PERFORMANCE INDICATORS FOR OPERATING COMMERCIAL NUCLEAR POWER REACTORS
Data through September 1989

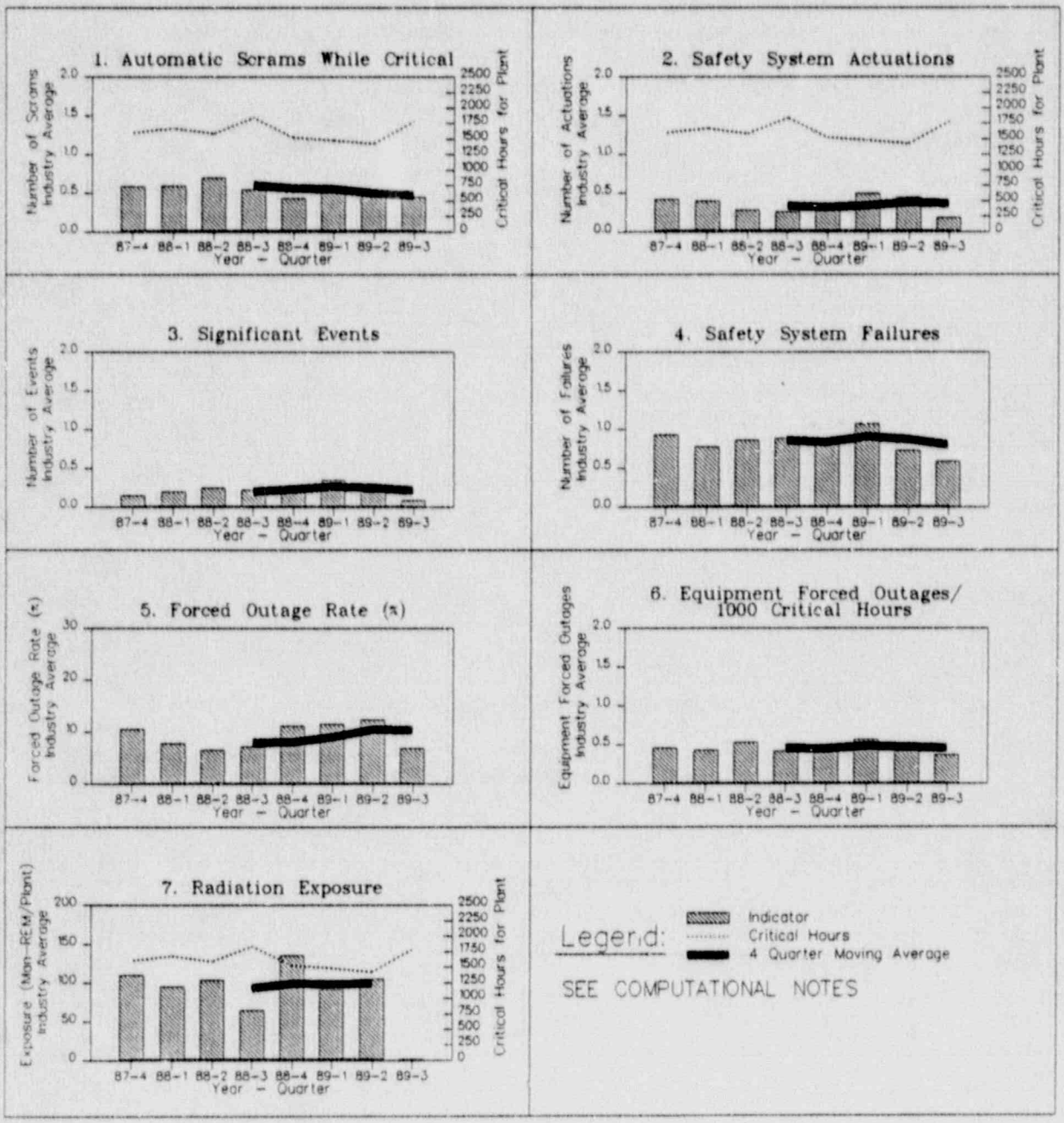
OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

PART I

U.S. NUCLEAR REGULATORY COMMISSION

PERFORMANCE INDICATOR TRENDS
INDUSTRY AVERAGE

This report contains the NRC performance indicators for the third quarter of 1989 (July 1, 1989 to September 30, 1989) for commercial power reactors. A summary of the industry averages, with a four quarter moving average trend line, is shown below for seven indicators. The final year to year trends will be provided in the report for the fourth quarter of 1989.



Computational Notes on 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 the latest monthly operating reports received from the utilities, updates to radiation exposure data, and continuing quality checks on the data.

Adjustments to Industry Averages

Adjustments are made in the industry averages for plants in extended shutdown. This exclusionary category represents only plants in extended shutdown where Commission approval is required for restart or operation above low power. Adjustments to the PI industry averages for these excluded plants are as follows:

Forced outage rate (FOR) for a plant in extended shutdown or restricted to low power operations for regulatory reasons is not a meaningful indicator. A single plant in forced outage for one quarter would add almost a full percentage point to the industry average FOR for that quarter. Thus, to avoid distorting the industry average FOR, that calculation will exclude the entire period of extended shutdown, including the quarters at the start and end of the extended shutdown.

A number of PI events may be experienced during a restart from an extended outage. These events could be meaningful and are reflected in industry averages.

Rancho Seco ceased commercial operation on June 6, 1989 and will be excluded from all performance indicator calculations after the second 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
Peach Bottom 2	* to 89-2	* to 89-1
Peach Bottom 3	Entire Period	Entire Period
Pilgrim	* to 88-4	* to 88-4
Rancho Seco	* to 88-1	* to 88-1
Rancho Seco	After 89-2	After 89-2
Seabrook	* to 89-2	* to 89-1
Sequoyah 1	* to 88-4	* to 88-3
Sequoyah 2	* to 88-2	* to 88-1
Shoreham	Entire Period	Entire Period

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.

* Extended shutdown began prior to 87-4

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.

EQUIPMENT FORCED OUTAGES per 1000 CRITICAL HOURS

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

COLLECTIVE RADIATION EXPOSURE

The total dose at the station. This data are provided by INPO. The station dose is divided by the number of units at the site contributing to dose to obtain unit values.

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 1989

1. INTRODUCTION

This U.S. Nuclear Regulatory Commission (NRC) report presents performance indicator data through September 1989 for 112 operating reactors. Rancho Seco ceased commercial operations in June 1989. Therefore performance indicator data for Rancho Seco are included only through June 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 critical 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, and monthly operating reports in accordance with plant technical specifications. 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 second quarter 1989 Performance Indicator report included cause code trends for the first time. The third quarter 1989 issue of the quarterly report contains data through September 1989.

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 number of unplanned automatic scrams while the reactor is critical. This Performance Indicator (PI) is identical 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 critical hours and the number of automatic scrams while critical below 15% power are monitored.

3.2 Safety System Actuations (SSA)

This indicator includes actual and inadvertent 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.

3.3 Significant Events (SE)

These events are identified by the detailed screening of operating experience by NRC staff. The events include degradation of important safety equipment, unexpected plant response to a transient, a major transient, discovery of a major condition not considered in the plant safety analysis, and degradation of fuel integrity, primary coolant pressure boundary, or important associated structures.

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 this indicator.

3.5 Forced Outage Rate (FOR)

This indicator's definition is identical to the one used by INPO and 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 Critical 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 critical 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 the station personnel. The station total is divided by the number of units at the site contributing to exposure to obtain unit values. This indicator is identical to the one used by INPO.

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. Maintenance problems are divided into subcategories of maintenance personnel error, test or calibration personnel error, maintenance equipment failure, and potential maintenance problems.

3.9 Additional Notes

Part II of this report provides brief descriptions of each performance indicator event for the fourth quarter 1988, and the first, second, and third quarters 1989. Part II also provides a tabular listing of PIs, cause codes and critical hours by quarter for each plant. In addition, an overall industry summary table provides the moving average for the most recent two quarters (two-quarter period) and the moving average for the four quarters that precede the two-quarter period (prior four-quarter period) for each performance indicator (except collective radiation exposure) 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 mean values[1] to provide a comparative performance level, and the four-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 four quarter moving averages of the cause codes for each plant.

4.2 Plant Summaries

Figures 4.1 through 4.113 consist of two (or three for newer plants) 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 prior four-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 four quarters (current four-quarter period) varies from an industry mean. Older plants are compared to the older plants. Newer plants are compared to the newer plants. The figures for newer plants also have a chart display that compares the plants' moving averages for the current four-quarter period to the older plant mean values.

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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 within 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.

4.3 PLANT SUMMARIES AND QUARTERLY DATA FIGURES

FIGURE 4.1

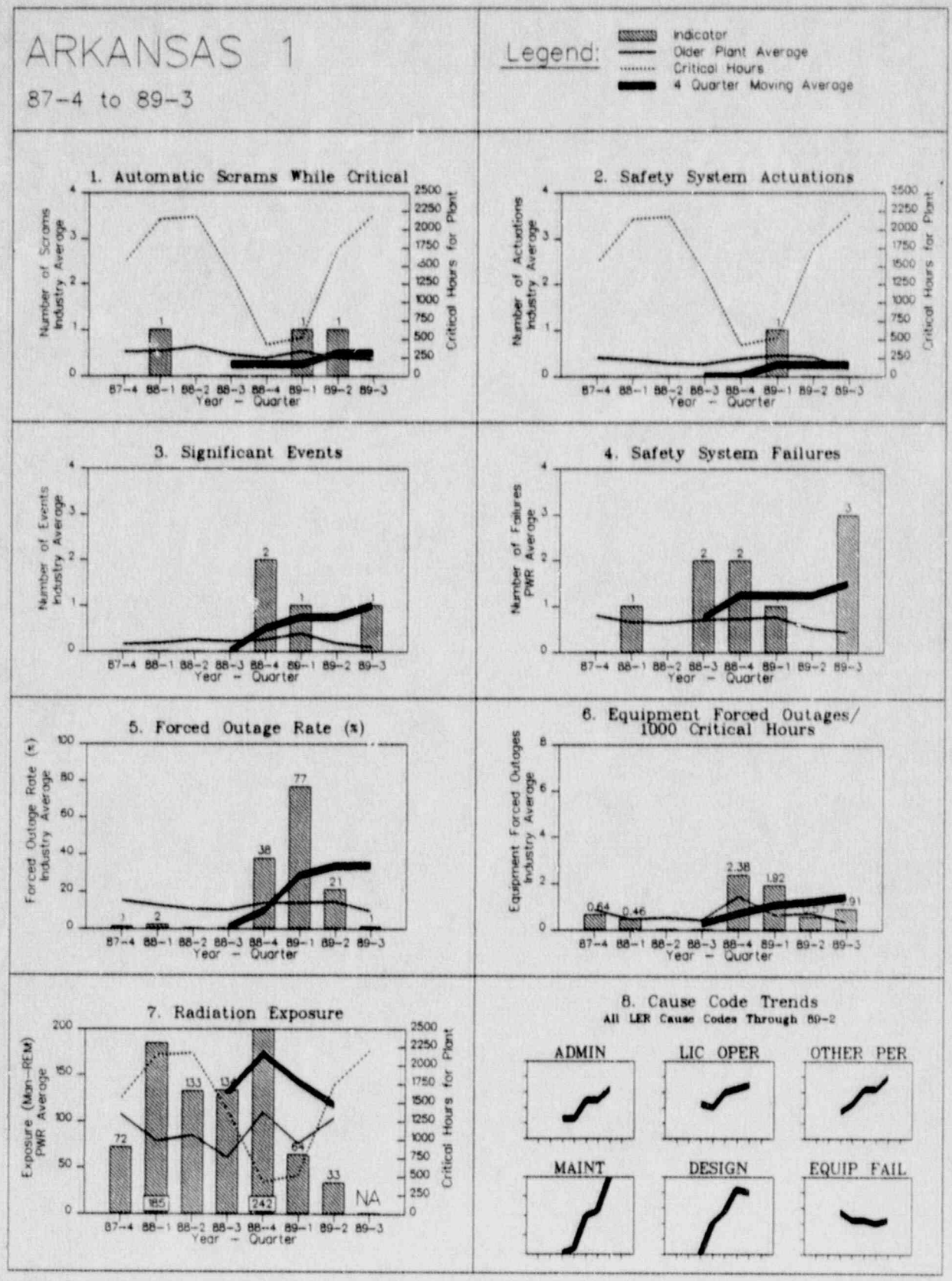

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FIGURE 4.1

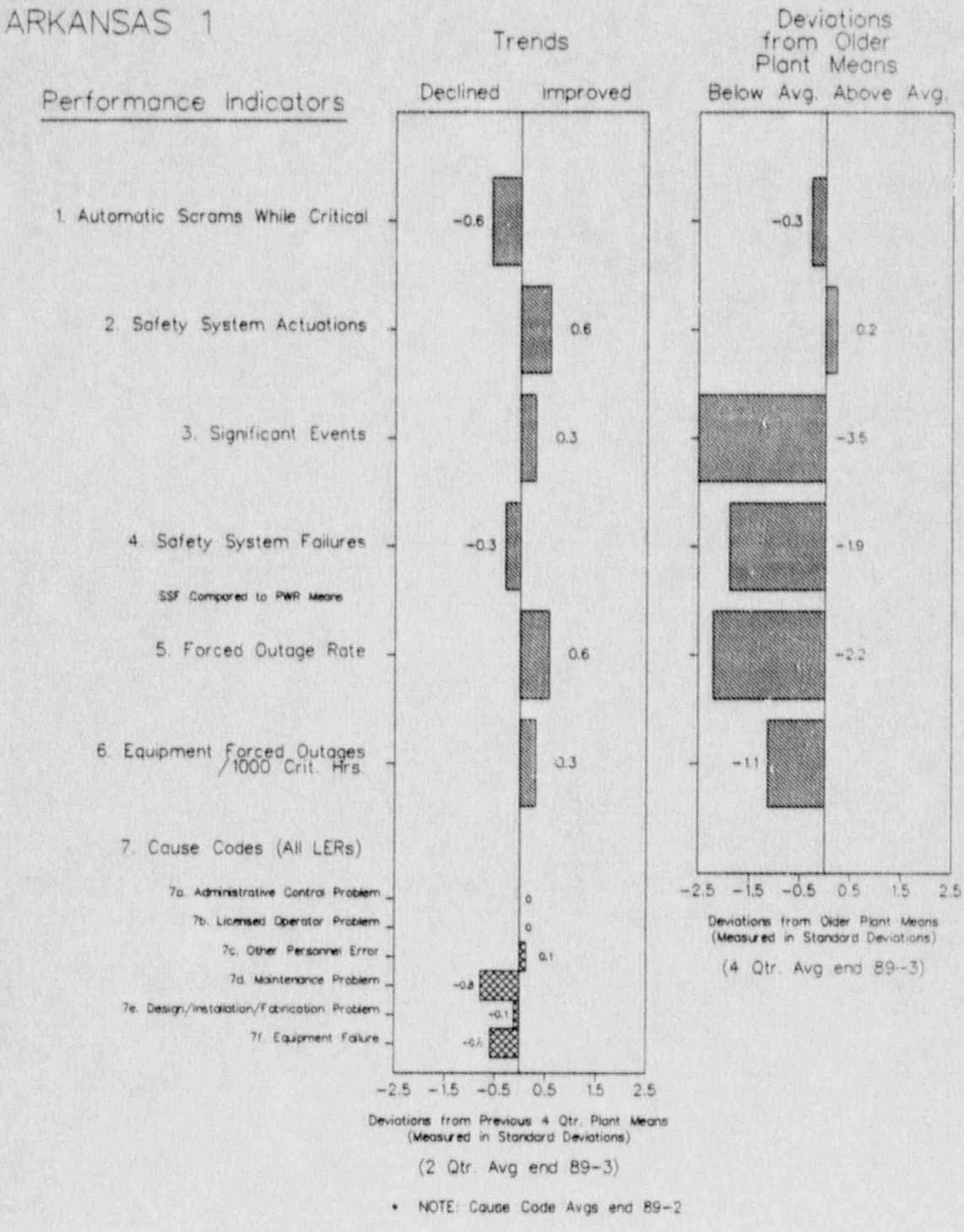
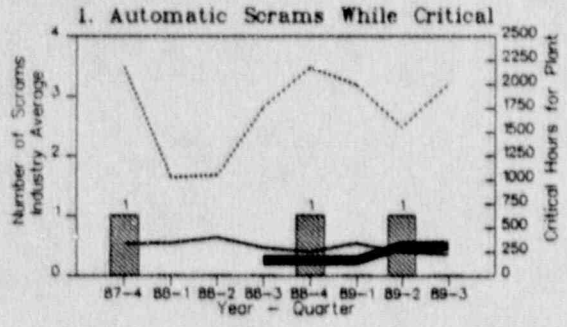

ARKANSAS 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.3
-3.5
4. Safety System Failures
-0.3
-1.9
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
-2.2
6. Equipment Forced Outages /1000 Crit. Hrs.
0.3
-1.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.1
7d. Maintenance Problem
-0.8
7e. Design/Installation/Fabrication Problem
-0.1
7f. Equipment Failure
-0.4
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

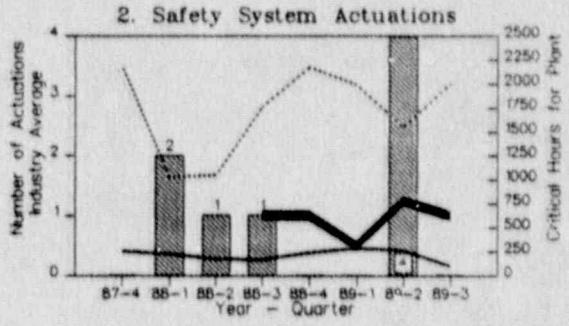
FIGURE 4.2

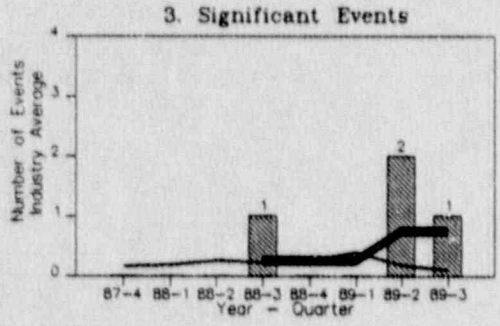
ARKANSAS 2

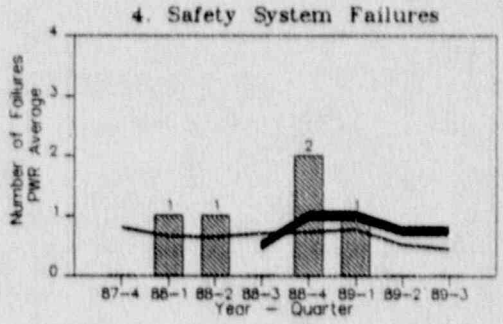
87-4 to 89-3

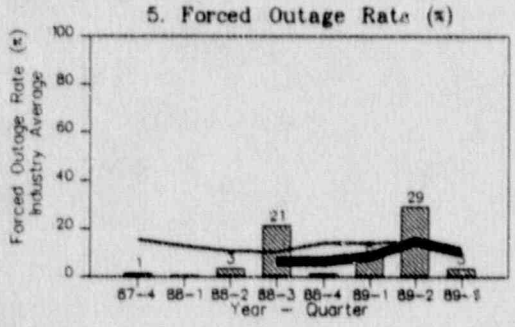
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

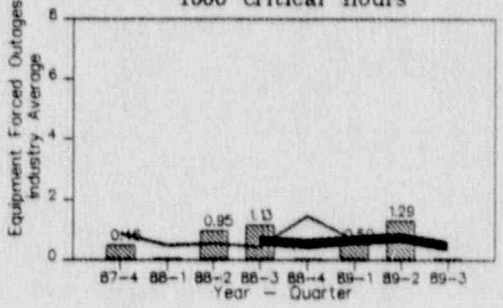


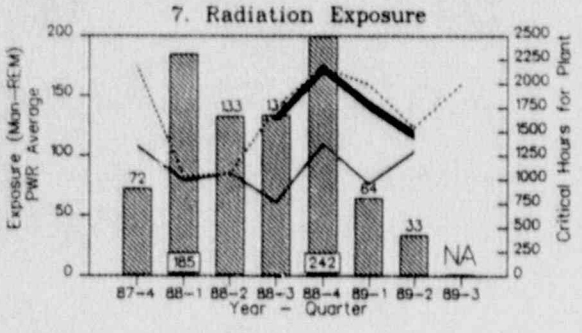












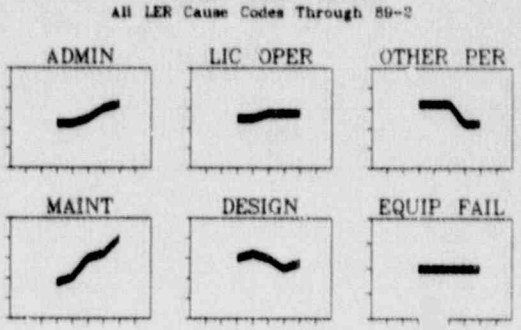
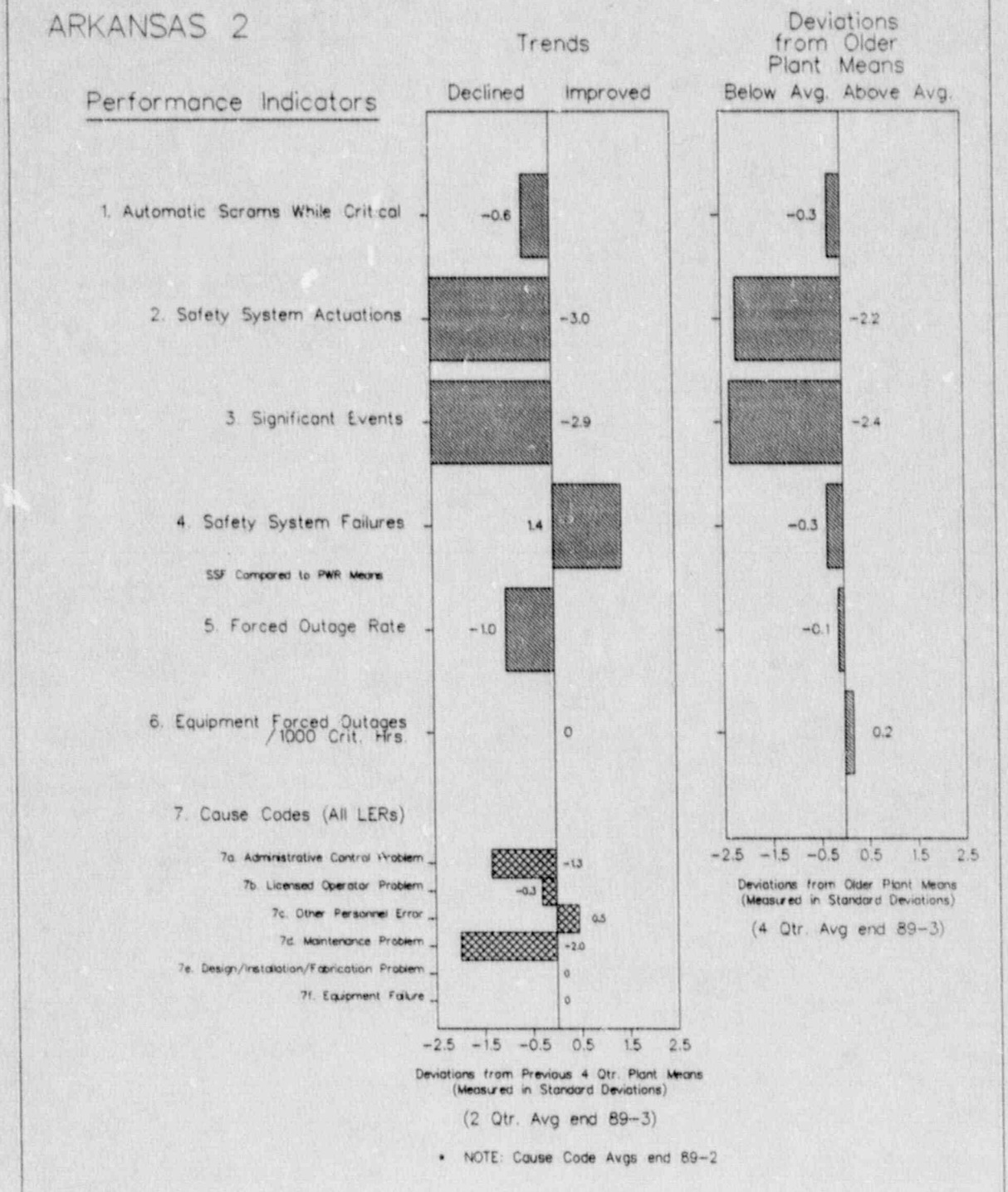


FIGURE 4.2


ARKANSAS 2
Performance Indicators
Trends
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Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
-3.0
-2.2
3. Significant Events
-2.9
-2.4
4. Safety System Failures
1.4
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-1.0
-0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
0
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.3
7b. Licensed Operator Problem
-0.3
7c. Other Personnel Error
0.5
7d. Maintenance Problem
-2.0
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.3

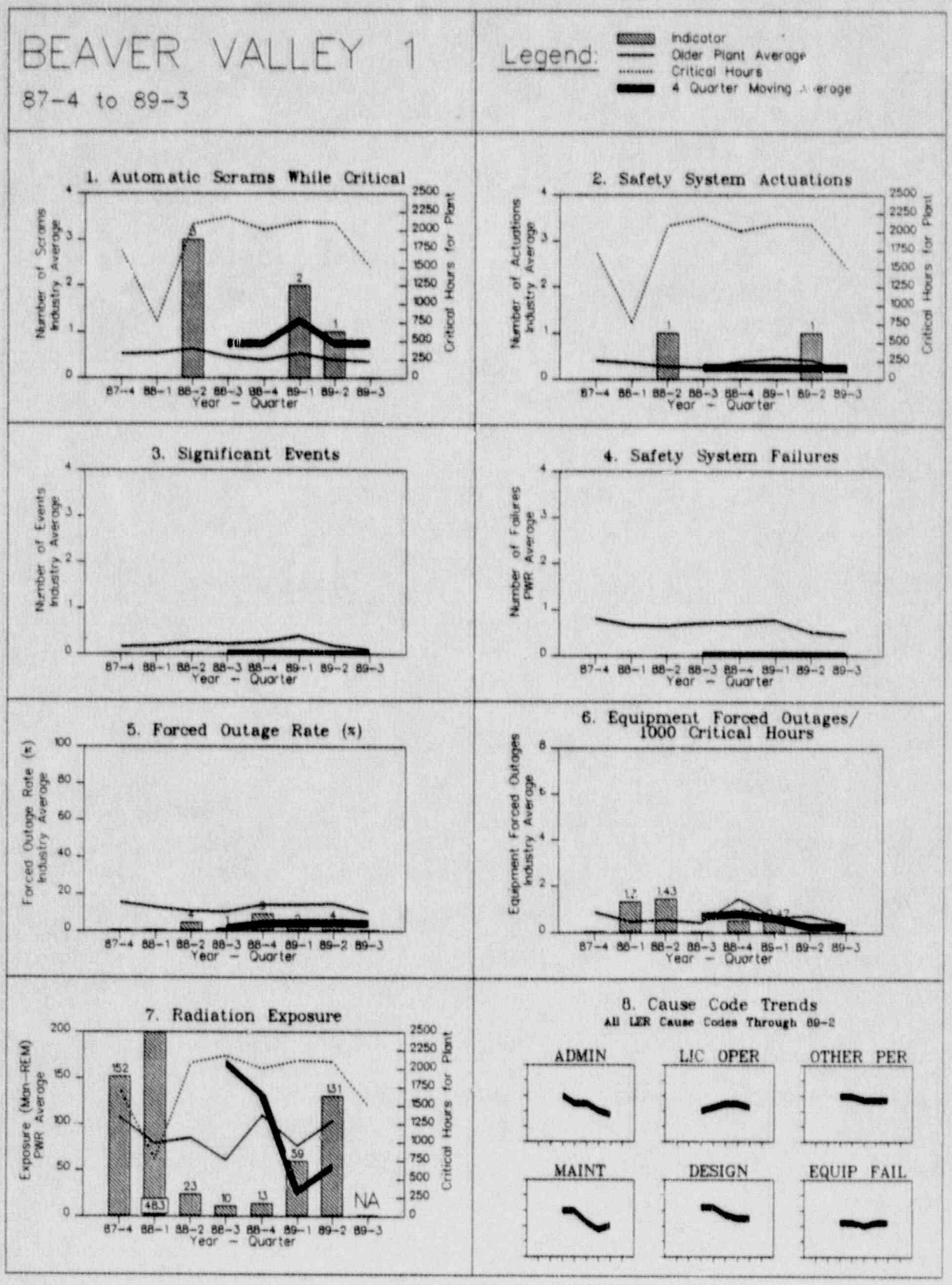
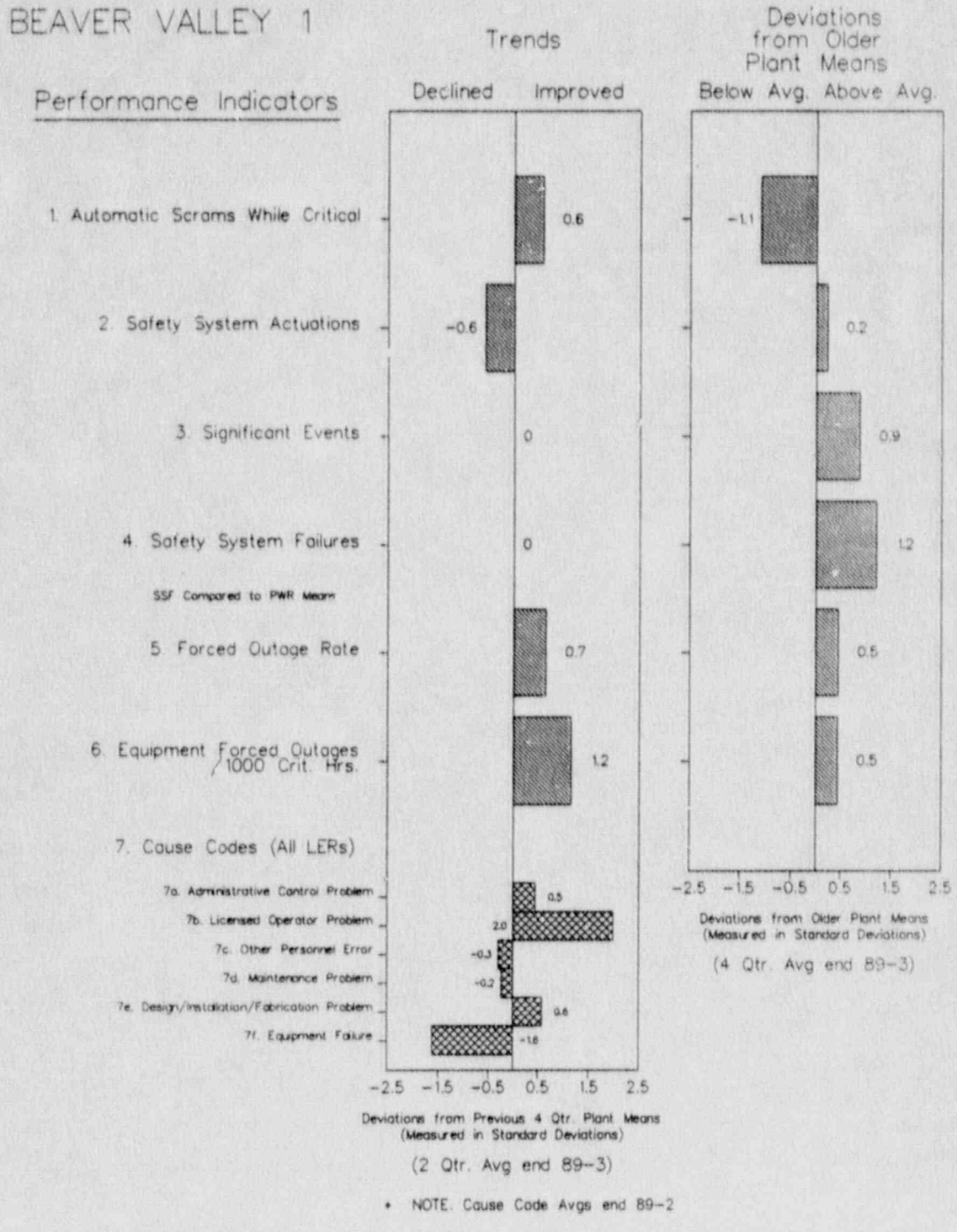

BEAVER VALLEY 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for 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 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.3


BEAVER VALLEY 1
Performance Indicators
Trends
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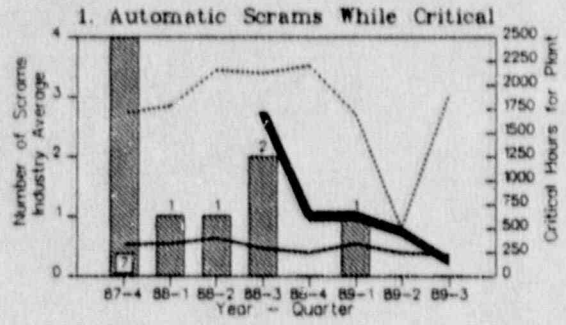
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-1.1
2. Safety System Actuations
-0.6
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0
1.2
SSF Compared to PWR Mean
5. Forced Outage Rate
0.7
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.2
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.5
7b. Licensed Operator Problem
2.0
7c. Other Personnel Error
-0.3
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
0.6
7f. Equipment Failure
-1.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE. Cause Code Avgs end 89-2

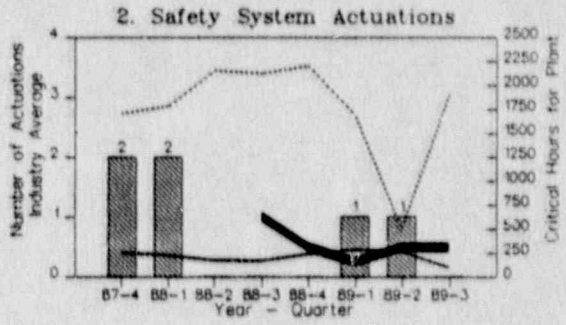
FIGURE 4.4

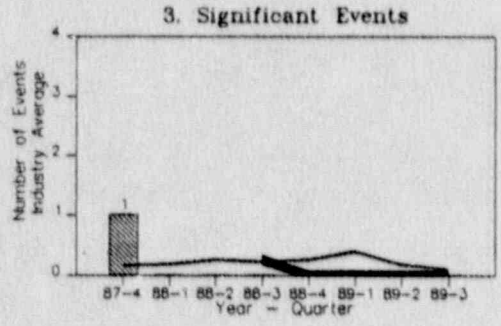
BEAVER VALLEY 2

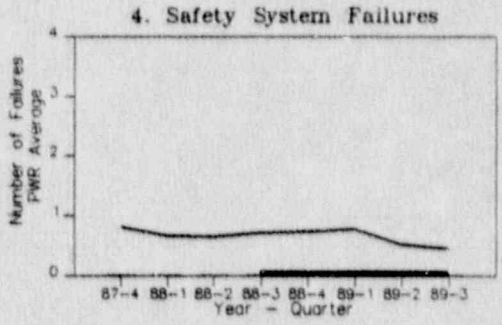
87-4 to 89-3

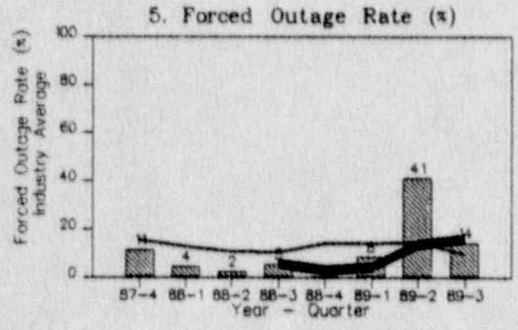
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

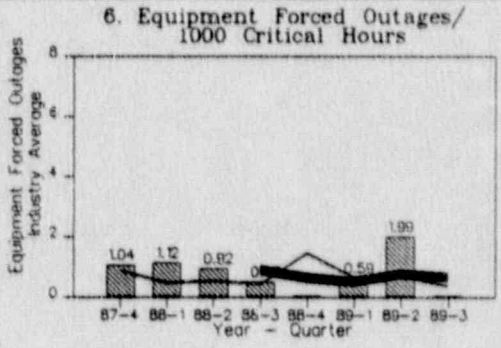


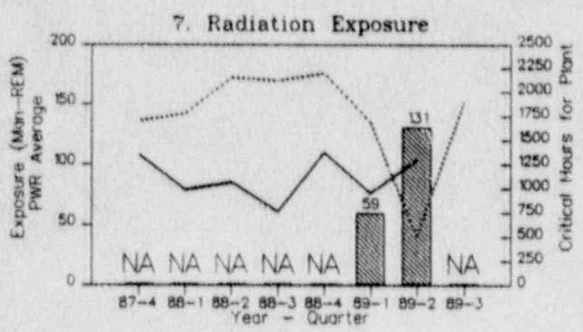












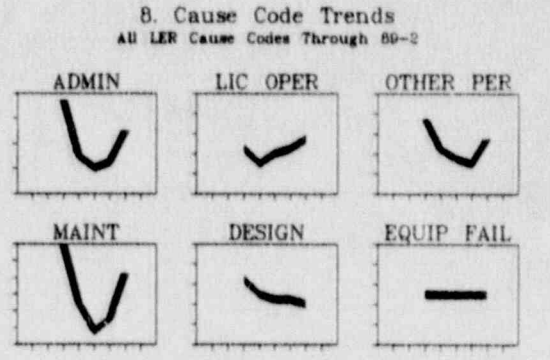


FIGURE 4.4

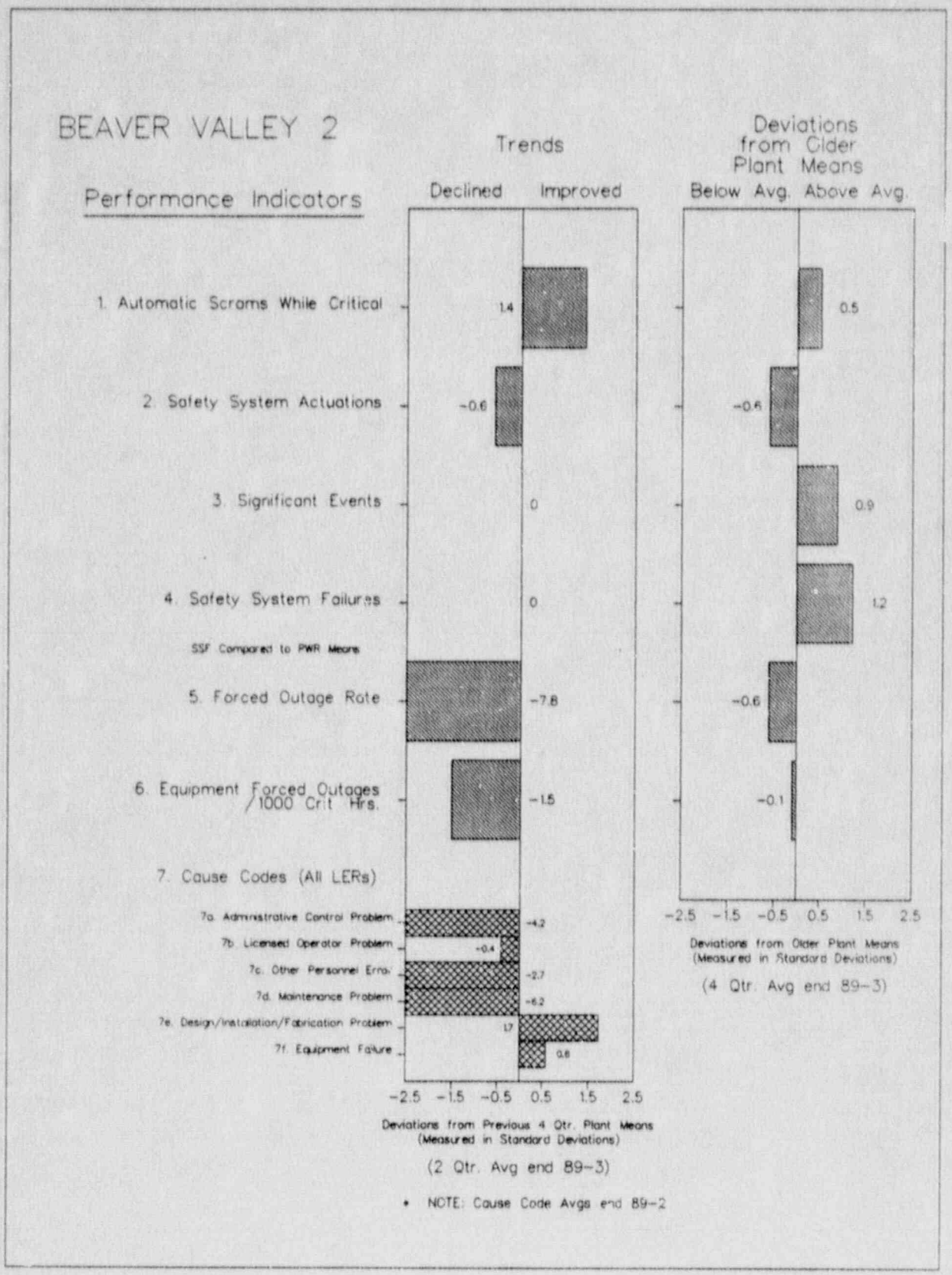
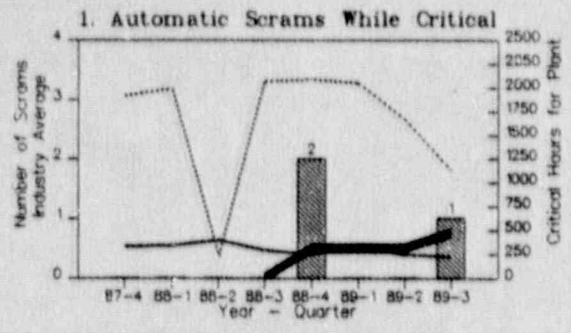

BEAVER VALLEY 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.4
0.5
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
-7.8
-0.6
6. Equipment Forced Outages /1000 Crit Hrs.
-1.5
-0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.2
7b. Licensed Operator Problem
-0.4
7c. Other Personnel Error
-2.7
7d. Maintenance Problem
-6.2
7e. Design/Installation/Fabrication Problem
1.7
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

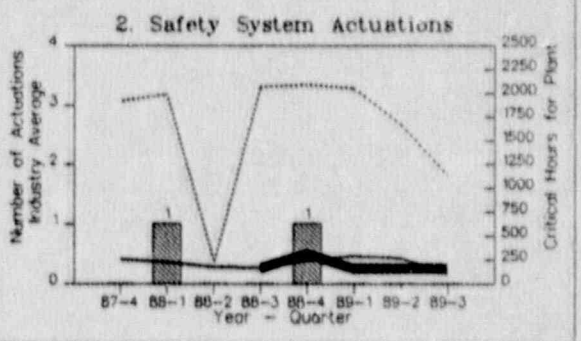
FIGURE 4.5

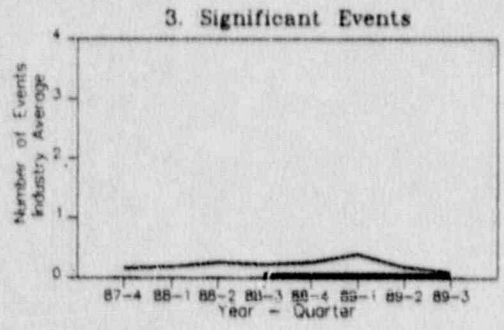
BIG ROCK POINT

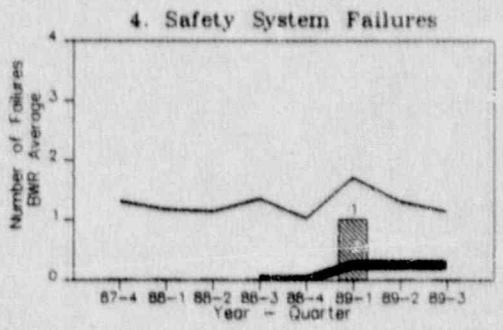
87-4 to 89-3

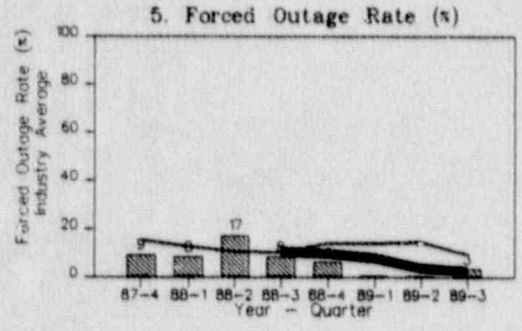
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

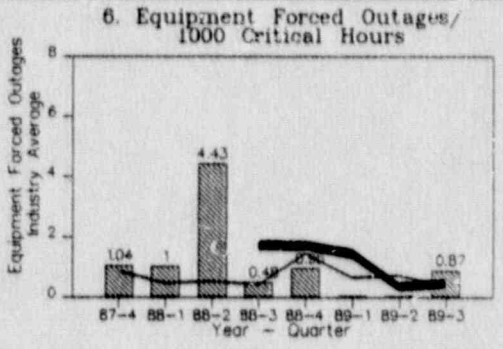


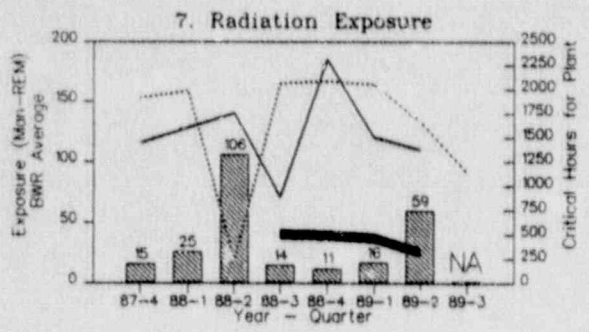












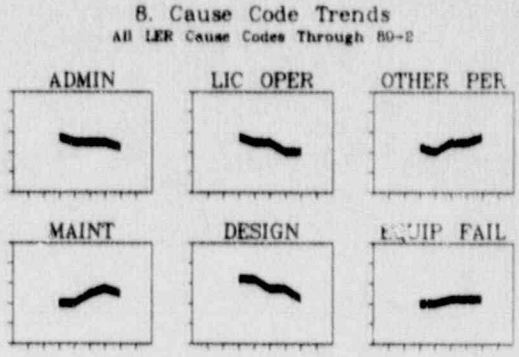


FIGURE 4.5

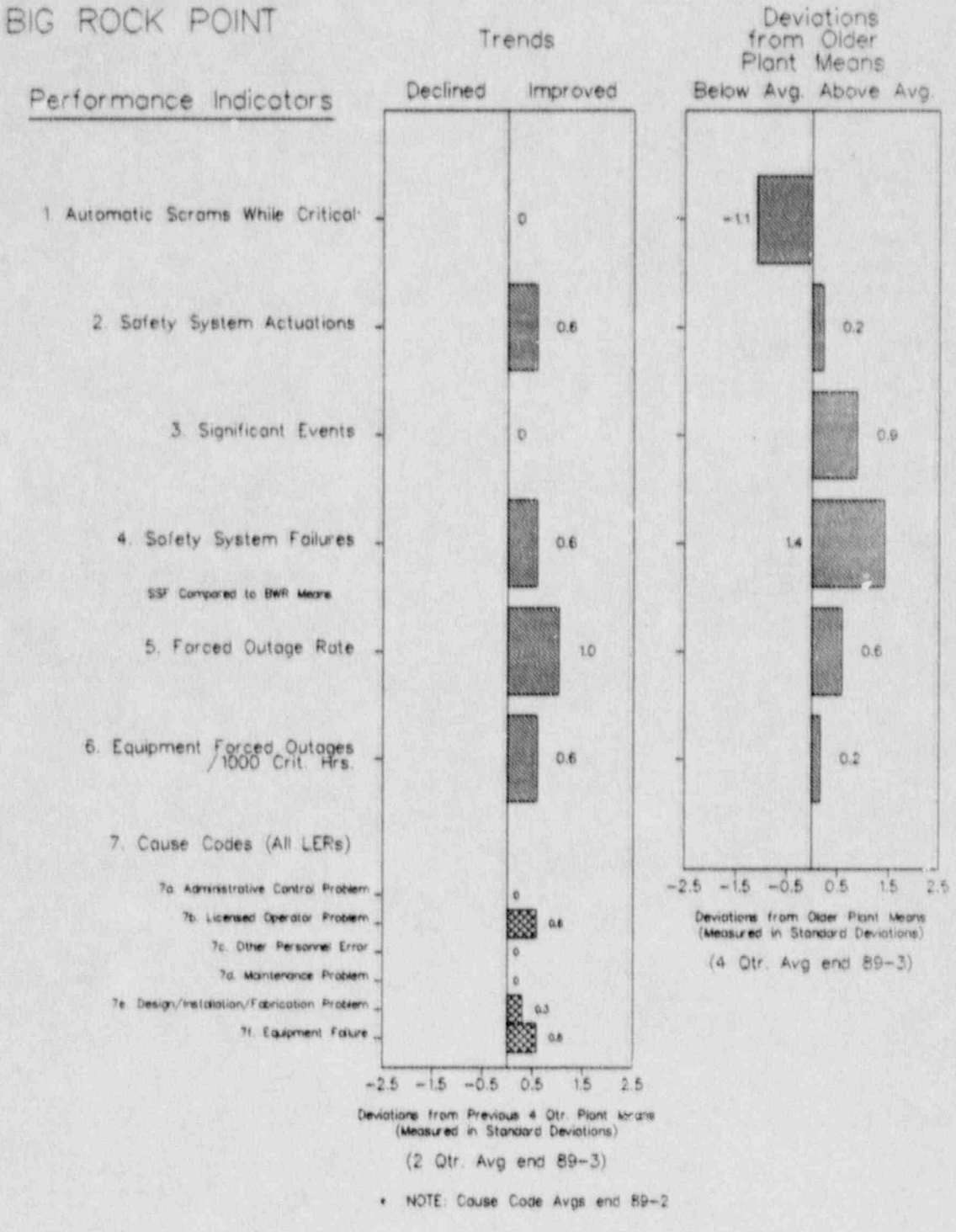

BIG ROCK POINT
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical*
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Crit. Hrs.
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
0.6
0
0.6
1.0
0.6
0
0.6
0
0
0.3
0.6
-1.1
0.2
0.9
1.4
0.6
0.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.6

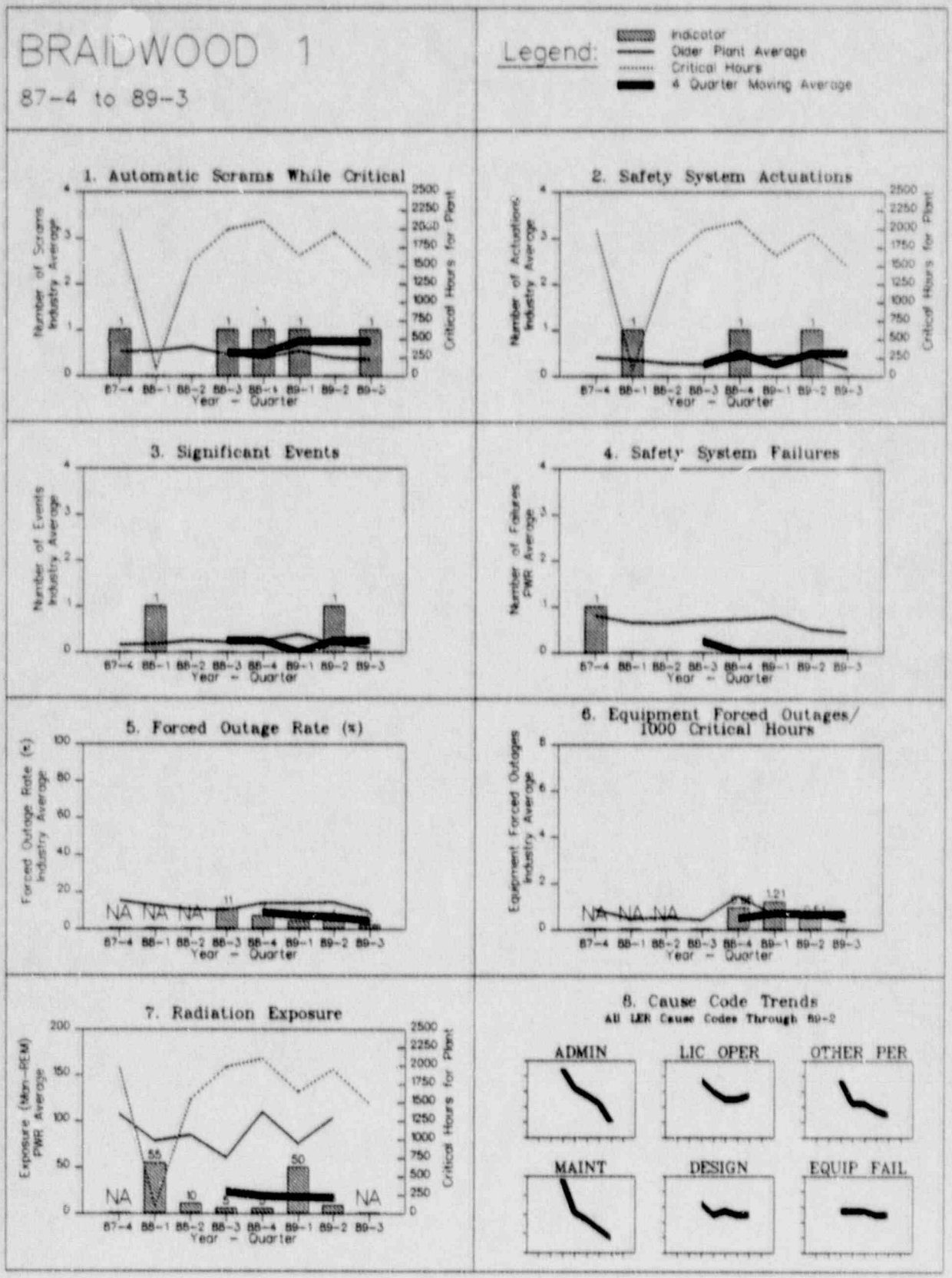

BRAIDWOOD 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
NA NA NA
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.6

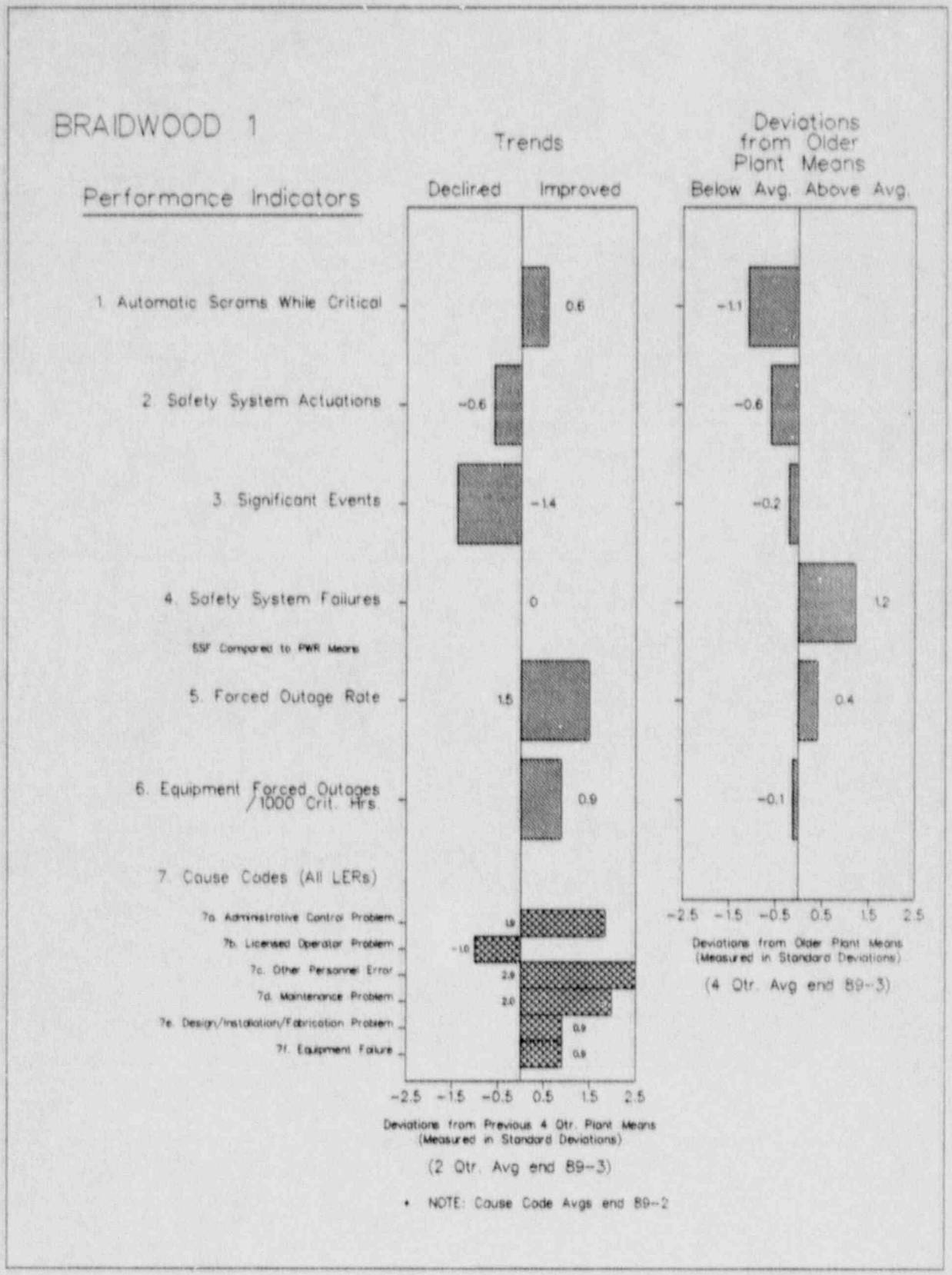

BRAIDWOOD 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-1.1
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
-1.4
-0.2
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
1.5
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
0.9
-0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.0
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
2.9
7d. Maintenance Problem
2.0
7e. Design/Installation/Fabrication Problem
0.9
7f. Equipment Failure
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.7

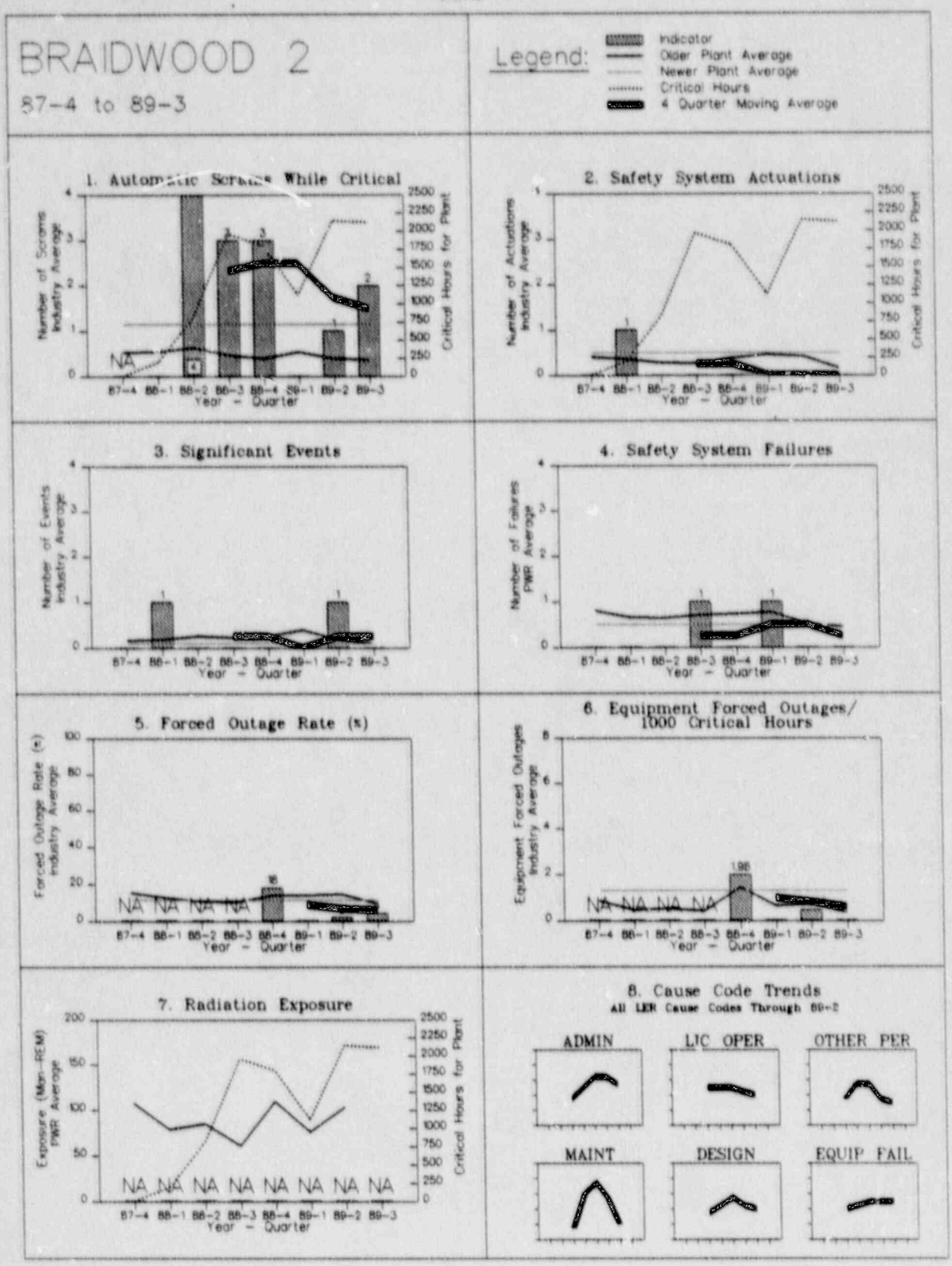

BRAIDWOOD 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Newer Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.7

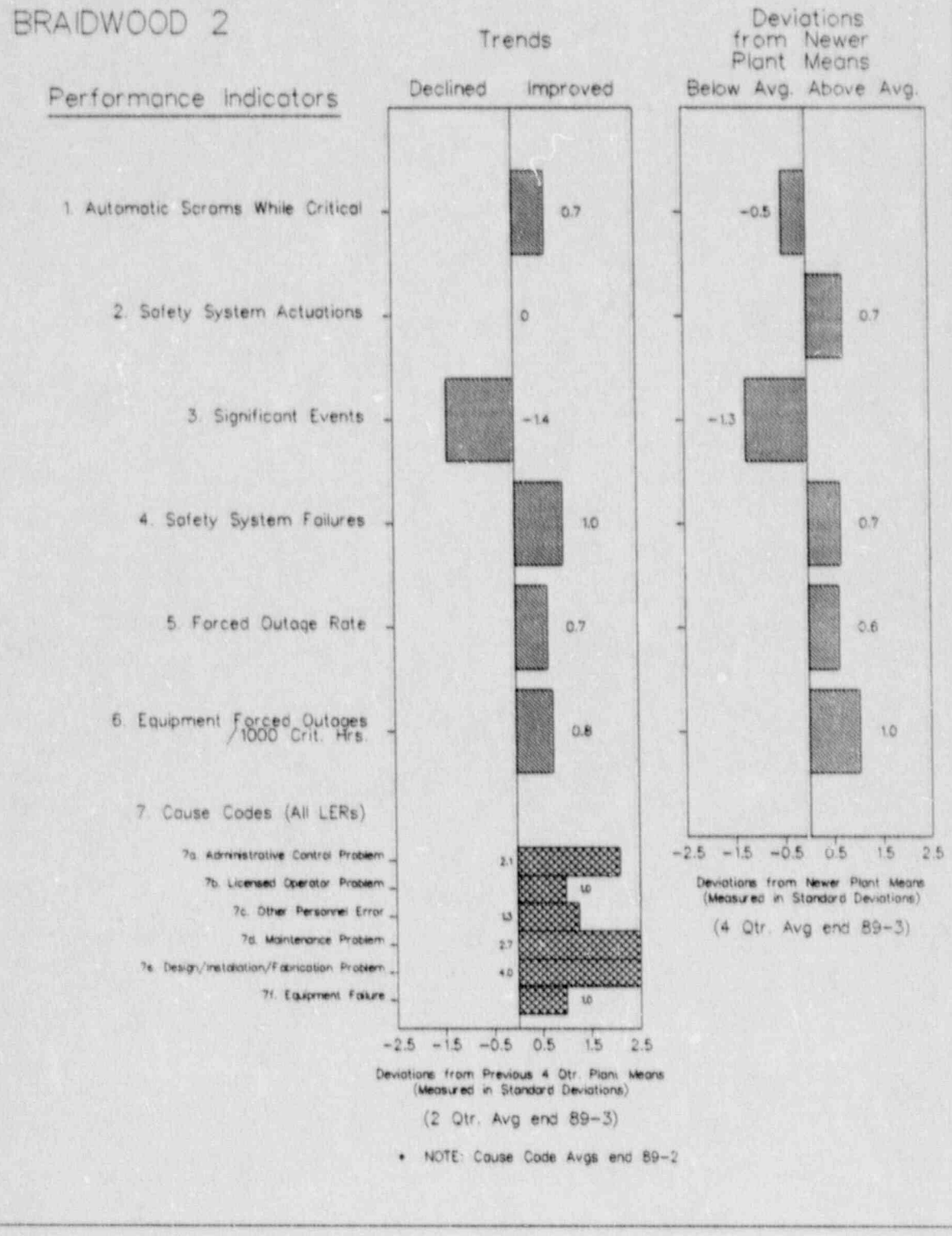

BRAIDWOOD 2
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-0.5
2. Safety System Actuations
0
0.7
3. Significant Events
-1.4
-1.3
4. Safety System Failures
1.0
0.7
5. Forced Outage Rate
0.7
0.6
6. Equipment Forced Outages /1000 Crit. Hrs.
0.8
1.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
2.1
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
1.3
7d. Maintenance Problem
2.7
7e. Design/Installation/Fabrication Problem
4.0
7f. Equipment Failure
1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.7

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

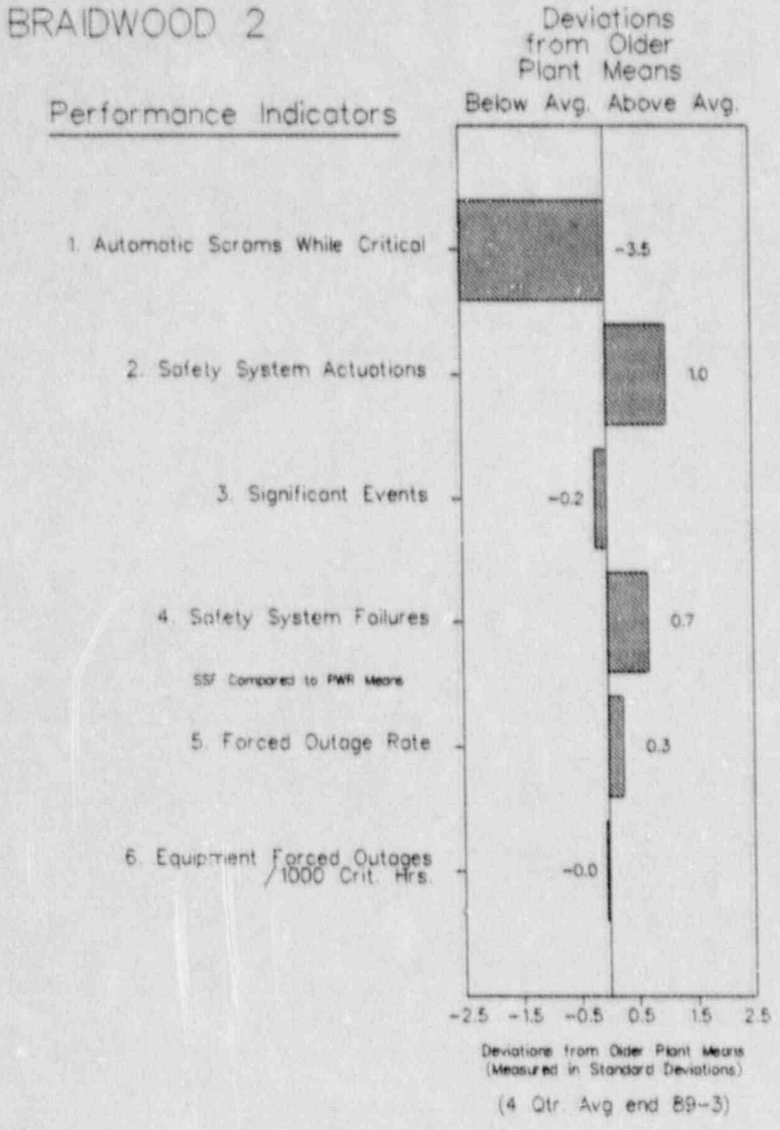
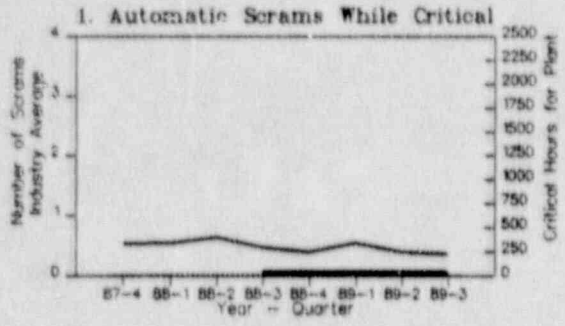


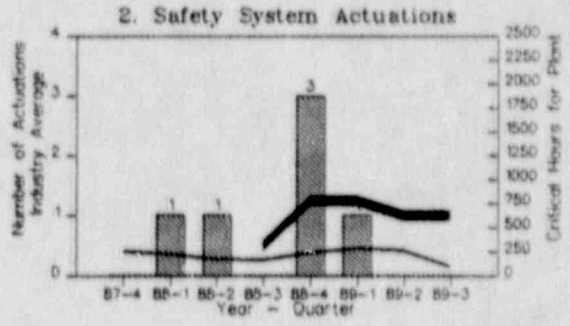
FIGURE 4.8

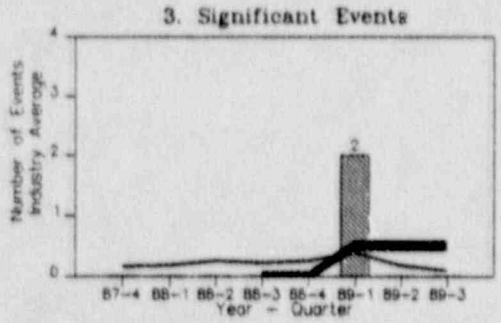
BROWNS FERRY 1

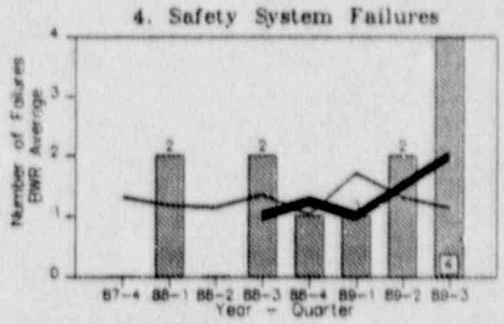
87-4 to 89-3

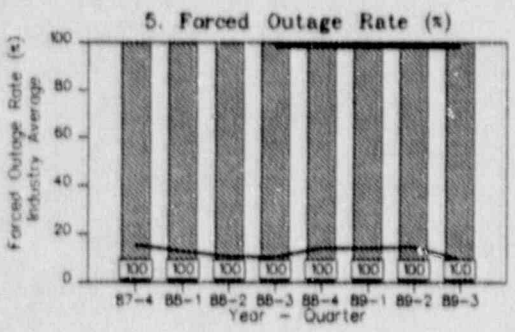
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

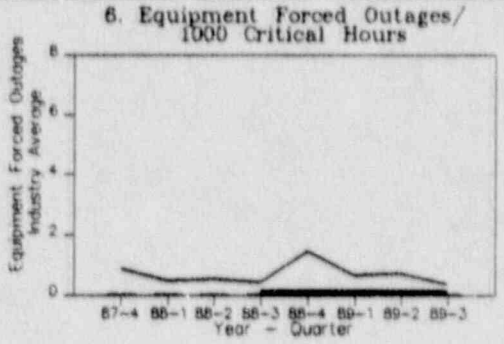


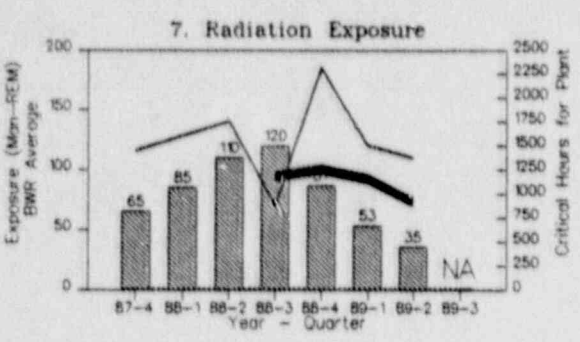












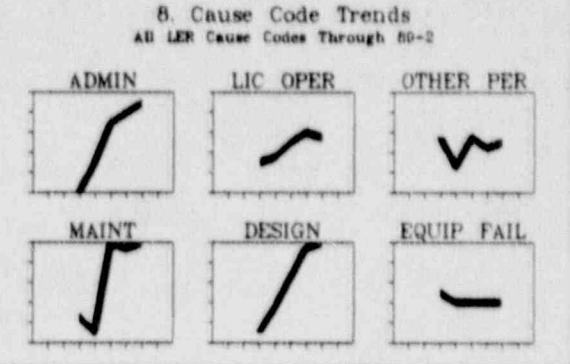


FIGURE 4.8

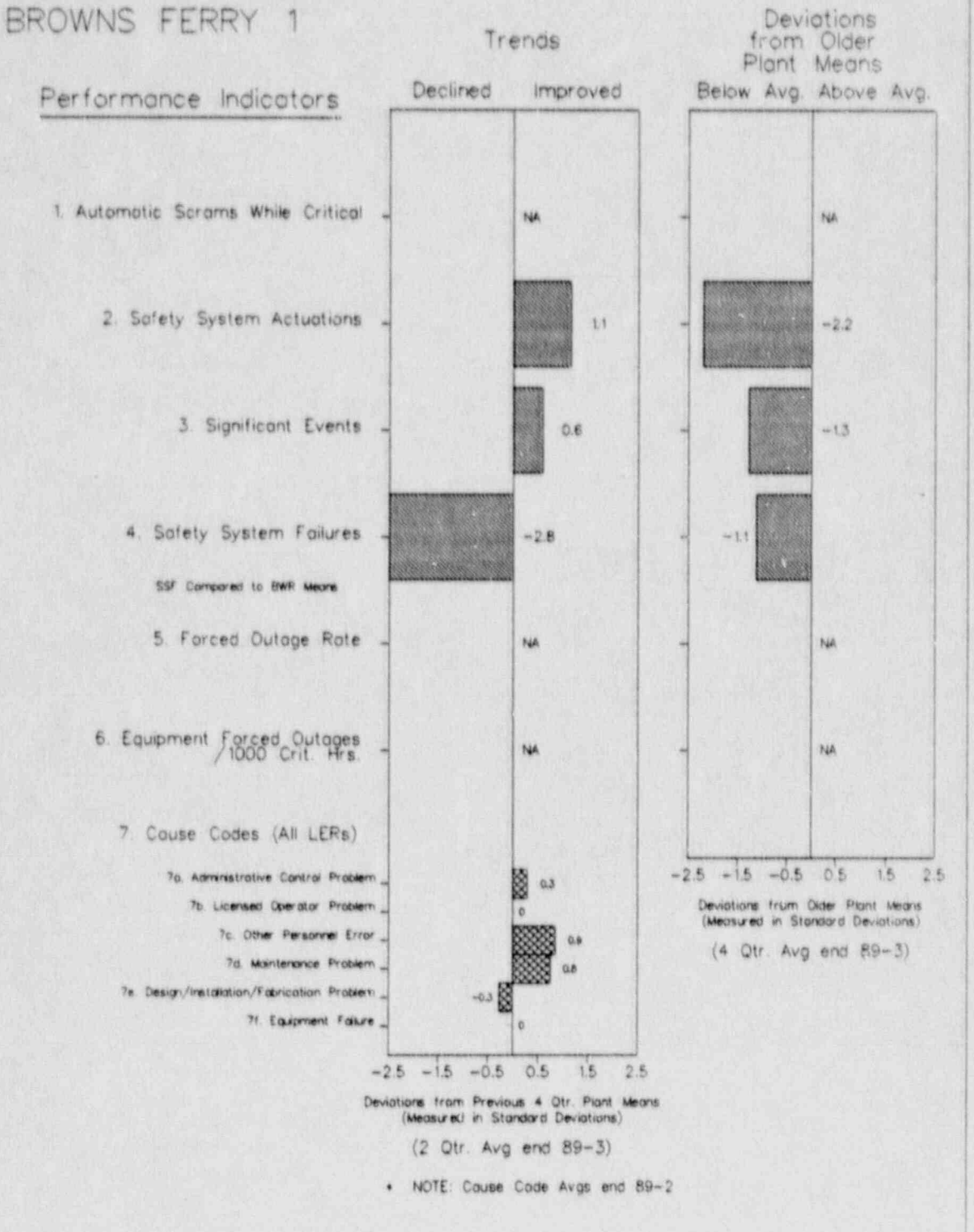

BROWNS FERRY 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
NA
2. Safety System Actuations
1.1
-2.2
3. Significant Events
0.6
-1.3
4. Safety System Failures
-2.8
-1.1
SSF Compared to BWR Means
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages /1000 Crit. Hrs.
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.9
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.9

