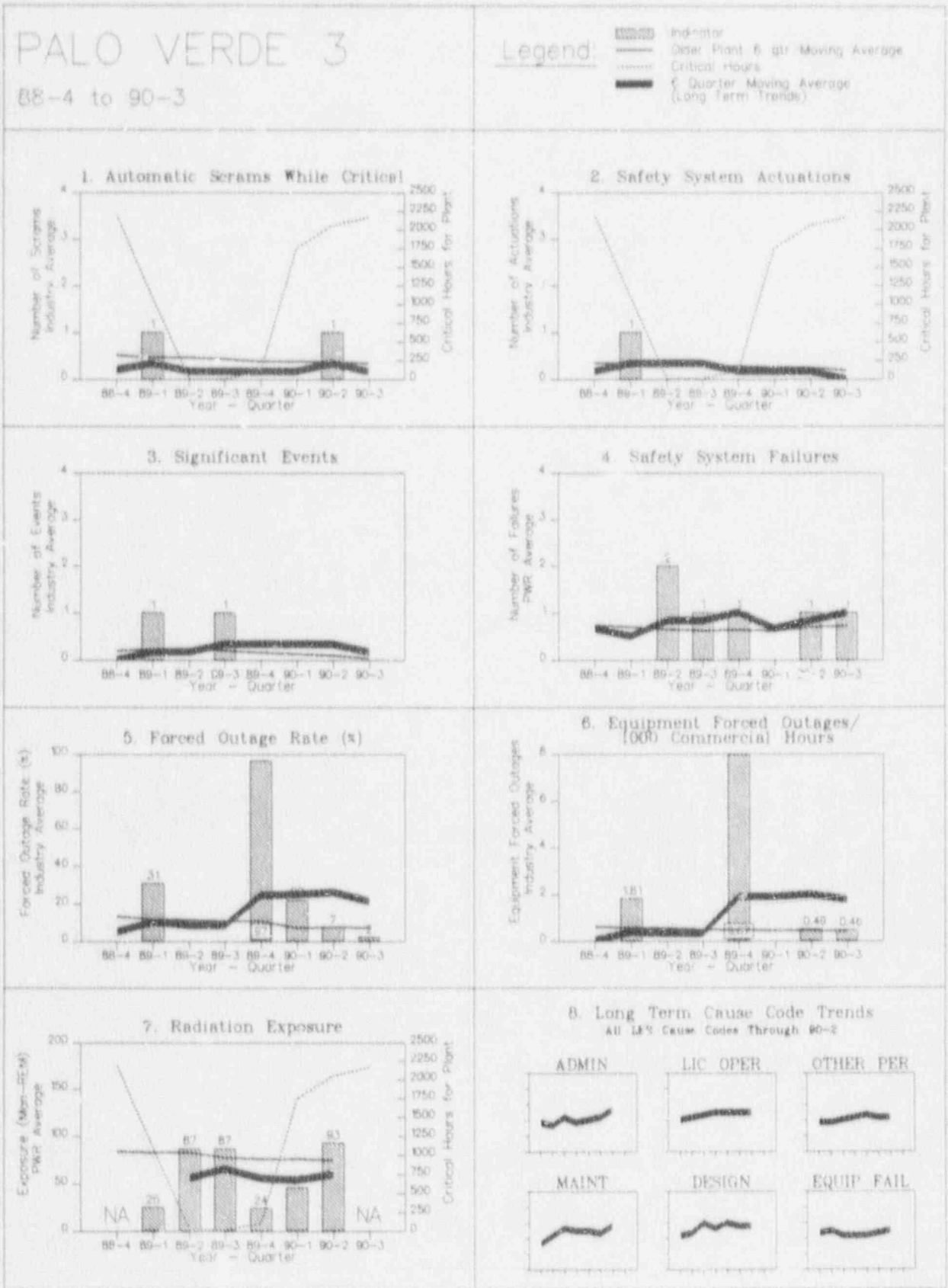

PALO VERDE 3
88-4 to 90-3
Legend:
Indicator
Oaser Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.69

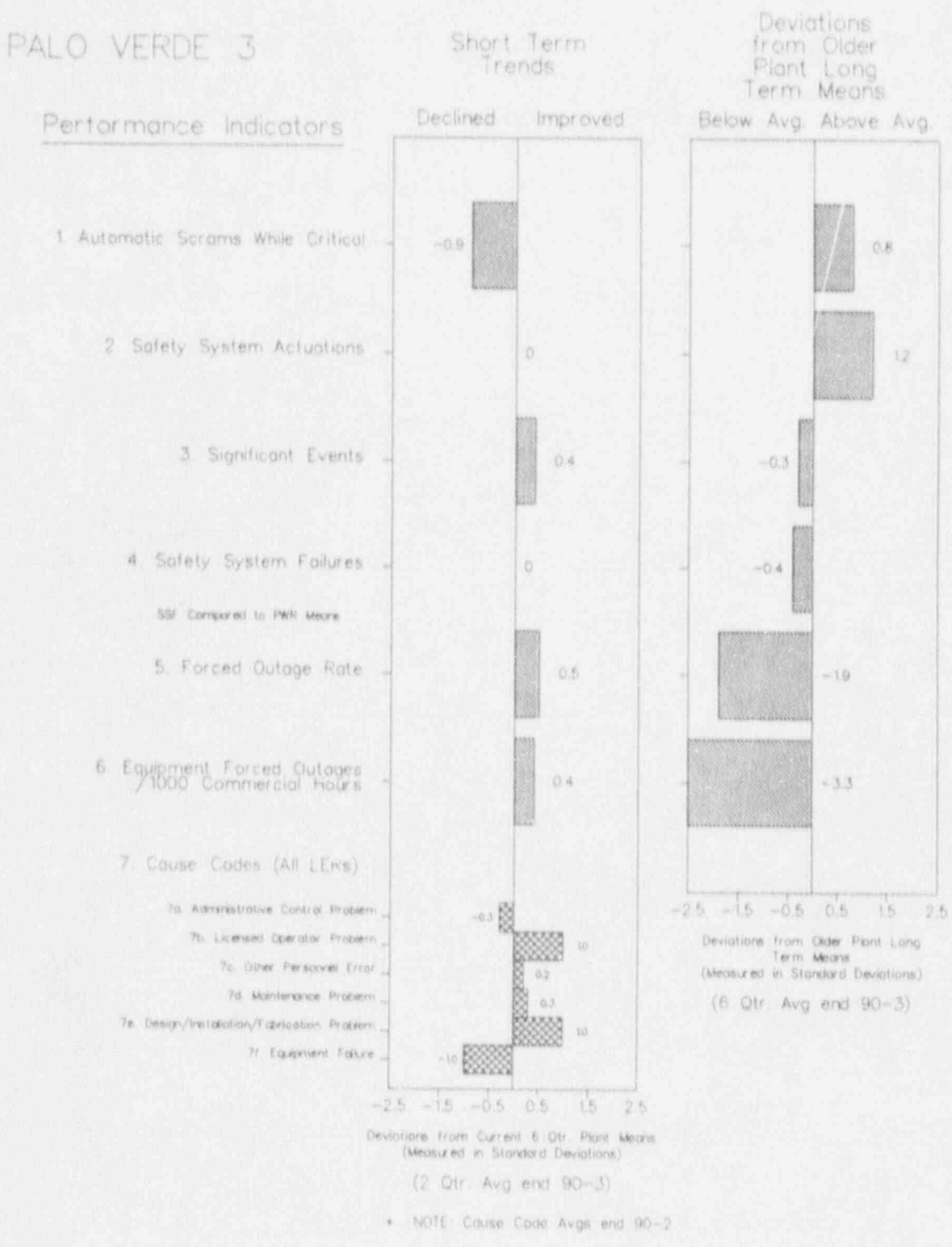

PALO VERDE 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.8
2. Safety System Actuations
0
1.2
3. Significant Events
0.4
-0.3
4. Safety System Failures
0
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
-1.9
6. Equipment Forced Outages /1000 Commercial Hours
0.4
-3.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.2
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
-1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.70

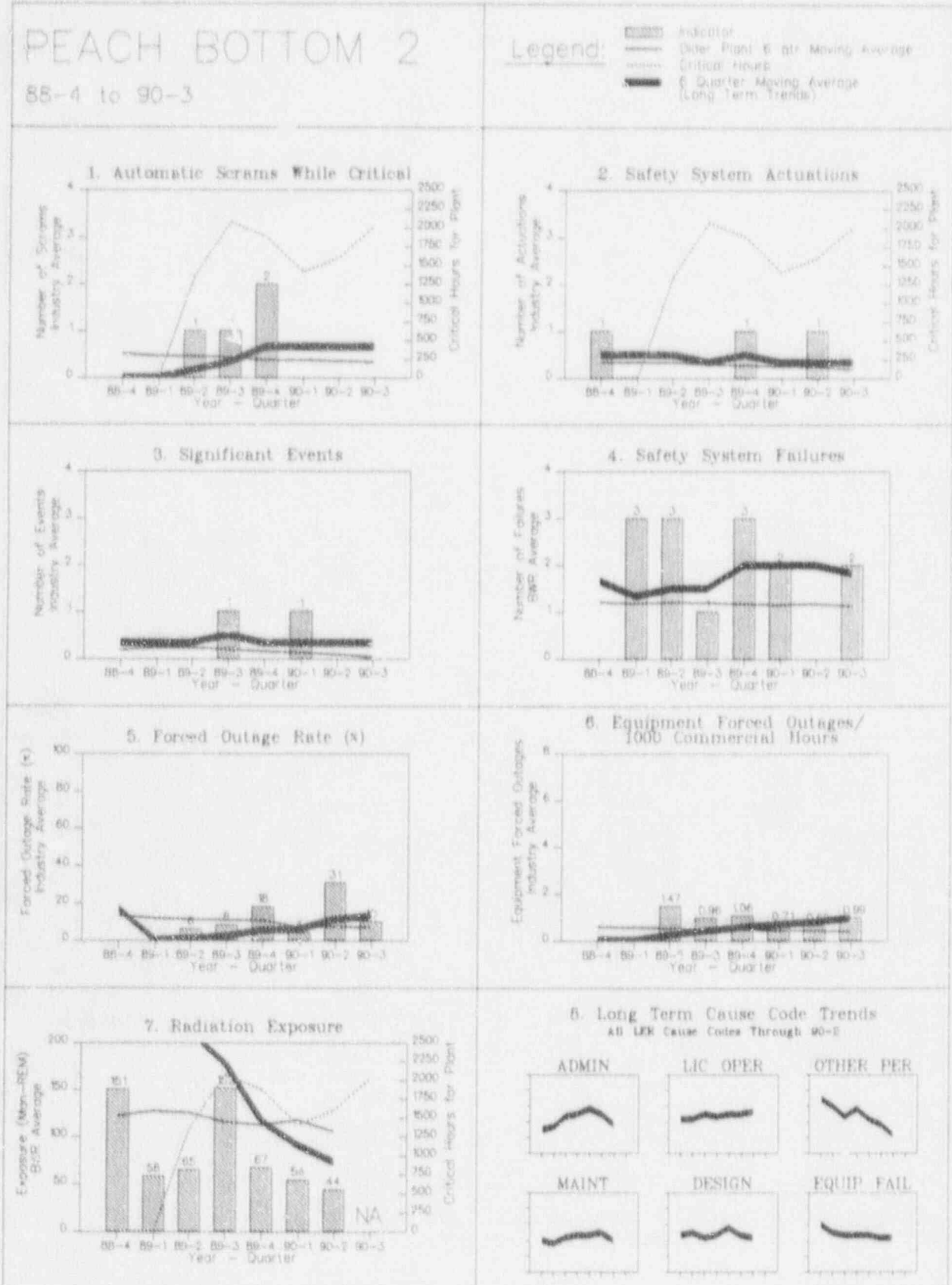

PEACH BOTTOM 2
88-4 to 90-3
Legend:
Indicator
Other Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.70

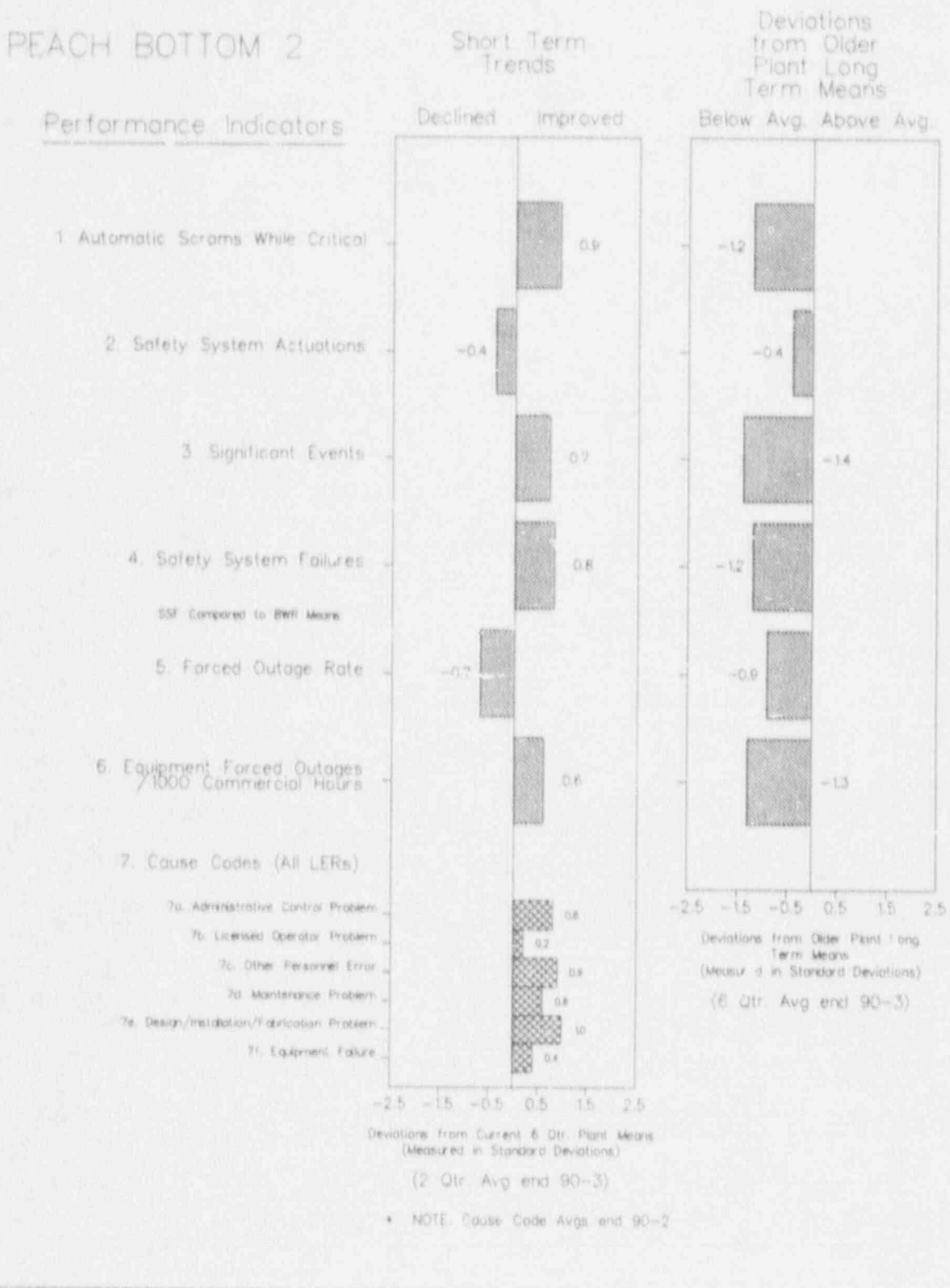

PEACH BOTTOM 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
-1.2
2. Safety System Actuations
-0.4
-0.4
3. Significant Events
0.7
-1.4
4. Safety System Failures
0.8
-1.2
SSF Compared to BWR Means
5. Forced Outage Rate
-0.7
-0.9
6. Equipment Forced Outages /1000 Commercial Hours
0.6
-1.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.2
7c. Other Personnel Error
0.9
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
1.0
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

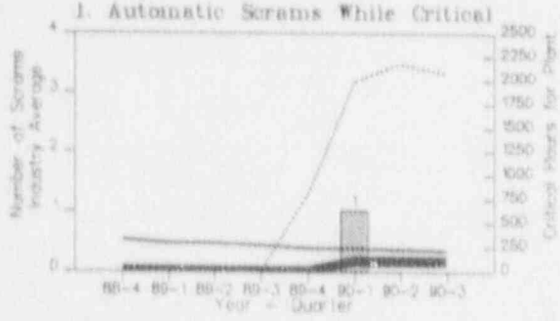
FIGURE 4.71

PEACH BOTTOM 3

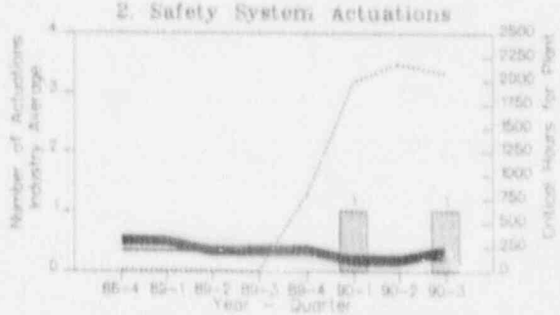
88-4 to 90-3

Legend:
- Indicator
- Older Point 4 qtr Moving Average
- Critical Hours
- 4 Quarter Moving Average (Long Term Trends)

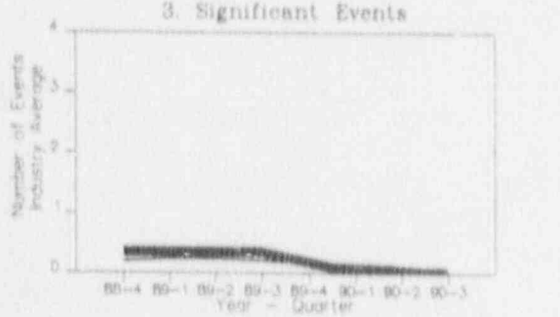
1. Automatic Scrams While Critical



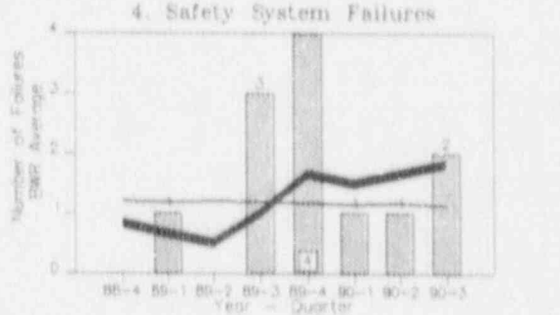
2. Safety System Actuations



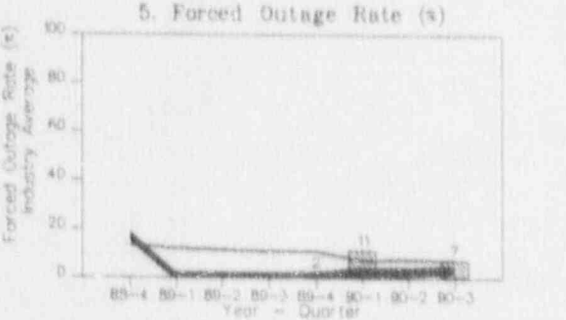
3. Significant Events



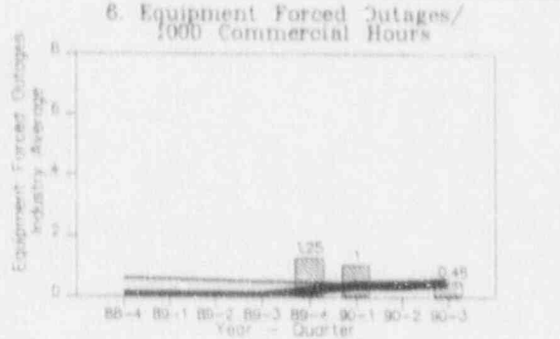
4. Safety System Failures



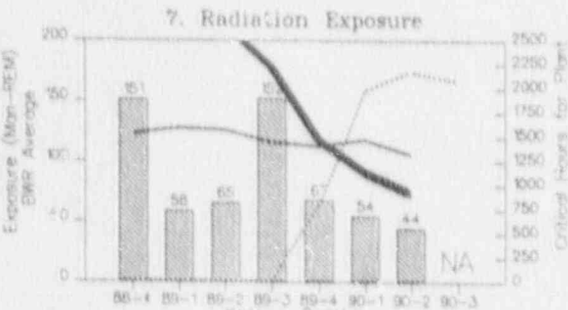
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 7000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

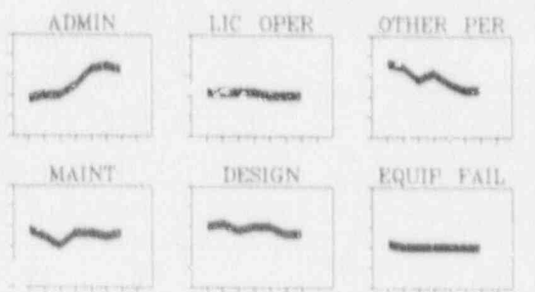


FIGURE 4.7.1

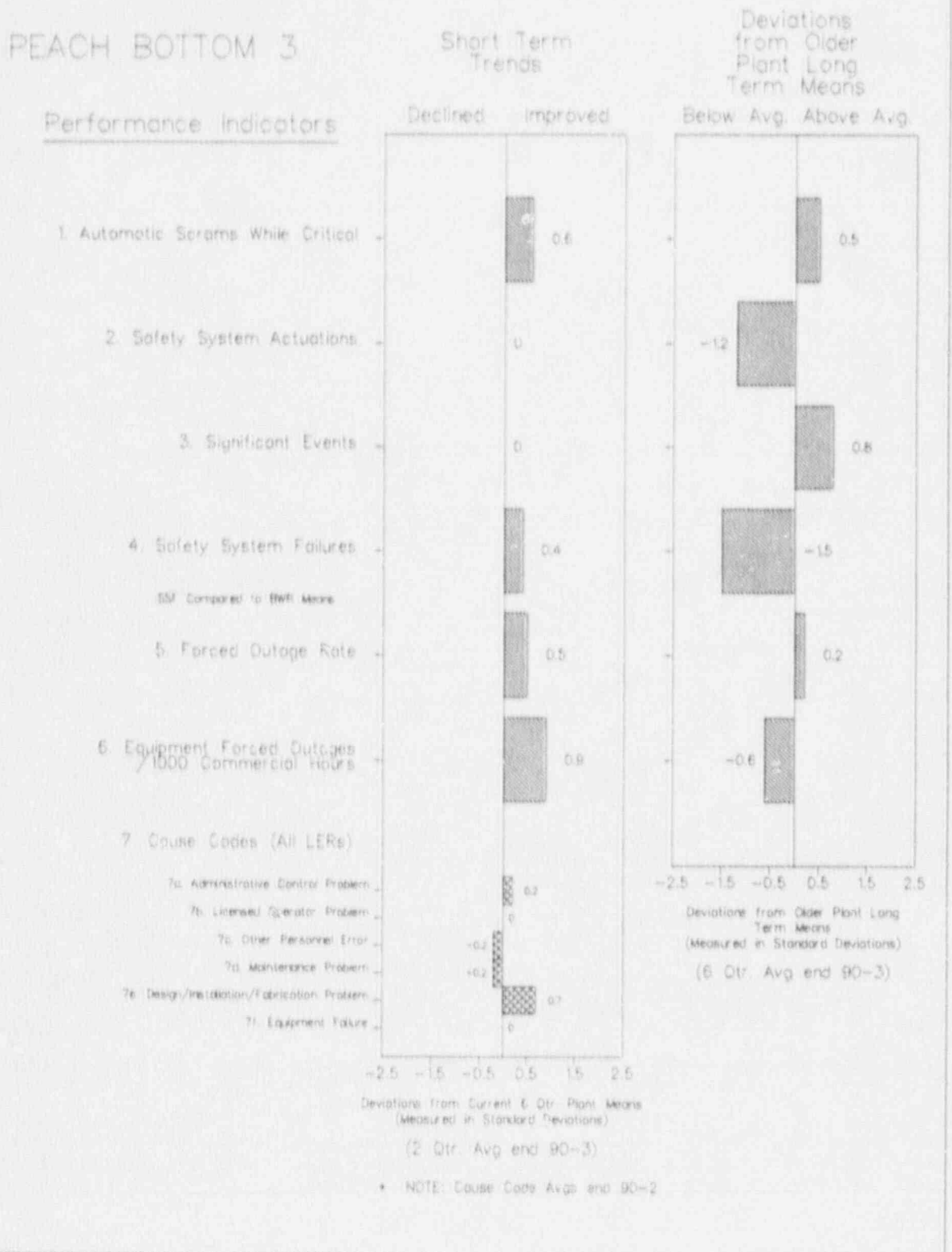

PEACH BOTTOM 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
0
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
0.4
-1.5
SSF Compared to Eff. Means
5. Forced Outage Rate
0.5
0.2
6. Equipment Forced Outages /1000 Commercial Hours
0.9
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
+0.2
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.72

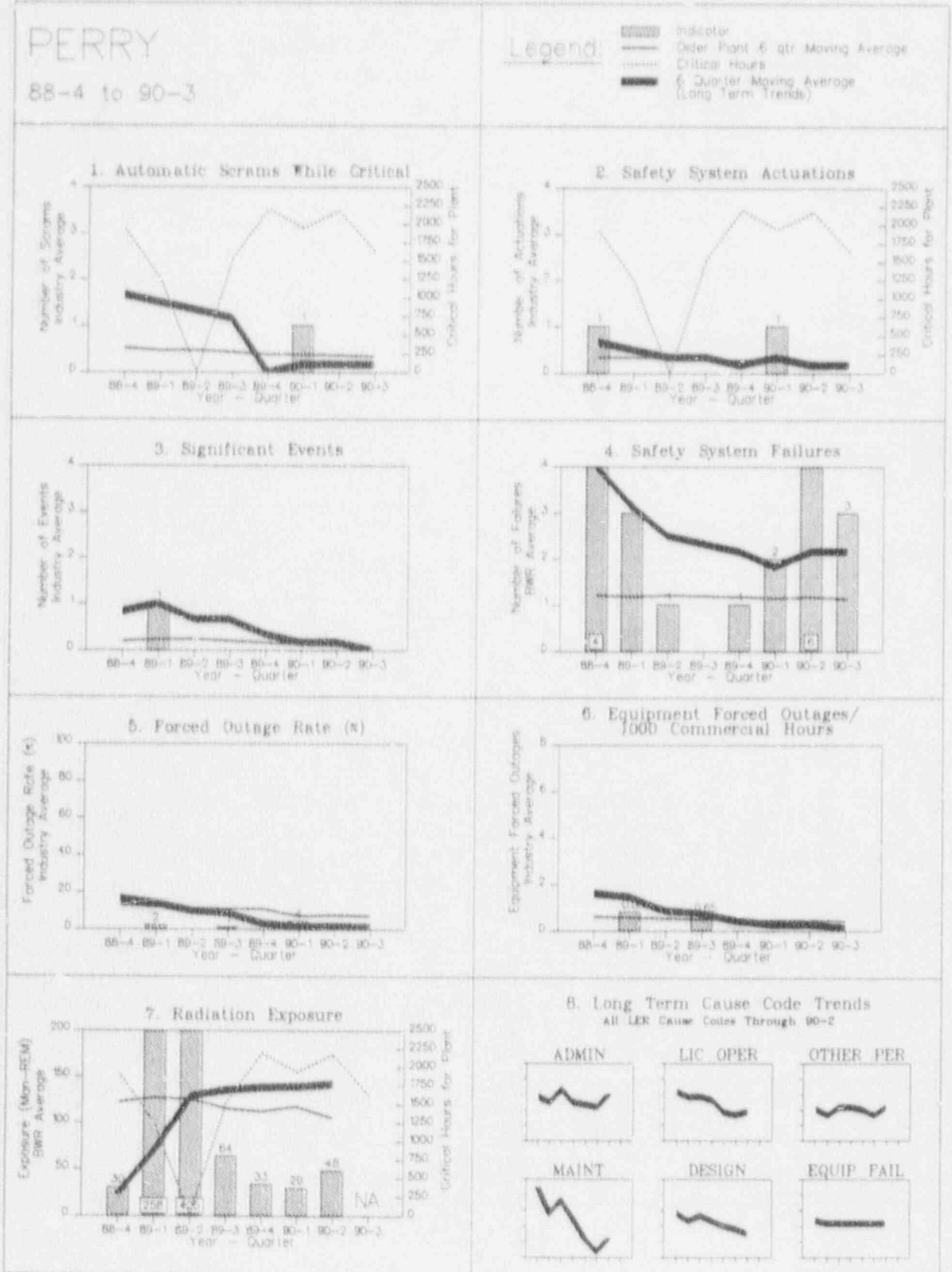

PERRY
88-4 to 90-3
Legend:
Indicator
Oder Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 7000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.72

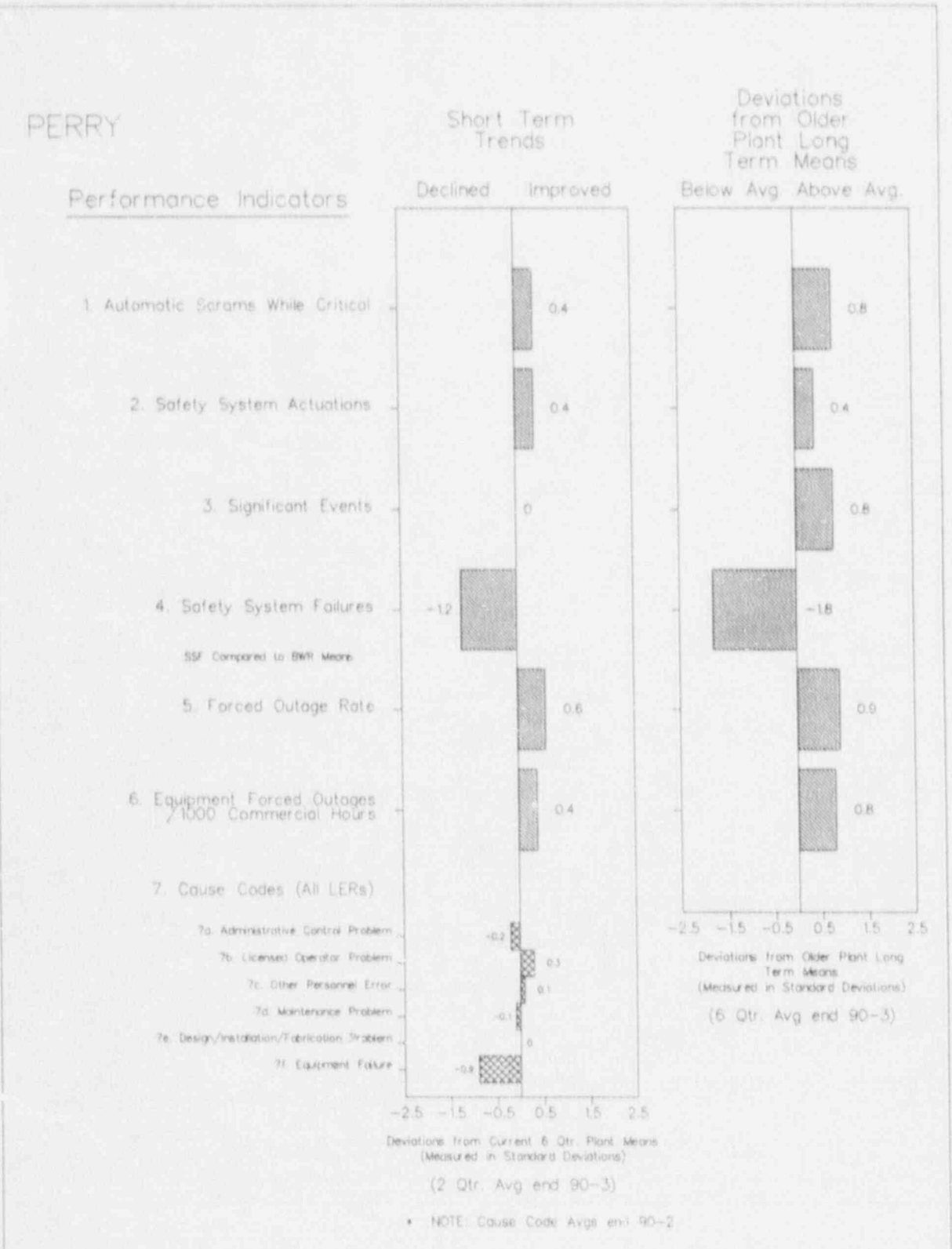

PERRY
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
0
0.8
4. Safety System Failures
-1.2
-1.8
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
0.9
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0.3
7c. Other Personnel Error
0.1
7d. Maintenance Problem
-0.1
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.73

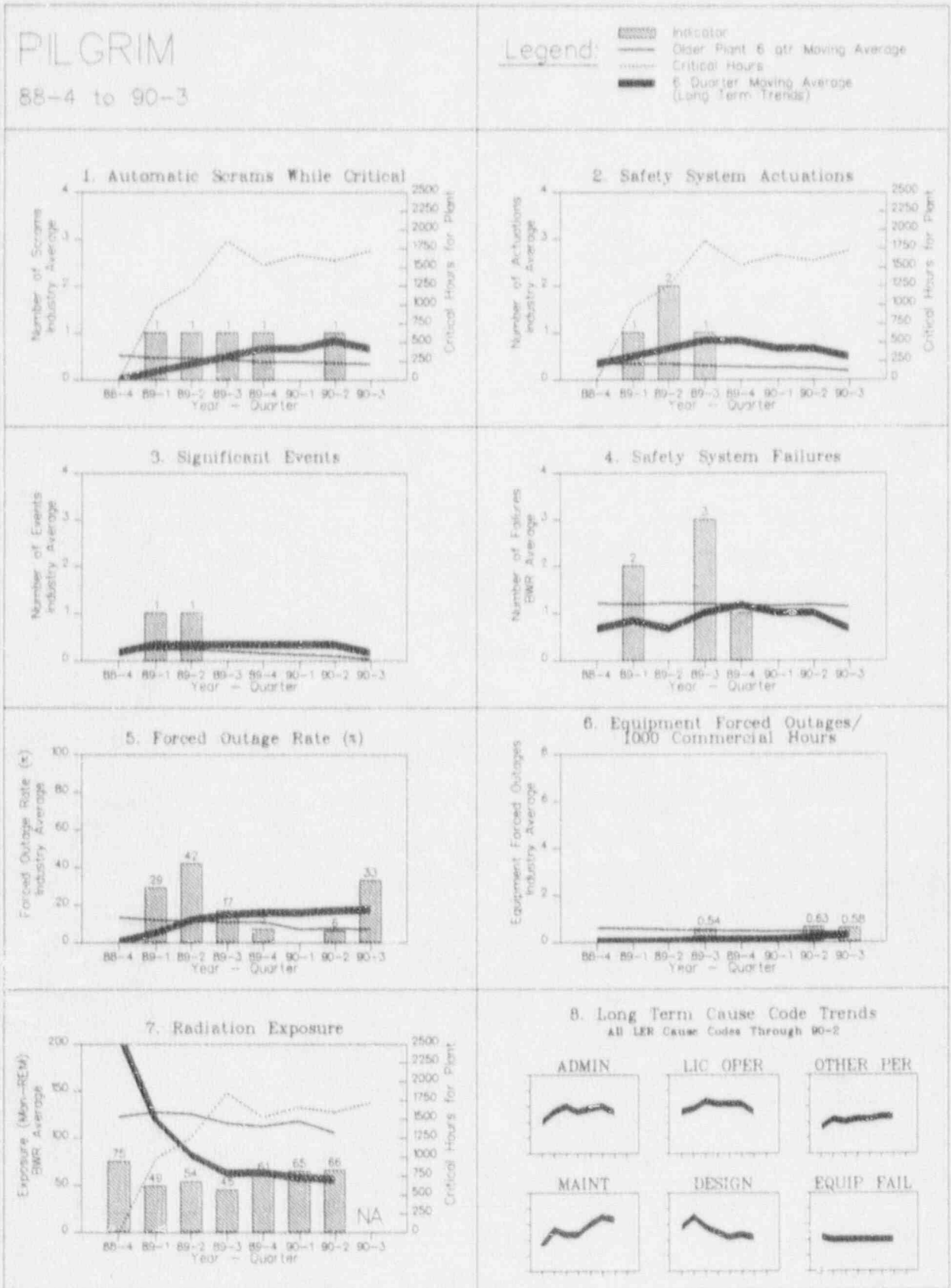

PILGRIM
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.73

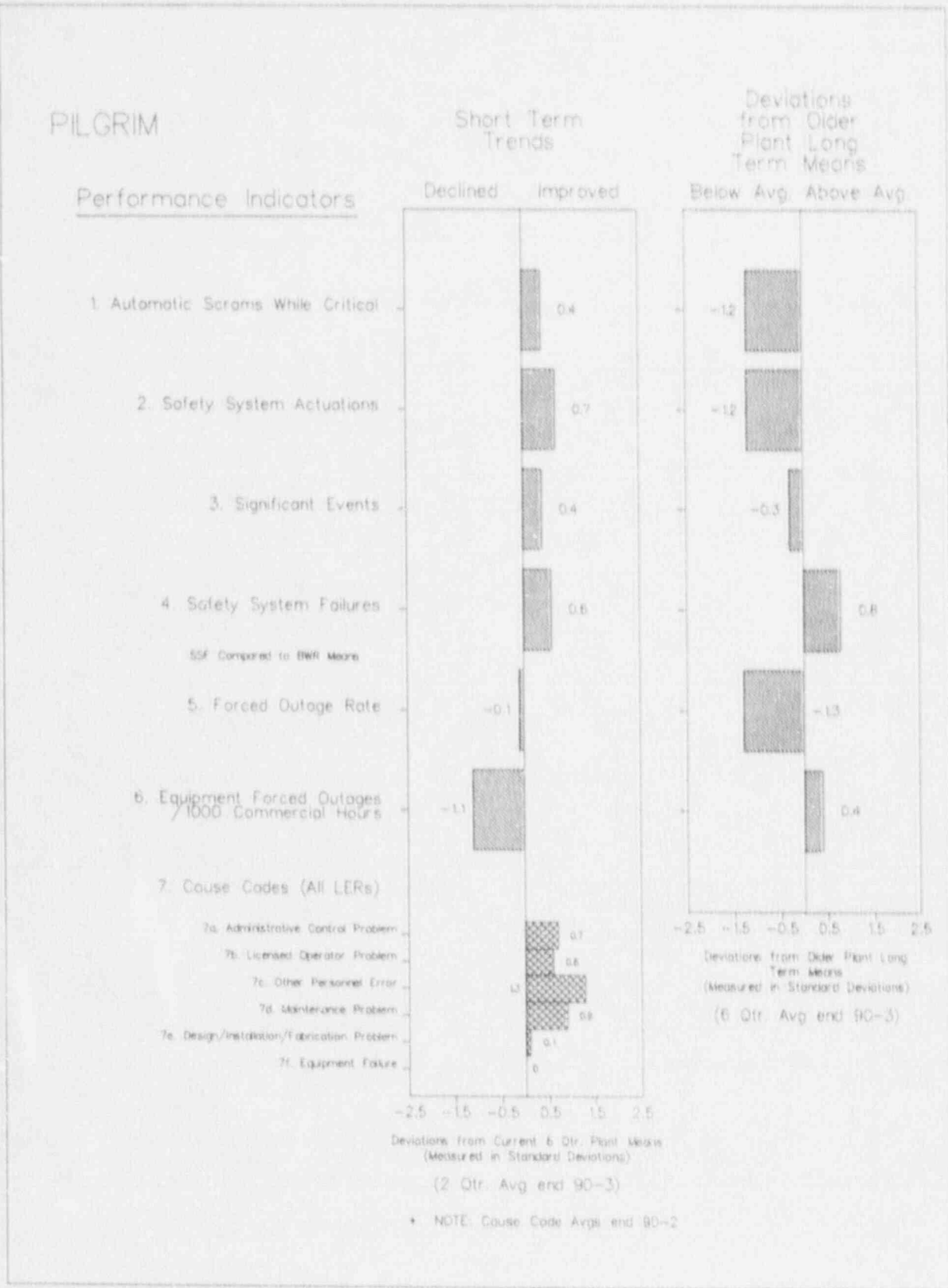

PILGRIM
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
-1.2
2. Safety System Actuations
0.7
-1.2
3. Significant Events
0.4
-0.3
4. Safety System Failures
0.6
0.8
SSF Compared to BWR Means
5. Forced Outage Rate
-0.1
-1.3
6. Equipment Forced Outages /1000 Commercial Hours
-1.1
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
1.3
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
0.1
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

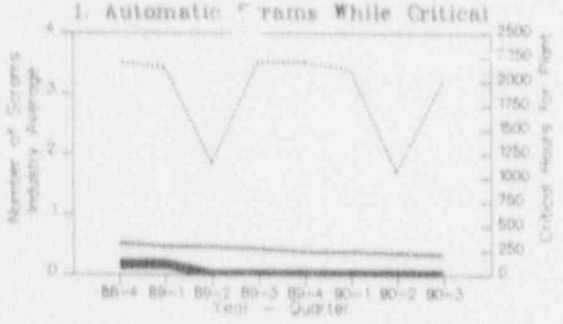
FIGURE 4.74

POINT BEACH 1

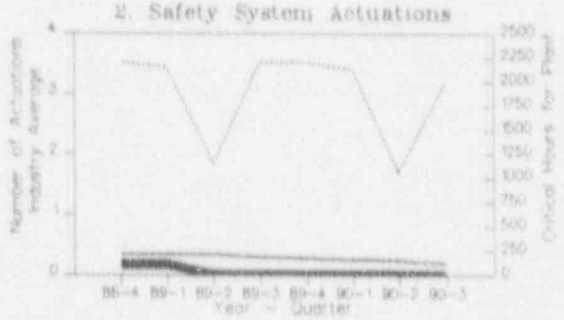
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

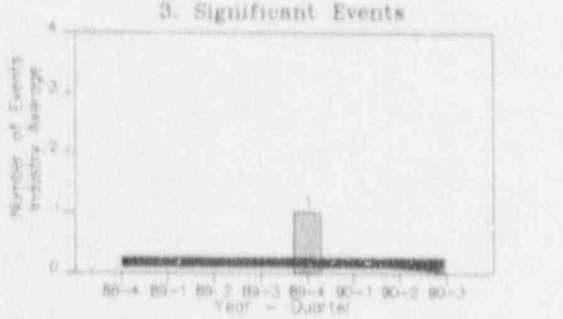
1. Automatic Scrams While Critical



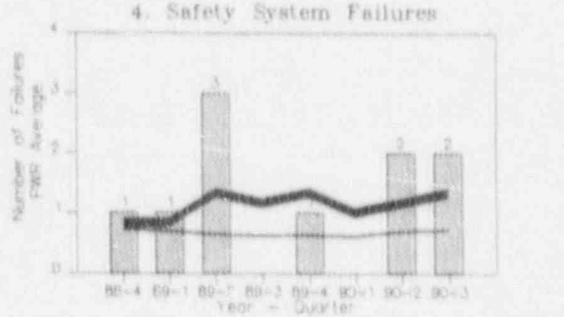
2. Safety System Actuations



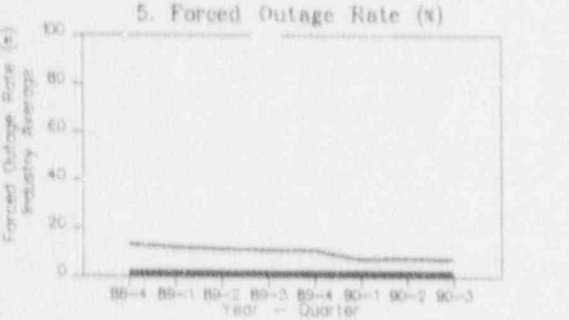
3. Significant Events



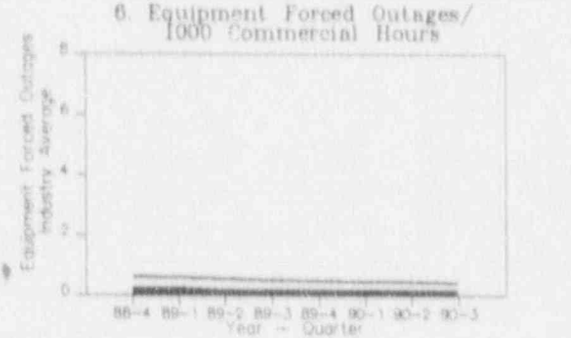
4. Safety System Failures



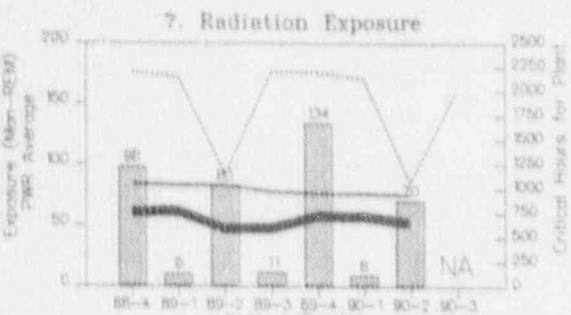
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

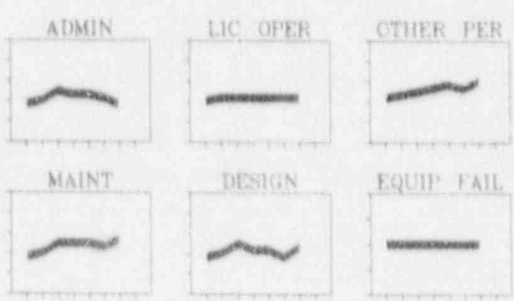


FIGURE 4.74

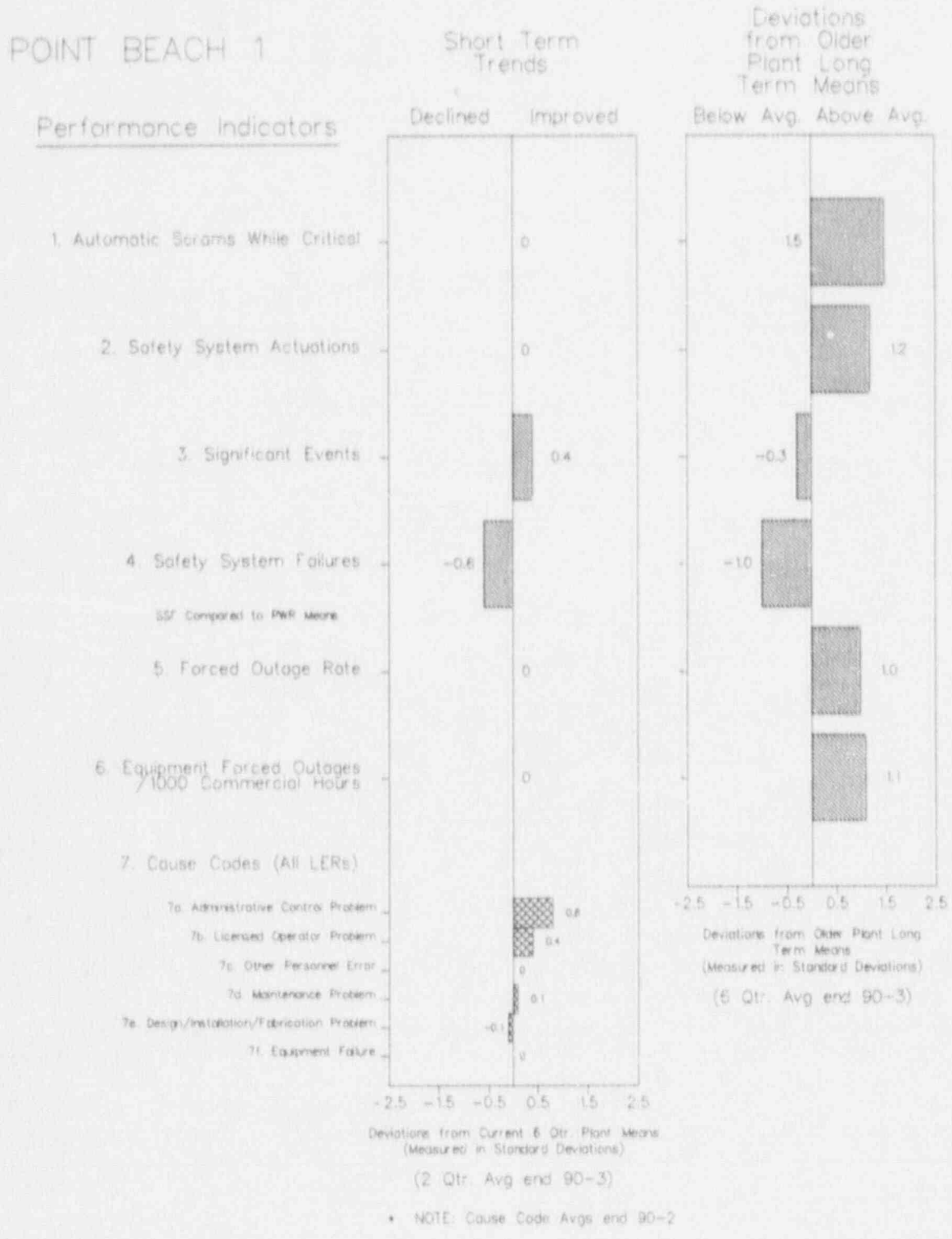
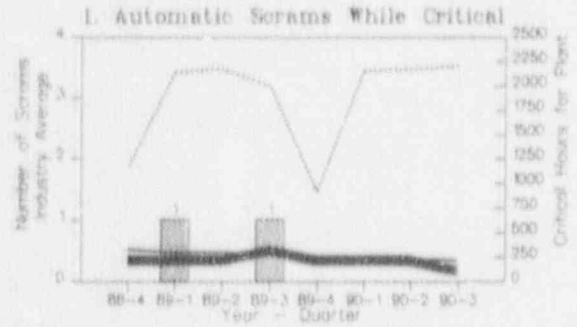

POINT BEACH 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0
0
0.4
-0.6
0
0
0.8
0.4
0
0.1
-0.1
0
1.5
1.2
-0.3
-1.0
1.0
1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

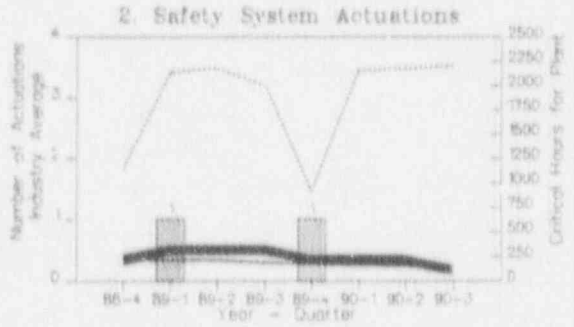
FIGURE 4.75

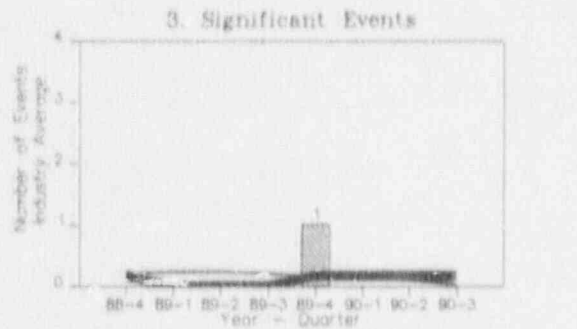
POINT BEACH 2

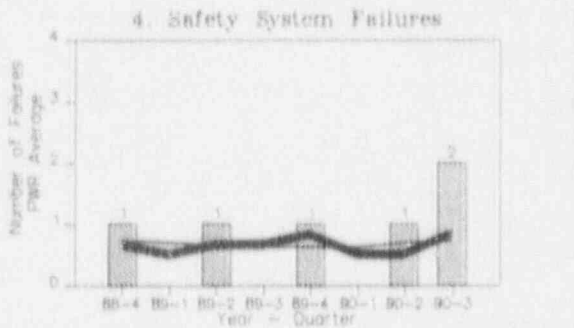
88-4 to 90-3

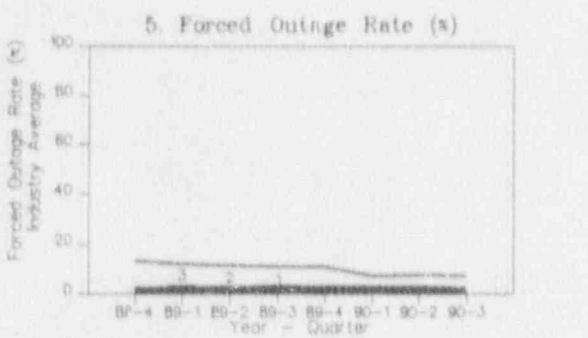
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

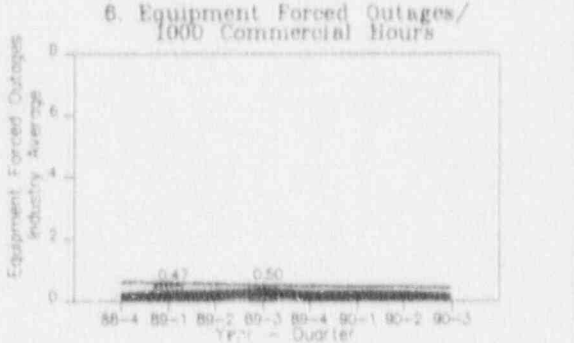


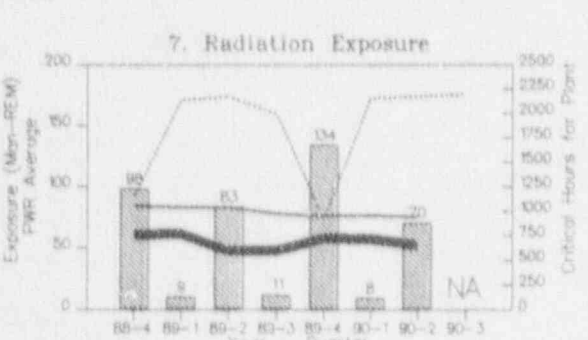












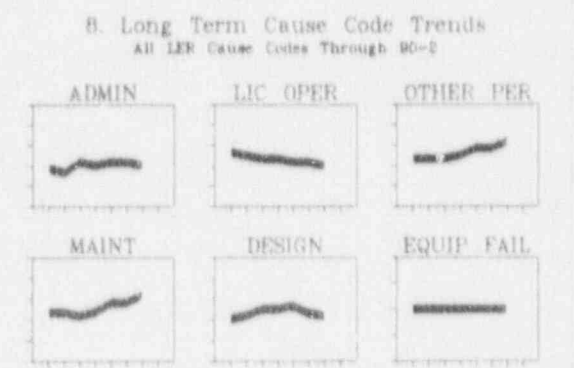


FIGURE 4.75

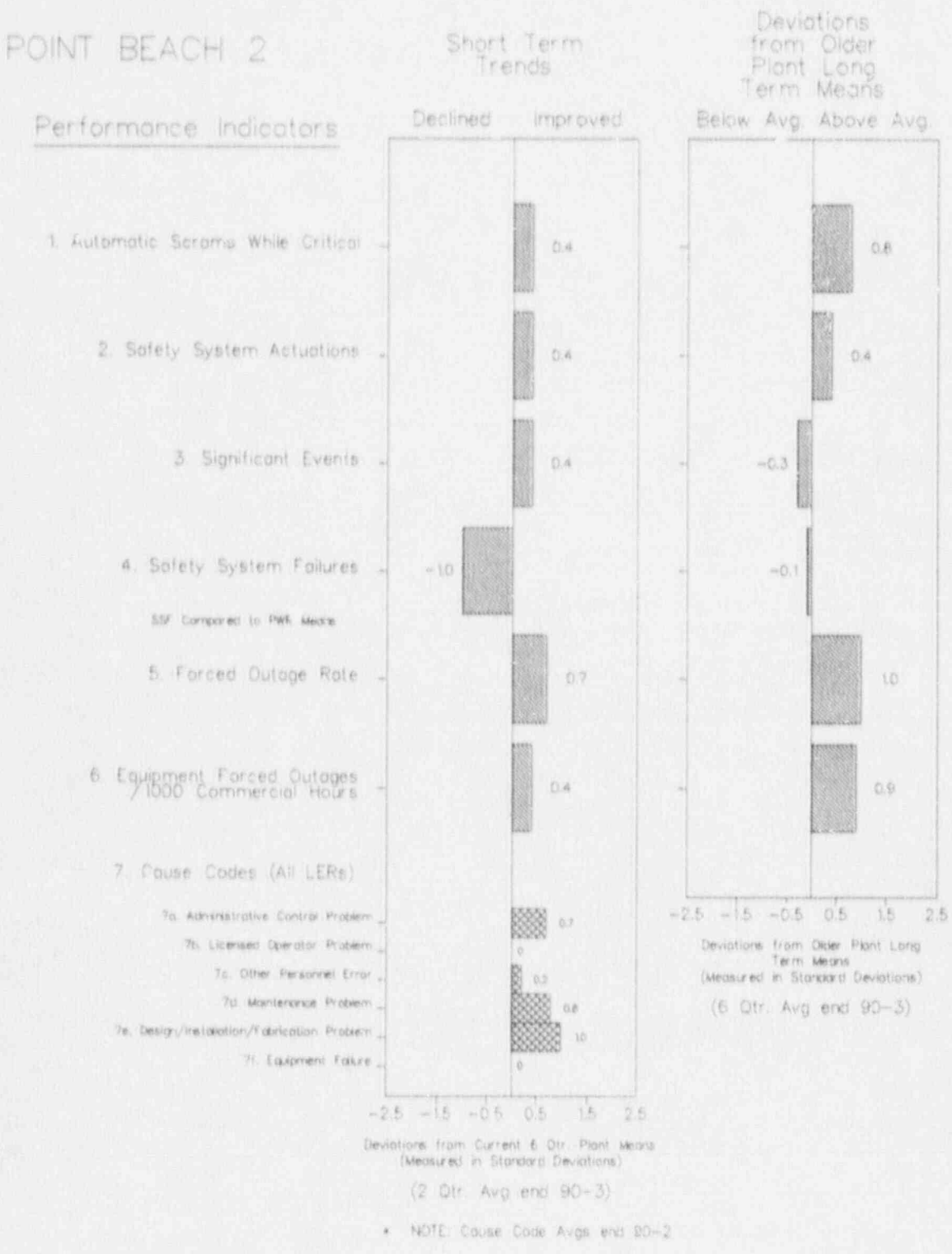

POINT BEACH 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.4
0.4
0.4
-1.0
0.7
0.4
0.7
0
0.2
0.8
1.0
0
0.8
0.4
-0.3
-0.1
1.0
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

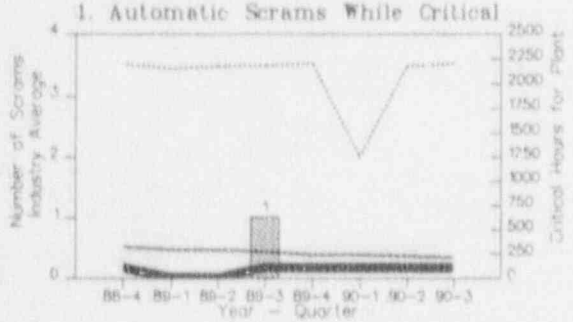
FIGURE 4.76

PRAIRIE ISLAND 1

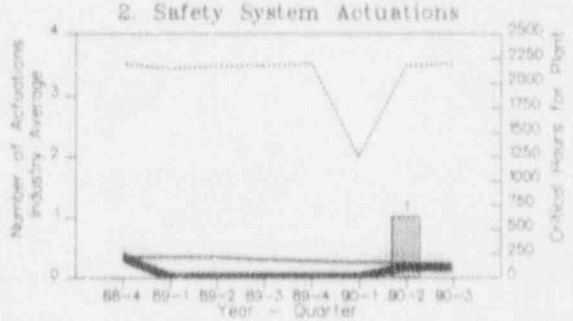
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

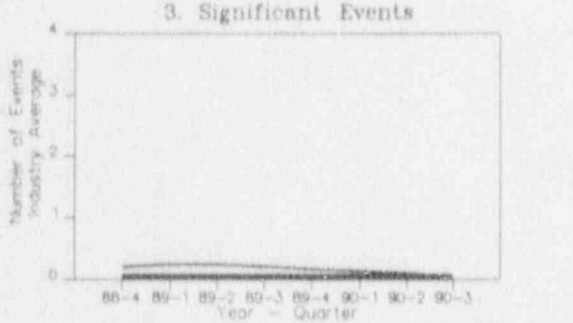
1. Automatic Scrams While Critical



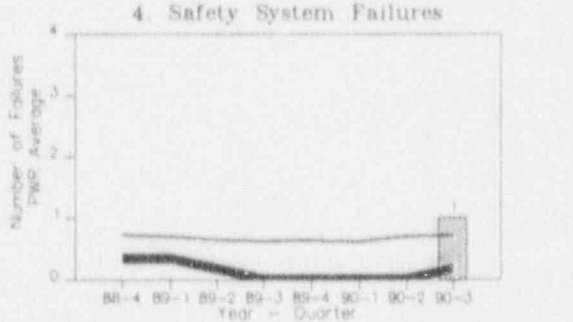
2. Safety System Actuations



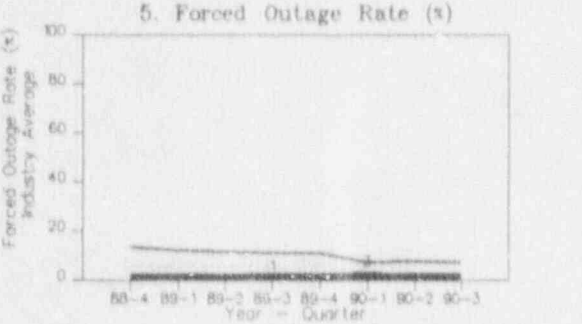
3. Significant Events



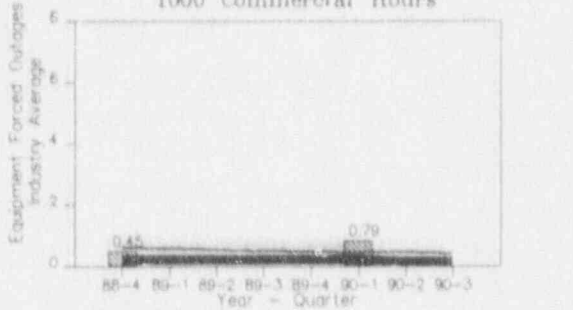
4. Safety System Failures



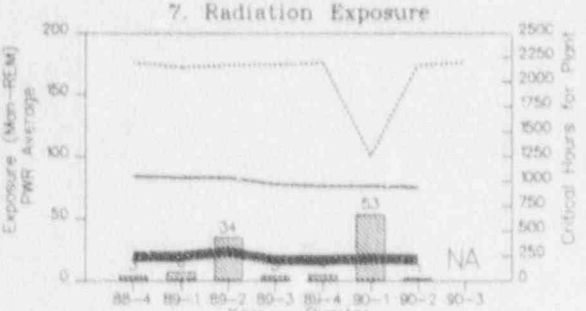
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

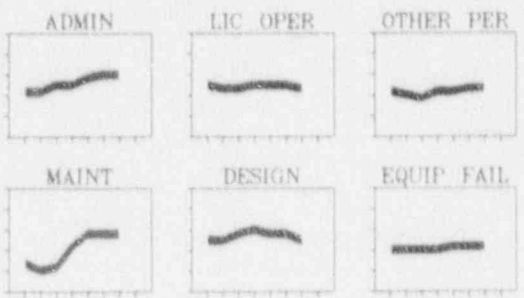


FIGURE 4.7f

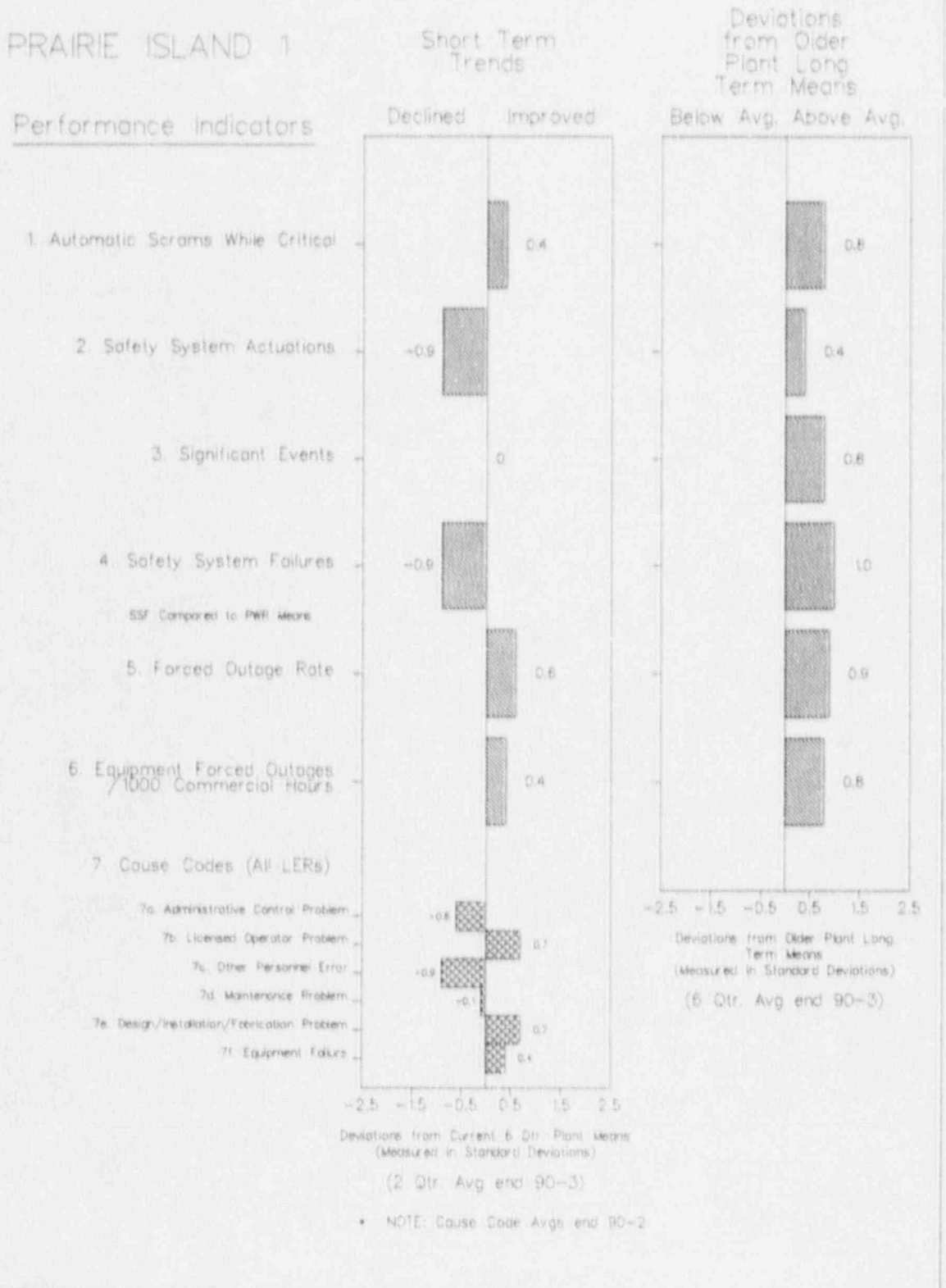

PRAIRIE ISLAND 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.4
-0.9
0
-0.9
0.6
0.4
-0.8
0.7
-0.9
-0.1
0.7
0.4
0.8
0.4
0.8
1.0
0.9
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

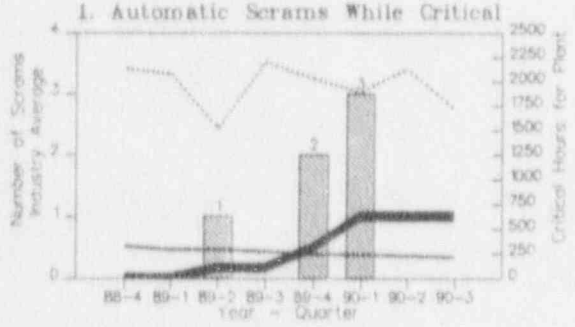
FIGURE 4.77

PRAIRIE ISLAND 2

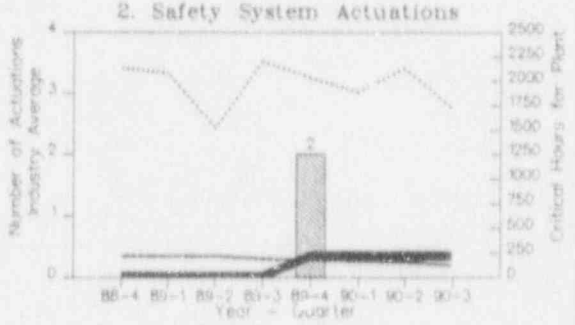
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

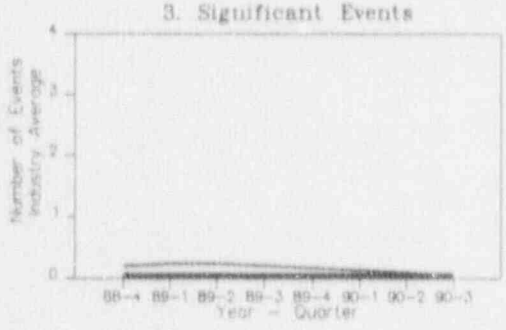
1. Automatic Scrams While Critical



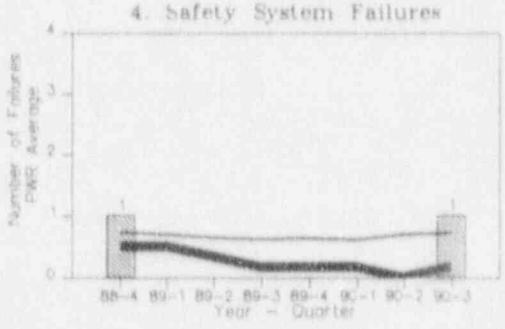
2. Safety System Actuations



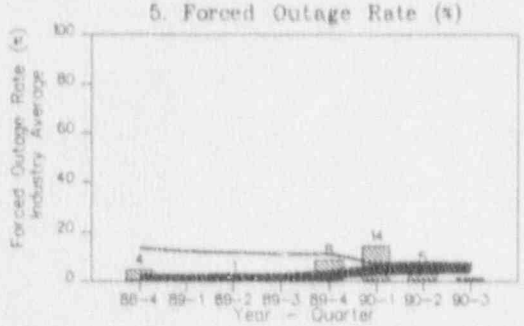
3. Significant Events



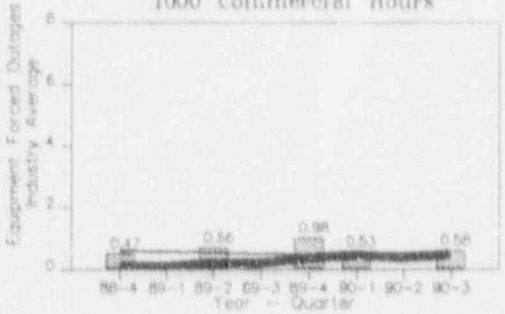
4. Safety System Failures



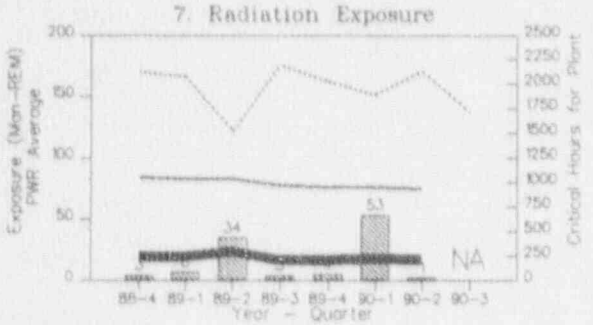
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

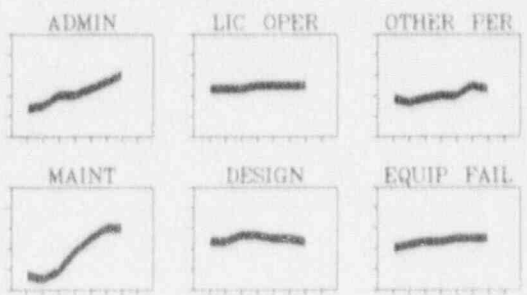


FIGURE 4.77

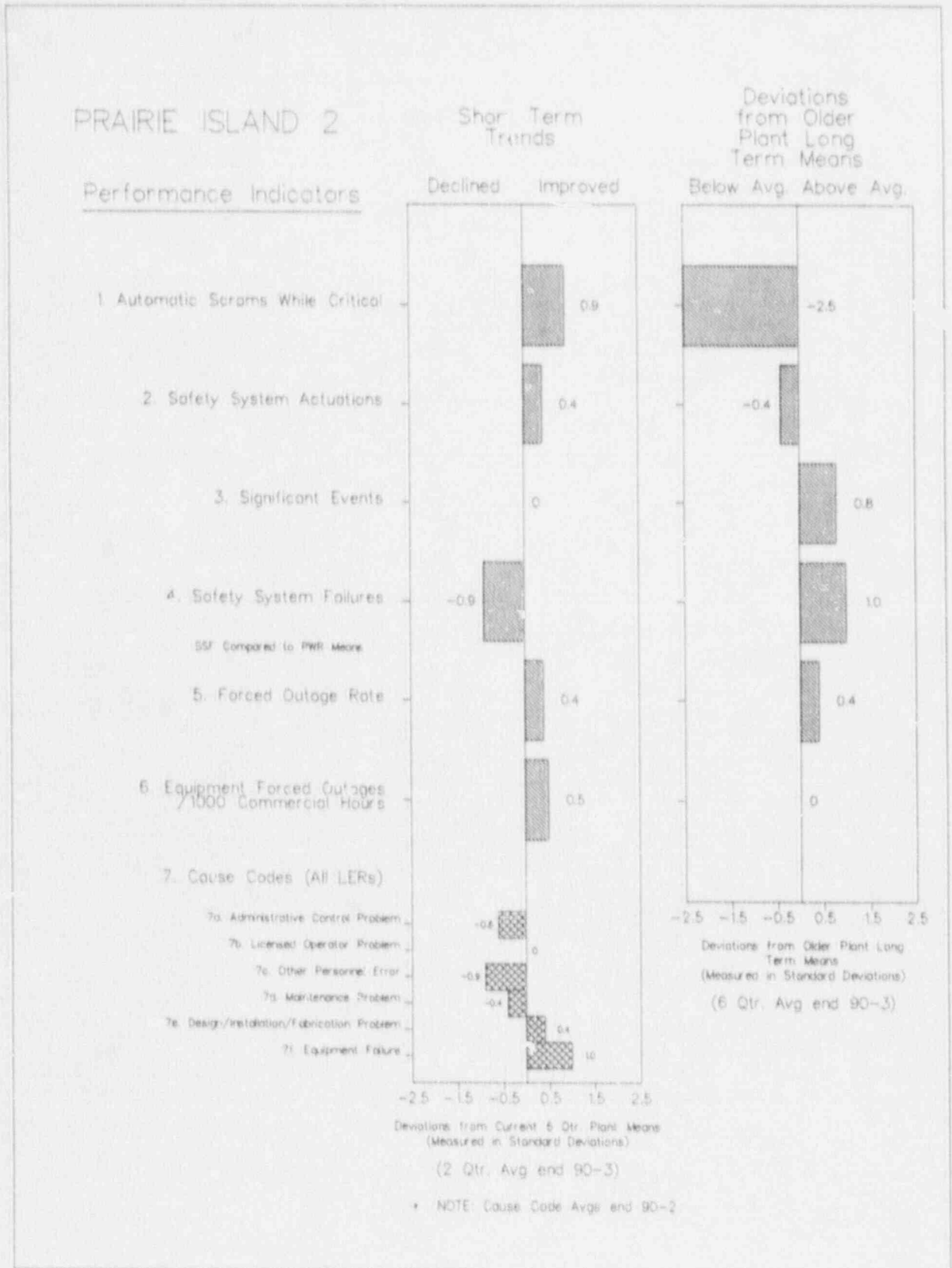

PRAIRIE ISLAND 2
Performance Indicators
Shor Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
-2.5
2. Safety System Actuations
0.4
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.9
1.0
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
0.4
6. Equipment Forced Outages /1000 Commercial Hours
0.5
0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.6
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.9
7d. Maintenance Problem
-0.4
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.78

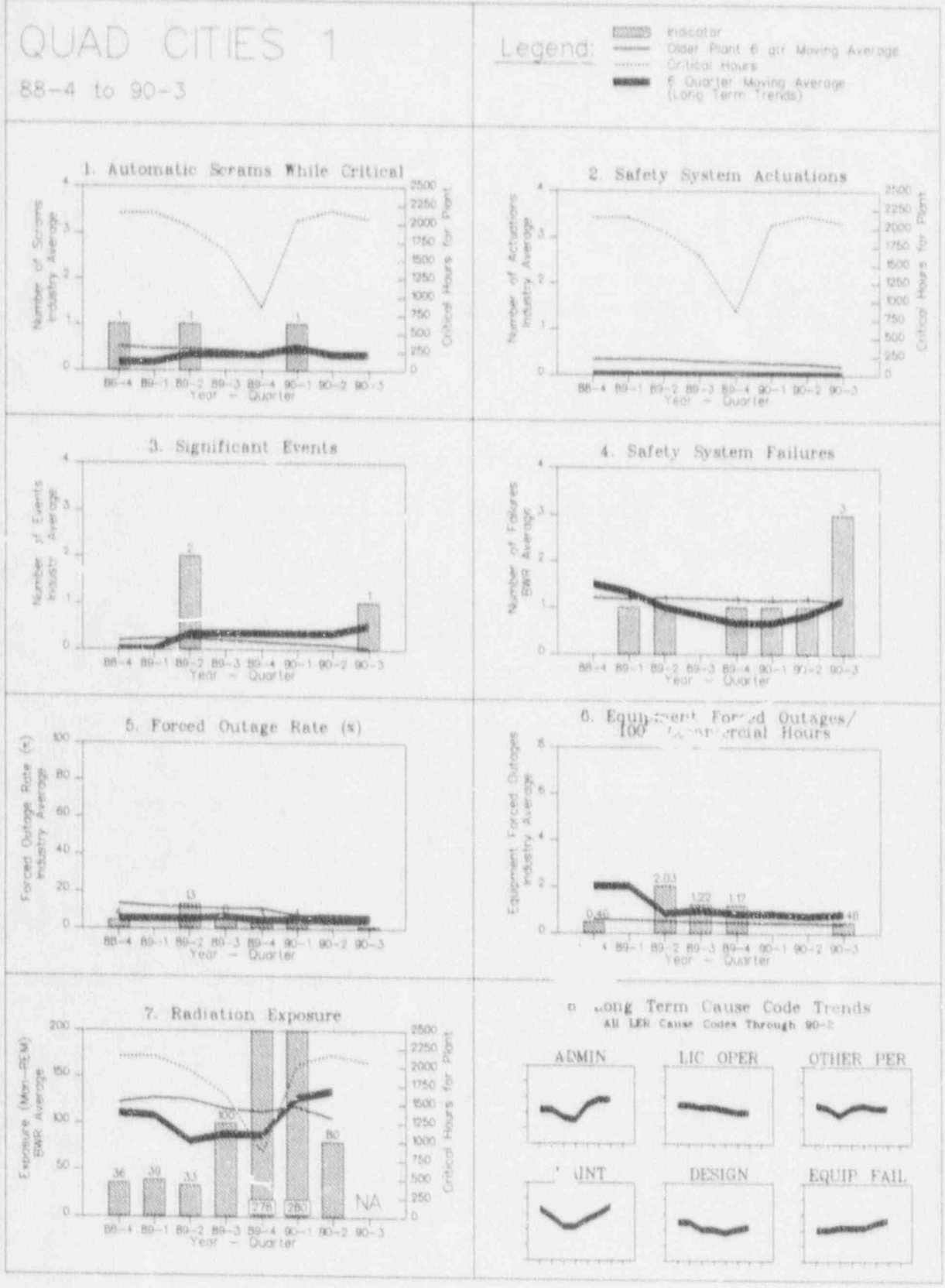

QUAD CITIES 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 100 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Year - Quarter
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
DESIGN
EQUIP FAIL

FIGURE 4.78

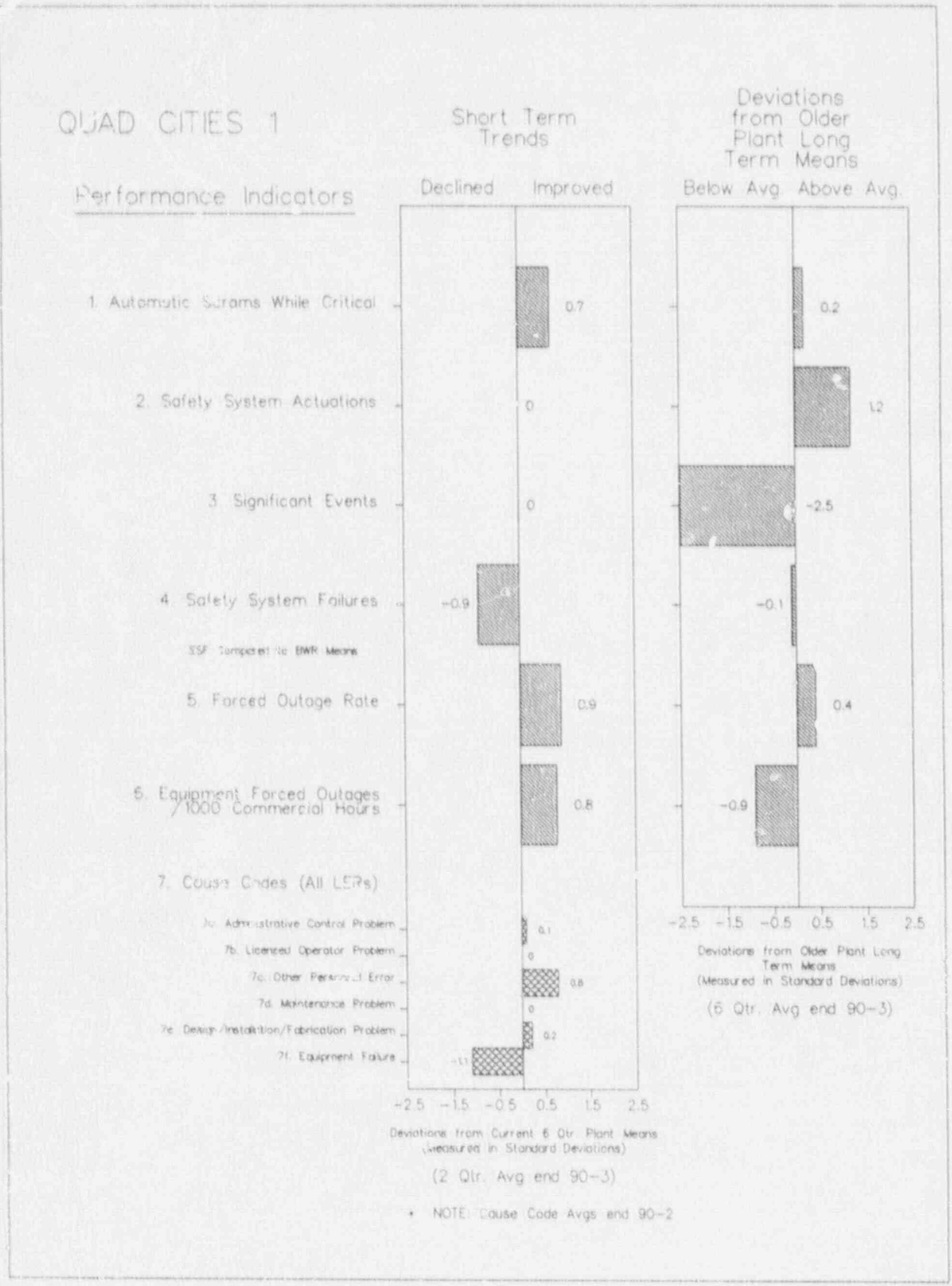

QUAD CITIES 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0
-2.5
4. Safety System Failures
-0.9
-0.1
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
0.4
6. Equipment Forced Outages /1000 Commercial Hours
0.8
-0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.1
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
0
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
-1.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

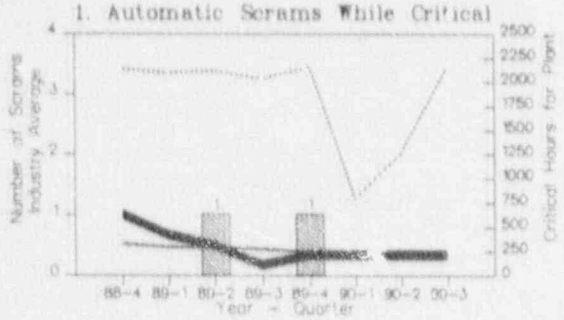
FIGURE 4.79

QUAD CITIES 2

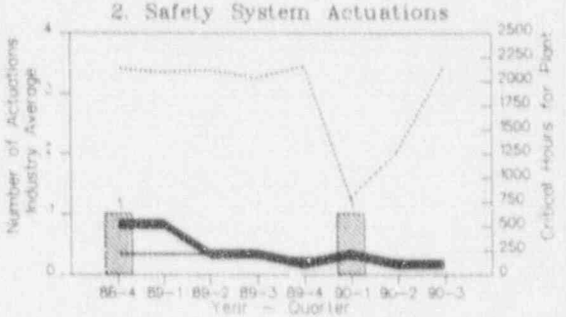
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

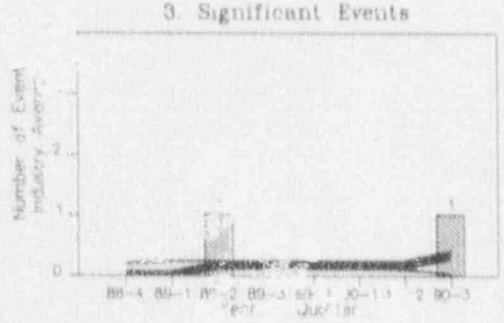
1. Automatic Scrams While Critical



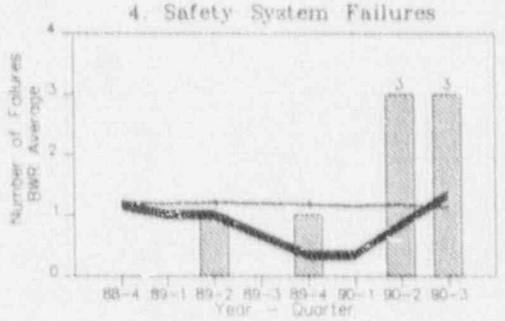
2. Safety System Actuations



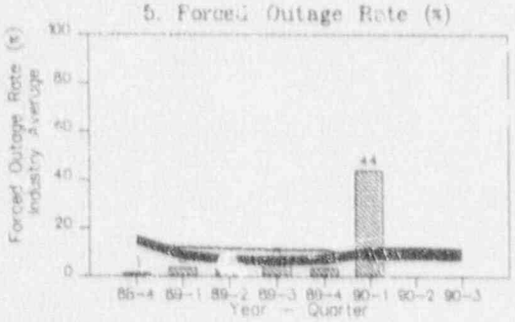
3. Significant Events



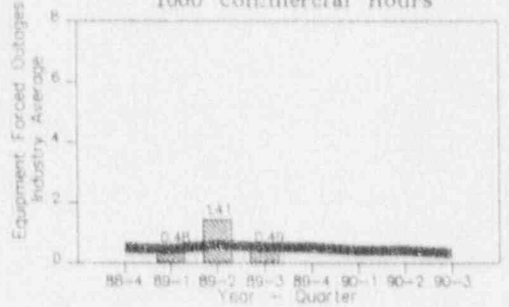
4. Safety System Failures



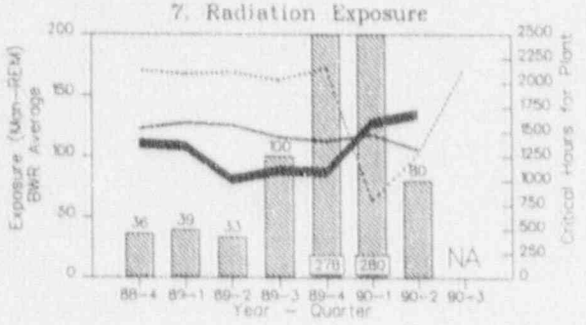
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

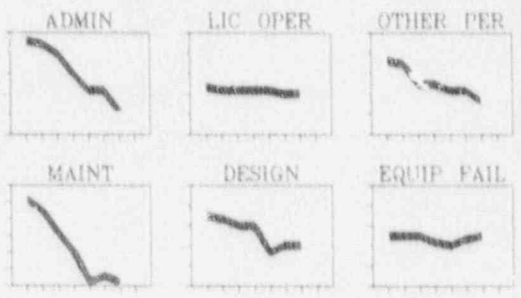


FIGURE 4.79

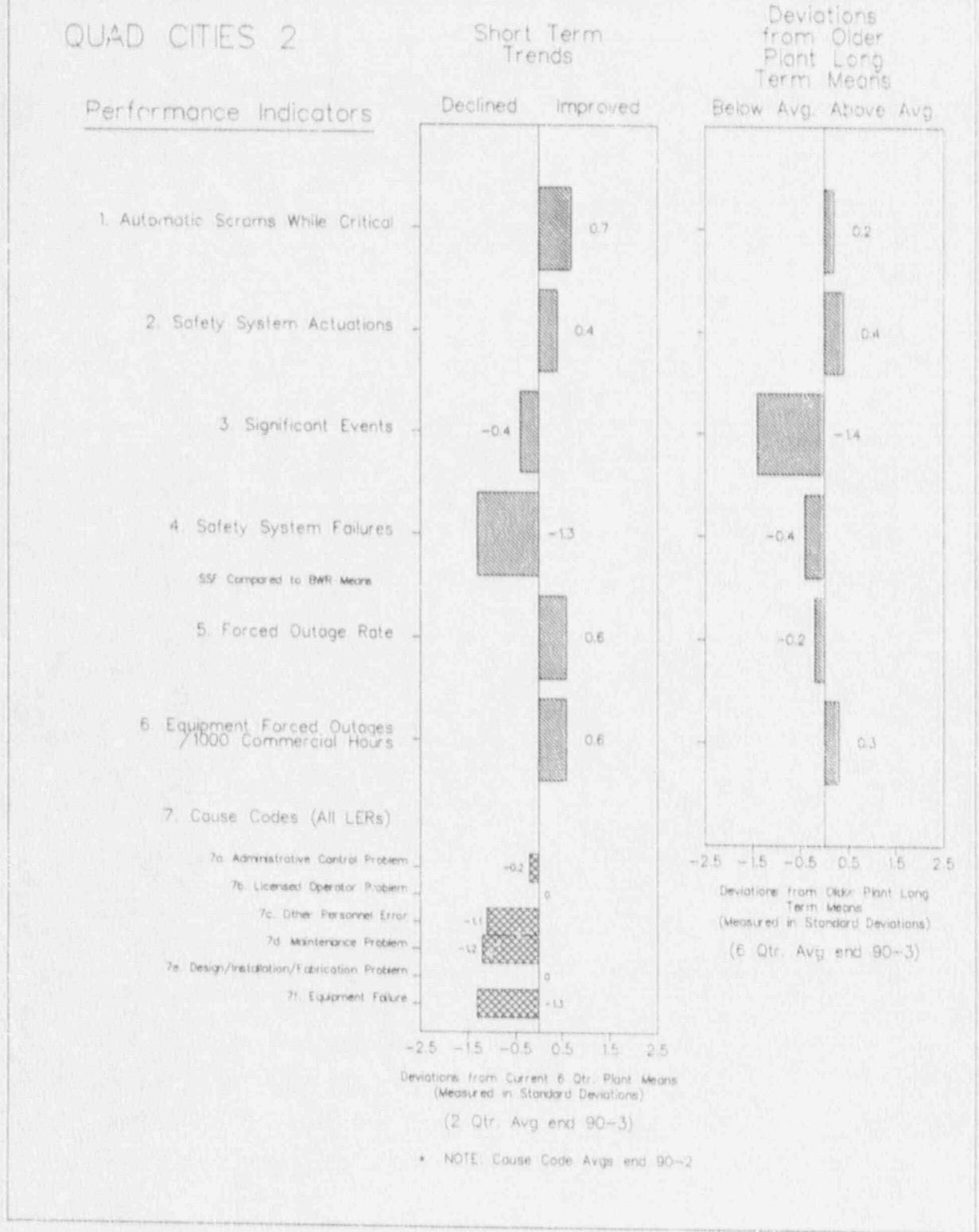
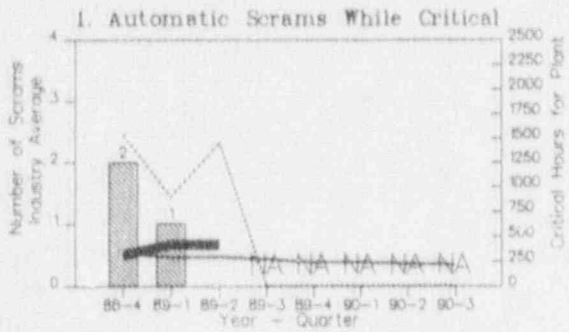

QUAD CITIES 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.7
0.4
-0.4
-1.3
0.6
0.6
-0.2
0
-1.1
-1.2
0
-1.3
0.2
0.4
-1.4
-0.4
-0.2
0.3
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

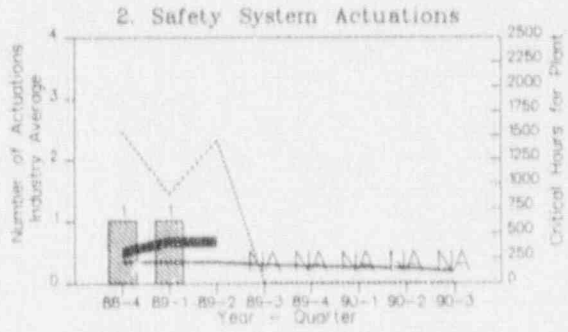
FIGURE 4.80

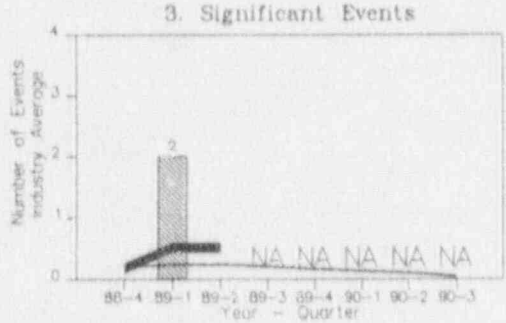
RANCHO SECO

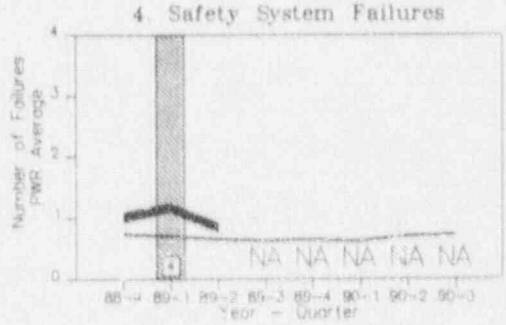
88-4 to 90-3

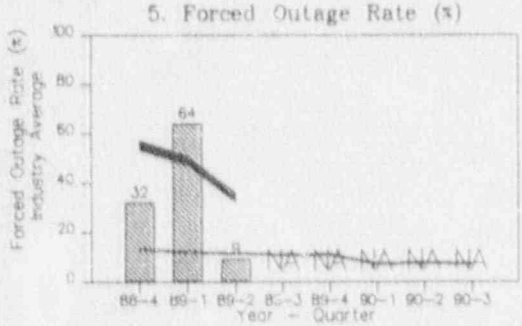
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

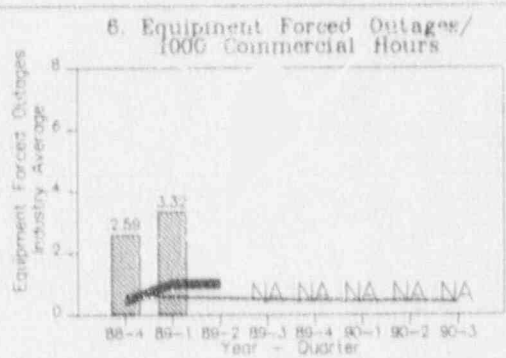


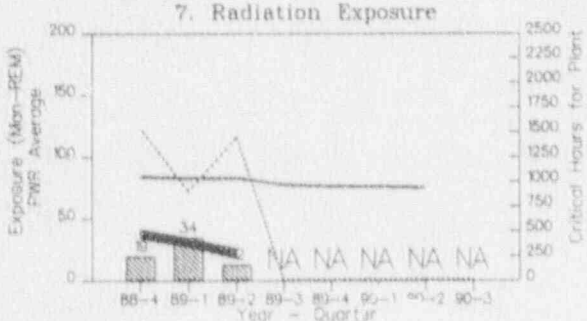












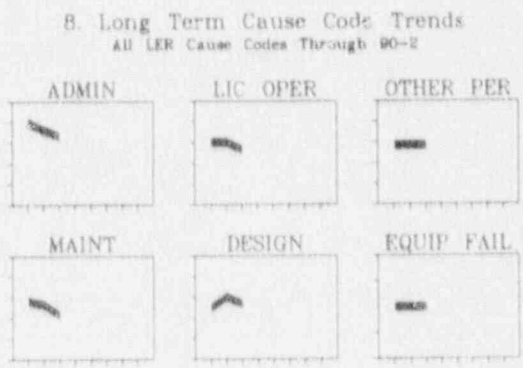


FIGURE 4.80

RANCHO SECO

Rancho Seco ceased all operations in June 1989. Therefore performance indicator data for Rancho Seco is included only through June 1989.

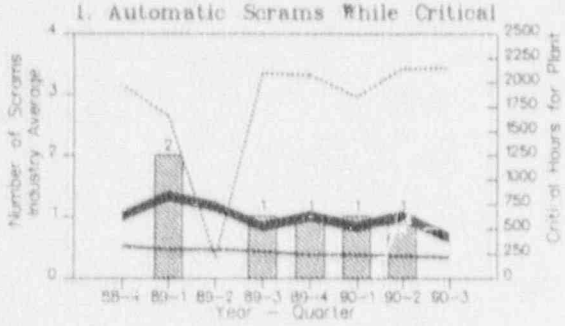
FIGURE 4.81

RIVER BEND

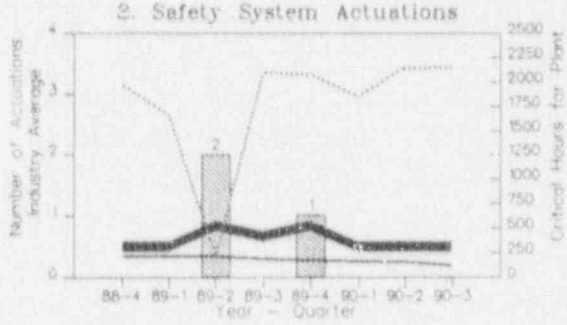
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

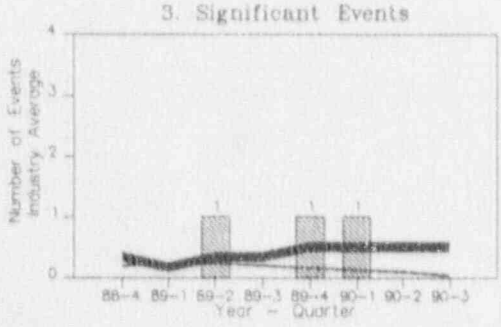
1. Automatic Scrams While Critical



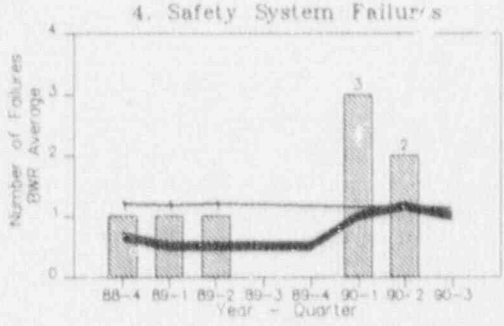
2. Safety System Actuations



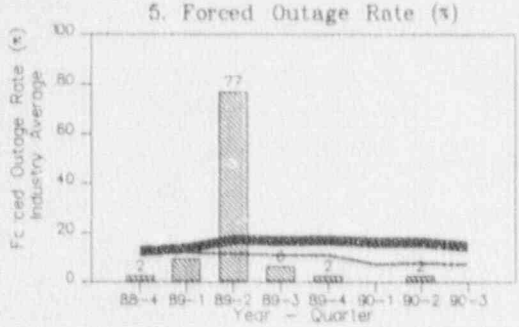
3. Significant Events



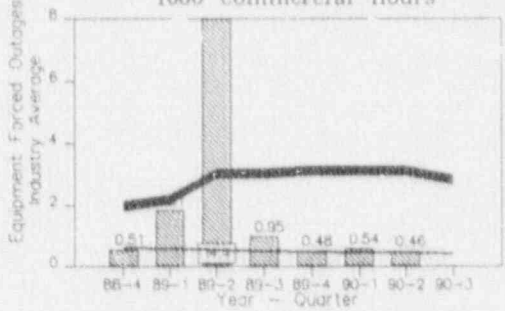
4. Safety System Failures



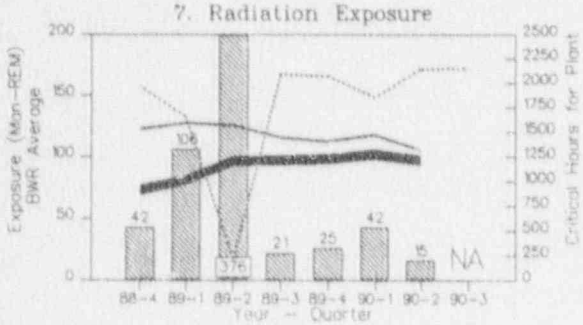
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

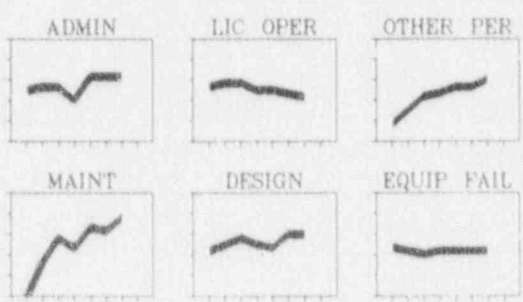


FIGURE 4.B1

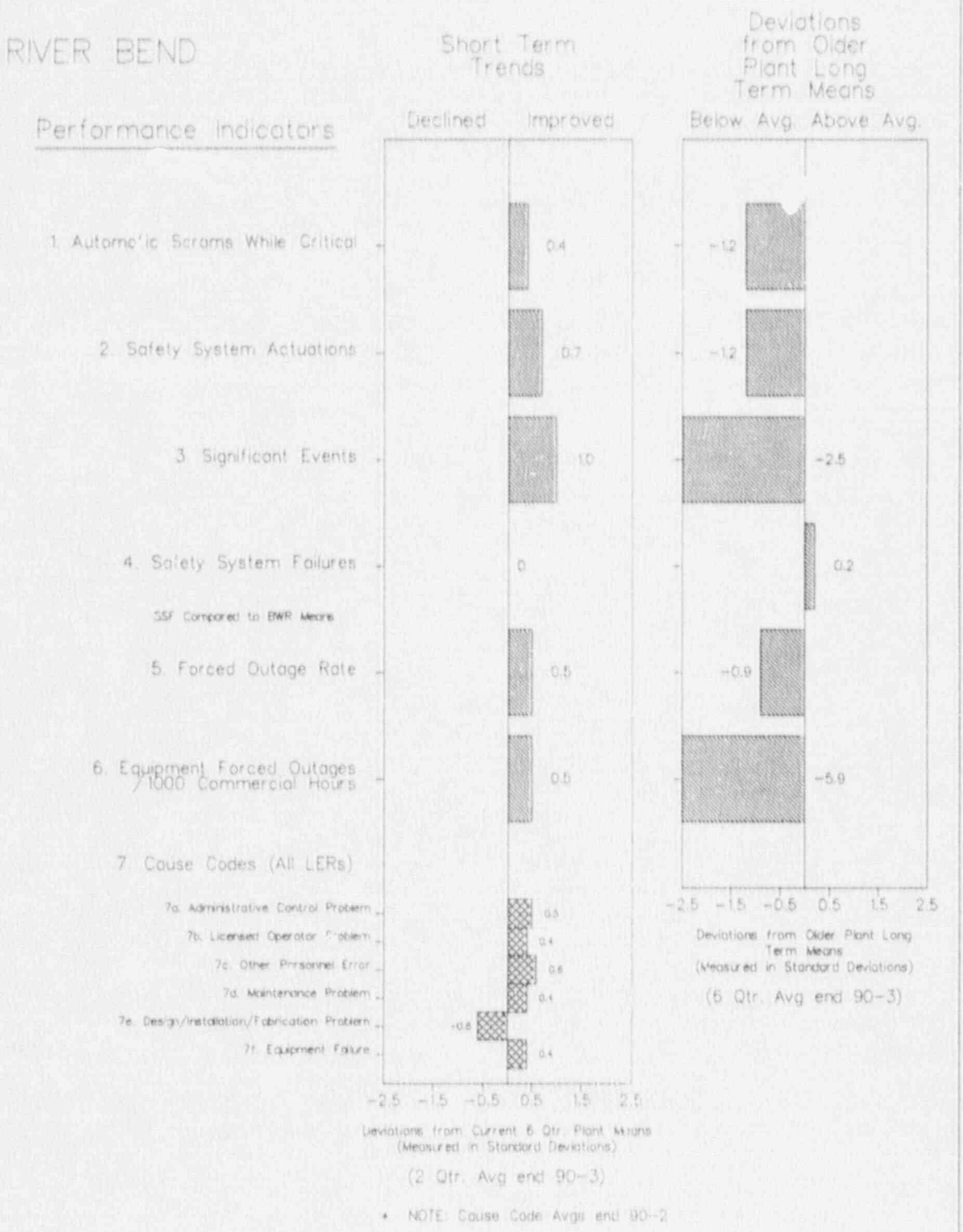
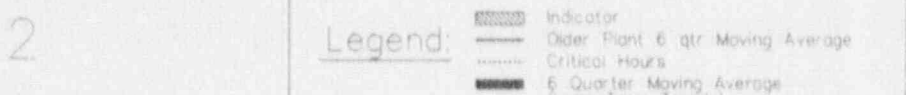
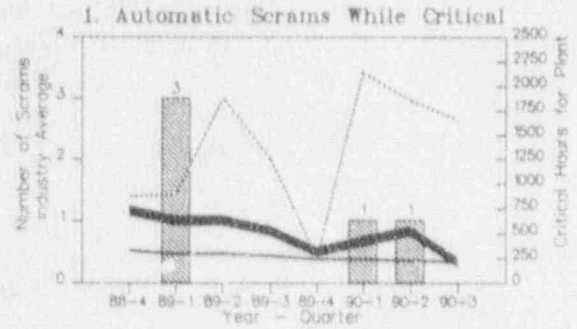

RIVER BEND
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
-1.2
2. Safety System Actuations
0.7
-1.2
3. Significant Events
1.0
-2.5
4. Safety System Failures
0
0.2
SSF Compared to BWR Means
5. Forced Outage Rate
0.5
-0.9
6. Equipment Forced Outages /1000 Commercial Hours
0.5
-5.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
-0.6
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

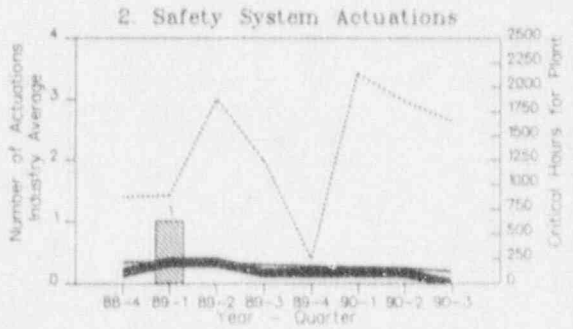
FIGURE 4.82

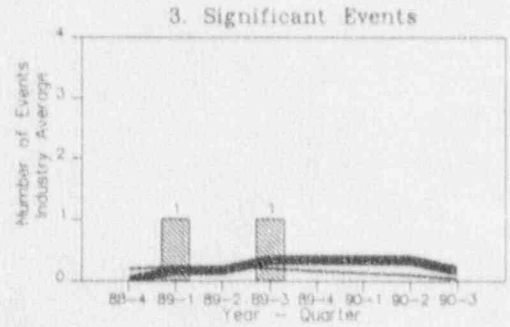
ROBINSON 2

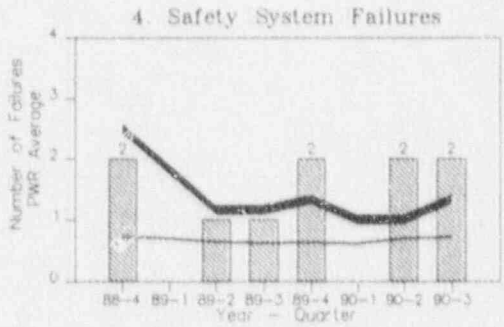
88-4 to 90-3

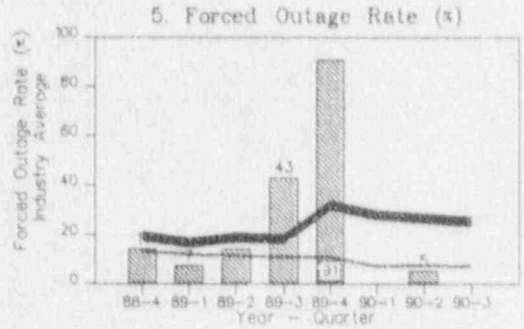


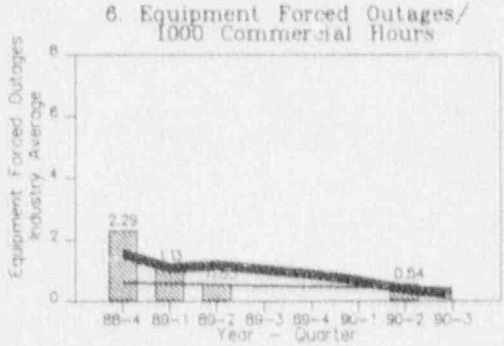


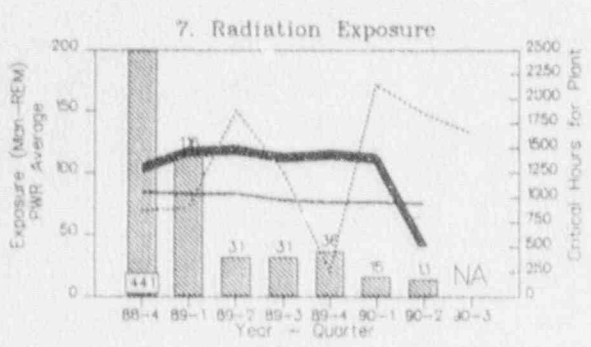












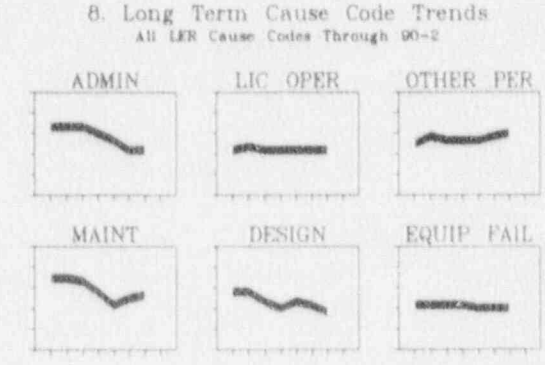


FIGURE A.82

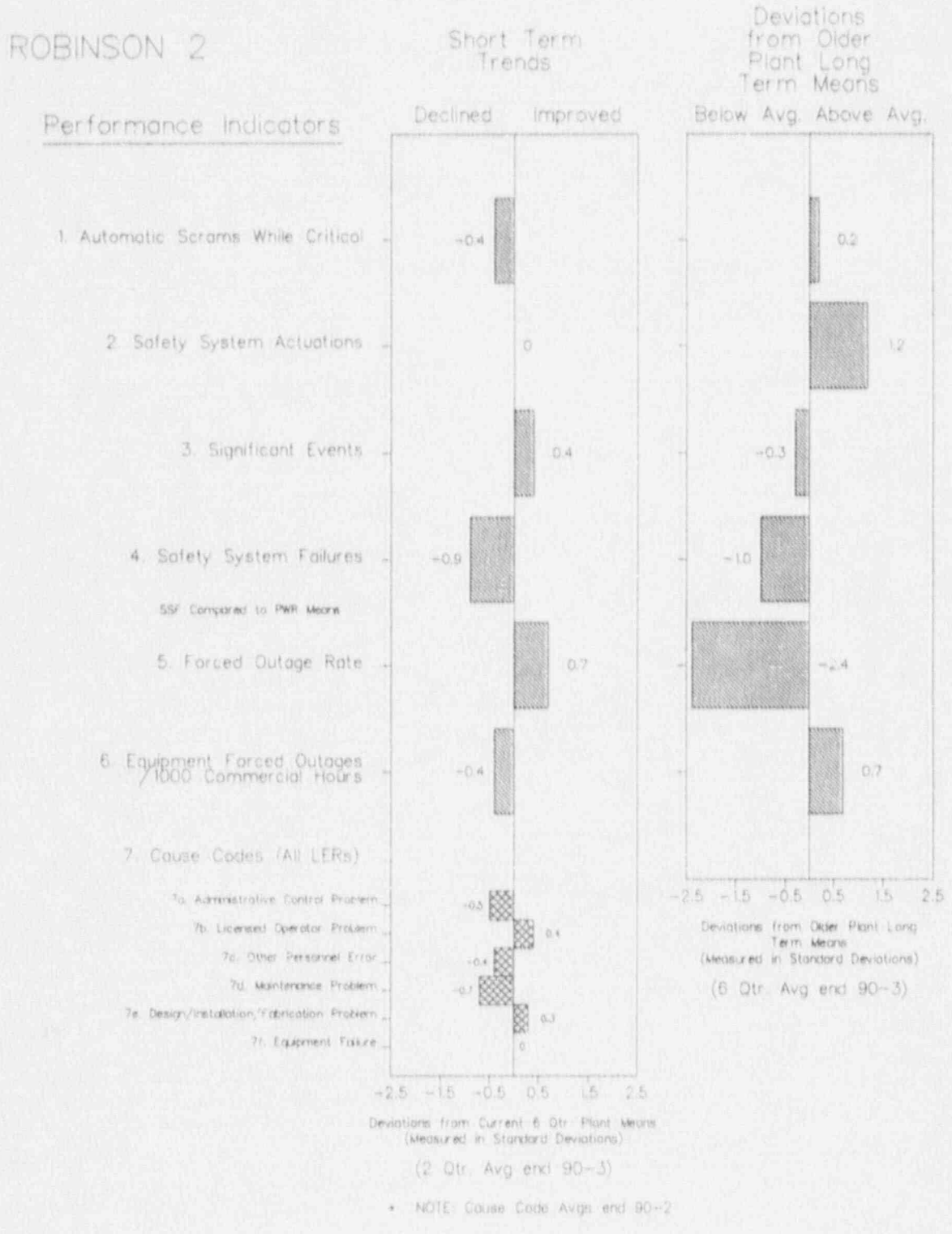
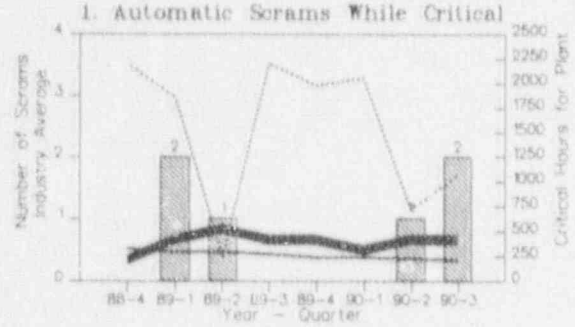

ROBINSON 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
0
0.4
-0.9
0.7
-0.4
-0.5
0.1
-0.4
-0.7
0.3
0
0.2
1.2
-0.3
-1.0
-2.4
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

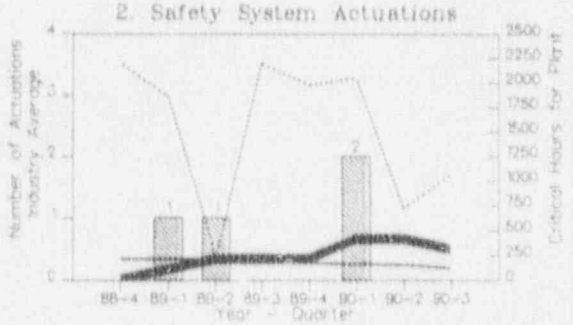
FIGURE 4.83

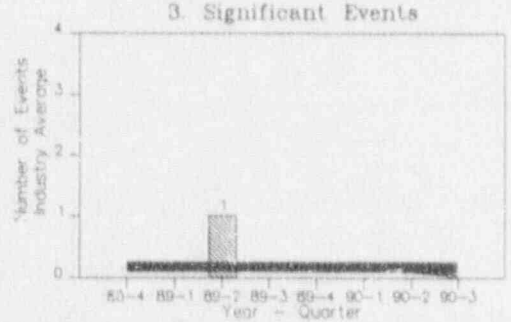
SALEM 1

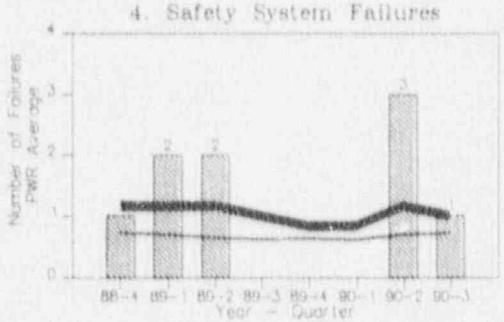
88-4 to 90-3

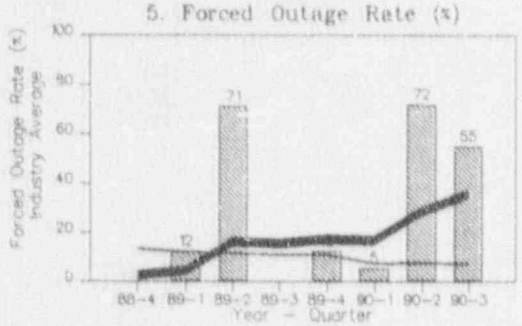
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

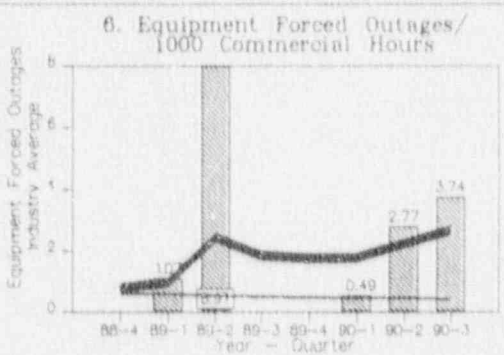


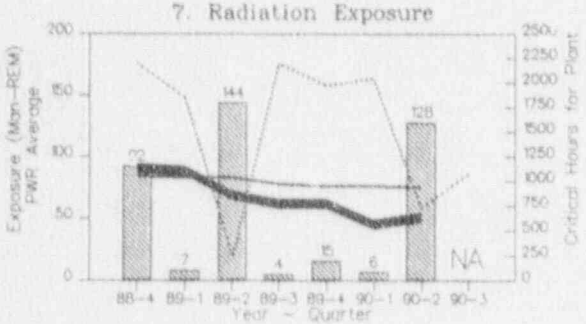












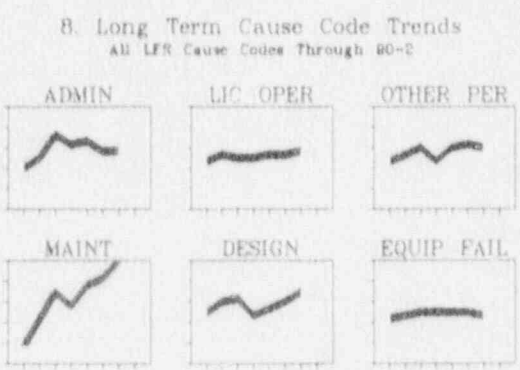


FIGURE 4.83

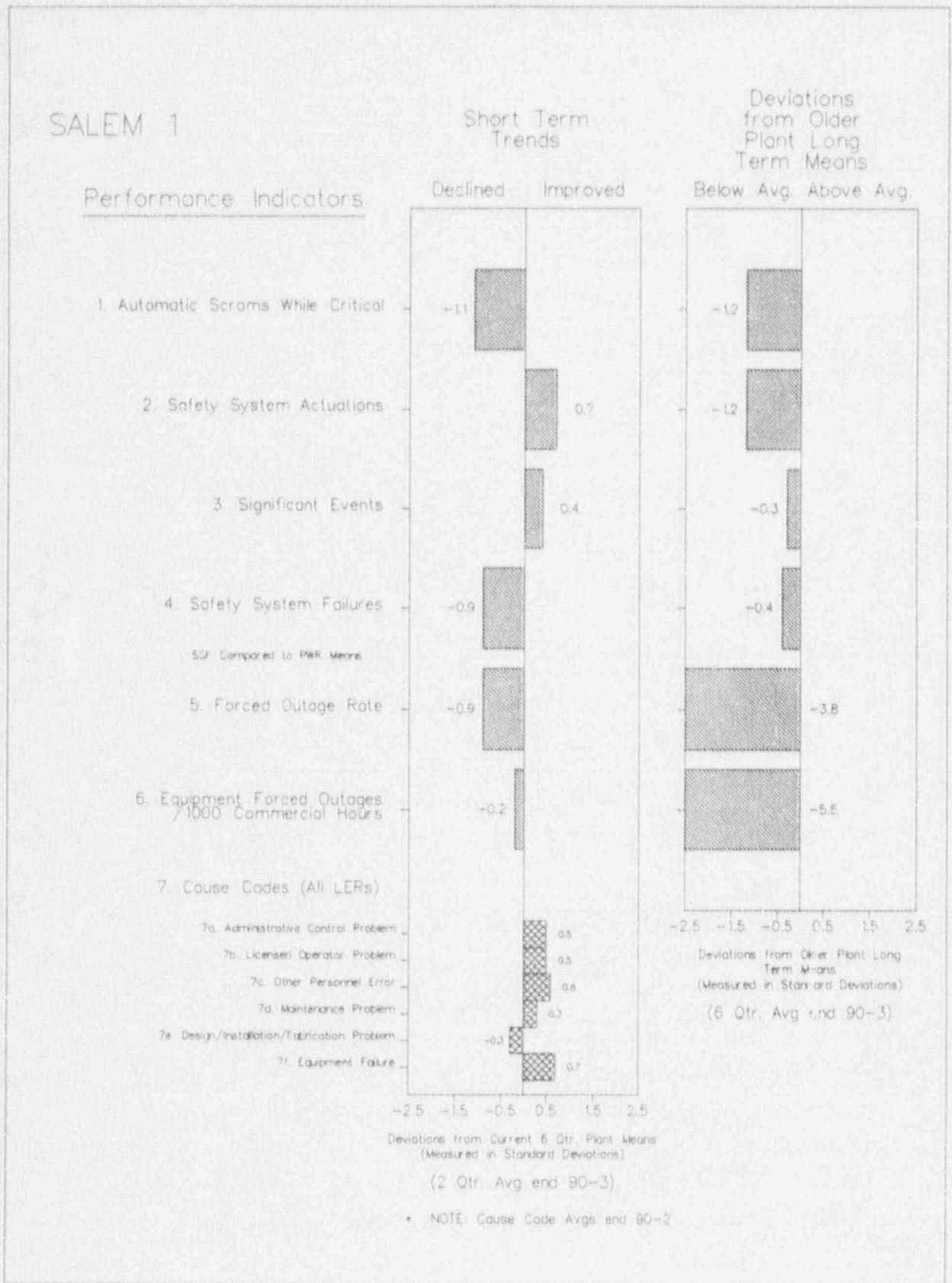

SALEM 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.1
-1.2
2. Safety System Actuations
0.7
-1.2
3. Significant Events
0.4
-0.3
4. Safety System Failures
-0.9
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.9
-3.8
6. Equipment Forced Outages /1000 Commercial Hours
-0.2
-5.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.5
7c. Other Personnel Error
0.6
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
-0.3
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