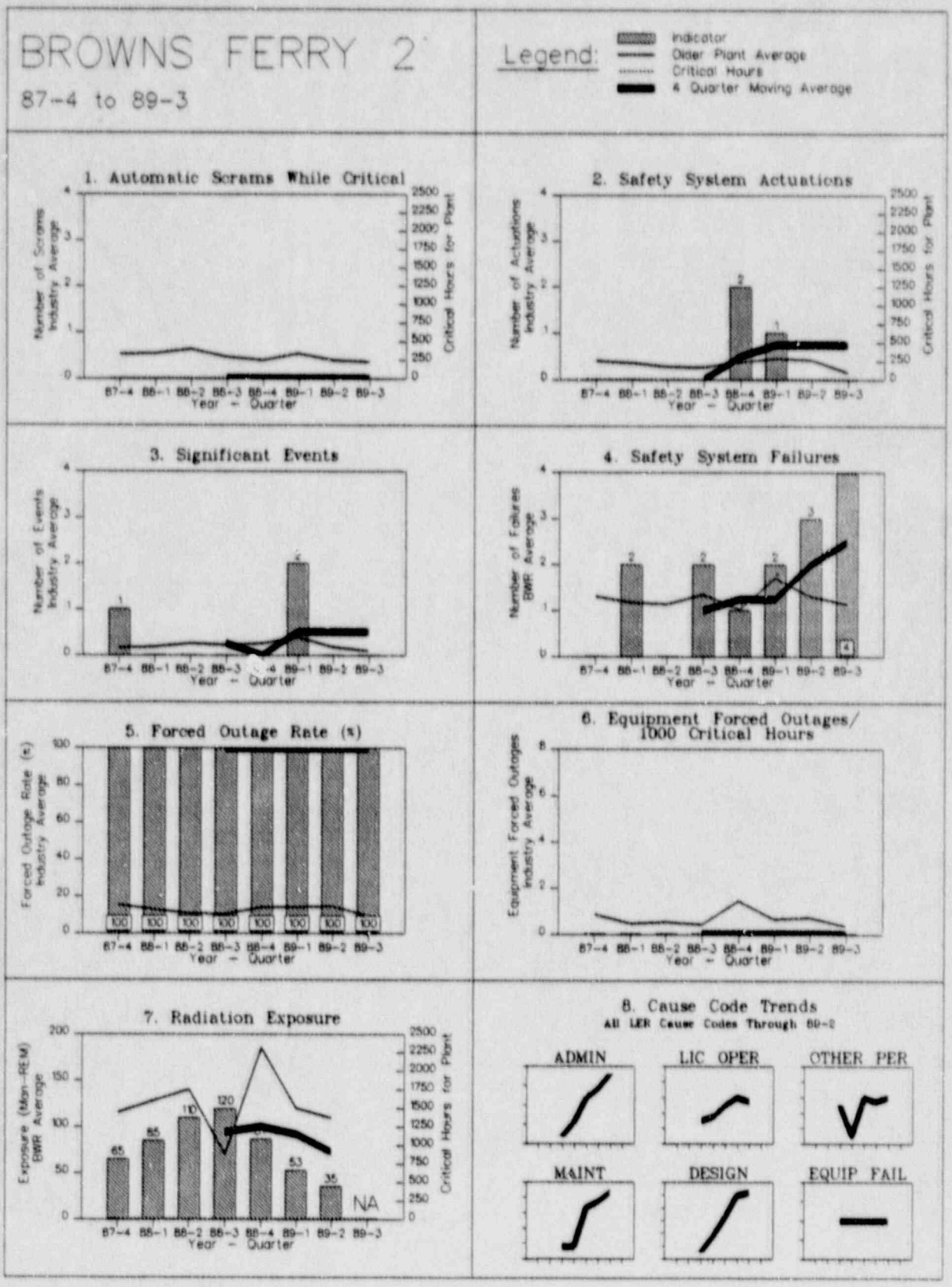

BROWNS FERRY 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
3. Significant Events
Number of Events Industry Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
4. Safety System Failures
Number of Failures BWR Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
65
85
110
120
53
35
NA
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.9

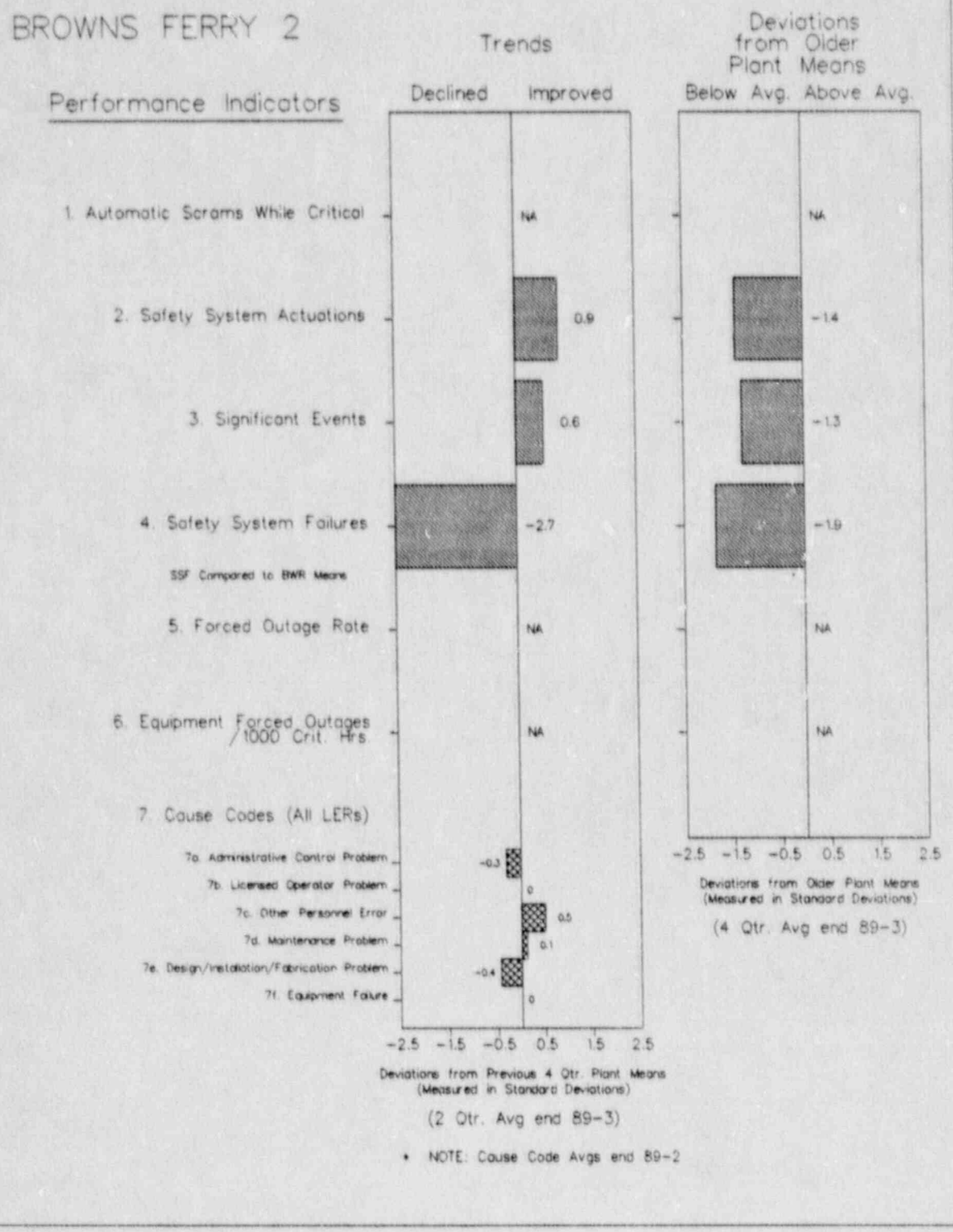

BROWNS FERRY 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
2. Safety System Actuations
0.9
-1.4
3. Significant Events
0.6
-1.3
4. Safety System Failures
-2.7
-1.9
SSF Compared to BWR Means
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages / 1000 Crit. Hrs
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.5
7d. Maintenance Problem
0.1
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.10

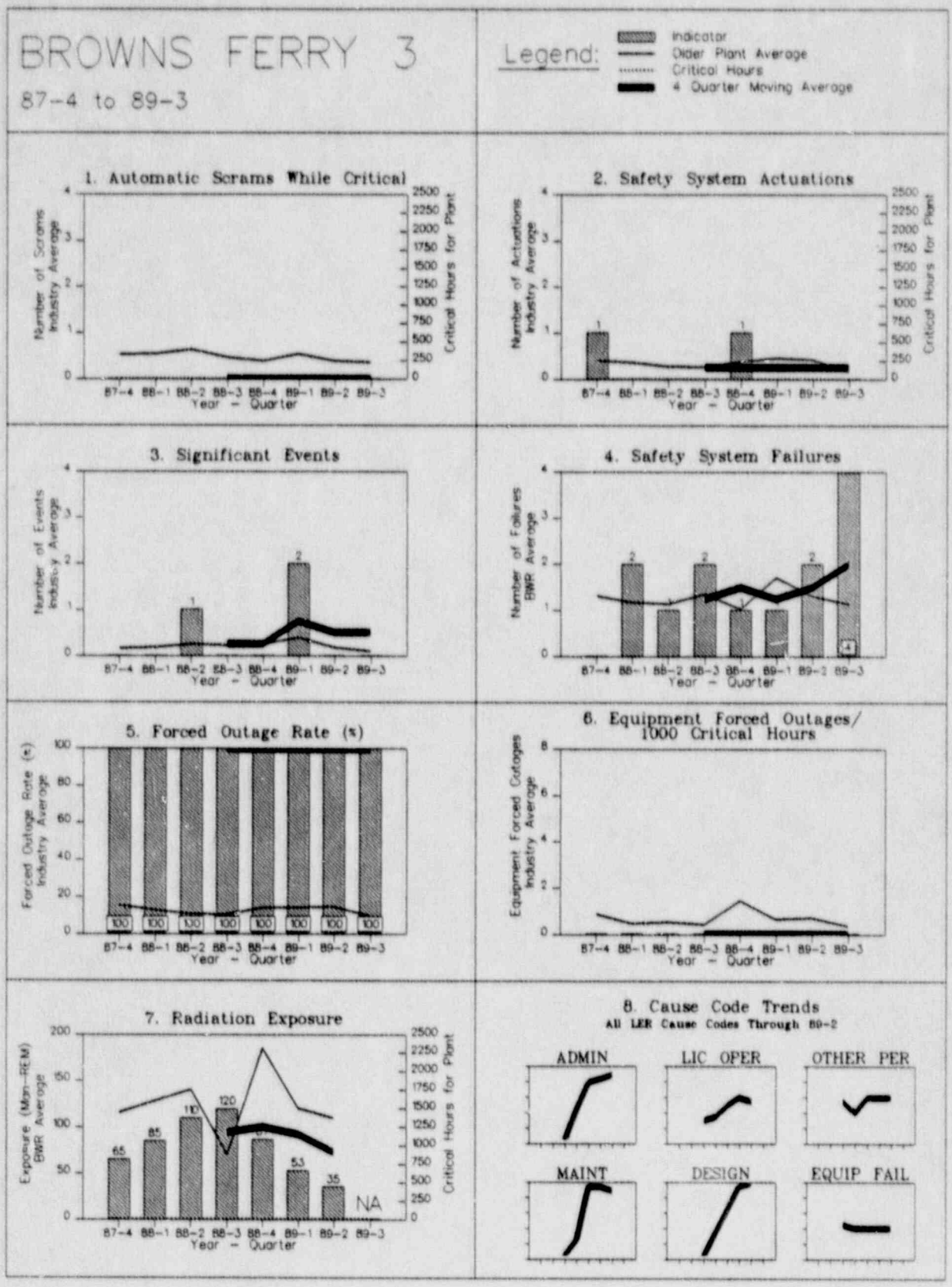

BROWNS FERRY 3
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
65
85
110
120
87
53
35
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.10

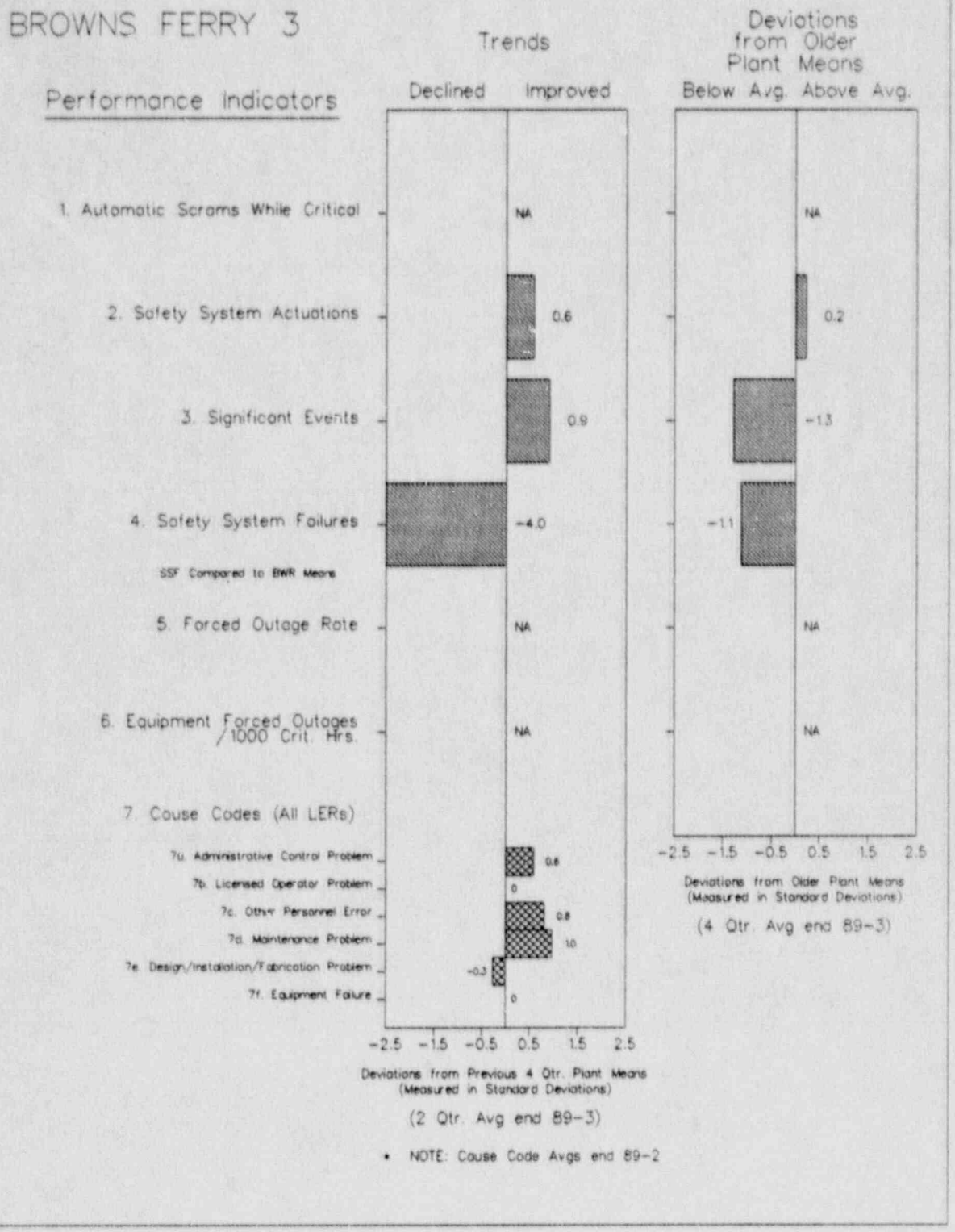

BROWNS FERRY 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
NA
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.9
-1.3
4. Safety System Failures
-4.0
-1.1
SSF Compared to BWR Means
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages / 1000 Crit. Hrs.
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.6
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
1.0
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.11

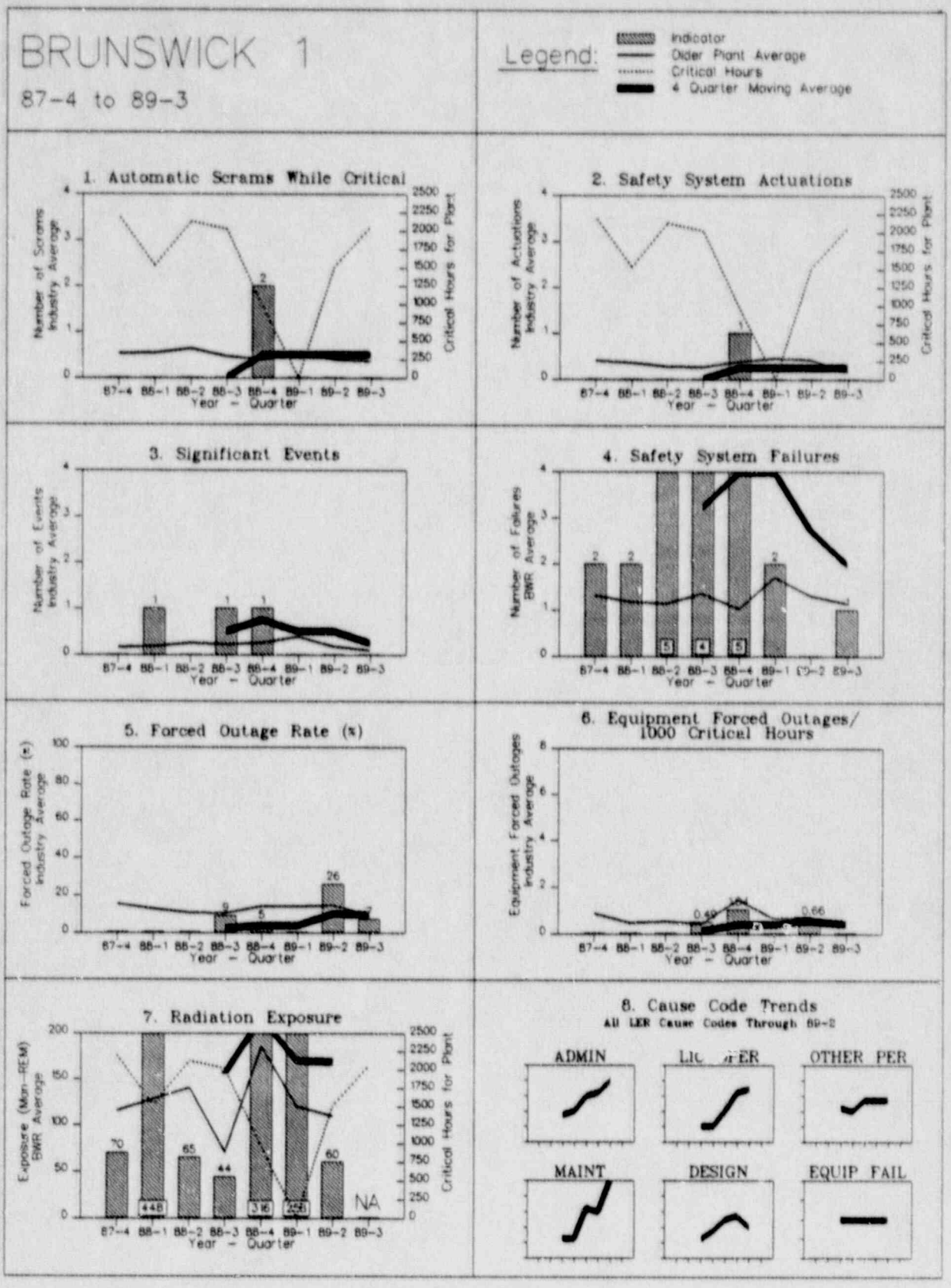

BRUNSWICK 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.11

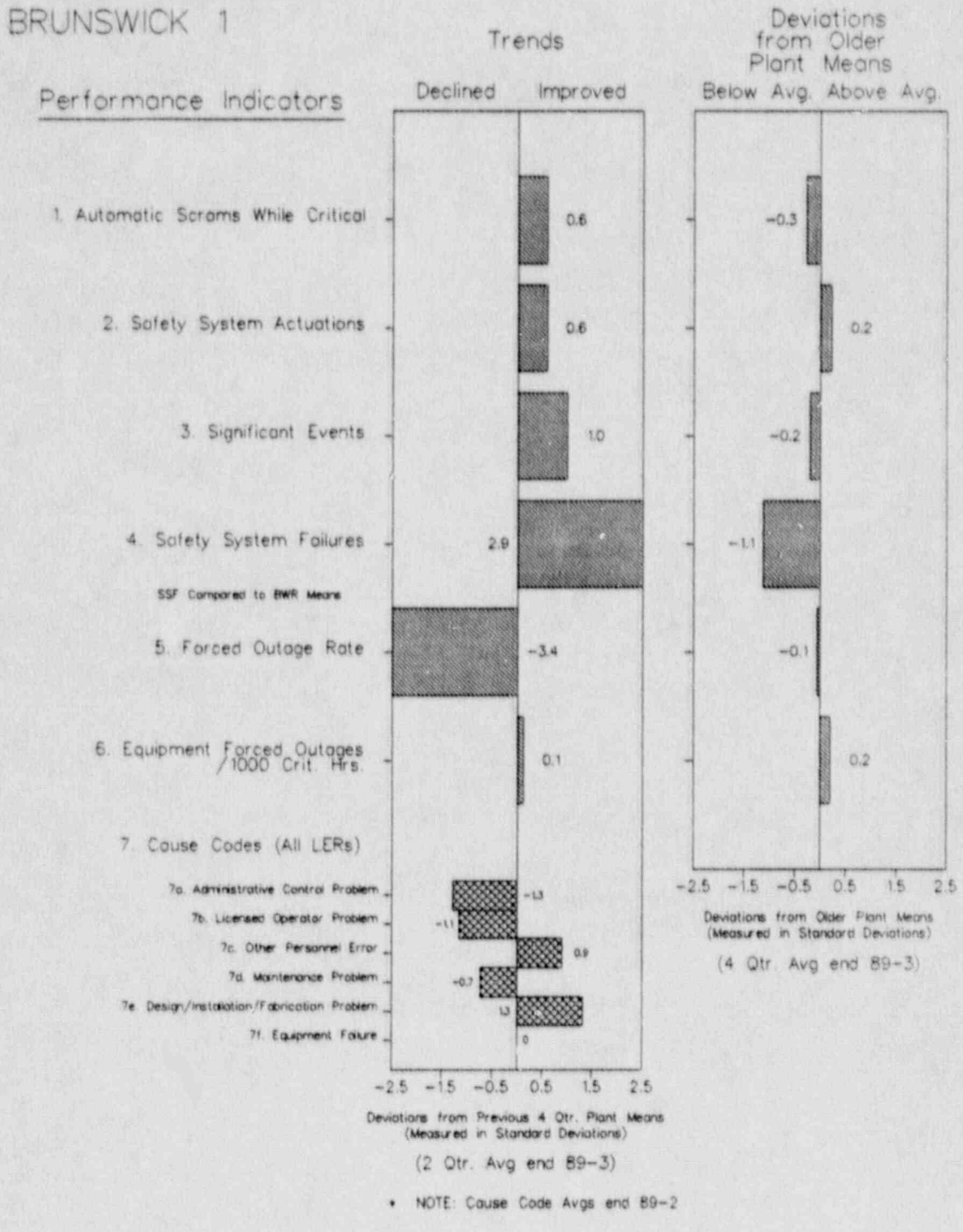
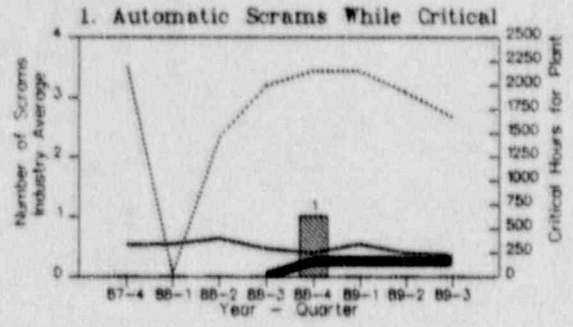

BRUNSWICK 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
1.0
-0.2
4. Safety System Failures
2.9
-1.1
SSF Compared to BWR Means
5. Forced Outage Rate
-3.4
-0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
0.1
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.3
7b. Licensed Operator Problem
-1.1
7c. Other Personnel Error
0.9
7d. Maintenance Problem
-0.7
7e. Design/Installation/Fabrication Problem
1.3
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

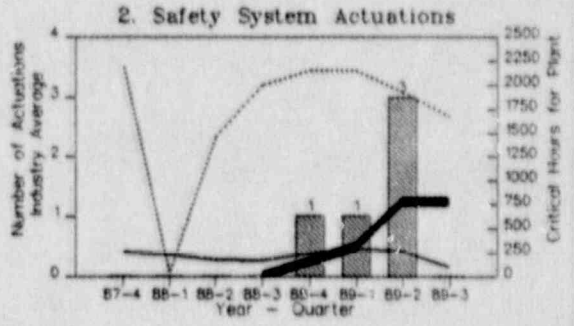
FIGURE 4.12

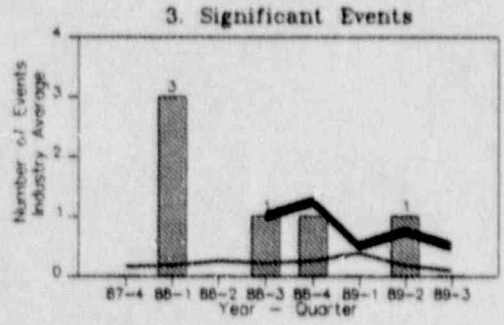
BRUNSWICK 2

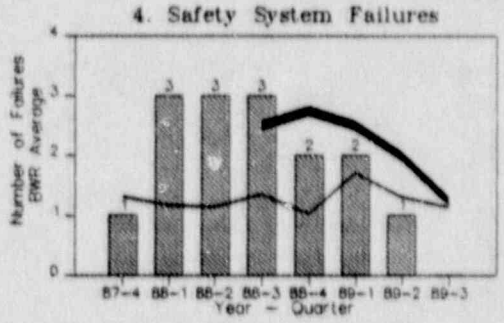
87-4 to 89-3

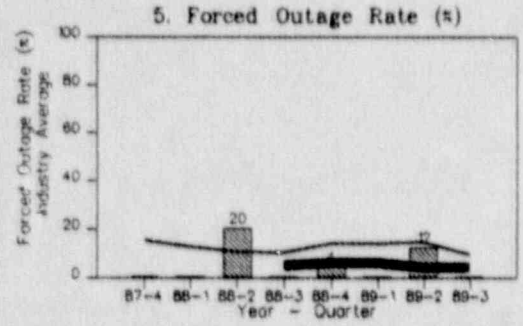
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

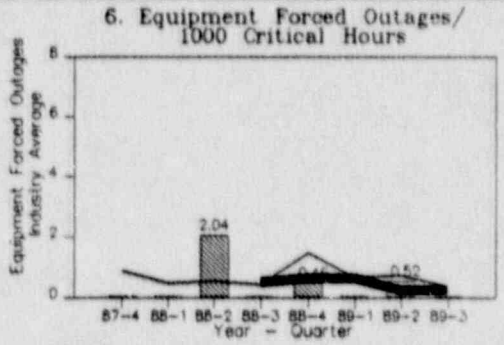


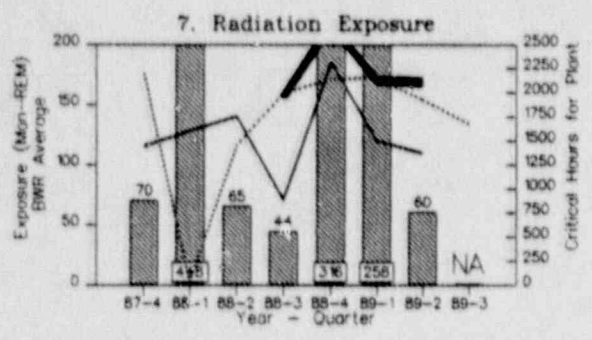












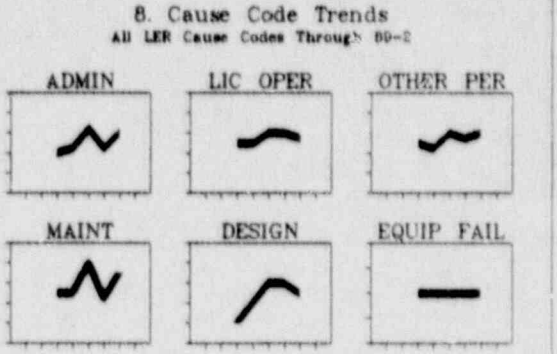


FIGURE 4.12

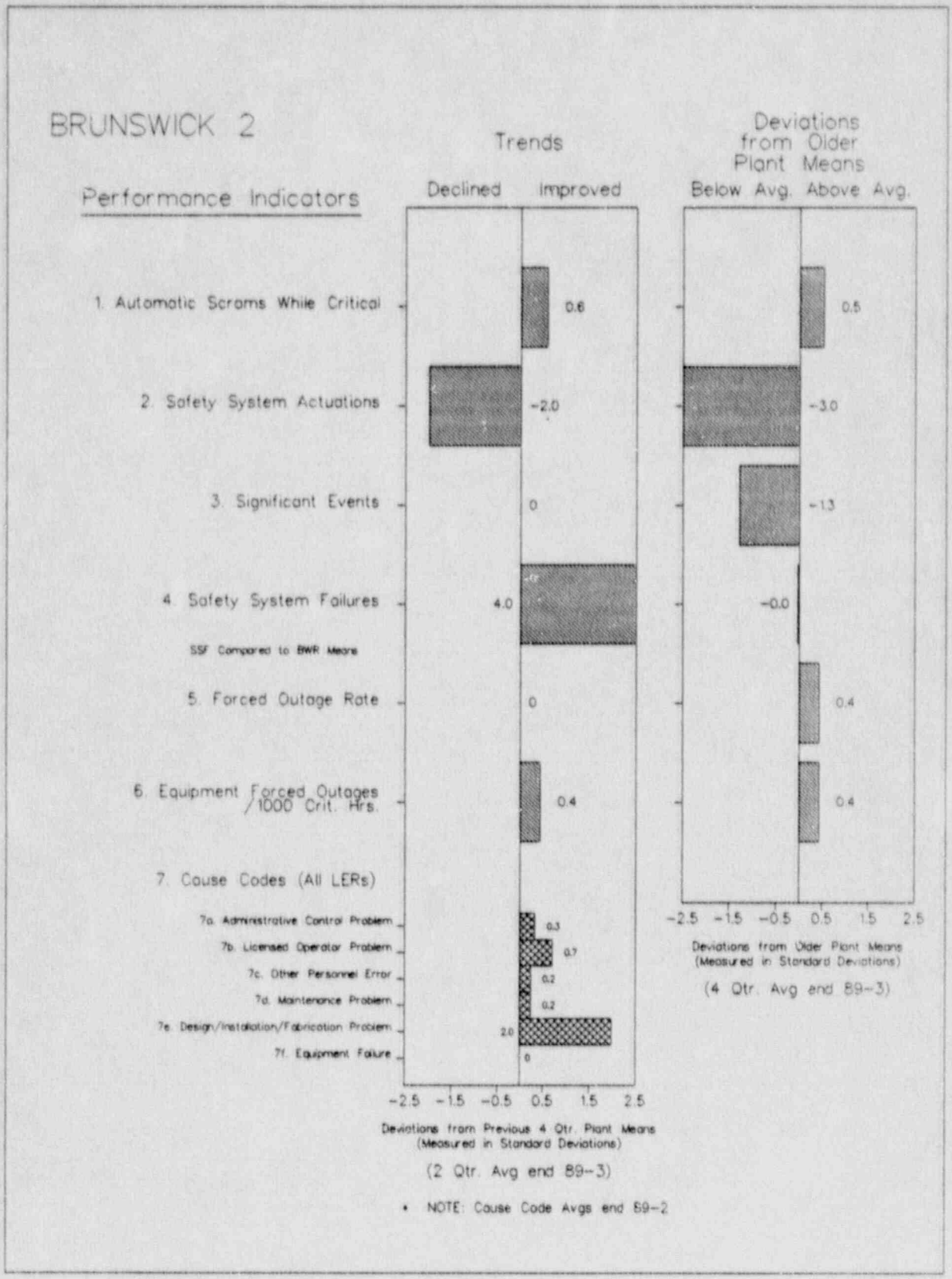

BRUNSWICK 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
-2.0
-3.0
3. Significant Events
0
-1.3
4. Safety System Failures
4.0
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
0
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
0.4
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0.2
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
2.0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.13

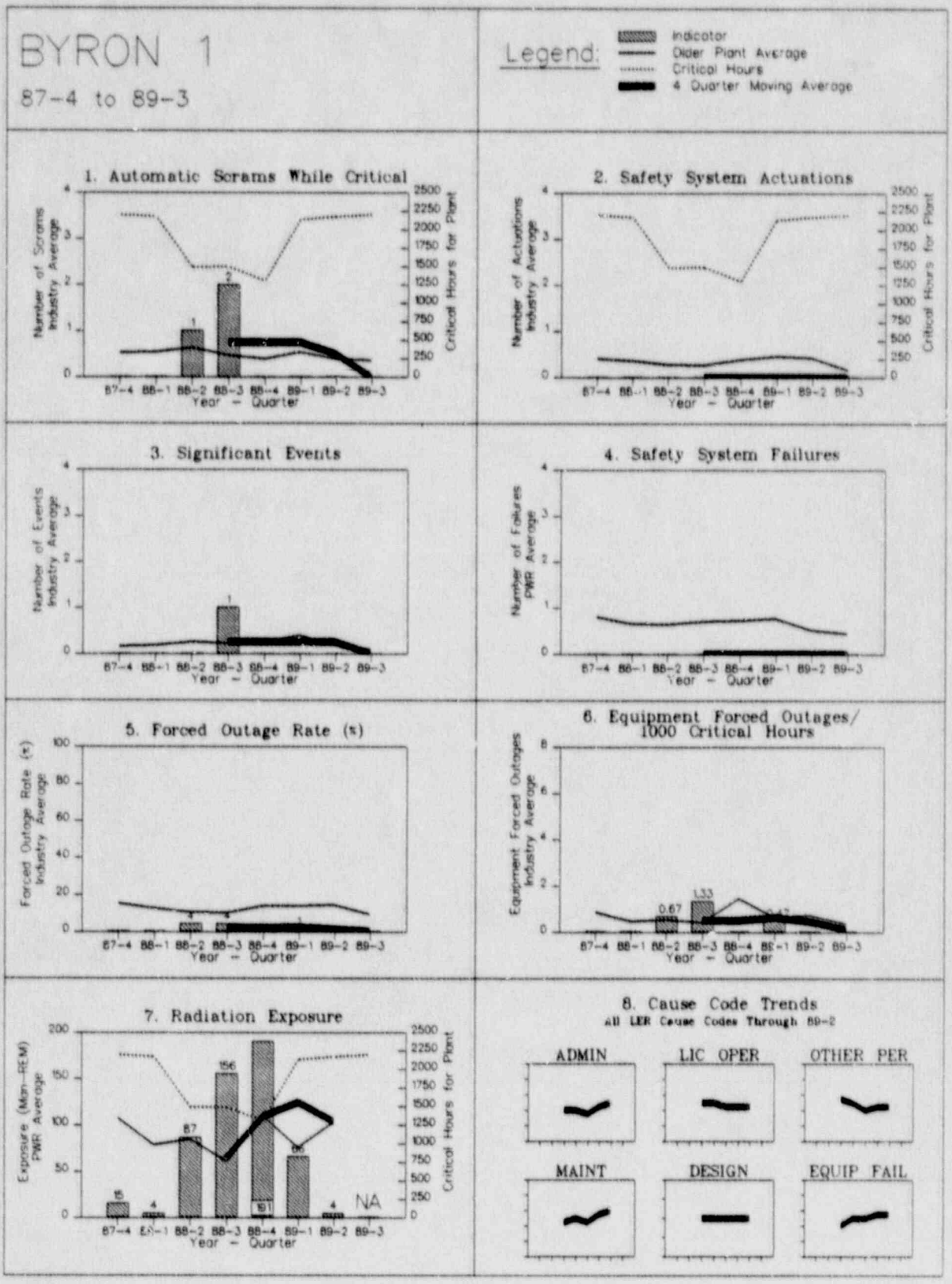

BYRON 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
0.67
1.33
7. Radiation Exposure
Exposure (Man-REM) PWR Average
15
4
87
156
151
66
4
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.13

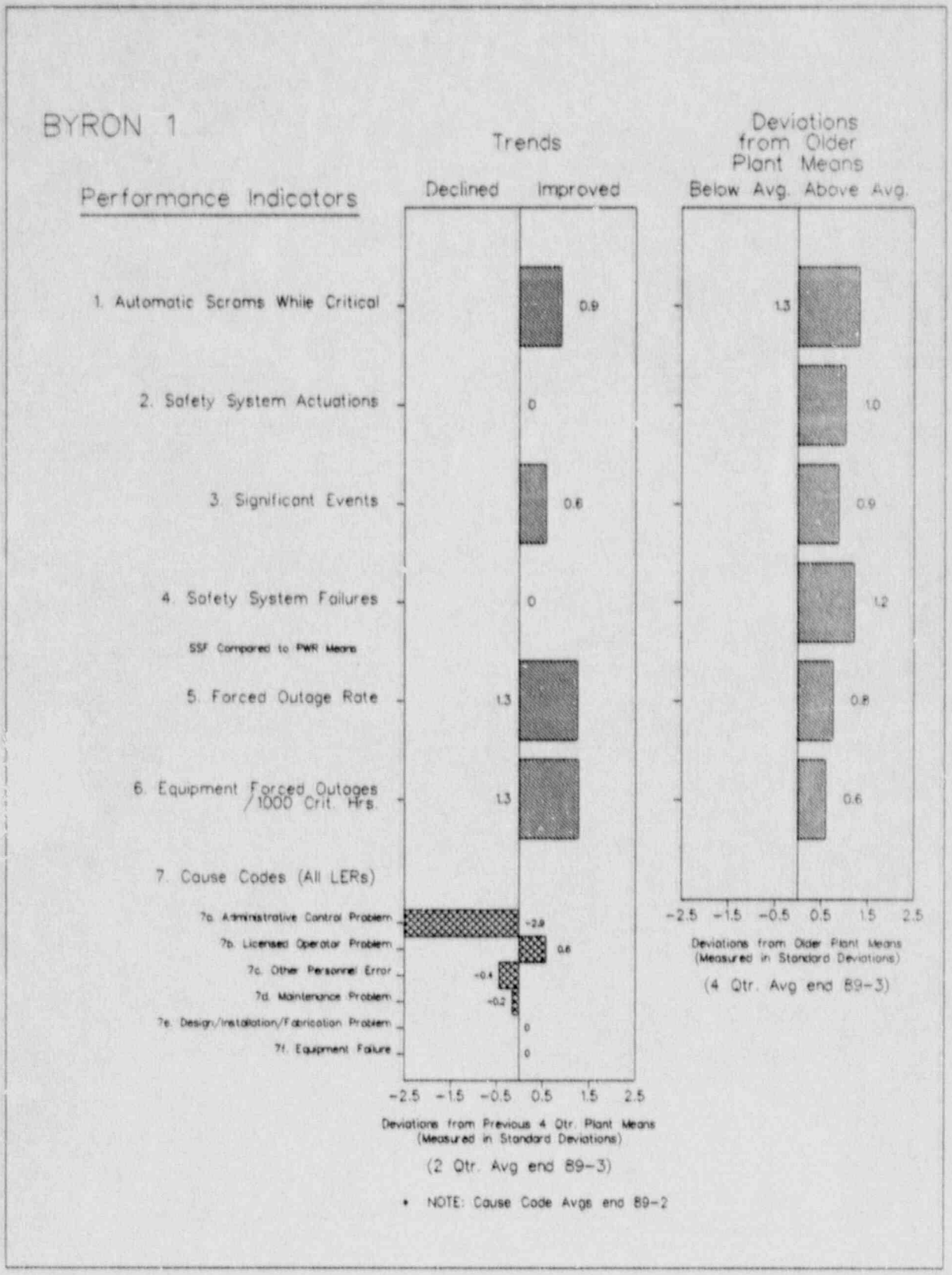

BYRON 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
0.9
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
1.3
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.3
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-2.9
7b. Licensed Operator Problem
0.6
7c. Other Personnel Error
-0.4
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.14

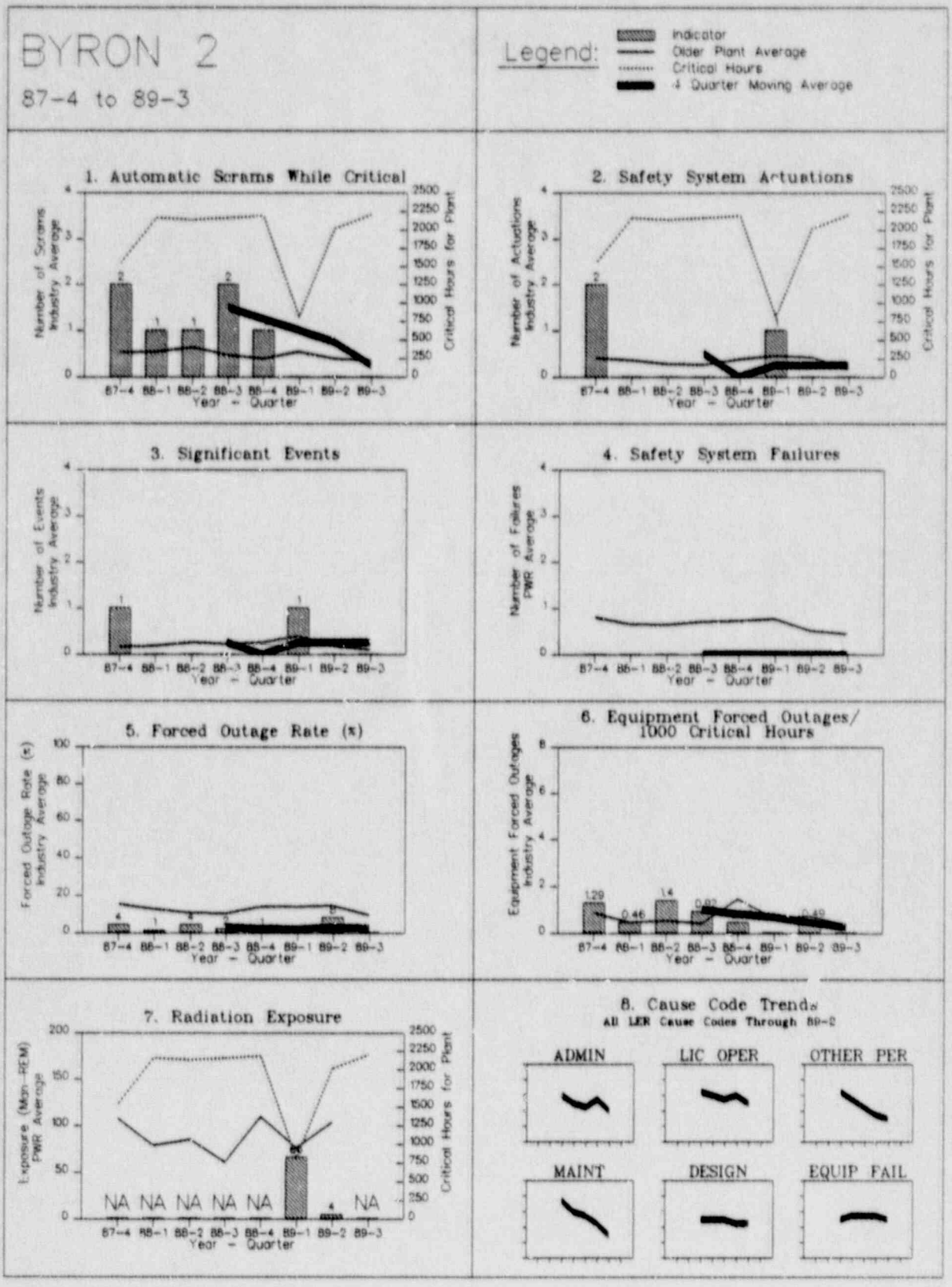

BYRON 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
NA NA NA NA NA NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.14

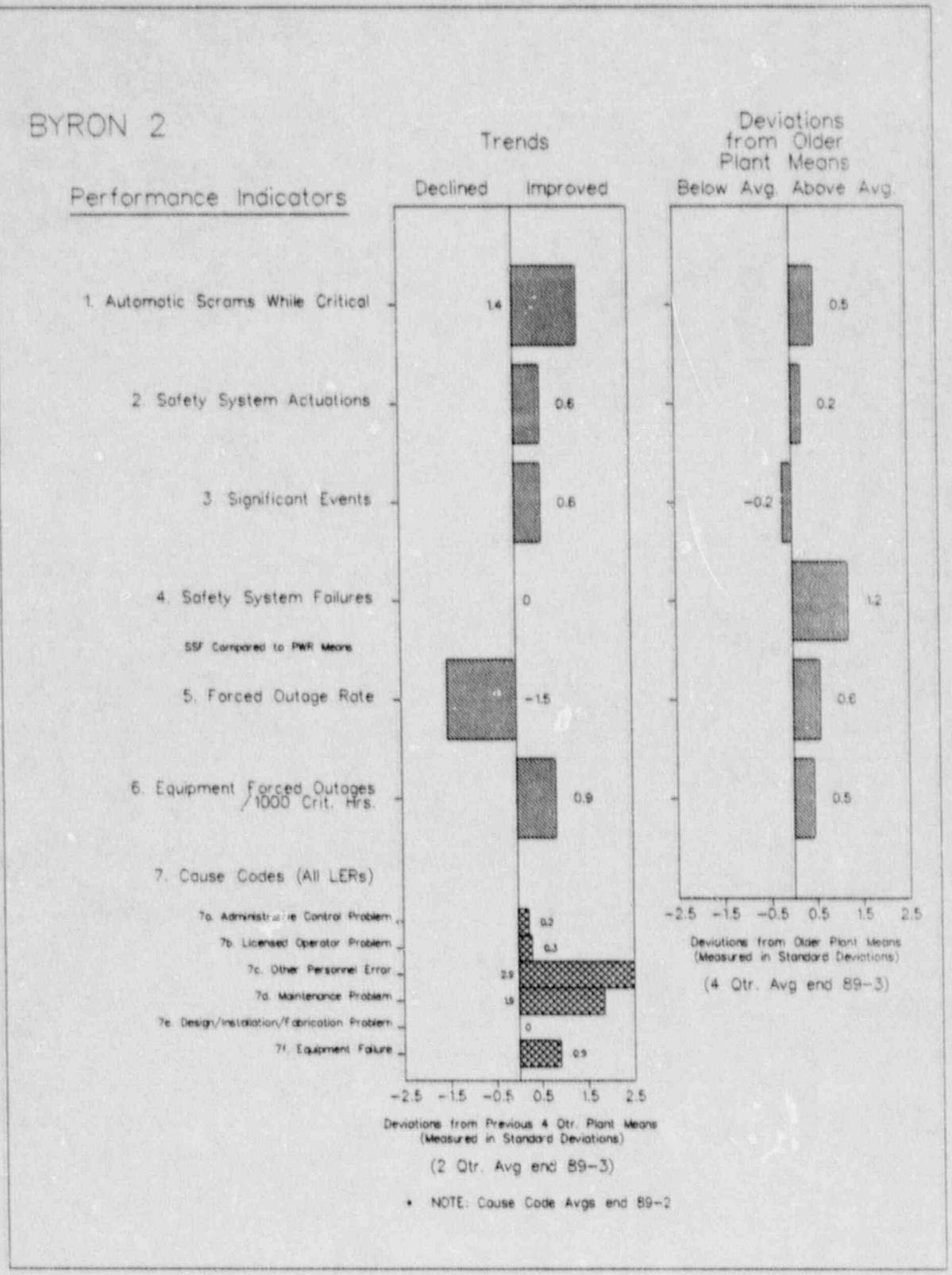

BYRON 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.4
0.5
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
-0.2
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
-1.5
0.6
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.9
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
0.3
7c. Other Personnel Error
2.9
7d. Maintenance Problem
1.9
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.15

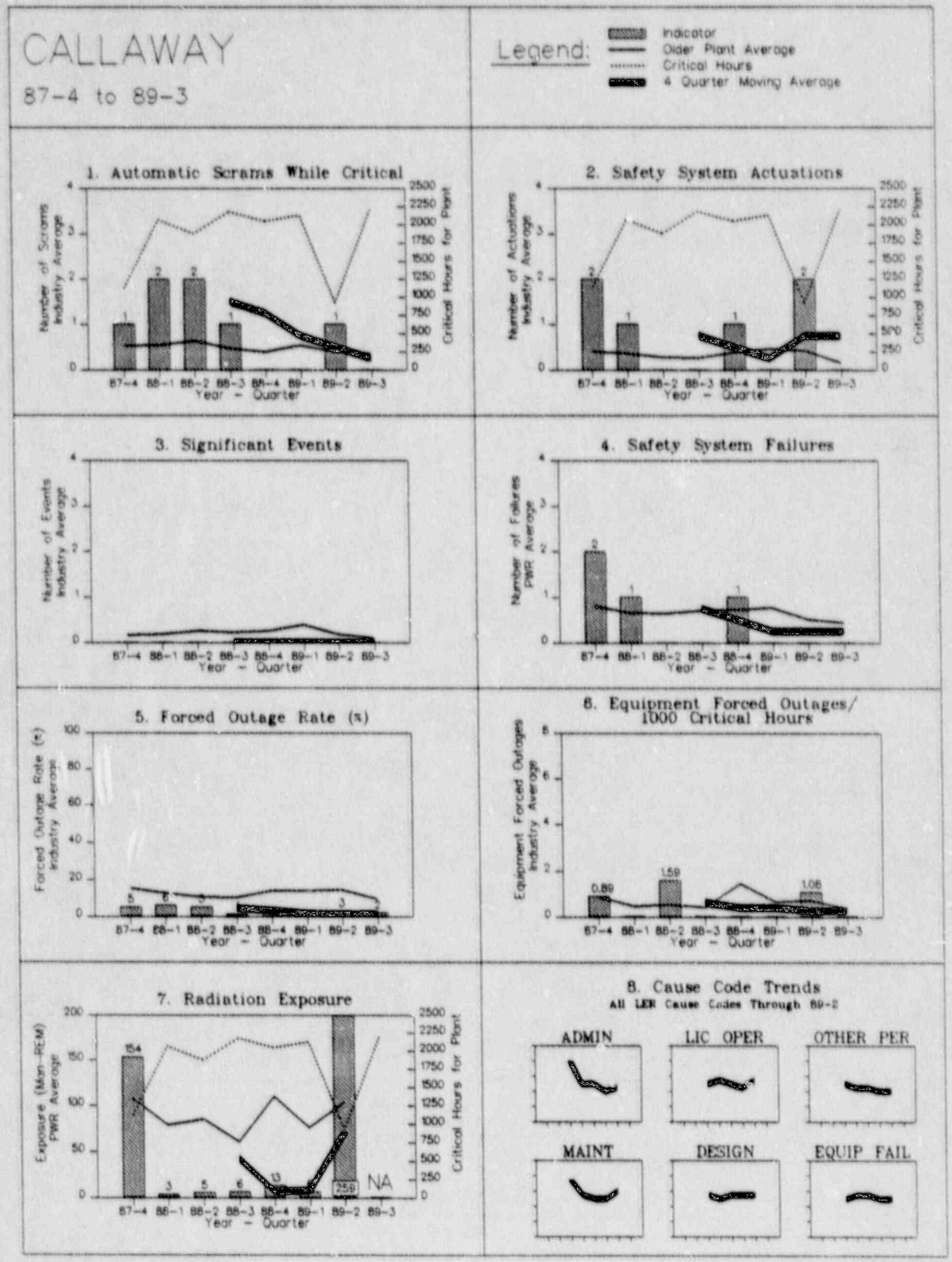

CALLAWAY
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
0.89
1.59
1.08
7. Radiation Exposure
Exposure (Man-REM) PWR Average
154
259
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.15

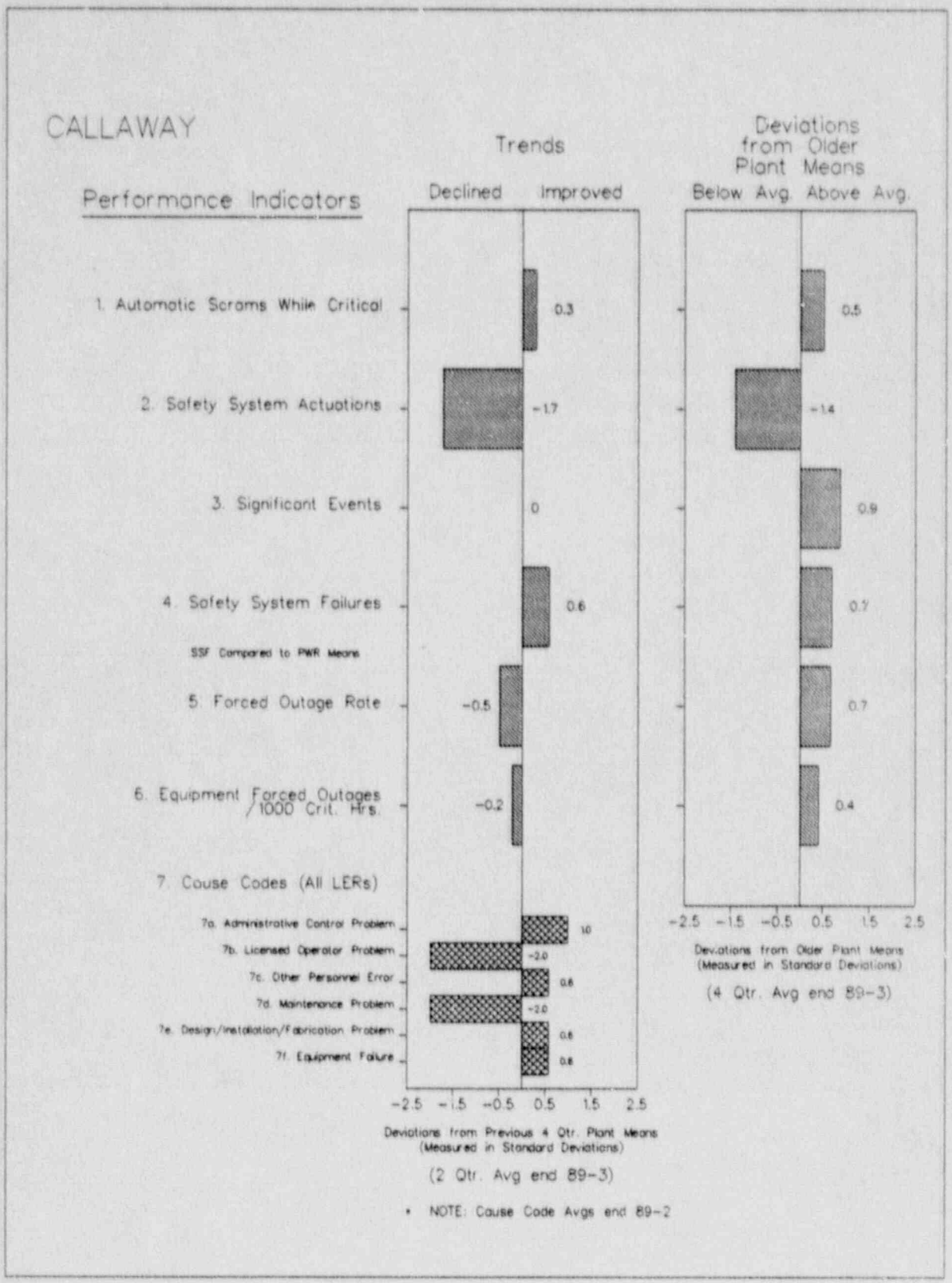

CALLAWAY
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
0.5
2. Safety System Actuations
-1.7
-1.4
3. Significant Events
0
0.9
4. Safety System Failures
0.6
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.5
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.2
0.4
7. Couse Codes (All LERs)
7a. Administrative Control Problem
1.0
7b. Licensed Operator Problem
-2.0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
-2.0
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.16

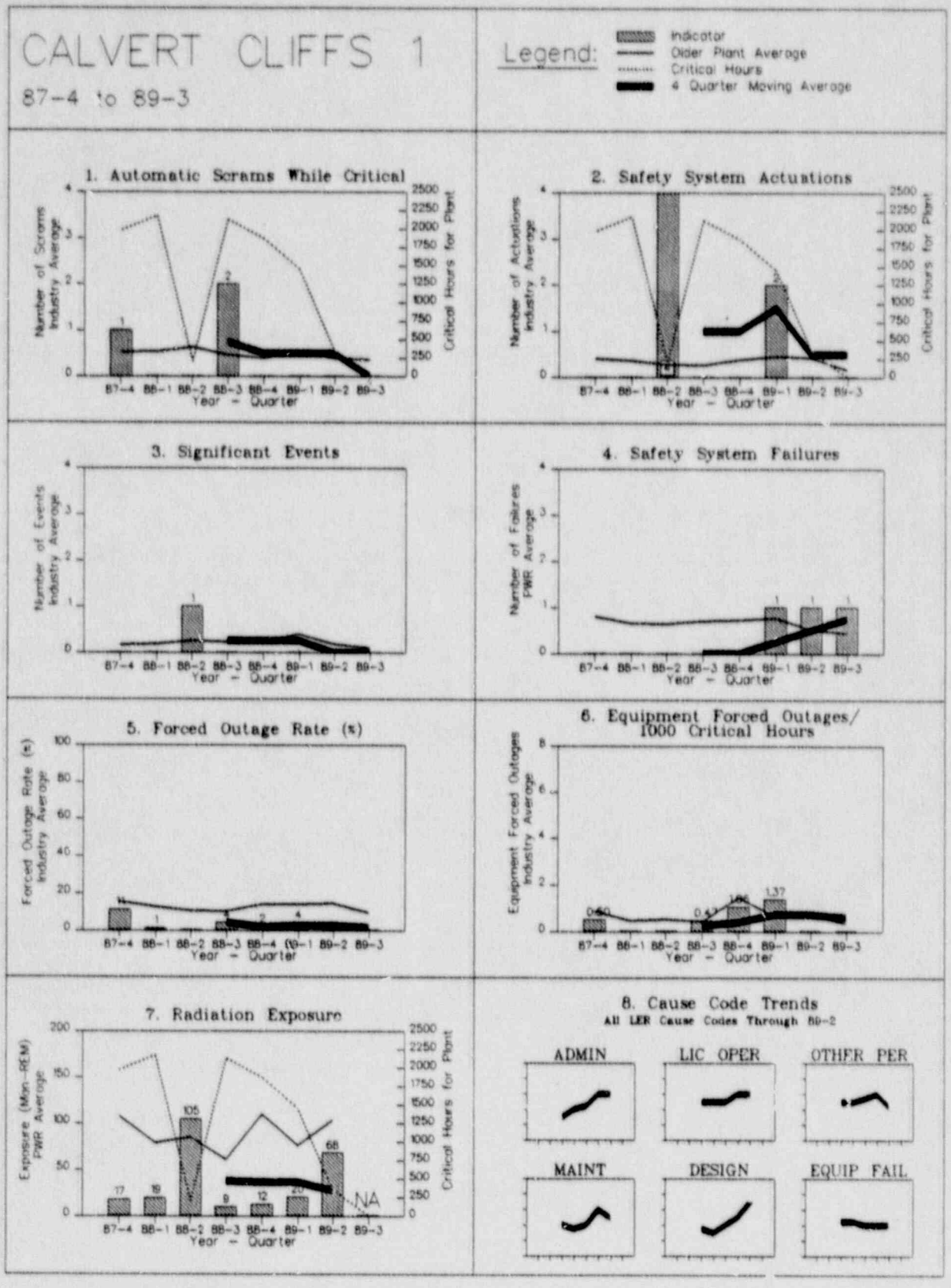

CALVERT CLIFFS 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for 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 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.16

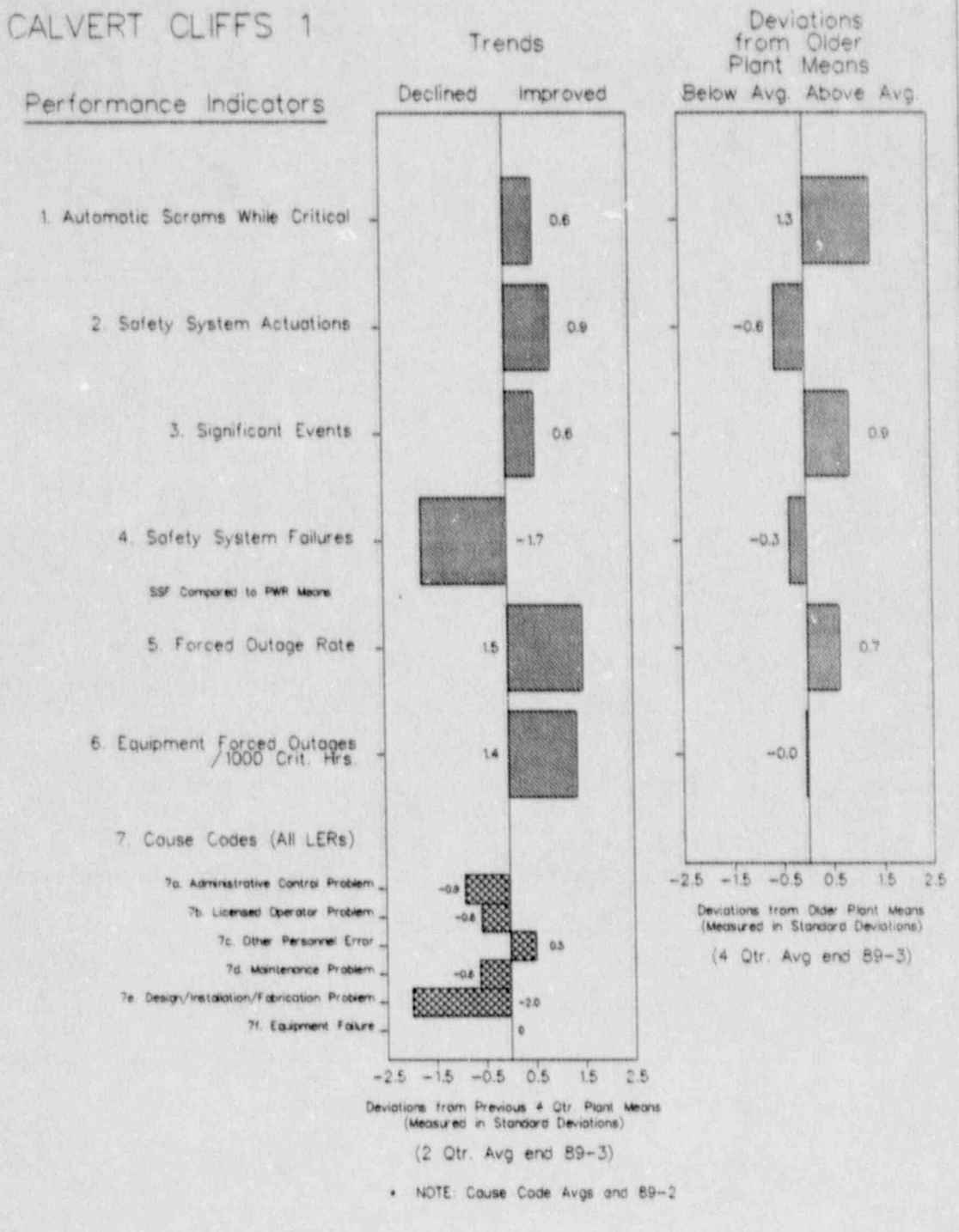

CALVERT CLIFFS 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
0.9
-0.6
3. Significant Events
0.6
0.9
4. Safety System Failures
-1.7
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
1.5
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.4
-0.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.9
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.5
7d. Maintenance Problem
-0.8
7e. Design/Installation/Fabrication Problem
-2.0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.17

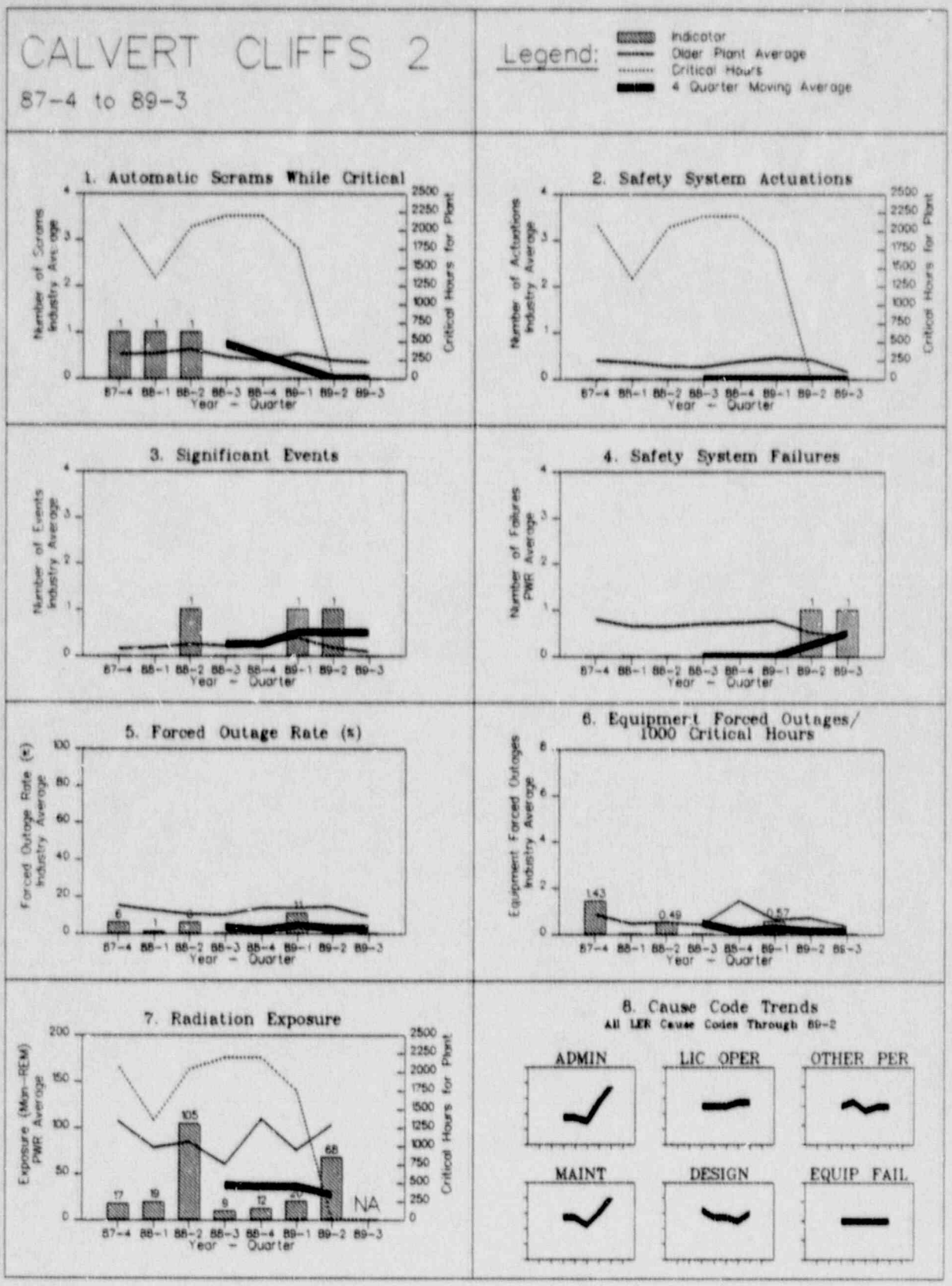

CALVERT CLIFFS 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
1.43
0.49
0.57
7. Radiation Exposure
Exposure (Man-REM) PWR Average
17
19
105
9
12
20
68
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.17

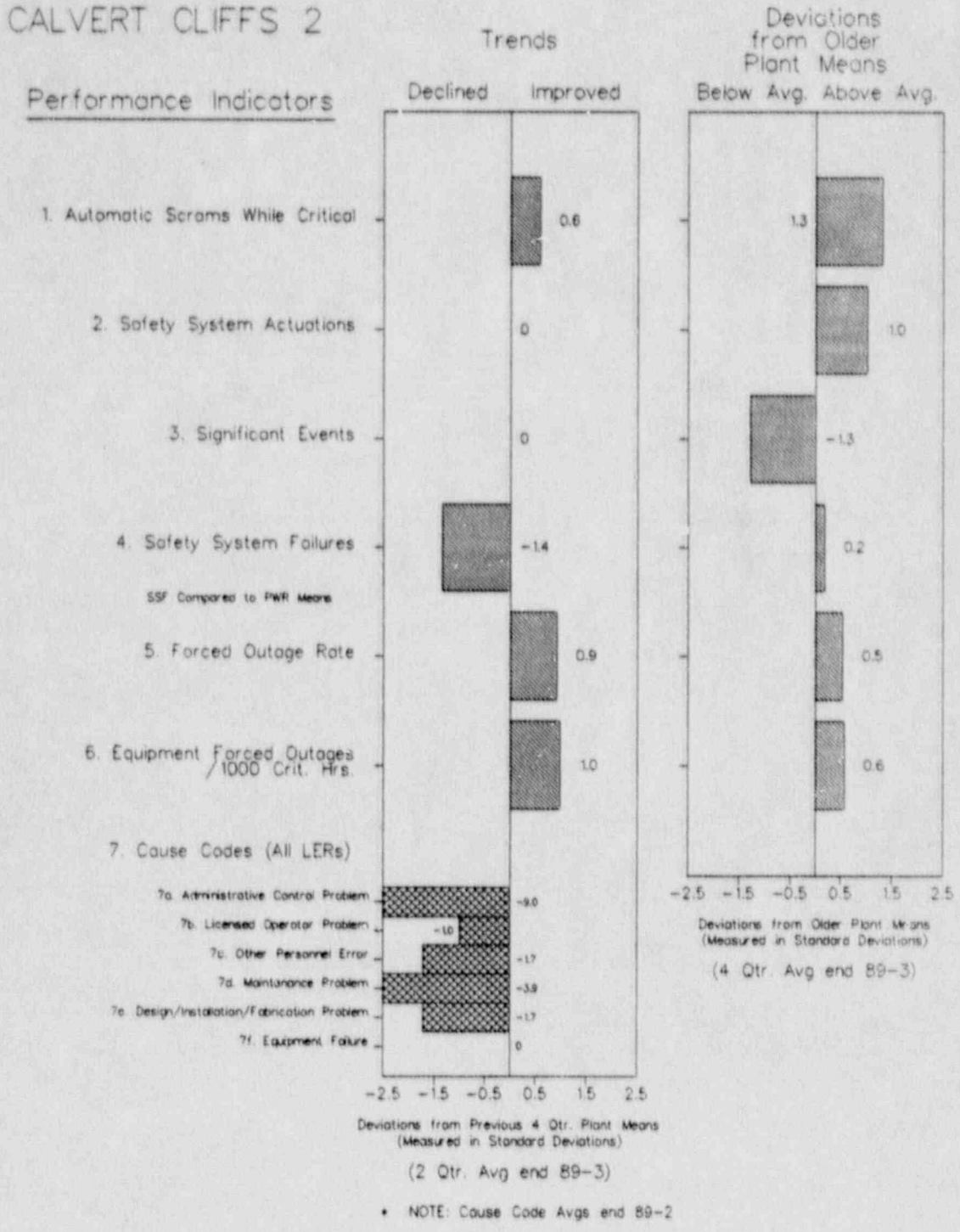
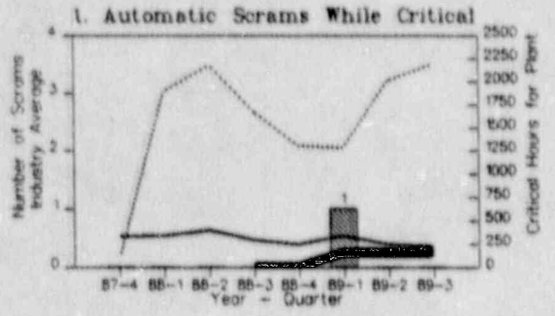

CALVERT CLIFFS 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0
-1.3
4. Safety System Failures
-1.4
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.9
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.0
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-9.0
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
-1.7
7d. Maintenance Problem
-3.9
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

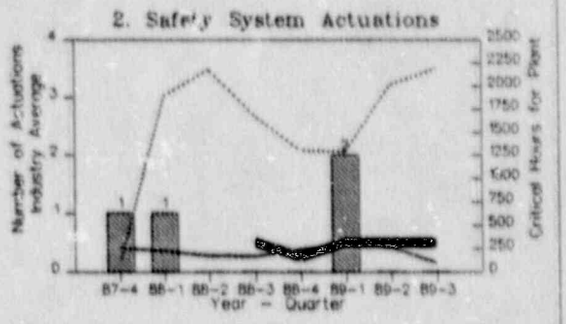
FIGURE 4.18

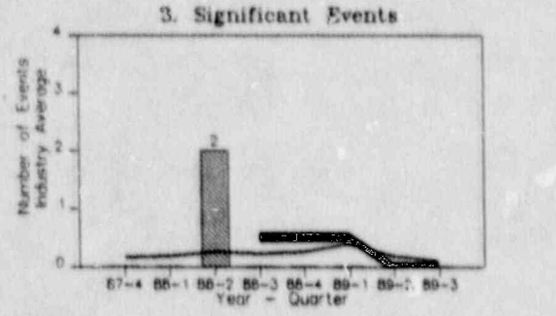
CATAWBA 1

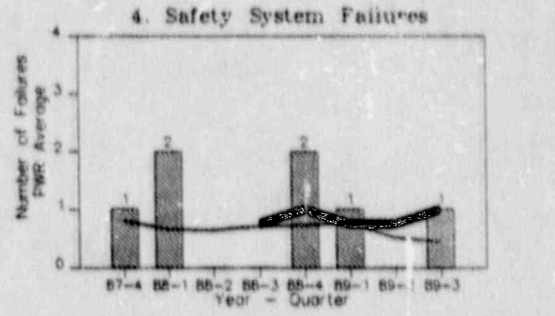
87-4 to 89-3

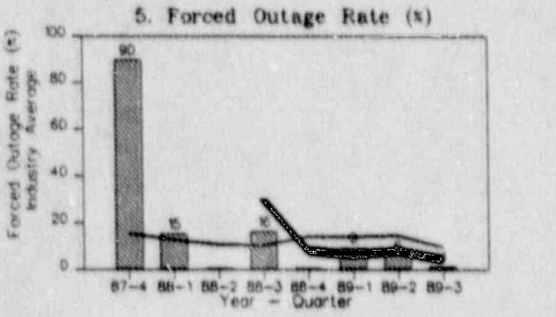
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

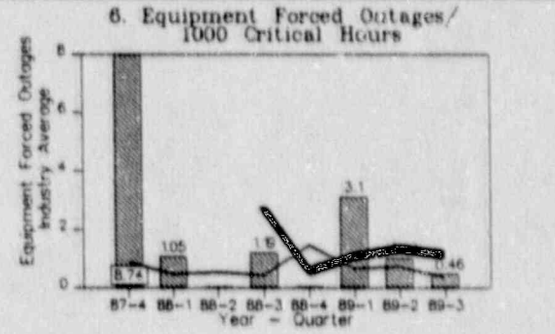












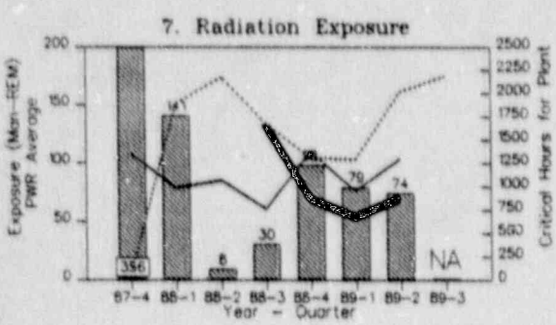


FIGURE 4.18

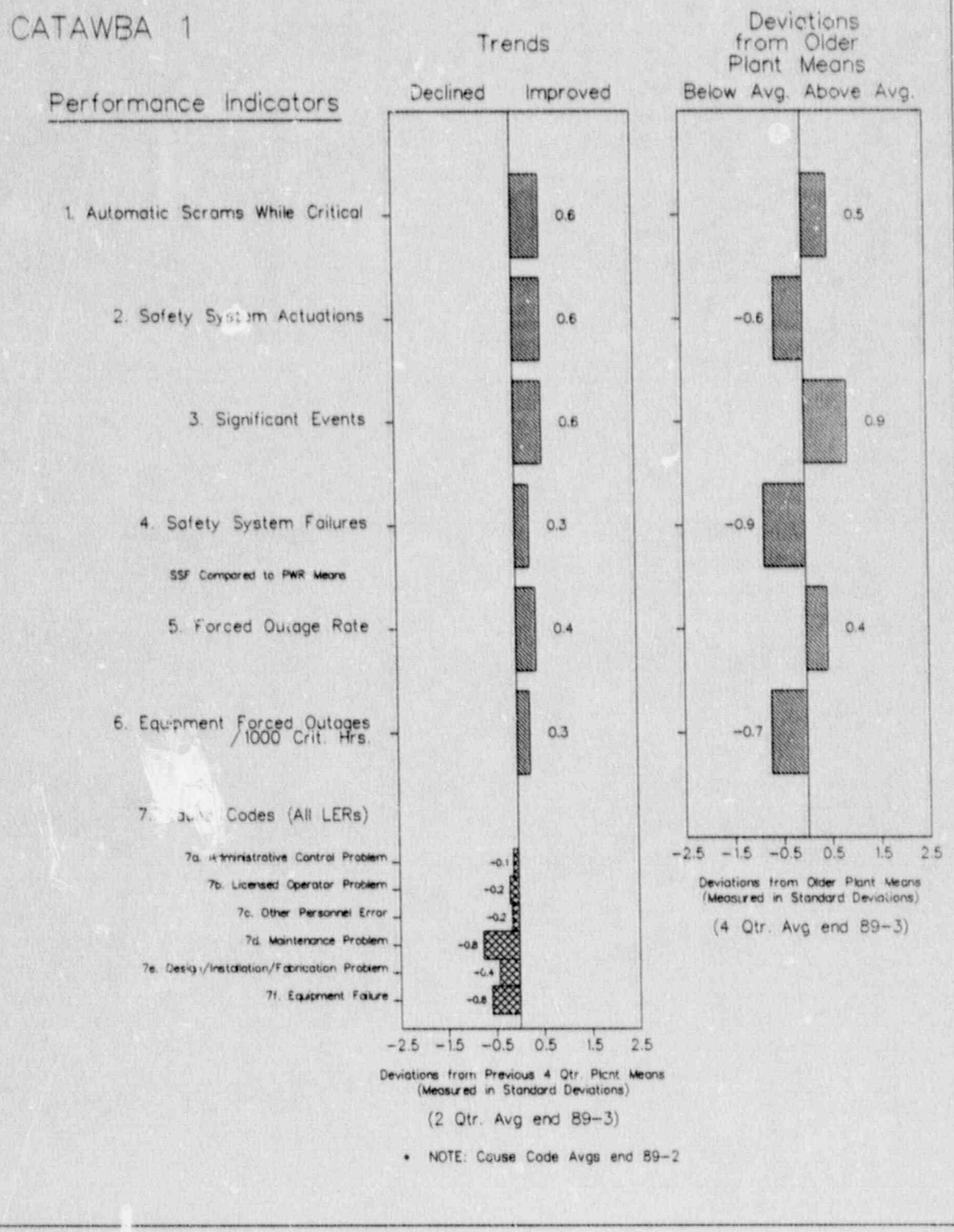

CATAWBA 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
0.6
-0.6
3. Significant Events
0.6
0.9
4. Safety System Failures
0.3
-0.9
SSF Compared to PWR Means
5. Forced Outage Rate
0.4
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
0.3
-0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
-0.2
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
-0.8
7e. Design/Installation/Fabrication Problem
-0.4
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.19

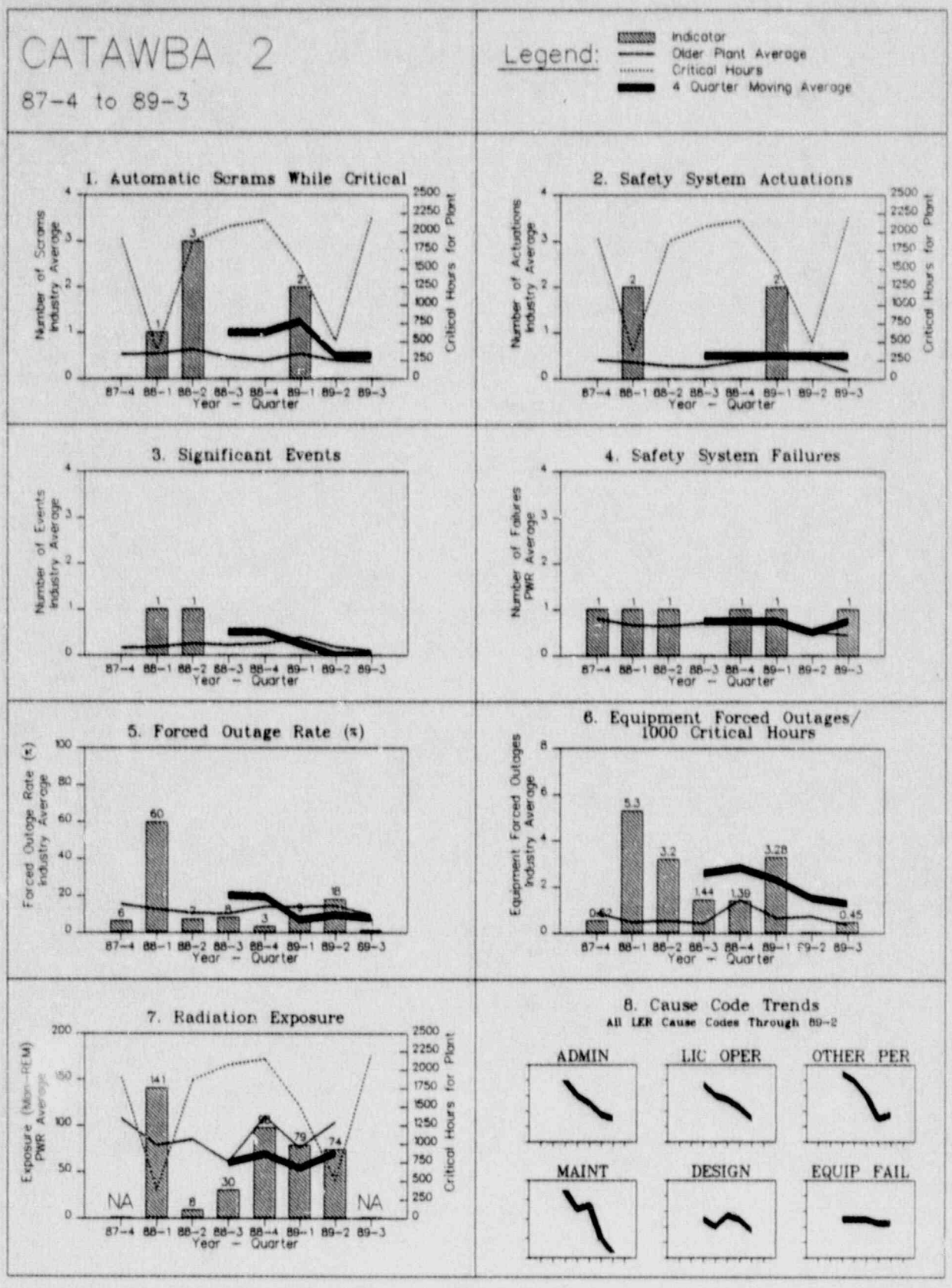

CATAWBA 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.19

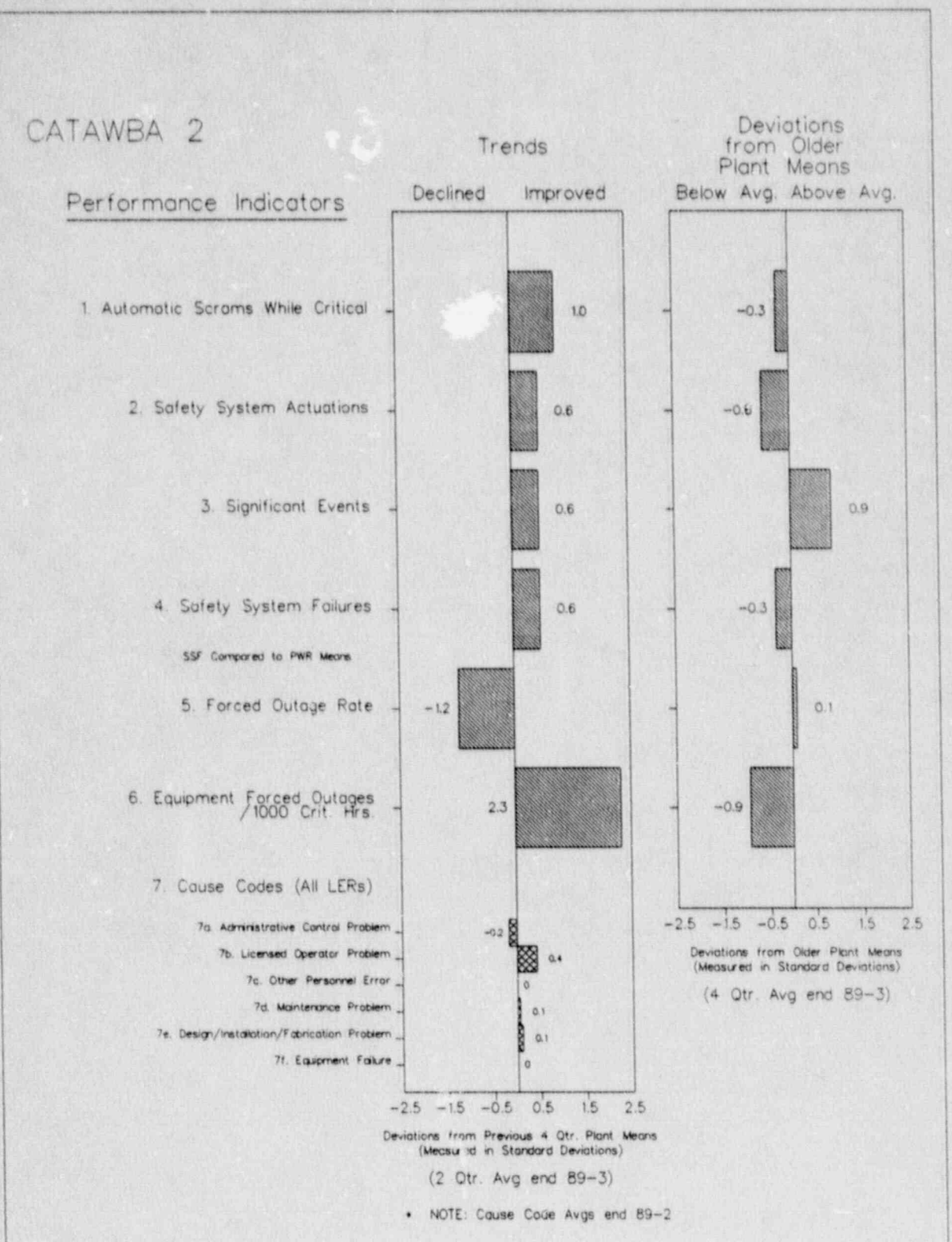

CATAWBA 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-0.3
2. Safety System Actuations
0.6
-0.6
3. Significant Events
0.6
0.9
4. Safety System Failures
0.6
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-1.2
0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
2.3
-0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.2
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0
7d. Maintenance Problem
0.1
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.20

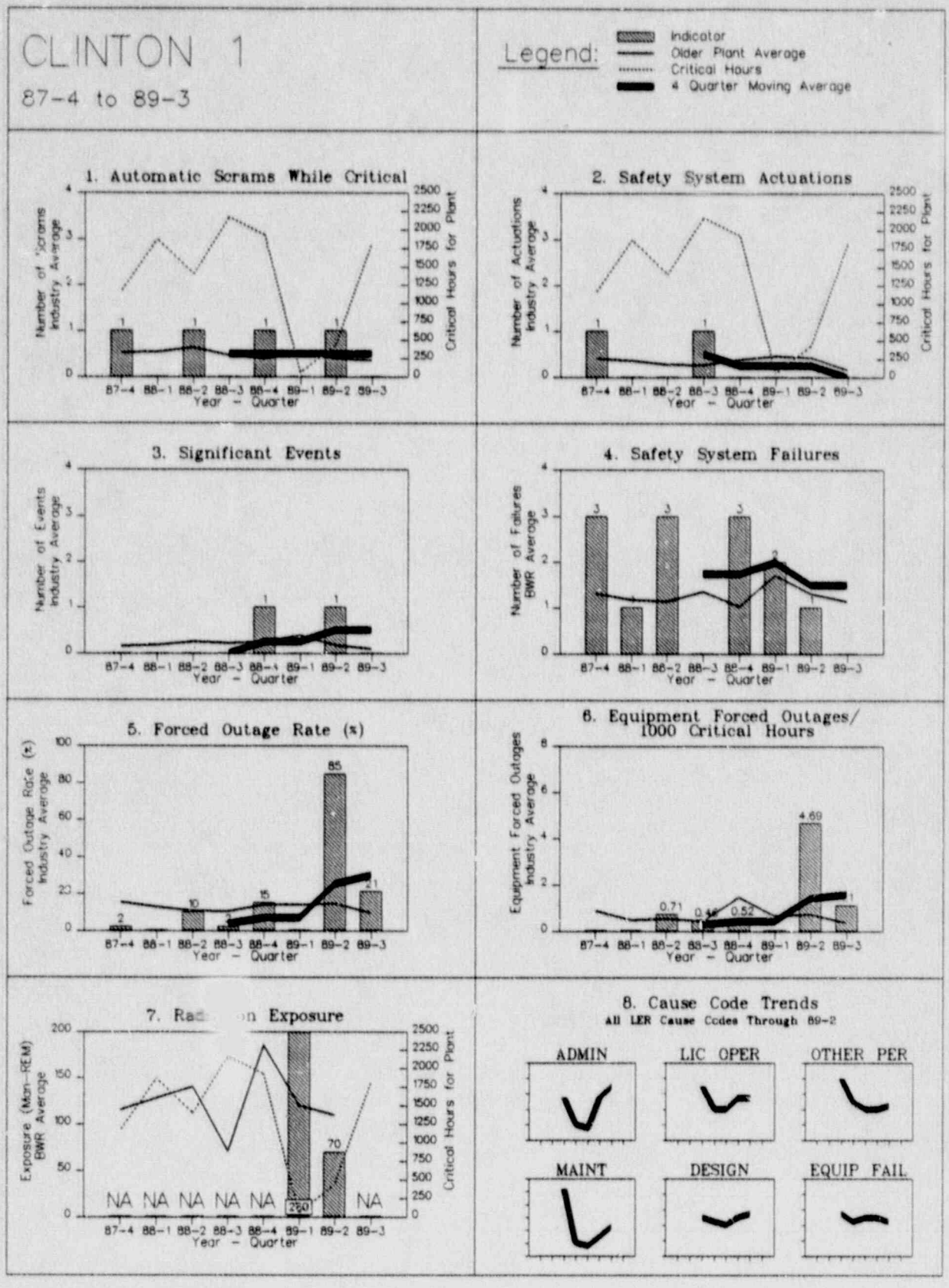

CLINTON 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
NA NA NA NA NA 250 NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.20

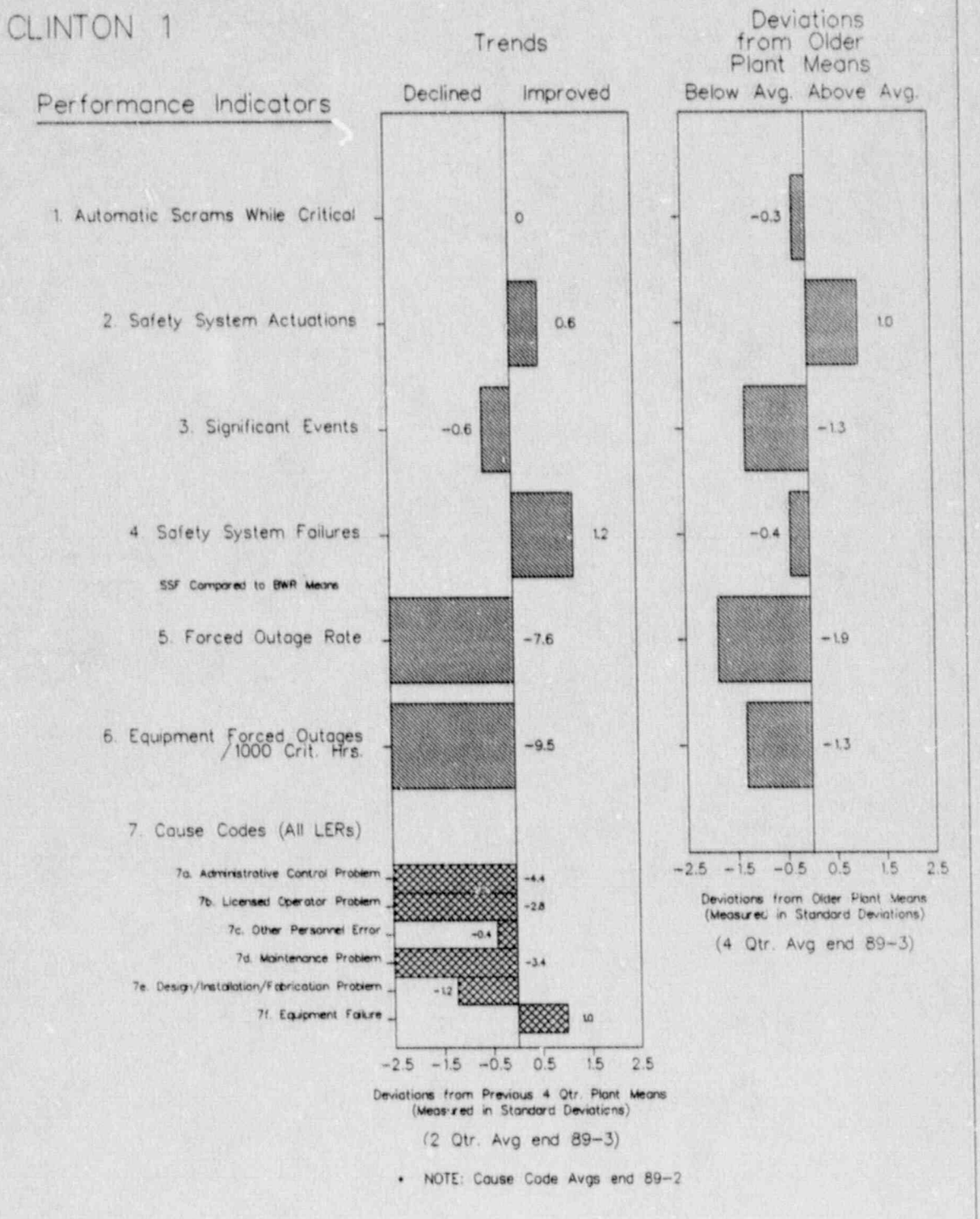

CLINTON 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0.6
1.0
3. Significant Events
-0.6
-1.3
4. Safety System Failures
1.2
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
-7.6
-1.9
6. Equipment Forced Outages /1000 Crit. Hrs.
-9.5
-1.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.4
7b. Licensed Operator Problem
-2.8
7c. Other Personnel Error
-0.4
7d. Maintenance Problem
-3.4
7e. Design/Installation/Fabrication Problem
-1.2
7f. Equipment Failure
1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.21

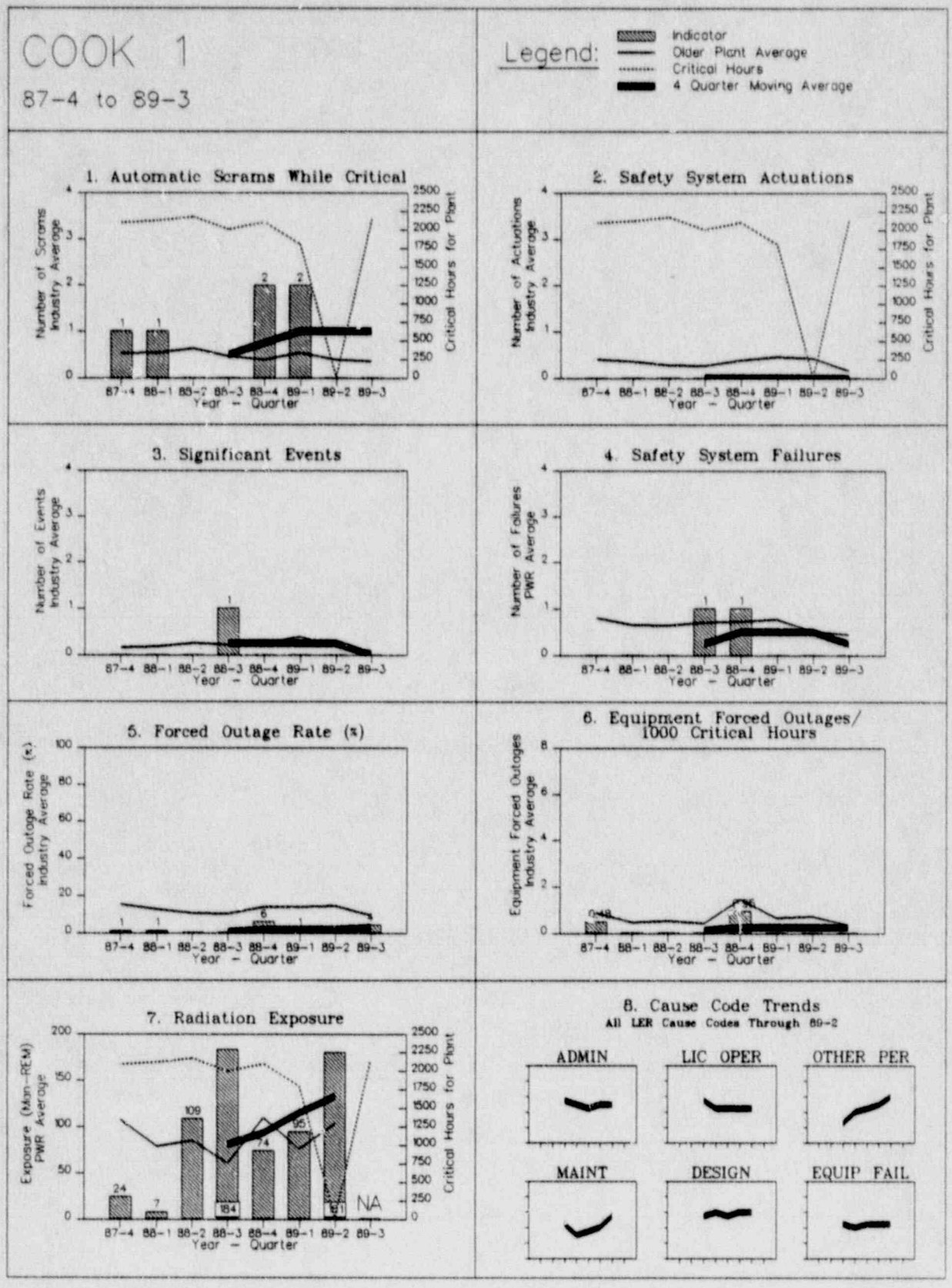

COOK 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams
Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations
Industry Average
Critical Hours for Plant
3. Significant Events
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 Critical Hours
Equipment Forced Outages
Industry Average
7. Radiation Exposure
Exposure (Man-REM)
PWR Average
Critical Hours for Plant
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.21

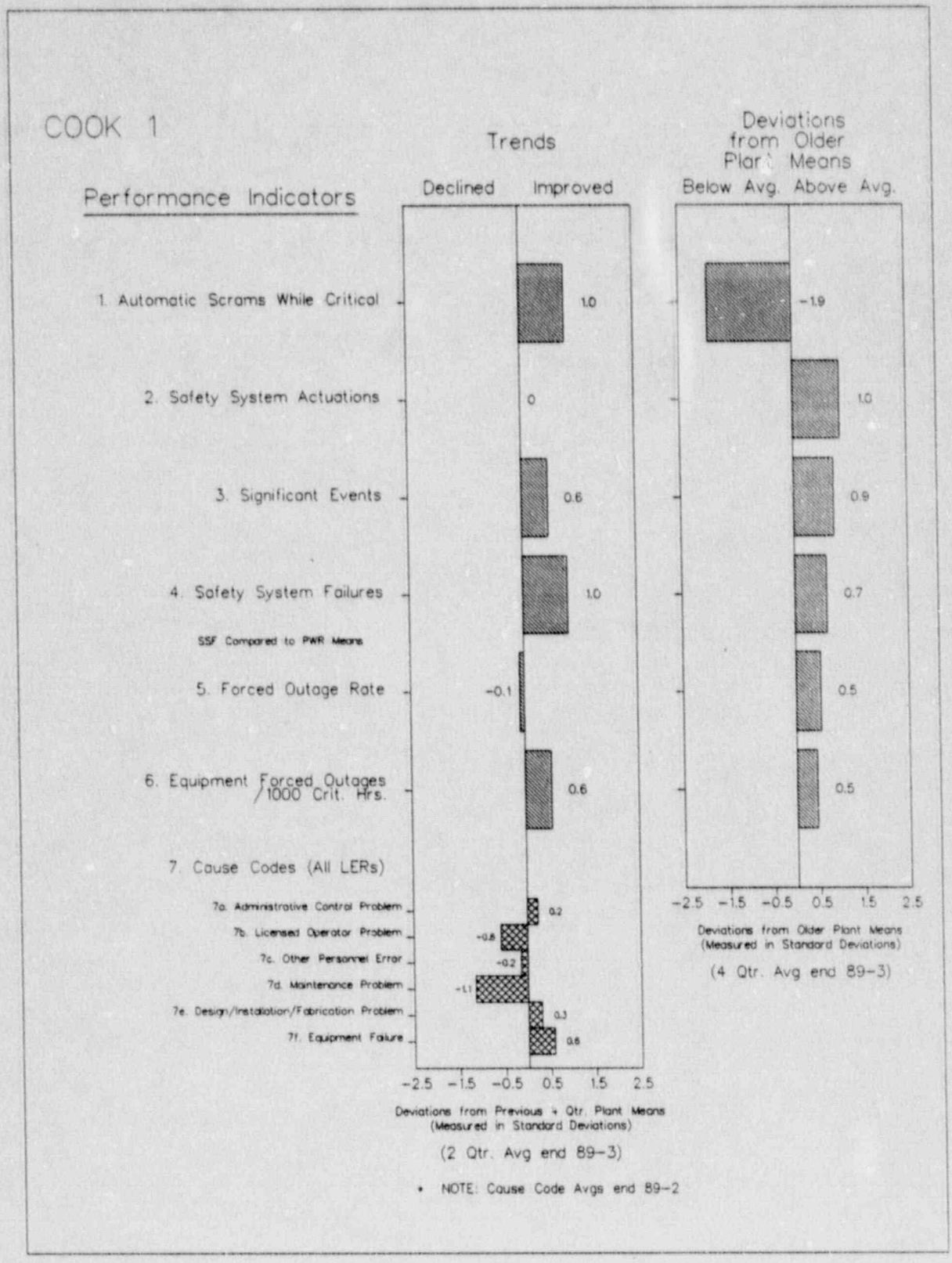
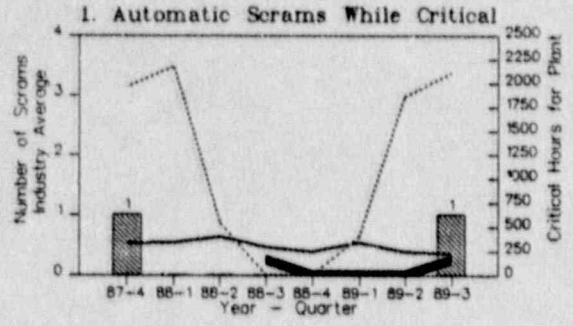

COOK 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-1.9
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
0.9
4. Safety System Failures
1.0
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.1
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
-1.1
7e. Design/Installation/Fabrication Problem
0.3
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

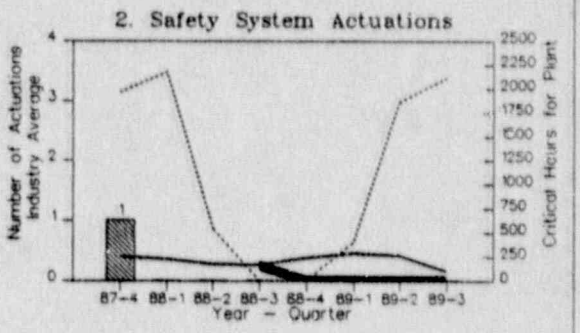
FIGURE 4.22

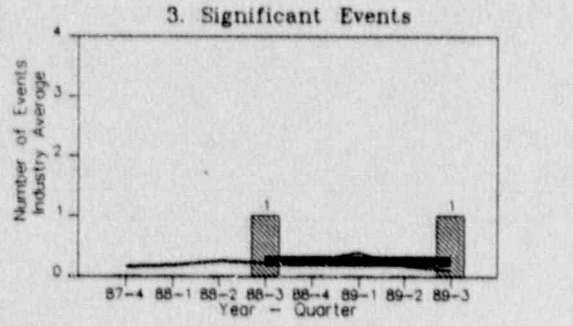
COOK 2

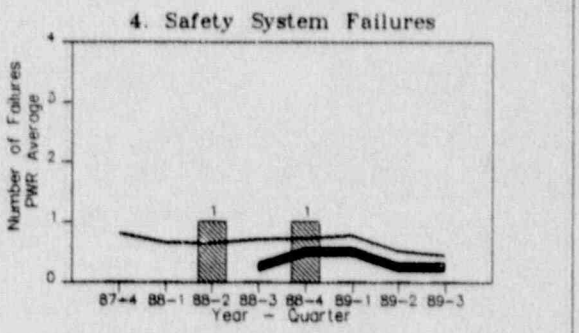
87-4 to 89-3

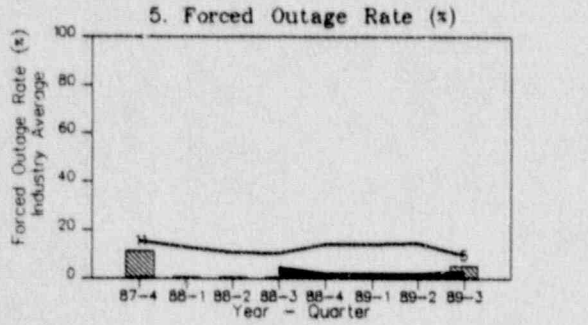
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

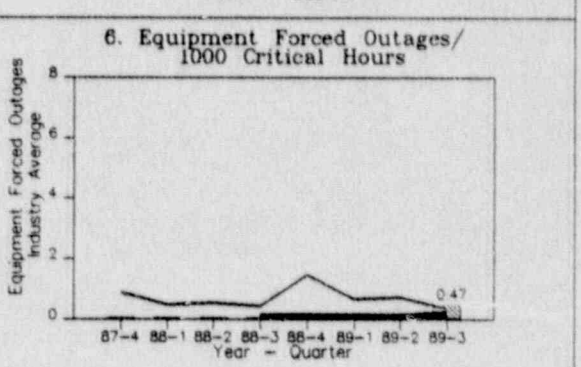


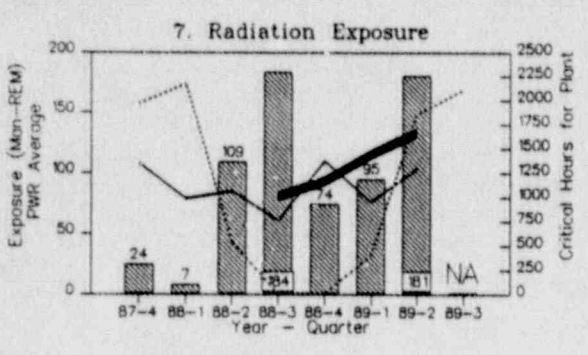












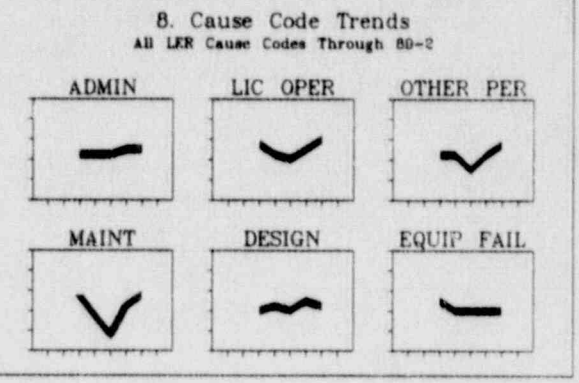


FIGURE 4.22

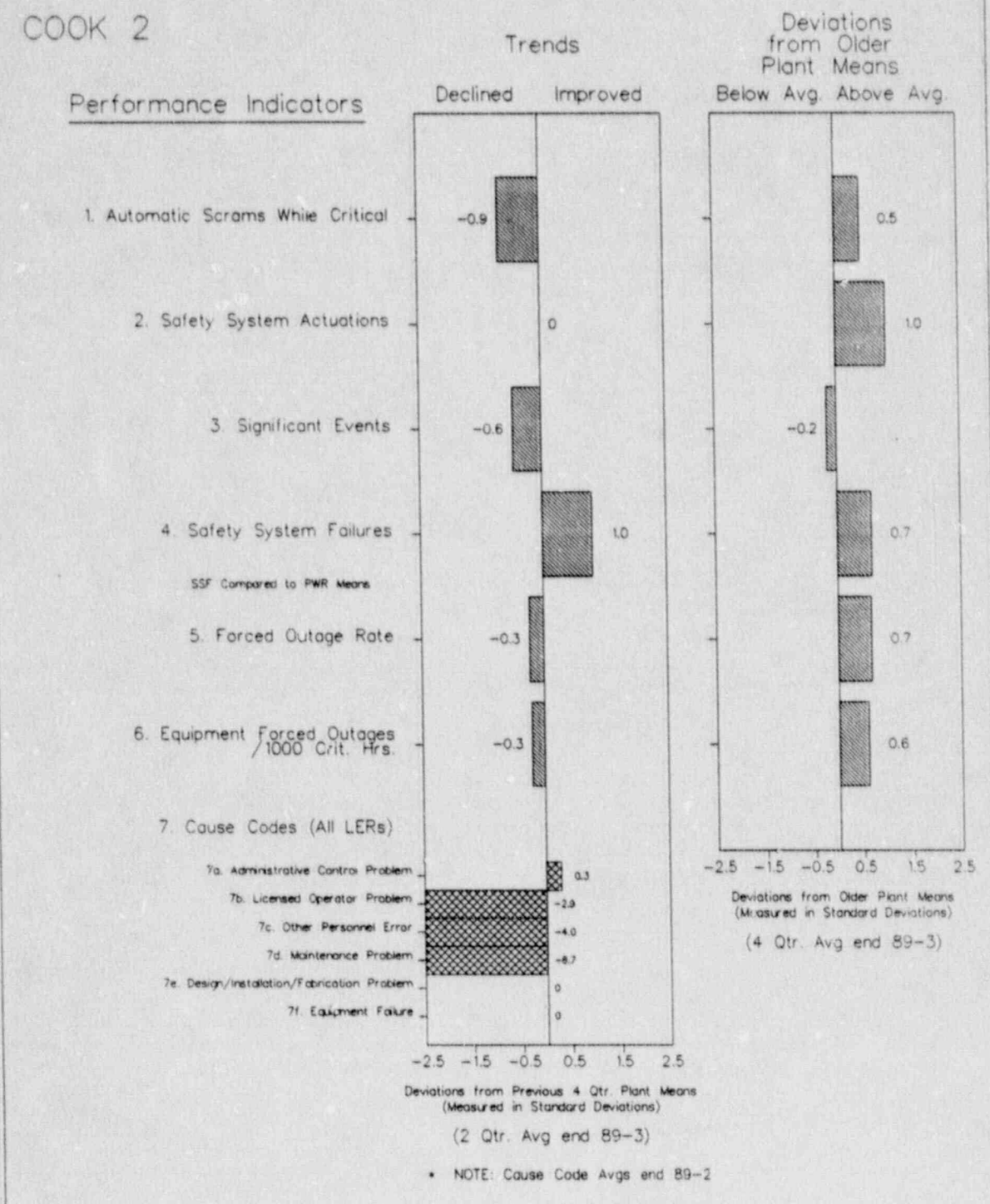
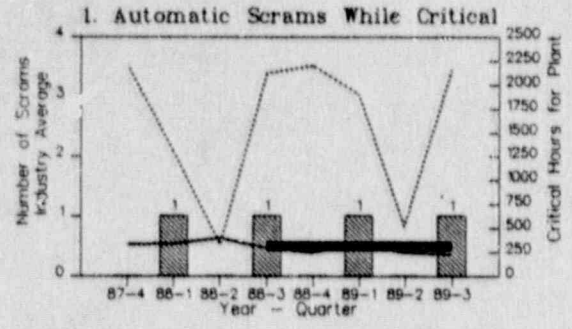

COOK 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
-0.6
-0.2
4. Safety System Failures
1.0
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.3
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.3
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
-2.9
7c. Other Personnel Error
-4.0
7d. Maintenance Problem
-8.7
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

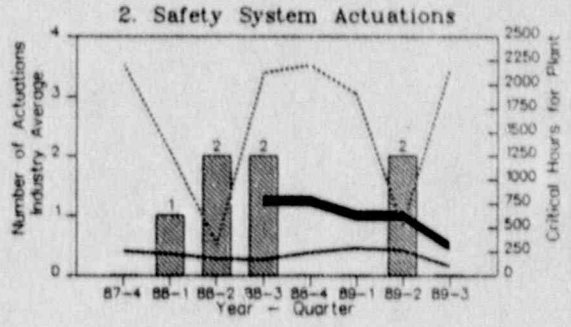
FIGURE 4.23

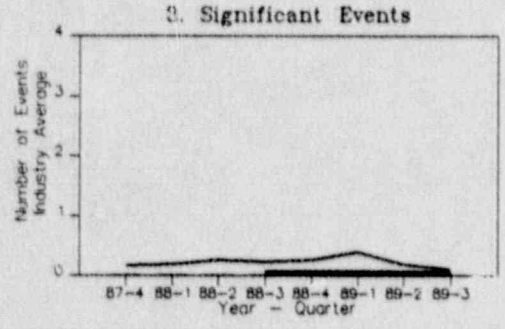
COOPER STATION

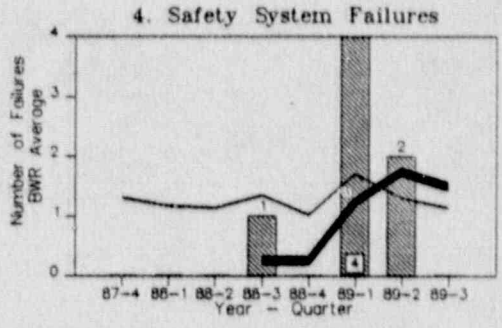
87-4 to 89-3

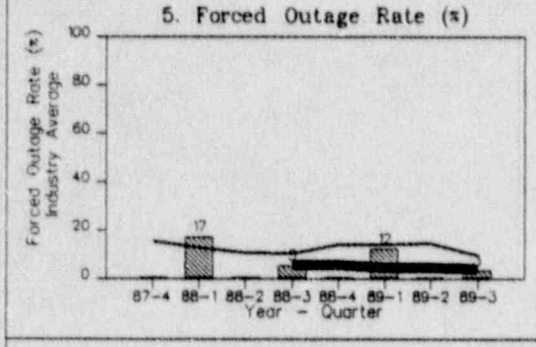
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

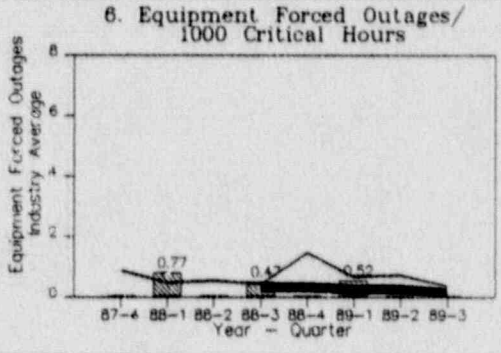












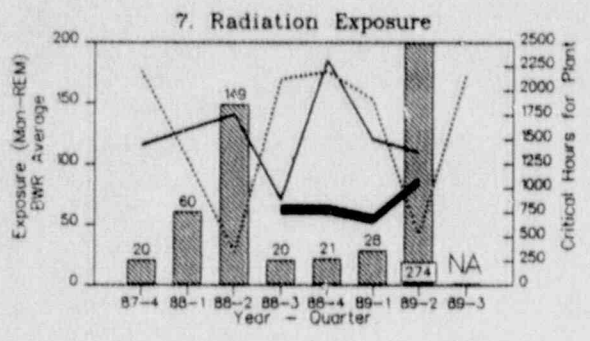


FIGURE 4.23

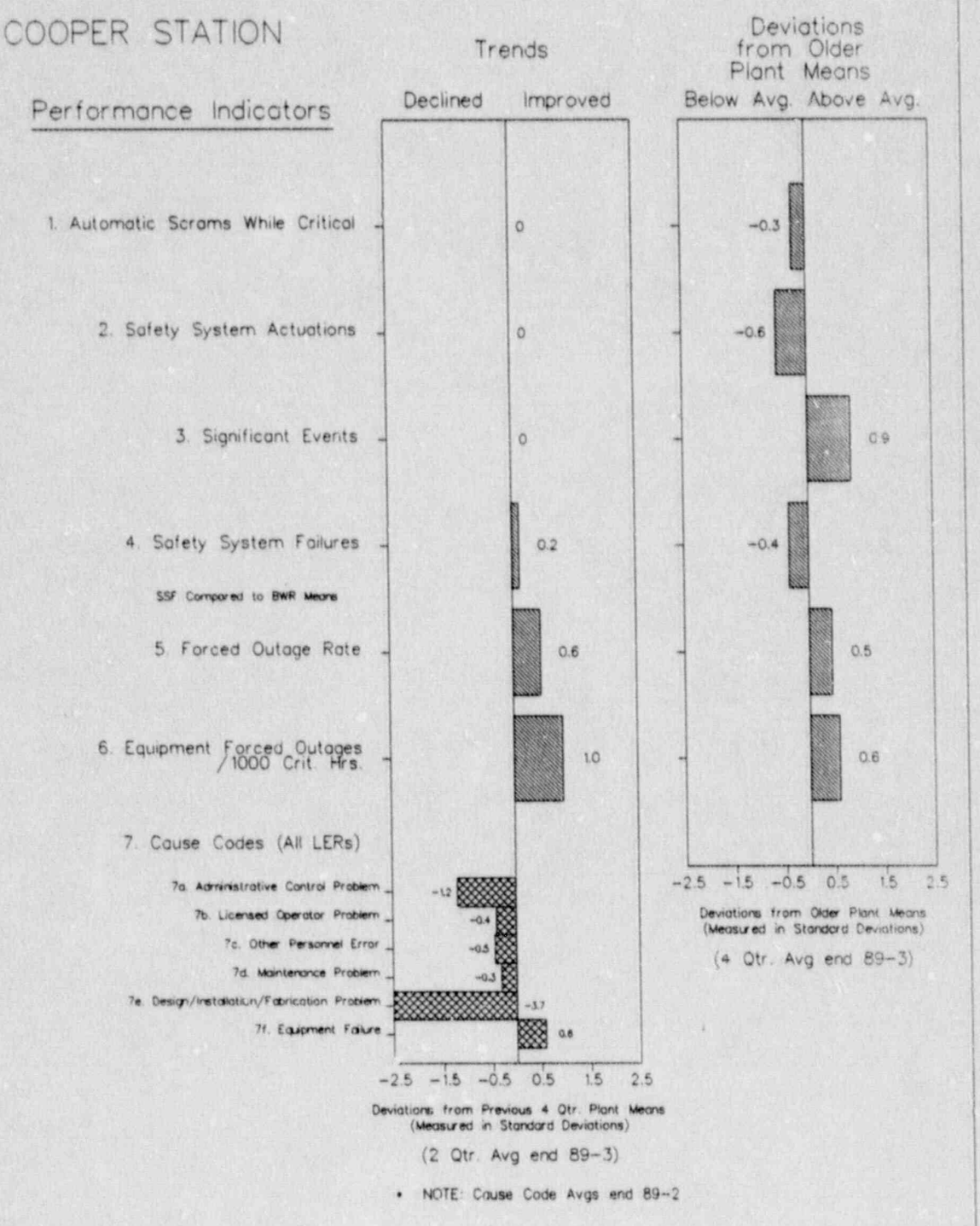
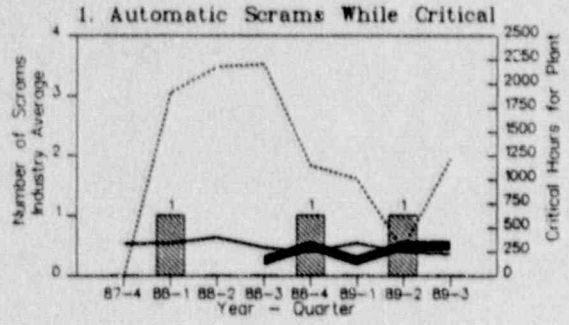

COOPER STATION
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
0.2
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
1.0
0.6
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
-0.3
7e. Design/Installation/Fabrication Problem
-3.7
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

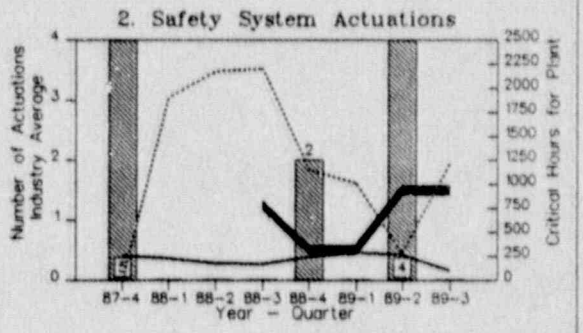
FIGURE 4.24

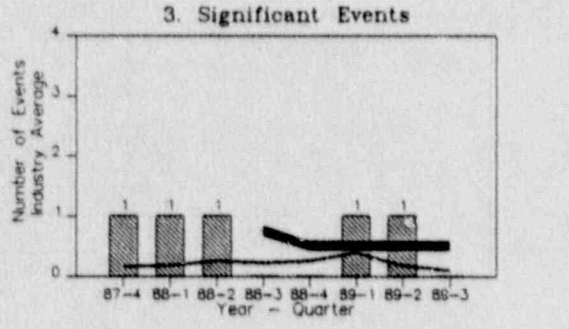
CRYSTAL RIVER 3

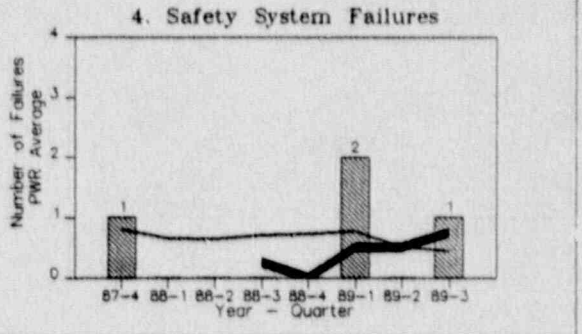
87-4 to 89-3

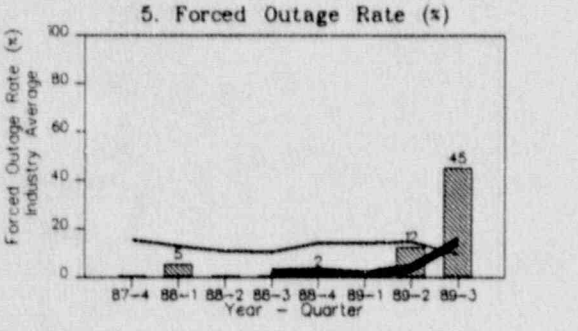
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

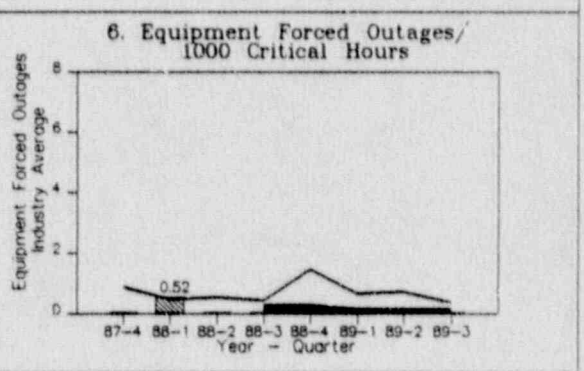


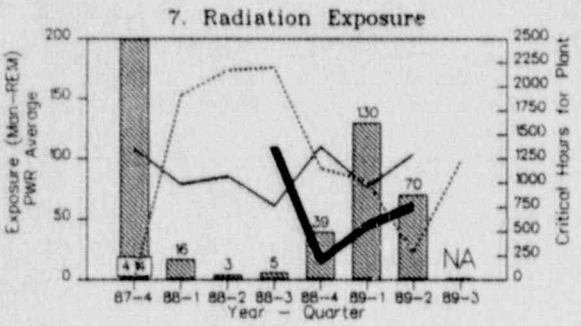












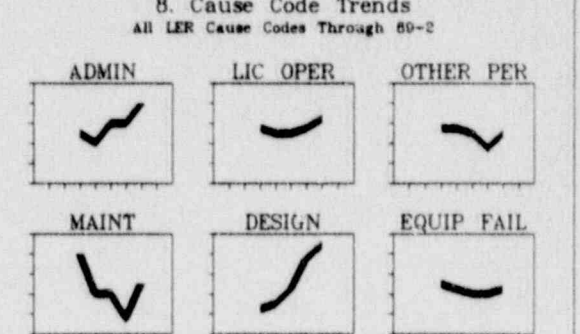


FIGURE 4.24

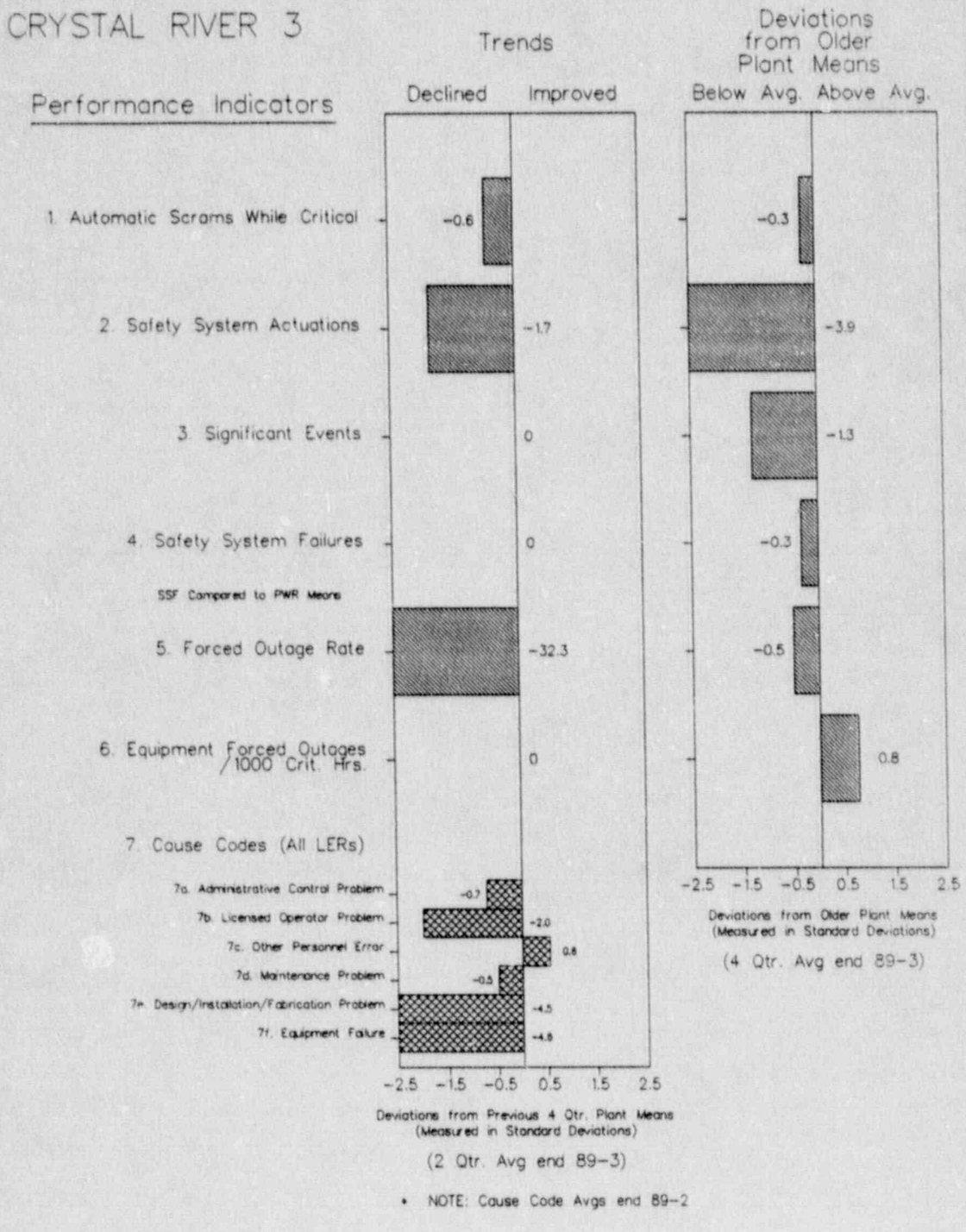

CRYSTAL RIVER 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
-1.7
-3.9
3. Significant Events
0
-1.3
4. Safety System Failures
0
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-32.3
-0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.7
7b. Licensed Operator Problem
+2.0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
-0.5
7e. Design/Installation/Fabrication Problem
+4.5
7f. Equipment Failure
+4.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.25

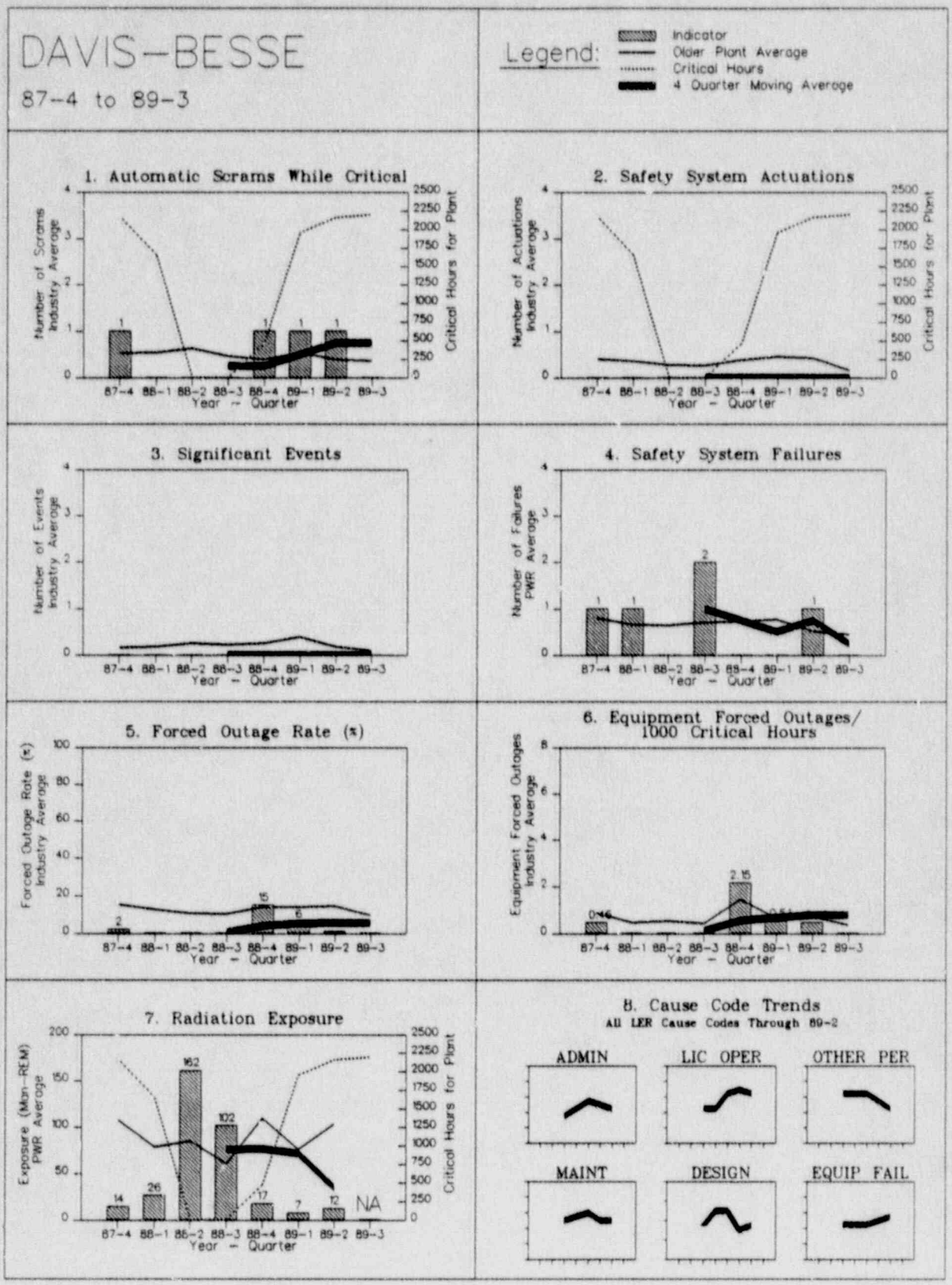
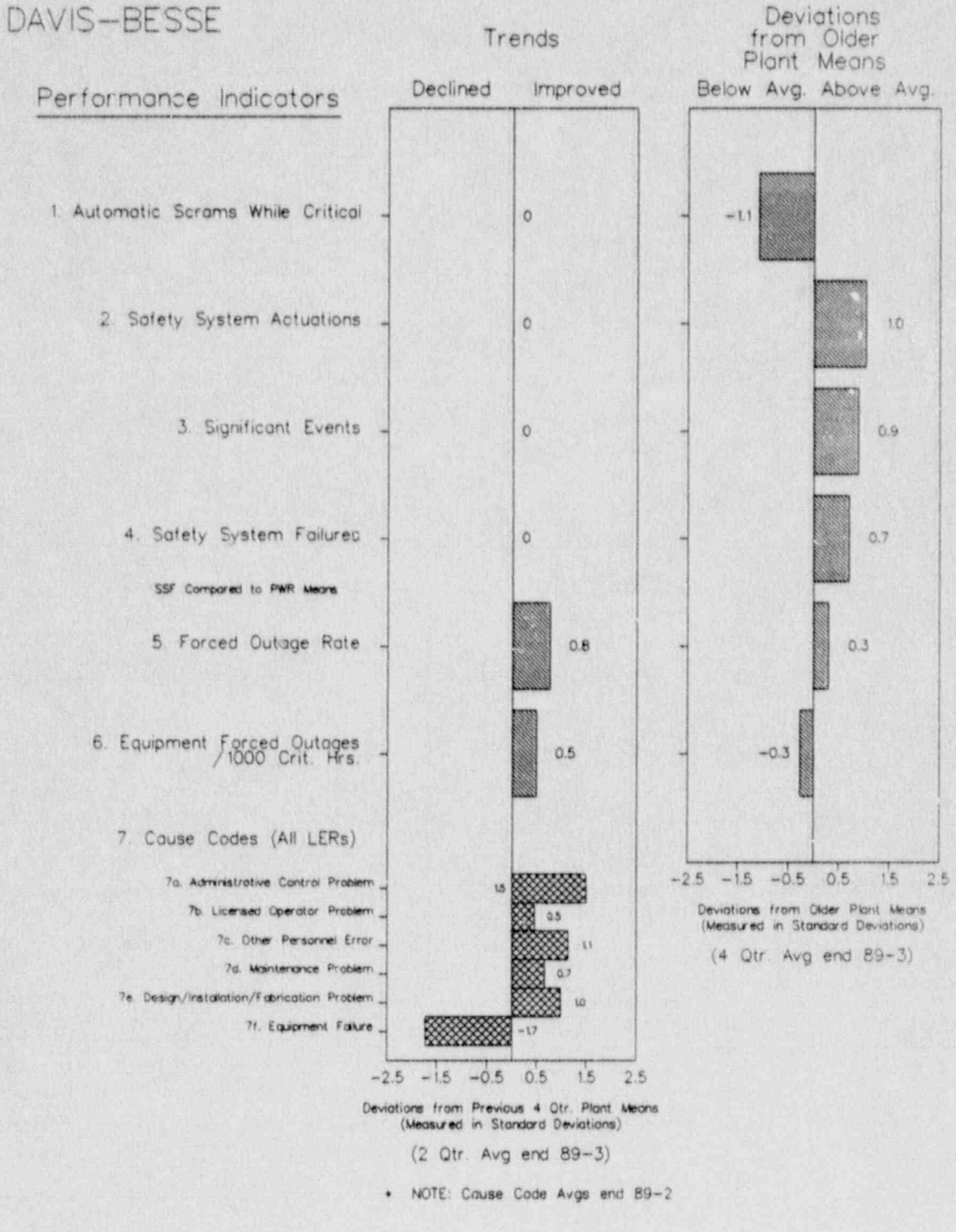

DAVIS–BESSE
87–4 to 89–3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year – Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
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 Critical Hours
Equipment Forced Outages Industry Average
Year – Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
Year – Quarter
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.25



* NOTE: Cause Code Avgs end 89-2

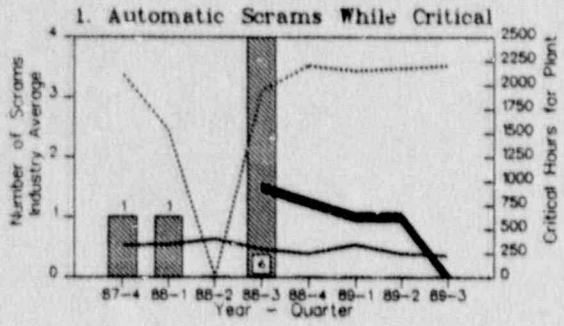
FIGURE 4.26

DIABLO CANYON 1

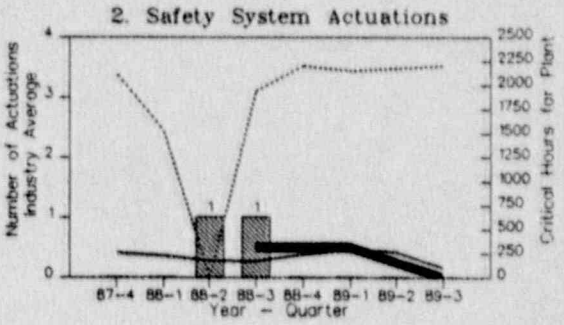
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

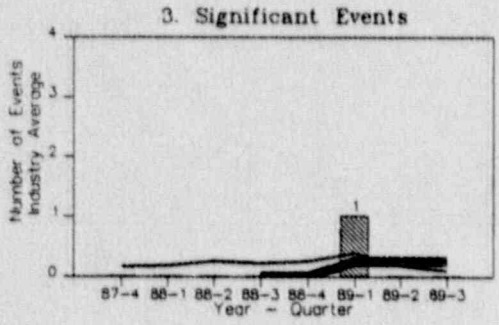
1. Automatic Scrams While Critical



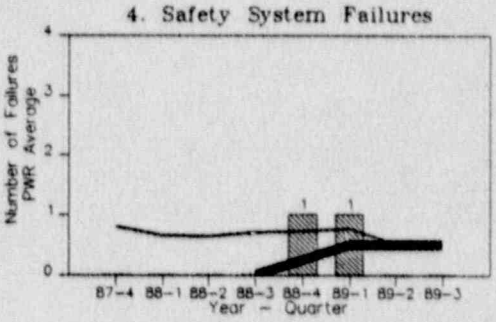
2. Safety System Actuations



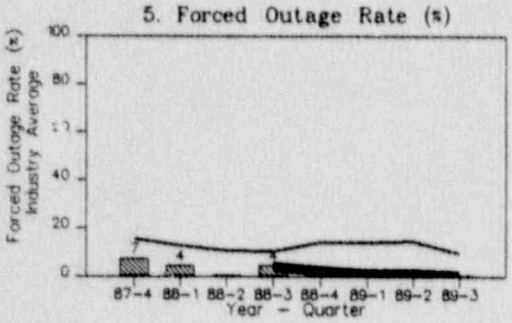
3. Significant Events



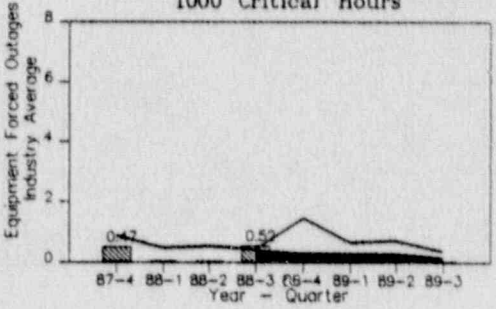
4. Safety System Failures



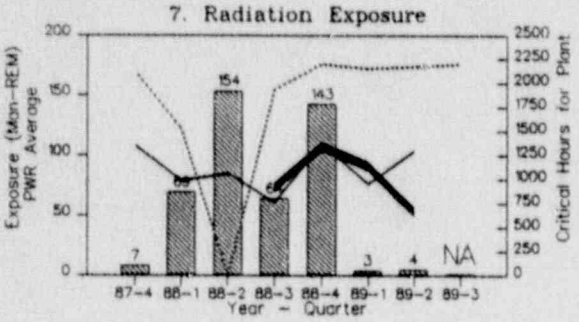
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

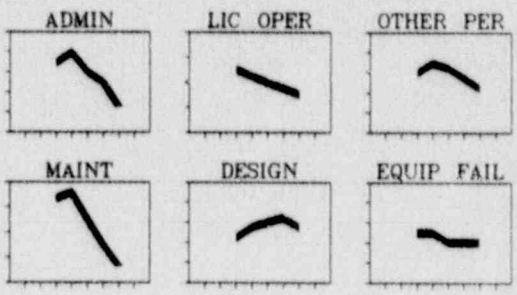


FIGURE 4.26

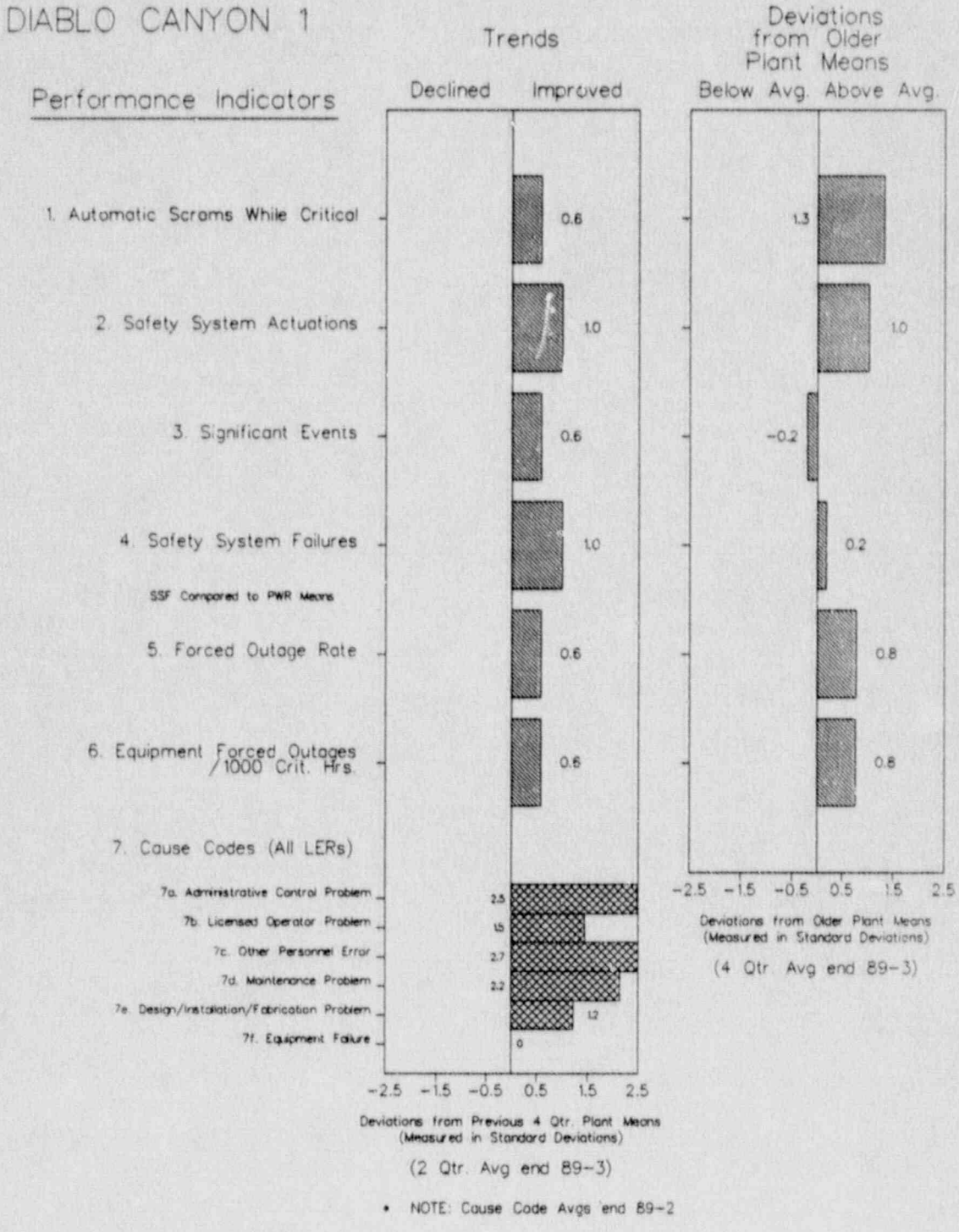
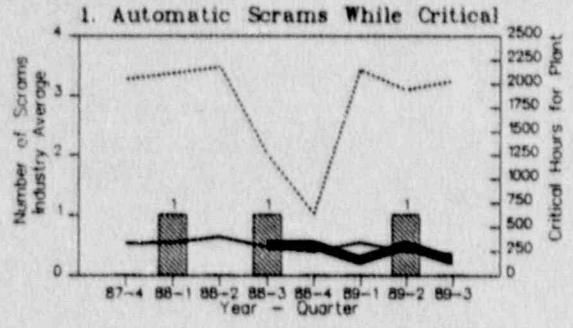

DIABLO CANYON 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
1.0
1.0
3. Significant Events
0.6
-0.2
4. Safety System Failures
1.0
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
2.5
7b. Licensed Operator Problem
1.5
7c. Other Personnel Error
2.7
7d. Maintenance Problem
2.2
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

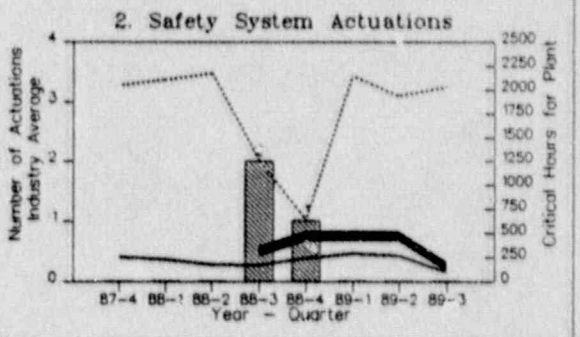
FIGURE 4.27

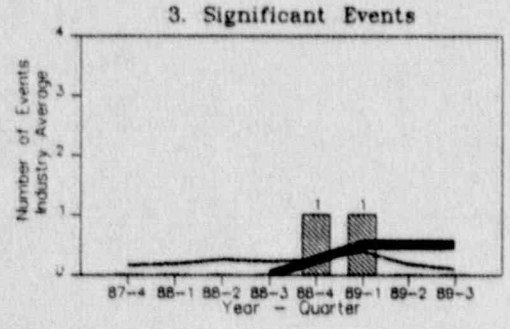
DIABLO CANYON 2

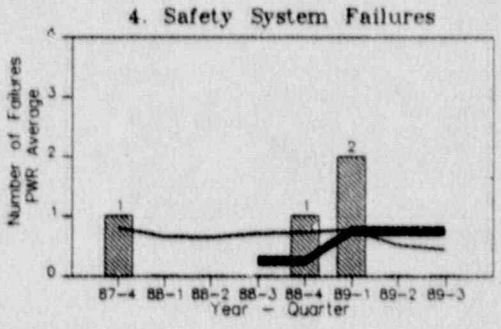
87-4 to 89-3

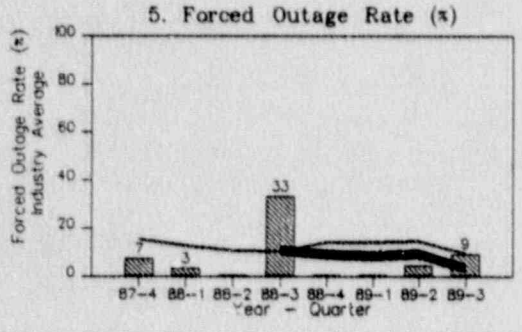
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

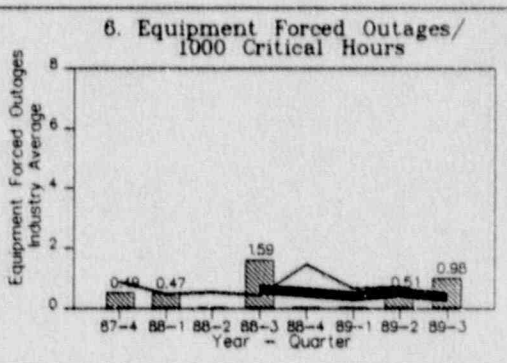


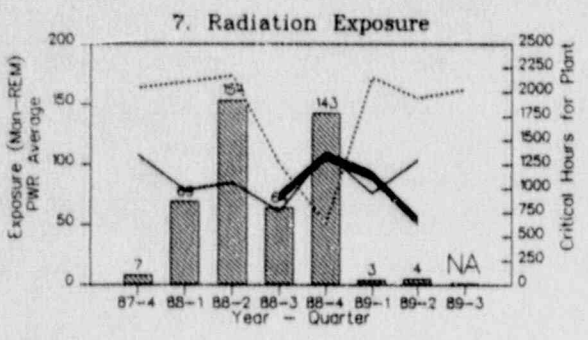












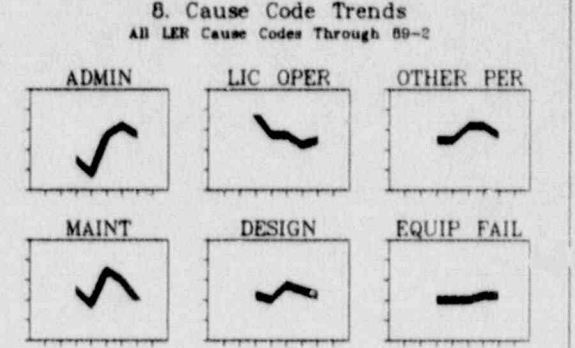


FIGURE 4.27

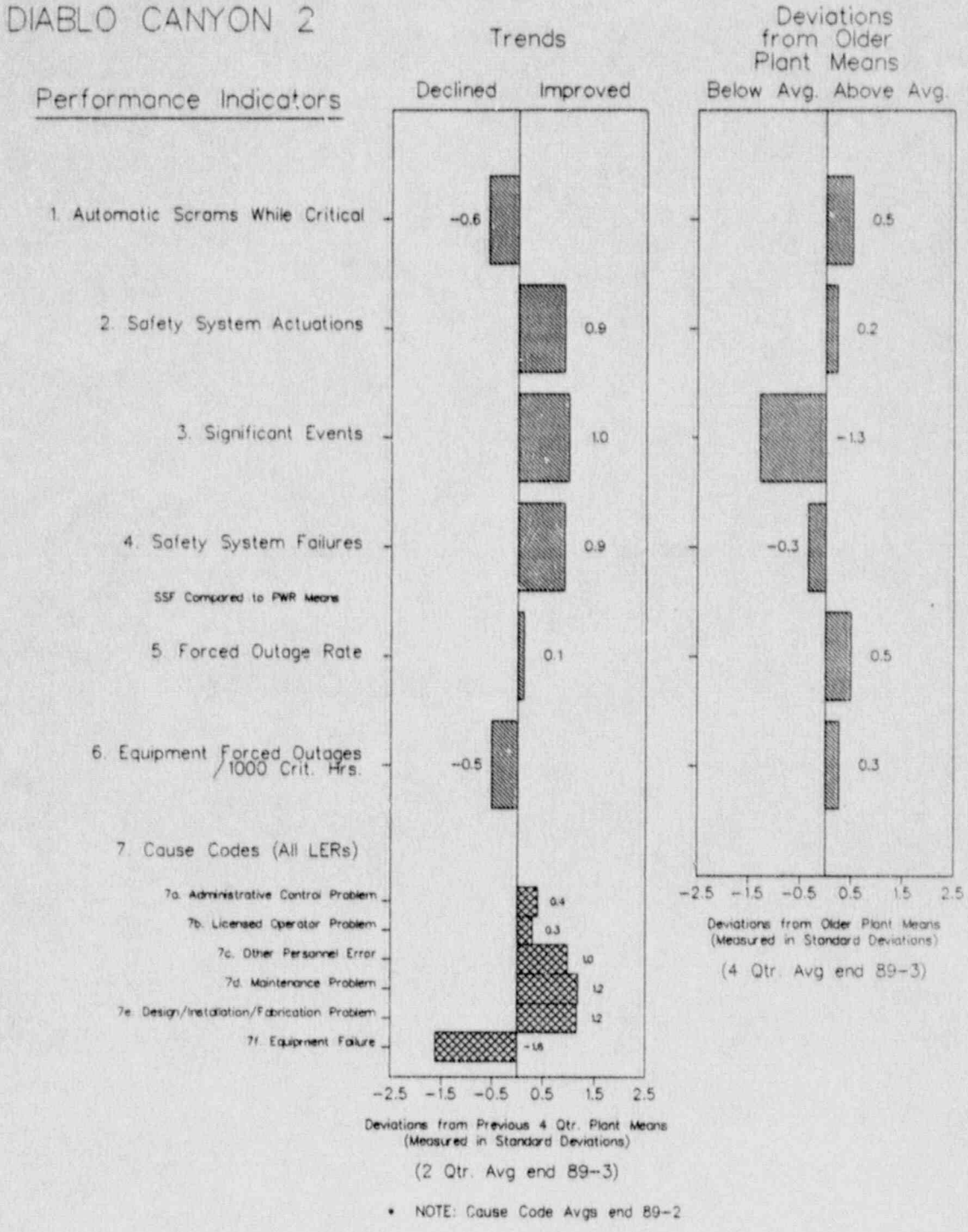

DIABLO CANYON 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
0.5
2. Safety System Actuations
0.9
0.2
3. Significant Events
1.0
-1.3
4. Safety System Failures
0.9
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.1
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.5
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.4
7b. Licensed Operator Problem
0.3
7c. Other Personnel Error
1.0
7d. Maintenance Problem
1.2
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
-1.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

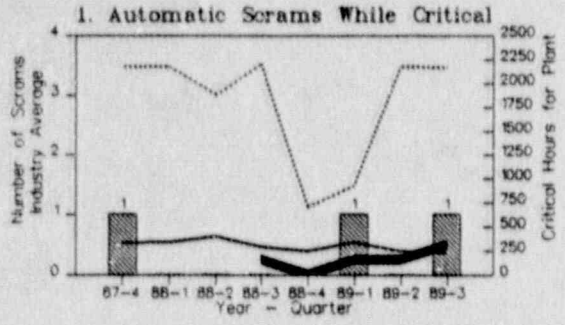
FIGURE 4.28

DRESDEN 2

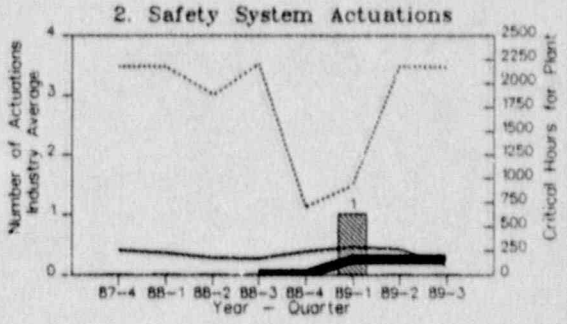
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

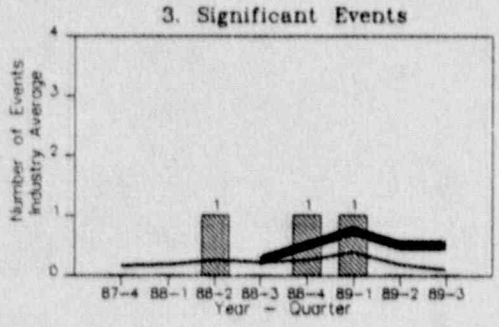
1. Automatic Scrams While Critical



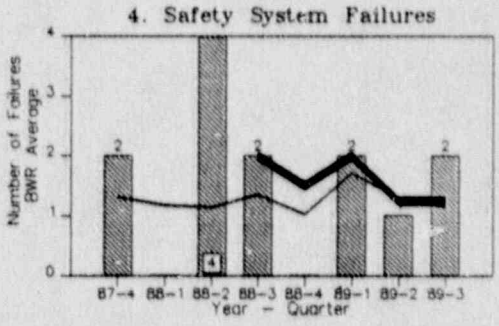
2. Safety System Actuations



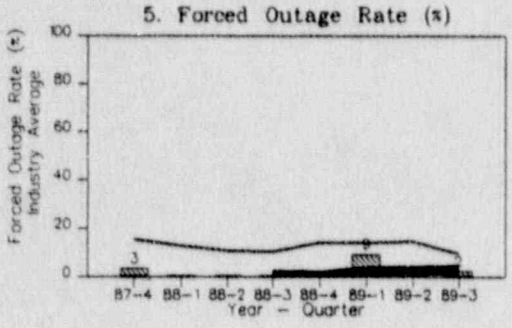
3. Significant Events



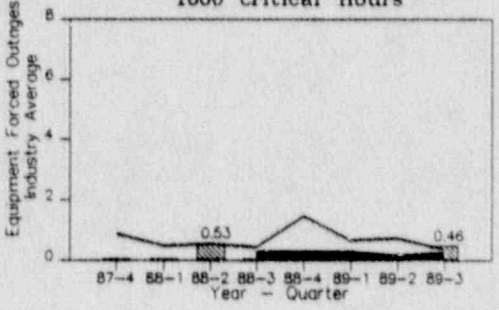
4. Safety System Failures



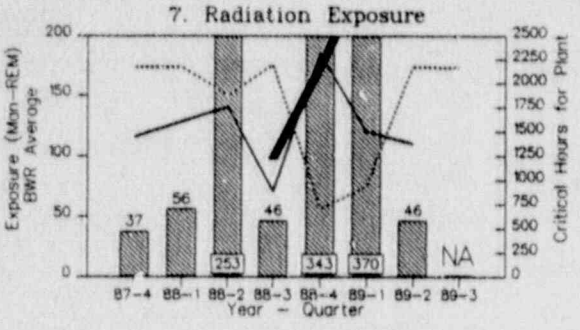
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