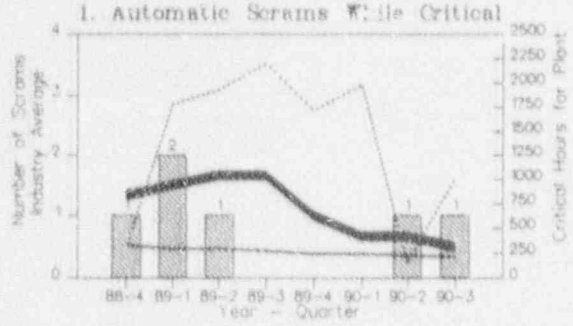
FIGURE 4.84

SALEM 2

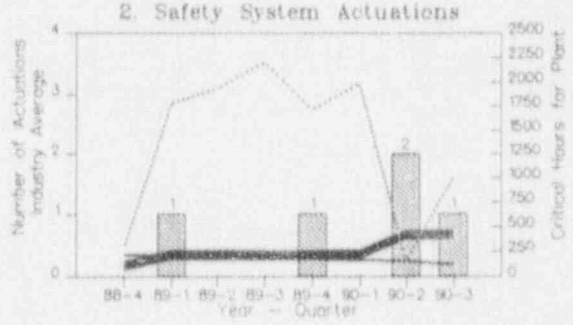
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

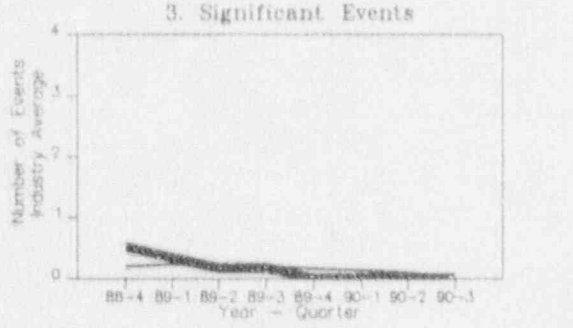
1. Automatic Scrams While Critical



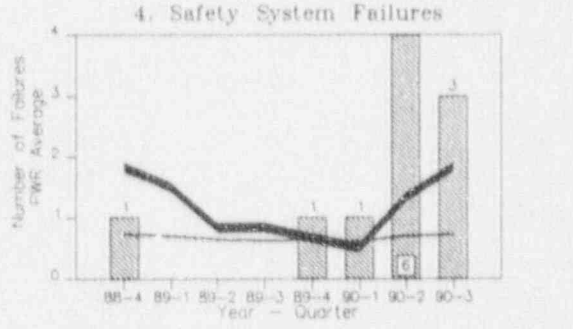
2. Safety System Actuations



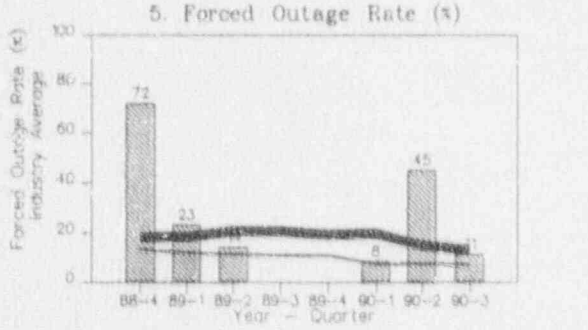
3. Significant Events



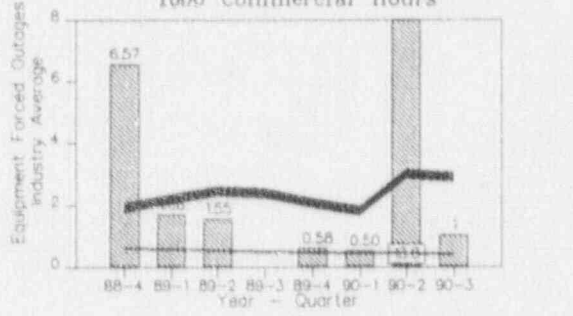
4. Safety System Failures



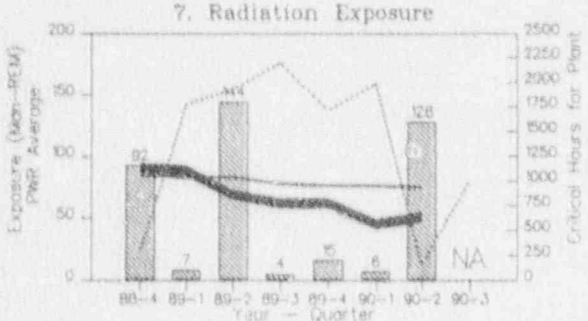
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

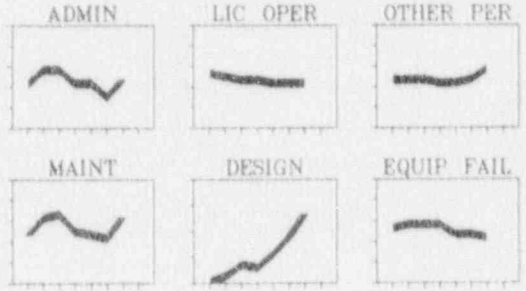


FIGURE 4.84

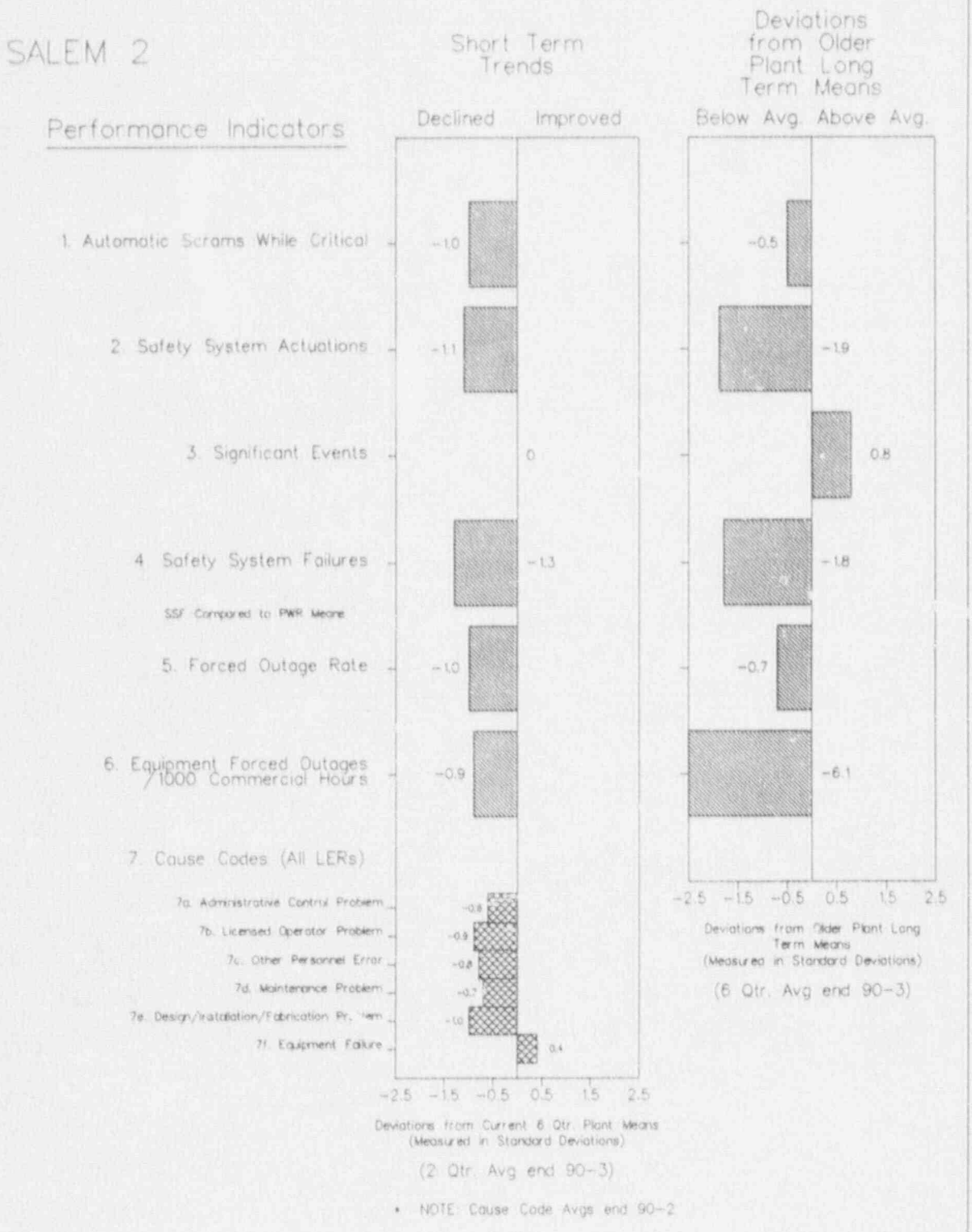

SALEM 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.0
-0.5
2. Safety System Actuations
-1.1
-1.9
3. Significant Events
0
0.8
4. Safety System Failures
-1.3
-1.8
SSF Compared to PWR Means
5. Forced Outage Rate
-1.0
-0.7
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
-6.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
-0.9
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-0.7
7e. Design/Installation/Fabrication Problem
-1.0
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

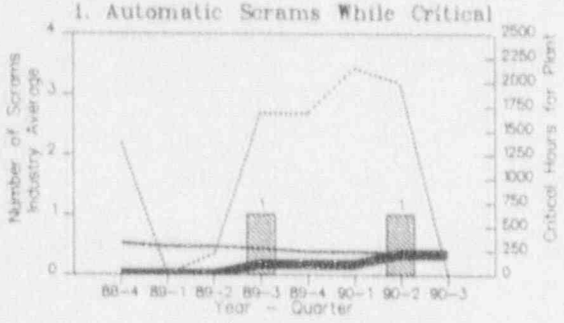
FIGURE 4.85

SAN ONOFRE 1

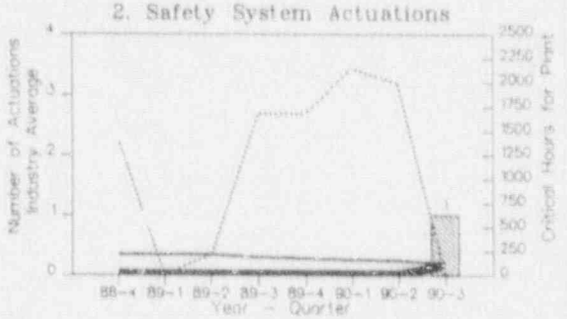
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

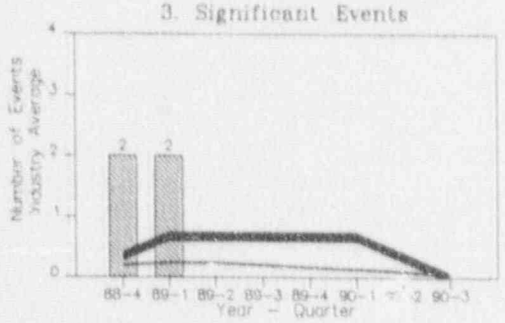
1. Automatic Scrams While Critical



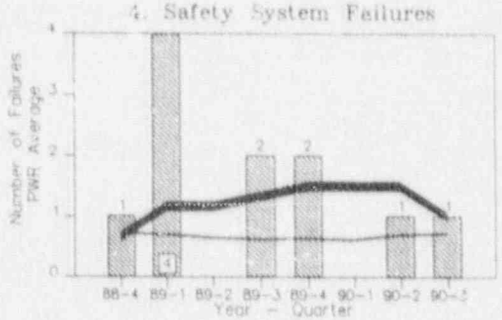
2. Safety System Actuations



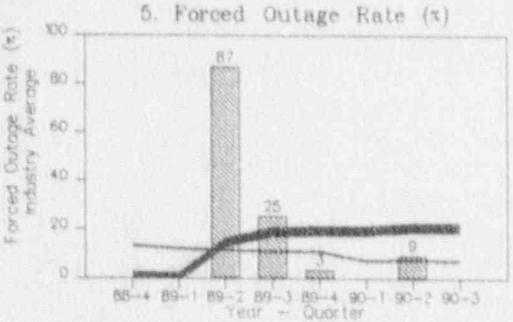
3. Significant Events



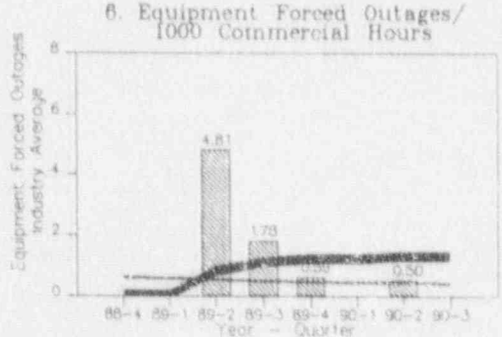
4. Safety System Failures



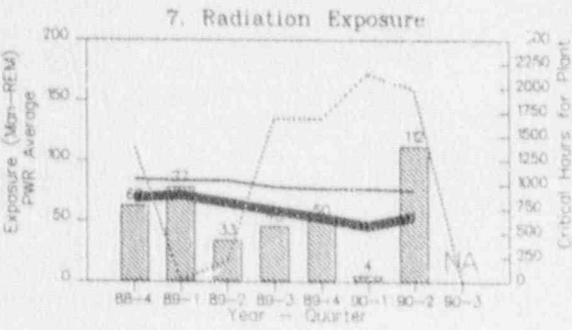
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

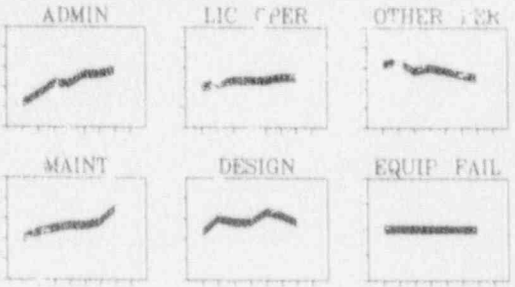


FIGURE 4.B5

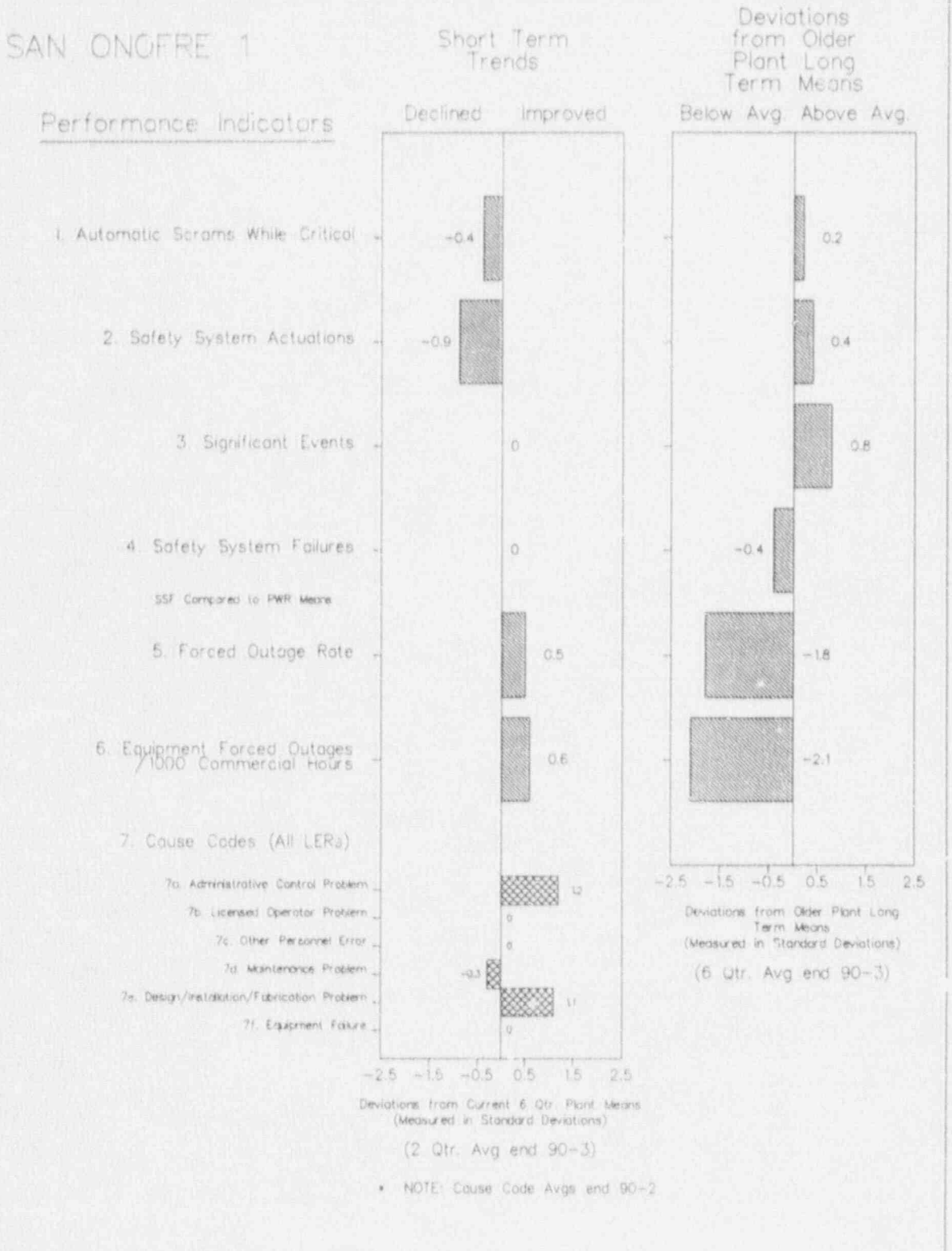

SAN ONOFRE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
0.2
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
-1.8
6. Equipment Forced Outages /1000 Commercial Hours
0.6
-2.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.2
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
1.1
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.86

SAN ONOFRE 2

88-4 to 90-3

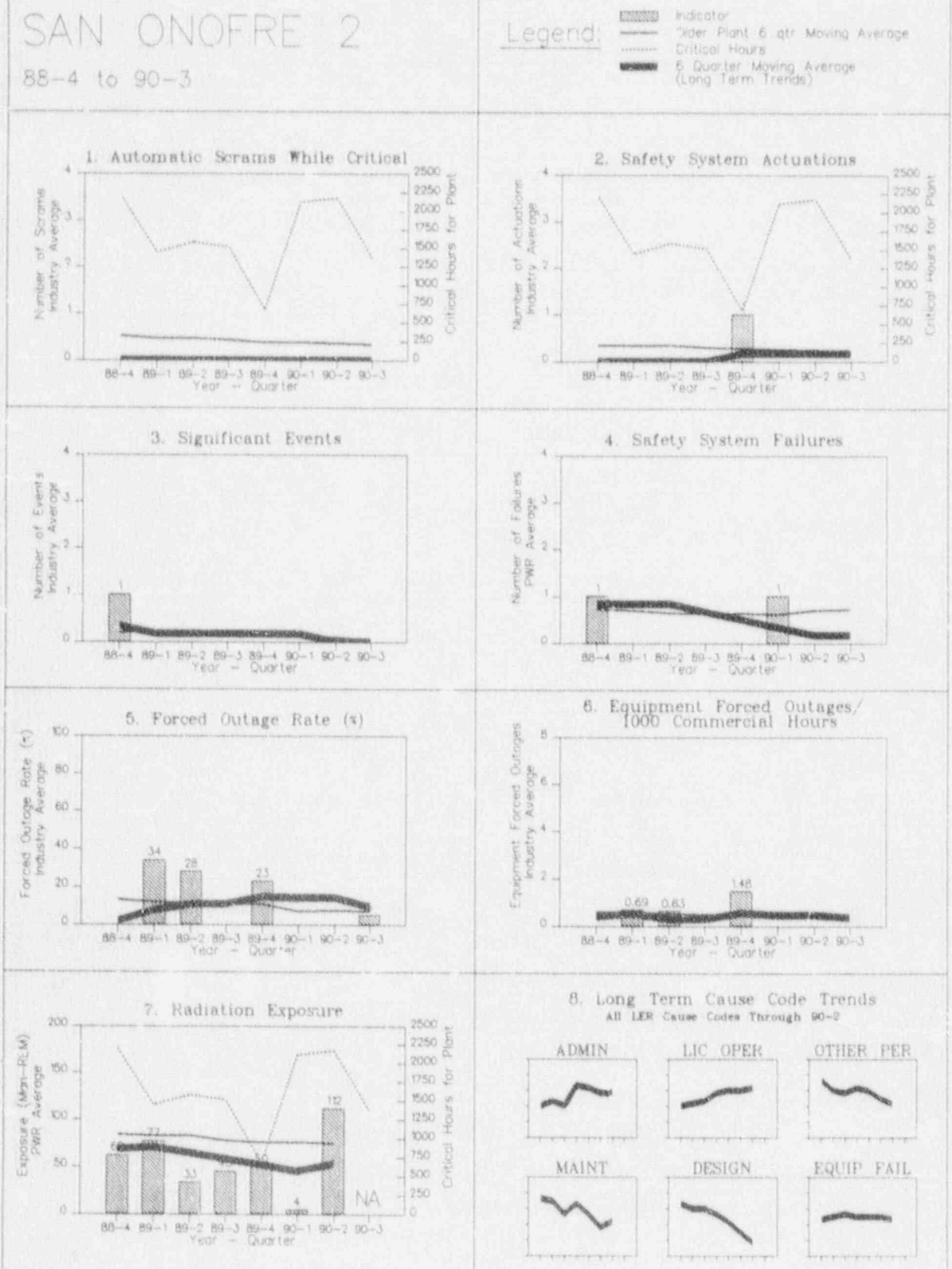


FIGURE 4.86

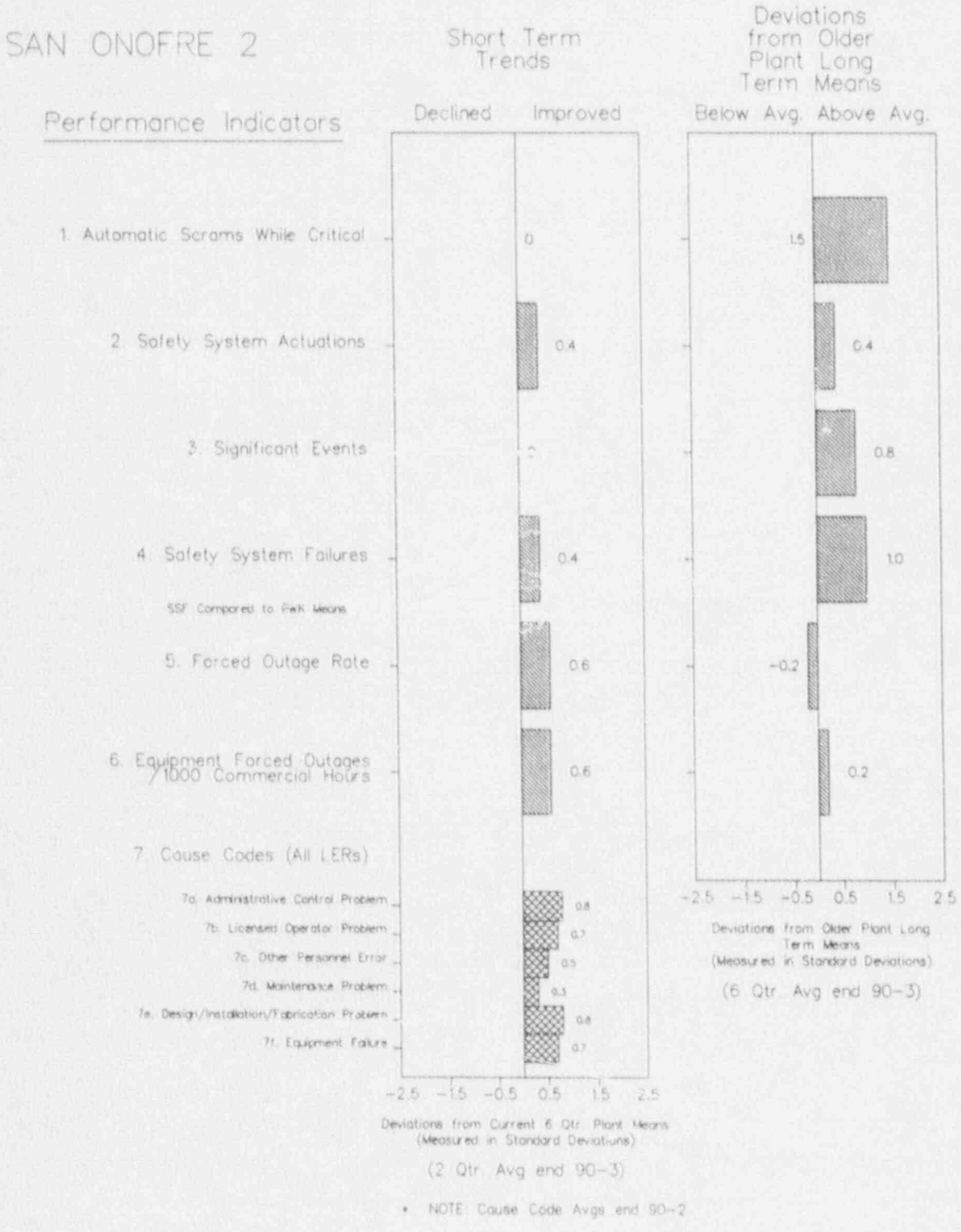

SAN ONOFRE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.5
2. Safety System Actuations
0.4
0.4
3. Significant Events
0.8
4. Safety System Failures
0.4
1.0
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
-0.2
6. Equipment Forced Outages /1000 Commercial Hours
0.6
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0.5
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

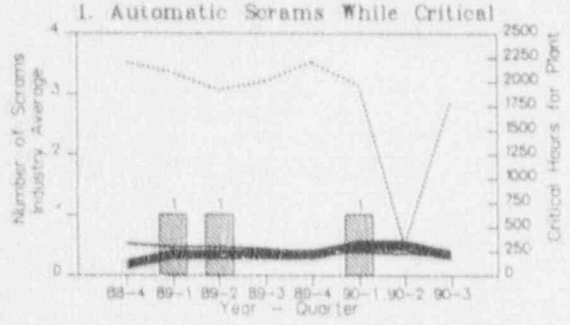
FIGURE 4.87

SAN ONOFRE 3

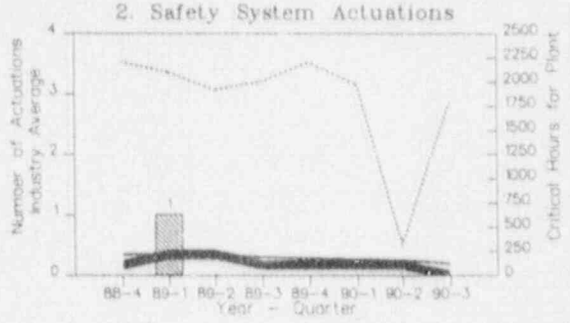
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

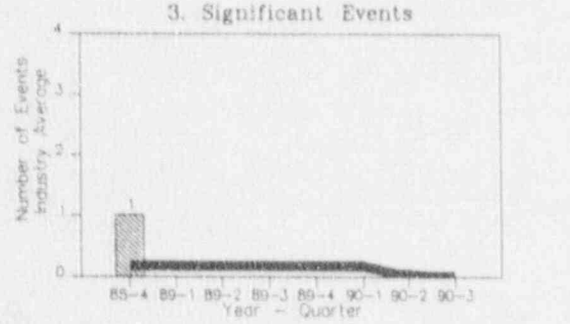
1. Automatic Scrams While Critical



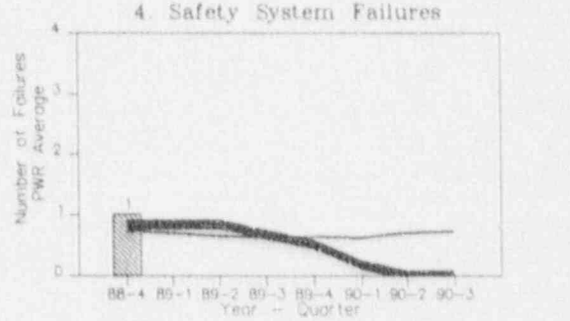
2. Safety System Actuations



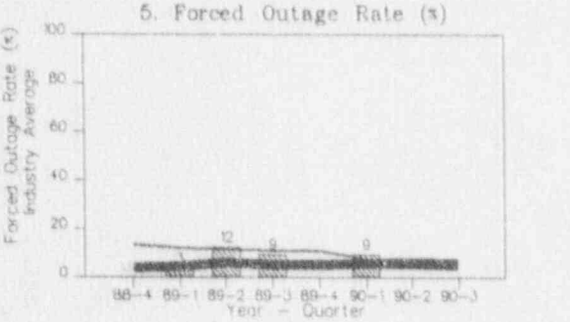
3. Significant Events



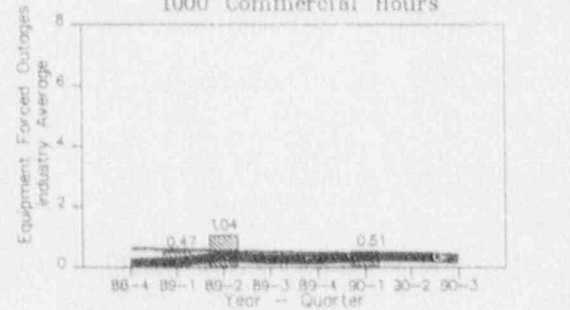
4. Safety System Failures



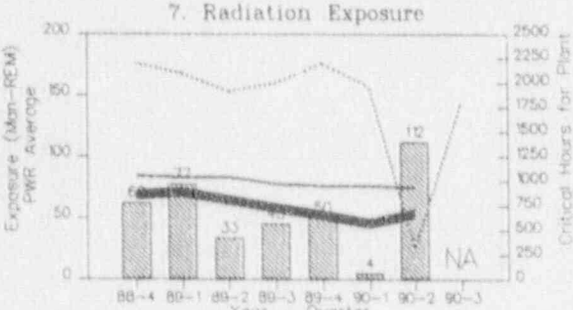
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

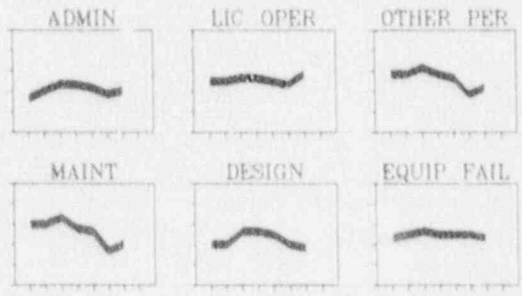


FIGURE 4.87

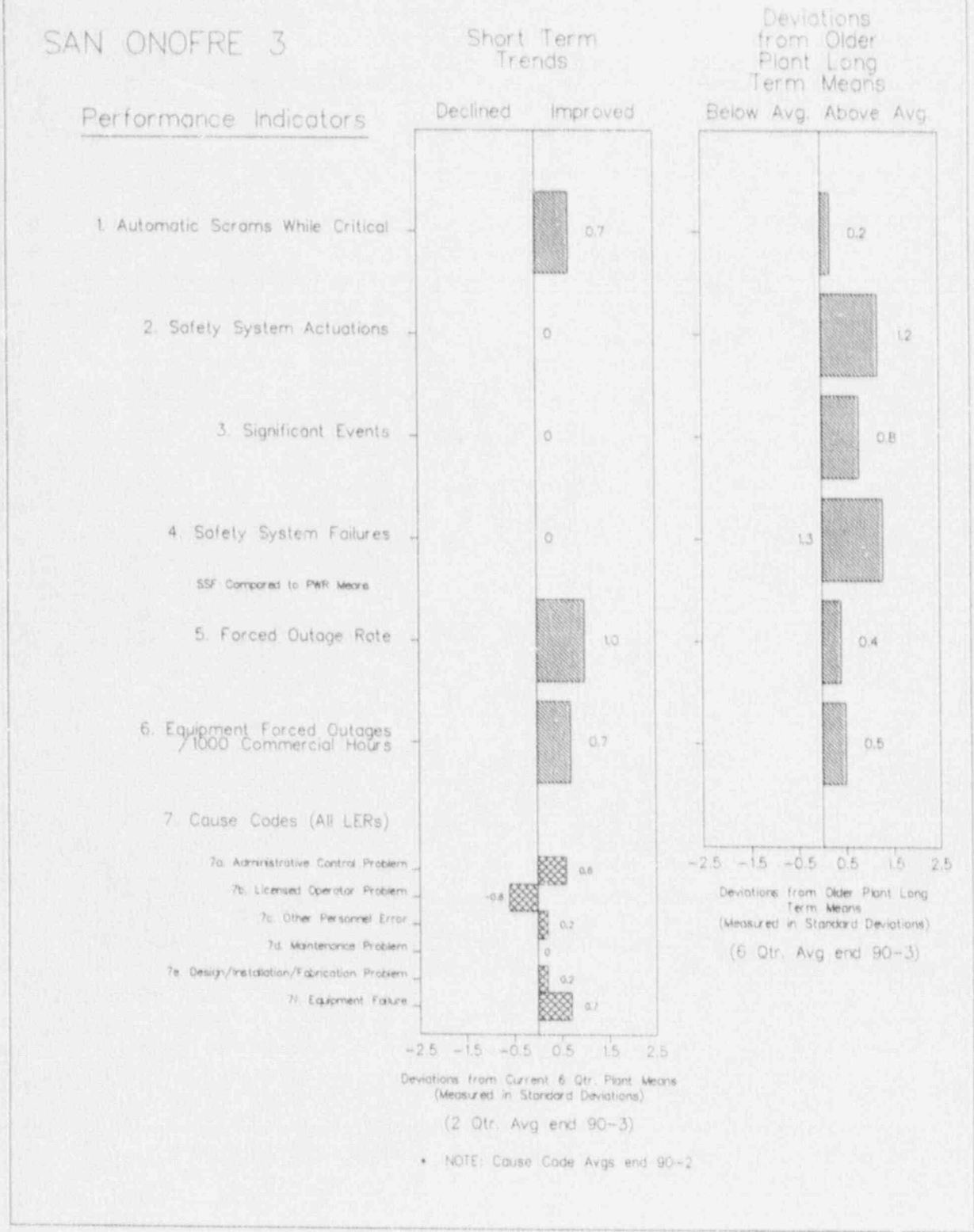

SAN ONOFRE 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
0
1.3
SSF Compared to PWR Means
5. Forced Outage Rate
1.0
0.4
6. Equipment Forced Outages /1000 Commercial Hours
0.7
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.6
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.2
7d. Maintenance Problem
0
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.88

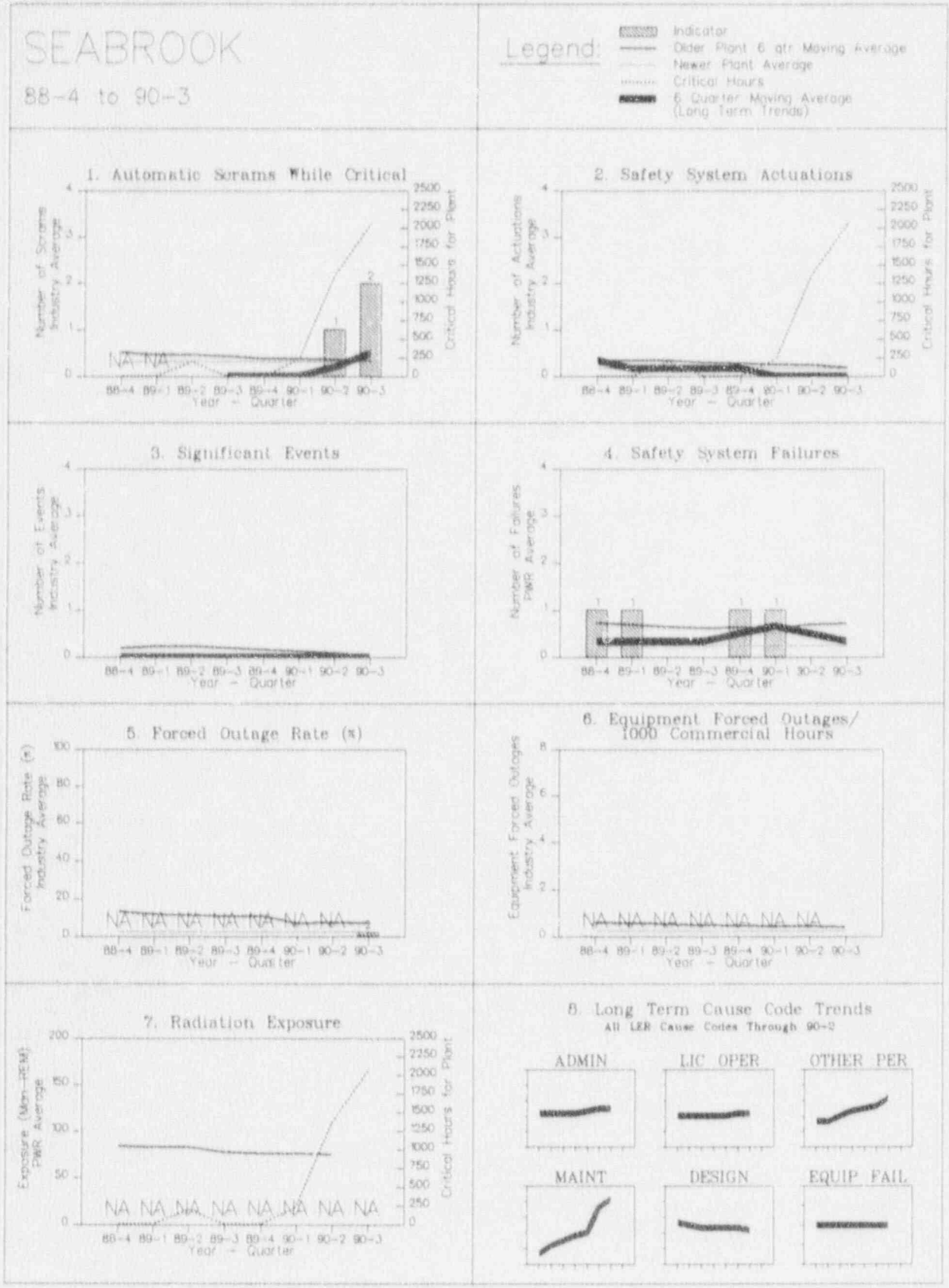

SEABROOK
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Newer Plant Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
NA NA
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
3. Significant Events
Number of Events Industry Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
NA NA NA NA NA NA NA
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
NA NA NA NA NA NA NA
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA NA NA NA NA NA NA NA
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.88

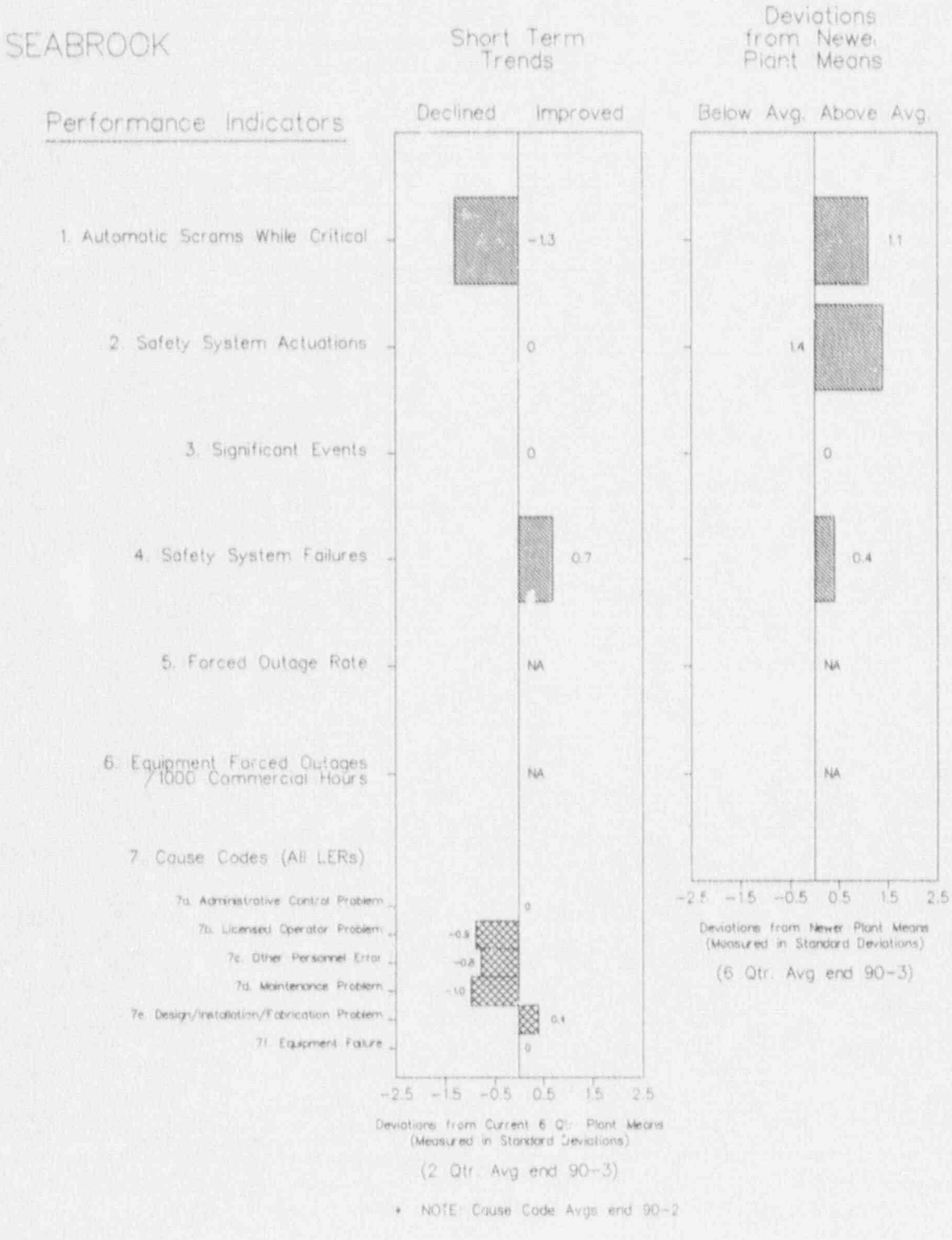

SEABROOK
Short Term Trends
Deviations from Newer Plant Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.3
1.1
2. Safety System Actuations
0
1.4
3. Significant Events
0
0
4. Safety System Failures
0.7
0.4
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages /1000 Commercial Hours
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-1.0
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

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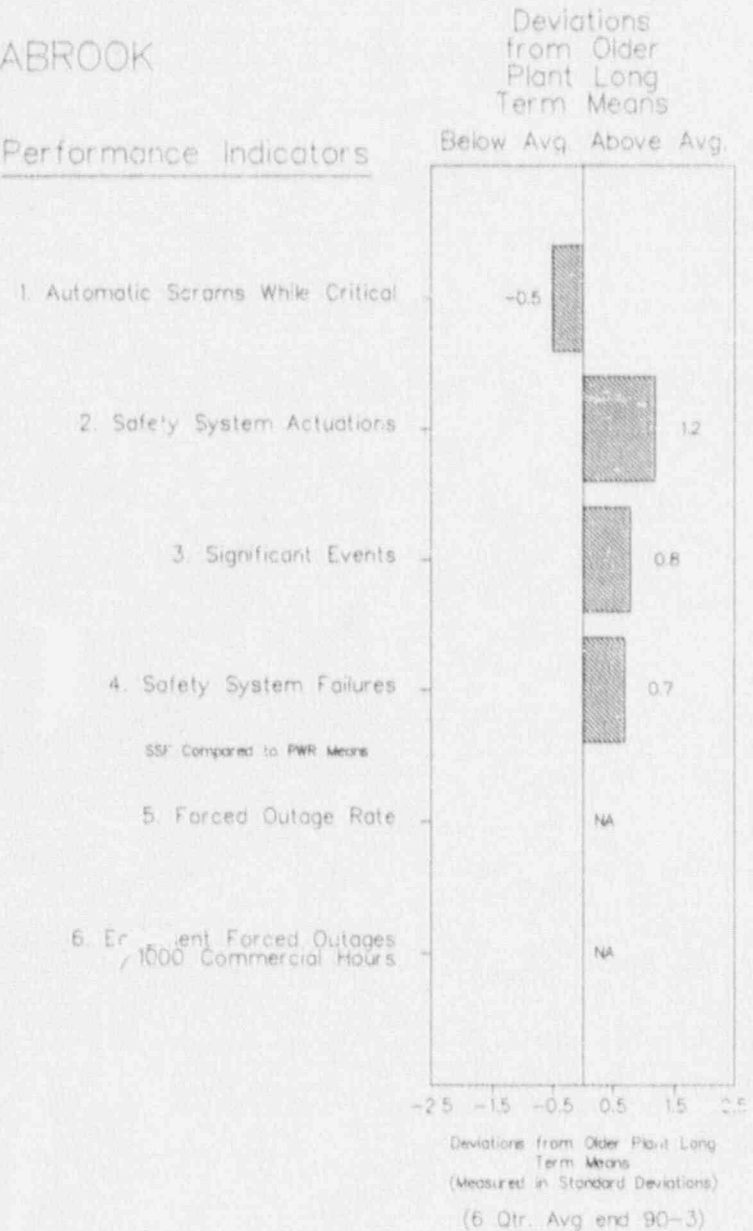
FIGURE 4.88

Note: This is a comparison of SEABROOK (a newer plant) against older plant means.

SEABROOK

Performance Indicators



(6 Qtr. Avg. end 90-3)

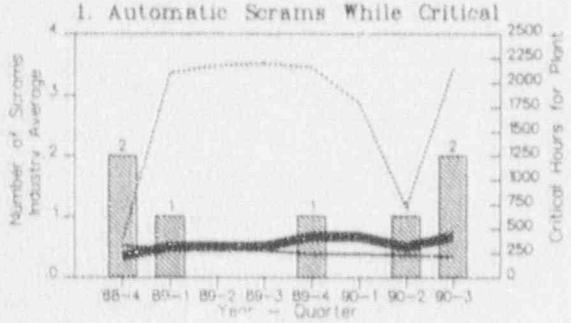
FIGURE 4.89

SEQUOYAH 1

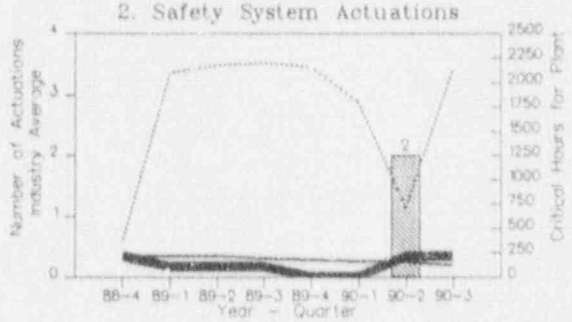
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

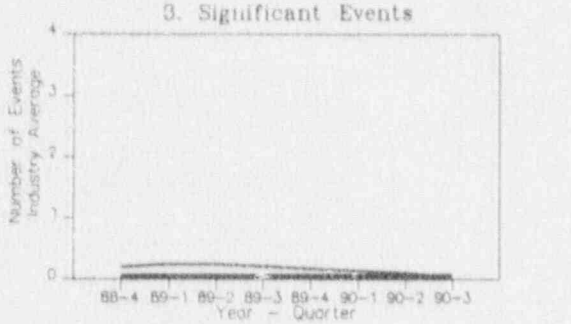
1. Automatic Scrams While Critical



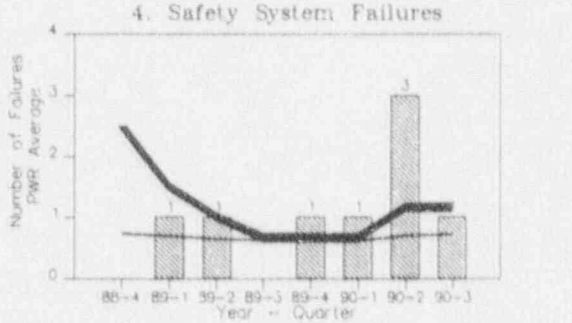
2. Safety System Actuations



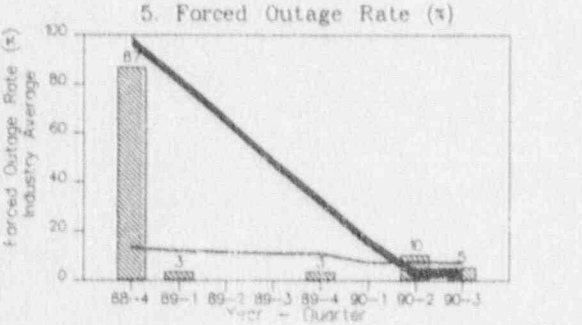
3. Significant Events



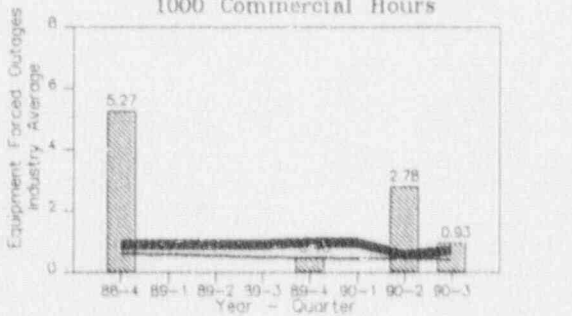
4. Safety System Failures



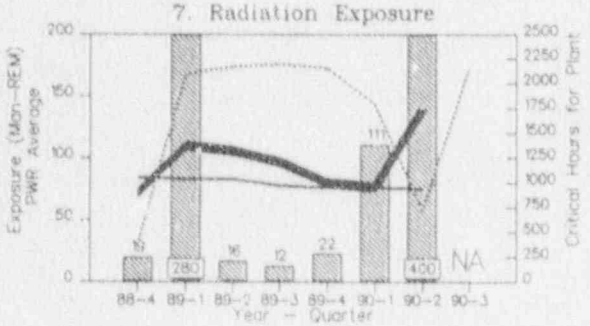
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

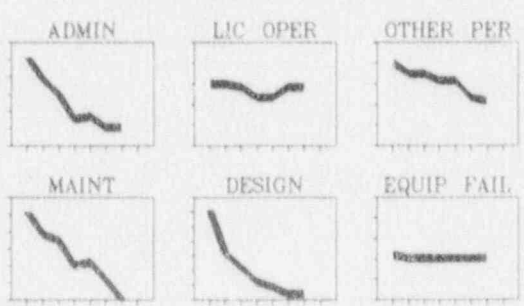


FIGURE 4.B9

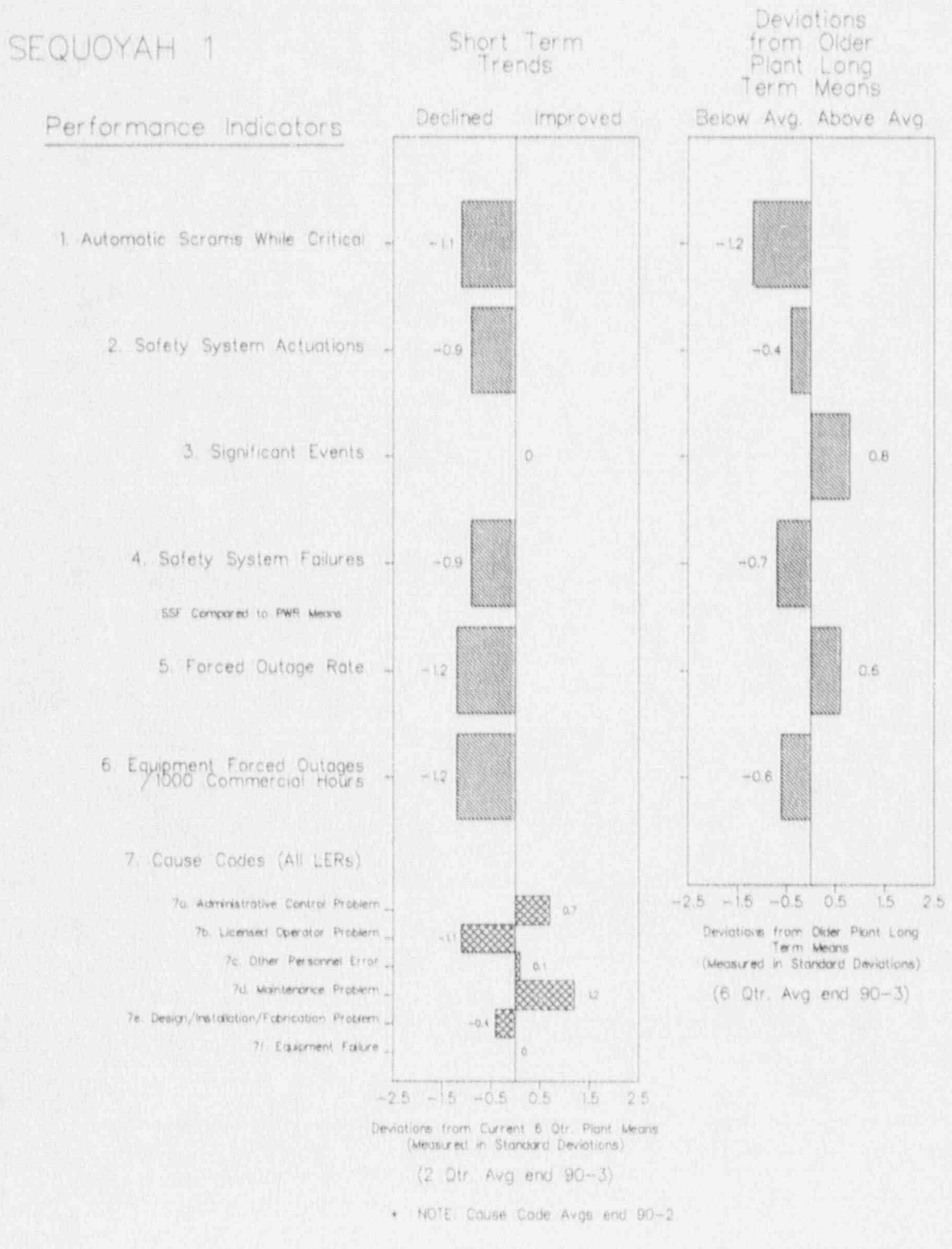
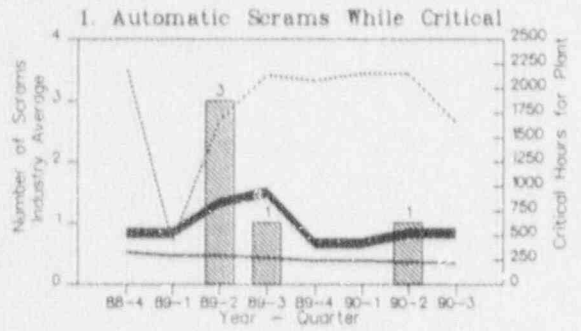

SEQUOYAH 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.1
-1.2
2. Safety System Actuations
-0.9
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.9
-0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-1.2
0.6
6. Equipment Forced Outages /1000 Commercial Hours
-1.2
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
-1.1
7c. Other Personnel Error
0.1
7d. Maintenance Problem
1.2
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

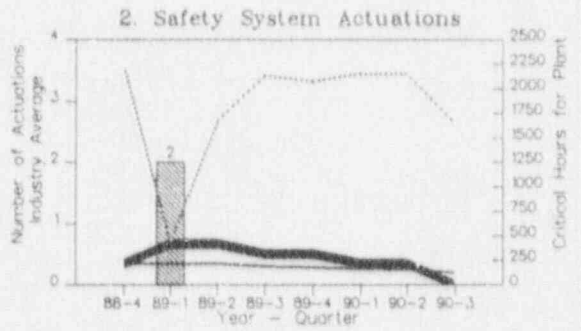
FIGURE 4.90

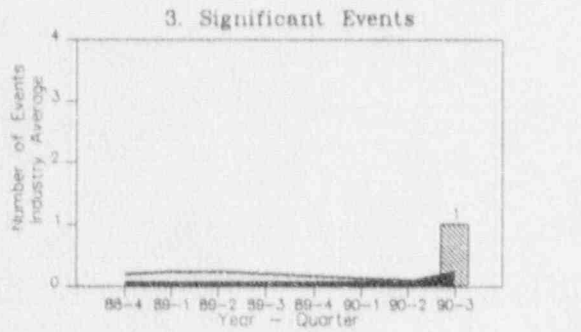
SEQUOYAH 2

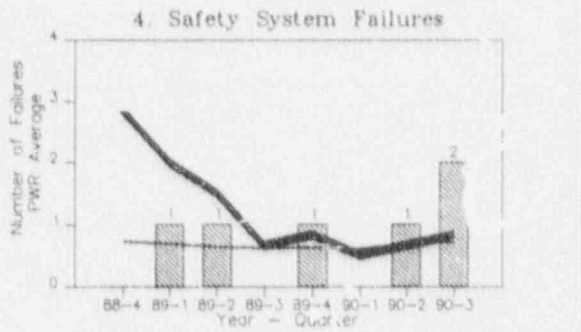
88-4 to 90-3

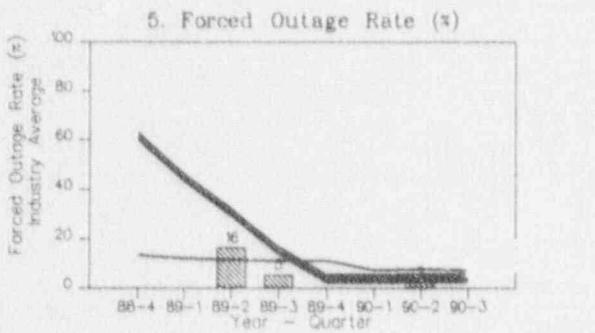
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

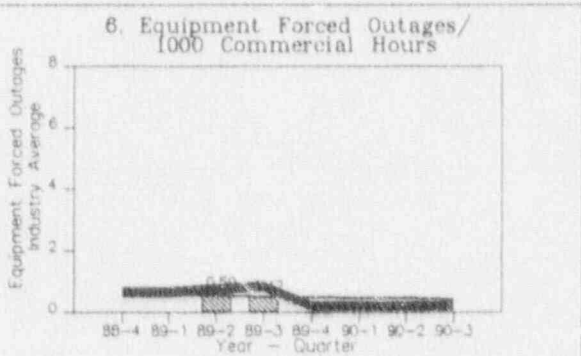


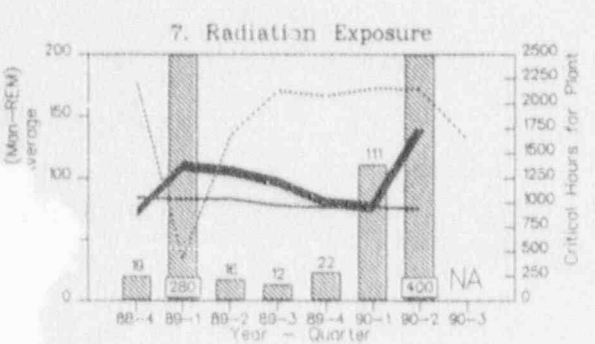












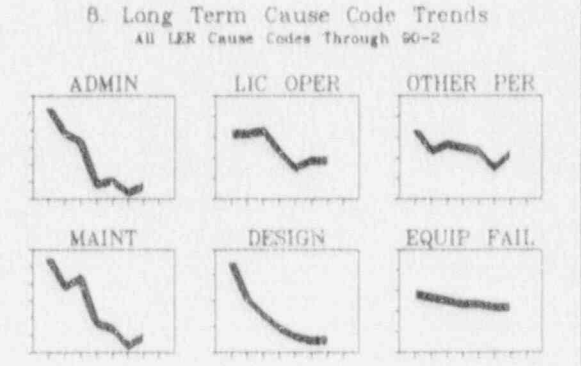


FIGURE 4.90

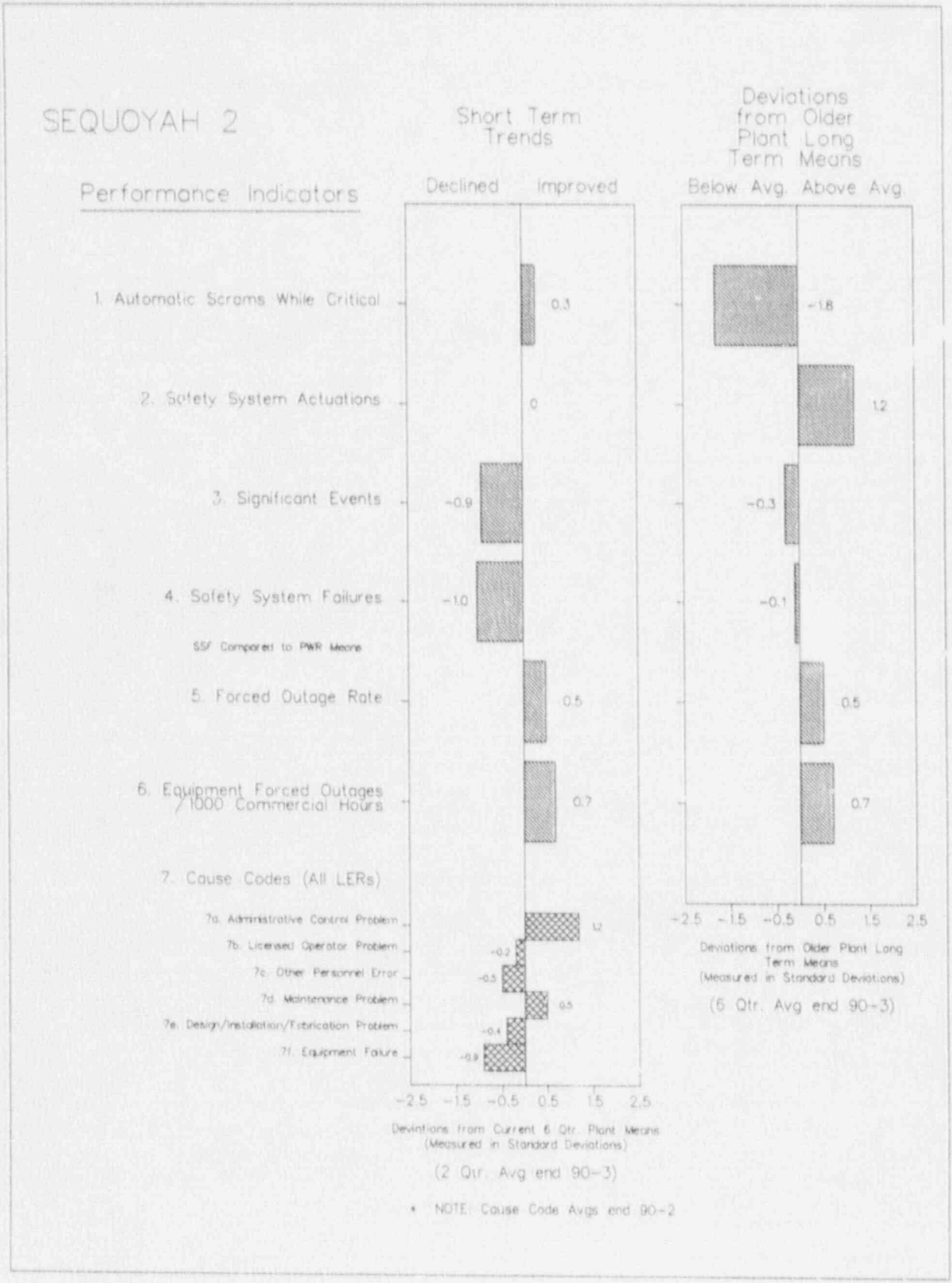

SEQUOYAH 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.8
2. Safety System Actuations
0
1.2
3. Significant Events
-0.9
-0.3
4. Safety System Failures
-1.0
-0.1
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
0.5
6. Equipment Forced Outages / 1000 Commercial Hours
0.7
0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.2
7b. Licensed Operator Problem
-0.2
7c. Other Personnel Error
-0.5
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

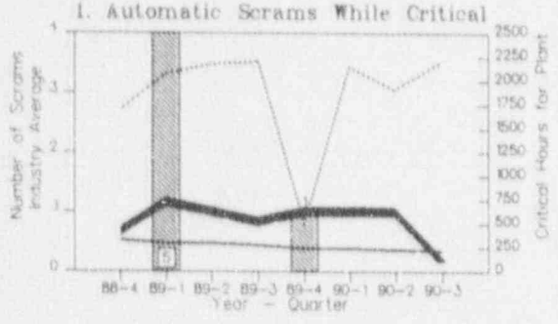
FIGURE 4.91

SHEARON HARRIS

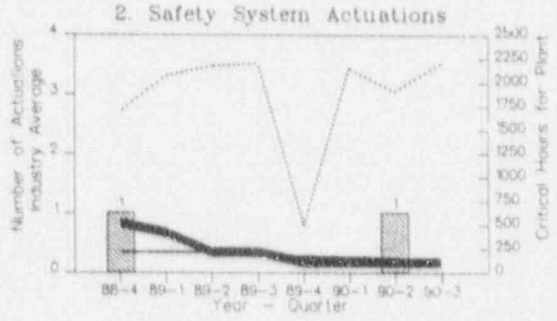
88-4 to 90-3

Legend:
- Indicator
- Older Plant 4 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

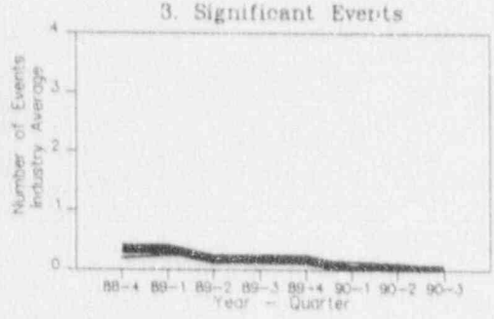
1. Automatic Scrams While Critical



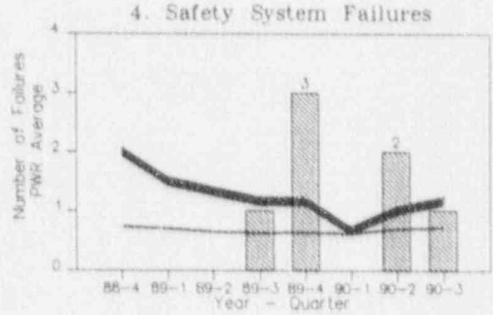
2. Safety System Actuations



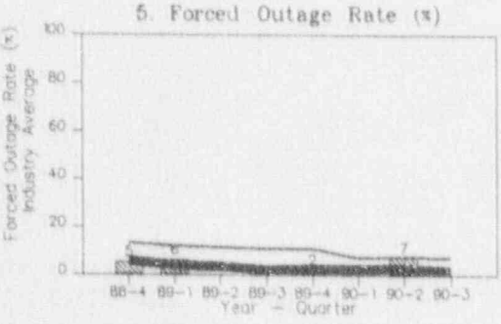
3. Significant Events



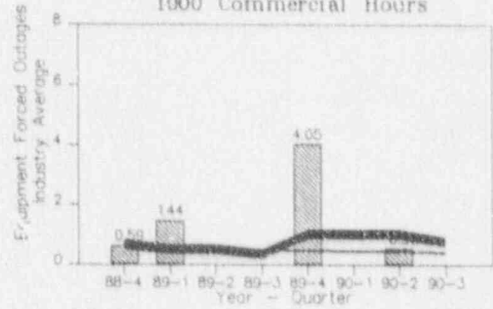
4. Safety System Failures



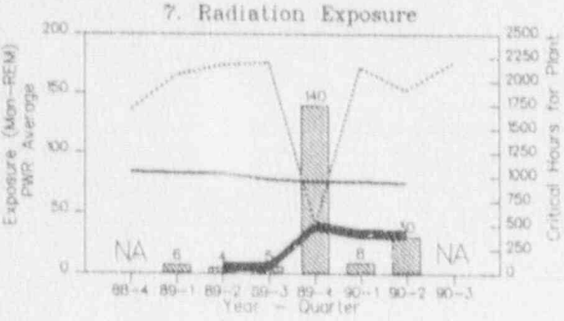
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

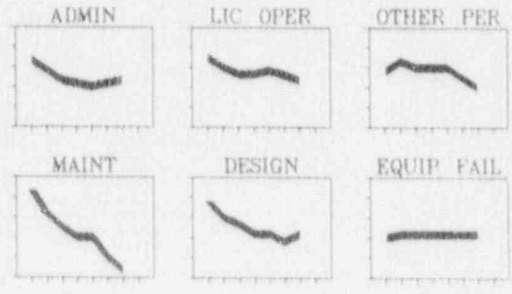


FIGURE 4.91

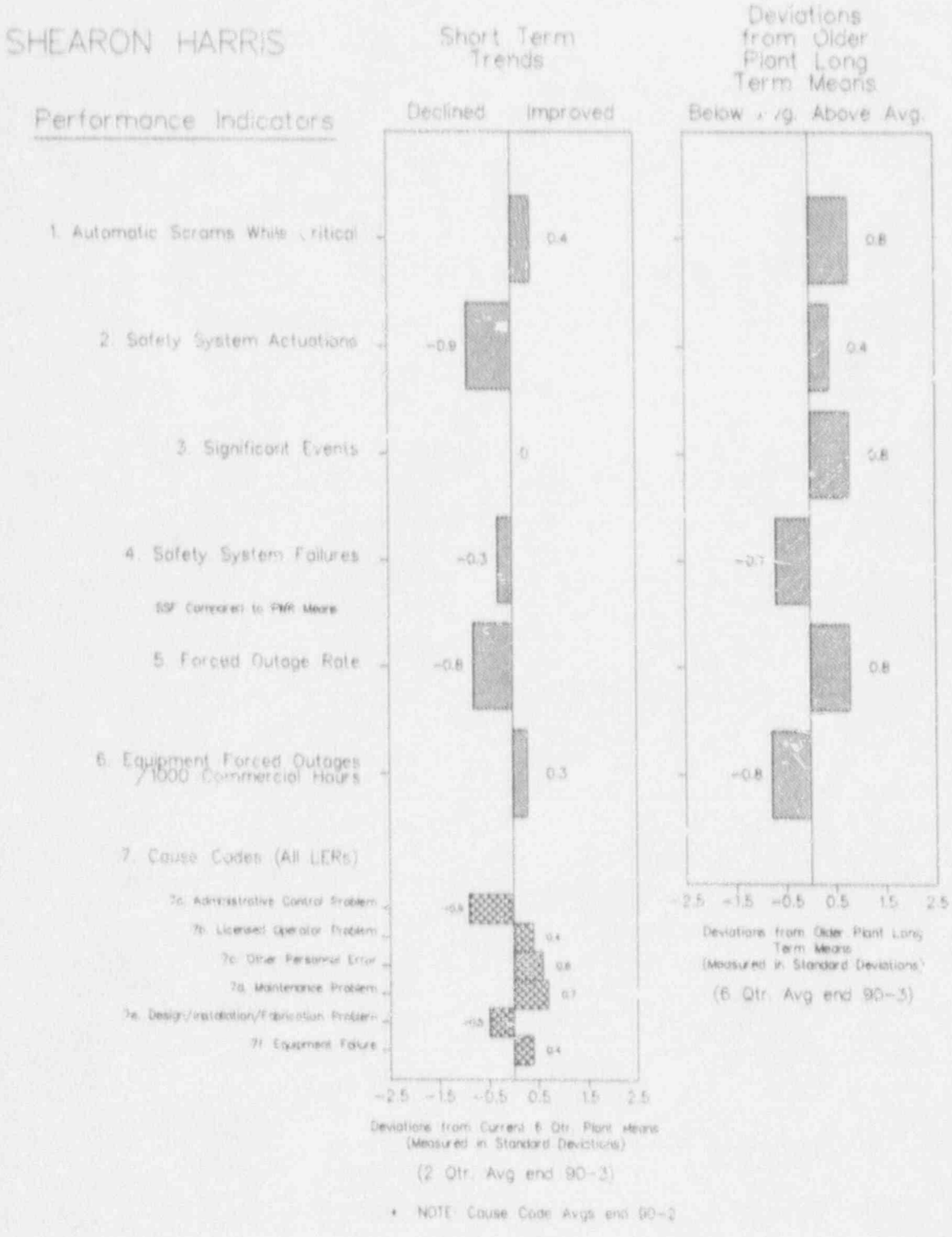

SHEARON HARRIS
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
0.4
-0.9
0
-0.3
-0.8
0.3
-0.8
0.4
0.8
0.7
-0.5
0.4
0.8
0.4
0.8
-0.7
0.8
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.92

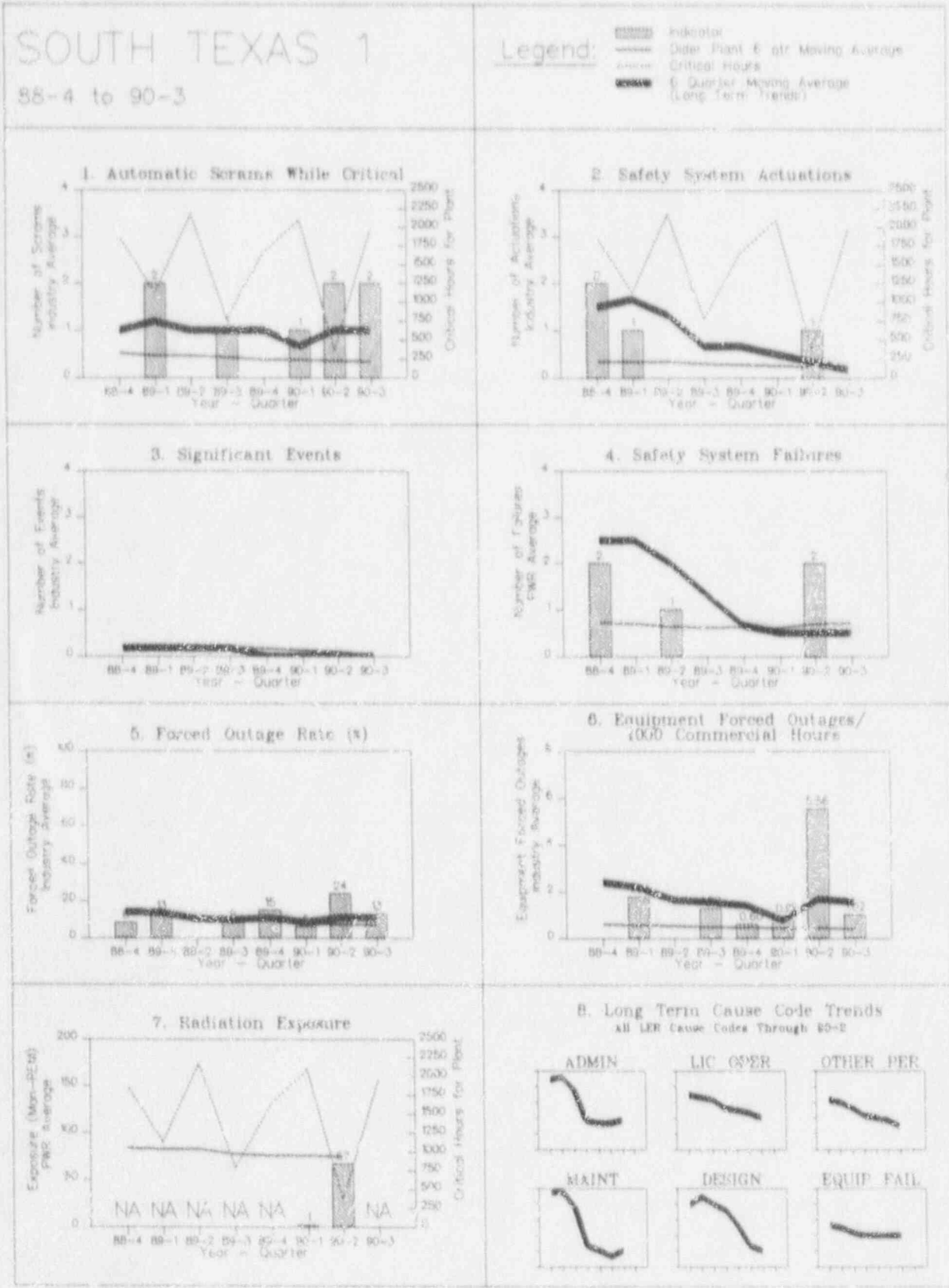

SOUTH TEXAS 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trend)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
3. Significant Events
Number of Events Industry Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
4. Safety System Failures
Number of Failures CWE Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA NA NA NA NA NA
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.92

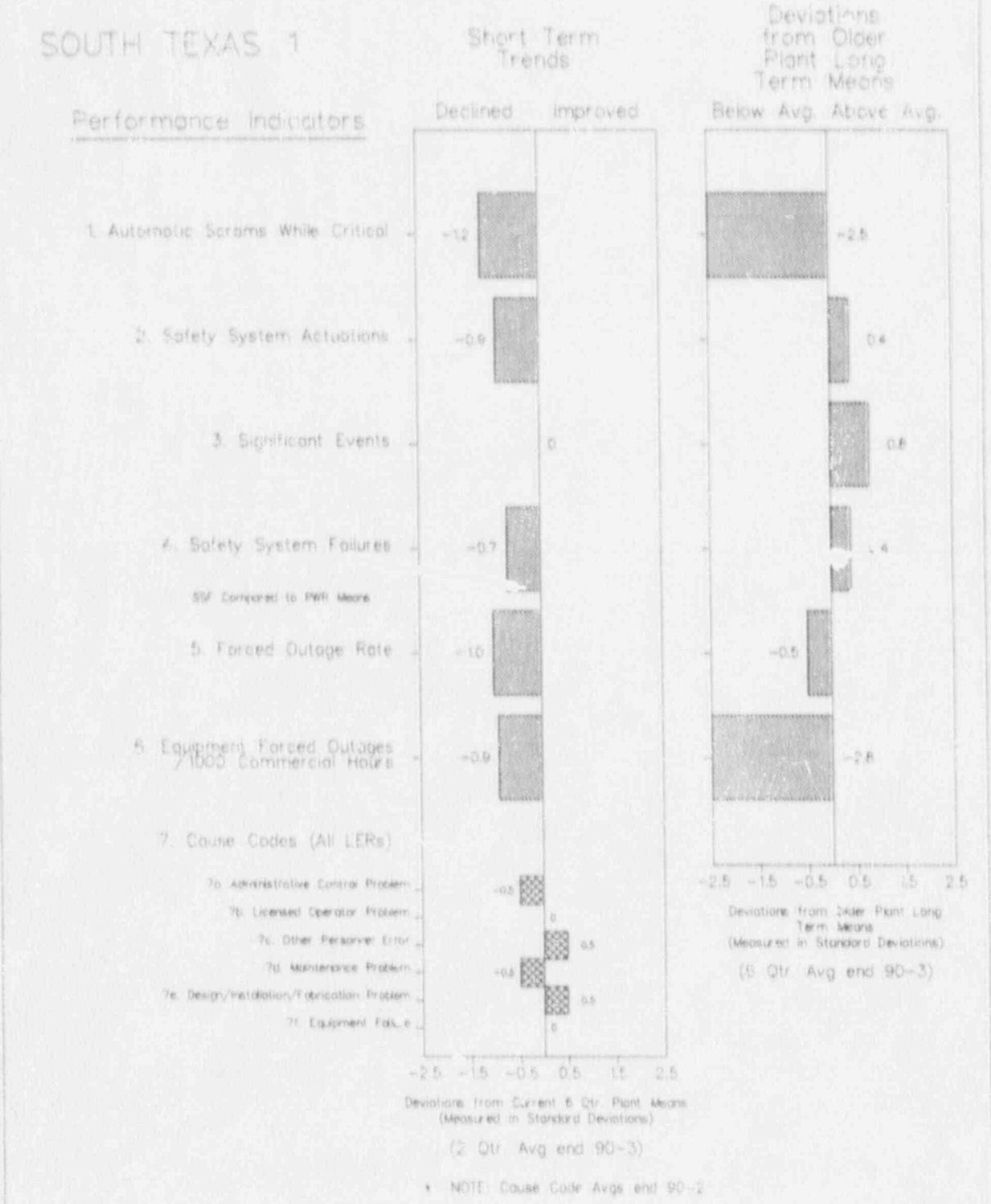
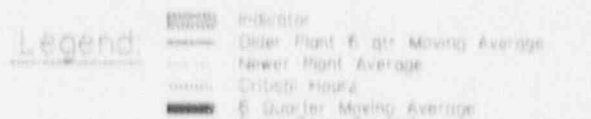
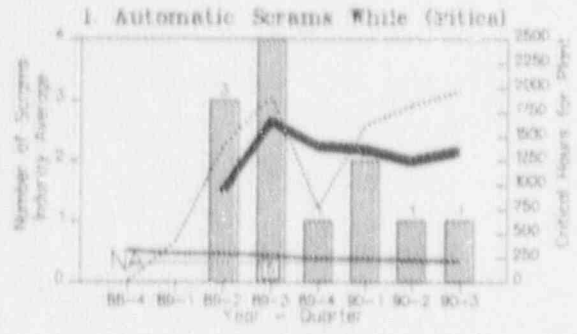

SOUTH TEXAS 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.2
-2.5
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.8
4. Safety System Failures
-0.7
1.4
SSF Compared to PWR Means
5. Forced Outage Rate
-1.0
-0.5
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
-2.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.5
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.5
7d. Maintenance Problem
-0.5
7e. Design/Installation/Fabrication Problem
0.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

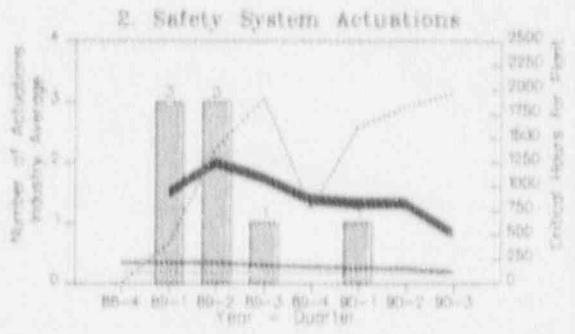
FIGURE 4.93

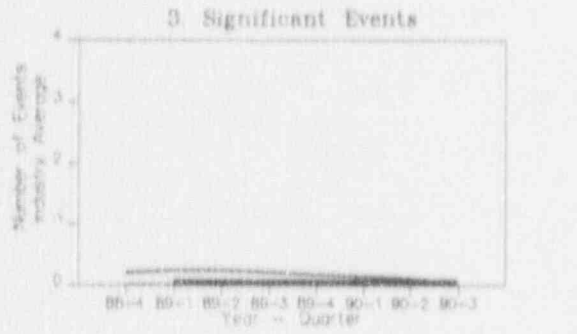
SOUTH TEXAS 2

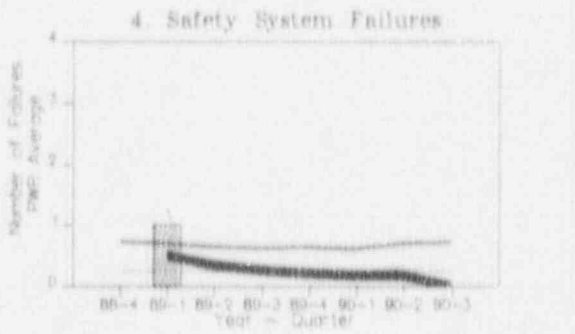
88-4 to 90-3

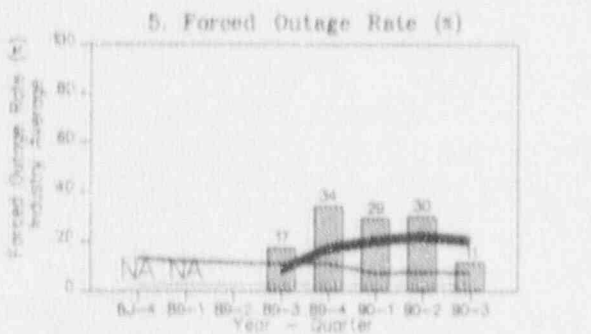


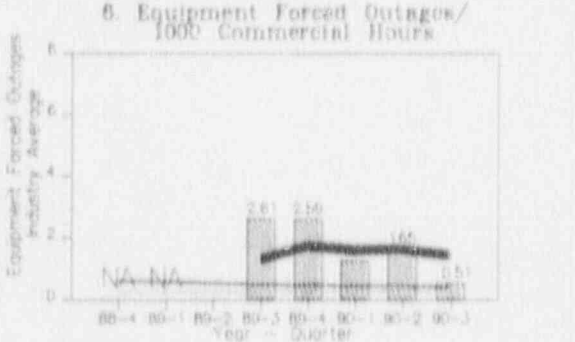












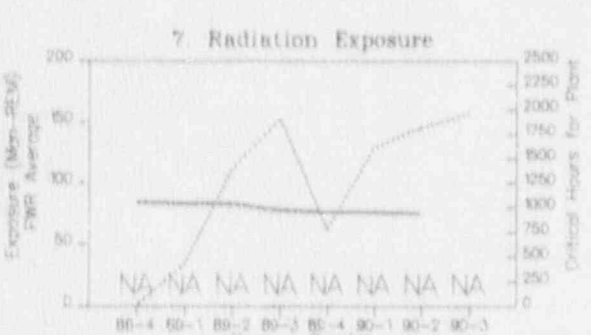
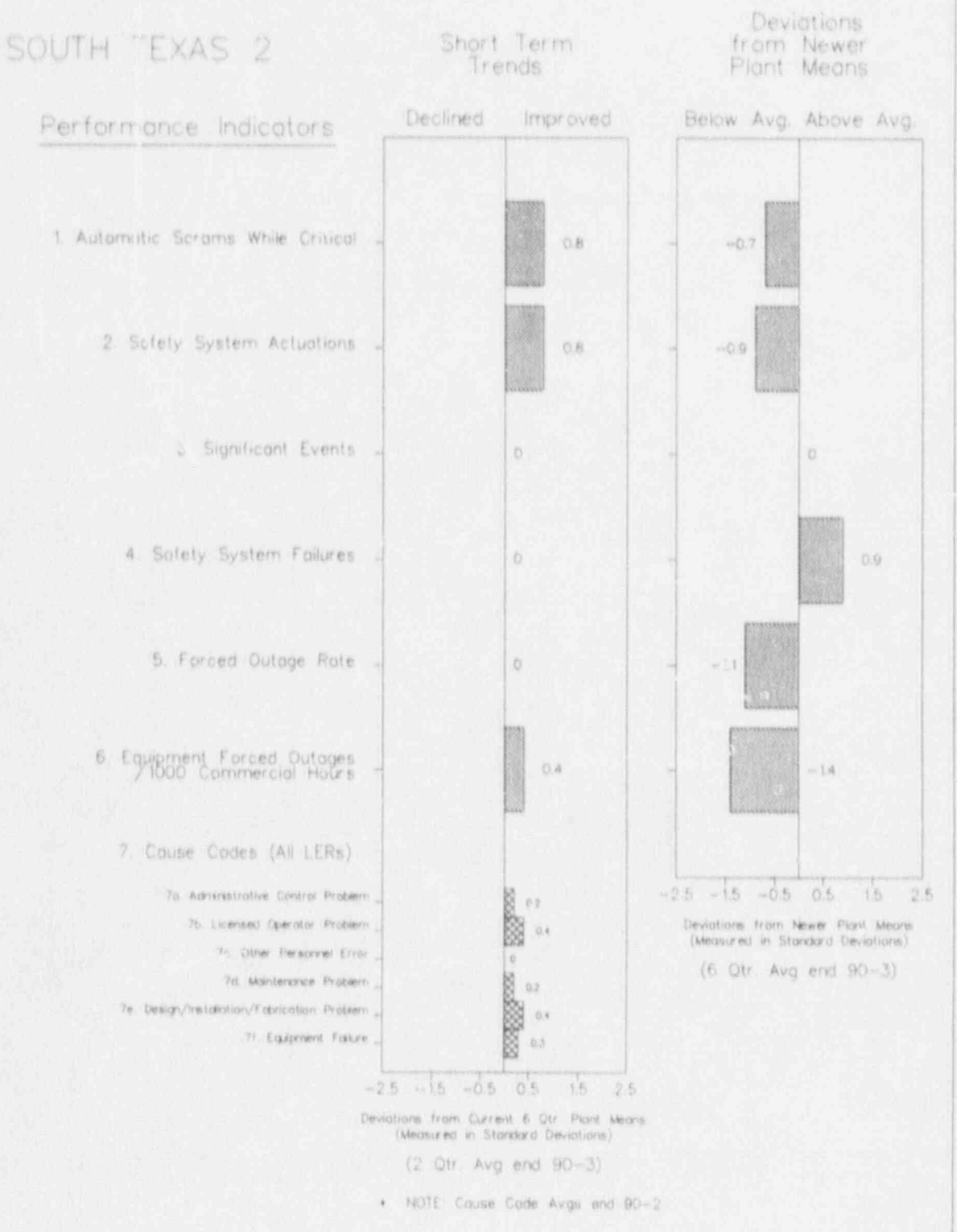


FIGURE 4.93



* NOTE: Cause Code Avgs. end 90-2

THIS

PAGE

INTENTIONALLY

LEFT

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FIGURE 4.93

Note: This is a comparison of SOUTH TEXAS 2 (a newer plant) against older plant means.

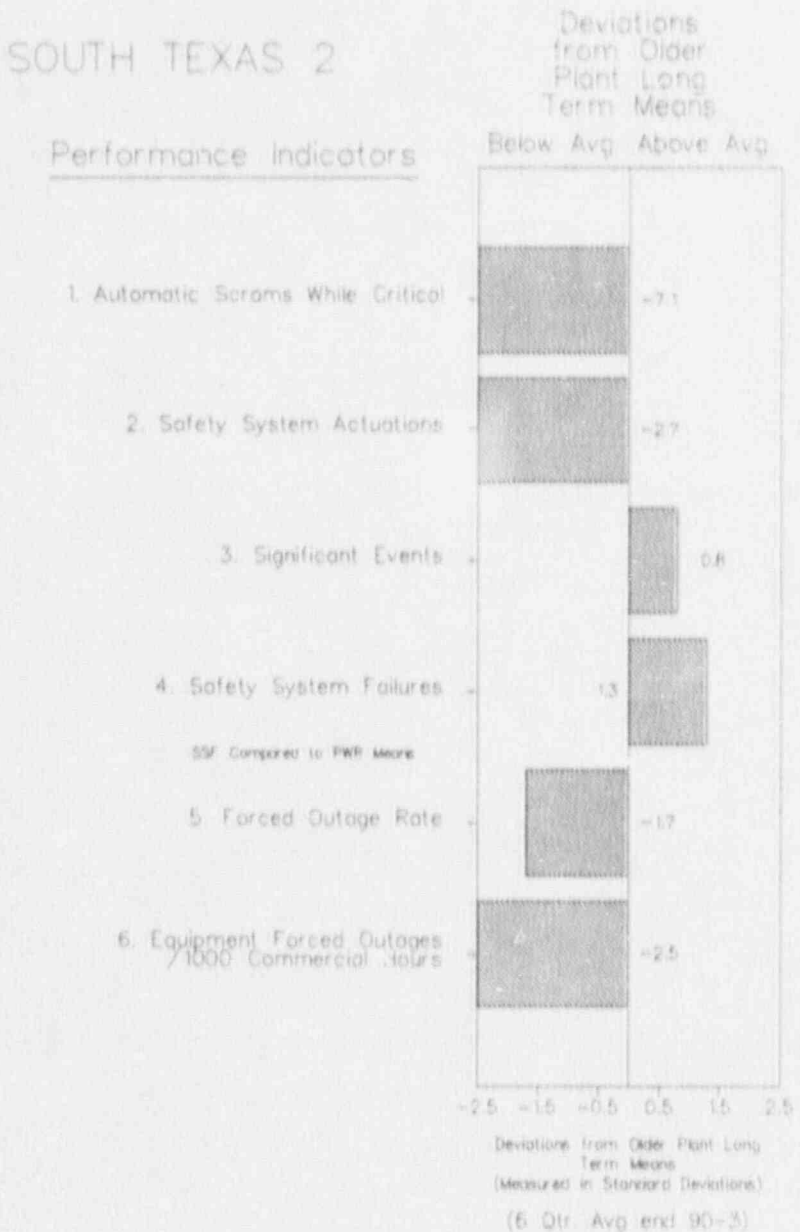


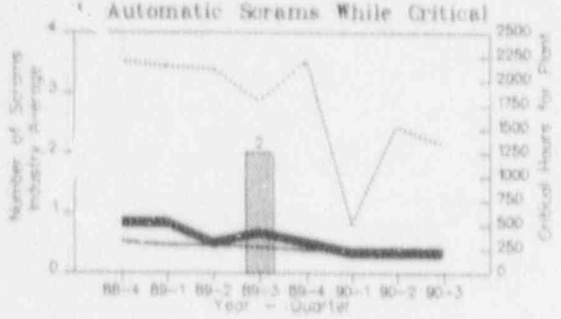
FIGURE 4.94

ST. LUCIE 1

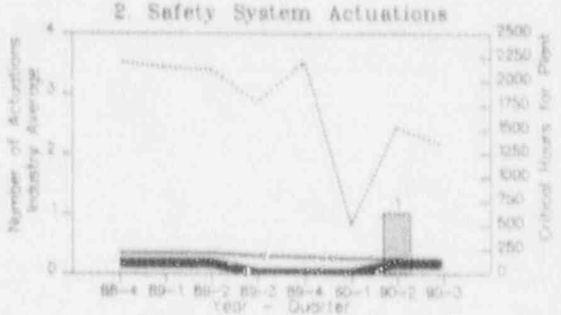
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

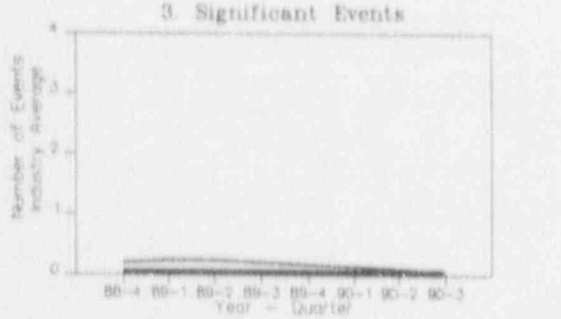
1. Automatic Scrams While Critical



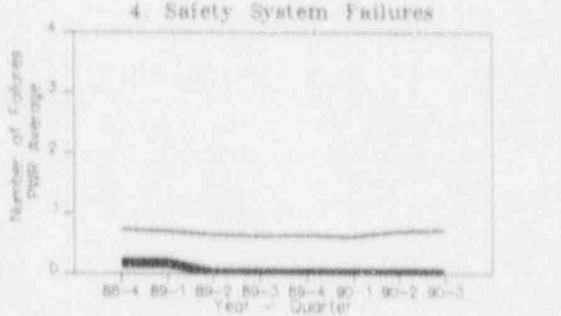
2. Safety System Actuations



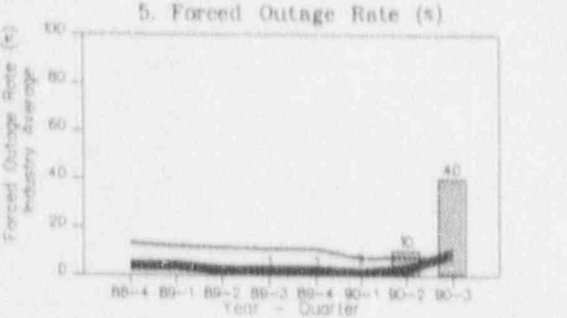
3. Significant Events



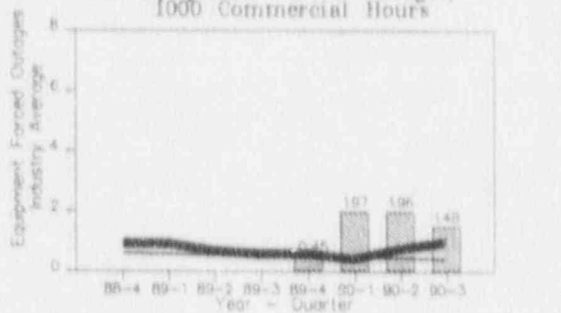
4. Safety System Failures



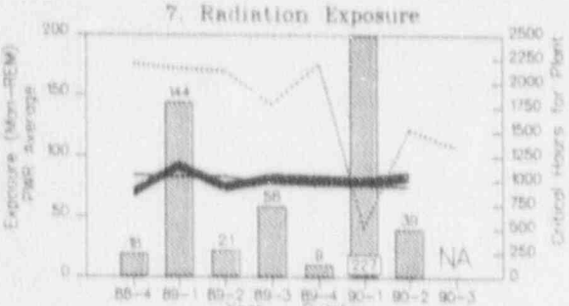
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

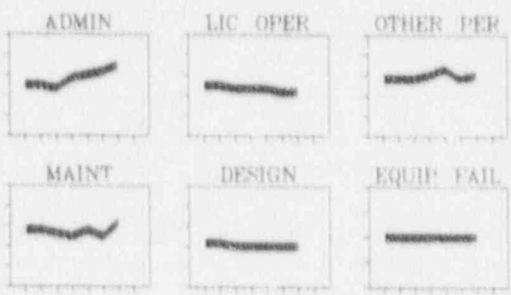


FIGURE 4.94

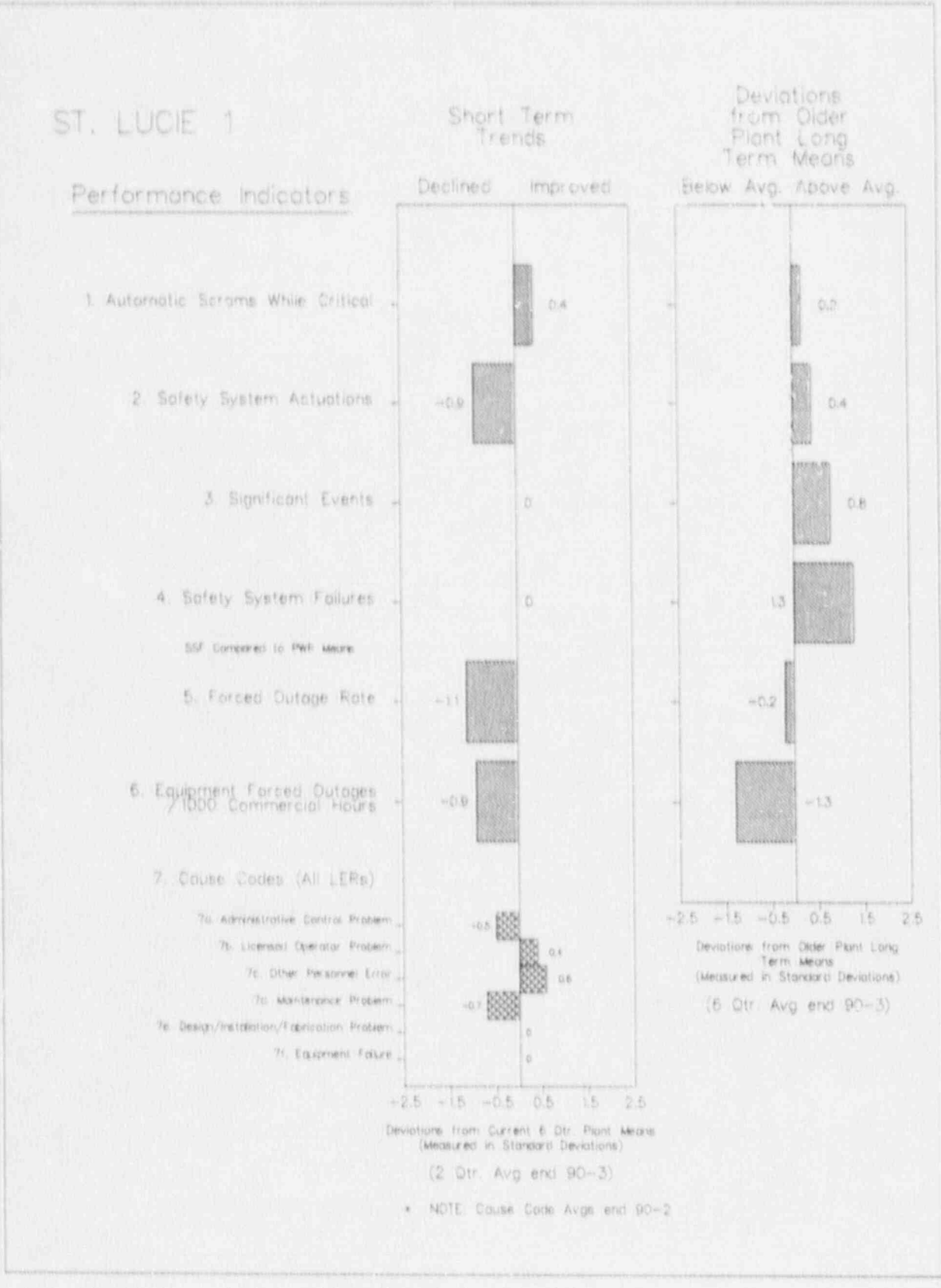

ST. LUCIE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.2
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0
1.3
SSF Compared to PWR Means
5. Forced Outage Rate
-1.1
-0.2
6. Equipment Forced Outages / 1000 Commercial Hours
-0.9
-1.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.5
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.6
7d. Maintenance Problem
-0.7
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

FIGURE 4.95

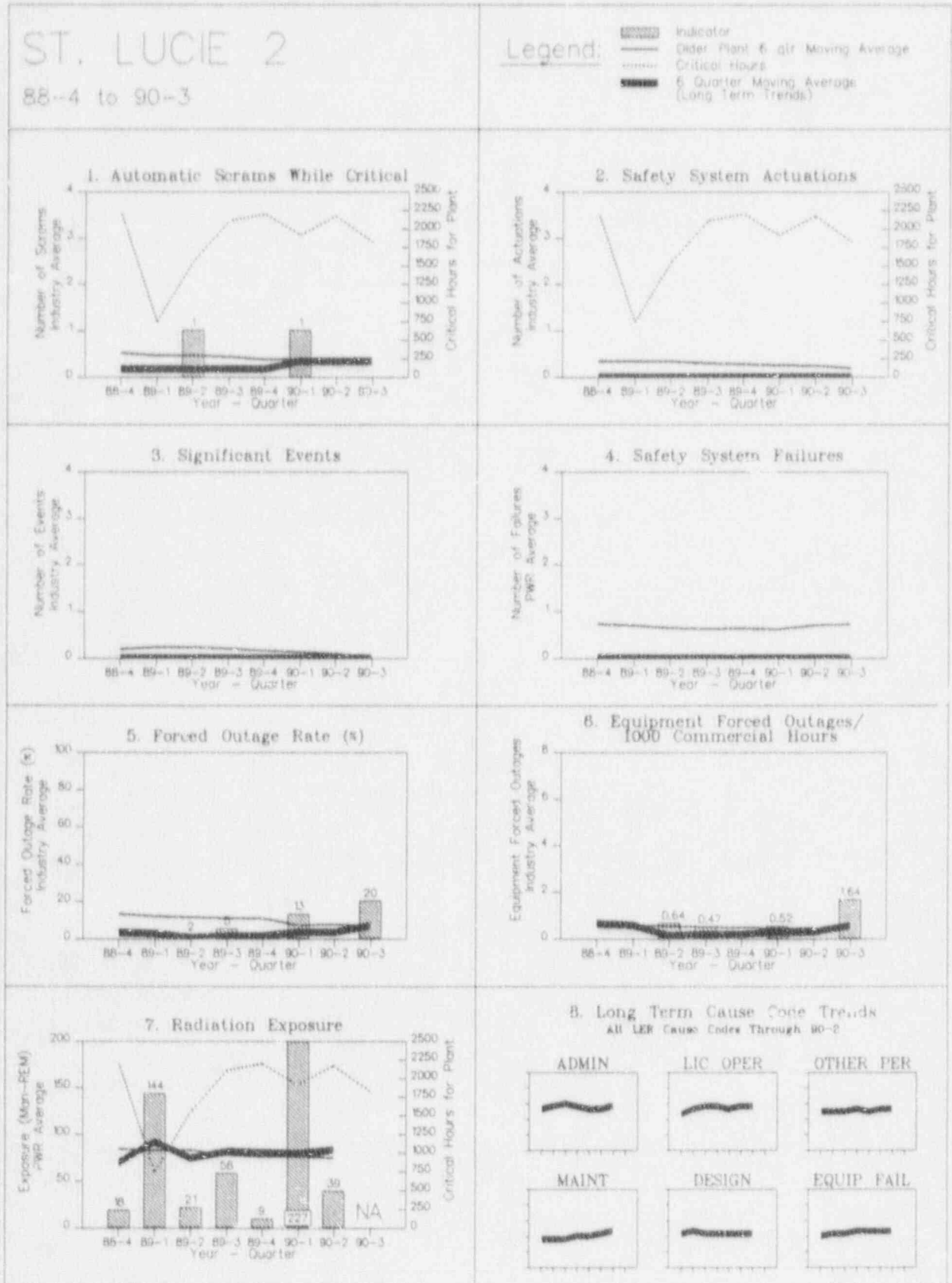

ST. LUCIE 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.95

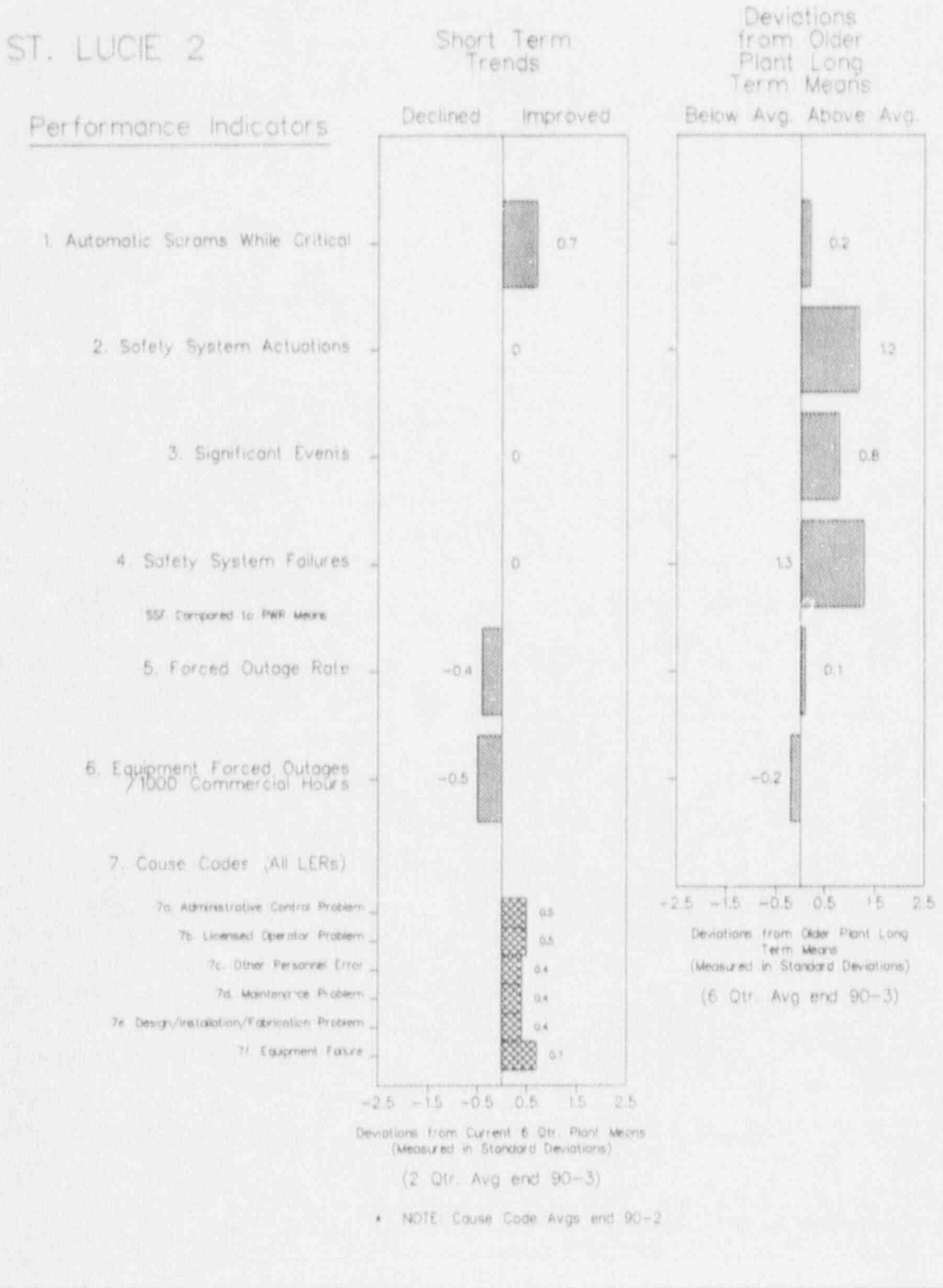

ST. LUCIE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
0
1.3
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
0.1
6. Equipment Forced Outages /1000 Commercial Hours
-0.5
-0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.5
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.96

SUMMER

88-4 to 90-3

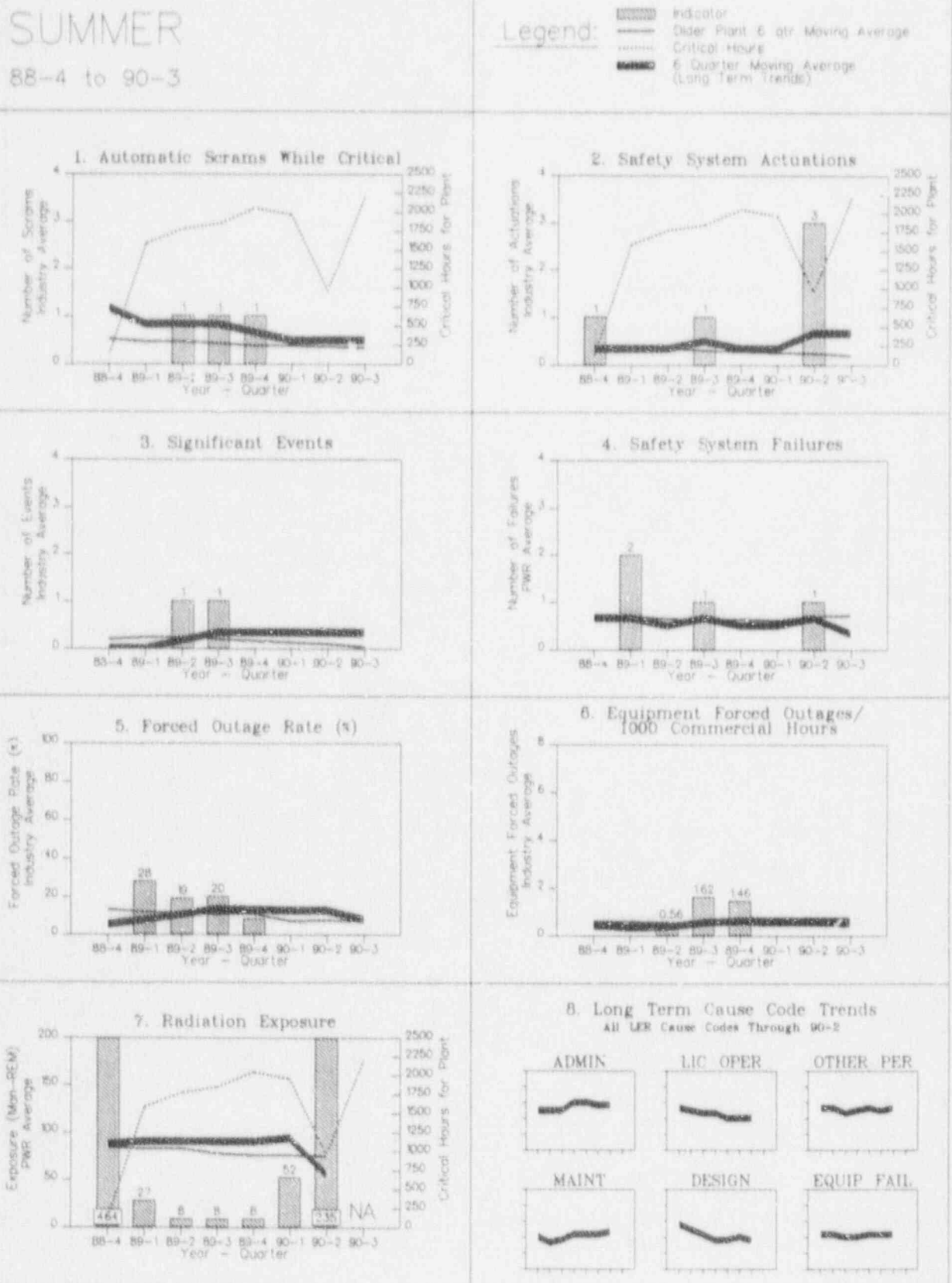


FIGURE 4.96

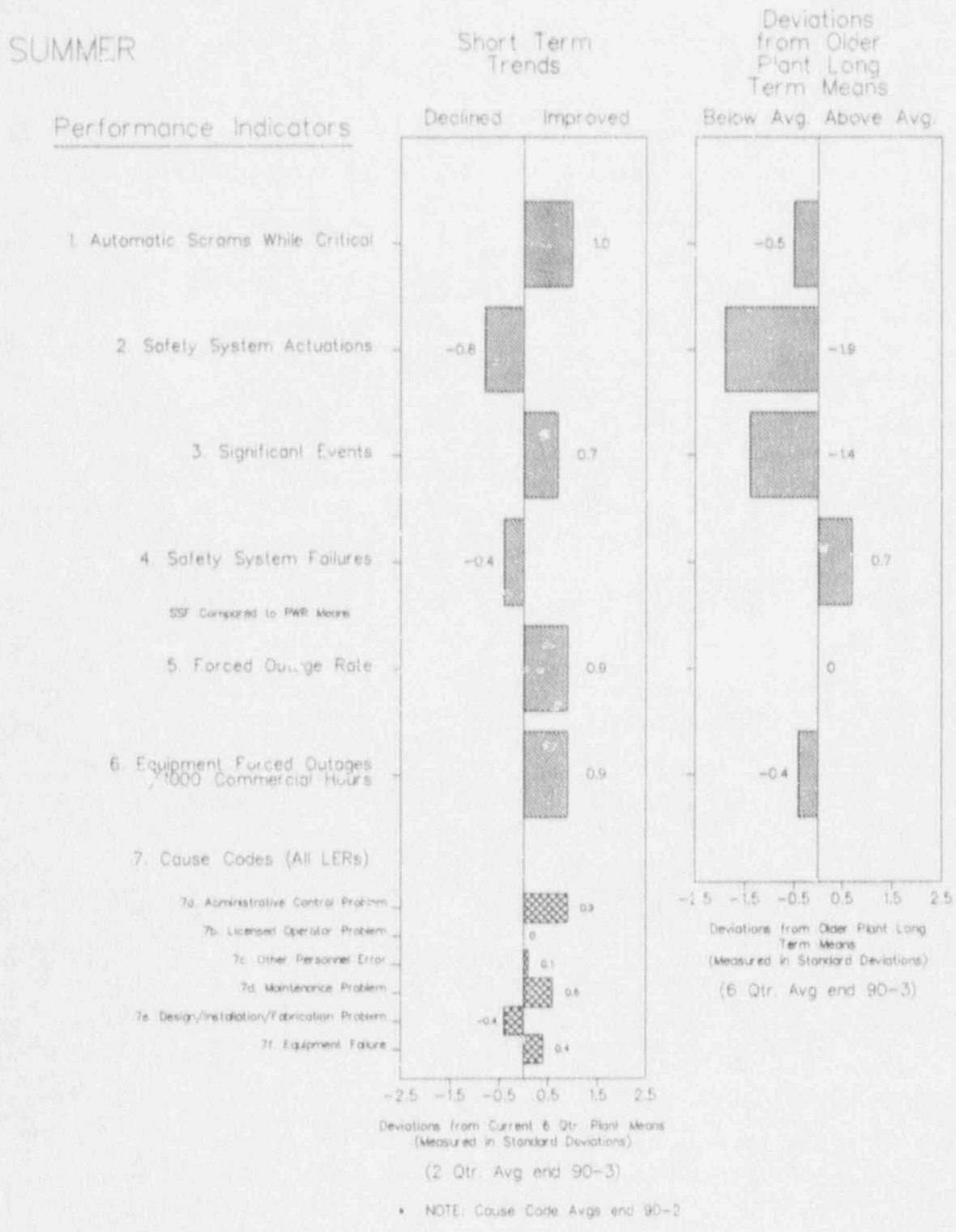

SUMMER
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-0.5
2. Safety System Actuations
-0.8
-1.9
3. Significant Events
0.7
-1.4
4. Safety System Failures
-0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.9
0
6. Equipment Forced Outages / 1000 Commercial Hours
0.9
-0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.1
7d. Maintenance Problem
0.6
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.97

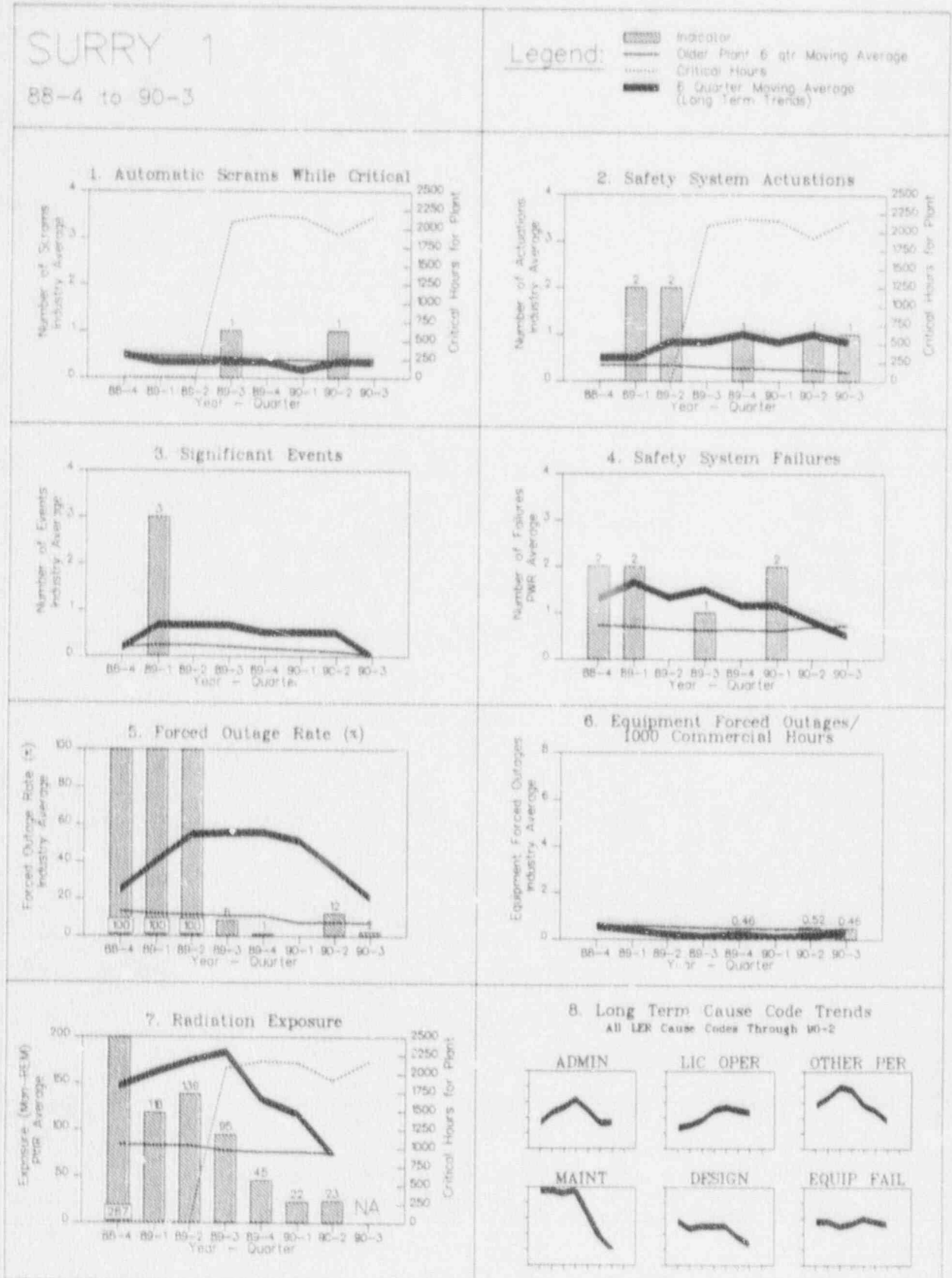

SURRY 1
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Long Term Cause Code Trends
All LER Cause Codes Through W0-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
88-4 89-1 89-2 89-3 89-4 90-1 90-2 90-3
Year - Quarter

FIGURE 4.97

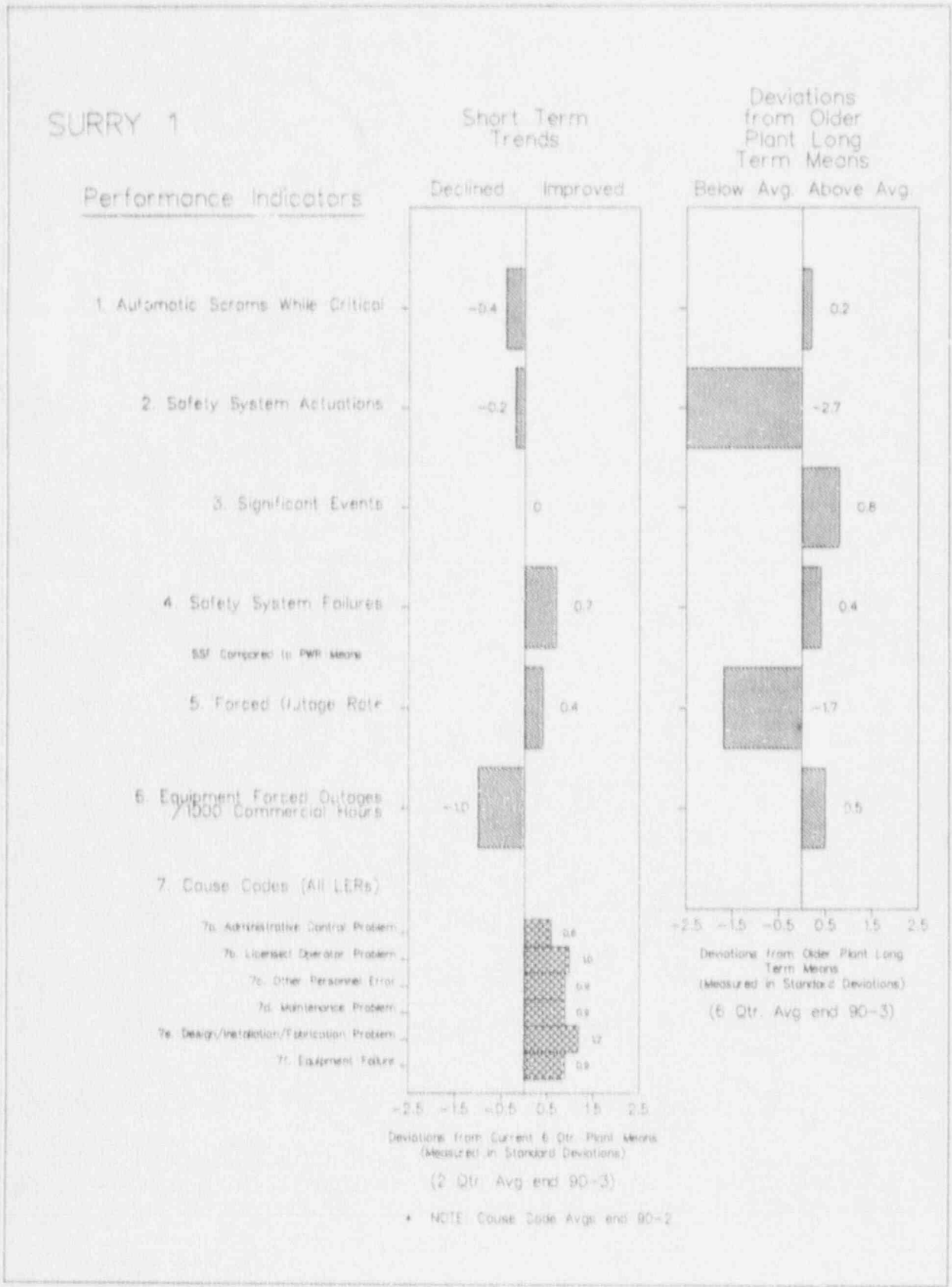

SURRY 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
0.2
2. Safety System Actuations
-0.2
-2.7
3. Significant Events
0
0.8
4. Safety System Failures
0.7
0.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
-1.7
6. Equipment Forced Outages /1000 Commercial Hours
-1.0
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.6
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

FIGURE 4.98

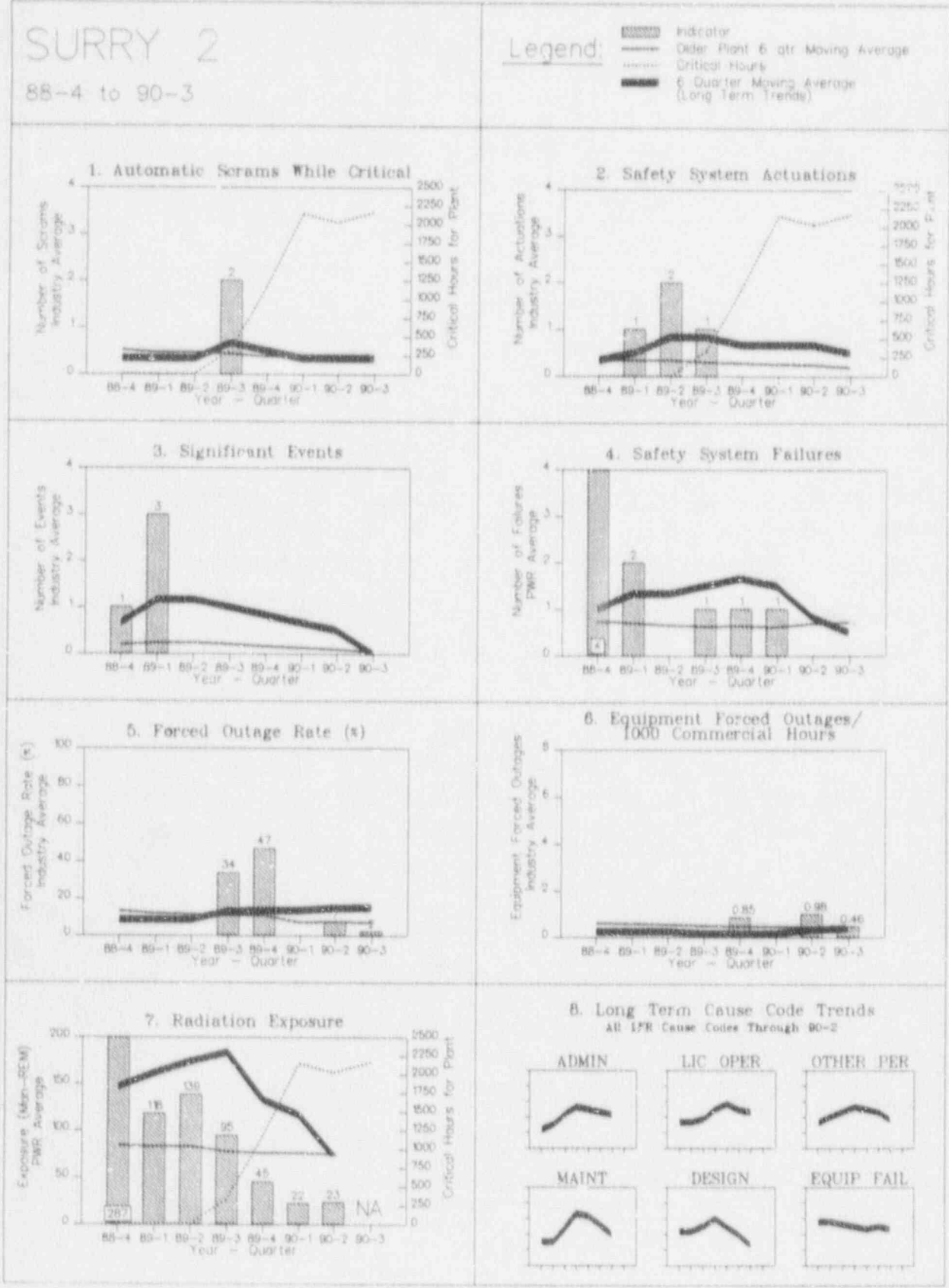

SURRY 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.98

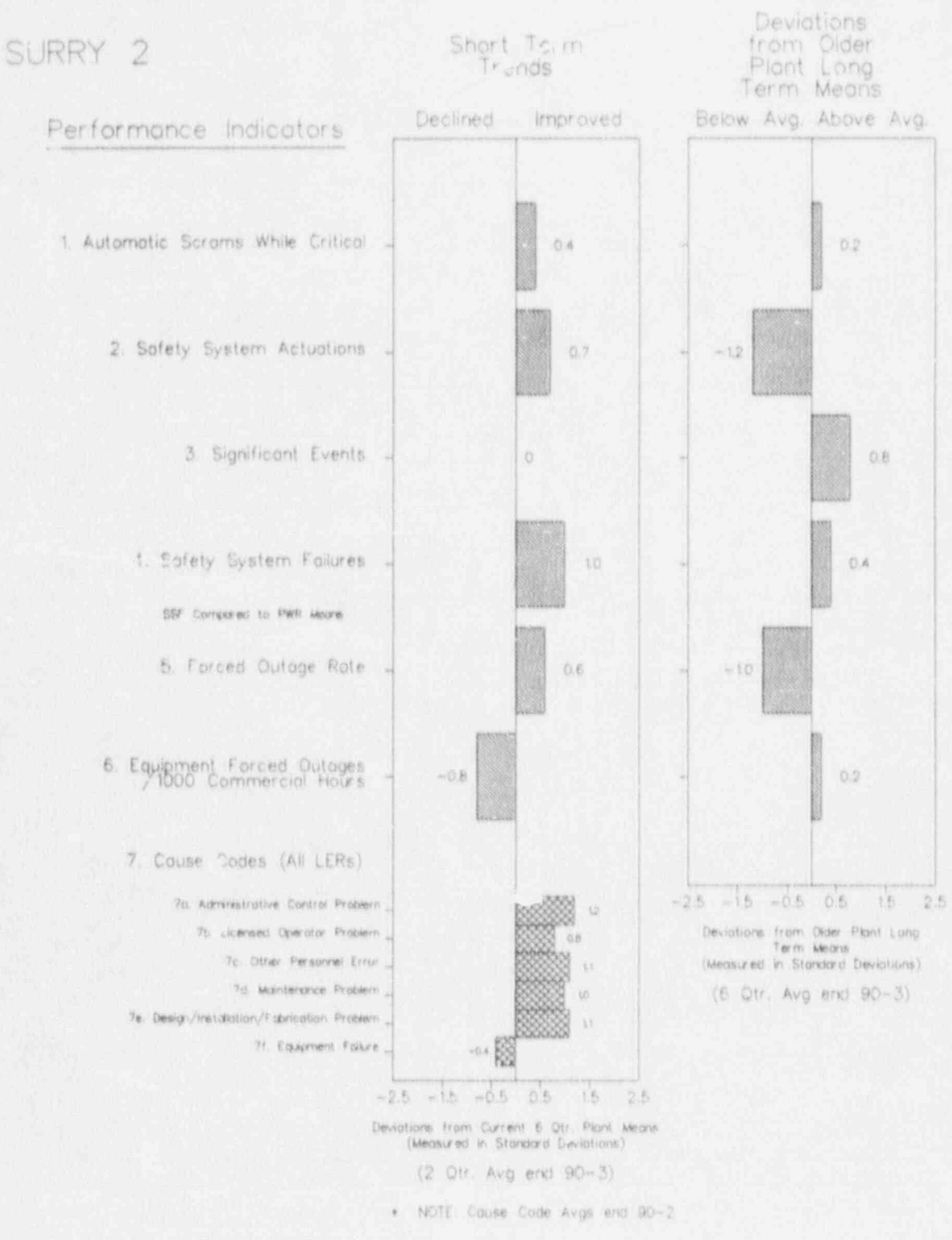

SURRY 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.2
2. Safety System Actuations
0.7
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
1.0
0.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
-1.0
6. Equipment Forced Outages /1000 Commercial Hours
-0.8
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
1.2
0.8
1.1
1.0
1.1
-0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

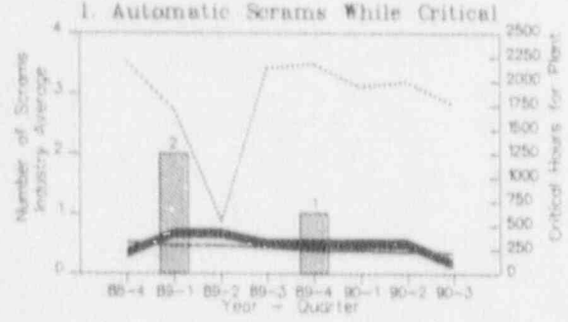
FIGURE 4.99

SUSQUEHANNA 1

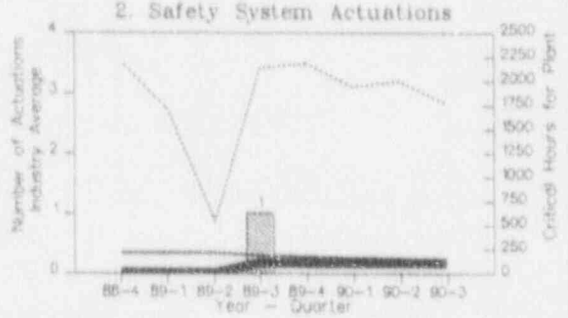
88-4 to 90-3

Legend:
- Indicator
- Qtr Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

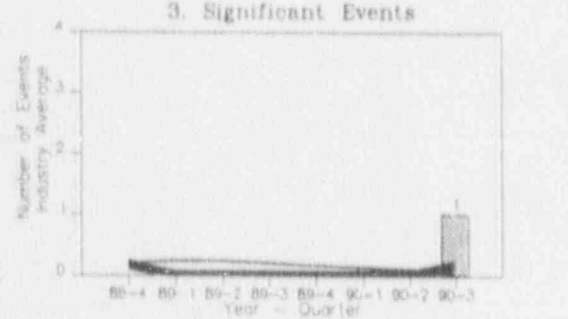
1. Automatic Scrams While Critical



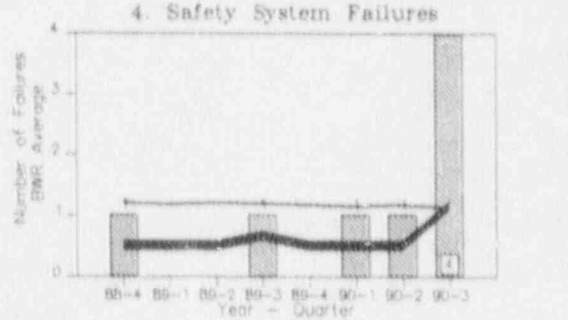
2. Safety System Actuations



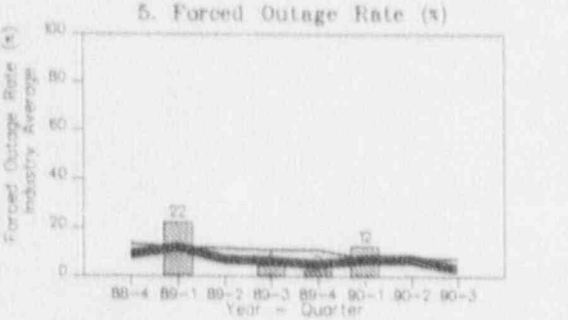
3. Significant Events



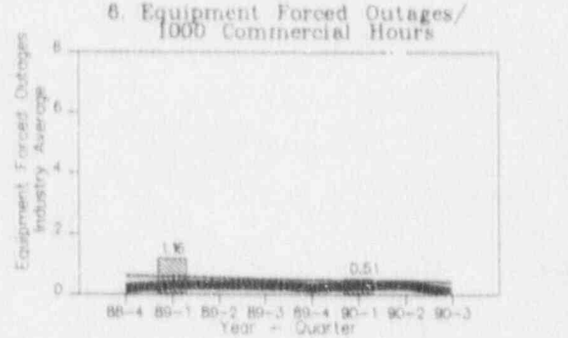
4. Safety System Failures



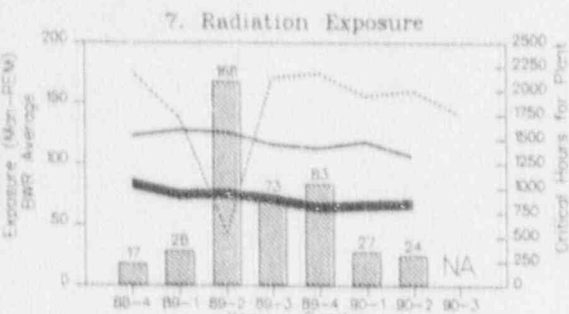
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

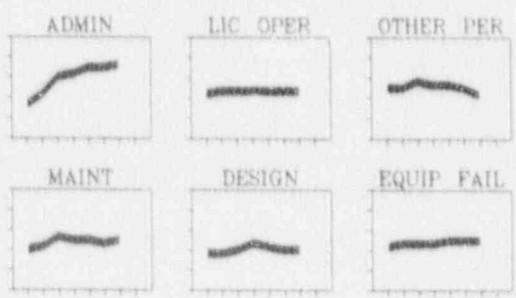


FIGURE 4.99

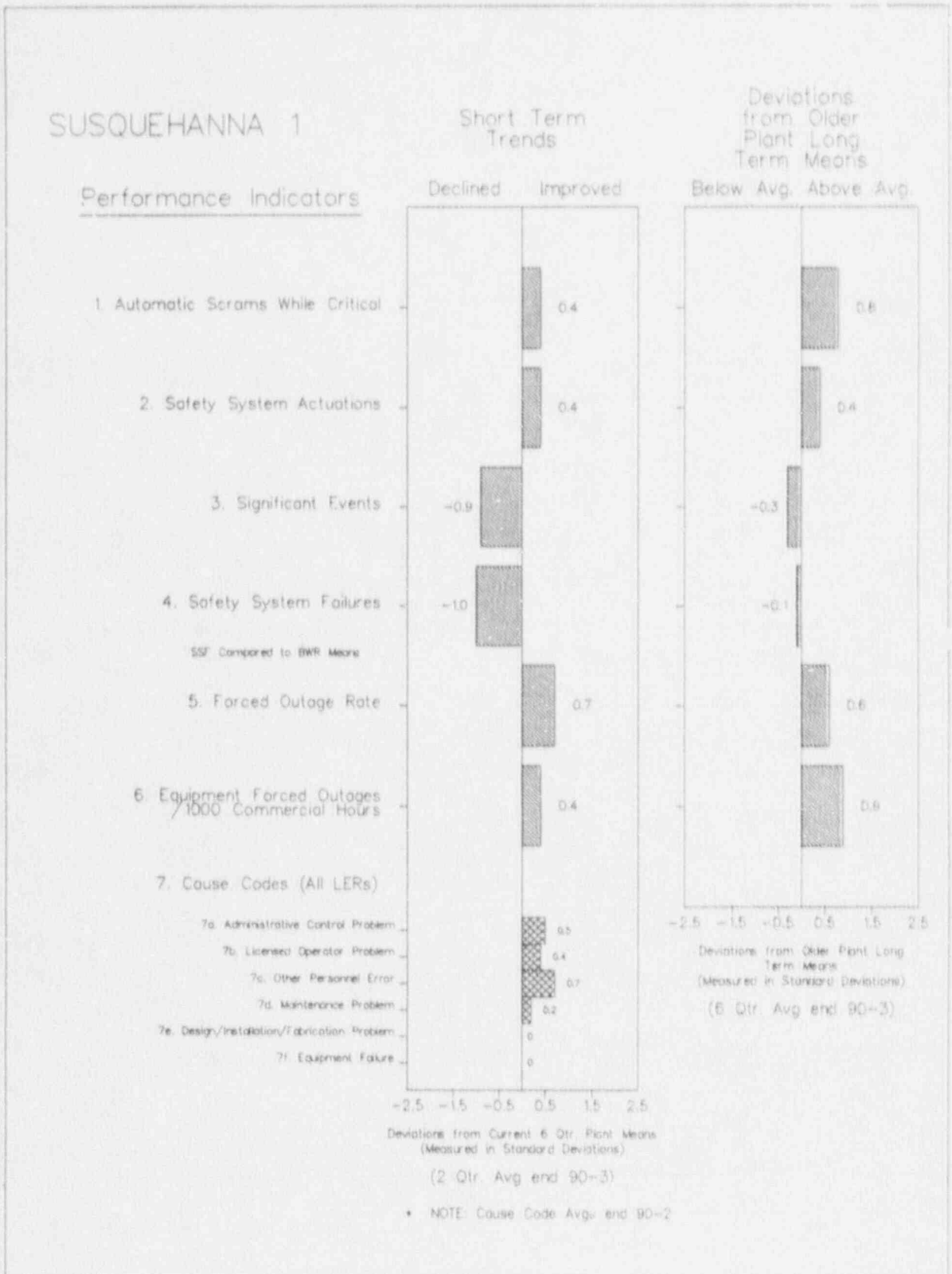

SUSQUEHANNA 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.8
2. Safety System Actuations
0.4
0.4
3. Significant Events
-0.9
-0.3
4. Safety System Failures
-1.0
-0.1
SSF Compared to BWR Means
5. Forced Outage Rate
0.7
0.6
6. Equipment Forced Outages /1000 Commercial Hours
0.4
0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. ending 90-3)
* NOTE: Cause Code Avgs. ending 90-2

FIGURE 4.100

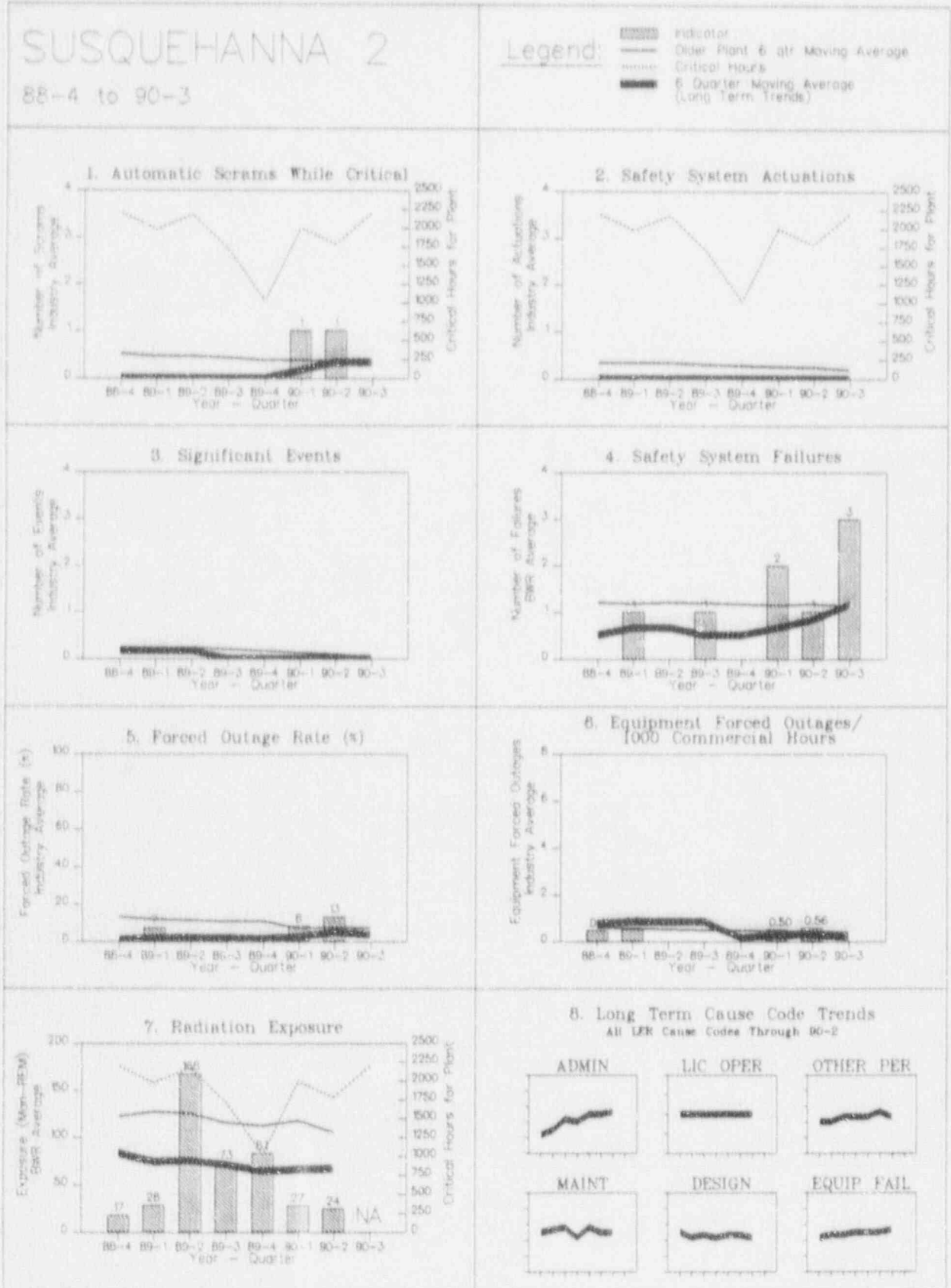

SUSQUEHANNA 2
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
Year - Quarter
NA
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.100

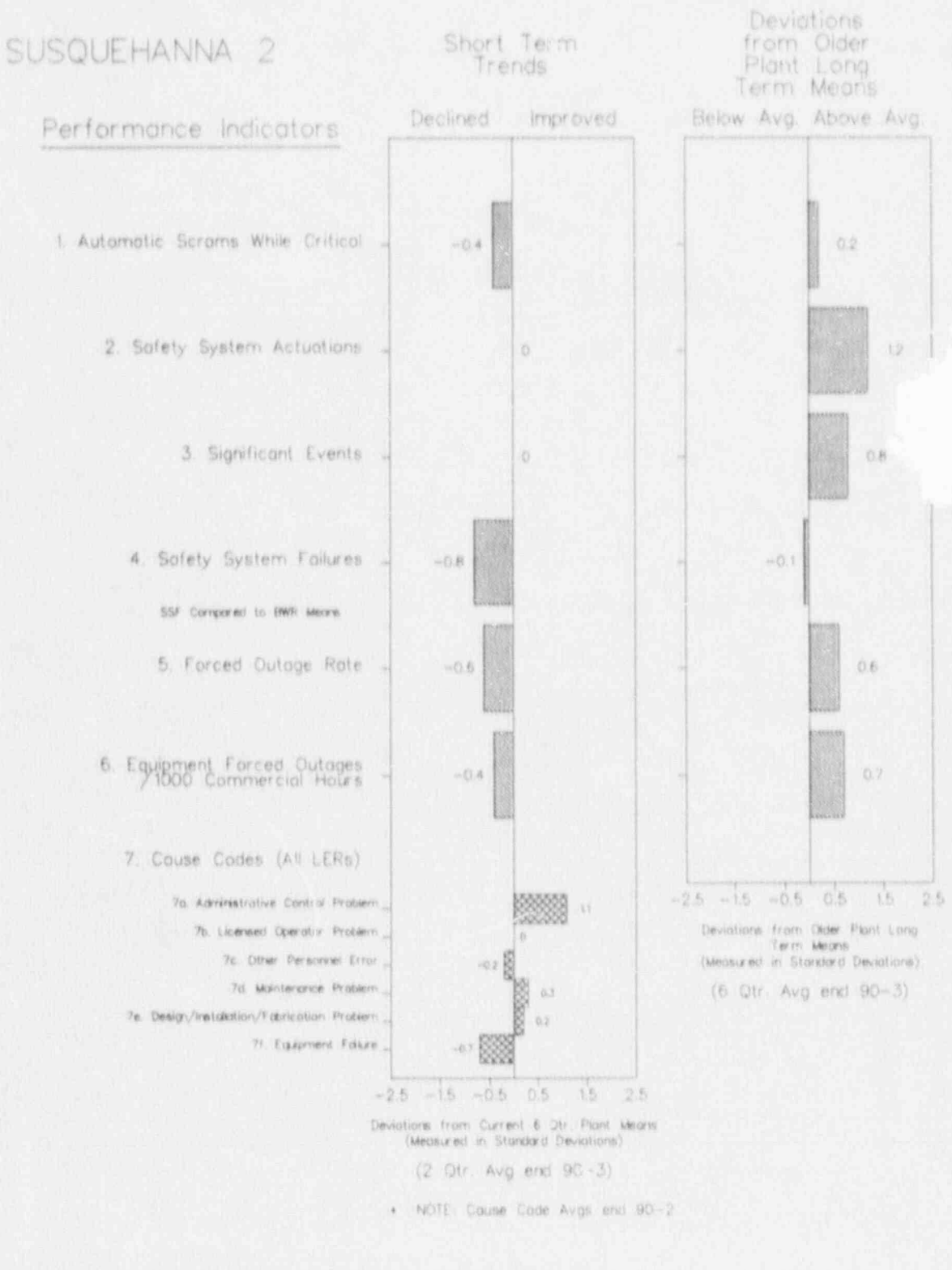

SUSQUEHANNA 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.8
-0.1
SSF Compared to BWR Means
5. Forced Outage Rate
-0.6
0.6
6. Equipment Forced Outages /1000 Commercial Hours
-0.4
0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.1
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0.2
7f. Equipment Failure
-0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg ending 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg ending 90-3)
* NOTE: Cause Code Avgs ending 90-2

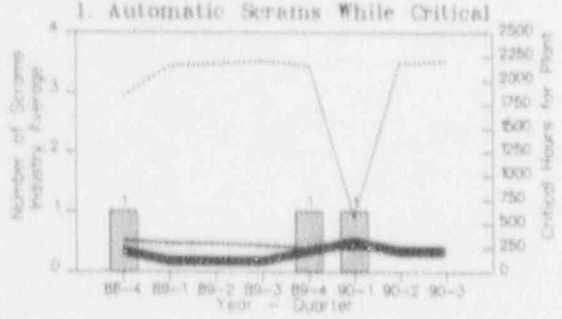
FIGURE 4.101

THREE MILE ISL 1

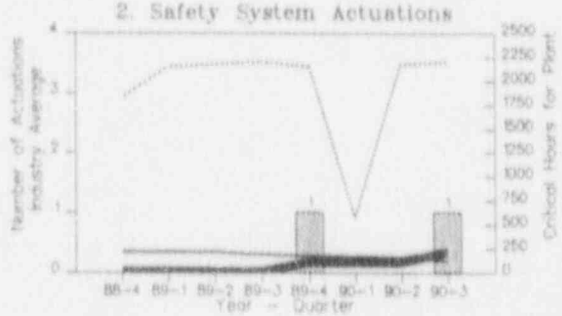
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

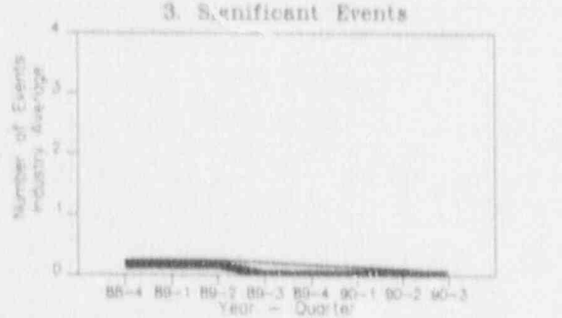
1. Automatic Scrams While Critical



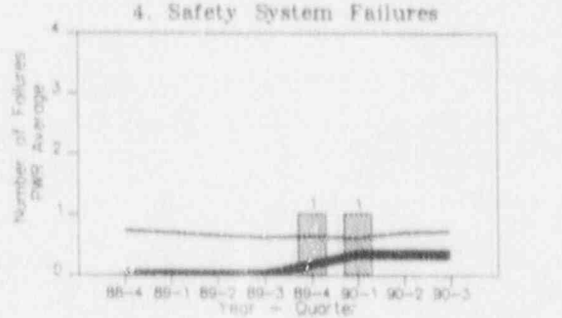
2. Safety System Actuations



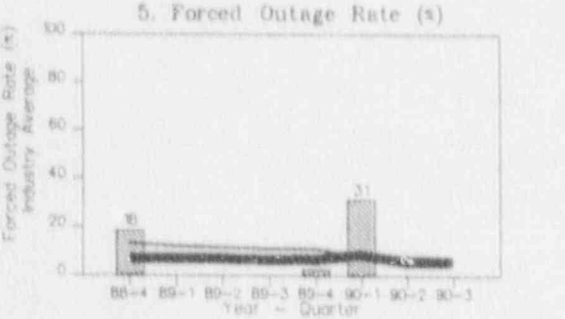
3. Significant Events



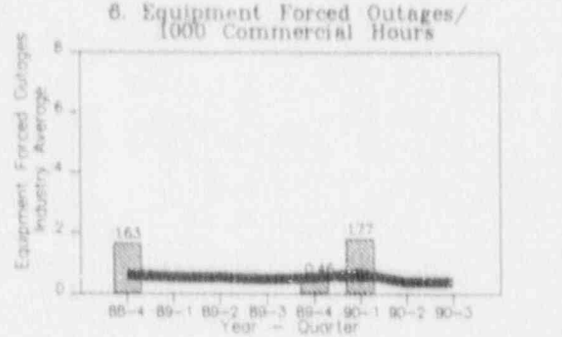
4. Safety System Failures



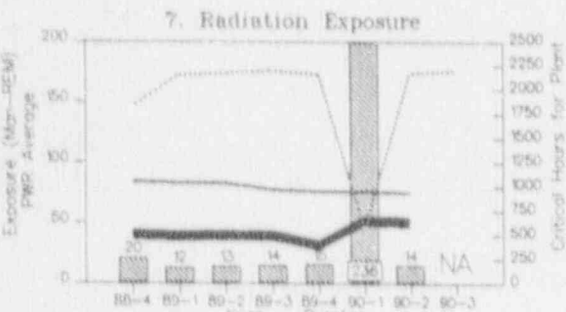
5. Forced Outage Rate (s)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

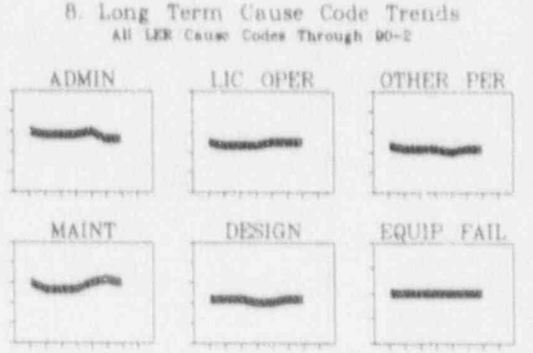


FIGURE 4.101

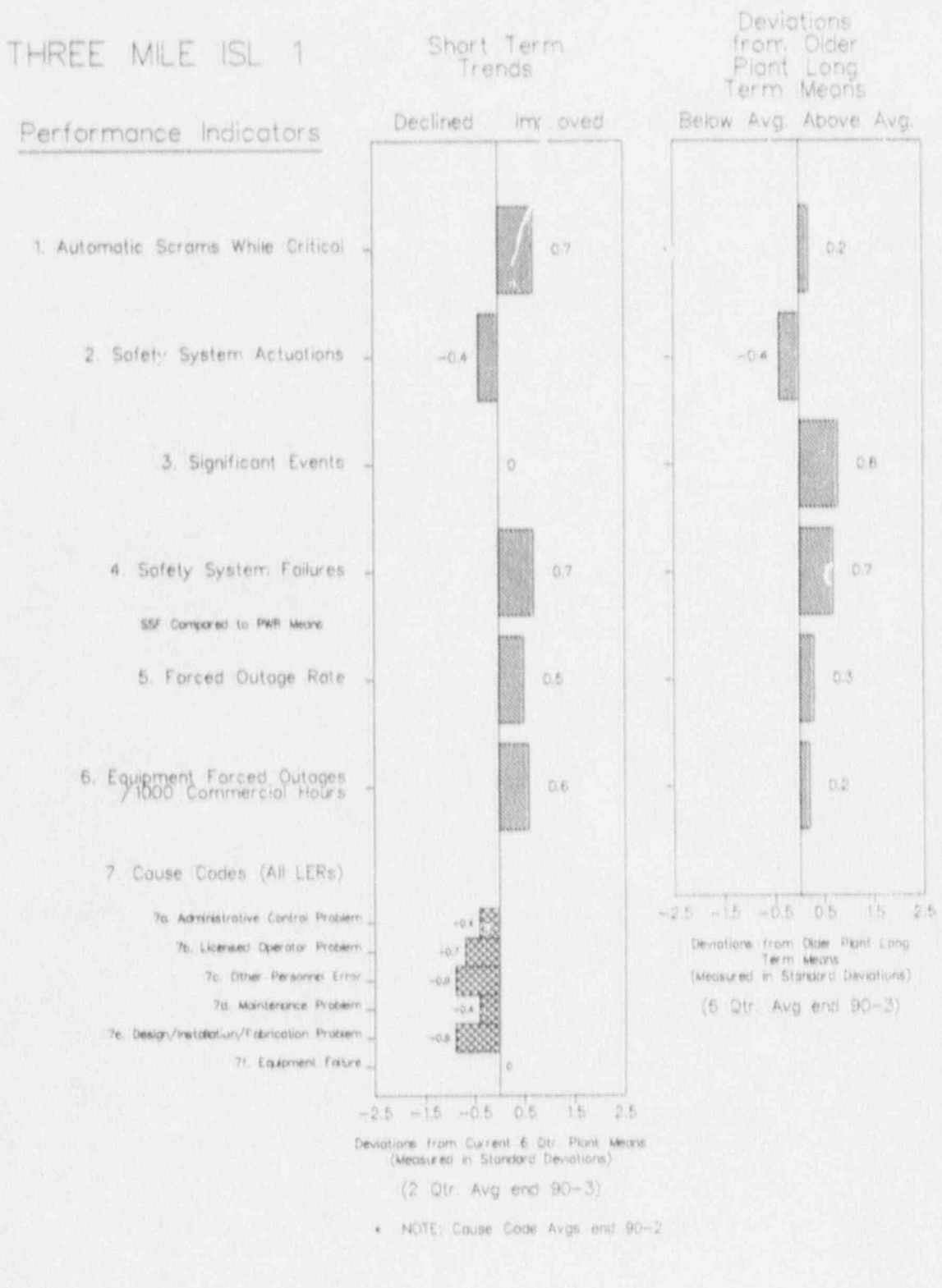

THREE MILE ISL 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
-0.4
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
0.7
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
0.3
6. Equipment Forced Outages /1000 Commercial Hours
0.6
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.4
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-0.4
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

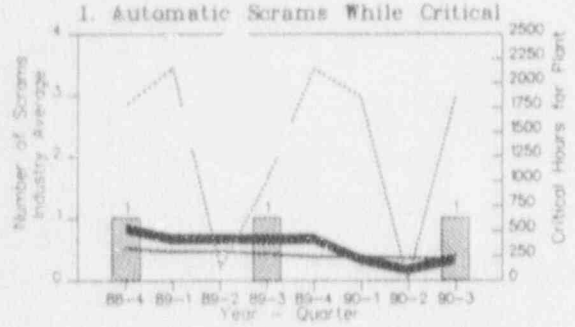
FIGURE 4.102

TROJAN

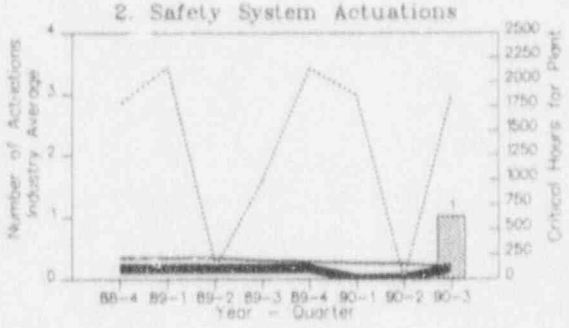
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

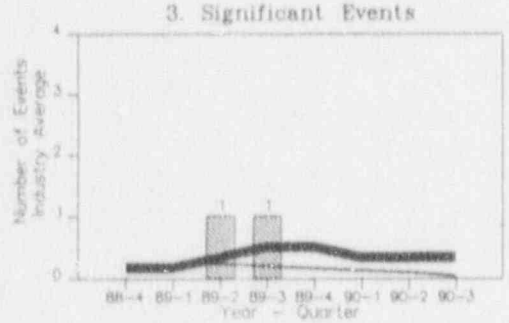
1. Automatic Scrams While Critical



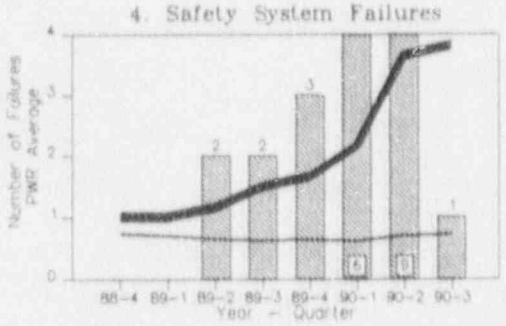
2. Safety System Actuations



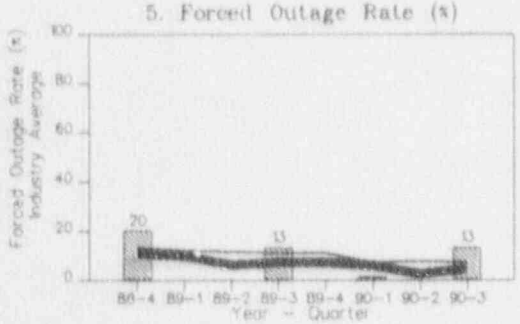
3. Significant Events



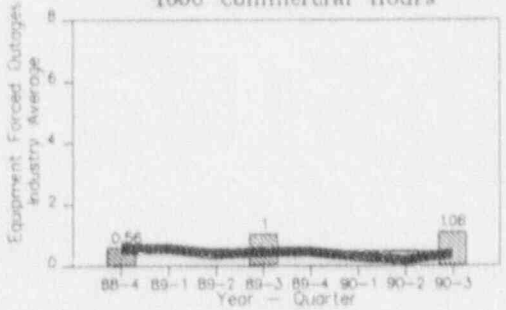
4. Safety System Failures



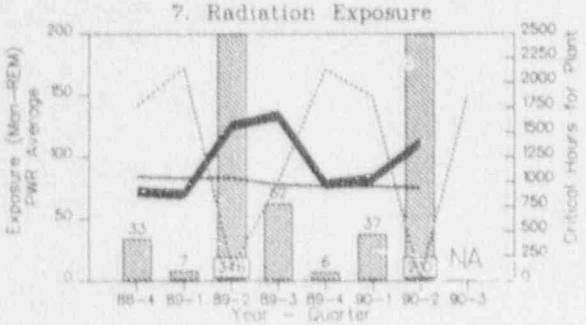
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

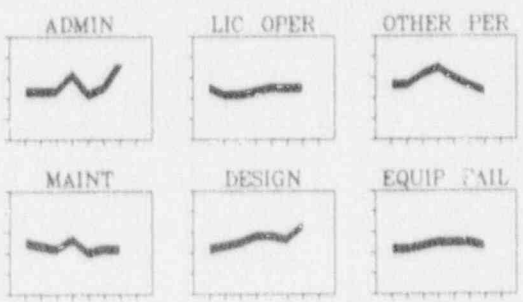


FIGURE 4.102

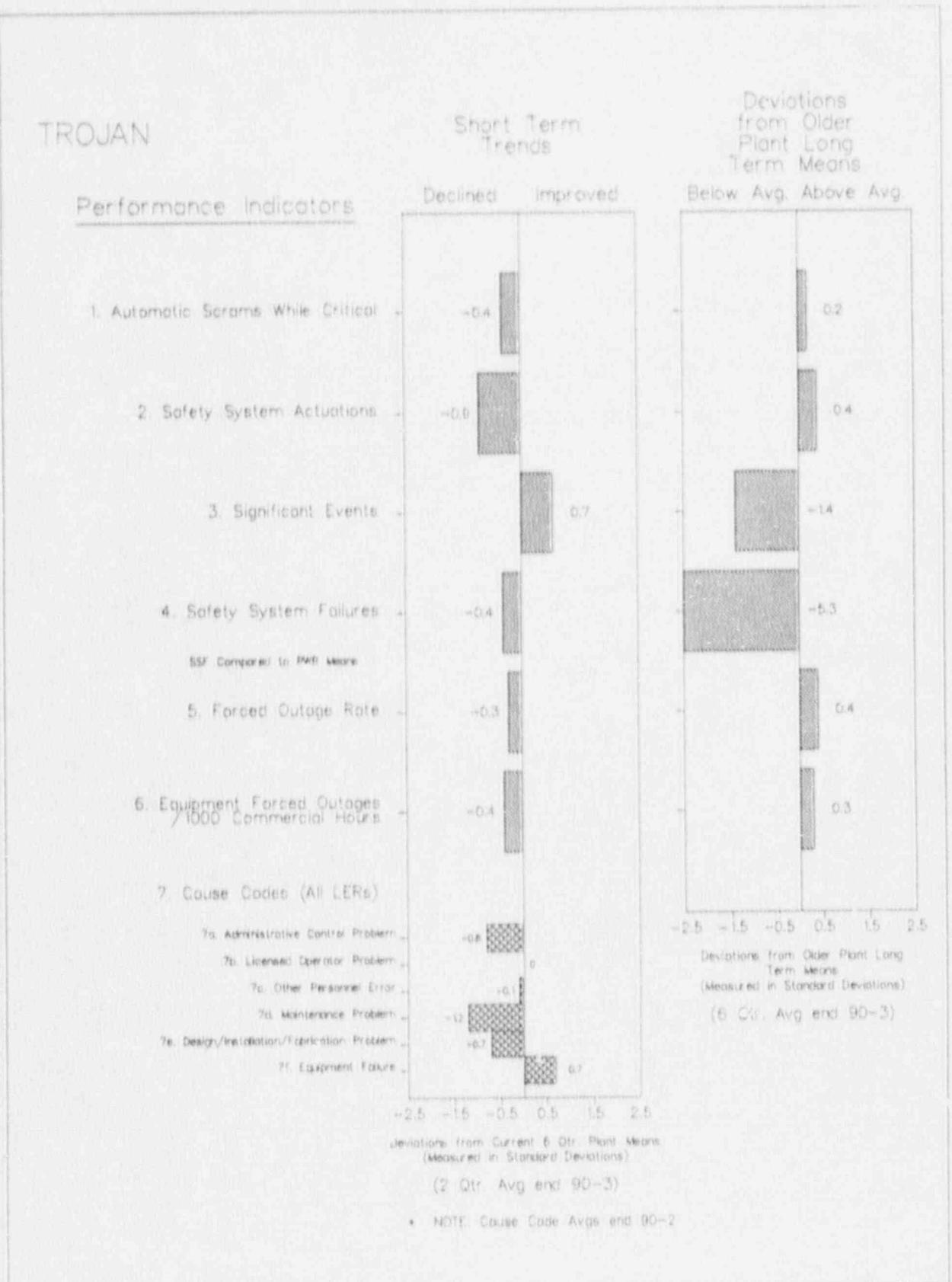

TROJAN
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
-0.9
0.7
-0.4
-0.3
-0.4
-0.8
0
-0.1
-1.2
-0.7
0.7
0.2
0.4
-1.4
-5.3
0.4
0.3
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

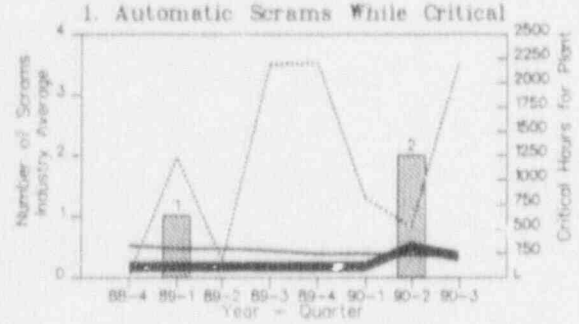
FIGURE 4.103

TURKEY POINT 3

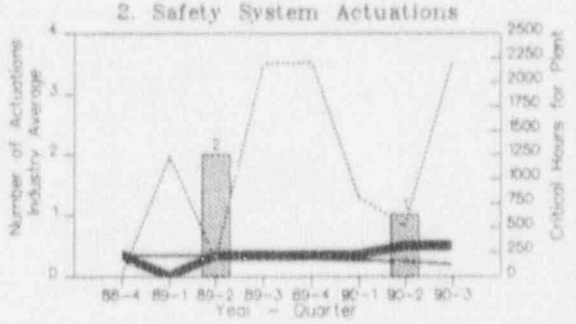
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trend)

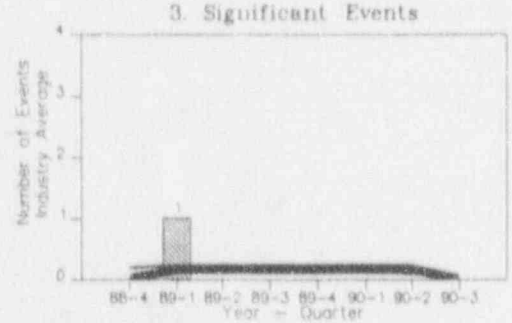
1. Automatic Scrams While Critical



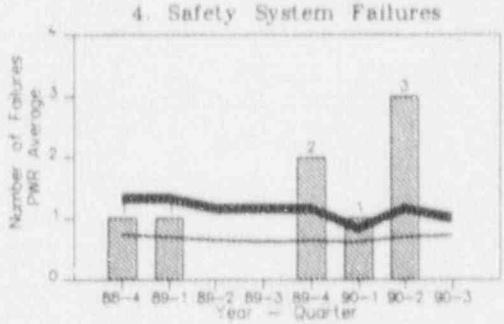
2. Safety System Actuations



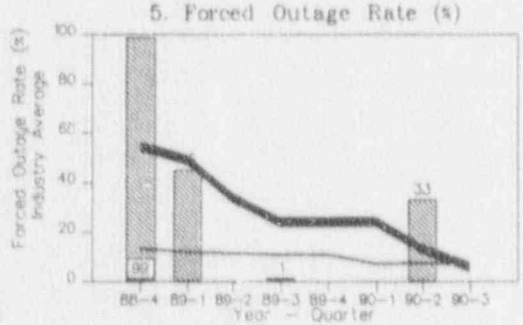
3. Significant Events



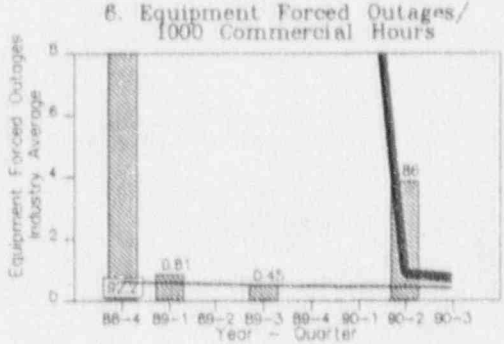
4. Safety System Failures



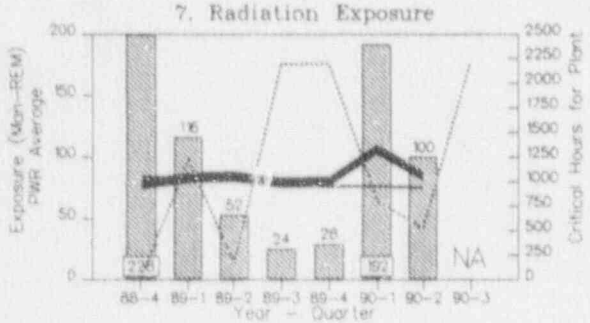
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

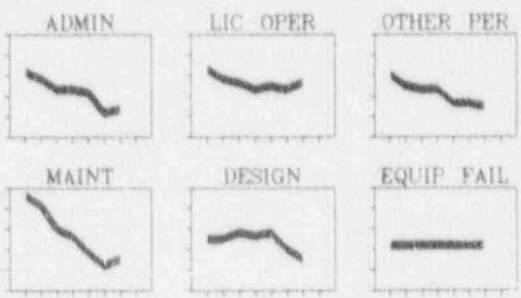


FIGURE 4.10.3

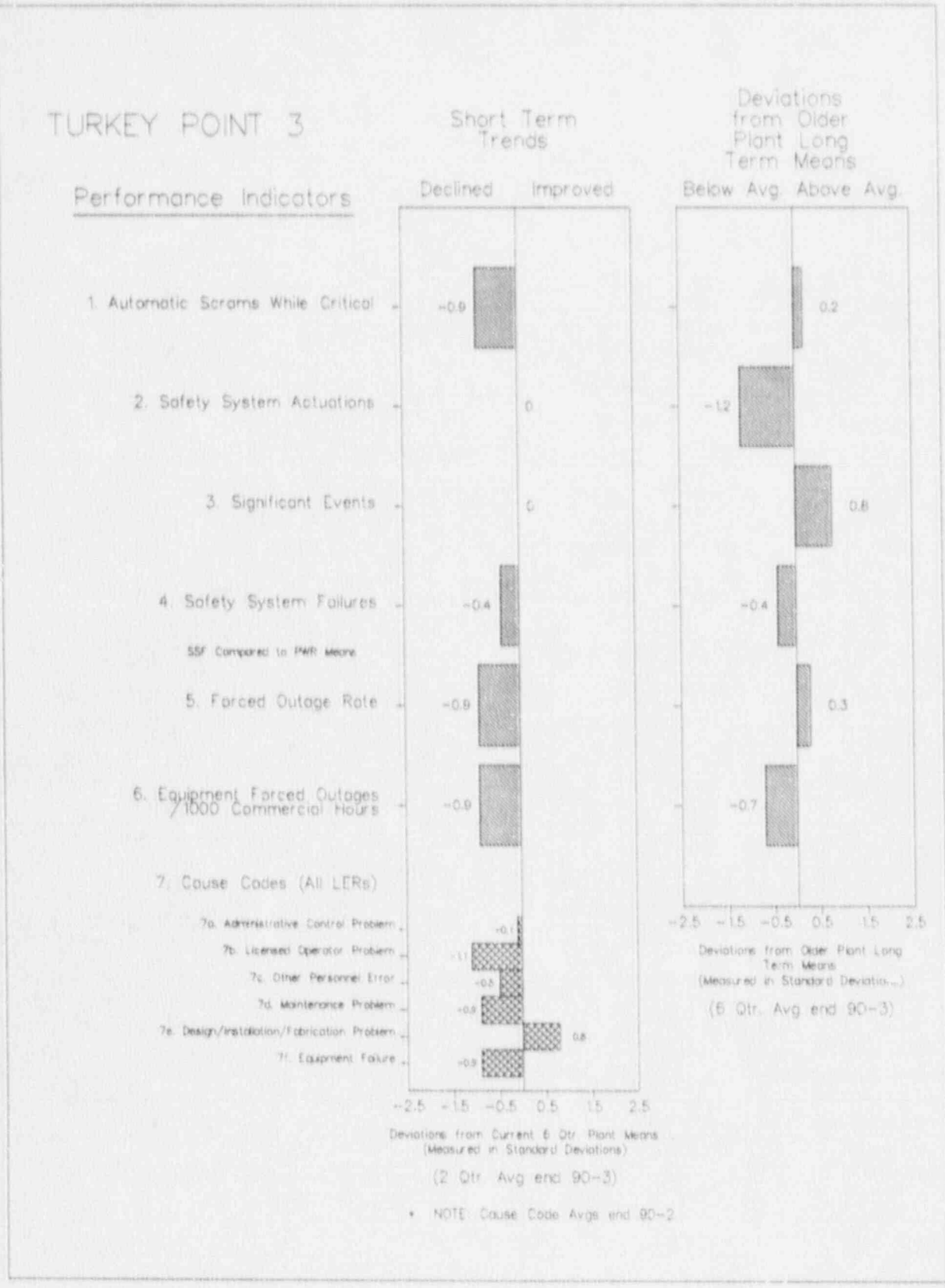

TURKEY POINT 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.2
2. Safety System Actuations
0
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
-0.4
-0.4
SSF Compared to PWR Mean
5. Forced Outage Rate
-0.9
0.3
6. Equipment Forced Outages /1000 Commercial Hours
-0.9
-0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
+0.1
7b. Licensed Operator Problem
-1.1
7c. Other Personnel Error
-0.5
7d. Maintenance Problem
-0.9
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.104

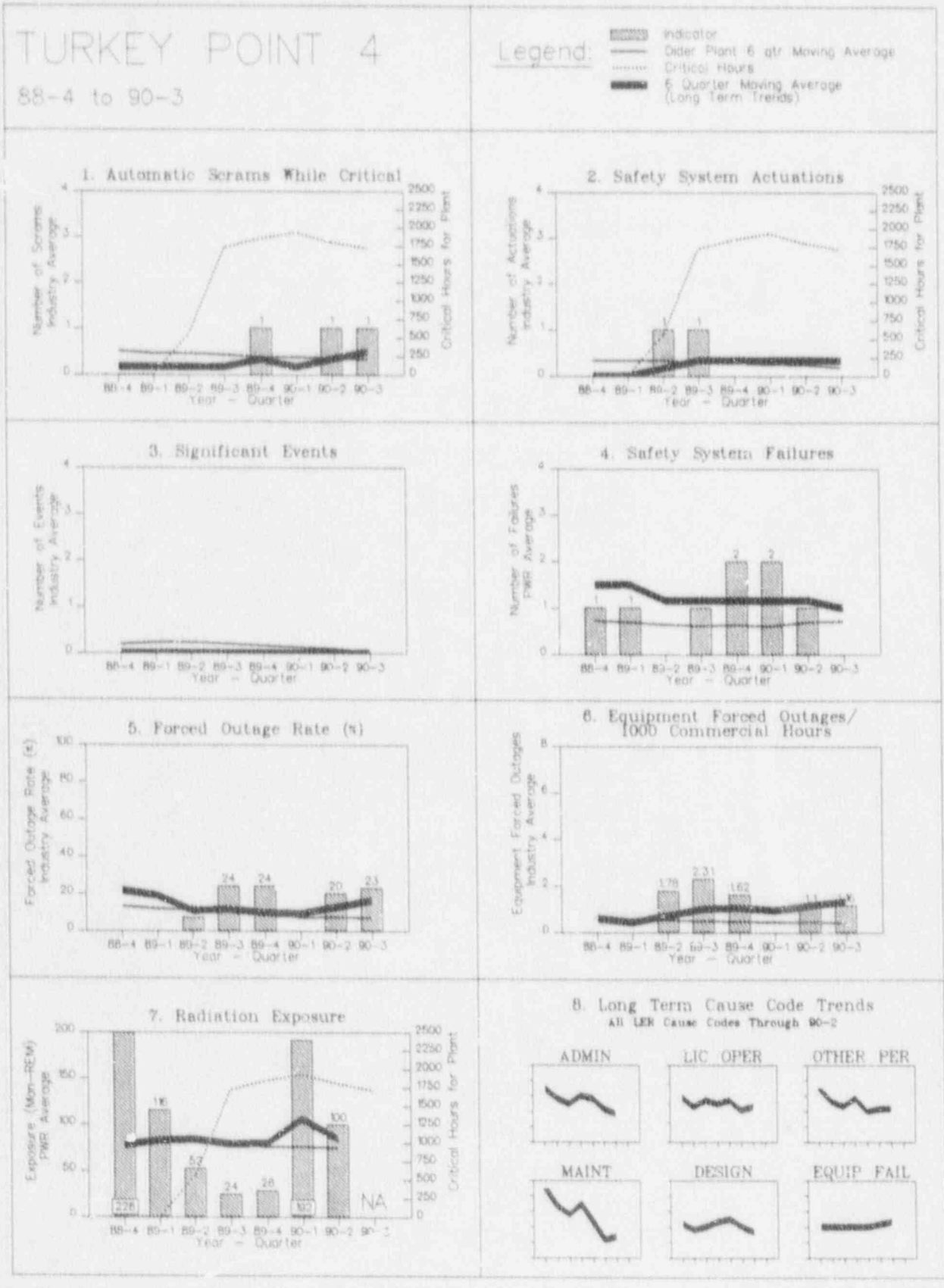

TURKEY POINT 4
88-4 to 90-3
Legend:
Indicator
Older Plant 6 qtr Moving Average
Critical Hours
6 Quarter Moving Average (Long Term Trends)
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Commercial Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Long Term Cause Code Trends
All LER Cause Codes Through 90-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.104

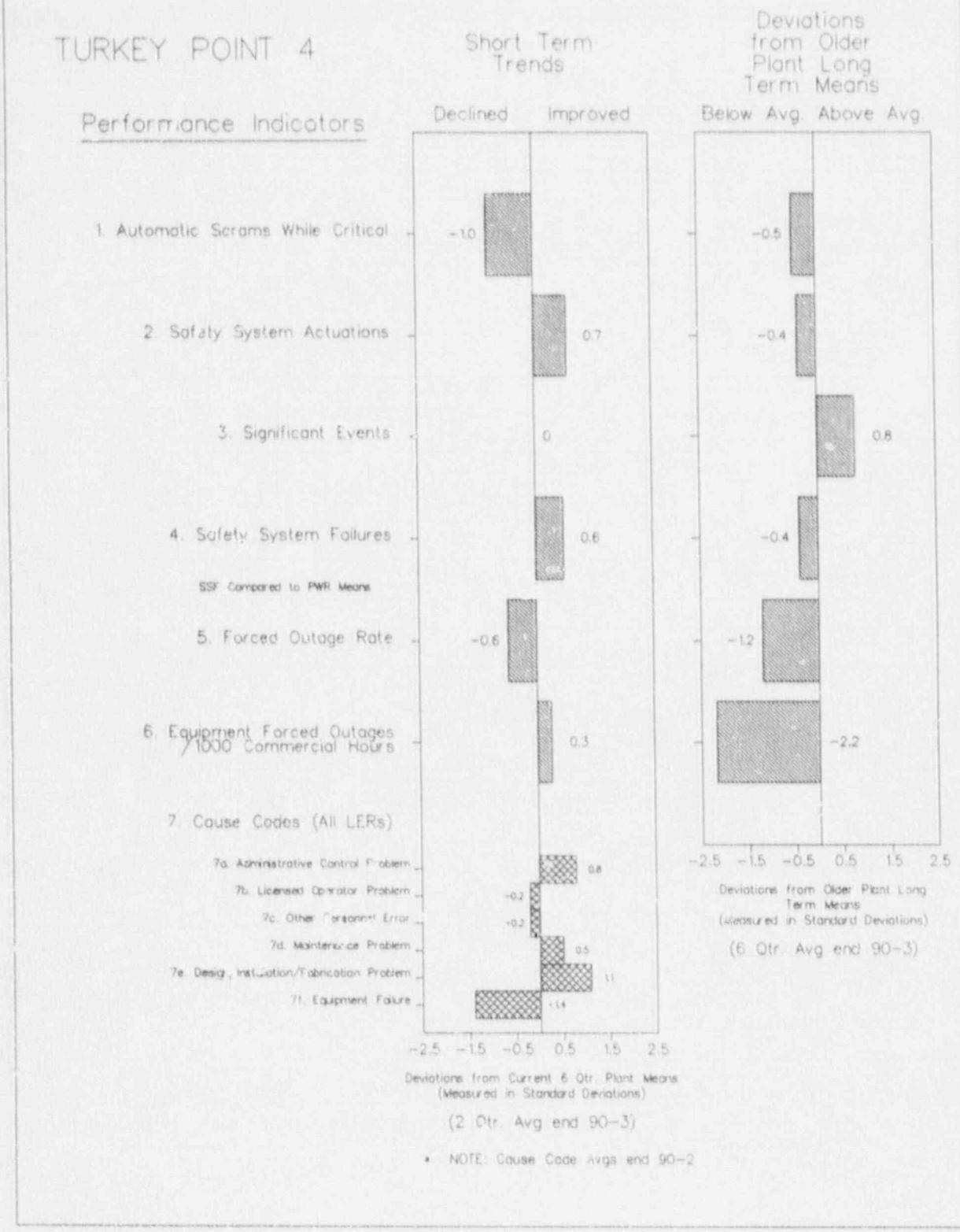

TURKEY POINT 4
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.0
-0.5
2. Safety System Actuations
0.7
-0.4
3. Significant Events
0
0.8
4. Safety System Failures
0.6
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.6
-1.2
6. Equipment Forced Outages /1000 Commercial Hours
0.3
-2.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
-0.2
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.5
7e. Design, Installation/Fabrication Problem
1.1
7f. Equipment Failure
-1.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

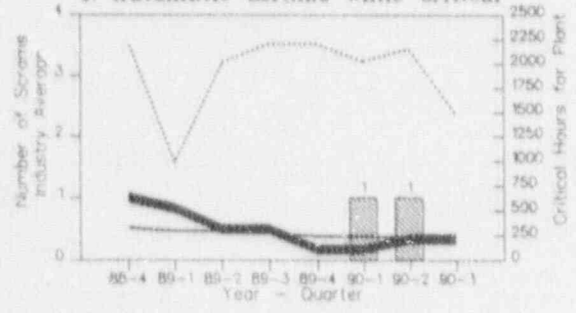
FIGURE 4.105

VERMONT YANKEE

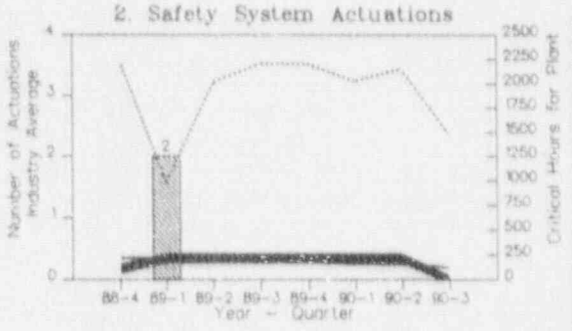
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

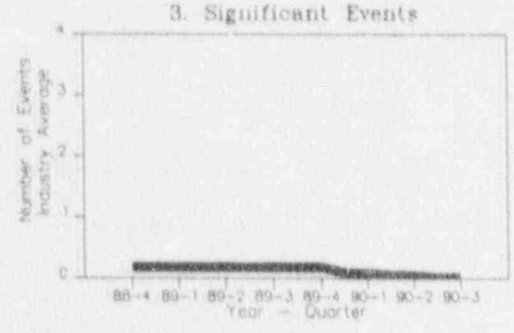
1. Automatic Scrams While Critical



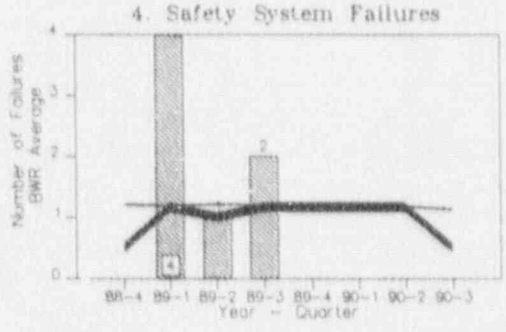
2. Safety System Actuations



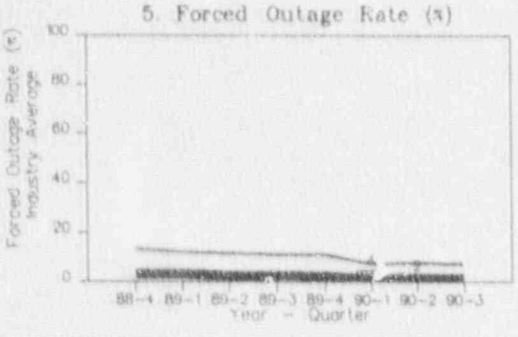
3. Significant Events



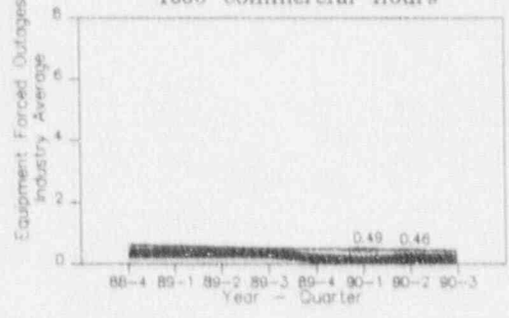
4. Safety System Failures



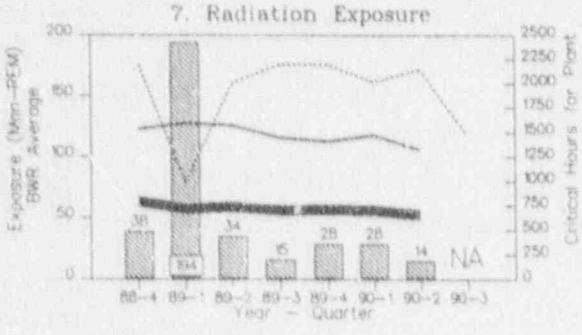
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

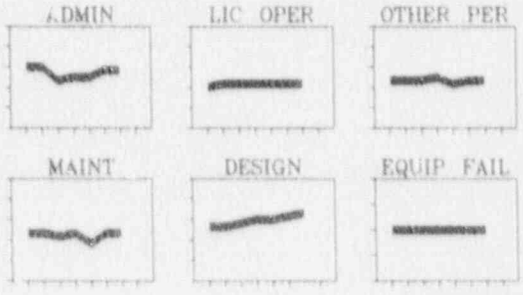


FIGURE 4.105

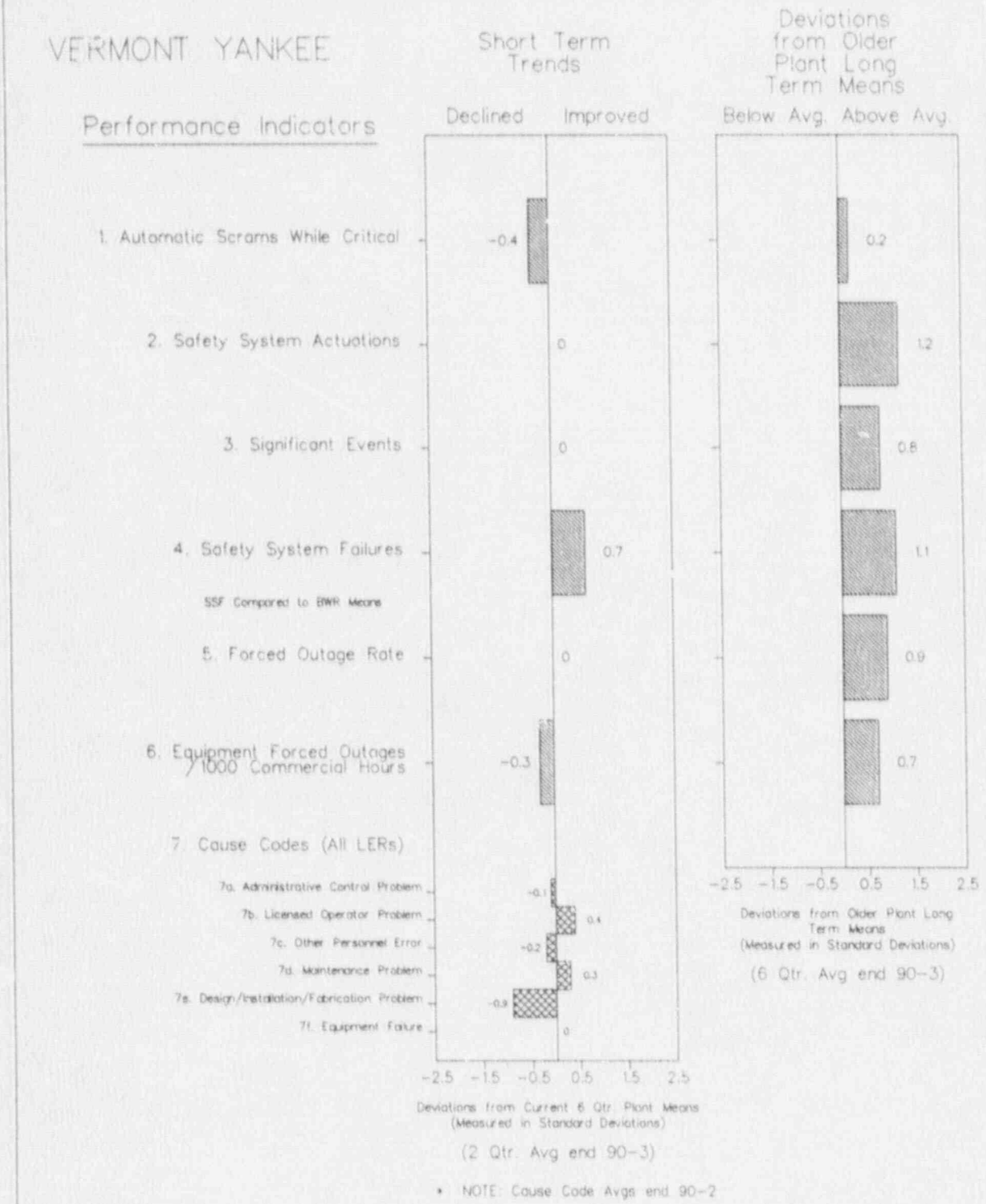

VERMONT YANKEE
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
0.2
2. Safety System Actuations
0
1.2
3. Significant Events
0
0.8
4. Safety System Failures
0.7
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
0
0.9
6. Equipment Forced Outages / 1000 Commercial Hours
-0.3
0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
-0.9
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

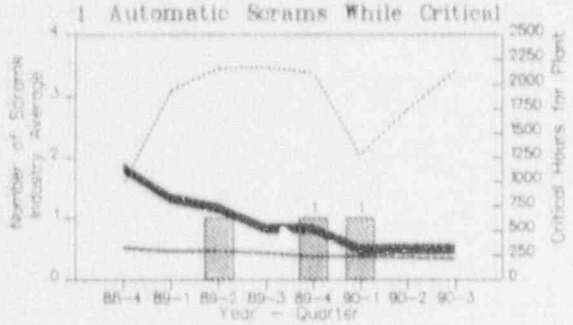
FIGURE 4.105

VOGTLE 1

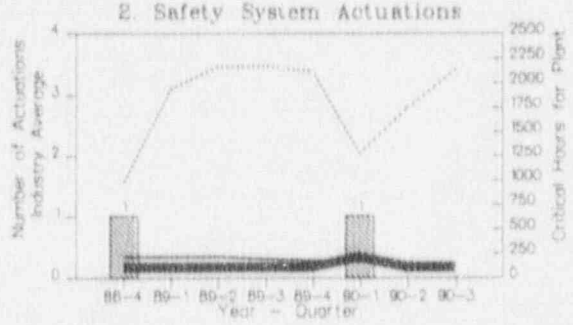
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

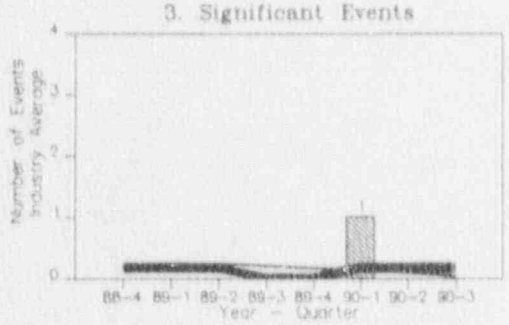
1. Automatic Scrams While Critical



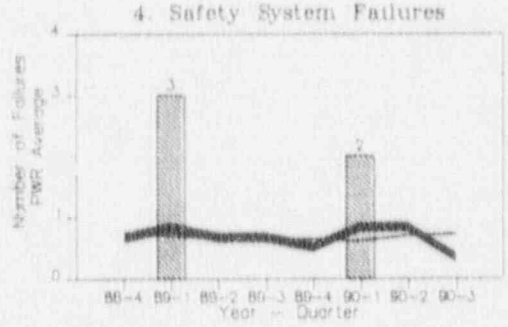
2. Safety System Actuations



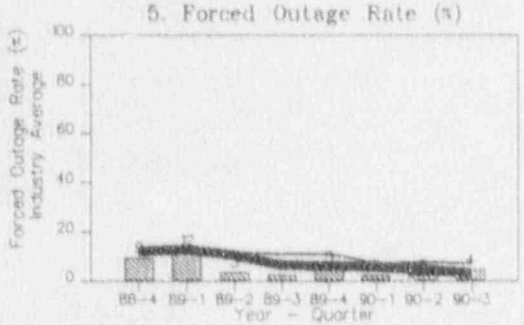
3. Significant Events



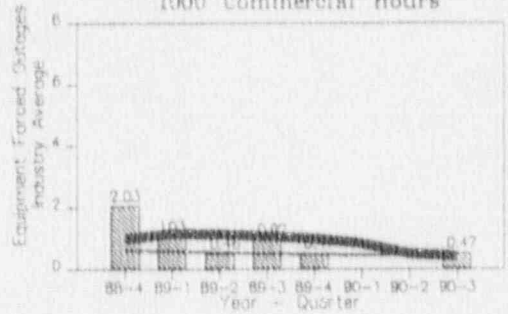
4. Safety System Failures



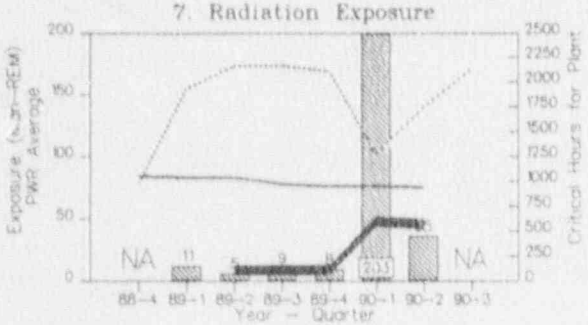
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

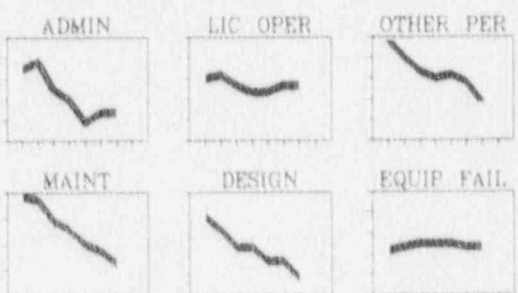


FIGURE 4.106

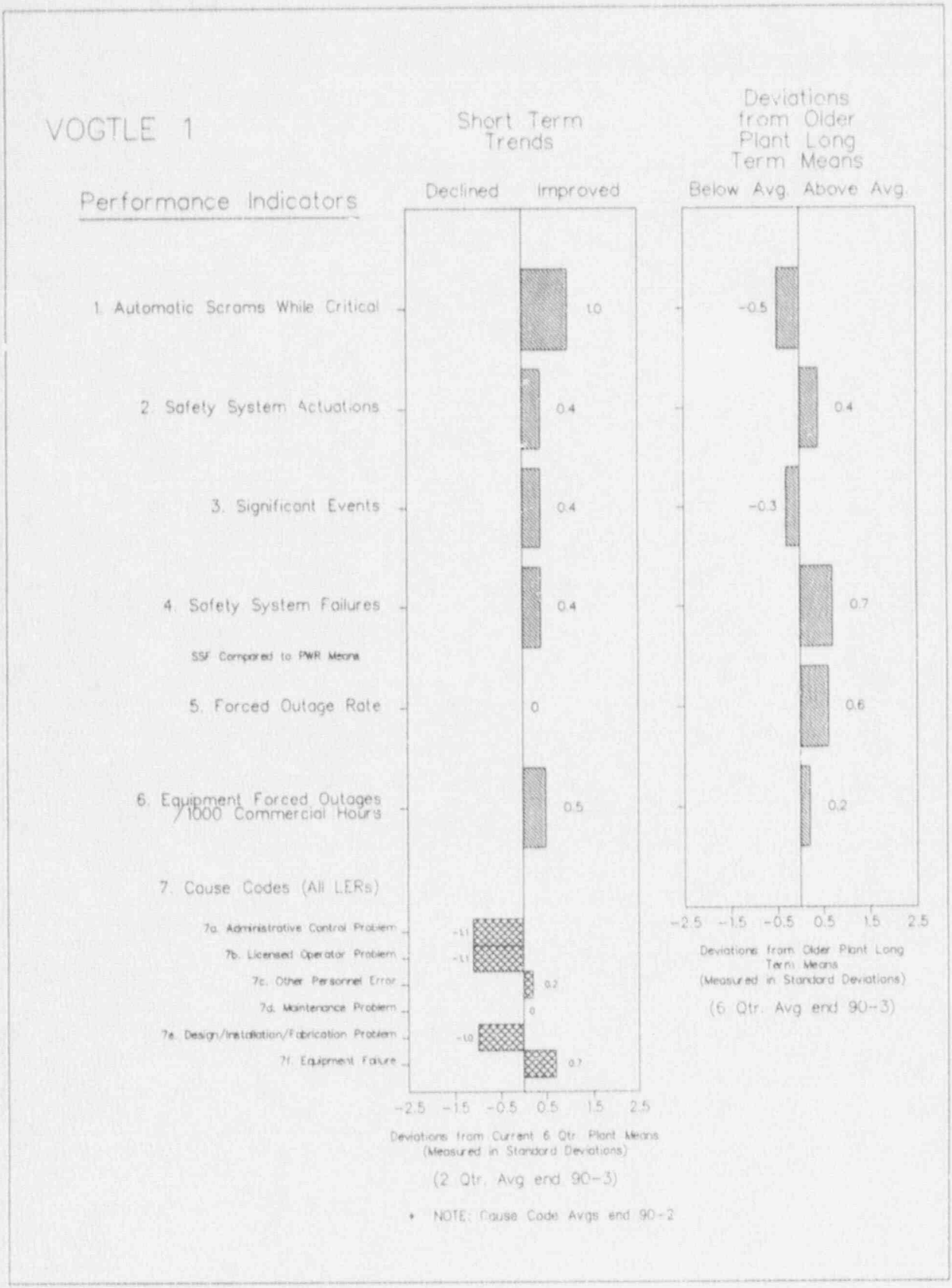

VOGTLE 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-0.5
2. Safety System Actuations
0.4
0.4
3. Significant Events
0.4
-0.3
4. Safety System Failures
0.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0
0.6
6. Equipment Forced Outages /1000 Commercial Hours
0.5
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.1
7b. Licensed Operator Problem
-1.1
7c. Other Personnel Error
0.2
7d. Maintenance Problem
0
7e. Design/Installation/Fabrication Problem
-1.0
7f. Equipment Failure
0.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

FIGURE 4.107

VOGTLE 2

88-4 to 90-3

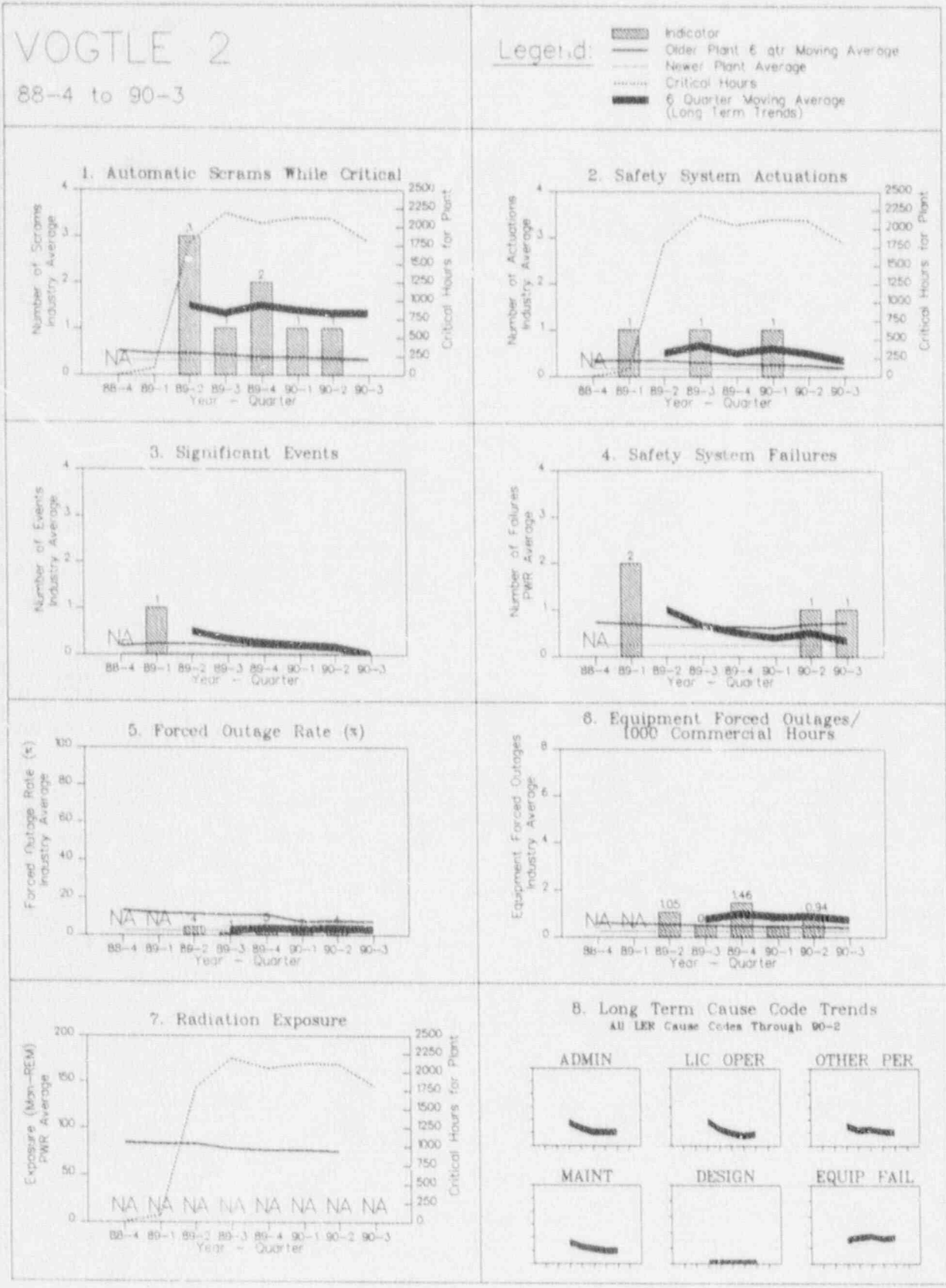


FIGURE 4.107

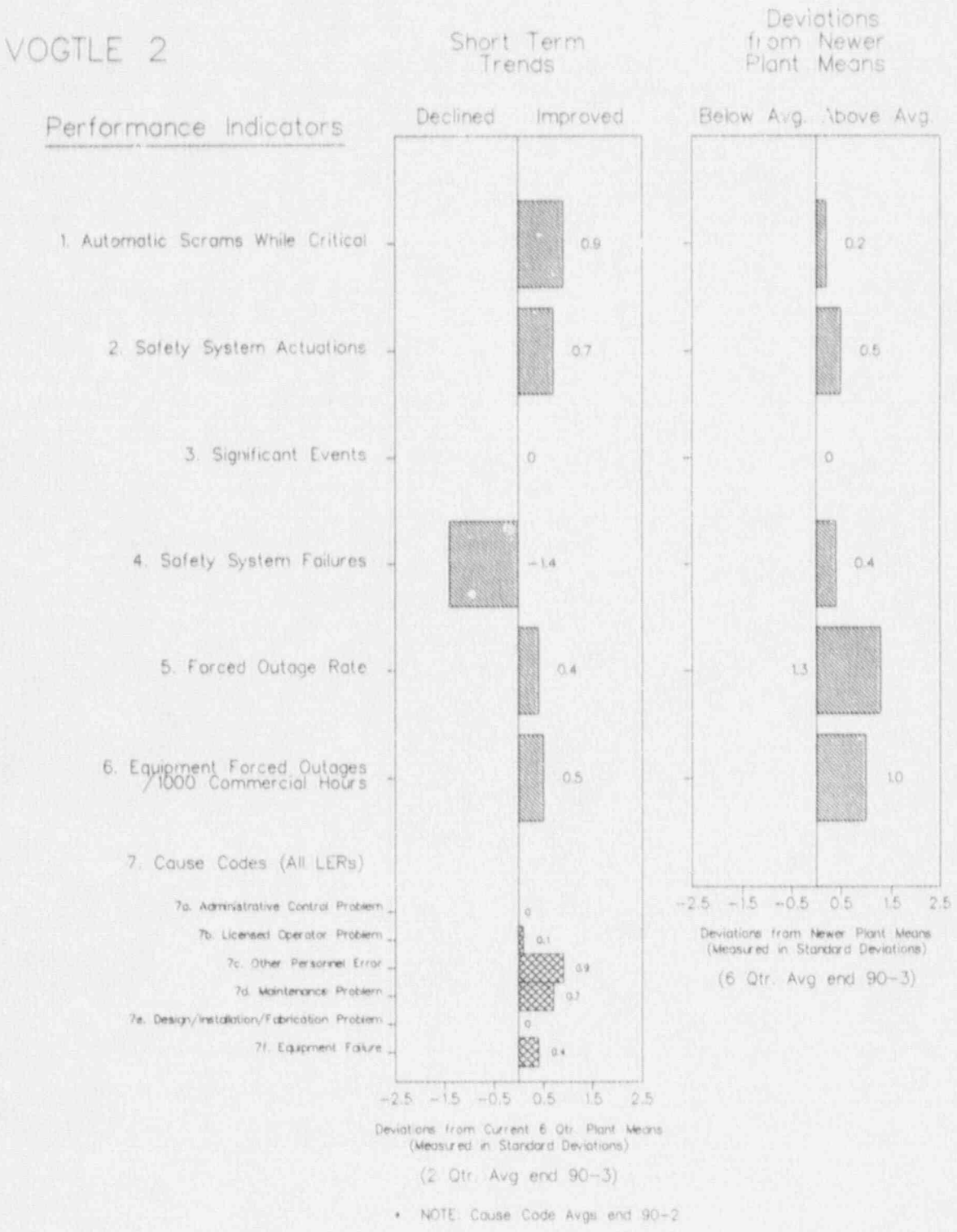

VOGTLE 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
0.2
2. Safety System Actuations
0.7
0.5
3. Significant Events
0
0
4. Safety System Failures
-1.4
0.4
5. Forced Outage Rate
0.4
1.3
6. Equipment Forced Outages /1000 Commercial Hours
0.5
1.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0.1
7c. Other Personnel Error
0.9
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

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FIGURE 4.107

Note: This is a comparison of VOGTLE 2 (a newer plant) against older plant means.

VOGTLE 2

Performance Indicators

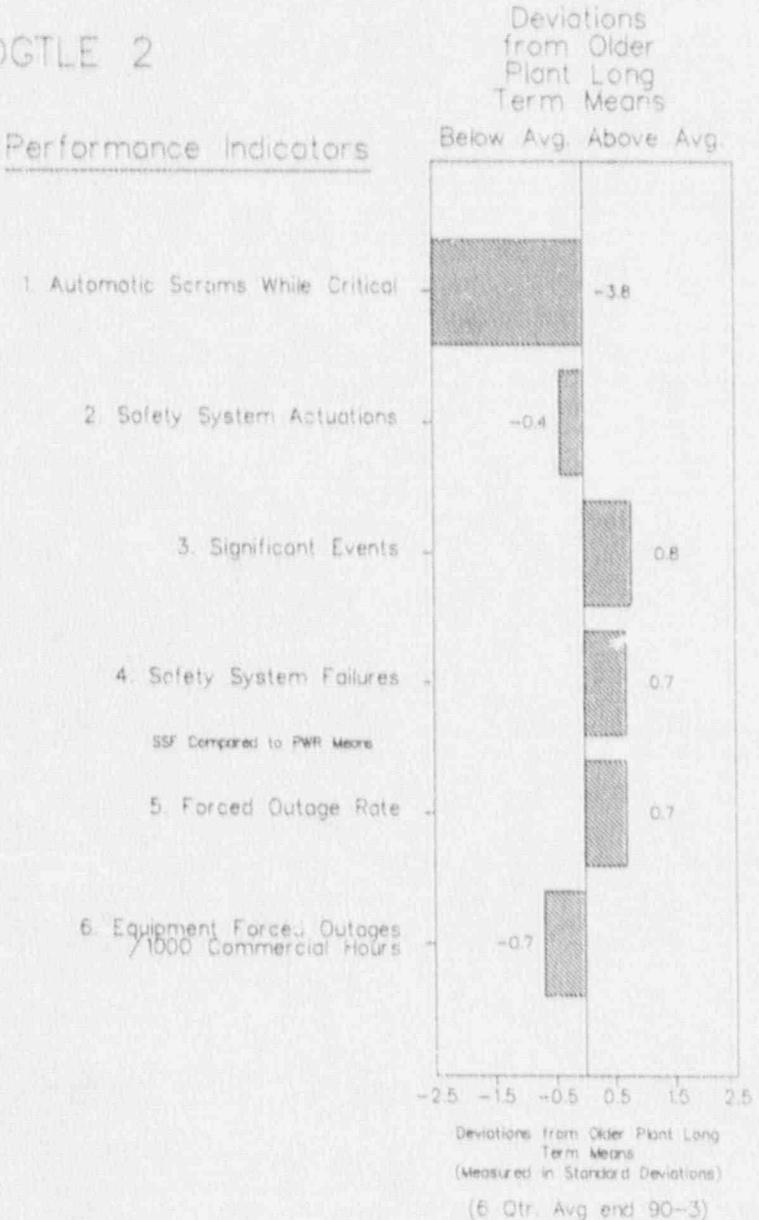


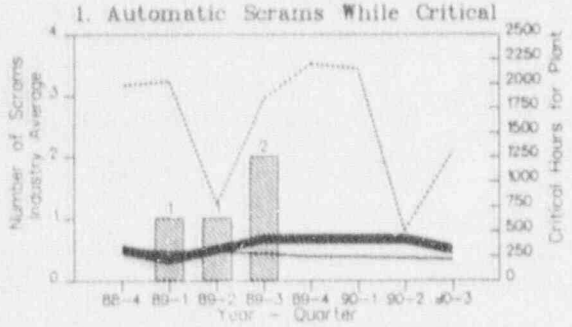
FIGURE 4.108

WASH. NUCLEAR 2

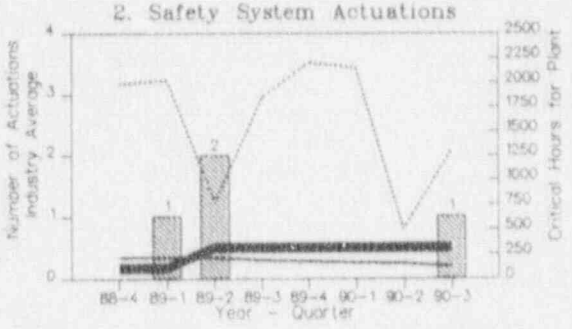
88-4 to 90-3

Legend:
- Actual
- Under Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

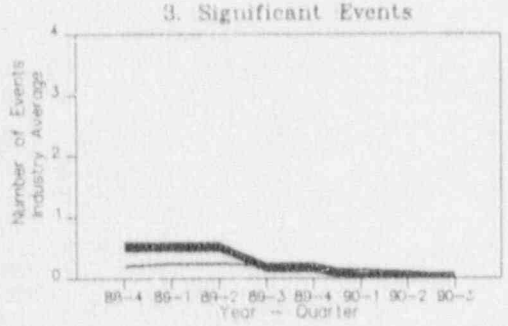
1. Automatic Scrams While Critical



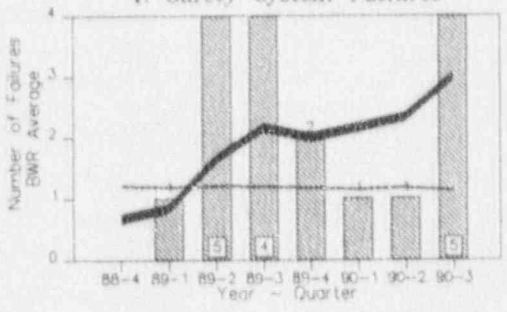
2. Safety System Actuations



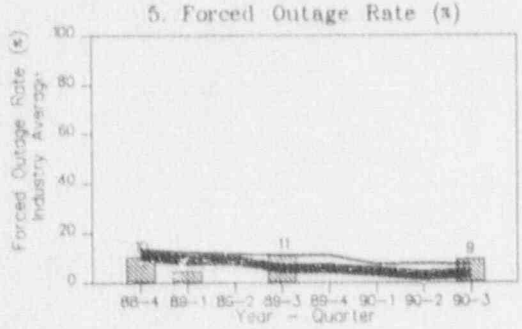
3. Significant Events



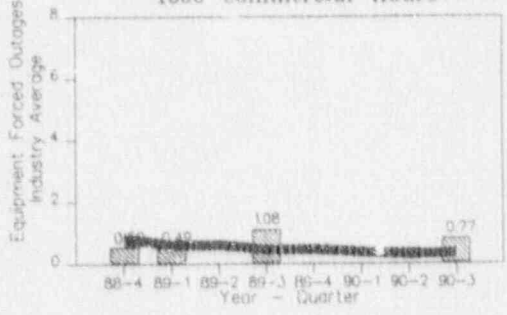
4. Safety System Failures



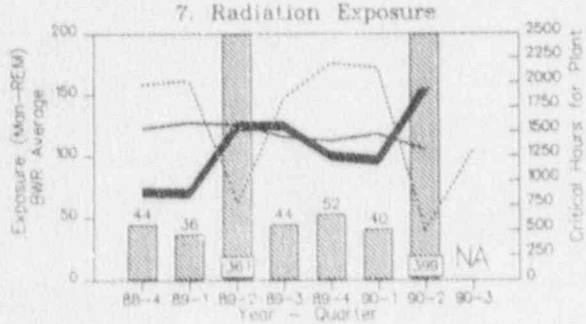
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

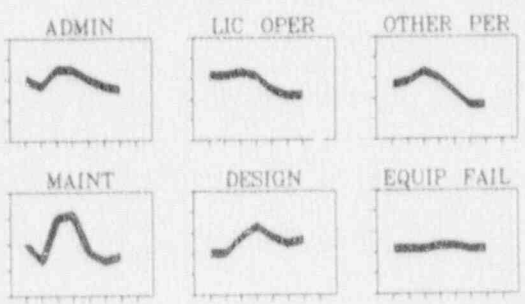


FIGURE 4.108

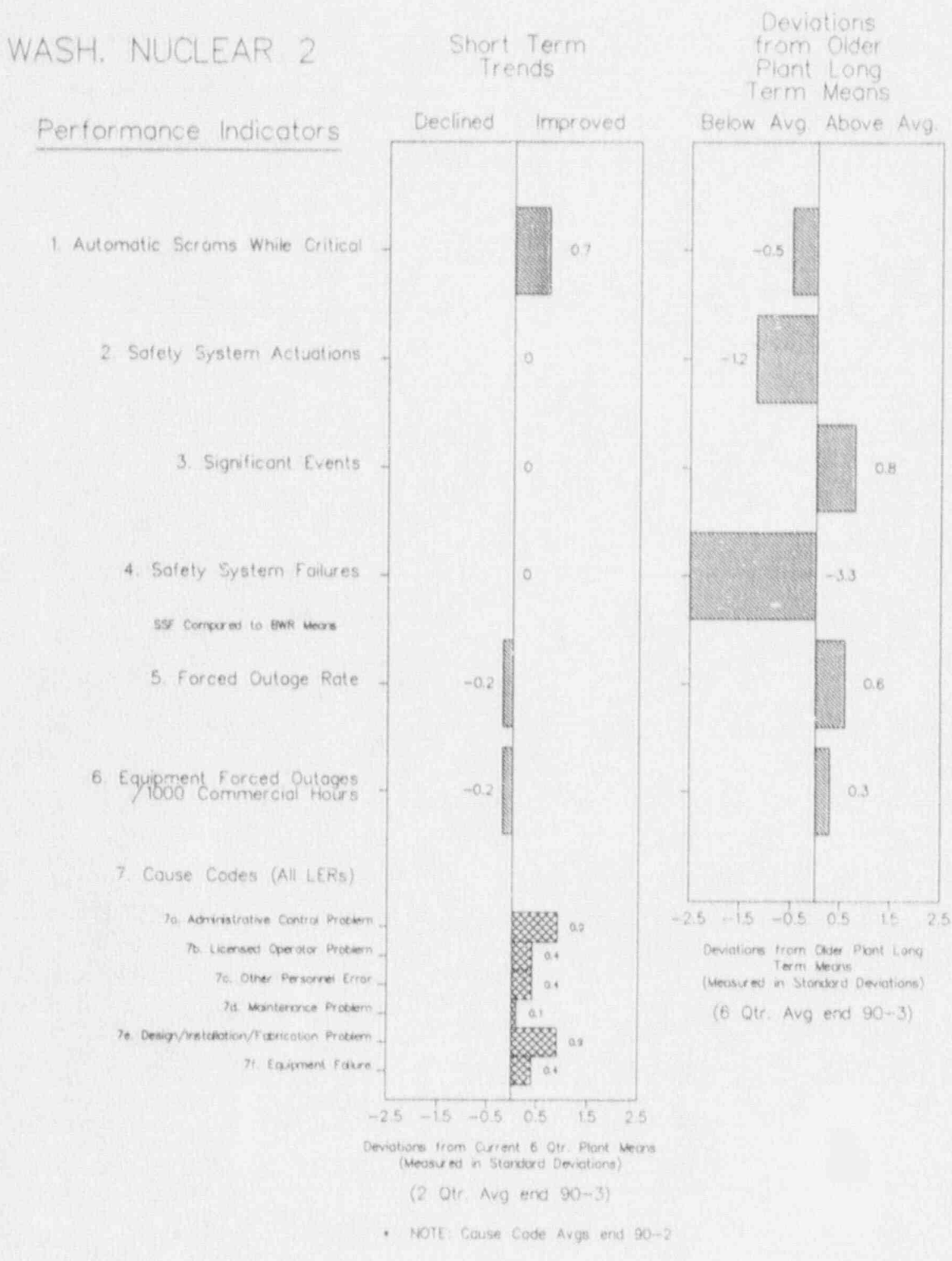

WASH. NUCLEAR 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-0.5
2. Safety System Actuations
0
-1.2
3. Significant Events
0
0.8
4. Safety System Failures
0
-3.3
SSF Compared to BWR Means
5. Forced Outage Rate
-0.2
0.6
6. Equipment Forced Outages /1000 Commercial Hours
-0.2
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.1
7e. Design/Installation/Fabrication Problem
0.9
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg end 90-3)
* NOTE: Cause Code Avgs end 90-2

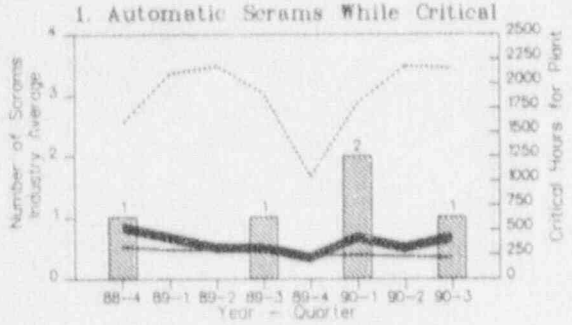
FIGURE 4.109

WATERFORD 3

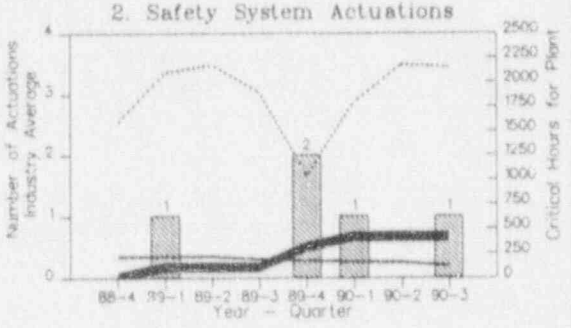
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr. Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

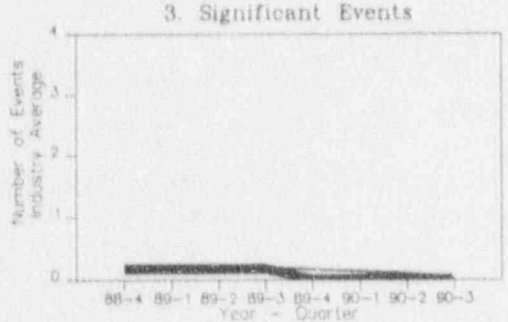
1. Automatic Scrams While Critical



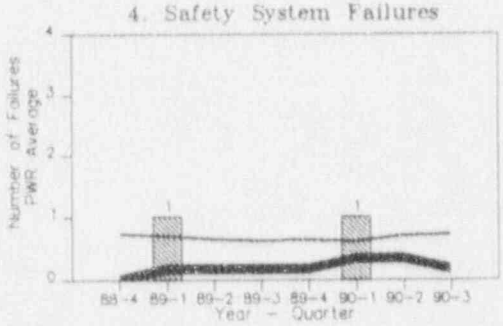
2. Safety System Actuations



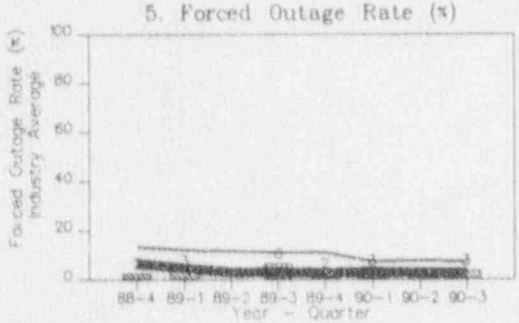
3. Significant Events



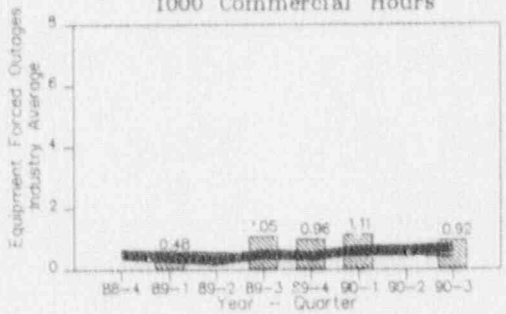
4. Safety System Failures



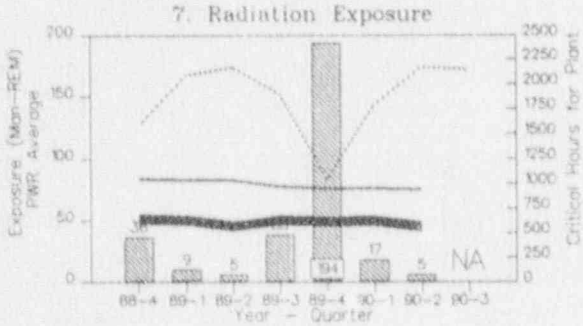
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

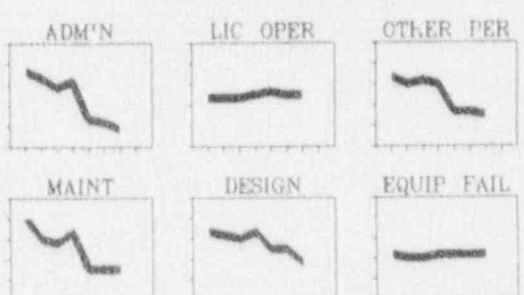


FIGURE 4.109

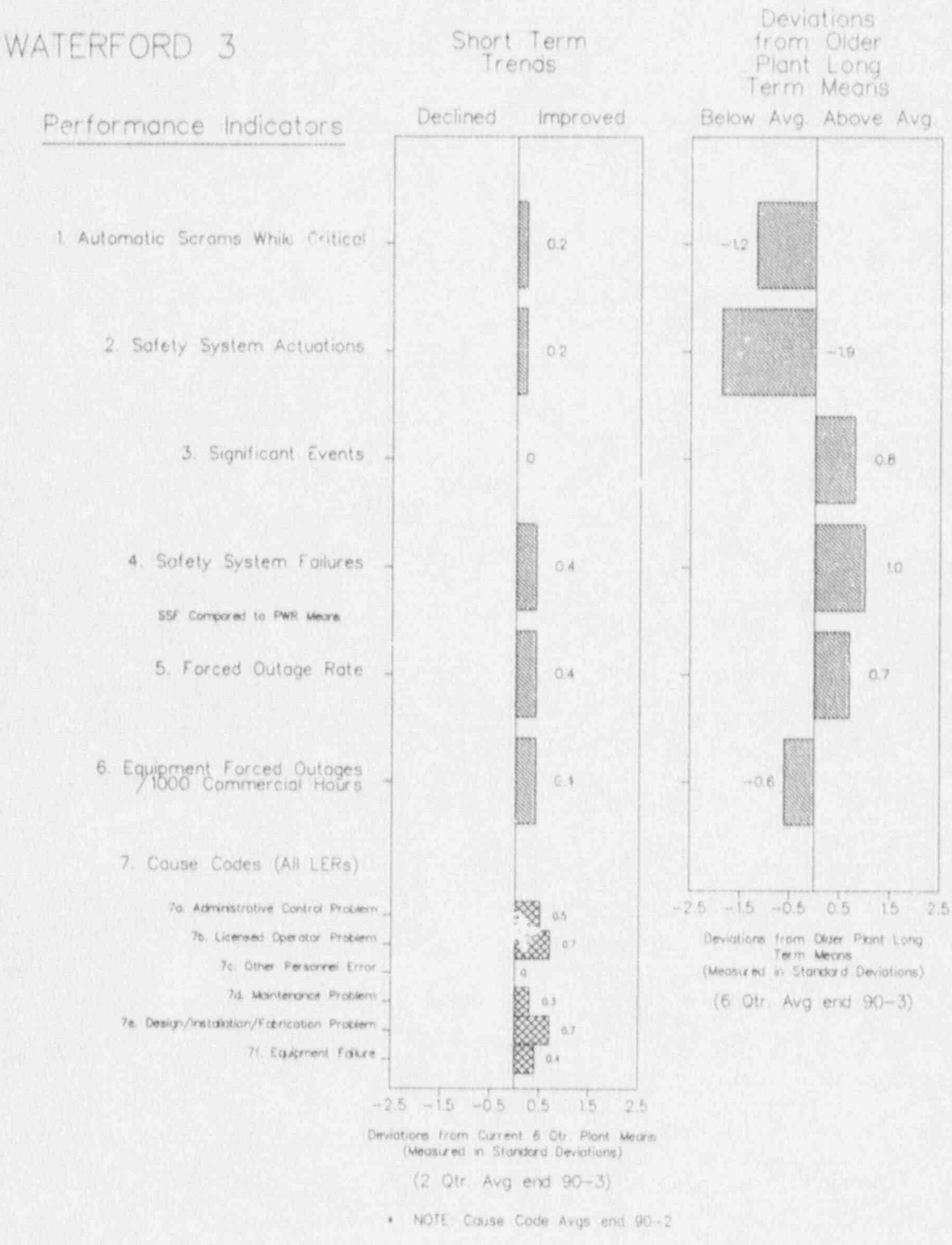
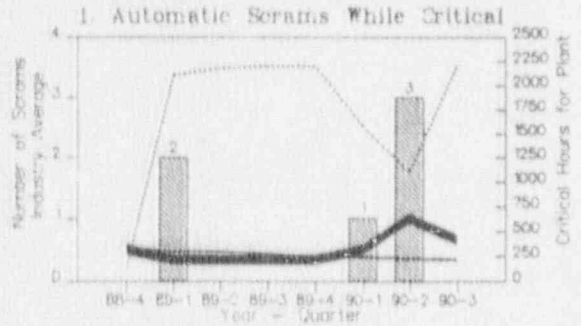

WATERFORD 3
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.2
-1.2
2. Safety System Actuations
0.2
-1.9
3. Significant Events
0
0.8
4. Safety System Failures
0.4
1.0
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
0.7
6. Equipment Forced Outages /1000 Commercial Hours
0.4
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 8 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

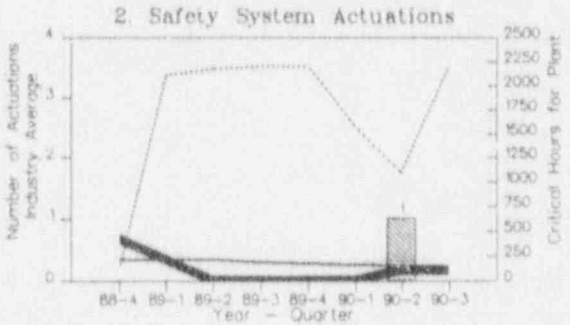
FIGURE 4.110

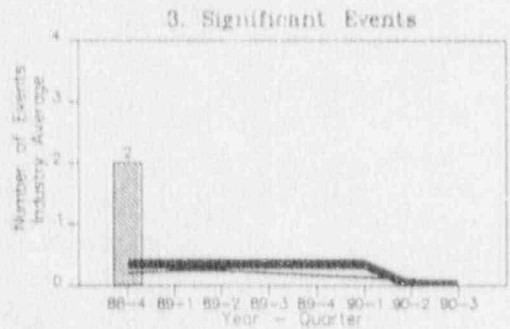
WOLF CREEK

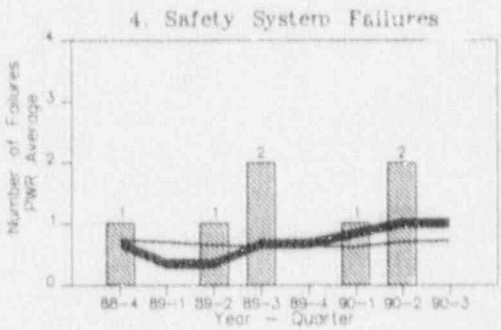
88-4 to 90-3

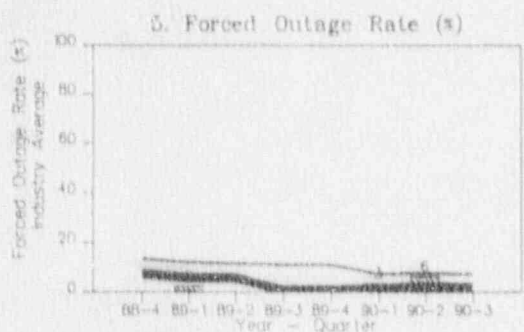
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

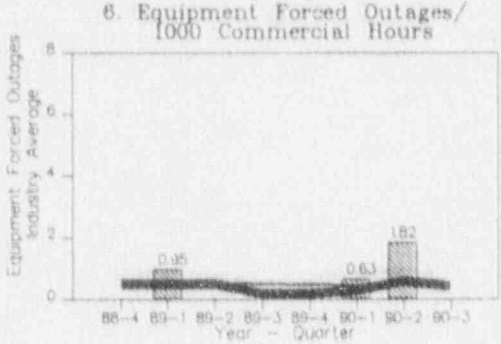


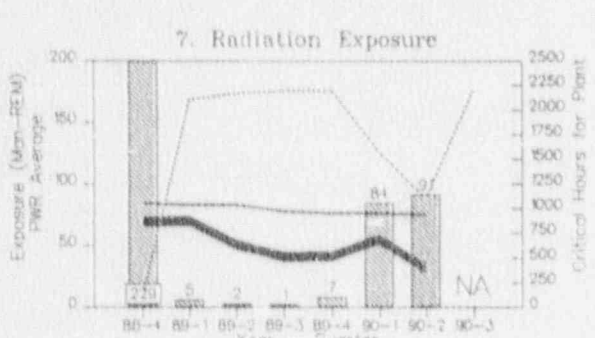












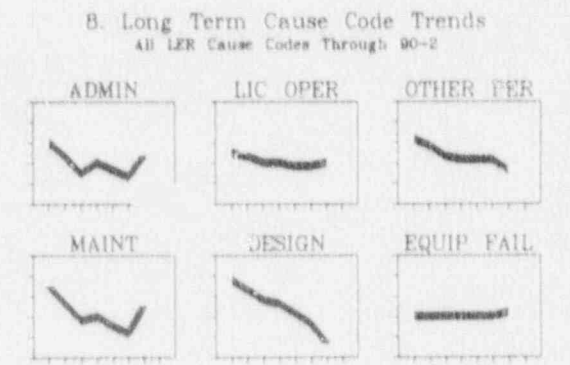


FIGURE 4.110

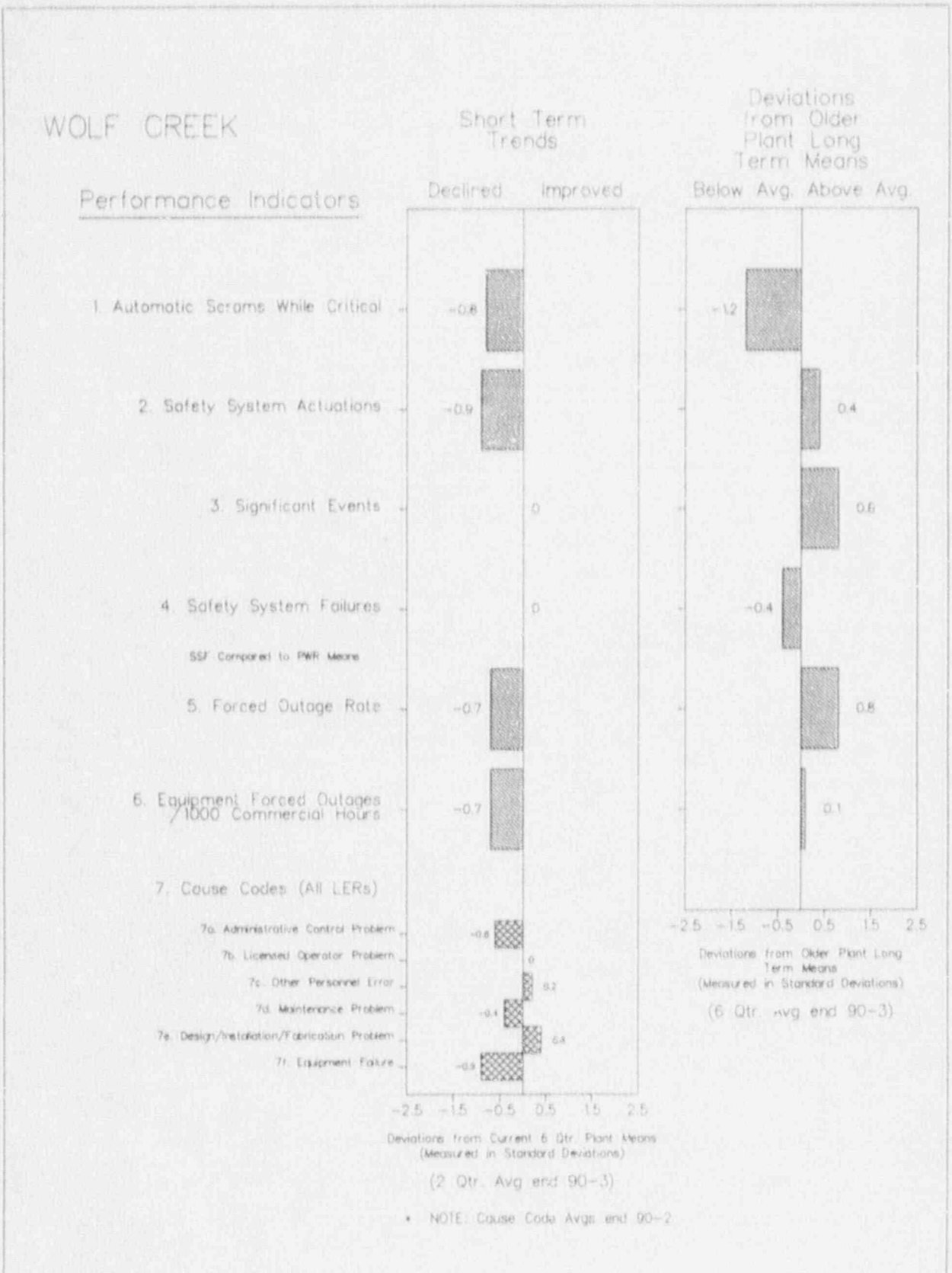

WOLF CREEK
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.8
-1.2
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.6
4. Safety System Failures
0
-0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.7
0.8
6. Equipment Forced Outages /1000 Commercial Hours
-0.7
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.2
7d. Maintenance Problem
-0.4
7e. Design/Installation/Fabrication Problem
0.4
7f. Equipment Failure
-0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs. end 90-2