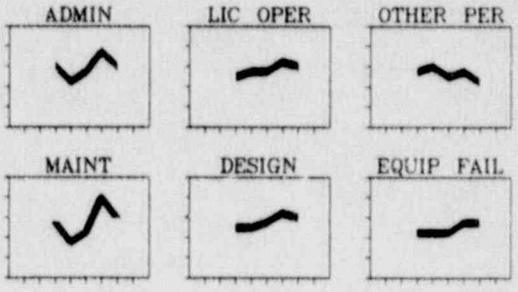


FIGURE 4.28

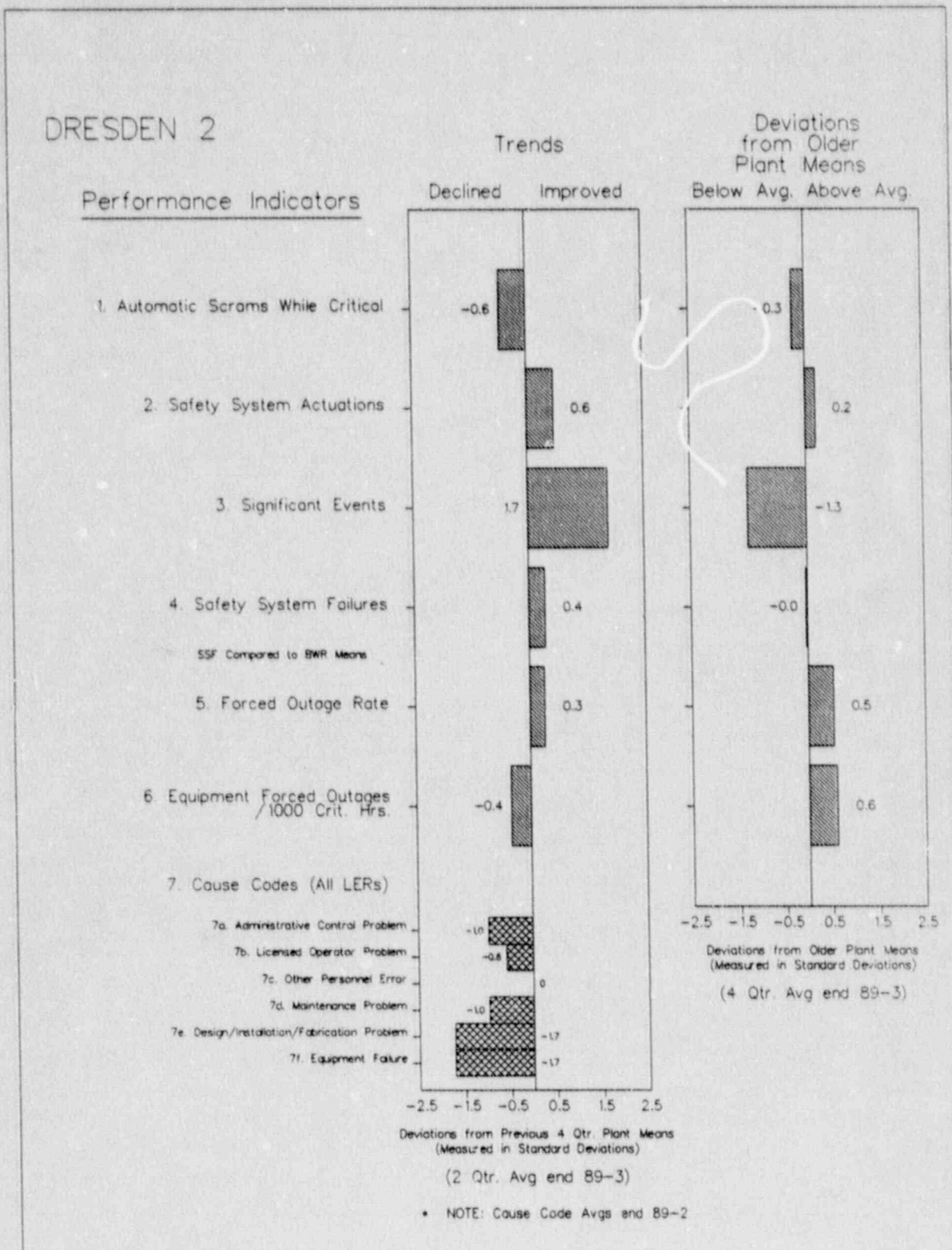

DRESDEN 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
1.7
-1.3
4. Safety System Failures
0.4
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
0.3
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.4
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.0
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0
7d. Maintenance Problem
-1.0
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
-1.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.29

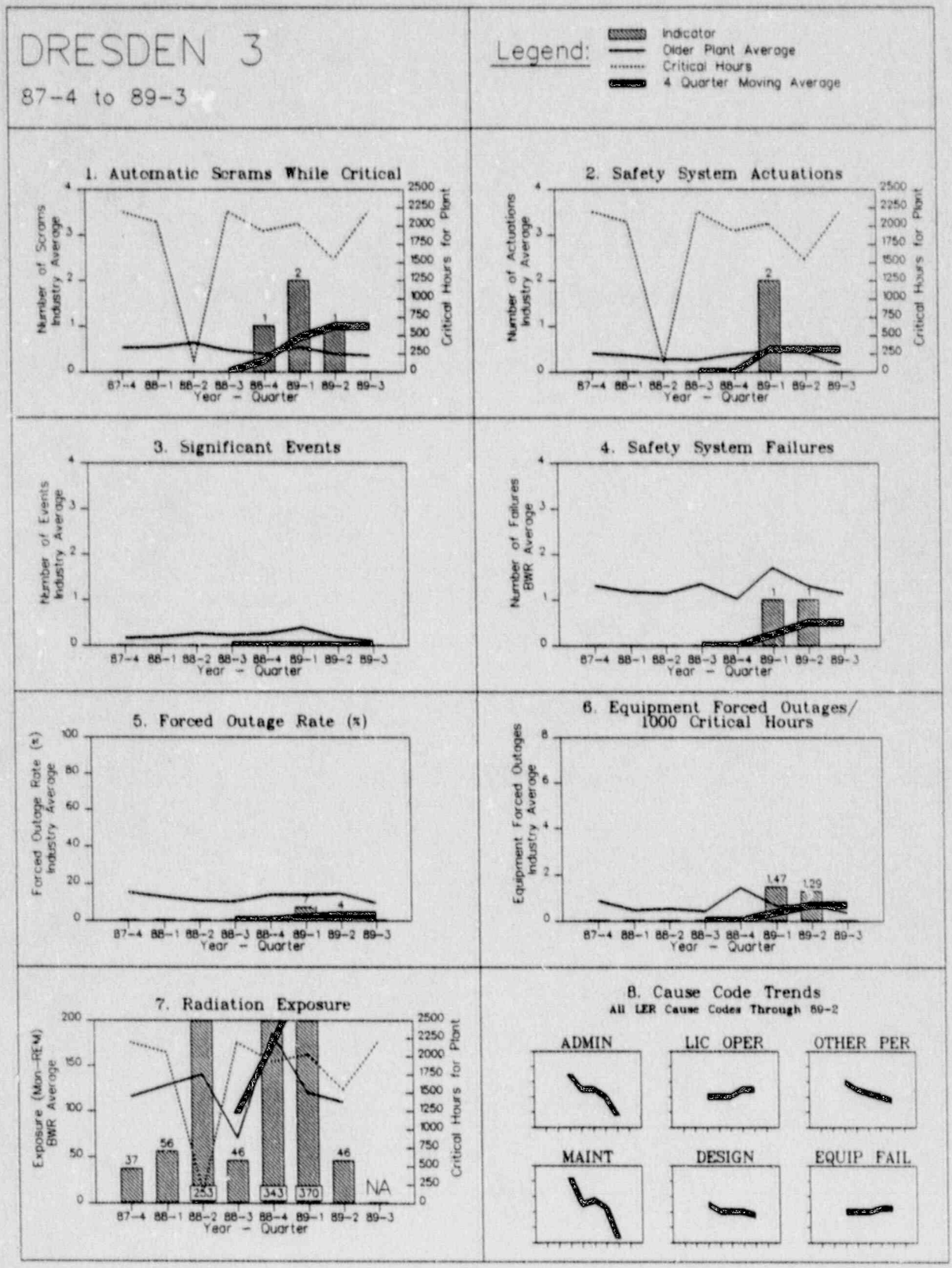

DRESDEN 3
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.29

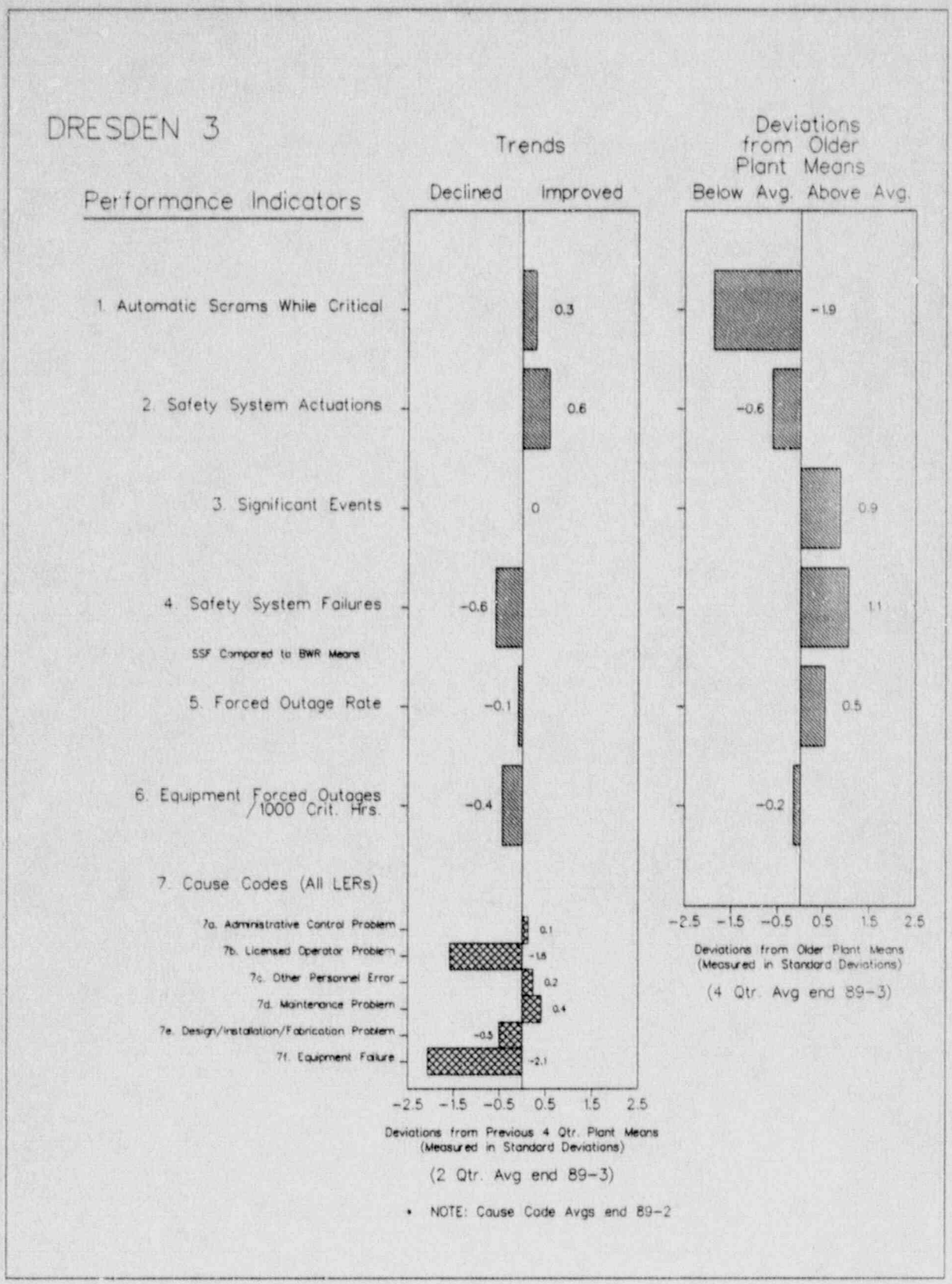
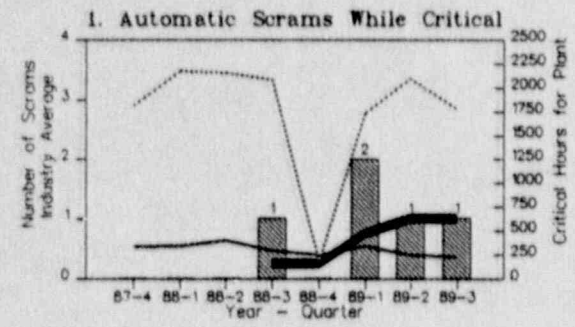

DRESDEN 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.9
2. Safety System Actuations
0.6
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
-0.6
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
-0.1
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.4
-0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.1
7b. Licensed Operator Problem
-1.6
7c. Other Personnel Error
0.2
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
-0.5
7f. Equipment Failure
-2.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

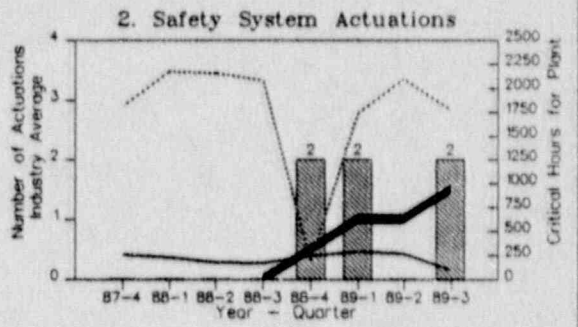
FIGURE 4.30

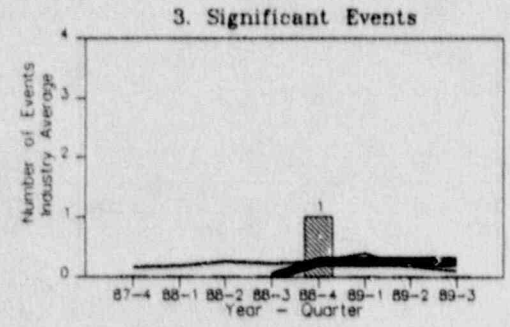
DUANE ARNOLD

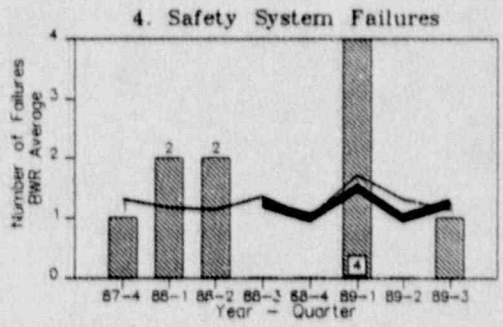
87-4 to 89-3

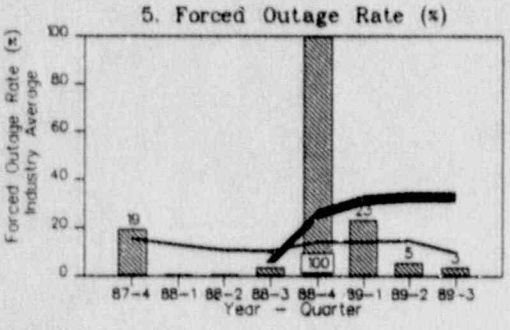
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

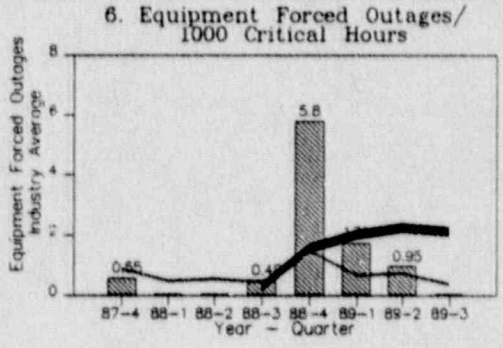


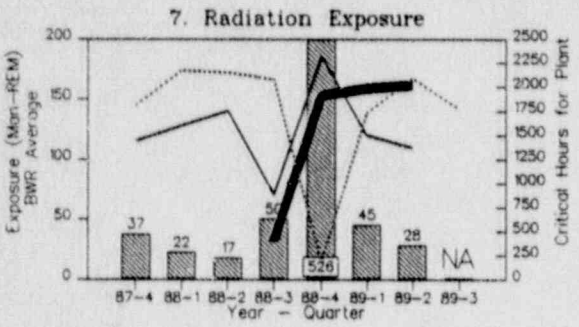












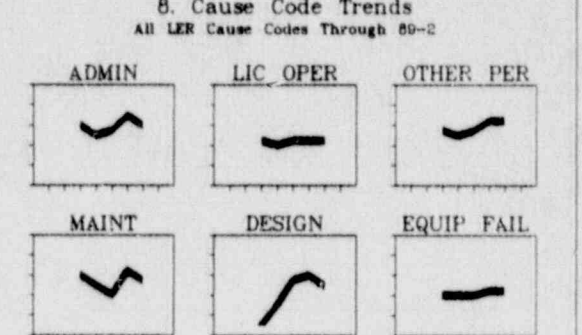


FIGURE 4.30

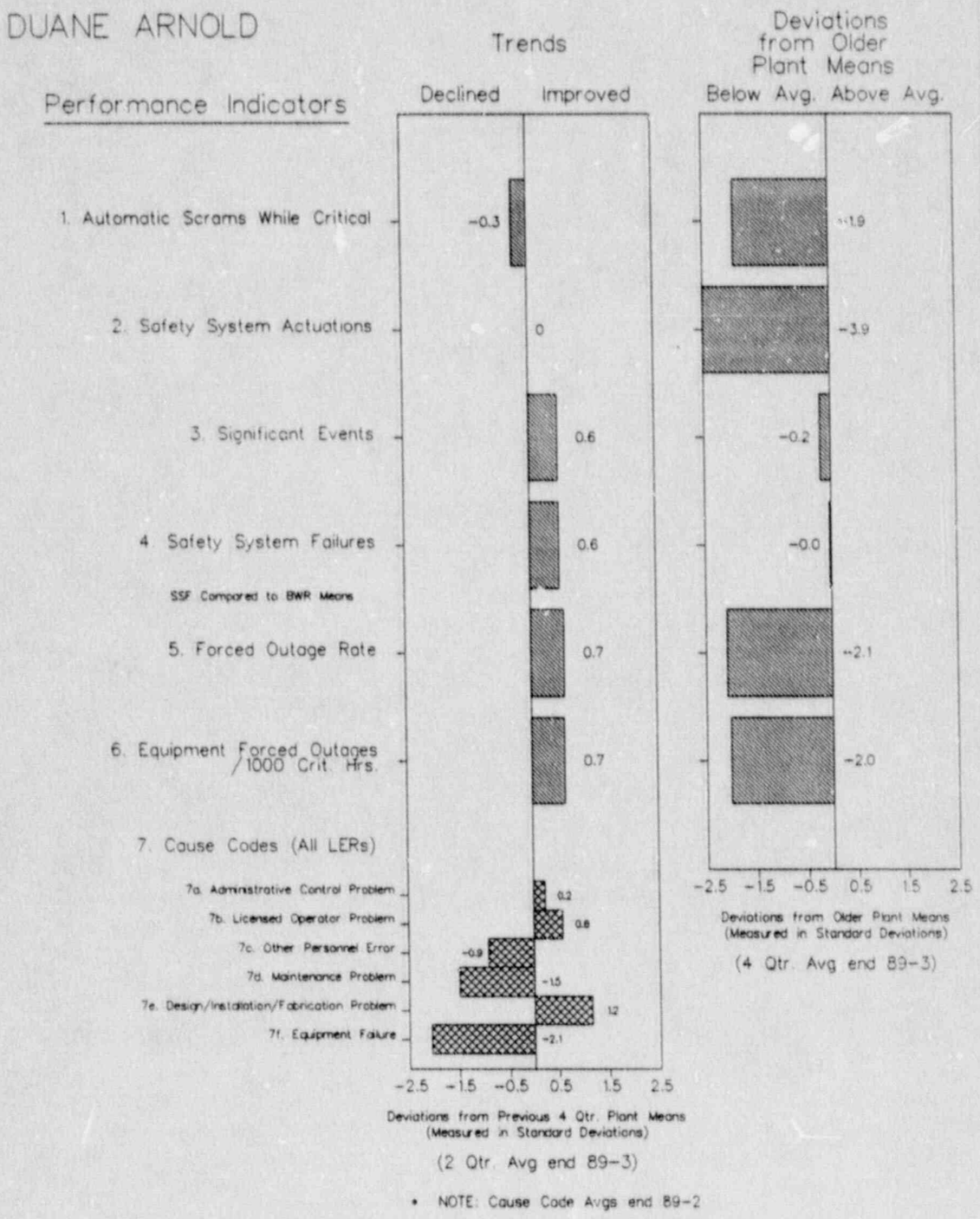

DUANE ARNOLD
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.3
-1.9
2. Safety System Actuations
0
-3.9
3. Significant Events
0.6
-0.2
4. Safety System Failures
0.6
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
0.7
-2.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.7
-2.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
-0.9
7d. Maintenance Problem
-1.5
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
-2.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.31

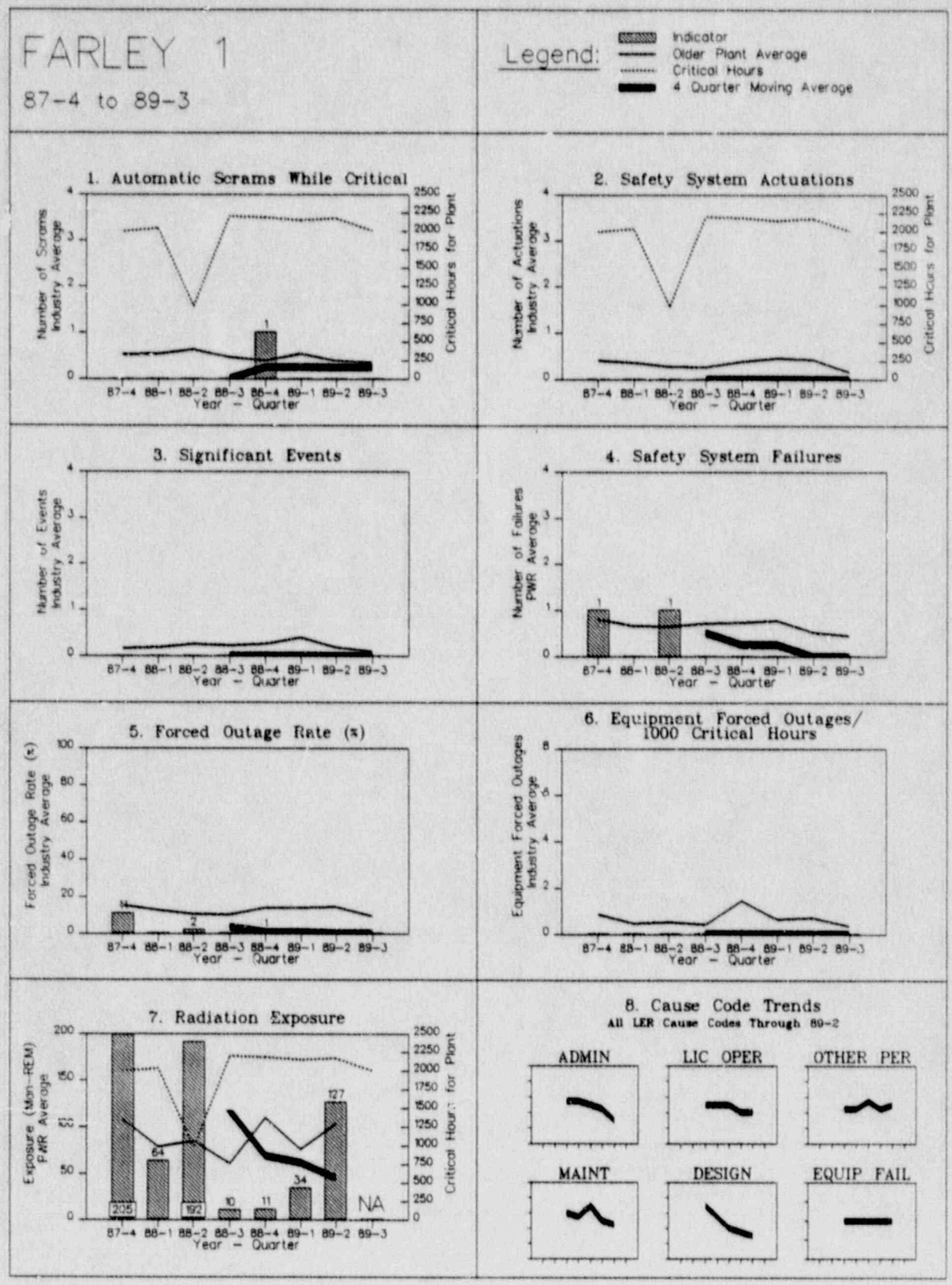

FARLEY 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.31

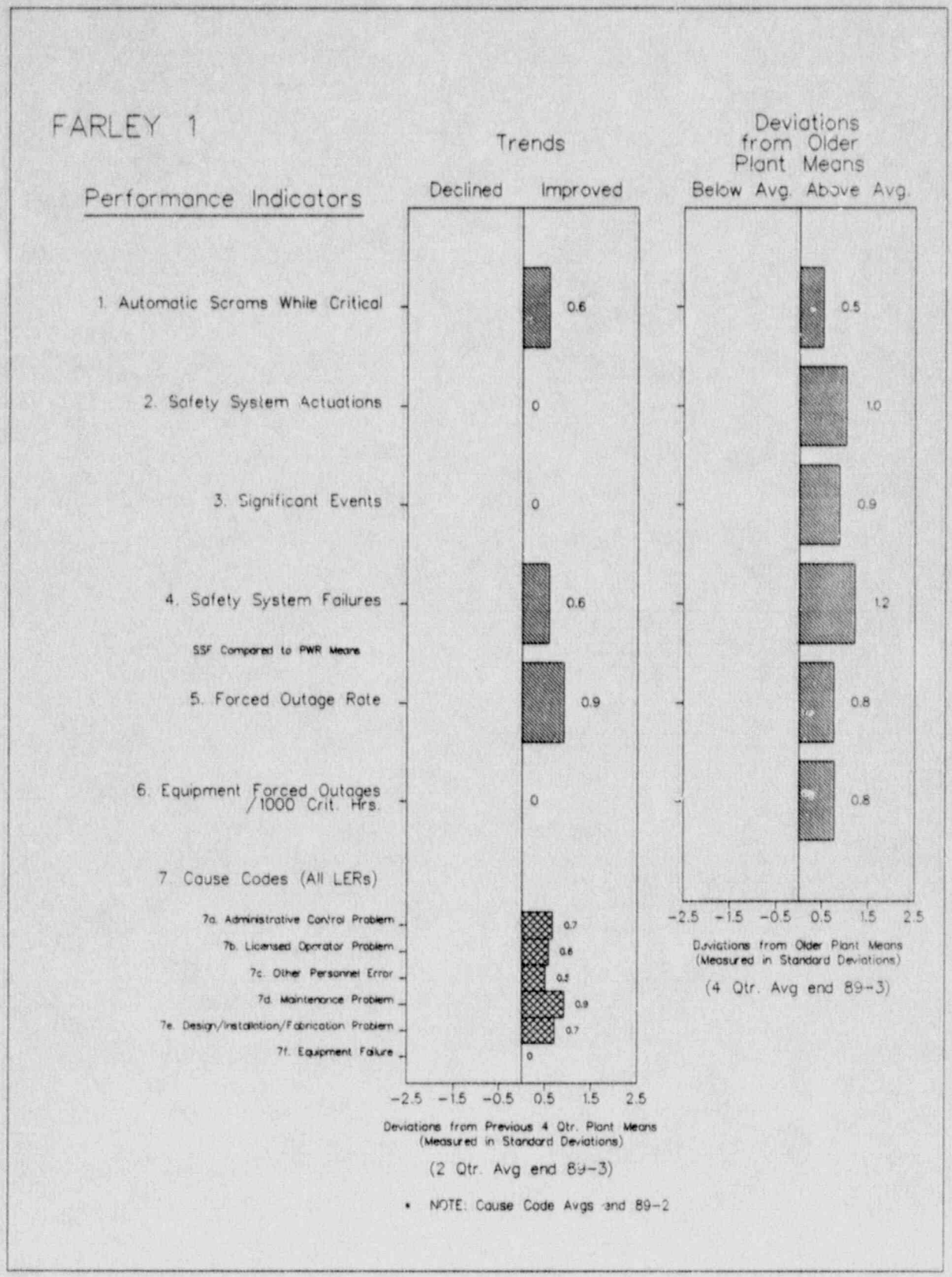

FARLEY 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0.6
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.9
0.8
6. Equipment Forced Outages /1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
0.6
7c. Other Personnel Error
0.5
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.32

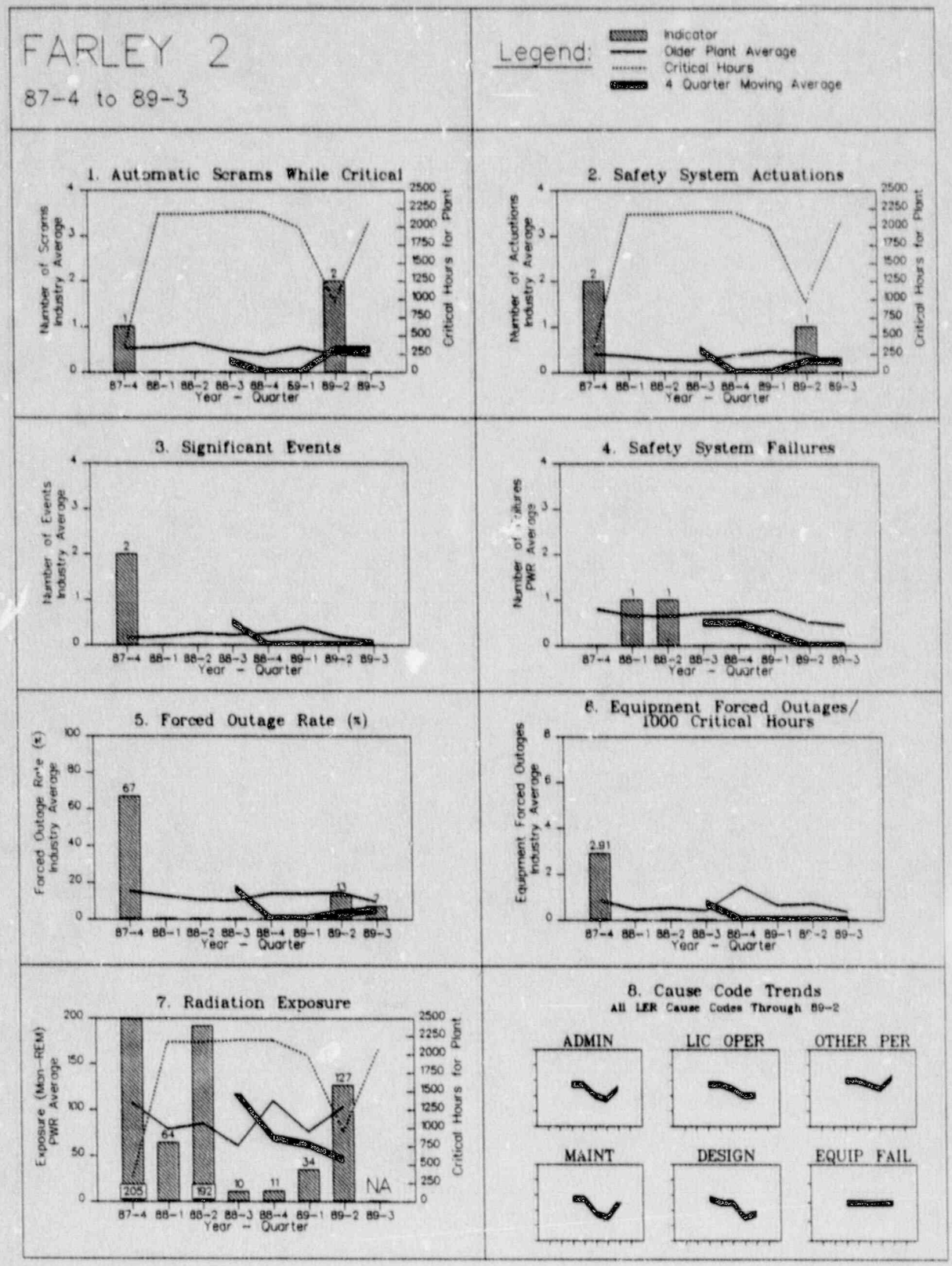

FARLEY 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
2.91
7. Radiation Exposure
Exposure (Man-REM) PWR Average
205
64
192
10
11
34
127
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.32

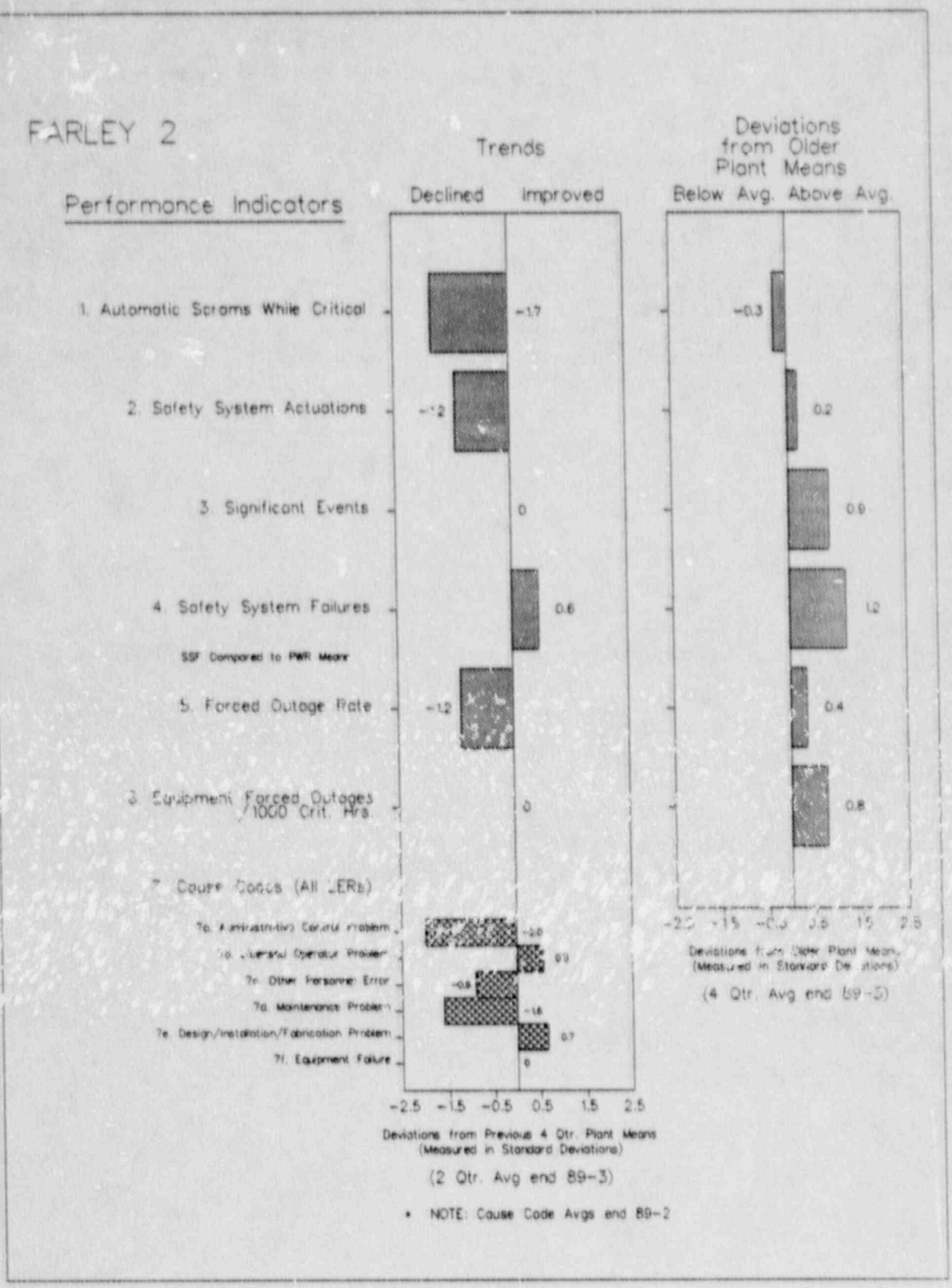

FARLEY 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Mean
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Crit. Hrs.
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Personal Operator Problem
7c. Other Personnel Error
7d. Maintenance Problem
7e. Design/Installation/Fabrication Problem
7f. Equipment Failure
-1.7
-1.2
0
0.6
-1.2
0
-2.0
0.9
-0.8
-1.8
0.7
0
-0.3
0.2
0.9
1.2
0.4
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.33

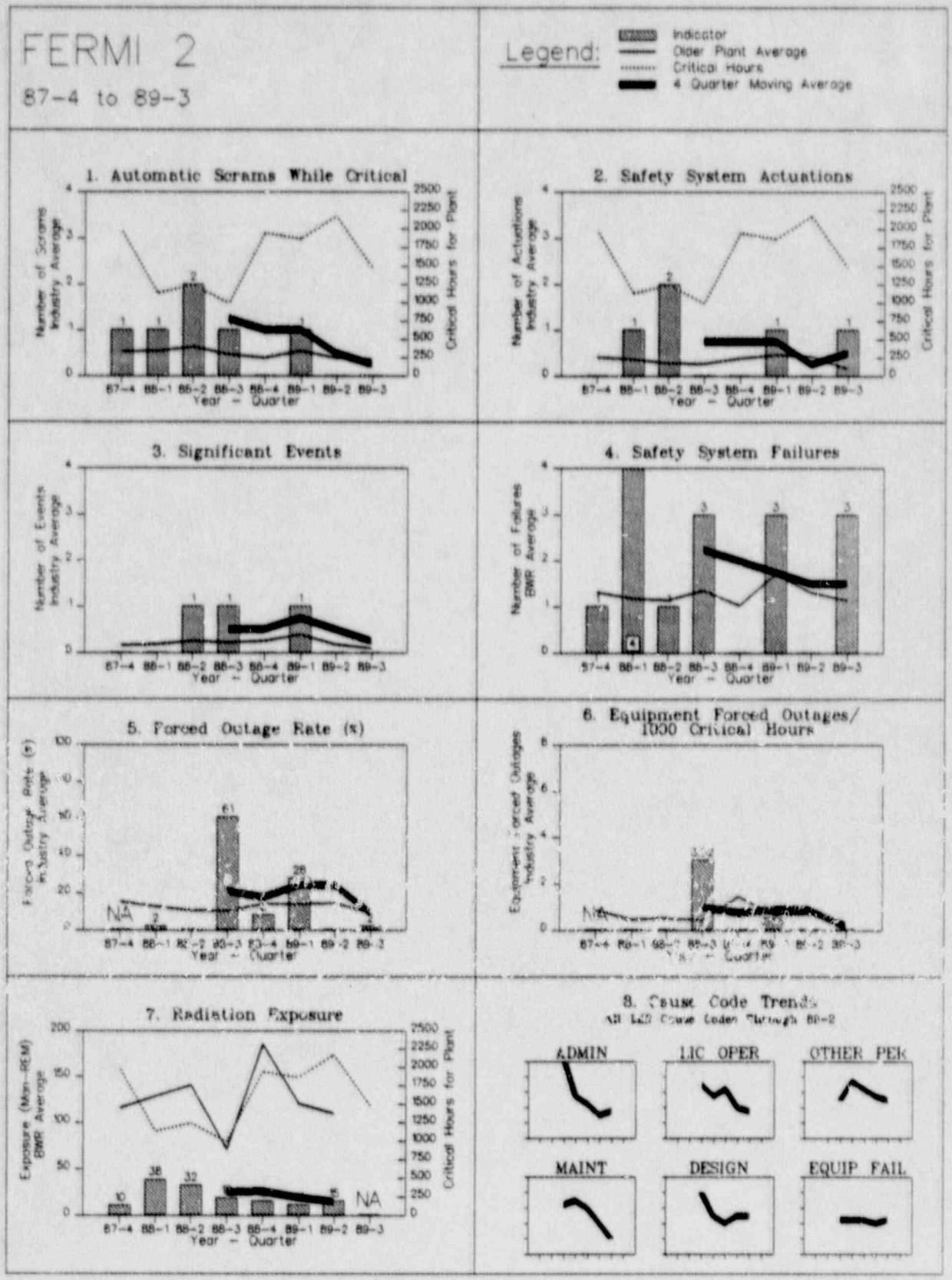

FERMI 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - 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
NA
Year - Quarter
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
NA
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Cause Code Trends
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.33

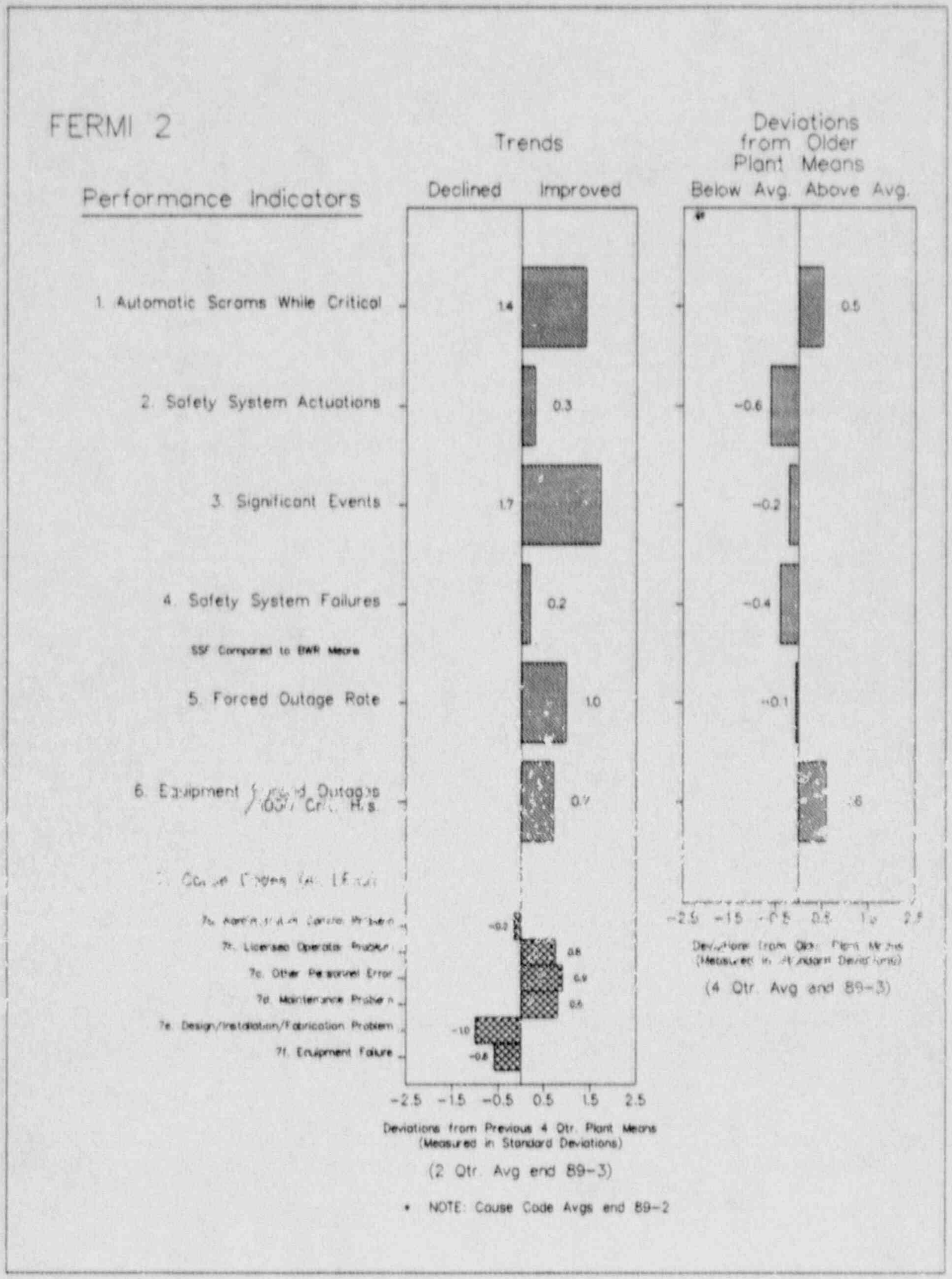
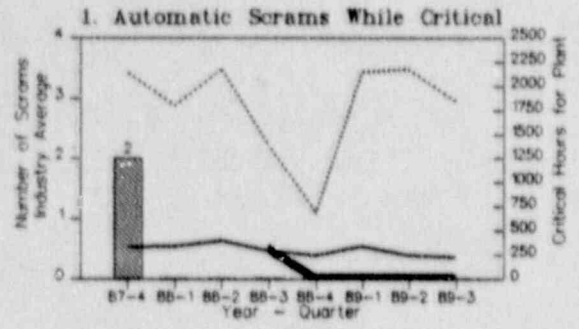

FERMI 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.4
0.5
2. Safety System Actuations
0.3
-0.6
3. Significant Events
1.7
-0.2
4. Safety System Failures
0.2
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
1.0
-0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
7f. Equipment Failure
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2
(4 Qtr. Avg and 89-3)

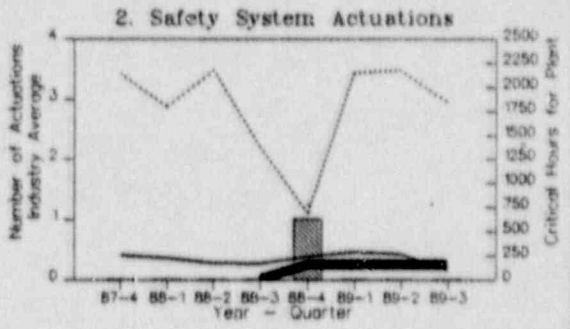
FIGURE 4.34

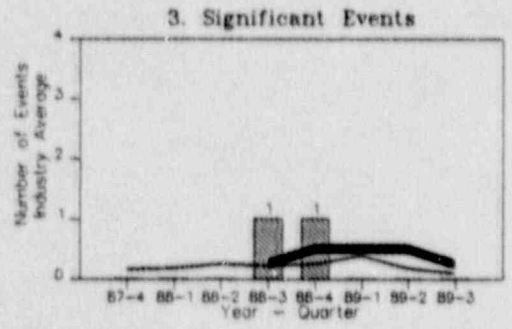
FITZPATRICK

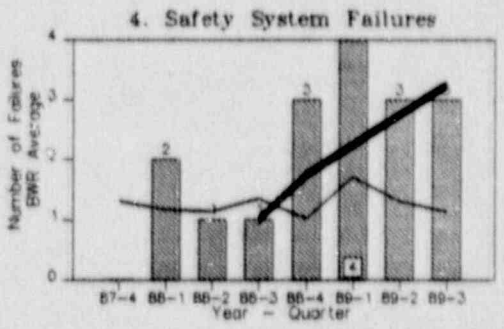
87-4 to 89-3

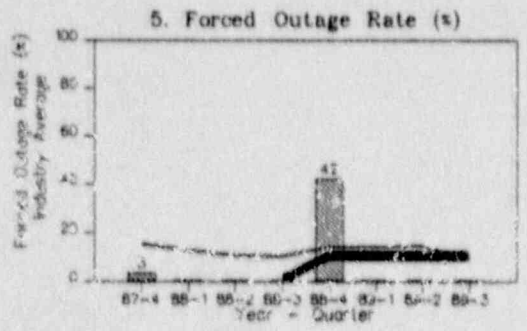
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

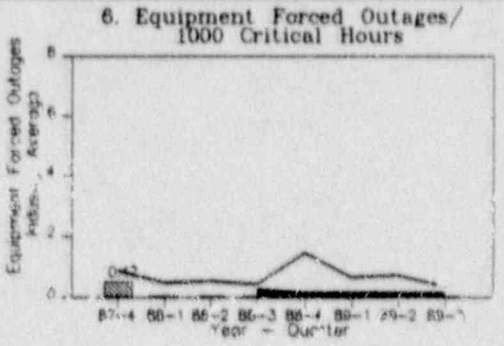


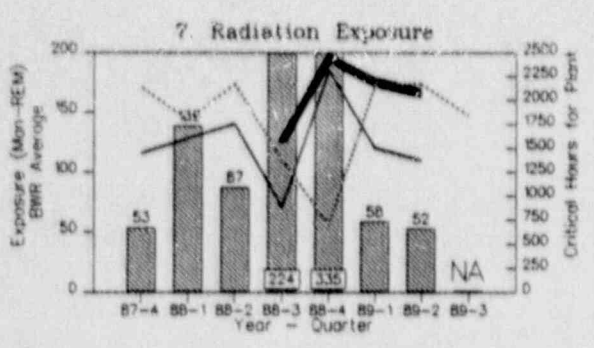












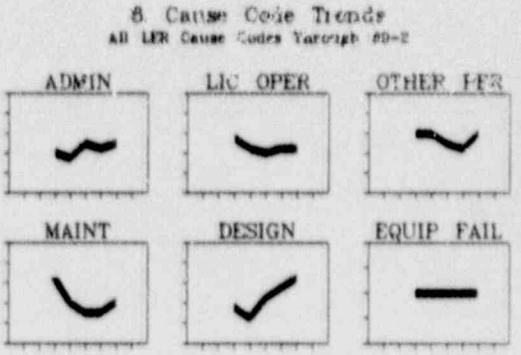


FIGURE 4.34

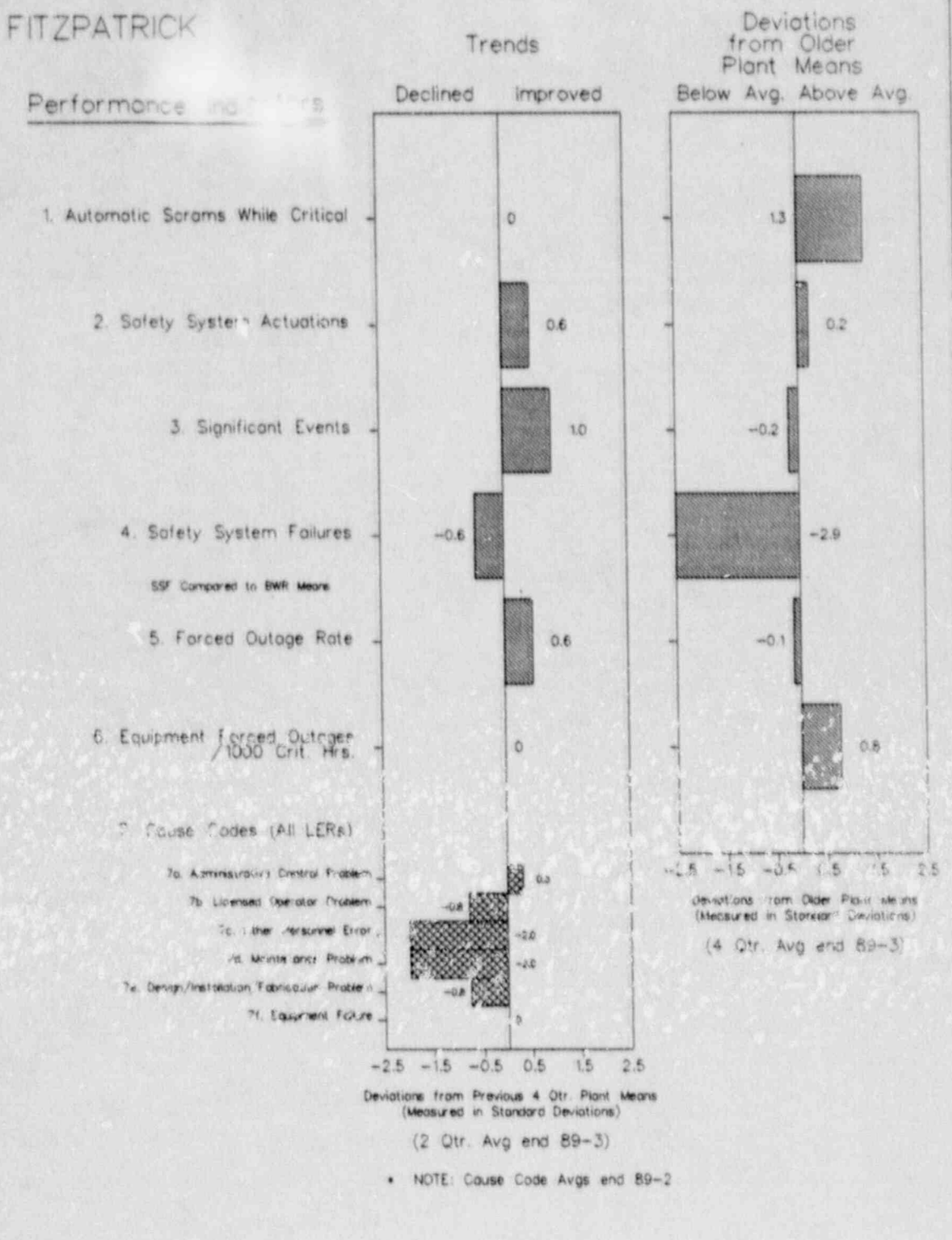

FITZPATRICK
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
1.0
-0.2
4. Safety System Failures
-0.6
-2.9
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
-0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
-2.0
7d. Maintenance Problem
-2.0
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.35

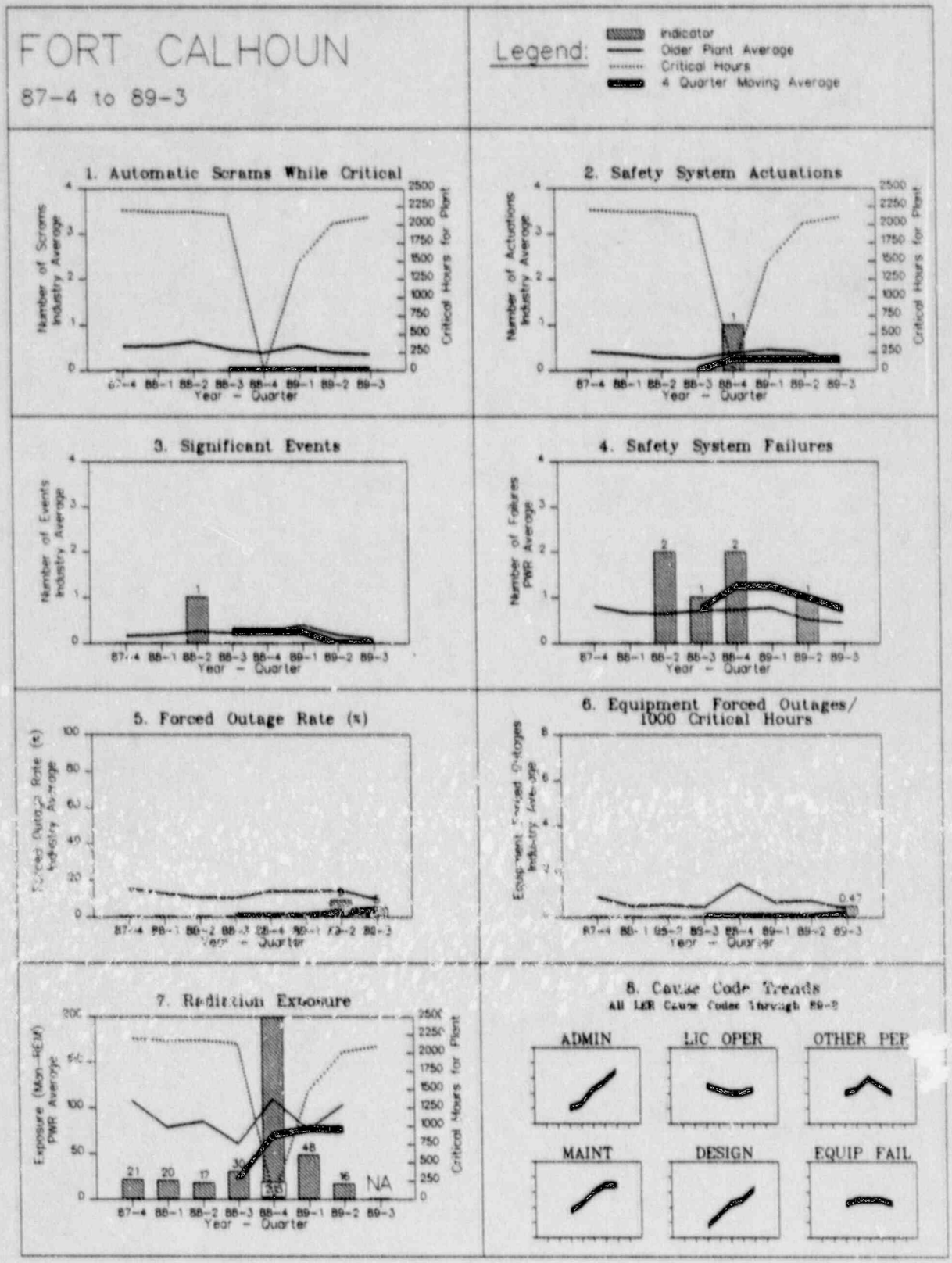

FORT CALHOUN
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
6. Equipment Forced Outages/ 1000 Critical Hours
7. Radiation Exposure
Exposure (Man-REM) PWR Average
21
20
17
30
48
16
NA
8. Cause Code Trends
All LER Cause Codes through 89-3
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.35

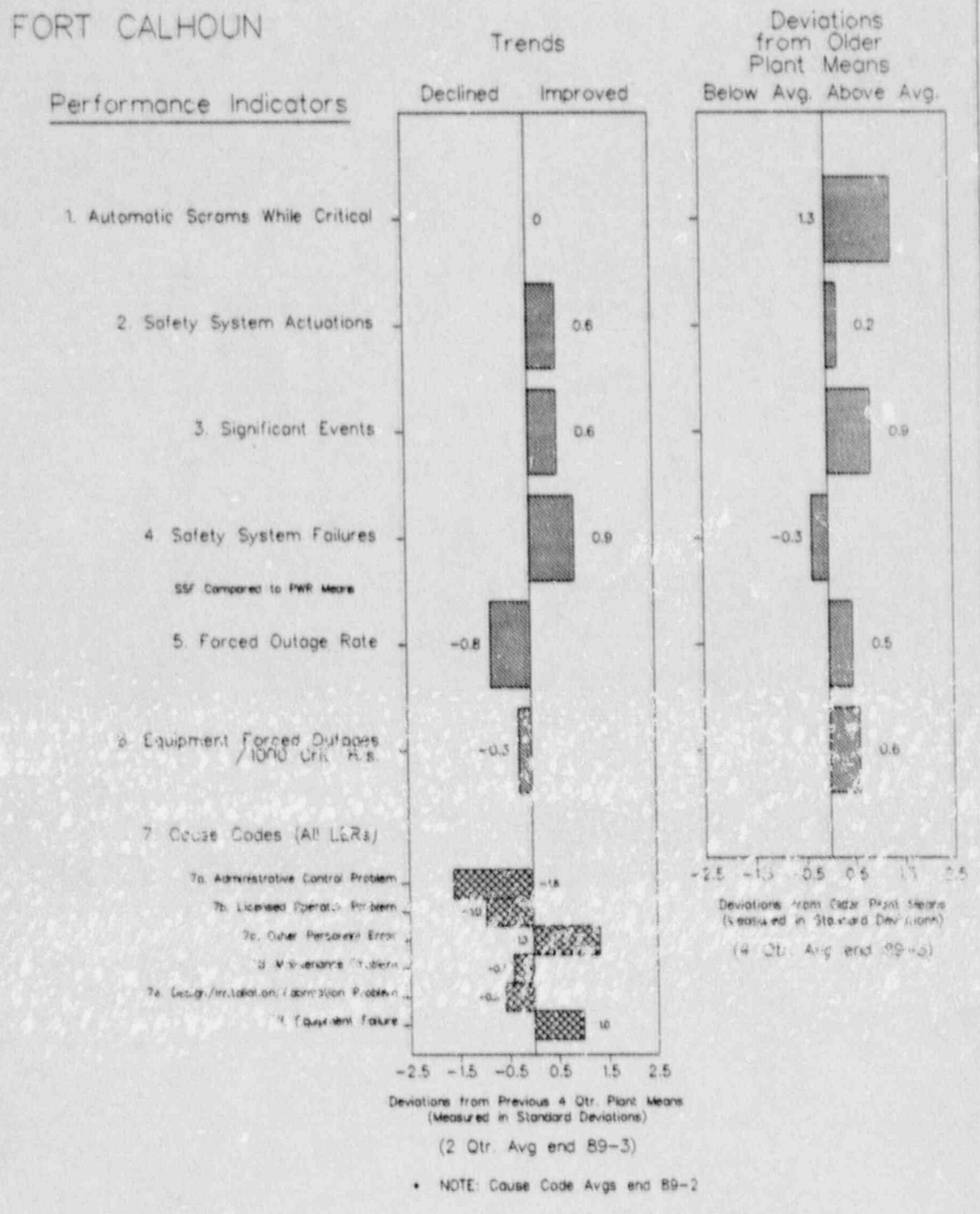

FORT CALHOUN
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
0.9
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-0.8
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.3
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.5
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
1.3
7d. Maintenance Problem
-0.7
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.36

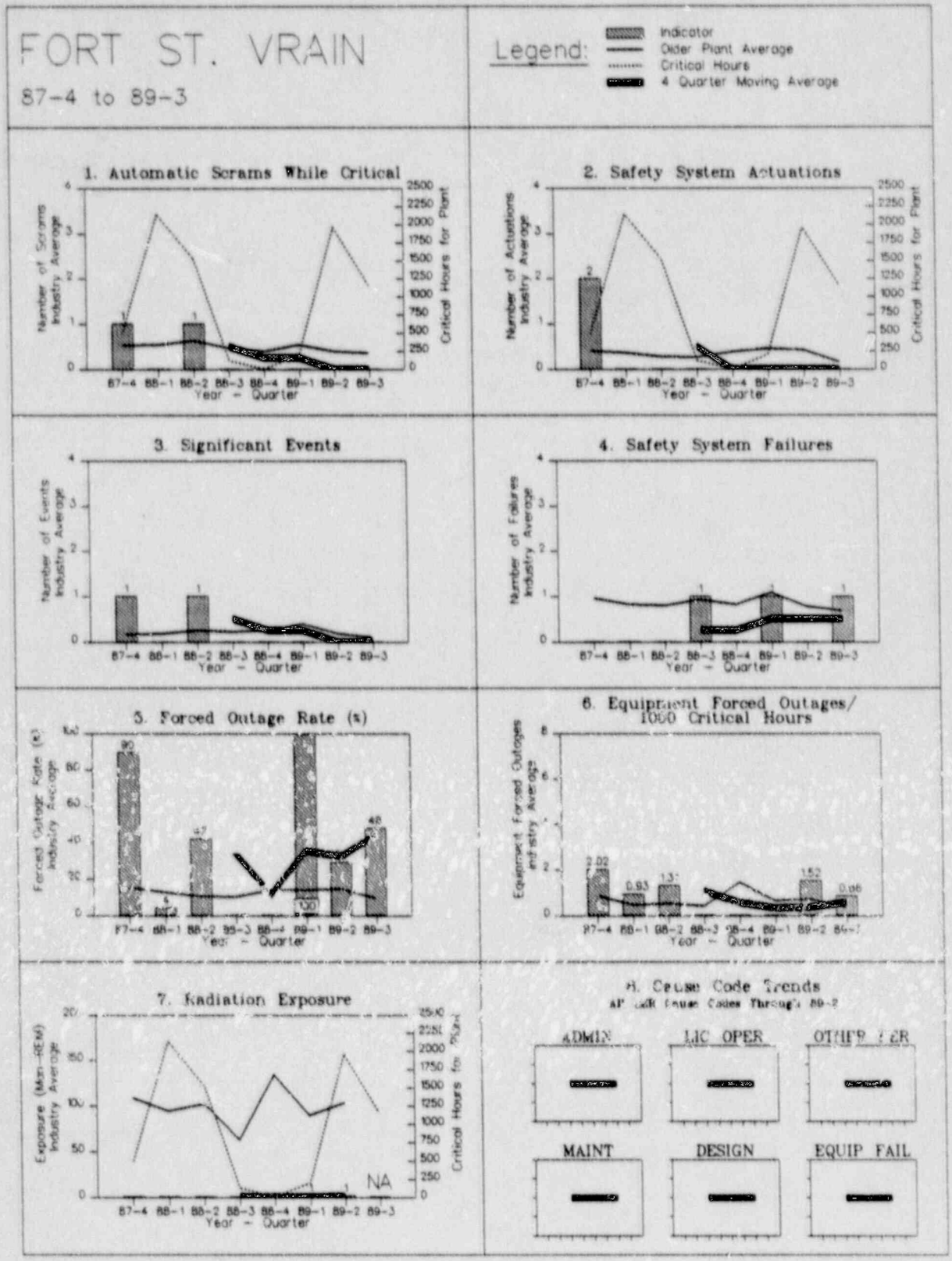

FORT ST. VRAIN
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Number of Failures Industry Average
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) Industry Average
Critical Hours for Plant
NA
Year - Quarter
8. Cause Code Trends
ADMIN
LIC OPER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.36

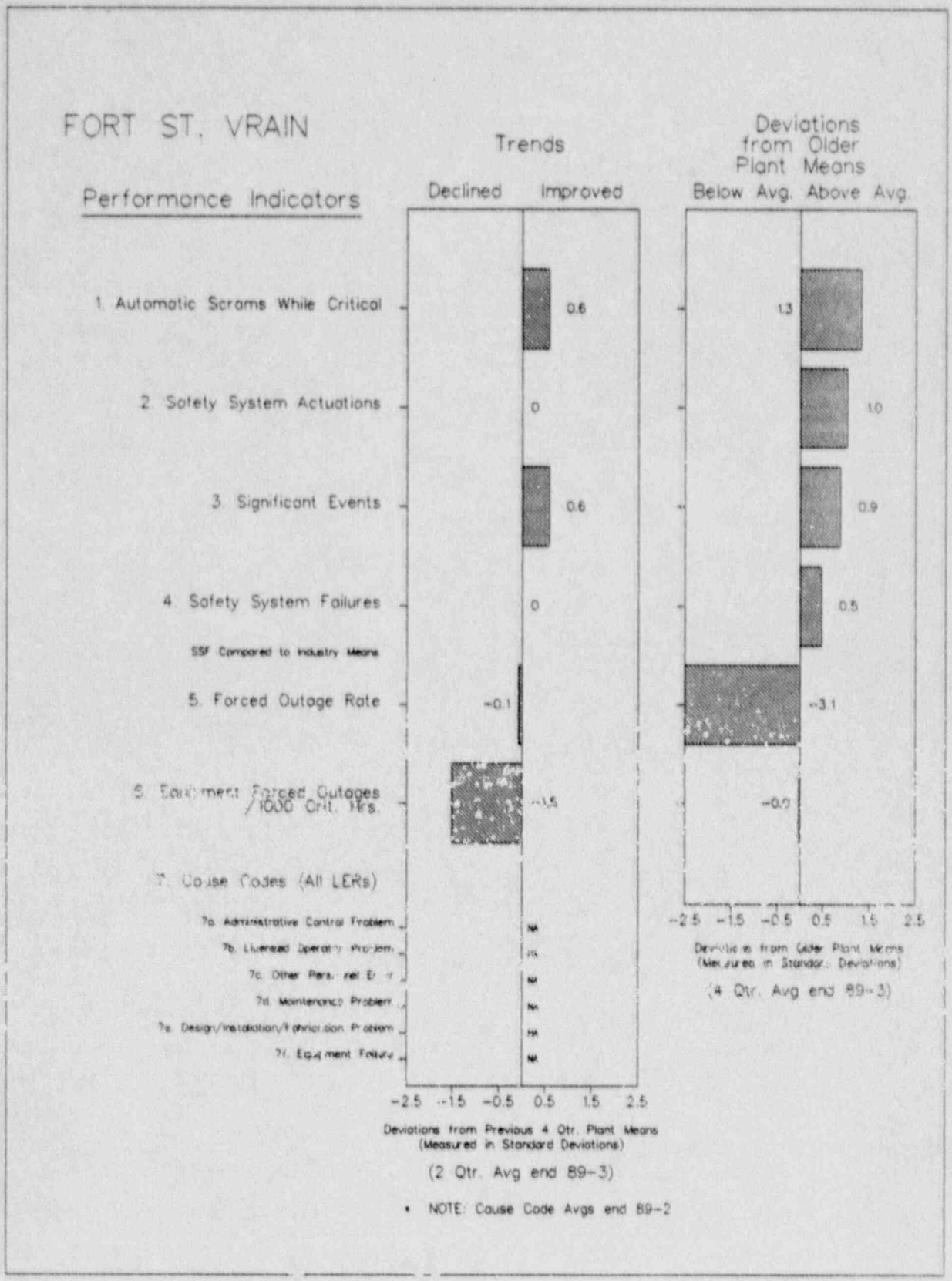

FORT ST. VRAIN
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
0.9
4. Safety System Failures
0
0.5
SSF Compared to Industry Means
5. Forced Outage Rate
-0.1
-3.1
6. Equipment Forced Outages /1000 Crit. Hrs.
-1.5
-0.0
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
NA
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.37

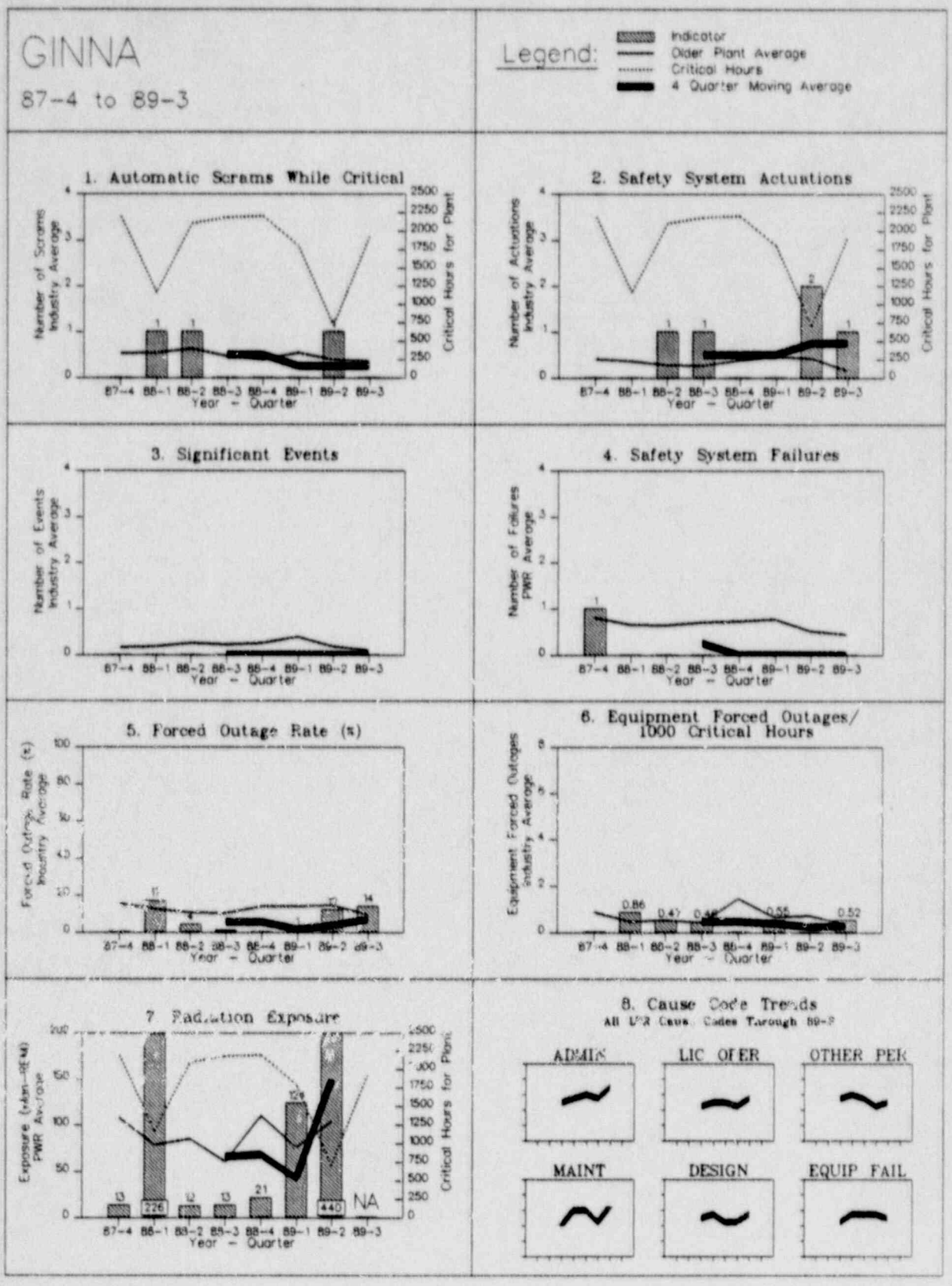

GINNA
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
0.86
0.47
0.55
0.52
7. Radiation Exposure
Exposure (Man-REM) PWR Average
13
226
12
13
21
129
440
NA
8. Cause Code Trends
All LER Cause Codes Through 89-3
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.37

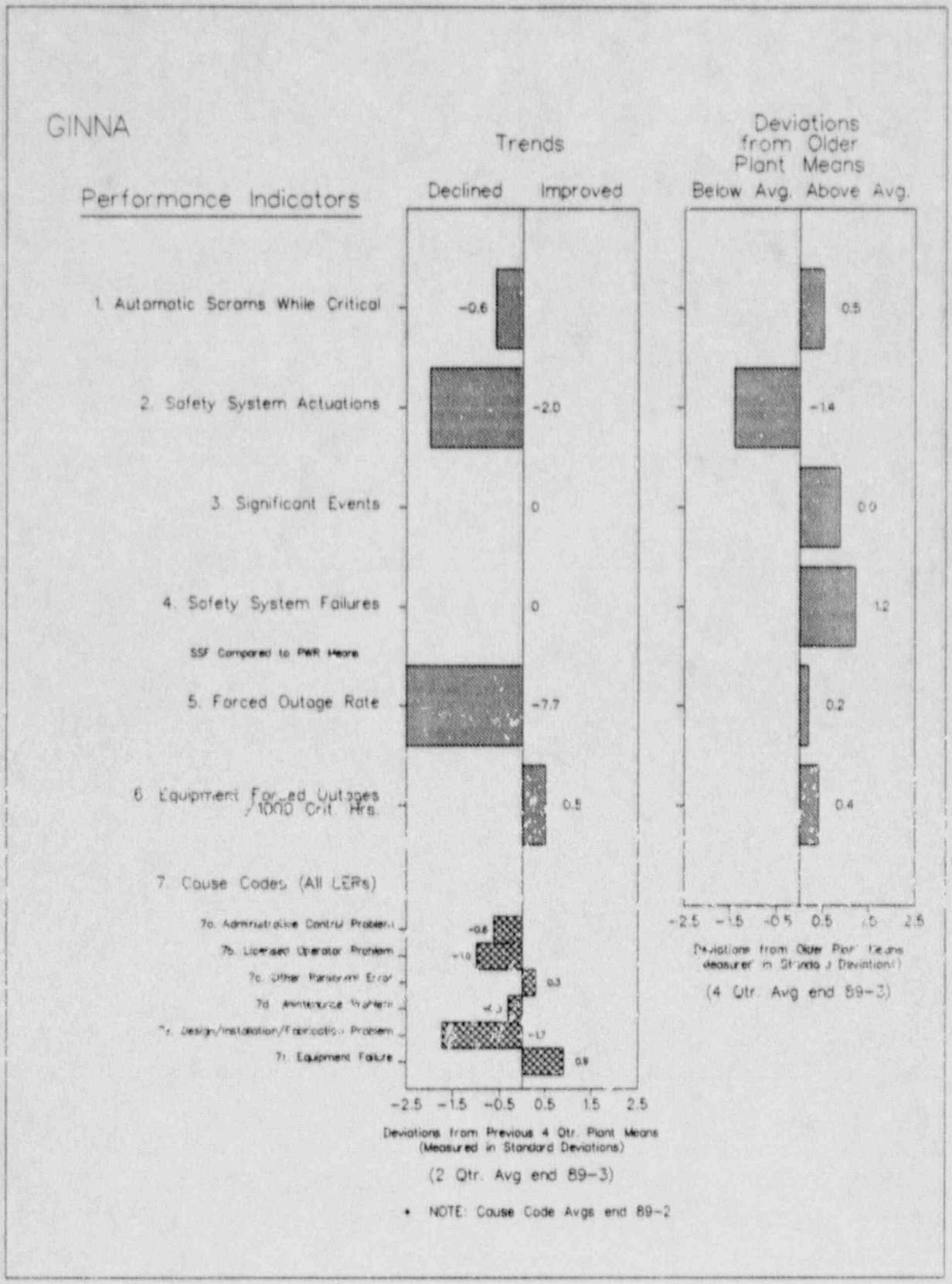

GINNA
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
0.5
2. Safety System Actuations
-2.0
-1.4
3. Significant Events
0
0.0
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
-7.7
0.2
6. Equipment Forced Outages /1000 Crit. Hrs.
0.5
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
0.3
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.3B

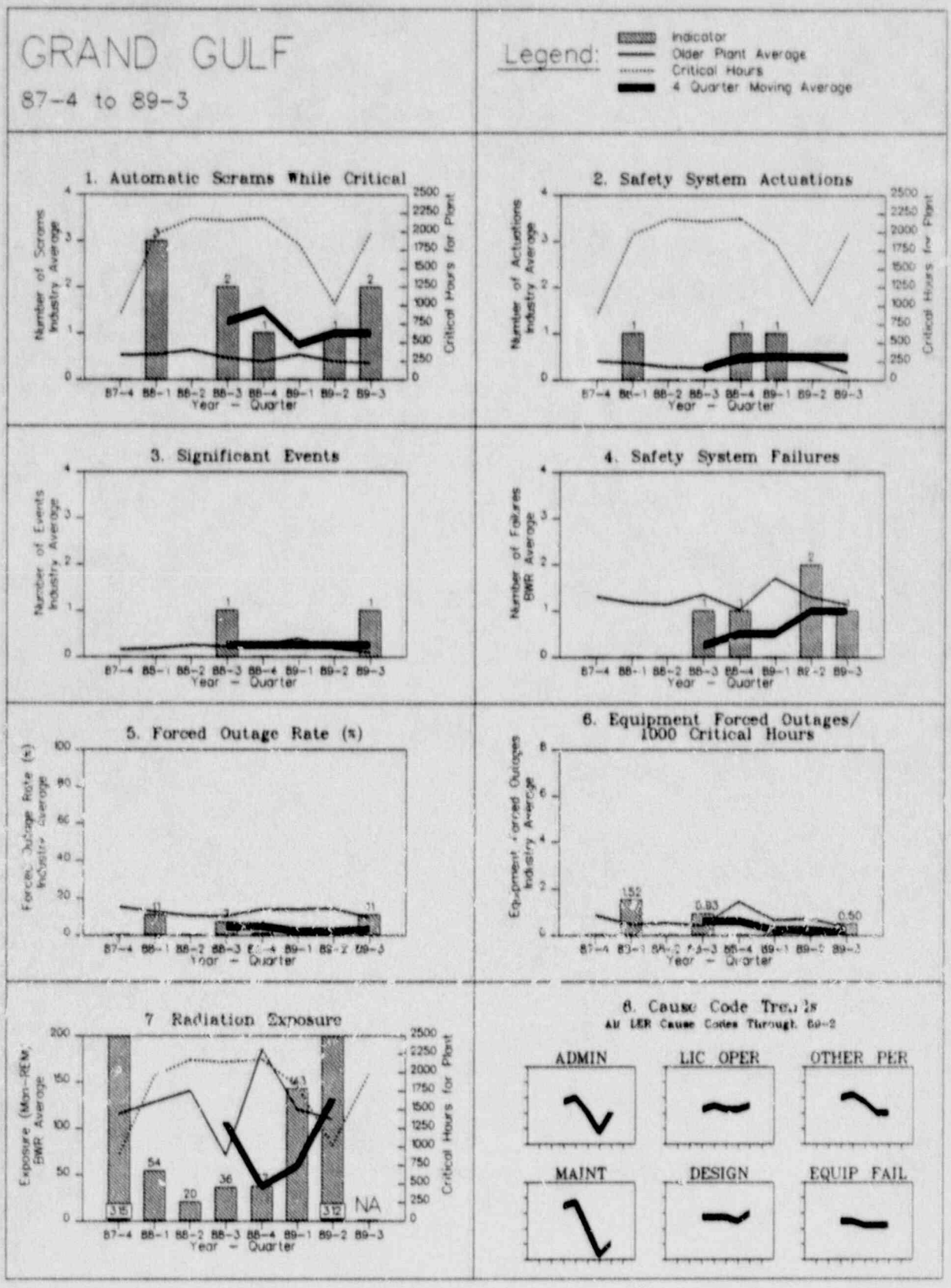

GRAND GULF
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams
Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations
Industry Average
3. Significant Events
Number of Events
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 Critical Hours
Equipment Forced Outages
Industry Average
7 Radiation Exposure
Exposure (Man-REM)
BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.38