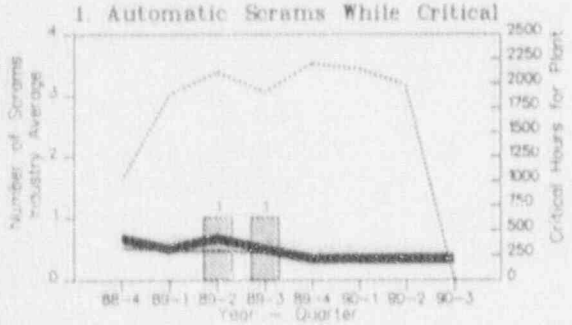
FIGURE 4.111

YANKEE-ROWE

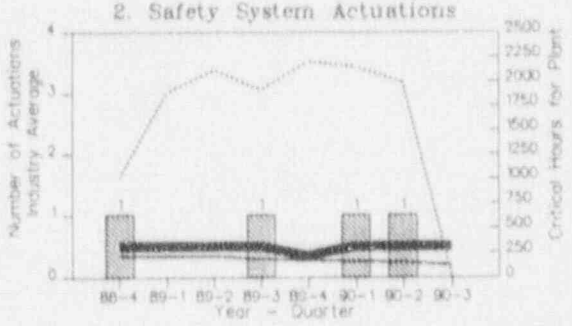
88-4 to 90-3

Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

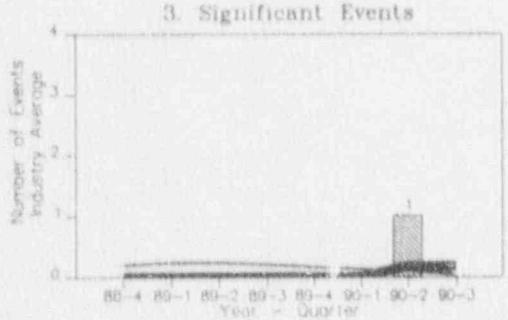
1. Automatic Scrams While Critical



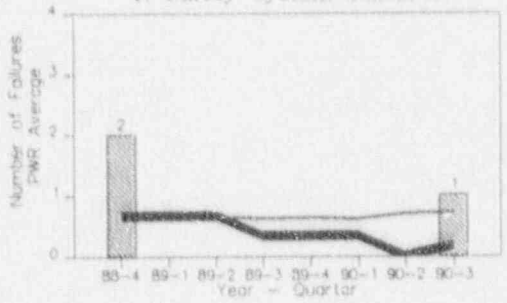
2. Safety System Actuations



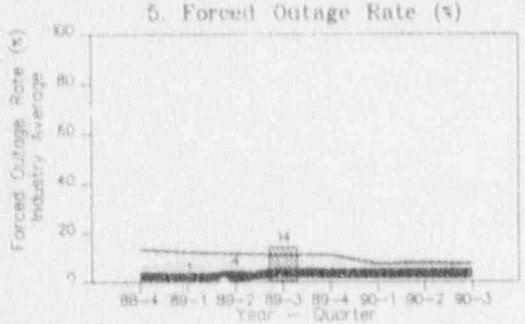
3. Significant Events



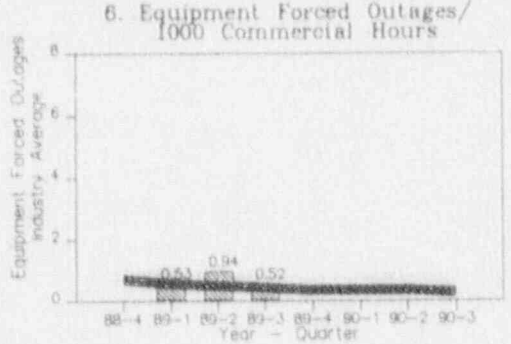
4. Safety System Failures



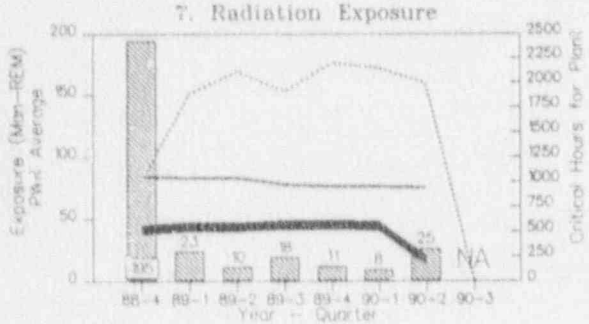
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-2

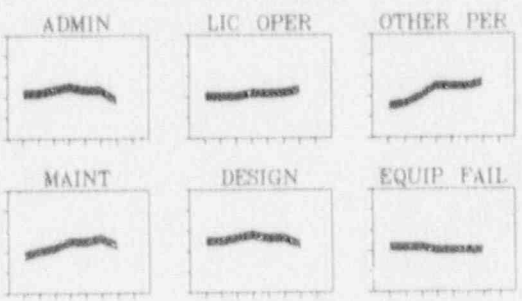


FIGURE 4.111

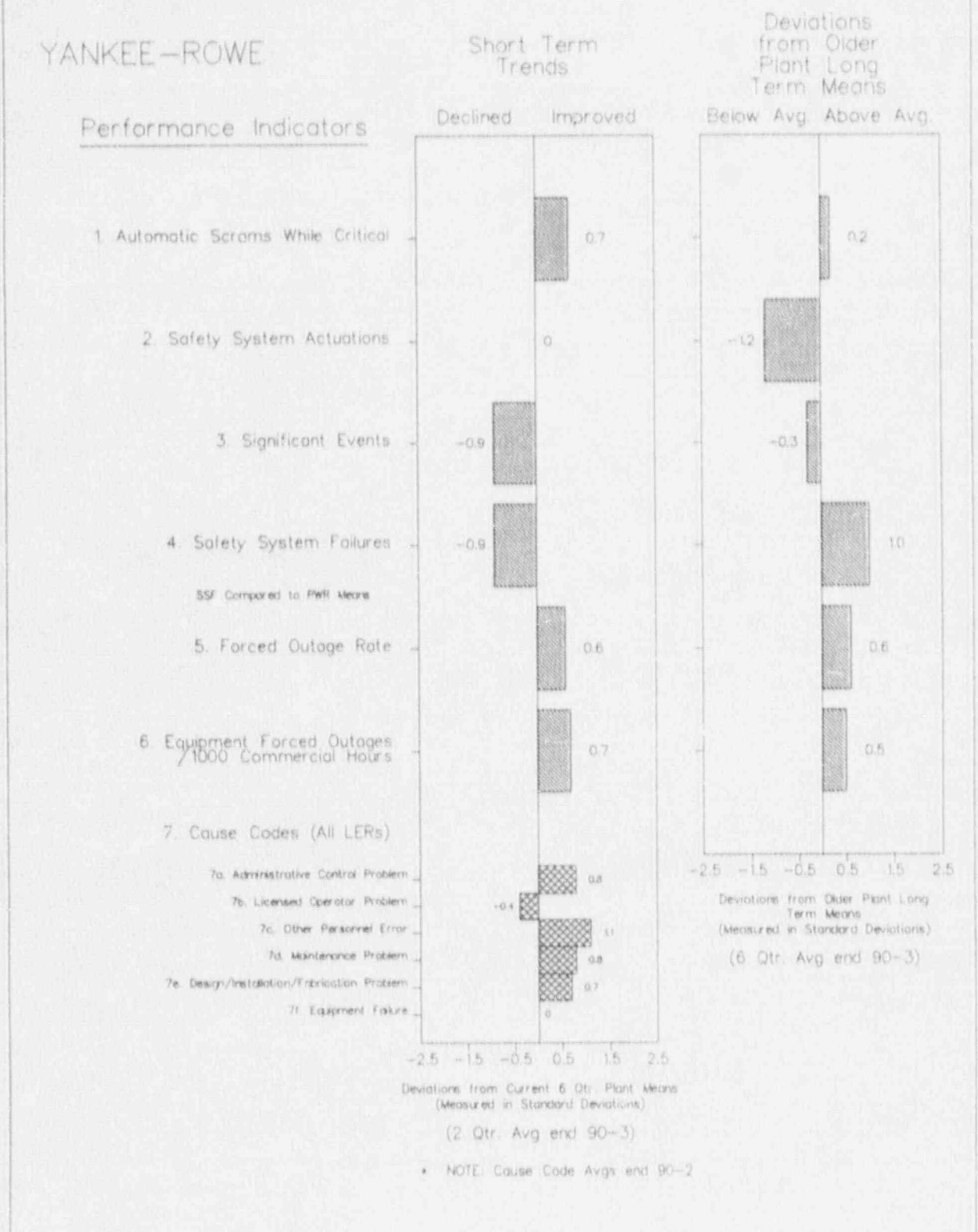
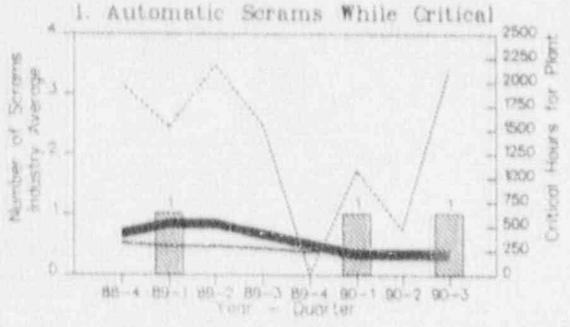

YANKEE-ROWE
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
0.2
2. Safety System Actuations
0
-1.2
3. Significant Events
-0.9
-0.3
4. Safety System Failures
-0.9
1.0
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.6
6. Equipment Forced Outages /1000 Commercial Hours
0.7
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
1.1
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

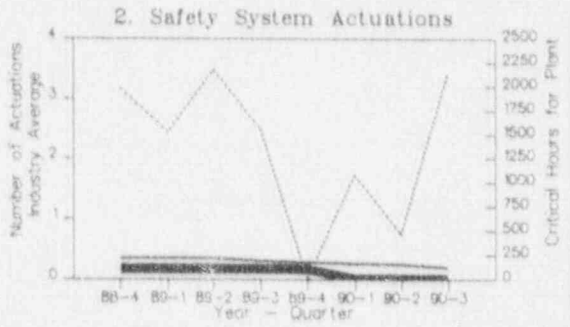
FIGURE 4.112

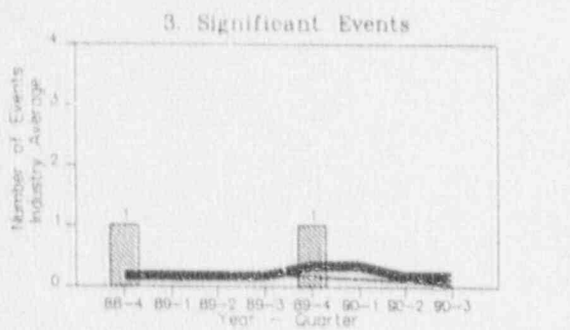
ZION 1

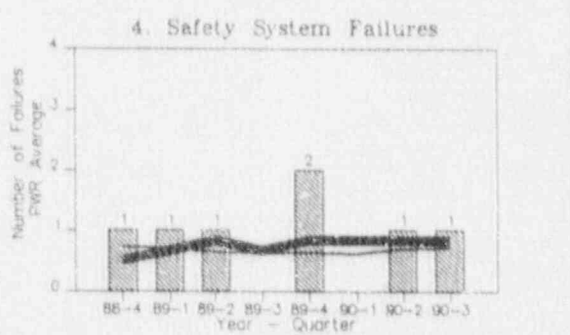
88-4 to 90-3

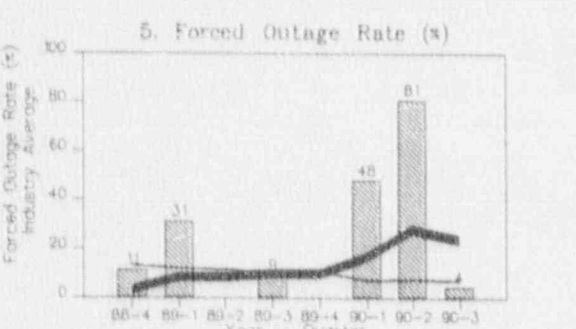
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

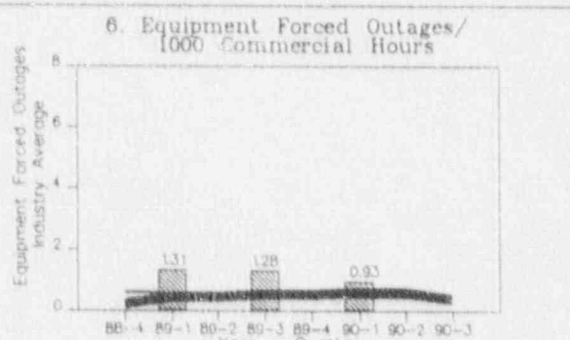


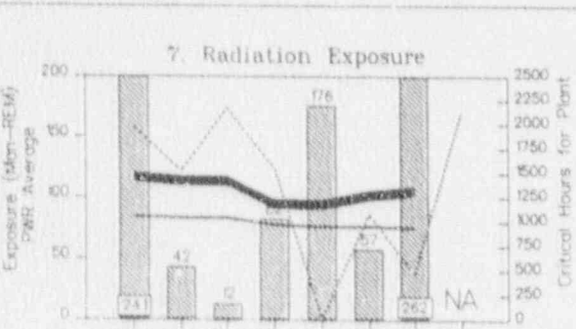












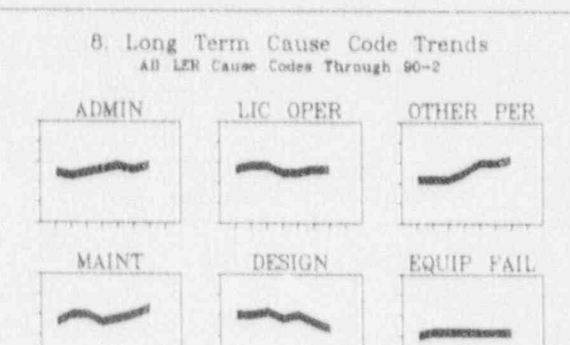


FIGURE 4.112

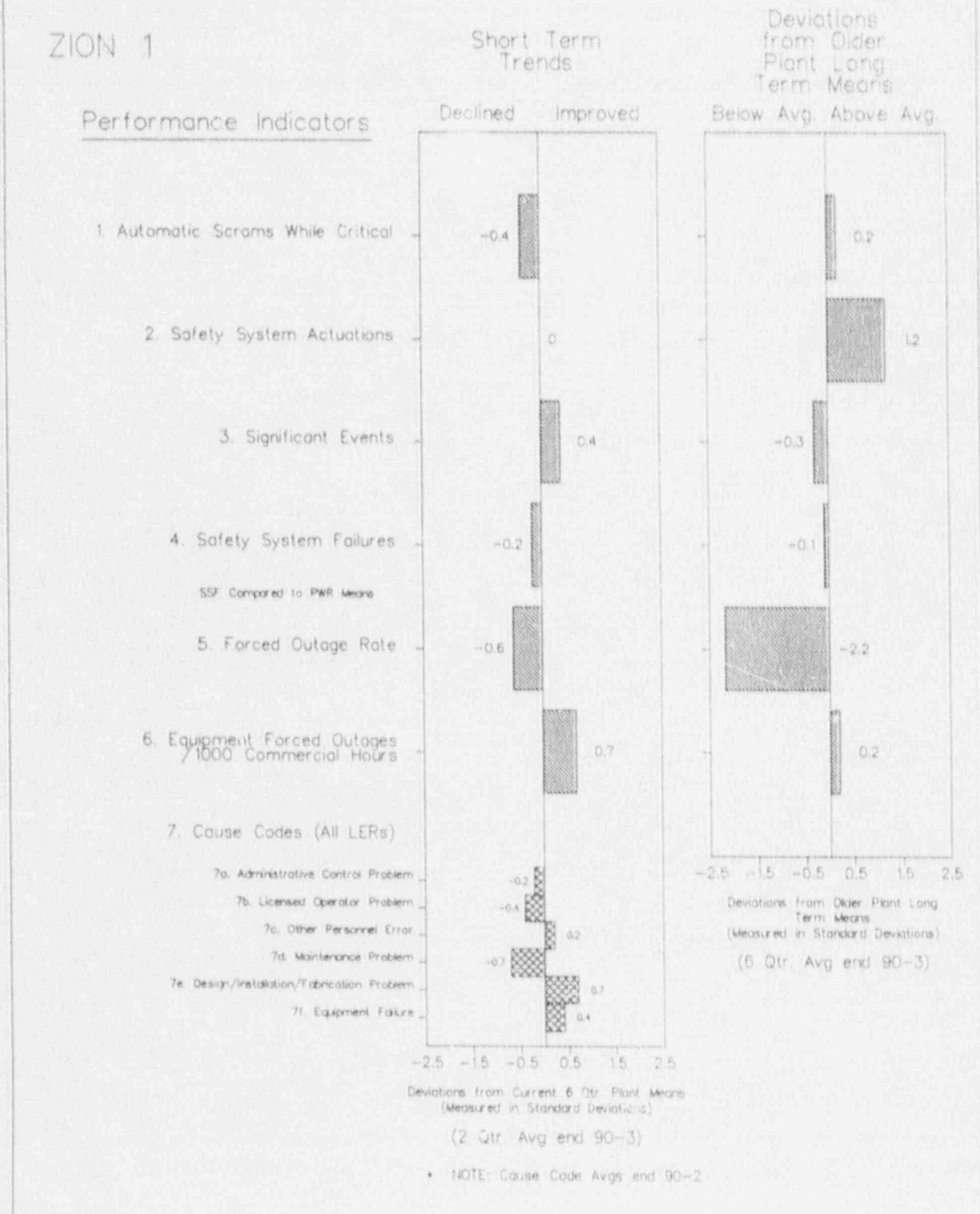
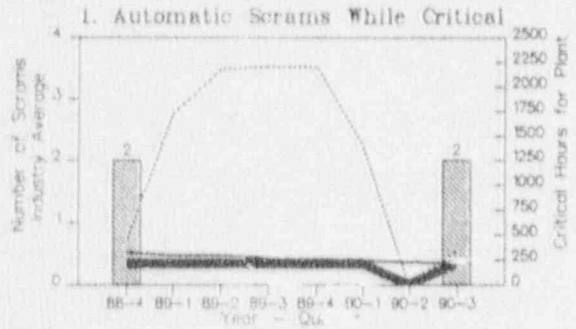

ZION 1
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Commercial Hours
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-0.4
0
0.4
-0.2
-0.6
0.7
-0.2
-0.1
0.2
-0.7
0.7
0.4
0.2
1.2
-0.3
-0.1
-2.2
0.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

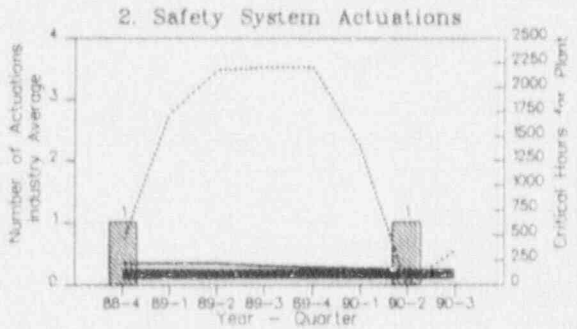
FIGURE 4.113

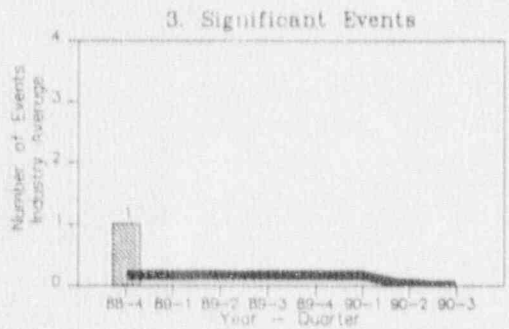
ZION 2

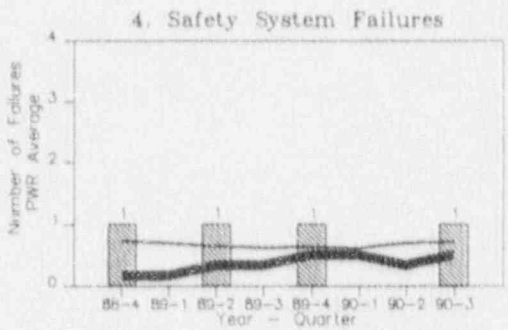
88-4 to 90-3

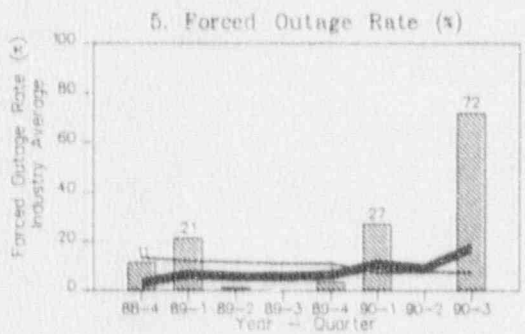
Legend:
- Indicator
- Older Plant 6 qtr Moving Average
- Critical Hours
- 6 Quarter Moving Average (Long Term Trends)

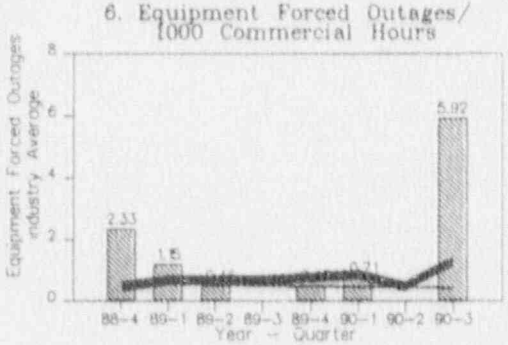


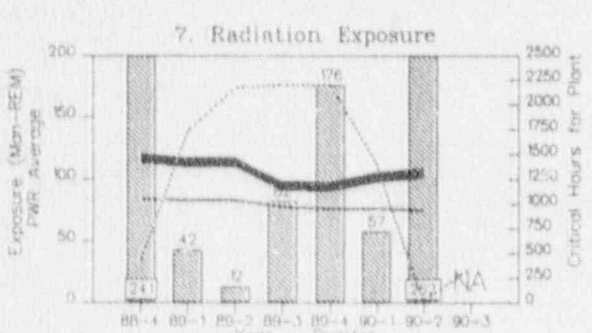












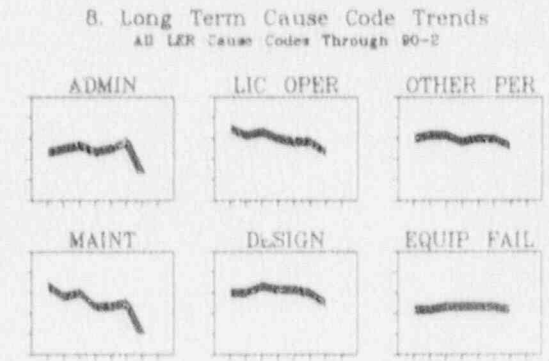
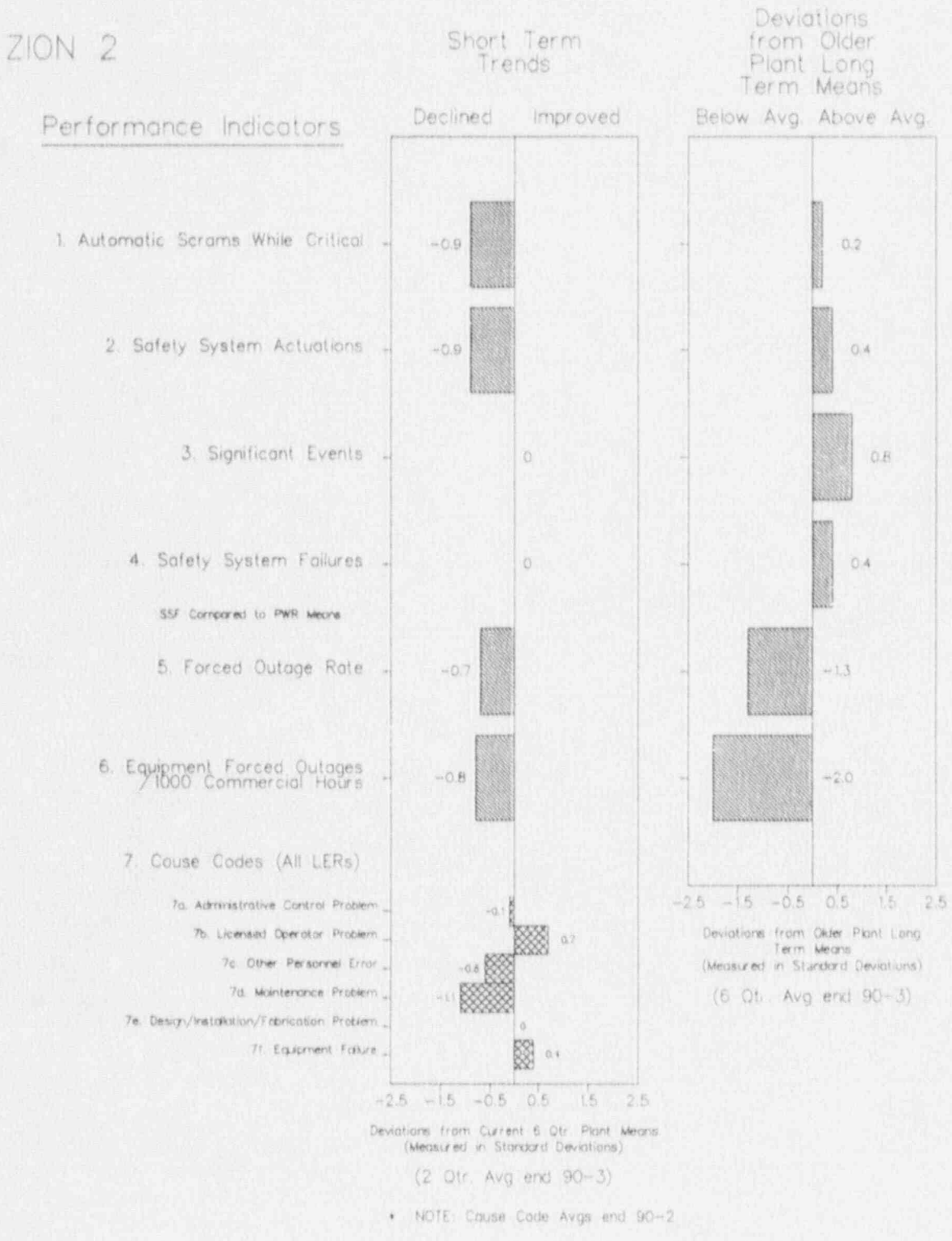


FIGURE 4.113


ZION 2
Performance Indicators
Short Term Trends
Declined
Improved
Deviations from Older Plant Long Term Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.2
2. Safety System Actuations
-0.9
0.4
3. Significant Events
0
0.8
4. Safety System Failures
0
0.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.7
-1.3
6. Equipment Forced Outages /1000 Commercial Hours
-0.8
-2.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
0.2
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-1.1
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 90-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Long Term Means (Measured in Standard Deviations)
(6 Qtr. Avg. end 90-3)
* NOTE: Cause Code Avgs end 90-2

PERFORMANCE INDICATORS FOR OPERATING COMMERCIAL NUCLEAR POWER REACTORS
Report for Third Quarter 1990
Data through September 1990

OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

PART II

U.S. NUCLEAR REGULATORY COMMISSION

CONTENTS
PART II

NOTE: Sections 1 through 4 are in Part I of this report.

List of Tables
Part II

5. DETAILED DEFINITIONS OF INDICATORS

The definitions of the eight indicators currently in the program are provided below.

5.1 Automatic Scrams While Critical (Scrams)

These are unplanned automatic scrams while the reactor is critical. Examples of the types of scrams included in this indicator are those that result from unplanned transients, equipment failures, spurious signals, or human error. Also included are those that occur during the execution of procedures in which there is a high chance of a scram occurring, but the occurrence of the scram is not planned. Scram data are primarily derived from 10 CFR 50.73 Licensee Event Report (LER) information and are supplemented as necessary from 10 CFR 50.72 reports. The reactor is "critical" if the report so states. Otherwise criticality is determined from the review of the information. Although the definition of this indicator is identical to that of the Institute of Nuclear Power Operations (INPO) definition of their Unplanned Automatic scrams While Critical indicator, the following differences exist (between the two indicators):

- INPO does not count manual turbine trips which directly cause reactor scrams that were affected to protect important equipment or to minimize the effects of transients. The NRC Indicator does count such events.

- INPO considers short-term transient conditions in its determination of whether a unit was critical or not. The NRC determines the actual plant condition at the time of the event.

- INPO industry averages exclude data prior to January 1 of the second full calendar year following commercial operation, and those years where the capacity factor is less than 25 percent or where data elements were not provided for the full period. NRC industry averages exclude only plants in long term shutdown and outliers more than 2.5 standard deviations from the mean.

In addition to the data for this indicator, scrams above 15% power per 1000 critical hours and scrams below 15% power are provided in Tables 9.3 and 9.4, respectively as supplemental information.

5.2 Safety System Actuations (SSA)

Safety system actuations are manual or automatic actuations of certain emergency core cooling system (ECCS) initiation logic circuits and emergency AC power system initiation logic actuations in response to low voltage on a safety bus. This indicator is similar to the corresponding INPO indicator, Unplanned Safety System Actuations. Input for this indicator is derived from LERs and is supplemented by 50.72 reports. In determining what events should be counted by this indicator, the following conventions are used:

- Only actuations of the high pressure injection system, low pressure injection system or safety injection tanks are counted for pressurized water reactors (PWRs). For boiling water reactors (BWRs), only actuations of the high pressure coolant injection system, the low pressure coolant injection system, the high pressure core spray system, or the low pressure core spray system are counted. Actuations of the reactor core isolation cooling system are not counted.

- Actuations of emergency AC power systems that result from loss of power to a safeguards bus are captured primarily on the basis of indications of low voltage signals in the emergency power system.

- Actuations of any of the equipment associated with the specific ECCS or emergency AC power system are considered necessary and sufficient to constitute a data count. For example, if only a valve in a system is commanded to move to its emergency operational position, this is counted as an actuation. A pump does not have to be commanded to go to its emergency mode of operation and fluid does not need to be injected for an occurrence to be counted.

- Only one ECCS actuation is counted in any one occurrence, even if multiple ECCS systems actuate during the occurrence. For example, actuation of both the high pressure injection and the low pressure injection systems at a PWR during the same occurrence counts as only a single ECCS actuation for that occurrence.

- Only one emergency diesel generator (EDG) actuation is counted in any occurrence, even if multiple EDGs actuate during the occurrence. For example, actuation of all four EDGs at a unit counts as only a single actuation for that occurrence.

- Occurrences involving actuations of both an EDG on a dead bus and an ECCS are given a count of two, one for the EDG actuation and one for the ECCS actuation.

- At multi-unit sites that share equipment (e.g., swing EDG or shared buses), actuations are counted and assigned to the unit at which the actuation signal or loss of power originated. If the signal source cannot be associated with one unit, the actuation is assigned to both units.

Although the INPO and NRC definitions are essentially the same, those definitions are applied differently, as follows:

- The INPO indicator requires the actuation of a "major" system component, whereas the NRC indicator requires only the generation of an initiation signal, whether any equipment starts or not.

- INPO industry averages exclude plant data prior to January 1 of the second full year following commercial operation. NRC industry averages exclude only plants in long term shutdown and outliers more than 2.5 standard deviations from the mean.

5.3 Significant Events (SE)

Significant events are those events identified by NRC staff through detailed screening and evaluation of operating experience. The screening process includes the daily review and discussion of all reported operating reactor events, as well as other operational data such as special tests or construction activities. An event identified from the screening process as a candidate significant event is further evaluated to determine if any actual or potential threat to the health and safety of the public is involved. Specific examples of the type of criteria are summarized as follows.

1. Degradation of important safety equipment. Events considered under this classification include situations where there either existed the potential for or was an actual reduction in the operational capability of equipment. One example is the identification of a common cause failure mechanism which could cause redundant components or multiple independent components to fail in response to a test or actual demand signal. This category does not include such items as a missed surveillance test, during which the equipment was subsequently tested and determined to be operable.

2. Unexpected plant response to a transient. Events considered under this classification include situations in which changes in reactor parameters represent unanticipated reductions in margins of safety. For example, a rapid plant cooldown following a reactor trip exacerbated by a balance-of-plant malfunction or an undesirable systems interaction. This category does not include minor differences in predicted and observed conditions that can be reasonably explained by instrument errors or modeling techniques and simplifying assumptions.

3. Degradation of fuel integrity, primary coolant pressure boundary, important associated structures. Events considered under this category include those of similar character to those identified in item 1, above related to the fuel, reactor coolant system (RCS) containment, or important plant structures.

4. Scram with complication. This event is an RPS actuation when critical, followed by an equipment failure, malfunction, or personnel error. The failure, malfunction, or error is generally not to include those that cause the transient that leads to the RPS actuation, or those that directly cause the scram. Failures that both cause the scram and reduce the capability of the mitigating system (e.g., electric power, instrument air, other auxiliary support functions, or deficient procedures) are counted.

Examples of equipment failure/malfunctions include:

   a. Mitigating system failures - Loss of redundancy due to single failures, reduced capacity, or margin. This includes components or trains out of service for maintenance.

b. Failure adding to complexity of event - Erroneous control system responses, electrical switching difficulties, mitigating system and key plant parameter instrumentation malfunctions/failures.

c. Additional event initiators - Stuck-open primary or secondary relief/safety valves, pipe breaks, and operating wrong equipment/trains.

Examples of personnel errors include:

a. Improper control or termination of mitigating system.

b. Misdiagnosis of the event or failure to follow procedures.

In addition to the situations described in items 1 through 4 above, other broad categories considered for significant events include:

5. Unplanned release of radioactivity. Events considered under this category include an unplanned release of radioactivity that had the potential for exceeding or actually exceeded the limits of the Technical Specifications or the Regulations.

6. Operation outside the limits of the Technical Specifications. Events considered under this classification include situations for which plant operation was conducted inconsistent with the license requirements.

   This category applies to risk significant deviations and most likely does not include an incident involving a missed surveillance, small errors in setpoints, or other administratively inoperable conditions.

7. Other. For example, a series of events or recurring incidents that when considered collectively represent ineffective corrective actions, or a deficiency in the plant hardware or administrative programs.

5.4 Safety System Failures (SSF)

Safety system failures are any events or conditions that could prevent fulfillment of the safety function for structures or systems. If a system consists of multiple redundant subsystems or trains, failure of all trains constitutes a safety system failure. Failure of one of two or more trains is not counted as a safety system failure. The definition for the indicator parallels NRC reporting requirements in 10 CFR 50.72 and 10 CFR 50.73. The following list gives the major Safety Systems, subsystems, and components which are monitored for this indicator:

Reactor Trip System and Instrumentation
Engineered Safety Features Instrumentation
Recirculation Pump Trip Actuation Instrumentation
Accident Monitoring Instrumentation
Radiation Monitoring Instrumentation

Reactor Coolant System
Safety Valves
Emergency Core Cooling Systems
Auxiliary (and Emergency) Feedwater System
Reactor Core Isolation Cooling System
Isolation Condenser
Standby Liquid Control System
Main Steam Line Isolation Valves
Component Cooling Water System
Essential or Emergency Service Water
Ultimate Heat Sink
Control Room Emergency Ventilation System
Onsite Emergency AC and DC Power and Associated Distribution
Containment and Containment Isolation
Containment Coolant Systems
Residual Heat Removal Systems
Combustible Gas Control
Fire Detection and Suppression Systems
Low Temperature Overpressure Protection
Spent Fuel Systems
Essential Compressed Air Systems

5.5 Forced Outage Rate (FOR)

Forced outages are those required to be initiated no later than the end of the weekend following the discovery of an off-normal condition. The forced outage rate is the number of forced outage hours divided by the sum of unit service hours (i.e., generator on-line hours) and forced outage hours. This indicator is the same as that of the NRC monthly operating report. The indicator is also the same as that of INPO with the following exceptions:

Although the formula for computing the FOR used by INPO and NRC are the same there are some differences in the application of the formula.

In computing industry averages, INPO uses data for units beginning January 1 of the second full calendar year following full power licensing, and has a requirement that data elements be provided for at least 50% of the time period to be included in the industry average. NRC industry averages exclude only plants in long term shutdown and outliers more than 2.5 standard deviations from the mean.

The data are generally obtained from the monthly operating reports. In some cases when the reports are not available, the data are obtained directly from the licensee.

5.6 Equipment Forced Outages per 1000 Commercial Hours (EFO)

This indicator is the number of forced outages caused by equipment failures per 1000 hours of commercial reactor operation. It is the inverse of the mean time between forced outages caused by equipment failures. The inverse number was adopted to facilitate calculation and display. The source of this data is the same as that for the forced outage rate.

5.7 Collective Radiation Exposure

This indicator is the total radiation dose accumulated by unit personnel. With the exception of Indian Point and Millstone unit values at multi-unit sites are obtained by dividing the station total by the number of units contributing to the exposure. The Indian Point and Millstone sites report individual unit values. This indicator is identical to the one used by INPO.

5.8 Cause Codes

Cause codes are intended to identify possible programmatic deficiencies. The cause code trend data are developed using the NRC's Sequence Coding Search System (SCSS) database. This database is developed from all LERs, and lags other performance indicator data by one quarter.

5.8.1 Administrative Control Problem

Management and supervisory deficiencies that affect plant programs or activities are included in this category. This code covers the implementation of the numerous functional disciplines necessary to operate a nuclear power facility such as operations, maintenance, licensing, design, health physics, etc. Examples of administrative control problems include poor planning, breakdown or lack of adequate management or supervisory control, inadequate interdepartmental coordination, poor communication between supervisors and staff or among departments, deficiencies resulting in weak or incorrect operating, surveillance or testing procedures, and departures from program requirements. The administrative cause code is used if there is evidence that a particular problem is recurring and no effective corrective action has been taken.

Specific examples are:

1. No corrective action after a design problem is discovered.
2. QA/QC problems.
3. Radioactive shipments without labeling.
4. Unauthorized work activity.
5. Unqualified personnel performing plant tasks.
6. 10 CFR 50.59 review not performed.
7. Personnel contamination due to lack of warning signs.
8. Tech. Spec. surveillance not scheduled.
9. Inadequate procedure resulted in inadvertent safety injection.

5.8.2 Licens ⁻ Operator Error

This cause code captures errors of omission or commission by licensed reactor operators during plant activities. These errors may initiate events or may be committed during the course of an event. Licensed operator errors typically occur due to carelessness, lack of experience or training, fatigue, stress, attitude, or poor work habits. Improper supervision is also included whenever the event is the result of improper instructions given by a licensed operator such as an operations supervisor or control room shift supervisor. Not included in this category are instances when administrative control problems, such as incorrect procedures or inadequate planning activities caused the operator to take inappropriate actions.

Examples of licensed operator errors include:

1. Operator withdrew control rods out of order.

2. Operator failed to bypass Scram discharge volume high level trip following a trip. A second trip results.

5.8.3 Other Personnel Error

This cause code captures errors of omission or commission committed by non-licensed personnel involved in plant activities. Included in this category are plant staff (technicians, maintenance workers, equipment operators) and contract personnel. Not included in this category are administrative control problems, such as incorrect procedures or inadequate planning activities, which caused personnel to take inappropriate actions. This cause code is used in conjunction with the maintenance code when an event is the result of a personnel error involved with a maintenance activity.

Examples of other personnel errors include:

1. Test personnel inadvertently shorted two cables while performing test.

2. Maintenance personnel omitted two fasteners while reassembling valve operator.

3. Steps in surveillance procedure performed out of order.

The report addresses plants licensed for operation in the third quarter 1990 or earlier.

5.8.4 Maintenance Problem

The intent of the maintenance cause code is to capture the full range of problems which can be attributed in any way to programmatic deficiencies in the maintenance functional organization. Activities included in this category are maintenance, testing, surveillance, calibration, and radiation protection.

The deficiencies noted within this group generally lead to (1) inadequate or improper upkeep and repair of plant equipment and systems or (2) inadequate programs to monitor equipment and plant performance as necessary to prevent hardware failures.

This is the broadest of all categories and is intended to identify areas where improved plant performance is possible through a program which includes such things as more attention to detail, more frequently performed surveillances, or the use of better trained personnel. The maintenance cause code is used to track the performance of plant management's capability to properly repair failed equipment and to preclude equipment failures through improved preventative maintenance programs. In addition, those hardware failures which cannot be readily attributable to any preventable cause are included in the potential maintenance sub-category.

Maintenance related errors are often coupled with other cause codes such as Personnel or Administrative. The maintenance code is used in conjunction with other codes when an error occurs while a maintenance, surveillance, or test activity is in progress - whether the error was the result of a deficient procedure or a personnel error.

5.8.5 Design/Construction/Installation/Fabrication Problem

This code covers a full range of programmatic deficiencies in the areas of design, construction, installation, and fabrication. It is used in conjunction with other cause codes when necessary to capture all contributors to the event. One exception to the use of additional codes is that since the very nature of the design process implies a personnel error, it is <u>not</u> necessary to code personnel error for the design error itself.

Examples of Design/Construction/Fabrication/Installation problems include:

1. Testable check valve being installed backwards resulted in RHR overpressurization when isolation valve opened.

2. Transmitter sensing lines reversed.

3. Loss of control power due to underrated fuse.

4. Use of wrong seal material resulted in solenoid malfunction.

5. Equipment not qualified for the environment.

6. Defect discovered in pump casing attributed to a manufacturing defect.

The design modification process is an ongoing task at nuclear power plants.

Examples of design modification problems include:

1. Incorrect interpretation of plant drawings led to an incorrect design modification package.

2. Incorrect modification package caused the installation of a component in an unfavorable configuration (e.g., incorrect wiring, incorrect location of instrumentation tubing, valve installed in wrong line, etc.).

3. Post modification test procedure is incorrect due to incorrect information in the design modification package.

The design error codes used in the above examples may be used in conjunction with other cause codes such as "Administrative Control Problem".

5.8.6 Equipment Failures (Electronic Piece-Part or Environmental-Related Failures)

This code is used for spurious failures of electronic piece-parts (such as solid state components) and failures due to meteorological conditions such as lightning, ice, high winds, etc. Generally, it includes spurious or onetime failures. Electronic components which are included in this category are circuit cards, rectifiers, bistable, fuses, capacitors, diodes, resistors, transducers, amplifiers, and computation modules.

This category does not include failures that can be attributed to other problems, such as design/installation/fabrication problems or maintenance problems. Failures of mechanical equipment for which a cause can not be specifically identified are included in the maintenance category.

Examples of electronic piece-part or environmental-related failures include:

1. Flashovers occur in switchyard due to high wind and rain from sudden thunderstorm.

2. Capacitor failure in instrument power supply causes loss of signal from containment leakage detection radiation monitor.

3. Surges from lightning strike close to plant propagate through plant electrical system and causes main generator to trip.

6. PRECAUTIONS

The data for this report, except collective radiation exposure, were obtained from NRC sources and were reviewed by NRC personnel in headquarters and the regions for completeness and accuracy. Collective radiation exposure data are obtained from INPO. All data, with emphasis on the data for the most recent quarter, will be reviewed again in preparation for the next quarterly report in order to ensure that late information, if any, is accounted for.

Although certain NRC performance indicators are the same as those used by INPO as overall performance indicators, the criteria for including the data in the calculations for industry average are not the same in all cases. For example, INPO does not include scram values for the plants with cumulative capacity factors of less than 25% during the time period being considered in calculating the industry average. The NRC includes such plants. Therefore, the industry average values of the common indicator are likely to be different.

Tables 8.1 to 8.113 provide brief descriptions of each performance indicator event for the fourth quarter of 1989 and first, second, and third quarters of 1990.

The forced outage rate is the ratio of forced outage hours divided by the sum of generator online and forced outage hours. For example, if a plant spends 1000 hours in a scheduled outage, 300 hours in a forced outage, and 800 hours online in a quarter, the forced outage rate would be 300/(800+300) = 27%.

Collective radiation exposure is the total radiation dose accumulated by unit personnel. With the exception of Indian Point and Millstone, unit values at multi-unit sites are obtained by dividing the station total by the number of units contributing to the exposure. The Indian Point and Millstone sites report individual unit values. This indicator is identical to the one used by INPO.

Collective radiation exposure and cause code data lag by one quarter.

Rancho Seco ceased commercial operations in June 1989 and Fort St. Vrain ceased all operations in August 1989. Therefore performance indicator data are included for Rancho Seco only through June 1989, and for Fort St. Vrain only through September 1989.

7. COMPUTATIONAL NOTES

The following computational notes describe some of the detailed methods used in calculations and displays for this report.

7.1. The report addresses plants licensed for operation in the third quarter 1990 or earlier.

7.2. NAs are used under the following conditions for newer plants:

1. For Safety System Actuations, Significant Events, Safety System Failures, and cause codes, until a low power license is first received (cause code data for Fort St. Vrain is not collected);

2. For scrams, until critical hours are first reported;

3. For forced outages and equipment forced outages, until commercial operation is declared;

4. For collective radiation exposure, until a full power license has been held for one calendar year; and

5. For cause codes and collective radiation exposure, for the most recent quarter.

Thereafter, numerical values are used. For example, plants shut down for an entire quarter after initial criticality have zeros for scrams rather than NAs.

7.3. NAs are not used in calculating averages and standard deviations. Zeros do count in such calculations.

7.4. For plant summaries (Figures 4.1 - 4.113 of Part I)

1. The "Short Term Trends" chart is based on the following numbers:

   a. The plant's average for the most recent two-quarter period,

   b. The plant's average for the most recent six-quarter period (if there are not at least two quarters of data for this average, no value is displayed on the chart), and

   c. A standard deviation based on the plant's most recent six-quarter period data.

2. The "Deviations from Older Plant Long Term Means" and "Deviations from Newer Plant Means" charts are based on the following numbers:

   a. The plant's average for the most recent six-quarter period (if there are not at least two quarters of data, no value is displayed on the chart),

   b. The average of the most recent six-quarter period for all older plants[1] or newer plants (see 7.6) outliers more than 2.5 standard deviations from the mean on the first calculation and plants in extended shutdown were discarded and the mean and standard deviation were recomputed, and

   c. The standard deviation based on the most recent six-quarter period for older or newer plants (outliers and plants in extended shutdown were discarded as discussed above).

3. The detailed plant analysis charts are based on the following numbers:

   a. Older plant averages are the averages of older plants and exclude plants in long term shutdown and outliers more than 2.5 standard deviations from the mean. The averages for safety system failures and collective radiation exposure are computed separately for BWRs and PWRs.

   b. Newer plant averages are single numbers representing the eight-quarter averages of all plants meeting the definition of a new plant (see 7.6) during the eight-quarter period.

   c. The plant's average for the most recent six-quarter period (if there are not at least two quarters for this, no value is displayed on the chart).

7.5. For certain plants in long-term shutdown, all displays are suppressed in the trends and deviations charts with the exception of the Cause Codes.

7.6. New plants are defined as those plants that have not completed one full calendar year of operation after receiving a full power license.

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1. Older plant averages for Ft. St. Vrain includes all older plants.

7.7. Beginning with this report, the following changes have been made:

1. The older plant average displayed on the detailed plant analysis charts in Part I no longer reflect a straight industry average for the quarter. Instead, it represents the six quarter moving average for the older plants.

2. The 'Power' field in the event description section of Part II has been renamed 'Power History' and provides more accurate information about the status of the plant at the time of the event. This change begins with the third quarter 1990 events.

3. The maintenance Cause Code sub-categories have been removed from Part II of the report.

4. Industry average information has been added to table 9.1 in Part II of the report.

5. All data for Shoreham has been removed from the report.

8. DESCRIPTIONS OF PLANT EVENTS

FOURTH QUARTER OF 1989

AND FIRST, SECOND, AND THIRD QUARTERS OF 1990

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TABLE 8.1

ARKANSAS 1

PI EVENTS FOR 89-4

SCRAM 11/10/89 LER# 31389037 50.72#: 17073 POWER: 74
DESC : A TECHNICIAN SHORTED A RPS CHANNEL POWER SUPPLY DURING A RPS CHANNEL CALIBRATION, CAUSING A REACTOR TRIP.

SCRAM 11/14/89 LER# 31389038 50.72#: 17105 POWER: 74
DESC : A REACTOR TRIP OCCURRED ON HIGH REACTOR COOLANT SYSTEM PRESSURE AFTER AN OPERATOR CLOSED THE MAIN FEEDWATER ISOLATION VALVE BY MISTAKE DURING A SURVEILLANCE TEST.

SSF 11/16/89 LER# 31389039 50.72#: 17119 POWER: 5
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE LATCH MECHANISM OF A PENETRATION ROOM DOOR WAS DISCOVERED MISSING AND THE DOOR'S WEATHER STRIPPING WAS SEVERELY DEGRADED. THIS CONDITION, CAUSED BY EXTENSIVE USE, COULD HAVE PREVENTED THE VENTILATION SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

SSA 12/05/89 LER# 31389040 50.72#: 17273 POWER: 0
DESC : AN AUTO START AND LOADING OF THE NUMBER 2 DIESEL GENERATOR OCCURRED WHEN BOTH THE TIE AND THE FEEDER BREAKER FOR THE "B6" 480v BUS WERE OPENED DURING RECOVERY FROM MAINTENANCE.

SSA 12/06/89 LER# 31389040 50.72#: 17285 POWER: 0
DESC : WHILE RESTORING THE "A3" 480V BUS AFTER AN INSPECTION OF THE "X5" TRANSFORMER, THE BREAKER FEEDING THE "B5" BUS OPENED, AND THE DIESEL STARTED AND LOADED.

SSF 12/08/89 LER# 31389043 50.72#: 17332 POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR VESSEL SYSTEM
DESC : A SIGNIFICANT DEGRADATION OF THE RCS PRESSURE BOUNDARY WAS DISCOVERED. THE GRADUAL AGE DETERIORATION OF GASKET MATERIAL RESULTED IN A LEAK AT A CRDM FLANGE, WHICH CAUSED SEVERE CORROSION OF THE CRDM-REACTOR VESSEL FLANGE RETAINING HARDWARE (NUT RING).

SE 12/08/89 LER# 31389043 50.72#: 17332 POWER: 0
DESC : POTENTIAL DEGRADATION OF THE RCS BOUNDARY. SEVERE BORIC ACID CORROSION. CORROSION SEVERE ENOUGH TO CAUSE TWO OF EIGHT BOLTS ON CRDM TO BECOME LOOSE.

SSF 12/14/89 LER# 31389044 50.72#: 17358 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : ENGINEERS IDENTIFIED INCONSISTENCIES BETWEEN ORIGINAL PLANT DESIGN CALCULATIONS AND EXISTING PLANT CONDITIONS RELATING TO POST LOCA CONTAINMENT SUMP WATER LEVELS. IT WAS DETERMINED THAT ADEQUATE NPSH FOR THE RHR PUMPS CAN'T BE ENSURED.

SSF 12/14/89 LER# 31389044 50.72#: 17358 POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : ENGINEERS IDENTIFIED INCONSISTENCIES BETWEEN ORIGINAL PLANT DESIGN CALCULATIONS AND EXISTING PLANT CONDITIONS RELATING TO POST LOCA CONTAINMENT SUMP WATER LEVELS. IT WAS DETERMINED THAT ADEQUATE NPSH FOR THE CONTAINMENT SPRAY PUMPS CAN'T BE ENSURED.

SCRAM 12/28/89 LER# 31389048 50.72#: 17458 POWER: 40
DESC : OPERATOR SECURED 'B' VERSUS 'A' MFP, CAUSING TOTAL LOSS OF MFW WHEN TROUBLESHOOTING PROBLEM WITH 'A' MFP CAUSING REACTOR SCRAM.

PI EVENTS FOR 90-1

SSF 02/28/90 LER# 31390002 50.72#: 17853 POWER: 80
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : A DESIGN ERROR WAS DISCOVERED THAT COULD HAVE RESULTED IN FAILURE OF THE CASING DRAIN VALVES OF THE P-36A AND B HIGH PRESSURE INJECTION PUMPS AND SUBSEQUENT RADIOACTIVE RELEASES. THE VALVES WERE NOT DESIGNED TO WITHSTAND MAXIMUM SYSTEM PRESSURE.

SSF 02/28/90 LER# 31390001 50.72#: 17851 POWER: 80
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : A LOSS OF REACTOR BUILDING INTEGRITY WAS CAUSED BY A REACTOR BUILDING COOLING COIL LEAK IN CONJUNCTION WITH A LEAKING COOLING COIL ISOLATION/CONTAINMENT ISOLATION VALVE. THE COIL LEAK WAS CAUSED BY LOCALIZED CORROSION PITTING.

TABLE 8.1 (CONT.)

ARKANSAS 1

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 09/21/90 LER# 50.72#: 19435
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED TIME PERIOD. DISCOVERED AT 80% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CREV ISOLATION DAMPERS WERE DECLARED INOPERABLE BECAUSE OF EXCESSIVE BACK LEAKAGE THROUGH THE INSTRUMENT AIR CHECK VALVES. THE LICENSEE PERFORMED THIS LEAK TEST BECAUSE OF A REGION 4 OPERATIONAL SAFETY INSPECTION TEAM QUERY.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.92	0.57	0.00	1.96	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	3	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	2	0	0	0
SIGNIFICANT EVENTS	2	1	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	2	2	0	4	4	2	0	1
FORCED OUTAGE RATE (%)	38	7	21	1	7	5	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.38	1.92	0.57	0.91	0.00	1.44	0.00	0.00
CRITICAL HOURS	419	520	1744	2208	1527	2085	2174	2208
COLLECTIVE RADIATION EXPOSURE	242	64	33	30	328	16	16	NA
CAUSE CODES:								
ADMINISTRATIVE	8	3	4	2	7	0	2	NA
LICENSED OPERATOR	4	1	1	1	2	0	0	NA
OTHER PERSONNEL	5	1	3	0	6	0	1	NA
MAINTENANCE	7	3	8	2	15	1	1	NA
DESIGN/INSTALLATION/FABRICATION	6	9	2	3	2	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.2

ARKANSAS 2

PI EVENTS FOR 89-4

SSA 10/17/89 LER# 36889018 50.72#: 16862 POWER: 0
DESC : A TECHNICIAN CLOSED THE PLANT PROTECTION SYSTEM CHANNEL 2 POWER SUPPLY CIRCUIT BREAKER CAUSING ACTUATIONS. NO SAFETY INJECTION.

SSA 11/14/89 LER# 36889022 50.72#: 17125 POWER: 0
DESC : A PROCEDURAL INADEQUACY DURING POST CORRECTIVE MAINTENANCE TESTING RESULTED IN A DIESEL START SIGNAL. THE DIESEL WAS DEFEATED FROM STARTING SO IT DID NOT START.

SSF 11/16/89 LER# 31389039 50.72#: 17119 POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE LATCH MECHANISM OF A PENETRATION ROOM DOOR WAS DISCOVERED MISSING AND THE DOOR'S WEATHER STRIPPING WAS SEVERELY DEGRADED. THIS CONDITION, CAUSED BY EXTENSIVE USE, COULD HAVE PREVENTED THE VENTILATION SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

SCRAM 12/31/89 LER# 36889024 50.72#: 17471 POWER: 100
DESC : A HIGH SG LEVEL, CAUSED BY A FAULTY CONTROL SIGNAL TO THE MFW PUMPS (DUE TO A LOOSE TERMINAL ON AN ELECTRICAL MODULE IN THE 'B' FEEDWATER CONTROL CABINET), CAUSED A REACTOR TRIP.

PI EVENTS FOR 90-1

SSF 02/12/90 LER# 36890004 50.72#: 17750 POWER: 100
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : A BACKWATER VALVE WAS DISCOVERED MISSING FROM ONE OF THE EMERGENCY FEEDWATER PUMP ROOMS. THIS VIOLATED THE WATERTIGHT INTEGRITY OF THE COMPARTMENT AND COULD HAVE PREVENTED THE SYSTEM FROM FULFILLING ITS SAFETY FUNCTION.

PI EVENTS FOR 90-2

SCRAM 06/26/90 LER# 36890014 50.72#: 18777 POWER: 30
DESC : REACTOR TRIP OCCURRED DUE TO CEA AND CPC SENSOR FAILURES. THESE FAILURES CAUSED THE CEA CALCULATOR PENALTY FACTORS AND THE CPC LOW DNBR/HIGH LOCAL POWER DENSITY TRIPS.

PI EVENTS FOR 90-3

SSA 07/16/90 LER# 36890016 50.72#: 18905 PWR HIST: COLD SHUTDOWN
DESC : A TECHNICIAN, DURING AN UNDERVOLTAGE TEST OF 4160VAC VITAL BUS #2A4, LIFTED THE WRONG LEADS CAUSING AN EDG TO START AND LOAD TO BUS #2A4.

SSF 07/18/90 LER# 36890017 50.72#:
PWR HIST: ALL MODES UP TO 100% POWER. ORIGINAL CONSTRUCTION ERROR DISCOVERED ON 7/18/90.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN INOPERABLE FIRE BARRIER PENETRATION SEAL WAS DISCOVERED, WHICH EXISTED SINCE ORIGINAL CONSTRUCTION. THIS WAS NOT IDENTIFIED IN SEVERAL PREVIOUS INSPECTIONS PERFORMED BY INADEQUATELY TRAINED PERSONNEL.

SCRAM 08/21/90 LER# 36890019 50.72#: 19164 PWR HIST: POWER OPERATIONS AT 100%
DESC : AUTOMATIC SCRAM OCCURRED WHEN THE 'B' MSIV WENT CLOSED DUE TO A FAILED AIR SOLENOID VALVE. THE CAUSE OF THE FAILURE COULD NOT BE DETERMINED.

SSF 09/21/90 LER# 50.72#: 19435
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CREV ISOLATION DAMPERS WERE DECLARED INOPERABLE BECAUSE OF EXCESSIVE BACK LEAKAGE THROUGH THE INSTRUMENT AIR CHECK VALVES. THE LICENSEE PERFORMED THIS LEAK TEST BECAUSE OF A REGION 4 OPERATIONAL SAFETY INSPECTION TEAM QUERY.

TABLE 8.2 (CONT.)

ARKANSAS 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.64	0.00	0.95	0.00	0.46	0.52
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	1	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	4	0	2	0	0	1
SIGNIFICANT EVENTS	0	0	2	1	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	1	1	1	0	2
FORCED OUTAGE RATE (%)	1	8	29	3	0	10	2	3
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.50	1.29	0.00	0.95	0.51	0.93	1.03
CRITICAL HOURS	2181	2000	1553	2001	1057	1944	2158	1935
COLLECTIVE RADIATION EXPOSURE	242	64	33	30	228	16	16	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	4	1	5	7	4	NA
LICENSED OPERATOR	1	0	1	0	2	0	0	NA
OTHER PERSONNEL	1	1	2	1	5	2	1	NA
MAINTENANCE	5	3	8	0	13	9	5	NA
DESIGN/INSTALLATION/FABRICATION	0	2	3	3	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.3

BEAVER VALLEY 1

PI EVENTS FOR 89-1

SSA 11/12/89 LER# 33489013 50.72#: 17080 POWER: 0
DESC : THE "A" NORMAL 4KV BUS TRIPPED ON PHASE "B" OVERCURRENT. THE "1" DIESEL STARTED AND LOADED. THE PHASE "B" OVERCURRENT OCCURRED DUE TO AN INCORRECT TAP SETTING CALIBRATION.

SSA 12/13/89 LER# 33489015 50.72#: 17337 POWER: 0
DESC : THE SOLID STATE PROTECTION SYSTEM TEST SWITCH WAS RETURNED TO 'NORMAL' FROM 'TEST' OUT OF SEQUENCE RESULTING IN A SAFETY INJECTION SIGNAL.

SCRAM 12/27/89 LER# 33489018 50.72#: 17445 POWER: 29
DESC : THE 480V POWER FEEDER BREAKER TO THE ROD CONTROL POWER TRIPPED DUE TO A FAULTY POWER SENSOR, CAUSING A NEGATIVE RATE SCRAM.

PI EVENTS FOR 90-1

SCRAM 03/30/90 LER# 33490007 50.72#: 18105 POWER: 100
DESC : THE 'C' FRV FAILED CLOSED, CAUSING A STEAM FLOW/FEED FLOW MISMATCH AND SUBSEQUENT REACTOR SCRAM.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.94	0.47	0.00	6.72	0.48	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	1	0	1	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	9	2	4	0	82	2	5	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.50	0.47	0.00	0.00	6.72	0.96	0.00	0.52
CRITICAL HOURS	2014	2119	2109	1510	149	2086	2095	1913
COLLECTIVE RADIATION EXPOSURE	13	59	133	198	299	8	8	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	1	0	1	1	0	NA
LICENSED OPERATOR	2	1	0	1	0	1	0	NA
OTHER PERSONNEL	0	0	2	0	3	1	0	NA
MAINTENANCE	2	3	4	2	8	4	2	NA
DESIGN/INSTALLATION/FABRICATION	1	0	1	2	0	4	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.4

BEAVER VALLEY 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SCRAM 07/02/90 LER# 41290008 50.72#: 18811 PWR HIST: POWER OPERATIONS AT 90%
DESC : THE REACTOR TRIPPED DUE TO A TURBINE TRIP. THE GENERATOR TRIPPED DUE TO A 345K LEADS PROTECTION SIGNAL.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.69
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	1	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	8	41	14	0	0	0	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.59	1.99	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2209	1695	502	1902	2209	2160	2183	1451
COLLECTIVE RADIATION EXPOSURE	NA	59	133	198	299	8	8	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	5	1	2	2	2	NA
LICENSED OPERATOR	3	1	2	0	0	0	0	NA
OTHER PERSONNEL	0	1	5	0	1	2	1	NA
MAINTENANCE	3	7	12	3	2	3	2	NA
DESIGN/INSTALLATION/FABRICATION	2	1	0	1	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.5

BIG ROCK POINT

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/06/90 LER# 15589006 50.72#: POWER: UNK
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR FIRE BARRIER PENETRATION SEAL DEFICIENCIES WERE FOUND.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 07/22/90 LER# 15590003 50.72#: 18941
PWR HIST: PLANT HAD RECENTLY SHUTDOWN FROM AT OR NEAR 100% POWER.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR RECIRCULATION SYSTEM
DESC : A PINHOLE LEAK WAS DISCOVERED IN THE REACTOR COOLANT PRESSURE BOUNDARY. THE PROBABLE CAUSE OF THE DEFECT IS RELATED TO THE CONFIGURATION OF A THERMAL SLEEVE FILET WELD BEING TOO CLOSE TO A BUTT WELD.

SSF 08/03/90 LER# 15590005 50.72#: 19032
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 17% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE CORE SPRAY SYSTEM
DESC : THE INBOARD CORE SPRAY VALVE WAS DECLARED INOPERABLE. DURING SURVEILLANCE, THE VALVE OPERATED ONLY INTERMITTENTLY. THE LICENSEE SUSPECTS THE PROBLEM IS ASSOCIATED WITH A TORQUE SWITCH.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.95	0.00	0.00	0.87	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	2	0	1	0	2
FORCED OUTAGE RATE (%)	6	0	0	3	8	0	0	21
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.95	0.00	0.00	0.87	0.49	0.00	0.00	1.25
CRITICAL HOURS	2096	2063	1678	1143	2037	2160	2183	1606
COLLECTIVE RADIATION EXPOSURE	11	16	59	60	13	9	13	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	0	2	0	1	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	0	1	3	0	0	0	NA
MAINTENANCE	2	2	1	3	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	1	0	0	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.6

BRAIDWOOD 1

PI EVENTS FOR 89-4

SSA 10/30/89 LER# 45689014 50.72#: 16971 POWER: 0
DESC : IT IS BELIEVED A CONTRACT EMPLOYEE BUMPED THE PRESSURIZER LOW PRESSURE SAFETY INJECTION BLOCK SWITCH, CAUSING ESF ACTUATIONS. THE SAFETY INJECTION SYSTEM WAS OUT OF SERVICE, SO NO INJECTION OCCURRED.

SE 12/01/89 LER# 45689016 50.72#: 17235 POWER: 0
DESC : 68,000 GALLONS OF RCS WATER LEAKED THROUGH THE SUCTION RELIEF VALVE ON THE "B" TRAIN OF THE RHR SYSTEM.

PI EVENTS FOR 90-1

SCRAM 01/12/90 LER# 45690001 50.72#: 17541 POWER: 99
DESC : DURING PERFORMANCE OF AN ELECTRICAL GROUND ISOLATION PROCEDURE ON A DC BUS, THE MAIN GEN. PROTECTION RELAY CABINET BKP WAS OPENED PER A FAULTY PROCEDURE, CAUSING THE TURBINE GOV. AND REHEAT INTERCEPT VALVES TO CLOSE. THE RX TRIPPED ON LOW SG LEVEL.

PI EVENTS FOR 90-2

SSF 04/16/90 LER# 45790004 50.72#: 18224 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE 2A EDG WAS DECLARED INOPERABLE BECAUSE OF A FAILED DROPPING RESISTOR IN THE GOVERNOR UNIT. SIMILAR FAILURES HAVE OCCURRED AT BRAIDWOOD 1 AND BYRON. THE RESISTOR IS BEING EVALUATED FOR 10CFR PART 21 APPLICABILITY.

SCRAM 06/08/90 LER# 45690008 50.72#: 18654 POWER: 99
DESC : A LOSS OF POWER TO THE CRD SYSTEM CAUSED A REACTOR TRIP ON HIGH NEGATIVE FLUX RATE. A LIGHTNING STRIKE IS BELIEVED TO BE THE CAUSE OF THE POWER LOSS.

PI EVENTS FOR 90-3

SSF 07/11/90 LER# 45690010 50.72#: 18875
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 78% POWER.
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT FAN COOLING SYSTEM
DESC : WITH THE "B" TRAIN OF THE REACTOR CONTAINMENT FAN COOLING SYSTEM INOPERABLE FOR MAINTENANCE, THE "A" AND "C" TRAINS WERE RENDERED INOPERABLE WHEN THEIR POWER SUPPLY BUS WAS DEENERGIZED IN ORDER TO REMOVE A FAILED CREV SYSTEM BREAKER THAT WAS SMOKING.

SSF 09/06/90 LER# 50.72#: 19291
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 99% POWER.
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ENGINEERING REVIEWS ASSOCIATED WITH GENERIC LETTER 89-10 IDENTIFIED A DISCREPANCY REGARDING THE ABILITY OF THE "AF013" VALVES TO ISOLATE AUX FEED FLOW TO A FAULTED SG. FAILURE TO ISOLATE COULD AFFECT THE STEAM LINE BREAK ANALYSIS OF UFSAR SECT. 15.

SCRAM 09/29/90 LER# 50.72#: 19497 PWR HIST: POWER OPERATIONS AT 99%
DESC : AUTOMATIC REACTOR TRIP OCCURRED ON SAFETY INJECTION WHEN THERE WAS NO SI SIGNAL PRESENT.

SSA 09/29/90 LER# 50.72#: 19497 PWR HIST: POWER OPERATIONS AT 99%
DESC : SAFETY INJECTION ACTUATED FOR UNKNOWN REASONS CAUSING A REACTOR TRIP. THERE WAS NO SI SIGNAL PRESENT.

SSA 09/30/90 LER# 50.72#: 19500 PWR HIST: HOT SHUTDOWN
DESC : SI SIGNAL GENERATED A REACTOR TRIP AND SI TO CORE FOR TWO MINUTES. PERSONNEL ERROR DURING A SURVEILLANCE TEST CAUSED THE SI SIGNAL.

TABLE 8.6 (CONT.)

BRAIDWOOD 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.47	0.61	0.00	0.67	0.00	0.47	0.46	0.52
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	0	1	0	1	1	1
SAFETY SYSTEM ACTUATIONS	1	0	1	0	1	0	0	2
SIGNIFICANT EVENTS	0	0	1	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	1	2
FORCED OUTAGE RATE (%)	7	4	4	2	0	2	1	13
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.95	1.21	0.51	0.00	0.00	0.00	0.00	1.04
CRITICAL HOURS	2108	1648	1961	1494	484	2137	2159	1920
COLLECTIVE RADIATION EXPOSURE	5	50	8	65	173	29	56	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	0	1	6	2	3	NA
LICENSED OPERATOR	0	0	1	0	0	1	0	NA
OTHER PERSONNEL	1	0	0	0	4	0	0	NA
MAINTENANCE	3	3	2	2	9	3	3	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	3	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	1	NA

TABLE 8.7

BRAIDWOOD 2

PI EVENTS FOR 89-4

SSF 11/10/89 LER# 45789007 50.72#: 17088 POWER: 98
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : WHILE PERFORMING MAINTENANCE ON THE AFW "B" TRAIN ESW SUCTION VALVES, THE "A" TRAIN CABINET WAS INADVERTENTLY PLACED IN THE TEST MODE. THE "B" TRAIN PUMP WAS IN "PULL TO LOCK" AT THAT TIME. THE PROCEDURE WAS CONFUSING TO OPERATORS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/06/90 LER# 45790003 50.72#: 18157 POWER: 0
DESC : SOLID-STATE PROTECTION SYSTEM SWITCHES WERE RETURNED TO NORMAL WITHOUT INHIBITING THE LOW STEAMLINE PRESSURE AND THE LOW PRESSURIZER PRESSURE SIGNALS. THIS CAUSED AN SI INITIATION SIGNAL.

SSF 04/16/90 LER# 45790004 50.72#: 18224 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE 2A EDG WAS DECLARED INOPERABLE BECAUSE OF A FAILED DROPPING RESISTOR IN THE GOVERNOR UNIT. SIMILAR FAILURES HAVE OCCURRED AT BRAIDWOOD 1 AND BYRON. THE RESISTOR IS BEING EVALUATED FOR 10CFR PART 21 APPLICABILITY.

SCRAM 06/09/90 LER# 45790010 50.72#: 18664 POWER: 15
DESC : THE '2B' SG FEED REGULATING BYPASS VALVE FAILED TO OPEN ON DEMAND DURING POWER ASCENSION. A LOW SG LEVEL RESULTED CAUSING A REACTOR SCRAM.

PI EVENTS FOR 90-3

SSF 09/06/90 LER# 50.72#: 19291
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 99% POWER.
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ENG.NEERING REVIEWS ASSOCIATED WITH GENERIC LETTER 89-10 IDENTIFIED A DISCREPANCY REGARDING THE ABILITY OF THE "AF013" VALVES TO ISOLATE AUX FEED FLOW TO A FAULTED SG. FAILURE TO ISOLATE COULD AFFECT THE STEAM LINE BREAK ANALYSIS OF UFSAR SECT. 15.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.11	0.00	0.46	0.94	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	0	0	0	0	0	1	0
TOTAL SCRAMS	3	0	1	2	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	1	0	1	1
FORCED OUTAGE RATE (%)	18	0	2	4	0	0	18	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.98	0.00	0.46	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	1807	1127	2152	2131	2209	1777	710	2208
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	29	56	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	0	0	4	1	2	NA
LICENSED OPERATOR	0	0	0	0	1	2	1	NA
OTHER PERSONNEL	1	1	0	0	1	0	0	NA
MAINTENANCE	4	3	1	1	2	1	7	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	1	2	0	1	NA
EQUIPMENT FAILURE	1	0	0	1	0	0	0	NA

TABLE 8.8

BROWNS FERRY 1

PI EVENTS FOR 89-4

SSF 11/02/89 LER# 25989025 50.72#: 11429 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THREE CONDITIONS WERE DISCOVERED, WHEREBY THE EMERGENCY DC POWER SUPPLY SYSTEM MIGHT NOT FUNCTION CORRECTLY. TWO COULD RESULT IN EDG OVERLOAD AND THE OTHER INVOLVES THE INABILITY TO CLOSE THE INBOARD AND OUTBOARD RHR ISOLATIONS.

PI EVENTS FOR 90-1

SSF 02/01/90 LER# 25990003 50.72#: POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : DUE TO THE INOPERABILITY OF TWO SBGT TRAINS, THE SECONDARY CONTAINMENT REQUIREMENTS WERE NOT SATISFIED. ONE TRAIN WAS INOPERABLE FOR MAINTENANCE AND ANOTHER BECAUSE OF A FAILED-SHUT FAN INLET DAMPER.

PI EVENTS FOR 90-2

SSA 04/29/90 LER# 25990006 50.72#: 18357 POWER: 0
DESC : A WIRING CONNECTION CHANGE, PER INADEQUATE CONNECTION DIAGRAM, CAUSED SHUTDOWN BOARD 'C' TO DEENERGIZE. DG 'C' AUTO STARTED AND LOADED THE BUS.

SSA 06/01/90 LER# 25990004 50.72#: 18610 POWER: 0
DESC : A, C AND D EDG'S AUTO STARTED WHEN WATER DRIPPED INTO THE ECCS ANALOG TRIP UNIT CABINETS AND CAUSED SHORTS AND TRIP SIGNALS. CORE SPRAY INBOARD INJECTION VALVE OPENED ON LOW REACTOR WATER LEVEL AND HIGH DRYWELL PRESSURE.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	3	1	0	0	0	0	2	0
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	3	3	1	1	0	0
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	87	53	35	38	82	86	148	NA
CAUSE CODES:								
ADMINISTRATIVE	11	9	5	8	2	3	3	NA
LICENSED OPERATOR	3	3	0	1	0	1	0	NA
OTHER PERSONNEL	6	2	3	3	2	1	3	NA
MAINTENANCE	20	10	6	9	5	5	7	NA
DESIGN/INSTALLATION/FABRICATION	6	7	4	3	2	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.9

BROWNS FERRY 2

PI EVENTS FOR 89-4

SSF 11/02/89 LER# 25989025 50.72#: 11429 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THREE CONDITIONS WERE DISCOVERED, WHEREBY THE EMERGENCY DC POWER SUPPLY SYSTEM MIGHT NOT FUNCTION CORRECTLY. TWO COULD RESULT IN EDG OVERLOAD AND THE OTHER INVOLVES THE INABILITY TO CLOSE THE INBOARD AND OUTBOARD RHR ISOLATIONS.

SSF 12/21/89 LER# 26089029 50.72#: POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : THE RESIDUAL HEAT REMOVAL SERVICE WATER SYSTEM WAS INOPERABLE. TWO OF THREE RHRSW PUMPS WERE INOPERABLE BECAUSE THEIR ASSOCIATED ROOM SUMP PUMPS WERE INOPERABLE. ONE SUMP PUMP WAS UNDERGOING MODIFICATION AND THE OTHER'S SUMP LEVEL SWITCH FAILED.

PI EVENTS FOR 90-1

SSF 02/01/90 LER# 25990003 50.72#: POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : DUE TO THE INOPERABILITY OF TWO SBGT TRAINS, THE SECONDARY CONTAINMENT REQUIREMENTS WERE NOT SATISFIED. ONE TRAIN WAS INOPERABLE FOR MAINTENANCE AND ANOTHER BECAUSE OF A FAILED-SHUT FAN INLET DAMPER.

PI EVENTS FOR 90-2

SSF 04/26/90 LER# 25990007 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AS A RESULT OF A PERSONNEL ERROR, THE HIGH PRESSURE FIRE PROTECTION SYSTEM WATER SUPPLY WAS ISOLATED TO SOME UNIT 2 AND 3 BUILDINGS. NON-LICENSED PERSONNEL MADE THE ERROR WHILE ATTEMPTING TO ISOLATE A RUPTURED POTABLE WATER PIPE.

PI EVENTS FOR 90-3

SSA 09/16/90 LER# 50.72#: 19383 PWR HIST: REFUELING
DESC : TECHNICIANS REMOVED A LEAD FOR REACTOR VESSEL LOW WATER LEVEL INDICATION CAUSING A SIGNAL TO BE SENT RESULTING IN ACTUATION SIGNALS FOR CORE SPRAY, LPCI, AND ALL 4 EDG'S. ONLY 'D' EDG STARTED.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	2	1	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	4	3	2	1	1	0
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	87	53	35	38	82	86	148	NA
CAUSE CODES:								
ADMINISTRATIVE	12	10	9	8	2	4	3	NA
LICENSED OPERATOR	3	3	0	1	0	1	0	NA
OTHER PERSONNEL	10	3	4	7	2	1	2	NA
MAINTENANCE	22	12	12	12	7	6	6	NA
DESIGN/INSTALLATION/FABRICATION	6	8	4	3	2	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.10

BROWNS FERRY 3

PI EVENTS FOR 89-4

SSF 11/02/89 LER# 25989025 50.72#: 11429 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THREE CONDITIONS WERE DISCOVERED WHEREBY THE EMERGENCY DC POWER SUPPLY SYSTEM MIGHT NOT FUNCTION CORRECTLY. TWO COULD RESULT IN EDG OVERLOAD, AND THE OTHER INVOLVES THE INABILITY TO CLOSE THE INBOARD AND OUTBOARD RHR ISOLATIONS.

PI EVENTS FOR 90-1

SSF 02/01/90 LER# 25990003 50.72#: POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : DUE TO THE INOPERABILITY OF TWO SBGT TRAINS, THE SECONDARY CONTAINMENT REQUIREMENTS WERE NOT SATISFIED. ONE TRAIN WAS INOPERABLE FOR MAINTENANCE AND ANOTHER BECAUSE OF A FAILED-SHUT FAN INLET DAMPER.

PI EVENTS FOR 90-2

SSF 04/26/90 LER# 25990007 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AS A RESULT OF A PERSONNEL ERROR, THE HIGH PRESSURE FIRE PROTECTION SYSTEM WATER SUPPLY WAS ISOLATED TO SOME UNIT 2 AND 3 BUILDINGS. NON-LICENSED PERSONNEL MADE THE ERROR WHILE ATTEMPTING TO ISOLATE A RUPTURED POTABLE WATER PIPE.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	3	3	1	1	1	0
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	87	53	35	38	82	86	148	NA
CAUSE CODES:								
ADMINISTRATIVE	10	7	4	7	2	3	2	NA
LICENSED OPERATOR	3	3	0	1	0	1	0	NA
OTHER PERSONNEL	6	3	3	3	2	1	2	NA
MAINTENANCE	19	9	5	9	5	5	5	NA
DESIGN/INSTALLATION/FABRICATION	6	7	4	3	2	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.11

BRUNSWICK 1

PI EVENTS FOR 89-4

SSF 10/11/89 LER# 32589020 50.72#: 16820 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO A LOSS OF CONTROL POWER TO THE HPCI [illegible]ECTION VALVE. A BREAKER COMPARTMENT INDICATOR LIGHT BULB WAS BEING REPLACED WHEN A SHORT TO GROUND CAUSED THE CONTROL POWER FUSE TO BLOW.

SSA 10/22/89 LER# 32589021 50.72#: 16910 POWER: 100
DESC : A TECHNICIAN PLACED METER LEADS ACROSS THE WRONG TERMINALS WHILE CHECKING FOR VOLTAGE AND RESISTANCE CAUSING A DIVISION 1 LOCA INITIATION SIGNAL. NO SI INJECTED TO THE VESSEL.

PI EVENTS FOR 90-1

SSF 01/02/90 LER# 32590001 50.72#: POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : WITH THE RCIC SYSTEM OUT OF SERVICE FOR MAINTENANCE, THE HPCI SYSTEM WAS RENDERED INOPERABLE FOR TWO MIN. AN OPERATOR FAILED TO USE P AND DRAWINGS WHEN DEENERGIZING PORTIONS OF THE RCIC SYSTEM AND INADVERTENTLY DEENERGIZED THE HPCI INVERTER.

SSF 03/02/90 LER# 32590003 50.72#: 17880 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE TO ISOLATE A STEAM LEAK LOCATED ON THE STEAM SUPPLY DRAIN LINE. THE INBOARD AND OUTBOARD STEAM SUPPLY ISOLATION VALVES HAD TO BE SHUT. SEVERE STEAM EROSION CAUSED THE FAILURE OF A CARBON STEEL PIPE ELBOW.

PI EVENTS FOR 90-2

SSF 05/11/90 LER# 32590007 50.72#: 18442 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE HABITABILITY DESIGN BASIS OF THE CONTROL ROOM MAY NOT BE SATISFIED DURING A DESIGN BASIS CHLORINE EVENT BECAUSE OF A DESIGN ERROR. THE CONTROL BUILDING EMERGENCY AIR FILTRATION INLET DAMPER DOES NOT FAIL CLOSED (AS REQUIRED) ON A LOSS OF POWER.

SSF 05/14/90 LER# 32590008 50.72#: 18468 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE WHEN CONTROL POWER WAS LOST TO THE MINIMUM FLOW BYPASS VALVE TO THE SUPPRESSION POOL. A FAULTY LIGHT BULB CAUSED A CONTROL POWER FUSE TO BLOW.

SE 05/20/90 LER# 50.72#: 18530 POWER: 100
DESC : 22 OF 47 LICENSED OPERATORS AND 7 OF 8 CREWS FAILED EITHER THE REQUALIFICATION EXAMINATION OR THE OPERATIONAL EVALUATION.

SSF 05/26/90 LER# 32590007 50.72#: 18577 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM WAS INOPERABLE. THE INLET DAMPER, WHICH IS REQUIRED TO BE WIRED SHUT, WAS FOUND 30 DEGREES OPEN DURING A SURVEILLANCE. A MISSING SET SCREW WAS THE CAUSE OF THE EVENT.

PI EVENTS FOR 90-3

SCRAM 09/27/90 LER# 50.72#: 19471 PWR HIST: POWER OPERATIONS AT 22%
DESC : A REACTOR SCRAM OCCURRED DURING TESTING WHEN THE EHC SYSTEM FAILED TO MAINTAIN REACTOR PRESSURE. A HIGH PRESSURE SCRAM OCCURRED. THE CAUSE IS CURRENTLY UNKNOWN.

TABLE 8.11 (CONT.)

BRUNSWICK 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.47
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	5	2	0	0	1	2	3	0
FORCED OUTAGE RATE (%)	5	0	26	7	0	0	25	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.04	0.00	0.66	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	962	0	1519	2070	2161	2160	1672	2116
COLLECTIVE RADIATION EXPOSURE	316	258	30	104	471	188	32	NA
CAUSE CODES:								
ADMINISTRATIVE	5	4	5	1	4	3	2	NA
LICENSED OPERATOR	4	4	1	0	0	0	0	NA
OTHER PERSONNEL	3	1	1	0	2	0	2	NA
MAINTENANCE	10	5	10	1	4	2	5	NA
DESIGN/INSTALLATION/FABRICATION	4	3	0	2	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.12

BRUNSWICK 2

PI EVENTS FOR 89-4

SSA 10/10/89 LER# 32489017 50.72#: 16814 POWER: 0
DESC : A PROCEDURAL INADEQUACY ALLOWED A REACTOR WATER LOW-LEVEL INSTRUMENT TO BE VALVED INTO THE SYSTEM FOLLOWING CALIBRATION W/O EQUALIZING THE PRESSURE BETWEEN THE REFERENCE LINE AND THE INSTRUMENT, CAUSING PRESSURE PERTURBATIONS AND AN ECCS ACTUATION.

SSA 12/10/89 LER# 3258[illegible]4 50.72#: 17308 POWER: 0
DESC : WHILE PREPARING FOR MAINTENANCE ON THE AUXILIARY BUS "2D", THE BREAKER BETWEEN IT AND THE EMERGENCY DIESEL OPENED, DIESEL #3 ALIGNED BACK ONTO EMERGENCY BUS 'E3'.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/11/90 LER# 32590007 50.72#: 18442 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE HABITABILITY DESIGN BASIS OF THE CONTROL ROOM MAY NOT BE SATISFIED DURING A DESIGN BASIS CHLORINE EVENT BECAUSE OF A DESIGN ERROR. THE CONTROL BUILDING EMERGENCY AIR FILTRATION INLET DAMPER DOES NOT FAIL CLOSED (AS REQUIRED) ON A LOSS OF POWER.

SE 05/20/90 LER# 50.72#: 18530 POWER: 100
DESC : 22 OF 47 LICENSED OPERATORS AND 7 OF 8 CREWS FAILED EITHER THE REQUALIFICATION EXAMINATION OR THE OPERATIONAL EVALUATION.

SSF 05/26/90 LER# 32590007 50.72#: 18577 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM WAS INOPERABLE. THE INLET DAMPER, WHICH IS REQUIRED TO BE WIRED SHUT, WAS FOUND 30 DEGREES OPEN DURING A SURVEILLANCE. A MISSING SET SCREW WAS THE CAUSE OF THE EVENT.

SSA 05/30/90 LER# 50.72#: 18595 POWER: 0
DESC : ALL FOUR EDG'S STARTED WITH #3 DG LOADING THE E3 BUS DURING A MAINTENANCE ACTIVITY.

PI EVENTS FOR 90-3

SCRAM 08/16/90 LER# 32490008 50.72#: 19138 PWR HIST: POWER OPERATIONS AT 100%.
DESC : REACTOR SCRAM OCCURRED WHEN A CONTROL POWER FUSE BLEW IN THE FEEDWATER CENTRAL CIRCUITRY. THE BLOWN FUSE CAUSED STEAM FLOW INDICATION TO GO TO ZERO. RFP'S OVER-FED THE VESSEL TO THE HIGH LEVEL SETPOINT. A TURBINE TRIP OCCURRED FOLLOWED BY A SCRAM.

SSA 08/16/90 LER# 32490008 50.72#: 19138 PWR HIST: HOT SHUTDOWN AFTER THE SCRAM.
DESC : HPCI WAS MANUALLY INITIATED ON DECREASING REACTOR WATER LEVEL FOLLOWING A SCRAM TO HELP MAINTAIN WATER LEVEL.

SSF 08/16/90 LER# 50.72#: 19138
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : RECIRCULATION PUMP INSTRUMENTATION
SYSTEM : FEEDWATER/STEAM GENERATOR WATER LEVEL CONTROL SYSTEM
DESC : A BLOWN FUSE IN A 120 VDC UNINTERRUPTABLE POWER SUPPLY FEED CAUSED A LOSS OF CONTROL POWER TO THE FEEDWATER CONTROL CIRCUITRY. THE FOUR STEAM LINE FLOW INSTRUMENTS FAILED LOW RESULTING IN A LOW FEEDWATER FLOW CONDITION.

SCRAM 08/19/90 LER# 32490009 50.72#: 19158 PWR HIST: POWER OPERATIONS AT 100%.
DESC : A REACTOR SCRAM OCCURRED FOLLOWING A MSIV CLOSURE. DURING MSIV LOW CONDENSER VACUUM SIGNAL TESTING, TWO ISOLATION SIGNALS WERE PRODUCED DUE TO PERSONNEL ERROR IN RESETTING A SIGNAL.

SSA 08/19/90 LER# 32490009 50.72#: 19158 PWR HIST: HOT SHUTDOWN AFTER THE SCRAM.
DESC : UNPLANNED MSIV CLOSURE CAUSED SEVERAL OTHER ESF ACTUATIONS AND A REACTOR SCRAM. HPCI STARTED ON LOW REACTOR LEVEL AFTER THE SCRAM.

TABLE 8.12 (CONT.)

BRUNSWICK 2

PI EVENTS FOR 90-3 (CONT.)

SSF 08/19/90 LER# 32490039 50.72#: 19158
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : AFTER A SINGLE SAFETY RELIEF VALVE FAILED TO OPEN FOLLOWING A SCRAM, THE PILOT ASSEMBLIES WERE REPLACED ON FIVE VALVES. WHEN THE OLD ASSEMBLIES WERE TESTED, NONE INITIALLY LIFTED WITHIN T.S. REQUIREMENTS. THIS IS INDICATIVE OF PILOT SEAT TO DISC BONDING.

SE 08/19/90 LER# 32490009 50.72#: 19158
PWR HIST: EVENT OCCURRED AT 100% POWER.
DESC : A TECHNICIAN TESTING THE PRIMARY CONTAINMENT ISOLATION LOGIC TRIPPED THE NEXT CHANNEL BEFORE THE PREVIOUSLY TRIPPED CHANNEL WAS RESET. FIVE SRVs FAILED TO LIFT AFTER THE MSIVs CLOSED.

SSA 08/20/90 LER# 32490009 50.72#: PWR HIST: HOT SHUTDOWN
DESC : HPCI STARTED MANUALLY TO MAINTAIN REACTOR VESSEL WATER LEVEL. GROUPS 2B AND 6B ISOLATED.

SCRAM 08/30/90 LER# 50.72#: 19249 PWR HIST: STARTUP AT 9%
DESC : REACTOR SCRAM OCCURRED DURING STARTUP WHEN THE STARTUP LEVEL CONTROL VALVE FAILED CAUSING A REACTOR LOW WATER LEVEL SCRAM.

SSF 09/06/90 LER# 50.72#: 19296
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 95% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE TURBINE EXHIBITED ERRATIC OPERATION DURING AN OPERABILITY TEST. A MALFUNCTION OF THE AUTOMATIC CONTROL SYSTEM IS SUSPECTED.

SCRAM 09/27/90 LER# 50.72#: 19472 PWR HIST: SCRAM FOLLOWED GEN. LOAD REJECT FROM 100%.
DESC : REACTOR SCRAM DUE TO GENERATOR LOAD REJECT. ERRATIC GENERATOR VOLTAGE REGULATION OPERATION FOR UNKNOWN REASON CAUSED THE SCRAM.

SSA 09/27/90 LER# 50.72#: 19472 PWR HIST: HOT SHUTDOWN AFTER THE SCRAM.
DESC : MSIV'S CLOSED DUE TO VOLTAGE PERTURBATIONS IN THE MAIN STEAM LINE LEAK DETECTION SYSTEM. HPCI & RCIC PUMPS WERE STARTED BUT ONLY RCIC WAS INJECTED TO MAINTAIN VESSEL LEVEL.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	0.00	0.00	0.00	0.00	1.69
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	1	0	0	0	0	0	0	4
SAFETY SYSTEM ACTUATIONS	1	1	3	0	2	0	1	4
SIGNIFICANT EVENTS	1	0	1	0	0	0	1	1
SAFETY SYSTEM FAILURES	2	2	1	2	0	0	2	3
FORCED OUTAGE RATE (%)	4	0	12	0	0	0	25	23
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.52	0.00	0.00	0.00	0.00	1.12
CRITICAL HOURS	2154	2160	1939	1681	0	461	1610	1780
COLLECTIVE RADIATION EXPOSURE	316	258	30	104	471	188	32	NA
CAUSE CODES:								
ADMINISTRATIVE	6	0	4	3	3	5	2	NA
LICENSED OPERATOR	2	0	0	1	0	0	0	NA
OTHER PERSONNEL	5	2	1	1	1	1	3	NA
MAINTENANCE	9	4	6	7	7	6	6	NA
DESIGN/INSTALLATION/FABRICATION	4	3	0	2	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.13

BYRON 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 03/01/90 LER# 45490002 50.72#: 17861 POWER: 0
DESC : THE '1B' REACTOR COOLANT RTD AMPLIFIER CARD FAILED HIGH DURING LOW POWER PHYSICS TESTING, CAUSING A SCRAM ON OVERTEMPERATURE DELTA-T (OTDT).

PI EVENTS FOR 90-2

SCRAM 05/03/90 LER# 45490006 50.72#: 18384 POWER: 79
DESC : REACTOR TRIPPED ON LOW S/G WATER LEVEL FOLLOWING LOAD REJECTION FROM A TURBINE GENERATOR. LOAD REJECTION WAS CAUSED BY A VOLTAGE SPIKE DURING FUSE REPLACEMENT IN DIGITAL EHC LIGHT CIRCUIT.

SSF 06/27/90 LER# 45490008 50.72#: 18781 POWER: 98
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH THE "B" CONTAINMENT CHILLER OUT-OF-SERVICE FOR REPAIR, THE "A" CHILLER DEVELOPED A TUBE LEAK AND BECAME INOPERABLE. THE PLANT WAS SHUTDOWN WHEN THE CONTAINMENT AIR TEMPERATURE EXCEEDED THE T.S. LIMIT.

PI EVENTS FOR 90-3

SCRAM 08/19/90 LER# 45490011 50.72#: 19153 PWR HIST: POWER OPERATIONS AT 78%
DESC : LIGHTNING IN THE AREA INDUCED A VOLTAGE SURGE TO SEVERAL RCC DRIVE POWER SUPPLIES. OVER VOLTAGE PROTECTION SYSTEMS CAUSED THE RELEASE OF 12 OF 15 RCC GROUPS TO DROP INTO THE CORE AND CAUSE A HIGH NEGATIVE FLUX RATE TRIP.

SSF 09/06/90 LER# 50.72#: 19289
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME, DISCOVERED AT 100% POWER.
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ENGINEERING REVIEWS ASSOCIATED WITH GENERIC LETTER 89-10 IDENTIFIED A DISCREPANCY REGARDING THE ABILITY OF THE "AF013" VALVES TO ISOLATE AUX FEED FLOW TO A FAULTED SG. FAILURE TO ISOLATE COULD AFFECT THE STEAM LINE BREAK ANALYSIS OF UFSAR SECT. 15.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	0	0	0	0	0	1	1	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	1	1
FORCED OUTAGE RATE (%)	0	1	0	0	0	0	6	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.47	0.00	0.00	0.00	0.00	0.99	0.46
CRITICAL HOURS	1309	2143	2183	2208	2209	779	2011	2177
COLLECTIVE RADIATION EXPOSURE	191	66	4	7	10	136	5	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	2	1	0	3	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	1	0	0	0	3	0	NA
MAINTENANCE	2	3	2	1	0	3	3	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	1	1	0	0	NA
EQUIPMENT FAILURE	0	1	0	1	0	1	0	NA

TABLE 8.14

BYRON 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/18/90 LER# 45590001 50.72#: 17580 POWER: 99
DESC : A SPURIOUS LOW STEAMLINE PRESSURE SIGNAL OCCURRED WHILE ANOTHER CHANNEL WAS TRIPPED FOR CALIBRATION, CAUSING A REACTOR TRIP.

SSA 01/18/90 LER# 45590001 50.72#: 17580 POWER: 99
DESC : A SPURIOUS LOW STEAMLINE PRESSURE SIGNAL OCCURRED WHILE ANOTHER CHANNEL WAS TRIPPED FOR CALIBRATION, CAUSING SAFETY INJECTIONS.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSA 09/03/90 LER# 50.72#: 19272 PWR HIST: COLD SHUTDOWN
DESC : AUTO SI SIGNAL OCCURRED DUE TO THE LOSS OF BOTH STEAM LINE PRESSURE BLOCKS DURING A SURVEILLANCE.

SSF 09/06/90 LER# 50.72#: 19289
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED DURING COLD SHUTDOWN.
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ENGINEERING REVIEWS ASSOCIATED WITH GENERIC LETTER 89-10 IDENTIFIED A DISCREPANCY REGARDING THE ABILITY OF THE "AF013" VALVES TO ISOLATE AUX FEED FLOW TO A FAULTED SG. FAILURE TO ISOLATE COULD AFFECT THE STEAM LINE BREAK ANALYSIS OF UFSAR SECT. 15.

TYPE	89-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	1	0	1
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	1	0	8	0	8	1	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.49	0.00	0.49	0.48	0.00	0.00
CRITICAL HOURS	2194	806	2021	2208	2025	2093	2183	1409
COLLECTIVE RADIATION EXPOSURE	NA	66	4	7	10	136	5	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	0	1	0	1	1	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	0	0	0	0	1	0	NA
MAINTENANCE	2	2	1	1	0	2	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	1	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.15

CALLAWAY

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/14/90 LER# 48390003 50.72#: 17977 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF A DESIGN PROBLEM, THE HALON FIRE PROTECTION SYSTEM FOR EITHER OF THE ESF SWITCHGEAR ROOMS COULD HAVE DISABLED BOTH TRAINS OF CLASS 1E AIR CONDITIONER UNITS. THE LONG-TERM OPERATION OF THE AFFECTED SAFETY SYSTEMS COULD HAVE BEEN DEGRADED.

PI EVENTS FOR 90-2

SCRAM 05/01/90 LER# 48390005 50.72#: 18370 POWER: 100
DESC : A REACTOR TRIP OCCURRED DUE TO TURBINE TRIP AT GREATER THAN 50% POWER. THE TURBINE TRIPPED ON LOSS OF STATOR COOLING FLOW INDICATION DUE TO A BLOWN FUSE IN THE STATOR COOLING WATER CONTROL CABINET.

SCRAM 06/11/90 LER# 48390007 50.72#: 18680 POWER: 100
DESC : ALL FOUR MSIVS CLOSED. THE REACTOR TRIPPED DUE TO OVERPRESSURE. THE INPUT BUFFER CARD IN THE MSIV MANUAL FAST CLOSURE CIRCUITRY HAD A CAPACITOR MOMENTARILY SHORT TO GROUND.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.08	0.00	0.00	0.00	0.95	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	2	0
SAFETY SYSTEM ACTUATIONS	1	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	1	0	0
FORCED OUTAGE RATE (%)	0	0	3	2	0	0	5	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.08	0.00	0.00	0.00	0.48	0.00
CRITICAL HOURS	2055	2138	927	2208	2209	2160	2097	1973
COLLECTIVE RADIATION EXPOSURE	13	6	259	9	8	7	7	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	2	1	0	2	1	NA
LICENSED OPERATOR	1	1	4	1	0	0	0	NA
OTHER PERSONNEL	1	1	1	1	1	1	1	NA
MAINTENANCE	2	2	5	2	1	3	3	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	1	0	1	0	1	NA

TABLE 8.16

CALVERT CLIFFS 1

PI EVENTS FOR 89-4

SSF 11/06/89 LER# 31789018 50.72#: 17024 POWER: 0
GROUP : ESSENTIAL COMPRESSED AIR SYSTEM GROUP
SYSTEM : ESSENTIAL AIR SYSTEM
DESC : MANY AOVS AND PISTON OPERATED DAMPERS WHICH UTILIZE SAFETY RELATED ACCUMULATORS WOULD NOT HAVE PEFORMED AS EXPECTED AFTER A LOSS OF INSTRUMENT AIR. SYSTEMS THAT WERE POTENTIALLY INOPERABLE: ESW,AFW,EDG COOLING,ECCS ROOM HVAC,AND SPENT FUEL VENTILATION.

SE 12/20/89 LER# 31789023 50.72#: 17387 POWER: 0
DESC : LICENSEE DISCOVERED NON-SAFETY SECTION OF PIPING IN SERVICE WATER SYSTEM COULD RUPTURE IN CASE OF AN EARTHQUATE, AND CAUSE LOSS OF SAFETY-RELATED SERVICE WATER FLOW TO AUX BLDG AND EDGs.

PI EVENTS FOR 90-1

SSF 01/30/90 LER# 31790005 50.72#: 17661 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : THE ABILITY OF THE SHUTDOWN COOLING HEAT EXCHANGERS TO PERFORM THEIR SAFETY FUNCTION CANNOT BE ENSURED. SHELL SIDE FLOWRATES ABOVE 2500 GPM INDUCE TUBE VIBRATIONS SEVERE ENOUGH TO CAUSE METAL-TO-METAL IMPACT. THIS IS AN ORIGINAL DESIGN DEFICIENCY.

SSF 02/09/90 LER# 31790006 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : WHILE PERFORMING AN INSPECTION OF TECHNICAL SPECIFICATION VENT DUCT FIRE BARRIER DAMPERS, IT WAS DETERMINED THAT FOUR DAMPERS WERE MISSING. THIS CONDITION MAY HAVE EXISTED SINCE THE ORIGINAL CONSTRUCTION.

SSF 02/24/90 LER# 31790009 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A FIRE DOOR WAS RENDERED INOPERABLE WHEN IT WAS BLOCKED OPEN BY ELECTRICAL CABLING. THE ACTION REQUIREMENT OF THE ASSOCIATED TECHNICAL SPECIFICATION WAS NOT PERFORMED.

SSA 03/08/90 LER# 31790003 50.72#: 17923 POWER: 0
DESC : MISCOMMUNICATION DURING A SURVEILLANCE TEST (M2108A-1) RESULTED IN A SI SIGNAL. HPSI PUMPS WERE TAGGED OUT, AND LPSI WAS ALIGNED FOR DECAY HEAT REMOVAL. ON THE SI SIGNAL THE RUNNING CHARGING PUMP REALIGNED TO THE BORIC ACID STORAGE TANK AND INJECTED.

SSF 03/09/90 LER# 31790009 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A FIRE DOOR WAS RENDERED INOPERABLE WHEN IT WAS TAPED OPEN. THE ACTION REQUIREMENT OF THE ASSOCIATED TECHNICAL SPECIFICATION WAS NOT PERFORMED.

PI EVENTS FOR 90-2

SSF 04/06/90 LER# 31790012 50.72#: 18156 POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : AN INADEQUATE LOCA PROCEDURE EXISTED THAT DID NOT ENSURE A POST-LOCA CORE FLUSH WOULD OCCUR IN TIME TO PREVENT BORON PRECIPITATION. THIS PROCEDURE EXISTED SINCE 2/89 AND COULD HAVE RESULTED IN DEGRADED CORE COOLING BECAUSE OF CLOGGED COOLANT CHANNELS.

SSF 06/15/90 LER# 31790020 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE 45 FOOT SWITCHGEAR ROOM HALON SYSTEM WAS INOPERABLE AFTER THE LATCH OF AN EMERGENCY ESCAPE HATCH FAILED FROM CYCLIC FATIGUE. IF THE HATCH DID NOT REMAIN SHUT, THE HALON CONCENTRATION MAY NOT HAVE BEEN ADEQUATE TO EXTINGUISH A FIRE.

TABLE 8.16 (CONT.)

CALVERT CLIFFS 1

PI EVENTS FOR 90-3

SSF 07/10/90 LER# 31790021 50.72#:
PWR HIST: ALL MODES UP TO 100% POWER. DESIGN CHANGE ERROR EXISTED SINCE 1982.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : DURING AN INTERACTIVE CABLE ANALYSIS REVIEW, CABLES SUPPORTING THE OPERATION OF BOTH EDGS WERE FOUND ROUTED THROUGH THE UNIT 1 ELECTRICAL EQUIPMENT ROOM. A SEVERE FIRE IN THIS ROOM COULD PREVENT THE EDGS FROM SUPPLYING POWER TO EITHER EMERGENCY BUS.

SSA 08/02/90 LER# 31790023 50.72#: 19019 PWR HIST: COLD SHUTDOWN
DESC : WHILE RETURNING THE 'A' ESF LOGIC CABINET TO SERVICE, AN INADVERTENT SI ACTUATION OCCURRED DUE TO A BLOWN FUSE.

SSF 09/10/90 LER# 50.72#: 19327
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED DURING COLD SHUTDOWN.
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : EVALUATION OF LER 31790017 IDENTIFIED THAT THE OPERATING INSTRUCTION INITIATING CRITERIA FOR SERVICE WATER HEAT EXCHANGER CLEANING WAS IN ERROR. IF A LOCA OCCURRED WITH ONE EXCHANGER OOS FOR CLEANING, THE OTHER MAY NOT HAVE PERFORMED ITS DESIGN FUNCTION.

SSF 09/19/90 LER# 50.72#: 19418
PWR HIST: EVENT DISCOVERED DURING HOT SHUTDOWN.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : CONTAINMENT INTEGRITY WAS LOST DUE TO A PACKING LEAK ON THE PERSONNEL AIRLOCK DOOR OPERATOR EQUALIZING VALVE. THIS WAS DISCOVERED DURING A SIX MONTH SURVEILLANCE TEST.

SSF 09/21/90 LER# 50.72#: 19438
PWR HIST: EVENT DISCOVERED DURING HOT SHUTDOWN.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : A TEST REVEALED THAT THE CONTAINMENT EMERGENCY AIRLOCK INNER DOOR-OUTER DOOR INTERLOCK WAS DEFECTIVE. THIS CONSTITUTED A LOSS OF CONTAINMENT INTEGRITY. THE CAUSE WAS A FAULTY MECHANICAL STOP ON THE INNER DOOR.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	1	0	1
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	2	1	2	1	4	2	4
FORCED OUTAGE RATE (%)	2	4	0	0	0	0	15	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.06	1.37	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	1881	1455	352	0	0	0	242	0
COLLECTIVE RADIATION EXPOSURE	12	20	68	47	38	34	41	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	1	3	4	6	5	NA
LICENSED OPERATOR	0	2	0	0	0	0	2	NA
OTHER PERSONNEL	0	1	1	0	1	4	0	NA
MAINTENANCE	3	4	1	3	3	8	4	NA
DESIGN/INSTALLATION/FABRICATION	3	2	5	4	4	2	5	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.17

CALVERT CLIFFS 2

PI EVENTS FOR 89-4

SSF 11/06/89 LER# 31789018 50.72#: 17024 POWER: 0
GROUP : ESSENTIAL COMPRESSED AIR SYSTEM GROUP
SYSTEM : ESSENTIAL AIR SYSTEM
DESC : MANY AOVS AND PISTON OPERATED DAMPERS WHICH UTILIZE SAFETY RELATED ACCUMULATORS WOULD NOT HAVE PEFORMED AS EXPECTED AFTER A LOSS OF INSTRUMENT AIR. SYSTEMS THAT WERE POTENTIALLY INOPERABLE:ESW,AFW,EDG COOLING,ECCS ROOM HVAC,SPENT FUEL VENTILATION.

SE 12/20/89 LER# 31789023 50.72#: 17387 POWER: 0
DESC : LICENSEE DISCOVERED NON-SAFETY SECTION OF PIPING IN SERVICE WATER SYSTEM COULD RUPTURE IN CASE OF AN EARTHQUATE, AND CAUSE LOSS OF SAFETY-RELATED SERVICE WATER FLOW TO AUX BLDG AND EDGs.

PI EVENTS FOR 90-1

SSF 01/30/90 LER# 31790005 50.72#: 17661 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : THE ABILITY OF THE SHUTDOWN COOLING HEAT EXCHANGERS TO PERFORM THEIR SAFETY FUNCTION CANNOT BE ENSURED. SHELL SIDE FLOWRATES ABOVE 2500 GPM INDUCE TUBE VIBRATIONS SEVERE ENOUGH TO CAUSE METAL-TO-METAL IMPACT. THIS IS AN ORIGINAL DESIGN DEFICIENCY.

PI EVENTS FOR 90-2

SSF 04/06/90 LER# 31790012 50.72#: 18156 POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : AN INADEQUATE LOCA PROCEDURE EXISTED THAT DID NOT ENSURE A POST-LOCA CORE FLUSH WOULD OCCUR IN TIME TO PREVENT BORON PRECIPITATION. THIS EXISTED SINCE 2/89 AND COULD HAVE RESULTED IN DEGRADED CORE COOLING BECAUSE OF CLOGGED COOLANT CHANNELS.

SSF 06/18/90 LER# 31790020 50.72#: POWER: UNK
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE 45 FOOT SWITCHGEAR ROOM HALON SYSTEM WAS INOPERABLE AFTER THE LATCH OF AN EMERGENCY ESCAPE HATCH FAILED FROM CYCLIC FATIGUE. IF THE HATCH DID NOT REMAIN SHUT, THE HALON CONCENTRATION MAY NOT HAVE BEEN ADEQUATE TO EXTINGUISH A FIRE.

PI EVENTS FOR 90-3

SSF 09/10/90 LER# 50.72#: 19327
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED DURING REFUELING.
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : EVALUATION OF LER 31790017 IDENTIFIED THAT THE OPERATING INSTRUCTION INITIATING CRITERIA FOR SERVICE WATER HEAT EXCHANGER CLEANING WAS IN ERROR. IF A LOCA OCCURRED WITH ONE EXCHANGER OOS FOR CLEANING, THE OTHER MAY NOT HAVE PERFORMED ITS DESIGN FUNCTION.

TABLE 8.17 (CONT.)

CALVERT CLIFFS 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	2	2	1	1	2	1
FORCED OUTAGE RATE (%)	0	11	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2209	1766	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	12	20	68	47	38	34	41	NA
CAUSE CODES:								
ADMINISTRATIVE	0	6	3	1	4	3	2	NA
LICENSED OPERATOR	0	0	1	0	0	0	2	NA
OTHER PERSONNEL	0	2	1	0	0	2	0	NA
MAINTENANCE	1	6	4	1	3	4	3	NA
DESIGN/INSTALLATION/FABRICATION	1	1	4	4	4	2	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.18

CATAWBA 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/27/90 LER# 41390012 50.72#: POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE LOWER CONTAINMENT PERSONNEL AIR LOCK DOOR WAS TIED OPEN. THIS RENDERED THE ANNULUS VENTILATION SYSTEM INOPERABLE BECAUSE IT COULD NOT DEVELOP THE REQUIRED NEGATIVE PRESSURE WITHIN THE ANNULUS.

SSF 02/12/90 LER# 41390009 50.72#: POWER: 0
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : CONTAINMENT PURGE SYSTEM
DESC : THE CONTAINMENT PURGE SYSTEM WAS DECLARED INOPERABLE. VOLTAGE FLUCTUATIONS FROM THE MASTER CONTROLLER CAUSED A HEATER CONTACTOR FAILURE. BECAUSE OF A PROCEDURAL ERROR, THIS SYSTEM HAD BEEN TESTED INCORRECTLY SINCE INITIAL STARTUP.

SSF 02/28/90 LER# 41390014 50.72#: 17877 POWER: 0
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE FUEL HANDLING AREA VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE TEMPERATURE CONTROLLER SETPOINT INACCURACIES COULD TRIP THE HEATERS AT A TEMPERATURE LESS THAN THAT REQUIRED TO MAINTAIN THE DESIRED CARBON ADSORBER EFFICIENCY.

SSF 02/28/90 LER# 41390014 50.72#: 17877 POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE ANNULUS VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE TEMPERATURE CONTROLLER SETPOINT INACCURACIES COULD TRIP THE HEATERS AT A TEMPERATURE LESS THAN THAT REQUIRED TO MAINTAIN THE DESIRED CARBON ADSORBER EFFICIENCY.

SE 03/20/90 LER# 41390018 50.72#: 18030 POWER: 0
DESC : INADVERTENT OVERPRESSURIZATION OF THE RHR SYSTEM DURING RCS FILL AND VENT OPERATIONS.

SSF 03/23/90 LER# 41390019 50.72#: POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH THE "A" TRAIN OF THE CONTROL ROOM AREA VENTILATION/CHILLED WATER SYSTEM INOPERABLE TO SWAP POWER SUPPLIES, A PERSONNEL ERROR RESULTED IN RENDERING THE "B" TRAIN INOPERABLE. AN OPERATOR DISCONNECTED THE "B" (VICE "A") POWER SUPPLY LEAD.

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 41390015 50.72#: 18154 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CONTAINMENT VALVE INJECTION WATER SYSTEM WERE RENDERED INOPERABLE BY A PERSONNEL ERROR. THE ASSURED MAKEUP SUPPLY VALVES FROM THE NUCLEAR SERVICE WATER SYSTEM WERE INCORRECTLY LEFT SHUT FOLLOWING MAINTENANCE/TESTING.

SSF 06/11/90 LER# 41390013 50.72#: 18679 POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : PERSONNEL ERROR DURING RESTORATION OF THE RHR SYSTEM, FOLLOWING CHECK VALVE TESTING, CAUSED 5000 GALLONS OF REACTOR COOLANT INVENTORY TO BE DISCHARGED INTO THE RWST. THE REACTOR REMAINED SUBCOOLED WITHOUT ANY VOIDS DEVELOPING.

SE 06/11/90 LER# 41390013 50.72#: 18679 POWER: 0
DESC : MISALIGNMENT OF RHR SYSTEM DUE TO OPERATOR ERROR.

TABLE 8.18 (CONT.)

CATAWBA 1

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	1	0
SAFETY SYSTEM FAILURES	2	1	0	1	0	5	2	0
FORCED OUTAGE RATE (%)	0	9	6	1	12	0	29	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	3.10	0.99	0.46	1.52	0.00	2.91	0.00
CRITICAL HOURS	1308	1289	2020	2197	1979	629	1372	2208
COLLECTIVE RADIATION EXPOSURE	98	79	72	6	10	256	61	NA
CAUSE CODES:								
ADMINISTRATIVE	3	4	3	3	2	13	3	NA
LICENSED OPERATOR	0	2	0	1	0	3	2	NA
OTHER PERSONNEL	1	4	1	1	0	5	2	NA
MAINTENANCE	5	9	4	4	2	11	4	NA
DESIGN/INSTALLATION/FABRICATION	3	5	2	4	2	5	1	NA
EQUIPMENT FAILURE	0	0	1	1	1	0	0	NA

TABLE 8.19

CATAWBA 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/30/90 LER# 41490002 50.72#: POWER: 97
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : THE INOPERABLITY OF A MANUAL CONTAINMENT ISOLATION VALVE COMPROMISED CONTAINMENT INTEGRITY. AS A RESULT OF INADEQUATE TRAINING, OPERATORS DID NOT UNDERSTAND THAT THIS VALVE FUNCTIONED AS A CONTAINMENT ISOLATION VALVE.

SSF 02/28/90 LER# 41390014 50.72#: 17877 POWER: UNK
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE ANNULUS VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE TEMPERATURE CONTROLLER SETPOINT INACCURACIES COULD TRIP THE HEATERS AT A TEMPERATURE LESS THAN THAT REQUIRED TO MAINTAIN THE DESIRED CARBON ADSORBER EFFICIENCY.

SSF 02/28/90 LER# 41390014 50.72#: 17877 POWER: UNK
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE FUEL HANDLING AREA VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE TEMPERATURE CONTROLLER SETPOINT INACCURACIES COULD TRIP THE HEATERS AT A TEMPERATURE LESS THAN THAT REQUIRED TO MAINTAIN THE DESIRED CARBON ADSORBER EFFICIENCY.

SSF 03/01/90 LER# 41490003 50.72#: POWER: 97
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE ANNULUS VENTILATION SYSTEM WAS DECLARED INOPERABLE AFTER A FAILED ANNULUS VACUUM DECAY TEST WITH THE FUEL HANDLING AREA AND AUX BUILDING VENTILATION SYSTEMS IN THEIR ACCIDENT ALIGNMENTS. THE INTERACTION OF THE THREE SYSTEMS WAS NOT FULLY UNDERSTOOD.

SSF 03/21/90 LER# 41490006 50.72#: POWER: 97
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
DESC : WITH THE "A" TRAIN OF THE CONTAINMENT VALVE INJECTION SYSTEM INOPERABLE BECAUSE ITS MAKEUP SUPPLY LINE WAS CLOGGED WITH MUD/DEBRIS (OPERATORS DID NOT RECOGNIZE INOPERABILITY), THE "B" TRAIN WAS RENDERED INOPERABLE SEVERAL TIMES FOR TESTING/MAINTENANCE.

SSF 03/23/90 LER# 41390019 50.72#: POWER: 97
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH THE "A" TRAIN OF THE CONTROL ROOM AREA VENTILATION/CHILLED WATER SYSTEM INOPERABLE TO SWAP POWER SUPPLIES, A PERSONNEL ERROR RESULTED IN RENDERING THE "B" TRAIN INOPERABLE. AN OPERATOR DISCONNECTED THE "B" (VICE "A") POWER SUPPLY LEAD.

PI EVENTS FOR 90-2

SSF 04/30/90 LER# 41490008 50.72#: POWER: 97
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE AUX FEEDWATER FIRE PROTECTION SYSTEM WAS INOPERABLE BECAUSE THE PILOT VALVE SOLENOIDS WERE INITIALLY INSTALLED BACKWARDS. AS A RESULT, THE REQUIRED CO2 CONCENTRATIONS COULD NOT BE ACHIEVED IN MORE THAN ONE AUX FEEDWATER PUMP PIT.

PI EVENTS FOR 90-3

SSF 08/11/90 LER# 41490007 50.72#: 19103
PWR HIST: EVENT DISCOVERED DURING REFUELING.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BOTH EDGS WERE INOPERABLE FOR 5.5 HOURS DURING THE REFUELING OUTAGE. WITH EDG "2B" INOPERABLE FOR MAINTENANCE, EDG "2A" WAS DECLARED INOPERABLE DUE TO LOW CELL VOLTAGE ON THE 125 VDC ESSENTIAL AUXILIARY POWER BATTERY SYSTEM.

TABLE 8.19 (CONT.)

CATAWBA 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	2	0	6	1	1
FORCED OUTAGE RATE (%)	3	9	18	1	0	3	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.39	3.28	0.00	0.45	0.00	0.47	0.00	0.00
CRITICAL HOURS	2164	1526	505	2208	2209	2119	1671	83
COLLECTIVE RADIATION EXPOSURE	98	79	72	6	10	256	61	NA
CAUSE CODES:								
ADMINISTRATIVE	4	7	5	5	2	9	2	NA
LICENSED OPERATOR	0	2	0	3	0	1	1	NA
OTHER PERSONNEL	1	3	5	3	1	4	0	NA
MAINTENANCE	7	10	9	5	2	7	1	NA
DESIGN/INSTALLATION/FABRICATION	4	5	2	3	3	3	1	NA
EQUIPMENT FAILURE	0	0	1	1	0	0	0	NA

TABLE 8.20

CLINTON 1

PI EVENTS FOR 89-4

SSF 11/22/89 LER# 46189041 50.72#: POWER: 61
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : WITH THE RCIC SYSTEM INOPERABLE FOR MAINTENANCE, THE HPCS SYSTEM WAS DECLARED INOPERABLE WHEN A CHILLER CONDENSING UNIT IN THE DIV III ESSENTIAL SWITCHGEAR HEAT REMOVAL SYSTEM BECAME INOPERABLE. THE CHILLER'S REFRIGERANT LEVEL WAS LOW.

PI EVENTS FOR 90-1

SE 01/24/90 LER# 46190002 50.72#: 17933 POWER: 100
DESC : ESSENTIAL SERVICE WATER FLOW TO ROOM COOLERS FOR VARIOUS SAFETY-RELATED SYSTEMS WAS SET TOO LOW BY A FACTOR OF 2 DURING PREOP TESTING.

SSF 02/12/90 LER# 46190001 50.72#: POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : THE PRIMARY CONTAINMENT INTEGRITY REQUIREMENTS WERE NOT MET. THE SEAT OF A DRYWELL PURGE CONTAINMENT ISOLATION VALVE WAS NOT SEALING BECAUSE THE ORIGINAL PRESERVATIVE (COSMOLENE) HAD NOT BEEN REMOVED AND HAD SUBSEQUENTLY COLLECTED A LARGE AMOUNT OF DIRT.

SSF 03/07/90 LER# 46190004 50.72#: 17919 POWER: 0
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL POOL COOLING AND PURIFICATION SYSTEM
DESC : A REVIEW OF 73 SOLENOID OPERATED VALVES (SOV) IDENTIFIED FOUR THAT COULD HAVE BEEN OVERPRESSURIZED BY FAILURE OF THE ASSOCIATED AIR REGULATOR. THIS COULD HAVE RENDERED THE ASSOCIATED AIR VALVES AND THE FUEL POOL COOLING AND CLEANUP SYSTEM INOPERABLE.

SSA 03/31/90 LER# 46190007 50.72#: 18110 POWER: 0
DESC : PERSONNEL ERROR BY NONLICENSED UTILITY OPERATOR CAUSED DEENERGIZATION OF DIVISION II NUCLEAR STEAM PROTECTION SYSTEM BUS(INSTRUMENT BUS). LPCI RECEIVED AN SI SIGNAL, BUT PUMPS WERE TAGGED OUT.

PI EVENTS FOR 90-2

SSF 05/14/90 LER# 46190011 50.72#: 18488 POWER: 1
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DIESEL COOLING WATER SYSTEM
DESC : THE DIV I AND II EDGs WERE DECLARED INOPERABLE BECAUSE SERVICE WATER INLET VALVES TO THE EDG HEAT EXCHANGERS HAD NOT BEEN OPENED FAR ENOUGH FOLLOWING MAINTENANCE. THE PLANT DID NOT HAVE AN ADEQUATE VALVE LINEUP PROCEDURE FOR THESE BUTTERFLY VALVES.

SE 05/14/90 LER# 46190011 50.72#: 18488 POWER: 1
DESC : AFTER MAINTENANCE ON SERVICE WATER SYSTEM, OUTLET VALVES FOR EDG SERVICE WATER COOLERS WERE MISPOSITIONED. THIS CREATED A SITUATION WHERE INSUFFICIENT COOLING WATER WAS AVAILABLE FOR DIV I AND DIV II EDGs.

PI EVENTS FOR 90-3

SCRAM 07/09/90 LER# 46190013 50.72#: 18861 PWR HIST: POWER OPERATIONS AT 91%
DESC : AN EXCESSIVE VOLT TO HERTZ SIGNAL INITIATED A 45 SECOND TIMER. OPERATORS WERE UNABLE TO STABLIZE THE VOLTAGE AND A REACTOR SCRAM RESULTED AFTER THE 45 SECOND DELAY TIME.

TABLE 8.20 (CONT.)

CLINTON 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.52	0.00	2.35	0.00	0.00	0.00	0.00	0.55
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	1	0	1	0	0	1	1	0
SAFETY SYSTEM FAILURES	3	2	1	0	1	2	1	0
FORCED OUTAGE RATE (%)	15	0	85	21	0	16	25	19
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.52	0.00	4.69	1.10	0.00	0.96	0.61	1.09
CRITICAL HOURS	1936	51	426	1817	1950	1037	1636	1829
COLLECTIVE RADIATION EXPOSURE	NA	260	81	14	18	85	26	NA
CAUSE CODES:								
ADMINISTRATIVE	4	10	7	2	5	3	4	NA
LICENSED OPERATOR	1	4	2	3	1	1	1	NA
OTHER PERSONNEL	3	3	4	1	2	1	1	NA
MAINTENANCE	7	11	10	4	6	4	3	NA
DESIGN/INSTALLATION/FABRICATION	1	3	2	1	3	4	1	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.21

COMANCHE PEAK 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/06/90 LER# 44590003 50.72#: 17908 POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : BOTH CHANNELS OF THE SOURCE RANGE FLUX DOUBLING INSTRUMENTATION WERE INOPERABLE. THE INSTRUMENTS WERE LEFT IN THE TRIP MODE AFTER COMPLETION OF A SURVEILLANCE TEST.

SSA 03/12/90 LER# 44590004 50.72#: 17953 POWER: 0
DESC : A SPURIOUS START OF SI TRAIN 'A' FOR 19 MIN INJECTED 8,000 GAL INTO THE CORE.

PI EVENTS FOR 90-2

SSF 04/16/90 LER# 44590007 50.72#: 18255 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WHILE ATTEMPTING TO RESTORE THE CONTROL ROOM AIR CONDITIONING SYSTEM TO A NORMAL LINEUP FOLLOWING AN ESF ACTUATION, THE SYSTEM WAS INADVERTENTLY RENDERED INOPERABLE. THIS RESULTED FROM FOLLOWING INADEQUATE PROCEDURES.