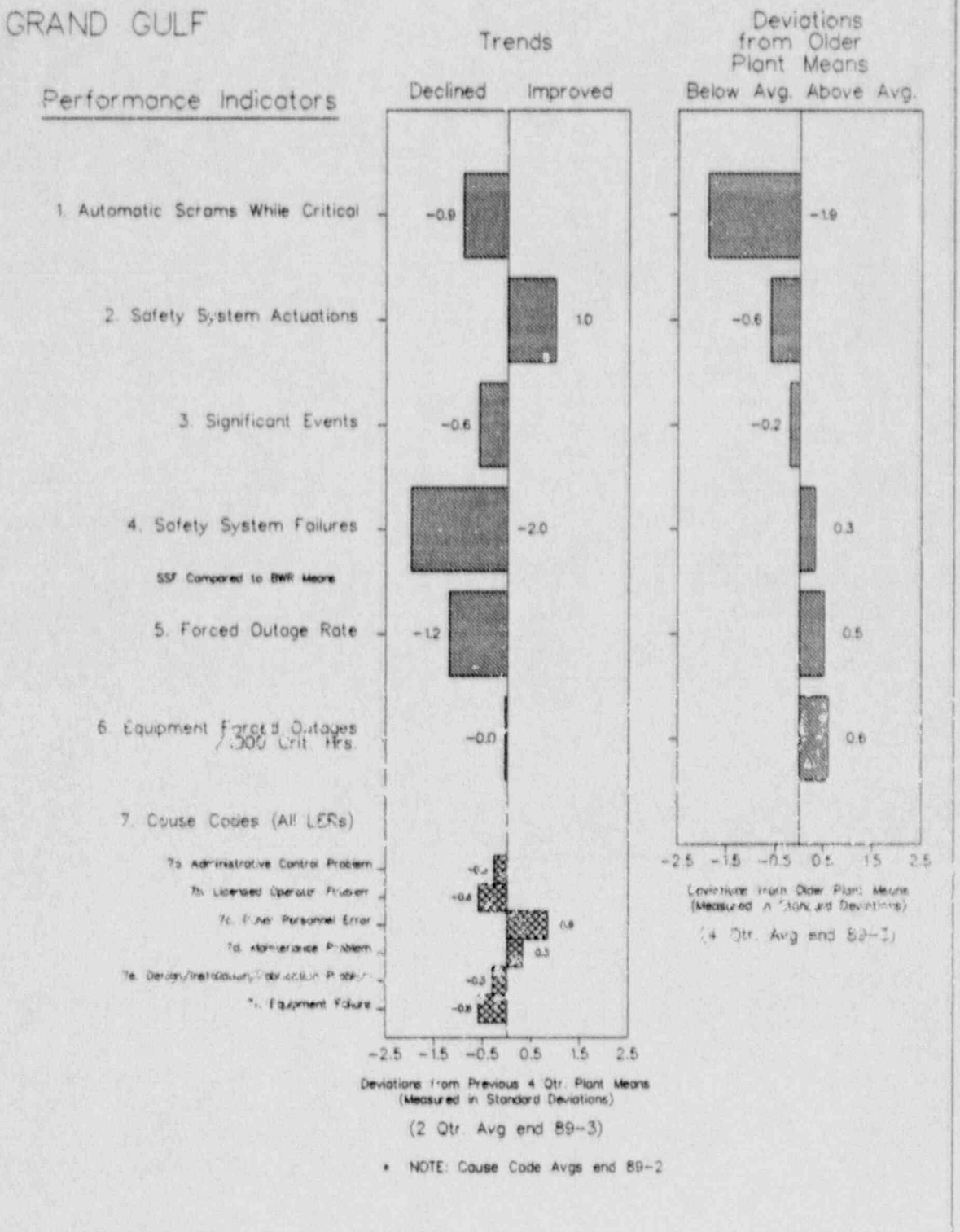

GRAND GULF
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to BWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /300 Crit. Hrs.
7. Cause Codes (All LERs)
7a. Administrative Control Problem
7b. Licensed Operator Problem
7c. Plant Personnel Error
7d. Maintenance Problem
7e. Design/Fabrication/Construction Problem
7f. Equipment Failure
-0.9
1.0
-0.6
-2.0
-1.2
-0.0
-1.9
-0.6
-0.2
0.3
0.5
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.39

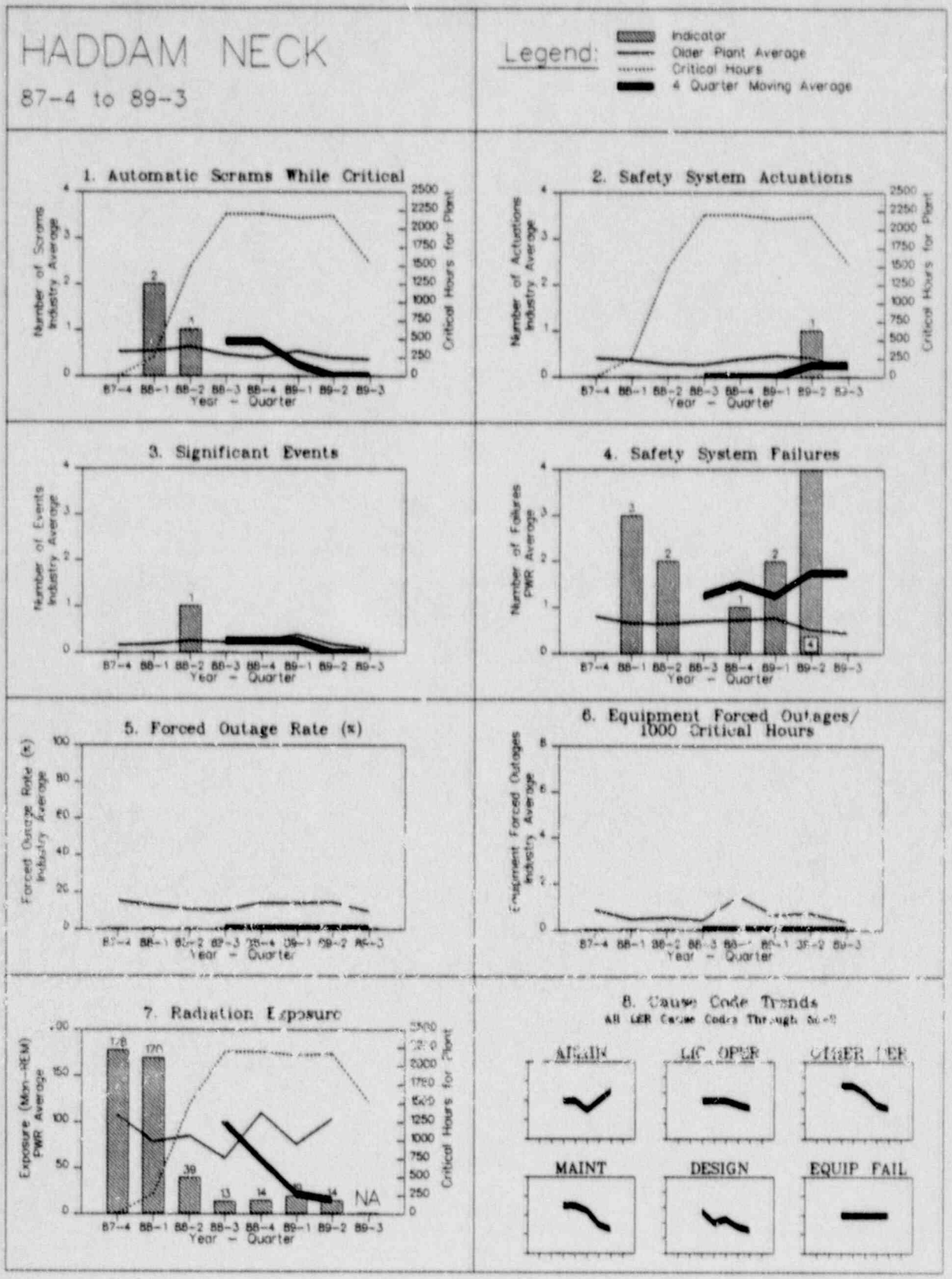

HADDAM NECK
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
178
170
39
13
14
14
NA
8. Cause Code Trends
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.39

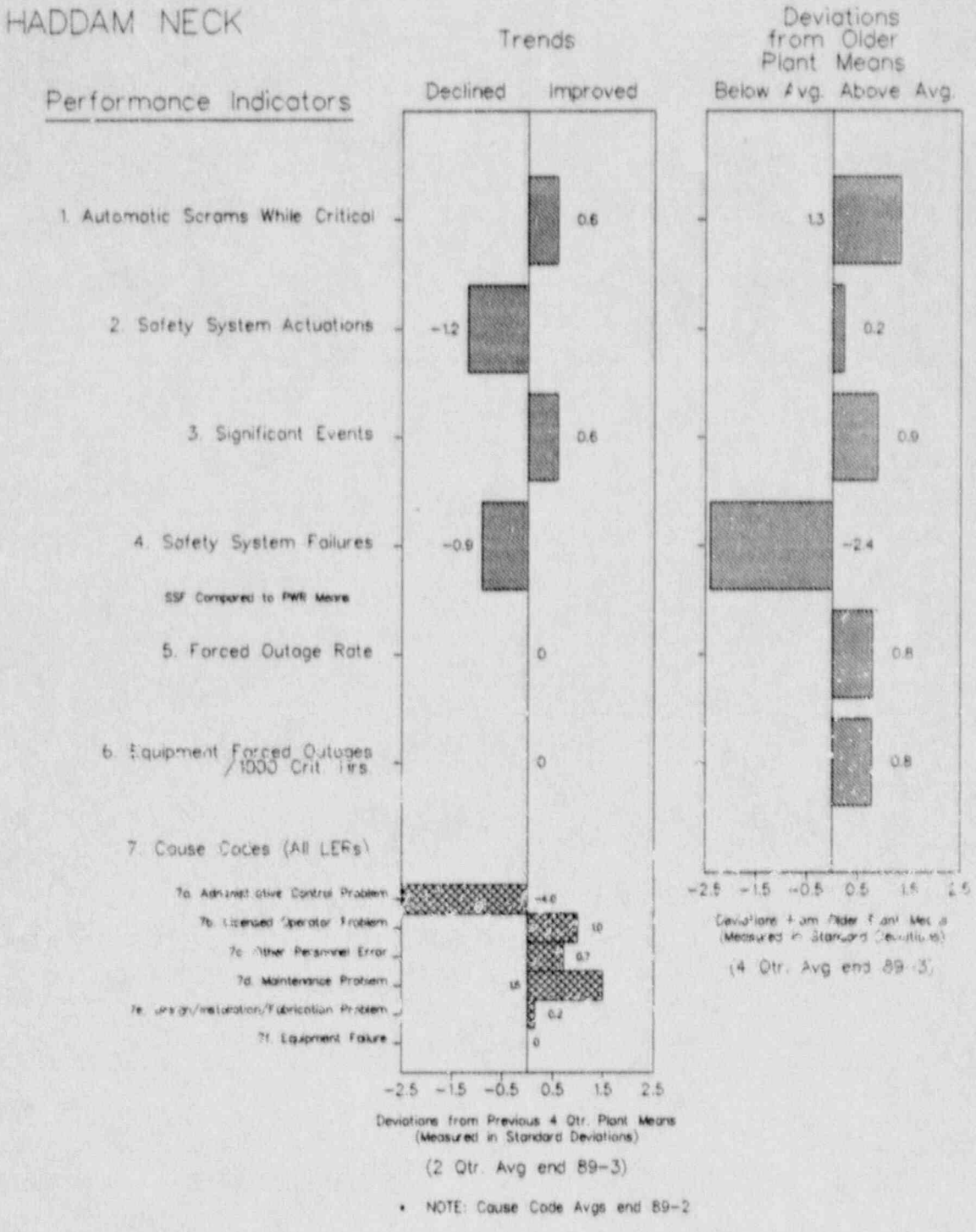

HADDAM NECK
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
-1.2
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
-0.9
-2.4
SSF Compared to PWR Means
5. Forced Outage Rate
0
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.0
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.7
7d. Maintenance Problem
1.5
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 Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.40

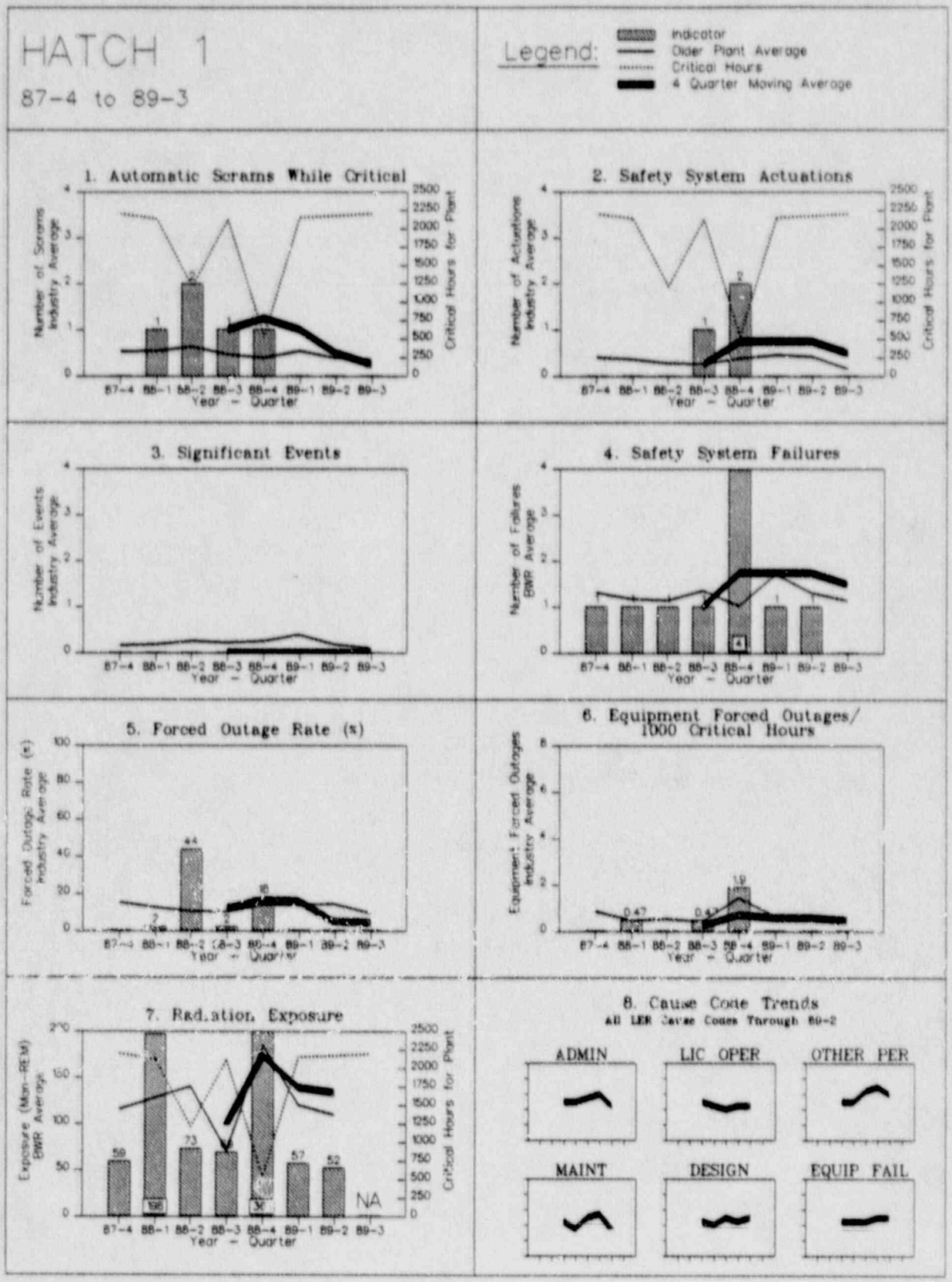

HATCH 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.40

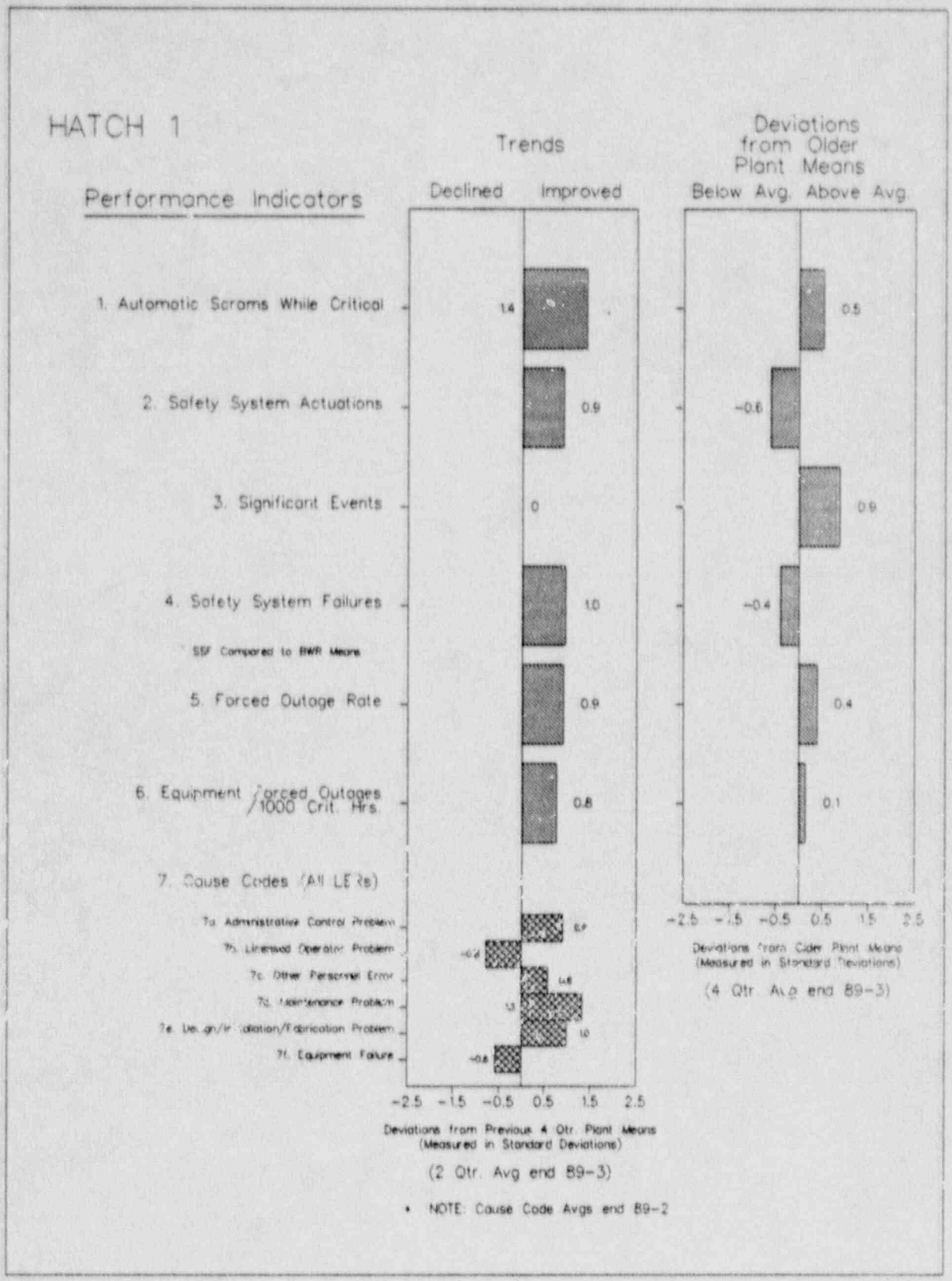

HATCH 1
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
Performance Indicators
1. Automatic Scrams While Critical
1.4
0.5
2. Safety System Actuations
0.9
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
1.0
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
0.8
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
-0.2
7c. Other Personnel Error
0.8
7d. Maintenance Problem
1.3
1.5
7e. Design/Installation/Fabrication Problem
1.0
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.41

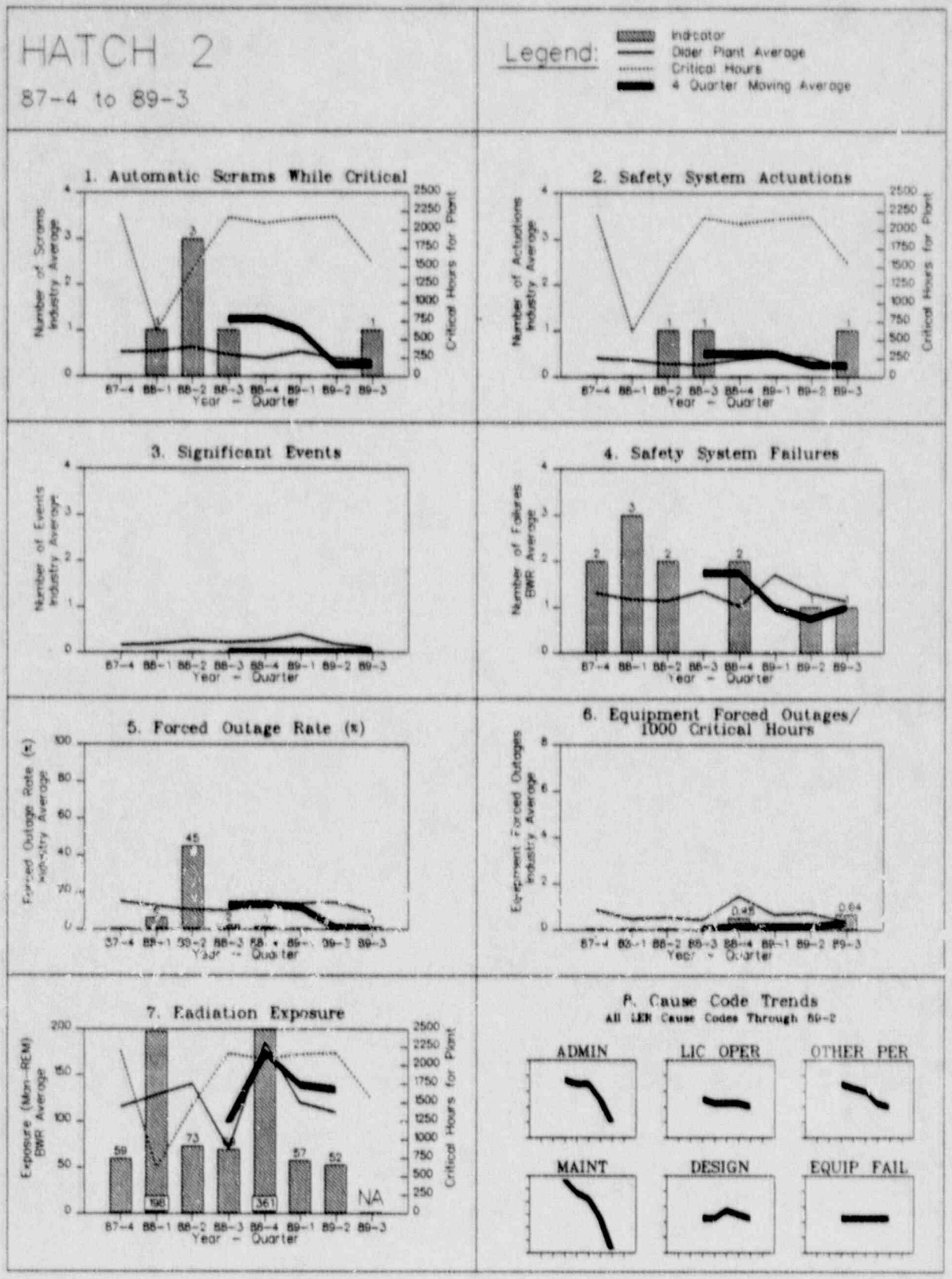

HATCH 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.41

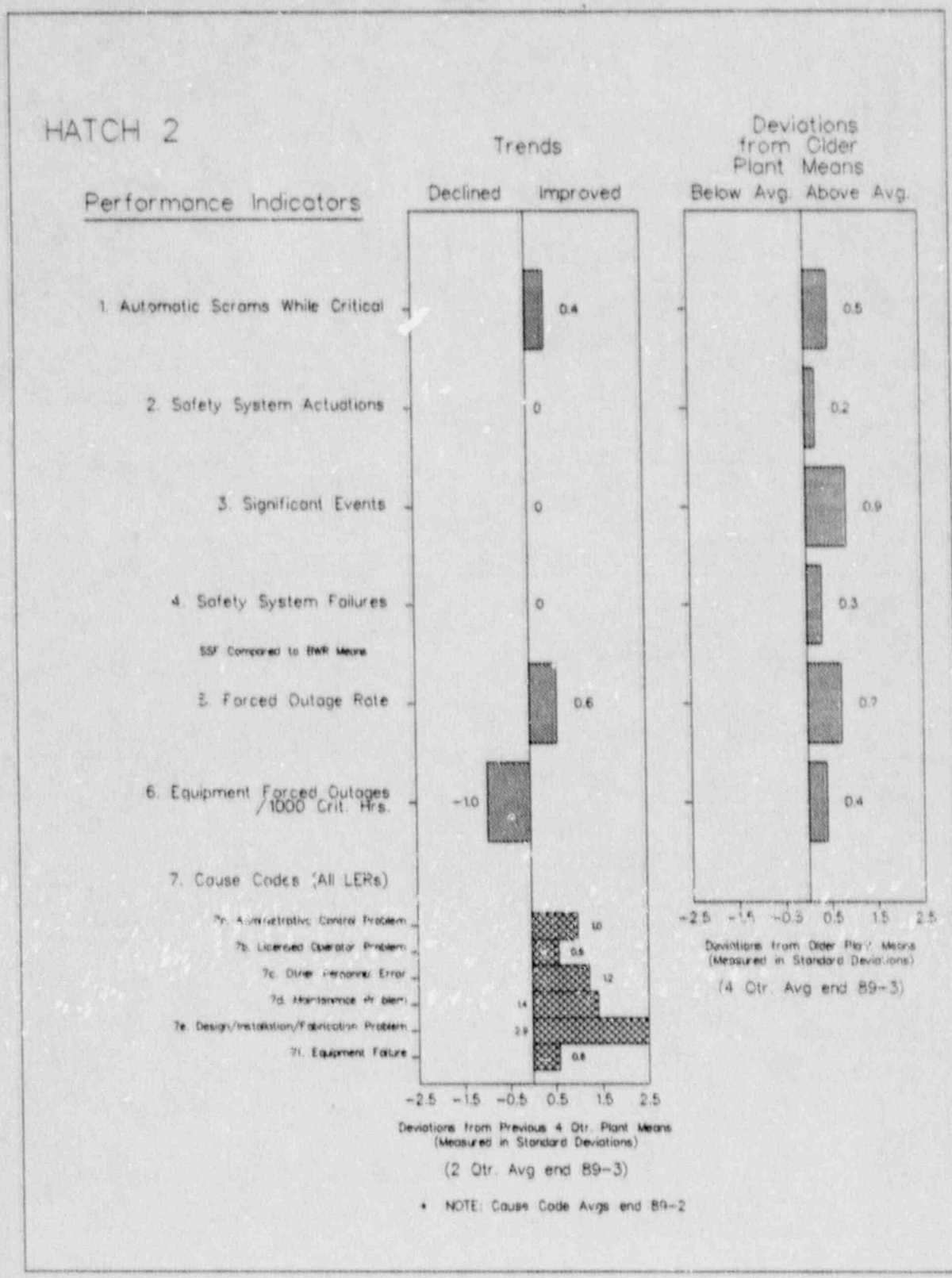
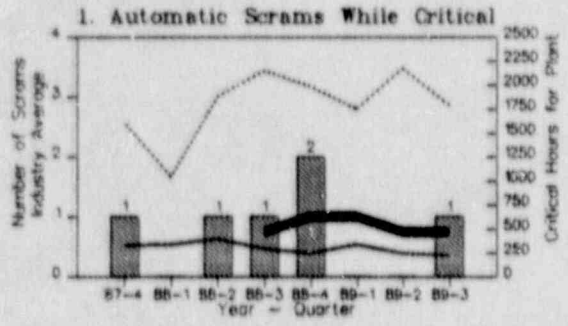

HATCH 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.5
2. Safety System Actuations
0
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0
0.3
SSF Compared to BWR Means
5. Forced Outage Rate
0.6
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
-1.0
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.0
7b. Licensed Operator Problem
0.6
7c. Other Personnel Error
1.2
7d. Maintenance Problem
1.4
7e. Design/Installation/Fabrication Problem
2.9
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

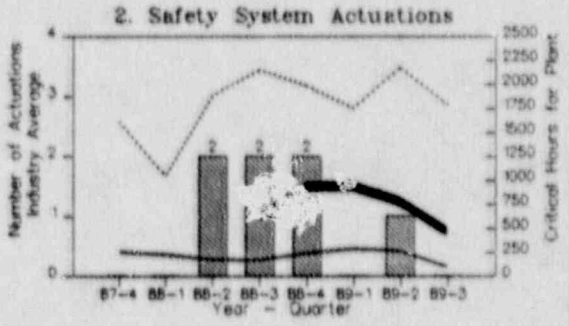
FIGURE 4.42

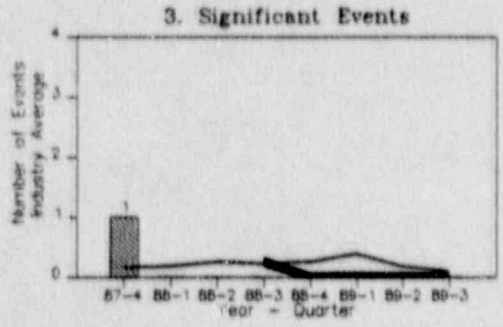
HOPE CREEK

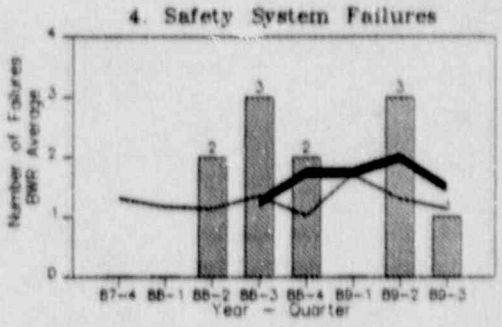
87-4 to 89-3

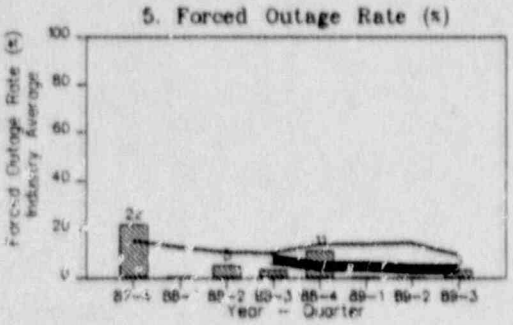
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

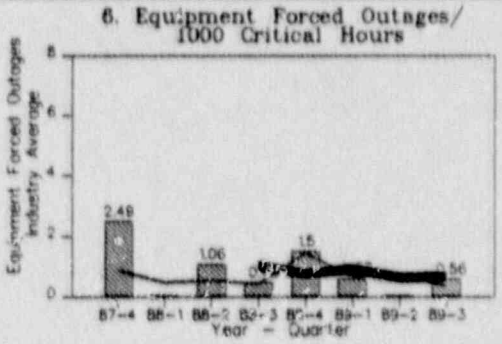


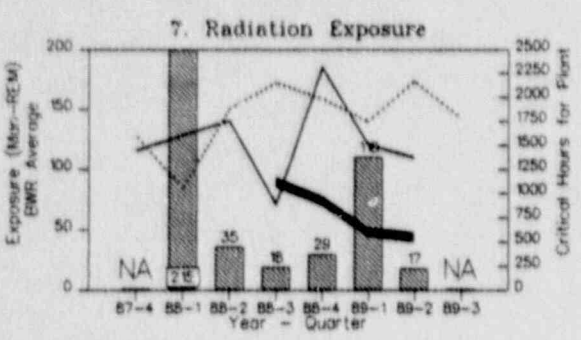












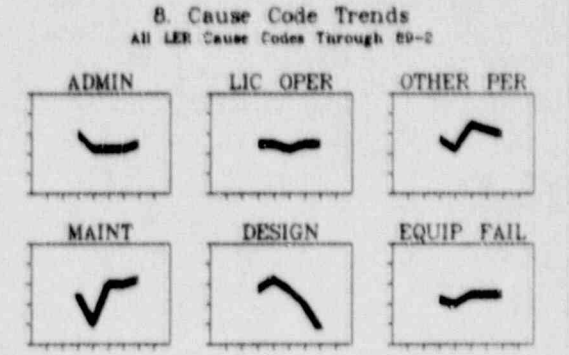


FIGURE 4.42

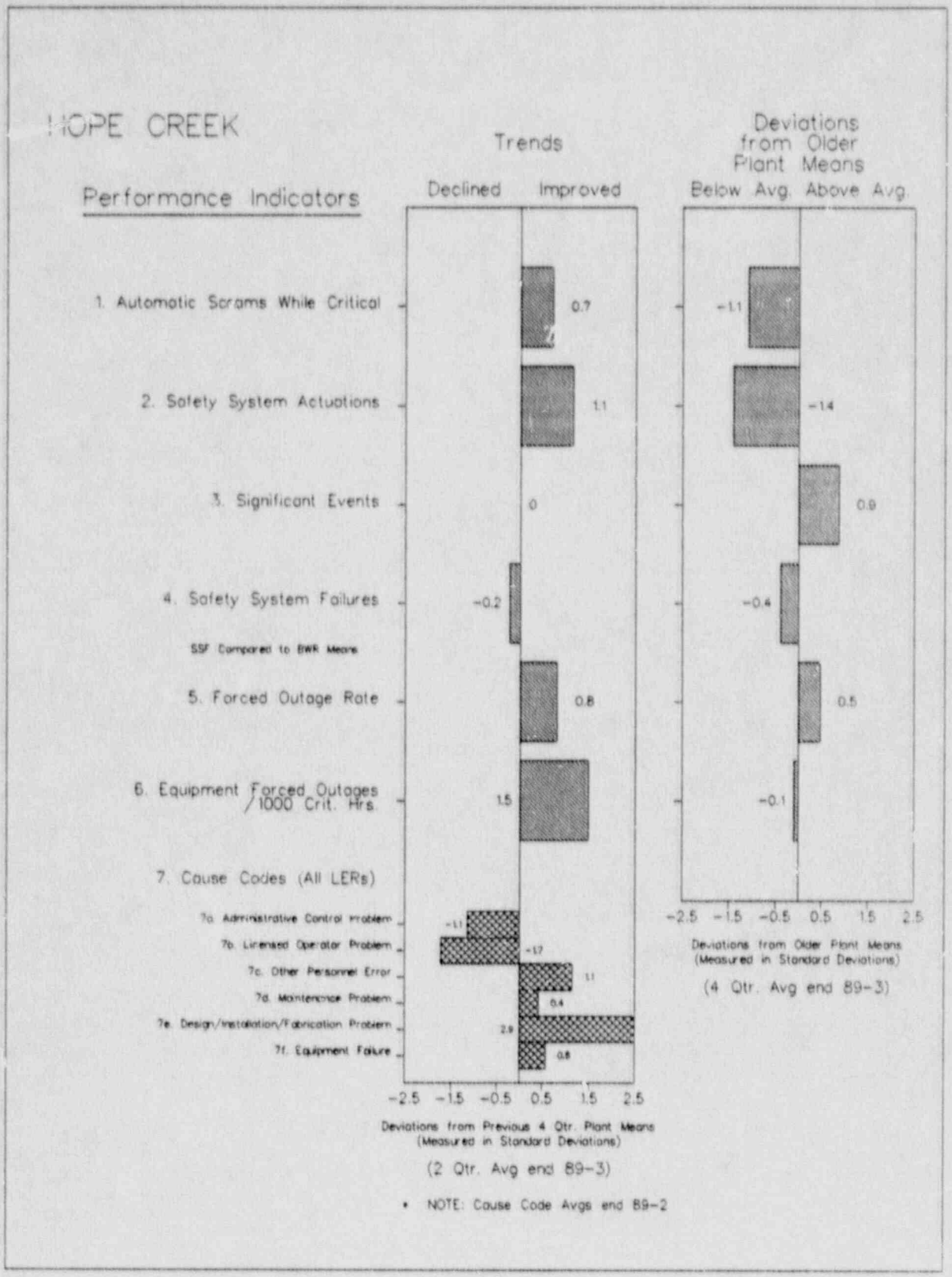

HOPE CREEK
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.7
-1.1
2. Safety System Actuations
1.1
-1.4
3. Significant Events
0
0.9
4. Safety System Failures
-0.2
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
0.8
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.5
-0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.1
7b. Licensed Operator Problem
-1.7
7c. Other Personnel Error
1.1
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
2.9
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.43

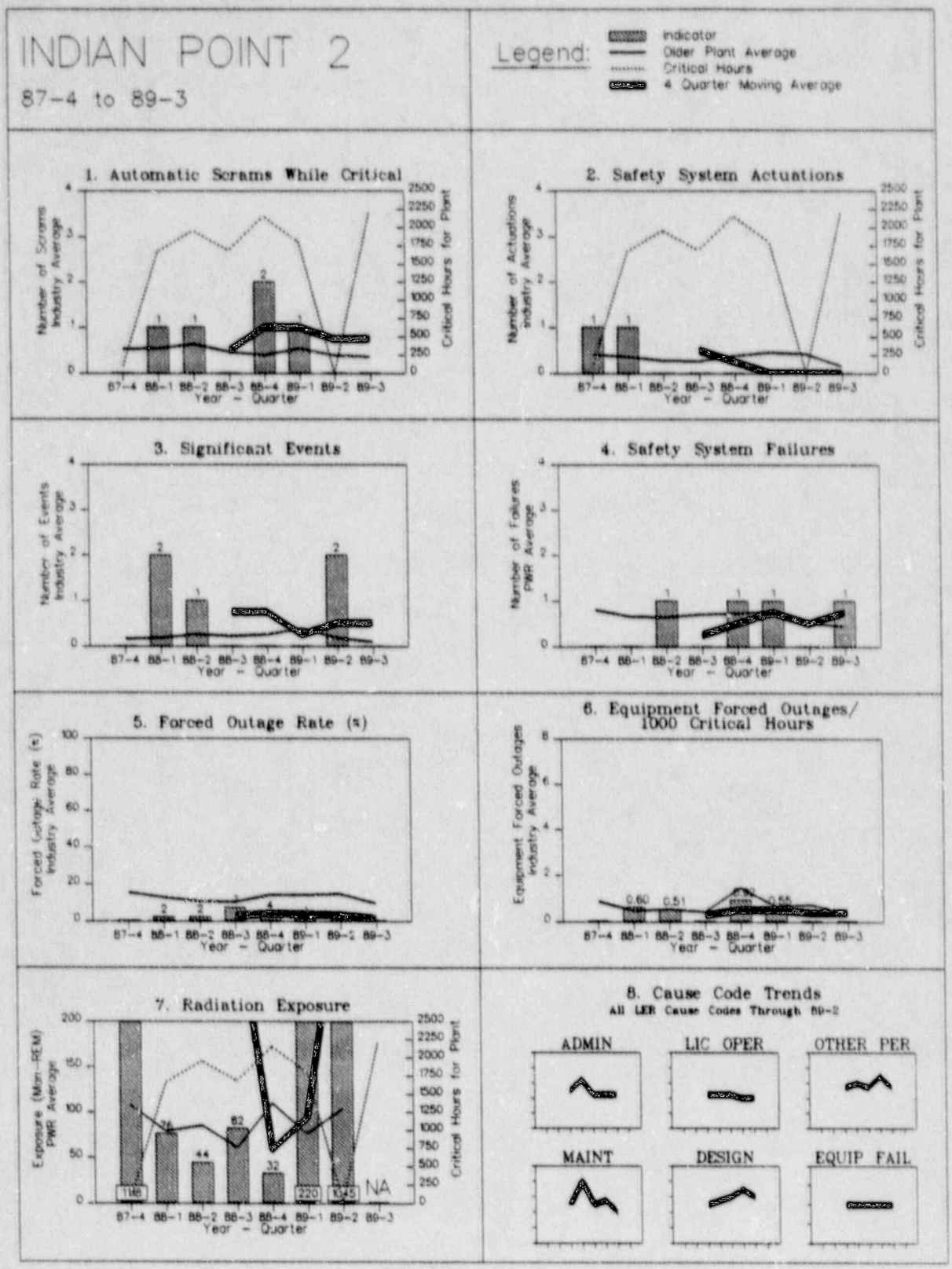

INDIAN POINT 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
0.60
0.51
0.55
7. Radiation Exposure
Exposure (Man-REM) PWR Average
146
76
44
82
32
220
345
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.43

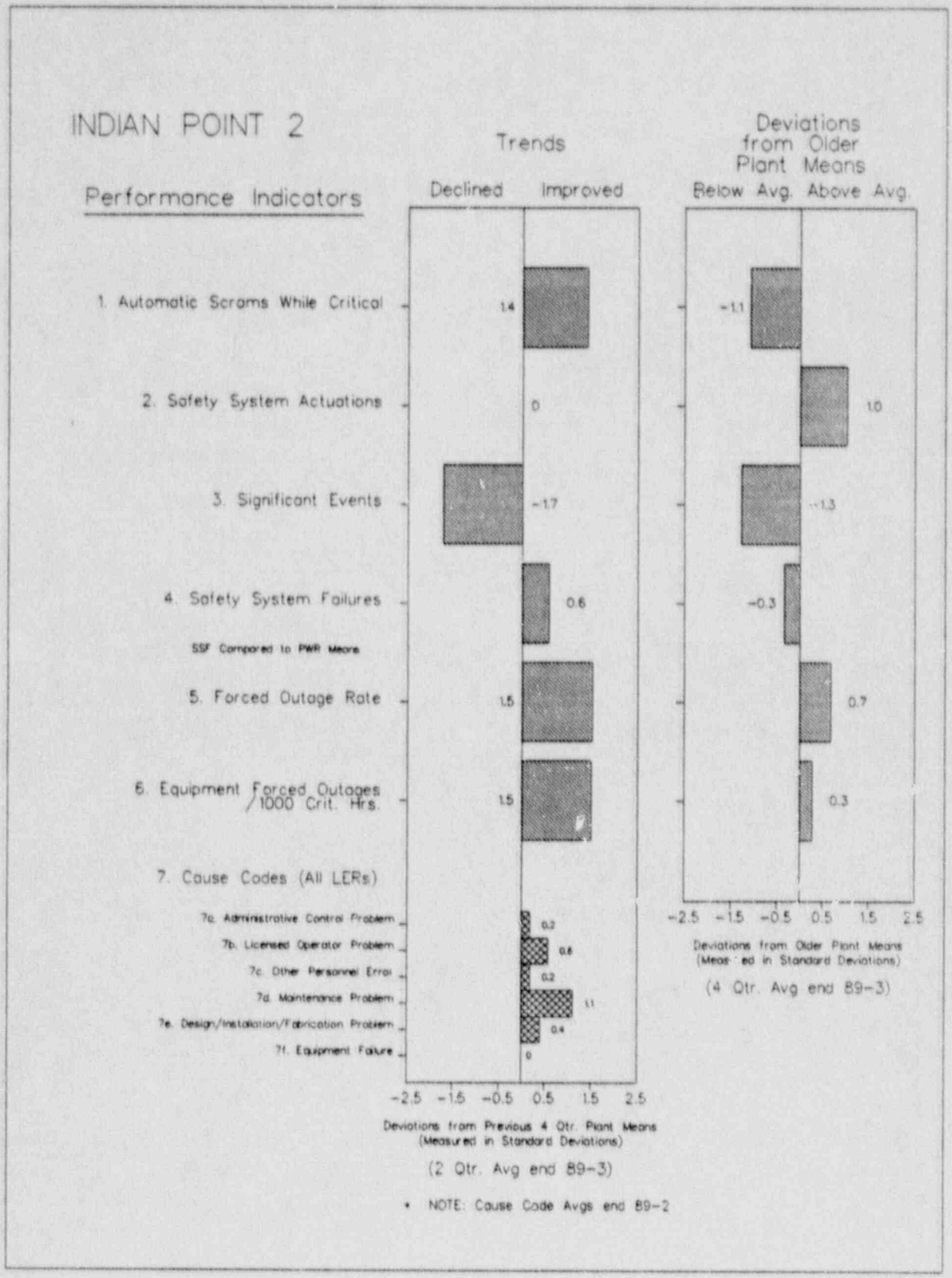

INDIAN POINT 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.4
-1.1
2. Safety System Actuations
0
1.0
3. Significant Events
-1.7
-1.3
4. Safety System Failures
0.6
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
1.5
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
1.5
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.2
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
0.2
7d. Maintenance Problem
1.1
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

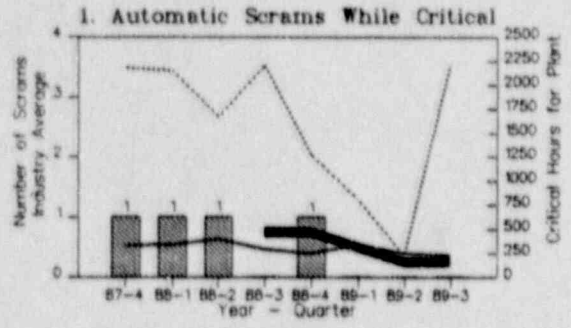
FIGURE 4.44

INDIAN POINT 3

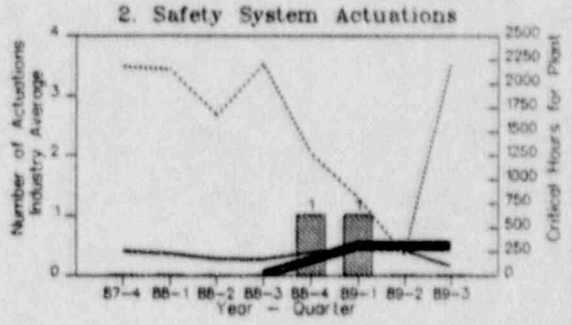
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

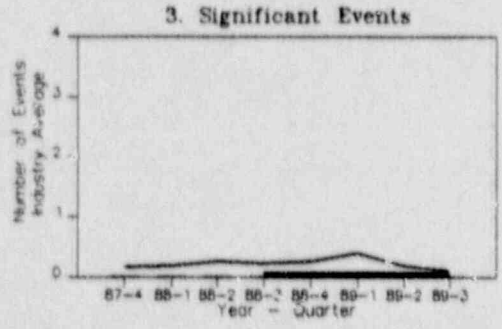
1. Automatic Scrams While Critical



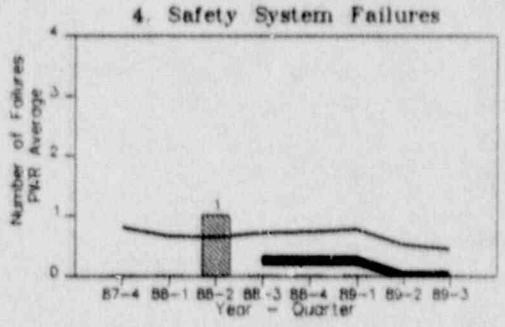
2. Safety System Actuations



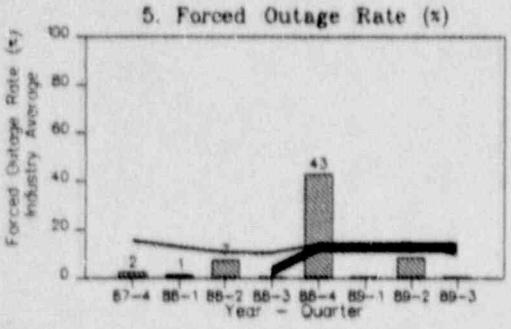
3. Significant Events



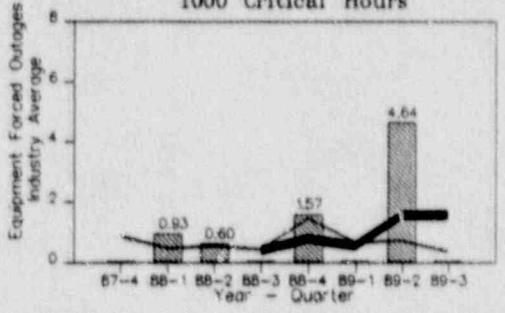
4. Safety System Failures



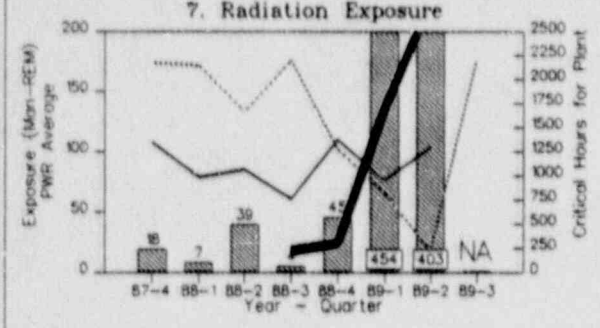
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

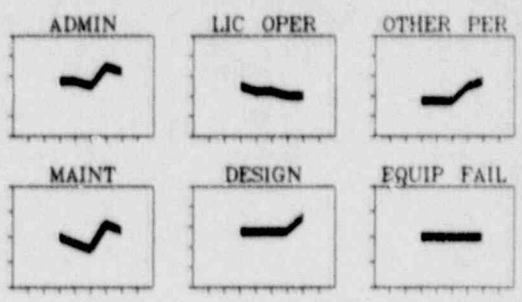


FIGURE 4.44

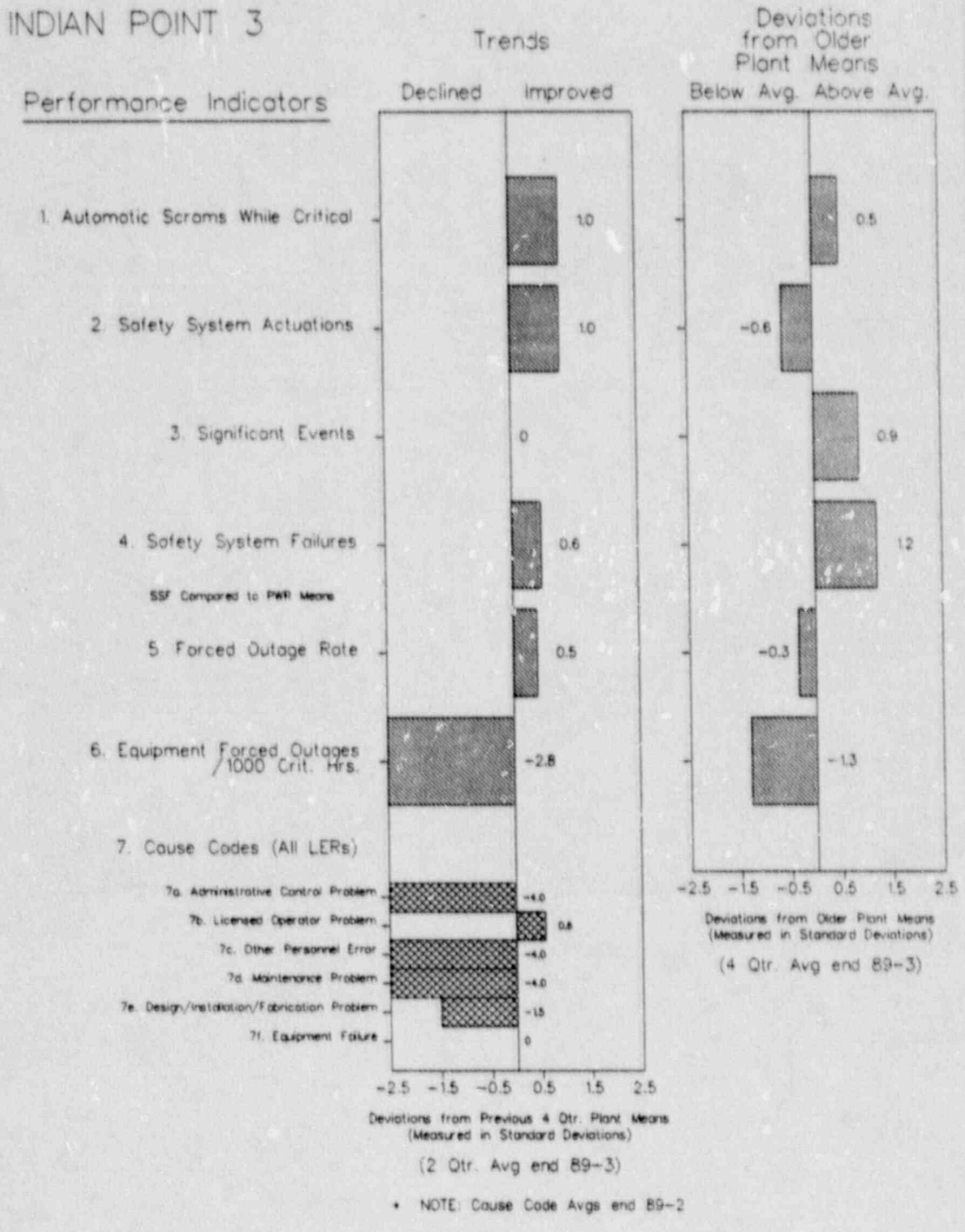

INDIAN POINT 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
0.5
2. Safety System Actuations
1.0
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
0.6
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.5
-0.3
6. Equipment Forced Outages / 1000 Crit. Hrs.
-2.8
-1.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.0
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
-4.0
7d. Maintenance Problem
-4.0
7e. Design/Installation/Fabrication Problem
-1.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.45

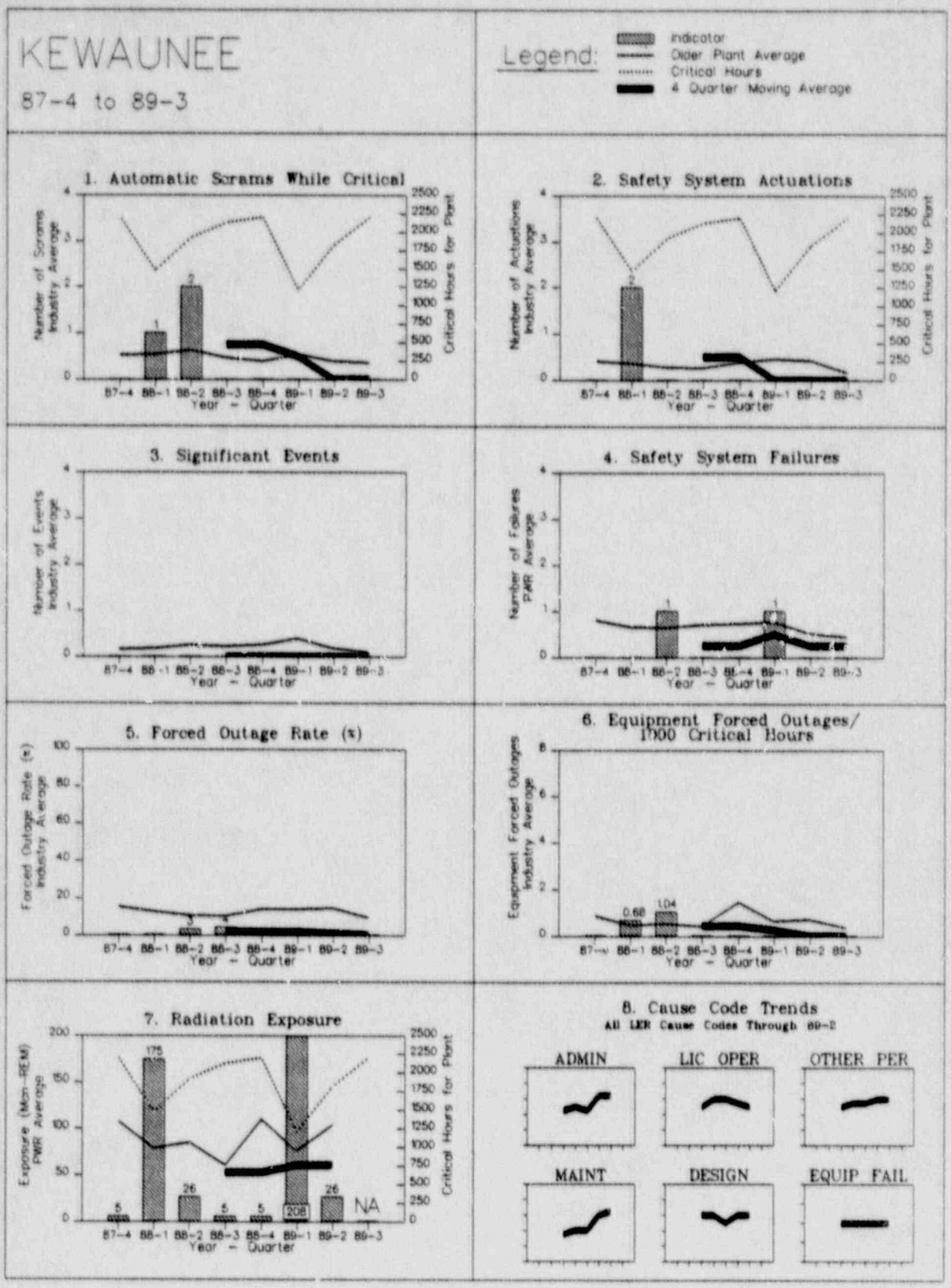

KEWAUNEE
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
3. Significant Events
Number of Events Industry Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
4. Safety System Failures
Number of Failures PWR Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
0.68
1.04
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
5
175
26
5
5
208
26
NA
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.45

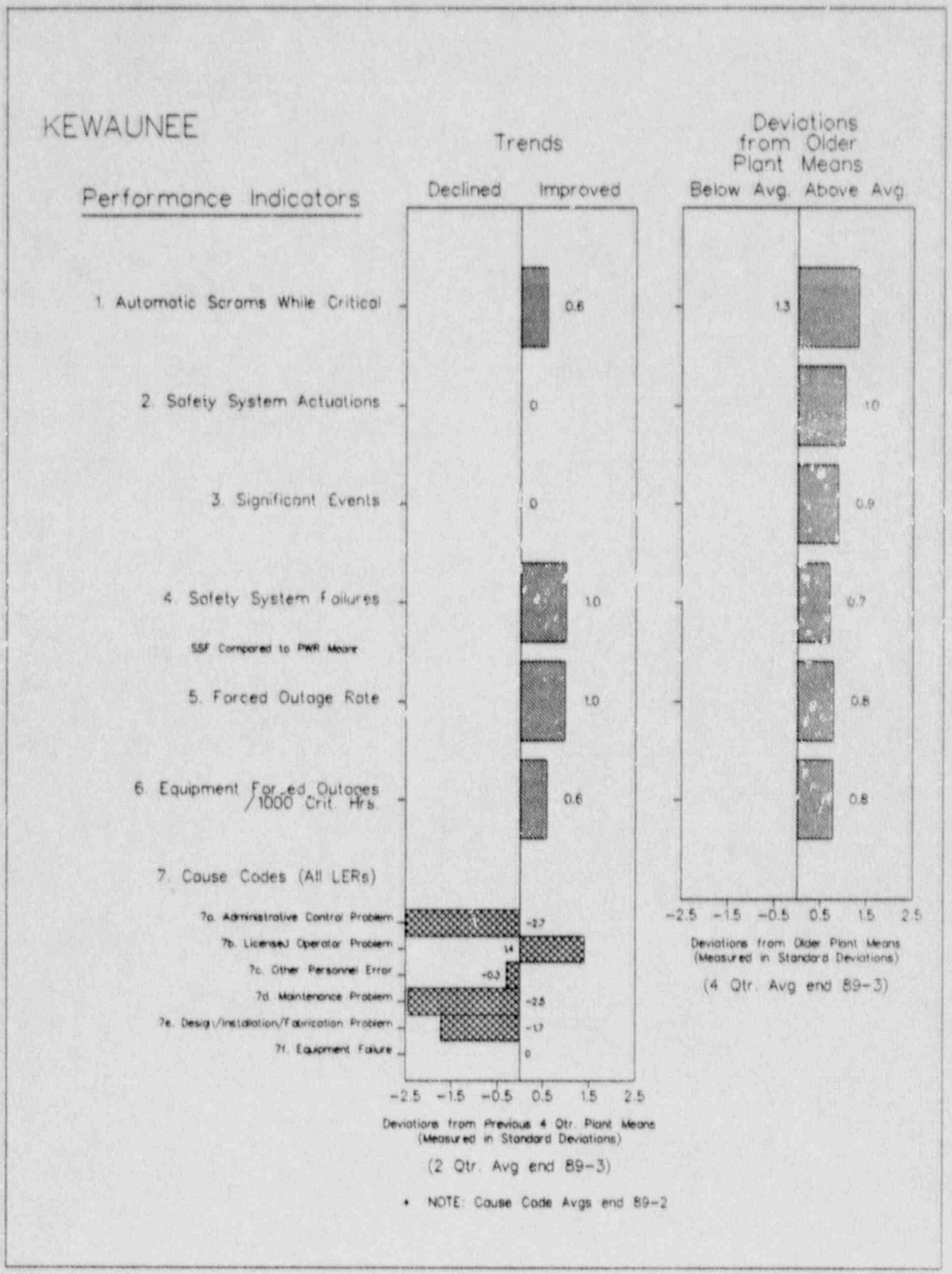

KEWAUNEE
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
1.0
0.7
SSF Compared to PWR Mean
5. Forced Outage Rate
1.0
0.8
6. Equipment Forced Outages /1000 Crit. Hrs.
0.6
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-2.7
7b. Licensed Operator Problem
1.4
7c. Other Personnel Error
-0.3
7d. Maintenance Problem
-2.5
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.46

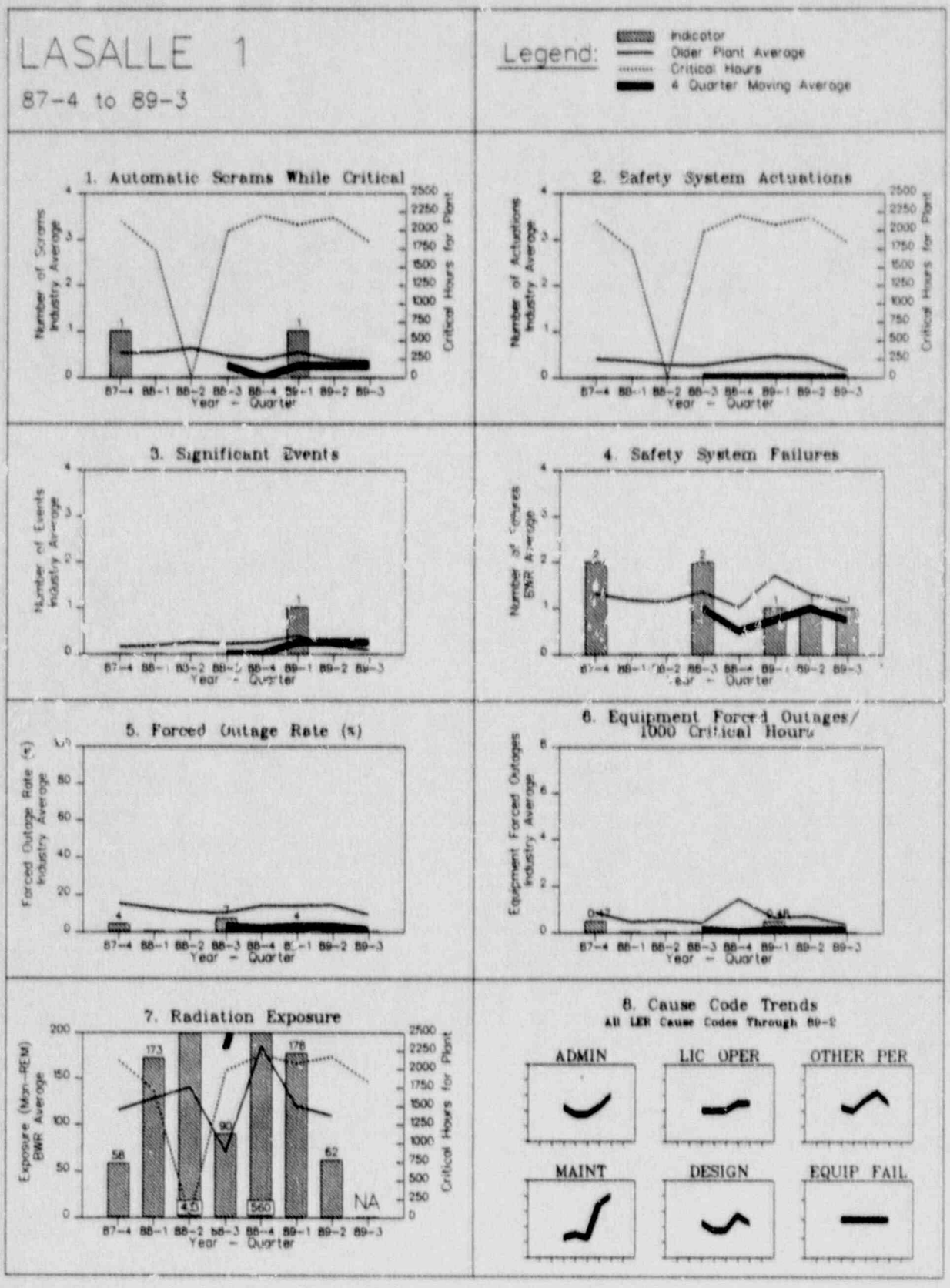

LASALLE 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - Quarter
3. Significant Events
Number of Events Industry Average
Year - Quarter
4. Safety System Failures
Year - Quarter
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
Year - Quarter
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
58
173
45
90
560
178
62
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.46

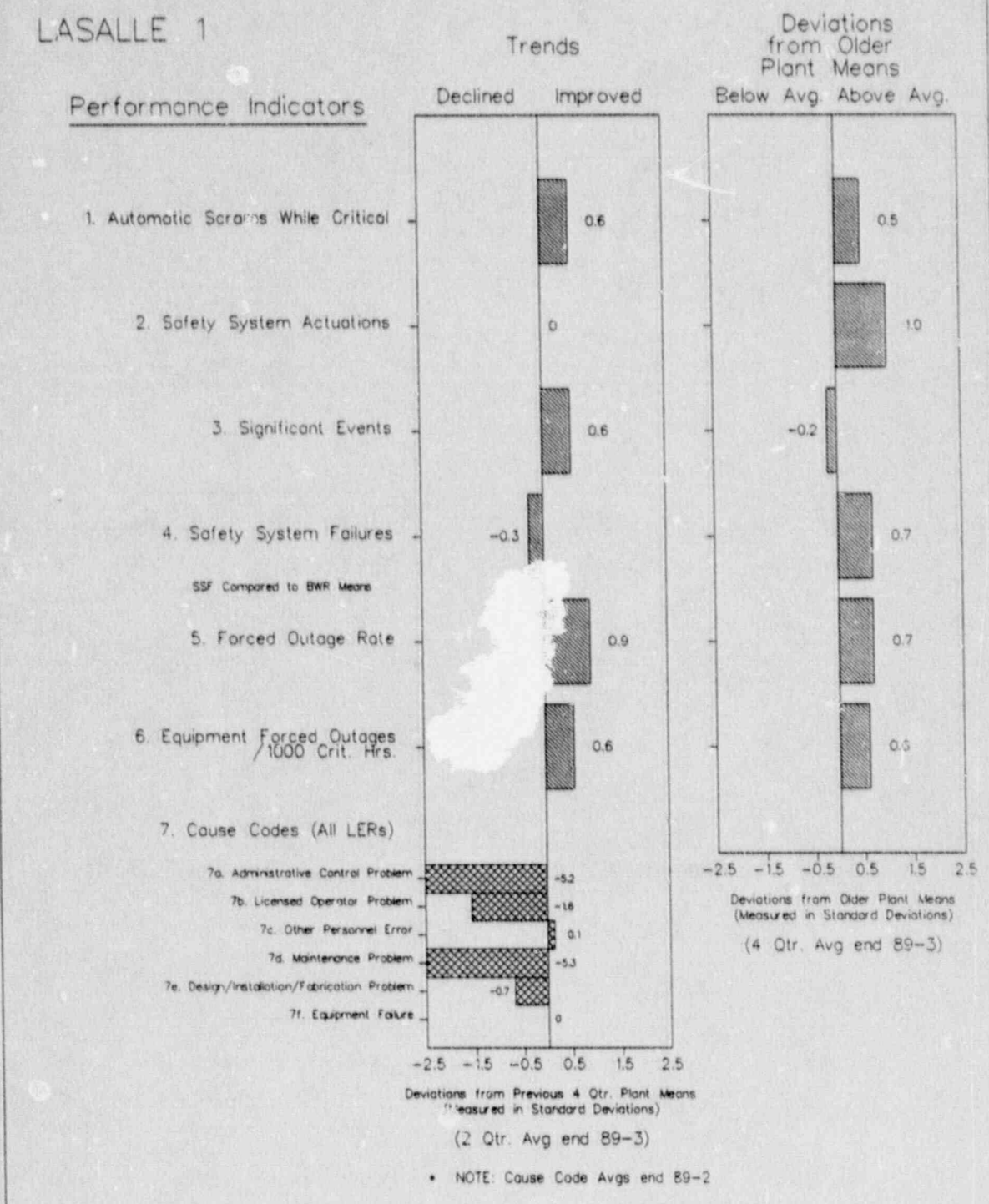

LASALLE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
-0.2
4. Safety System Failures
-0.3
0.7
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-5.2
7b. Licensed Operator Problem
-1.8
7c. Other Personnel Error
0.1
7d. Maintenance Problem
-5.3
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.47

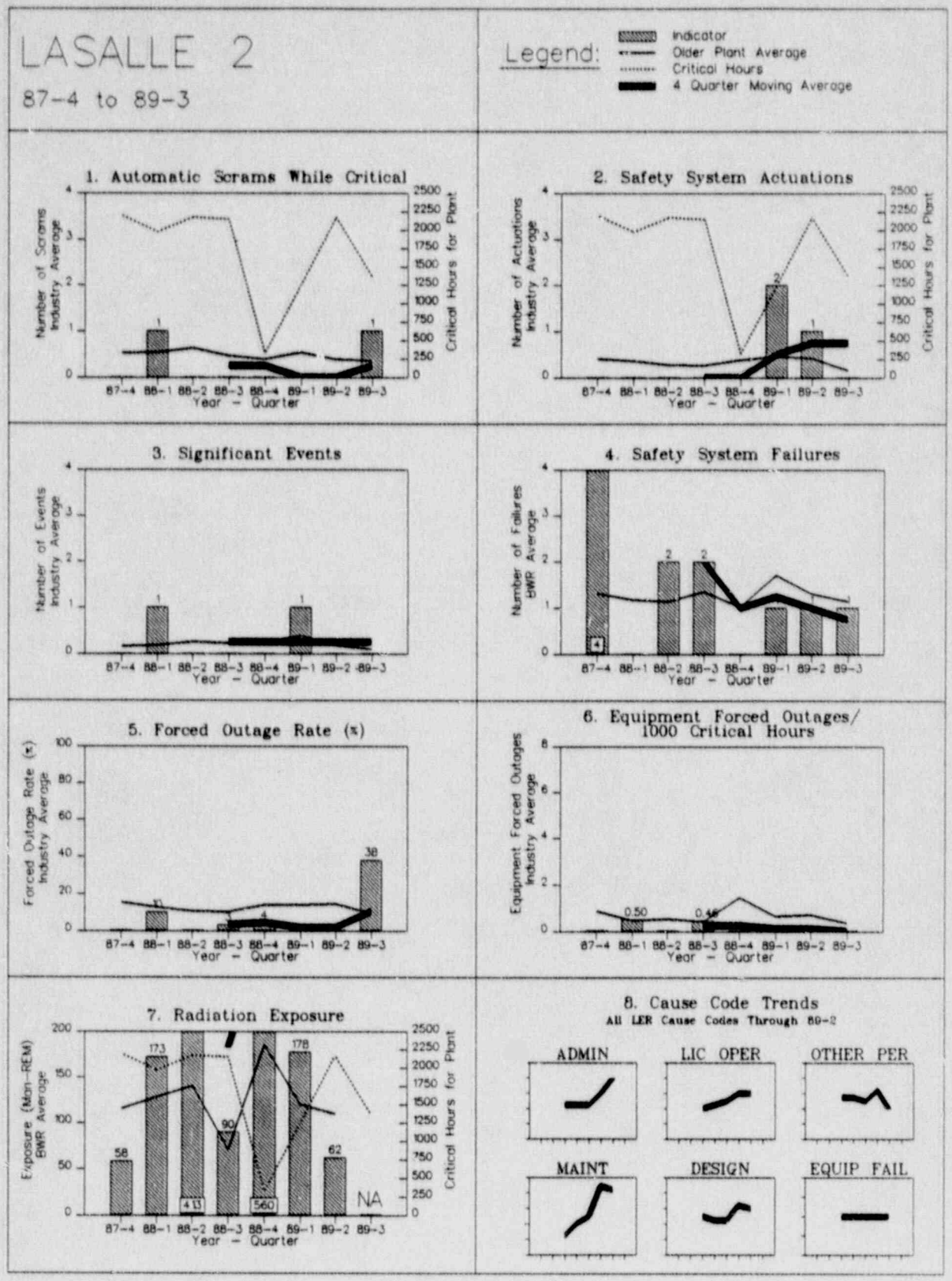

LASALLE 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
0.50
7. Radiation Exposure
Exposure (Man-REM) BWR Average
58
173
413
90
560
178
62
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.47

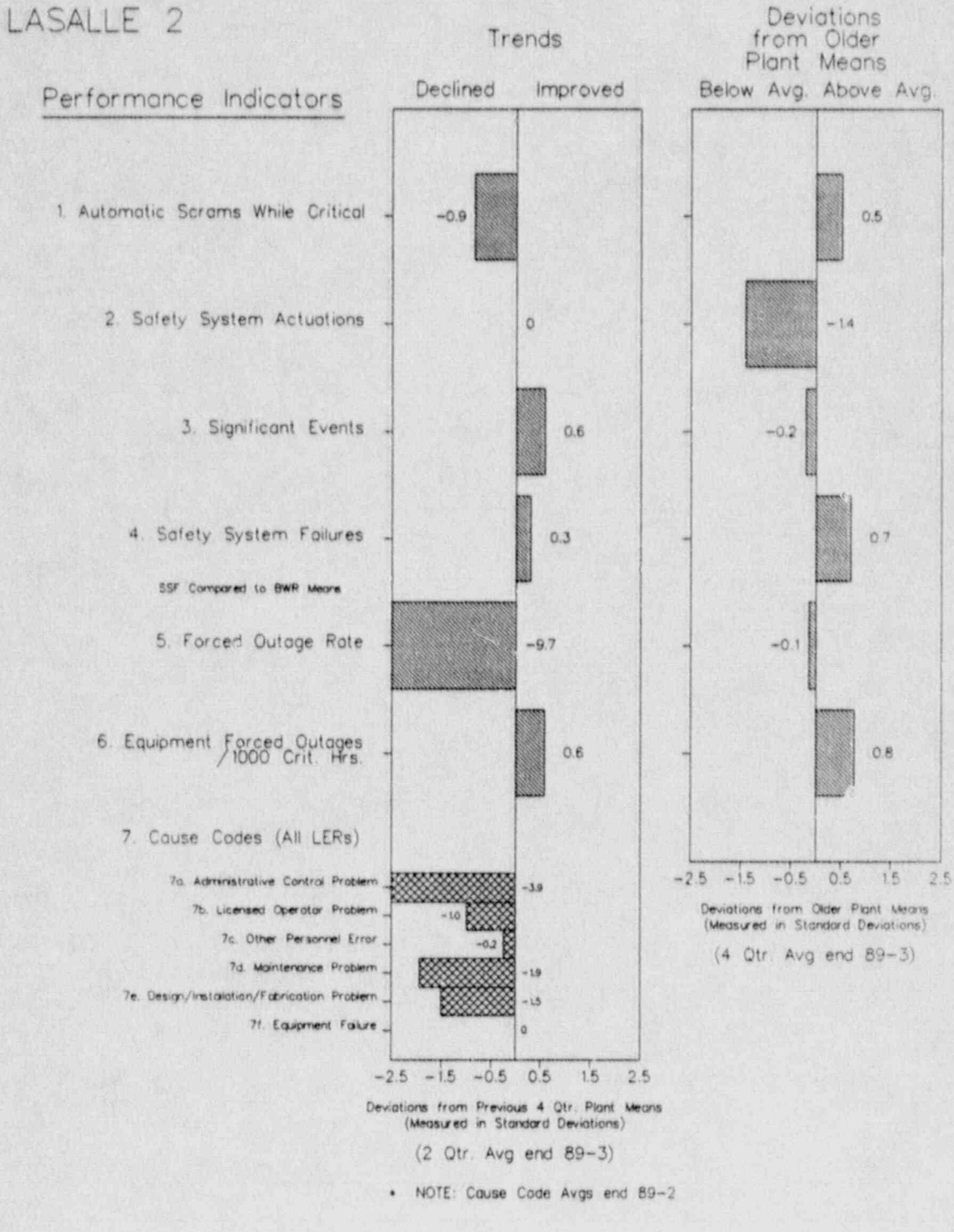
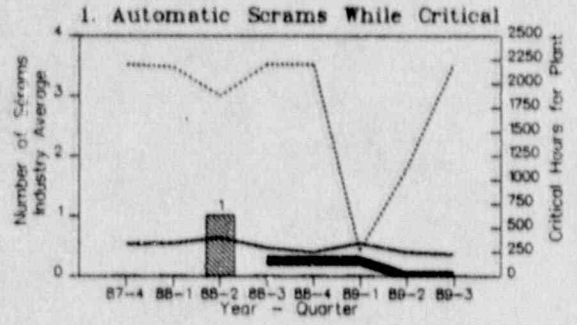

LASALLE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
-1.4
3. Significant Events
0.6
-0.2
4. Safety System Failures
0.3
0.7
BSF Compared to BWR Means
5. Forced Outage Rate
-9.7
-0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
0.6
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-3.9
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
-1.9
7e. Design/Installation/Fabrication Problem
-1.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