SCRAM 04/21/90 LER# 44590009 50.72#: 18303 POWER: 7
DESC : THE REACTOR OPERATOR ACCIDENTALLY BUMPED THE SR SWITCH 1/1-N-33B AND RESET THE SOURCE RANGE CHANNEL N31. SR IS NORMALLY BYPASSED FOR POWER OPERATIONS. A REACTOR TRIP OCCURRED ON SR HIGH FLUX.

SCRAM 05/09/90 LER# 44590013 50.72#: 18424 POWER: 48
DESC : I & C TECHNICIANS INSTALLED A JUMPER PER PROCEDURE CAUSING LOSS OF AUTOMATIC CONTROL OF MFW. AN MFP RUN BACK RESULTED IN A LOW SG LEVEL SCRAM. THE PROCEDURE USED WAS WRITTEN FOR USE IN MODE 5 OR 6. THE UNIT WAS IN MODE 1.

SSF 05/09/90 LER# 44590013 50.72#: 18424 POWER: 48
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : FEEDWATER/STEAM GENERATOR WATER LEVEL CONTROL SYSTEM
DESC : BECAUSE OF A PERSONNEL ERROR, A CALIBRATION PROCEDURE WRITTEN FOR MODE 5 OR 6 WAS ATTEMPTED WHILE IN MODE 1. A JUMPER WAS INSTALLED ACROSS THE MFW PUMP SPEED CONTROLLERS WHILE THEY WERE IN USE. THE PUMPS COASTED DOWN AND THE REACTOR SCRAMMED.

SSF 05/23/90 LER# 44590016 50.72#: 18560 POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : THREE OF FOUR SG ATMOSPHERIC RELIEF VALVES WERE INOPERABLE BECAUSE OF INSUFFICIENT STROKE LENGTHS. THE VALVES DID NOT PROVIDE THE REQUIRED MINIMUM STEAM FLOW CAPACITY. SOME CALIBRATION REQUIREMENTS WERE WRONG AND SOME PNEUMATIC CONTROLS HAD DRIFTED.

PI EVENTS FOR 90-3

SSA 07/26/90 LER# 44590020 50.72#: 18972 PWR HIST: HOT STANDBY
DESC : DURING A CLEARANCE PROCESS TO ISOLATE THE SECONDARY FOR MAINTENANCE, MSIV CONTROL POWER FUSES WERE REMOVED PRIOR TO ISOLATING AIR TO THE MSIV. SI ACTUATED ALONG WITH SEVERAL OTHER ESF'S.

SSA 07/30/90 LER# 44590021 50.72#: 18998 PWR HIST: HOT STANDBY
DESC : HIGH HEAD SAFETY INJECTION INJECTED FOR 25 MINUTES WHEN A SG RELIEF VALVE LIFTED FOR UNKNOWN REASONS CAUSING LOW MAIN STEAM LINE PRESSURE.

SCRAM 08/08/90 LER# 44590023 50.72#: 19073 PWR HIST: POWER OPERATIONS AT 17%
DESC : A REACTOR TRIP OCCURRED WHEN A FW PREHEATER BYPASS VALVE FAILED CLOSED DUE TO A LOOSE FUSE CAUSING A LOW SG LEVEL IN #4 SG.

SCRAM 08/25/90 LER# 44590025 50.72#: 19199 PWR HIST: POWER OPERATIONS AT 97%
DESC : A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP. AN FRV FAILED OPEN CAUSING A HIGH SG LEVEL TURBINE TRIP. THE FRV POSITIONER FEEDBACK LINKAGE SEPARATED DUE TO A NUT BECOMING LOOSE.

TABLE 8.21 (CONT.)

COMANCHE PEAK 1

PI EVENTS FOR 90-3 (CONT.)

SCRAM 09/08/90 LER# 50.72#: 19314 PWR HIST: POWER OPERATIONS AT 38%
DESC : A REACTOR TRIP OCCURRED FROM 38% POSSIBLY DUE TO A LIGHTNING STRIKE CAUSING A NEGATIVE FLUX RATE TRIP SIGNAL.

SCRAM 09/10/90 LER# 50.72#: 19321 PWR HIST: POWER OPERATIONS AT 91%
DESC : THE "B" MSR SEPARATOR FLOODED CAUSING THE TURBINE TO TRIP. A REACTOR TRIP FOLLOWED. THE CAUSE FOR THE FLOODED SEPARATOR IS UNKNOWN.

SSF 09/19/90 LER# 50.72#: 19420
PWR HIST: ALL MODES UP TO 100% POWER. ERROR DISCOVERED ON 9/19/90 EXISTED SINCE INITIAL OPERATION.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : SINCE INITIAL OPERATION, SIX VALVES IN THE CONTAINMENT AIRLOCK HYDRAULIC OPERATING SYSTEM HAD BEEN INCORRECTLY CLASSIFIED AS NON-CONTAINMENT ISOLATION VALVES. THESE NORMALLY OPEN VALVES COULD HAVE ALLOWED EXCESSIVE CONTAINMENT LEAKAGE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	0.61	2.31
SCRAMS <= 15% POWER	NA	NA	NA	NA	NA	NA	1	0
TOTAL SCRAMS	NA	NA	NA	NA	NA	NA	2	4
SAFETY SYSTEM ACTUATIONS	NA	NA	NA	NA	NA	1	0	2
SIGNIFICANT EVENTS	NA	NA	NA	NA	NA	0	0	0
SAFETY SYSTEM FAILURES	NA	NA	NA	NA	NA	1	3	1
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	17
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	NA	NA	4.97
CRITICAL HOURS	NA	NA	NA	NA	NA	NA	1650	1733
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	NA	3	10	NA
LICENSED OPERATOR	NA	NA	NA	NA	NA	2	3	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	0	4	NA
MAINTENANCE	NA	NA	NA	NA	NA	4	9	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	NA	NA	NA	1	0	NA
EQUIPMENT FAILURE	NA	NA	NA	NA	NA	1	0	NA

TABLE 8.22

COOK 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 02/25/90 LER# 31590001 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : A FIRE ALARM DETECTION ZONE SHARED BY UNITS 1 AND 2 WAS DECLARED INOPERABLE. TWO FIRE DOORS WITHIN THIS ZONE WERE ALSO INOPERABLE.

PI EVENTS FOR 90-2

SSF 04/10/90 LER# 31590003 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : A PYRALARM FIRE DETECTION ZONE WAS RENDERED INOPERABLE WHEN THE DETECTION CONTROL PANEL WAS PERMEATED BY STEAM FROM A S/G BLOWDOWN SAFETY VALVE. THE UNIT SUPERVISOR FAILED TO DECLARE THE ZONE INOPERABLE AND POST THE REQUIRED FIRE WATCH.

SSF 06/01/90 LER# 31590008 50.72#: POWER: 83
GROUP : COMPONENT COOLING WATER SYSTEM GROUP
SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE CCW PUMPS DID NOT MEET APPENDIX R SEPERATION CRITERIA. THE DESIGN CHANGES HAD BEEN PROPERLY PREPARED, BUT THE CHANGES WERE NOT PROPERLY IMPLEMENTED ON THE DESIGN DRAWINGS.

SSF 06/01/90 LER# 31590008 50.72#: POWER: 83
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE ESW PUMPS DID NOT MEET APPENDIX R SEPERATION CRITERIA. THE DESIGN CHANGES HAD BEEN PROPERLY PREPARED, BUT THE CHANGES WERE NOT PROPERLY IMPLEMENTED ON THE DESIGN DRAWINGS.

PI EVENTS FOR 90-3

SSF 09/21/90 LER# 31690009 50.72#: 19436
PWR HIST: ALL MODES UP TO 100% POWER. PREVIOUSLY UNANALYZED CONDITION DISCOVERED ON 9/21/90.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : POTENTIAL LOSS OF CONTROL ROOM HVAC DURING POSTULATED FIRE WITHOUT COMPENSATORY ACTION DUE TO OVERSIGHT IN APPENDIX "R" 'LOSS OF HVAC' STUDY.

TABLE 8.22 (CONT.)

COOK 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.95	0.55	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	2	2	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	1	0	1	3	1
FORCED OUTAGE RATE (%)	6	1	0	4	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2109	1810	0	2151	2209	2097	2163	2208
COLLECTIVE RADIATION EXPOSURE	74	95	136	10	10	15	14	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	3	3	1	1	2	NA
LICENSED OPERATOR	0	1	0	0	1	0	1	NA
OTHER PERSONNEL	1	1	2	3	0	1	0	NA
MAINTENANCE	3	4	5	4	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	1	2	0	0	0	1	0	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.23

COOK 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/10/90 LER# 31690002 50.72#: 17530 POWER: 0
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : ALL FOUR MAIN STEAM ISOLATION VALVES MAY HAVE BEEN INOPERABLE DURING PLANT POWER OPERATION. EXCESSIVE CONDENSATE ACCUMULATION ON THE VENT SIDE OF THE MSIV OPERATING PISTON CAUSED THE VALVE CLOSING TIMES TO EXCEED THE TECHNICAL SPECIFICATION LIMIT.

SSA 01/12/90 LER# 31690001 50.72#: 17535 POWER: 0
DESC : A TECHNICIAN WAS PERFORMING A TIME DELAY RELAY CALIBRATION WHEN A LEAD THAT WAS LIFTED (PER PROCEDURE) CAME IN CONTACT WITH A DIFFERENT TERMINAL, CAUSING A LOSS OF EMERGENCY BUS AND DIESEL START.

SSF 02/25/90 LER# 31590001 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : A FIRE ALARM DETECTION ZONE SHARED BY UNITS 1 AND 2 WAS DECLARED INOPERABLE. TWO FIRE DOORS WITHIN THIS ZONE WERE ALSO INOPERABLE.

PI EVENTS FOR 90-2

SSF 06/01/90 LER# 31590008 50.72#: POWER: 90
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE ESW PUMPS DID NOT MEET APPENDIX R SEPERATION CRITERIA. THE DESIGN CHANGES HAD BEEN PROPERLY PREPARED, BUT THE CHANGES WERE NOT PROPERLY IMPLEMENTED ON THE DESIGN DRAWINGS.

SSF 06/01/90 LER# 31590008 50.72#: POWER: 90
GROUP : COMPONENT COOLING WATER SYSTEM GROUP
SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE CCW PUMPS DID NOT MEET APPENDIX R SEPERATION CRITERIA. THE DESIGN CHANGES HAD BEEN PROPERLY PREPARED, BUT THE CHANGES WERE NOT PROPERLY IMPLEMENTED ON THE DESIGN DRAWINGS.

SCRAM 06/11/90 LER# 31690004 50.72#: 18681 POWER: 85
DESC : ROD 'H8' IS SUSPECTED TO HAVE DROPPED CAUSING A HIGH NEGATIVE FLUX RATE REACTOR SCRAM. THE EXACT CAUSE IS UNKNOWN.

SSF 06/25/90 LER# 31690006 50.72#: POWER: 75
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : EIGHT OF TWENTY MAIN STEAM SAFETY VALVE LIFT SETPOINTS EXCEEDED T.S. REQUIREMENTS. THIS RESULTED FROM THE INCOMPATIBILITY OF THE T.S. SETPOINT TOLERANCE AND THE SETPOINT REPEATABILITY INHERENT TO THE VALVE'S DESIGN.

PI EVENTS FOR 90-3

SSF 09/21/90 LER# 31690009 50.72#: 19436
PWR HIST: ALL MODES UP TO 100% POWER. PREVIOUSLY UNANALYZED CONDITION DISCOVERED ON 9/21/90.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : POTENTIAL LOSS OF CONTROL ROOM HVAC DURING POSTULATED FIRE WITHOUT COMPENSATORY ACTION DUE TO TO OVERSIGHT IN APPENDIX "R" 'LOSS OF HVAC' STUDY.

TABLE 8.23 (CONT.)

COOK 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.47	0.00	0.00	0.48	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	2	3	1
FORCED OUTAGE RATE (%)	0	0	0	5	0	22	3	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.47	0.00	0.00	0.48	0.00
CRITICAL HOURS	0	395	1863	2114	2209	1695	2093	0
COLLECTIVE RADIATION EXPOSURE	74	95	138	10	10	15	14	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	2	2	1	1	1	NA
LICENSED OPERATOR	0	1	2	0	0	0	0	NA
OTHER PERSONNEL	1	3	2	1	0	2	1	NA
MAINTENANCE	3	8	5	2	2	2	1	NA
DESIGN/INSTALLATION/FABRICATION	1	2	0	0	1	2	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.24

COOPER STATION

PI EVENTS FOR 89-4

SCRAM 11/25/89 LER# 29889026 50.72#: 17190 POWER: 100
DESC : THE REACTOR TRIPPED AFTER THE OUTBOARD MSIV DRIFTED SHUT FOLLOWING A RUPTURE OF AN INSTRUMENT AIR DRYER.

SSA 11/25/89 LER# 29889026 50.72#: 17190 POWER: 100
DESC : AN INSTRUMENT AIR DRYER PREFILTER PIPE RUPTURED CAUSING LOW INSTRUMENT AIR PRESSURE WHICH RESULTED IN A CLOSURE OF THE OUTBOARD MAIN STEAM ISOLATION VALVES. A REACTOR LEVEL TRANSIENT FOLLOWING A REACTOR TRIP CAUSED AN SI ACTUATION.

PI EVENTS FOR 90-1

SSF 03/26/90 LER# 29890006 50.72#: 18711 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : THE SUPPRESSION POOL COOLING MODE OF RHR MAY NOT HAVE PERFORMED ITS SAFETY FUNCTION BECAUSE THE MOTOR PINION KEYS OF THE SUPPRESION CHAMBER COOLING VALVES WERE NOT OF THE PROPER MATERIAL HARDNESS. THE MANUFACTURER HAD SUPPLIED THE WRONG SPARE KEYS.

PI EVENTS FOR 90-2

SSA 04/13/90 LER# 29890004 50.72#: 18231 POWER: 0
DESC : A VOLTAGE DROP WHILE STARTING THE 'B' CORE SPRAY PUMP CAUSED BOTH EDG'S TO START DUE TO A MOMENTARY LOW VOLTAGE. A DISCONNECT LINK IN THE STARTUP STATION SERVICE TRANSFORMER WAS MISALIGNED WITH ITS GEARBOX SHAFT PREVENTING A FULL SEATING.

SSA 04/14/90 LER# 29890004 50.72#: 18235 POWER: 0
DESC : A LICENSED OPERATOR CLOSED THE WRONG CIRCUIT BREAKER CAUSING A TRIP AND UNDERVOLTAGE CONDITION ON THE VITAL BUS. THIS RESULTED IN AN EDG STARTING ON LOW VOLTAGE.

SSF 06/17/90 LER# 29890007 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE SERVICE WATER PUMP ROOM HALON FIRE SUPPRESSION SYSTEM WOULD NOT OPERATE AUTOMATICALLY. A CONTROL BOARD HAD BEEN DAMAGED DURING A STORM. BECAUSE OF A PROCEDURAL INADEQUACY, THIS CONDITION WAS NOT DISCOVERED FOR THREE DAYS.

PI EVENTS FOR 90-3

SSF 08/08/90 LER# 29890009 50.72#: 19081
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC STEAM SUPPLY VALVE FAILED CLOSED AFTER A SUCCESSFUL PUMP OPERABILITY TEST. GREASE IN THE SPRING PACK CAVITY APPARENTLY CAUSED A HYDRAULIC LOCK, WHICH PREVENTED THE SPRING PACK FROM COMPRESSING. THUS, THE TORQUE SWITCH REMAINED CLOSED.

TABLE 8.24 (CONT.)

COOPER STATION

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.52	0.00	0.46	0.48	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	1	0	2	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	4	2	0	0	1	1	1
FORCED OUTAGE RATE (%)	0	12	0	3	6	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.52	0.00	0.00	0.48	0.00	0.00	0.00
CRITICAL HOURS	2209	1913	512	2164	2084	1465	1369	2203
COLLECTIVE RADIATION EXPOSURE	21	28	274	19	21	157	184	NA
CAUSE CODES:								
ADMINISTRATIVE	0	4	4	0	0	2	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	1	NA
OTHER PERSONNEL	0	3	0	0	0	1	1	NA
MAINTENANCE	1	4	8	2	1	2	3	NA
DESIGN/INSTALLATION/FABRICATION	0	6	6	0	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.25

CRYSTAL RIVER 3

PI EVENTS FOR 89-4

SSF 10/26/89 LER# 30289037 50.72#: 16951 POWER: 94
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : THE LICENSEE DETERMINED THAT THE ACCURACY OF THE HPI FLOW INSTRUMENTATION WAS INADEQUATE. ADEQUATE HPI FLOW TO THE CORE COULD NOT BE ENSURED. BOTH HPI TRAINS WERE DECLARED INOPERABLE. THE CAUSE WAS AN INADEQUATE LICENSEE REVIEW OF A B&W GUIDELINE.

SE 10/26/89 LER# 30289037 50.72#: 16951 POWER: 94
DESC : HPI LINE FLOW INSTRUMENTATION DETERMINED NOT TO BE SUFFICIENTLY ACCURATE FOR OPERATORS TO CORRECTLY BALANCE LOOP INJECTION FLOWS IN ACCORDANCE WITH THE PLANT EMERGENCY OPERATING PROCEDURES.

SSA 12/08/89 LER# 30289040 50.72#: 17294 POWER: 2
DESC : A CONDENSATE PUMP WAS STARTED CAUSING BUS VOLTAGES TO DIP BELOW THE LOW-VOLTAGE SETPOINT LONG ENOUGH TO START BOTH DIESEL GENERATORS.

PI EVENTS FOR 90-1

SSF 01/12/90 LER# 30290007 50.72#: POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A DOOR BETWEEN THE CONTROL COMPLEX AND THE TURBINE BUILDING WAS REMOVED FOR MODIFICATION WORK ON JANUARY 12, 1990. ON APRIL 23, 1990, IT WAS DETERMINED THAT THIS RENDERED BOTH TRAINS OF THE CONTROL COMPLEX EMERGENCY VENTILATION SYSTEM INOPERABLE.

SSF 02/16/90 LER# 30290002 50.72#: 17781 POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A DESIGN ERROR MAY PREVENT A SMALL NUMBER OF FIRE DAMPERS (LESS THAN 10 OF 120) FROM OPERATING UNDER EXPECTED VENTILATION FLOWRATES. THIS CONDITION WAS PREVIOUSLY IDENTIFIED IN 1985, BUT DUE TO A PERSONNEL ERROR, HAD NOT BEEN PURSUED AND RESOLVED.

SSF 03/29/90 LER# 30290005 50.72#: 18096 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : BECAUSE OF A DESIGN ERROR, THE REACTOR BUILDING FLOOD LEVEL EXCEEDS THE LEVEL NECESSARY TO PREVENT SUBMERGENCE OF SAFE SHUTDOWN INSTRUMENTATION AND EQUIPMENT. DURING A LOCA, THE AFFECTED EQUIPMENT MAY NOT PERFORM THEIR SAFETY FUNCTIONS.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 09/18/90 LER# 50.72#: 19430
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 97% POWER.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : A MOTOR OPERATED DECAY HEAT VALVE WAS DISCOVERED 0.75 INCHES OPEN. THIS LINEUP RESULTED IN A BREACH OF CONTAINMENT. THE VALVE HAD NOT CLOSED FULLY BECAUSE THE CLOSED LIMIT SWITCH WAS NOT PROPERLY SET. THIS CONDITION EXISTED FOR ABOUT 14 HOURS.

TABLE 8.25 (CONT.)

CRYSTAL RIVER 3

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	2	0	4	0	1	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	2	2	2	1	3	0	1
FORCED OUTAGE RATE (%)	2	0	59	45	13	4	8	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	3.58	0.00	0.00	0.00	4.26	0.00
CRITICAL HOURS	1153	1016	279	1216	1763	1499	235	2208
COLLECTIVE RADIATION EXPOSURE	39	130	70	8	10	49	395	NA
CAUSE CODES:								
ADMINISTRATIVE	7	5	6	4	4	0	2	NA
LICENSED OPERATOR	1	1	2	1	0	0	0	NA
OTHER PERSONNEL	5	0	3	3	1	0	1	NA
MAINTENANCE	7	4	9	6	1	1	3	NA
DESIGN/INSTALLATION/FABRICATION	3	7	5	5	2	4	2	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.26

DAVIS-BESSE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/26/90 LER# 34690002 50.72#: 17638 POWER: 73
DESC : THE REACTOR TRIPPED DUE TO HIGH FLUX PER # RCP'S RUNNING SIGNAL. THIS OCCURRED DURING TESTING OF REACTOR COOLANT PUMPS CURRENT MONITOR. RCP 1-2 SENT A FALSE OFF SIGNAL TO RPS WHILE RCP 2-2 WAS ACTUALLY OFF DUE TO HIGH INDICATED VIBRATIONS IN 01-90.

PI EVENTS FOR 90-2

SSA 04/03/90 LER# 34690006 50.72#: 18128 POWER: 0
DESC : A CONTRACT WORKER BUMPED INTO 13.8KV BREAKER 'HAAE2', DEENERGIZING THE BUS. THE BREAKER OPENED CAUSING SFAS ACTUATION, INCLUDING A DIESEL GENERATOR START.

SSA 04/07/90 LER# 34690007 50.72#: 18172 POWER: 0
DESC : THE REMOVAL OF A FUSE IN CONTAINMENT PRESSURE TRANSMITTERS CAUSED AN ELECTRICAL SPIKE. THIS RESULTED IN LEVEL 1 THROUGH 4 ESF ACTUATIONS. SAFETY INJECTION STARTED BUT DID NOT INJECT TO THE CORE.

SSA 05/18/90 LER# 34690010 50.72#: 18522 POWER: 0
DESC : LOW PRESSURE INJECTION ACTUATED DURING MAINTENANCE ON SFAS CHANNEL 1. 1000 GALLONS OF WATER INJECTED FROM THE BORATED WATER STORAGE TANK.

PI EVENTS FOR 90-3

SSF 07/14/90 LER# 34690012 50.72#:
PWR HIST: ALL MODES UP TO 100% POWER. PROCEDURAL ERROR DISCOVERED ON 7/14/90.
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : WITH ONE CONTAINMENT RADIATION MONITOR CHANNEL INOPERABLE, THE OTHER CHANNEL WAS DECLARED INOPERABLE BECAUSE ITS TRIP SETPOINT WAS ABOVE THE T.S. ALLOWABLE VALUE. THE METHOD USED TO PROJECT THE TRIP SETPOINT DURING POWER ASCENSION WAS INACCURATE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	2.15	0.51	0.46	0.00	0.00	1.64	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	3	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	0	0	0	1
FORCED OUTAGE RATE (%)	15	6	1	0	0	18	100	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.15	0.51	0.46	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	465	1962	2168	2208	2209	609	0	2198
COLLECTIVE RADIATION EXPOSURE	17	7	11	9	10	251	223	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	4	1	0	3	1	NA
LICENSED OPERATOR	4	1	0	0	0	1	0	NA
OTHER PERSONNEL	2	0	1	5	1	0	3	NA
MAINTENANCE	4	2	4	4	2	2	3	NA
DESIGN/INSTALLATION/FABRICATION	1	0	2	0	0	2	0	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	0	NA

TABLE 8.27

DIABLO CANYON 1

PI EVENTS FOR 89-4

SCRAM 10/06/89 LER# 27589009 50.72#: 16786 POWER: 100
DESC : A SAFETY INJECTION CAUSED A REACTOR TRIP DURING A SURVEILLANCE TEST. A CONDENSER CIRCULATING PUMP WAS LOST DURING THE ELECTRICAL TRANSFER.

SSA 10/06/89 LER# 27589009 50.72#: 16786 POWER: 100
DESC : WHILE PERFORMING A LOOP TEST ON STEAM PRESSURE CHANNEL 1PT-526A, A SAFETY INJECTION OCCURRED AS THE PRESSURE TRANSMITTER SENSING LINE ISOLATION VALVE WAS BEING CLOSED.

PI EVENTS FOR 90-1

SSF 03/09/90 LER# 27590004 50.72#: POWER: 100
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : AN OPERATOR INCORRECTLY ISOLATED THE UNIT 1, SG #4 PRESSURE TRANSMITTERS VICE THE UNIT 2 TRANSMITTERS. AS A RESULT, THE TRANSMITTERS WOULD NOT HAVE INITIATED A SAFETY INJECTION SIGNAL DURING A SECONDARY STEAM LINE BREAK ON STEAM GENERATOR #4.

PI EVENTS FOR 90-2

SSF 04/20/90 LER# 27583037 50.72#: 18296 POWER: 100
GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP
SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC : BECAUSE OF INADEQUATE SEPARATION OF REDUNDANT CIRCUITS, THE LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM MIGHT NOT HAVE BEEN CAPABLE OF SUSTAINING A SINGLE FAILURE AND MAINTAINING AT LEAST ONE TRAIN OPERATIONAL. THIS RESULTED FROM A DESIGN ERROR.

SCRAM 06/14/90 LER# 27590005 50.72#: 18712 POWER: 100
DESC : A REACTOR TRIP OCCURRED DUE TO AN NI HIGH FLUX REJECTION CAUSING AN INCREASE IN RCP SPEED - THIS RAISED REACTOR POWER.

SSA 06/14/90 LER# 27590005 50.72#: 18712 POWER: 100
DESC : EDG STARTED ON A LOW VOLTAGE SIGNAL DUE TO LOSS OF OFFSITE POWER.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	1.57	0.00	0.47	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	0	0	1	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	1	2	6	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.00
CRITICAL HOURS	2209	2160	2183	2208	638	2125	2106	2208
COLLECTIVE RADIATION EXPOSURE	143	3	4	4	207	104	38	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	0	2	6	3	1	NA
LICENSED OPERATOR	1	0	0	0	1	1	0	NA
OTHER PERSONNEL	3	2	0	0	2	2	0	NA
MAINTENANCE	4	3	0	2	8	2	2	NA
DESIGN/INSTALLATION/FABRICATION	3	1	0	1	2	0	0	NA
EQUIP' 'T FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.28

DIABLO CANYON 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/12/90 LER# 32390002 50.72#: POWER: 0
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF A PERSONNEL ERROR, FUEL HANDLING OPERATIONS WERE PERFORMED WITH THE VENTILATION SYSTEM INOPERABLE. VARIOUS TEMPORARY HOSES WERE BLOCKING OPEN BOUNDARY DOORS. THE SYSTEM WAS NOT ABLE TO MAINTAIN THE REQUIRED NEGATIVE PRESSURE.

PI EVENTS FOR 90-2

SSF 04/20/90 LER# 27583037 50.72#: 18296 POWER: 0
GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP
SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC : BECAUSE OF INADEQUATE SEPARATION OF REDUNDANT CIRCUITS, THE LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM MIGHT NOT HAVE BEEN CAPABLE OF SUSTAINING A SINGLE FAILURE AND MAINTAINING AT LEAST ONE TRAIN OPERATIONAL. THIS RESULTED FROM A DESIGN ERROR.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	0	0	0	1	1	0
FORCED OUTAGE RATE (%)	0	0	4	9	11	0	1	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.51	0.98	0.50	0.00	0.66	0.00
CRITICAL HOURS	632	2160	1946	2035	1996	1490	1526	2208
COLLECTIVE RADIATION EXPOSURE	143	3	4	4	207	104	38	NA
CAUSE CODES:								
ADMINISTRATIVE	9	4	1	2	6	2	1	NA
LICENSED OPERATOR	1	0	1	0	0	0	1	NA
OTHER PERSONNEL	6	0	0	1	0	2	2	NA
MAINTENANCE	12	4	2	3	4	1	4	NA
DESIGN/INSTALLATION/FABRICATION	6	1	0	1	1	1	0	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.29

DRESDEN 2

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 23789029 50.72#: 16920 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE OF THE POSSIBILITY THAT A STEAM VOID EXISTED IN THE PUMP DISCHARGE LINE. THE LINE'S HIGH TEMPERATURE (275F) WAS CAUSED BY REACTOR FEEDWATER BACK LEAKAGE. DRESDEN 3 EXPERIENCED A SIMILAR CONDITION.

SE 10/23/89 LER# 23789029 50.72#: 16920 POWER: 100
DESC : LEAKAGE OF FEEDWATER INTO THE HPCI SYSTEM THRU THE INJECTION VALVES RESULTED IN WATER HAMMER AND THE POTENTIAL OF THERMAL STRATIFICATION AND STEAM BINDING. AIT TO SITE.

.. EVENTS FOR 90-1

SCRAM 01/05/90 LER# 23790001 50.72#: 17495 POWER: 99
DESC : PERSONNEL ERROR AND PROCEDURAL DEFICIENCIES CAUSED THE MSIV'S TO CLOSE DURING A MAIN STEAMLINE HIGH FLOW SURVEILLANCE. THIS CAUSED A REACTOR TRIP.

SCRAM 01/16/90 LER# 23790002 50.72#: 17566 POWER: 100
DESC : THE REACTOR TRIPPED ON LOW-WATER LEVEL FOLLOWING A LOSS OF ALL OFFSITE POWER. THIS WAS DUE TO A FAULT IN THE "2D" CONDENSATE PUMP MOTOR AND A FAILURE OF ITS BREAKER TO OPEN. SEVEN RODS STOPPED AT LEVEL 02.

SSA 01/16/90 LER# 23790002 50.72#: 17566 POWER: 100
DESC : EMERGENCY DIESEL GENERATORS STARTED AND A GROUP 2 ISOLATION OCCURRED DUE TO A LOSS OF ALL OFFSITE POWER.

SE 01/16/90 LER# 23790002 50.72#: 17566 POWER: 100
DESC : FAILURE OF RESERVE AUX TRANSFORMER (RAT). RAT FAILED AFTER CONDENSATE PUMP 2D TRIPPED, PUMP MOTOR CAUGHT FIRE. LOSS OF OFFSITE POWER WITH MULTIPLE EQUIPMENT FAILURES.

SE 03/19/90 LER# 50.72#: POWER: 0
DESC : WATER HAMMER IN HPCI PROBABLY CAUSED BY LEAKING VALVES.

PI EVENTS FOR 90-2

SSF 06/28/90 LER# 23790003 50.72#: 18790 POWER: 99
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE PRIMARY CONTAINMENT INTEGRITY WAS CHALLENGED DAILY WHILE OBTAINING DRYWELL AIR SAMPLES. THE SAMPLE PUMPS WERE LEFT UNATTENDED (ONE HOUR PER DAY SINCE 1983) WITHOUT ANY AUTOMATIC ISOLATION CAPABILITY.

PI EVENTS FOR 90-3

SSA 08/02/90 LER# 2379000[illegible] 50.72#: 19015 PWR HIST: POWER OPERATIONS AT 87%
DESC : OPERATORS MANUALLY INITIATED CONTAINMENT COOLING SERVICE WATER PUMPS AND LOW PRESSURE COOLANT INJECTION PUMPS TO COOL THE TORUS FOLLOWING A ELECTROMAGNETIC RELIEF VALVE OPENING.

[illegible] 08/02/90 LER# 23790006 50.72#: 19015
[illegible] : POWER OPERATIONS AT 87%.
: A SAFETY RELIEF VALVE SPURIOUSLY OPENED AND REMAINED STUCK OPEN. AFTER A MANUAL SCRAM, THERE WAS A RAPID COOLDOWN OF THE SYSTEM.

SSF 08/20/90 LER# 23790008 50.72#: 19159
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 82% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN A HIGH STEAM FLOW TRANSMITTER WAS FOUND OUT OF TOLERANCE. ATTEMPTS TO RECALIBRATE THE TRANSMITTER WERE UNSUCCESSFUL. THE ROOT CAUSE OF THE FAILURE WILL BE DETERMINED BY THE MANUFACTURER.

TABLE 8.29 (CONT.)

DRESDEN 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.08	0.00	0.46	0.00	1.06	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	2	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	1	0	1
SIGNIFICANT EVENTS	1	1	0	0	1	2	0	1
SAFETY SYSTEM FAILURES	0	2	1	1	1	0	1	1
FORCED OUTAGE RATE (%)	0	9	0	2	4	14	0	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.46	0.00	0.53	0.00	0.53
CRITICAL HOURS	700	929	2183	2177	1964	1888	2183	1888
COLLECTIVE RADIATION EXPOSURE	343	370	46	43	105	168	45	NA
CAUSE CODES:								
ADMINISTRATIVE	3	7	2	3	1	2	1	NA
LICENSED OPERATOR	1	2	0	0	0	1	0	NA
OTHER PERSONNEL	1	2	1	0	2	0	0	NA
MAINTENANCE	7	10	3	10	3	2	1	NA
DESIGN/INSTALLATION/FABRICATION	1	2	0	2	1	0	1	NA
EQUIPMENT FAILURE	0	2	0	0	0	0	0	NA

TABLE 8.30

DRESDEN 3

PI EVENTS FOR 89-4

SSF 10/22/89 LER# 24989004 50.72#: POWER: 93
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER THE HPCI ROOM COOLER DRIVE BELTS FAILED. A WORN BEARING CAUSED MISALIGNMENT OF THE SHAFT AND FAILURE OF THE BELT. IMPROPER BELT TENSIONING MAY HAVE CAUSED THE BEARING TO WEAR EXCESSIVELY.

SE 10/23/89 LER# 23789029 50.72#: 16920 POWER: 0
DESC : LEAKAGE OF FEEDWATER INTO THE HPCI SYSTEM THRU THE INJECTION VALVES RESULTED IN WATER HAMMER AND THE POTENTIAL OF THERMAL STRATIFICATION AND STEAM BINDING.

SSF 10/31/89 LER# 23789029 50.72#: 16983 POWER: 93
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE OF THE POSSIBILITY THAT A STEAM VOID MAY HAVE EXISTED IN THE HPCI PUMP DISCHARGE LINE. THE LINE'S HIGH TEMPERATURE WAS CAUSED BY REACTOR FEEDWATER BACK LEAKAGE. DRESDEN 2 EXPERIENCED A SIMILAR CONDITION.

PI EVENTS FOR 90-1

SCRAM 03/10/90 LER# 24990005 50.72#: 17944 POWER: 94
DESC : AN AIR LINE TO THE 2A OUTBOARD MSIV BROKE, CAUSING THE MSIV TO SHUT, CAUSING A HIGH STEAM FLOW CONDITION WHICH SCRAMMED THE REACTOR.

PI EVENTS FOR 90-2

SSF 06/28/90 LER# 23790003 50.72#: 18790 POWER: 48
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE PRIMARY CONTAINMENT INTEGRITY WAS CHALLENGED DAILY WHILE OBTAINING DRYWELL AIR SAMPLES. THE SAMPLE PUMPS WERE LEFT UNATTENDED (ONE HOUR PER DAY SINCE 1983) WITHOUT ANY AUTOMATIC ISOLATION CAPABILITY.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.52	0.98	0.65	0.00	0.00	1.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	2	1	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	2	0	1	0
FORCED OUTAGE RATE (%)	0	7	4	0	0	26	0	0
EQUIP. FORCED OUTAGES/1.00 COMMERCIAL HRS	0.00	1.47	1.29	0.00	0.00	2.00	0.00	0.00
CRITICAL HOURS	1939	2040	1548	2208	1516	999	2164	2119
COLLECTIVE RADIATION EXPOSURE	343	370	46	43	105	168	45	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	5	1	3	4	2	NA
LICENSED OPERATOR	0	2	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	2	0	3	0	0	NA
MAINTENANCE	1	2	4	3	5	4	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	1	1	2	2	1	NA
EQUIPMENT FAILURE	0	1	0	0	0	1	0	NA

TABLE 8.31

DUANE ARNOLD

PI EVENTS FOR 89-4

SSF 11/03/89 LER# 33189014 50.72#: 17002 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT ISOLATION CONTROL SYSTEM
DESC : AT LOWER STEAM LEAKAGE RATES, ACTIVATION OF THE FIRE SUPPRESSION DELUGE IN THE HPCI OR RCIC EQUIPMENT ROOMS WOULD PROBABLY PREVENT THE STEAM LEAK DETECTION SYSTEM FROM AUTOMATICALLY ISOLATING THE HPCI OR RCIC STEAM SUPPLY PIPING.

SSF 12/12/89 LER# 33189016 50.72#: 17330 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM FAILED TO COME UP TO RATED FLOW WITHIN THE REQUIRED TIME INTERVAL DURING A SURVEILLANCE TEST. THE PROBLEM WAS DETERMINED TO BE INADEQUATE TURBINE RESPONSE DURING THE STARTUP SEQUENCE. ADJUSTMENTS WERE MADE AND THE SYSTEM WAS RESTORED.

PI EVENTS FOR 90-1

SSA 03/15/90 LER# 33190001 50.72#: 17987 POWER: 48
DESC : A SUBSTATION CAPACITOR EXPLODED, CAUSING VOLTAGE PERTURBATIONS, WHICH CAUSED BOTH EDG'S TO START BUT NOT LOAD THE BUS.

PI EVENTS FOR 90-2

SCRAM 04/01/90 LER# 33190004 50.72#: 18114 POWER: 8
DESC : A SPURIOUS UPSCALE SPIKE ON THE APRM'S CAUSED A SCRAM. THE APRM SPIKED TO 15% POWER ON THE STARTUP.

PI EVENTS FOR 90-3

SSA 07/09/90 LER# 33190007 50.72#: 18859 PWR HIST: REFUELING
DESC : A LOSS OF VITAL OFFSITE POWER CAUSED THE EDG TO START AND LOAD THE BUS. CONTROL ROOM STANDBY FILTER UNIT AND SBGT STARTED.

SSF 07/30/90 LER# 33190009 50.72#:
PWR HIST: ALL MODES UP TO 100% POWER. EXISTED SINCE ISSUANCE OF 10 CFR 50 APP R. DISCOVERED 7/30/90.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN INADEQUATE FIRE BARRIER PENETRATION SEAL WAS DISCOVERED IN THE SEIMIC GAP BETWEEN THE CONTROL BUILDING AND THE REACTOR BUILDING. THIS SEAL HAD EXISTED SINCE ORIGINAL CONSTRUCTION BUT HAD NOT BEEN UPGRADED TO THE REQUIREMENTS OF 10 CFR 50 APPENDIX R.

SCRAM 09/10/90 LER# 33190014 50.72#: 19332 PWR HIST: POWER OPERATIONS AT 27%
DESC : A HIGH PRESSURE REACTOR TRIP OCCURRED FOLLOWING TURBINE TRIP DUE TO SENSED HIGH LEVEL IN MOISTURE SEPARATOR DUE TO VALVE MISALIGNMENT FOLLOWING MAINTENANCE.

SCRAM 09/18/90 LER# 50.72#: 19399 PWR HIST: POWER OPERATIONS AT 50%
DESC : THREE OF FOUR MSIV'S CLOSED DURING SURVEILLANCE TESTING CAUSING A REACTOR SCRAM. LOOSE CONNECTIONS ON THE CONTROL ROOM FRONT PANEL MSIV'S CONTROL CIRCUITRY CAUSED THE SCRAM.

TABLE 8.31 (CONT.)

DUANE ARNOLD

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.15	0.48	0.56	0.00	0.00	0.00	5.07
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	2	1	1	0	0	1	2
SAFETY SYSTEM ACTUATIONS	2	2	0	2	0	1	0	1
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	4	0	1	2	0	0	1
FORCED OUTAGE RATE (%)	100	23	5	3	45	3	1	41
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	5.80	1.72	0.95	0.00	0.77	0.00	0.47	5.07
CRITICAL HOURS	173	1741	2103	1785	1293	2095	2111	394
COLLECTIVE RADIATION EXPOSURE	526	45	28	46	63	36	58	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	0	2	1	1	2	NA
LICENSED OPERATOR	1	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	2	1	2	1	0	0	NA
MAINTENANCE	1	6	1	4	2	3	1	NA
DESIGN/INSTALLATION/FABRICATION	5	1	0	2	1	0	1	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.32

FARLEY 1

PI EVENTS FOR 89-4

SCRAM 11/12/89 LER# 34889006 50.72#: 17082 POWER: 34
DESC : A CIRCUIT CARD CONFIGURED FOR THE WRONG VALVE WAS INSTALLED. ALL GOVERNOR VALVES OPENED REDUCING MAIN STEAM LINE PRESSURE AND CAUSING A SAFETY INJECTION AND THEN A REACTOR TRIP.

SSA 11/12/89 LER# 34889006 50.72#: 17082 POWER: 34
DESC : A SAFETY INJECTION OCCURRED ON LOW MAIN STEAMLINE PRESSURE WHEN A MISCONFIGURED CIRCUIT CARD WAS INSTALLED IN THE TURBINE CONTROL VALVE CIRCUITRY, CAUSING TURBINE CONTROL VALVES TO FULLY OPEN.

SSF 11/13/89 LER# 34889008 50.72#: 17097 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : THE CONTAINMENT INTEGRITY WAS VIOLATED WHEN BOTH AIRLOCK DOORS WERE OPEN AT THE SAME TIME. WITH THE INNER DOOR BLOCKED PARTIALLY OPEN BY AN OBSTRUCTION, PERSONNEL BYPASSED THE ASSOCIATED ELECTRICAL INTERLOCKS BY OPENING THE OUTER DOOR MANUALLY.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	0.00	0.80	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	1	0	0	0
FORCED OUTAGE RATE (%)	1	0	0	0	6	0	0	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
CRITICAL HOURS	2198	2160	2183	2016	1254	2160	2183	2144
COLLECTIVE RADIATION EXPOSURE	11	34	127	44	169	8	10	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	1	0	1	3	1	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OTHER PERSONNEL	4	0	2	0	2	0	0	NA
MAINTENANCE	5	0	3	0	2	2	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	0	2	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.33

BARLEY 2

PI EVENTS FOR 89-4

SCRAM 10/18/89 LER# 36489012 50.72#: 16875 POWER: 100
DESC : THE MAIN TURBINE ELECTRO-HYDRAULIC CONTROL VA. E CLOSED, CAUSING A SG SHRINK AND A REACTOR TRIP ON LOW SG LEVEL.

SCRAM 10/19/89 LER# 36489013 50.72#: 16887 POWER: 2
DESC : BECAUSE THE AIR SUPPLY TO THE "B" MAIN FEEDWATER R GULATOR BYPASS VALVE WAS ISOLATED, THE VALVE DID NOT OPEN AS EXPECTED WHEN SWITCHING FROM AUXILIARY TO MAIN FEEDWATER. OPERATOR FAILED TO VERIFY SG LEVELS INCREASING PRIOR TO DECREASING AFW FLOW.

SCRAM 11/18/89 LER# 36489015 50.72#: 17139 POWER: 1 0
DESC : A VOLTAGE TRANSIENT IN THE INVERTER FOR THE DIGITAL E ECTRO HYDRAULIC SYSTEM CAUSED A TURBINE TRIP WHICH CAUSED A REACTOR TRIP. AN INTERNAL FAULT DUE T MOISTURE INTRUSION CAUSED THE TRANSIENT.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 05/12/90 LER# 36490001 50.72#: 18449 POWER: 3
DESC : THE LOSS OF THE MFP STEAM SUPPLY VALVE CLOSED CAUSED A LOWERING SG LEVEL WHILE STARTING UP. A LOW SG LEVEL REACTOR SCRAM RESULTED. THE MFP STEAM SUPPLY VALVE CLOSED DUE TO LOW EH PRESSURE.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	2.09	0.00	0.92	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	1	0
TOTAL SCRAMS	0	0	2	0	3	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	13	7	3	0	5	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.92	0.00	0.54	0.00
CRITICAL HOURS	2209	1995	959	2082	2169	2160	1839	2208
COLLECTIVE RADIATION EXPOSURE	11	34	127	44	169	8	10	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	5	1	2	2	2	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	2	0	4	1	2	0	0	NA
MAINTENANCE	3	1	8	2	2	2	2	NA
DESIGN/INSTALLATION/FABRICATION	1	0	2	0	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.34

FERMI 2

PI EVENTS FOR 89-4

SSA 11/15/89 LER# 34189025 50.72#: 17108 POWER: 0
DESC : A PRESSURE SPIKE CAUSED A HIGH SCRAM DISCHARGE VOLUME LEVEL WHICH RESULTED IN A CORE SPRAY AND RCIC INITIATION ALONG WITH A DIESEL GENERATOR START.

SSF 11/20/89 LER# 34189031 50.72#: POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : THE EMERGENCY EQUIPMENT SERVICE WATER AND COOLING WATER SYSTEMS WERE INOPERABLE. THE ASSOCIATED PUMPS' AUTO START CAPABILITIES HAD BEEN INOPERABLE FOLLOWING A TEST THAT OCCURRED APPROXIMATELY 30 HOURS EARLIER. THE CAUSE WAS A PROCEDURAL ERROR.

SCRAM 12/18/89 LER# 34189036 50.72#: 17380 POWER: 20
DESC : DURING AN RWCU SYSTEM SURVEILLANCE TEST, AN OPERATOR INADVERTENTLY PUSHED THE INBOARD MAIN STEAM ISOLATION VALVE CLOSE PUSHBUTTON INSTEAD OF THE RESET FOR THE NSSSS LOGIC AND CAUSED A REACTOR TRIP.

PI EVENTS FOR 90-1

SSF 01/08/90 LER# 34190001 50.72#: 17515 POWER: 100
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : A BLOWN POWER FUSE FOR A DIV II ECCS TESTABILITY CABINET RESULTED IN THE FOLLOWING SYSTEMS BEING DECLARED INOPERABLE: EMERGENCY CORE COOLING SYSTEMS, ALTERNATE ROD INSERTION, ANTICIPATED TRANSIENT WITHOUT SCRAM, SAFETY RELIEF VALVES LOW-LOW SETPOINT.

PI EVENTS FOR 90-2

SCRAM 04/10/90 LER# 34190003 50.72#: 18193 POWER: 100
DESC : A REACTOR TRIP OCCURRED DUE TO THE PLANTS ANTICIPATORY MSIV CLOSURE TRIP.

PI EVENTS FOR 90-3

SSF 07/26/90 LER# 34190006 50.72#: 18974
PWR HIST: ALL MODES UP TO 100% POWER. PREVIOUSLY UNANALYZED CONDITION DISCOVERED ON 7/26/90.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A PREVIOUSLY UNANALYZED CONDITION COULD RESULT FROM A SINGLE FAILURE OF EITHER CONTROL CENTER HVAC CHLORINE DETECTORS. THIS WOULD CAUSE THE CCHVAC TO SHIFT INTO THE CHLORINE ISOLATION MODE AND PREVENT IT FROM AUTO-SHIFTING INTO THE RAD RECIRC MODE.

SSF 08/26/90 LER# 50.72#: 19208
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 95% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO EXCESSIVE VIBRATION OF THE HPCI BOOSTER PUMP.

TABLE 8.34 (CONT.)

FERMI 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.53	0.00	0.00	2.17	0.00	0.49	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	1	1	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	3	0	2	1	1	0	2
FORCED OUTAGE RATE (%)	8	28	0	2	20	0	6	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.53	0.00	0.00	0.00	0.00	0.49	0.00
CRITICAL HOURS	1950	1870	2183	1488	461	2160	2061	2056
COLLECTIVE RADIATION EXPOSURE	15	11	15	66	142	21	28	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	3	2	8	1	0	NA
LICENSED OPERATOR	2	1	0	1	3	0	0	NA
OTHER PERSONNEL	1	2	1	3	7	0	0	NA
MAINTENANCE	3	7	4	8	11	1	2	NA
DESIGN/INSTALLATION/FABRICATION	0	2	2	1	2	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.35

FITZPATRICK

PI EVENTS FOR 89-4

SSF 10/08/89 LER# 33369018 50.72#: 16799 POWER: 14
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE SYSTEM ISOLATED ON A HIGH STEAM FLOW SIGNAL. THE SIGNAL WAS ELECTRICALLY VALID BUT THE SETPOINT, LIMITS, AND ASSUMPTIONS UPON WHICH THE SETPOINT WAS BASED WERE OVERLY CONSERVATIVE.

SSF 10/31/89 LER# 33389021 50.72#: 17098 POWER: 100
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE. AFTER FAILING AN OPERABILITY TEST, A FAULT WAS DISCOVERED IN THE RCIC INBOARD INJECTION VALVE MOTOR OPERATOR WINDING INSULATION. THE CAUSE WAS POOR MANUFACTURING QUALITY CONTROL.

SCRAM 11/05/89 LER# 33389020 50.72#: 17014 POWER: 100
DESC : ELECTRONIC NOISE GENERATED A TURBINE OVERSPEED SIGNAL WHICH CAUSED THE TURBINE CONTROL VALVES TO CLOSE. THIS CAUSED A REACTOR COOLANT SYSTEM PRESSURE SPIKE THAT RESULTED IN A REACTOR TRIP ON HIGH REACTOR POWER.

SCRAM 11/12/89 LER# 33389023 50.72#: POWER: 10
DESC : THE SURVEILLANCE TEST PROCEDURE TO SET THE APRM HIGH FLUX TRIP SETPOINT FAILED TO PROVIDE ADEQUAYE MARGIN TO THE NOMINAL 15% RESULTING IN A REACTOR SCRAM.

SSF 11/29/89 LER# 33389024 50.72#: POWER: 100
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS INADVERTENTLY RENDERED INOPERABLE DURING A SURVEILLANCE TEST. AN OPERATOR ERROR RESULTED IN SHUTTING THE RCIC OUTBOARD STEAM ISOLATION VALVE. THE SYSTEM WAS INOPERABLE FOR [illegible] MIN.

SSF 11/30/89 LER# 33389025 50.72#: 17224 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE SYSTEM ISOLATED ON A HIGH STEAM FLOW SIGNAL. THE SETPOINTS WERE DETERMINED TO BE OVERLY CONSERVATIVE. ADDITIONALLY, THE TURBINE FAILED TO ACHIEVE ITS RATED SPEED DURING TESTING.

PI EVENTS FOR 90-1

SCRAM 01/19/90 LER# 33390001 50.72#: 17593 POWER: 100
DESC : THE REACTOR TRIPPED AS TECHNICIANS WERE CALIBRATING THE REACTOR WATER-LEVEL INSTRUMENTS. RAPID VALVE MOVEMENT OF THE INSTRUMENT EQUALIZING VALVE BY A TECHNICIAN CAUSED A LOW REACTOR WATER-LEVEL SIGNAL.

SSF 02/07/90 LER# 33390004 50.72#: 17715 POWER: 100
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE. A FAILED MASTER TRIP UNIT GENERATED A FALSE HIGH AREA TEMPERATURE SIGNAL, WHICH CAUSED THE TURBINE STEAM SUPPLY ISOLATION VALVE TO SHUT.

SSF 02/20/90 LER# 33390005 50.72#: 17802 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE TURBINE STOP VALVE OPENED TOO SLOWLY DURING A SURVEILLANCE TEST. THE FILTER ELEMENTS AND SERVO MECHANISM OF THE HYDRAULIC OIL CONTROL SYSTEM WERE CLOGGED WITH FOREIGN MATERIAL.

SCRAM 03/19/90 LER# 33390009 50.72#: 18015 POWER: 100
DESC : A MFW MALFUNCTION RESULTED IN A TURBINE TRIP REACTOR SCRAM. A LOCK WASHER WAS LODGED IN THE AMPLIFIER BOX CAUSING A PATH TO GROUND.

SSA 03/19/90 LER# 33390009 50.72#: 18015 POWER: 100
DESC : HPCI AND RCIC AUTO INITIATED AND INJECTED ON THE LOW REACTOR LEVEL AFTER THE SCRAM. HPCI EXPERIENCED FLOW FLUCTUATIONS AND HAD TO BE CONTROLLED IN MANUAL.

TABLE 8.35 (CONT.)

FITZPATRICK

PI EVENTS FOR 90-1 (CONT.)

SSF 03/19/90 LER# 33390010 50.72#: 18015 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER EXPERIENCING FLOW FLUCTUATIONS FOLLOWING A REACTOR SCRAM. INADEQUATE TEST PROCEDURES FAILED TO REVEAL THAT SYSTEM DAMPING NEEDED TO BE INCREASED FOLLOWING HYDRAULIC SERVO CLEANING.

PI EVENTS FOR 90-2

SE 04/11/90 LER# 33390012 50.72#: 18211 POWER: 0
DESC : MANY CHECK VALVES IN THE EMERGENCY SERVICE WATER AND INTERFACING SYSTEMS WERE INOPERABLE BECAUSE OF ACCUMULATIONS OF SILT AND CORROSION PRODUCTS.

PI EVENTS FOR 90-3

SSF 08/21/90 LER# 50.72#: 19171
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME, DISCOVERED AT 60% POWER.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : THE EOP PRIMARY CONTAINMENT PRESSURE LIMIT MAY BE INCORRECT BECAUSE OF AN ERROR IN A CALCULATIONAL INPUT. THE LICENSEE HAS DECIDED TO SHUT THE PLANT DOWN PENDING FINAL EVALUATION OF THIS PROBLEM.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.53	0.98	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	0	0	0	2	2	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	3	4	3	2	4	3	0	1
FORCED OUTAGE RATE (%)	42	0	0	0	14	9	0	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	1.06	0.49	0.00	0.48
CRITICAL HOURS	690	2160	2183	1854	1890	2038	174	2063
COLLECTIVE RADIATION EXPOSURE	335	58	52	178	89	101	664	NA
CAUSE CODES:								
ADMINISTRATIVE	4	0	2	2	5	6	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	3	2	4	4	2	NA
MAINTENANCE	3	2	5	4	6	9	7	NA
DESIGN/INSTALLATION/FABRICATION	4	2	3	3	5	1	4	NA
EQUIPMENT FAILURE	0	0	0	0	1	2	0	NA

TABLE 8.36

FORT CALHOUN

PI EVENTS FOR 89-4

SSF 10/12/89 LER# 28589020 50.72#: 16829 POWER: 99
GROUP : COMPONENT COOLING WATER SYSTEM GROUP
SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
DESC : TWO OF THE FOUR CCW HEAT EXCHANGERS WERE INOPERABLE FOR GREATER THAN 24 HOURS. THIS VIOLATES T.S. 2.3 AND COULD HAVE PREVENTED FULFILLMENT OF A SAFETY FUNCTION. ONE HX WAS OOS DUE TO IMPROPERLY INSTALLED VALVE OPERATORS AND THE OTHER FOR MAINTENANCE.

SSF 12/21/89 LER# 28589024 50.72#: 17400 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : PROCEDURES INCORRECTLY ALLOWED THE USE OF THE CS PUMPS AS AN ALTERNATE MEANS OF SHUTDOWN COOLING. THIS COULD HAVE RESULTED IN PRESSURIZING THE CS SUCTION PIPING ABOVE DESIGN PRESSURE, WHICH COULD HAVE RESULTED IN THE LOSS OF HEAT REMOVAL CAPABILITY.

PI EVENTS FOR 90-1

SSF 02/17/90 LER# 28590004 50.72#: 17789 POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : SIX OF 10 MAIN STEAM SAFETY VALVES' LIFT SETPOINTS WERE FOUND OUT OF TOLERANCE DURING A SURVEILLANCE TEST. THE CAUSE WAS ATTRIBUTED TO SETPOINT DRIFT AND AN OVERLY RESTRICTIVE OPERABILITY CRITERIA.

SSA 02/26/90 LER# 28590006 50.72#: 17844 POWER: 0
DESC : LOST ALL OFFSITE POWER FOR APPROXIMATELY 14 MIN DUE TO A RELAY TRIPPING. THE EDG AUTOMATICALLY STARTED, BUT THE SHUTDOWN COOLING HAD TO BE MANUALLY SHED FROM THE BUS BEFORE THE EDG COULD LOAD THE BUS.

SSF 03/16/90 LER# 28590009 50.72#: 17995 POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : BECAUSE OF DESIGN AND ANALYSIS DEFICIENCIES,IN THE EVENT OF A MAIN STEAM LINE BREAK OR A LOSS OF COOLANT ACCIDENT, THE AUX FEED WATER PIPING INSIDE THE CONTAINMENT WOULD BE OVER-PRESSURIZED DUE TO THERMAL EXPANSION OF FLUID BETWEEN CLOSED VALVES.

SSA 03/27/90 LER# 28590010 50.72#: 18075 POWER: 0
DESC : DURING POST MAINT TESTING, AN EDG TRIED TO AUTO START WHEN AN OPERATOR PLACED THE MODE SELECTER SWITCH IN "EMERG STANDBY" WITH THE NONVITAL BUS DENERGIZED. THE EDG DID NOT START BECAUSE THE AIR RECEIVER HAD NOT ACCUMULATED THE REQUIRED AIR PRESS TO

PI EVENTS FOR 90-2

SSA 04/02/90 LER# 28590011 50.72#: 18123 POWER: 0
DESC : A SAFETY INJECTION ACTUATION SIGNAL (SIAS) OCCURRED WHEN A FAULTY PROCEDURE CAUSED A LOW PRESSURIZER PRESSURE SIGNAL. SIAS SIGNAL WAS GENERATED BUT THE PUMPS WERE BLOCKED.

SSF 06/12/90 LER# 28590018 50.72#: POWER: 30
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : PLANT PROTECTION SYSTEM
DESC : PROCEDURAL DEFICIENCIES COULD HAVE RENDERED THE AXIAL POWER DISTRIBUTION AND THERMAL MARGIN/LOW PRESSURE TRIP FUNCTIONS OF ALL RPS CHANNELS INOPERABLE. THE PROCEDURE CONTAINED AN ERROR IN THE CALIBRATION EQUATION.

SE 06/25/90 LER# 50.72#: 19354 POWER: 6
DESC : ELEVATED AMBIENT TEMPERATURES CAUSE HEAT BUILDUP IN INSTRUMENT CABINETS RESULTING IN EMERGENCY DIESEL GENERATOR PROBLEMS.

PI EVENTS FOR 90-3

SSF 09/13/90 LER# 50.72#: 19354
PWR HIST: ALL MODES UP TO 100% POWER. ORIGINAL DESIGN ERROR EXISTED UNTIL 6/25/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : A POTENTIAL COMMON MODE FAILURE OF BOTH EDGS EXISTED SINCE INITIAL PLANT STARTUP. THE STATIC VOLTAGE REGULATOR EXCITER CABINET REACHED TEMPERATURES HIGH ENOUGH TO CAUSE SOLID STATE COMPONENT MALFUNCTION.

TABLE 8.36 (CONT.)

FORT CALHOUN

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	2	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	2	0	2	1	2	2	1	1
FORCED OUTAGE RATE (%)	0	0	9	5	0	0	0	13
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.0L	0.00	0.47	0.00	0.00	0.00	0.51
CRITICAL HOURS	0	1479	2022	2107	2209	1142	870	1947
COLLECTIVE RADIATION EXPOSURE	213	48	16	19	10	99	139	NA
CAUSE CODES:								
ADMINISTRATIVE	5	5	6	2	2	3	8	NA
LICENSED OPERATOR	0	0	1	0	0	1	0	NA
OTHER PERSONNEL	7	2	1	1	2	3	1	NA
MAINTENANCE	8	7	6	2	3	5	5	NA
DESIGN/INSTALLATION/FABRICATION	4	2	3	0	1	4	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.37

FORT ST. VRAIN

PI EVENTS FOR 89-4

FORT ST. VRAIN CEASED ALL OPERATIONS IN AUGUST 1989. THEREFORE, ANY PERFORMANCE INDICATOR EVENTS OCCURRING AFTER THE THIRD QUARTER 1989 WILL NOT BE INCLUDED IN THIS REPORT.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	NA	NA	NA	NA
SCRAMS <= 15% POWER	0	0	0	0	NA	NA	NA	NA
TOTAL SCRAMS	0	0	0	0	NA	NA	NA	NA
SAFETY SYSTEM ACTUATIONS	0	0	0	0	NA	NA	NA	NA
SIGNIFICANT EVENTS	0	0	0	0	NA	NA	NA	NA
SAFETY SYSTEM FAILURES	0	1	0	3	NA	NA	NA	NA
FORCED OUTAGE RATE (%)	0	100	29	48	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.52	0.86	NA	NA	NA	NA
CRITICAL HOURS	0	193	1971	1168	NA	NA	NA	NA
COLLECTIVE RADIATION EXPOSURE	0	1	1	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	NA	NA	NA	NA
LICENSED OPERATOR	NA	NA	NA	NA	NA	NA	NA	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	NA	NA	NA
MAINTENANCE	NA	NA	NA	NA	NA	NA	NA	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	NA	NA	NA	NA	NA	NA
EQUIPMENT FAILURE	NA	NA	NA	NA	NA	NA	NA	NA

THE UNIT CEASED ALL OPERATIONS IN AUGUST 1989 AND ALL PERFORMANCE INDICATOR DATA AFTER THE THE THIRD QUARTER 1989 WILL BE NA.

TABLE 8.38

GINNA

PI EVENTS FOR C9-4

SSF 11/17/89 LER# 24489016 50.72#: 18597 POWER: 99
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : SEVERAL SINGLE SWITCH FAILURES WERE IDENTIFIED THAT COULD DISABLE BOTH TRAINS OF THE FOLLOWING SYSTEMS: SAFETY INJECTION, CONTAINMENT ISOLATION, CONTAINMENT SPRAY, CONTAINMENT VENTILATION, AND FEEDWATER ISOLATION.

PI EVENTS FOR 90-1

SSF 02/25/90 LER# 24490001 50.72#: POWER: 98
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE PLANT HAD AN INOPERABLE FIRE BARRIER PENETRATION, FIRE DAMPER, AND FIRE DETECTION SYSTEM. FURTHERMORE, THE APPROPRIATE FIRE WATCH T.S. REQUIREMENTS WERE NOT MET.

SSF 02/26/90 LER# 24490002 50.72#: POWER: 98
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : THE PLANT HAD INOPERABLE FIRE DETECTION SYSTEMS IN THE "A" AND "B" BATTERY ROOMS. FURTHERMORE, TH APPROPRIATE FIRE WATCH T.S. REQUIREMENTS WERE NOT MET.

PI EVENTS FOR 90-2

SSA 04/25/90 LER# 24490005 50.72#: 18336 POWER: 0
DESC : AN EDG AUTO STARTED WHEN AN RCP STARTED. THIS CAUSED A DIP IN VOLTAGE ON THE '14' AND '18' SAFEGUARDS BUSSES.

SSA 05/05/90 LER# 24490006 50.72#: 18398 POWER: 0
DESC : SAFETY INJECTION WAS INITIATED BUT DID NOT INJECT ANY WATER TO THE CORE. TWO OUT OF 3 LOGIC ON PZR LOW PRESSURE CAUSED THE ACTUATION. CORE PHYSICS TESTING WAS IN PROGRESS.

SCRAM 05/10/90 LER# 24490007 50.72#: 18426 POWER: 88
DESC : A FAULTY FRV CONTROLLER CAUSED A STEAMFLOW FEEDFLOW MISMATCH WHEN THE ALL VOLATILE TREATMENT SYSTEM WAS SWAPPED. A REACTOR SCRAM RESULTED.

SCRAM 06/09/90 LER# 24490010 50.72#: 18665 POWER: 97
DESC : A REACTOR TRIP OCCURRED DUE TO LOW SG LEVEL AND STEAM FLOW/FEED FLOW MISMATCH. THE FEED REGULATING VALVE FAILED CLOSED AND TRIPPED THE CONDENSATE BOOSTER PUMPS.

SSA 06/09/90 LER# 24490009 50.72#: 18668 POWER: 0
DESC : AN ELECTRICIAN ACCIDENTALLY CLOSED THE WRONG BREAKER CAUSING POWER TO BACKFEED THROUGH THE STATION. THE RESULTING DROP IN VOLTAGE CAUSED THE 'A' EDG TO START AND LOAD THE BUS.

SSF 06/19/90 LER# 24490011 50.72#: POWER: 98
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : BECAUSE OF INADEQUATE DESIGN INFORMATION, A FIRE DAMPER WAS NOT INSTALLED (AS REQUIRED) IN THE TWO HOUR FIRE WALL SEPERATING THE RELAY ROOM FROM THE CONTROL ROOM STAIRWELL. THIS CONDITION EXISTED SINCE ORIGINAL CONSTRUCTION.

PI EVENTS FOR 90-3

SCRAM 09/26/90 LER# 50.72#: 19465 PWR HIST: POWER OPERATIONS AT 97%
DESC : A TURBINE/REACTOR TRIP OCCURRED WHEN A PLANT EMPLOYEE DROPPED A FLASHLIGHT ON THE TURBINE TRIP AUTO STOP RELAYS.

TABLE 8.38 (CONT.)

GINNA

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.41	0.00	0.00	0.00	1.55	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	2	1
SAFETY SYSTEM ACTUATIONS	0	0	2	1	0	0	3	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	1	2	1	0
FORCED OUTAGE RATE (%)	0	1	12	14	0	0	4	3
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.55	0.00	0.52	0.00	0.00	1.55	0.00
CRITICAL HOURS	2209	1806	708	1925	2209	1962	1288	2151
COLLECTIVE RADIATION EXPOSURE	21	124	440	24	20	81	241	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	4	0	2	0	1	NA
LICENSED OPERATOR	0	0	2	0	0	0	0	NA
OTHER PERSONNEL	0	0	1	0	0	2	3	NA
MAINTENANCE	0	0	5	3	4	1	6	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	1	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.39

GRAND GULF

PI EVENTS FOR 89-4

SCRAM 11/07/89 LER# 41689016 50.72#: 17037 POWER: 100
DESC : A LIGHTNING STRIKE CAUSED SPIKES IN THE RPS SYSTEM INSTRUMENTATION, RESULTING IN A REACTOR TRIP.

PI EVENTS FOR 90-1

SSF 02/15/90 LER# 41690003 50.72#: 17774 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : LOSS OF THE DIV I ESF ELECTRICAL SYSTEM DURING LOCA CONDITIONS, COULD RENDER THE LPCS AND [illegible]S SYSTEMS INOPERABLE FOR LONG-TERM, POST-LOCA CORE COOLING. ALTHOUGH THE HPCS SYSTEM WOULD STILL BE POWERED, ITS SERVICE WATER WOULD NOT BE ADEQUATELY COOLED.

PI EVENTS FOR 90-2

SSA 05/26/90 LER# 41690009 50.72#: 18585 POWER: 83
DESC : A LOW PRESSURE CORE SPRAY PUMP INADVERTENTLY STARTED. AN OPERATOR INCORRECTLY ATTEMPTED TO RACKOUT THE PUMP BREAKER CAUSING THE ACTUATION.

PI EVENTS FOR 90-3

SSF 07/06/90 LER# 41690010 50.72#: 18847
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL OPERATION.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE AVAILABILITY OF THE HPCS SYSTEM FOR LONG-TERM COOLING COULD NOT BE ENSURED. AN ERROR WAS MADE IN THE EVALUATION USED TO DEMONSTRATE THE ADEQUACY OF THE HPCS PUMP ROOM COOLER TO MAINTAIN ACCEPTABLE TEMPERATURES.

SCRAM 07/24/90 LER# 41690011 50.72#: 18955 PWR HIST: POWER OPERATIONS AT 100%
DESC : UNIT LOST CONTROL OF 'B' RFP WHICH OVERFED THE REACTOR. THE REACTOR SCRAMMED ON HIGH REACTOR WATER LEVEL. THE CAUSE FOR THE LOSS OF RFP CONTROL WAS A FAILED CIRCUIT IN THE DAH1 CONTROLLER.

SSF 07/24/90 LER# 41690012 50.72#: 18959
PWR HIST: ALL MODES UP TO 100% POWER. ORIGINAL DESIGN ERROR DISCOVERED ON 7/24/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : A DIV III 125 VDC SYSTEM DESIGN BASIS REVIEW DISCOVERED A DESIGN DEFICIENCY THAT MAY PREVENT LOADS FROM RECEIVING SUFFICIENT ENERGY TO START AND OPERATE UNDER DBA CONDITIONS.

SSF 08/16/90 LER# 50.72#: 19142
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : THE "A" TRAIN OF THE RHR SYSTEM BECAME INOPERABLE WHEN THE "A" JOCKEY PUMP SEIZED. AN OPERATOR WAS DISPATCHED TO RACK OUT THE "A" RHR PUMP BREAKER BUT INADVERTANTLY RACKED OUT THE "B" RHR PUMP BREAKER, RENDERING BOTH TRAINS INOPERABLE FOR 23 MIN.

SSF 08/23/90 LER# 41690015 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE 1983. DISCOVERED 8/23/90.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A FIRE RATED ASSEMBLY PENETRATION WAS FOUND NOT PROPERLY SEALED. IT IS BELIEVED THAT THE PENETRATION WAS OPENED IN 1983 DURING THE IMPLEMENTATION OF A DESIGN CHANGE PACKAGE AND NOT PROPERLY RESEALED.

SCRAM 09/16/90 LER# 50.72#: 19388 PWR HIST: POWER OPERATIONS AT 93%.
DESC : ALL 8 MSIV ISOLATED DUE TO A FAILED CARD IN THE DIVISION '1' LOAD SHEDDING AND SEQUENCER PANEL CAUSING A LOSS OF BALANCE OF PLANT POWER.

SSA 09/16/90 LER# 50.72#: 19388 PWR HIST: HOT SHUTDOWN AFTER THE SCRAM.
DESC : MSIV'S SHUT DUE TO LOSS OF BALANCE OF PLANT POWER CAUSING A REACTOR SCRAM. REACTOR VESSEL LOW WATER SIGNAL STARTED HPCS AND EDG. PLANT PERSONNEL INITIATED RCIC AND CONTAINMENT AND AUXILLIARY BUILDING VENTILATION ISOLATION.

TABLE 8.39 (CONT.)

GRAND GULF

TYPE	88 4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	1.01	0.46	0.00	0.00	1.01
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	1	0	1	2	1	0	0	2
SAFETY SYSTEM ACTUATIONS	1	1	0	0	0	0	1	1
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	2	1	0	1	0	4
FORCED OUTAGE RATE (%)	1	0	0	11	3	0	0	10
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.50	0.46	0.00	0.00	1.01
CRITICAL HOURS	2191	1829	1025	1987	2166	2160	2183	1982
COLLECTIVE RADIATION EXPOSURE	37	143	312	25	18	16	14	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	5	1	1	2	4	NA
LICENSED OPERATOR	0	0	1	2	1	0	0	NA
OTHER PERSONNEL	1	1	0	1	1	0	2	NA
MAINTENANCE	2	1	3	3	2	1	6	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	2	1	1	0	NA
EQUIPMENT FAILURE	0	1	0	1	1	0	0	NA

TABLE 8.40

HADDAM NECK

PI EVENTS FOR 89-4

SE 11/17/89 LER# 21389020 50.72#: 17128 POWER: 0
DESC : ABOUT 450 FUEL RODS FAILED DUE TO ABRASION AND PIERCING FROM POST-MAINTENANCE DEBRIS LEFT IN THE CORE.

SSF 11/20/89 LER# 21389021 50.72#: 17153 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : AN ENGINEERING EVALUATION CONCLUDED THAT THE RCP SEAL WATER INJECTION LINES HAVE NOT BEEN SEISMICALLY EVALUATED. FAILURE OF THESE LINES COULD RESULT IN BOTH AN RCS PRESSURE BOUNDARY FAILURE AND A LOSS OF CONTAINMENT INTEGRITY.

SSF 12/26/89 LER# 21389024 50.72#: 17437 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : AN ENGINEERING EVALUATION REVEALED THAT A SINGLE FAILURE OF THE HPSI BLOCK CIRCUITRY SWITCH COULD RENDER BOTH TRAINS OF THE HPSI SYSTEM INOPERABLE. THE ROOT CAUSE IS A DESIGN ERROR WHICH OCCURRED DURING PLANT CONSTRUCTION.

PI EVENTS FOR 90-1

SSF 02/02/90 LER# 21390001 50.72#: 17684 POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT FAN COOLING SYSTEM
DESC : BECAUSE OF A DESIGN DEFICIENCY, FAILURE OF THE SERVICE WATER FILTERS (i.e., CLOGGING OR MECHANICAL FAILURE) COULD RENDER THE CONTAINMENT AIR RECIRC FANS INOPERABLE FOLLOWING A DESIGN BASIS LOCA. THIS ERROR OCCURRED DURING PLANT CONSTRUCTION.

SSF 02/14/90 LER# 21390002 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN UNQUALIFIED, TEMPORARY SEAL WAS DISCOVERED IN A FIRE BARRIER BETWEEN THE CONTROL ROOM AND THE "A" SWITCHGEAR ROOM. THE CAUSE WAS ATTRIBUTED TO PAST PROCEDURAL DEFICIENCIES IN THE PENETRATION FIRE SEAL PROGRAM.

SSF 03/16/90 LER# 21390004 50.72#: 17992 POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ALL MFW SYSTEM BYPASS LINE CHECK VALVES FAILED THEIR LEAK RATE TESTS. THIS COMPROMISED THE AUX FEEDWATER SYSTEM'S ABILITY TO DELIVER FLOW TO THE SGS. THE DOWNSTREAM ISOLATION VALVES LEAKED BY CAUSING THE CHECK VALVES TO CHATTER AND WEAR EXCESSIVELY.

SSF 03/29/90 LER# 21390003 50.72#: 18093 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BECAUSE OF CORROSION PRODUCT BUILDUP WITHIN THE SERVICE WATER SYSTEM PIPING, THE EMERGENCY DIESEL GENERATORS AND CONTAINMENT AIR RECIRCULATION FANS MAY NOT RECEIVE AN ADEQUATE AMOUNT OF COOLING WATER DURING A DESIGN BASIS ACCIDENT.

PI EVENTS FOR 90-2

SSF 06/11/90 LER# 21390006 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : A FIRE DETECTOR FOULED AND ALARMED. OPERATORS ACKNOWLEDGED THE ALARM, BUT FAILED TO REALIZE THAT THIS RENDERED THE FIRE DETECTORS INOPERABLE FOR THE UPPER AND LOWER LEVELS OF THE SCREENWELL BUILDING. THE APPROPRIATE FIRE WATCH WAS NOT ESTABLISHED.

PI EVENTS FOR 90-3

SSF 07/09/90 LER# 21390008 50.72#: 18857
PWR HIST: ALL MODES TO 100% POWER. DESIGN ERROR DISCOVERED ON 7/9/90.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : A DESIGN ERROR EXISTED THAT COULD DISABLE BOTH CHARGING PUMPS DURING A LOCA. THE PUMP SUCTION VENT SOLENOID VALVE WAS NOT CAPABLE OF EFFECTIVELY ISOLATING THE VOLUME CONTROL TANK, WHICH COULD HAVE LEAD TO GAS BINDING OF THE CHARGING PUMPS.

TABLE 8.40 (CONT.)

HADDAM NECK

PI EVENTS FOR 90-3 (CONT.)

S&F 07/11/90 LER# 21390009 50.72#: 18873
PWR HIST: ALL MODES TO 100% POWER. DESIGN DEFICIENCY DISCOVERED ON 7/11/90.
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT FAN COOLING SYSTEM
DESC : AN EVALUATION OF NRC INFO NOTICE 88-24 REVEALED A DESIGN DEFICIENCY THAT COULD DISABLE ALL FOUR CONTAINMENT AIR RECIRC FANS DURING A LOCA. A FAILURE OF A PRESSURE REGULATOR COULD ULTIMATELY PREVENT THE FANS FROM ALIGNING TO THEIR ACCIDENT POSITIONS.

SSF 07/27/90 LER# 21390010 50.72#: 18980
PWR HIST: EVENT DISCOVERED DURING HOT STANDBY.
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : PLANT PROTECTION SYSTEM
DESC : BECAUSE OF THE INCOMPATIBILITY BETWEEN A TEST PROCEDURE AND THE NEW TECHNICAL SPECIFICATIONS, ALL FOUR CHANNELS OF THE MAIN STEAM LINE BREAK PROTECTIVE CIRCUITRY WERE REMOVED FROM SERVICE WHEN THEY WERE REQUIRED TO BE OPERATIONAL.

SSF 08/02/90 LER# 21390012 50.72#: 19027
PWR HIST: EVENT DISCOVERED DURING HOT SHUTDOWN.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : THE "A" CHARGING PUMP BECAME GAS-BOUND WHILE RUNNING. THE VENT SYSTEM WAS DETERMINED TO BE OPERABLE. THE CAUSE OF THE EVENT IS UNKNOWN. ALTHOUGH THE "B" PUMP WAS NOT AFFECTED, IT WAS DETERMINED THAT BOTH PUMPS COULD HAVE BECOME DISABLED.

SSF 08/02/90 LER# 21390011 50.72#: 19023
PWR HIST: ALL MODES UP TO 100% POWER. PROBLEM EXISTED FOR SEVERAL YEARS. DISCOVERED ON 8/2/90.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : A REVIEW OF EOPS REVEALED THAT RESTARTING A HPSI PUMP DURING A CERTAIN ACCIDENT SCENARIO COULD RESULT IN LOAD SHEDDING OF A RHR PUMP. WITHOUT NPSH SUPPLIED FROM THE RHR PUMP, THE HPSI PUMP WOULD CAVITATE. RECIRCULATION COOLING WOULD NOT BE ESTABLISHED.

SSF 08/06/90 LER# 21390014 50.72#: 19049
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. FOUND 8/6/90 DURING COLD SHUTDOWN.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : THE REACTOR COOLANT LOOP ISOLATION VALVES MAY NOT HAVE FULLY CLOSED DURING AN SG TUBE RUPTURE EVENT BECAUSE THEIR TORQUE SWITCHES WERE SET TOO LOW. THE ROOT CAUSE OF THE EVENT WAS INADEQUATE CONTROL OF THE TORQUE SWITCH SETPOINTS.

SSF 08/06/90 LER# 21390013 50.72#: 19048
PWR HIST: ALL MODES THROUGH 100% POWER. EXISTED SINCE THE 1987 REFUELING OUTAGE, DISCOVERED 8/6/90.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : INSTALLATION OF INCORRECT O-RING MATERIAL COULD HAVE RENDERED FOUR SAFETY RELATED VALVES INOPERABLE. THE VENDOR RECOMMENDED MATERIAL WAS NOT PROPERLY EVALUATED BY A PROCUREMENT TECHNICAL REVIEW. THIS CONDITION EXISTED SINCE THE 1987 REFUELING OUTAGE.

SSF 08/20/90 LER# 21390016 50.72#: 19162
PWR HIST: ALL MODES TO 100% POWER. DESIGN ERROR DISCOVERED 8/20/90.
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : THE AUTOMATIC ACTUATION PORTION OF THE AFW SYSTEM DOES NOT MEET THE DESIGN BASIS REQUIREMENTS NECESSARY TO DECLARE IT OPERABLE. THE CAUSE WAS ATTRIBUTED TO ERRORS IN THE ASSUMPTIONS AND CALCULATIONS USED FOR THE AFW SYSTEM AUTOMATIC INITIATION DESIGN.

SE 08/20/90 LER# 21390016 50.72#: 19162
PWR HIST: ALL MODES TO 100% POWER. DESIGN ERROR DISCOVERED 8/20/89.
DESC : TURBINE DRIVEN AFW PUMP STEAM ADMISSION VALVES OPEN TOO FAST CAUSING PUMP TRIP ON OVERSPEED. FLOW CONTROLLER SETTING NECESSARY TO ACHIEVE MINIMUM REQUIRED FLOWRATE RESULTS IN TRIP OF AFW PUMP TURBINES ON OVERSPEED.

TABLE 8.40 (CONT.)

HADDAM NECK

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	1
SAFETY SYSTEM FAILURES	1	2	4	2	2	4	1	8
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	25
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84
CRITICAL HOURS	2209	2160	2183	1540	0	0	0	1056
COLLECTIVE RADIATION EXPOSURE	14	19	14	313	251	119	200	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	3	1	0	2	0	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OTHER PERSONNEL	0	1	1	3	2	0	1	NA
MAINTENANCE	2	1	3	6	3	3	0	NA
DESIGN/INSTALLATION/FABRICATION	1	3	1	2	4	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.41

HATCH 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/04/90 LER# 321900001 50.72#: 17486 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE THE SYSTEM COULD NOT MAINTAIN RATED FLOW DURING A SURVEILLANCE TEST. AN INVESTIGATION REVEALED THAT A FAILED RESISTOR RESULTED IN A LOSS OF POWER TO THE HPCI TURBINE GOVERNOR SPEED CONTROL.

SSF 02/19/90 LER# 32190004 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : BECAUSE OF A PROCEDURAL ERROR, THE LOW DILUTION FLOW ISOLATION TRIP SETPOINT FOR THE LIQUID RAD WASTE EFFLUENT RELEASES WAS NOT ALWAYS SET TO ENSURE THE RELEASE WOULD TERMINATE IF THE PREDEFINED MINIMUM DILUTION FLOW WAS NOT MAINTAINED.

PI EVENTS FOR 90-2

SCRAM 06/20/90 LER# 32190013 50.72#: 18735 POWER: 30
DESC : A REACTOR TRIP OCCURRED ON LOW REACTOR VESSEL WATER LEVEL. THE 'B' FW PUMP WOULD NOT MAINTAIN VESSEL LEVEL WHEN THE OTHER FW PUMP WAS SECURED. THE CAUSE IS UNKNOWN.

SSA 06/20/90 LER# 32190013 50.72#: 18735 POWER: 30
DESC : HPCI, RCIC AND SBGT STARTED ON LOW REACTOR WATER LEVEL. THE 'B' FW PUMP WOULD NOT MAINTAIN VESSEL LEVEL WHEN THE OTHER FW PUMP WAS SECURED.

PI EVENTS FOR 90-3

SSF 07/30/90 LER# 32190015 50.72#: 18987
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE OF A MALFUNCTIONING FLOW CONTROLLER. AN OPERATOR DISCOVERED THE PROBLEM DURING A CONTROL BOARD WALKDOWN. THE CAUSE OF THE MALFUNCTION WAS A DEFECTIVE CONTROL AMPLIFIER.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.90	0.00	0.00	0.00	0.00	0.00	2.03	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	1	1	0	0	2	0	1
FORCED OUTAGE RATE (%)	18	0	0	0	0	0	42	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	527	2160	2183	2208	2209	1162	492	2208
COLLECTIVE RADIATION EXPOSURE	361	57	41	100	136	315	358	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	2	2	6	3	4	NA
LICENSED OPERATOR	0	1	0	0	2	0	2	NA
OTHER PERSONNEL	3	1	0	0	2	0	3	NA
MAINTENANCE	4	4	0	2	6	5	6	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	0	2	1	2	NA
EQUIPMENT FAILURE	0	1	0	0	0	1	2	NA

TABLE 8.42

HATCH 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/12/90 LER# 36690001 50.72#: 17545 POWER: 100
DESC : A FAULTY CONDENSER VACUUM SWITCH CAUSED THE MSIV'S TO GO SHUT. THIS RESULTED IN A REACTOR SCRAM ON MSIV LESS THAN 90% OPEN.

SSA 01/12/90 LER# 36690001 50.72#: 17545 POWER: 100
DESC : THE MSIV'S CLOSED WHILE REPAIRING A MAIN CONDENSER LOW VACUUM SWITCH. A LOW REACTOR LEVEL CAUSED HPCI INJECTION.

SSF 01/12/90 LER# 36690001 50.72#: 17545 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS INOPERABLE FOLLOWING SUCCESSFUL AUTOMATIC INITIATION WHEN ITS INJECTION VALVE FAILED IN THE CLOSED POSITION DURING A SUBSEQUENT MANUAL HPCI RESTART. A THERMAL OVERLOAD RELAY IN THE VALVE MOTOR'S STARTER FAILED AND CAUSED AN OPEN CKT.

SSF 02/19/90 LER# 32190004 50.72#: POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : BECAUSE OF A PROCEDURAL ERROR, THE LOW DILUTION FLOW ISOLATION TRIP SETPOINT FOR THE LIQUID RAD WASTE EFFLUENT RELEASES WAS NOT ALWAYS SET TO ENSURE THE RELEASE WOULD TERMINATE IF THE PREDEFINED MINIMUM DILUTION FLOW WAS NOT MAINTAINED.

SCRAM 03/28/90 LER# 36690003 50.72#: 18081 POWER: 100
DESC : THE REACTOR LEVEL INSTRUMENT SPIKED LOW FROM A PRESSURE PERTURBATION AND THE RESULTANT LOW REACTOR WATER LEVEL SIGNAL CAUSED A SCRAM AND A GROUP 2 ISOLATION. VALVING IN THE INSTRUMENT CAUSED THE PERTURBATION.

PI EVENTS FOR 90-2

SSF 05/21/90 LER# 36690004 50.72#: POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : A REVISION TO A WEEKLY PROCEDURE INCORRECTLY DIRECTED PERSONNEL TO OPEN BOTH POST ACCIDENT SAMPLING SYSTEM DOORS SIMULTANEOUSLY, WHICH IS A VIOLATION OF SECONDARY CONTAINMENT INTEGRITY. THE REVISION WAS ADDED IN A WAY THAT BYPASSED SAFETY REVIEWS.

PI EVENTS FOR 90-3

SSF 07/19/90 LER# 36690005 50.72#: 18919
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE BY AN ELECTRICAL FAILURE OF THE AUXILIARY OIL PUMP MOTOR.

TABLE 8.42 (CONT.)

HATCH 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.64	0.00	0.96	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	2	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	0	0	2	1	1
FORCED OUTAGE RATE (%)	1	0	0	1	5	5	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.48	0.00	0.00	0.64	1.68	0.48	0.00	0.00
CRITICAL HOURS	2095	2160	2183	1559	594	2085	2183	2208
COLLECTIVE RADIATION EXPOSURE	361	57	41	100	136	315	358	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	1	4	6	5	3	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	0	1	2	0	1	NA
MAINTENANCE	2	3	0	4	7	5	3	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	0	1	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.43

HOPE CREEK

PI EVENTS FOR 89-4

SCRAM 12/30/89 LER# 35489025 50.72#: 17467 POWER: 100
DESC : DURING A MONTHLY MAIN TURBINE THRUST BEARING WEAR TEST, THE MAIN TURBINE TRIPPED DUE TO A FAULTY LIMIT SWITCH. THIS CAUSED A REACTOR TRIP.

PI EVENTS FOR 90-1

SCRAM 01/06/90 LER# 35490001 50.72#: 17497 POWER: 97
DESC : THE MOISTURE SEPARATOR REHEATER LEVEL CONTROLLER MALFUNCTIONED, CAUSING A HIGH MOISTURE SEPARATOR REHEATER LEVEL LEADING TO A TURBINE TRIP AND REACTOR TRIP.

SCRAM 03/19/90 LER# 35490003 50.72#: 18016 POWER: 100
DESC : AN OFFSITE FIRE CAUSED A PARTIAL LOSS OF POWER AND MFW. THE RESULTANT LOW REACTOR WATER LEVEL CAUSED A REACTOR SCRAM.

SSA 03/19/90 LER# 35490003 50.72#: 18016 POWER: 100
DESC : AN OFFSITE FIRE CAUSED A PARTIAL LOSS OF POWER AND MFW. HPCI AND RCIC AUTO INITIATED AND INJECTED ON LOW REACTOR LEVEL.

PI EVENTS FOR 90-2

SSF 06/07/90 LER# 35490009 50.72#: 18646 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE QUARTERLY HPCI TURBINE OIL ANALYSIS REVEALED UNACCEPTABLE LEVELS OF MOISTURE AND SEDIMENT. A DESIGN DEFICIENCY IN THE OIL RESERVOIR (NO LOW POINT DRAIN) PREVENTS COMPLETE DRAINING DURING OIL CHANGES.

PI EVENTS FOR 90-3

SSF 08/17/90 LER# 35490014 50.72#: 19145
PWR HIST: ALL MODES TO 100% POWER. DESIGN BASIS ERROR EXISTED SINCE INITIAL OPERATION.
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : THE T.S. ULTIMATE HEAT SINK TEMPERATURE LIMIT (90.5F) WAS UNCONSERVATIVELY HIGH. THE ROOT CAUSE WAS A MISINTERPRETATION OF DESIGN BASIS CALCULATIONS. THE SERVICE WATER SYSTEM MAY HAVE BEEN PREVIOUSLY INOPERABLE BECAUSE OF HIGH HEAT SINK TEMPERATURES.

SSF 09/14/90 LER# 50.72#: 19361
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE OF HIGH WATER CONTENT IN THE HPCI LUBE OIL SYSTEM. THE LICENSEE SUSPECTS THAT THE LUBE OIL COOLER HAS A LEAK.

TABLE 8.43 (CONT.)

HOPE CREEK

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.00	0.00	0.00		0.93	1.08	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	1	1	2	0	0
SAFETY SYSTEM ACTUATIONS	2	0	1	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	3	0	0	0	1	2
FORCED OUTAGE RATE (%)	11	0	0	3	3	10	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.50	0.57	0.00	0.56	0.93	0.00	0.00	0.00
CRITICAL HOURS	1994	1758	2183	1798	1075	1845	2183	2208
COLLECTIVE RADIATION EXPOSURE	29	110	21	96	238	49	35	NA
CAUSE CODES:								
ADMINISTRATIVE	2	5	4	2	5	1	2	NA
LICENSED OPERATOR	0	1	1	0	0	1	0	NA
OTHER PERSONNEL	7	0	2	1	2	1	2	NA
MAINTENANCE	9	5	7	1	5	3	4	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	0	3	0	2	NA
EQUIPMENT FAILURE	2	0	0	0	0	0	0	NA

TABLE 8.44

INDIAN POINT 2

PI EVENTS FOR 89-4

SCRAM 12/13/89 LER# 24789013 50.72#: 17336 POWER: 100
DESC : A STICKY VALVE IN THE HIGH PRESSURE TURBINE CONTROL OIL SYSTEM CAUSED A PERTURBATION IN THE CONTROL OIL PRESSURE DURING FILTER BANK SWAP-OVER. THIS CAUSED TURBINE AND REACTOR TRIPS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/27/90 LER# 24790002 50.72#: POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : DISCREPANCIES WERE FOUND IN THE CALIBRATION OF THE REFUELING WATER STORAGE TANK LEVEL TRANSMITTERS, WHICH COULD HAVE RESULTED IN A RWST VOLUME 6000 GALLONS BELOW THE TECHNICAL SPECIFICATION MINIMUM.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.92	0.55	0.00	0.00	0.61	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	1	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	3	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	1	0	0	1	0
FORCED OUTAGE RATE (%)	4	1	0	0	2	0	0	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.92	0.55	0.00	0.00	0.61	0.00	0.00	0.47
CRITICAL HOURS	2164	1811	0	2206	1627	1299	199	2130
COLLECTIVE RADIATION EXPOSURE	32	220	1046	29	142	232	319	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	2	1	1	0	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	3	3	1	0	0	0	0	NA
MAINTENANCE	3	2	2	3	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	4	3	0	0	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.45

INDIAN POINT 3

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SE 01/20/90 LER# 28690002 50.72#: 17803 POWER: 100
DESC : 2 OF 3 EDGs WERE INOPERABLE FOR 56 HOURS IN MODE 1. EDGs ARE REQUIRED FOR ACCIDENT MITIGATION. THIS SIREVENT WAS NOT BRIEFED.

PI EVENTS FOR 90-2

SCRAM 06/29/90 LER# 28690004 50.72#: 18799 POWER: 100
DESC : A REACTOR TRIP OCCURRED FOLLOWING A TURBINE TRIP. THE MAIN GENERATOR TRIPPED OFF THE LINE WHEN A MAIN GENERATOR LOCKOUT RELAY WAS TRIPPED BY A DIRECT TRIP SIGNAL FROM THE BUCHANAN SUBSTATION RELAY TR-1 VIA RELAY 'MTC1'.

PI EVENTS FOR 90-3

SSF 08/09/90 LER# 50.72#: 19078
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : TWO OF THREE EDGS WERE INOPERABLE. WITH "33" EDG UNDERGOING MODIFICATION, "32" EDG BECAME INOPERABLE WHEN THE METHOD USED TO REFILL THE JACKET WATER TANK RESULTED IN HIGH GENERATOR CURRENTS (WITH THE EDG SHUTDOWN) AND BLOWN CONTROL POWER FUSES.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.78	0.00	0.00	0.00	0.00	0.00	0.50	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	1	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	0		0	1
FORCED OUTAGE RATE (%)	43	0	8	0	5		2	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.57	0.00	4.64	0.00	0.00	0.00	0.00	0.56
CRITICAL HOURS	1277	817	215	2208	2112	1466	1983	1794
COLLECTIVE RADIATION EXPOSURE	45	454	403	10	9	64	20	NA
CAUSE CODES:								
ADMINISTRATIVE	0	5	0	0	1	1	0	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	4	1	0	1	0	0	NA
MAINTENANCE	1	6	1	0	2	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	0	4	0	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.46

KEWAUNEE

PI EVENTS FOR 89-4

SCRAM 12/27/89 LER# 30589016 50.72#: 17448 POWER: 100
DESC : A TURBINE TRIP SCRAM OCCURRED WHEN THE TURBINE STOP VALVES AUTOMATICALLY CLOSED. THE SPECIFIC CAUSE FOR THE TURBINE STOP VALVES CLOSING HAS NOT BEEN DETERMINED.

PI EVENTS FOR 90-1

SSA 03/28/90 LER# 30590004 50.72#: 18087 POWER: 0
DESC : A TURBINE TRIP SIGNAL WAS GENERATED WHEN CALIBRATING THE TURBINE THRUST BEARING. DUE TO THE ELECTRICAL LINEUP, SAFETY BUS '16' WAS DEENERGIZED. THE EDG DID NOT START BECAUSE IT WAS OOS FOR MAINTENANCE.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 09/17/90 LER# 30590009 50.72#: 19412
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BOTH EDGS WERE EFFECTIVELY OUT-OF-SERVICE FOR ABOUT 1.7 HOURS. WHILE THE "B" EDG WAS OOS FOR TESTING, A BROKEN CYLINDER INJECTOR LEAK WAS DISCOVERED THAT PREVENTED THE "A" EDG FROM REACHING FULL LOAD.

TYPE	3-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	0	0	0	0	1	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
CRITICAL HOURS	2209	1208	1825	2208	2195	1464	1820	2208
COLLECTIVE RADIATION EXPOSURE	5	208	26	4	2	104	36	NA
CAUSE CODES:								
ADMINISTRATIVE	0	5	2	0	0	1	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	1	1	0	0	1	2	NA
MAINTENANCE	0	6	4	1	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	0	2	2	2	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.47

LASALLE 1

PI EVENTS FOR 89-4

SSA 11/01/89 LER# 37389025 50.72#: 16992 POWER: 0
DESC : AN OPERATOR, WHILE ATTEMPTING TO CLOSE A COMPARTMENT DOOR TO SWITCHGEAR 142Y CUBICLE, CAUSED AN UNDERVOLTAGE RELAY TO BE JARRED AND OPERATE. THIS LEAD TO A TRIP OF THE BUS. UNIT 1 DIESEL GENERATOR RECEIVED A START SIGNAL, BUT WAS OOS FOR MAINTENANCE.

PI EVENTS FOR 90-1

SCRAM 03/28/90 LER# 37390006 50.72#: 18080 POWER: 100
DESC : THE 'B' PHASE INSULATOR FAILED ON THE MAIN POWER TRANSFORMER, CAUSING A MAIN GENERATOR TRIP, TURBINE TRIP, AND REACTOR SCRAM.

PI EVENTS FOR 90-2

SSF 05/11/90 LER# 37390009 50.72#: 18437 POWER: 100
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE AFTER THE STEAM LINE HIGH FLOW ISOLATION SWITCH FAILED DURING FUNCTIONAL TESTING. BECAUSE OF A TORN DIAPHRAGM, THE SWITCH WOULD NOT HAVE ISOLATED THE OUTBOARD CONTAINMENT ISOLATION VALVE DURING A STEAM LINE BREAK.

SSF 06/18/90 LER# 37390007 50.72#: 18725 POWER: 100
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE AFTER THE TURBINE TRIPPED ON OVERSPEED DURING A SURVEILLANCE. THE CAUSE OF THE TRIP IS UNDER INVESTIGATION.

SCRAM 06/26/90 LER# 37390010 50.72#: 18771 POWER: 75
DESC : A REACTOR TRIP OCCURRED FOLLOWING A CLOSURE OF THE MAIN TURBINE STOP VALVE DURING SURVEILLANCE TESTING DUE TO UNKNOWN REASONS.

PI EVENTS FOR 90-3

SSF 08/01/90 LER# 37390011 50.72#: 19014
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 84% POWER.
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE. DURING A SURVEILLANCE, A PRESSURE DIFFERENTIAL SWITCH FAILED BECAUSE OF A TORN DIAPHRAGM. THE DIV II ISOLATION AND RCIC TRIP ASSOCIATED WITH THIS SWITCH WAS UNAVAILABLE.

SSF 08/18/90 LER# 50.72#: 19151
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 79% POWER.
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE DUE TO A 250 VDC BATTERY GROUND. THE LICENSEE SUSPECTS THE GROUND WAS RELATED TO HUMIDITY.

SSF 08/23/90 LER# 50.72#: 19183
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 90% POWER.
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE AFTER DISCOVERING THAT THE LOW REACTOR VESSEL WATER LEVEL ACTUATION SWITCH HAD A BLOWN DIAPHRAGM.

TABLE 8.47 (CONT.)

LASALLE 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.48	0.00	0.00	0.00	0.50	0.48	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	3	1	0	0	2	3
FORCED OUTAGE RATE (%)	0	4	0	0	0	7	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.48	0.00	0.00	0.00	0.50	0.48	0.00
CRITICAL HOURS	2209	2086	2183	1846	0	1989	2069	2208
COLLECTIVE RADIATION EXPOSURE	560	178	62	94	360	117	259	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	3	0	4	2	1	NA
LICENSED OPERATOR	0	2	0	0	1	0	0	NA
OTHER PERSONNEL	3	2	1	0	2	3	1	NA
MAINTENANCE	5	13	9	3	5	5	4	NA
DESIGN/INSTALLATION/FABRICATION	2	4	1	0	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.48

LASALLE 2

PI EVENTS FOR 89-4

SSF 11/17/89 LER# 37489017 50.72#: 17136 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HIGH PRESSURE CORE SPRAY SYSTEM WAS DECLARED INOPERABLE WHEN THE MINIMUM BYPASS FLOW SWITCH FAILED A SURVEILLANCE TEST. THE OUT-OF-TOLERANCE CONDITION WAS CAUSED BY SETPOINT DRIFT.

SSF 12/16/89 LER# 37489018 50.72#: 17367 POWER: 99
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : RCIC WAS DECLARED INOPERABLE DUE TO THE LOSS OF THE RCIC 250 VDC BATTERY. THE BATTERY PILOT CELLS WERE FOUND TO BE LOW IN TEMPERATURE WHICH NECESSITATED DECLARING THE BATTERIES INOPERABLE. ROOM OUTSIDE AIR DAMPERS WERE LEAKING (-14F OUTSIDE AIR).

PI EVENTS FOR 90-1

SSF 01/29/90 LER# 37390002 50.72#: 17658 POWER: 99
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : CONTAINMENT COMBUSTIBLE GAS CONTROL SYSTEM
DESC : BOTH HYDROGEN RECOMBINERS WERE INOPERABLE AT THE SAME TIME. THE "B" TRAIN WAS OUT OF SERVICE BECAUSE THE "B" TRAIN RHR TRAIN WAS OUT OF SERVICE (PLANNED). THE "A" TRAIN WAS DECLARED INOPERABLE UPON LOSS OF ITS EMERGENCY POWER SOURCE (UNPLANNED).

SCRAM 02/06/90 LER# 37490001 50.72#: 17707 POWER: 99
DESC : THE REACTOR TRIPPED DURING AVERAGE POWER RANGE MONITOR ROD BLOCK AND FUNCTIONAL TESTING WHEN A SPURIOUS APRM TRIP OCCURRED WHILE ANOTHER CHANNEL WAS TRIPPED FOR TESTING.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SCRAM 09/12/90 LER# 50.72#: 19340 PWR HIST: POWER OPERATIONS AT 100%
DESC : A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP. THE TURBINE TRIPPED WHEN A GENERATOR LOCKOUT OCCURRED DURING [illegible] TEST. THE CAUSE IS UNKNOWN.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.50
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	2	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	1	2	1	0	0
FORCED OUTAGE RATE (%)	4	0	0	34	15	3	18	10
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	4.40	0.50
CRITICAL HOURS	323	1246	2183	1372	1892	1764	455	2011
COLLECTIVE RADIATION EXPOSURE	560	178	62	94	360	117	259	NA
CAUSE CODES:								
ADMINISTRATIVE	2	5	4	2	2	3	6	NA
LICENSED OPERATOR	1	2	0	2	0	0	0	NA
OTHER PERSONNEL	0	4	0	0	2	2	1	NA
MAINTENANCE	7	12	8	3	6	7	5	NA
DESIGN/INSTALLATION/FABRICATION	2	4	1	0	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.49

LIMERICK 1

PI EVENTS FOR 89-4

SSF 12/13/89 LER# 35289060 50.72#: 17342 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : A POTENTIAL BYPASS RELEASE PATH THROUGH THE "A" SBGT CHARCOAL FILTER WAS DISCOVERED. AN OPENING CAUSED BY FAILED SPOT WELDS WAS FOUND IN THE MOUNTING SCREEN. THE REDISTRIBUTION OF CHARCOAL WITHIN THE FILTER BED CREATED THE PATH.

PI EVENTS FOR 90-1

SSF 01/25/90 LER# 35290002 50.72#: 17628 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : IF THE MAIN CONTROL ROOM VENTILATION SYSTEM IS IN THE RADIATION ISOLATION MODE, A SINGLE FAILURE COULD PREVENT THE SYSTEM FROM PERFORMING A REQUIRED AUTOMATIC CHLORINE ISOLATION. ALL SYSTEM OPERATING SCENARIOS WERE NOT EVALUATED DURING DESIGN.

SSF 02/08/90 LER# 35290003 50.72#: 17728 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE. WITH ONE CHANNEL OF THE HPCI ISOLATION LOGIC TRIPPED AS A RESULT OF AN INTERMITTENT FAILURE OF THE ROSEMONT TRIP UNIT, OPERATORS PERFORMING A SURVEILLANCE TRIPPED THE OTHER CHANNEL AND ISOLATED THE HPCI SYSTEM.

SSF 02/11/90 LER# 35290005 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : AN ELECTRICAL MALFUNCTION IN A FIRE ALARM PANEL MADE THE SMOKE DETECTORS FOR THE FOLLOWING ROOMS INOPERABLE: 1B AND 1D RHR PUMP ROOM, 1D CORE SPRAY PUMP ROOM, AND 1B CS PUMP ROOM.

PI EVENTS FOR 90-2

SSF 04/20/90 LER# 35290011 50.72#: 18287 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE BECAUSE THE "B" ESW PUMP DISCHARGE CHECK VALVE WAS REASSEMBLED INCORRECTLY FOLLOWING MAINTENANCE ON 04/19/90.

SSF 04/26/90 LER# 35290012 50.72#: 18352 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE COOLANT INJECTION SYSTEM
DESC : A PHYSICAL SEPARATION DEFICIENCY IN THE "A" AND "B" RHR HEAT EXCHANGER BYPASS VALVE CIRCUITRY RENDERED THE FOLLOWING MODES OF RHR INOPERABLE: SUPPRESSION POOL COOLING, SUPPRESSION POOL SPRAY, SHUTDOWN COOLING, LOW PRESSURE COOLANT INJECTION.

SSF 06/08/90 LER# 35390010 50.72#: 18661 POWER: 0
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : THE STANDBY GAS TREATMENT SYSTEM WAS RENDERED INOPERABLE BECAUSE OF A PERSONNEL ERROR, WHEN THE FILTER CONTROL HAND SWITCH WAS PLACED IN THE WRONG POSITION (AUTO VICE OPEN). THE OPERATOR WAS NOT USING THE PROCEDURE TO SET UP THE SBGT FOR AUTO OPERATION.

SSF 06/11/90 LER# 35290013 50.72#: 18706 POWER: 0
GROUP : EMERGENC AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : DIVISIONS 1 AND 2 DC ELECTRICAL DISTRIBUTION SYSTEMS WERE DECLARED INOPERABLE BECAUSE OF INADEQUATE ISOLATION CAPABILITY BETWEEN CLASS 1E AND NON-CLASS 1E COMPONENTS AND UNDERRATED FUSES. THESE DESIGN DEFICIENCIES EXISTED SINCE PLANT CONSTRUCTION.

TABLE 8.49 (CONT.)

LIMERICK 1

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	2	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	8	5	3	1	3	4	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	12	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00
CRITICAL HOURS	2209	258	1110	2208	2209	2160	1696	1654
COLLECTIVE RADIATION EXPOSURE	9	162	56	17	29	12	13	NA
CAUSE CODES:								
ADMINISTRATIVE	4	10	10	5	1	4	3	NA
LICENSED OPERATOR	1	0	0	0	0	0	1	NA
OTHER PERSONNEL	5	5	7	3	3	5	1	NA
MAINTENANCE	5	11	13	8	8	6	3	NA
DESIGN/INSTALLATION/FABRICATION	8	10	8	1	0	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.50

LIMERICK 2

PI EVENTS FOR 89-4

SSF 10/13/89 LER# 35389010 50.72#: 16848 POWER: 54
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE. WITH THE ASSOCIATED DRAIN LINE CLOGGED WITH DEBRIS, STEAM LEAKING PAST A SUPPLY VALVE CONDENSED AND ACCUMULATED IN THE TURBINE EXHAUST LINE. THE CLOGGED DRAIN WAS A RESULT OF A PERSONNEL ERROR.

SCRAM 11/10/89 LER# 35389013 50.72#: 17067 POWER: 98
DESC : THE "A" PHASE DIFFERENTIAL OVER-CURRENT IN THE MAIN GENERATOR TRIPPED AND CAUSED FAST CLOSURE OF THE TURBINE CONTROL VALVES, RESULTING IN A REACTOR TRIP.

SSA 11/10/89 LER# 35389013 50.72#: 17067 POWER: 98
DESC : HPCI AND RCIC ACTUATED FOLLOWING A REACTOR TRIP BUT NO INJECTION OCCURRED. MAJOR COMPONENTS OF THE HPCI SYSTEM OPERATED.

SSF 12/13/89 LER# 35289060 50.72#: 17342 POWER: 0
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : A POTENTIAL RELEASE PATH THROUGH THE "A" SBGT CHARCOAL FILTER WAS DISCOVERED. AN OPENING CAUSED BY FAILED SPOT WELDS WAS FOUND IN THE MOUNTING SCREEN. THE REDISTRIBUTION OF CHARCOAL WITHIN THE FILTER BED CREATED THE PATH.

PI EVENTS FOR 90-1

SSF 01/08/90 LER# 35390002 50.72#: POWER: 100
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
DESC : BOTH CONTAINMENT H2/O2 ANALYZERS WERE INOPERABLE: ONE BECAUSE OF AN INTERNAL LEAK AND THE OTHER BECAUSE IT WAS INCORRECTLY INSTALLED. THE MANUFACTURER HAD MISLABELED THE CONNECTION PORTS ON THE UNIT THAT WAS INCORRECTLY INSTALLED.

SSF 01/25/90 LER# 35290002 50.72#: 17628 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : IF THE MAIN CONTROL ROOM VENTILATION SYSTEM IS IN THE RADIATION ISOLATION MODE, A SINGLE FAILURE COULD PREVENT THE SYSTEM FROM PERFORMING A REQUIRED AUTOMATIC CHLORINE ISOLATION. ALL SYSTEM OPERATING SCENARIOS WERE NOT EVALUATED DURING DESIGN.

SSF 03/08/90 LER# 35390004 50.72#: 17931 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE TURBINE STEAM SUPPLY DRAIN LINE ISOLATION VALVE AIR LINE FITTING BROKE. THIS CAUSED THE VALVE TO CLOSE, WHICH COULD HAVE RESULTED IN WATER IMPINGING ON THE TURBINE BLADES DURING OPERATION.

SSA 03/12/90 LER# 35390006 50.72#: 17950 POWER: 100
DESC : A TECHNICIAN WAS VALVING A REACTOR VESSEL PRESSURE INSTRUMENT FOLLOWING CALIBRATION. A SPURIOUS PRESSURE SPIKE RESULTED IN A FALSE LOW REACTOR LEVEL SIGNAL AND HPCI INITIATION.

PI EVENTS FOR 90-2

SSF 04/17/90 LER# 35390008 50.72#: 18269 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : WHILE THE HPCI SYSTEM WAS INOPERABLE FOR MAINTENANCE, A ROSEMOUNT STEAM LINE DIFFERENTIAL PRESSURE TRANSMITTER FAILED, CAUSING THE STEAM SUPPLY LINE INBOARD CONTAINMENT ISOLATION VALVE TO SHUT.

SSF 04/20/90 LER# 35290011 50.72#: 18287 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS RENDERED INOPERABLE BECAUSE THE "B" ESW PUMP DISCHARGE CHECK VALVE WAS REASSEMBLED INCORRECTLY FOLLOWING MAINTENANCE ON 04/19/90.

TABLE 8.50 (CONT.)

LIMERICK 2

PI EVENTS FOR 90-2 (CONT.)

SSF 06/08/90 LER# 35390010 50.72#: 18661 POWER: 61
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : THE STANDBY GAS TREATMENT SYSTEM WAS RENDERED INOPERABLE BECAUSE OF A PERSONNEL ERROR, WHEN THE FILTER CONTROL HAND SWITCH WAS PLACED IN THE WRONG POSITION (AUTO VICE OPEN). THE OPERATOR WAS NOT USING THE PROCEDURE TO SET UP THE SBGT FOR AUTO OPERATION.

SSF 06/11/90 LER# 35290013 50.72#: 18706 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : DIVISIONS 1 AND 2 DC ELECTRICAL DISTRIBUTION SYSTEMS WERE DECLARED INOPERABLE BECAUSE OF INADEQUATE ISOLATION CAPABILITY BETWEEN CLASS 1E AND NON-CLASS 1E COMPONENTS AND UNDERRATED FUSES. THESE DESIGN DEFICIENCIES EXISTED SINCE PLANT CONSTRUCTION.

PI EVENTS FOR 90-3

SSF 07/13/90 LER# 35390011 50.72#: 18885
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 31% POWER.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : WITH THE "C" REACTOR ENCLOSURE EXHAUST FAN OUT-OF-SERVICE, A FAILED AIR LINE CAUSED THE "A" AND "B" EXHAUST FANS TO OPERATE AT THEIR MINIMUM SETTINGS. THE RESULTING POSITIVE PRESSURE CAUSED A BLOWOUT PANEL TO ACTUATE, VIOLATING SECONDARY CONTAINMENT.

SCRAM 07/15/90 LER# 35390012 50.72#: 18898 PWR HIST: POWER OPERATIONS AT 65%
DESC : A REACTOR TRIP OCCURRED ON TURBINE TRIP AND LOW CONDENSER VACUUM. THE CAUSE OF THE LOW CONDENSER VACUUM WAS A FAILURE OF A WASTE OIL DRAIN PIPE WHICH RUNS THROUGH THE MAIN CONDENSER.

SCRAM 09/10/90 LER# 50.72#: 19322 PWR HIST: POWER OPERATIONS AT 100%
DESC : A REACTOR SCRAM OCCURRED ON SPURIOUS GROUP 1 MSIV ISOLATION.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	0.00	0.70	0.00	0.00	1.29
SCRAMS <= 15% POWER	NA	NA	NA	0	0	0	0	0
TOTAL SCRAMS	NA	NA	NA	0	1	0	0	2
SAFETY SYSTEM ACTUATIONS	NA	NA	0	0	1	1	0	0
SIGNIFICANT EVENTS	NA	NA	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	NA	NA	0	3	2	3	4	1
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	8	5	27
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	0.97	0.52	1.29
CRITICAL HOURS	NA	NA	NA	541	1421	2058	1910	1551
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	3	4	2	5	2	NA
LICENSED OPERATOR	NA	NA	0	1	0	0	1	NA
OTHER PERSONNEL	NA	NA	1	5	5	4	1	NA
MAINTENANCE	NA	NA	2	6	9	7	3	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	1	1	1	2	1	NA
EQUIPMENT FAILURE	NA	NA	0	1	0	1	0	NA

TABLE 8.51

MAINE YANKEE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/14/90 LER# 30990002 50.72#: 18242 POWER: 0
DESC : A LICENSED OPERATOR OPENED THE WRONG VITAL BUS SUPPLY CIRCUIT BREAKER. THIS DEENERGIZED BOTH 120V VITAL BUSSES. THE LOSS OF POWER GENERATED A SAFETY INJECTION SIGNAL.

SSF 06/06/90 LER# 30990003 50.72#: POWER: 0
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : POST-ACCIDENT MONITORING SYSTEM
DESC : THE CORE EXIT THERMOCOUPLES (CETS) COULD HAVE BEEN INOPERABLE DURING A LOCA WITH A DESIGN BASIS SEISMIC EVENT. FOUR BOLTS WERE MISSING FROM THE SEISMICALLY QUALIFIED INSTRUMENT SUPPORT RACK ASSOCIATED WITH THE CETS. THE CAUSE WAS NOT DETERMINED.

SSF 06/07/90 LER# 30990004 50.72#: 18708 POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : CONTROL ROD DRIVE SYSTEM
DESC : NINE OF 23 ORIGINAL DESIGN CONTROL ELEMENT ASSEMBLIES (CEAS) SUFFERED FROM IRRADIATION ASSISTED STRESS CORROSION CRACKING. THREE CEAS WERE MISSING COMPONENTS. ONE OF THESE CEAS WOULD NOT INSERT BELOW 27 IN. ADEQUATE SHUTDOWN MARGIN WAS MAINTAINED.

SE 06/07/90 LER# 30990004 50.72#: 18708 POWER: 0
DESC : FAILURE OF CONTROL ELEMENT ASSEMBLY - END CAPS CRACKED AND DISLODGED.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.97	0.51	0.46	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	2	0
FORCED OUTAGE RATE (%)	34	11	1	0	12	0	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	3.94	1.02	0.00	0.00	0.54	0.00	0.00	0.91
CRITICAL HOURS	508	1970	2172	2208	1861	2160	1944	2208
COLLECTIVE RADIATION EXPOSURE	665	21	11	19	38	28	476	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	0	0	0	0	0	NA
LICENSED OPERATOR	1	0	0	0	0	0	1	NA
OTHER PERSONNEL	1	0	1	0	0	0	1	NA
MAINTENANCE	1	1	1	0	2	0	3	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	0	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.52

MCGUIRE 1

PI EVENTS FOR 89-4

SSF 10/12/89 LER# 36989031 50.72#: 17001 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE OUTSIDE AIR DAMPERS CLOSED WHEN THE CHLORINE DETECTOR POWER LEADS WERE ACCIDENTALLY SHORTED. THE DAMPER POWER SUPPLY WAS REMOVED AND THE DAMPERS WERE MANUALLY OPENED. THIS MADE THE SYSTEM INOPERABLE BECAUSE IT WOULD NOT RESPOND TO A RADIATION ALARM.

SSF 12/04/89 LER# 36989028 50.72#: 17410 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : PLANT AUDIT PERSONNEL DISCOVERED A GAP AROUND AN ACCESS DOOR OF THE CONTROL ROOM VENTILATION SYSTEM. THE SYSTEM WAS DECLARED INOPERABLE. THIS HAD EXISTED SINCE PLANT CONSTRUCTION AND WAS ATTRIBUTED TO A CONSTRUCTION/INSTALLATION DEFICIENCY.

PI EVENTS FOR 90-1

SCRAM 01/08/90 LER# 36990001 50.72#: 17512 POWER: 100
DESC : A CLOGGED STRAINER IN THE FEEDPUMP CONTROL OIL SYSTEM CAUSED FEEDPUMP TRIPS, A TURBINE TRIP, AND A REACTOR TRIP.

SSF 02/21/90 LER# 36990005 50.72#: POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE RAD MONITOR FOR THE EQUIPMENT STAGING BUILDING AND SAMPLER MINIMUM FLOW DEVICE WERE DECLARED INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. THIS COULD HAVE RESULTED IN AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL.

PI EVENTS FOR 90-2

SSF 04/10/90 LER# 36990013 50.72#: POWER: 100
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE FUEL POOL VENTILATION SYSTEM WAS DECLARED INOPERABLE. BECAUSE OF DEFICIENCIES IN THE INSTALLATION OF FLOW MEASURING DEVICES AND IN THE SELECTION OF THE MINIMALLY SIZED EXHAUST FANS, THE SYSTEM WAS NOT DEVELOPING ADEQUATE FLOW.

SSF 04/17/90 LER# 36990007 50.72#: POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT ICE CONDENSER/REFRIGERATION SYSTEM
DESC : WHILE REPAIRING ICE CONDENSER BASKET DEFICIENCIES DISCOVERED IN OCTOBER 1988 AT BOTH UNITS, SCREWS MADE OF THE WRONG MATERIAL WERE USED. AS A RESULT, DURING A POSTULATED LOCA PLUS SEISMIC EVENT, THE OPERATION OF THE SYSTEM COULD HAVE BEEN DEGRADED.

SSF 04/27/90 LER# 36990010 50.72#: 18466 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE ANNULUS VENTILATION SYSTEM WAS DETERMINED TO BE INOPERABLE BECAUSE OF A DESIGN ERROR. THE PREHEATERS ARE UNABLE TO DISSIPATE ENOUGH HEAT DURING A DEGRADED VOLTAGE CONDITION TO MAINTAIN THE REQUIRED RELATIVE HUMIDITY OF 70% OR LESS.

SSF 04/30/90 LER# 36990008 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE RAD MONITOR FOR THE CONTAMINATED PARTS WAREHOUSE VENTILATION AND SAMPLER MINIMUM FLOW DEVICE WERE INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL COULD HAVE RESULTED.

SSF 05/22/90 LER# 36990012 50.72#: POWER: 35
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : LOOSE MATERIAL WAS DISCOVERED IN THE UPPER CONTAINMENT THAT COULD HAVE BEEN TRANSPORTED TO THE SUMP AND RESTRICTED THE ECCS PUMPS' SUCTION DURING ACCIDENT CONDITIONS. QA PERSONNEL DID NOT FOLLOW INSPECTION PROCEDURES AND IDENTIFY THIS MATERIAL

TABLE 8.52 (CONT.)

MCGUIRE 1

PI EVENTS FOR 90-2 (CONT.)

SSF 06/04/90 LER# 36990014 50.72#: 18629 POWER: 66
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. A PROCEDURAL ERROR RESULTED IN CLOSING ALL OF THE OUTSIDE AIR INTAKES FOR ABOUT 1.5 HOURS.

SSF 06/26/90 LER# 36990017 50.72#: 18773 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : INADEQUATE SUPERVISION OF PAINTING PERSONNEL RESULTED IN RENDERING BOTH EDGS INOPERABLE. PAINT OVERSPRAY ON THE EXCITER COMMUTATOR RINGS AND FUEL RACKS PREVENTED THE PROPER OPERATION OF THE EDGS.

PI EVENTS FOR 90-3

SSF 07/16/90 LER# 36990022 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL STARTUP.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : A REVIEW OF THE STROKE TIME TEST PROCEDURES OF SOME RHR VALVES REVEALED THAT THEY HAD ROUTINELY BEEN PERFORMED IN MODES 1-4 (SINCE INITIAL STARTUP). THIS COULD HAVE DEGRADED INJECTION FLOW HAD A LBLOCA OCCURRED.

SSF 08/02/90 LER# 36990020 50.72#: 19024
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM VENTILATION SYSTEM WAS INOPERABLE BECAUSE SEVERAL INTAKE VALVES WERE CLOSED. THE LICENSEE COULD NOT DETERMINE THE CAUSE OF THIS EVENT. AN NRC RESIDENT INSPECTOR INITIALLY IDENTIFIED THE PROBLEM.

SSF 08/22/90 LER# 36990024 50.72#:
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED 8/22/90 AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : LEAKAGE WAS DISCOVERED IN THE "A" AIR HANDLING UNIT THAT RENDERED THE CONTROL ROOM VENTILATION SYSTEM INOPERABLE. THIS LEAKAGE WAS SEVERAL HUNDRED CFM, WHICH EXCEEDED THE FSAR CHAPTER 15 ASSUMPTION OF 10 CFM.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.46	0.00	5.61	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	1	0	0
SAFETY SYSTEM ACTUATIONS	1	1	0	1	0	0	0	0
SIGNIFICANT EVENTS	2	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	2	0	6	2	1	7	3
FORCED OUTAGE RATE (%)	0	27	43	2	0	48	1	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.63	0.80	0.46	0.00	11.22	1.93	0.93
CRITICAL HOURS	289	1584	1256	2162	2209	178	1035	2142
COLLECTIVE RADIATION EXPOSURE	281	30	49	222	9	152	67	NA
CAUSE CODES:								
ADMINISTRATIVE	9	4	2	7	1	1	3	NA
LICENSED OPERATOR	3	0	1	1	0	1	1	NA
OTHER PERSONNEL	6	1	2	6	1	2	2	NA
MAINTENANCE	14	4	3	11	2	4	5	NA
DESIGN/INSTALLATION/FABRICATION	5	3	2	6	1	3	2	NA
EQUIPMENT FAILURE	0	1	0	1	0	0	0	NA

TABLE 8.53

MCGUIRE 2

PI EVENTS FOR 89-4

SSF 10/12/89 LER# 36989031 50.72#: 17001 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE OUTSIDE AIR DAMPERS CLOSED WHEN THE CHLORINE DETECTOR POWER LEADS WERE ACCIDENTLY SHORTED. THE DAMPER POWER SUPPLY WAS REMOVED AND THE DAMPERS WERE MANUALLY OPENED. THIS MADE THE SYSTEM INOPERABLE BECAUSE IT WOULD NOT RESPOND TO A RADIATION ALARM.

SSF 12/04/89 LER# 36989028 50.72#: 17410 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : PLANT AUDIT PERSONNEL DISCOVERED A GAP AROUND AN ACCESS DOOR OF THE CONTROL ROOM VENTILATION SYSTEM. THE SYSTEM WAS DECLARED INOPERABLE. THIS HAD EXISTED SINCE PLANT CONSTRUCTION AND WAS ATTRIBUTED TO A CONSTRUCTION/INSTALLATION DEFICIENCY.