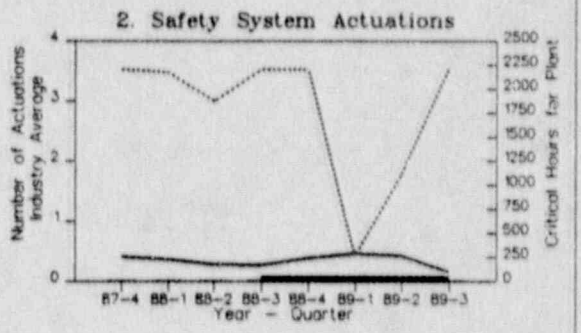
FIGURE 4.48

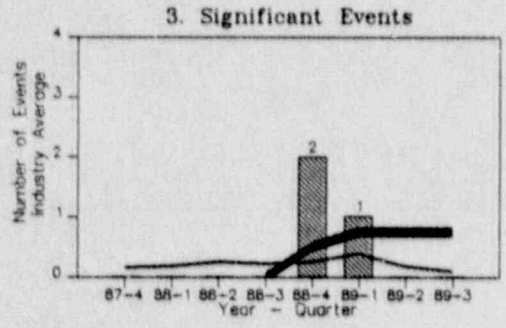
LIMERICK 1

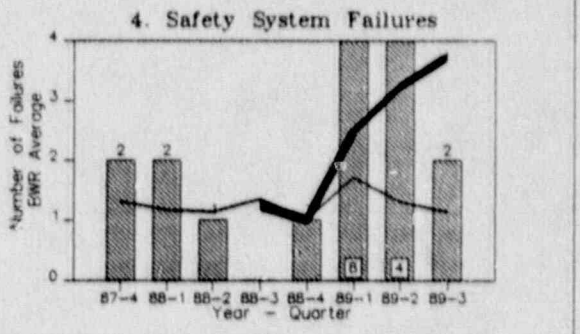
87-4 to 89-3

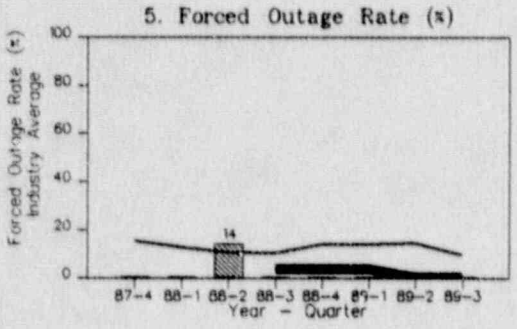
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

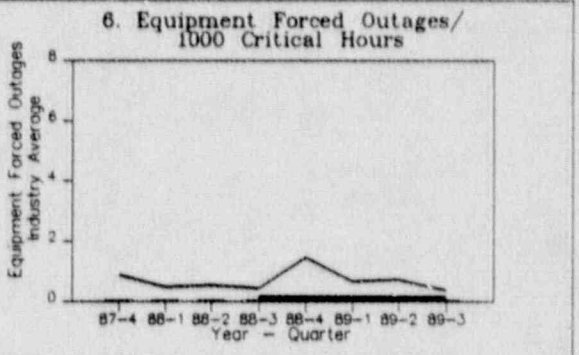


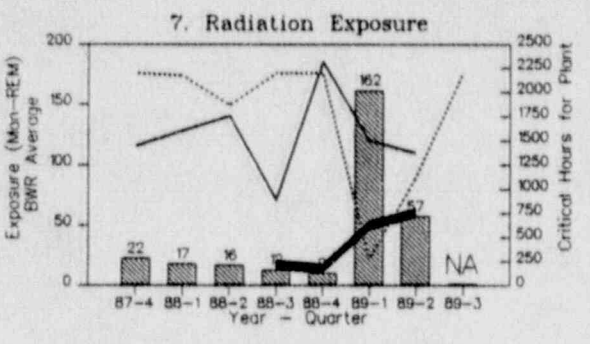












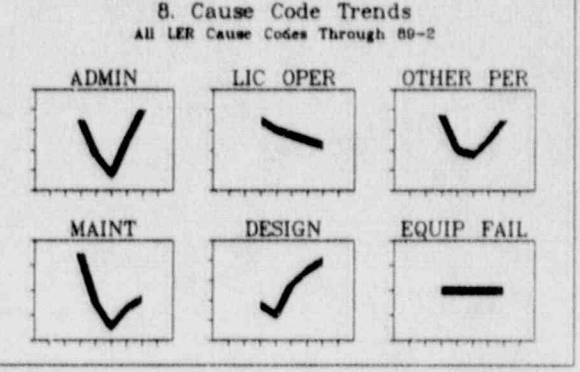


FIGURE 4.48

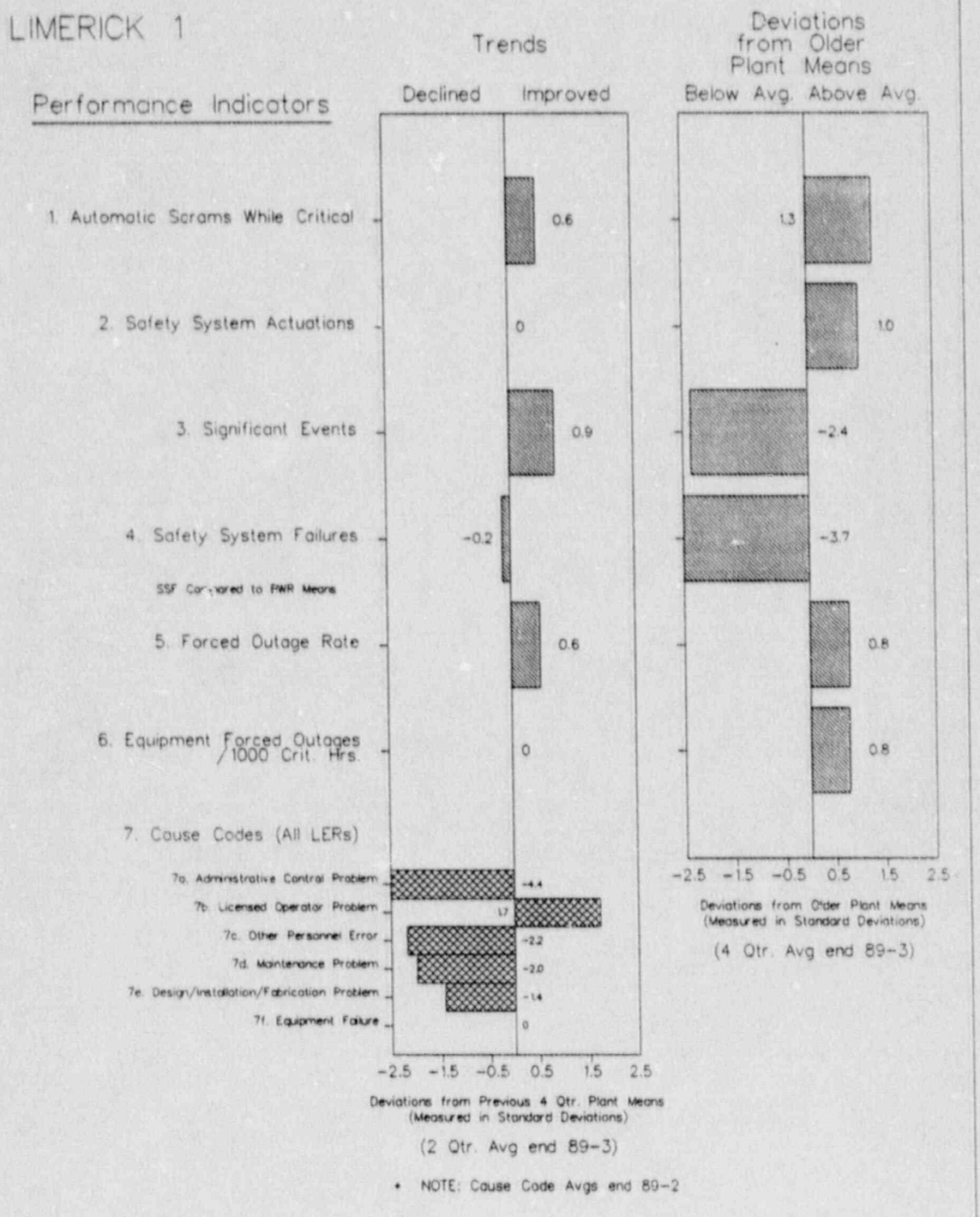

LIMERICK 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.9
-2.4
4. Safety System Failures
-0.2
-3.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.4
7b. Licensed Operator Problem
1.7
7c. Other Personnel Error
-2.2
7d. Maintenance Problem
-2.0
7e. Design/Installation/Fabrication Problem
-1.4
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.49

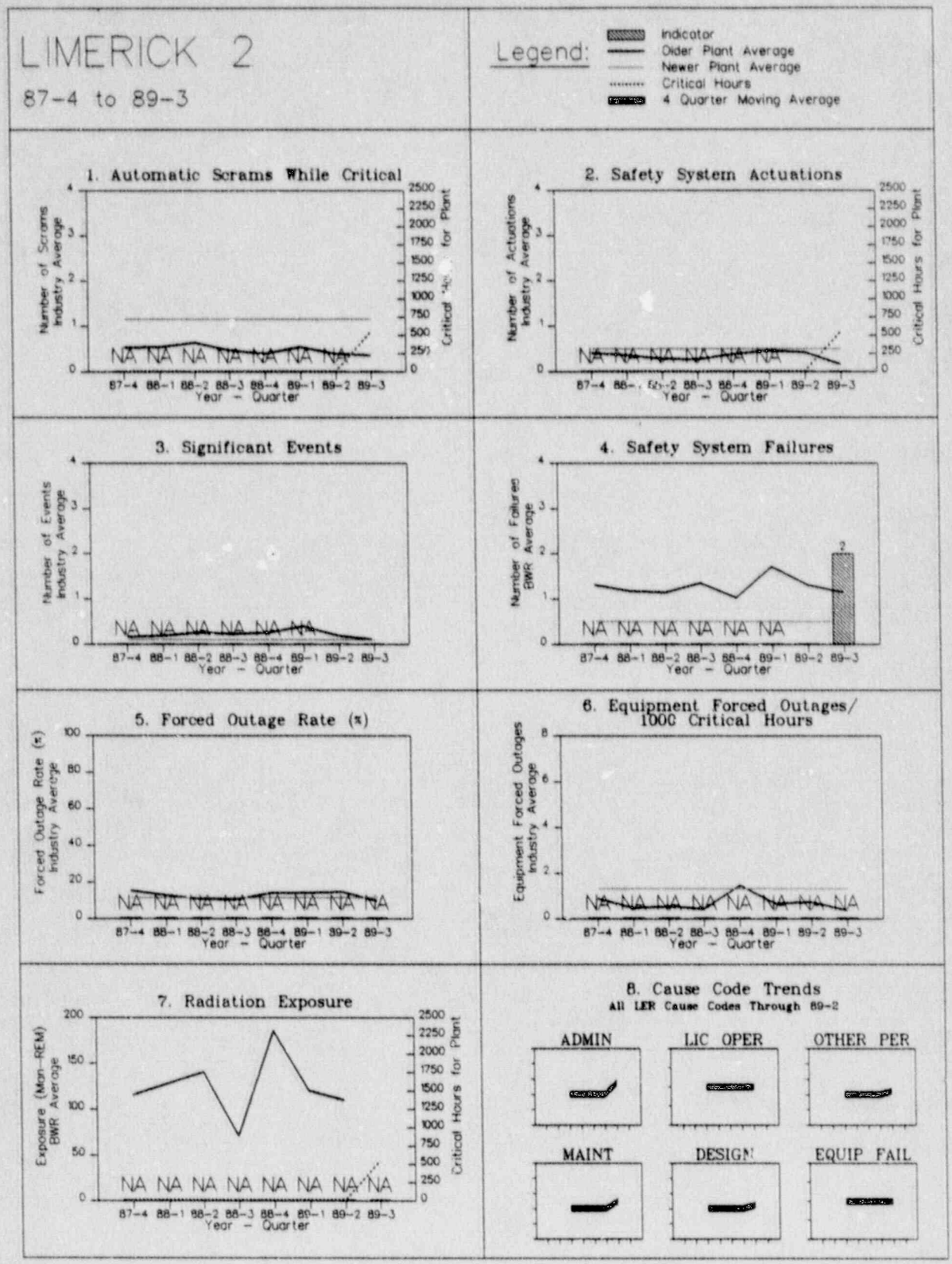

LIMERICK 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Newer Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.49

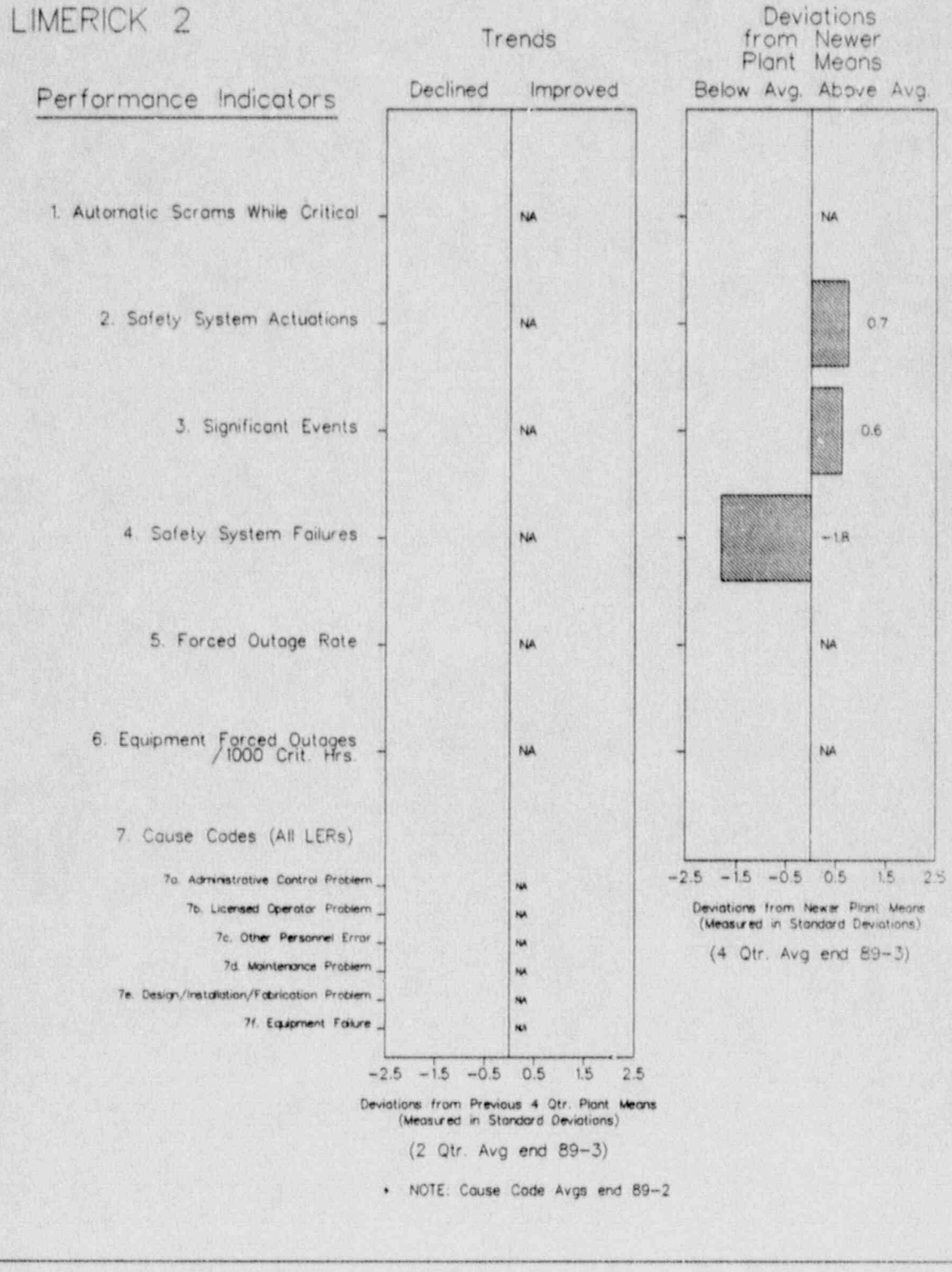

LIMERICK 2
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
5. Forced Outage Rate
6. Equipment Forced Outages / 1000 Crit. Hrs.
7. Cause 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
NA
0.7
0.6
-1.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.49

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

LIMERICK 2

Performance Indicators

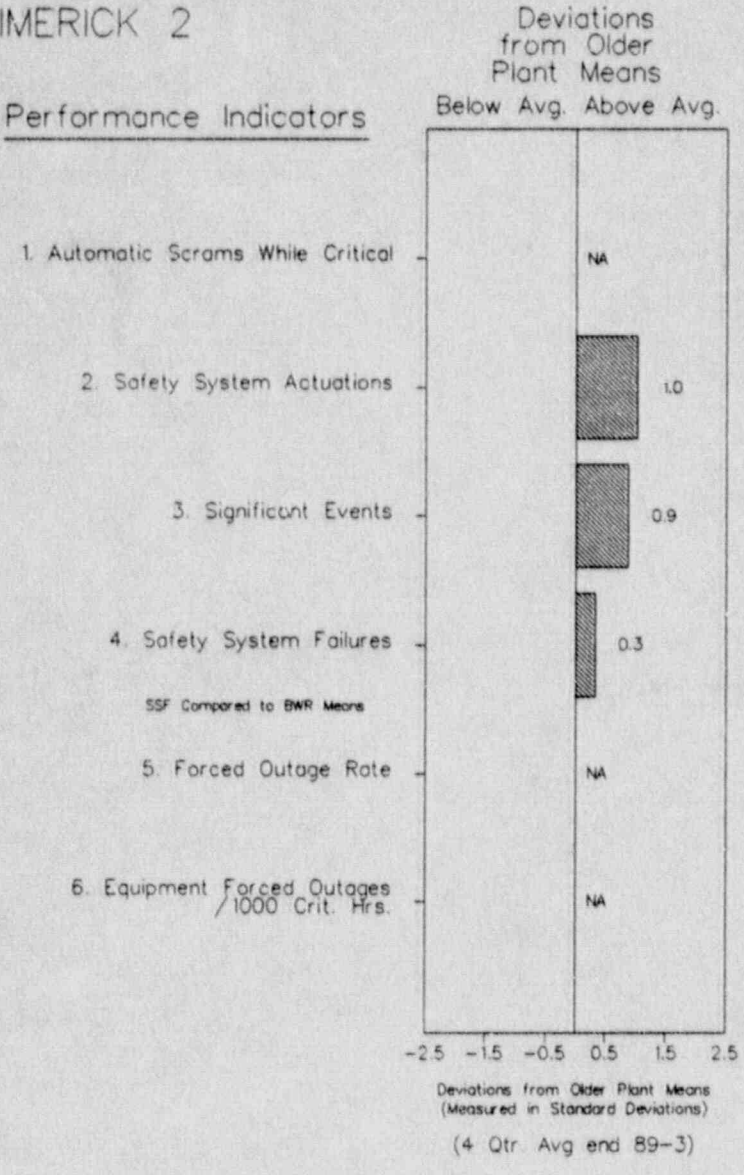


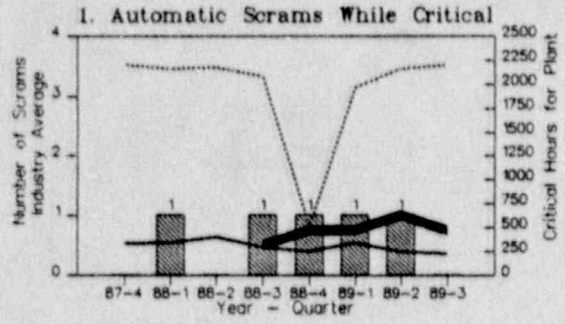
FIGURE 4.50

MAINE YANKEE

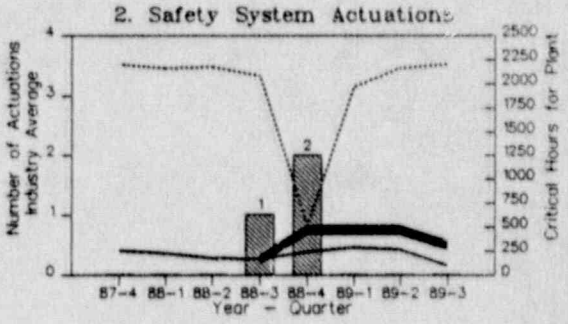
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

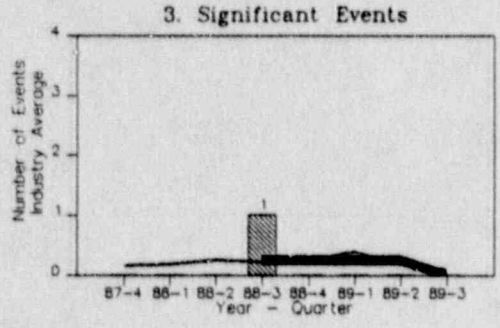
1. Automatic Scrams While Critical



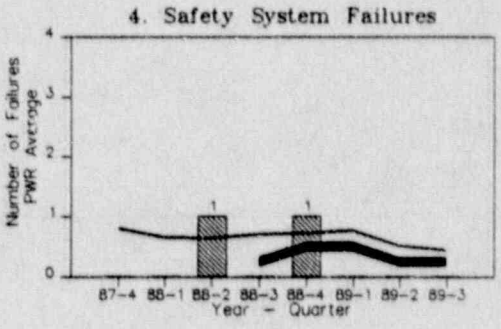
2. Safety System Actuations



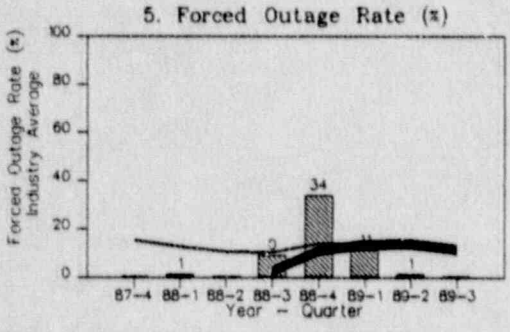
3. Significant Events



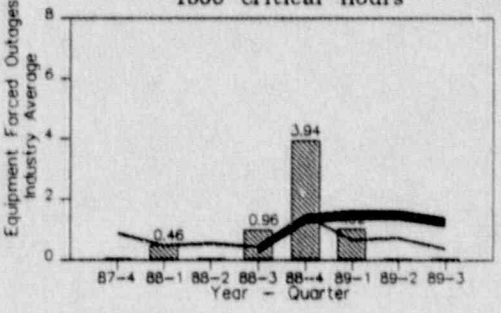
4. Safety System Failures



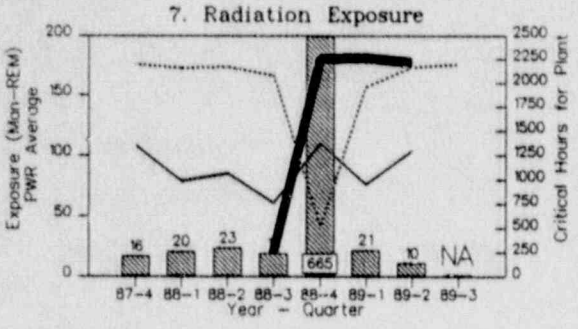
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

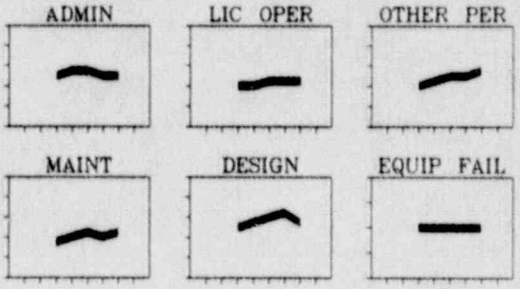


FIGURE 4.50

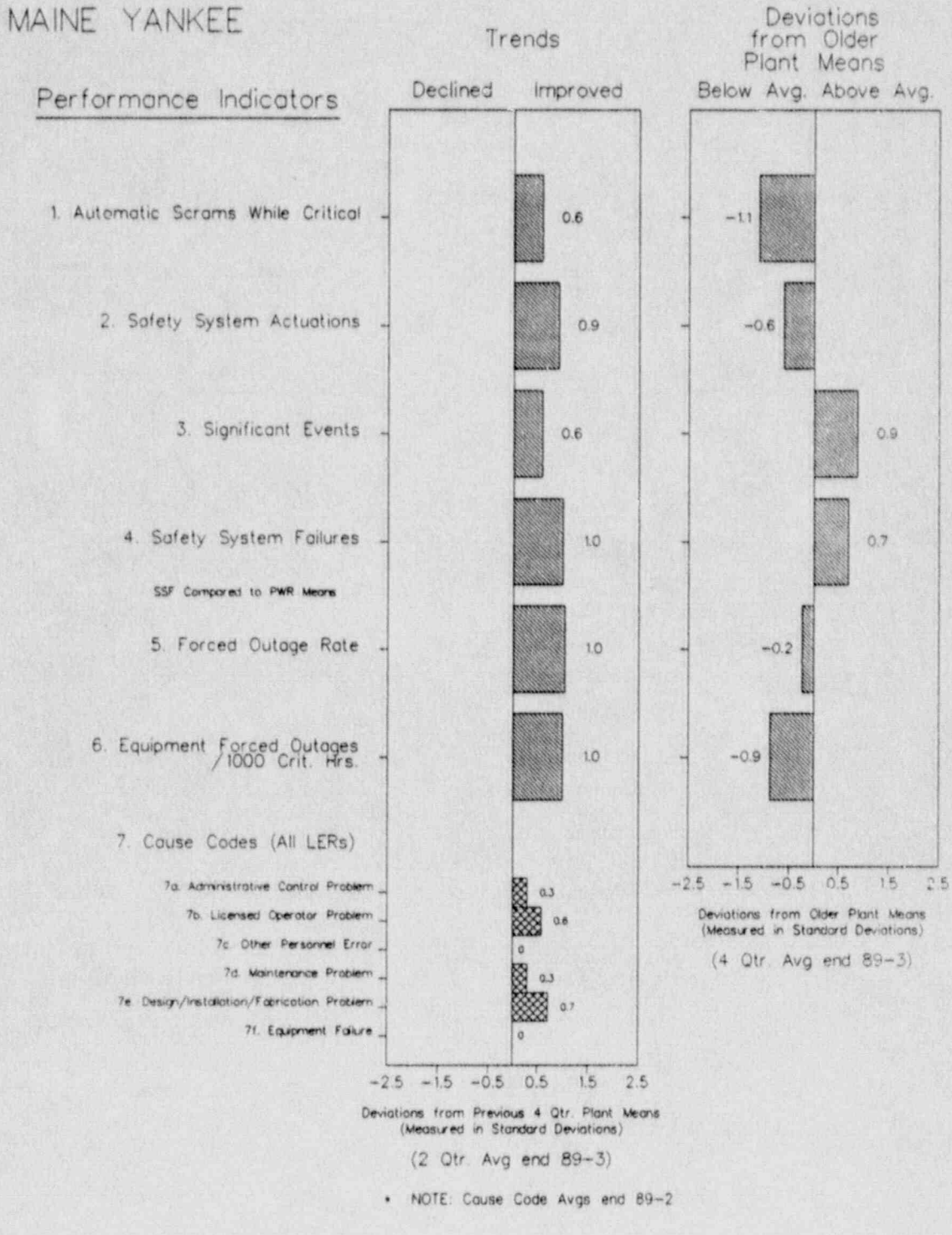
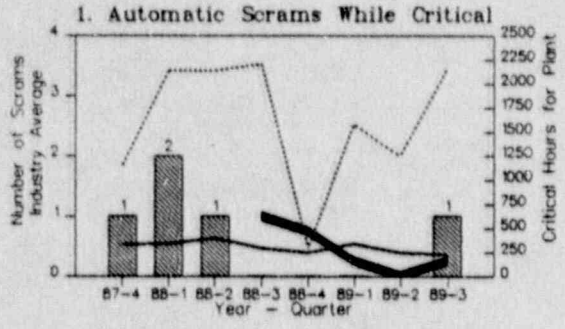

MAINE YANKEE
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-1.1
2. Safety System Actuations
0.9
-0.6
3. Significant Events
0.6
0.9
4. Safety System Failures
1.0
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
1.0
-0.2
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.0
-0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
0
7d. Maintenance Problem
0.3
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 Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

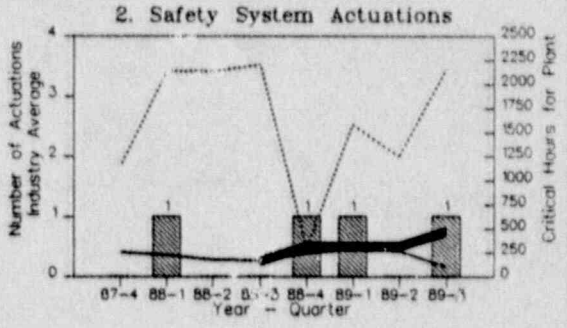
FIGURE 4.51

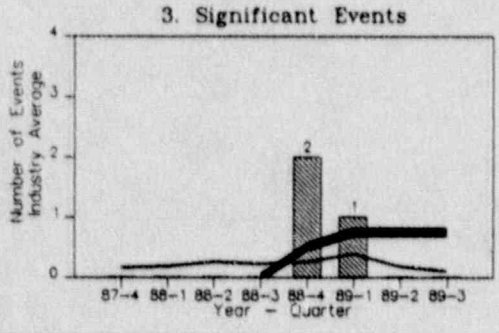
MCGUIRE 1

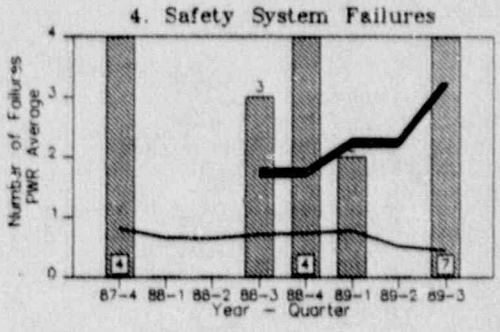
87-4 to 89-3

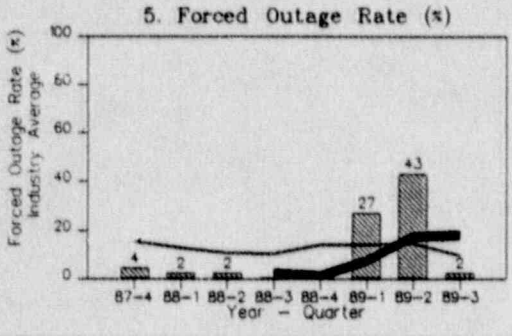
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

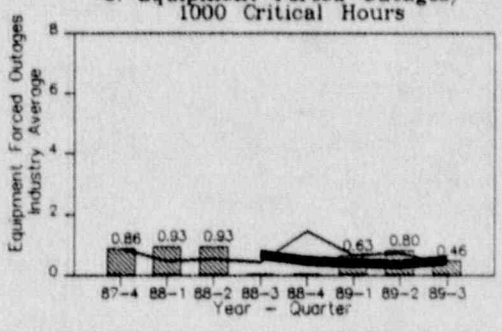


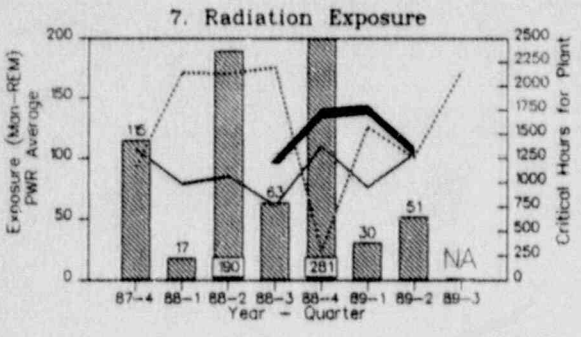












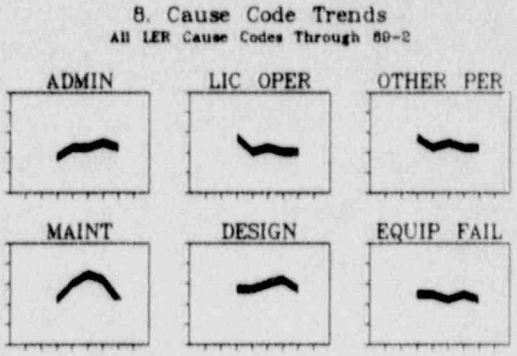


FIGURE 4.51

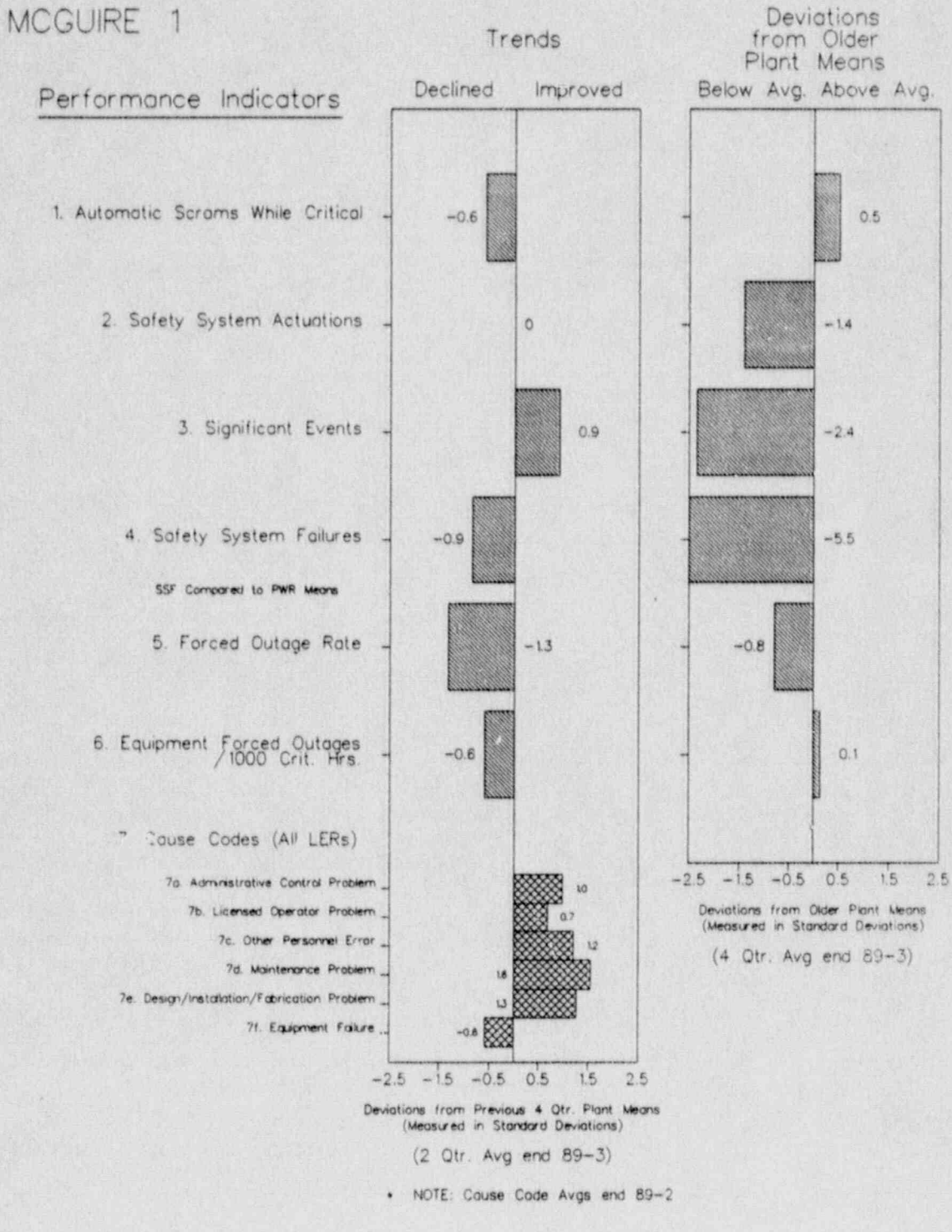

MCGUIRE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
0.5
2. Safety System Actuations
0
-1.4
3. Significant Events
0.9
-2.4
4. Safety System Failures
-0.9
-5.5
SSF Compared to PWR Means
5. Forced Outage Rate
-1.3
-0.8
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.6
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.0
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
1.2
7d. Maintenance Problem
1.8
7e. Design/Installation/Fabrication Problem
1.3
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.52

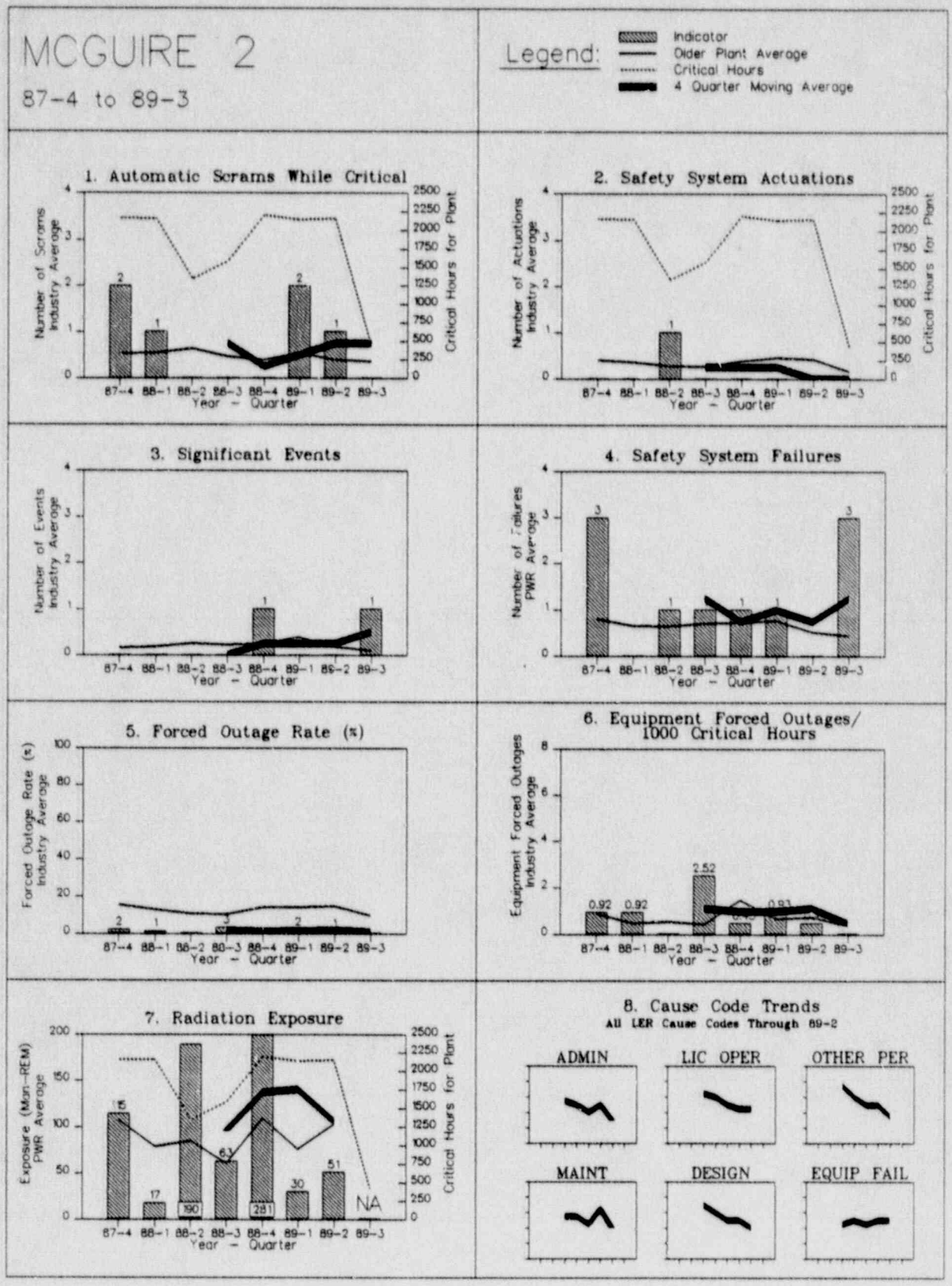

MCGUIRE 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
0.92
0.92
2.52
0.93
7. Radiation Exposure
Exposure (Man-REM) PWR Average
15
17
190
61
281
30
51
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.52

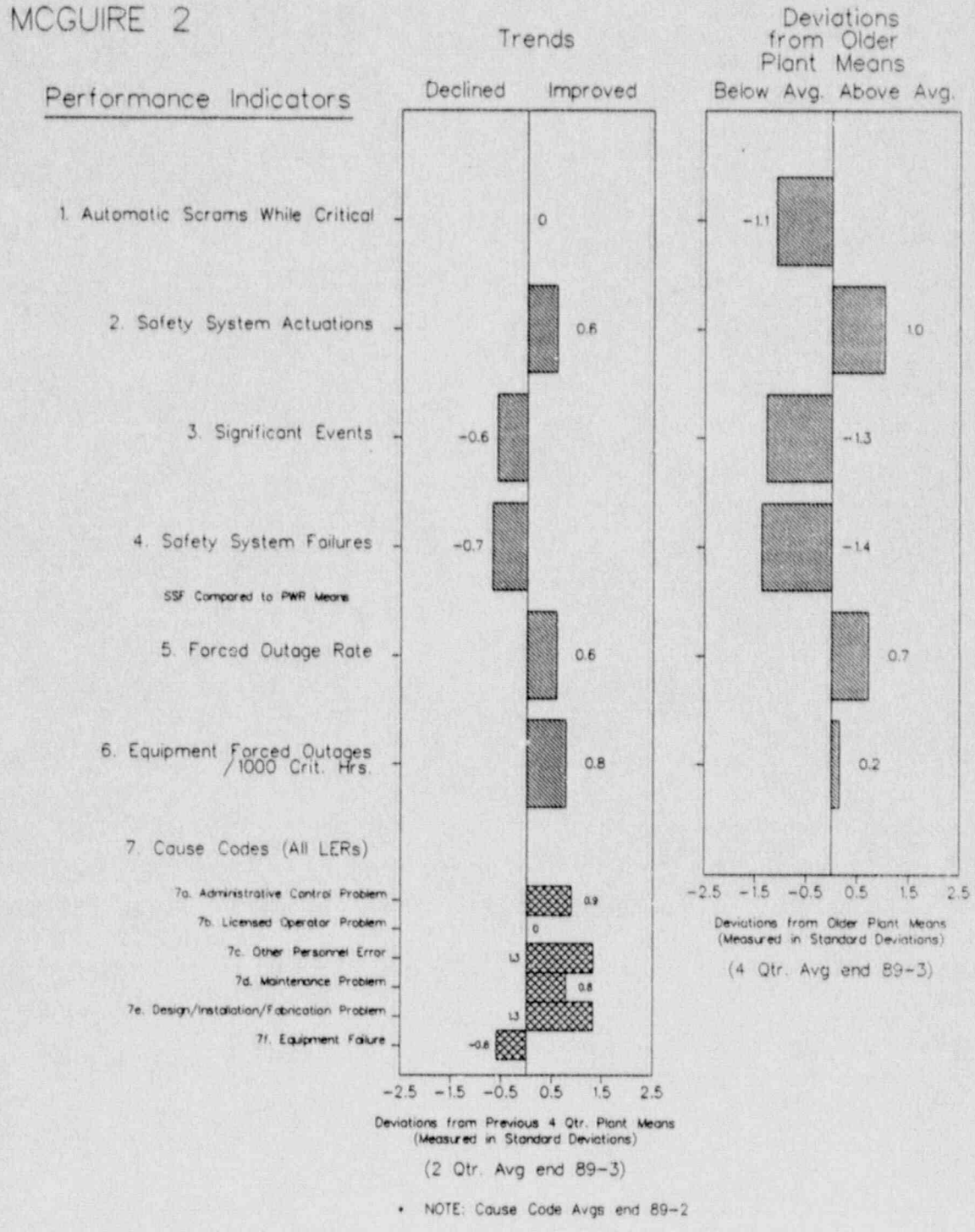

MCGUIRE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-1.1
2. Safety System Actuations
0.6
1.0
3. Significant Events
-0.6
-1.3
4. Safety System Failures
-0.7
-1.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
0.8
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0
7c. Other Personnel Error
1.3
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
1.3
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.53

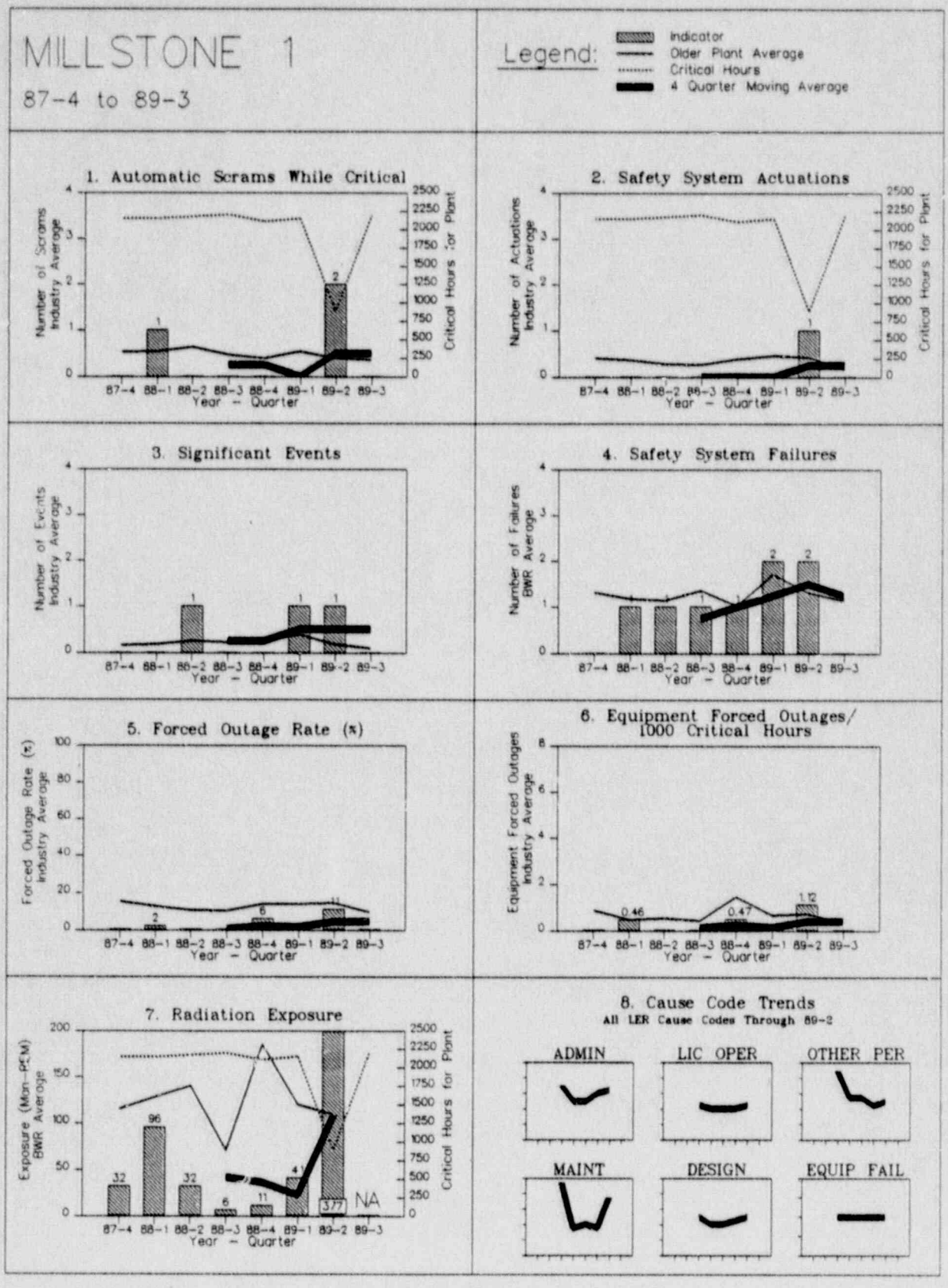

MILLSTONE 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
0.46
0.47
1.12
7. Radiation Exposure
Exposure (Man-REM) BWR Average
32
96
32
6
11
41
377
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.53

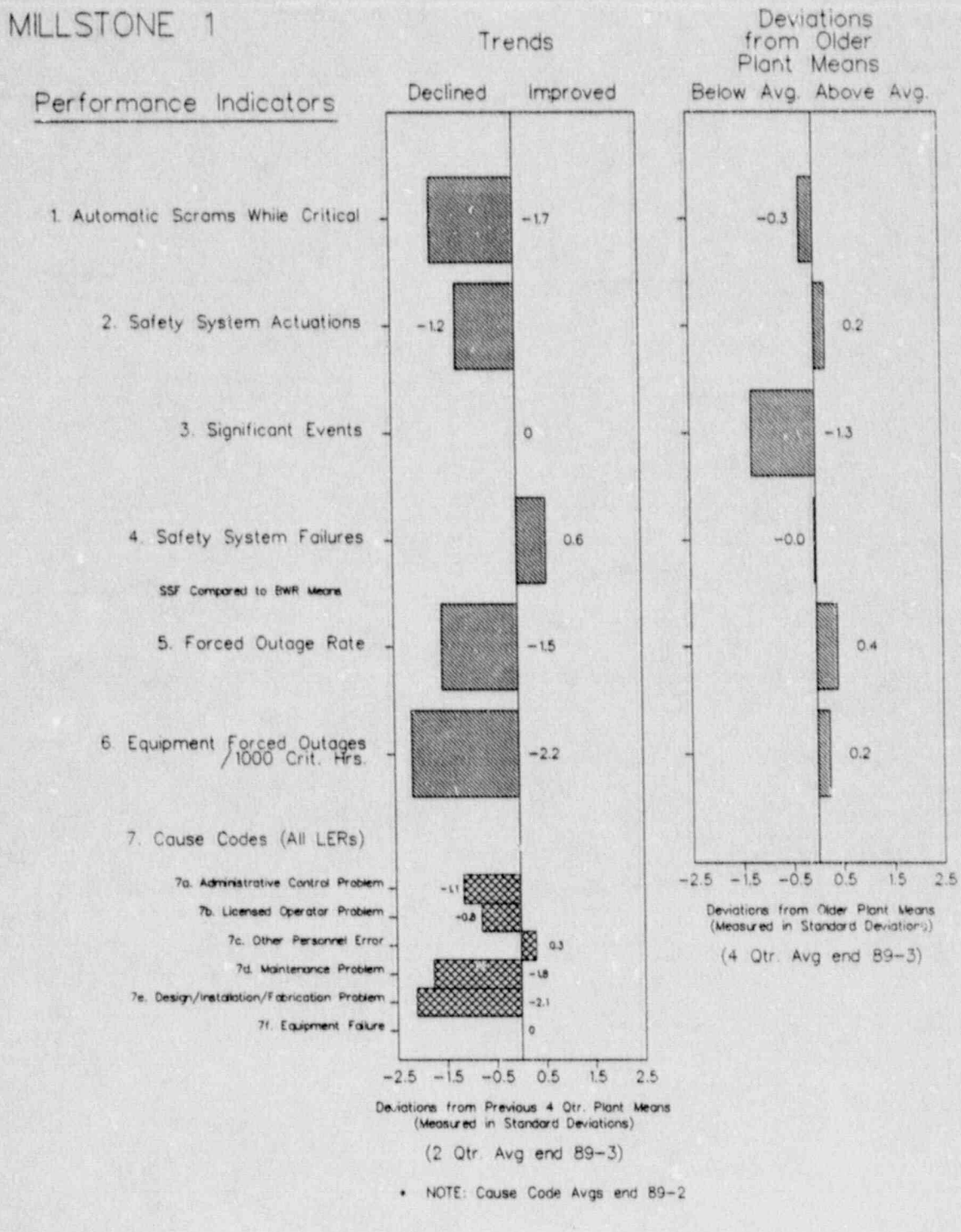
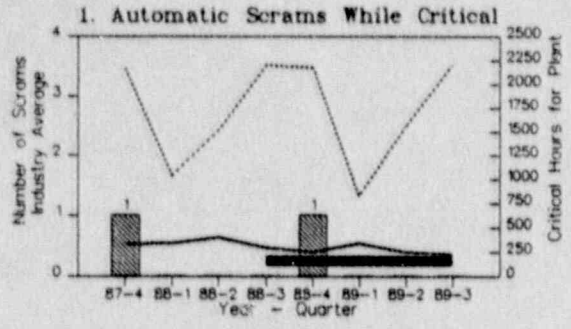

MILLSTONE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.7
-0.3
2. Safety System Actuations
-1.2
0.2
3. Significant Events
0
-1.3
4. Safety System Failures
0.6
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
-1.5
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
-2.2
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.1
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.3
7d. Maintenance Problem
-1.8
7e. Design/Installation/Fabrication Problem
-2.1
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

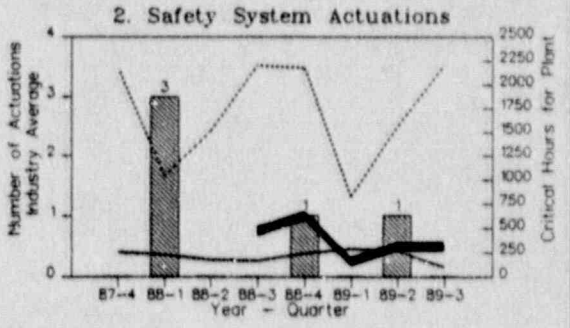
FIGURE 4.54

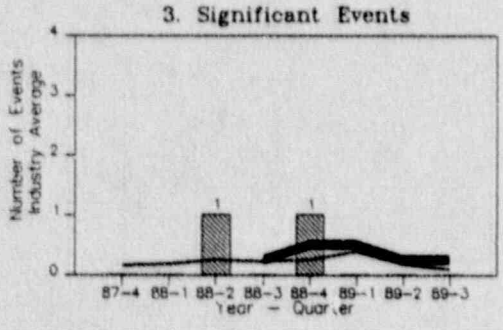
MILLSTONE 2

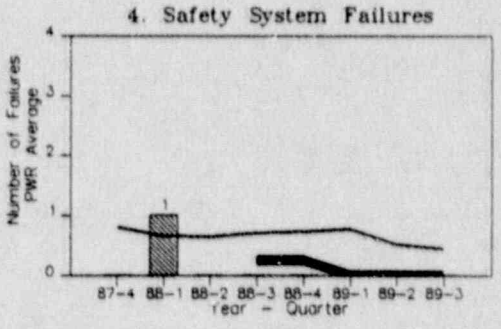
87-4 to 89-3

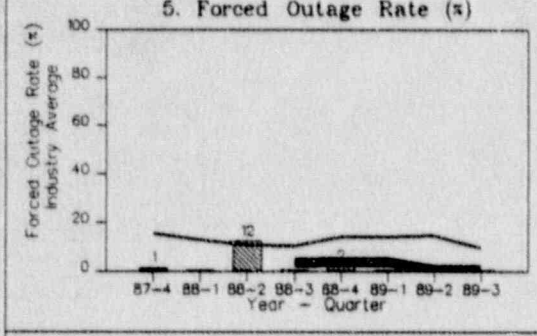
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

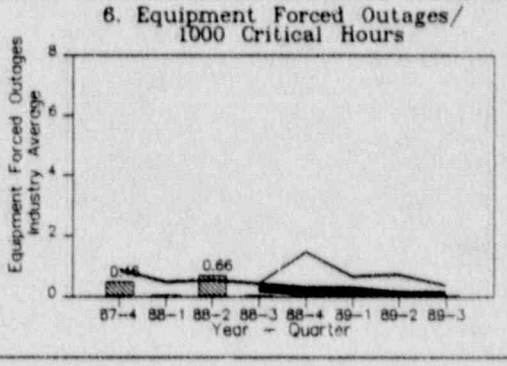












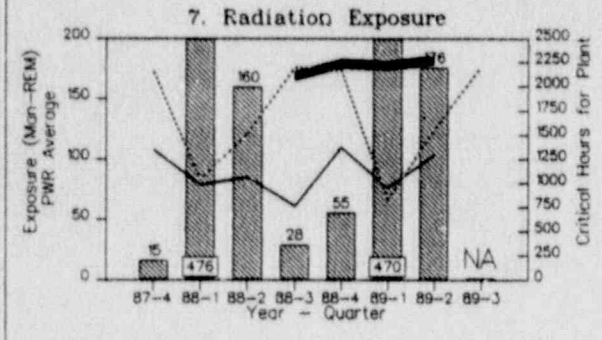


FIGURE 4.54

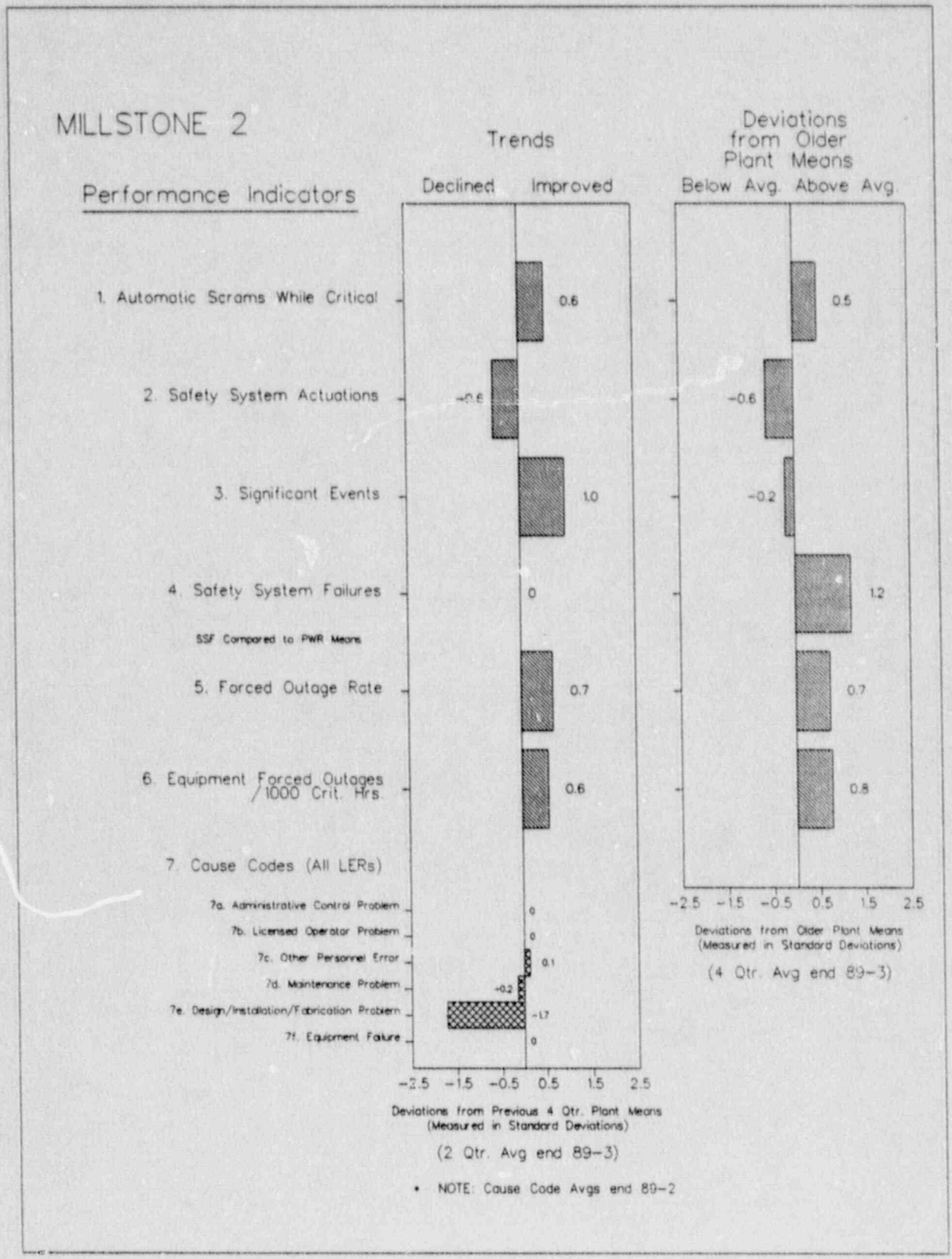

MILLSTONE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
1.0
-0.2
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.1
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

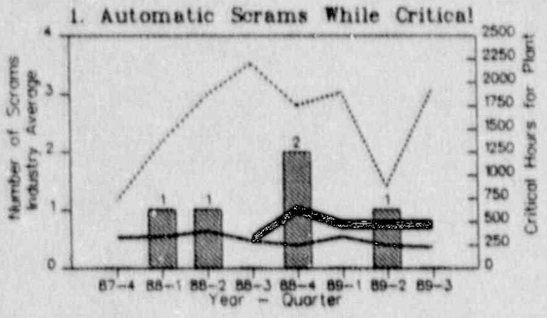
FIGURE 4.55

MILLSTONE 3

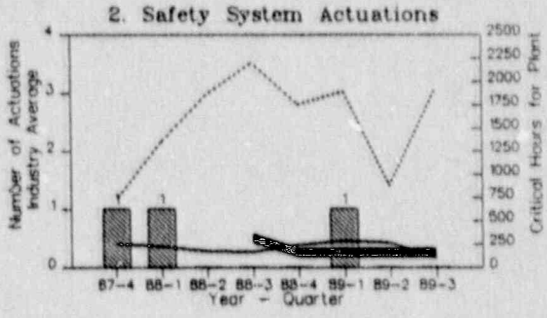
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

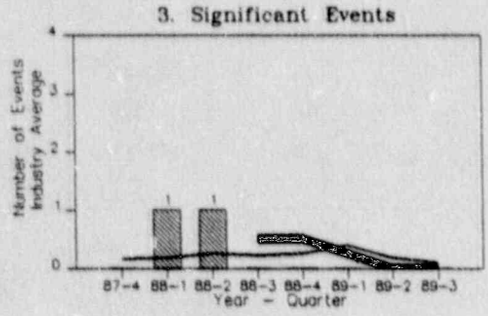
1. Automatic Scrams While Critical



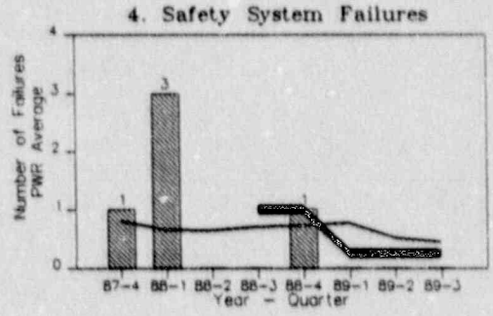
2. Safety System Actuations



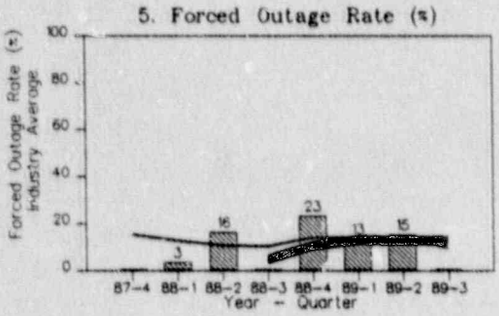
3. Significant Events



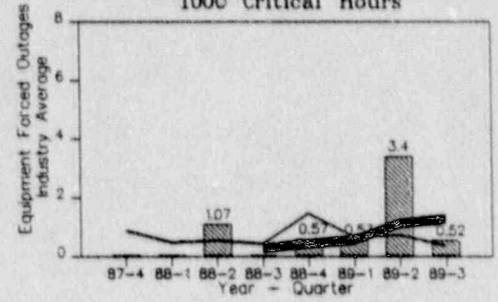
4. Safety System Failures



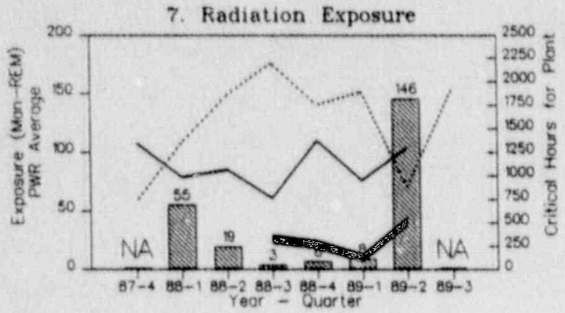
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

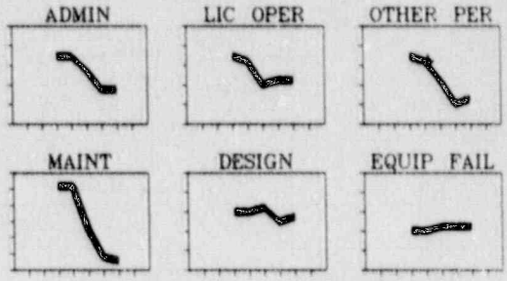


FIGURE 4.55

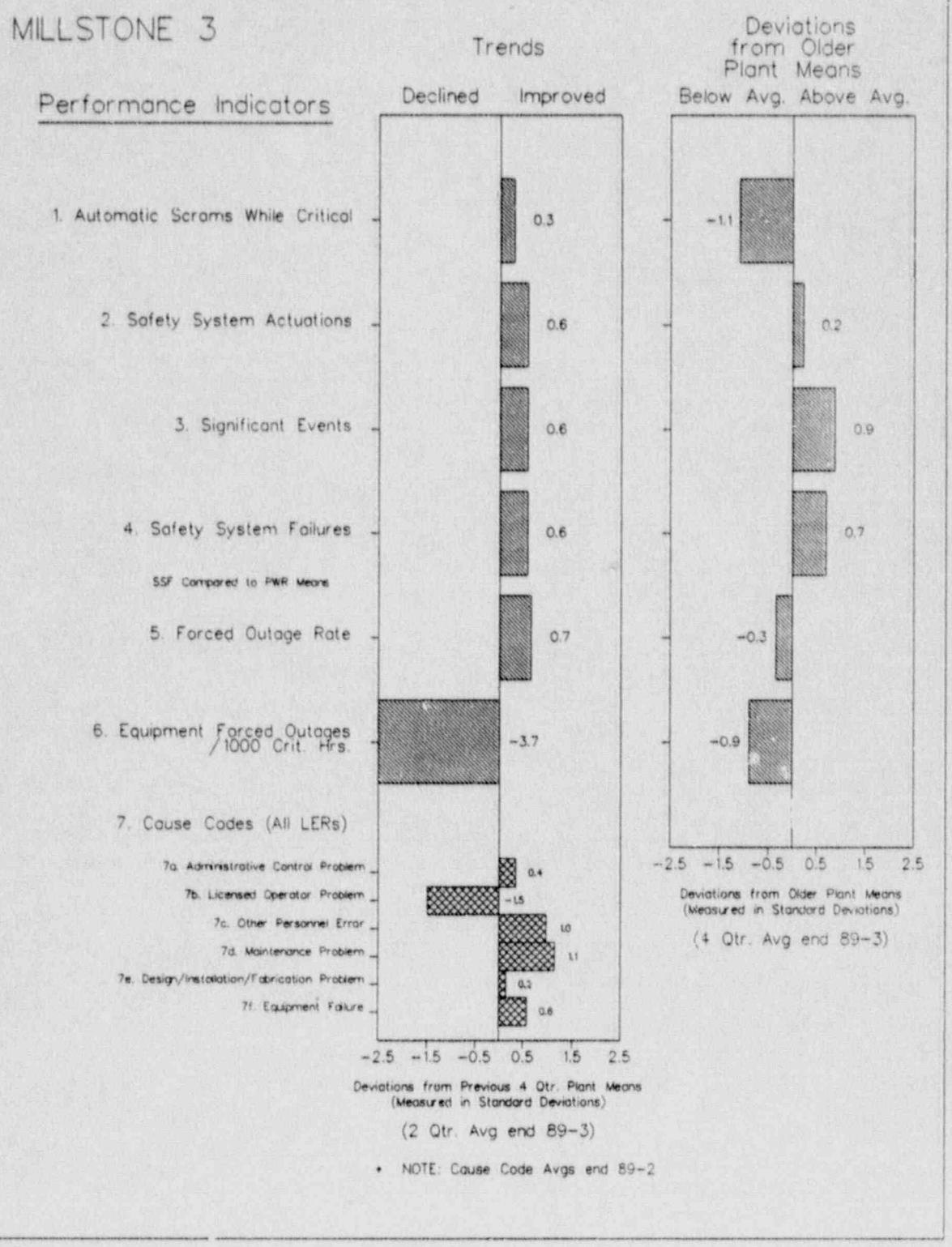
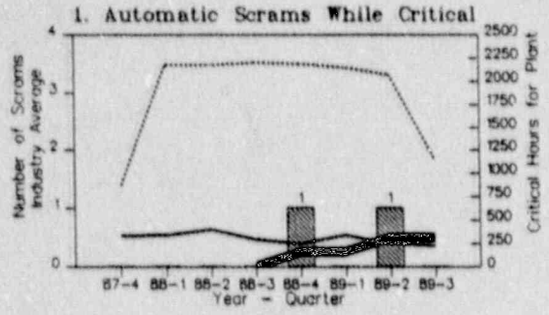

MILLSTONE 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.1
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
0.6
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
-0.3
6. Equipment Forced Outages / 1000 Crit. Hrs.
-3.7
-0.9
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.4
7b. Licensed Operator Problem
-1.5
7c. Other Personnel Error
1.0
7d. Maintenance Problem
1.1
7e. Design/Installation/Fabrication Problem
0.3
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

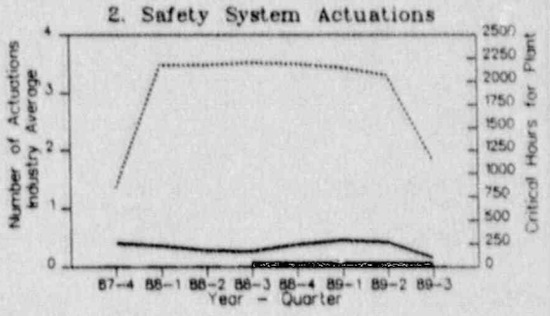
FIGURE 4.56

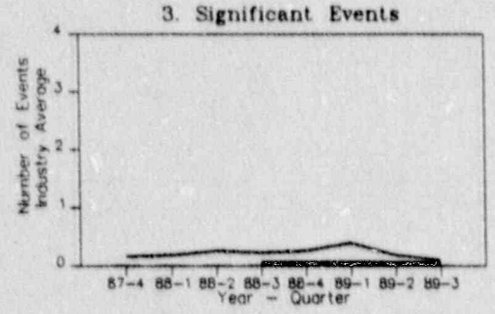
MONTICELLO

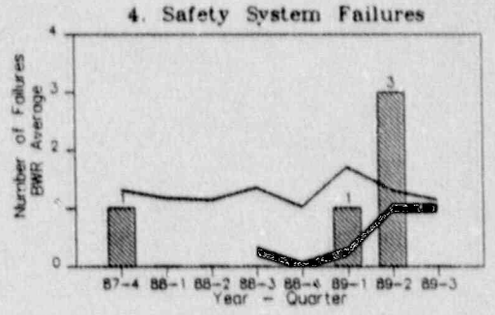
87-4 to 89-3

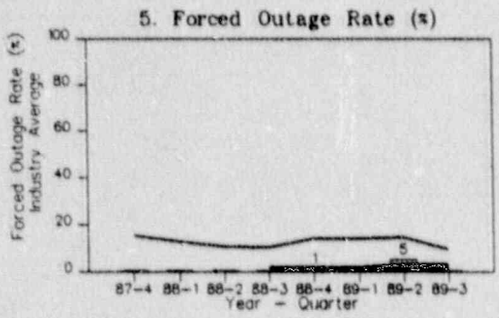
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

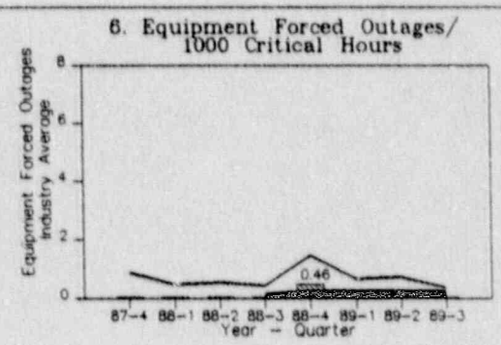


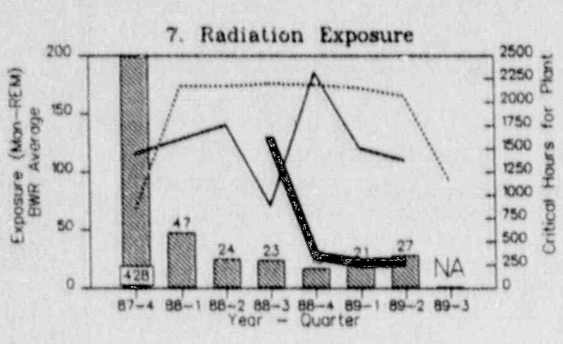












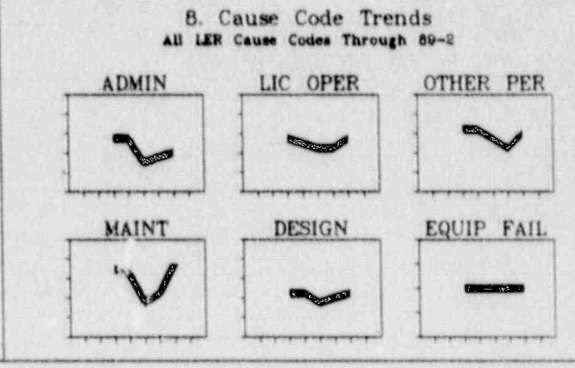


FIGURE 4.56

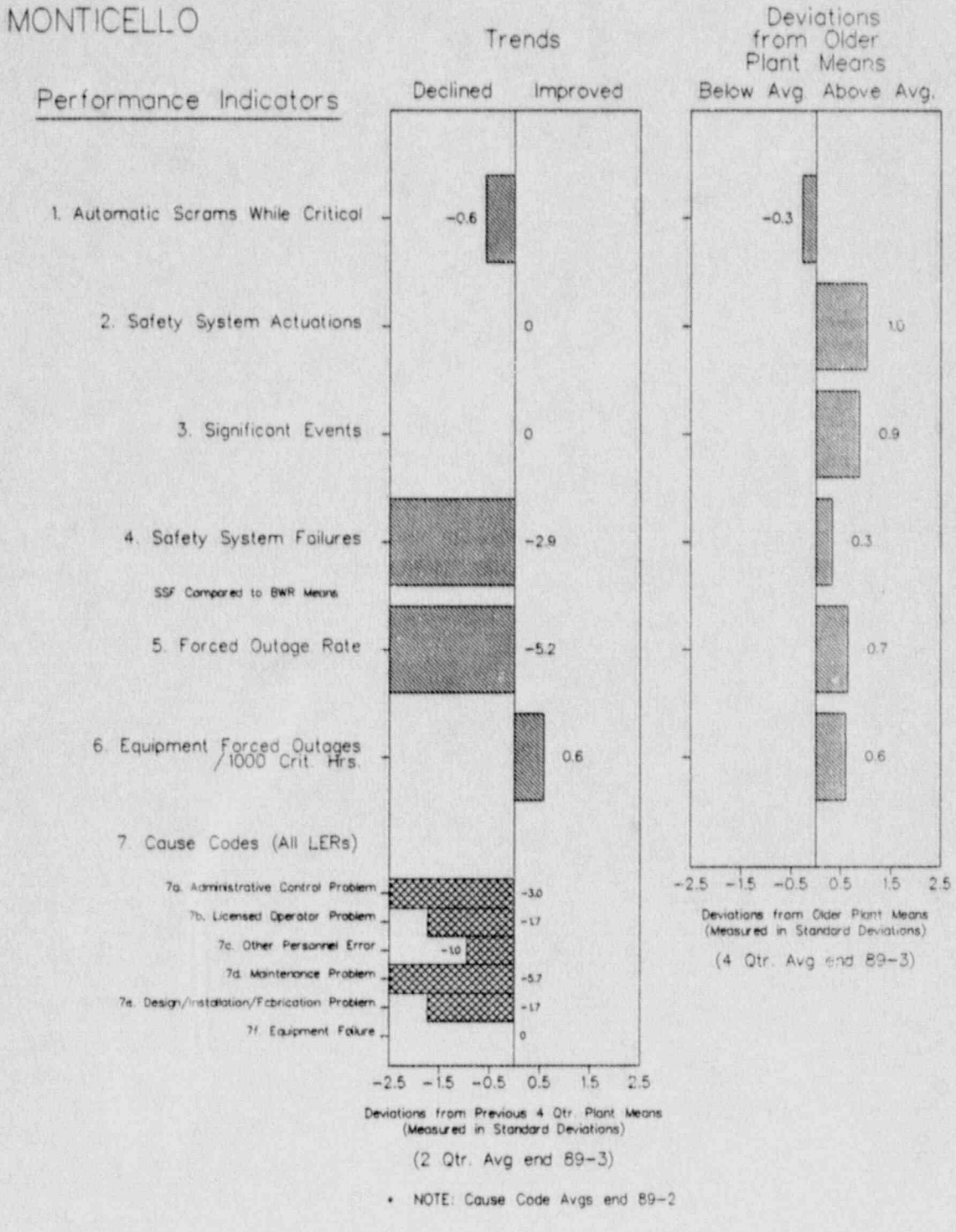
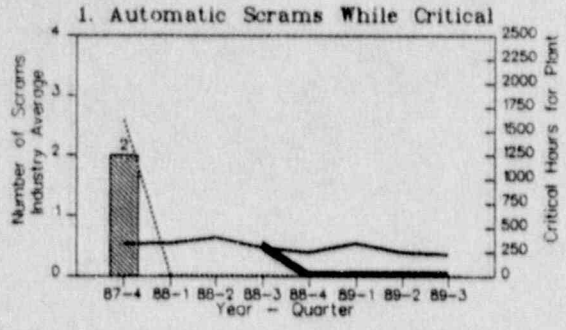

MONTICELLO
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
-2.9
0.3
SSF Compared to BWR Means
5. Forced Outage Rate
-5.2
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
0.6
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-3.0
7b. Licensed Operator Problem
-1.7
7c. Other Personnel Error
-1.0
7d. Maintenance Problem
-5.7
7e. Design/Installation/Fabrication Problem
-1.7
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

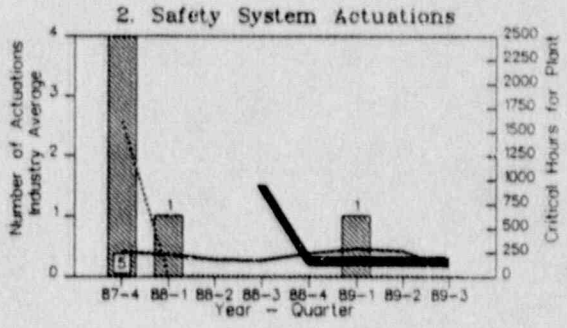
FIGURE 4.57

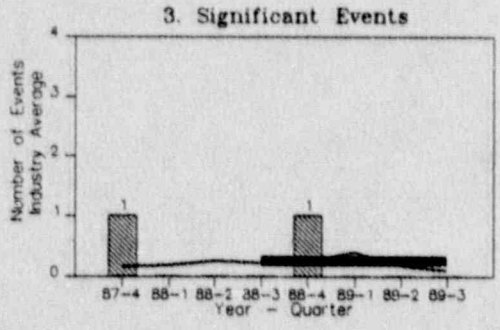
NINE MILE PT. 1

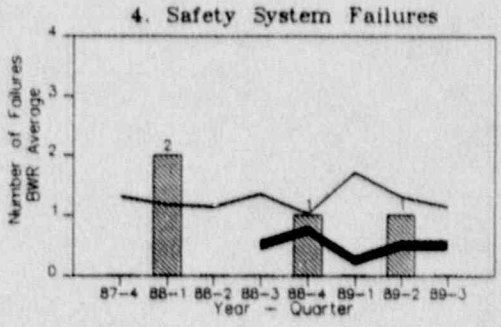
87-4 to 89-3

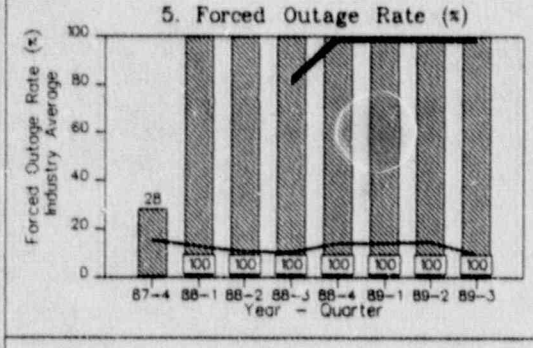
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