PI EVENTS FOR 90-1

SSF 03/22/90 LER# 36990013 50.72#: POWER: 100
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE FUEL POOL VENTILATION SYSTEM WAS DECLARED INOPERABLE. BECAUSE OF DEFICIENCIES IN THE INSTALLATION OF FLOW MEASURING DEVICES AND IN THE SELECTION OF THE MINIMALLY SIZED EXHAUST FANS, THE SYSTEM WAS NOT DEVELOPING ADEQUATE FLOW.

PI EVENTS FOR 90-2

SSF 04/17/90 LER# 36990007 50.72#: POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT ICE CONDENSER/REFRIGERATION SYSTEM
DESC : WHILE REPAIRING ICE CONDENSER BASKET DEFICIENCIES DISCOVERED IN OCTOBER 1988 AT BOTH UNITS, SCREWS MADE OF THE WRONG MATERIAL WERE USED. AS A RESULT, DURING A POSTULATED LOCA PLUS SEISMIC EVENT, THE OPERATION OF THE SYSTEM COULD HAVE BEEN DEGRADED.

SSF 04/30/90 LER# 36990008 50.72#: POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE RAD MONITOR FOR THE CONTAMINATED PARTS WAREHOUSE VENTILATION AND SAMPLER MINIMUM FLOW DEVICE WERE INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL COULD HAVE RESULTED.

SSF 06/04/90 LER# 36990014 50.72#: 18629 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. A PROCEDURAL ERROR RESULTED IN CLOSING ALL OF THE OUTSIDE AIR INTAKES FOR ABOUT 1.5 HOURS.

PI EVENTS FOR 90-3

SSF 07/16/90 LER# 36990022 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL STARTUP.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : A REVIEW OF THE STROKE TIME TEST PROCEDURES OF SOME RHR VALVES REVEALED THAT THEY HAD ROUTINELY BEEN PERFORMED IN MODES 1-4 (SINCE INITIAL STARTUP). THIS COULD HAVE DEGRADED INJECTION FLOW HAD A LBLOCA OCCURRED.

SSF 08/02/90 LER# 36990020 50.72#: 19024
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM VENTILATION SYSTEM WAS INOPERABLE BECAUSE SEVERAL INTAKE VALVES WERE CLOSED. THE LICENSEE COULD NOT DETERMINE THE CAUSE OF THIS EVENT. AN NRC RESIDENT INSPECTOR INITIALLY IDENTIFIED THE PROBLEM.

TABLE 8.53 (CONT.)

MCGUIRE 2

PI EVENTS FOR 90-3 (CONT.)

SSF 08/22/90 LER# 36990024 50.72#:
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED 8/22/90 AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : LEAKAGE WAS DISCOVERED IN THE "A" AIR HANDLING UNIT THAT RENDERED THE CONTROL ROOM VENTILATION SYSTEM INOPERABLE. THIS LEAKAGE WAS SEVERAL HUNDRED CFM, WHICH EXCEEDED THE FSAR CHAPTER 15 ASSUMPTION OF 10 CFM.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.93	0.46	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	0	5	2	1	3	3
FORCED OUTAGE RATE (%)	0	2	1	0	0	0	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.45	0.93	0.46	0.00	0.00	0.00	0.00	0.68
CRITICAL HOURS	2209	2149	2165	421	2209	2160	2183	1477
COLLECTIVE RADIATION EXPOSURE	281	30	49	222	9	152	67	NA
CAUSE CODES:								
ADMINISTRATIVE	4	4	2	9	3	3	1	NA
LICENSED OPERATOR	0	0	1	2	0	1	0	NA
OTHER PERSONNEL	2	1	1	4	3	1	1	NA
MAINTENANCE	6	6	2	12	5	2	2	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	6	1	5	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.54

MILLSTONE 1

PI EVENTS FOR 89-4

SCRAM 10/19/89 LER# 24589021 50.72#: 16881 POWER: 70
DESC : WHILE PLACING THE "B" MAIN FEEDWATER REGULATING VALVE (FRV) IN SERVICE AND OPERATING ON THE "A" FRV, THE "A" VALVE OPENED AND STUCK, CAUSING A HIGH REACTOR WATER LEVEL, TURBINE TRIP, AND REACTOR TRIP.

SSF 10/19/89 LER# 24589021 50.72#: POWER: 70
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : A FEEDWATER REGULATING VALVE (FRV) STUCK OPEN FOLLOWING A SCRAM (10/19/89). INVESTIGATION REVEALED THAT A BOLT AND THE RETAINING BLOCK FROM THE FEEDWATER DISCHARGE CHECK VALVE WAS WEDGED IN THE FRV. FEEDWATER COOLANT INJECTION IS AN ECCS AT MILLSTONE 1.

SSF 11/17/89 LER# 24589022 50.72#: 17134 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE FEEDWATER COOLANT INJECTION SYSTEM (WHICH FUNCTIONS AS AS ECC SYSTEM) WAS DECLARED INOPERABLE DUE TO A LACK OF DETAILED ANALYSIS CONFIRMING ITS OPERABILITY.

PI EVENTS FOR 90-1

SSF 03/05/90 LER# 24590002 50.72#: 17899 POWER: 100
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : THE SETPOINT ASSOCIATED WITH THE MAIN STEAM HIGH FLOW ISOLATION WAS INCORRECT AND NON-CONSERVATIVE. DUE TO A PERSONNEL ERROR, THE SETPOINT HAD BEEN INCORRECTLY CALCULATED IN 1976.

PI EVENTS FOR 90-2

SE 05/11/90 LER# 24590009 50.72#: 18440 POWER: 100
DESC : HOUSE HEATING STEAM LINES PASSING THRU VITAL AREAS FOUND NOT TO BE ANALYZED BY HELB FOR FAILURE. SEISMIC EVENT COULD CAUSE MULTIPLE LINE FAILURES RESULTING IN LOSS OF MULTIPLE TRAINS OF SAFETY EQUIPMENT.

SSF 05/12/90 LER# 24590017 50.72#: 18456 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE FEEDWATER COOLANT INJECTION AUTO-START CAPABILITY WAS RENDERED INOPERABLE IN ORDER TO REDUCE ACCIDENT LOADS ON THE EMERGENCY GAS TURBINE GENERATOR. AN ONGOING STUDY INDICATED THAT THE MAXIMUM ACCIDENT LOAD WAS BEYOND THE TURBINE'S CAPACITY.

PI EVENTS FOR 90-3

SSF 07/20/90 LER# 24590011 50.72#:
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 100% POWER.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AS A RESULT OF PERSONNEL ERROR, A FIRE DOOR WAS BLOCKED OPEN AND LEFT UNGUARDED. THE DOOR IS LOCATED BETWEEN THE TURBINE BUILDING UNLOADING AREA AND THE TURBINE BUILDING DECONTAMINATION ROOM.

SSF 08/13/90 LER# 24590012 50.72#:
PWR HIST: SHUTDOWN TO 100% POWER. EXISTED FROM 6/4/90 TO 8/13/90.
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE EXISTING HIGH-HIGH TRIP SETPOINTS OF BOTH SJAE OFF-GAS RAD MONITORS EXCEEDED T.S. LIMITS FROM JUNE 4, 1990 TO AUGUST 13, 1990. THE ROOT CAUSE WAS PERSONNEL ERROR IN FAILING TO RECOGNIZE THAT THE SETPOINTS NEEDED ADJUSTING.

SSF 09/07/90 LER# 50.72#: 19111
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE COOLANT INJECTION SYSTEM
DESC : DESIGN BASIS AND PROCEDURE REVIEWS DISCOVERED THAT THE LPCI HEAT EXCHANGER FLOW RATES REQUIRED BY EMERGENCY OPERATING PROCEDURES EXCEED THEIR DESIGN LIMITS. THE FLOW RATES NEED TO BE DECREASED BY APPROXIMATELY A FACTOR OF TWO TO PREVENT FLOW VIBRATIONS.

TABLE 8.54 (CONT.)

MILLSTONE 1

PI EVENTS FOR 90-3 (CONT.)

SCRAM 09/14/90 LER# 50.72#: 19359 PWR HIST: POWER OPERATIONS AT 100%
DESC : AUTOMATIC REACTOR SCRAM OCCURRED DUE TO LOW REACTOR VESSEL WATER LEVEL. A FALSE WATER LEVEL SIGNAL WAS GENERATED DURING PRESSURE SWITCH CALIBRATION WHICH RESULTED IN A HIGH RVWL SIGNAL CLOSING THE FRV.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.12	0.00	0.47	0.00	0.00	0.47
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	0	2	0	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	1	0
SAFETY SYSTEM FAILURES	1	2	2	1	2	1	1	3
FORCED OUTAGE RATE (%)	6	0	11	0	5	0	1	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.47	0.00	1.12	0.00	0.47	0.00	0.54	0.00
CRITICAL HOURS	2116	2160	890	2200	2128	2160	1868	2114
COLLECTIVE RADIATION EXPOSURE	11	41	377	17	24	23	29	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	1	1	1	2	5	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	0	1	2	1	0	1	NA
MAINTENANCE	4	1	8	3	2	1	4	NA
DESIGN/INSTALLATION/FABRICATION	1	3	2	0	2	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.55

MILLSTONE 2

PI EVENTS FOR 89-4

SSF 10/25/89 LER# 33689009 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
DESC : BOTH CONTAINMENT ATMOSPHERE-PARTICLE/GASEOUS MONITORS WERE INOPERABLE DURING 19 HOURS OF A CONTAINMENT PURGE EVOLUTION. ONE MONITOR HAD NOT BEEN CORRECTLY RETURNED TO SERVICE FOLLOWING MAINTENANCE AND THE OTHER MONITOR'S EMERGENCY POWER SUPPLY WAS OOS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SCRAM 08/27/90 LER# 50.72#: 19209 PWR HIST: POWER OPERATIONS AT 100%
DESC : DURING A SURVEILLANCE TEST, THE REACTOR TRIPPED WHEN 'A' AND 'B' RPS CHANNELS WERE PLACED IN TRIP. 'A' CHANNEL WAS IN TRIP DUE TO A POWER SUPPLY FAILURE AND 'B' WAS PLACED IN TRIP DURING TESTING.

SSA 09/20/90 LER# 50.72#: 19423 PWR HIST: COLD SHUTDOWN
DESC : SAFETY INJECTION PUMP INJECTED APPROX. 50 GALLONS TO THE RCS DURING A TEST OF THE PRESSURIZER PRESSURE INSTRUMENTATION. THE CAUSE IS UNKNOWN.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.56
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	1	0	0	0	0	1
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	1	0	0	0
FORCED OUTAGE RATE (%)	2	0	0	0	0	0	5	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00
CRITICAL HOURS	2183	826	1560	2208	1433	2160	1292	1795
COLLECTIVE RADIATION EXPOSURE	55	470	176	27	241	6	158	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	1	1	1	2	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	2	2	1	1	2	NA
MAINTENANCE	1	2	3	3	2	0	4	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	0	1	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.56

MILLSTONE 3

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 42389026 50.72#: POWER: 100
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : THE TURBINE-DRIVEN PUMP WAS TAKEN OUT OF SERVICE FOR MAINTENANCE FOR 32 DAYS. DURING THIS TIME, THERE WERE TWO 8 HOUR PERIODS WHEN ONE OF THE TWO MOTOR-DRIVEN PUMPS WAS ALSO INOPERABLE.

SSF 11/27/89 LER# 42389030 50.72#: 17202 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC : ENGINEERING CONCLUDED THAT THE 4160VAC FAST BUS TRANSFER, IF PERFORMED REPEATEDLY, COULD DAMAGE SAFETY RELATED MOTORS. THE VOLTAGE TRANSIENTS ACROSS THE MOTOR TERMINALS COULD CAUSE SHAFT AND/OR WINDING DAMAGE, CAUSED BY INADEQUATE DESIGN CONSIDERATIONS.

SSA 12/05/89 LER# 42389033 50.72#: 17271 POWER: 0
DESC : A SAFETY INJECTION OCCURRED ON A SG PRESSURE DECREASE WHEN A MAIN STEAM ISOLATION VALVE WAS OPENED. A PROCEDURE FAILED TO CAUTION THAT A SAFETY INJECTION COULD OCCUR.

SSA 12/11/89 LER# 42389034 50.72#: 17317 POWER: 100
DESC : DURING SURVEILLANCE TESTING OF THE "B" TRAIN ESFAS SLAVE RELAYS, A CONTAINMENT DEPRESSURIZATION ACTUATION SIGNAL WAS INITIATED DUE TO OPERATOR ERROR.

PI EVENTS FOR 90-1

SSA 01/09/90 LER# 42390002 50.72#: 17520 POWER: 100
DESC : A CONTAINMENT DEPRESSURIZATION ACTUATION SIGNAL WAS INADVERTENTLY GENERATED DURING MAINTENANCE. THE TRAIN 'A' CONTAINMENT SPRAY PUMPS AND ECCS PUMPS STARTED.

SCRAM 03/09/90 LER# 42390009 50.72#: 17936 POWER: 100
DESC : THE TEMPERATURE CONTROL VALVE TO THE MAIN GENERATOR STATOR COOLING SYSTEM FAILED CAUSING A TURBINE TRIP ON HIGH TEMPERATURE IN THE GENERATOR STATOR COOLING SYSTEM. THE TURBINE TRIP CAUSED A REACTOR TRIP.

PI EVENTS FOR 90-2

SSF 05/18/90 LER# 42390017 50.72#: 18531 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : BOTH TRAINS OF THE HIGH PRESSURE SAFETY INJECTION SYSTEM WERE RENDERED INOPERABLE (4 HRS AND 12 MIN). AN OPERATOR INCORRECTLY FOLLOWED A PROCEDURE THAT WAS TO BE USED ONLY IF THE REACTOR WAS SHUTDOWN WITH TEMPERATURE LESS THAN 350 DEGREES.

SSF 06/01/90 LER# 42390018 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR FIRE STOP AND SEAL PENETRATIONS WITHIN THE ESF BUILDING WERE DECLARED INOPERABLE. FIRE WATCHES WERE NOT ESTABLISHED IN ALL AFFECTED AREAS.

SCRAM 06/06/90 LER# 42390019 50.72#: 18637 POWER: 100
DESC : A REACTOR SCRAM OCCURRED ON HIGH NEGATIVE FLUX RATE TRIP. THE CAUSE WAS A POSSIBLE DROPPED ROD DUE TO A BROKEN CONNECTION IN THE STATIONARY GRIPPER COIL POWER CABLE FOR ROD G13.

SSF 06/14/90 LER# 42390020 50.72#: 18710 POWER: 80
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : WHILE THE TRAIN "B" HPSI AND QUENCH SPRAY PUMPS WERE UNDERGOING AN OPERABILITY EVALUATION, THE TRAIN "A" PUMPS WERE RENDERED INOPERABLE FOR MAINTENANCE. THE EVALUATION DETERMINED TRAIN "B" PUMPS WERE ALSO INOPERABLE BECAUSE THEIR ROOM COOLER WAS FOULED.

SSF 06/15/90 LER# 42390023 50.72#: 18836 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : THE CONTAINMENT RECIRCULATION SPRAY SYSTEM WAS INOPERABLE DUE TO FOULING OF THE AREA COOLER HEAT EXCHANGERS. THE FOULING CAUSED SEVERE EROSION OF A DRAIN HOLE IN THE HEAT EXCHANGER DIVIDER PLATE. SURVEILLANCE PROCEDURES DID NOT IDENTIFY THIS CONDITION.

TABLE 8.56 (CONT.)

MILLSTONE 3

PI EVENTS FOR 90-2 (CONT.)

SSF 06/25/90 LER# 42390026 50.72#: POWER: 100
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
DESC : A HIGH TEMPERATURE CONDITION IN THE RECOMBINER BUILDING HVAC ROOM COULD RENDER BOTH TRAINS OF CONTAINMENT HYDROGEN MONITORS INOPERABLE. AN ERROR IN DESIGN RESULTED IN THE SELECTION OF MONITORS DESIGNED TO OPERATE WITH AMBIENT TEMPERATURES BELOW 90F.

PI EVENTS FOR 90-3

SSF 08/11/90 LER# 42390027 50.72#:
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 99% POWER.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AS A RESULT OF PERSONNEL ERROR, A T.S. FIRE DOOR WAS LEFT BLOCKED OPEN FOR ABOUT THREE HOURS AFTER THE APPLICABLE FIRE WATCH HAD BEEN SECURED. THE ROOT CAUSE WAS INADEQUATE TRAINING OF FIRE WATCH PERSONNEL.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.14	0.00	1.13	0.00	0.00	0.49	0.69	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	1	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	2	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	2	0	5	1
FORCED OUTAGE RATE (%)	23	13	15	0	10	6	37	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.57	0.53	3.40	0.52	1.00	0.98	2.06	0.00
CRITICAL HOURS	1760	1900	882	1926	2009	2046	1454	2208
COLLECTIVE RADIATION EXPOSURE	6	8	146	7	7	2	6	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	5	7	8	6	8	NA
LICENSED OPERATOR	0	3	2	0	1	0	1	NA
OTHER PERSONNEL	2	0	3	1	3	5	1	NA
MAINTENANCE	5	2	6	7	8	9	6	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	0	2	3	2	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.57

MONTICELLO

PI EVENTS FOR 89-4

SSF 10/14/89 LER# 26389029 50.72#: 16847 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : THE SECONDARY CONTAINMENT WAS DECLARED INOPERABLE AFTER FAILING A CAPABILITY TEST. SEVERAL DEGRADED CONDITIONS EXISTED INCLUDING BYPASS FLOW FROM THE REACTOR BUILDING TO THE REACTOR BUILDING PLENUM. THE ROOT CAUSES WERE DESIGN AND MAINTENANCE PROBLEMS.

SCRAM 11/15/89 LER# 26389038 50.72#: 17107 POWER: 100
DESC : DURING AN AVERAGE POWER RANGE MONITOR RECIRCULATION FLOW INSTRUMENT CALIBRATION, A PRESSURE SPIKE ON THE "B" REACTOR PRESSURE INSTRUMENT CAUSED A REACTOR TRIP.

SSF 12/19/89 LER# 26389040 50.72#: 17381 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : THE SECONDARY CONTAINMENT WAS DECLARED INOPERABLE WHEN THE SBGT SYSTEM COULD NOT MAINTAIN THE REQUIRED CONTAINMENT VACUUM DURING A TEST. THREE DESIGN DEFICIENCIES WERE IDENTIFIED THAT AFFECT OR COULD AFFECT THE SBGT SYSTEM OPERATION ADVERSELY.

PI EVENTS FOR 90-1

SSF 03/13/90 LER# 26390001 50.72#: 18106 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF DESIGN DEFICIENCIES, INTERACTIONS BETWEEN THE EMERGENCY FILTER SYSTEM (EFS) AND NON-SAFETY RELATED VENTILATION SYSTEMS MAY PREVENT THE EFS FROM MAINTAINING THE PROPER POSITIVE PRESSURE IN THE CONTROL ROOM DURING A HIGH RADIATION EVENT.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 07/05/90 LER# 26390007 50.72#: 18834
PWR HIST: EVENT DISCOVERED DURING COLD SHUTDOWN.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR RECIRCULATION SYSTEM
DESC : THE #12 REACTOR RECIRCULATION PUMP DISCHARGE VALVE FAILED TO CLOSE. THIS COULD HAVE RESULTED IN A LOSS OF LPCI SYSTEM INJECTION TO THE VESSEL DURING A DBA. THE PROBABLE CAUSE OF THE VALVE'S MOTOR FAILURE WAS STATOR WINDING ENDTURN INSULATION FAILURE.

SSF 07/19/90 LER# 26390009 50.72#:
PWR HIST: ALL MODES UP TO 100% POWER. PROBLEM EXISTED SINCE THE LATE 1989 REFUELING OUTAGE.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AS A RESULT OF A PERSONNEL ERROR, A FIRE BARRIER PENETRATION SEAL WAS OPENED DURING THE LATE 1989 REFUELING OUTAGE AND NOT RE-SEALED.

SE 09/11/90 LER# 50.72#: 19338
PWR HIST: ALL MODES UP TO 100% POWER, PROBLEM EXISTED FOR AN UNDETERMINED PERIOD OF TIME.
DESC : FAILURE OF A NONSEISMIC FIRE SUPPRESSION PIPE COULD CAUSE LOSS OF BOTH EMERGENCY DIESEL GENERATORS.

TABLE 8.57 (CONT.)

MONTICELLO

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.48	0.00	0.78	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	1	3	0	2	1	0	2
FORCED OUTAGE RATE (%)	1	0	5	0	2	0	0	6
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2194	2160	2074	1157	1288	2160	2183	2012
COLLECTIVE RADIATION EXPOSURE	16	21	27	273	186	25	13	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	3	1	6	0	3	NA
LICENSED OPERATOR	1	0	2	0	2	0	0	NA
OTHER PERSONNEL	0	1	2	1	3	0	1	NA
MAINTENANCE	0	4	7	4	8	0	5	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	2	5	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.58

NINE MILE PT. 1

PI EVENTS FOR 89-4

SSF 10/04/89 LER# 22089014 50.72#: POWER: 0
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE TEMPERATURE CONTROLLERS FOR THE REACTOR BUILDING EMERGENCY VENTILATION SYSTEM CHARCOAL HEATERS WERE NOT IN A SCHEDULED CALIBRATION PROGRAM. THE CONTROLLERS WERE TESTED AND FOUND TO BE SET BELOW THE DESIGN CRITERIA (HUMIDITY AFFECTS EFFICIENCY).

PI EVENTS FOR 90-1

SSF 02/06/90 LER# 22089010 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AS A RESULT OF AN INADEQUATE DESIGN REVIEW, THE RADWASTE DISCHARGE MONITOR COULD BE RENDERED INOPERABLE BY SWITCH MISPOSITIONING WITHOUT ENERGIZING THE "EQUIPMENT TROUBLE" ANNUNCIATOR IN THE CONTROL ROOM.

SSF 02/28/90 LER# 22090002 50.72#: POWER: 0
GROUP : COMPONENT COOLING WATER SYSTEM GROUP
SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
DESC : A DESIGN DEFICIENCY IN THE REACTOR BUILDING CLOSED LOOP COOLING WATER SYSTEM COULD CAUSE A LOSS OF COOLING TO ESSENTIAL LOADS DURING A DESIGN BASIS ACCIDENT. THIS WOULD RESULT FROM THE FAILURE OF A THREE-WAY TEMPERATURE CONTROL VALVE.

PI EVENTS FOR 90-2

SSF 06/15/90 LER# 22090013 50.72#: POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : A 200 FOOT SECTION OF PIPING WAS INADEQUATELY INSTALLED. DURING A DESIGN BASIS SEISMIC EVENT, THE PIPING COULD CAUSE A THREE-QUARTER INCH UNISOLABLE LEAK BETWEEN THE PRIMARY AND SECONDARY CONTAINMENTS. THIS RESULTED FROM POOR ADMINISTRATIVE CONTROLS.

PI EVENTS FOR 90-3

SSA 07/27/90 LER# 22090015 50.72#: 18977 PWR HIST: COLD SHUTDOWN
DESC : DURING TESTING, THE HPCI SYSTEM ACTUATED A TURBINE TRIP DUE TO LEAKING FEEDWATER FLOW CONTROL VALVES.

SSA 08/06/90 LER# 22090017 50.72#: 19058 PWR HIST: POWER OPERATIONS AT 19%
DESC : MSIV ISOLATED ON LOW CONDENSER VACUUM AND HPCI INITIATED ON LOW REACTOR WATER LEVEL. BOTH OCCURRED FOLLOWING A MANUAL SCRAM.

SSF 08/06/90 LER# 22090018 50.72#:
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 14% POWER.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : SECONDARY CONTAINMENT WAS BREACHED MOMENTARILY WHITH THE REACTOR AT 14% POWER. BOTH DOORS OF AN AIRLOCK WERE INADVERTANTLY OPENED WHEN PERSONNEL SIMULTANEOUSLY ENTERED FROM OPPOSITE SIDES.

SSA 08/11/90 LER# 50.72#: 19095 PWR HIST: COLD SHUTDOWN
DESC : HPCI LOGIC FOR THE FEEDWATER SYSTEM ACTUATED DUE TO AN MFP TRIP.

SSA 08/19/90 LER# 22090020 50.72#: 19156 PWR HIST: POWER OPERATIONS AT 21%
DESC : MANUAL TURBINE TRIP INITIATED DUE TO EXCESSIVE TURBINE VIBRATION. HPCI STARTED ON TRIP SIGNAL PER DESIGN.

TABLE 8.58 (CONT.)

NINE MILE PT. 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	4
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	1	2	1	1
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	53
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
CRITICAL HOURS	0	0	0	0	0	0	0	1303
COLLECTIVE RADIATION EXPOSURE	133	56	81	92	33	60	36	NA
CAUSE CODES:								
ADMINISTRATIVE	2	4	4	3	5	2	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	1	NA
OTHER PERSONNEL	1	0	1	2	1	0	3	NA
MAINTENANCE	2	4	2	3	2	1	5	NA
DESIGN/INSTALLATION/FABRICATION	1	0	1	1	2	2	4	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.59

NINE MILE PT. 2

PI EVENTS FOR 89-4

SCRAM 10/13/89 LER# 41089035 50.72#: 16840 POWER: 54
DESC : A LOW CONDENSER VACUUM LED TO A REACTOR TRIP AND A TURBINE TRIP WHEN THE AIR INLET VALVE OF THE OPERATING STEAM JET AIR EJECTOR CLOSED DUE TO AN INTERLOCK DURING MAINTENANCE.

SCRAM 10/18/89 LER# 41089036 50.72#: 16872 POWER: 1
DESC : DURING A PLANT SHUTDOWN, COLD WATER INTRODUCED BY THE FEEDWATER SYSTEM PRODUCED POSITIVE REACTIVITY IN EXCESS OF THE NEGATIVE REACTIVITY FROM CONTROL ROD INSERTION.

SCRAM 12/01/89 LER# 41089040 50.72#: 17240 POWER: 97
DESC : A REACTOR TRIP OCCURRED ON AN AVERAGE POWER RANGE MONITOR UPSCALE TRIP. A MALFUNCTION OF THE TURBINE ELECTROHYDRAULIC CONTROL SYSTEM PRODUCED A SUDDEN ZERO VOLTAGE INPUT TO THE CONTROL VALVE DEMAND SIGNAL.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SCRAM 09/05/90 LER# 50.72#: 19280 PWR HIST: POWER OPERATIONS AT 64%
DESC : A REACTOR SCRAM OCCURRED WHEN THE TURBINE TRIPPED DUE TO A GENERATOR FIELD GROUND.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.99	0.54	1.52	0.00	0.00	0.63
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	0	2	1	3	0	0	1
SAFETY SYSTEM ACTUATIONS	2	3	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	12	1	49	42	15	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.99	0.54	1.52	0.00	0.53	0.63
CRITICAL HOURS	16	0	2020	1869	1317	1328	1885	1588
COLLECTIVE RADIATION EXPOSURE	NA	56	81	92	33	60	36	NA
CAUSE CODES:								
ADMINISTRATIVE	7	5	6	6	6	2	5	NA
LICENSED OPERATOR	0	1	5	0	4	1	1	NA
OTHER PERSONNEL	5	3	1	2	2	3	1	NA
MAINTENANCE	11	6	8	7	6	7	6	NA
DESIGN/INSTALLATION/FABRICATION	6	2	1	1	2	0	0	NA
EQUIPMENT FAILURE	0	1	1	1	2	0	0	NA

TABLE 8.60

NORTH ANNA 1

PI EVENTS FOR 89-4

SCRAM 12/05/89 LER# 33889017 50.72#: 17274 POWER: 7
DESC : A REACTOR TRIP OCCURRED ON A LOW SG LEVEL FOLLOWING A FEEDWATER ISOLATION AS A RESULT OF A LOAD REDUCTION DUE TO THE #3 GOVERNOR VALVE CLOSING DURING TESTING.

SSF 12/28/89 LER# 33889019 50.72#: 17461 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : CONTAINMENT INTEGRITY WAS VIOLATED. PERSONNEL DISCOVERED THAT THE OUTER CONTAINMENT DOOR WAS LEAKING INWARD. INVESTIGATION ALSO REVEALED THAT THE INNER DOOR WAS NOT FULLY CLOSED.

PI EVENTS FOR 90-1

SCRAM 01/23/90 LER# 33890001 50.72#: 17612 POWER: 100
DESC : A FEEDWATER REGULATING VALVE CLOSED DUE TO A FAILED DRIVER CARD. THIS CAUSED A REACTOR TRIP ON LOW SG LEVEL COINCIDENT WITH A STEAM FLOW/FEED FLOW MISMATCH.

PI EVENTS FOR 90-2

SSF 04/03/90 LER# 33890005 50.72#: 18133 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : PERSONNEL AND PROCEDURAL ERRORS RESULTED IN THE MISCALIBRATION OF THE REFUELING WATER STORAGE TANK LEVEL INSTRUMENTATION. THE LOW HEAD SAFETY INJECTION AND RECIRCULATION SPRAY PUMPS PERFORMANCE COULD HAVE BEEN AFFECTED DURING AN ESF ACTUATION.

SSF 05/23/90 LER# 33890007 50.72#: 18559 POWER: 100
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : TWO SETS OF CONCRETE ROOF BLOCKS (WHICH SERVE AS A MISSILE BARRIER) ON THE SERVICE WATER PUMP HOUSE WERE NOT IN THEIR REQUIRED SAFETY POSITIONS. ONE SET HAD BEEN MISSING SINCE OCTOBER 1989. THE BLOCKS HAD BEEN REMOVED TO PERFORM MAINTENANCE/MODIFICATION.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.75	0.00	0.54	0.00	0.47	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	1	0	1	1	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	1	0	1	0	2	0
FORCED OUTAGE RATE (%)	0	10	0	2	17	2	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.75	0.00	0.54	0.54	0.47	0.00	0.00
CRITICAL HOURS	2209	1334	0	1840	1849	2148	2183	2208
COLLECTIVE RADIATION EXPOSURE	10	174	511	28	24	16	11	NA
CAUSE CODES:								
ADMINISTRATIVE	8	1	2	2	0	2	3	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	4	2	0	0	2	2	NA
MAINTENANCE	5	6	6	2	2	3	4	NA
DESIGN/INSTALLATION/FABRICATION	3	0	1	0	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.61

NORTH ANNA 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/23/90 LER# 33890007 50.72#: 18559 POWER: 100
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : TWO SETS OF CONCRETE ROOF BLOCKS (WHICH SERVE AS A MISSILE BARRIER) ON THE SERVICE WATER PUMP HOUSE WERE NOT IN THEIR REQUIRED SAFETY POSITIONS. ONE SET HAD BEEN MISSING SINCE OCTOBER 1989. THE BLOCKS HAD BEEN REMOVED TO PERFORM MAINTENANCE/MODIFICATION.

PI EVENTS FOR 90-3

SSA 08/02/90 LER# 50.72#: 19016 PWR HIST: POWER OPERATIONS AT 75%
DESC : A PARTIAL LOSS OF OFFSITE POWER OCCURRED DUE TO A FAILED SERVICE TRANSFORMER. ONE EDG STARTED AND LOADED THE BUS.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	1
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	0	0	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	18
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2209	1205	1297	2208	2209	2160	2183	1227
COLLECTIVE RADIATION EXPOSURE	10	174	511	28	24	16	11	NA
CAUSE CODES:								
ADMINISTRATIVE	7	1	3	2	0	2	3	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	2	0	0	3	1	NA
MAINTENANCE	5	5	5	1	0	3	3	NA
DESIGN/INSTALLATION/FABRICATION	3	0	1	0	1	0	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.62

OCONEE 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/01/90 LER# 26990004 50.72#: POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF A DESIGN DEFICIENCY, DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS, BOTH THE 230KV SWITCHYARD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE ENGINEERED SAFEGUARDS BUSES.

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 26990005 50.72#: 18322 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADED VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE 04/24/90 LER# 26990005 50.72#: 18344 POWER: 100
DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

SSA 05/16/90 LER# 26990007 50.72#: 18492 POWER: 0
DESC : INADEQUATE TEST PROCEDURES RESULTED IN LOW PRESSURE SIGNAL (2 OUT OF 3 LOGIC) FROM 'B' ANALOG CHANNEL. HPI AND LPI RECEIVED START SIGNALS. ONLY VALVES IN THE LOW PRESSURE SERVICE WATER WERE AVAILABLE TO OPERATE.

SSF 05/18/90 LER# 26990008 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : WITH THE UNIT VENT STACK MONITORS INOPERABLE AND THE AUXILIARY SAMPLER ALIGNED TO ANOTHER AREA, THE TEMPORARY SAMPLING EQUIPMENT WAS USED TO SAMPLE THE VENT STACK. HOWEVER, THE EQUIPMENT SAMPLING LINES WERE NOT PROPERLY CONNECTED TO THE VENT STACK.

SSF 06/04/90 LER# 26990009 50.72#: POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : THE UPPER SURGE TANK'S ABILITY TO SUPPLY SUFFICIENT INVENTORY TO THE EMERGENCY FEEDWATER SYSTEM WAS SIGNIFICANTLY COMPROMISED BECAUSE OF OPERATOR ERROR. WHILE TRYING TO DE-OXYGENATE THE FEEDWATER, OPERATORS DRAINED THE TANK BELOW MINIMUM REQUIREMENTS.

SSF 06/13/90 LER# 26990010 50.72#: 18704 POWER: 97
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE PENETRATION ROOM VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE OF A DESIGN ERROR. A LOSS OF OFFSITE POWER OR SEISMIC EVENT COULD CAUSE PNEUMATIC THROTTLE VALVES IN BOTH TRAINS TO FAIL CLOSED, RENDERING THE SYSTEM INOPERABLE.

SSF 06/27/90 LER# 26990011 50.72#: 18791 POWER: 100
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE BORON DILUTION SYSTEM DOES NOT MEET SINGLE FAILURE CRITERIA. VALVES ON THE TWO REDUNDANT TRAINS ARE POWERED FROM THE SAME MOTOR CONTROL CENTER. SYSTEM FAILURE COULD RESULT IN BORON PRECIPITATION CLOGGING COOLANT CHANNELS.

PI EVENTS FOR 90-3

SSF 07/31/90 LER# 26990012 50.72#: 19022
PWR HIST: ALL MODES UP TO 100% POWER. DESIGN ERROR EXISTED SINCE 1973. DISCOVERED 7/31/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : WHILE DEVELOPING A DESIGN BASIS DOCUMENT FOR THE KEOWEE EMERGENCY POWER SYSTEM, DESIGN ENGINEERING DISCOVERED DESIGN DEFICIENCIES THAT COULD PREVENT THE SYSTEM FROM PROVIDING ADEQUATE POWER DURING A LOCA/LOOP OR LOOP EVENT.

TABLE 8.62 (CONT.)

OCONEE 1

PI EVENTS FOR 90-3 (CONT.)

SCRAM 08/28/90 LER# 50.72#: 19224 PWR HIST: POWER OPERATIONS AT 100%
DESC : AN MFP TRIPPED CAUSING A REACTOR SCRAM ON HIGH RCS PRESSURE. '1B' CONDENSATE BOOSTER PUMP TRIPPED DUE TO THE DISCHARGE VALVE INDICATING LESS THAN FULL OPEN. THE '1A' PUMP FAILED TO START IN AUTO.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.92	0.00	0.50	0.00	0.00	0.00	0.45
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	1	0
SAFETY SYSTEM FAILURES	0	3	3	1	0	1	5	1
FORCED OUTAGE RATE (%)	0	11	0	1	6	0	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.84	0.00	0.00	0.48	0.00	0.00	0.91
CRITICAL HOURS	2209	1090	2183	2016	2082	2160	1204	2202
COLLECTIVE RADIATION EXPOSURE	24	62	62	14	90	12	41	NA
CAUSE CODES:								
ADMINISTRATIVE	1	7	4	5	2	0	7	NA
LICENSED OPERATOR	0	2	0	0	0	0	2	NA
OTHER PERSONNEL	0	4	0	3	0	0	1	NA
MAINTENANCE	1	7	2	3	0	0	5	NA
DESIGN/INSTALLATION/FABRICATION	1	3	3	2	1	1	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.03

OCONEE 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/01/90 LER# 26990004 50.72#: POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF A DESIGN DEFICIENCY, DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS, BOTH THE 230KV SWITCHYARD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE ENGINEERED SAFEGUARDS BUSES.

PI EVENTS FOR 90-2

SSF 2[illegible]/90 LER# 26990005 50.72#: 18322 POWER: 10[illegible]
[illegible]ERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADED VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE [illegible]/24/90 LER# 26990005 50.72#: 18344 POWER: 100
DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

SSF 06/13/90 LER# 26990010 50.72#: 18704 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE PENETRATION ROOM VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE OF A DESIGN ERROR. A LOSS OF OFFSITE POWER OR SEISMIC EVENT COULD CAUSE PNEUMATIC THROTTLE VALVES IN BOTH TRAINS TO FAIL CLOSED, RENDERING THE SYSTEM INOPERABLE.

SSF 06/27/90 LER# 26990011 50.72#: 18791 POWER: 100
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE BORON DILUTION SYSTEM DOES NOT MEET SINGLE FAILURE CRITERIA. VALVES ON THE TWO REDUNDANT TRAINS ARE POWERED FROM THE SAME MOTOR CONTROL CENTER. SYSTEM FAILURE COULD RESULT IN BORON PRECIPITATION CLOGGING COOLANT CHANNELS.

PI EVENTS FOR 90-3

SSF 07/31/90 LER# 26990012 50.72#: 19022
[illegible] HIST: ALL MODES UP TO 100% POWER. DESIGN ERROR EXISTED SINCE 1973. DISCOVERED 7/31/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : WHILE DEVELOPING A DESIGN BASIS DOCUMENT FOR THE KEOWEE EMERGENCY POWER SYSTEM, DESIGN ENGINEERING DISCOVERED DESIGN DEFICIENCIES THAT COULD PREVENT THE SYSTEM FROM PROVIDING ADEQUATE POWER DURING A LOCA/LOOP OR LOOP EVENT.

TABLE 8.63 (CONT.)

OCONEE 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.93	0.87	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	1	0
SAFETY SYSTEM FAILURES	0	2	3	1	0	1	3	1
FORCED OUTAGE RATE (%)	0	2	7	0	10	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.93	2.62	0.00	1.54	0.00	0.00	0.00
CRITICAL HOURS	2209	2144	1147	2152	1943	2160	2183	1777
COLLECTIVE RADIATION EXPOSURE	24	62	62	14	90	12	41	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	5	3	2	0	3	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	2	1	1	0	0	0	NA
MAINTENANCE	1	5	2	1	1	0	2	NA
DESIGN/INSTALLATION/FABRICATION	1	3	2	2	2	1	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.64

OCONEE 3

PI EVENTS FOR 89-4

SSA 11/14/89 LER# 28789014 50.72#: 17101 POWER: 0
DESC : DURING A SURVEILLANCE TEST WITH "B" CHANNEL OF THE ESF ACTUATING SYSTEM IN 'TEST', AN UNRELATED PLANT ACTIVITY OCCURRED IN WHICH THE INVERTER WAS IMPROPERLY BYPASSED. THIS RESULTED IN A START OF EMERGENCY POWER AND ISOLATION OF SEVERAL SAFETY SYSTEMS.

PI EVENTS FOR 90-1

SCRAM 01/19/90 LER# 28790001 50.72#: 17592 POWER: 49
DESC : A REACTOR TRIP OCCURRED DUE TO A LOW REACTOR PRESSURE SIGNAL, THE GROUP 6 RODS DROPPED INTO THE CORE DURING A GROUP 6 POWER SUPPLY CHECK.

SSF 01/[illegible]/90 LER# 26990004 50.72#: POWER: 100
GROUP [illegible]ENCY AC/DC POWER SYSTEMS GROUP
SYSTEM [illegible]ENCY ONSITE POWER SUPPLY SYSTEM
DESC [illegible]USE OF A DESIGN DEFICIENCY, DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS, BOTH [illegible]30KV SWITCHYARD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE EN[illegible]ERED SAFEGUARDS BUSES.

SCRAM 03/07/90 LER# 28790002 50.72#: 17916 POWER: 100
DESC : THE SG LEVEL CONTROL WAS SHIFTED TO MANUAL TO CONDUCT AN ON-LINE CALIBRATION. THE '3A' MFW BLOCK VALVE WAS SHUT, CAUSING A LOW SG LEVEL AND SUBSEQUENT SCRAM ON HIGH REACTOR PRESSURE.

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 26990005 50.72#: 18322 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADED VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE 04/24/90 LER# 26990005 50.72#: 18344 POWER: 100
DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

SSF 06/13/90 LER# 26990010 50.72#: 18704 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : THE PENETRATION ROOM VENTILATION SYSTEM WAS DECLARED INOPERABLE BECAUSE OF A DESIGN ERROR. A LOSS OF OFFSITE POWER OR SEISMIC EVENT COULD CAUSE PNEUMATIC THROTTLE VALVES IN BOTH TRAINS TO FAIL CLOSED, RENDERING THE SYSTEM INOPERABLE.

SSF 06/27/90 LER# 26990011 50.72#: 18791 POWER: 70
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE BORON DILUTION SYSTEM DOES NOT MEET SINGLE FAILURE CRITERIA. VALVES ON THE TWO REDUNDANT TRAINS ARE POWERED FROM THE SAME MOTOR CONTROL CENTER. SYSTEM FAILURE COULD RESULT IN BORON PRECIPITATION CLOGGING COOLANT CHANNELS.

PI EVENTS FOR 90-3

SSF 07/31/90 LER# 26990012 50.72#: 19022
PWR HIST: ALL MODES UP TO 100% POWER. DESIGN ERROR EXISTED SINCE 1973. DISCOVERED 7/31/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : WHILE DEVELOPING A DESIGN BASIS DOCUMENT FOR THE KEOWEE EMERGENCY POWER SYSTEM, DESIGN ENGINEERING DISCOVERED DESIGN DEFICIENCIES THAT COULD PREVENT THE SYSTEM FROM PROVIDING ADEQUATE POWER DURING A LOCA/LOOP OR LOOP EVENT.

TABLE 8.64 (CONT.)

OCONEE 3

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.91	0.48	0.00	0.45	0.00	0.94	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	1	0	1	0	2	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	1	0
SAFETY SYSTEM FAILURES	0	3	3	1	0	1	3	1
FORCED OUTAGE RATE (%)	1	4	0	0	1	2	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.91	0.96	0.00	0.45	1.66	0.94	0.00	0.00
CRITICAL HOURS	2195	2094	2183	2203	1204	2136	2183	2208
COLLECTIVE RADIATION EXPOSURE	24	62	62	14	90	12	41	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	4	4	2	1	3	NA
LICENSED OPERATOR	0	0	0	1	1	1	0	NA
OTHER PERSONNEL	0	2	0	3	1	1	0	NA
MAINTENANCE	2	5	2	3	2	1	2	NA
DESIGN/INSTALLATION/FABRICATION	1	3	2	2	1	2	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.65

OYSTER CREEK

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 0[illegible]/15/90 LER# 21990003 50.72#: POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : CONTROL ROD DRIVE SYSTEM
DESC : PERSONNEL ERROR RESULTED IN THE WITHDRAWAL OF SEVEN CONTROL RODS DURING A REACTOR STARTUP WHILE THE ROD WORTH MINIMIZER (RWM) WAS INOPERABLE. THE OPERATORS FAILED TO OBSERVE THAT THE NORMAL/BYPASS SWITCH WAS STILL IN THE BYPASS POSITION.

PI EVENTS FOR 90-2

SCRAM 06/25/90 LER# 21990008 50.72#: 18764 POWER: 100
DESC : A BREAKER FOR ONE OF THE VALVES IN THE CONDENSER COOLING SYSTEM TRIPPED. THIS LOSS OF COOLING FLOW CAUSED A LOSS OF CONDENSER VACUUM AND SUBSEQUENT REACTOR TRIP.

PI EVENTS FOR 90-3

SSF 08/29/90 LER# 50.72#: 19240
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : A CORE SPRAY RELIEF VALVE FAILED OPEN DURING A SURVEILLANCE TEST, RENDERING THE CORE SPRAY SYSTEM INOPERABLE. HALF OF THE ADS VALVES WERE RENDERED INOPERABLE WHEN THE CORE SPRAY SYSTEM WAS ISOLATED TO REPLACE THE RELIEF VALVE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.87	1.09	0.00	0.00	0.59	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	2	2	0	0	1	0
SAFETY SYSTEM ACTUATIONS	1	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	3	0	0	0	1	0	1
FORCED OUTAGE RATE (%)	100	85	55	24	9	15	22	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	15.75	0.94	1.09	0.00	0.56	1.19	0.00
CRITICAL HOURS	0	64	1069	1842	2040	1781	1685	2130
COLLECTIVE RADIATION EXPOSURE	1131	569	149	82	111	126	80	NA
CAUSE CODES:								
ADMINISTRATIVE	7	5	3	1	1	3	2	NA
LICENSED OPERATOR	1	0	2	0	2	1	0	NA
OTHER PERSONNEL	2	1	2	3	0	1	0	NA
MAINTENANCE	7	4	4	5	1	3	3	NA
DESIGN/INSTALLATION/FABRICATION	0	5	0	0	1	0	0	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	0	NA

TABLE 8.66

PALISADES

PI EVENTS FOR 89-4

SSA 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : SAFETY INJECTION OCCURRED ON LOW REACTOR PRESSURE. STARTING OF SAFETY INJECTION EQUIPMENT CAUSED A BUS LOW VOLTAGE THAT STARTED THE DIESEL GENERATOR.

SSA 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : SAFETY INJECTION OCCURRED ON LOW REACTOR PRESSURE. STARTING OF SAFETY INJECTION EQUIPMENT CAUSED A BUS LOW VOLTAGE THAT STARTED THE DIESEL GENERATOR.

SE 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : A PRESSURIZER PORV (TARGET ROCK BRAND) OPENED WHEN THE BLOCK VALVE WAS OPENED. THE BLOCK VALVE COULD NOT BE CLOSED TO ISOLATE THE OPEN PORV. AIT TO SITE. ALSO MORNING REPORTS 11/24/89 AND 11/27/89.

PI EVENTS FOR 90-1

SCRAM 02/28/90 LER# 25590002 50.72#: 17855 POWER: 80
DESC : THE 'B' MFP TRIPPED ON HIGH VIBRATION. THE 'A' MFP INCREASED THE FEED RATE, AND A MANUAL TURBINE RUNBACK CAUSED SG SHRINK AND THEN SG OVERFEEDING, CAUSING AN INSERTION OF REACTIVITY AND A SCRAM ON VARIABLE HIGH POWER SETPOINT.

PI EVENTS FOR 90-2

SSF 04/18/90 LER# 25590007 50.72#: 18308 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : A MAIN STEAM LINE BREAK COULD RESULT IN EXCEEDING THE CONTAINMENT DESIGN PRESSURE. THE ORIGINAL ASSUMPTION THAT A 100% STEAM LINE CROSS-SECTIONAL AREA BREAK SIZE IS MOST LIMITING WAS INCORRECT. SMALLER BREAK SIZES RESULT IN HIGHER CONTAINMENT PRESSURES.

PI EVENTS FOR 90-3

SSF 07/05/90 LER# 25590012 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE AT LEAST 1988.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A NON-CONSERVATIVE HEAT LOAD ASSUMPTION WAS IDENTIFIED IN THE CALCULATION THAT ANALYZED SERVICE WATER FLOW RATES REQUIRED BY THE CONTROL ROOM HVAC SYSTEM. DURING A WORST CASE DBA, THE CONTROL ROOM TEMPERATURE COULD HAVE EXCEEDED THE T.S. LIMIT BY 7F.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.46	0.00	0.48	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	0	0	1	1
FORCED OUTAGE RATE (%)	61	34	0	3	69	5	14	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.48	0.69	0.00	0.46	3.69	0.00	0.82	0.00
CRITICAL HOURS	403	1445	2183	2152	271	2087	1218	1838
COLLECTIVE RADIATION EXPOSURE	279	57	16	18	208	24	129	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	3	3	4	2	2	NA
LICENSED OPERATOR	1	0	0	0	0	3	0	NA
OTHER PERSONNEL	3	1	2	0	0	3	1	NA
MAINTENANCE	5	3	5	4	3	6	2	NA
DESIGN/INSTALLATION/FABRICATION	2	3	1	4	1	3	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.67

PALO VERDE 1

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52689017 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 0
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

PI EVENTS FOR 90-3

SSF 07/13/90 LER# 52890002 50.72#: 18889
PWR HIST: ALL MODES TO 100% POWER. PROCUREMENT ERROR EXISTED AS EARLY AS 1982.
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : AIR REGULATORS INSTALLED IN THE ADV NITROGEN/AIR SUPPLY SYSTEM WERE NOT SEISMICALLY OR ENVIRONMENTALLY QUALIFIED. THE VENDOR HAD FAILED TO SUPPLY COMPONENTS THAT MET PROCUREMENT SPECIFICATIONS. A REGULATOR FAILURE COULD PREVENT ADV OPERATION.

SCRAM 08/14/90 LER# 52890006 50.72#: 19129 PWR HIST: POWER OPEATIONS AT 65%
DESC : THE REACTOR TRIPPED ON HIGH PRESSURIZER PRESSURE FOLLOWING A TURBINE TRIP. COOLING TO THE MAIN TRANSFORMER COOLING WAS LOST AND RESULTED IN A TURBINE TRIP.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.54
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	1	0	1	1
FORCED OUTAGE RATE (%)	0	30	100	0	0	0	0	18
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.66	0.00	0.00	0.00	0.00	0.00	1.08
CRITICAL HOURS	2208	1522	0	0	0	0	138	1853
COLLECTIVE RADIATION EXPOSURE	11	25	87	87	24	46	93	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	3	1	3	1	4	NA
LICENSED OPERATOR	0	1	0	0	1	0	1	NA
OTHER PERSONNEL	1	0	1	2	2	1	0	NA
MAINTENANCE	3	2	4	5	2	2	3	NA
DESIGN/INSTALLATION/FABRICATION	1	2	2	1	4	0	1	NA
EQUIPMENT FAILURE	0	1	0	1	1	0	0	NA

TABLE 8.68

PALO VERDE 2

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52889017 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

SCRAM 10/31/89 LER# 52989010 50.72#: 16985 POWER: 67
DESC : POWER WAS BEING INCREASED FOR NUCLEAR INSTRUMENTATION CALIBRATION WITH RPS CHANNEL "C" IN BYPASS (RCP SPEED SENSOR PROBLEMS) AND RPS CHANNEL "D" IN TRIP (LINEAR CALIBRATION SWITCH PROBLEMS). AN EXCORE DETECTOR MALFUNCTION CAUSED A DNBR REACTOR TRIP.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/04/90 LER# 52990004 50.72#: POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : LAB TESTING IDENTIFIED THAT ALL FOUR PRESSURIZER CODE SAFETY VALVES' SETPOINTS EXCEEDED THEIR TECHNICAL SPECIFICATION TOLERANCE. THREE OF THE FAILURES WERE ATTRIBUTED TO THE PERFORMANCE LIMITATION OF THE VALVES. THE FOURTH WAS DUE TO SETPOINT DRIFT.

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 0
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

PI EVENTS FOR 90-3

SSF 07/13/90 LER# 52890002 50.72#: 18889
PWR HIST: ALL MODES TO 100% POWER. PROCUREMENT ERROR EXISTED SINCE INITIAL OPERATION.
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : AIR REGULATORS INSTALLED IN THE ADV NITROGEN/AIR SUPPLY SYSTEM WERE NOT SEISMICALLY OR ENVIRONMENTALLY QUALIFIED. THE VENDOR HAD FAILED TO SUPPLY COMPONENTS THAT MET PROCUREMENT SPECIFICATIONS. A REGULATOR FAILURE COULD PREVENT ADV OPERATION.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.68	0.00	0.61	0.94	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	0	1	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	2	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	1	0	2	1
FORCED OUTAGE RATE (%)	9	17	0	17	41	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.49	0.68	0.00	1.83	2.82	0.00	0.00	0.00
CRITICAL HOURS	2029	1475	44	1643	1064	1295	0	1873
COLLECTIVE RADIATION EXPOSURE	11	25	87	87	24	46	93	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	3	1	0	2	3	NA
LICENSED OPERATOR	1	1	1	0	0	1	1	NA
OTHER PERSONNEL	1	1	1	0	1	1	2	NA
MAINTENANCE	3	2	4	2	3	2	5	NA
DESIGN/INSTALLATION/FABRICATION	2	2	3	1	2	0	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.69

PALO VERDE 3

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52889017 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 04/14/90 LER# 53090004 50.72#: 18236 POWER: 81
DESC : A DROPPED ROD DURING TS SURV TEST ON CEAS CAUSED CPC HIGH POWER DENSITY AND LOW DNBR REACTOR TRIP SIGNAL. FORTY-TWO SECONDS LATER, THREE CPC LOW DNBR REACTOR TRIP SIGNALS WERE GENERATED CAUSING THE REACTOR TRIP.

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 100
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

PI EVENTS FOR 90-3

SSF 07/13/90 LER# 52890002 50.72#: 18889
PWR HIST: ALL MODES TO 100% POWER. PROCUREMENT ERROR EXISTED SINCE INITIAL OPERATION.
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : MAIN/REHEAT STEAM SYSTEM
DESC : AIR REGULATORS INSTALLED IN THE ADV NITROGEN/AIR SUPPLY SYSTEM WERE NOT SEISMICALLY OR ENVIRONMENTALLY QUALIFIED. THE VENDOR HAD FAILED TO SUPPLY COMPONENTS THAT MET PROCUREMENT SPECIFICATIONS. A REGULATOR FAILURE COULD PREVENT ADV OPERATION.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.90	0.00	0.00	0.00	0.00	0.49	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	1	1	0	1	1
FORCED OUTAGE RATE (%)	0	31	0	0	97	22	7	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.81	0.00	0.00	9.67	0.00	0.49	0.46
CRITICAL HOURS	2208	1106	0	0	103	1752	2061	2175
COLLECTIVE RADIATION EXPOSURE	NA	25	87	97	24	46	93	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	3	1	2	1	3	NA
LICENSED OPERATOR	0	1	1	1	0	0	0	NA
OTHER PERSONNEL	0	0	1	3	1	2	0	NA
MAINTENANCE	0	3	4	4	1	2	3	NA
DESIGN/INSTALLATION/FABRICATION	1	3	4	1	2	0	1	NA
EQUIPMENT FAILURE	0	1	0	0	0	1	1	NA

TABLE 8.70

PEACH BOTTOM 2

PI EVENTS FOR 89-4

SSF 10/03/89 LER# 27789022 50.72#: 16763 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE UPON THE DISCOVERY THAT ALL REMOTE STOP VALVE TRIP FUNCTIONS WERE RENDERED INOPERABLE. A TRIP SOLENOID LEAD WAS DISCOVERED UNTERMINATED; IT HAD BECOME ENTANGLED IN A PANEL DOOR.

SCRAM 10/05/89 LER# 27789023 50.72#: 16780 POWER: 100
DESC : A REACTOR TRIP OCCURRED FOLLOWING A PRESSURE INCREASE, AN AVERAGE POWER RANGE MONITOR TRIP SIGNAL RESULTED WHEN AN OUTBOARD MAIN STEAM ISOLATION VALVE SHUT DURING TESTING.

SSF 10/07/89 LER# 27789025 50.72#: 16795 POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
DESC : THE UTILITY DETERMINED THAT NON-SAFETY RELATED BELLOWS LEAK DETECTING PRESSURE SWITCHES INSTALLED ON THE MAIN STEAM RELIEF VALVES COULD PREVENT THE MANUAL AND AUTO OPENING OF THE MSRVS DURING DESIGN BASIS CONDITIONS. THE ADS WAS DECLARED INOPERABLE.

SSF 11/05/89 LER# 27789028 50.72#: 17043 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : THE HEATER ELEMENT TIME DELAY RELAYS (TDRS) IN THE SBGT WERE NOT ENVIRONMENTALLY QUALIFIED. AN EVALUATION DETERMINED THAT THESE TDRS COULD FAIL IN A LOCA HIGH RADIATION ENVIRONMENT; HEATERS WOULD BE DISABLED AND COULD CAUSE FAILURE OF THE SBGT.

SCRAM 12/20/89 LER# 27789033 50.72#: 17390 POWER: 100
DESC : AN I & C TECHNICIAN MISTAKENLY PLACED 'A' APRM IN BYPASS MODE, WHEN 'D' APRM WAS ALREADY IN BYPASS MODE, CAUSING AN APRM REACTOR SCRAM.

SSA 12/20/89 LER# 27789033 50.72#: 17390 POWER: 100
DESC : HPCI AND RCIC STARTED ON LOW REACTOR LEVEL AFTER A SCRAM.

PI EVENTS FOR 90-1

SSF 03/10/90 LER# 27790003 50.72#: 17943 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : BECAUSE OF EXCESSIVE SEAT LEAKAGE IN TWO MAIN STEAM LINE DRAIN ISOLATION VALVES, THE PRIMARY CONTAINMENT MAXIMUM LEAKAGE RATE WAS EXCEEDED. THE ROOT CAUSE OF THE SEAT LEAKAGE IS UNDER INVESTIGATION.

SSF 03/21/90 LER# 27790004 50.72#: 18035 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BECAUSE OF THE BUILDUP OF CORROSION PRODUCTS AND SILT, 11 ROOM COOLERS WOULD NOT RECEIVE THE REQUIRED EMERGENCY SERVICE WATER (ESW) FLOW DURING A DBA. TWO CORE SPRAY PUMPS, ONE RHR PUMP, THE HPCI SYSTEM, AND THE RCIC SYSTEM COULD BE RENDERED INOPERABLE.

SE 03/21/90 LER# 27790004 50.72#: 18035 POWER: 0
DESC : AREA COOLERS FOR ECCS EQUIPMENT WERE NOT GETTING DESIRED FLOW DUE TO SILTING. IT IS UNKNOWN IF THE LICENSEE FOUND THE PROBLEM BECAUSE OF GL 89-13 OR WHAT THE SAFETY SIGNIFICANCE IS.

PI EVENTS FOR 90-2

SSA 04/02/90 LER# 27790006 50.72#: 18119 POWER: 0
DESC : POOR COMMUNICATIONS CAUSED AN OPERATOR TO GO TO ANOTHER STEP IN TEST PROCEDURE ST-13.11D, CAUSING BUS E42 TO BE DEENERGIZED. THE EDG STARTED AND LOADED THE BUS.

TABLE 8.70 (CONT.)

PEACH BOTTOM 2

PI EVENTS FOR 90-3

SSF 07/24/90 LER# 27790017 50.72#: 18952
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE FOR ABOUT 10 MIN WHEN A VOLTAGE TRANSIENT RESULTED IN AN UNDERVOLTAGE CONDITION ON THE HPCI 250VDC BUS. THREE MORE EVENTS OCCURRED ON 8/3 AND 8/4. DEGRADATION OF A BATTERY CHARGER SUPPORT PIECE WAS THE CAUSE.

SCF 09/13/90 LER# 50.72#: 19348
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 82% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE OF INADEQUATE EMERGENCY SERVICE WATER FLOW THROUGH THE ECCS ROOM COOLERS. THIS WAS DISCOVERED DURING A SURVEILLANCE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.74	0.48	1.06	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	2	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	0	0	1	0	1	0	0
SAFETY SYSTEM FAILURES	0	3	3	1	3	2	0	2
FORCED OUTAGE RATE (%)	0	0	6	8	18	4	31	10
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.47	0.96	1.06	0.71	0.62	0.99
CRITICAL HOURS	0	0	1359	2082	1890	1417	1603	2030
COLLECTIVE RADIATION EXPOSURE	151	58	65	152	67	54	44	NA
CAUSE CODES:								
ADMINISTRATIVE	7	3	7	3	5	2	3	NA
LICENSED OPERATOR	0	0	2	0	1	0	1	NA
OTHER PERSONNEL	4	1	1	4	1	0	0	NA
MAINTENANCE	8	4	9	6	7	5	5	NA
DESIGN/INSTALLATION/FABRICATION	3	3	2	2	4	0	2	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 3.71

PEACH BOTTOM 3

PI EVENTS FOR 89-4

SSF 10/07/89 LER# 27789025 50.72#: 16795 POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
DESC : THE UTILITY DETERMINED THAT NON-SAFETY RELATED BELLOWS LEAK DETECTING PRESSURE SWITCHES INSTALLED ON THE MAIN STEAM RELIEF VALVES COULD PREVENT THE MANUAL AND AUTO OPENING OF THE MSRVS DURING DESIGN BASIS CONDITIONS. THE ADS WAS DECLARED INOPERABLE.

SSF 11/08/89 LER# 27789028 50.72#: 17043 POWER: 0
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : THE HEATER ELEMENT TIME DELAY RELAYS (TDRS) IN THE SBGT WERE NOT ENVIRONMENTALLY QUALIFIED. AN EVALUATION DETERMINED THAT THESE TDRS COULD FAIL IN A LOCA HIGH RADIATION ENVIRONMENT; HEATERS WOULD BE DISABLED AND COULD CAUSE FAILURE OF THE SBGT.

SSF 12/07/89 LER# 27889009 50.72#: 17292 POWER: 3
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI TURBINE FAILED TO START DURING TESTING DUE TO LOW AUXILIARY LUBE OIL PRESSURE. THE HPCI SYSTEM WAS DECLARED INOPERABLE. A SETPOINT SCREW ON A OIL RELIEF VALVE HAD WORKED LOOSE AND WAS RELIEVING TOO SOON AND PREVENTING THE TURBINE FROM STARTING.

SSF 12/22/89 LER# 27889012 50.72#: 17405 POWER: 66
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A FIRE IN FIRE AREA 13 COULD CAUSE A LOSS OF REACTOR COOLANT INVENTORY THROUGH THE RWCU SYSTEM REJECT LINE BEYOND THE MAKEUP CAPABILITY OF THE RCIC SYSTEM. THIS DESIGN ERROR WAS DISCOVERED DURING A REVIEW OF THE FIRE PROTECTION PLAN.

PI EVENTS FOR 90-1

SSF 01/08/90 LER# 27890001 50.72#: 17509 POWER: 99
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN IT FAILED TO MEET THE REQUIRED STARTUP TIME DURING A SYSTEM OPERABILITY TEST. THE CAUSE OF THE EVENT WAS AN INADEQUATE CALIBRATION PROCEDURE, WHICH CAUSED THE HPCI CONTROL VALVE TO OPEN TOO SLOWLY.

SSA 01/28/90 LER# 27890002 50.72#: 17649 POWER: 50
DESC : HPCI AND RCIC WERE MANUALLY STARTED TO CONTROL REACTOR PRESSURE AND LEVEL FOLLOWING A MANUAL SCRAM.

SCRAM 03/06/90 LER# 27890003 50.72#: 17903 POWER: 100
DESC : THE MAIN GENERATOR STATOR WATER COOLANT PUMP TRIPPED, CAUSING A TURBINE RUNBACK AND SUBSEQUENT TURBINE TRIP REACTOR SCRAM.

PI EVENTS FOR 90-2

SSF 05/11/90 LER# 27890006 50.72#: 18439 POWER: 85
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : A BLOWN FUSE FROM THE "3B" BATTERY CHARGER RESULTED IN DECLARING THE HPCI SYSTEM, CORE SPRAY "B" LOGIC, RHR "B" LOGIC, "B" CS SUBSYSTEM, "B" RHR SUBSYSTEM, AND E2 AND E4 EDGS INOPERABLE. THE CAUSE WAS POOR WORK PLANNING AND PRACTICES.

PI EVENTS FOR 90-3

SSA 07/27/90 LER# 27890009 50.72#: 18976 PWR HIST: POWER OPERATIONS AT 100%
DESC : HPCI AND RCIC WERE USED TO LOWER REACTOR VESSEL PRESSURE FOLLOWING A MANUAL REACTOR TRIP.

SSF 08/04/90 LER# 27890010 50.72#: 19041
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 85% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE THE TURBINE STOP VALVE WOULD NOT STAY IN THE OPEN POSITION DURING A SURVEILLANCE. THE CAUSE IS BELIEVED TO BE A DESIGN ERROR INVOLVING TAPPET SWELLING.

TABLE 8.71 (CONT.)

PEACH BOTTOM 3

PI EVENTS FOR 90-3 (CONT.)

SSF 09/10/90 LER# 50.72#: 19330
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 80% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO AN INOPERABLE AUXILIARY OIL PUMP. THE PUMP FAILED TO START DURING A FUNCTIONAL TEST. A RELAY WAS STICKING IN THE MOTOR CONTACTOR CIRCUIT.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	3	4	1	1	2
FORCED OUTAGE RATE (%)	0	0	0	0	2	11	0	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	1.25	1.00	0.00	0.48
CRITICAL HOURS	0	0	0	0	801	1992	2183	2086
COLLECTIVE RADIATION EXPOSURE	151	58	65	152	67	54	44	NA
CAUSE CODES:								
ADMINISTRATIVE	4	1	3	4	6	3	3	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	1	0	3	1	1	2	NA
MAINTENANCE	4	2	3	6	7	5	5	NA
DESIGN/INSTALLATION/FABRICATION	2	2	1	2	3	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.72

PERRY

PI EVENTS FOR 89-4

SSF 12/22/89 LER# 44089032 50.72#: 17407 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE. THE TEMPERATURE OF THE ELECTROLYTE ON THE ONLY OPERABLE BATTERY (UNIT 2 DIV III) WAS BELOW THE MINIMUM REQUIRED BY T.S. THE CAUSE WAS A BLOWN FUSE IN THE VENTILATION DUCT HEATER CIRCUIT.

PI EVENTS FOR 90-1

SSF 01/05/90 LER# 44089032 50.72#: 17492 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE. THE TEMPERATURE OF THE ELECTROLYTE IN THE ONLY OPERABLE HPCS BATTERY (UNIT 2 DIV III) WAS BELOW THE MINIMUM REQUIRED BY T.S. THE CAUSE WAS A MALFUNCTION IN THE CONTROL COMPLEX CHILLED WATER SYSTEM.

SCRAM 01/07/90 LER# 44090001 50.72#: 17504 POWER: 100
DESC : A PERSONNEL ERROR CAUSED A LOSS OF THE NONVITAL 480V BUS #F1C AND A LOSS OF FEEDWATER. THE REACTOR TRIPPED ON LOW REACTOR WATER LEVEL.

SSA 01/07/90 LER# 44090001 50.72#: 17504 POWER: 100
DESC : A PERSONNEL ERROR CAUSED A LOSS OF THE NONVITAL 480V BUS #F1C AND A LOSS OF MAIN FEEDWATER. HPCS AND RCIC INJECTED DUE TO LOW REACTOR WATER LEVEL.

SSF 01/07/90 LER# 44090002 50.72#: 17506 POWER: 0
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE. INVESTIGATION SHOWED IT HAD BEEN INOPERABLE SINCE 11/01/89 BECAUSE OF A DESIGN DEFICIENCY INVOLVING THE DELTA-T ISOLATION INSTRUMENT. DURING THIS PERIOD THE HPCS SYSTEM HAD BEEN INOPERABLE ON THREE OCCASIONS.

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 44090005 50.72#: 18152 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE BECAUSE ITS EMERGENCY POWER SOURCE (DIV III EDG) WAS INOPERABLE FOR GREATER THAN 72 HOURS. THE EDG FUEL OIL EXCEEDED T.S. SEDIMENT LIMITS. A CONTAMINANT FOUND IN A BIOCIDE ADDITIVE CAUSED THE FUEL OIL TO DEGRADE.

SSF 04/11/90 LER# 44090006 50.72#: 18217 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH ONE TRAIN OF THE CREV SYST. INOPERABLE FOR MAINTENANCE THE OTHER BECAME INOPERABLE BECAUSE OF A FAILED RELAY IN A SUPPLY FAN. THE ROOT CAUSE OF THE FAILURE (FAULTY RELAY TRIP UNIT) WAS NOT DISCOVERED UNTIL ANOTHER FAILURE OCCURRED ON 4/16/90.

SSF 04/11/90 LER# 44090006 50.72#: 18210 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. WITH THE "A" TRAIN INOPERABLE DUE TO AN UNAVAILABLE EMERGENCY COOLING SUPPLY, AN OPERATOR INCORRECTLY RENDERED THE "B" TRAIN INOPERABLE TO PERFORM MAINTENANCE.

SSF 04/18/90 LER# 44090007 50.72#: 18270 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : A TEMPORARY (TWO MIN) LOSS OF CONTAINMENT INTEGRITY OCCURRED WHEN THE OUTER DOOR AIR LOCK SEAL RUPTURED WHILE THE INNER DOOR WAS OPEN. PERSONNEL ERRORS RESULTED IN OPENING THE INNER DOOR TWICE WHILE IN THIS CONDITION.

TABLE 8.72 (CONT.)

PERRY

PI EVENTS FOR 90-2 (CONT.)

SSF 05/17/90 LER# 44090009 50.72#: 18506 POWER: 100
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : WITH THE "A" TRAIN OF RHR INOPERABLE FOR TESTING, THE "B"TRAIN WAS DECLARED INOPERABLE FOR THE CONTAINMENT SPRAY AND SUPPRESSION COOLING MODES AFTER THE SYSTEM HEAT EXCHANGER BYPASS VALVE FAILED TO REPOSITION ON DEMAND. THE VALVE'S STEM NUT WAS WORN.

SSF 06/07/90 LER# 44090012 50.72#: 18693 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CONTROL ROOM HVAC SYSTEM WERE INOPERABLE FOR THE EMERGENCY RECIRCULATION MODE. PERSONNEL ERROR AND INEFFECTIVE CORRECTIVE ACTIONS RESULTED IN A CHILLER GUIDE VANE LINKAGE MECHANICAL FAILURE. THE OTHER TRAIN WAS UNDERGOING MAINTENANCE.

PI EVENTS FOR 90-3

SSF 08/31/90 LER# 44090020 50.72#: 19263
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL OPERATIONS. DISCOVERED 8/31/90.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : AS A RESULT OF A PROGRAM DEFICIENCY, NUMEROUS MAINTENANCE ACTIVITIES HAVE BEEN PERFORMED WITHOUT REALIZING THAT THEY RENDERED BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM INOPERABLE FOR THE EMERGENCY RECIRCULATION MODE.

SSF 09/16/90 LER# 50.72#: 19378
PWR HIST: EVENT DISCOVERED DURING REFUELING.
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : DURING SURVEILLANCE TESTING, LEAKAGE PAST ALL MSIVS WAS DISCOVERED TO BE GREATER THAN THE T.S. LIMIT.

SSF 09/19/90 LER# 50.72#: 19413
PWR HIST: EVENT DISCOVERED DURING REFUELING.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : EXCESSIVE CONTAINMENT BYPASS LEAKAGE WAS DISCOVERED. TWO LEAKING VALVES IN THE POST LOCA SAMPLING SYSTEM CAUSED THE COMBINED LEAKAGE TO EXCEED T.S. REQUIREMENTS.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	3	1	0	1	2	6	3
FORCED OUTAGE RATE (%)	0	2	0	1	0	4	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.80	0.00	0.65	0.00	0.00	0.00	0.00
CRITICAL HOURS	1931	1255	0	1534	2209	1952	2183	1638
COLLECTIVE RADIATION EXPOSURE	30	258	425	64	33	29	48	NA
CAUSE CODES:								
ADMINISTRATIVE	3	7	7	2	3	3	8	NA
LICENSED OPERATOR	0	1	3	0	0	0	1	NA
OTHER PERSONNEL	2	3	3	4	3	1	5	NA
MAINTENANCE	5	9	9	3	3	3	10	NA
DESIGN/INSTALLATION/FABRICATION	3	1	3	1	1	2	1	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	1	NA

TABLE 8.73

PILGRIM

PI EVENTS FOR 89-4

SSF 11/22/89 LER# 29389036 50.72#: 17177 POWER: 94
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE GLAND SEAL EXHAUST BLOWER FAILED BECAUSE OF WORN BRUSHES. THESE BRUSHES HAD BEEN REPLACED IN AUGUST 1989 (LER 29389025). THE REASON FOR THE WORN BRUSHES WAS AGE-RELATED WEAR OF THE MOTOR SHAFT.

SCRAM 12/08/89 LER# 29389038 50.72#: 17296 POWER: 95
DESC : WHILE RESTORING LOCAL REACTOR LEVEL INSTRUMENTATION FOLLOWING CALIBRATION, A REACTOR TRIP OCCURRED ON A FALSE LOW REACTOR LEVEL DUE TO A MINOR HYDRAULIC TRANSIENT PRODUCED DURING TESTING.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 05/13/90 LER# 29390008 50.72#: 18461 POWER: 100
DESC : GRID FLUCTUATIONS OCCURRED DOWNSTREAM OF THE SWITCHYARD. THIS CAUSED A LOAD REJECT SIGNAL AND A SCRAM DUE TO THE TURBINE TRIPPING.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.79	0.54	0.65	0.00	0.63	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	1	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	1	2	1	0	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	3	1	0	0	0
FORCED OUTAGE RATE (%)	0	29	42	17	7	0	6	33
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.54	0.00	0.00	0.63	0.58
CRITICAL HOURS	0	969	1259	1855	1531	1666	1594	1726
COLLECTIVE RADIATION EXPOSURE	75	49	54	45	61	65	66	NA
CAUSE CODES:								
ADMINISTRATIVE	3	6	5	3	3	4	1	NA
LICENSED OPERATOR	3	1	3	0	0	0	0	NA
OTHER PERSONNEL	0	4	3	3	3	1	0	NA
MAINTENANCE	4	9	5	7	8	6	3	NA
DESIGN/INSTALLATION/FABRICATION	1	4	0	1	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.74

POINT BEACH 1

PI EVENTS FOR 89-4

SSF 11/07/89 LER# 26689009 50.72#: 17036 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THE STATION BATTERIES WERE DECLARED INOPERABLE UPON THE DISCOVERY OF AN ORIGINAL DESIGN DEFICIENCY. THE POINT BEACH DC SYSTEM UTILIZES BREAKERS ONLY. SOME OF THESE BREAKERS HAVE THERMAL, BUT NOT MAGNETIC TRIP ELEMENTS; FAULT CURRENT COULD BE SUSTAINED.

SE 11/07/89 LER# 26689009 50.72#: 17036 POWER: 100
DESC : CIRCUIT BREAKERS DO NOT HAVE INSTANTANEOUS TRIP DEVICES TO PROVIDE CIRCUIT PROTECTION AGAINST HIGH AMPERAGE SHORT [illegible]TION FAULTS. SEISMIC EVENT COULD CREATE FAULT CONDITIONS THAT COULD POTENTIALLY DAMAGE REDUND[illegible]RIES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/04/90 LER# 26690004 50.72#: POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : A POTENTIAL SINGLE FAILURE OF THE B03/B04 SAFEGUARDS BUS TIE BREAKER COULD RESULT IN PARALLELING BOTH EDGS OUT-OF-PHASE. THIS COULD RESULT IN THE FAILURE OF BOTH EDGS AND A LOSS OF ONSITE AC POWER.

SSF 04/09/90 LER# 26690003 50.72#: 18187 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : IT WAS DETERMINED THAT THE EDGS MAY NOT OPERATE FOR LONGER THAN TWO HOURS FOLLOWING A SEISMIC EVENT. THIS WAS BECAUSE THE FUEL OIL PIPING BETWEEN THE EDGS AND THE EMERGENCY FUEL OIL TANK WAS NOT SEISMICALLY QUALIFIED AND MAY NOT REPLENISH THE DAY TANKS.

PI EVENTS FOR 90-3

SSF 07/12/90 LER# 26690007 50.72#:
PWR HIST: ALL MODES TO 100% POWER. ORIGINAL LOCA ANALYSIS ERROR DISCOVERED ON 7/12/90.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : AN ERROR (UNDERESTIMATION OF THE DECAY HEAT POWER FRACTION) IN THE ECCS DECAY HEAT MODEL INDICATED A POTENTIAL FOR EXCEEDING THE 2200F PEAK CLADDING TEMPERATURE ACCEPTANCE LIMIT SPECIFIED IN 10 CFR 50.46 WITHIN THE CONSTRAINTS OF APPENDIX K.

SSF 08/29/90 LER# 26690011 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL OPERATION.
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : AN ENGINEERING EVALUATION CONCLUDED THAT, UNDER CERTAIN CONDITIONS, THE RHR PUMPS CANNOT PROVIDE ADEQUATE NPSH TO THE CONTAINMENT SPRAY PUMPS WHEN THE EMERGENCY CORE COOLING SYSTEM IS IN THE RECIRCULATION MODE.

TABLE 8.74 (CONT.)

POINT BEACH 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	1	3	0	1	0	2	2
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2209	2160	1151	2208	2209	2139	1066	2010
COLLECTIVE RADIATION EXPOSURE	98	9	83	11	134	8	70	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	3	0	1	0	0	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	1	1	1	1	0	2	NA
MAINTENANCE	1	1	4	1	1	0	3	NA
DESIGN/INSTALLATION/FABRICATION	0	1	3	0	1	0	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.75

POINT BEACH 2

PI EVENTS FOR 89-4

SSA 10/27/89 LER# 30189007 50.72#: 16962 POWER: 0
DESC : AN INADEQUATE INSTALLATION TEST PROCEDURE FOR THE CONTAINMENT HIGH PRESSURE LOGIC STATEMENT LEAD TO SEVERAL ESF ACTUATIONS. THE SAFETY INJECTION PUMPS WERE IN PULL TO LOCK SO THEY DID NOT START.

SSF 11/07/89 LER# 26689009 50.72#: 17036 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THE STATION BATTERIES WERE DECLARED INOPERABLE UPON THE DISCOVERY OF AN ORIGINAL DESIGN DEFICIENCY. THE POINT BEACH DC SYSTEM UTILIZES BREAKERS ONLY. SOME OF THESE BREAKERS HAVE THERMAL BUT NOT MAGNETIC TRIP ELEMENTS; FAULT CURRENT COULD BE SUSTAINED.

SE 11/07/89 LER# 26689009 50.72#: 17036 POWER: 0
DESC : CIRCUIT BREAKERS DO NOT HAVE INSTANTANEOUS TRIP DEVICES TO PROVIDE CIRCUIT PROTECTION AGAINST HIGH AMPERAGE SHORT DURATION FAULTS. SEISMIC EVENT COULD CREATE FAULT CONDITIONS THAT COULD POTENTIALLY DAMAGE REDUNDANT BATTERIES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/09/90 LER# 26690003 50.72#: 18187 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : IT WAS DETERMINED THAT THE EDGS MAY NOT OPERATE FOR LONGER THAN TWO HOURS FOLLOWING A SEISMIC EVENT. THIS WAS BECAUSE THE FUEL OIL PIPING BETWEEN THE EDGS AND THE EMERGENCY FUEL OIL TANK WAS NOT SEISMICALLY QUALIFIED AND MAY NOT REPLENISH THE DAY TANKS.

PI EVENTS FOR 90-3

SSF 07/12/90 LER# 26690007 50.72#:
PWR HIST: ALL MODES TO 100% POWER. ORIGINAL LOCA ANALYSIS ERROR DISCOVERED ON 7/12/90.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : AN ERROR (UNDERESTIMATION OF THE DECAY HEAT POWER FRACTION) IN THE ECCS DECAY HEAT MODEL INDICATED A POTENTIAL FOR EXCEEDING THE 2200F PEAK CLADDING TEMPERATURE ACCEPTANCE LIMIT SPECIFIED IN 10 CFR 50.46 WITHIN THE CONSTRAINTS OF APPENDIX K.

SSF 08/29/90 LER# 26690011 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE INITIAL OPERATION.
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : AN ENGINEERING EVALUATION CONCLUDED THAT, UNDER CERTAIN CONDITIONS, THE RHR PUMPS CANNOT PROVIDE ADEQUATE NPSH TO THE CONTAINMENT SPRAY PUMPS WHEN THE EMERGENCY CORE COOLING SYSTEM IS IN THE RECIRCULATION MODE.

TABLE 8.75 (CONT.)

POINT BEACH 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.47	0.00	0.50	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	1	0	1	2
FORCED OUTAGE RATE (%)	0	3	2	1	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.47	0.00	0.50	0.00	0.00	0.00	0.00
CRITICAL HOURS	1152	2144	2183	2004	912	2160	2183	2208
COLLECTIVE RADIATION EXPOSURE	98	9	83	11	134	8	70	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	3	0	3	0	0	NA
LICENSED OPERATOR	1	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	1	1	1	2	0	2	NA
MAINTENANCE	0	2	2	2	5	0	2	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	1	2	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.76

PRAIRIE ISLAND 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 05/18/90 LER# 28290007 50.72#: 18510 POWER: 100
DESC : A BLOWN FUSE CAUSED THE LOSS OF 4KV SAFEGUARDS BUS #15. THE EDG STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-3

SSF 07/12/90 LER# 28290011 50.72#: 18895
PWR HIST: ALL MODES TO 100% POWER. ORIGINAL LOCA ANALYSIS ERROR DISCOVERED ON 7/12/90.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : AN ERROR (UNDERESTIMATION OF THE DECAY HEAT POWER FRACTION) IN THE ECCS DECAY HEAT MODEL INDICATED A POTENTIAL FOR EXCEEDING THE 2200F PEAK CLADDING TEMPERATURE ACCEPTANCE LIMIT SPECIFIED IN 10 CFR 50.46 WITHIN THE CONSTRAINTS OF APPENDIX K.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	0	0	0	1	0	3	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.45	0.00	0.00	0.00	0.00	0.79	0.00	0.00
CRITICAL HOURS	2209	2160	2183	2189	2209	1260	2183	2208
COLLECTIVE RADIATION EXPOSURE	3	6	34	3	4	53	1	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	3	1	2	2	3	NA
LICENSED OPERATOR	1	0	0	1	1	0	0	NA
OTHER PERSONNEL	2	0	1	2	1	2	2	NA
MAINTENANCE	6	0	3	6	6	2	6	NA
DESIGN/INSTALLATION/FABRICATION	2	0	2	1	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.77

PRAIRIE ISLAND 2

PI EVENTS FOR 89-4

SCRAM 12/21/89 LER# 30689004 50.72#: 17394 POWER: 100
DESC : THE REACTOR TRIPPED ON NEGATIVE FLUX RATE DUE TO A FAULTY URGENT FAILURE ALARM CIRCUIT BOARD. THE ROD CONTROL MOTOR GENERATOR SET BREAKER OPENED.

SSA 12/21/89 LER# 30689004 50.72#: 17394 POWER: 100
DESC : AFTER A REACTOR SCRAM, THE SUBSTATION CIRCUIT BREAKER FOR THE NORMAL POWER TO THE NON-SAFEGUARDS 4KV BUSES WAS SLOW TO OPEN. THE DIESEL GENERATOR STARTED BUT DID NOT LOAD THE BUS.

SCRAM 12/26/89 LER# 30689004 50.72#: 17440 POWER: 100
DESC : THE REACTOR TRIPPED ON NEGATIVE FLUX RATE DUE TO A FAULTY URGENT FAILURE ALARM CIRCUIT BOARD. THE ROD CONTROL MOTOR GENERATOR SET BREAKER OPENED.

SSA 12/26/89 LER# 30689004 50.72#: 17440 POWER: 100
DESC : AFTER A REACTOR SCRAM, THE SUBSTATION CIRCUIT BREAKER FOR THE NORMAL POWER TO THE NON-SAFEGUARDS 4KV BUSES WAS SLOW TO OPEN DUE TO COLD WEATHER. THE DIESEL GENERATOR STARTED BUT DID NOT LOAD THE BUS.

PI EVENTS FOR 90-1

SCRAM 03/08/90 LER# 30690001 50.72#: 17926 POWER: 100
DESC : A REACTOR TRIP FROM A TURBINE TRIP WAS CAUSED BY A GENERATOR LOCKOUT. A TEST RELAY FAILED TO OPERATE PROPERLY, CAUSING THE GENERATOR LOCKOUT.

SCRAM 03/09/90 LER# 30690002 50.72#: 17930 POWER: 6
DESC : A FOLLOWER RELAY IN THE RPS SYSTEM SHOWING TURBINE STOP VALVE POSITIONS FAILED DURING A SURVEILLANCE TEST. THIS FAILURE CAUSED A FUSE IN TRAIN 'B' TO OPEN RESULTING IN LOSS OF POWER TO TRAIN 'B' RPS LOGIC CAUSING ALL TRAIN 'B' REACTOR TRIPS TO OCCUR.

SCRAM 03/16/90 LER# 30690003 50.72#: 17993 POWER: 100
DESC : AN IMPROPER HOOKUP OF TEST EQUIPMENT TO THE ROD CONTROL SYSTEM CAUSED A NEGATIVE HIGH FLUX RATE SCRAM WHEN RODS DROPPED INTO THE CORE.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSF 07/12/90 LER# 28290011 50.72#: 18895
PWR HIST: ALL MODES TO 100% POWER. ORIGINAL LOCA ANALYSIS ERROR DISCOVERED ON 7/12/90.
GROUP : PRIMARY REACTOR SYSTEM GROUP
SYSTEM : REACTOR CORE SYSTEM
DESC : AN ERROR (UNDERESTIMATION OF THE DECAY HEAT POWER FRACTION) IN THE ECCS DECAY HEAT MODEL INDICATED A POTENTIAL FOR EXCEEDING THE 2200F PEAK CLADDING TEMPERATURE ACCEPTANCE LIMIT SPECIFIED IN 10 CFR 50.46 WITHIN THE CONSTRAINTS OF APPENDIX K.

TABLE 8.77 (CONT.)

PRAIRIE ISLAND 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.66	0.00	0.98	1.06	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	0	0	1	0	2	3	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	4	0	1	0	8	14	5	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.47	0.00	0.66	0.00	0.98	0.53	0.00	0.58
CRITICAL HOURS	2137	2088	1521	1008	2036	1894	2139	1726
COLLECTIVE RADIATION EXPOSURE	3	6	34	3	4	53	1	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	3	1	2	2	3	NA
LICENSED OPERATOR	0	0	0	1	1	1	0	NA
OTHER PERSONNEL	2	0	1	1	1	4	1	NA
MAINTENANCE	5	0	2	6	6	5	5	NA
DESIGN/INSTALLATION/FABRICATION	1	0	2	0	0	0	0	NA
EQUIPMENT FAILURE	0	1	1	0	1	0	0	NA

TABLE 8.78

QUAD CITIES 1

PI EVENTS FOR 89-4

SSF 11/28/89 LER# 25489022 50.72#: 17205 POWER: 10
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER ITS OIL RESERVE DELUGE SYSTEM INADVERTENTLY SPRAYED THE HPCI TURBINE AND SOME HPCI SYSTEM 250 VDC COMPONENTS, CAUSING GROUNDS. THE CAUSE OF THE INADVERTENT DELUGE ACTUATION IS BEING INVESTIGATED.

PI EVENTS FOR 90-1

SCRAM 03/10/90 LER# 25490004 50.72#: 17940 POWER: 98
DESC : A LIGHTNING STRIKE CAUSED A DISTURBANCE ON POWER LINE 0402, CAUSING A GENERATOR LOAD MISMATCH TURBINE TRIP REACTOR TRIP.

SSF 03/13/90 LER# 25490005 50.72#: 17958 POWER: 12
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE AFTER THE STEAM INLET VALVE FAILED TO OPEN USING THE LOCAL AND REMOTE CONTROL SWITCHES DURING A TEST. THE FEED BREAKER OPEN CONTACTOR WAS BINDING BECAUSE OF A DIRTY ROLLER BEARING.

PI EVENTS FOR 90-2

SSF 06/12/90 LER# 25490012 50.72#: 18689 POWER: 98
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM EMERGENCY AIR FILTRATION UNIT WAS DECLARED INOPERABLE AFTER FAILING TO ACHIEVE A MINIMUM 15 DEGREE DELTA T ACROSS THE HEATER DURING A SURVEILLANCE. IT IS NOT KNOWN WHY THE HEATER COULD NOT PRODUCE THE REQUIRED DIFFERENTIAL TEMPERATURE.

PI EVENTS FOR 90-3

SE 07/07/90 LER# 25490015 50.72#: 18850
PWR HIST: UTILITY OPERATED AT ALL POWER LEVELS AND MODES FROM 0% TO 100%. DISCOVERED AT 59% POWER.
DESC : FLOOR DRAIN CHECK VALVE IN ALL ECCS PUMP ROOMS INOPERABLE; WOULD ALLOW FLOOD WATER FLOW TO ALL REDUNDANT ECCS EQUIPMENT ROOMS.

SSF 08/09/90 LER# 50.72#: 19802
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 36% POWER.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE NORMAL FIRE SUPPRESSION WATER SYSTEM WAS DECLARED INOPERABLE AFTER DETERMINING BOTH DIESEL DRIVEN FIRE PUMPS WERE INOPERABLE. ONE PUMP WAS OUT OF SERVICE FOR REPAIR WHEN THE OTHER FAILED TO AUTO START DURING A TEST.

SSF 08/11/90 LER# 50.72#: 19096
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 82% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI STEAM EXHAUST CHECK VALVE FAILED AN LLRT. A DOWNSTREAM STOP CHECK VALVE WAS SHUT TO ISOLATE THE LEAKAGE. THIS RENDERED THE HPCI SYSTEM INOPERABLE.

SSF 08/29/90 LER# 25490018 50.72#: 19239
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE APRIL 1978. DISCOVERED 8/29/90.
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : BECAUSE OF AN INADEQUATE ENGINEERING REVIEW, PERMANENT TEST LEADS WERE INSTALLED FOR ECCS SYSTEMS THAT DID NOT MEET SEPERATION REQUIREMENTS. UPON DISCOVERY, THE FOLLOWING WERE DECLARED INOPERABLE: 1/2 EDG, 1A 2A CORE SPRAY PUMPS, 1A 1B 2A 2B LPCI PUMPS.

TABLE 8.78 (CONT.)

QUAD CITIES 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.51	0.00	0.00	0.49	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	1	1	0	1	1	1	3
FORCED OUTAGE RATE (%)	4	0	13	6	3	4	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	2.03	1.22	1.17	0.00	0.00	0.48
CRITICAL HOURS	2152	2160	1967	1640	854	2046	2183	2077
COLLECTIVE RADIATION EXPOSURE	36	39	33	100	278	280	80	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	0	4	7	4	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	2	3	2	1	0	NA
MAINTENANCE	1	2	5	5	6	5	4	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	1	2	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	2	1	NA

TABLE 8.79

QUAD CITIES 2

PI EVENTS FOR 89-4

SCRAM 10/12/89 LER# 26589005 50.72#: 16826 POWER: 55
DESC : A LOW MAIN CONDENSER VACUUM CAUSED THE MAIN TURBINE STOP VALVES TO CLOSE, LEADING TO A REACTOR TRIP.

SSF 12/25/89 LER# 26590001 50.72#: POWER: 86
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE HPCI FIRE PROTECTION DELUGE SYSTEM WAS RENDERED INOPERABLE BECAUSE OF A CONCERN THAT AN ACTUATION WOULD AFFECT THE OPERATION OF THE STEAM LEAK DETECTION SYSTEM AND POSSIBLY DELAY HPCI HIGH TEMPERATURE TURBINE ISOLATION.

PI EVENTS FOR 90-1

SSA 02/13/90 LER# 26590004 50.72#: 17755 POWER: 0
DESC : WHILE ELECTRICIANS WERE INSPECTING A PLANT CONTROL DISTRIBUTION PANEL, A WIRE WAS PINCHED WHICH SHORTED AND CAUSED THE LOSS OF "A" RPS MOTOR GENERATOR SET AND SEVERAL ESF ACTUATIONS. THE DIESEL GENERATOR WAS OOS FOR MAINTENANCE.

PI EVENTS FOR 90-2

SSF 05/08/90 LER# 26590006 50.72#: 18421 POWER: 23
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE DUE TO UNSTABLE FLOW OSCILLATIONS DURING TESTING. THE PROPORTIONAL BAND OF THE RECENTLY INSTALLED FLOW CONTROLLER HAD BEEN INCORRECTLY ADJUSTED DURING INITIAL CALIBRATION.

SSF 06/02/90 LER# 26590008 50.72#: 18619 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO FAILURE OF THE AUTOMATIC MODE OF THE FLOW CONTROLLER. THE CAUSE OF THE FAILURE COULD NOT BE DETERMINED. AFTER THE POWER SUPPLY FUSE WAS REMOVED AND REINSTALLED, THE CONTROLLER RETURNED TO NORMAL.

SSF 06/12/90 LER# 25490012 50.72#: 18689 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM EMERGENCY AIR FILTRATION UNIT WAS DECLARED INOPERABLE AFTER FAILING TO ACHIEVE A MINIMUM 15 DEGREE DELTA T ACROSS THE HEATER DURING A SURVEILLANCE. IT IS NOT KNOWN WHY THE HEATER COULD NOT PRODUCE THE REQUIRED DIFFERENTIAL TEMPERATURE.

PI EVENTS FOR 90-3

SE 07/07/90 LER# 25490015 50.72#: 18850
PWR HIST: UTILITY OPERATED AT ALL POWER LEVELS AND MODES FROM 0% TO 100%. DISCOVERED AT 58% POWER.
DESC : FLOOR DRAIN CHECK VALVE IN ALL ECCS PUMP ROOMS INOPERABLE; WOULD ALLOW FLOOD WATER FLOW TO ALL REDUNDANT ECCS EQUIPMENT ROOMS.

SSF 08/09/90 LER# 50.72#: 19802
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE NORMAL FIRE SUPPRESSION WATER SYSTEM WAS DECLARED INOPERABLE AFTER DETERMINING BOTH DIESEL DRIVEN FIRE PUMPS WERE INOPERABLE. ONE PUMP WAS OUT OF SERVICE FOR REPAIR WHEN THE OTHER FAILED TO AUTO START DURING A TEST.

SSF 08/29/90 LER# 25490018 50.72#: 19239
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE APRIL 1978. DISCOVERED 8/29/90.
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : BECAUSE OF AN INADEQUATE ENGINEERING REVIEW, PERMANENT TEST LEADS WERE INSTALLED FOR ECCS SYSTEMS THAT DID NOT MEET SEPERATION REQUIREMENTS. UPON DISCOVERY, THE FOLLOWING WERE DECLARED INOPERABLE: 1/2 EDG, 1A 2A CORE SPRAY PUMPS, 1A 1B 2A 2B LPCI PUMPS.

TABLE 8.79 (CONT.)

QUAD CITIES 2

PI EVENTS FOR 90-3 (CONT.)

SSF 09/15/90 LER# 50.72#: 19377
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 88% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE THE GLAND SEAL CONDENSER HOTWELL PUMP BEGAN TO CYCLE ON AND OFF. OPERATION WITHOUT THE PUMP WOULD RELEASE STEAM INTO THE HPCI ROOM AND CAUSE AN HPCI ISOLATION ON HIGH ROOM TEMPERATURE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.47	0.00	0.46	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	0	1	0	1	0	3	3
FORCED OUTAGE RATE (%)	1	3	4	5	3	44	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.48	1.41	0.49	0.00	0.00	0.00	0.00
CRITICAL HOURS	2144	2103	2124	2045	2163	795	1268	2158
COLLECTIVE RADIATION EXPOSURE	36	39	33	100	2**	280	80	NA
CAUSE CODES:								
ADMINISTRATIVE	6	0	1	0	3	3	0	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	4	0	0	0	1	2	1	NA
MAINTENANCE	6	0	3	0	1	5	4	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	1	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	2	1	NA

TABLE 8.80

RANCHO SECO

PI EVENTS FOR 89-4

RANCHO SECO CEASED COMMERCIAL OPERATIONS IN JUNE 1989. THEREFORE, ANY PERFORMANCE INDICATOR EVENTS OCCURRING AFTER THE SECOND QUARTER 1989 WILL NOT BE INCLUDED IN THIS REPORT.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.30	1.11	0.00	NA	NA	NA	NA	NA
SCRAMS <= 15% POWER	0	0	0	NA	NA	NA	NA	NA
TOTAL SCRAMS	2	1	0	NA	NA	NA	NA	NA
SAFETY SYSTEM ACTUATIONS	1	1	0	NA	NA	NA	NA	NA
SIGNIFICANT EVENTS	0	2	0	NA	NA	NA	NA	NA
SAFETY SYSTEM FAILURES	0	4	0	NA	NA	NA	NA	NA
FORCED OUTAGE RATE (%)	32	64	9	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.59	3.32	0.00	NA	NA	NA	NA	NA
CRITICAL HOURS	1542	903	1452	NA	NA	NA	NA	NA
COLLECTIVE RADIATION EXPOSURE	19	34	12	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	0	NA	NA	NA	NA	NA
LICENSED OPERATOR	1	0	0	NA	NA	NA	NA	NA
OTHER PERSONNEL	2	1	1	NA	NA	NA	NA	NA
MAINTENANCE	6	4	1	NA	NA	NA	NA	NA
DESIGN/INSTALLATION/FABRICATION	1	4	0	NA	NA	NA	NA	NA
EQUIPMENT FAILURE	0	0	0	NA	NA	NA	NA	NA

THE UNIT CEASED COMMERCIAL OPERATION IN JUNE 1989 AND ALL PERFORMANCE INDICATOR DATA AFTER THE THE SECOND QUARTER 1989 WILL BE NA.

TABLE 8.81

RIVER BEND

PI EVENTS FOR 89-4

SCRAM 12/01/89 LER# 45889042 50.72#: 17236 POWER: 97
DESC : THE MAIN GENERATOR AND THE REACTOR TRIPPED DUE TO A FAILED PROTECTION RELAY ON THE OFFSITE POWER SWITCH.

SSA 12/01/89 LER# 45889042 50.72#: 17236 POWER: 97
DESC : AFTER A REACTOR TRIP, A 4160V BUS FAILED TO TRANSFER TO ITS ALTERNATE OFFSITE POWER SOURCE. THE DIESEL STARTED AND LOADED.

SE 12/01/89 LER# 45889042 50.72#: 17245 POWER: 97
DESC : SECOND INSTANCE OF MULTIPLE MAIN STEAM ISOLATION VALVE (MSIV) FAILURES AT RIVER BEND OCCURRED AFTER TAKING CORRECTIVE ACTION. MSIV SOLENOID VALVES FAILED TO RELEASE.

PI EVENTS FOR 90-1

SSF 02/02/90 LER# 45890002 50.72#: 17683 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL BUILDING VENTILATION SYSTEM WAS DECLARED INOPERABLE, BECAUSE OF A MALFUNCTIONING BREAKER, OPERATORS WERE NOT ABLE TO RESTART THE DIV. II CHILLER AFTER THE DIV. I CHILLER FAILED TO START (BECAUSE OF INADEQUATE CHILLED WATER).

SSF 02/06/90 LER# 45890003 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : SEVERAL MINOR DEFICIENCIES (HOLES, CRACKS, AND UNFILLED SEAMS) WERE DISCOVERED IN THE FIRE BARRIER ENVELOPES SURROUNDING SAFE SHUTDOWN CIRCUITS. THESE DEFICIENCIES, SOME OF WHICH EXISTED SINCE ORIGINAL CONSTRUCTION, RENDERED THE FIRE BARRIERS INOPERABLE.

SE 02/11/90 LER# 45890004 50.72#: 17743 POWER: 100
DESC : PARTIAL ESF ACTUATION OCCURRED WHEN A TOPAZ INVERTER RESET AND REENERGIZED THE ROSEMOUNT TRANSMITTER/TRIP UNITS. TRIP UNITS REENERGIZED BEFORE THE TRANSMITTER, AND RESULTED IN OPENING OF THE TWO LPCI INJECTION VALVES.

SCRAM 03/15/90 LER# 45890008 50.72#: 17989 POWER: 42
DESC : A MALFUNCTION IN THE MAIN TURBINE GENERATOR ZONE 1 LOSS OF FIELD RELAY (40G KLF) CAUSED A TURBINE TRIP. THIS RESULTED IN A REACTOR TRIP FROM 42% POWER.

SSF 03/19/90 LER# 45890009 50.72#: POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : THE DIVISION I SERVICE WATER CONTAINMENT PENETRATION FAILED A LOCAL LEAK RATE TEST. SILT AND CORROSION PRODUCT BUILDUP WAS PREVENTING THE INBOARD AND OUTBOARD ISOLATION VALVES FROM FULLY CLOSING.

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 45890013 50.72#: POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF AN INADEQUATE CALIBRATION PROCEDURE, ONE TRAIN OF THE CONTROL ROOM CHILLER SYSTEM WAS INOPERABLE (THE MOTOR CURRENT LIMITER WAS SET TOO LOW). THE OPERATORS DID NOT REALIZE THIS AND RENDERED THE OTHER TRAIN INOPERABLE FOR MAINTENANCE.

SCRAM 04/07/90 LER# 45890014 50.72#: 18169 POWER: 79
DESC : A LOW EHC OIL PRESSURE SIGNAL OCCURRED WHILE TESTING THE #4 COMBINED INTERMEDIATE VALVE CAUSING A TURBINE TRIP AND A REACTOR TRIP.

SSF 04/19/90 LER# 45890017 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : TWO VOIDS IN A FIRE BARRIER WERE DISCOVERED IN A SHAKE SPACE BETWEEN THE AUX BUILDING AND THE CONTAINMENT SHIELD WALL. THESE VOIDS RESULTED FROM A PERSONNEL ERROR DURING CONSTRUCTION AND VIOLATED A 3-HOUR FIRE BARRIER REQUIREMENT.

TABLE 6.81 (CONT.)

RIVER BEND

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.60	0.00	0.48	0.48	0.54	0.46	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	1	1	1	1	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	1	1	0	0
SAFETY SYSTEM FAILURES	1	1	1	0	0	3	2	0
FORCED OUTAGE (%)	2	9	77	6	2	0	2	0
EQUIP. FORCED OUTAGES/1000 CUMMERS	0.51	1.81	14.42	0.95	0.48	0.54	0.46	0.00
CRITICAL HOURS	1976	1656	208	2104	2084	1861	2153	2160
COLLECTIVE RADIATION EXPOSURE	42	106	376	21	25	42	15	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	8	1	7	3	3	NA
LICENSED OPERATOR	1	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	5	7	2	4	3	3	NA
MAINTENANCE	5	13	14	3	8	6	9	NA
DESIGN/INSTALLATION/FABRICATION	2	2	4	0	0	4	2	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.82

ROBINSON 2

PI EVENTS FOR 89-4

SSF 11/03/89 LER# 26189013 50.72#: 17021 POWER: 0
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : POTENTIAL MOISTURE INTRUSION PATHS WERE FOUND IN THE CABLE ENTRANCE CONDUIT SEALS OF ELECTRICAL COMPONENTS ASSOCIATED WITH THE FOLLOWING SYSTEMS: CVCS, MAIN STEAM, HVAC, PZR, S/G, SI-ACCUMULATORS, POST ACCIDENT SAMPLING, RCS, AND CONTAINMENT PRESSURE.

SSF 11/28/89 LER# 26189015 50.72#: 17213 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : LEAKAGE WAS DISCOVERED THROUGH A BALL VALVE USED TO RELIEVE PRESSURE FROM AN AIRLOCK. THIS LEAKAGE, COMBINED WITH OTHER SMALL LEAKAGE PATHS IN THE AIRLOCK, CONSTITUTED A BREACH OF CONTAINMENT INTEGRITY AS DEFINED BY THE TECHNICAL SPECIFICATIONS.

PI EVENTS FOR 90-1

SCRAM 01/17/90 LER# 26190002 50.72#: 17576 POWER: 100
DESC : A TECHNICIAN TRIPPED TWO BISTABLES DURING A NUCLEAR INSTRUMENT SYSTEM SURVEILLANCE TEST, CAUSING A REACTOR TRIP ON OVERTEMPERATURE DIFFERENTIAL TEMPERATURE (OTDT).

PI EVENTS FOR 90-2

SSF 04/30/90 LER# 26190008 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A DEFICIENT FIRE BARRIER PENETRATION WAS DISCOVERED BETWEEN FIRE ZONES 10 AND 11. THE PREVIOUS INSPECTION ACTIVITY WAS NOT OF SUFFICIENT SCOPE AND DETAIL TO IDENTIFY THE DEGRADATION, WHICH HAD EXISTED PRIOR TO AUGUST 1984.

SCRAM 05/17/90 LER# 26190007 50.72#: 18496 POWER: 100
DESC : A REACTOR TRIP OCCURRED ON A STEAM FLOW/FEED MISMATCH SIGNAL. A FRV DISK APPARENTLY SEPARATED FROM THE STEM, CAUSING A LOSS OF FEED FLOW.

SSF 06/20/90 LER# 26190010 50.72#: POWER: 60
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : DURING AN INSPECTION OF ALL SITE FIRE BARRIERS, A PENETRATION WAS DISCOVERED WITHOUT A FIRE SEAL. THIS PENETRATION WAS NOT PROPERLY SEALED DURING A MODIFICATION INSTALLED BETWEEN APRIL, 1977, AND JULY, 1988.

PI EVENTS FOR 90-3

SSF 08/02/90 LER# 26190011 50.72#:
PWR HIST: ALL MODES UP TO 100%. DISCOVERED ON 8/2/90. COULD HAVE EXISTED SINCE 9/88.
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : DURING A SURVEILLANCE, A FIRE DAMPER WAS DISCOVERED TO BE INOPERABLE BECAUSE IT WAS NOT IN THE REQUIRED POSITION (CLOSED). THIS DAMPER HAD BEEN PERMANENTLY CLOSED ON 9/2/88. THE CAUSE WAS ATTRIBUTED TO PERSONNEL ERROR.

SSF 09/26/90 LER# 50.72#: 19485
PWR HIST: EVENT DISCOVERED DURING REFUELING.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : THE SAFETY INJECTION PUMPS WERE DECLARED INOPERABLE. PUMP RUN OUT TESTS CONDUCTED DURING THE REFUELING OUTAGE INDICATE MAX FLOW RATES HIGHER THAN PREDICTED. AT HIGH FLOW RATES AND MIN RWST LEVEL THE NPSH AVAILABLE MAY BE INSUFFICIENT FOR EITHER PUMP.

TABLE 8.82 (CONT.)

ROBINSON 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	3.38	0.00	0.00	0.00	0.46	0.54	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	3	0	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	1	2	0	2	2
FORCED OUTAGE RATE (%)	14	7	14	43	91	0	5	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.29	1.13	0.53	0.00	0.00	0.00	0.54	0.00
CRITICAL HOURS	873	688	1886	1250	238	2152	1865	1658
CCLLECTIVE RADIATION EXPOSURE	441	116	31	31	36	15	13	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	1	0	1	1	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	3	0	0	0	2	1	NA
MAINTENANCE	2	5	2	0	1	5	3	NA
DESIGN/INSTALLATION/FABRICATION	4	2	1	1	4	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.83

SALEM 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSA 03/27/90 LER# 27290008 50.72#: 18071 POWER: 100
DESC : A FAULTY ELECTRICAL CARD CAUSED THE NON-VITAL LOADS TO BE SHED FROM THE VITAL BUS WHICH CAUSED ACTUATION OF THE RHR PUMP.

SSA 03/27/90 LER# 27290008 50.72#: 18073 POWER: 75
DESC : THE 'A' VITAL BUS SEQUENCER ACTUATED WHILE PLACING IT BACK IN SERVICE FOLLOWING MAINTENANCE. THE NON-VITAL LOADS SHED.

PI EVENTS FOR 90-2

SCRAM 04/09/90 LER# 27290012 50.72#: 18184 POWER: 90
DESC : A REACTOR TRIP WAS CAUSED BY A LOW SG LEVEL. THE '12' MFP CONTROLLER FAILED RESULTING IN THE LOW LEVEL.

SSF 04/19/90 LER# 27290016 50.72#: 18284 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : SIX FAST CLOSURE TURBINE BUILDING SERVICE WATER VALVES MAY NOT PERFORM THEIR SAFETY FUNCTION OF ISOLATING NONESSENTIAL LOADS. BECAUSE OF INADEQUATE DESIGN, THE MOTOR PINION KEYS WERE MADE OF A MATERIAL THAT WAS TOO SOFT.

SSF 05/07/90 LER# 27290017 50.72#: 18403 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : THE HIGH HEAD SAFETY INJECTION PUMPS DID NOT MEET REQUIRED NOZZLE LOAD AND SEISMIC CRITERIA. THE ORIGINAL EQUIPMENT MANUFACTURER DID NOT COMPLETE THE WELDING REQUIRED BY THE PUMP BASE FABRICATION DRAWING.

SSF 06/08/90 LER# 27290020 50.72#: POWER: 77
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : BECAUSE OF A PROCEDURAL ERROR, A PERMISSIVE RELAY HAS BEEN SET NON-CONSERVATIVELY SINCE INITIAL STARTUP. THIS BLOCKED THE SOURCE RANGE REACTOR TRIP WHEN POWER WAS DECREASING THROUGH THE UPPER END OF THE SOURCE RANGE DURING SHUTDOWN.

PI EVENTS FOR 90-3

SSF 07/22/90 LER# 50.72#: 18942
PWR HIST: ALL MODES TO 100%. DESIGN BASIS ERROR DISCOVERED 7/22/90.
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : ANALYSIS SHOWS THAT DURING A DESIGN BASIS STEAM LINE BREAK, THE MSIVs WOULD NOT CLOSE FAST ENOUGH TO PREVENT DEPRESSURIZATION OF THE SGs, POTENTIALLY OVERCOOLING THE REACTOR. THE LICENSEE IS ANALYZING THIS SCENARIO.

SCRAM 08/17/90 LER# 27290029 50.72#: 19144 PWR HIST: SCRAM OCCURRED AT 25% DURING POWER ASCENSION
DESC : A FAILED LIMIT SWITCH PREVENTED THE AUXILIARY POWER TRANSFORMER OUTPUT BREAKER FROM CLOSING DURING A BUS TRANSFER. THIS CAUSED A LOSS OF RCP'S AND A SCRAM ON LOW SG LEVEL.

SCRAM 09/10/90 LER# 50.72#: 19333 PWR HIST: POWER OPERATIONS AT 79%
DESC : A REACTOR SCRAM OCCURRED DUE TO LOW SG LEVEL. MAIN TURBINE STEAM GOVERNOR AND STOP VALVES WERE CLOSED TO REPAIR A LEAK AND SG SHRINK BROUGHT SG LEVEL BELOW THE LOW-LOW LEVEL SETPOINT.

TABLE 8.83 (CONT.)

SALEM 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.54	4.49	0.00	0.00	0.00	1.38	1.87
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	2	1	0	0	0	1	2
SAFETY SYSTEM ACTUATIONS	0	1	1	0	0	2	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	2	0	0	0	3	1
FORCED OUTAGE RATE (%)	0	12	71	0	12	5	72	55
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.07	8.97	0.00	0.00	0.49	2.77	3.74
CRITICAL HOURS	2209	1862	223	2208	1983	2054	723	1069
COLLECTIVE RADIATION EXPOSURE	92	7	144	4	15	6	128	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	12	1	2	3	1	NA
LICENSED OPERATOR	0	2	1	0	1	0	1	NA
OTHER PERSONNEL	1	2	4	0	4	2	0	NA
MAINTENANCE	1	9	13	1	7	6	6	NA
DESIGN/INSTALLATION/FABRICATION	0	3	6	0	4	5	3	NA
EQUIPMENT FAILURE	1	1	1	0	0	0	0	NA

TABLE 8.84

SALEM 2

PI EVENTS FOR 89-4

SSF 10/24/89 LER# 31189017 50.72#: 16930 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : VARIOUS DISCREPANCIES WERE DISCOVERED IN MOV LIMIT SWITCH COMPARTMENT SPACE HEATERS. THESE HEATERS WERE SUPPOSED TO HAVE BEEN REMOVED IN 1986. DAMAGED WIRE INSULATION WAS FOUND IN THE HEATERS FOR TWO RHR VALVE MOVS; POTENTIAL INOPERABILITY OF RHR.

SSA 12/01/89 LER# 31189024 50.72#: 17353 POWER: 100
DESC : WHILE INSTALLING SCAFFOLDING AROUND THE '2C' VITAL BUS, A PIECE FELL AND HIT THE PHASE "C" DIFFERENTIAL PROTECTION RELAY CABINET. THE SHOCK ACTUATED THE RELAY, WHICH DEENERGIZED THE BUS AND STARTED THE '2C' DIESEL GENERATOR.

PI EVENTS FOR 90-1

SSF 01/17/90 LER# 31190005 50.72#: 17567 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : BOTH TRAINS OF THE HPSI SYSTEM WERE RENDERED INOPERABLE IN ORDER TO ISOLATE A LEAK. THE CAUSE OF THE LEAK WAS A DEFECT IN THE ROOT OF A WELD.

PI EVENTS FOR 90-2

SSF 04/16/90 LER# 31190013 50.72#: 18262 POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AN ENGINEERING REVIEW DISCOVERED THAT THE CONTAINMENT PARTICULATE AND NOBLE GAS RAD MONITORS WERE IMPROPERLY CALIBRATED. THE CALIBRATION PROCEDURE DID NOT INCLUDE THE REVISED T.S. ISOLATION AND ALARM SETPOINTS FOR REFUELING OUTAGES.

SSF 04/19/90 LER# 27290016 50.72#: 18284 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : SIX FAST CLOSURE TURBINE BUILDING SERVICE WATER VALVES MAY NOT PERFORM THEIR SAFETY FUNCTION OF ISOLATING NONESSENTIAL LOADS. BECAUSE OF INADEQUATE DESIGN, THE MOTOR PINION KEYS WERE MADE OF A MATERIAL THAT WAS TOO SOFT.

SSF 04/20/90 LER# 31190016 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : A CONTAINMENT PRESSURE RELIEF WAS PERFORMED WITH THE ASSOCIATED RADIATION MONITORING CHANNELS INOPERABLE; ONE CHANNEL WAS INOPERABLE BECAUSE OF DETECTOR RESPONSE CONCERNS AND THE OTHER CHANNEL BECAUSE ITS POWER SUPPLY WAS REMOVED FROM SERVICE.

SSA 05/01/90 LER# 31190017 50.72#: 18367 POWER: 0
DESC : A MANUAL SAFETY INJECTION SIGNAL WAS RECEIVED WHEN THE SAFEGUARDS EQUIPMENT CABINET WAS DEENERGIZED WITH THE SI SIGNAL STILL PRESENT. 3 EDG'S, 2 AFW PUMPS, AND VARIOUS AUXILIARY HVAC FANS STARTED.

SSF 05/07/90 LER# 27290017 50.72#: 18403 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : THE HIGH HEAD SAFETY INJECTION PUMPS DID NOT MEET REQUIRED NOZZLE LOAD AND SEISMIC CRITERIA. THE ORIGINAL EQUIPMENT MANUFACTURER DID NOT COMPLETE THE WELDING REQUIRED BY THE PUMP BASE FABRICATION DRAWING.

SSA 05/16/90 LER# 31190023 50.72#: 18500 POWER: 0
DESC : A START SIGNAL FOR THE EDG WAS RECEIVED WHEN THE FEEDER BREAKER' TO THE '2A' 4KV VITAL BUS OPENED. AN ELECTRICIAN LOADED HIS VISICORDER LEADS ON THE WRONG POINTS, RESULTING IN THE EDG START SIGNAL.

SSF 05/25/90 LER# 31190025 50.72#: 18571 POWER: 0
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : THE MSIV VENT VALVE CONTROL PANELS DO NOT HAVE VENT PATH OPENINGS. DURING A MAIN STEAM LINE BREAK IN THE VICINITY, THESE PANELS COULD COLLAPSE AND PREVENT TWO OF THE FOUR MSIVS FROM CLOSING.

PI EVENTS FOR 90-2 (CONT.)

SSF 06/08/90 LER# 27290020 50.72#: POWER: 0
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : BECAUSE OF A PROCEDURAL ERROR, A PERMISSIVE RELAY HAS BEEN SET NON-CONSERVATIVELY SINCE INITIAL STARTUP. THIS BLOCKED THE SOURCE RANGE REACTOR TRIP WHEN POWER WAS DECREASING THROUGH THE UPPER END OF THE SOURCE RANGE DURING SHUTDOWN.

SCR 06/28/90 LER# 31190029 50.72#: 18785 POWER: 75
DESC : A REACTOR TRIP OCCURRED DUE TO A LOW SG LEVEL IN #24 SG. THE "2F" 460V TRANSFORMER FAILED CAUSING A TRIP OF TWO SG FEED PUMPS.

PI EVENTS FOR 90-3

SSF 07/09/90 LER# 50.72#: 18863
PWR HIST: DESIGN CHANGE ERROR EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 1% POWER.
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : A DESIGN CHANGE INSTALLED ON THE MSIVS MAY HAVE CREATED A VENT PATH FOR UNCONTROLLED RELEASE DURING A STEAM GENERATOR TUBE RUPTURE EVENT. THE VENT VALVES WHICH CAUSE THE MSIVS TO CLOSE, MAY REMAIN OPEN CREATING A STEAM RELEASE PATH.

SSF 07/09/90 LER# 31190031 50.72#:
PWR HIST: ALL MODES TO 100% POWER. CONDITION EXISTED SINCE 1980.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT ISOLATION CONTROL SYSTEM
DESC : AN ERROR IN THE IMPLEMENTATION OF A DESIGN CHANGE AFFECTED THE OPERABILITY OF FOUR CONTAINMENT ISOLATION VALVES. THE CONTROL CIRCUITRY OF THESE VALVES WAS NOT WIRED PER THE DESIGN CHANGE.

SSF 07/22/90 LER# 50.72#: 18942
PWR HIST: ALL MODES TO 100% POWER. DESIGN BASIS ERROR DISCOVERED 7/22/90.
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : ANALYSIS SHOWS THAT DURING A DESIGN BASIS STEAM LINE BREAK, THE MSIVs WOULD NOT CLOSE FAST ENOUGH TO PREVENT DEPRESSURIZATION OF THE SGs, POTENTIALLY OVERCOOLING THE REACTOR. THE LICENSEE IS ANALYZING THIS SCENARIO.

SCRAM 09/04/90 LER# 50.72#: 19275 PWR HIST: POWER OPERATIONS AT 70%
DESC : UNIT 2 LOST THE #21 MFP AND SG LEVELS STARTED TO DECREASE. FRV'S OPENED AND SG LEVELS REACHED THE HIGH-HIGH SETPOINT RESULTING IN A TURBINE TRIP. THE TURBINE TRIP CAUSED THE REACTOR TRIP.

SSA 09/22/90 LER# 50.72#: 19441 PWR HIST: POWER OPERATIONS AT 97%
DESC : THE PLANT EXPERIENCED AN ACCIDENT LOADING MODE OPERATION OF "2CSEC" SAFEGUARD EQUIPMENT CONTROL, CAUSING SEVERAL ECCS ACTUATIONS AND A DIESEL START.

TABLE 8.84 (CONT.)

SALEM 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	3.29	1.12	0.52	0.00	0.00	0.00	6.88	1.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	2	1	0	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	2	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	1	1	6	3
FORCED OUTAGE RATE (%)	72	23	14	0	0	8	45	11
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	6.57	1.68	1.55	0.00	0.58	0.50	13.76	1.00
CRITICAL HOURS	304	1783	1939	2208	1720	1994	145	1002
COLLECTIVE RADIATION EXPOSURE	92	7	144	4	15	6	128	NA
CAUSE CODES:								
ADMINISTRATIVE	3	4	5	0	1	2	8	NA
LICENSED OPERATOR	1	0	0	0	0	0	1	NA
OTHER PERSONNEL	3	1	0	0	3	1	6	NA
MAINTENANCE	5	6	7	0	3	4	11	NA
DESIGN/INSTALLATION/FABRICATION	1	3	8	1	9	11	12	NA
EQUIPMENT FAILURE	1	1	0	0	0	0	0	NA

TABLE 8.85

SAN ONOFRE 1

PI EVENTS FOR 89-4

SSF 12/22/89 LER# 20689029 50.72#: 17415 POWER: 91
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : FAILURE OF A NON-SAFETY-RELATED FILTER DURING A DESIGN BASIS ACCIDENT MAY RESULT IN INSUFFICIENT CONTAINMENT SUMP INVENTORY TO SATISFY THE MIN. NPSH REQUIREMENTS OF THE SI RECIRC PUMPS. OPERATING PROCEDURES DIDN'T DIRECT OPERATORS TO ISOLATE THIS FILTER.

SSF 12/28/89 LER# 20689030 50.72#: POWER: 92
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : PREVIOUS EVALUATIONS OF POST-LOCA RECIRCULATION FLOW FROM THE CONTAINMENT SUMP TO THE REACTOR CORE WERE INCORRECT. LOSS OF A NON-SEISMICALLY QUALIFIED VOLUM. CONTROL TANK COULD RESULT IN UNCOVERING THE CORE AND/OR INCREASING OFFSITE DOSES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 20690010 50.72#: 18321 POWER: 92
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL POOL COOLING AND PURIFICATION SYSTEM
DESC : DUE TO A CALCULATIONAL ERROR, THE ACTUAL HEAT LOADS ON THE SPENT FUEL COOLING SYSTEM COULD BE MUCH GREATER THAN THOSE REPORTED IN THE UFSAR. UPON FAILURE OF THE INSTALLED PUMP, THE SPARE PUMP MAY NOT HAVE BEEN INSTALLED IN TIME TO PREVENT BOILING.

SCRAM 04/30/90 LER# 20690007 50.72#: 18365 POWER: 91
DESC : A REACTOR TRIP OCCURRED DUE TO A SPURIOUS SINGLE LOOP LOSS OF FLOW SIGNAL.

PI EVENTS FOR 90-3

SSA 07/09/90 LER# 20690014 50.72#: 18866 PWR HIST: REFUELING
DESC : AN EDG STARTED BUT DID NOT LOAD DUE TO A SPURIOUS UNDERVOLTAGE SIGNAL ON '2C' 4KV BUS. THE CAUSE WAS A LIFTED LEAD INADVERTENTLY SHORT CIRCUITING THE 2C BUS POTENTIAL TRANSFORMER.

SSF 07/27/90 LER# 20690016 50.72#: 18979
PWR HIST: ALL MODES TO 100% POWER. SINGLE FAILURE ANALYSIS PROBLEMS EXISTED SINCE 1976.
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : REANALYSIS OF THE 1976 SINGLE FAILURE ANALYSIS OF THE ECCS AND SUPPORTING SYSTEMS REVEALED SCENARIOS THAT COULD HAVE IMPACTED THE PERFORMANCE OF SOME ECCS FUNCTIONS. THIS NEW ANALYSIS USED ADDITIONAL GUIDANCE AND INTERPRETATIONS PROVIDED AFTER 1976.

TABLE 8.85 (CONT.)

SAN ONOFRE 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.59	0.00	0.00	0.50	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	2	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	4	0	2	2	0	1	1
FORCED OUTAGE RATE (%)	0	0	87	25	3	0	9	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	4.81	1.78	0.59	0.00	0.50	0.00
CRITICAL HOURS	1395	0	208	1687	1688	2160	2003	0
COLLECTIVE RADIATION EXPOSURE	62	77	33	45	50	4	112	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	5	7	4	1	2	NA
LICENSED OPERATOR	0	1	1	0	0	1	0	NA
OTHER PERSONNEL	2	1	0	1	0	0	1	NA
MAINTENANCE	3	4	5	6	2	3	7	NA
DESIGN/INSTALLATION/FABRICATION	3	5	2	3	5	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.86

SAN ONOFRE 2

PI EVENTS FOR 89-4

SSA 11/06/89 LER# 36189014 50.72#: 17026 POWER: 0
DESC : THE OPERATOR CLOSED THE WRONG BREAKER, CAUSING A LOSS OF VOLTAGE ON THE "1E" 4160V BUS. THE DIESEL GENERATOR STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-1

SSF 02/20/90 LER# 36190001 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : A FIRE DOOR LOCATED IN THE EDG BUILDING WAS INOPERABLE BECAUSE OF A STICKY LATCH. A FIRE WATCH WAS THEN POSTED IN THE WRONG AREA. THE FIRE PROTECTION IMPAIRMENT EVALUATION PROCEDURES DID NOT PROVIDE SUFFICIENT GUIDANCE ABOUT THIS DOOR.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	1	0	0
FORCED OUTAGE RATE (%)	0	34	28	0	23	0	0	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.69	0.63	0.00	1.48	0.00	0.00	0.00
CRITICAL HOURS	2209	1449	1584	1518	676	2125	2183	1381
COLLECTIVE RADIATION EXPOSURE	62	77	33	45	50	4	112	NA
CAUSE CODES:								
ADMINISTRATIVE	2	4	3	9	3	2	2	NA
LICENSED OPERATOR	0	1	1	3	1	0	?	NA
OTHER PERSONNEL	3	1	1	4	0	0	.	NA
MAINTENANCE	4	5	3	8	2	1	6	NA
DESIGN/INSTALLATION/FABRICATION	4	1	3	1	0	0	0	NA
EQUIPMENT FAILURE	1	1	1	0	0	0	0	NA

TABLE 8.87

SAN ONOFRE 3

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/23/90 LER# 36290002 50.72#: 17828 POWER: 100
DESC : THE REACTOR TRIPPED ON A MSIV ISOLATION DUE TO A 2 OF 2 LOGIC SIGNAL WHICH OCCURRED DURING MATRIX TESTING OF THE PLANT PROTECTION SYSTEM.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.47	0.52	0.00	0.00	0.51	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	3	12	9	0	9	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.47	1.04	0.00	0.00	0.51	0.00	0.00
CRITICAL HOURS	2209	2110	1924	2009	2209	1979	315	1795
COLLECTIVE RADIATION EXPOSURE	62	77	33	45	50	4	112	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	4	3	2	3	2	NA
LICENSED OPERATOR	0	0	1	1	0	0	3	NA
OTHER PERSONNEL	0	2	2	1	0	0	2	NA
MAINTENANCE	2	5	3	3	1	2	4	NA
DESIGN/INSTALLATION/FABRICATION	3	0	4	3	1	1	2	NA
EQUIPMENT FAILURE	1	1	1	0	0	0	0	NA

TABLE 8.88

SEABROOK

PI EVENTS FOR 89-4

SSF 10/11/89 LER# 44389012 50.72#: 16818 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : RHR SHUTDOWN COOLING CAPABILTY WAS LOST FOR APPROXIMATELY AN HOUR. THIS WAS CAUSED BY A CONFLICT BETWEEN TWO PROCEDURES; THE BUS RESTORATION PROCEDURE CONFLICTED WITH A MAINTENANCE PROCEDURE THAT WAS ALREADY IN PROGRESS. THE BUS PROCEDURE WAS INADEQUATE.

PI EVENTS FOR 90-1

SSF 02/09/90 LER# 44390008 50.72#: POWER: 0
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : CONTAINMENT PURGE SYSTEM
DESC : A FAILED LATCHING MECHANISM FOR A DOOR ENTERING THE CONTAINMENT ENCLOSURE BUILDING RENDERED THE CONTAINMENT ENCLOSURE EMERGENCY AIR CLEANUP SYSTEM INOPERABLE. THE SYSTEM WAS NOT CAPABLE OF PRODUCING THE REQUIRED VACUUM WITHIN THE ANNULUS.

PI EVENTS FOR 90-2

SCRAM 06/20/90 LER# 44390015 50.72#: 18743 POWER: 30
DESC : A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP. A TURBINE STATOR GROUND FAULT INDICATION CAUSED THE TURBINE TRIP.

PI EVENTS FOR 90-3

SCRAM 07/05/90 LER# 44390018 50.72#: 18841 PWR HIST: POWER OPERATIONS AT 75%
DESC : THE REACTOR TRIPPED ON A DIRECT TRIP SIGNAL FROM A LOW EHC PRESSURE SWITCH.

SCRAM 08/22/90 LER# 50.72#: 19175 PWR HIST: POWER OPERATIONS AT 100%
DESC : PROCEDURAL INADEQUACY DURING EQUIPMENT HOOKUP WHILE TROUBLESHOOTING EARLY VALVE ACTUATION CIRCUITRY IN THE EHC PANEL CAUSED A TURBINE TRIP. A REACTOR TRIP FOLLOWED.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	0.00	0.00	0.00	0.00	0.73	0.97
SCRAMS <= 15% POWER	NA	NA	0	0	0	0	0	0
TOTAL SCRAMS	NA	NA	0	0	0	0	1	2
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	0	1	1	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	NA	NA	0.00
CRITICAL HOURS	NA	NA	194	0	0	228	1367	2069
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	1	2	2	1	NA
LICENSED OPERATOR	0	0	0	0	0	1	0	NA
OTHER PERSONNEL	1	1	2	3	1	2	4	NA
MAINTENANCE	2	5	4	4	2	11	5	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	1	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.89

SEQUOYAH 1

PI EVENTS FOR 89-4

SSF 11/15/89 LER# 32789028 50.72#: 17124 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : A MISSING ACCESS COVER ON AN AUX. BUILDING GAS TREATMENT SYSTEM DUCT RESULTED IN A BREACH OF THE AUX. BUILDING SECONDARY CONTAINMENT ENCLOSURE. THE ACCESS COVER LATCHING MECHANISM LOOSENED AND ALLOWED THE COVER TO FALL OFF.

SCRAM 12/10/89 LER# 32789035 50.72#: 17311 POWER: 100
DESC : THE REACTOR TRIPPED DUE TO A HIGH S/G LEVEL WHICH FOLLOWED A TURBINE RUNBACK. THIS WAS DUE TO THE NUMBER THREE HEATER DRAIN TANK BYPASSING TO THE CONDENSER.

PI EVENTS FOR 90-1

SSF 02/11/90 LER# 32890003 50.72#: 17744 POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AN OPERATOR INCORRECTLY RENDERED THE ISOLATION FUNCTION OF THE CONTAINMENT PURGE EXHAUST RADIATION MONITORS INOPERABLE. THIS COULD HAVE RESULTED IN A RADIOLOGICAL RELEASE IF UNIT 1 HAD BEEN PURGING THE CONTAINMENT.

PI EVENTS FOR 90-2

SSA 04/09/90 LER# 32790005 50.72#: 18179 POWER: 0
DESC : ALL DIESEL GENERATORS AUTOMATICALLY STARTED WHEN POWER WAS INTERRUPTED WHILE TRANSFERRING POWER ON THE SHUTDOWN BOARD. THE NORMAL FEEDER BREAKER FAILED TO CLOSE BECAUSE THE SUPPLY BREAKER FROM THE UNIT BOARD WAS OPEN.

SSF 06/01/90 LER# 32790013 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : AN ANNUAL FIRE PROTECTION INSPECTION REVEALED THAT REMOVAL OF THE MAIN CONTROL ROOM LIGHTING DIFFUSER PANELS IN DECEMBER 1989 AFFECTED THE AIR FLOW PATTERNS AND RENDERED THE SMOKE DETECTORS INOPERABLE. AN INADEQUATE DESIGN REVIEW WAS THE CAUSE.

SCRAM 06/02/90 LER# 32790012 50.72#: 18618 POWER: 11
DESC : A REACTOR TRIP OCCURRED DUE TO LOW SG LEVEL IN #4 SG DUE TO INADEQUATE COMMUNICATIONS BETWEEN THE REACTOR OPERATORS AND THE AUXILIARY OPERATORS WHO ISOLATED STEAM TO THE MFP'S.

SSF 06/08/90 LER# 32790011 50.72#: POWER: 24
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : AS A RESULT OF MISINTERPRETED VENDOR INFORMATION, THE PR AND IR DETECTOR CURRENTS WERE NONCONSERVATIVELY CALIBRATED FOLLOWING REFUELING. ALTHOUGH THE PR AND IR SETPOINTS WERE OUTSIDE OF THE T.S. ALLOWED VALUES, THEY WERE WITHIN UFSAR ANALYSIS LIMITS.

SSA 06/25/90 LER# 32790014 50.72#: 18766 POWER: 98
DESC : AN EDG STARTED AND LOADED THE SHUTDOWN BOARD WHEN A FUSE BLEW ON THE BOARD, SIMULATING A LOSS OF VOLTAGE. THE FUSE BLEW WHEN TEST EQUIPMENT WAS IMPROPERLY CONNECTED TO THE BOARD.

SSF 06/28/90 LER# 32790016 50.72#: 18798 POWER: 98
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : PLANT PROTECTION SYSTEM
DESC : AS A RESULT OF A PERSONNEL ERROR, A CONTAINMENT PURGE WAS INITIATED WITHOUT DISABLING THE SG WATER LEVEL ENVIRONMENTAL ALLOWANCE MODIFIER. THIS RENDERED ALL FOUR SG LOW-LOW LEVEL CHANNELS INOPERABLE.

PI EVENTS FOR 90-3

SSF 08/29/90 LER# 50.72#: 19229
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CREV SYSTEM WERE INOPERABLE. WHILE ONE TRAIN'S EMERGENCY POWER SUPPLY WAS INOPERABLE, THE OTHER TRAIN'S AIR HANDLING UNIT WOULD NOT START.

TABLE 8.89 (CONT.)

SEQUOYAH 1

PI EVENTS FOR 90-3 (CONT.)

SCRAM 09/14/90 LER# 50.72#: 19365 PWR HIST: POWER OPERATIONS AT 100%
DESC : THE REACTOR TRIPPED FOR UNKNOWN REASONS WHEN A 120V VITAL BOARD DEENERGIZED WHEN IT WAS PLACED BACK INTO SERVICE.

SCRAM 09/19/90 LER# 50.72#: 19409 PWR HIST: POWER OPERATIONS AT 61%
DESC : A SUDDEN HIGH OIL PRESSURE RELAY ACTUATION ON THE MAIN BANK TRANSFORMER CAUSED A TURBINE TRIP AND REACTOR TRIP.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	2.64	0.47	0.00	0.00	0.46	0.00	0.00	0.93
SCRAMS <= 15% POWER	1	0	0	0	0	0	1	0
TOTAL SCRAMS	2	1	0	0	1	0	1	2
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	2	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	1	1	3	1
FORCED OUTAGE RATE (%)	87	3	0	0	3	0	10	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	5.27	0.00	0.00	0.00	0.46	0.00	2.78	0.93
CRITICAL HOURS	380	2111	2183	2208	2169	1803	721	2153
COLLECTIVE RADIATION EXPOSURE	10	280	16	12	22	111	400	NA
CAUSE CODES:								
ADMINISTRATIVE	6	6	4	6	6	2	6	NA
LICENSED OPERATOR	1	1	0	0	0	3	1	NA
OTHER PERSONNEL	6	5	2	3	3	1	5	NA
MAINTENANCE	12	6	7	7	8	3	5	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	0	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.90

SEQUOYAH 2

PI EVENTS FOR 89-4

SSF 11/15/89 LER# 32789028 50.72#: 17124 POWER: 12
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : A MISSING ACCESS COVER ON AN AUX. BUILDING GAS TREATMENT SYSTEM DUCT RESULTED IN A BREACH OF THE AUX. BUILDING SECONDARY CONTAINMENT ENCLOSURE. THE ACCESS COVER LATCHING MECHANISM LOOSENED AND ALLOWED THE COVER TO FALL OFF.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 04/10/90 LER# 32890008 50.72#: 18192 POWER: 100
DESC : A REACTOR TRIP WAS CAUSED BY 2 GENERAL WARNING ALARMS WHICH OCCURRED WHILE TESTING A REACTOR TRIP BREAKER. WHEN SEVERAL STEPS IN THE TESTING PROCEDURE WERE PERFORMED OUT OF SEQUENCE, THE WARNING ALARMS WERE RECEIVED AND THE REACTOR TRIPPED.

SSF 06/01/90 LER# 32790013 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE DETECTION SYSTEM
DESC : AN ANNUAL FIRE PROTECTION INSPECTION REVEALED THAT REMOVAL OF THE MAIN CONTROL ROOM LIGHTING DIFFUSER PANELS IN DECEMBER 1989 AFFECTED THE AIR FLOW PATTERNS AND RENDERED THE SMOKE DETECTORS INOPERABLE. AN INADEQUATE DESIGN REVIEW WAS THE CAUSE.

PI EVENTS FOR 90-3

SE 08/22/90 LER# 50.72#: 19182
PWR HIST: THIS EVENT OCCURRED AT 78% POWER.
DESC : GAS BUILDUP IN THE CHARGING SYSTEM (HYDROGEN).

SSF 08/29/90 LER# 50.72#: 19229
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 75% POWER.
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF THE CREV SYSTEM WERE INOPERABLE. WHILE ONE TRAIN'S EMERGENCY POWER SUPPLY WAS INOPERABLE THE OTHER TRAIN'S AIR HANDLING UNIT WOULD NOT START.

SSF 09/11/90 LER# 50.72#: 19337
PWR HIST: EVENT DISCOVERED DURING COLD SHUTDOWN.
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : WHILE PERFORMING MODIFICATIONS TO THE RHR SYSTEM, ONE OF THE SUCTION VALVES INADVERTENTLY CLOSED. REACTOR COOLANT TEMPERATURE INCREASED FROM 127F TO 132F DURING THE FIVE MINUTES IT TOOK TO RESTORE THE SYSTEM TO OPERATION. AN ALERT WAS DECLARED.

TABLE 8.90 (CONT.)

SEQUOYAH 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.78	0.47	0.00	0.00	0.46	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	3	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	1	1	0	1	0	1	2
FORCED OUTAGE RATE (%)	0	0	16	5	0	0	2	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.59	0.47	0.00	0.00	0.00	0.00
CRITICAL HOURS	2209	429	1687	2142	2086	2160	2156	1659
COLLECTIVE RADIATION EXPOSURE	19	280	16	12	22	111	400	NA
CAUSE CODES:								
ADMINISTRATIVE	1	5	5	5	7	3	3	NA
LICENSED OPERATOR	0	1	2	0	0	2	0	NA
OTHER PERSONNEL	2	1	4	4	2	2	6	NA
MAINTENANCE	2	4	12	6	8	6	5	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	1	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.91

SHEARON HARRIS

PI EVENTS FOR 89-4

SCRAM 10/09/89 LER# [illegible] 50.72#: 16805 POWER: 100
DESC : FIRE AND RUPTURE [illegible] MAIN GENERATOR AND MAIN TRANSFORMER LED TO A TURBINE TRIP AND A SUBSEQUENT REACT[illegible]RIP.

SSF 10/31/89 LER# 40089020 50.72#: POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : PRESSURIZER SYSTEM
DESC : PLANT PERSONNEL DISCOVERED THAT THE LIMITORQUE OPERATOR FOR A PRESSURIZER PORV BLOCK VALVE WAS NOT ENVIRONMENTALLY QUALIFIED. THEREFORE, IT COULD NOT BE ENSURED THAT THE OPERATOR WOULD PERFORM ITS SAFETY FUNCTION DURING A DESIGN BASIS EVENT.

SSF 10/31/89 LER# 40089020 50.72#: POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : PLANT PERSONNEL DISCOVERED THAT THE LIMITORQUE OPERATORS FOR TWO AFW ISOLATION VALVES WERE NOT ENVIRONMENTALLY QUALIFIED. THEREFORE, IT COULD NOT BE ENSURED THAT THE OPERATORS WOULD PERFORM THEIR SAFETY FUNCTION DURING A DESIGN BASIS EVENT.

SSF 12/23/89 LER# 40089023 50.72#: POWER: 42
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : A LOW LEAKAGE CORE LOADING PATTERN WAS INSTALLED WITH NO COMPENSATING ADJUSTMENTS MADE TO THE POWER RANGE NUCLEAR INSTRUMENTS. THIS RESULTED IN A 48% NONCONSERVATIVE MISMATCH BETWEEN ACTUAL AND INDICATED POWER. NO FORMAL POWER ASCENSION PROGRAM EXISTED.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 40090010 50.72#: 18151 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : ADMINISTRATIVE CONTROLS WERE NOT IN PLACE TO ENSURE THE DESIGN CONFIGURATION OF THE PRESSURE BOUNDARIES OF THE FOLLOWING SYSTEMS WERE MAINTAINED: REACTOR AUX BLDG EMERGENCY EXHAUST, CONTROL ROOM EMER FILTRATION, AND FUEL HANDLING BLDG EMER FILTRATION.

SSA 04/15/90 LER# 40090012 50.72#: 18243 POWER: 100
DESC : DURING UNDERVOLTAGE SURVEILLANCE TESTING, SUPPLY CIRCUIT BREAKER #105 TO BUS #1A-SA OPENED UNEXPECTEDLY DUE TO AN UNDERVOLTAGE SIGNAL. THE LOSS OF POWER CAUSED THE #1 AND #2 EDGS TO START AND EVENTUALLY THE RADIATION MONITOR TO ALARM HIGH.

SSF 05/24/90 LER# 40090015 50.72#: 18565 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE EMERGENCY LOAD SEQUENCERS WERE DECLARED INOPERABLE. UNDER CERTAIN SCENARIOS, MICROSWITCHES IN THE SEQUENCERS MAY FAIL AND CAUSE THE SEQUENCER TO OVERLOAD THE DIESEL GENERATORS OR PREVENT THE AUTOMATIC SEQUENCING OF REQUIRED LOADS.

PI EVENTS FOR 90-3

SSF 08/23/90 LER# 40090018 50.72#: 19216
PWR HIST: ALL MODES TO 100% POWER. PREVIOUSLY UNANALYZED SINGLE FAILURE DISCOVERED 8/27/90.
GROUP : COMPONENT COOLING WATER SYSTEM GROUP
SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
DESC : A POTENTIAL SINGLE FAILURE COULD DEGRADE THE PLANT'S ABILITY TO REMOVE DECAY HEAT FOLLOWING AN ACCIDENT. A FAILURE OF A CONTAINMENT ISOLATION VALVE COULD RESULT IN A LOSS OF COMPONENT COOLING WATER SYSTEM INVENTORY TO THE CONTAINMENT SUMP.

TABLE 8.91 (CONT.)

SHEARON HARRIS

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	2.41	0.00	0.00	2.03	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	5	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	3	0	2	1
FORCED OUTAGE RATE (%)	5	6	0	0	2	0	7	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.59	1.44	0.00	0.00	4.05	0.00	0.52	0.00
CRITICAL HOURS	1708	2078	2183	2208	493	2160	1916	2208
COLLECTIVE RADIATION EXPOSURE	NA	6	4	5	140	8	30	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	3	2	3	6	3	NA
LICENSED OPERATOR	2	0	0	0	2	0	0	NA
OTHER PERSONNEL	6	6	3	1	4	1	3	NA
MAINTENANCE	6	6	5	2	7	4	2	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	1	1	1	2	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.92

SOUTH TEXAS 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 03/29/90 LER# 49890005 50.72#: 18099 POWER: 100
DESC : A GROUND FAULT ON AN MFW BOOSTER PUMP OCCURRED. WHEN THE STANDBY BOOSTER PUMP STARTED, THE RECIRCULATION VALVE FAILED OPEN, CAUSING A LOSS OF THE MFW AND SUBSEQUENT SCRAM ON LOW SG LEVEL.

PI EVENTS FOR 90-2

SSF 04/30/90 LER# 49890007 50.72#: 18369 POWER: 0
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : BECAUSE OF A PROCEDURAL INADEQUACY, THE LICENSEE INADVERTENTLY DISABLED THE CONTAINMENT VENTILATION ISOLATION FUNCTION DURING CORE ALTERATIONS. AN I&C TECH PLACED ALL THREE ESF ACTUATION SYSTEM TRAINS IN TEST.

SSF 06/14/90 LER# 49890012 50.72#: POWER: 0
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : POST-ACCIDENT MONITORING SYSTEM
DESC : TWENTY-TWO MISSING O-RINGS WERE DISCOVERED IN 42 RTD JUNCTION BOXES. BECAUSE THE JUNCTION BOXES DID NOT MEET EQ REQUIREMENTS, LONG TERM, POST-ACCIDENT OPERABILITY OF THE WIDE RANGE RTDS WAS NOT ENSURED. THE CAUSE WAS INADEQUATE INSTALLATION PROCEDURES.

SCRAM 06/20/90 LER# 49890014 50.72#: 18736 POWER: 10
DESC : WHILE ATTEMPTING TO SYNCHRONIZE THE MAIN GENERATOR TO THE GRID, SEVERAL SWITCHYARD BREAKERS OPENED. THIS CAUSED ALL FOUR RCP'S TO TRIP ON UNDERVOLTAGE, CAUSING A REACTOR TRIP.

SSA 06/20/90 LER# 49890014 50.72#: 18736 POWER: 10
DESC : AN EDG STARTED AND THE REACTOR TRIPPED. EMERGENCY BORATION WAS STARTED BECAUSE THERE WAS NO ROD POSITION INDICATION FOR ABOUT 15 MINUTES.

SCRAM 06/28/90 LER# 49890015 50.72#: 18787 POWER: 76
DESC : THE EHC SUPPLY LINE TO THE 3" THROTTLE VALVE RUPTURED, RESULTING IN A MAIN TURBINE TRIP. THIS RESULTED IN A REACTOR TRIP.

PI EVENTS FOR 90-3

SCRAM 07/02/90 LER# 49890016 50.72#: 18816 PWR HIST: POWER OPERATIONS AT 98%
DESC : THE REACTOR TRIPPED ON AN OVERTEMPERATURE DELTA-TEMPERATURE SIGNAL DURING CALIBRATION OF THE TEMPERATURE INSTRUMENTATION DUE TO OPERATOR INATTENTION.

SCRAM 07/16/90 LER# 49890020 50.72#: 18904 PWR HIST: POWER OPERATIONS AT 100%
DESC : AN AUTOMATIC REACTOR SCRAM OCCURRED WHEN AN SSPS TEST SWITCH STAYED IN URGENT ALARM FOLLOWING CHANNEL TESTING. WHEN THE OTHER CHANNEL TEST SWITCH WAS PLACED IN URGENT ALARM, A SCRAM OCCURRED ON 2 OF 2 LOGIC DUE TO FAILURE OF TEST SWITCH.

TABLE 8.92 (CONT.)

SOUTH TEXAS 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.77	0.00	1.28	0.00	0.48	2.78	1.02
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	2	0	1	0	1	2	2
SAFETY SYSTEM ACTUATIONS	2	1	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	0	0	0	2	0
FORCED OUTAGE RATE (%)	8	13	0	8	15	6	24	13
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.77	0.00	1.28	0.60	0.95	5.56	1.02
CRITICAL HOURS	1873	1129	2183	783	1656	2103	360	1962
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	1	67	NA
CAUSE CODES:								
ADMINISTRATIVE	5	5	2	4	3	3	6	NA
LICENSED OPERATOR	2	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	2	1	1	3	2	0	NA
MAINTENANCE	5	7	3	2	6	5	7	NA
DESIGN/INSTALLATION/FABRICATION	4	5	1	4	0	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.93

SOUTH TEXAS 2

PI EVENTS FOR 89-4

SCRAM 10/13/89 LER# 49989026 50.72#: 16846 POWER: 100
DESC : A ROD DROPPED DUE TO A HIGH RESISTANCE CONNECTION IN THE STATIONARY GRIPPER CIRCUIT DIODE. THE DROPPED ROD CAUSED A HIGH NEGATIVE FLUX RATE REACTOR TRIP.

PI EVENTS FOR 90-1

SSA 01/08/90 LER# 49990001 50.72#: 17508 POWER: 0
DESC : DURING A SURVEILLANCE PROCEDURE, A SPRING-TO-CENTER HAND SWITCH TRAVELED PAST CENTER, CAUSING A SAFETY INJECTION ON LOW STEAMLINE PRESSURE. THE SI PUMPS WERE IN PULL-TO-LOCK.

SCRAM 02/02/90 LER# 49990002 50.72#: 17682 POWER: 100
DESC : THE REACTOR TRIPPED FOLLOWING THE OPENING OF THE TRAIN "S" REACTOR TRIP BREAKER DUE TO UNKNOWN CAUSE.

SCRAM 03/26/90 LER# 49990004 50.72#: 18063 POWER: 100
DESC : THE REACTOR TRIPPED ON LOW SG LEVEL DUE TO A FAULTY FEED REGULATOR VALVE.

PI EVENTS FOR 90-2

SCRAM 04/14/90 LER# 49990005 50.72#: 18241 POWER: 100
DESC : THE MAIN TURBINE TRIPPED DUE TO A RUPTURED EHC SUPPLY LINE TO THE GOVERNOR VALVE. A REACTOR TRIP OCCURRED SIMULTANEOUSLY.

PI EVENTS FOR 90-3

SCRAM 09/17/90 .R# 50.72#: 19390 PWR HIST: POWER OPERATIONS AT 100%
DESC : AN OPERATOR MISTAKENLY OPENED THE 'R' REACTOR TRIP BREAKER INSTEAD OF THE BYPASSED 'S' TRIP BREAKER DURING A BREAKER SURVEILLANCE.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	0.00	1.41	2.61	1.30	1.24	0.55	0.51
SCRAMS <= 15% POWER	NA	0	1	0	0	0	0	0
TOTAL SCRAMS	NA	0	3	5	1	2	1	1
SAFETY SYSTEM ACTUATIONS	0	3	3	1	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	NA	NA	0	17	34	29	30	11
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	0.00	2.61	2.59	1.24	1.65	0.51
CRITICAL HOURS	NA	411	1414	1918	771	1614	1822	1970
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	0	5	3	1	1	2	2	NA
LICENSED OPERATOR	0	0	3	0	0	0	0	NA
OTHER PERSONNEL	1	1	1	0	2	1	1	NA
MAINTENANCE	0	8	5	2	2	2	5	NA
DESIGN/INSTALLATION/FABRICATION	2	2	1	5	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	3	1	1	0	NA

TABLE 8.94

ST. LUCIE 1

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/18/90 LER# 33590005 50.72#: 18276 POWER: 0
DESC : OFFSITE POWER WAS LOST TO THE 'B' EMERGENCY ELECTRICAL BUS. AN AUXILIARY TRANSFORMER BREAKER TO THE '1132' 4160V BUS INADVERTENTLY CLOSED WHILE CONTROL FUSES WERE BEING INSTALLED INTO IT.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	0	2	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	0	1	1	2	10	40
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.45	1.97	1.96	1.48
CRITICAL HOURS	2209	2160	2132	1789	2209	507	1530	1348
COLLECTIVE RADIATION EXPOSURE	18	144	21	58	9	227	39	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	1	3	1	2	2	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OTHER PERSONNEL	0	0	2	1	2	0	1	NA
MAINTENANCE	0	0	2	2	3	2	4	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.95

ST. LUCIE 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/14/90 LER# 38990001 50.72#: 17553 POWER: 50

DESC : WHILE THE PLANT WAS INCREASING POWER AFTER AN EARLIER STARTUP, THE MAIN FEEDWATER PUMP TRIPPED ON LOW SUCTION PRESSURE. THE REACTOR TRIPPED ON LOW SG LEVEL BECAUSE AN OPERATOR DID NOT FOLLOW THE APPROVED TURBINE STARTUP PROCEDURE.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.64	0.00	0.00	0.52	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	2	5	0	13	0	20
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.64	0.47	0.00	0.52	0.00	1.64
CRITICAL HOURS	2209	742	1560	2116	2209	1921	2183	1834
COLLECTIVE RADIATION EXPOSURE	18	144	21	58	9	227	39	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	2	1	0	0	1	NA
LICENSED OPERATOR	0	2	1	1	0	1	0	NA
OTHER PERSONNEL	0	1	1	1	0	1	0	NA
MAINTENANCE	0	1	1	3	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	1	0	1	0	0	0	NA

TABLE 8.96

SUMMER

PI EVENTS FOR 89-4

SCRAM 12/02/89 LER# 39589020 50.72#: 17256 POWER: 100
DESC : THE REACTOR TRIPPED ON LOW SG LEVEL JUST AFTER POWER HAD BEEN REDUCED FROM 100 TO 98% FOR TURBINE CONTROL VALVE TESTING. THE TURBINE UNLOADED TO 10% AND CAUSED A LOW SG LEVEL DUE TO SHRINK.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/06/90 LER# 39590003 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE REACTOR BUILDING PURGE EXHAUST RADIATION MONITOR HAS BEEN INOPERABLE FOR PURGE EXHAUST OPERATIONS SINCE INITIAL PLANT STARTUP IN OCTOBER 1982. AN ERROR IN THE COMPUTER SOFTWARE THAT PERFORMS THE SETPOINT CALCULATION CAUSED A NONCONSERVATIVE FAILURE.

SSA 04/12/90 LER# 39590006 50.72#: 18220 POWER: 0
DESC : A DC SYSTEM TRANSIENT CREATED BY REVERSED LEADS TO THE 'B' BATTERY CAUSED THE AC NORMAL FEEDER BREAKER TO THE ESF 1DB BUS TO OPEN. THE 'B' EDG STARTED ON THE LOSS OF BUS 1DB. THE EDG DID NOT LOAD BECAUSE THE FIELD FLASH CIRCUITRY DID NOT ACTUATE.

SSA 04/27/90 LER# 39590007 50.72#: 18309 POWER: 0
DESC : A PROCEDURAL ERROR CAUSED A LOSS OF OFFSITE POWER TO ESF TRAIN 'B' BUS. THIS RESULTED IN AN EDG STARTING AND LOADING THE BUS.

SSA 05/05/90 LER# 39590008 50.72#: 18396 POWER: 0
DESC : AN UNDERVOLTAGE RELAY WAS WIRED WRONG CAUSING THE BUS TO SHED WHEN THE LOAD SEQUENCER WAS REENERGIZED. THE EDG AUTO STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.56	0.54	0.49	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	1	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	1	0	0	3	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	1	0	0	1	0
FORCED OUTAGE RATE (%)	0	28	19	20	8	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.56	1.62	1.46	0.00	0.00	0.00
CRITICAL HOURS	131	1588	1779	1854	2055	1970	959	2208
COLLECTIVE RADIATION EXPOSURE	464	27	8	8	8	52	235	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	3	3	1	1	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	3	0	3	1	0	3	NA
MAINTENANCE	3	4	5	4	2	1	4	NA
DESIGN/INSTALLATION/FABRICATION	2	1	0	1	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.97

SURRY 1

PI EVENTS FOR 89-4

SSA 12/21/89 LER# 28089044 50.72#: 17402 POWER: 100
DESC : HIGH WINDS CAUSED A PIECE OF INSULATION TO BE BLOWN FROM THE TURBINE BUILDING ONTO THE 'A' RESERVE STATION TRANSFORMER, CAUSING A GROUND FAULT. THE '1J' SAFEGUARDS BUS WAS SUPPLIED BY THE SITE SWING DIESEL.

PI EVENTS FOR 90-1

SSF 03/14/90 LER# 28090001 50.72#: 17979 POWER: 100
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : ALL THREE EMERGENCY SEAWATER PUMPS WERE INOPERABLE. THE EMERGENCY ENGINE SHUTDOWN DEVICES WERE TRIPPED, PREVENTING THE PUMPS' DIESEL ENGINES FROM STARTING. THE CAUSE IS UNDER INVESTIGATION.

ESF 03/15/90 LER# 28090002 50.72#: 17988 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC : BOTH CONTAINMENT VACUUM PUMPS WERE INOPERABLE. THE PUMPS' INTERNALS WERE BINDING AS A RESULT OF CORROSION BUILDUP IN THE CASINGS. MOISTURE HAD ACCUMULATED IN THE CASINGS BECAUSE OF A RECENT CHANGE IN PUMP OPERATING FREQUENCY.

PI EVENTS FOR 90-2

SCRAM 05/22/90 LER# 28090004 50.72#: 18550 POWER: 100
DESC : THE REACTOR TRIPPED DUE TO A GENERATOR TRIP/TURBINE TRIP.

SSA 05/22/90 LER# 28090004 50.72#: 18550 POWER: 100
DESC : AN EDG STARTED FROM A LOSS OF THE '1J' EMERGENCY BUS.

PI EVENTS FOR 90-3

SSA 07/01/90 LER# 28090006 50.72#: 18809 PWR HIST: POWER OPERATIONS AT 100%
DESC : AN EDG STARTED WHEN THE '1J' BUS DEENERGIZED, POSSIBLY DUE TO LIGHTENING.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.48	0.00	0.00	0.52	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	2	2	0	1	0	1	1
SIGNIFICANT EVENTS	0	3	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	2	0	1	0	2	0	0
FORCED OUTAGE RATE (%)	100	100	100	8	1	0	12	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.46	0.00	0.52	0.46
CRITICAL HOURS	0	0	0	2088	2184	2160	1924	2176
COLLECTIVE RADIATION EXPOSURE	287	118	139	95	45	22	23	NA
CAUSE CODES:								
ADMINISTRATIVE	2	5	4	4	0	1	2	NA
LICENSED OPERATOR	1	1	2	4	1	0	0	NA
OTHER PERSONNEL	4	4	5	2	0	0	0	NA
MAINTENANCE	7	6	10	8	2	2	2	NA
DESIGN/INSTALLATION/FABRICATION	3	1	3	2	2	0	0	NA
EQUIPMENT FAILURE	1	1	0	1	2	0	0	NA

TABLE 8.9?

SURRY 2

PI EVENTS FOR 89-4

SSF 10/17/89 LER# 28189013 50.72#: POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : THE PLANT WAS NOTIFIED BY THE VENDOR THAT THE METHOD USED TO TEST AND SET THE PZR SAFETY VALVES WAS IN ERROR; PAST TESTS WERE CONDUCTED WITHOUT A WATER LOOP SEAL. THE AS-FOUND LIFT SETPOINTS (TEST PERFORMED CORRECTLY) EXCEEDED T.S. REQUIREMENTS.

PI EVENTS FOR 90-1

SSF 03/14/90 LER# 28090001 50.72#: 17979 POWER: 100
GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
SYSTEM : ULTIMATE HEAT SINK SYSTEM
DESC : ALL THREE EMERGENCY SEAWATER PUMPS WERE INOPERABLE. THE EMERGENCY ENGINE SHUTDOWN DEVICES WERE TRIPPED, PREVENTING THE PUMPS' DIESEL ENGINES FROM STARTING. THE CAUSE IS UNDER INVESTIGATION.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	3.06	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	0	2	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	2	1	0	0	0	0
SIGNIFICANT EVENTS	1	3	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	2	0	1	1	1	0	0
FORCED OUTAGE RATE (%)	0	0	0	34	47	0	7	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.85	0.00	0.98	0.46
CRITICAL HOURS	0	0	0	327	1177	2160	2037	2178
COLLECTIVE RADIATION EXPOSURE	287	118	139	95	45	22	23	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	4	5	4	2	1	NA
LICENSED OPERATOR	1	0	1	4	3	0	0	NA
OTHER PERSONNEL	3	2	4	4	1	0	0	NA
MAINTENANCE	6	4	9	13	6	2	2	NA
DESIGN/INSTALLATION/FABRICATION	4	1	3	3	1	0	0	NA
EQUIPMENT FAILURE	1	1	0	0	0	1	0	NA

TABLE 8.99

SUSQUEHANNA 1

PI EVENTS FOR 89-4

SCRAM 12/24/89 LER# 38789027 50.72#: 17427 POWER: 100
DESC : A REACTOR SCRAM OCCURRED DUE TO FAST CLOSURE OF THE TURBINE CONTROL VALVES ON A MAIN GENERATOR LOAD REJECT SIGNAL. THIS OCCURRED WHEN THE UNIT BREAKER TO THE 230KV SWITCHYARD OPENED AFTER A VEHICLE KNOCKED DOWN A POWER POLE.

PI EVENTS FOR 90-1

SSF 02/15/90 LER# 38790007 50.72#: 17777 POWER: 97
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE HPCI STOP VALVE WOULD NOT OPEN DURING A SURVEILLANCE. THE CAUSE WAS BELIEVED TO BE HIGH STOP VALVE BALANCE CHAMBER PRESSURE IN CONJUNCTION WITH THE MAGNITUDE OF THE HYDRAULIC AND STEAM FORCES.

PI EVENTS FOR 90-2

SSF 06/21/90 LER# 38890008 50.72#: 18748 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : A BREACH OF SECONDARY CONTAINMENT RESULTED FROM PERSONNEL ERROR. A BOUNDARY DOOR, PROPPED OPEN FOR WORK ACTIVITIES, RESULTED IN A SYSTEM ALIGNMENT IN WHICH SECONDARY CONTAINMENT LEAK RATES COULD HAVE EXCEEDED AUTHORIZED LIMITS.

PI EVENTS FOR 90-3

SSF 07/24/90 LER# 38790016 50.72#: 18960
PWR HIST: ALL MODES THROUGH 100% POWER. CONDITION EXISTED SINCE 1989.
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : BECAUSE AN INCORRECT TEMPERATURE WAS SPECIFIED IN THE EQ INDEX DATABASE, TWO SBGT DAMPER ACTUATORS WERE NOT CORRECTLY EQ QUALIFIED. THIS COULD HAVE AFFECTED THE MAINTENANCE OF SECONDARY CONTAINMENT PRESSURE FOLLOWING AN ACCIDENT.

SE 07/24/90 LER# 38790016 50.72#: 0
PWR HIST: UTILITY OPERATED AT ALL POWER LEVELS AND MODES FROM 0% TO 100%.
DESC : A SINGLE FAILURE COULD PREVENT AUTOMATIC INITIATION OF COOLING TO THE EMERGENCY SWITCHGEAR ROOMS DURING A LOSS OF OFFSITE POWER OR A LOSS OF COOLANT ACCIDENT.

SSF 07/26/90 LER# 38790015 50.72#: 18968
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THREE OF 5 EDGS WERE INOPERABLE. WITH THE "B" EDG UNDERGOING OVERHAUL AND THE "E" EDG INOPERABLE BECAUSE A FUEL OIL SAMPLE FAILED TO MEET INSOLUBLE LIMITS, THE "A" EDG FAILED AN OPERABILITY TEST. A SHEARED STARTING AIR REDUCER CAUSED THE LATTER FAILURE.

SSF 08/30/90 LER# 38790018 50.72#:
PWR HIST: ALL MODES TO 100% POWER. PROCEDURAL ERROR EXISTED SINCE AT LEAST 1987. DISCOVERED 8/30/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : A DEFICIENT WORK PROCEDURE RESULTED IN THE INTRODUCTION OF SAND INTO TWO EDG ENGINES DURING RECENT SAND BLASTING OF THE AIR INTERCOOLERS. LESSONS LEARNED FROM A SIMILAR INCIDENT IN 1987 WERE NOT INCORPORATED INTO THE WORK PROCEDURES.

SSF 09/20/90 LER# 50.72#: 19426
PWR HIST: EVENT DISCOVERED DURING REFUELING.
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : PRELIMINARY LLRT IDENTIFIED THAT LEAKAGE OF ALL MSIVS EXCEEDED T.S. LIMIT.

TABLE 8.99 (CONT.)

SUSQUEHANNA 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.16	0.00	0.00	0.46	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	1	0	0	1	0	1	1	4
FORCED OUTAGE RATE (%)	0	22	0	4	2	12	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.16	0.00	0.00	0.00	0.51	0.00	0.00
CRITICAL HOURS	2209	1721	539	2145	2187	1954	2007	1771
COLLECTIVE RADIATION EXPOSURE	17	28	168	73	83	27	24	NA
CAUSE CODES:								
ADMINISTRATIVE	1	6	8	1	2	3	2	NA
LICENSED OPERATOR	0	2	0	0	0	0	0	NA
OTHER PERSONNEL	3	2	6	1	2	1	1	NA
MAINTENANCE	2	3	10	2	4	5	3	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	2	0	1	1	NA
EQUIPMENT FAILURE	0	1	0	0	1	1	0	NA

TABLE 8.100

SUSQUEHANNA 2

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/06/90 LER# 38890002 50.72#: 17704 POWER: 100
DESC : THE MAIN TURBINE TRIPPED DUE TO A MAIN GENERATOR POWER LOAD UNBALANCE ALARM. THE [illegible] OCCURRED WHEN A LOOSE 'STATES' LINK CAUSED A 500KV BREAKER TO OPEN. THIS CAUSED A REACTOR TRIP.

SSF 02/16/90 LER# 38890001 50.72#: 17784 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER FAILING A SURVEILLANCE TEST. THE FLOW CONTROLLER WOULD NOT MAINTAIN A STABLE FLOW CONTROL WHILE IN THE AUTOMATIC MODE. THE PROBLEM WAS AN IMPROPERLY ADJUSTED GOVERNOR NEEDLE VALVE.

SSF 02/28/90 LER# 38890003 50.72#: 17851 POWER: 100
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
DESC : THE AUTOMATIC DEPRESSURIZATION SYSTEM WAS DECLARED INOPERABLE DUE TO LOW PRESSURE IN THE CONTAINMENT INSTRUMENT GAS HEADER. THE PRESSURE DROPPED WHEN A RELIEF VALVE LIFTED UNEXPECTEDLY AND DID NOT RESEAT. THE RELIEF VALVE MAY HAVE BEEN BUMPED.

PI EVENTS FOR 90-2

SCRAM 05/28/90 LER# 38890005 50.72#: 18582 POWER: 100
DESC : THE 'B' FEEDWATER LEVEL CONTROLLER FAILED DOWNSCALE CAUSING A TURBINE TRIP ON A HIGH REACTOR WATER LEVEL. THE REACTOR SCRAMMED ON A TURBINE TRIP.

SSF 06/21/90 LER# 38890008 50.72#: 18748 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : A BREACH OF SECONDARY CONTAINMENT RESULTED FROM PERSONNEL ERROR. A BOUNDARY DOOR, PROPPED OPEN FOR WORK ACTIVITIES, RESULTED IN A SYSTEM ALIGNMENT IN WHICH SECONDARY CONTAINMENT LEAK RATES COULD HAVE EXCEEDED AUTHORIZED LIMITS.

PI EVENTS FOR 90-3

SSF 07/24/90 LER# 38790016 50.72#: 18960
PWR HIST: ALL MODES THROUGH 100% POWER. CONDITION EXISTED SINCE 1989.
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : BECAUSE AN INCORRECT TEMPERATURE WAS SPECIFIED IN THE EQ INDEX DATABASE, TWO SBGT DAMPER ACTUATERS AND TWO EMER SWITCH GEAR ROOM COOLING VALVE ACTUATORS WERE NOT CORRECTLY EQ QUALIFIED. THIS COULD HAVE DEGRADED THE OPERATION OF THESE SYSTEMS.

SSF 07/26/90 LER# 38790015 50.72#: 18968
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THREE OF 5 EDGS WERE INOPERABLE. WITH THE "B" EDG UNDERGOING OVERHAUL AND THE "E" EDG INOPERABLE BECAUSE A FUEL OIL SAMPLE FAILED TO MEET INSOLUBLE LIMITS, THE "A" EDG FAILED AN OPERABILITY TEST. A SHEARED STARTING AIR REDUCER CAUSED THE LATTER FAILURE.

SSF 08/30/90 LER# 38790018 50.72#:
PWR HIST: ALL MODES TO 100% POWER. PROCEDURAL ERROR EXISTED SINCE AT LEAST 1987. DISCOVERED 8/30/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : A DEFICIENT WORK PROCEDURE RESULTED IN THE INTRODUCTION OF SAND INTO TWO EDG ENGINES DURING RECENT SAND BLASTING OF THE AIR INTERCOOLERS. LESSONS LEARNED FROM A SIMILAR INCIDENT IN 1987 WERE NOT INCORPORATED INTO THE WORK PROCEDURES.

TABLE 8.100 (CONT.)

SUSQUEHANNA 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.50	0.56	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	1	0	2	1	3
FORCED OUTAGE RATE (%)	0	7	0	0	0	8	13	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.45	0.50	0.00	0.00	0.00	0.50	0.56	0.00
CRITICAL HOURS	2209	1987	2183	1720	1027	2011	1792	2208
COLLECTIVE RADIATION EXPOSURE	17	28	168	73	83	27	24	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	4	2	4	2	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	4	1	3	2	3	3	2	NA
MAINTENANCE	3	2	3	3	7	3	3	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	1	2	2	0	NA
EQUIPMENT FAILURE	0	1	0	1	0	1	1	NA

TABLE 8.101

THREE MILE ISL 1

PI EVENTS FOR 89-4

SSA 10/30/89 LER# 28989001 50.72#: 16969 POWER: 100
DESC : WHILE TESTING REACTOR BUILDING COOLING AND ISOLATION SYSTEM LOGIC, THE "1C" HIGH PRESSURE SAFETY INJECTION PUMP STARTED AND INJECTED BORON INTO THE REACTOR COOLANT SYSTEM.

SSF 11/14/89 LER# 28989002 50.72#: 17096 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE "B" EDG RADIATOR FAN DRIVE BEARING LUBRICATION LINES WERE DISCOVERED CLOGGED. THIS SAME CONDITION CAUSED THE FAILURE OF THE "A" EDG RADIATOR FAN DRIVE BEARING ON NOV 2,1989. THE CAUSE WAS INADEQUATE INSPECTION AND MAINTENANCE PROCEDURES.

SCRAM 11/29/89 LER# 28989003 50.72#: 17215 POWER: 100
DESC : THE REACTOR TRIPPED ON HIGH PRESSURE WHEN A LOOSE SHIELD WIRE FOR THE TURBINE SPEED ERROR CIRCUIT CAUSED A RAPID LOAD REDUCTION ON THE MAIN TURBINE.

PI EVENTS FOR 90-1

SSF 01/31/90 LER# 28990002 50.72#: 17667 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : BECAUSE OF PROCEDURAL INADEQUACIES, GAPS EXISTED IN THE CONTAINMENT SUMP SCREEN. THIS COULD HAVE RESULTED IN THE INOPERABILITY OF THE LPSI/RHR AND CONTAINMENT SPRAY SYSTEMS.

SCRAM 03/04/90 LER# 28990004 50.72#: 17887 POWER: 0
DESC : DURING PHYSICS TESTING, A LICENSED OPERATOR INADVERTENTLY WITHDREW GROUP 5 RODS WHILE GROUP 6 RODS WERE BEING WITHDRAWN. THIS CAUSED A HIGH POWER SCRAM AT 0.3% POWER.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SSA 07/02/90 LER# 28990006 50.72#: 18815 PWR HIST: POWER OPERATIONS AT 93%
DESC : HPSI INJECTED 375 GALLONS OF BORATED WATER TO REACTOR FOLLOWING INITIATION. REACTOR BUILDING ISOLATION VALVES WERE BEING TESTED AND A TEST PUSH-BUTTON WAS INADVERTENTLY RELEASED.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.54	0.00	0.00	0.00	0.46	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	1	0	0	0	1	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	1	1	0	0
FORCED OUTAGE RATE (%)	18	0	0	0	2	31	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.63	0.00	0.00	0.00	0.46	1.77	0.00	0.00
CRITICAL HOURS	1837	2160	2183	2208	2166	566	2183	2208
COLLECTIVE RADIATION EXPOSURE	20	12	13	14	15	236	14	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	0	0	2	2	0	NA
LICENSED OPERATOR	0	0	0	0	1	2	0	NA
OTHER PERSONNEL	0	0	0	0	0	1	0	NA
MAINTENANCE	1	0	0	0	3	3	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.102

TROJAN

PI EVENTS FOR 89-4

SSF 10/30/89 LER# 34489021 50.72#: 16984 POWER: 97
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PR E SAFETY INJECTION SYSTEM
DESC : BOTH CH NG PUMPS COULD BE RENDERED INOPERABLE IF A SAFETY INJECTION SIGNAL OCCURRED DURING THE FERFORMANCE OF A PERIODIC OPERATING TEST. THESE PUMPS PERFORM THE HIGH HEAD SAFETY INJECTION FUNCTION. PROCEDURE ERROR: VCT ISOLATION VALVES WERE BYPASSED.

SSF 12/12/89 LER# 34489030 50.72#: POWER: 97
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF CREV CHLORINE DETECTORS WERE DECLARED INOPERABLE. A DESIGN REVIEW DISCOVERED THAT BECAUSE OF AN INADEQUATE DESIGN SPECIFICATION THE DETECTOR RESPONSE TIME WAS INADEQUATE.

SSF 12/19/89 LER# 34489030 50.72#: POWER: UNK
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH BOTH TRAINS OF CREV CHLORINE DETECTORS INOPERABLE, A PERSONNEL ERROR RESULTED IN A PROHIBITED CREV LINEUP. THE RESPONSIBLE OPERATOR WAS NOT USING A PROCEDURE TO PERFORM THE LINEUP.

PI EVENTS FOR 90-1

SSF 01/09/90 LER# 34490002 50.72#: POWER: 97
GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP
SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC : THE LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM LIMITS MAY NOT HAVE BEEN MET DURING PLANT HEATUPS AND COOLDOWNS. THE CAUSE WAS A FAILURE TO IMPLEMENT THE LTOP ANALYSIS INTO THE APPLICABLE OPERATING PROCEDURES AND PRECAUTIONS. THIS EXISTED SINCE 1978.

SSF 01/19/90 LER# 34490003 50.72#: 17625 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : A DESIGN BASIS DOCUMENT REVIEW FOUND THAT BECAUSE OF PROCEDURAL INADEQUACIES, BOTH CENTRIFUGAL CHARGING PUMPS COULD BE MADE INOPERABLE. THERE WAS NO ASSURANCE THAT THE BORON INJECTION TANK INLET VALVES WOULD OPEN ON A VALID SAFETY INJECTION SIGNAL.

SSF 01/24/90 LER# 34490004 50.72#: 17617 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A PERSONNEL ERROR RESULTED IN RENDERING THE EMERGENCY CONTROL ROOM VENTILATION SYSTEM INOPERABLE FOR ONE MIN. WITH THE "B" TRAIN INOPERABLE FOR TESTING, AN OPERATOR INADVERTENTLY RENDERED "A" TRAIN'S EMERGENCY POWER SOURCE INOPERABLE.

SSF 02/16/90 LER# 34490005 50.72#: POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH DESIGN BASIS HEAT LOADS AND SUMMER DESIGN TEMPERATURE CONDITIONS, ESF ELECTRICAL EQUIPMENT ROOM TEMPERATURES MAY NOT HAVE REMAINED BELOW THE FSAR DESIGN BASIS OF 104F IF SOME ROOM COOLERS WERE OUT OF SERVICE. THIS WAS DUE TO ORIGINAL DESIGN ERRORS.

SSF 02/21/90 LER# 34490006 50.72#: 17812 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : INTERMEDIATE HEAD INJECTION
DESC : AN INADEQUATE REVISION TO A PERIODIC OPERATING TEST CAUSED BOTH TRAINS OF THE INTERMEDIATE SAFETY INJECTION SYSTEM TO BE RENDERED INOPERABLE IN HOT STANDBY. THIS CONDITION VIOLATED TECHNICAL SPECIFICATION 3.5.2.

SSF 03/12/90 LER# 34490007 50.72#: 17954 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : INADEQUATE CONTROL OF WORK PRACTICES RESULTED IN THE INOPERABILTY OF BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM. WHILE ONE TRAIN WAS INOPERABLE BECAUSE OF AN AIR CLEANUP OPERATION, THE OTHER TRAIN WAS RENDERED INOPERABLE FOR TESTING.

TABLE 8.102 (CONT.)

TROJAN

PI EVENTS FOR 90-2

SSF 04/09/90 LER# 34490012 50.72#: 18214 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE ESF SWITCHGEAR ROOM COOLER FANS DO NOT AUTO RESTART IN SOME ACCIDENT SCENARIOS. FURTHERMORE, PLANT PROCEDURES DID NOT SPECIFY TIMELY RESTORATION OF THE FANS. THE SWITCHGEAR ROOMS COULD EXCEED THEIR DESIGN TEMPERATURE LIMIT IN A MATTER OF MINUTES.

SSF 04/22/90 LER# 34490013 50.72#: 18307 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CREV SYSTEM WAS INOPERABLE DURING FUEL HANDLING OPERATIONS. A DOOR, WHICH WAS REQUIRED TO BE OPEN TO ENSURE THE CREV SYSTEM WAS ABLE TO PRODUCE THE REQUIRED POSITIVE CONTROL ROOM PRESSURE, WAS FOUND CLOSED.

SSF 05/09/90 LER# 34490014 50.72#: 18423 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM WAS RENDERED INOPERABLE BECAUSE THE CONTROL ROOM PARTITION WALL DID NOT MEET SEISMIC 1 CRITERIA. THIS CONDITION EXISTED SINCE INITIAL CONSTRUCTION.

SSF 05/14/90 LER# 34490016 50.72#: 18469 POWER: 0
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : PLANT PROTECTION SYSTEM
DESC : THE CALIBRATION PROCEDURE FOR THE MAIN STEAM FLOW INSTRUMENTS DID NOT INCLUDE BENCHMARKING THE OUTPUTS TO ENSURE THEY CORRESPONDED WITH THE FEED FLOW OUTPUTS. THE RESULT WAS AN INCREASE IN THE UNCERTAINTY LEVEL ASSOCIATED WITH THE REACTOR TRIP SYSTEM.

SSF 05/18/90 LER# 34490015 50.72#: 18520 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE CREV SYSTEM COOLING CAPACITY WAS INADEQUATE. PRIOR TO 1988 (WHEN A SUPPLEMENTAL COOLING SYSTEM WAS INSTALLED) THE CONTROL ROOM MIGHT NOT HAVE BEEN ADEQUATELY COOLED IF OFFSITE POWER REMAINED AVAILABLE DURING AN ACCIDENT.

SSF 05/22/90 LER# 34490022 50.72#: POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN INSPECTION OF FIRE BARRIERS REVEALED DEFICIENCIES IN 31 OF 43 PENETRATION SEALS. THESE DEFICIENCIES, CAUSED BY INADEQUATE INSTALLATION TECHNIQUES AND INSPECTION REQUIREMENTS, AFFECTED 13 FIRE AREA BOUNDARIES.

SSF 05/31/90 LER# 34490017 50.72#: 18603 POWER: 0
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : PLANT PROTECTION SYSTEM
DESC : AS A RESULT OF A DESIGN ERROR (SEPARATION REQUIREMENTS NOT MET), A COMMON MODE FAILURE OF NON-CLASS 1E 12 KV SWITCHGEAR COULD CAUSE: LOSS OF POWER TO ALL RCPS, FAILURE OF THE ESFAS, AND FAILURE OF THE UNDERVOLTAGE OR UNDERFREQUENCY REACTOR TRIP CIRCUITS.

SSF 06/28/90 LER# 34490028 50.72#: 18794 POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : THE AFW SYSTEM WAS DECLARED INOPERABLE. BOTH TRAINS' DIFFERENTIAL PRESSURE CONTROLLERS WERE MISSING THEIR SEISMIC CATEGORY 1 SUPPORTS. THE MOST PROBABLE CAUSE WAS INADEQUATE WORK INSTRUCTIONS FOR PREVIOUS MAINTENANCE ACTIVITIES.

SSF 06/29/90 LER# 34490029 50.72#: 18805 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : INTERMEDIATE HEAD INJECTION
DESC : A PERSONNEL ERROR RESULTED IN LEAVING BOTH SAFETY INJECTION PUMP CONTROL SWITCHES IN "PULL-TO LOCK" WHEN THE PLANT TRANSITIONED FROM MODE 4 TO MODE 3. THE ONCOMING SHIFT SUPERVISOR DISCOVERED THIS DURING A CONTROL BOARD WALKDOWN.

TABLE 8.102 (CONT.)

TROJAN

PI EVENTS FOR 90-3

SSF 07/27/90 LER# 34490006 50.72#: 17812
PWR HIST: ALL MODES UP TO 100% POWER. PROCEDURAL ERROR DISCOVERED ON 7/27/90.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : INTERMEDIATE HEAD INJECTION
DESC : CORRECTIVE ACTIONS PERFORMED FOR LER 34490006 IDENTIFIED AN INADEQUATE PERIODIC OPERATING TEST THAT COULD RENDER THE INTERMEDIATE HEAD AND HIGH HEAD SI SYSTEMS INOPERABLE. THE SUCTION OF THE CCPS AND SIPS WERE LINED UP INCORRECTLY BY THE TEST.

SCRAM 08/09/90 LER# 34490034 50.72#: 19084 PWR HIST: TRIP DURING RUNBACK & ROD INSERTION FROM 100%
DESC : REACTOR TRIP OCCURRED ON LOW SG LEVEL FOLLOWING AN MFP TRIP. THE PUMP TRIPPED DUE TO AN INCORRECTLY SET THRUST BEARING WEAR DETECTOR. THE GENERATOR LOAD AT THE TIME OF THE TRIP WAS BETWEEN 600 AND 650 MW. FULL POWER IS 1135 MW.

SSA 09/07/90 LER# 50.72#: 19310 PWR HIST: POWER OPERATIONS AT 100%
DESC : BOTH EDGS STARTED FOLLOWING AN UNDERVOLTAGE CONDITION ON THE 'H1' AND 'H2' BUSSES. THUNDERSTORMS MAY HAVE CAUSED THE GRID DISTURBANCES WHICH CAUSED THE UNDERVOLTAGE CONDITION.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.56	0.00	0.00	1.00	0.00	0.00	0.00	0.54
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	2	3	6	9	1
FORCED OUTAGE RATE (%)	20	0	0	13	0	1	0	13
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.56	0.00	0.00	1.00	0.00	0.00	0.00	1.08
CRITICAL HOURS	1778	2160	120	1001	2142	1870	0	1853
COLLECTIVE RADIATION EXPOSURE	33	7	346	62	6	37	210	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	3	9	2	6	11	NA
LICENSED OPERATOR	1	0	0	1	1	0	1	NA
OTHER PERSONNEL	4	2	5	4	2	5	2	NA
MAINTENANCE	10	4	5	8	5	11	10	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	2	1	1	6	NA
EQUIPMENT FAILURE	1	0	1	1	0	0	0	NA

TABLE 8.103

TURKEY POINT 3

PI EVENTS FOR 89-4

SSF 12/12/89 LER# 25089018 50.72#: 17327 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : AN ENGINEERING EVALUATION REVEALED THAT A SINGLE FAILURE OF THE HPSI BLOCK CIRCUITRY SWITCH COULD RENDER BOTH TRAINS OF THE HPSI SYSTEM INOPERABLE. THE ROOT CAUSE IS A DESIGN ERROR WHICH OCCURRED DURING PLANT CONSTRUCTION.

SSF 12/22/89 LER# 25090001 50.72#: POWER: UNK
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "A" WASTE MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 45 MIN.

PI EVENTS FOR 90-1

SSF 01/12/90 LER# 25090001 50.72#: 17540 POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "B" MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 46 MIN.

PI EVENTS FOR 90-2

SSA 04/15/90 LER# 25090008 50.72#: 18246 POWER: 0
DESC : DURING A TECH SPEC SURVEILLANCE, PRESSURE SWITCH #3-2007 FAILED. A HIGH CONTAINMENT PRESSURE SIGNAL RESULTED.

SSF 05/18/90 LER# 25090010 50.72#: POWER: 0
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : POST-ACCIDENT MONITORING SYSTEM
DESC : THE PLANT ENTERED MODE 3 WITH BOTH CHANNELS OF THE REACTOR VESSEL LEVEL MONITORING SYSTEM INOPERABLE. AN INCOMPLETE REVIEW OF THE CLEARANCE ORDER BOOK FAILED TO IDENTIFY THAT BOTH CHANNELS WERE OUT OF SERVICE FOR MAINTENANCE.

SCRAM 06/09/90 LER# 25090011 50.72#: 18667 POWER: 30
DESC : A REACTOR TRIP OCCURRED WHEN THE 'C' SG FEED REGULATING VALVE FAILED OPEN. THIS CAUSED A HIGH SG LEVEL WHICH RESULTED IN THE TRIP.

SSF 06/13/90 LER# 25090012 50.72#: 18702 POWER: 50
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, A SINGLE FAILURE OF THE RESET PUSH BUTTON COULD PREVENT BOTH REDUNDANT TRAINS OF THE CONTAINMENT SPRAY SYSTEM FROM ACTUATING AUTOMATICALLY.

SCRAM 06/15/90 LER# 25090013 50.72#: 18714 POWER: 10
DESC : A REACTOR TRIP OCCURRED DUE TO HIGH POWER. OPERATORS REDUCED POWER BELOW 10%RTP AND BLOCKED THE "AT POWER" TRIPS. THE OPERATORS THEN PULLED RODS CAUSING POWER TO RISE ABOVE 10%RTP ENABLING THESE TRIPS.

SSF 06/27/90 LER# 25090014 50.72#: 18784 POWER: 100
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : THE PORV BLOCK VALVES MAY NOT FULLY CLOSE UNDER MAXIMUM DIFFERENTIAL PRESSURE CONDITIONS. THE VALVE OPERATORS ARE ABLE TO PROVIDE THE REQUIRED THRUST, BUT THE TORQUE SWITCH SETTINGS WERE TOO LOW. MANUFACTURER'S THRUST VALUES WERE UNCONSERVATIVE.

TABLE 8.103 (CONT.)

TURKEY POINT 3

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	1.93	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	1	0
TOTAL SCRAMS	0	1	0	0	0	0	2	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	0	2	1	3	0
FORCED OUTAGE RATE (%)	99	45	0	1	0	0	33	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	92.17	0.81	0.00	0.45	0.00	0.00	3.86	0.00
CRITICAL HOURS	22	1231	167	2199	2209	815	518	2208
COLLECTIVE RADIATION EXPOSURE	228	116	52	24	28	192	100	NA
CAUSE CODES:								
ADMINISTRATIVE	3	4	1	3	1	1	4	NA
LICENSED OPERATOR	0	0	0	0	1	1	2	NA
OTHER PERSONNEL	2	2	1	2	0	3	1	NA
MAINTENANCE	3	5	1	3	2	5	5	NA
DESIGN/INSTALLATION/FABRICATION	4	3	3	0	2	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.104

TURKEY POINT 4

PI EVENTS FOR 89-4

SSF 12/12/89 LER# 25089018 50.72#: 17327 POWER: 40
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : AN ENGINEERING EVALUATION REVEALED THAT A SINGLE FAILURE OF THE HPSI BLOCK CIRCUITRY SWITCH COULD RENDER BOTH TRAINS OF THE HPSI SYSTEM INOPERABLE. THE ROOT CAUSE WAS A DESIGN ERROR WHICH OCCURRED DURING PLANT CONSTRUCTION.

SSF 12/22/89 LER# 25090001 50.72#: POWER: UNK
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "A" WASTE MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 45 MIN.

SCRAM 12/23/89 LER# 25089020 50.72#: 17424 POWER: 94
DESC : A REACTOR SCRAM OCCURRED ON LOW SG LEVEL DUE TO THE CLOSURE OF 'A' MSIV. THIS WAS DUE TO CORROSION BUILDUP ON THE MSIV TERMINAL BOX CONTACTS.

PI EVENTS FOR 90-1

SSF 01/12/90 LER# 25090001 50.72#: 17540 POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "B" MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 46 MIN.

SSF 02/28/90 LER# 25190002 50.72#: POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : CONTAINMENT COMBUSTIBLE GAS CONTROL SYSTEM
DESC : AS A RESULT OF A PERSONNEL ERROR, THE UNIT 4 POST ACCIDENT CONTAINMENT VENT SYSTEM WAS INADVERTENTLY RENDERED INOPERABLE (TAGGED OUT) IN ORDER TO PERFORM UNIT 3 TESTING. THIS CONDITION EXISTED FOR 13 DAYS WITHOUT BEING DISCOVERED.

PI EVENTS FOR 90-2

SCRAM 04/09/90 LER# 25190003 50.72#: 18188 POWER: 100
DESC : A REACTOR TRIP WAS CAUSED BY A RCP TRIPPING ON UNDERFREQUENCY. A RELAY FAILURE CAUSED THE UNDERFREQUENCY TRIP.

SSF 06/13/90 LER# 25090012 50.72#: 18702 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, A SINGLE FAILURE OF THE RESET PUSH BUTTON COULD PREVENT BOTH REDUNDANT TRAINS OF THE CONTAINMENT SPRAY SYSTEM FROM AUTOMATICALLY ACTUATING.

PI EVENTS FOR 90-3

SCRAM 08/12/90 LER# 25190008 50.72#: 19106 PWR HIST: POWER OPERATIONS AT 100%
DESC : A REACTOR TRIP OCCURRED AS A RESULT OF A LOW SG LEVEL. AN MFP TRIPPED ON LOW SUCTION BECAUSE A CONDENSATE PUMP TRIPPED. THE CONDENSATE PUMP HAD WETTED MOTOR WINDINGS.

TABLE 8.104 (CONT.)

TURKEY POINT 4

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.54	0.00	0.55	0.58
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	1	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	1	2	2	1	0
FORCED OUTAGE RATE (%)	0	0	7	24	24	0	20	23
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.78	2.31	1.62	0.00	1.10	1.16
CRITICAL HOURS	0	0	562	1730	1855	1942	1814	1723
COLLECTIVE RADIATION EXPOSURE	228	116	52	24	28	192	100	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	2	5	1	0	1	NA
LICENSED OPERATOR	0	0	2	0	1	1	1	NA
OTHER PERSONNEL	1	0	0	4	0	2	1	NA
MAINTENANCE	2	3	3	7	2	2	3	NA
DESIGN/INSTALLATION/FABRICATION	3	2	3	3	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	1	NA

TABLE 8.105

VERMONT YANKEE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 03/21/90 LER# 27190004 50.72#: 18038 POWER: 22
DESC : A PRESSURE SPIKE TO 1060-1070 PSIG DUE TO A BYPASS VALVE NOT ACTING PROPERLY CAUSED A REACTOR SCRAM ON HIGH PRESSURE.

PI EVENTS FOR 90-2

SCRAM 06/01/90 LER# 27190009 50.72#: 18609 POWER: 98
DESC : THE REACTOR SCRAMMED DUE TO A MSIV CLOSING.

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.49	0.46	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	4	1	2	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	4	2	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.49	0.46	0.00
CRITICAL HOURS	2209	985	2014	2208	2209	2031	2154	1485
COLLECTIVE RADIATION EXPOSURE	38	194	34	15	28	28	14	NA
CAUSE CODES:								
ADMINISTRATIVE	2	7	0	3	1	4	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	2	2	1	0	2	1	NA
MAINTENANCE	3	11	3	4	1	4	3	NA
DESIGN/INSTALLATION/FABRICATION	1	2	1	1	0	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.106

VOGTLE 1

PI EVENTS FOR 89-4

SCRAM 10/02/89 LER# 4248901B 50.72#: 16749 POWER: 87
DESC : A MAIN STEAM ISOLATION VALVE CLOSED, CAUSING A LOW SG LEVEL REACTOR TRIP. THE VALVE CLOSED WHEN AN ELECTRICAL GROUND ON A 125VDC 1E DISTRIBUTION PANEL CAUSED ITS CONTROL POWER FUSE TO BLOW.

PI EVENTS FOR 90-1

SCRAM 01/24/90 LER# 42490001 50.72#: 17615 POWER: 90
DESC : THE REACTOR TRIPPED DUE TO A LOW SG LEVEL AFTER THE LOOP 4 INBOARD MSIV CLOSED AFTER A CONTROL POWER FUSE BLEW DURING TESTING.

SSF 02/23/90 LER# 42490003 50.72#: 17825 POWER: 88
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC : A SYSTEM ENGINEER DISCOVERED THAT THE BOTTOM CORE CLAMP BOLTS WERE MISSING FROM TWO CLASS 1E 480V TRANSFORMERS. THESE BOLTS WERE NECESSARY FOR THE SEISMIC INTEGRITY AND OPERABILITY OF THE TRANSFORMERS.

SSA 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
DESC : A TRUCK RAN INTO A TOWER IN THE SWITCHYARD, CAUSING A LOSS OF OFFSITE POWER DUE TO THE ELECTRICAL LINEUP FROM OFFSITE. THE EDG STARTED AND TRIPPED, RESTARTED THEN TRIPPED ON LOW-WATER JACKET PRESSURE. THE EDG WAS STARTED LOCALLY AND LOADED THE BUS.

SSF 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE PLANT LOST AC POWER TO BOTH CLASS 1E BUSES. WITH THE "B" EDG APART FOR MAINTENANCE, OFFSITE POWER WAS LOST. THE "A" EDG AUTO-STARTED AND TRIPPED. THIRTY-SIX MIN LATER, IT WAS STARTED LOCALLY. WITHOUT RHR, RCS TEMP INCREASED 46 DEGREES.

SE 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
DESC : LOSS OF ALL AC 1E (VITAL) POWER AND FAILURE OF SINGLE AVAILABLE EDG TO START AND LOAD, SUBSEQUENT RCS HEATUP DUE TO LOSS OF RHR.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

NONE

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.46	0.00	0.47	0.78	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	1	1	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	3	0	0	0	2	0	0
FORCED OUTAGE RATE (%)	9	12	3	2	5	2	2	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.03	1.03	0.46	0.92	0.47	0.00	0.00	0.47
CRITICAL HOURS	985	1944	2172	2175	2142	1278	1747	2143
COLLECTIVE RADIATION EXPOSURE	NA	11	5	9	8	203	35	NA
CAUSE CODES:								
ADMINISTRATIVE	5	4	3	1	1	6	5	NA
LICENSED OPERATOR	1	1	0	0	0	2	1	NA
OTHER PERSONNEL	7	6	0	1	1	2	1	NA
MAINTENANCE	11	9	3	4	2	4	5	NA
DESIGN/INSTALLATION/FABRICATION	6	1	0	0	1	2	1	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	0	NA

TABLE 8.107

VOGTLE 2

PI EVENTS FOR 89-4

SCRAM 10/11/89 LER# 42589027 50.72#: 16825 POWER: 58
DESC : A FAULTY DIODE IN THE STATIONARY GRIPPER COIL CIRCUITRY FOR A CONTROL ROD CAUSED THE ROD TO FALL INTO THE CORE, RESULTING IN A REACTOR TRIP.

SCRAM 12/02/89 LER# 42589031 50.72#: 17247 POWER: 100
DESC : THE TURBINE TRIPPED ON HIGH MOISTURE SEPARATOR REHEATER LEVEL. THE TURBINE TRIP CAUSED A REACTOR TRIP. THE EVENT WAS CAUSED, IN PART, BY AN IMPROPER REASSEMBLY OF THE MOISTURE SEPARATOR REHEATER HIGH LEVEL DUMP VALVE.

PI EVENTS FOR 90-1

SCRAM 03/20/90 LER# 42590002 50.72#: 18027 POWER: 100
DESC : DUE TO THE LOSS OF SWITCHYARD AT UNIT 1 A MAIN GENERATOR/TURBINE TRIP OCCURRED WITH A REACTOR SCRAM.

SSA 03/20/90 LER# 42590002 50.72#: 18027 POWER: 100
DESC : LOSS OF THE 2B RESERVE AUXILIARY TRANSFORMER DUE TO AN INCIDENT AT UNIT 1 CAUSED EDG 2B TO START AND LOAD BUS 1E.

PI EVENTS FOR 90-2

SSF 05/01/90 LER# 42590006 50.72# POWER: 100
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : LEAK MONITORING SYSTEM
DESC : WITH ONE REACTOR COOLANT LEAKAGE DETECTION SYSTEM INOPERABLE FOR REPAIR, A PERSONNEL ERROR RESULTED IN RENDERING TWO MORE REDUNDANT LEAKAGE DETECTION SYSTEMS INOPERABLE, WHICH VIOLATED TECHNICAL SPECIFICATIONS.

SCRAM 05/06/90 LER# 42590007 50.72#: 18401 POWER: 100
DESC : A REACTOR TRIP OCCURRED ON LOW S/G LEVEL. THE CAUSE WAS DUE TO CLOSURE OF MSIV '2HV3026A' - DUE TO A FAILED RELAY.

PI EVENTS FOR 90-3

SSF 09/16/90 LER# 42590012 50.72#: 19380
PWR HIST: EVENT DISCOVERED DURING HOT SHUTDOWN.
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : A PERSONNEL ERROR RESULTED IN TAGGING OUT BOTH TRAINS OF THE CONTAINMENT SPRAY SYSTEM WHILE IN MODE 4. THIS CONDITION EXISTED FOR SEVEN MINUTES.

TABLE 8.107 (CONT.)

VOGTLE 2

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	0.00	1.12	0.45	0.97	0.47	0.47	0.00
SCRAMS <= 15% POWER	NA	0	1	0	0	0	0	0
TOTAL SCRAMS	NA	0	3	1	2	1	1	0
SAFETY SYSTEM ACTUATIONS	NA	1	0	1	0	1	0	0
SIGNIFICANT EVENTS	NA	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	NA	2	0	0	0	0	1	1
FORCED OUTAGE RATE (%)	NA	NA	4	1	5	2	4	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	1.05	0.45	1.46	0.47	0.94	0.00
CRITICAL HOURS	NA	83	1793	2199	2059	2127	2124	1821
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	3	4	1	0	2	2	NA
LICENSED OPERATOR	NA	3	2	0	0	0	2	NA
OTHER PERSONNEL	NA	4	2	1	3	1	1	NA
MAINTENANCE	NA	8	8	3	3	2	4	NA
DESIGN/INSTALLATION/FABRICATION	NA	1	1	1	1	1	1	NA
EQUIPMENT FAILURE	NA	1	0	1	1	0	1	NA

TABLE 8.108

WASH. NUCLEAR 2

PI EVENTS FOR 89-4

SSF 11/21/89 LER# 39789043 50.72#: 17162 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HIGH PRESSURE CORE SPRAY SYSTEM WAS DECLARED INOPERABLE AFTER THE MINIMUM FLOW VALVE APPEARED TO HAVE FAILED DURING A TEST. TROUBLESHOOTING REVEALED THAT THE TEST RETURN VALVE TO THE SUPPRESSION POOL HAD FAILED 10% OPEN DIVERTING SYSTEM FLOW.

SSF 11/28/89 LER# 39789044 50.72#: 17211 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : HPCS WAS DECLARED INOPERABLE DUE TO ASSOCIATED ELECTRICAL CIRCUITS WHICH WERE DETERMINED TO HAVE UNDERSIZED THERMAL OVERLOAD DEVICES. CONDITION COULD RESULT IN A LOSS OF THESE CIRCUITS DURING UV CONDITIONS COINCIDENT WITH HIGH AMBIENT TEMPERATURES.

PI EVENTS FOR 90-1

SSF 03/08/90 LER# 39790006 50.72#: 17929 POWER: 99
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN EXPANDED 10CFR50 APPENDIX R ANALYSIS IDENTIFIED 12 CABLES THAT COULD PREVENT AN ORDERLY PLANT SHUTDOWN IN THE EVENT OF A DESIGN BASIS FIRE. THE ARCHITECT-ENGINEER FAILED TO THOROUGHLY IMPLEMENT APPENDIX R REQUIREMENTS INTO THE EQUIPMENT DESIGN.

PI EVENTS FOR 90-2

SSF 05/27/90 LER# 39790012 50.72#: 18581 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BOTH EDGS CONTAINED ORIGINAL MANUFACTURING DEFECTS; SHORTED GENERATOR FIELD POLE WINDINGS. THE WINDING PROCESS WAS DEFECTIVE IN THAT THE WINDING INSULATION WAS ABRAIDED AND NOT FULLY ENCAPSULATED. ADDITIONALLY, THE WRONG ENCAPSULATION RESIN WAS USED.

PI EVENTS FOR 90-3

SSF 08/06/90 LER# 39790016 50.72#:
PWR HIST: S/U MODE TO 100% POWER. CONDITION WAS NOT RECOGNIZED FOR 15 DAYS.
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE BECAUSE THE TURBINE STEAM ISOLATION VALVE HAD AN UNACCEPTABLE CLOSING TIME. BECAUSE OF PERSONNEL ERROR, THIS WAS NOT RECOGNIZED UNTIL 15 DAYS AFTER THE EVENT.

SSF 08/30/90 LER# 39790017 50.72#: 19252
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 100% POWER.
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE WHEN A CRACKED CELL WAS DISCOVERED IN THE HPCS DIESEL GENERATOR BATTERY.

SSA 09/07/90 LER# 50.72#: 19309 PWR HIST: POWER OPERATIONS AT 95%
DESC : EDG #2 STARTED FOLLOWING AN UNDERVOLTAGE CONDITION ON THE 'SM8' VITAL BUS. SEVERE WEATHER IN THE AREA MAY HAVE CAUSED THE GRID DISTURBANCES WHICH CAUSED THE UNDERVOLTAGE CONDITION.

SSF 09/12/90 LER# 50.72#: 19345
PWR HIST: CONDITION EXISTED FOR AN UNDETERMINED PERIOD OF TIME. DISCOVERED AT 100% POWER.
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : AN NRC INSPECTION DISCOVERED THE SUPPRESSION POOL PRESSURE LIMIT CURVE IN THE EMERGENCY OPERATING PROCEDURES IS NON-CONSERVATIVE. THE CONSEQUENCES OF THIS ARE UNKNOWN BUT COULD CHALLENGE THE DESIGN OF THE SRV TAIL PIPES AND CONTAINMENT LOADING.

TABLE 8.108 (CONT.)

WASH. NUCLEAR 2

PI EVENTS FOR 90-3 (CONT.)

SSF 09/17/90 LER# 50.72#: 19395
PWR HIST: ALL MODES UP TO 100% POWER. ORIGINAL DESIGN ERROR DISCOVERED 9/17/90.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : A POTENTIAL COMMON MODE FAI[illegible] OF BOTH EDGS EXISTED SINCE INITIAL PLANT STARTUP. THE STATIC VOLTAGE REGULATOR EXCITER [illegible]T REACHED TEMPERATURES HIGH ENOUGH TO CAUSE SOLID STATE COMPONENT MALFUNCTION.

SSF 09/27/90 LER# 50.72#: 19479
PWR HIST: ALL MODES TO 100% POWER. PREVIOUSLY UNANALYZED CONDITION DISCOVERED 9/27/90.
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : REACTOR RECIRCULATION SYSTEM
DESC : DURING AN ATWS CONDITION, THE REACTOR RECIRC PUMPS ARE SUPPOSED TO TRIP AND REMAIN OFF, THUS ADDING NEGATIVE REACTIVITY. A SIMULATOR EVALUATION REVEALED THAT UNDER CERTAIN CONDITIONS, THE RECIRC PUMPS COULD RESTART. THIS IS CURRENTLY BEING INVESTIGATED.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.49	1.30	1.08	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	2	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	2	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	5	4	2	1	1	5
FORCED OUTAGE RATE (%)	10	4	0	11	0	0	0	9
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.50	0.49	0.00	1.08	0.00	0.00	0.00	0.77
CRITICAL HOURS	1992	2028	770	1850	2209	2160	494	1300
COLLECTIVE RADIATION EXPOSURE	44	36	361	44	52	40	399	NA
CAUSE CODES:								
ADMINISTRATIVE	4	5	7	6	3	3	3	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	2	5	1	0	1	1	NA
MAINTENANCE	4	3	13	5	2	5	5	NA
DESIGN/INSTALLATION/FABRICATION	1	4	6	6	2	2	2	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.109

WATERFORD 3

PI EVENTS FOR 89-4

SSA 10/12/89 LER# 38289019 50.72#: 16834 POWER: 0
DESC : AN ELECTRICIAN PULLED THE WRONG FUSES ON THE UNIT AUXILIARY TRANSFORMER. THE NORMAL SUPPLY BREAKER OPENED, BUT THE EMERGENCY DIESEL GENERATOR WAS BLOCKED FROM STARTING.

SSA 12/23/89 LER# 38289024 50.72#: 17419 POWER: 0
DESC : FRV OPENED AFTER A MANUAL SCRAM WHEN ICE MELTED IN THE AIR LINE TO THE FRV, CAUSING SG OVERFEEDING AND SUBSEQUENT SAFETY INJECTION ACTUATION SIGNAL ON LOW RCS PRESSURE.

PI EVENTS FOR 90-1

GSF 02/23/90 LER# 38290001 50.72#: 17865 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : BECAUSE OF INADEQUATE ADMIN CONTROLS, TWO CONTROLLED VENTILATION AREA SYSTEM (CVAS) AIR LOCK DOORS WERE PROPPED OPEN. THIS WOULD HAVE PREVENTED THE CV.S FROM ESTABLISHING THE REQUIRED NEGATIVE PRESSURE FOLLOWING A SAFETY INJECTION SIGNAL.

SCRAM 03/22/90 LER# 38290002 50.72#: 18047 POWER: 100
DESC : WHILE TROUBLESHOOTING THE CONTROL ELEMENT DRIVE SYSTEM AND TRANSFERRING CEA BACK TO THE HOLD BUS, TWO CEA'S DROPPED INTO THE CORE, CAUSING A SCRAM ON DNBR.

SCRAM 03/29/90 LER# 38290003 50.72#: 18094 POWER: 100
DESC : A MAJOR GRID FAULT CAUSED A GENERATOR TRIP, TURBINE TRIP, AND REACTOR SCRAM.

SSA 03/29/90 LER# 38290003 50.72#: 18094 POWER: 100
DESC : A MAJOR GRID FAULT CAUSED A LOSS OF THE 'B' 4160V SAFETY BUS, WHICH WAS RESTORED WHEN THE 'B' DIESEL GENERATOR STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-2

NONE

PI EVENTS FOR 90-3

SCRAM 08/25/90 LER# 38290012 50.72#: 19200 PWR HIST: POWER OPERATIONS AT 100%
DESC : A SCRAM OCCURRED DUE TO ELECTRICAL PERTURBATIONS FOLLOWING A LIGHTNING STRIKE AND TRANSFORMER FIRE.

SSA 08/25/90 LER# 38290012 50.72#: 19200 PWR HIST: POWER OPERATIONS AT 100%
DESC : THE EDG STARTED WHEN A LIGHTNING STRIKE CAUSED A MOMENTARY LOSS OF POWER TO THE 'A' BUS.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.63	0.00	0.00	0.52	0.00	1.11	0.00	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	0	2	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	0	2	1	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	1	0	0
FORCED OUTAGE RATE (%)	2	3	0	6	2	3	0	3
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.48	0.00	1.05	0.96	1.11	0.00	0.92
CRITICAL HOURS	1590	2101	2183	1907	1042	1797	2183	2164
COLLECTIVE RADIATION EXPOSURE	36	9	5	38	194	17	5	NA
CAUSE CODES:								
ADMINISTRATIVE	4	2	1	5	1	0	2	NA
LICENSED OPERATOR	0	0	0	1	2	0	0	NA
OTHER PERSONNEL	3	1	2	1	2	1	2	NA
MAINTENANCE	3	1	3	6	5	3	3	NA
DESIGN/INSTALLATION/FABRICATION	4	2	0	3	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.110

WOLF CREEK

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/06/90 LER# 48290001 50.72#: 17705 POWER: 100
DESC : A DIFFERENTIAL OVERCURRENT RELAY TRIPPED A REACTOR COOLANT PUMP. THE REACTOR SUBSEQUENTLY TRIPPED ON LOW REACTOR COOLANT FLOW. THE CAUSE IS UNKNOWN.

SSF 03/14/90 LER# 48290002 50.72#: 17978 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BECAUSE OF A DESIGN PROBLEM, THE HALON FIRE PROTECTION SYSTEM FOR SITHER OF THE ESF SWITCHGEAR ROOMS COULD HAVE DISABLED BOTH TRAINS OF CLASS 1E AIR CONDITIONER UNITS. THE LONG-TERM OPERATION OF THE AFFECTED SAFETY SYSTEMS COULD HAVE BEEN DEGRADED.

PI EVENTS FOR 90-2

SSF 04/10/90 LER# 48290005 50.72#: POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : INADEQUATE ADMINISTRATIVE CONTROL OF CONTROL BUILDING PRESSURE BOUNDARY DOORS RESULTED IN RENDERING THE CONTROL ROOM VENTILATION SYSTEM INCAPABLE OF PERFORMING ITS FUNCTION. ADDITIONAL EVENTS OF THIS NATURE MAY HAVE OCCURRED PREVIOUSLY.

SCRAM 05/14/90 LER# 48290011 50.72#: 18475 POWER: 18
DESC : THE STEAM DUMPS BEGAN TO OSCILLATE CAUSING A HIGH SG LEVEL MFP TRIP. SUBSEQUENT LOW SG LEVEL CAUSED A REACTOR SCRAM.

SCRAM 05/17/90 LER# 48290012 50.72#: 18507 POWER: 1
DESC : A REACTOR SCRAM OCCURRED BECAUSE OF A LOW SG LEVEL IN 'C' SG. THE 'C' SG ATMOSPHERIC DUMP VALVE FAILED OPEN CAUSING THE SG LOW LEVEL CONDITION.

SCRAM 05/19/90 LER# 48290013 50.72#: 18526 POWER: 97
DESC : ONE OUT OF 3 HIGH LEVEL SIGNALS IN THE MOISTURE SEPARATOR REHEATERS CAUSED A TURBINE TRIP/REACTOR TRIP. THE REASON WHY THE DUMP VALVE DID NOT CONTROL THE HIGH LEVEL IS UNKNOWN.

SSA 06/13/90 LER# 48290014 50.72#: 18701 POWER: 100
DESC : THE EDG STARTED ON LOW VOLTAGE TO ONE OF TWO 4.16KV BUSES. A TRANSFORMER IN THE SWITCHYARD BLEW UP CAUSING THIS EVENT.

ESF 06/19/90 LER# 48290016 50.72#: POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : CHANNEL "B" OF THE UNIT VENT EFFLUENT RAD MONITOR WAS INOPERABLE DUE TO A MECHANICAL FAILURE. THE "A" MONITOR SPIKED AND ENTERED AN ACCIDENT MODE, WHICH RENDERED IT INOPERABLE. OPERATORS USING THE WRONG PROCEDURE DID NOT RETURN CHANNEL "A" TO SERVICE.

PI EVENTS FOR 90-3

NONE

TABLE 8.110 (CONT.)

WOLF CREEK

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.95	0.00	0.00	0.00	0.63	1.82	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	2	0	0	0	1	3	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	2	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	2	0	1	2	0
FORCED OUTAGE RATE (%)	0	2	0	0	0	3	6	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.95	0.00	0.00	0.00	0.63	1.82	0.00
CRITICAL HOURS	146	2115	2183	2208	2209	1577	1102	2208
COLLECTIVE RADIATION EXPOSURE	229	5	2	1	7	84	91	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	1	3	0	1	6	NA
LICENSED OPERATOR	1	3	0	1	0	0	2	NA
OTHER PERSONNEL	4	2	0	1	0	0	1	NA
MAINTENANCE	3	7	3	5	0	1	11	NA
DESIGN/INSTALLATION/FABRICATION	6	1	1	0	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.111

YANKEE-ROWE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSA 03/08/90 LER# 02990001 50.72#: 17927 POWER: 100
DESC : POWER WAS LOST TO THE EMERGENCY BUS WHILE CONDUCTING THE HPSI PUMP OPERABILITY TEST. THE DIESEL GENERATOR STARTED, BUT THE OUTPUT BREAKER WOULD NOT CLOSE, THE NORMAL BREAKER WAS RECLOSED TO REENERGIZE THE BUS.

PI EVENTS FOR 90-2

SSA 06/23/90 LER# 02990002 50.72#: 18755 POWER: 18
DESC : THE CONTROL ROOM OPERATOR INADVERTENTLY DEENERGIZED THE 480V BUS '4-1' CAUSING THE EDG TO START AND LOAD THE BUS.

SE 06/23/90 LER# 50.72#: 18756 POWER: 18
DESC : STUCK CONTROL ROD DURING ROD DROP TEST.

PI EVENTS FOR 90-3

SSF 08/11/90 LER# 02990006 50.72#: 19092
PWR HIST: EVENT DISCOVERED DURING COLD SHUTDOWN.
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : ALL THREE EDGS WERE DECLARED INOPERABLE. EDGS 2 AND 3 FAILED TO SATISFY LOADING REQUIREMENTS DURING SURVEILLANCE TESTING. THE CAUSE OF THE FAILURES IS UNDER INVESTIGATION. COMMON FAILURE CAUSES ARE BEING CONSIDERED.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	1	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	1	0	1	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	2	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	0	1	4	14	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.53	0.94	0.52	0.00	0.00	0.00	0.00
CRITICAL HOURS	1014	1891	2122	1915	2209	2160	2000	0
COLLECTIVE RADIATION EXPOSURE	195	23	10	18	11	8	25	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	1	3	0	0	0	NA
LICENSED OPERATOR	0	0	0	1	0	0	1	NA
OTHER PERSONNEL	0	3	2	3	1	0	1	NA
MAINTENANCE	4	3	3	4	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	1	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.112

ZION 1

PI EVENTS FOR 89-4

SE 10/22/89 LER# 50.72#: POWER: 0
DESC : SURFACE AND SUBSURFACE CRACK INDICATIONS WERE FOUND BY UNTRASONIC TESTING (UT) OF THE TRANSITION CONE UPPER GIRTH WELD (GIRTH WELD) OF THE STEAM GENERATOR.

SSF 11/17/89 LER# 29589024 50.72#: 17181 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY BLDG. ENVIRONMENTAL CONTROL SYS
DESC : THE EDG ROOM VENTILATION SYSTEM DAMPERS HAVE EXPERIENCED FREQUENT FAILURES. UPON FAILURE, THE T.S. DIRECTS OPERATORS TO CLOSE THE DAMPERS, WHICH CONTRADICTS THE FSAR. THE EDG LONG TERM OPERABILITY IS IN QUESTION.

SSF 12/18/89 LER# 29589025 50.72#: POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : TWO AUX FEED MOVS FAILED TO FULLY SHUT WITH THE 1B PUMP RUNNING. AN ENGINEERING REVIEW DISCOVERED THAT EIGHT AUX FEED MOVS HAD BEEN REPLACED BY VALVES WITH UNDERSIZED ACTUATORS. THE CAUSE OF THE EVENT WAS AN INADEQUATE REVIEW OF A PLANT MODIFICATION.

PI EVENTS FOR 90-1

SCRAM 01/27/90 LER# 29590004 50.72#: 17642 POWER: 39
DESC : THE 1D S/G FEEDWATER REGULATING VALVE WAS PLACED IN MANUAL FOR MAINTENANCE. THE S/G WATER LEVEL WENT HIGH DUE TO INATTENTION OF THE OPERATOR, CAUSING THE TURBINE TO TRIP. THIS RESULTED IN A REACTOR TRIP.

PI EVENTS FOR 90-2

SSF 05/12/90 LER# 29590013 50.72#: POWER: 6
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
DESC : THE ISOLATION VALVE SEAL WATER SYSTEM WAS INOPERABLE BECAUSE BOTH MAKEUP VALVES WERE SHUT. THE ROOT CAUSE WAS A PROCEDURAL DEFICIENCY, IN THAT A TECHNICAL STAFF SURVEILLANCE VALVE LINEUP CONFLICTED WITH THE STANDARD OPERATING INSTRUCTION LINEUP.

PI EVENTS FOR 90-3

SSF 07/27/90 LER# 29590016 50.72#: 18982
PWR HIST: EVENT DISCOVERED DURING OPERATION AT 98% POWER.
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AFTER RECEIVING A HIGH RADIATION ISOLATION SIGNAL DURING A TANK DISCHARGE, THE DISCHARGE ISOLATION VALVE SHUT BUT THEN REOPENED. THE ALARM WAS DETERMINED TO BE SPURIOUS, BUT THE CAUSE OF THE VALVE FAILURE COULD NOT BE DETERMINED.

SCRAM 08/13/90 LER# 29590017 50.72#: 19113 PWR HIST: POWER OPERATIONS AT 95%
DESC : A REACTOR TRIP OCCURRED ON A TURBINE TRIP WHEN AN OPERATOR TRIPPED UNIT 1'S TURBINE WHEN HE WAS SUPPOSED TO TRIP UNIT 2'S TURBINE.

TABLE 8.112 (CONT.)

ZION 1

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.66	0.00	0.00	0.00	0.93	0.00	0.47
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	1	1	0	2	0	1	1
FORCED OUTAGE RATE (%)	11	31	0	9	0	48	81	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.31	0.00	1.28	0.00	0.93	0.00	0.00
CRITICAL HOURS	1981	1527	2183	1559	0	1078	459	2130
COLLECTIVE RADIATION EXPOSURE	241	42	12	82	176	57	262	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	2	4	4	3	3	NA
LICENSED OPERATOR	0	1	0	0	1	2	0	NA
OTHER PERSONNEL	1	1	1	4	3	2	2	NA
MAINTENANCE	3	4	1	5	5	6	5	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	0	1	0	0	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.113

ZION 2

PI EVENTS FOR 89-4

SSF 11/17/89 LER# 29589024 50.72#: 17181 POWER: 40
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY BLDG. ENVIRONMENTAL CONTROL SYS
DESC : THE EDG ROOM VENTILATION SYSTEM DAMPERS HAVE EXPERIENCED FREQUENT FAILURES. UPON FAILURE, THE T.S. DIRECTS OPERATORS TO CLOSE THE DAMPERS, WHICH CONTRADICTS THE FSAR. THE EDG LONG TERM OPERABILITY IS IN QUESTION.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/06/90 LER# 30490005 50.72#: 18155 POWER: 0
DESC : '2B' EDG AUTO STARTED ON UNDERVOLTAGE WHEN BUS '249' WAS TAKEN OUT OF SERVICE FOR A MODIFICATION. INADEQUATE OOS PREPARATION AND REVIEW CAUSED BUS '249' TO BE DEENERGIZED PRIOR TO ENSURING '2B' EDG WOULD NOT START.

PI EVENTS FOR 90-3

SSF 07/27/90 LER# 29590016 50.72#: 18982
PWR HIST: EVENT DISCOVERED DURING COLD SHUTDOWN.
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AFTER RECEIVING A HIGH RADIATION ISOLATION SIGNAL DURING A TANK DISCHARGE, THE DISCHARGE ISOLATION VALVE SHUT BUT THEN REOPENED. THE ALARM WAS DETERMINED TO BE SPURIOUS, BUT THE CAUSE OF THE VALVE FAILURE COULD NOT BE DETERMINED.

SCRAM 09/07/90 LER# 30490010 50.72#: 19312 PWR HIST: POWER OPERATIONS AT 98%
DESC : A TURBINE TRIP CAUSED A REACTOR TRIP FOLLOWING A FAILURE OF THE CONDENSER RUBBER BOOT WHICH CAUSED A LOSS OF CONDENSER VACUUM.

SCRAM 09/22/90 LER# 50.72#: 19445 PWR HIST: POWER OPERATIONS AT 40%
DESC : THE MAIN TRANSFORMER EXPLODED AND A FIRE RESULTED. THE TURBINE TRIPPED FOLLOWED BY A REACTOR TRIP.

TYPE	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	4.66	0.00	0.00	0.00	0.00	0.00	0.00	5.92
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	0	0	0	0	2
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	1	0	0	1
FORCED OUTAGE RATE (%)	11	21	1	0	3	27	0	72
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.33	1.15	0.46	0.00	0.45	0.71	0.00	5.92
CRITICAL HOURS	430	1734	2183	2208	2209	1411	0	338
COLLECTIVE RADIATION EXPOSURE	241	42	12	82	176	57	262	NA
CAUSE CODES:								
ADMINISTRATIVE	10	4	2	0	3	4	1	NA
LICENSED OPERATOR	3	1	1	0	0	0	0	NA
OTHER PERSONNEL	6	3	0	1	1	1	4	NA
MAINTENANCE	13	4	2	1	2	5	4	NA
DESIGN/INSTALLATION/FABRICATION	3	0	2	0	0	1	0	NA
EQUIPMENT FAILURE	1	0	1	0	0	0	0	NA

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8. DATA TABLES

OVERALL INDUSTRY SUMMARY

PERFORMANCE INDICATORS

CRITICAL HOURS

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TABLE 9.1

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
ARKANSAS 1	0.67	0.00			0.33	0.00			0.33	0.00			1.83	0.50			5.67	0.00			0.49	0.00		
ARKANSAS 2	0.67	1.00			1.17	0.50			0.50	0.00			0.83	1.00			7.83	2.50			0.79	0.98		
BEAVER VALLEY 1	0.50	0.00			0.50	0.00			0.00	0.00			0.00	0.00			15.67	3.00			1.37	0.26		
BEAVER VALLEY 2	0.17	0.50			0.17	0.00			0.00	0.00			0.00	0.00			10.33	3.50			0.33	0.00		
BIG ROCK POINT	0.17	0.00			0.00	0.00			0.00	0.00			0.83	1.00			5.33	10.50			0.43	0.63		
BRAIDWOOD 1	0.67	1.00			0.67	1.00			0.33	0.00			0.50	1.50			3.67	7.00			0.26	0.52		
BRAIDWOOD 2	0.67	0.50			0.17	0.50			0.17	0.00			0.50	1.00			4.00	9.00			0.08	0.00		
BROWNS FERRY 1	NA	NA			NA	NA			NA	NA			NA	NA			NA	NA			NA	NA		
BROWNS FERRY 2	NA	NA			NA	NA			NA	NA			NA	NA			NA	NA			NA	NA		
BROWNS FERRY 3	NA	NA			NA	NA			NA	NA			NA	NA			NA	NA			NA	NA		
BRUNSWICK 1	0.17	0.50			0.17	0.00			0.17	0.50			1.00	1.50			9.67	12.50			0.11	0.00		
BRUNSWICK 2	0.67	2.00			1.67	2.50			0.50	1.00			1.33	2.50			10.00	24.00			0.27	0.56		
BYRON 1	0.50	1.00			0.00	0.00			0.00	0.00			0.33	1.00			1.33	4.00			0.24	0.72		
BYRON 2	0.17	0.00			0.33	0.50			0.00	0.00			0.17	0.50			2.83	0.00			0.24	0.00		
CALLAWAY	0.50	1.00			0.33	0.00			0.00	0.00			0.17	0.00			1.67	2.50			0.26	0.24		
CALVERT CLIFFS 1	0.00	0.00			0.33	0.50			0.17	0.00			2.33	3.00			2.50	7.50			0.00	0.00		
CALVERT CLIFFS 2	0.00	0.00			0.00	0.00			0.33	0.00			1.50	1.50			0.00	0.00			0.00	0.00		
CATAWBA 1	0.00	0.00			0.00	0.00			0.33	0.50			1.33	1.00			8.00	14.50			0.98	1.46		
CATAWBA 2	0.00	0.00			0.00	0.00			0.00	0.00			1.67	1.00			3.67	0.00			0.15	0.00		

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
CLINTON 1	0.33	0.50	0.17	0.00	0.50	0.50	0.83	0.50	27.67	22.00	1.41	0.85												
COMANCHE PEAK 1	3.00	3.00	1.00	1.00	0.00	0.00	1.67	2.00	NA	8.50	NA	2.48												
COOK 1	0.00	0.00	0.00	0.00	0.00	0.00	1.00	2.00	0.67	0.00	0.00	0.00												
COOK 2	0.33	0.50	0.17	0.00	0.17	0.00	1.00	2.00	5.00	1.50	0.16	0.24												
COOPER STATION	0.33	0.00	0.83	1.00	0.00	0.00	0.83	1.00	1.50	0.00	0.08	0.00												
CRYSTAL RIVER 3	0.17	0.00	0.83	0.00	0.33	0.00	1.50	0.50	21.50	4.00	1.31	2.13												
DAVIS-BESSE	0.33	0.00	0.50	1.50	0.00	0.00	0.33	0.50	19.83	50.00	0.58	0.00												
DIABLO CANYON 1	0.33	0.50	0.33	0.50	0.00	0.00	0.33	0.50	1.50	3.00	0.16	0.23												
DIABLO CANYON 2	0.17	0.00	0.00	0.00	0.00	0.00	0.33	0.50	4.17	0.50	0.44	0.33												
DRESDEN 2	0.50	0.00	0.33	0.50	0.67	0.50	0.83	1.00	4.50	3.50	0.25	0.27												
DRESDEN 3	0.33	0.00	0.00	0.00	0.17	0.00	0.67	0.50	5.00	0.00	0.55	0.00												
DUANE ARNOLD	0.83	1.50	0.67	0.50	0.00	0.00	0.67	0.50	16.33	21.00	1.21	2.77												
FARLEY 1	0.17	0.00	0.17	0.00	0.00	0.00	0.50	0.00	1.67	2.00	0.08	0.23												
FARLEY 2	1.00	0.50	0.17	0.00	0.00	0.00	0.33	0.00	4.67	2.50	0.24	0.27												
FERMI 2	0.33	0.50	0.33	0.00	0.00	0.00	1.00	1.00	4.67	3.00	0.08	0.24												
FITZPATRICK	0.67	0.00	0.17	0.00	0.17	0.50	2.17	0.50	4.17	1.00	0.34	0.24												
FORT CALHOUN	0.00	0.00	0.50	0.50	0.17	0.50	1.50	1.00	4.50	6.50	0.16	0.26												

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0.67	1.50	1.00	1.50	0.00	0.00	0.67	0.50	5.50	3.50	0.34	0.78												
GRAND GULF	1.00	1.00	0.33	1.00	0.17	0.00	1.33	2.00	4.00	5.00	0.33	0.51												
HADDAM NECK	0.00	0.00	0.17	0.00	0.33	0.50	3.50	4.50	4.17	12.50	0.47	1.42												
HATCH 1	0.17	0.50	0.17	0.50	0.00	0.00	0.67	0.50	7.00	21.00	0.00	0.00												
HATCH 2	0.50	0.00	0.33	0.00	0.00	0.00	0.83	1.00	1.83	0.00	0.47	0.00												
HOPE CREEK	0.67	0.00	0.33	0.00	0.00	0.00	1.00	1.50	2.67	0.00	0.25	0.00												
INDIAN POINT 2	0.17	0.00	0.00	0.00	0.50	0.00	0.33	0.50	1.00	2.00	0.18	0.23												
INDIAN POINT 3	0.17	0.50	0.00	0.00	0.17	0.00	0.33	0.50	2.83	2.00	0.87	0.28												
KEWAUNEE	0.17	0.00	0.17	0.00	0.00	0.00	0.17	0.50	0.17	0.00	0.08	0.00												
LASALLE 1	0.33	0.50	0.17	0.00	0.00	0.00	1.50	2.50	1.17	0.00	0.16	0.24												
LASALLE 2	0.50	0.50	0.17	0.00	0.00	0.00	0.83	0.00	13.33	14.00	0.82	2.45												
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	2.67	2.00	2.00	5.00	0.10	0.29												
LIMERICK 2	0.60	1.00	0.33	0.00	0.00	0.00	2.17	2.50	13.33	16.00	0.93	0.91												
MAINE YANKEE	0.17	0.00	0.17	0.50	0.17	0.50	0.33	1.00	2.33	0.50	0.24	0.46												
MCGUIRE 1	0.33	0.00	0.17	0.00	0.00	0.00	3.17	5.00	16.33	2.50	2.56	1.43												
MCGUIRE 2	0.17	0.00	0.00	0.00	0.17	0.00	2.33	3.00	0.33	0.50	0.19	0.34												

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
MILLSTONE 1	0.67	0.50	0.17	0.00	0.33	0.50	1.67	2.00	3.67	3.00	0.35	0.27												
MILLSTONE 2	0.17	0.50	0.33	0.50	0.00	0.00	0.33	0.00	1.17	3.50	0.13	0.39												
MILLSTONE 3	0.50	0.50	0.50	0.00	0.00	0.00	1.33	3.00	11.33	18.50	1.33	1.03												
MONTICELLO	0.33	0.00	0.17	0.00	0.17	0.50	1.33	1.00	2.17	3.00	0.00	0.00												
NINE MILE PT. 1	0.00	0.00	0.67	2.00	0.00	0.00	1.00	1.00	92.17	76.50	0.13	0.39												
NINE MILE PT. 2	1.17	0.50	0.17	0.00	0.00	0.00	0.00	0.00	20.50	9.50	0.70	0.58												
NORTH ANNA 1	0.50	0.00	0.17	0.00	0.00	0.00	0.67	1.00	3.50	0.00	0.26	0.00												
NORTH ANNA 2	0.00	0.00	0.33	0.50	0.00	0.00	0.33	0.50	3.00	9.00	0.00	0.00												
OCONEE 1	0.33	0.50	0.17	0.50	0.33	0.50	1.83	3.00	1.33	0.50	0.23	0.46												
OCONEE 2	0.17	0.00	0.00	0.00	0.33	0.50	1.50	2.00	2.83	0.00	0.69	0.00												
OCONEE 3	0.50	0.00	0.17	0.00	0.33	0.50	1.50	2.00	0.50	0.00	0.51	0.00												
OYSTER CREEK	0.83	0.50	0.17	0.00	0.00	0.00	0.33	0.50	21.50	13.00	0.63	0.59												
PALISADES	0.33	0.00	0.33	0.00	0.17	0.00	0.33	1.00	15.17	7.00	0.83	0.41												
PALO VERDE 1	0.17	0.50	0.17	0.00	0.00	0.00	0.83	1.00	19.67	9.00	0.18	0.54												
PALO VERDE 2	0.33	0.00	0.33	0.00	0.00	0.00	1.00	1.50	9.67	0.00	0.78	0.00												
PALO VERDE 3	0.17	0.50	0.00	0.00	0.17	0.00	1.00	1.00	21.33	4.50	1.77	0.47												
PEACH BOTTOM 2	0.67	0.00	0.33	0.50	0.33	0.00	1.83	1.00	14.20	20.50	0.97	0.81												
PEACH BOTTOM 3	0.25	0.00	0.50	0.50	0.00	0.00	2.00	1.50	6.00	3.50	0.68	0.24												
PERRY	0.17	0.00	0.17	0.00	0.00	0.00	2.17	4.50	0.83	0.00	0.11	0.00												

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
PILGRIM	0.67	0.50	0.50	0.00	0.17	0.00	0.67	0.00	17.50	19.50	0.29	0.60
POINT BEACH 1	0.00	0.00	0.00	0.00	0.17	0.00	1.33	2.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.17	0.00	0.17	0.00	0.17	0.00	0.83	1.50	0.50	0.00	0.08	0.00
PRAIRIE ISLAND 1	0.17	0.00	0.17	0.50	0.00	0.00	0.17	0.50	0.67	0.00	0.13	0.00
PRAIRIE ISLAND 2	1.00	0.00	0.33	0.00	0.00	0.00	0.17	0.50	4.83	3.00	0.46	0.29
QUAD CITIES 1	0.33	0.00	0.00	0.00	0.50	0.50	1.17	2.00	4.50	0.50	0.82	0.24
QUAD CITIES 2	0.33	0.00	0.17	0.00	0.33	0.50	1.33	3.00	9.33	0.00	0.32	0.00
RANCHO SECO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RIVER BEND	0.67	0.50	0.50	0.00	0.50	0.00	1.00	1.00	14.50	1.00	2.81	0.23
ROBINSON 2	0.33	0.50	0.00	0.00	0.17	0.00	1.33	2.00	25.50	2.50	0.18	0.27
SALEM 1	0.67	1.50	0	0.00	0.17	0.00	1.00	2.00	15.83	63.50	2.66	3.25
SALEM 2	0.50	1.00	0.67	1.50	0.00	0.00	1.83	4.50	13.00	26.00	2.90	7.38
SAN ONOFRE 1	0.33	0.50	0.17	0.50	0.00	0.00	1.00	1.00	20.67	4.50	1.28	0.25
SAN ONOFRE 2	0.00	0.00	0.17	0.00	0.00	0.00	0.17	0.00	9.33	2.50	0.35	0.00
SAN ONOFRE 3	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.26	0.50
SEABROOK	0.50	1.50	0.00	0.00	0.00	0.00	0.33	0.00	NA	1.00	NA	0.00
SEQUOYAH 1	0.67	1.50	0.33	1.00	0.00	0.00	1.17	2.00	3.00	7.50	0.69	1.85
SEQUOYAH 2	0.83	0.50	0.00	0.00	0.17	0.50	0.83	1.50	3.83	1.00	0.18	0.00

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
SHEARON HARRIS	0.17	0.00			0.17	0.50			0.00	0.00			1.17	1.50			1.50	3.50			0.76	0.26		
SOUTH TEXAS 1	1.00	2.00			0.17	0.50			0.00	0.00			0.50	1.00			11.00	18.50			1.57	3.23		
SOUTH TEXAS 2	2.17	1.00			0.83	0.00			0.00	0.00			0.00	0.00			20.17	20.50			1.43	1.08		
ST. LUCIE 1	0.33	0.00			0.17	0.50			0.00	0.00			0.00	0.00			9.00	25.00			0.98	1.72		
ST. LUCIE 2	0.33	0.00			0.00	0.00			0.00	0.00			0.00	0.00			6.67	10.00			0.55	0.82		
SUMMER	0.50	0.00			0.67	1.50			0.33	0.00			0.33	0.50			7.83	0.00			0.61	0.00		
SURRY 1	0.33	0.50			0.83	1.00			0.00	0.00			0.50	0.00			20.50	7.00			0.24	0.49		
SURRY 2	0.33	0.00			0.50	0.00			0.00	0.00			0.50	0.00			15.00	4.50			0.38	0.72		
SUSQUEHANNA 1	0.17	0.00			0.17	0.00			0.17	0.50			1.17	2.50			3.00	0.00			0.09	0.00		
SUSQUEHANNA 2	0.33	0.50			0.00	0.00			0.00	0.00			1.17	2.00			3.50	6.50			0.18	0.28		
THREE MILE ISL 1	0.33	0.00			0.33	0.50			0.00	0.00			0.33	0.00			5.50	0.00			0.37	0.00		
TROJAN	0.33	0.50			0.17	0.50			0.33	0.00			3.83	5.00			4.50	6.50			0.35	0.54		
TURKEY POINT 3	0.33	1.00			0.50	0.50			0.00	0.00			1.00	1.50			5.67	16.50			0.72	1.93		
TURKEY POINT 4	0.50	1.00			0.33	0.00			0.00	0.00			1.00	0.50			15.33	21.50			1.33	1.13		
VERMONT YANKEE	0.33	0.50			0.00	0.00			0.00	0.00			0.50	0.00			1.00	1.00			0.16	0.23		
VOGTLE 1	0.50	0.00			0.17	0.00			0.17	0.00			0.33	0.00			3.00	3.00			0.39	0.23		
VOGTLE 2	1.33	0.50			0.33	0.00			0.00	0.00			0.33	1.00			2.67	2.00			0.73	0.47		
WASH. NUCLEAR 2	0.50	0.00			0.50	0.50			0.00	0.00			3.00	3.00			3.33	4.50			0.31	0.39		

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 6 QTR END 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR AVG 90-3	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 6 QTR END 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR AVG 90-3	SAFETY SYSTEM ACTUATIONS 2 QTR END 90-3	SIGNIFICANT EVENTS 6 QTR AVG 90-3	SIGNIFICANT EVENTS 6 QTR END 90-3	SIGNIFICANT EVENTS 2 QTR AVG 90-3	SIGNIFICANT EVENTS 2 QTR END 90-3	SAFETY SYSTEM FAILURES 6 QTR AVG 90-3	SAFETY SYSTEM FAILURES 6 QTR END 90-3	SAFETY SYSTEM FAILURES 2 QTR AVG 90-3	SAFETY SYSTEM FAILURES 2 QTR END 90-3	FORCED OUTAGE RATE (%) 6 QTR AVG 90-3	FORCED OUTAGE RATE (%) 6 QTR END 90-3	FORCED OUTAGE RATE (%) 2 QTR AVG 90-3	FORCED OUTAGE RATE (%) 2 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 6 QTR END 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR AVG 90-3	EQUIPMENT OUTAGES PER 1000 COMM HRS 2 QTR END 90-3
WATERFORD 3	0.67	0.50	0.67	0.50	0.00	0.00	0.17	0.00	2.33	1.50	0.67	0.46												
WOLF CREEK	0.67	1.50	0.17	0.50	0.00	0.00	1.00	1.00	1.50	3.00	0.41	0.91												
YANKEE-ROWE	0.33	0.00	0.50	0.50	0.17	0.50	0.17	0.50	3.00	0.00	0.24	0.00												
ZION 1	0.33	0.50	0.00	0.00	0.17	0.00	0.83	1.00	23.67	42.50	0.37	0.00												
ZION 2	0.33	1.00	0.17	0.50	0.00	0.00	0.50	0.50	17.17	36.00	1.26	2.96												
* INDUSTRY AVERAGE	0.43	0.40	0.29	0.28	0.11	0.09	0.97	1.21	8.53	8.00	0.55	0.59												

PERFORMANCE INDICATORS

* Industry average does not include suppressed and outlier plants.