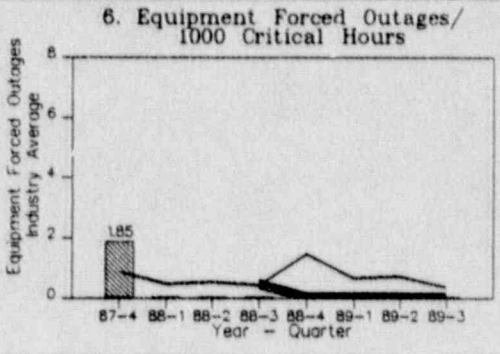


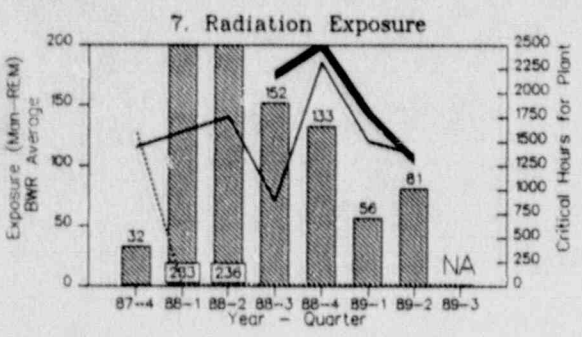












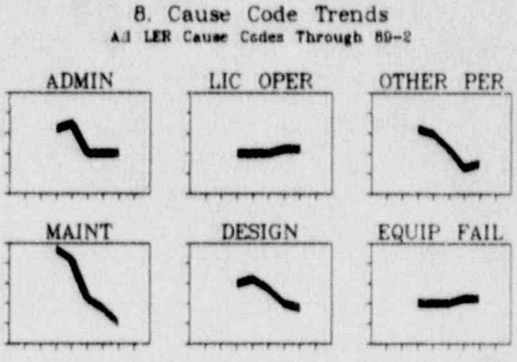


FIGURE 4.57

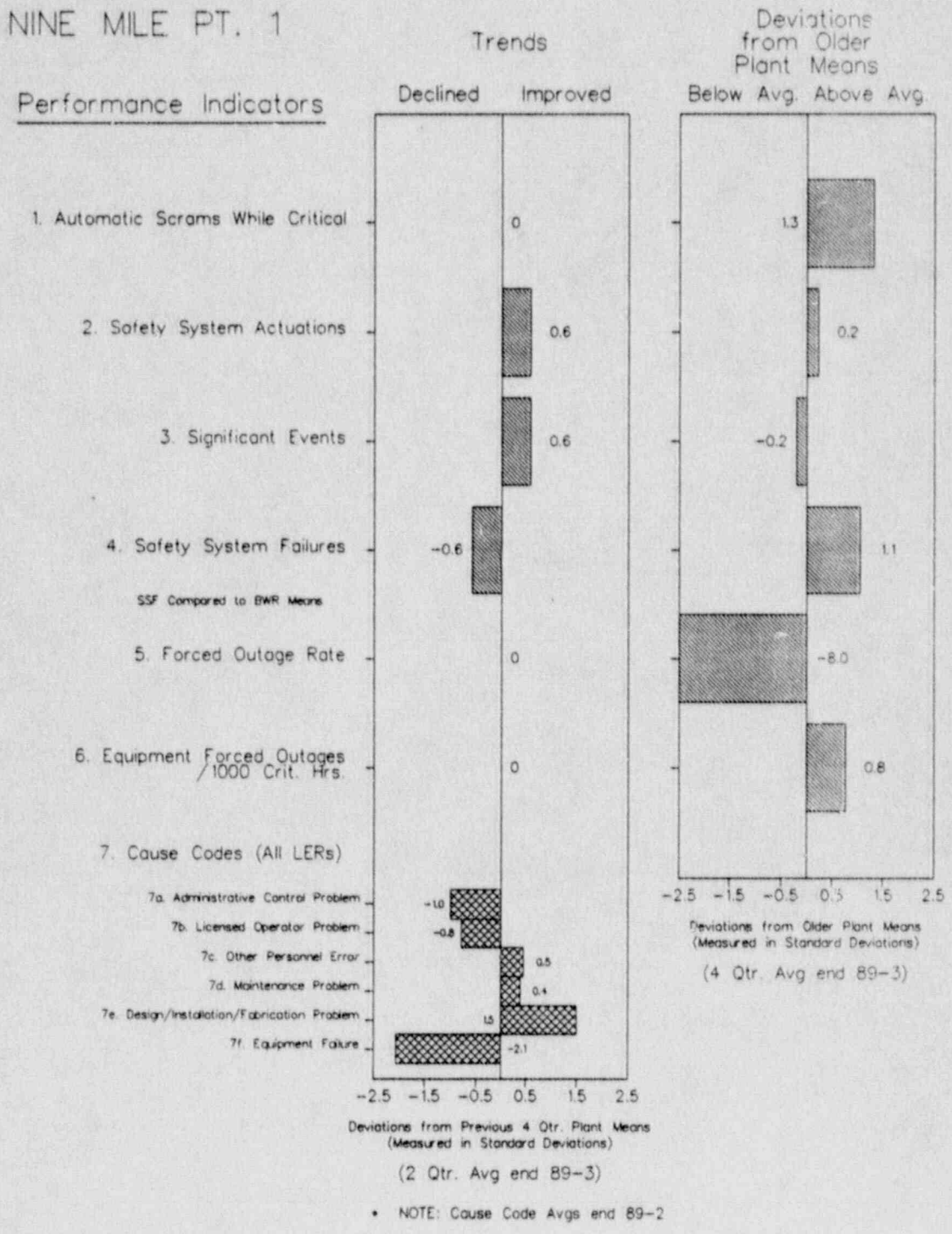
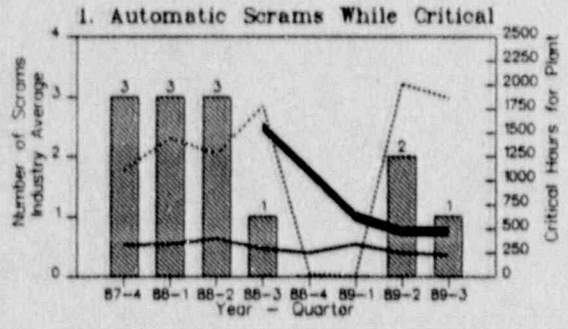

NINE MILE PT. 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
-0.2
4. Safety System Failures
-0.6
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
0
-8.0
6. Equipment Forced Outages /1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.0
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.5
7d. Maintenance Problem
0.4
7e. Design/Installation/Fabrication Problem
1.5
7f. Equipment Failure
-2.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

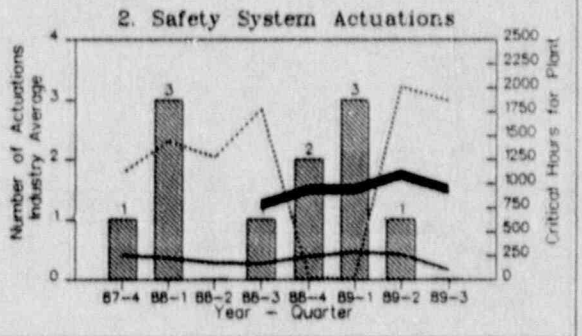
FIGURE 4.58

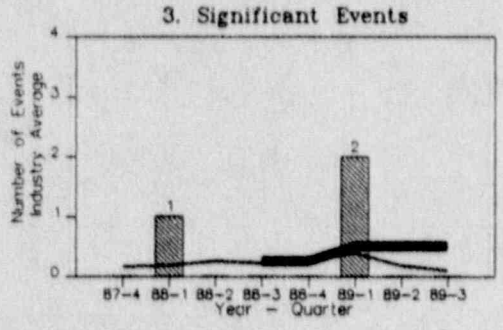
NINE MILE PT. 2

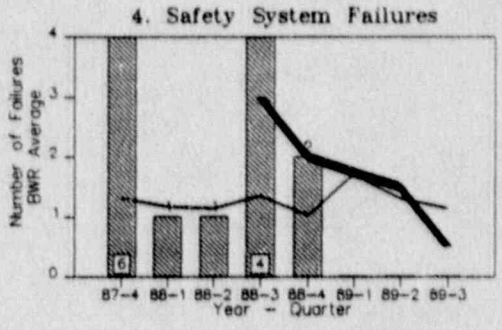
87-4 to 89-3

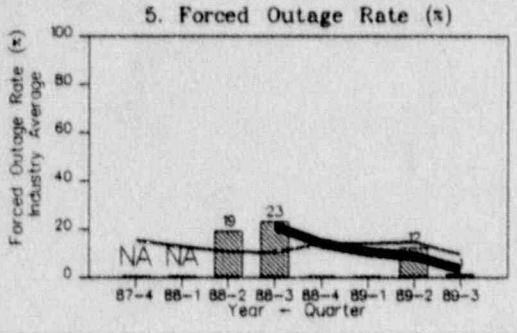
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

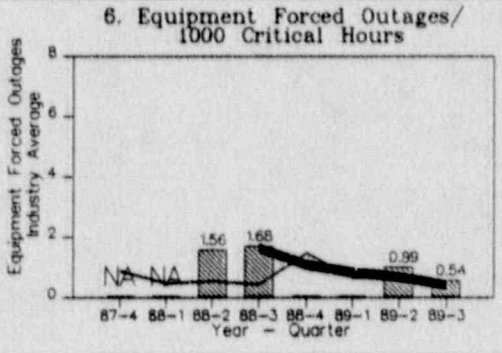


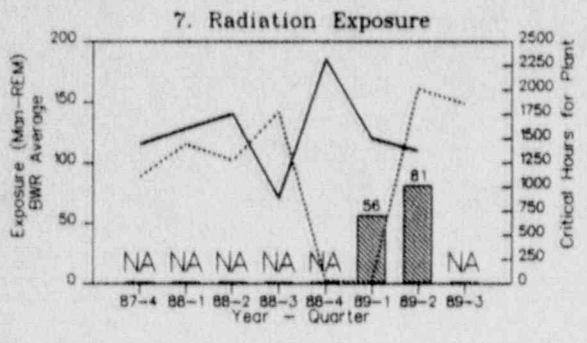












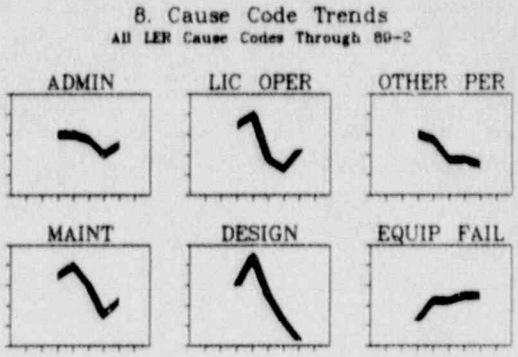


FIGURE 4.58

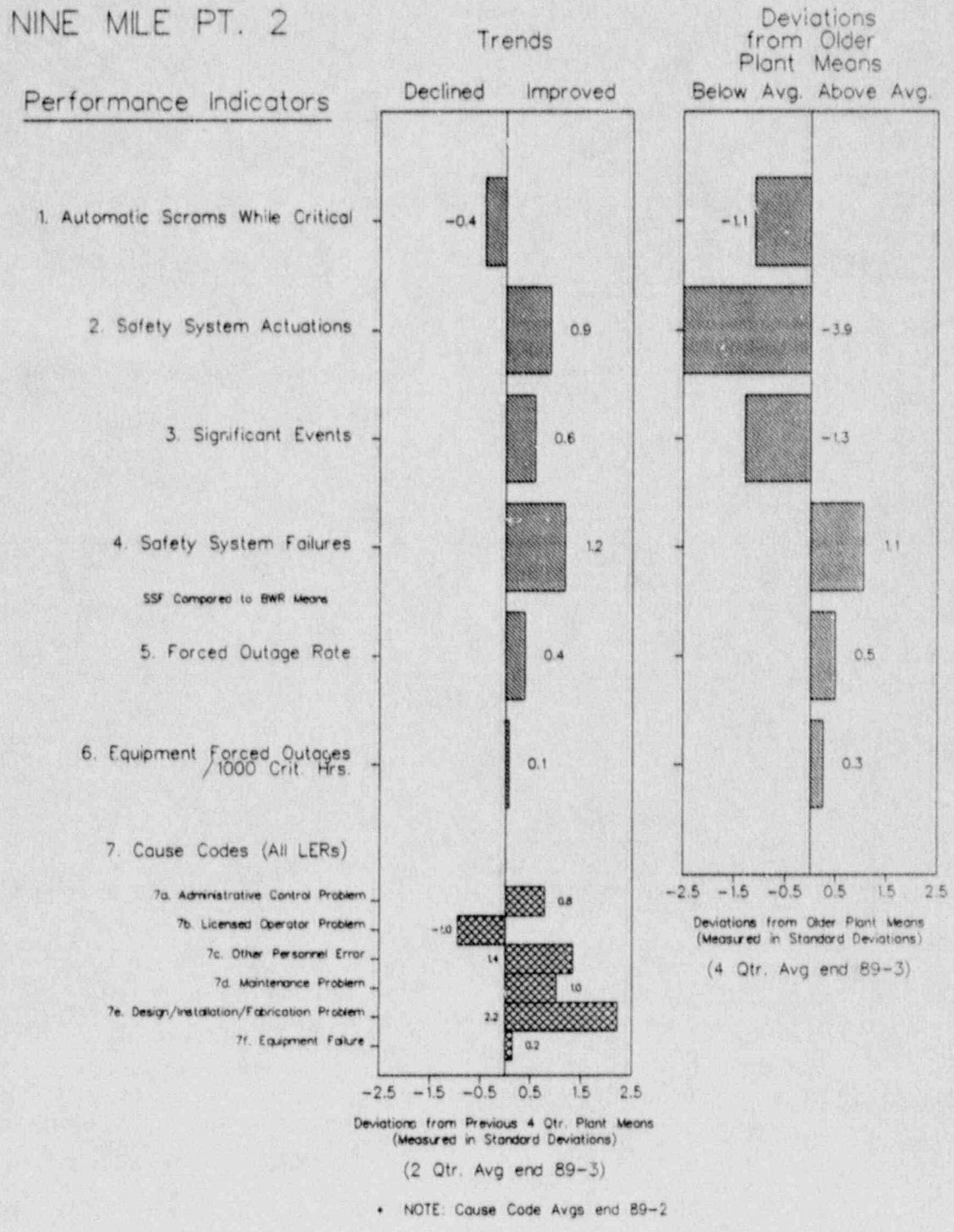
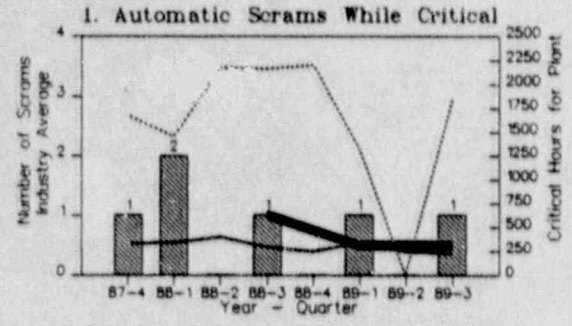

NINE MILE PT. 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
-1.1
2. Safety System Actuations
0.9
-3.9
3. Significant Events
0.6
-1.3
4. Safety System Failures
1.2
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
0.4
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.1
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
-1.0
7c. Other Personnel Error
1.4
7d. Maintenance Problem
1.0
7e. Design/Installation/Fabrication Problem
2.2
7f. Equipment Failure
0.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

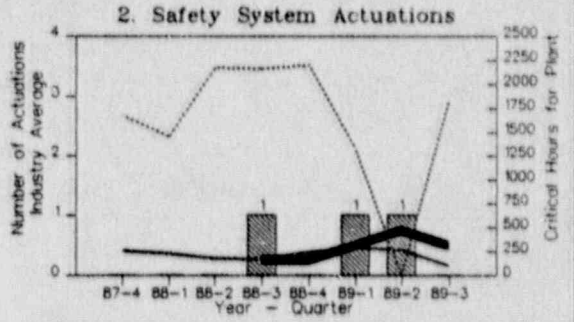
FIGURE 4.59

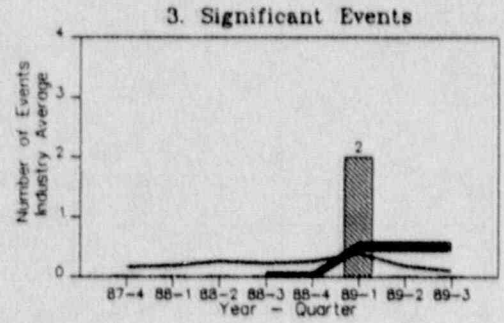
NORTH ANNA 1

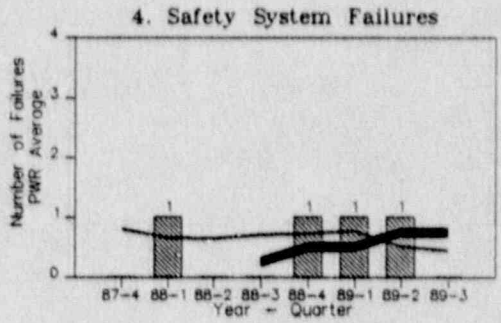
87-4 to 89-3

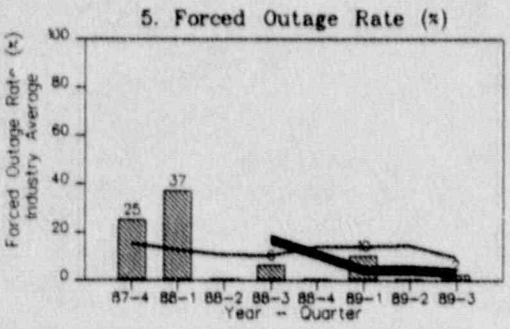
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

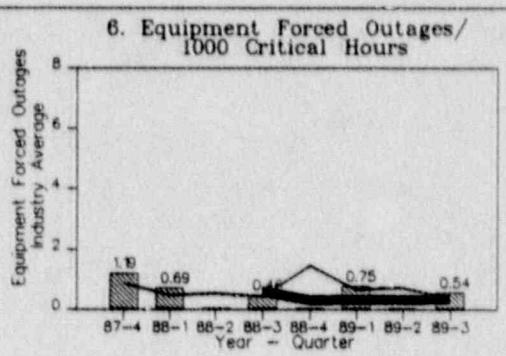


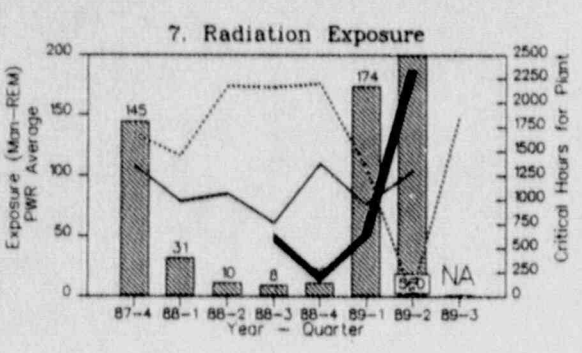












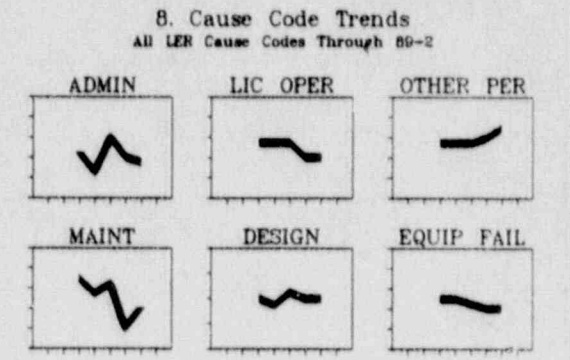


FIGURE 4.59

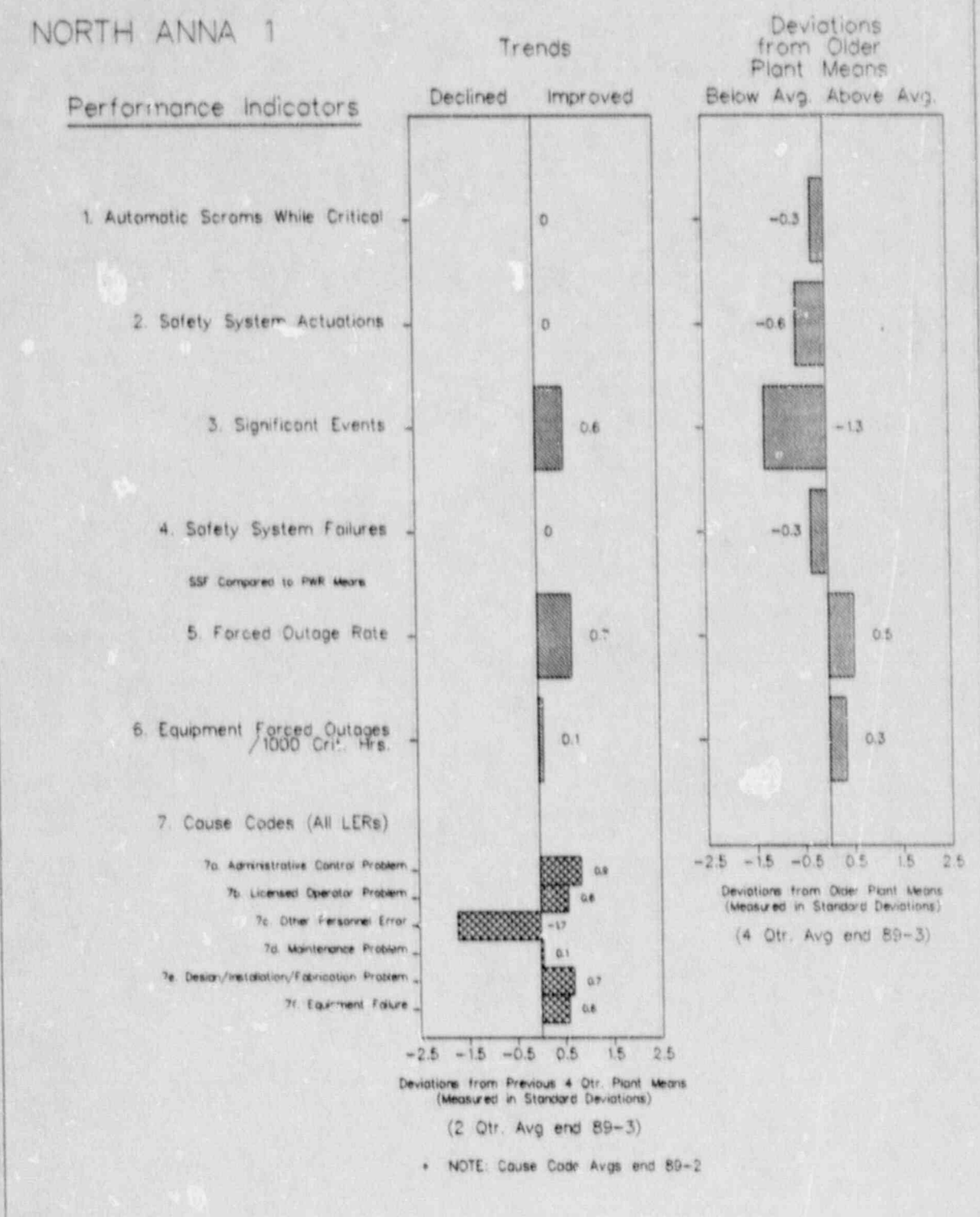

NORTH ANNA 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0
-0.6
3. Significant Events
0.6
-1.3
4. Safety System Failures
0
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
0.1
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
-1.7
7d. Maintenance Problem
0.1
7e. Design/Installation/Fabrication Problem
0.7
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

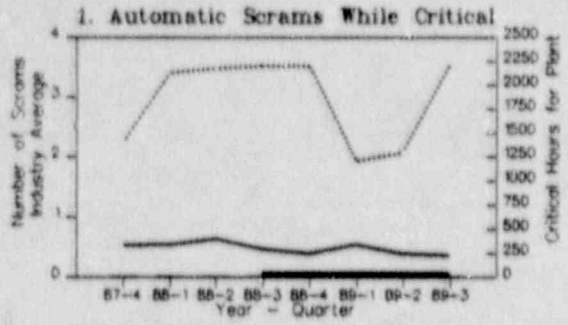
FIGURE 4.60

NORTH ANNA 2

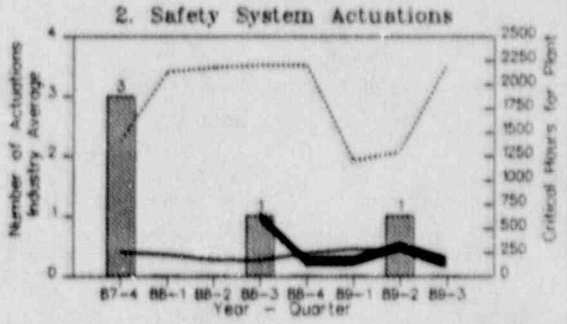
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

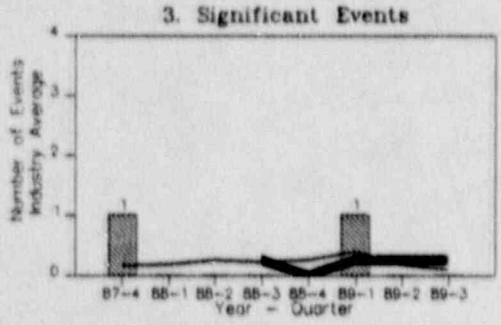
1. Automatic Scrams While Critical



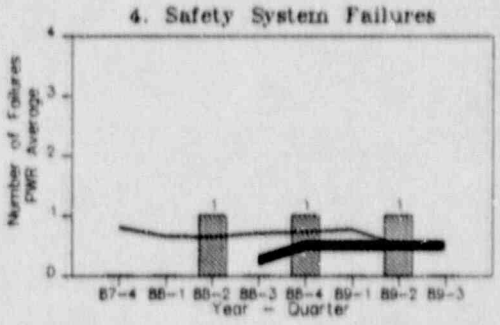
2. Safety System Actuations



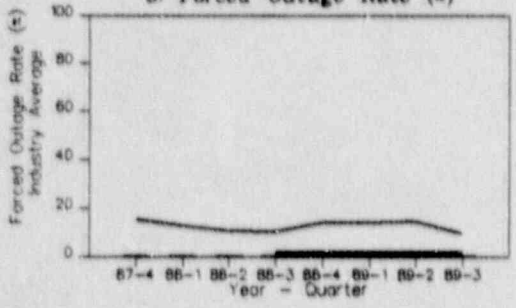
3. Significant Events



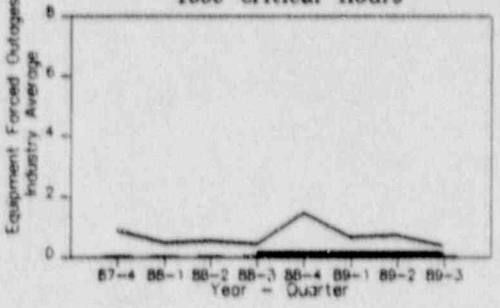
4. Safety System Failures



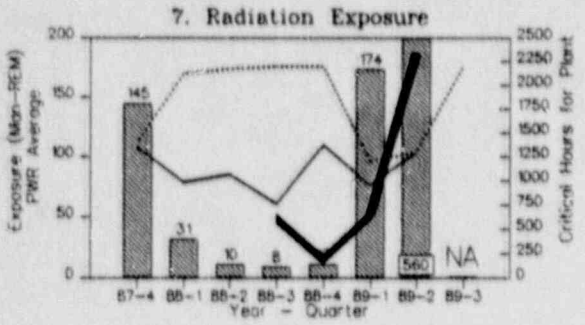
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

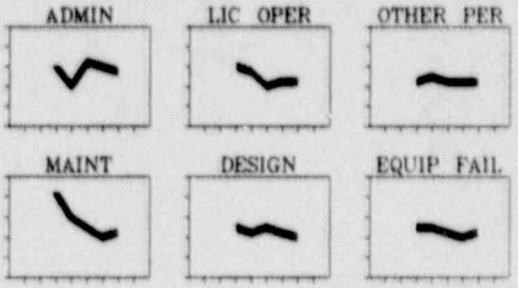


FIGURE 4.60

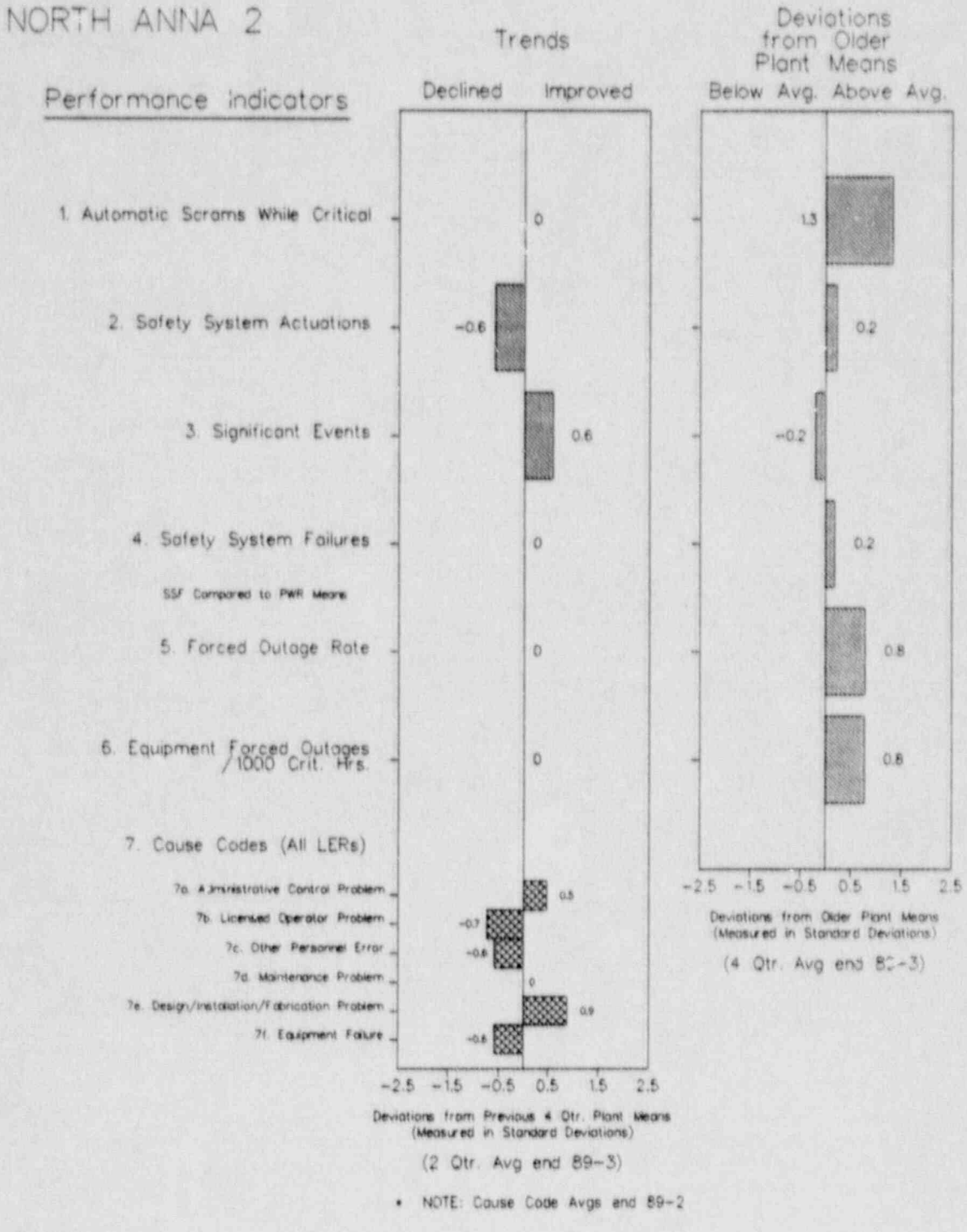

NORTH ANNA 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
2. Safety System Actuations
3. Significant Events
4. Safety System Failures
SSF Compared to PWR Means
5. Forced Outage Rate
6. Equipment Forced Outages /1000 Crit. Hrs.
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
-0.6
0.6
0
0
0
0.5
-0.7
-0.8
0
0.9
-0.8
1.3
0.2
-0.2
0.2
0.8
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

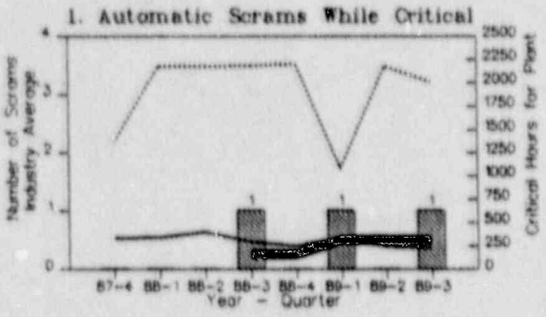
FIGURE 4.61

OCONEE 1

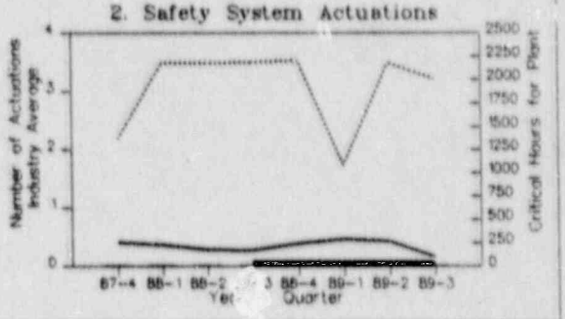
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

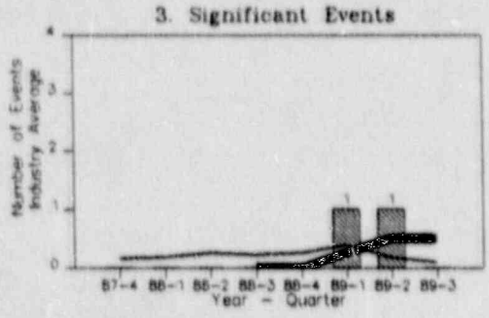
1. Automatic Scrams While Critical



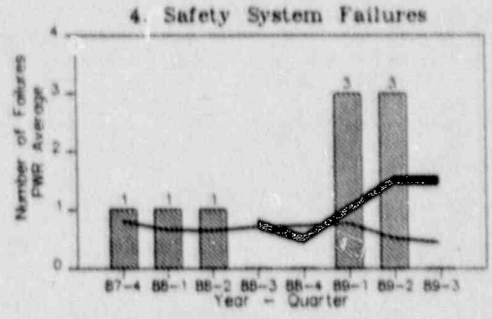
2. Safety System Actuations



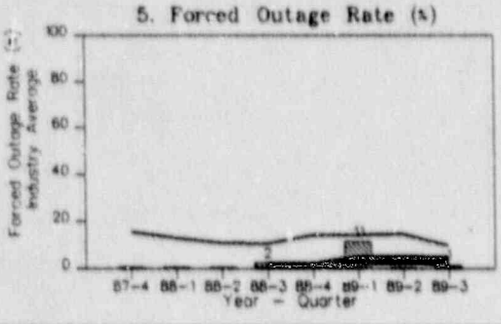
3. Significant Events



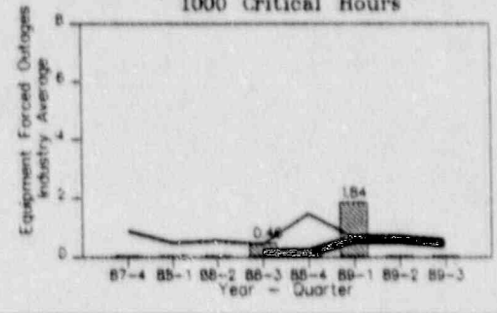
4. Safety System Failures



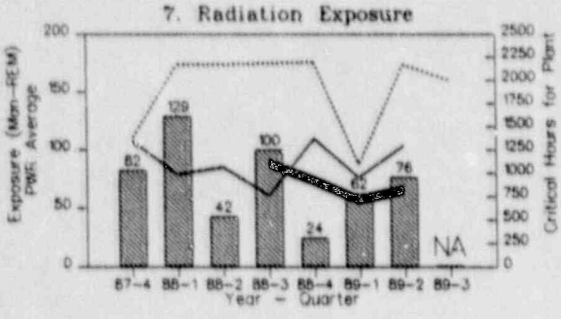
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

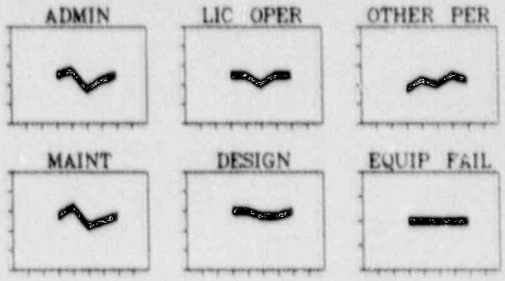


FIGURE 4.61

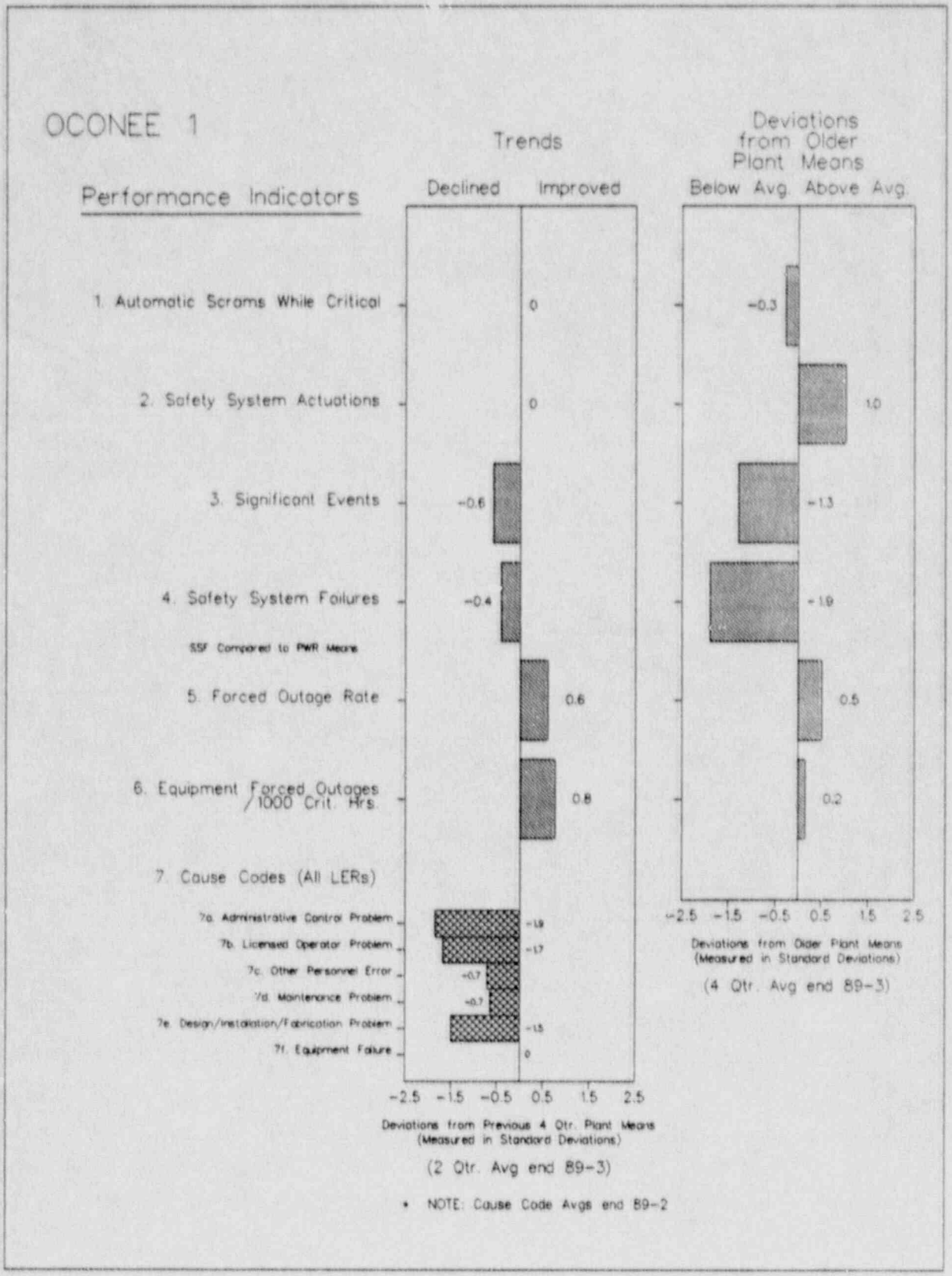

OCONEE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0
1.0
3. Significant Events
-0.6
-1.3
4. Safety System Failures
-0.4
-1.9
SSF Compared to PWR Means
5. Forced Outage Rate
0.6
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
0.8
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.9
7b. Licensed Operator Problem
-1.7
7c. Other Personnel Error
-0.7
7d. Maintenance Problem
-0.7
7e. Design/Installation/Fabrication Problem
-1.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.62

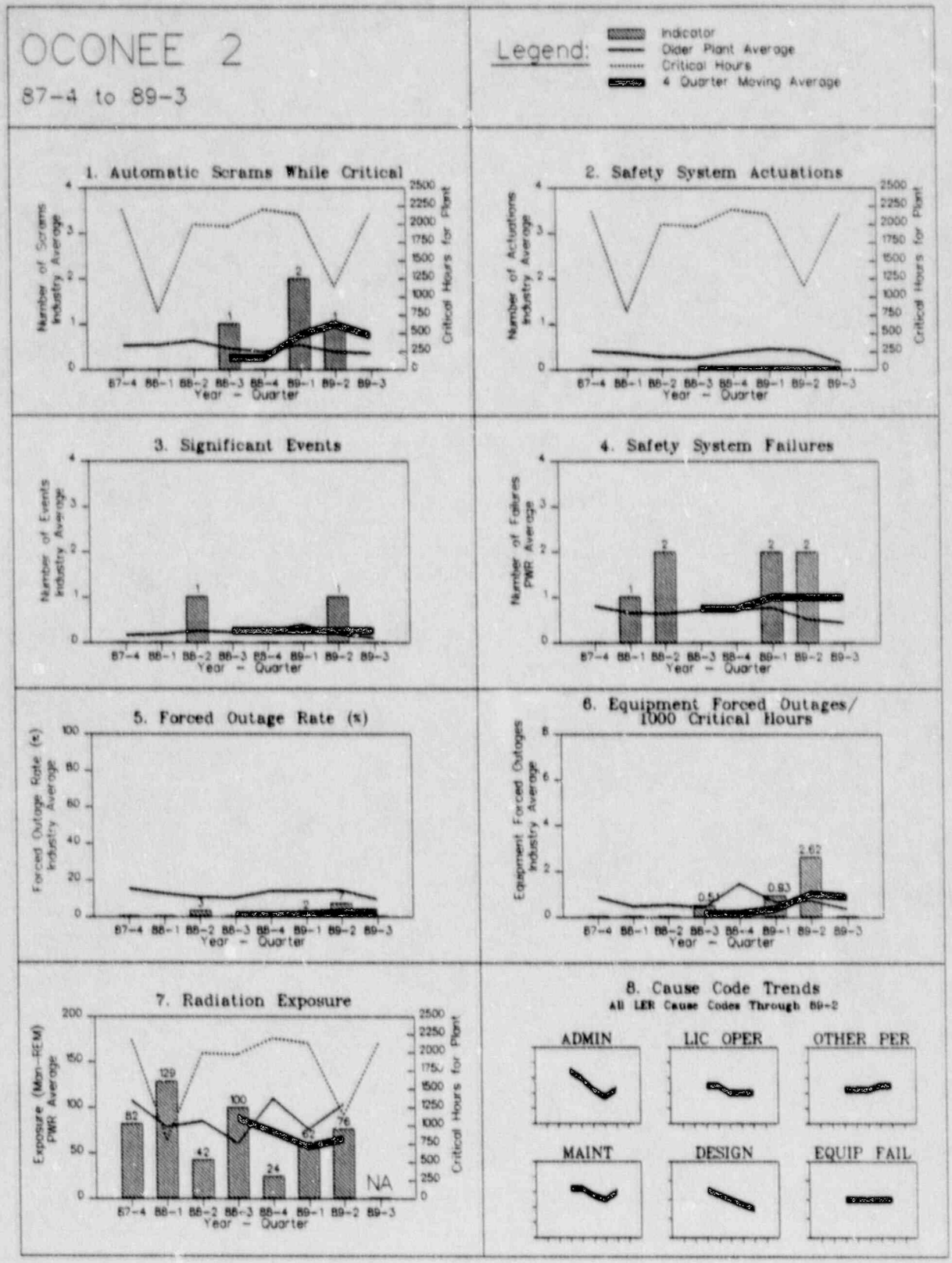

OCONEE 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - 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 Critical Hours
Equipment Forced Outages Industry Average
2.62
0.83
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
82
129
42
100
24
78
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.62

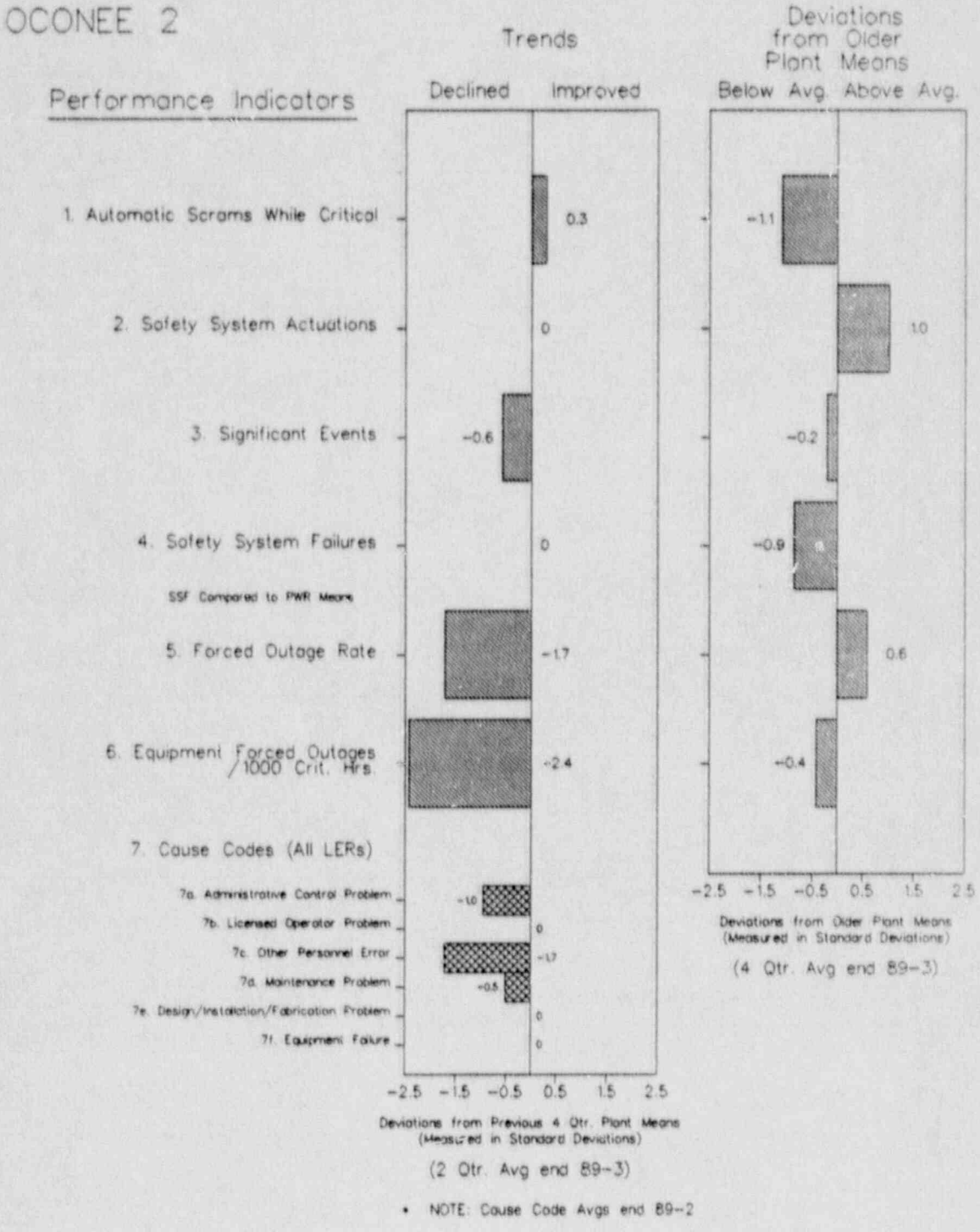

OCONEE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.1
2. Safety System Actuations
0
1.0
3. Significant Events
-0.6
-0.2
4. Safety System Failures
0
-0.9
SSF Compared to PWR Means
5. Forced Outage Rate
-1.7
0.6
6. Equipment Forced Outages /1000 Crit. Hrs.
-2.4
-0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.0
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-1.7
7d. Maintenance Problem
-0.5
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.63

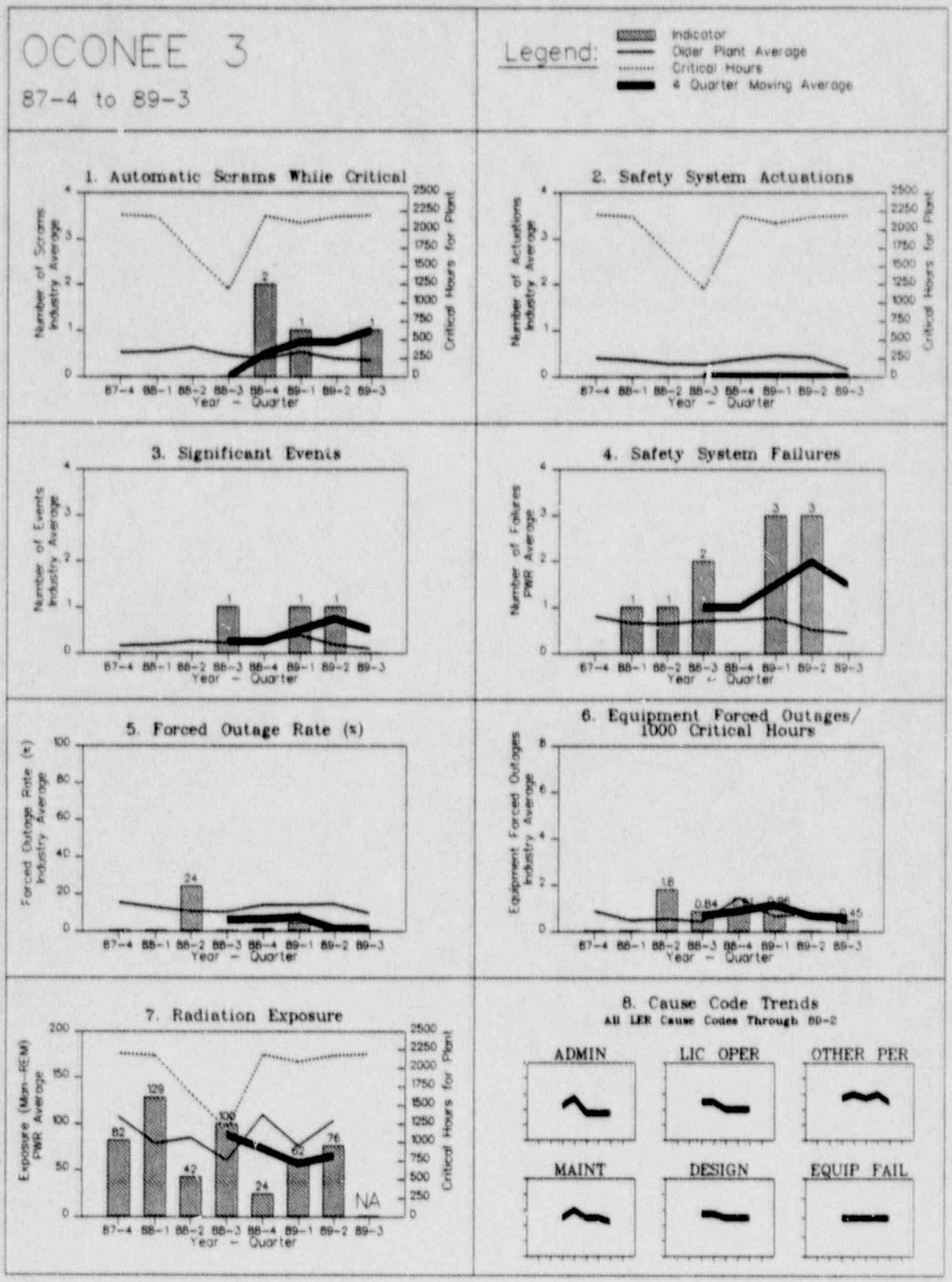

OCONEE 3
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - 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 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
Year - Quarter
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.63

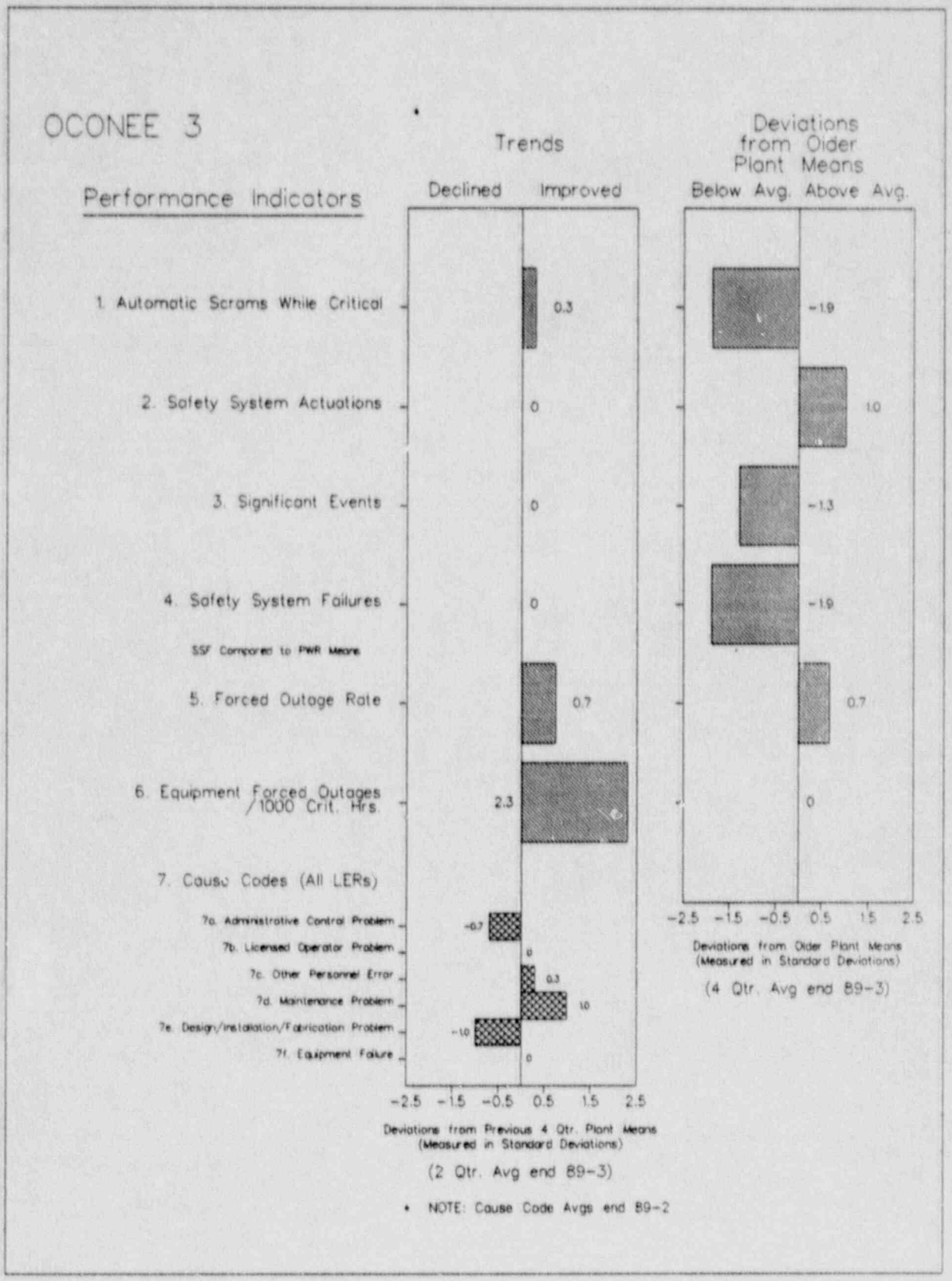
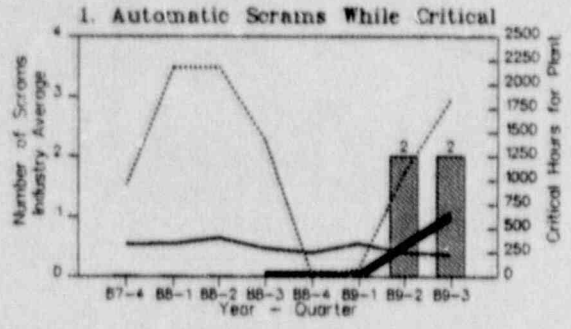

OCONEE 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.9
2. Safety System Actuations
0
1.0
3. Significant Events
0
-1.3
4. Safety System Failures
0
-1.9
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
2.3
0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.7
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.3
7d. Maintenance Problem
1.0
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

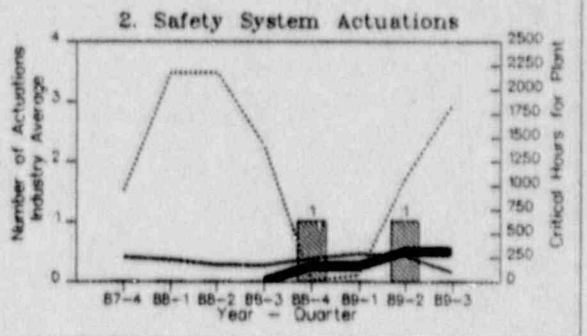
FIGURE 4.64

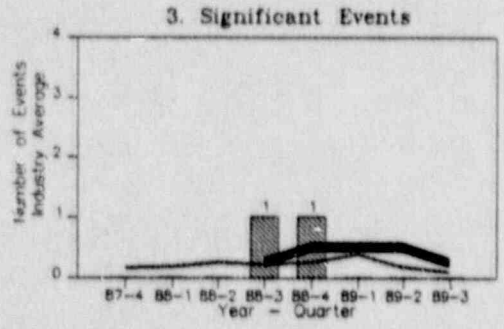
OYSTER CREEK

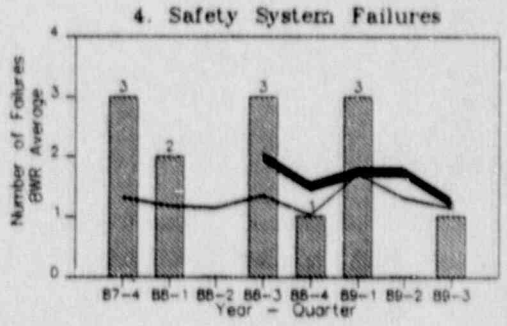
87-4 to 89-3

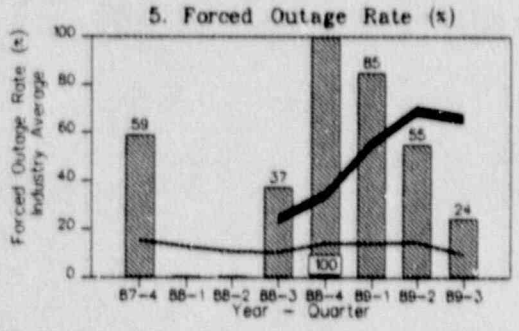
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

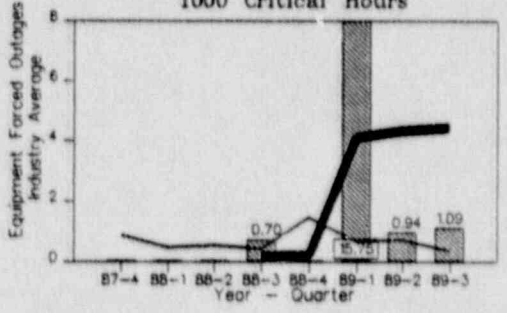


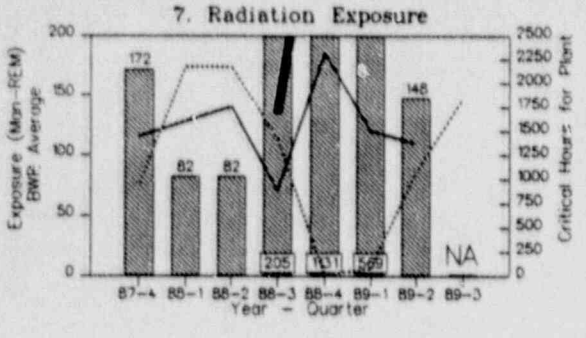












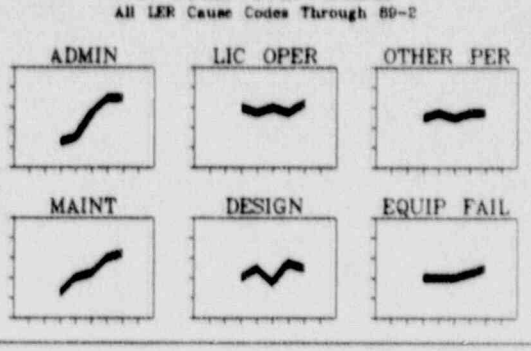


FIGURE 4.64

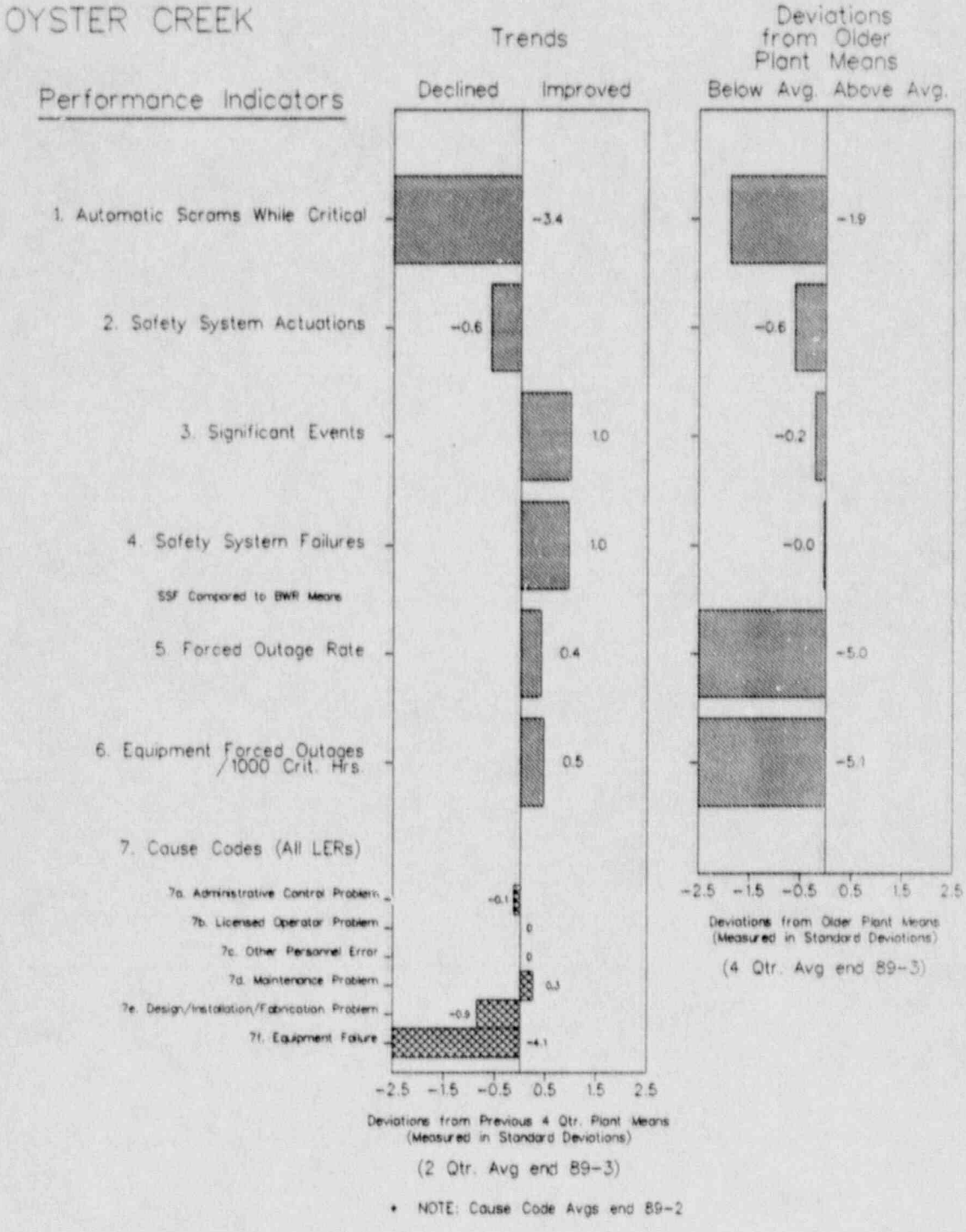

OYSTER CREEK
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-3.4
-1.9
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
1.0
-0.2
4. Safety System Failures
1.0
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
0.4
-5.0
6. Equipment Forced Outages /1000 Crit. Hrs.
0.5
-5.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.1
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0
7d. Maintenance Problem
0.3
7e. Design/Installation/Fabrication Problem
-0.9
7f. Equipment Failure
-4.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

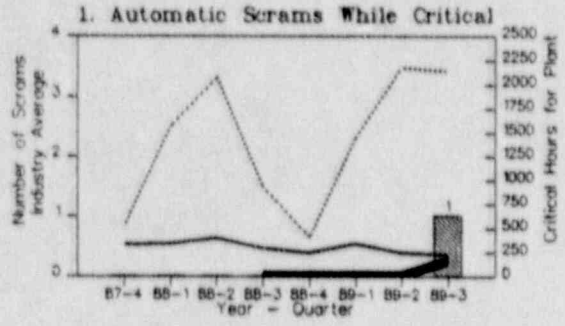
FIGURE 4.65

PALISADES

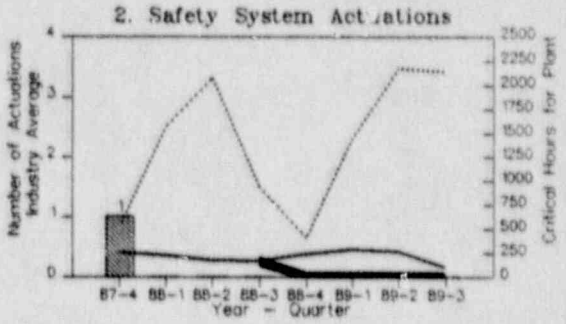
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

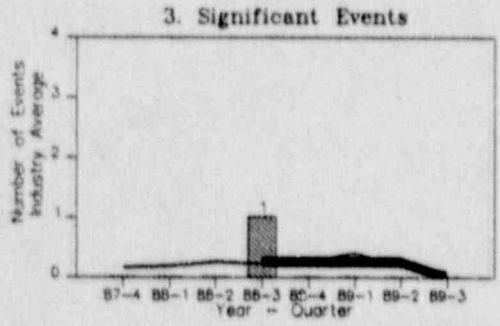
1. Automatic Scrams While Critical



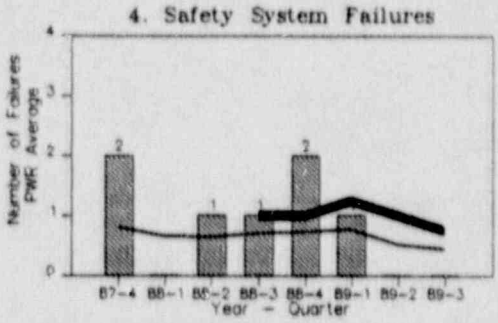
2. Safety System Actuations



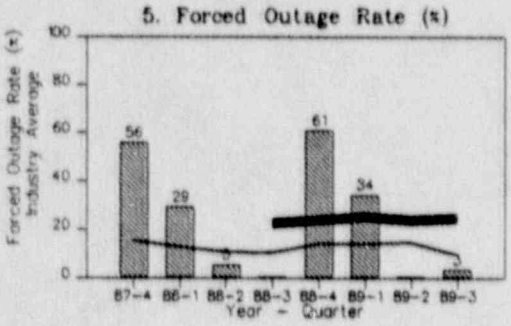
3. Significant Events



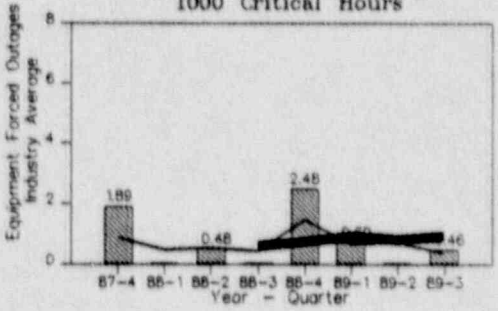
4. Safety System Failures



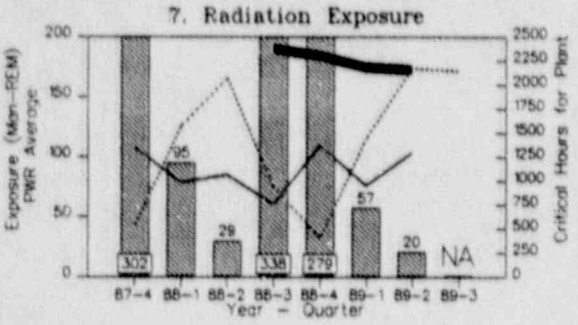
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

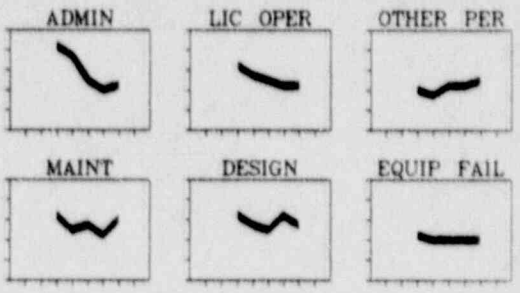


FIGURE 4.65

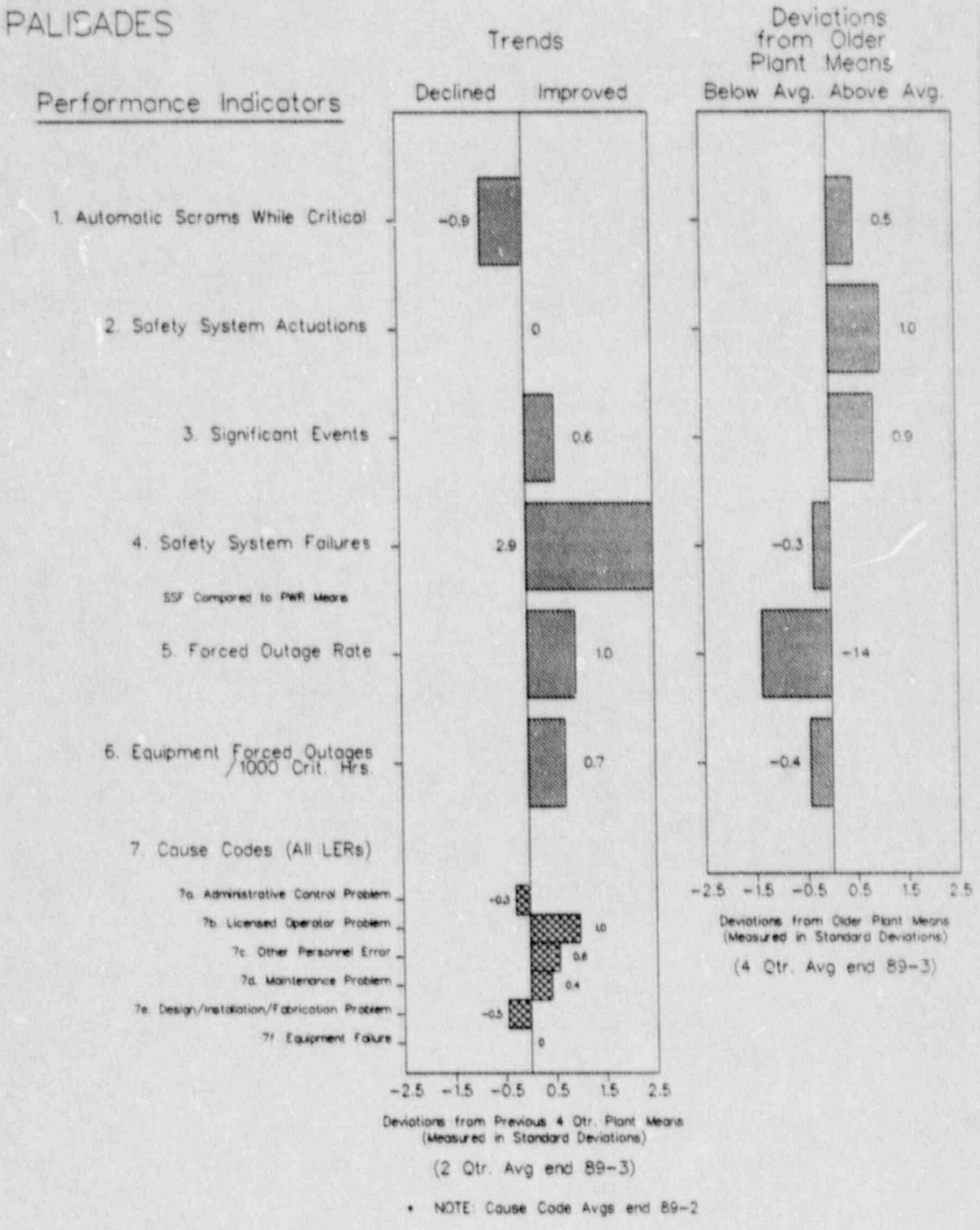

PALISADES
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
0.9
4. Safety System Failures
2.9
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
1.0
-1.4
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.7
-0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.8
7d. Maintenance Problem
0.4
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.66

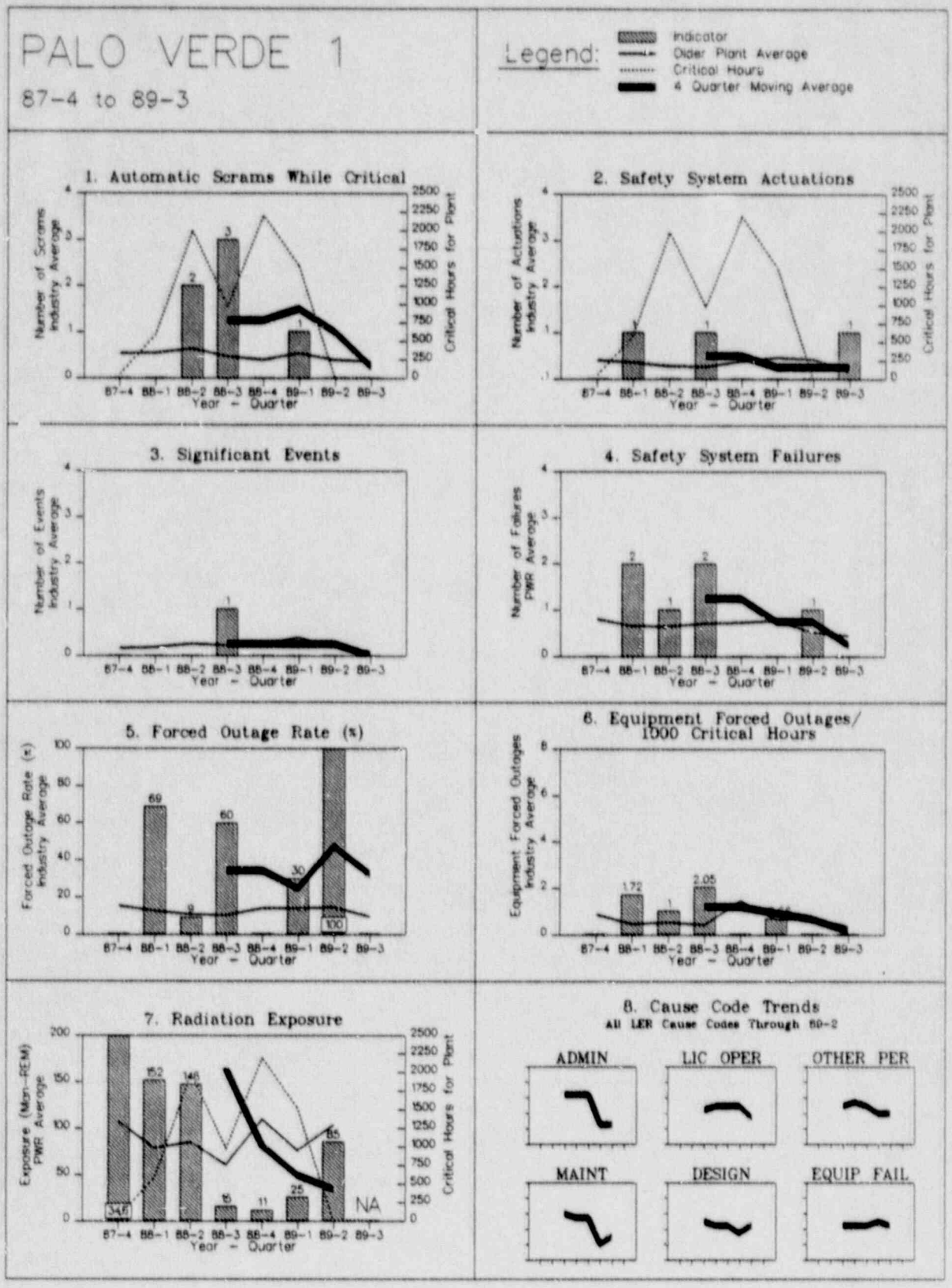

PALO VERDE 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
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 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.66