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	0	1	1	0	3	0	0	0
ARKANSAS 2	1	0	1	0	1	0	1	1
BEAVER VALLEY 1	0	2	1	0	1	1	0	0
BEAVER VALLEY 2	0	1	0	0	0	0	0	1
BIG ROCK POINT	2	0	0	1	0	0	0	0
BRAIDWOOD 1	1	1	0	1	0	1	1	1
BRAIDWOOD 2	3	0	1	2	0	0	1	0
BROWNS FERRY 1	0	0	0	0	0	0	0	0
BROWNS FERRY 2	0	0	0	0	0	0	0	0
BROWNS FERRY 3	0	0	0	0	0	0	0	0
BRUNSWICK 1	2	0	0	0	0	0	0	1
BRUNSWICK 2	1	0	0	0	0	0	0	4
BYRON 1	0	0	0	0	0	1	1	1
BYRON 2	1	0	0	0	0	1	0	0
CALLAWAY	0	0	1	0	0	0	2	0
CALVERT CLIFFS 1	0	0	0	0	0	0	0	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	1	0	0	0	0	0	0
CATAWBA 2	0	2	0	0	0	0	0	0
CLINTON 1	1	0	1	0	0	0	0	1
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	2	4
COOK 1	2	2	0	0	0	0	0	0
COOK 2	0	0	0	1	0	0	1	0
COOPER STATION	0	1	0	1	1	0	0	0
CRYSTAL RIVER 3	1	0	1	0	0	0	0	0
DAVIS-BESSE	1	1	1	0	0	1	0	0
DIABLO CANYON 1	0	0	0	0	1	0	1	0
DIABLO CANYON 2	0	0	1	0	0	0	0	0
DRESDEN 2	0	1	0	1	0	2	0	0
DRESDEN 3	1	2	1	0	0	1	0	0
DUANE ARNOLD	0	2	1	1	0	0	1	2
FARLEY 1	1	0	0	0	1	0	0	0
FARLEY 2	0	0	2	0	3	0	1	0
FERMI 2	0	1	0	0	1	0	1	0
FITZPATRICK	0	0	0	0	2	2	0	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	NA	NA	NA	NA
GINNA	0	0	1	0	0	0	2	1
GRAND GULF	1	0	1	1	1	0	0	2
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	1	0	0	0	0	0	1	0
HATCH 2	0	0	0	1	0	2	0	0
HOPE CREEK	2	0	0	1	1	2	0	0
INDIAN POINT 2	2	1	0	0	1	0	0	0
INDIAN POINT 3	1	0	0	0	0	0	1	0
KEWAUNEE	0	0	0	0	1	0	0	0
LASALLE 1	0	1	0	0	0	1	1	0
LASALLE 2	0	0	0	1	0	1	0	1
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	0	1	0	0	2

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	1	1	0	0	0	0	0
MCGUIRE 1	0	0	0	1	0	1	0	0
MCGUIRE 2	0	2	1	0	0	0	0	0
MILLSTONE 1	0	0	2	0	1	0	0	1
MILLSTONE 2	1	0	0	0	0	0	0	1
MILLSTONE 3	2	0	1	0	0	1	1	0
MONTICELLO	1	0	1	0	1	0	0	0
NINE MILE PT. 1	0	0	0	0	0	0	0	0
NINE MILE PT. 2	0	0	2	1	3	0	0	1
NORTH ANNA 1	0	1	0	1	1	1	0	0
NORTH ANNA 2	0	0	0	0	0	0	0	0
OCONEE 1	0	1	0	1	0	0	0	1
OCONEE 2	0	2	1	0	0	0	0	0
OCONEE 3	2	1	0	1	0	2	0	0
OYSTER CREEK	0	0	2	2	0	0	1	0
PALISADES	0	0	0	1	0	1	0	0
PALO VERDE 1	0	1	0	0	0	0	0	1
PALO VERDE 2	1	1	0	1	1	0	0	0
PALO VERDE 3	0	1	0	0	0	0	1	0
PEACH BOTTOM 2	0	0	1	1	2	0	0	0
PEACH BOTTOM 3	0	0	0	0	0	1	0	0
PERRY	0	0	0	0	0	1	0	0
PILGRIM	0	1	1	1	1	0	1	0
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	1	0	1	0	0	0	0
PRAIRIE ISLAND 1	0	0	0	1	0	0	0	0
PRAIRIE ISLAND 2	0	0	1	0	2	3	0	0
QUAD CITIES 1	1	0	1	0	0	1	0	0
QUAD CITIES 2	0	0	1	0	1	0	0	0
RANCHO SECO	2	1	0	NA	NA	NA	NA	NA
RIVER BEND	0	2	0	1	1	1	1	0
ROBINSON 2	0	3	0	0	0	1	1	0
SALEM 1	0	2	1	0	0	0	1	2
SALEM 2	1	2	1	0	0	0	1	1
SAN ONOFRE 1	0	0	0	1	0	0	1	0
SAN ONOFRE 2	0	0	0	0	0	0	0	0
SAN ONOFRE 3	0	1	1	0	0	1	0	0
SEABROOK	NA	NA	0	0	0	0	1	2
SEQUOYAH 1	2	1	0	0	1	0	1	2
SEQUOYAH 2	0	0	3	1	0	0	1	0
SHEARON HARRIS	0	5	0	0	1	0	0	0
SOUTH TEXAS 1	0	2	0	1	0	1	2	2
SOUTH TEXAS 2	NA	0	3	5	1	2	1	1
ST. LUCIE 1	0	0	0	2	0	0	0	0
ST. LUCIE 2	0	0	1	0	0	1	0	0
SUMMER	0	0	1	1	1	0	0	0
SURRY 1	0	0	0	1	0	0	1	0
SURRY 2	0	0	0	2	0	0	0	0
SUSQUEHANNA 1	0	2	0	0	1	0	0	0
SUSQUEHANNA 2	0	0	0	0	0	1	1	0

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	1	0	0	0	1	1	0	0
TROJAN	1	0	0	1	0	0	0	1
TURKEY POINT 3	0	1	0	0	0	0	2	0
TURKEY POINT 4	0	0	0	0	1	0	1	1
VERMONT YANKEE	0	0	0	0	0	1	1	0
VOGTLE 1	0	0	1	0	1	1	0	0
VOGTLE 2	NA	0	3	1	2	1	1	0
WASH. NUCLEAR 2	0	1	1	2	0	0	0	0
WATERFORD 3	1	0	0	1	0	2	0	1
WOLF CREEK	0	2	0	0	0	1	3	0
YANKEE-ROWE	0	0	1	1	0	0	0	0
ZION 1	0	1	0	0	0	1	0	1
ZION 2	2	0	0	0	0	0	0	2
TOTAL	44	59	48	47	43	44	43	43

NA - The plant is not yet critical.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.3 AUTOMATIC SCRAMS >15% POWER/1000 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	0.00	1.92	0.57	0.00	1.96	0.00	0.00	0.00
ARKANSAS 2	0.46	0.00	0.64	0.00	0.95	0.00	0.46	0.52
BEAVER VALLEY 1	0.00	0.94	0.47	0.00	6.72	0.48	0.00	0.00
BEAVER VALLEY 2	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.69
BIG ROCK POINT	0.95	0.00	0.00	0.87	0.00	0.00	0.00	0.00
BRAIDWOOD 1	0.47	0.61	0.00	0.67	0.00	0.47	0.46	0.52
BRAIDWOOD 2	1.11	0.00	0.46	0.94	0.00	0.00	0.00	0.00
BROWNS FERRY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 1	2.08	0.00	0.00	0.00	0.00	0.00	0.00	0.47
BRUNSWICK 2	0.46	0.00	0.00	0.00	0.00	0.00	0.00	1.69
BYRON 1	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.46
BYRON 2	0.46	0.00	0.00	0.00	0.00	0.48	0.00	0.00
CALLAWAY	0.00	0.00	1.08	0.00	0.00	0.00	0.95	0.00
CALVERT CLIFFS 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALVERT CLIFFS 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CATAWBA 1	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.00
CATAWBA 2	0.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00
CLINTON 1	0.52	0.00	2.35	0.00	0.00	0.00	0.00	0.55
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	0.61	2.31
COOK 1	0.95	0.55	0.00	0.00	0.00	0.00	0.00	0.00
COOK 2	0.00	0.00	0.00	0.47	0.00	0.00	0.48	0.00
COOPER STATION	0.00	0.52	0.00	0.46	0.48	0.00	0.00	0.00
CRYSTAL RIVER 3	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DAVIS-BESSE	2.15	0.51	0.46	0.00	0.00	1.64	0.00	0.00
DIABLO CANYON 1	0.00	0.00	0.00	0.00	1.57	0.00	0.47	0.00
DIABLO CANYON 2	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00
DRESDEN 2	0.00	1.08	0.00	0.46	0.00	1.06	0.00	0.00
DRESDEN 3	0.52	0.98	0.65	0.00	0.00	1.00	0.00	0.00
DUANE ARNOLD	0.00	1.15	0.48	0.56	0.00	0.00	0.00	5.07
FARLEY 1	0.46	0.00	0.00	0.00	0.80	0.00	0.00	0.00
FARLEY 2	0.00	0.00	2.09	0.00	0.92	0.00	0.00	0.00
FERMI 2	0.00	0.53	0.00	0.00	2.17	0.00	0.49	0.00
FITZPATRICK	0.00	0.00	0.00	0.00	0.53	0.98	0.00	0.00
FORT CALHOUN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORT ST. VRAIN	0.00	0.00	0.00	0.00	NA	NA	NA	NA
GINNA	0.00	0.00	1.41	0.00	0.00	0.00	1.55	0.46
GRAND GULF	0.46	0.00	0.00	1.01	0.46	0.00	0.00	1.01
HADDAM NECK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 1	1.90	0.00	0.00	0.00	0.00	0.00	2.03	0.00
HATCH 2	0.00	0.00	0.00	0.64	0.00	0.96	0.00	0.00
HOPE CREEK	1.00	0.00	0.00	0.56	0.93	1.08	0.00	0.00
INDIAN POINT 2	0.92	0.55	0.00	0.00	0.61	0.00	0.00	0.00
INDIAN POINT 3	0.78	0.00	0.00	0.00	0.00	0.00	0.50	0.00
KEWAUNEE	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
LASALLE 1	0.00	0.48	0.00	0.00	0.00	0.50	0.48	0.00
LASALLE 2	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.50
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LIMERICK 2	NA	NA	NA	0.00	0.70	0.00	0.00	1.29

TABLE 9.3 AUTOMATIC SCRAMS >15%/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1.97	0.51	0.46	0.00	0.00	0.00	0.00	0.00
MCGUIRE 1	0.00	0.00	0.00	0.46	0.00	5.61	0.00	0.00
MCGUIRE 2	0.00	0.93	0.46	0.00	0.00	0.00	0.00	0.00
MILLSTONE 1	0.00	0.00	1.12	0.00	0.47	0.00	0.00	0.47
MILLSTONE 2	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.56
MILLSTONE 3	1.14	0.00	1.13	0.00	0.00	0.49	0.69	0.00
MONTICELLO	0.46	0.00	0.48	0.00	0.78	0.00	0.00	0.00
NINE MILE PT. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 2	0.00	0.00	0.99	0.54	1.52	0.00	0.00	0.63
NORTH ANNA 1	0.00	0.75	0.00	0.54	0.00	0.47	0.00	0.00
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.00	0.92	0.00	0.50	0.00	0.00	0.00	0.45
OCONEE 2	0.00	0.93	0.87	0.00	0.00	0.00	0.00	0.00
OCONEE 3	0.91	0.48	0.00	0.45	0.00	0.94	0.00	0.00
OYSTER CREEK	0.00	0.00	1.87	1.09	0.00	0.00	0.59	0.00
PALISADES	0.00	0.00	0.00	0.46	0.00	0.48	0.00	0.00
PALO VERDE 1	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.54
PALO VERDE 2	0.00	0.68	0.00	0.61	0.94	0.00	0.00	0.00
PALO VERDE 3	0.00	0.90	0.00	0.00	0.00	0.00	0.49	0.00
PEACH BOTTOM 2	0.00	0.00	0.74	0.48	1.06	0.00	0.00	0.00
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
PERRY	0.00	0.00	0.00	0.00	0.00	0.51	0.00	0.00
PILGRIM	0.00	0.00	0.79	0.54	0.65	0.00	0.63	0.00
POINT BEACH 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.47	0.00	0.50	0.00	0.00	0.00	0.00
PRAIRIE ISLAND 1	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00
PRAIRIE ISLAND 2	0.00	0.00	0.66	0.00	0.98	1.06	0.00	0.00
QUAD CITIES 1	0.46	0.00	0.51	0.00	0.00	0.49	0.00	0.00
QUAD CITIES 2	0.00	0.00	0.47	0.00	0.46	0.00	0.00	0.00
RANCHO SECO	1.30	1.11	0.00	NA	NA	NA	NA	NA
RIVER BEND	0.00	0.60	0.00	0.48	0.48	0.54	0.46	0.00
ROBINSON 2	0.00	3.38	0.00	0.00	0.00	0.46	0.54	0.00
SALEM 1	0.00	0.54	4.49	0.00	0.00	0.00	1.38	1.87
SALEM 2	3.29	1.12	0.52	0.00	0.00	0.00	6.88	1.00
SAN ONOFRE 1	0.00	0.00	0.00	0.59	0.00	0.00	0.50	0.00
SAN ONOFRE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN ONOFRE 3	0.00	0.47	0.52	0.00	0.00	0.51	0.00	0.00
SEABROOK	NA	NA	0.00	0.00	0.00	0.00	0.73	0.97
SEQUOYAH 1	2.64	0.47	0.00	0.00	0.46	0.00	0.00	0.93
SEQUOYAH 2	0.00	0.00	1.78	0.47	0.00	0.00	0.46	0.00
SHEARON HARRIS	0.00	2.41	0.00	0.00	2.03	0.00	0.00	0.00
SOUTH TEXAS 1	0.00	1.77	0.00	1.28	0.00	0.48	2.78	1.02
SOUTH TEXAS 2	NA	0.00	1.41	2.61	1.30	1.24	0.55	0.51
ST. LUCIE 1	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.00
ST. LUCIE 2	0.00	0.00	0.64	0.00	0.00	0.52	0.00	0.00
SUMMER	0.00	0.00	0.56	0.54	0.49	0.00	0.00	0.00
SURRY 1	0.00	0.00	0.00	0.48	0.00	0.00	0.52	0.00
SURRY 2	0.00	0.00	0.00	3.06	0.00	0.00	0.00	0.00
SUSQUEHANNA 1	0.00	1.16	0.00	0.00	0.46	0.00	0.00	0.00
SUSQUEHANNA 2	0.00	0.00	0.00	0.00	0.00	0.50	0.56	0.00

TABLE 9.3 AUTOMATIC SCRAMS >15%/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0.54	0.00	0.00	0.00	0.46	0.00	0.00	0.00
TROJAN	0.56	0.00	0.00	1.00	0.00	0.00	0.00	0.54
TURKEY POINT 3	0.00	0.00	0.00	0.00	0.00	0.00	1.93	0.00
TURKEY POINT 4	0.00	0.00	0.00	0.00	0.54	0.00	0.55	0.58
VERMONT YANKEE	0.00	0.00	0.00	0.00	0.00	0.49	0.46	0.00
VOGTLE 1	0.00	0.00	0.46	0.00	0.47	0.78	0.00	0.00
VOGTLE 2	NA	0.00	1.12	0.45	0.97	0.47	0.47	0.00
WASH. NUCLEAR 2	0.00	0.49	1.30	1.08	0.00	0.00	0.00	0.00
WATERFORD 3	0.63	0.00	0.00	0.52	0.00	1.11	0.00	0.46
WOLF CREEK	0.00	0.95	0.00	0.00	0.00	0.63	1.82	0.00
YANKEE-ROWE	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00
ZION 1	0.00	0.66	0.00	0.00	0.00	0.93	0.00	0.47
ZION 2	4.66	0.00	0.00	0.00	0.00	0.00	0.00	5.92
AVERAGE	0.33	0.32	0.32	0.24	0.31	0.26	0.29	0.29

NA - The plant is not yet critical.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.4 AUTOMATIC SCRAMS <=15% POWER

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	0	0	0	0	0	0	0	0
ARKANSAS 2	0	0	0	0	0	0	0	0
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	0	0	0	0	0	0	0	0
BIG ROCK POINT	0	0	0	0	0	0	0	0
BRAIDWOOD 1	0	0	0	0	0	0	0	0
BRAIDWOOD 2	1	0	0	0	0	0	1	0
BROWNS FERRY 1	0	0	0	0	0	0	0	0
BROWNS FERRY 2	0	0	0	0	0	0	0	0
BROWNS FERRY 3	0	0	0	0	0	0	0	0
BRUNSWICK 1	0	0	0	0	0	0	0	0
BRUNSWICK 2	0	0	0	0	0	0	0	1
BYRON 1	0	0	0	0	0	1	0	0
BYRON 2	0	0	0	0	0	0	0	0
CALLAWAY	0	0	0	0	0	0	0	0
CALVERT CLIFFS 1	0	0	0	0	0	0	0	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	0	0	0	0	0	0	0
CATAWBA 2	0	0	0	0	0	0	0	0
CLINTON 1	0	0	0	0	0	0	0	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	0
COOK 1	0	1	0	0	0	0	0	0
COOK 2	0	0	0	0	0	0	0	0
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	0	0	1	0	0	0	0	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	0	0	0	0	0	0	0
DIABLO CANYON 2	0	0	0	0	0	0	0	0
DRESDEN 2	0	0	0	0	0	0	0	0
DRESDEN 3	0	0	0	0	0	0	0	0
DUANE ARNOLD	0	0	0	0	0	0	1	0
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	0	0	0	0	1	0	1	0
FERMI 2	0	0	0	0	0	0	0	0
FITZPATRICK	0	0	0	0	1	0	0	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	NA	NA	NA	NA
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	0	0	1	0	0	0	0	0
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	0	0	0	0	0	0	0	0
HATCH 2	0	0	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0	0	0
INDIAN POINT 2	0	0	0	0	0	0	0	0
INDIAN POINT 3	0	0	0	0	0	0	0	0
KEWAUNEE	0	0	0	0	0	0	0	0
LASALLE 1	0	0	0	0	0	0	0	0
LASALLE 2	0	0	0	1	0	0	0	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	0	0	0	0	0

TABLE 9.4 AUTOMATIC SCRAMS <=15% POWER (CONTINUED)

(the latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	0	0	0	0	0	0	0	0
MCGUIRE 1	0	0	0	0	0	0	0	0
MCGUIRE 2	0	0	0	0	0	0	0	0
MILLSTONE 1	0	0	1	0	0	0	0	0
MILLSTONE 2	0	0	0	0	0	0	0	0
MILLSTONE 3	0	0	0	0	0	0	0	0
MONTICELLO	0	0	0	0	0	0	0	0
NINE MILE PT. 1	0	0	0	0	0	0	0	0
NINE MILE PT. 2	0	0	0	0	1	0	0	0
NORTH ANNA 1	0	0	0	0	1	0	0	0
NORTH ANNA 2	0	0	0	0	0	0	0	0
OCONEE 1	0	0	0	0	0	0	0	0
OCONEE 2	0	0	0	0	0	0	0	0
OCONEE 3	0	0	0	0	0	0	0	0
OYSTER CREEK	0	0	0	0	0	0	0	0
PALISADES	0	0	0	0	0	0	0	0
PALO VERDE 1	0	0	0	0	0	0	0	0
PALO VERDE 2	1	0	0	0	0	0	0	0
PALO VERDE 3	0	0	0	0	0	0	0	0
PEACH BOTTOM 2	0	0	0	0	0	0	0	0
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	0	0	0	0	0	0	0	0
PILGRIM	0	1	0	0	0	0	0	0
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	0	0	0	0	0	0	0
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	0
PRAIRIE ISLAND 2	0	0	0	0	0	1	0	0
QUAD CITIES 1	0	0	0	0	0	0	0	0
QUAD CITIES 2	0	0	0	0	0	0	0	0
RANCHO SECO	0	0	0	NA	NA	NA	NA	NA
RIVER BEND	0	1	0	0	0	0	0	0
ROBINSON 2	0	0	0	0	0	0	0	0
SALEM 1	0	1	0	0	0	0	0	0
SALEM 2	0	0	0	0	0	0	0	0
SAN ONOFRE 1	0	0	0	0	0	0	0	0
SAN ONOFRE 2	0	0	0	0	0	0	0	0
SAN ONOFRE 3	0	0	0	0	0	0	0	0
SEABROOK	NA	NA	0	0	0	0	0	0
SEQUOYAH 1	1	0	0	0	0	0	1	0
SEQUOYAH 2	0	0	0	0	0	0	0	0
SHEARON HARRIS	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	0	0	0	0	0	0	1	0
SOUTH TEXAS 2	NA	0	1	0	0	0	0	0
ST. LUCIE 1	0	0	0	1	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	0	0	0	0	0	0	0	0
SURRY 1	0	0	0	0	0	0	0	0
SURRY 2	0	0	0	1	0	0	0	0
SUSQUEHANNA 1	0	0	0	0	0	0	0	0
SUSQUEHANNA 2	0	0	0	0	0	0	0	0

TABLE 9.4 AUTOMATIC SCRAMS <=15% POWER (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	0	1	0	0
TROJAN	0	0	0	0	0	0	0	0
TURKEY POINT 3	0	1	0	0	0	0	1	0
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	0	0	0	0	0	0	0	0
VOGTLE 1	0	0	0	/	0	0	0	0
VOGTLE 2	NA	0	1	0	0	0	0	0
WASH. NUCLEAR 2	0	0	0	0	0	0	0	0
WATERFORD 3	0	0	0	0	0	0	0	0
WOLF CREEK	0	0	0	0	0	0	1	0
YANKEE-ROWE	0	0	0	1	0	0	0	0
ZION 1	0	0	0	0	0	0	0	0
ZION 2	0	0	0	0	0	0	0	0
TOTAL	3	5	5	4	4	3	8	1

NA - The plant is not yet critical.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.5 SAFETY SYSTEM ACTUATIONS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	0	1	0	0	2	0	0	0
ARKANSAS 2	0	0	4	0	2	0	0	1
BEAVER VALLEY 1	0	0	1	0	2	0	0	0
BEAVER VALLEY 2	0	1	1	0	0	0	0	0
BIG ROCK POINT	1	0	0	0	0	0	0	0
BRAIDWOOD 1	1	0	1	0	1	0	0	2
BRAIDWOOD 2	0	0	0	0	0	0	1	0
BROWNS FERRY 1	3	1	0	0	0	0	2	0
BROWNS FERRY 2	2	1	0	0	0	0	0	1
BROWNS FERRY 3	1	0	0	0	0	0	0	0
BRUNSWICK 1	1	0	0	0	1	0	0	0
BRUNSWICK 2	1	1	3	0	2	0	1	4
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	0	1	0	0	0	1	0	1
CALLAWAY	1	0	2	0	0	0	0	0
CALVERT CLIFFS 1	0	2	0	0	0	1	0	1
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	2	0	0	0	0	0	0
CATAWBA 2	0	2	0	0	0	0	0	0
CLINTON 1	0	0	0	0	0	1	0	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	1	0	2
COOK 1	0	0	0	0	0	0	0	0
COOK 2	0	0	0	0	0	1	0	0
COOPER STATION	0	0	2	0	1	0	2	0
CRYSTAL RIVER 3	2	0	4	0	1	0	0	0
DAVIS-BESSE	0	0	0	0	0	0	3	0
DIABLO CANYON 1	0	0	0	0	1	0	1	0
DIABLO CANYON 2	1	0	0	0	0	0	0	0
DRESDEN 2	0	1	0	0	0	1	0	1
DRESDEN 3	0	2	0	0	0	0	0	0
DUANE ARNOLD	2	2	0	2	0	1	0	1
FARLEY 1	0	0	0	0	1	0	0	0
FARLEY 2	0	0	1	0	0	0	0	0
FERMI 2	0	1	0	1	1	0	0	0
FITZPATRICK	1	0	0	0	0	1	0	0
FORT CALHOUN	1	0	0	0	0	2	1	0
FORT ST. VRAIN	0	0	0	0	NA	NA	NA	NA
GINNA	0	0	2	1	0	0	3	0
GRAND GULF	1	1	0	0	0	0	1	1
HADDAM NECK	0	0	1	0	0	0	0	0
HATCH 1	2	0	0	0	0	0	1	0
HATCH 2	0	0	0	1	0	1	0	0
HOPE CREEK	2	0	1	0	0	1	0	0
INDIAN POINT 2	0	0	0	0	0	0	0	0
INDIAN POINT 3	1	1	0	0	0	0	0	0
KEWAUNEE	0	0	0	0	0	1	0	0
LASALLE 1	0	0	0	0	1	0	0	0
LASALLE 2	0	2	1	0	0	0	0	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	0	0	1	1	0	0

TABLE 9.5 SAFETY SYSTEM ACTUATIONS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	2	0	0	0	0	0	1	0
MCGUIRE 1	1	1	0	1	0	0	0	0
MCGUIRE 2	0	0	0	0	0	0	0	0
MILLSTONE 1	0	0	1	0	0	0	0	0
MILLSTONE 2	1	0	1	0	0	0	0	1
MILLSTONE 3	0	1	0	0	2	1	0	0
MONTICELLO	0	0	0	1	0	0	0	0
NINE MILE PT. 1	0	1	0	0	0	0	0	4
NINE MILE PT. 2	2	3	1	0	0	0	0	0
NORTH ANNA 1	0	1	1	0	0	0	0	0
NORTH ANNA 2	0	0	1	0	0	0	0	1
OCONEE 1	0	0	0	0	0	0	1	0
OCONEE 2	0	0	0	0	0	0	0	0
OCONEE 3	0	0	0	0	1	0	0	0
OYSTER CREEK	1	0	1	0	0	0	0	0
PALISADES	0	0	0	0	2	0	0	0
PALO VERDE 1	0	0	0	1	0	0	0	0
PALO VERDE 2	0	2	0	2	0	0	0	0
PALO VERDE 3	0	1	0	0	0	0	0	0
PEACH BOTTOM 2	1	0	0	0	1	0	1	0
PEACH BOTTOM 3	0	0	0	0	0	1	0	1
PERRY	1	0	0	0	0	1	0	0
PILGRIM	0	1	2	1	0	0	0	0
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	1	0	0	1	0	0	0
PRAIRIE ISLAND 1	0	0	0	0	0	0	1	0
PRAIRIE ISLAND 2	0	0	0	0	2	0	0	0
QUAD CITIES 1	0	0	0	0	0	0	0	0
QUAD CITIES 2	1	0	0	0	0	1	0	0
RANCHO SECO	1	1	0	NA	NA	NA	NA	NA
RIVER BEND	0	0	2	0	1	0	0	0
ROBINSON 2	0	1	0	0	0	0	0	0
SALEM 1	0	1	1	0	0	2	0	0
SALEM 2	0	1	0	0	1	0	2	1
SAN ONOFRE 1	0	0	0	0	0	0	0	1
SAN ONOFRE 2	0	0	0	0	1	0	0	0
SAN ONOFRE 3	0	1	0	0	0	0	0	0
SEABROOK	0	0	0	0	0	0	0	0
SEQUOYAH 1	0	0	0	0	0	0	2	0
SEQUOYAH 2	0	2	0	0	0	0	0	0
SHEARON HARRIS	1	0	0	0	0	0	1	0
SOUTH TEXAS 1	2	1	0	0	0	0	1	0
SOUTH TEXAS 2	0	3	3	1	0	1	0	0
ST. LUCIE 1	0	0	0	0	0	0	1	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	1	0	0	1	0	0	3	0
SURRY 1	0	2	2	0	1	0	1	1
SURRY 2	0	1	2	1	0	0	0	0
SUSQUEHANNA 1	0	0	0	1	0	0	0	0
SUSQUEHANNA 2	0	0	0	0	0	0	0	0

TABLE 9.5 SAFETY SYSTEM ACTUATIONS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	1	0	0	1
TROJAN	0	0	0	0	0	0	0	1
TURKEY POINT 3	0	0	2	0	0	0	1	0
TURKEY POINT 4	0	0	1	1	0	0	0	0
VERMONT YANKEE	0	2	0	0	0	0	0	0
VOGTLE 1	1	0	0	0	0	1	0	0
VOGTLE 2	NA	1	0	1	0	1	0	0
WASH. NUCLEAR 2	0	1	2	0	0	0	0	1
WATERFORD 3	0	1	0	0	2	1	0	1
WOLF CREEK	0	0	0	0	0	0	1	0
YANKEE-ROWE	1	0	0	1	0	1	1	0
ZION 1	0	0	0	0	0	0	0	0
ZION 2	1	0	0	0	0	0	1	0
TOTAL	42	53	47	18	33	25	35	29

NA - The plant is not yet licensed.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.6 SIGNIFICANT EVENTS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	2	1	0	1	1	0	0	0
ARKANSAS 2	0	0	2	1	0	0	0	0
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	0	0	0	0	0	0	0	0
BIG ROCK POINT	0	0	0	0	0	0	0	0
BRAIDWOOD 1	0	0	1	0	1	0	0	0
BRAIDWOOD 2	0	0	1	0	0	0	0	0
BROWNS FERRY 1	0	2	0	0	0	0	0	0
BROWNS FERRY 2	0	2	0	0	0	0	0	0
BROWNS FERRY 3	0	2	0	0	0	0	0	0
BRUNSWICK 1	1	0	0	0	0	0	1	0
BRUNSWICK 2	1	0	1	0	0	0	1	1
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	0	1	0	0	0	0	0	0
CALLAWAY	0	0	0	0	0	0	0	0
CALVERT CLIFFS 1	0	0	0	0	1	0	0	0
CALVERT CLIFFS 2	0	1	1	0	1	0	0	0
CATAWBA 1	0	0	0	0	0	1	1	0
CATAWBA 2	0	0	0	0	0	0	0	0
CLINTON 1	1	0	1	0	0	1	1	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	0	0	0
COOK 1	0	0	0	0	0	0	0	0
COOK 2	0	0	0	1	0	0	0	0
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	0	1	1	0	1	0	0	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	1	0	0	0	0	0	0
DIABLO CANYON 2	1	1	0	0	0	0	0	0
DRESDEN 2	1	1	0	0	1	2	0	1
DRESDEN 3	0	0	0	0	1	0	0	0
DUANE ARNOLD	1	0	0	0	0	0	0	0
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	0	0	0	0	0	0	0	0
FERMI 2	0	1	0	0	0	0	0	0
FITZPATRICK	1	0	0	0	0	0	1	0
FORT CALHOUN	0	0	0	0	0	0	1	0
FORT ST. VRAIN	0	0	0	0	NA	NA	NA	NA
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	0	0	0	1	0	0	0	0
HADDAM NECK	0	0	0	0	1	0	0	1
HATCH 1	0	0	0	0	0	0	0	0
HATCH 2	0	0	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0	0	0
INDIAN POINT 2	0	0	3	0	0	0	0	0
INDIAN POINT 3	0	0	0	0	0	1	0	0
KEWAUNEE	0	0	0	0	0	0	0	0
LASALLE 1	0	1	0	0	0	0	0	0
LASALLE 2	0	1	0	0	0	0	0	0
LIMERICK 1	2	1	0	0	0	0	0	0
LIMERICK 2	NA	NA	0	0	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	0	0	0	0	0	0	1	0
MCGUIRE 1	2	1	0	0	0	0	0	0
MCGUIRE 2	1	0	0	1	0	0	0	0
MILLSTONE 1	0	1	1	0	0	0	1	0
MILLSTONE 2	1	0	0	0	0	0	0	0
MILLSTONE 3	0	0	0	0	0	0	0	0
MONTICELLO	0	0	0	0	0	0	0	1
NINE MILE PT. 1	1	0	0	0	0	0	0	0
NINE MILE PT. 2	0	2	0	0	0	0	0	0
NORTH ANNA 1	0	2	0	0	0	0	0	0
NORTH ANNA 2	0	1	0	0	0	0	0	0
OCONEE 1	0	1	1	0	0	0	1	0
OCONEE 2	0	0	1	0	0	0	1	0
OCONEE 3	0	1	1	0	0	0	1	0
OYSTER CREEK	1	0	0	0	0	0	0	0
PALISADES	0	0	0	0	1	0	0	0
PALO VERDE 1	0	0	0	0	0	0	0	0
PALO VERDE 2	0	0	0	0	0	0	0	0
PALO VERDE 3	0	1	0	1	0	0	0	0
PEACH BOTTOM 2	0	0	0	1	0	1	0	0
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	0	1	0	0	0	0	0	0
PILGRIM	0	1	1	0	0	0	0	0
POINT BEACH 1	0	0	0	0	1	0	0	0
POINT BEACH 2	0	0	0	0	1	0	0	0
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	0
PRAIRIE ISLAND 2	0	0	0	0	0	0	0	0
QUAD CITIES 1	0	0	2	0	0	0	0	1
QUAD CITIES 2	0	0	1	0	0	0	0	1
RANCHO SECO	0	2	0	NA	NA	NA	NA	NA
RIVER BEND	0	0	1	0	1	1	0	0
ROBINSON 2	0	1	0	1	0	0	0	0
SALEM 1	0	0	1	0	0	0	0	0
SALEM 2	0	0	0	0	0	0	0	0
SAN ONOFRE 1	2	2	0	0	0	0	0	0
SAN ONOFRE 2	1	0	0	0	0	0	0	0
SAN ONOFRE 3	1	0	0	0	0	0	0	0
SEABROOK	0	0	0	0	0	0	0	0
SEQUOYAH 1	0	0	0	0	0	0	0	0
SEQUOYAH 2	0	0	0	0	0	0	0	1
SHEARON HARRIS	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	0	0	0	0	0	0	0	0
SOUTH TEXAS 2	0	0	0	0	0	0	0	0
ST. LUCIE 1	0	0	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	0	0	1	1	0	0	0	0
SURRY 1	0	3	0	0	0	0	0	0
SURRY 2	1	3	0	0	0	0	0	0
SUSQUEHANNA 1	0	0	0	0	0	0	0	1
SUSQUEHANNA 2	0	0	0	0	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	0	0	0	0
TROJAN	0	0	1	1	0	0	0	0
TURKEY POINT 3	0	1	0	0	0	0	0	0
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	0	0	0	0	0	0	0	0
VOGTLE 1	0	0	0	0	0	1	0	0
VOGTLE 2	NA	1	0	0	0	0	0	0
WASH. NUCLEAR 2	0	0	0	0	0	0	0	0
WATERFORD 3	0	0	0	0	0	0	0	0
WOLF CREEK	2	0	0	0	0	0	0	0
YANKEE-ROWE	0	0	0	0	0	0	1	0
ZION 1	1	0	0	0	1	0	0	0
ZION 2	1	0	0	0	0	0	0	0
TOTAL	26	42	23	10	13	8	12	8

NA - The plant is not yet licensed.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.7 SAFETY SYSTEM FAILURES

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	2	2	0	4	4	2	0	1
ARKANSAS 2	2	1	0	1	1	1	0	2
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	0	0	0	0	0	0	0	0
BIG ROCK POINT	0	1	0	2	0	1	0	2
BRAIDWOOD 1	0	0	0	0	0	0	1	2
BRAIDWOOD 2	0	1	0	0	1	0	1	1
BROWNS FERRY 1	1	1	3	3	1	1	0	0
BROWNS FERRY 2	1	2	4	3	2	1	1	0
BROWNS FERRY 3	1	1	3	3	1	1	1	0
BRUNSWICK 1	5	2	0	0	1	2	3	0
BRUNSWICK 2	2	2	1	2	0	0	2	3
BYRON 1	0	0	0	0	0	0	1	1
BYRON 2	0	0	0	0	0	0	0	1
CALLAWAY	1	0	0	0	0	1	0	0
CALVERT CLIFFS 1	0	2	1	2	1	4	2	4
CALVERT CLIFFS 2	0	1	2	2	1	1	2	1
CATAWBA 1	2	1	0	1	0	5	2	0
CATAWBA 2	1	1	0	2	0	6	1	1
CLINTON 1	3	2	1	0	1	2	1	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	1	3	1
COOK 1	1	0	0	1	0	1	3	1
COOK 2	1	0	0	0	0	2	3	1
COOPER STATION	0	4	2	0	0	1	1	1
CRYSTAL RIVER 3	0	2	2	2	1	3	0	1
DAVIS-BESSE	0	0	1	0	0	0	0	1
DIABLO CANYON 1	1	1	0	0	0	1	1	0
DIABLO CANYON 2	1	2	0	0	0	1	1	0
DRESDEN 2	0	2	1	1	1	0	1	1
DRESDEN 3	0	1	1	0	2	0	1	0
DUANE ARNOLD	0	4	0	1	2	0	0	1
FARLEY 1	0	0	1	1	1	0	0	0
FARLEY 2	0	0	2	0	0	0	0	0
FERMI 2	0	3	0	2	1	1	0	2
FITZPATRICK	3	4	3	2	4	3	0	1
FORT CALHOUN	2	0	2	1	2	2	1	1
FORT ST. VRAIN	0	1	0	3	NA	NA	NA	NA
GINNA	0	0	0	0	1	2	1	0
GRAND GULF	1	0	2	1	0	1	0	4
HADDAM NECK	1	2	4	2	2	4	1	8
HATCH 1	4	1	1	0	0	2	0	1
HATCH 2	2	0	1	0	0	2	1	1
HOPE CREEK	2	0	3	0	0	0	1	2
INDIAN POINT 2	1	1	0	1	0	0		0
INDIAN POINT 3	0	0	1	0	0	0		1
KEWAUNEE	0	1	0	0	0	0	0	1
LASALLE 1	0	1	3	1	0	0	2	3
LASALLE 2	0	1	1	1	2	1	0	0
LIMERICK 1	1	8	5	3	1	3	4	0
LIMERICK 2	NA	NA	0	3	2	3	4	1

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	0	0	0	0	0	2	0
MCGUIRE 1	4	2	0	6	2	1	7	3
MCGUIRE 2	1	2	0	5	2	1	3	3
MILLSTONE 1	1	2	2	1	2	1	1	3
MILLSTONE 2	0	0	0	1	1	0	0	0
MILLSTONE 3	1	0	0	0	2	0	5	1
MONTICELLO	0	1	3	0	2	1	0	2
NINE MILE PT. 1	1	0	1	0	1	2	1	1
NINE MILE PT. 2	2	0	0	0	0	0	0	0
NORTH ANNA 1	1	1	1	0	1	0	2	0
NORTH ANNA 2	1	0	1	0	0	0	1	0
OCONEE 1	0	3	3	1	0	1	5	1
OCONEE 2	0	2	3	1	0	1	3	1
OCONEE 3	0	3	3	1	0	1	3	1
OYSTER CREEK	1	3	0	0	0	1	0	1
PALISADES	2	1	0	0	0	0	1	1
PALO VERDE 1	0	0	1	1	1	0	1	1
PALO VERDE 2	0	0	1	1	1	0	2	1
PALO VERDE 3	0	0	2	1	1	0	1	1
PEACH BOTTOM 2	0	3	3	1	3	2	0	2
PEACH BOTTOM 3	0	1	0	3	4	1	1	2
PERRY	4	3	1	0	1	2	6	3
PILGRIM	0	2	0	3	1	0	0	0
POINT BEACH 1	1	1	3	0	1	0	2	2
POINT BEACH 2	1	0	1	0	1	0	1	2
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	
PRAIRIE ISLAND 2	1	0	0	0	0	0	0	
QUAD CITIES 1	0	1	1	0	1	1	1	-
QUAD CITIES 2	0	0	1	0	1	0	3	3
RANCHO SECO	0	4	0	NA	NA	NA	NA	NA
RIVER BEND	1	1	1	0	0	3	2	0
ROBINSON 2	2	0	1	1	2	0	2	2
SALEM 1	1	2	2	0	0	0	3	1
SALEM 2	1	0	0	0	1	1	6	3
SAN ONOFRE 1	1	4	0	2	2	0	1	1
SAN ONOFRE 2	1	0	0	0	0	1	0	0
SAN ONOFRE 3	1	0	0	0	0	0	0	0
SEABROOK	1	1	0	0	1	1	0	0
SEQUOYAH 1	0	1	1	0	1	1	3	1
SEQUOYAH 2	0	1	1	0	1	0	1	2
SHEARON HARRIS	0	0	0	1	3	0	2	1
SOUTH TEXAS 1	2	0	1	0	0	0	2	0
SOUTH TEXAS 2	0	1	0	0	0	0	0	0
ST. LUCIE 1	0	0	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	0	2	0	1	0	0	1	0
SURRY 1	2	2	0	1	0	2	0	0
SURRY 2	4	2	0	1	1	1	0	0
SUSQUEHANNA 1	1	0	0	1	0	1	1	4
SUSQUEHANNA 2	0	1	0	1	0	2	1	3

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	1	1	0	0
TROJAN	0	0	2	2	3	6	9	1
TURKEY POINT 3	1	1	0	0	2	1	3	0
TURKEY POINT 4	1	1	0	1	2	2	1	0
VERMONT YANKEE	0	4	1	2	0	0	0	0
VOGTLE 1	0	3	0	0	0	2	0	0
VOGTLE 2	NA	2	0	0	0	0	1	1
WASH. NUCLEAR 2	0	1	5	4	2	1	1	5
WATERFORD 3	0	1	0	0	0	1	0	0
WOLF CREEK	1	0	1	2	0	1	2	0
YANKEE-ROWE	2	0	0	0	0	0	0	1
ZION 1	1	1	1	0	2	0	1	1
ZION 2	1	0	1	0	1	0	0	1
TOTAL	90	126	100	97	90	106	143	121

NA - The plant is not yet licensed.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.8 FORCED OUTAGE RATE(%)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	38	77	21	1	7	5	0	0
ARKANSAS 2	1	8	29	3	0	10	2	3
BEAVER VALLEY 1	9	2	4	0	82	2	5	1
BEAVER VALLEY 2	0	8	41	14	0	0	0	7
BIG ROCK POINT	6	0	0	3	8	0	0	21
BRAIDWOOD 1	7	4	4	2	0	2	1	13
BRAIDWOOD 2	18	0	2	4	0	0	18	0
BROWNS FERRY 1	100	100	100	100	100	100	100	100
BROWNS FERRY 2	100	100	100	100	100	100	100	100
BROWNS FERRY 3	100	100	100	100	100	100	100	100
BRUNSWICK 1	5	0	26	7	0	0	25	0
BRUNSWICK 2	4	0	12	0	0	0	25	23
BYRON 1	0	1	0	0	0	0	6	2
BYRON 2	1	0	8	0	8	1	0	0
CALLAWAY	0	0	3	2	0	0	5	0
CALVERT CLIFFS 1	2	4	0	0	0	0	15	0
CALVERT CLIFFS 2	0	11	0	0	0	0	0	0
CATAWBA 1	0	9	6	1	12	0	29	0
CATAWBA 2	3	9	18	1	0	3	0	0
CLINTON 1	15	0	85	21	0	16	25	19
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	17
COOK 1	/	1	0	4	0	0	0	0
COOK 2	0	0	0	5	0	22	3	0
COOPER STATION	0	12	0	3	6	0	0	0
CRYSTAL RIVER 3	2	0	59	45	13	4	8	0
DAVIS-BESSE	15	6	1	0	0	18	100	0
DIABLO CANYON 1	0	0	0	0	1	2	6	0
DIABLO CANYON 2	0	0	4	9	11	0	1	0
DRESDEN 2	0	9	0	2	4	14	0	7
DRESDEN 3	0	7	4	0	0	26	0	0
DUANE ARNOLD	100	23	5	3	45	3	1	41
FARLEY 1	1	0	0	0	6	0	0	4
FARLEY 2	0	0	13	7	3	0	5	0
FERMI 2	8	28	0	2	20	0	6	0
FITZPATRICK	42	0	0	0	14	4	0	2
FORT CALHOUN	0	0	9	5	0	0	0	13
FORT ST. VRAIN	0	100	29	48	NA	NA	NA	NA
GINNA	0	1	12	14	0	0	4	3
GRAND GULF	1	0	0	11	3	0	0	10
HADDAM NECK	0	0	0	0	0	0	0	25
HATCH 1	18	0	0	0	0	0	42	0
HATCH 2	1	0	0	1	5	5	0	0
HOPE CREEK	11	0	0	3	3	10	0	0
INDIAN POINT 2	4	1	0	0	2	0	0	4
INDIAN POINT 3	43	0	8	0	5	0	2	2
KEWAUNEE	0	0	0	0	1	0	0	0
LASALLE 1	0	4	0	0	0	7	0	0
LASALLE 2	4	0	0	34	15	3	18	10
LIMERICK 1	0	0	0	0	0	0	12	0
LIMERICK 2	NA	NA	NA	NA	NA	8	5	27

TABLE 9.8 FORCED OUTAGE RATE(%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	34	11	1	0	12	0	0	1
MCGUIRE 1	0	27	43	2	0	48	1	4
MCGUIRE 2	0	2	1	0	0	0	0	1
MILLSTONE 1	6	0	11	0	5	0	1	5
MILLSTONE 2	2	0	0	0	0	0	5	2
MILLSTONE 3	23	13	15	0	10	6	37	0
MONTICELLO	1	0	5	0	2	0	0	6
NINE MILE PT. 1	100	100	100	100	100	100	100	53
NINE MILE PT. 2	0	0	12	1	49	42	15	4
NORTH ANNA 1	0	10	0	2	17	2	0	0
NORTH ANNA 2	0	0	0	0	0	0	0	18
OCONEE 1	0	11	0	1	6	0	0	1
OCONEE 2	0	2	7	0	10	0	0	0
OCONEE 3	1	4	0	0	1	2	0	0
OYSTER CREEK	100	85	55	24	9	15	22	4
PALISADES	61	34	0	3	69	5	14	0
PALO VERDE 1	0	30	100	0	0	0	0	18
PALO VERDE 2	9	17	0	17	41	0	0	0
PALO VERDE 3	0	31	0	0	97	22	7	2
PEACH BOTTOM 2	0	0	6	8	18	4	31	10
PEACH BOTTOM 3	0	0	0	0	2	11	0	7
PERRY	0	2	0	1	0	4	0	0
PILGRIM	0	29	42	17	7	0	6	33
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	3	2	1	0	0	0	0
PRAIRIE ISLAND 1	0	0	0	1	0	3	0	0
PRAIRIE ISLAND 2	4	0	1	0	8	14	5	1
QUAD CITIES 1	4	0	13	6	3	4	0	1
QUAD CITIES 2	1	3	4	5	3	44	0	0
RANCHO SECO	32	64	9	NA	NA	NA	NA	NA
RIVER BEND	2	9	77	6	2	0	2	0
ROBINSON 2	14	7	14	43	91	0	5	0
SALEM 1	0	12	71	0	12	5	72	55
SALEM 2	72	23	14	0	0	8	45	11
SAN ONOFRE 1	0	0	87	25	3	0	9	0
SAN ONOFRE 2	0	34	28	0	23	0	0	5
SAN ONOFRE 3	0	3	12	9	0	9	0	0
SEABROOK	NA	NA	NA	NA	NA	NA	NA	2
SEQUOYAH 1	87	3	0	0	3	0	10	5
SEQUOYAH 2	0	0	16	5	0	0	2	0
SHEARON HARRIS	5	6	0	0	2	0	7	0
SOUTH TEXAS 1	8	13	0	8	15	6	24	13
SOUTH TEXAS 2	NA	NA	0	17	34	29	30	11
ST. LUCIE 1	0	0	0	1	1	2	10	40
ST. LUCIE 2	0	0	2	5	0	13	0	20
SUMMER	0	28	19	20	8	0	0	0
SURRY 1	100	100	100	8	1	0	12	2
SURRY 2	0	0	0	34	47	0	7	2
SUSQUEHANNA 1	0	22	0	4	2	12	0	0
SUSQUEHA	0	7	0	0	0	8	13	0

TABLE 9.8 FORCED OUTAGE RATE(%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	18	0	0	0	2	31	0	0
TROJAN	20	0	0	13	0	1	0	13
TURKEY POINT 3	99	45	0	1	0	0	33	0
TURKEY POINT 4	0	0	7	24	24	0	20	23
VERMONT YANKEE	0	0	0	0	0	4	2	0
VOGTLE 1	9	12	3	2	5	2	2	4
VOGTLE 2	NA	NA	4	1	5	2	4	0
WASH. NUCLEAR 2	10	4	0	11	0	0	0	9
WATERFORD 3	2	3	0	6	2	3	0	3
WOLF CREEK	0	2	0	0	0	3	6	0
YANKEE-ROWE	0	1	4	14	0	0	0	0
ZION 1	11	31	0	9	0	48	81	4
ZION 2	11	21	1	0	3	27	0	72
TOTAL	1511	1489	1589	1010	1328	1009	1309	1019

NA - The plant is not yet commercial.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.9 EQUIPMENT FORCED OUTAGES/1000 COMMERCIAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	2.38	1.92	0.57	0.91	0.00	1.44	0.00	0.00
ARKANSAS 2	0.00	0.50	1.29	0.00	0.95	0.51	0.93	1.03
BEAVER VALLEY 1	0.50	0.47	0.00	0.00	6.72	0.96	0.00	0.52
BEAVER VALLEY 2	0.00	0.59	1.99	0.00	0.00	0.00	0.00	0.00
BIG ROCK POINT	0.95	0.00	0.00	0.87	0.49	0.00	0.00	1.25
BRAIDWOOD 1	0.95	1.21	0.51	0.00	0.00	0.00	0.00	1.04
BRAIDWOOD 2	1.98	0.00	0.46	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 1	1.04	0.00	0.66	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 2	0.46	0.00	0.52	0.00	0.00	0.00	0.00	1.12
BYRON 1	0.00	0.47	0.00	0.00	0.00	0.00	0.99	0.46
BYRON 2	0.46	0.00	0.49	0.00	0.49	0.48	0.00	0.00
CALLAWAY	0.00	0.00	1.08	0.00	0.00	0.00	0.48	0.00
CALVERT CLIFFS 1	1.06	1.37	0.00	0.00	0.00	0.00	0.00	0.00
CALVERT CLIFFS 2	0.00	0.57	0.00	0.00	0.00	0.00	0.00	0.00
CATAWBA 1	0.00	3.10	0.99	0.46	1.52	0.00	2.91	0.00
CATAWBA 2	1.39	3.28	0.00	0.45	0.00	0.47	0.00	0.00
CLINTON 1	0.52	0.00	4.69	1.10	0.00	0.96	0.61	1.09
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	4.97
COOK 1	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
COOK 2	0.00	0.00	0.00	0.47	0.00	0.00	0.48	0.00
COOPER STATION	0.00	0.52	0.00	0.00	0.48	0.00	0.00	0.00
CRYSTAL RIVER 3	0.00	0.00	3.58	0.00	0.00	0.00	4.26	0.00
DAVIS-BESSE	2.15	0.51	0.46	0.00	0.00	0.00	0.00	0.00
DIABLO CANYON 1	0.00	0.00	0.00	0.00	0.00	0.47	0.47	0.00
DIABLO CANYON 2	0.00	0.00	0.51	0.98	0.50	0.00	0.66	0.00
DRESDEN 2	0.00	0.00	0.00	0.46	0.00	0.53	0.00	0.53
DRESDEN 3	0.00	1.47	1.29	0.00	0.00	2.00	0.00	0.00
DUANE ARNOLD	5.80	1.72	0.95	0.00	0.77	0.00	0.47	5.07
FARLEY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
FARLEY 2	0.00	0.00	0.00	0.00	0.92	0.00	0.54	0.00
FERMI 2	0.00	0.53	0.00	0.00	0.00	0.00	0.49	0.00
FITZPATRICK	0.00	0.00	0.00	0.00	1.06	0.49	0.00	0.48
FORT CALHOUN	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.51
FORT ST. VRAIN	0.00	0.00	1.52	0.86	NA	NA	NA	NA
GINNA	0.00	0.55	0.00	0.52	0.00	0.00	1.55	0.00
GRAND GULF	0.00	0.00	0.00	0.50	0.46	0.00	0.00	1.01
HADDAM NECK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.84
HATCH 1	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 2	0.48	0.00	0.00	0.64	1.68	0.48	0.00	0.00
HOPE CREEK	1.50	0.57	0.00	0.56	0.93	0.00	0.00	0.00
INDIAN POINT 2	0.92	0.55	0.00	0.00	0.61	0.00	0.00	0.47
INDIAN POINT 3	1.57	0.00	4.64	0.00	0.00	0.00	0.00	0.56
KEWAUNEE	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
LASALLE 1	0.00	0.48	0.00	0.00	0.00	0.50	0.48	0.00
LASALLE 2	0.00	0.00	0.00	0.00	0.00	0.00	4.40	0.50
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.00
LIMERICK 2	NA	NA	NA	NA	NA	0.97	0.52	1.29

TABLE 9.9 EQUIPMENT FORCED OUTAGE/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	3.94	1.02	0.00	0.00	0.54	0.00	0.00	0.91
MCGUIRE 1	0.00	0.63	0.80	0.46	0.00	11.22	1.93	0.93
MCGUIRE 2	0.45	0.93	0.46	0.00	0.00	0.00	0.00	0.68
MILLSTONE 1	0.47	0.00	1.12	0.00	0.47	0.00	0.54	0.00
MILLSTONE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00
MILLSTONE 3	0.57	0.53	3.40	0.52	1.00	0.98	2.06	0.00
MONTICELLO	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
NINE MILE PT. 2	0.00	0.00	0.99	0.54	1.52	0.00	0.53	0.63
NORTH ANNA 1	0.00	0.75	0.00	0.54	0.54	0.47	0.00	0.00
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.00	1.84	0.00	0.00	0.48	0.00	0.00	0.91
OCONEE 2	0.00	0.93	2.62	0.00	1.54	0.00	0.00	0.00
OCONEE 3	0.91	0.96	0.00	0.45	1.66	0.94	0.00	0.00
OYSTER CREEK	0.00	15.75	0.94	1.09	0.00	0.56	1.19	0.00
PALISADES	2.48	0.69	0.00	0.46	3.69	0.00	0.82	0.00
PALO VERDE 1	0.00	0.66	0.00	0.00	0.00	0.00	0.00	1.08
PALO VERDE 2	0.49	0.68	0.00	1.83	2.82	0.00	0.00	0.00
PALO VERDE 3	0.00	1.81	0.00	0.00	9.67	0.00	0.49	0.46
PEACH BOTTOM 2	0.00	0.00	1.47	0.96	1.06	0.71	0.62	0.99
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	1.25	1.00	0.00	0.48
PERRY	0.00	0.80	0.00	0.65	0.00	0.00	0.00	0.00
PILGRIM	0.00	0.00	0.00	0.54	0.00	0.00	0.63	0.58
POINT BEACH 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.47	0.00	0.50	0.00	0.00	0.00	0.00
PRAIRIE ISLAND 1	0.45	0.00	0.00	0.00	0.00	0.79	0.00	0.00
PRAIRIE ISLAND 2	0.47	0.00	0.66	0.00	0.98	0.53	0.00	0.58
QUAD CITIES 1	0.46	0.00	2.03	1.22	1.17	0.00	0.00	0.48
QUAD CITIES 2	0.00	0.48	1.41	0.49	0.00	0.00	0.00	0.00
RANCHO SECO	2.59	3.32	0.00	NA	NA	NA	NA	NA
RIVER BEND	0.51	1.81	14.42	0.95	0.48	0.54	0.46	0.00
ROBINSON 2	2.[illegible]	1.13	0.53	0.00	0.00	0.00	0.54	0.00
SALEM 1	0.00	1.07	8.97	0.00	0.00	0.49	2.77	3.74
SALEM 2	6.57	1.68	1.55	0.00	0.58	0.50	13.76	1.00
SAN ONOFRE 1	0.00	0.00	4.81	1.78	0.50	0.00	0.50	0.00
SAN ONOFRE 2	0.00	0.69	0.63	0.00	1.48	0.00	0.00	0.00
SAN ONOFRE 3	0.00	0.47	1.04	0.00	0.00	0.51	0.00	0.00
SEABROOK	NA	NA	NA	NA	NA	NA	NA	0.00
SEQUOYAH 1	5.27	0.00	0.00	0.00	0.46	0.00	2.78	0.93
SEQUOYAH 2	0.00	0.00	0.59	0.47	0.00	0.00	0.00	0.00
SHEARON HARRIS	0.59	1.44	0.00	0.00	4.05	0.00	0.52	0.00
SOUTH TEXAS 1	0.00	1.77	0.00	1.28	0.60	0.95	5.56	1.02
SOUTH TEXAS 2	NA	NA	0.00	2.61	2.59	1.24	1.65	0.51
ST. LUCIE 1	0.00	0.00	0.00	0.00	0.45	1.97	1.96	1.48
ST. LUCIE 2	0.00	0.00	0.64	0.47	0.00	0.52	0.00	1.64
SUMMER	0.00	0.00	0.56	1.62	1.46	0.00	0.00	0.00
SURRY 1	0.00	0.00	0.00	0.00	0.46	0.00	0.52	0.46
SURRY 2	0.00	0.00	0.00	0.00	0.85	0.00	0.98	0.46
SUSQUEHANNA 1	0.00	1.16	0.00	0.00	0.00	0.51	0.00	0.00
SUSQUEHANNA 2	0.45	0.50	0.00	0.00	0.00	0.50	0.56	0.00

TABLE 9.9 EQUIPMENT FORCED OUTAGE/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	1.63	0.00	0.00	0.00	0.46	1.77	0.00	0.00
TROJAN	0.56	0.00	0.00	1.00	0.00	0.00	0.00	1.08
TURKEY POINT 3	92.17	0.81	0.00	0.45	0.00	0.00	3.86	0.00
TURKEY POINT 4	0.00	0.00	1.78	2.31	1.62	0.00	1.10	1.16
VERMONT YANKEE	0.00	0.00	0.00	0.00	0.00	0.49	0.46	0.00
VOGTLE 1	2.03	1.03	0.46	0.92	0.47	0.00	0.00	0.47
VOGTLE 2	NA	NA	1.05	0.45	1.46	0.47	0.94	0.00
WASH. NUCLEAR 2	0.50	0.49	0.00	1.08	0.00	0.00	0.00	0.77
WATERFORD 3	0.00	0.48	0.00	1.05	0.96	1.11	0.00	0.92
WOLF CREEK	0.00	0.95	0.00	0.00	0.00	0.63	1.82	0.00
YANKEE-ROWE	0.00	0.53	0.94	0.52	0.00	0.00	0.00	0.00
ZION 1	0.00	1.31	0.00	1.28	0.00	0.93	0.00	0.00
ZION 2	2.33	1.15	0.46	0.00	0.45	0.71	0.00	5.92
TOTAL	156	71	81	38	66	41	71	56

NA - The plant is not yet commercial.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.10 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	419	520	1744	2208	1527	2085	2174	2208
ARKANSAS 2	2181	2000	1553	2001	1057	1944	2158	1935
BEAVER VALLEY 1	2014	2119	2109	1510	149	2086	2095	1913
BEAVER VALLEY 2	2209	1695	502	1902	2209	2160	2183	1451
BIG ROCK POINT	2096	2063	1678	1143	2037	2160	2183	1606
BRAIDWOOD 1	2108	1648	1961	1494	484	2137	2159	1920
BRAIDWOOD 2	1807	1127	2152	2131	2209	1777	710	2208
BROWNS FERRY 1	0	0	0	0	0	0	0	0
BROWNS FERRY 2	0	0	0	0	0	0	0	0
BROWNS FERRY 3	0	0	0	0	0	0	0	0
BRUNSWICK 1	962	0	1519	2070	2161	2160	1672	2116
BRUNSWICK 2	2154	2160	1939	1681	0	461	1610	1780
BYRON 1	1309	2143	2183	2208	2209	779	2011	2177
BYRON 2	2194	806	2021	2208	2025	2093	2183	1409
CALLAWAY	2055	2138	927	2208	2209	2160	2097	1973
CALVERT CLIFFS 1	1881	1455	352	0	0	0	242	0
CALVERT CLIFFS 2	2209	1766	0	0	0	0	0	0
CATAWBA 1	1308	1289	2020	2197	1979	629	1372	2208
CATAWBA 2	2164	1526	505	2208	2209	2119	1671	83
CLINTON 1	1936	51	426	1817	1950	1037	1636	1829
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1650	1733
COOK 1	2109	1810	0	2151	2209	2097	2183	2208
COOK 2	0	395	1863	2114	2209	1695	2093	0
COOPER STATION	2209	1913	512	2164	2084	1465	1369	2208
CRYSTAL RIVER 3	1153	1015	279	1216	1763	1499	235	2208
DAVIS-BESSE	465	1962	2165	2208	2209	609	0	2198
DIABLO CANYON 1	2209	2160	2183	2208	638	2125	2106	2208
DIABLO CANYON 2	632	2160	1946	2035	1996	1490	1526	2208
DRESDEN 2	700	929	2183	2177	1964	1888	2183	1888
DRESDEN 3	1939	2040	1548	2208	1516	999	2164	2119
DUANE ARNOLD	173	1741	2103	1785	1293	2095	2111	394
FARLEY 1	2198	2160	2183	2016	1254	2160	2183	2144
FARLEY 2	2209	1995	959	2082	2169	2160	1839	2208
FERMI 2	1950	1870	2183	1488	461	2160	2061	2056
FITZPATRICK	690	2160	2183	1854	1890	2038	174	2063
FORT CALHOUN	0	1479	2022	2107	2209	1142	870	1947
FORT ST. VRAIN	0	193	1971	1168	NA	NA	NA	NA
GINNA	2209	1806	708	1925	2209	1962	1288	2151
GRAND GULF	2191	1829	1025	1987	2166	2160	2183	1982
HADDAM NECK	2209	2160	2183	1540	0	0	0	1056
HATCH 1	527	2160	2183	2208	2209	1162	492	2208
HATCH 2	2095	2160	2183	1559	594	2085	2183	2208
HOPE CREEK	1994	1758	2183	1798	1075	1845	2183	2208
INDIAN POINT 2	2164	1811	0	2206	1627	1299	199	2130
INDIAN POINT 3	1277	817	215	2208	2112	1466	1983	1794
KEWAUNEE	2209	1208	1825	2208	2195	1464	1820	2208
LASALLE 1	2209	2086	2183	1846	0	1989	2069	2208
LASALLE 2	323	1246	2183	1372	1892	1764	455	2011
LIMERICK 1	2209	258	1110	2208	2209	2160	1696	1654
LIMERICK 2	NA	NA	NA	541	1421	2058	1910	1551

TABLE 9.10 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	508	1970	2172	2208	1861	2160	194	2208
MCGUIRE 1	289	1584	1256	2162	2209	178	1035	2142
MCGUIRE 2	2209	2149	2165	421	2209	2160	2183	1477
MILLSTONE 1	2116	2160	890	2200	2128	2160	1868	2114
MILLSTONE 2	2183	826	1560	2208	1433	2160	1292	1795
MILLSTONE 3	1760	1900	882	1926	2009	2046	1454	2208
MONTICELLO	2194	2160	2074	1157	1288	2160	2183	2012
NINE MILE PT. 1	0	0	0	0	0	0	0	1303
NINE MILE PT. 2	16	0	2020	1869	1317	1328	1885	1588
NORTH ANNA 1	2209	1334	0	1840	1849	2148	2183	2208
NORTH ANNA 2	2209	1205	1297	2208	2209	2160	2183	1227
OCONEE 1	2209	1090	2183	2016	2082	2160	1204	2202
OCONEE 2	2209	2144	1147	2152	1943	2160	2183	1777
OCONEE 3	2195	2094	2183	2203	1204	2136	2183	2208
OYSTER CREEK	0	64	1069	1842	2040	1781	1685	2130
PALISADES	403	1445	2183	2152	271	2087	1218	1838
PALO VERDE 1	2208	1522	0	0	0	0	138	1853
PALO VERDE 2	2029	1475	44	1643	1064	1295	0	1873
PALO VERDE 3	2208	1106	0	0	103	1752	2061	2175
PEACH BOTTOM 2	0	0	1359	2082	1890	1417	1603	2030
PEACH BOTTOM 3	0	0	0	0	801	1992	2183	2086
PERRY	1931	1255	0	1534	2209	1952	2183	1638
PILGRIM	0	969	1259	1855	1531	1666	1594	1726
POINT BEACH 1	2209	2160	1151	2208	2209	2139	1066	2010
POINT BEACH 2	1152	2144	2183	2004	912	2160	2183	2208
PRAIRIE ISLAND 1	2209	2160	2183	2189	2209	1260	2183	2208
PRAIRIE ISLAND 2	2137	2088	1521	2208	2036	1894	2139	1726
QUAD CITIES 1	2152	2160	1767	1640	854	2046	2183	2077
QUAD CITIES 2	2144	2103	2124	2045	2163	795	1268	2158
RANCHO SECO	1542	903	1452	NA	NA	NA	NA	NA
RIVER BEND	1976	1656	208	2104	2084	1861	2153	2160
ROBINSON 2	873	888	1886	1250	238	2152	1865	1658
SALEM 1	2209	1862	223	2208	1983	2054	723	1069
SALEM 2	304	1783	1939	2208	1720	1994	145	1002
SAN ONOFRE 1	1395	0	208	1607	1688	2160	2003	0
SAN ONOFRE 2	2209	1449	1584	1518	676	2125	2183	1381
SAN ONOFRE 3	2209	2110	1924	2009	2209	1979	315	1795
SEABROOK	NA	NA	194	0	0	228	1367	2069
SEQUOYAH 1	380	2111	2183	2208	2169	1803	721	2153
SEQUOYAH 2	2209	429	1687	2142	2086	2160	2156	1659
SHEARON HARRIS	1708	2078	2183	2208	493	2160	1916	2208
SOUTH TEXAS 1	1873	1129	2183	783	1656	2103	360	1962
SOUTH TEXAS 2	NA	411	1414	1918	771	1614	1822	1970
ST. LUCIE 1	2209	2160	2132	1789	2209	507	1530	1348
ST. LUCIE 2	2209	742	1560	2116	2209	1921	2183	1834
SUMMER	131	1588	1779	1854	2055	1970	959	2208
SURRY 1	0	0	0	2088	2184	2160	1924	2176
SURRY 2	0	0	0	327	1177	2160	2037	2178
SUSQUEHANNA 1	2209	1721	539	2145	2187	1954	2007	1771
SUSQUEHANNA 2	2209	1987	2183	1720	1027	2011	1792	2208

TABLE 9.10 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	1837	2160	2183	2208	2166	566	2183	2208
TROJAN	1778	2160	120	1001	2142	1870	0	1853
TURKEY POINT 3	22	1231	167	2199	2209	815	518	2208
TURKEY POINT 4	0	0	562	1730	1855	1942	1814	1723
VERMONT YANKEE	2209	985	2014	2208	2209	2031	2154	1485
VOGTLE 1	985	1944	2172	2175	2122	1278	1747	2143
VOGTLE 2	NA	83	1793	2199	2059	2127	2124	1821
WASH. NUCLEAR 2	1992	2028	770	1850	2209	2160	494	1300
WATERFORD 3	1590	2101	2183	1907	1042	1797	2183	2164
WOLF CREEK	146	2115	2183	2208	2209	1577	1102	2208
YANKEE-ROWE	1014	1891	2122	1915	2209	2160	2000	0
ZION 1	1981	1527	2183	1559	0	1078	459	2130
ZION 2	430	1734	2183	2208	2209	1411	0	338
TOTAL	156184	156021	152826	191194	169481	180063	164020	194570

NA - The plant is not yet critical.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	242	64	33	30	228	16	16	NA
ARKANSAS 2	242	64	33	30	228	16	16	NA
BEAVER VALLEY 1	13	59	133	198	299	8	8	NA
BEAVER VALLEY 2	NA	59	133	198	299	8	8	NA
BIG ROCK POINT	11	16	59	60	13	9	13	NA
BRAIDWOOD 1	5	50	8	65	173	29	56	NA
BRAIDWOOD 2	NA	NA	NA	NA	NA	29	56	NA
BROWNS FERRY 1	87	53	35	38	82	86	148	NA
BROWNS FERRY 2	87	53	35	38	82	86	148	NA
BROWNS FERRY 3	87	53	35	38	82	86	148	NA
BRUNSWICK 1	316	258	30	104	471	188	32	NA
BRUNSWICK 2	316	258	30	104	471	188	32	NA
BYRON 1	191	66	4	7	10	136	5	NA
BYRON 2	NA	66	4	7	10	136	5	NA
CALLAWAY	13	6	259	9	8	7	7	NA
CALVERT CLIFFS 1	12	20	68	47	38	34	41	NA
CALVERT CLIFFS 2	12	20	68	47	38	34	41	NA
CATAWBA 1	98	79	72	6	10	256	61	NA
CATAWBA 2	98	79	72	6	10	256	61	NA
CLINTON 1	NA	260	81	14	18	85	26	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	NA
COOK 1	74	95	138	10	10	15	14	NA
COOK 2	74	95	138	10	10	15	14	NA
COOPER STATION	21	28	274	19	21	157	184	NA
CRYSTAL RIVER 3	39	130	70	8	10	49	395	NA
DAVIS-BESSE	17	7	11	9	10	251	223	NA
DIABLO CANYON 1	143	3	4	4	207	104	38	NA
DIABLO CANYON 2	143	3	4	4	207	104	38	NA
DRESDEN 2	343	370	46	43	105	168	45	NA
DRESDEN 3	343	370	46	43	105	168	45	NA
DUANE ARNOLD	526	45	28	46	63	36	58	NA
FARLEY 1	11	34	127	44	169	8	10	NA
FARLEY 2	11	34	127	44	169	8	10	NA
FERMI 2	15	11	15	66	142	21	28	NA
FITZPATRICK	335	58	52	178	89	101	664	NA
FORT CALHOUN	213	48	16	19	10	99	139	NA
FORT ST. VRAIN	0	1	1	NA	NA	NA	NA	NA
GINNA	21	124	440	24	20	81	241	NA
GRAND GULF	37	143	312	25	18	16	14	NA
HADDAM NECK	14	19	14	313	251	119	200	NA
HATCH 1	361	57	41	100	136	315	358	NA
HATCH 2	361	57	41	100	136	315	358	NA
HOPE CREEK	29	110	21	96	238	49	35	NA
INDIAN POINT 2	32	220	1046	29	142	232	319	NA
INDIAN POINT 3	45	454	403	10	9	64	20	NA
KEWAUNEE	5	208	26	4	2	104	36	NA
LASALLE 1	560	178	62	94	360	117	259	NA
LASALLE 2	560	178	62	94	360	117	259	NA
LIMERICK 1	9	162	56	17	29	12	13	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	665	21	11	19	38	28	476	NA
MCGUIRE 1	281	30	49	222	9	152	67	NA
MCGUIRE 2	281	30	49	222	9	152	67	NA
MILLSTONE 1	11	41	377	17	24	23	29	NA
MILLSTONE 2	55	470	176	27	241	6	158	NA
MILLSTONE 3	6	8	146	7	7	2	6	NA
MONTICELLO	16	21	27	273	186	25	13	NA
NINE MILE PT. 1	133	56	81	92	33	60	36	NA
NINE MILE PT. 2	NA	56	81	92	33	60	36	NA
NORTH ANNA 1	10	174	511	28	24	16	11	NA
NORTH ANNA 2	10	174	511	28	24	16	11	NA
OCONEE 1	24	62	62	14	90	12	41	NA
OCONEE 2	24	62	62	14	90	12	41	NA
OCONEE 3	24	62	62	14	90	12	41	NA
OYSTER CREEK	1131	569	149	82	111	126	80	NA
PALISADES	279	57	16	18	208	24	129	NA
PALO VERDE 1	11	25	87	87	24	46	93	NA
PALO VERDE 2	11	25	87	87	24	46	93	NA
PALO VERDE 3	NA	25	87	87	24	46	93	NA
PEACH BOTTOM 2	151	58	65	152	67	54	44	NA
PEACH BOTTOM 3	151	58	65	152	67	54	44	NA
PERRY	30	258	425	64	33	29	48	NA
PILGRIM	75	49	54	45	61	65	66	NA
POINT BEACH 1	98	9	83	11	134	8	70	NA
POINT BEACH 2	98	9	83	11	134	8	70	NA
PRAIRIE ISLAND 1	3	6	34	3	4	53	1	NA
PRAIRIE ISLAND 2	3	6	34	3	4	53	1	NA
QUAD CITIES 1	36	39	33	100	278	280	80	NA
QUAD CITIES 2	36	39	33	100	278	280	80	NA
RANCHO SECO	19	34	12	NA	NA	NA	NA	NA
RIVER BEND	42	106	376	21	25	42	15	NA
ROBINSON 2	441	116	31	31	36	15	13	NA
SALEM 1	92	7	144	4	15	6	128	NA
SALEM 2	92	7	144	4	15	6	128	NA
SAN ONOFRE 1	62	77	33	45	50	4	112	NA
SAN ONOFRE 2	62	77	33	45	50	4	112	NA
SAN ONOFRE 3	62	77	33	45	50	4	112	NA
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	19	280	16	12	22	111	400	NA
SEQUOYAH 2	19	280	16	12	22	111	400	NA
SHEARON HARRIS	NA	6	4	5	140	8	30	NA
SOUTH TEXAS 1	NA	NA	NA	NA	NA	1	67	NA
SOUTH TEXAS 2	NA	NA	NA	NA	NA	NA	NA	NA
ST. LUCIE 1	18	144	21	58	9	227	39	NA
ST. LUCIE 2	18	144	21	58	9	227	39	NA
SUMMER	464	27	8	8	8	52	235	NA
SURRY 1	287	118	139	95	45	22	23	NA
SURRY 2	287	118	139	95	45	22	23	NA
SUSQUEHANNA 1	17	28	168	73	83	27	24	NA
SUSQUEHANNA 2	17	28	168	73	83	27	24	NA

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	20	12	13	14	15	236	14	NA
TROJAN	33	7	346	62	6	37	210	NA
TURKEY POINT 3	228	116	52	24	28	192	100	NA
TURKEY POINT 4	228	116	52	24	28	192	100	NA
VERMONT YANKEE	38	194	34	15	28	28	14	NA
VOGTLE 1	NA	11	5	9	8	203	35	NA
VOGTLE 2	NA	NA	NA	NA	NA	NA	NA	NA
WASH. NUCLEAR 2	44	36	361	44	52	40	399	NA
WATERFORD 3	36	9	5	38	194	17	5	NA
WOLF CREEK	229	5	2	1	7	84	91	NA
YANKEE-ROWE	195	23	10	18	11	8	25	NA
ZION 1	241	42	12	82	176	57	262	NA
ZION 2	241	42	12	82	176	57	262	NA
TOTAL	13376	9611	10763	5667	9383	8353	10411	NA

NA - The plant has not yet been commercial for one calendar year
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-2 will be NA.

TABLE 9.12 CAUSE CODES

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	8	3	4	2	7	0	2	NA
ARKANSAS 2	3	3	4	1	5	7	4	NA
BEAVER VALLEY 1	1	1	1	0	1	1	0	NA
BEAVER VALLEY 2	1	3	5	1	2	2	2	NA
BIG ROCK POINT	0	1	0	2	0	1	1	NA
BRAIDWOOD 1	1	0	0	1	6	2	3	NA
BRAIDWOOD 2	3	2	0	0	4	1	2	NA
BROWNS FERRY 1	11	9	5	8	2	3	3	NA
BROWNS FERRY 2	12	10	9	8	2	4	3	NA
BROWNS FERRY 3	10	7	4	7	2	3	2	NA
BRUNSWICK 1	5	4	5	1	4	3	2	NA
BRUNSWICK 2	6	0	4	3	3	5	2	NA
BYRON 1	1	2	2	1	0	3	1	NA
BYRON 2	1	2	0	1	0	1	1	NA
CALLAWAY	2	0	2	1	0	2	1	NA
CALVERT CLIFFS 1	2	3	1	3	4	6	5	NA
CALVERT CLIFFS 2	0	6	3	1	4	3	2	NA
CATAWBA 1	3	4	3	3	2	13	3	NA
CATAWBA 2	4	7	5	5	2	9	2	NA
CLINTON 1	4	10	7	2	5	3	4	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	3	10	NA
COOK 1	2	2	3	3	1	1	2	NA
COOK 2	3	2	2	2	1	1	1	NA
COOPER STATION	0	4	4	0	0	2	1	NA
CRYSTAL RIVER 3	7	5	6	4	4	0	2	NA
DAVIS-BESSE	3	2	4	1	0	3	1	NA
DIABLO CANYON 1	3	3	0	2	6	3	1	NA
DIABLO CANYON 2	9	4	1	2	6	2	1	NA
DRESDEN 2	3	7	2	3	1	2	1	NA
DRESDEN 3	1	1	5	1	3	4	2	NA
DUANE ARNOLD	2	3	0	2	1	1	2	NA
FARLEY 1	1	0	1	0	1	3	1	NA
FARLEY 2	0	1	5	1	2	2	2	NA
FERMI 2	1	2	3	2	8	1	0	NA
FITZPATRICK	4	0	2	2	5	6	2	NA
FORT CALHOUN	5	5	6	2	2	3	8	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	4	0	2	0	1	NA
GRAND GULF	1	0	5	1	1	2	4	NA
HADDAM NECK	0	2	3	1	0	2	0	NA
HATCH 1	3	3	2	2	6	3	4	NA
HATCH 2	1	2	1	4	6	5	3	NA
HOPE CREEK	2	5	4	2	5	1	2	NA
INDIAN POINT 2	0	0	2	1	1	0	1	NA
INDIAN POINT 3	0	5	0	0	1	1	0	NA
KEWAUNEE	0	5	2	0	0	1	1	NA
LASALLE 1	1	3	3	0	4	2	1	NA
LASALLE 2	2	5	4	2	2	3	6	NA
LIMERICK 1	4	10	10	5	1	4	3	NA
LIMERICK 2	NA	NA	3	4	2	5	2	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	0	1	0	0	0	0	0	NA
MCGUIRE 1	9	4	2	7	1	1	3	NA
MCGUIRE 2	4	4	2	9	3	3	1	NA
MILLSTONE 1	3	2	1	1	1	2	5	NA
MILLSTONE 2	0	1	1	1	1	1	2	NA
MILLSTONE 3	4	3	5	7	8	6	8	NA
MONTICELLO	0	2	3	1	6	0	3	NA
NINE MILE PT. 1	2	4	4	3	5	2	2	NA
NINE MILE PT. 2	7	5	6	6	6	2	5	NA
NORTH ANNA 1	8	1	2	2	0	2	3	NA
NORTH ANNA 2	7	1	3	2	0	2	3	NA
OCONEE 1	1	7	4	5	2	0	7	NA
OCONEE 2	1	3	5	3	2	0	3	NA
OCONEE 3	1	4	4	4	2	1	3	NA
OYSTER CREEK	7	5	3	1	1	3	2	NA
PALISADES	0	3	3	3	4	2	2	NA
PALO VERDE 1	3	2	3	1	3	1	4	NA
PALO VERDE 2	2	1	3	1	0	2	3	NA
PALO VERDE 3	0	0	3	1	2	1	3	NA
PEACH BOTTOM 2	7	3	7	3	5	2	3	NA
PEACH BOTTOM 3	4	1	3	4	6	3	3	NA
PERRY	3	7	7	2	3	3	8	NA
PILGRIM	3	6	5	3	3	4	1	NA
POINT BEACH 1	2	1	3	0	1	0	0	NA
POINT BEACH 2	1	0	3	0	3	0	0	NA
PRAIRIE ISLAND 1	3	1	3	1	2	2	3	NA
PRAIRIE ISLAND 2	1	1	3	1	2	2	3	NA
QUAD CITIES 1	1	1	0	4	7	4	1	NA
QUAD CITIES 2	6	0	1	0	3	3	0	NA
RANCHO SECO	3	3	0	NA	NA	NA	NA	NA
RIVER BEND	3	3	8	1	7	3	3	NA
ROBINSON 2	2	2	1	0	1	1	2	NA
SALEM 1	1	4	12	1	2	3	1	NA
SALEM 2	3	4	5	0	1	2	8	NA
SAN ONOFRE 1	1	4	5	7	4	1	2	NA
SAN ONOFRE 2	2	4	3	9	3	2	2	NA
SAN ONOFRE 3	1	4	4	3	2	3	2	NA
SEABROOK	1	1	2	1	2	2	1	NA
SEQUOYAH 1	6	6	4	6	6	2	6	NA
SEQUOYAH 2	1	5	5	5	7	3	3	NA
SHEARON HARRIS	2	3	3	2	3	6	3	NA
SOUTH TEXAS 1	5	5	2	4	3	3	6	NA
SOUTH TEXAS 2	0	5	3	1	1	2	2	NA
ST. LUCIE 1	0	0	1	3	1	2	2	NA
ST. LUCIE 2	0	1	2	1	0	0	1	NA
SUMMER	1	2	3	3	1	1	1	NA
SURRY 1	2	5	7	4	0	1	2	NA
SURRY 2	2	3	4	5	4	2	1	NA
SUSQUEHANNA 1	1	6	8	1	2	3	2	NA
SUSQUEHANNA 2	0	3	4	2	4	2	1	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	2	2	0	NA
TROJAN	4	3	3	9	2	6	11	NA
TURKEY POINT 3	3	4	1	3	1	1	4	NA
TURKEY POINT 4	3	2	2	5	1	0	1	NA
VERMONT YANKEE	2	7	0	3	1	4	2	NA
VOGTLE 1	5	4	3	1	1	6	5	NA
VOGTLE 2	NA	3	4	1	0	2	2	NA
WASH. NUCLEAR 2	4	5	7	6	3	3	3	NA
WATERFORD 3	4	2	1	5	1	0	2	NA
WOLF CREEK	0	3	1	3	0	1	6	NA
YANKEE-ROWE	3	1	1	3	0	0	0	NA
ZION 1	2	1	2	4	4	3	3	NA
ZION 2	10	4	2	0	3	4	1	NA
TOTAL	304	344	353	278	282	268	285	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

TABLE 9.13 CAUSE CODES

LICENSED OPERATOR ERROR

(The latest quarter date are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	4	1	1	1	2	0	0	NA
ARKANSAS 2	1	0	1	0	2	0	0	NA
BEAVER VALLEY 1	2	1	0	1	0	1	0	NA
BEAVER VALLEY 2	3	1	2	0	0	0	0	NA
BIG ROCK POINT	0	0	0	0	0	0	0	NA
BRAIDWOOD 1	0	0	1	0	0	1	0	NA
BRAIDWOOD 2	0	0	0	0	1	2	1	NA
BROWNS FERRY 1	3	3	0	1	0	1	0	NA
BROWNS FERRY 2	3	3	0	1	0	1	0	NA
BROWNS FERRY 3	3	3	0	1	0	1	0	NA
BRUNSWICK 1	4	4	1	0	0	0	0	NA
BRUNSWICK 2	2	0	0	1	0	0	0	NA
BYRON 1	0	0	0	0	0	0	0	NA
BYRON 2	0	1	0	0	0	0	0	NA
CALLAWAY	1	1	4	1	0	0	0	NA
CALVERT CLIFFS 1	0	2	0	0	0	0	2	NA
CALVERT CLIFFS 2	0	0	1	0	0	0	2	NA
CATAWBA 1	0	2	0	1	0	3	2	NA
CATAWBA 2	0	2	0	3	0	1	1	NA
CLINTON 1	1	4	2	3	1	1	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	2	3	NA
COOK 1	0	1	0	0	1	0	1	NA
COOK 2	0	1	2	0	0	0	0	NA
COOPER STATION	0	0	0	0	0	0	1	NA
CRYSTAL RIVER 3	1	1	2	1	0	0	0	NA
DAVIS-BESSE	4	1	0	0	0	1	0	NA
DIABLO CANYON 1	1	0	0	0	1	1	0	NA
DIABLO CANYON 2	1	0	1	0	0	0	1	NA
DRESDEN 2	1	2	0	0	0	1	0	NA
DRESDEN 3	0	2	0	0	0	0	0	NA
DUANE ARNOLD	1	0	0	0	0	0	0	NA
FARLEY 1	0	0	0	1	0	0	0	NA
FARLEY 2	0	0	0	0	1	0	0	NA
FERMI 2	2	1	0	1	3	0	0	NA
FITZPATRICK	0	1	0	0	0	0	0	NA
FORT CALHOUN	0	0	1	0	0	1	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	2	0	0	0	0	NA
GRAND GULF	0	0	1	2	1	0	0	NA
HADDAM NECK	0	0	0	1	0	0	0	NA
HATCH 1	0	1	0	0	2	0	2	NA
HATCH 2	0	0	0	0	0	0	0	NA
HOPE CREEK	0	1	1	0	0	1	0	NA
INDIAN POINT 2	0	0	0	0	0	0	0	NA
INDIAN POINT 3	0	0	0	0	0	0	0	NA
KEWAUNEE	0	0	0	0	0	0	0	NA
LASALLE 1	0	2	0	0	1	0	0	NA
LASALLE 2	1	2	0	2	0	0	0	NA
LIMERICK 1	1	0	0	0	0	0	1	NA
LIMERICK 2	NA	NA	0	1	0	0	1	NA

TABLE 9.13 CAUSE CODES (CONTINUED)

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	0	0	0	0	0	1	NA
MCGUIRE 1	3	0	1	1	0	1	1	NA
MCGUIRE 2	0	0	1	2	0	1	0	NA
MILLSTONE 1	0	0	1	0	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	0	3	2	0	1	0	1	NA
MONTICELLO	1	0	2	0	2	0	0	NA
NINE MILE PT. 1	0	1	0	0	0	0	1	NA
NINE MILE PT. 2	0	1	5	0	4	1	1	NA
NORTH ANNA 1	0	0	0	0	0	0	0	NA
NORTH ANNA 2	0	1	0	0	0	0	0	NA
OCONEE 1	0	2	0	0	0	0	2	NA
OCONEE 2	0	0	0	0	0	0	0	NA
OCONEE 3	0	0	0	1	1	1	0	NA
OYSTER CREEK	1	0	2	0	2	1	0	NA
PALISADES	1	0	0	0	0	3	0	NA
PALO VERDE 1	0	1	0	0	1	0	1	NA
PALO VERDE 2	1	1	1	0	0	1	1	NA
PALO VERDE 3	0	1	1	1	0	0	0	NA
PEACH BOTTOM 2	0	0	2	0	1	0	1	NA
PEACH BOTTOM 3	0	0	0	0	0	0	0	NA
PERRY	0	1	3	0	0	0	1	NA
PILGRIM	3	1	3	0	0	0	0	NA
POINT BEACH 1	0	1	0	0	0	0	0	NA
POINT BEACH 2	1	0	0	0	0	0	0	NA
PRAIRIE ISLAND 1	1	0	0	1	1	0	0	NA
PRAIRIE ISLAND 2	0	0	0	1	1	1	0	NA
QUAD CITIES 1	0	0	0	0	0	0	0	NA
QUAD CITIES 2	0	0	0	0	0	0	0	NA
RANCHO SECO	1	0	0	NA	NA	NA	NA	NA
RIVER BEND	1	1	0	0	0	0	0	NA
ROBINSON 2	0	1	0	0	0	0	0	NA
SALEM 1	0	2	1	0	1	0	1	NA
SALEM 2	1	0	0	0	0	0	1	NA
SAN ONOFRE 1	0	1	1	0	0	1	0	NA
SAN ONOFRE 2	0	1	1	3	1	0	1	NA
SAN ONOFRE 3	0	0	1	1	0	0	3	NA
SEABROOK	0	0	0	0	0	1	0	NA
SEQUOYAH 1	1	1	0	0	0	3	1	NA
SEQUOYAH 2	0	1	2	0	0	2	0	NA
SHEARON HARRIS	2	0	0	0	2	0	0	NA
SOUTH TEXAS 1	2	0	0	0	0	0	0	NA
SOUTH TEXAS 2	0	0	3	0	0	0	0	NA
ST. LUCIE 1	0	0	0	1	0	0	0	NA
ST. LUCIE 2	0	2	1	1	0	1	0	NA
SUMMER	0	0	0	0	0	0	0	NA
SURRY 1	1	1	2	4	1	0	0	NA
SURRY 2	1	0	1	4	3	0	0	NA
SUSQUEHANNA 1	0	2	0	0	0	0	0	NA
SUSQUEHANNA 2	0	0	0	0	0	0	0	NA

TABLE 9.13 CAUSE CODES (CONTINUED)

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	1	2	0	NA
TROJAN	1	0	0	1	1	0	1	NA
TURKEY POINT 3	0	0	0	0	1	1	2	NA
TURKEY POINT 4	0	0	2	0	1	1	1	NA
VERMONT YANKEE	0	1	0	0	0	0	0	NA
VOGTLE 1	1	1	0	0	0	2	1	NA
VOGTLE 2	NA	3	2	0	0	0	2	NA
WASH. NUCLEAR 2	0	0	1	0	0	0	0	NA
WATERFORD 3	0	0	0	1	2	0	0	NA
WOLF CREEK	1	3	0	1	0	0	2	NA
YANKEE-ROWE	0	0	0	1	0	0	1	NA
ZION 1	0	1	0	0	1	2	0	NA
ZION 2	3	1	1	0	0	0	0	NA
TOTAL	69	81	66	48	45	45	47	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

TABLE 9.14 CAUSE CODES

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	5	1	3	0	6	0	1	NA
ARKANSAS 2	1	1	2	1	5	2	1	NA
BEAVER VALLEY 1	0	0	2	0	3	1	0	NA
BEAVER VALLEY 2	0	1	5	0	1	2	1	NA
BIG ROCK POINT	2	0	1	3	0	0	0	NA
BRAIDWOOD 1	1	0	0	0	4	0	0	NA
BRAIDWOOD 2	1	1	0	0	1	0	0	NA
BROWNS FERRY 1	6	2	3	3	2	1	3	NA
BROWNS FERRY 2	10	3	4	7	2	1	2	NA
BROWNS FERRY 3	6	3	3	3	2	1	2	NA
BRUNSWICK 1	3	1	1	0	2	0	2	NA
BRUNSWICK 2	5	2	1	1	1	1	3	NA
BYRON 1	0	1	0	0	0	3	0	NA
BYRON 2	1	0	0	0	0	1	0	NA
CALLAWAY	1	1	1	1	1	1	1	NA
CALVERT CLIFFS 1	0	1	1	0	1	4	0	NA
CALVERT CLIFFS 2	0	2	1	0	0	2	0	NA
CATAWBA 1	1	4	1	1	0	5	2	NA
CATAWBA 2	1	3	5	3	1	4	0	NA
CLINTON 1	3	3	4	1	2	1	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	0	4	NA
COOK 1	1	1	2	3	0	1	0	NA
COOK 2	1	3	2	1	0	2	1	NA
COOPER STATION	0	3	0	0	0	1	1	NA
CRYSTAL RIVER 3	5	0	3	3	1	0	1	NA
DAVIS-BESSE	2	0	1	5	1	0	3	NA
DIABLO CANYON 1	3	2	0	0	2	2	0	NA
DIABLO CANYON 2	6	0	0	1	0	2	2	NA
DRESDEN 2	1	2	1	0	2	0	0	NA
DRESDEN 3	0	0	2	0	3	0	0	NA
DUANE ARNOLD	2	2	1	2	1	0	0	NA
FARLEY 1	4	0	2	0	2	0	0	NA
FARLEY 2	2	0	4	1	2	0	0	NA
FERMI 2	1	2	1	3	7	0	0	NA
FITZPATRICK	0	0	3	2	4	4	2	NA
FORT CALHOUN	7	2	1	1	2	3	1	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	1	0	0	2	3	NA
GRAND GULF	1	1	0	1	1	0	2	NA
HADDAM NECK	0	1	1	3	2	0	1	NA
HATCH 1	3	1	0	0	2	0	3	NA
HATCH 2	1	1	0	1	2	0	1	NA
HOPE CREEK	7	0	2	1	2	1	2	NA
INDIAN POINT 2	3	3	1	0	0	0	0	NA
INDIAN POINT 3	1	4	1	0	1	0	0	NA
KEWAUNEE	0	1	1	0	0	1	2	NA
LASALLE 1	3	2	1	0	2	3	1	NA
LASALLE 2	0	4	0	0	2	2	1	NA
LIMERICK 1	5	5	7	3	3	5	1	NA
LIMERICK 2	NA	NA	1	5	5	4	1	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	0	1	0	0	0	1	NA
MCGUIRE 1	6	1	2	6	1	2	2	NA
MCGUIRE 2	2	1	1	4	3	1	1	NA
MILLSTONE 1	1	0	1	2	1	0	1	NA
MILLSTONE 2	1	1	2	2	1	1	2	NA
MILLSTONE 3	2	0	3	1	3	5	1	NA
MONTICELLO	0	1	2	1	3	0	1	NA
NINE MILE PT. 1	1	0	1	2	1	0	3	NA
NINE MILE PT. 2	5	3	1	2	2	3	1	NA
NORTH ANNA 1	0	4	2	0	0	2	2	NA
NORTH ANNA 2	1	1	2	0	0	3	1	NA
OCONEE 1	0	4	0	3	0	0	1	NA
OCONEE 2	0	2	1	1	0	0	0	NA
OCONEE 3	0	2	0	3	1	1	0	NA
OYSTER CREEK	2	1	2	3	0	1	0	NA
PALISADES	3	1	2	0	0	3	1	NA
PALO VERDE 1	1	0	1	2	2	1	0	NA
PALO VERDE 2	1	1	1	0	1	1	2	NA
PALO VERDE 3	0	0	1	3	1	2	0	NA
PEACH BOTTOM 2	4	1	1	4	1	0	0	NA
PEACH BOTTOM 3	2	1	0	3	1	1	2	NA
PERRY	2	3	3	4	3	1	5	NA
PILGRIM	0	4	3	3	3	1	0	NA
POINT BEACH 1	0	1	1	1	1	0	2	NA
POINT BEACH 2	0	1	1	1	2	0	2	NA
PRAIRIE ISLAND 1	2	0	1	2	1	2	2	NA
PRAIRIE ISLAND 2	2	0	1	1	1	4	1	NA
QUAD CITIES 1	0	0	2	3	2	1	0	NA
QUAD CITIES 2	4	0	0	0	1	2	1	NA
RANCHO SECO	2	1	1	NA	NA	NA	NA	NA
RIVER BEND	1	5	7	2	4	3	3	NA
ROBINSON 2	0	3	0	0	0	2	1	NA
SALEM 1	1	2	4	0	4	2	0	NA
SALEM 2	3	1	0	0	3	1	6	NA
SAN ONOFRE 1	2	1	0	1	0	0	1	NA
SAN ONOFRE 2	3	1	1	4	0	0	1	NA
SAN ONOFRE 3	0	2	2	1	0	0	2	NA
SEABROOK	1	1	2	3	1	2	4	NA
SEQUOYAH 1	6	5	2	3	3	1	5	NA
SEQUOYAH 2	2	1	4	4	2	2	6	NA
SHEARON HARRIS	6	6	3	1	4	1	3	NA
SOUTH TEXAS 1	2	2	1	1	3	2	0	NA
SOUTH TEXAS 2	1	1	1	0	2	1	1	NA
ST. LUCIE 1	0	0	2	1	2	0	1	NA
ST. LUCIE 2	0	1	1	1	0	1	0	NA
SUMMER	2	3	0	3	1	0	3	NA
SURRY 1	4	4	5	2	0	0	0	NA
SURRY 2	3	2	4	4	1	0	0	NA
SUSQUEHANNA 1	3	2	6	1	2	1	1	NA
SUSQUEHANNA 2	4	1	3	2	3	3	2	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	0	1	0	NA
TROJAN	4	2	5	4	2	5	2	NA
TURKEY POINT 3	2	2	1	2	0	3	1	NA
TURKEY POINT 4	1	0	0	4	0	2	1	NA
VERMONT YANKEE	1	2	2	1	0	2	1	NA
VOGTLE 1	7	6	0	1	1	2	1	NA
VOGTLE 2	NA	4	2	1	3	1	1	NA
WASH. NUCLEAR 2	1	2	5	1	0	1	1	NA
WATERFORD 3	3	1	2	1	2	1	2	NA
WOLF CREEK	4	2	0	1	0	0	1	NA
YANKEE-ROWE	0	3	2	3	1	0	1	NA
ZION 1	1	1	1	4	3	2	2	NA
ZION 2	6	3	0	1	1	1	4	NA
TOTAL	225	177	185	175	167	144	145	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

TABLE 9.15 CAUSE CODES

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	7	3	8	2	15	1	1	NA
ARKANSAS 2	5	3	8	0	13	9	5	NA
BEAVER VALLEY 1	2	3	4	2	8	4	2	NA
BEAVER VALLEY 2	3	7	12	3	2	3	2	NA
BIG ROCK POINT	2	2	1	3	0	0	0	NA
BRAIDWOOD 1	3	3	2	2	9	3	3	NA
BRAIDWOOD 2	4	3	1	1	2	1	7	NA
BROWNS FERRY 1	20	10	6	9	5	5	7	NA
BROWNS FERRY 2	22	12	12	12	7	6	6	NA
BROWNS FERRY 3	19	9	5	9	5	5	5	NA
BRUNSWICK 1	10	5	10	1	4	2	5	NA
BRUNSWICK 2	9	4	6	7	7	6	6	NA
BYRON 1	2	3	2	1	0	3	3	NA
BYRON 2	2	2	1	1	0	2	1	NA
CALLAWAY	2	2	5	2	1	3	3	NA
CALVERT CLIFFS 1	3	4	1	3	3	8	4	NA
CALVERT CLIFFS 2	1	6	4	1	3	4	3	NA
CATAWBA 1	5	9	4	4	2	11	4	NA
CATAWBA 2	7	10	9	5	2	7	1	NA
CLINTON 1	7	11	10	4	6	4	3	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	4	9	NA
COOK 1	3	4	5	4	1	1	1	NA
COOK 2	3	8	5	2	2	2	1	NA
COOPER STATION	1	4	8	2	1	2	3	NA
CRYSTAL RIVER 3	7	4	9	6	1	1	3	NA
DAVIS-BESSE	4	2	4	4	2	2	3	NA
DIABLO CANYON 1	4	3	0	2	8	2	2	NA
DIABLO CANYON 2	12	4	2	3	4	1	4	NA
DRESDEN 2	7	10	3	10	3	2	1	NA
DRESDEN 3	1	2	4	3	5	4	1	NA
DUANE ARNOLD	1	6	1	4	2	3	1	NA
FARLEY 1	5	0	3	0	2	2	1	NA
FARLEY 2	3	1	8	2	2	2	2	NA
FERMI 2	3	7	4	8	11	1	2	NA
FITZPATRICK	3	2	5	4	6	9	7	NA
FORT CALHOUN	8	7	6	2	3	5	5	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	5	3	4	1	6	NA
GRAND GULF	2	1	3	3	2	1	6	NA
HADDAM NECK	2	1	3	6	3	3	0	NA
HATCH 1	4	4	0	2	6	5	6	NA
HATCH 2	2	3	0	4	7	5	3	NA
HOPE CREEK	9	5	7	3	5	3	4	NA
INDIAN POINT 2	3	2	2	3	1	0	1	NA
INDIAN POINT 3	1	6	1	0	2	1	1	NA
KEWAUNEE	0	6	4	1	1	1	2	NA
LASALLE 1	5	13	9	3	5	5	4	NA
LASALLE 2	7	12	8	3	6	7	5	NA
LIMERICK 1	5	11	13	8	8	6	3	NA
LIMERICK 2	NA	NA	2	6	9	7	3	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	1	1	0	2	0	3	NA
MCGUIRE 1	14	4	3	11	2	4	5	NA
MCGUIRE 2	6	6	2	12	5	2	2	NA
MILLSTONE 1	4	1	8	3	2	1	4	NA
MILLSTONE 2	1	2	3	3	2	0	4	NA
MILLSTONE 3	5	2	6	7	8	9	6	NA
MONTICELLO	0	4	7	4	8	0	5	NA
NINE MILE PT. 1	2	4	2	3	2	1	5	NA
NINE MILE PT. 2	11	6	8	7	6	7	6	NA
NORTH ANNA 1	5	6	6	2	2	3	4	NA
NORTH ANNA 2	5	5	5	1	0	3	3	NA
OCONEE 1	1	7	2	3	0	0	5	NA
OCONEE 2	1	5	2	1	1	0	2	NA
OCONEE 3	2	5	2	3	2	1	2	NA
OYSTER CREEK	7	4	4	5	1	3	3	NA
PALISADES	5	3	5	4	3	6	2	NA
PALO VERDE 1	3	2	4	5	2	2	3	NA
PALO VERDE 2	3	2	4	2	3	2	5	NA
PALO VERDE 3	0	3	4	4	1	2	3	NA
PEACH BOTTOM 2	8	4	9	6	7	5	5	NA
PEACH BOTTOM 3	4	2	3	6	7	5	3	NA
PERRY	5	9	9	3	3	3	10	NA
PILGRIM	4	9	5	7	8	6	3	NA
POINT BEACH 1	1	1	4	1	1	0	3	NA
POINT BEACH 2	0	2	2	2	5	0	2	NA
PRAIRIE ISLAND 1	6	0	3	6	6	2	6	NA
PRAIRIE ISLAND 2	5	0	2	6	[illegible]	5	5	NA
QUAD CITIES 1	1	2	5	5	[illegible]	5	[illegible]	NA
QUAD CITIES 2	6	0	3	0	1	5	4	NA
RANCHO SECO	6	4	1	NA	NA	NA	NA	NA
RIVER BEND	5	13	14	3	8	6	9	NA
ROBINSON 2	2	5	2	0	1	5	3	NA
SALEM 1	1	9	13	1	7	6	6	NA
SALEM 2	5	6	7	0	3	4	11	NA
SAN ONOFRE 1	3	4	5	6	2	3	7	NA
SAN ONOFRE 2	4	5	3	8	2	1	6	NA
SAN ONOFRE 3	2	5	3	3	1	2	4	NA
SEABROOK	2	5	4	4	2	11	5	NA
SEQUOYAH 1	12	6	7	7	8	3	5	NA
SEQUOYAH 2	2	4	12	6	8	6	5	NA
SHEARON HARRIS	6	6	5	2	7	4	2	NA
SOUTH TEXAS 1	5	7	3	2	6	5	7	NA
SOUTH TEXAS 2	0	8	5	2	2	2	5	NA
ST. LUCIE 1	0	0	2	2	3	2	4	NA
ST. LUCIE 2	3	1	1	3	1	1	1	NA
SUMMER	3	4	5	4	2	1	4	NA
SURRY 1	7	6	[illegible]	8	2	2	2	NA
SURRY 2	6	4	[illegible]	13	6	2	2	NA
SUSQUEHANNA 1	2	3	10	2	4	5	3	NA
SUSQUEHANNA 2	3	2	3	3	7	3	3	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	1	0	0	0	3	3	0	NA
TROJAN	10	4	5	8	5	11	10	NA
TURKEY POINT 3	3	5	1	3	2	5	5	NA
TURKEY POINT 4	2	3	3	7	2	2	3	NA
VERMONT YANKEE	3	11	3	4	1	4	3	NA
VOGTLE 1	11	9	3	4	2	4	5	NA
VOGTLE 2	NA	8	8	3	3	2	4	NA
WASH. NUCLEAR 2	4	3	13	5	2	5	5	NA
WATERFORD 3	3	1	3	6	5	3	3	NA
WOLF CREEK	3	7	3	5	0	1	11	NA
YANKEE-ROWE	4	3	3	4	1	1	2	NA
ZION 1	3	4	1	5	5	6	5	NA
ZION 2	13	4	2	1	2	5	4	NA
TOTAL	492	509	530	429	423	383	434	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

TABLE 9.20 CAUSE CODES

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	6	9	2	3	2	1	1	NA
ARKANSAS 2	0	2	3	3	1	1	2	NA
BEAVER VALLEY 1	1	0	1	2	0	4	0	NA
BEAVER VALLEY 2	2	1	0	1	0	2	0	NA
BIG ROCK POINT	0	1	0	0	1	0	0	NA
BRAIDWOOD 1	2	0	0	3	1	0	0	NA
BRAIDWOOD 2	2	0	0	1	2	0	1	NA
BROWNS FERRY 1	6	7	4	3	2	2	1	NA
BROWNS FERRY 2	6	8	4	3	2	2	1	NA
BROWNS FERRY 3	6	7	4	3	2	2	1	NA
BRUNSWICK 1	4	3	0	2	1	1	2	NA
BRUNSWICK 2	4	3	0	2	1	1	2	NA
BYRON 1	0	0	0	1	1	0	0	NA
BYRON 2	0	0	0	1	1	0	0	NA
CALLAWAY	1	1	0	0	0	1	0	NA
CALVERT CLIFFS 1	3	2	5	4	4	2	5	NA
CALVERT CLIFFS 2	1	1	4	4	4	2	3	NA
CATAWBA 1	3	5	2	4	2	5	1	NA
CATAWBA 2	4	5	2	3	3	3	1	NA
CLINTON 1	1	3	2	1	3	4	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	1	0	NA
COOK 1	1	2	0	0	0	1	0	NA
COOK 2	1	2	0	0	1	2	1	NA
COOPER STATION	0	6	6	0	1	2	0	NA
CRYSTAL RIVER 3	3	7	5	5	2	4	2	NA
DAVIS-BESSE	1	0	2	0	0	2	0	NA
DIABLO CANYON 1	3	1	0	1	2	0	0	NA
DIABLO CANYON 2	6	1	0	1	1	1	0	NA
DRESDEN 2	1	2	0	2	1	0	1	NA
DRESDEN 3	0	2	1	1	2	2	1	NA
DUANE ARNOLD	5	1	0	2	1	0	1	NA
FARLEY 1	0	0	2	0	2	0	0	NA
FARLEY 2	1	0	2	0	1	0	0	NA
FERMI 2	0	2	2	1	2	0	2	NA
FITZPATRICK	4	2	3	3	5	1	4	NA
FORT CALHOUN	4	2	3	0	1	4	3	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	2	1	1	0	1	NA
GRAND GULF	0	0	2	2	1	1	0	NA
HADDAM NECK	1	3	1	2	4	1	2	NA
HATCH 1	2	0	1	0	2	1	2	NA
HATCH 2	2	0	0	0	1	2	2	NA
HOPE CREEK	2	0	0	3	3	0	2	NA
INDIAN POINT 2	4	3	0	0	1	0	0	NA
INDIAN POINT 3	2	0	4	0	1	1	0	NA
KEWAUNEE	0	2	2	2	0	2	0	NA
LASALLE 1	2	4	1	0	1	2	0	NA
LASALLE 2	2	4	1	0	1	1	0	NA
LIMERICK 1	8	10	8	1	0	1	2	NA
LIMERICK 2	NA	NA	1	1	1	2	1	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	1	1	0	0	1	1	0	NA
MCGUIRE 1	5	3	2	6	1	3	2	NA
MCGUIRE 2	2	1	2	6	1	5	2	NA
MILLSTONE 1	1	3	2	0	2	1	2	NA
MILLSTONE 2	0	2	0	0	1	0	2	NA
MILLSTONE 3	1	1	1	0	2	3	2	NA
MONTICELLO	1	1	3	2	5	1	2	NA
NINE MILE PT. 1	1	0	1	1	2	2	4	NA
NINE MILE PT. 2	6	2	1	1	2	0	0	NA
NORTH ANNA 1	3	0	1	0	1	0	1	NA
NORTH ANNA 2	3	0	1	0	1	0	1	NA
OCONEE 1	1	3	3	2	1	1	3	NA
OCONEE 2	1	3	2	2	2	1	3	NA
OCONEE 3	1	3	2	2	1	2	3	NA
OYSTER CREEK	0	5	0	0	1	0	0	NA
PALISADES	2	3	1	4	1	3	3	NA
PALO VERDE 1	1	2	2	1	4	0	1	NA
PALO VERDE 2	2	2	3	1	2	0	1	NA
PALO VERDE 3	1	3	4	1	2	0	1	NA
PEACH BOTTOM 2	3	3	2	2	4	0	2	NA
PEACH BOTTOM 3	2	2	1	2	3	0	2	NA
PERRY	3	1	3	1	1	2	1	NA
PILGRIM	1	4	0	1	0	2	0	NA
POINT BEACH 1	0	1	3	0	1	0	3	NA
POINT BEACH 2	2	1	2	1	2	0	1	NA
PRAIRIE ISLAND 1	2	0	2	1	0	0	0	NA
PRAIRIE ISLAND 2	1	0	2	0	0	0	0	NA
QUAD CITIES 1	0	0	2	1	2	1	1	NA
QUAD CITIES 2	0	0	2	1	1	2	0	NA
RANCHO SECO	1	4	0	NA	NA	NA	NA	NA
RIVER BEND	2	2	4	0	0	4	2	NA
ROBINSON 2	4	2	1	1	4	1	2	NA
SALEM 1	0	3	6	0	4	5	3	NA
SALEM 2	1	3	8	1	9	11	12	NA
SAN ONOFRE 1	3	5	2	3	5	1	1	NA
SAN ONOFRE 2	4	1	3	1	0	0	0	NA
SAN ONOFRE 3	3	0	4	3	1	1	2	NA
SEABROOK	1	0	0	1	0	0	0	NA
SEQUOYAH 1	1	0	0	0	1	0	1	NA
SEQUOYAH 2	1	1	0	1	1	1	1	NA
SHEARON HARRIS	0	2	0	1	1	1	2	NA
SOUTH TEXAS 1	4	5	1	4	0	0	2	NA
SOUTH TEXAS 2	2	2	1	5	1	1	2	NA
ST. LUCIE 1	0	0	0	0	0	0	0	NA
ST. LUCIE 2	0	1	0	0	0	0	0	NA
SUMMER	2	1	0	1	1	1	1	NA
SURRY 1	3	1	3	2	2	0	0	NA
SURRY 2	4	1	3	3	1	0	0	NA
SUSQUEHANNA 1	1	1	1	2	0	1	1	NA
SUSQUEHANNA 2	1	1	1	1	2	2	0	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	0	1	0	NA
TROJAN	2	2	2	2	1	1	6	NA
TURKEY POINT 3	4	3	3	0	2	0	1	NA
TURKEY POINT 4	3	2	3	3	1	0	1	NA
VERMONT YANKEE	1	2	1	1	0	2	2	NA
VOGTLE 1	6	1	0	0	1	2	1	NA
VOGTLE 2	NA	1	1	1	1	1	1	NA
WASH. NUCLEAR 2	1	4	6	6	2	2	2	NA
WATERFORD 3	4	2	0	3	0	0	0	NA
WOLF CREEK	6	1	1	0	1	1	0	NA
YANKEE-ROWE	2	0	1	1	0	0	0	NA
ZION 1	2	0	1	0	1	0	0	NA
ZION 2	3	0	2	0	0	1	0	NA
TOTAL	226	218	191	158	162	138	138	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

TABLE 9.21 CAUSE CODES

EQUIPMENT FAILURE(ELEC./ENVIRON.)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
ARKANSAS 1	0	0	1	0	0	0	0	NA
ARKANSAS 2	0	0	0	0	0	0	0	NA
BEAVER VALLEY 1	0	0	0	0	0	0	0	NA
BEAVER VALLEY 2	0	0	0	0	0	0	0	NA
BIG ROCK POINT	1	0	0	0	0	0	0	NA
BRAIDWOOD 1	0	0	0	1	0	0	1	NA
BRAIDWOOD 2	1	0	0	1	0	0	0	NA
BROWNS FERRY 1	0	0	0	0	0	0	0	NA
BROWNS FERRY 2	0	0	0	0	0	0	0	NA
BROWNS FERRY 3	0	0	0	0	0	0	0	NA
BRUNSWICK 1	0	0	0	0	0	0	0	NA
BRUNSWICK 2	0	0	0	0	0	0	0	NA
BYRON 1	0	1	0	1	0	1	0	NA
BYRON 2	0	0	0	1	0	0	0	NA
CALLAWAY	0	0	1	0	1	0	1	NA
CALVERT CLIFFS 1	0	0	0	0	0	0	0	NA
CALVERT CLIFFS 2	0	0	0	0	0	0	0	NA
CATAWBA 1	0	0	1	1	1	0	0	NA
CATAWBA 2	0	0	1	1	0	0	0	NA
CLINTON 1	1	0	0	0	0	0	0	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	1	0	NA
COOK 1	1	0	0	0	0	0	0	NA
COOK 2	0	0	0	1	0	0	0	NA
COOPER STATION	0	0	0	0	0	0	1	NA
CRYSTAL RIVER 3	0	0	1	0	0	0	0	NA
DAVIS-BESSE	0	1	1	0	0	0	0	NA
DIABLO CANYON 1	0	0	0	0	0	1	0	NA
DIABLO CANYON 2	0	1	0	0	0	0	0	NA
DRESDEN 2	0	2	0	0	0	0	0	NA
DRESDEN 3	0	1	0	0	0	1	0	NA
DUANE ARNOLD	0	1	0	0	0	0	0	NA
FARLEY 1	0	0	0	0	0	0	0	NA
FARLEY 2	0	0	0	0	0	0	0	NA
FERMI 2	0	0	0	0	0	1	0	NA
FITZPATRICK	0	0	0	0	1	2	0	NA
FORT CALHOUN	0	0	0	0	0	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	0	0	0	0	0	NA
GRAND GULF	0	1	0	1	1	0	0	NA
HADDAM NECK	0	0	0	0	0	0	0	NA
HATCH 1	0	1	0	0	0	1	2	NA
HATCH 2	0	0	0	0	0	0	1	NA
HOPE CREEK	2	0	0	0	0	0	0	NA
INDIAN POINT 2	0	0	0	0	0	0	0	NA
INDIAN POINT 3	0	0	0	0	0	0	0	NA
KEWAUNEE	0	0	0	0	0	0	0	NA
LASALLE 1	0	0	0	0	0	0	0	NA
LASALLE 2	0	0	0	0	0	0	0	NA
LIMERICK 1	0	0	0	0	0	1	0	NA
LIMERICK 2	NA	NA	0	1	0	1	0	NA

TABLE 9.21 CAUSE CODES (CONTINUED)

EQUIPMENT FAILURE(ELEC./ENVIRON.) (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
MAINE YANKEE	0	0	0	0	0	0	0	NA
MCGUIRE 1	0	1	0	1	0	0	0	NA
MCGUIRE 2	0	0	0	0	0	0	0	NA
MILLSTONE 1	0	0	0	0	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	1	0	0	0	0	0	0	NA
MONTICELLO	0	0	0	0	0	0	0	NA
NINE MILE PT. 1	0	1	0	0	0	0	0	NA
NINE MILE PT. 2	0	1	1	1	2	0	0	NA
NORTH ANNA 1	0	0	0	0	0	0	0	NA
NORTH ANNA 2	0	0	1	0	0	0	0	NA
OCONEE 1	0	0	0	0	0	0	0	NA
OCONEE 2	0	0	0	0	0	0	0	NA
OCONEE 3	0	0	0	0	0	0	0	NA
OYSTER CREEK	0	1	1	0	0	0	0	NA
PALISADES	0	0	0	0	0	1	0	NA
PALO VERDE 1	0	1	0	1	1	0	0	NA
PALO VERDE 2	0	0	0	1	0	0	0	NA
PALO VERDE 3	0	1	0	0	0	1	1	NA
PEACH BOTTOM 2	0	0	1	0	0	0	0	NA
PEACH BOTTOM 3	0	0	0	0	0	0	0	NA
PERRY	1	0	0	0	0	0	1	NA
PILGRIM	0	0	0	0	0	0	0	NA
POINT BEACH 1	0	0	0	0	0	0	0	NA
POINT BEACH 2	0	0	0	0	0	0	0	NA
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	NA
PRAIRIE ISLAND 2	0	1	1	0	1	0	0	NA
QUAD CITIES 1	0	0	1	0	0	2	1	NA
QUAD CITIES 2	0	0	0	0	0	2	1	NA
RANCHO SECO	0	0	0	NA	NA	NA	NA	NA
RIVER BEND	0	0	0	1	0	0	0	NA
ROBINSON 2	0	0	0	0	0	0	0	NA
SALEM 1	1	1	1	0	0	0	0	NA
SALEM 2	1	1	0	0	0	0	0	NA
SAN ONOFRE 1	0	0	0	0	0	0	0	NA
SAN ONOFRE 2	1	1	1	0	0	0	0	NA
SAN ONOFRE 3	1	1	1	0	0	0	0	NA
SEABROOK	0	0	0	0	0	0	0	NA
SEQUOYAH 1	0	0	0	0	0	0	0	NA
SEQUOYAH 2	0	0	0	0	0	1	0	NA
SHEARON HARRIS	0	1	0	0	0	0	0	NA
SOUTH TEXAS 1	0	0	0	0	0	0	0	NA
SOUTH TEXAS 2	0	0	0	3	1	1	0	NA
ST. LUCIE 1	0	0	0	0	0	0	0	NA
ST. LUCIE 2	0	1	0	1	0	0	0	NA
SUMMER	0	0	0	0	1	0	0	NA
SURRY 1	1	1	0	1	2	0	0	NA
SURRY 2	1	1	0	0	0	1	0	NA
SUSQUEHANNA 1	0	1	0	0	1	1	0	NA
SUSQUEHANNA 2	0	1	0	1	0	1	1	NA

TABLE 9.21 CAUSE CODES (CONTINUED)

EQUIPMENT FAILURE (ELEC./ENVIRON.) (the latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3
THREE MILE ISL 1	0	0	0	0	0	0	0	NA
TROJAN	1	0	1	1	0	0	0	NA
TURKEY POINT 3	0	0	0	0	0	1	0	NA
TURKEY POINT 4	0	0	0	0	0	1	1	NA
VERMONT YANKEE	0	0	0	0	0	0	0	NA
VOGTLE 1	0	1	1	0	0	0	0	NA
VOGTLE 2	NA	1	0	1	1	0	1	NA
WASH. NUCLEAR 2	0	0	0	1	0	0	0	NA
WATERFORD 3	0	0	0	1	0	0	0	NA
WOLF CREEK	0	0	0	0	0	0	1	NA
YANKEE-ROWE	0	0	0	0	0	0	0	NA
ZION 1	0	1	0	0	0	0	0	NA
ZION 2	1	0	1	0	0	0	0	NA
TOTAL	16	29	18	24	15	23	14	NA

NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.

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10. REVISION OF DATA CONTAINED IN THE SECOND QUARTER 1990 REPORT

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10. REVISION OF DATA CONTAINED IN THE SECOND QUARTER 1990 REPORT

An intensive review of data sources and application of detailed screening criteria have resulted in some changes to the data previously reported in the second quarter 1990 report. These changes are summarized in Tables 10.1 through 10.13. In aggregate, they do not significantly alter the overall picture presented in the second quarter 1990 report.

TABLE 10.1 REVISIONS TO SAFETY SYSTEM ACTUATIONS (TABLE 9.5 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	4-89	1	2
CLINTON 1	1-90	2	1
DAVIS-BESSE	2-90	4	3
FORT CALHOUN	1-90	3	2
OCONEE 3	4-89	0	1

TABLE 10.2 REVISIONS TO SIGNIFICANT EVENTS (TABLE 9.6 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
CALVERT CLIFFS 1	4-89	0	1
CALVERT CLIFFS 2	4-89	0	1
FORT CALHOUN	2-90	0	1
PEACH BOTTOM 2	3-89	0	1
ZION 2	4-88	0	1

TABLE 10.3 REVISIONS TO SAFETY SYSTEM FAILURES (TABLE 9.7 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	2-90	1	0
BRUNSWICK 1	2-90	4	3
BRUNSWICK 2	2-90	3	2
CALVERT CLIFFS 1	1-89	1	2
CALVERT CLIFFS 2	1-89	0	1
CALVERT CLIFFS 2	2-90	1	2
CLINTON 1	2-90	2	1
COMANCHE PEAK 1	2-90	2	3
COOK 1	2-90	1	3
COOK 2	1-90	1	2
COOK 2	2-90	0	3
COOPER STATION	2-90	0	1
CRYSTAL RIVER 3	1-90	2	3
CRYSTAL RIVER 3	2-90	2	0
DIABLO CANYON 2	1-90	0	1
DRESDEN 2	2-90	0	1
DRESDEN 3	1-90	1	0
DRESDEN 3	2-90	0	1
FITZPATRICK	2-90	1	0
GINNA	2-90	2	1
HADDAM NECK	2-90	2	1
MAINE YANKEE	2-90	0	2
MILLSTONE 1	2-90	3	1
MILLSTONE 3	2-90	3	5
NINE MILE PT. 1	2-90	0	1
NORTH ANNA 1	2-90	3	2
NORTH ANNA 2	2-90	2	1
OCONEE 1	2-90	3	5
OCONEE 2	2-90	1	3
OCONEE 3	2-90	1	3
PALISADES	2-90	2	1
PEACH BOTTOM 2	2-90	1	0
PEACH BOTTOM 3	2-90	2	1
PERRY	2-90	7	6
PRAIRIE ISLAND 1	2-90	1	0
ROBINSON 2	2-90	1	2
SALEM 1	2-90	4	3
SALEM 2	2-90	7	6
SEQUOYAH 1	2-90	2	3
SOUTH TEXAS 1	2-90	1	2
SUSQUEHANNA 1	2-90	0	1
TROJAN	2-90	8	9

TABLE 10.3 REVISIONS TO SAFETY SYSTEM FAILURES (CONTINUED)
(TABLE 9.7 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
TURKEY POINT 4	1-90	1	2
WOLF CREEK	2-90	1	2
YANKEE-ROWE	2-90	1	0
ZION 1	2-90	2	1

TABLE 10.4 REVISIONS TO FORCED OUTAGE RATE
(TABLE 9.8 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BRAIDWOOD 2	2-90	21	18
LIMERICK 1	2-90	19	12
TURKEY POINT 3	2-90	32	33

TABLE 10.5 REVISIONS TO EQUIPMENT FORCED OUTAGES/1000 COMMERCIAL HOURS (TABLE 9.9 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
LIMERICK 1	2-90	1.18	0.59
ZION 1	1-90	0.00	0.93

TABLE 10.6 REVISIONS TO COLLECTIVE RADIATION EXPOSURE (TABLE 2.11 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BROWNS FERRY 1	1-90	72	86
BROWNS FERRY 2	1-90	72	86
BROWNS FERRY 3	1-90	72	86
CATAWBA 1	1-90	268	256
CATAWBA 2	1-90	268	256
COOK 1	1-90	25	15
COOK 2	1-90	25	15
DIABLO CANYON 1	1-90	108	104
DIABLO CANYON 2	1-90	108	104
DRESDEN 2	1-90	169	168
DRESDEN 3	1-90	169	168
DUANE ARNOLD	1-90	38	36
KEWAUNEE	1-90	117	104
MAINE YANKEE	1-90	27	28
MCGUIRE 1	1-90	167	152
MCGUIRE 2	1-90	167	152
OCONEE 1	1-90	14	12
OCONEE 2	1-90	14	12
OCONEE 3	1-90	14	12
OYSTER CREEK	1-90	130	126
PEACH BOTTOM 2	1-90	52	54
PEACH BOTTOM 3	1-90	52	54
PERRY	1-90	34	29
RIVER BEND	1-90	41	42
ROBINSON 2	1-90	16	15
SEQUOYAH 1	1-90	117	111
SEQUOYAH 2	1-90	117	111
SOUTH TEXAS 1	1-90	7	1
SUMMER	1-90	59	52
SURRY 1	1-90	23	22
SURRY 2	1-90	23	22
TURKEY POINT 3	1-90	236	192
TURKEY POINT 4	1-90	236	192
VERMONT YANKEE	1-90	18	28
YANKEE-ROWE	1-90	7	8

TABLE 10.7 REVISIONS TO CRITICAL HOURS
(TABLE 9.10 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BRUNSWICK 2	2-90	1589	1610
COMANCHE PEAK 1	2-90	1651	1650
DRESDEN 3	1-90	998	999
DUANE ARNOLD	2-90	2110	2111
NINE MILE PT. 2	2-90	1895	1885

TABLE 10.8 REVISIONS TO CAUSE CODES
ADMINISTRATIVE CONTROL PROBLEM
(TABLE 9.12 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BEAVER VALLEY 1	1-90	0	1
BROWNS FERRY 1	3-89	7	8
BROWNS FERRY 1	4-89	3	2
BROWNS FERRY 2	4-89	3	2
BROWNS FERRY 3	4-89	3	2
CALLAWAY	1-90	1	2
COOPER STATION	1-90	1	2
CRYSTAL RIVER 3	4-89	3	4
DAVIS-BESSE	1-90	2	3
DIABLO CANYON 1	1-90	2	3
DIABLO CANYON 2	1-90	1	2
DRESDEN 2	1-90	1	2
FITZPATRICK	1-90	4	6
FORT CALHOUN	1-90	2	3
HADDAM NECK	1-90	1	2
HATCH 2	1-90	4	5
LIMERICK 2	1-90	4	5
MCGUIRE 2	1-90	2	3
PALISADES	4-89	3	4
PEACH BOTTOM 2	3-89	2	3
PEACH BOTTOM 2	4-89	4	5
PEACH BOTTOM 3	3-89	3	4
QUAD CITIES 1	4-89	6	7
SALEM 1	2-89	11	12
SALEM 2	2-89	4	5
SOUTH TEXAS 1	4-89	2	3
SOUTH TEXAS 2	1-90	1	2
SUSQUEHANNA 1	1-90	2	3
SUSQUEHANNA 2	1-90	1	2
TROJAN	1-90	5	6
TURKEY POINT 3	3-89	2	3
TURKEY POINT 3	1-90	2	1
TURKEY POINT 4	3-89	4	5
WASH. NUCLEAR 2	3-89	5	6
WATERFORD 3	1-90		0

TABLE 10.9 REVISIONS TO CAUSE CODES
LICENSED OPERATOR ERROR
(TABLE 9.13 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BEAVER VALLEY 1	1-90	2	1
COOPER STATION	1-89	1	0
DRESDEN 2	1-90	0	1
FORT CALHOUN	1-90	0	1
HADDAM NECK	3-89	0	1
SOUTH TEXAS 2	1-90	1	0

TABLE 10.10 REVISIONS TO CAUSE CODES
OTHER PERSONNEL ERROR
(TABLE 9.14 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	4-89	6	5
BROWNS FERRY 1	4-89	1	2
BROWNS FERRY 2	4-89	1	2
BROWNS FERRY 3	4-89	1	2
CALLAWAY	1-90	0	1
CATAWBA 2	1-90	3	4
DIABLO CANYON 1	1-90	1	2
DIABLO CANYON 2	1-90	1	2
DRESDEN 2	1-90	1	0
FARLEY 2	2-89	3	4
FITZPATRICK	1-90	3	4
MILLSTONE 3	1-90	4	5
TROJAN	1-90	4	5
TURKEY POINT 3	1-90	2	3

TABLE 10.11 REVISIONS TO CAUSE CODES
MAINTENANCE RELATED
(TABLE 9.15 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BROWNS FERRY 1	3-89	8	9
CALLAWAY	1-90	2	3
CATAWBA 1	1-90	12	11
CRYSTAL RIVER 3	4-89	2	1
DIABLO CANYON 1	1-90	1	2
DIABLO CANYON 2	1-90	0	1
FARLEY 2	2-89	7	8
FORT CALHOUN	1-90	4	5
HADDAM NECK	1-90	2	3
LIMERICK 2	1-90	6	7
MCGUIRE 2	3-89	11	12
MILLSTONE 3	1-90	8	9
NINE MILE PT. 1	2-89	1	2
NORTH ANNA 1	1-89	5	6
NORTH ANNA 1	4-89	1	2
NORTH ANNA 2	1-89	4	5
OYSTER CREEK	4-89	0	1
PALISADES	4-89	2	3
PEACH BOTTOM 2	3-89	5	6
PEACH BOTTOM 2	4-89	6	7
PEACH BOTTOM 3	3-89	5	6
QUAD CITIES 1	4-89	5	6
SALEM 1	2-89	12	13
SALEM 2	2-89	6	7
SALEM 2	4-89	4	3
SOUTH TEXAS 1	4-89	5	6
SOUTH TEXAS 2	3-89	3	2
SOUTH TEXAS 2	1-90	3	2
SUSQUEHANNA 1	1-90	6	5
SUSQUEHANNA 2	3-89	4	3
SUSQUEHANNA 2	1-90	4	3
TROJAN	1-90	9	11
VOGTLE 1	1-90	5	4
VOGTLE 2	1-90	3	2

TABLE 10.12 REVISIONS TO CAUSE CODES
DESIGN/INSTALLATION/FABRICATION
(TABLE 9.20 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BEAVER VALLEY 1	1-90	3	4
CALVERT CLIFFS 1	4-89	3	4
CALVERT CLIFFS 2	1-89	0	1
CALVERT CLIFFS 2	4-89	3	4
COOK 2	1-90	1	2
COOPER STATION	1-90	1	2
DAVIS-BESSE	1-90	1	2
MCGUIRE 1	1-90	1	3
MCGUIRE 2	1-90	3	5
MILLSTONE 3	1-90	4	3
PALISADES	1-90	2	3
SALEM 1	4-89	3	4
SALEM 2	4-89	8	9
SUSQUEHANNA 2	1-90	1	2

TABLE 10.13 REVISIONS TO CAUSE CODES
EQUIPMENT FAILURE (ELEC./ENVIRON.)
(TABLE 9.21 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
FITZPATRICK	1-90	1	2
SOUTH TEXAS 2	3-89	2	3
SOUTH TEXAS 2	1-90	0	1
SUSQUEHANNA 1	1-90	0	1
SUSQUEHANNA 2	3-89	0	1
SUSQUEHANNA 2	1-90	0	1