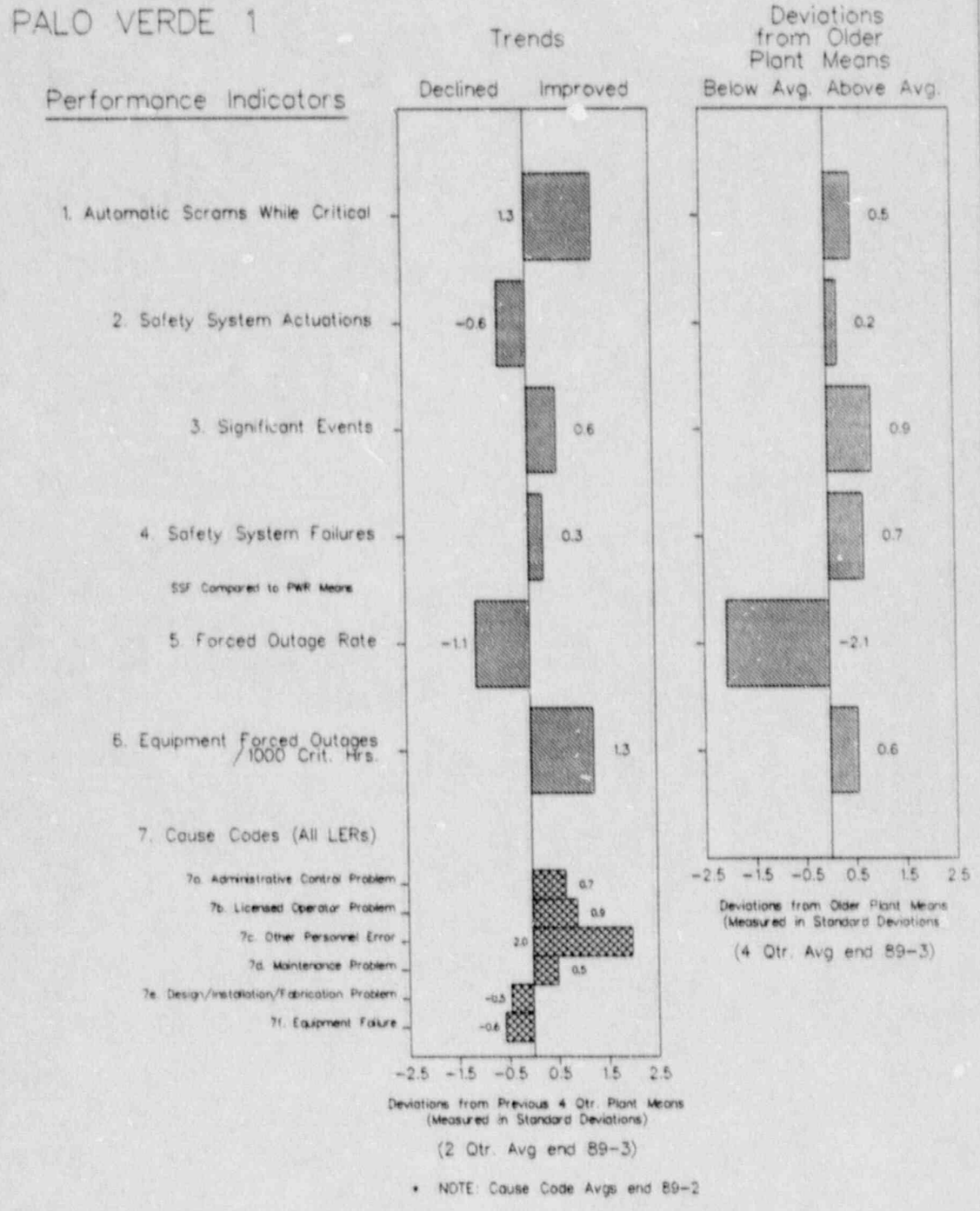

PALO VERDE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.3
0.5
2. Safety System Actuations
-0.6
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
0.3
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-1.1
-2.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.3
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
0.9
7c. Other Personnel Error
2.0
7d. Maintenance Problem
0.5
7e. Design/Installation/Fabrication Problem
-0.5
7f. Equipment Failure
-0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.67

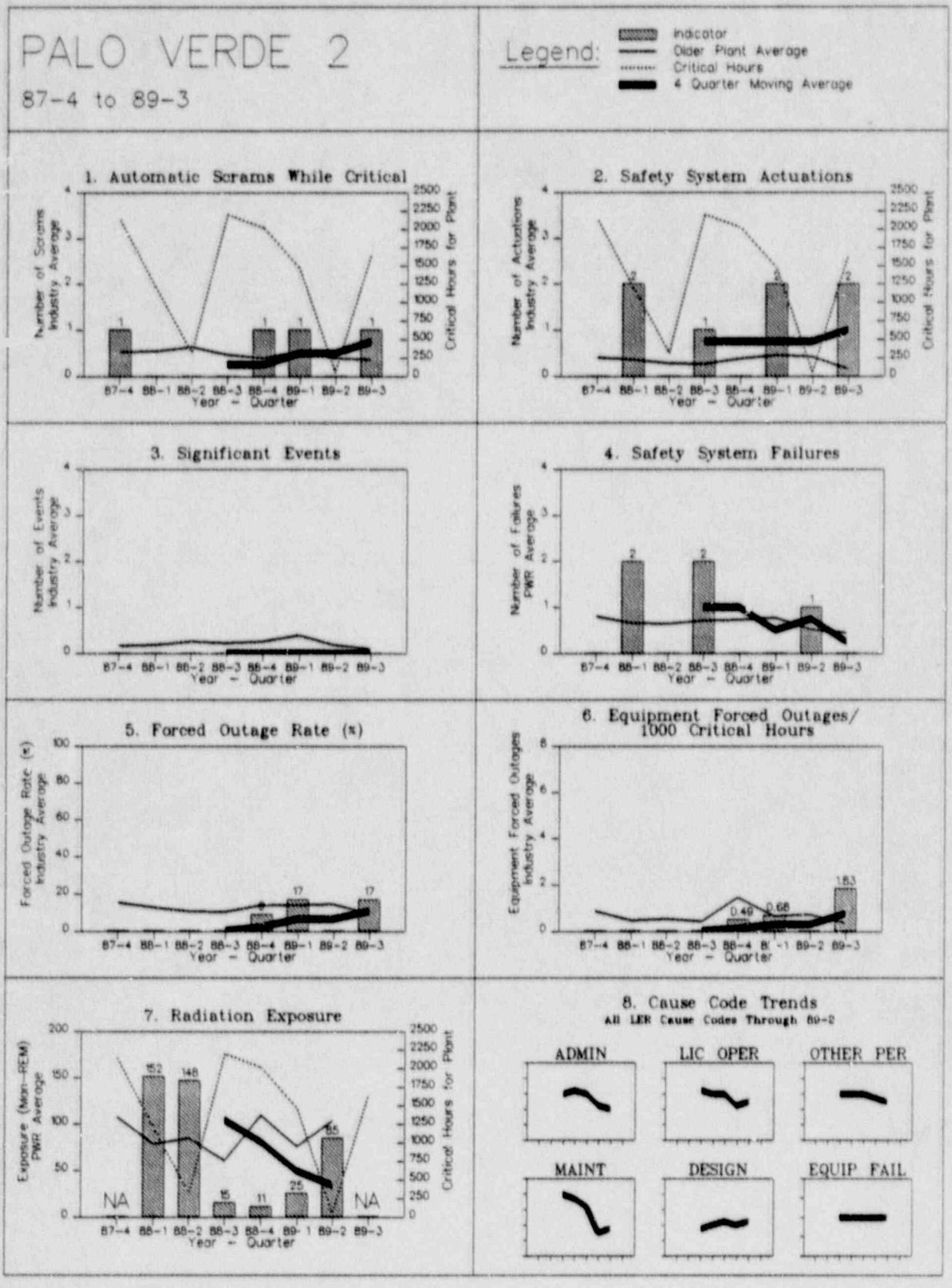

PALO VERDE 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.67

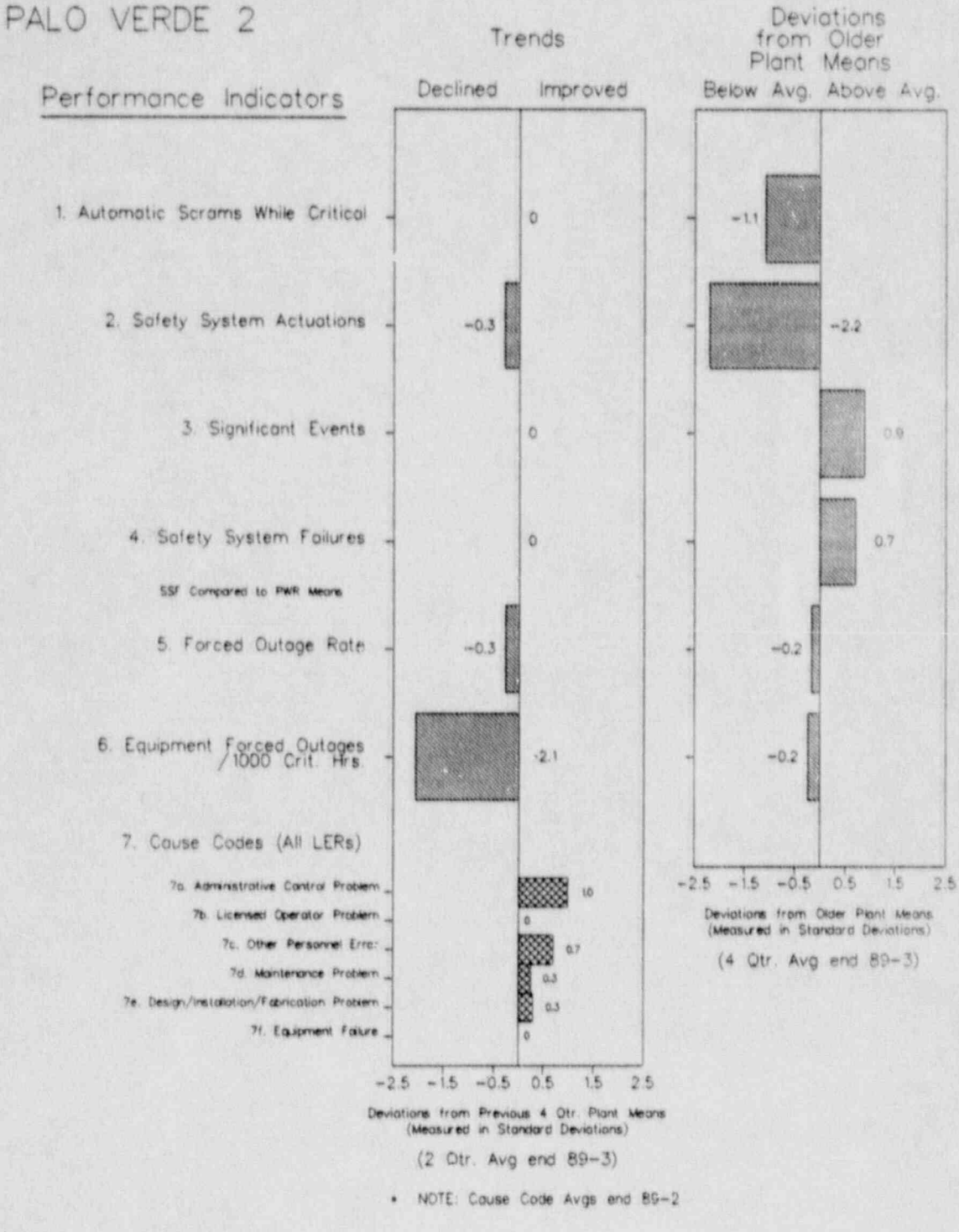
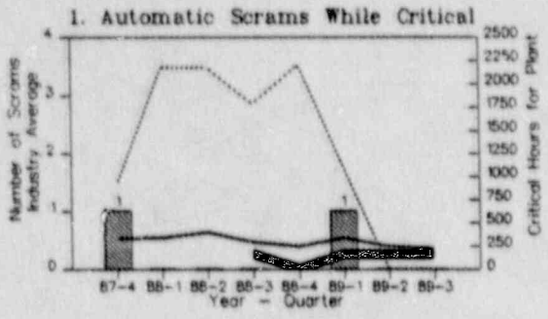

PALO VERDE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-1.1
2. Safety System Actuations
-0.3
-2.2
3. Significant Events
0
0.9
4. Safety System Failures
0
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.3
-0.2
6. Equipment Forced Outages / 1000 Crit. Hrs.
-2.1
-0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.0
7b. Licensed Operator Problem
0
7c. Other Personnel Errors
0.7
7d. Maintenance Problem
0.3
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

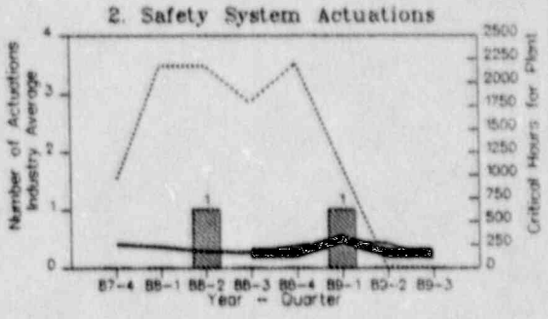
FIGURE 4.68

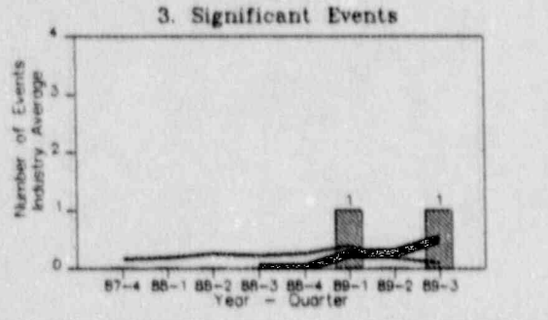
PALO VERDE 3

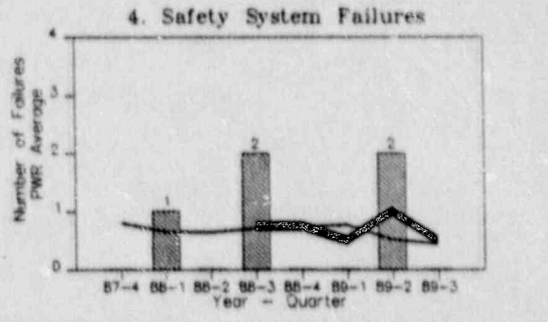
87-4 to 89-3

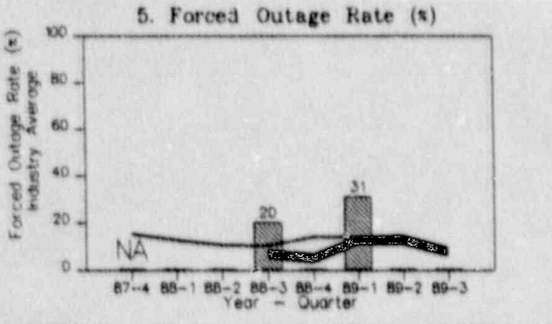
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

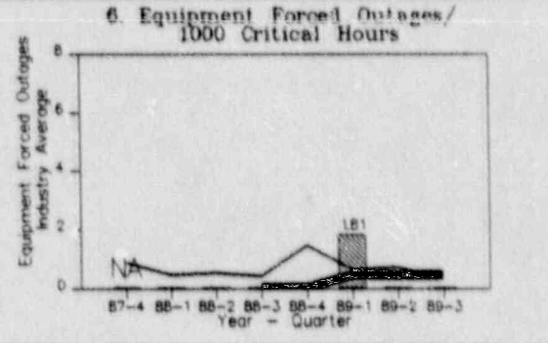


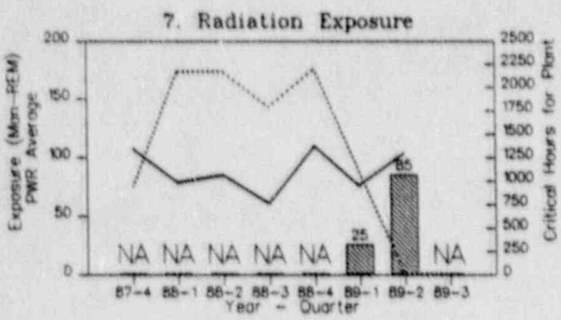












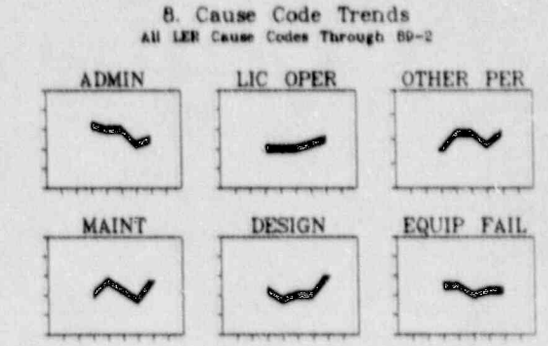


FIGURE 4.6B

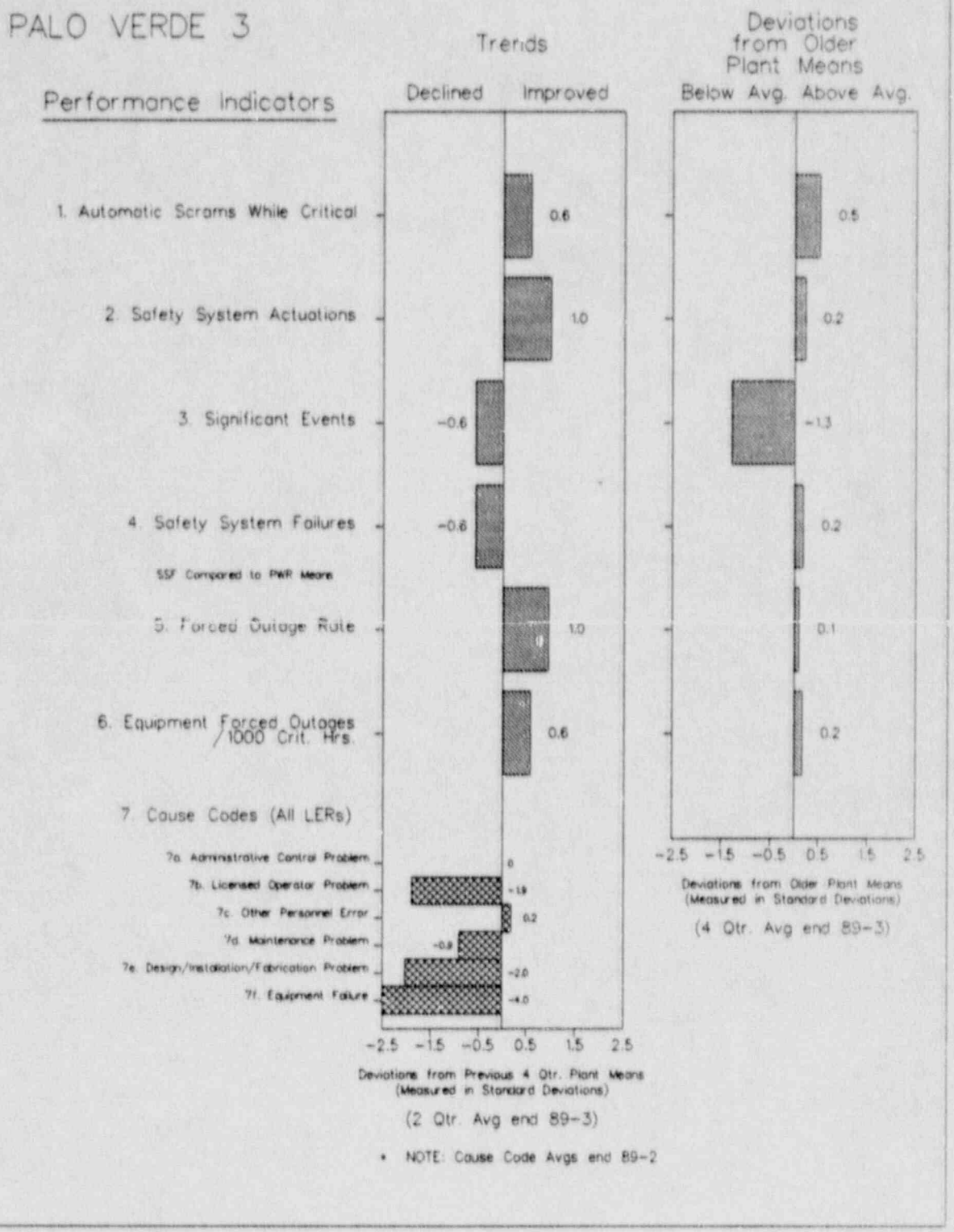

PALO VERDE 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
1.0
0.2
3. Significant Events
-0.6
-1.3
4. Safety System Failures
-0.6
0.2
SSF Compared to PWR Mean
5. Forced Outage Rate
1.0
0.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
-1.9
7c. Other Personnel Error
0.2
7d. Maintenance Problem
-0.9
7e. Design/Installation/Fabrication Problem
-2.0
7f. Equipment Failure
-4.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.69

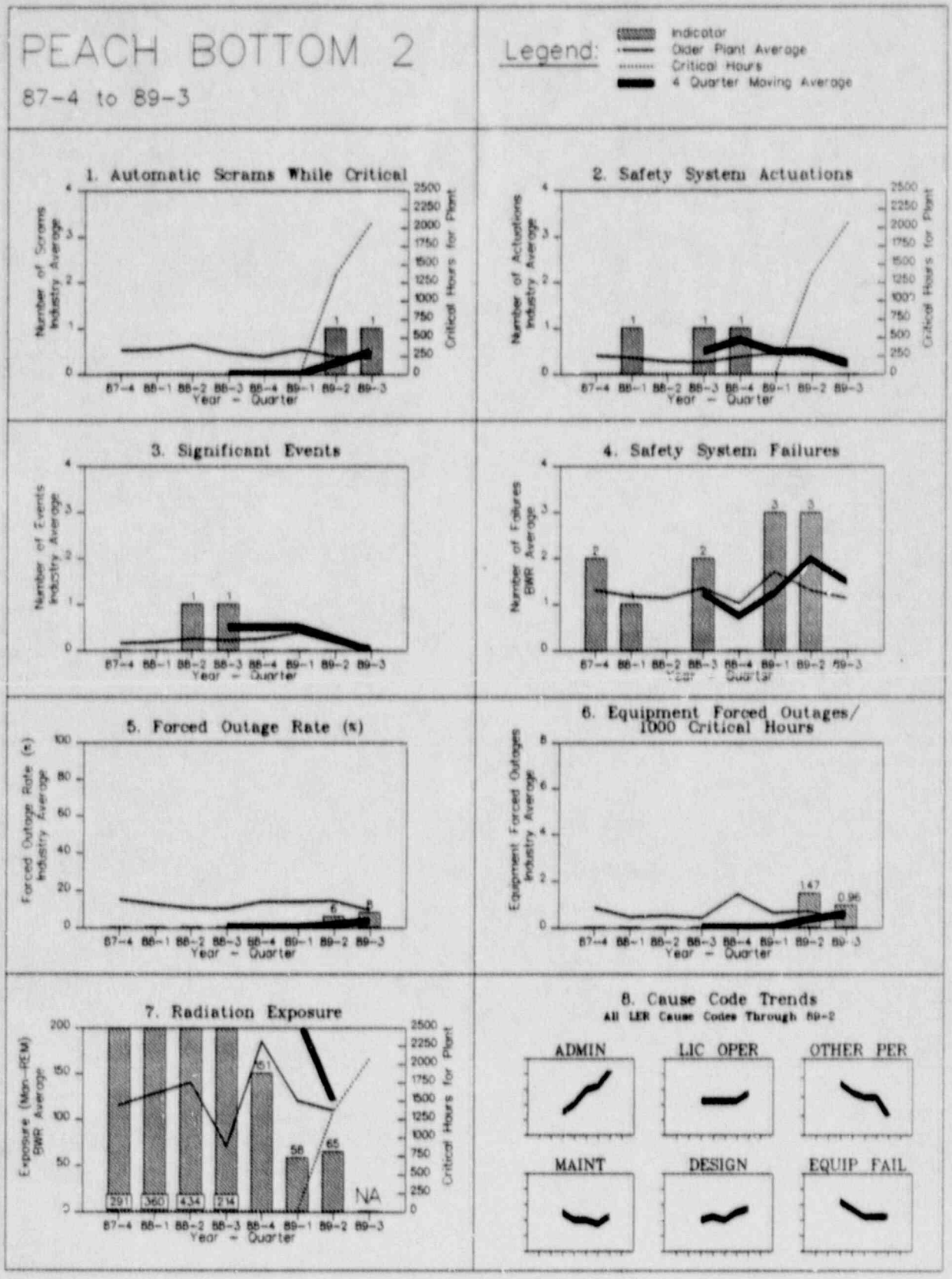

PEACH BOTTOM 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.69

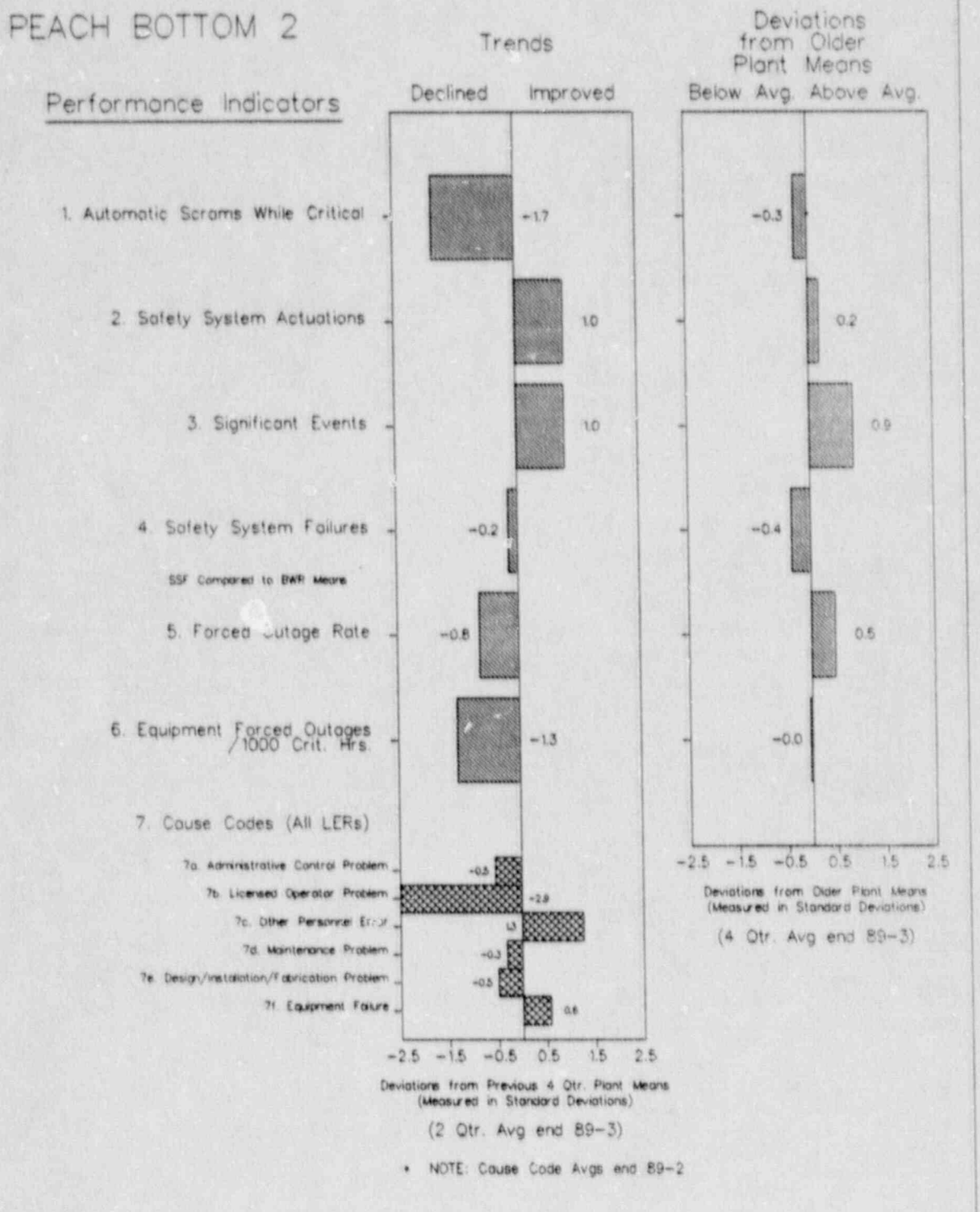
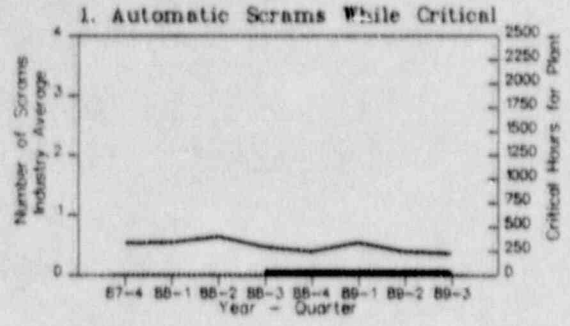

PEACH BOTTOM 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.7
-0.3
2. Safety System Actuations
1.0
0.2
3. Significant Events
1.0
0.9
4. Safety System Failures
-0.2
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
-0.8
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
-1.3
-0.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.5
7b. Licensed Operator Problem
-2.9
7c. Other Personnel Error
1.1
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
-0.5
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

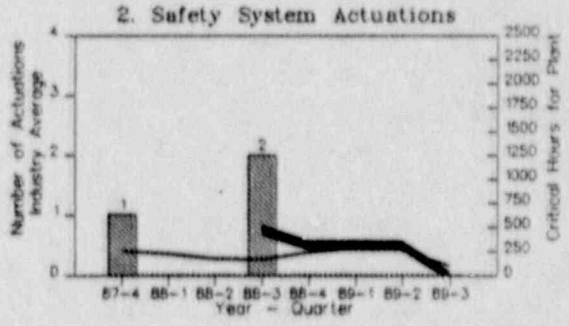
FIGURE 4.70

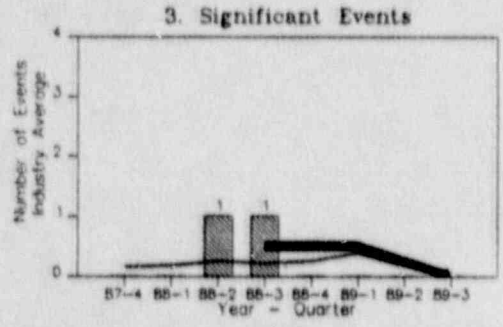
PEACH BOTTOM 3

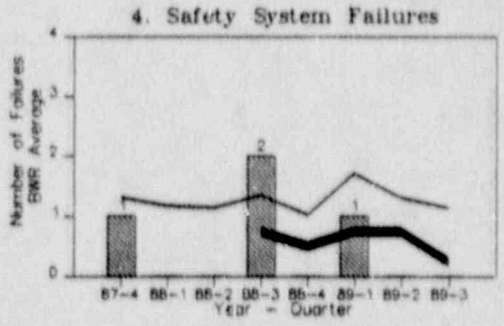
87-4 to 89-3

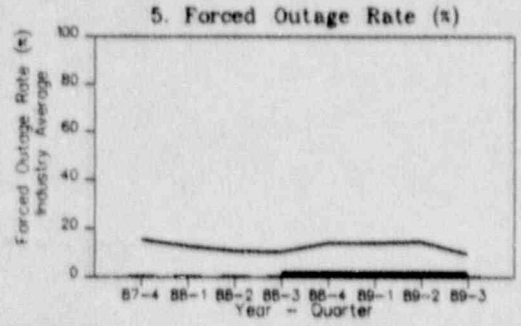
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

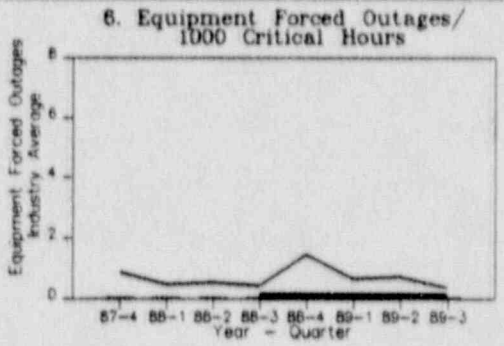


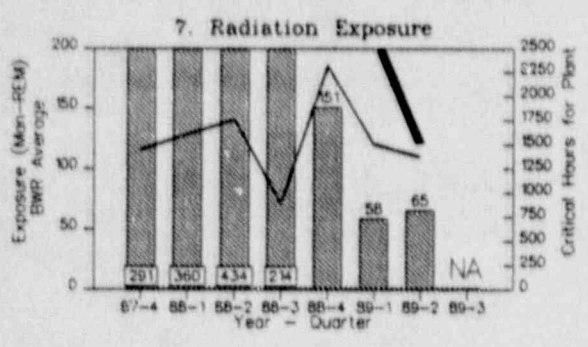












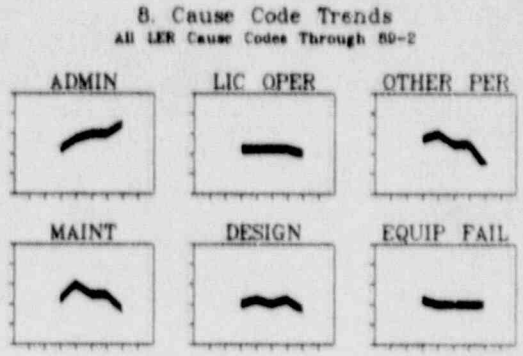


FIGURE 4.70

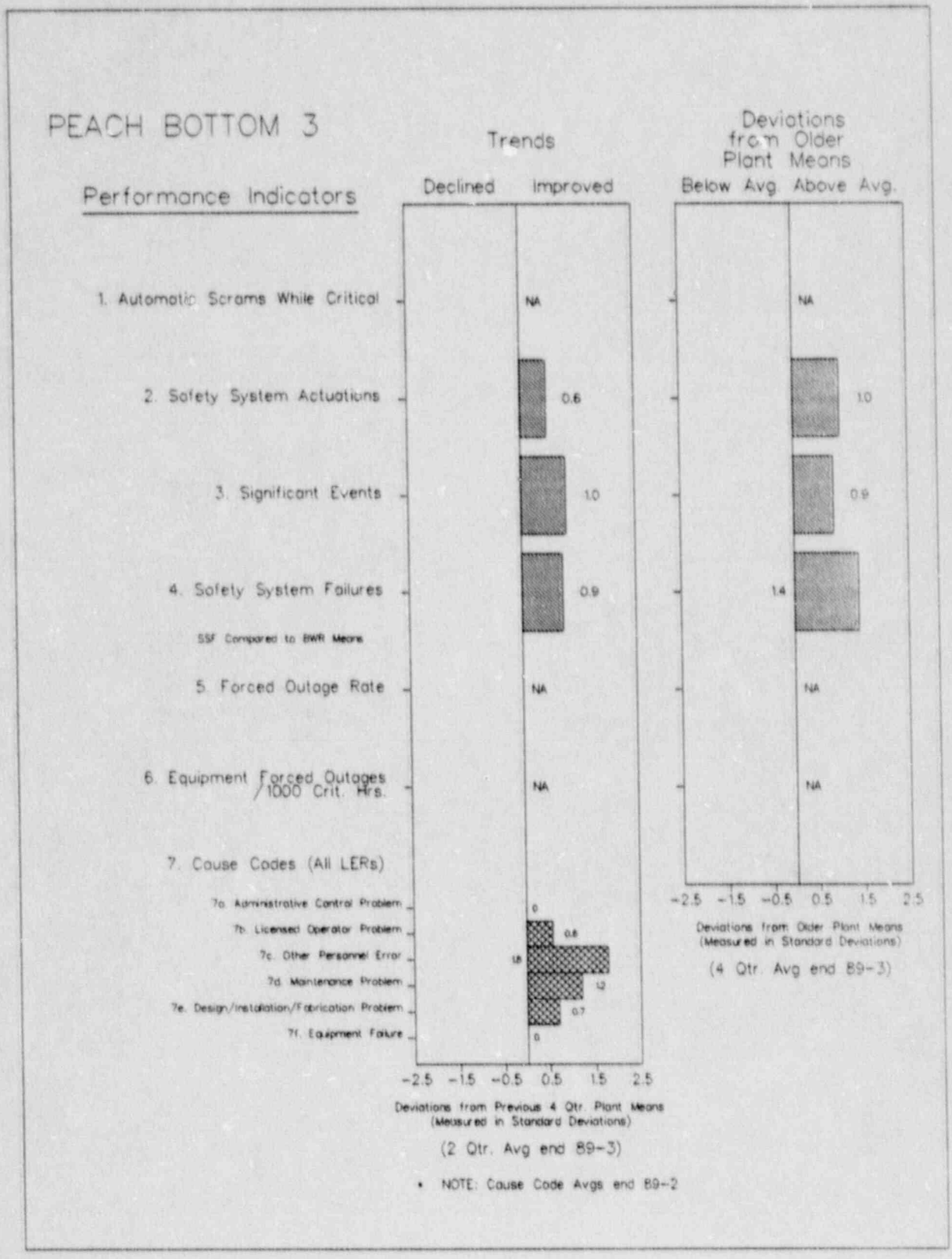
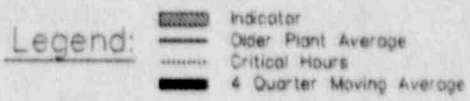
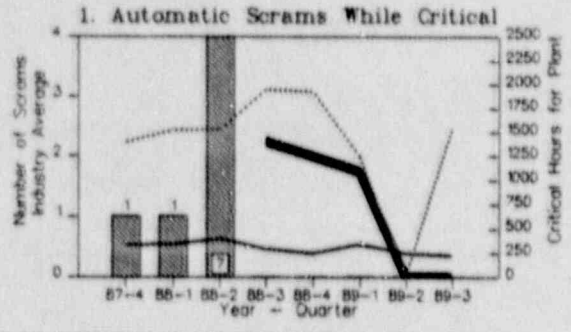

PEACH BOTTOM 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
NA
2. Safety System Actuations
0.6
1.0
3. Significant Events
1.0
0.9
4. Safety System Failures
0.9
1.4
SSF Compared to BWR Means
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages / 1000 Crit. Hrs.
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
1.8
7d. Maintenance Problem
1.2
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

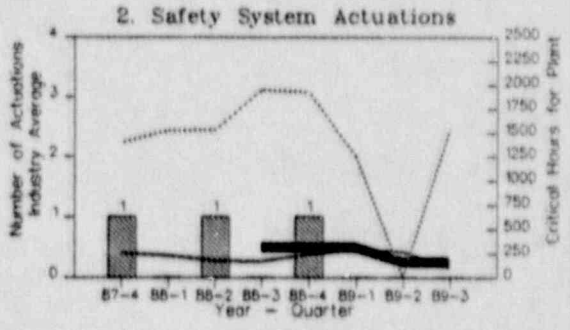
FIGURE 4.1

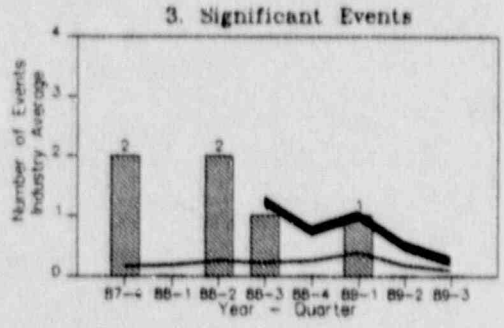
PERRY

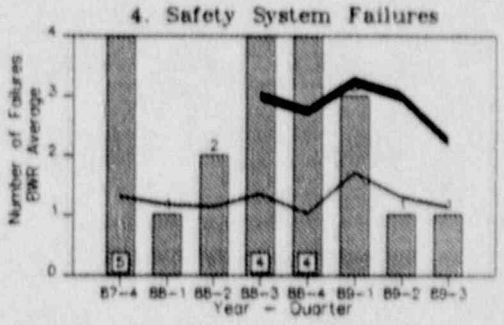
87-4 to 89-3

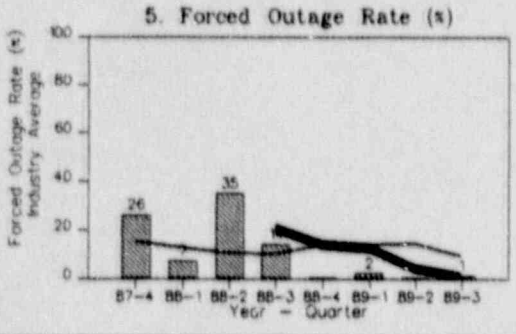


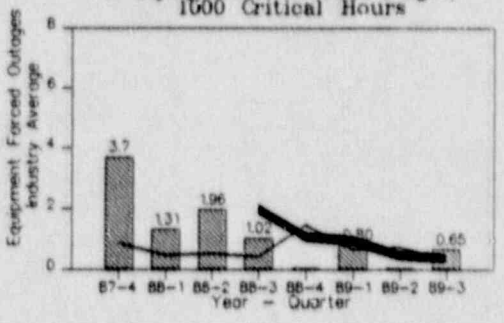


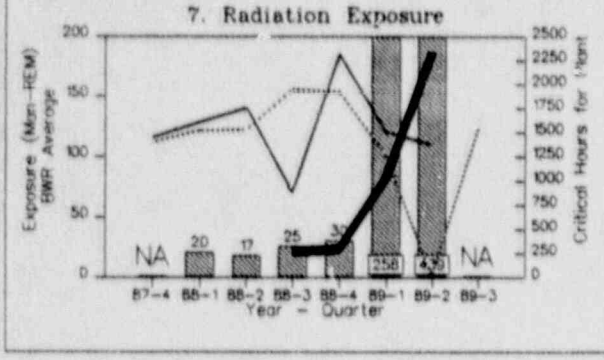












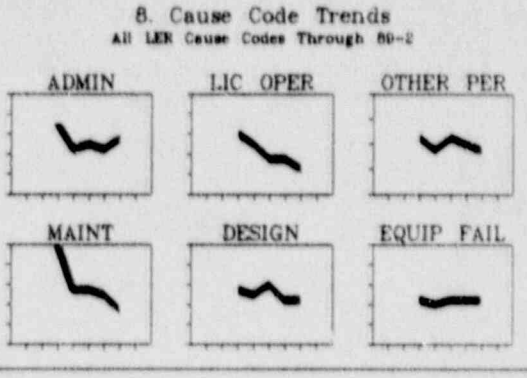


FIGURE 4.71

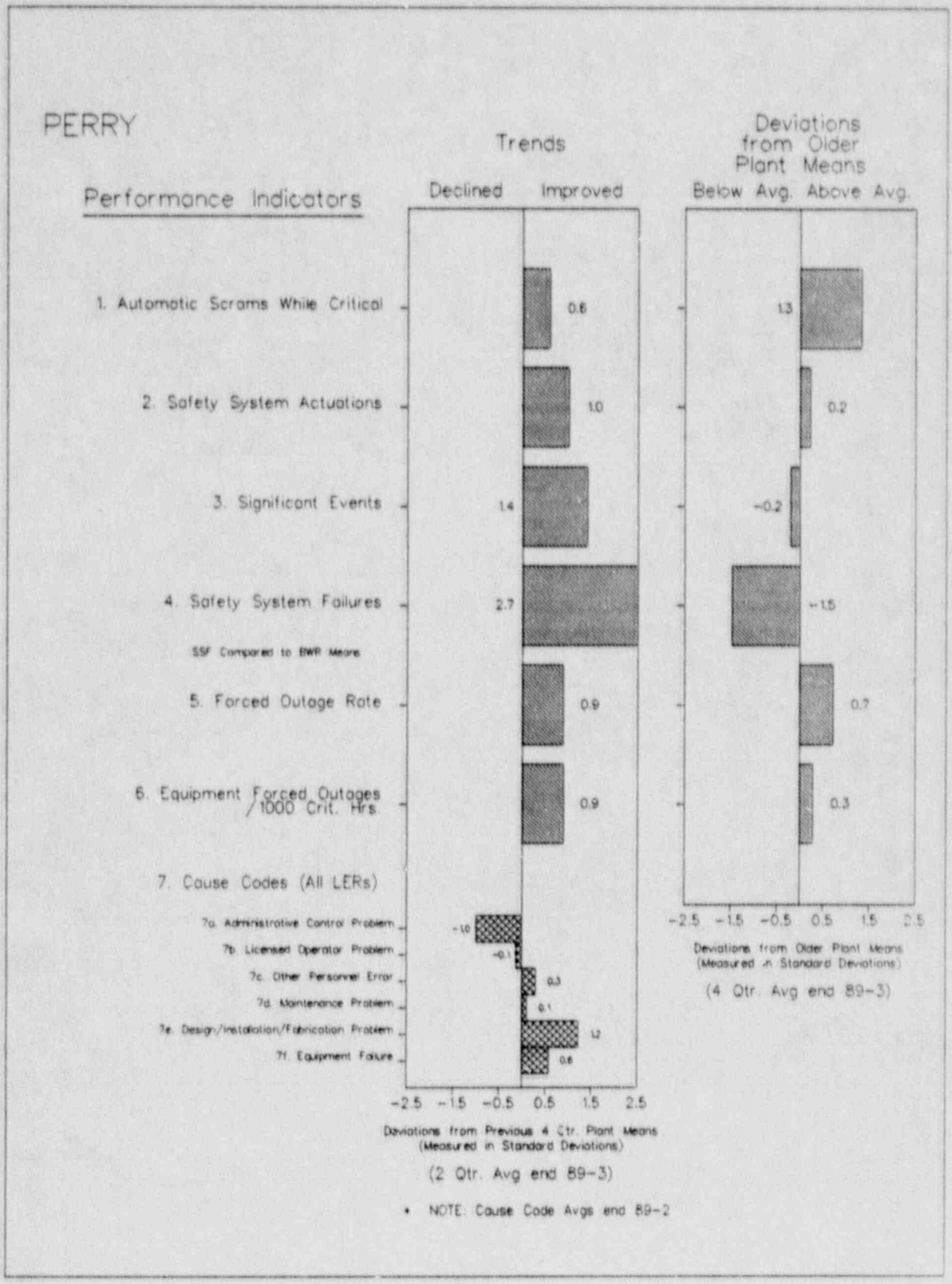

PERRY
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
1.0
0.2
3. Significant Events
1.4
-0.2
4. Safety System Failures
2.7
-1.5
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.9
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.0
7b. Licensed Operator Problem
-0.1
7c. Other Personnel Error
0.3
7d. Maintenance Problem
0.1
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.72

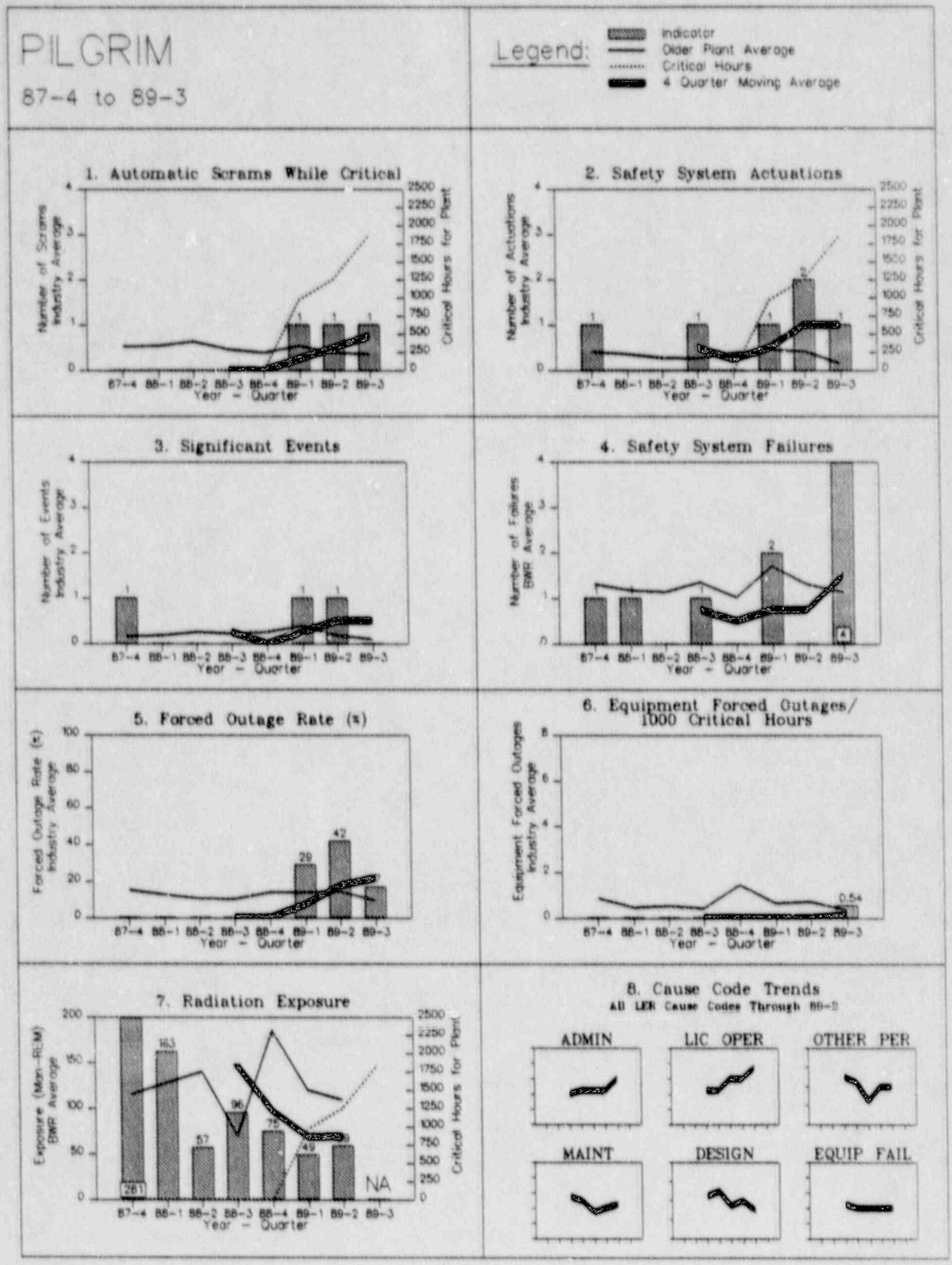

PILGRIM
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures BWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-3
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
Year - Quarter

FIGURE 4.72

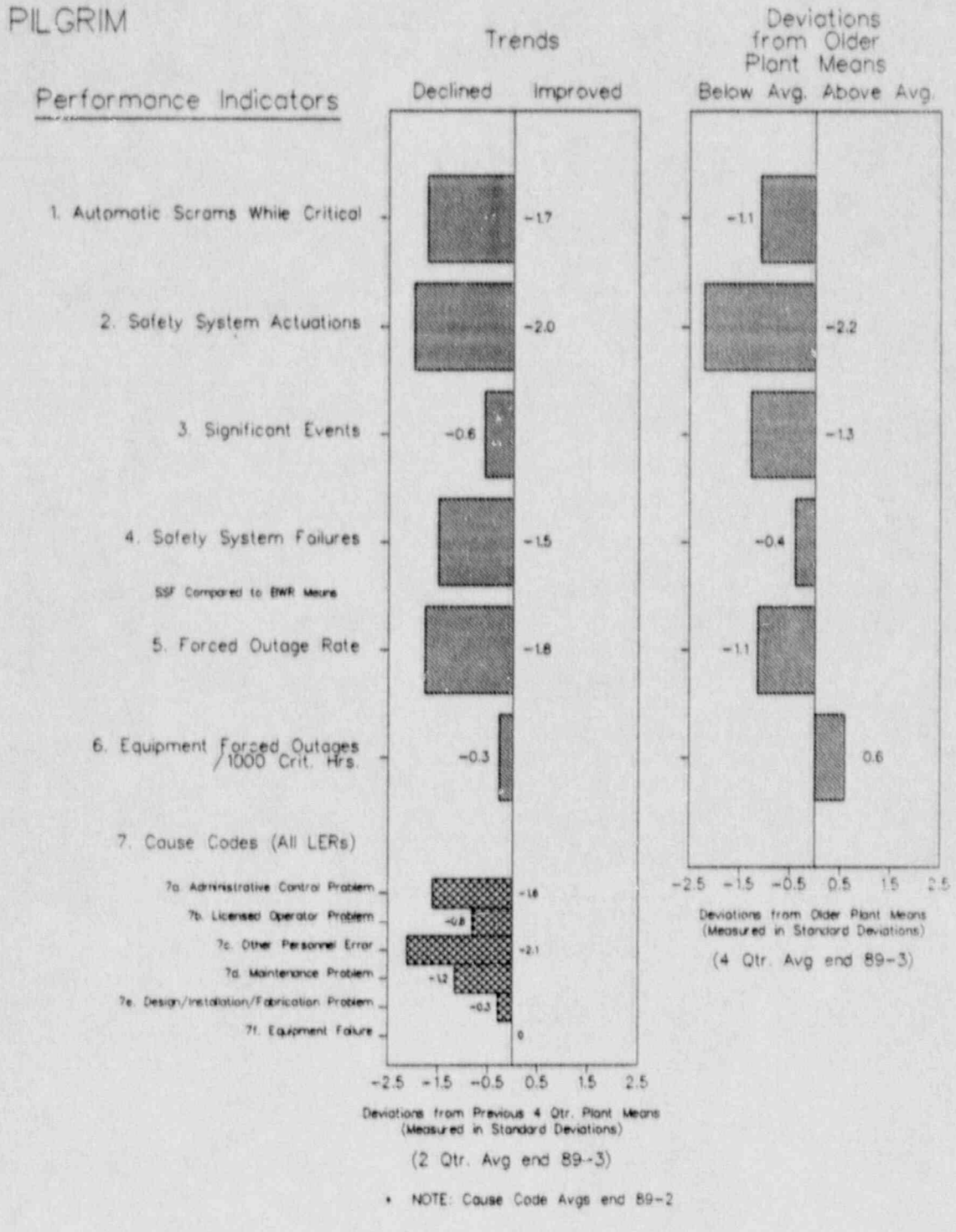

PILGRIM
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.7
-1.1
2. Safety System Actuations
-2.0
-2.2
3. Significant Events
-0.6
-1.3
4. Safety System Failures
-1.5
-0.4
SSF Compared to BWR Means
5. Forced Outage Rate
-1.8
-1.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.3
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.6
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
-2.1
7d. Maintenance Problem
-1.2
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

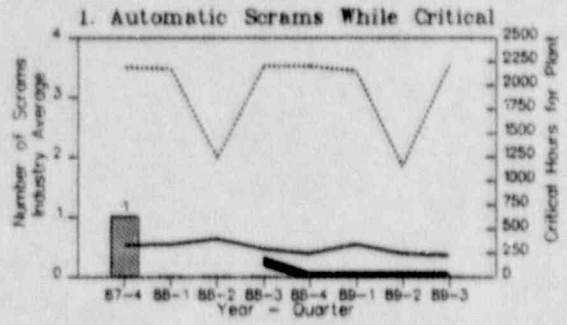
FIGURE 4.73

POINT BEACH 1

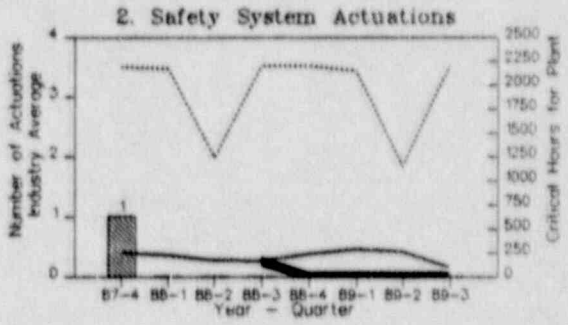
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

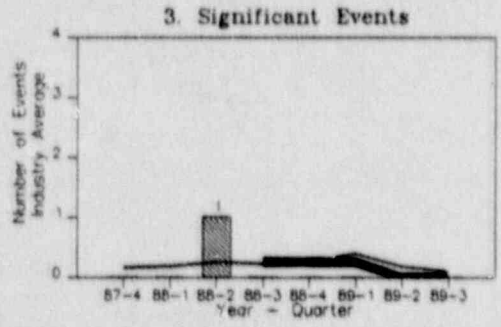
1. Automatic Scrams While Critical



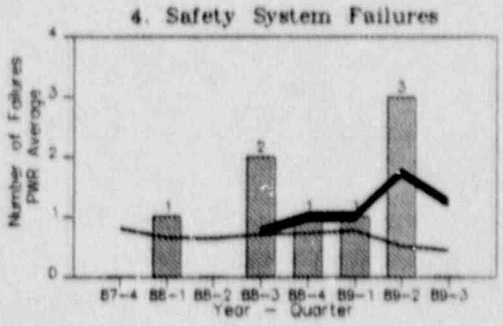
2. Safety System Actuations



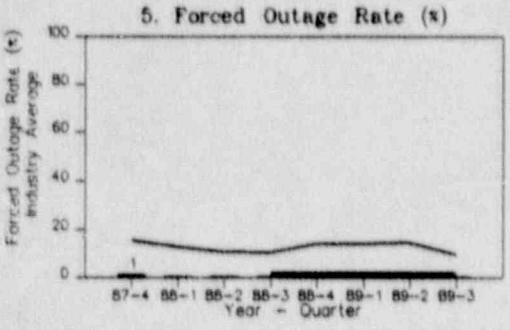
3. Significant Events



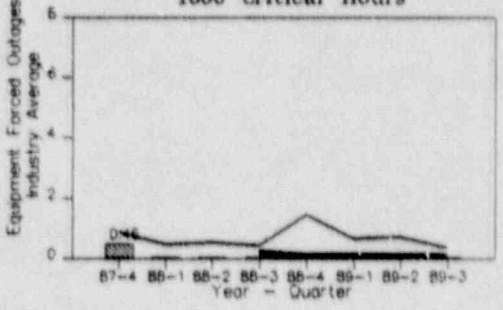
4. Safety System Failures



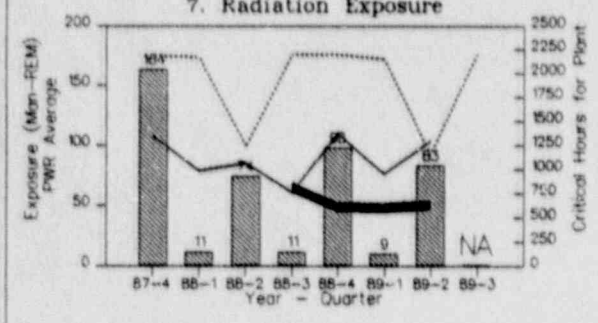
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

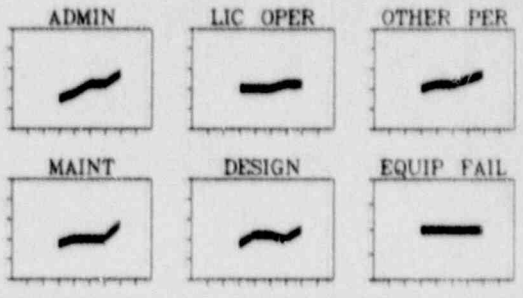


FIGURE 4.73

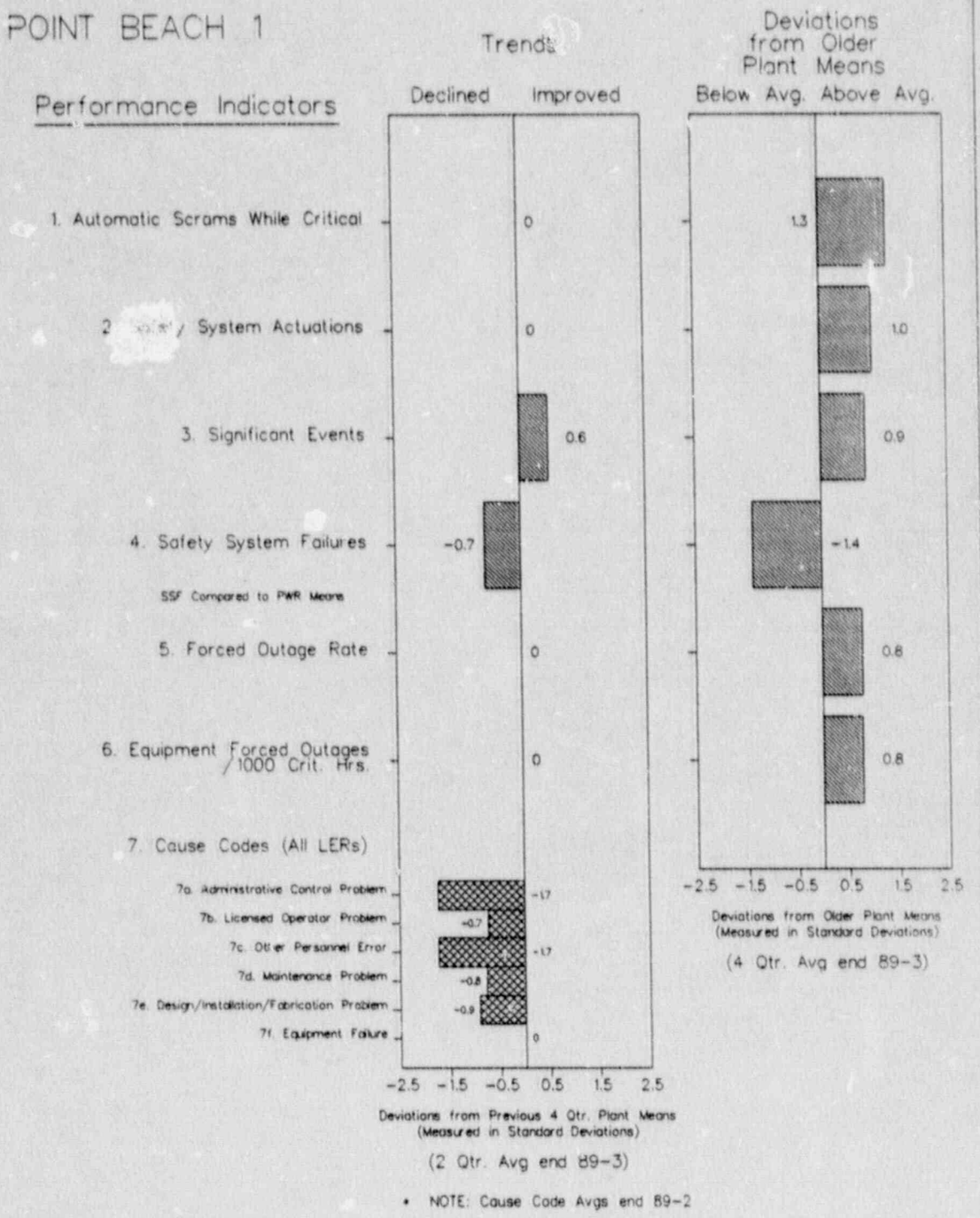
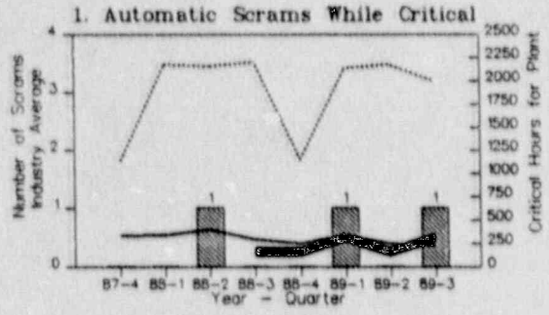

POINT BEACH 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
0.9
4. Safety System Failures
SSF Compared to PWR Means
-0.7
-1.4
5. Forced Outage Rate
0
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.7
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
-1.7
7d. Maintenance Problem
-0.8
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 Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

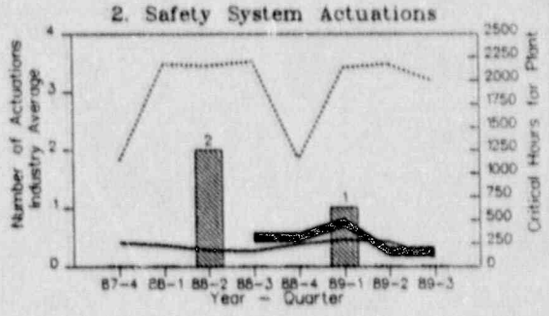
FIGURE 4.74

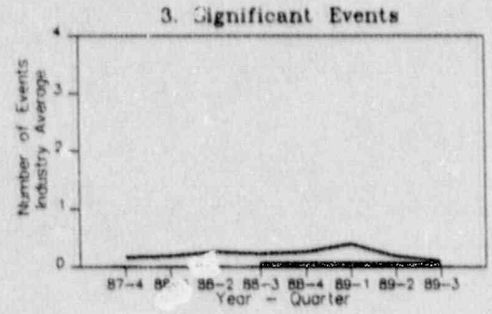
POINT BEACH 2

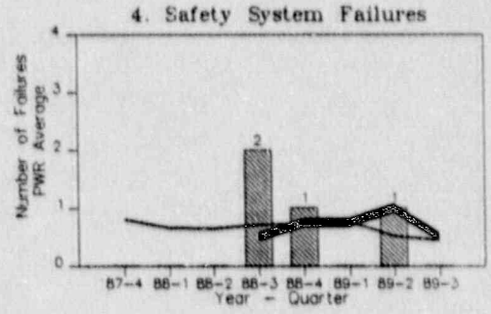
87-4 to 89-3

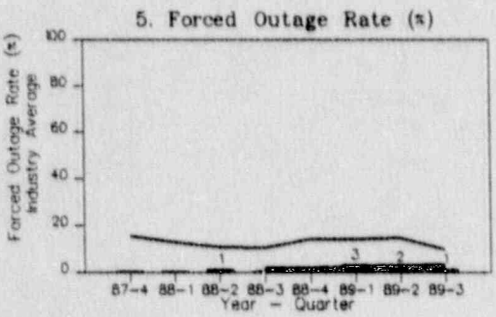
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

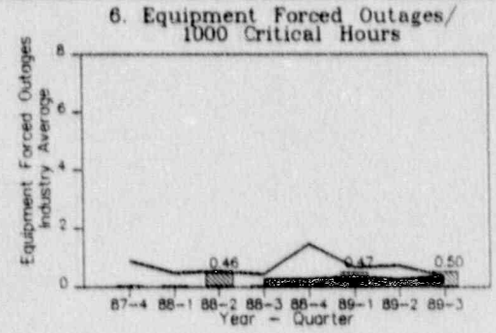


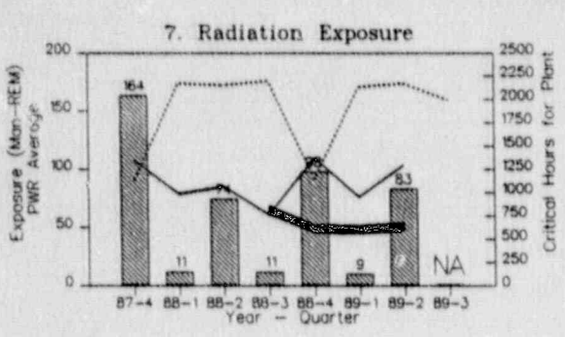












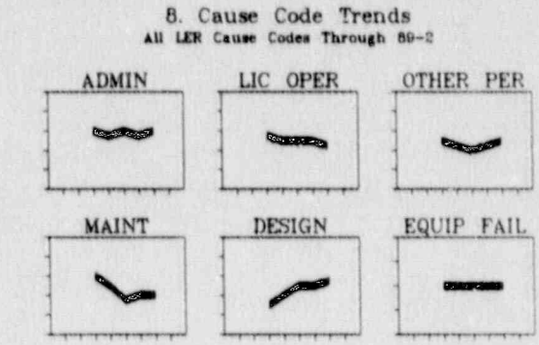


FIGURE 4.74

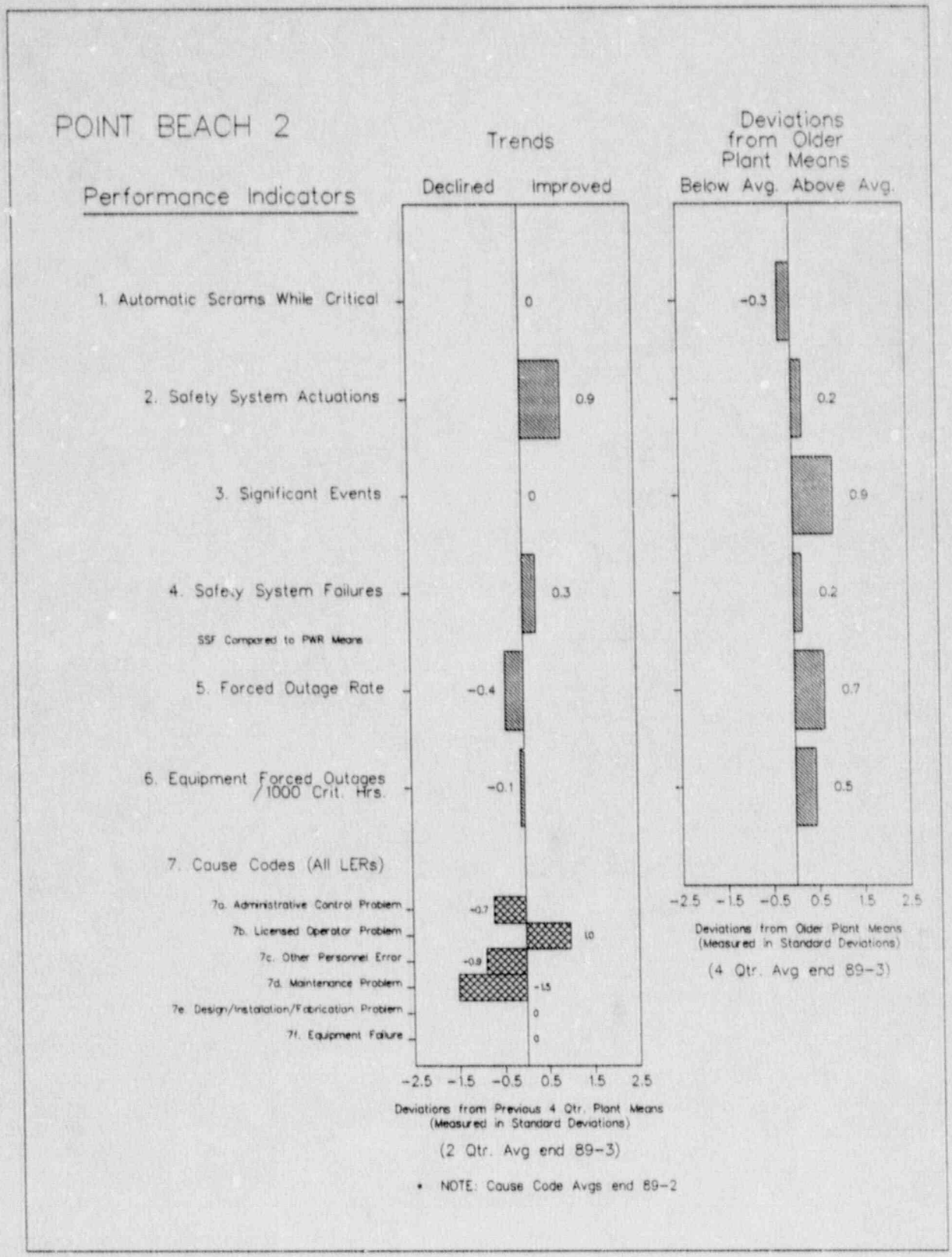

POINT BEACH 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0.9
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0.3
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.1
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.7
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
-0.9
7d. Maintenance Problem
-1.5
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

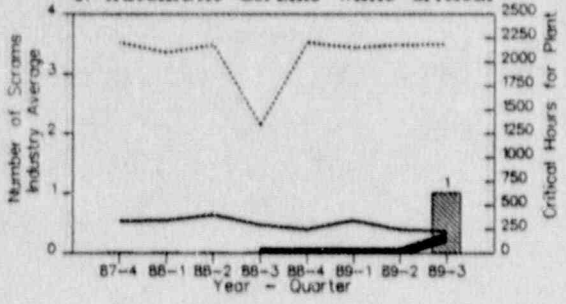
FIGURE 4.75

PRAIRIE ISLAND 1

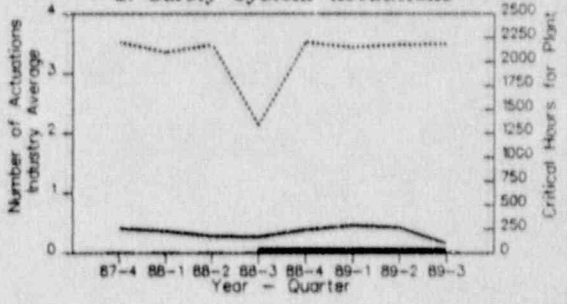
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

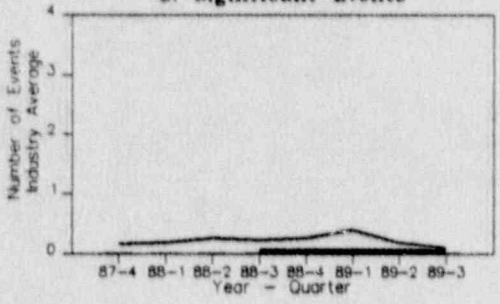
1. Automatic Scrams While Critical



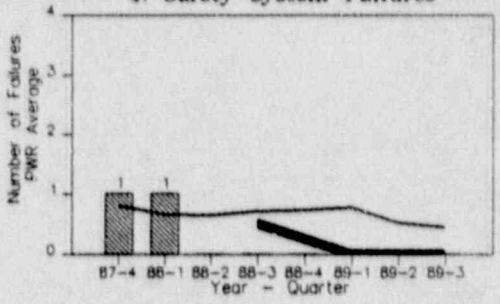
2. Safety System Actuations



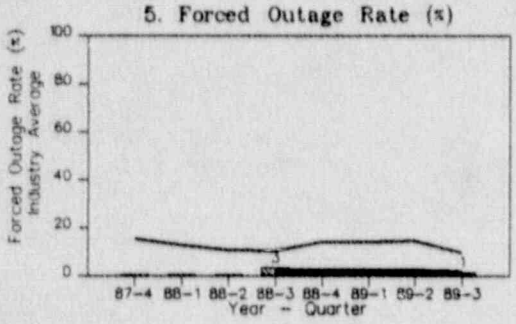
3. Significant Events



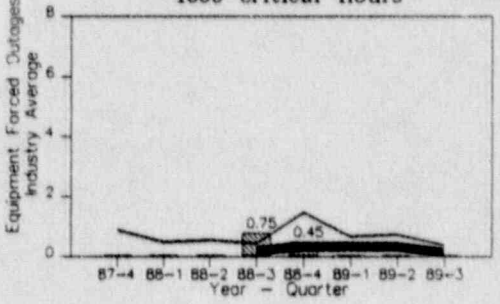
4. Safety System Failures



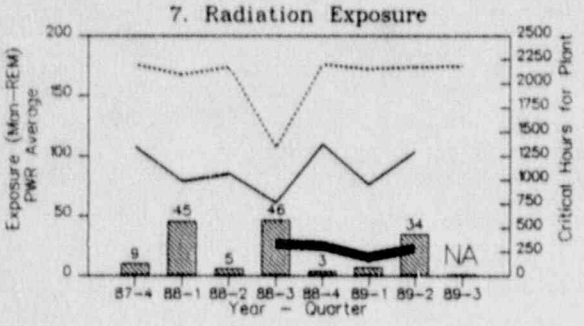
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

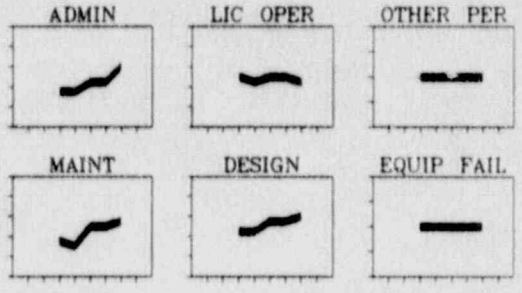


FIGURE 4.75

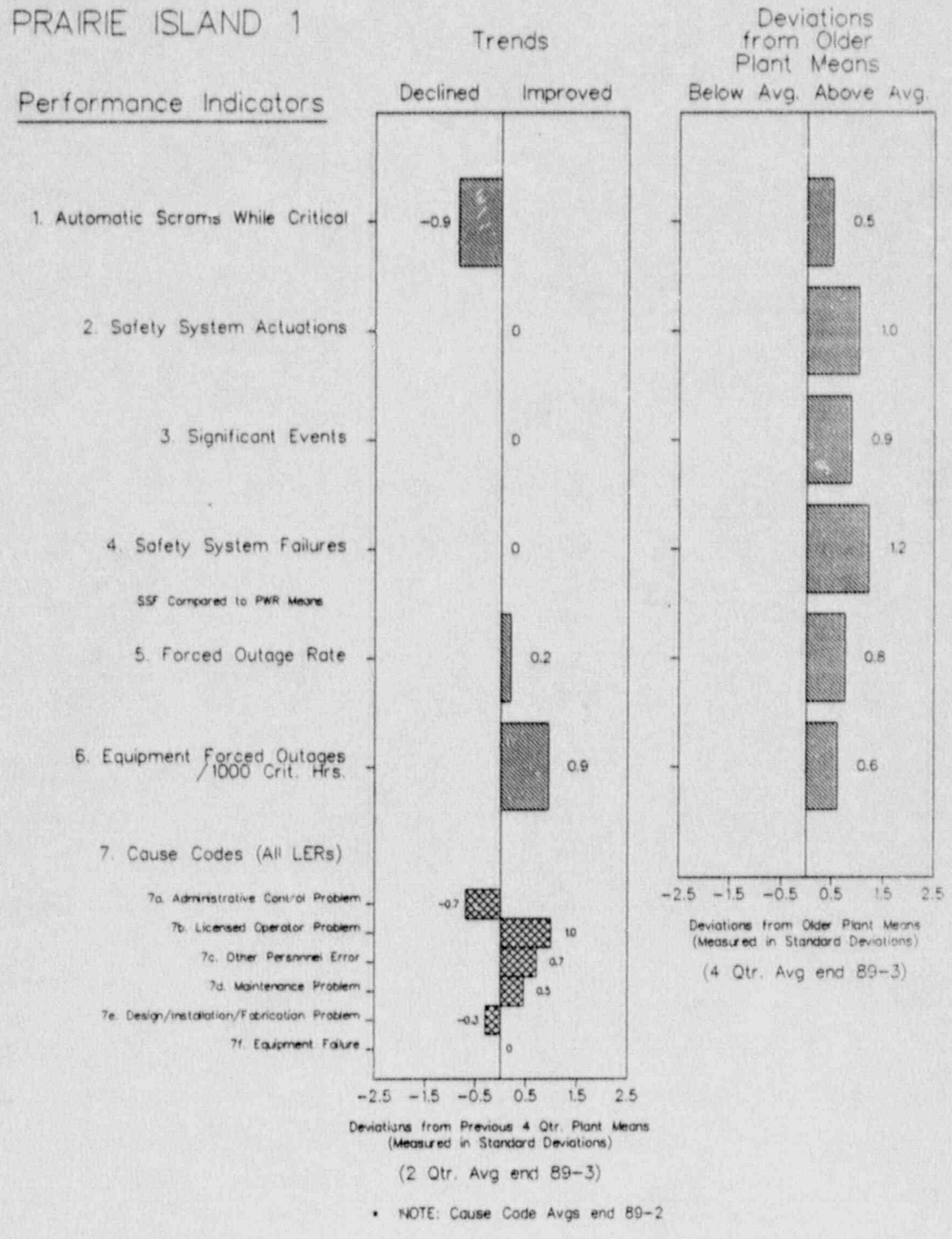

PRAIRIE ISLAND 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.2
0.8
6. Equipment Forced Outages /1000 Crit. Hrs.
0.9
0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.7
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.5
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

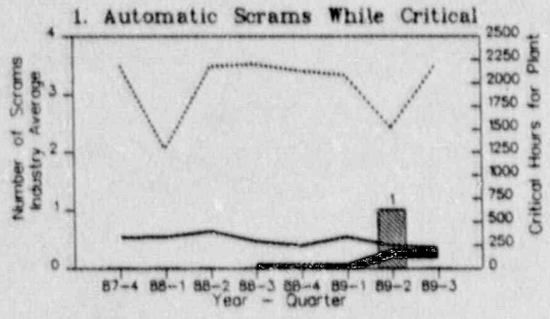
FIGURE 4.76

PRAIRIE ISLAND 2

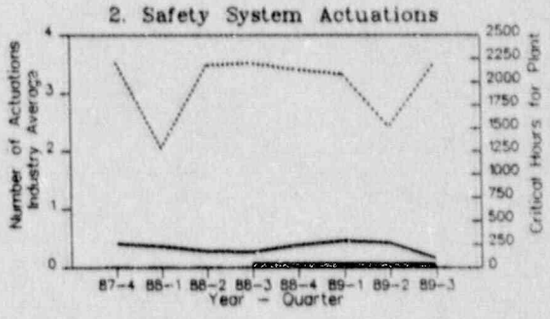
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

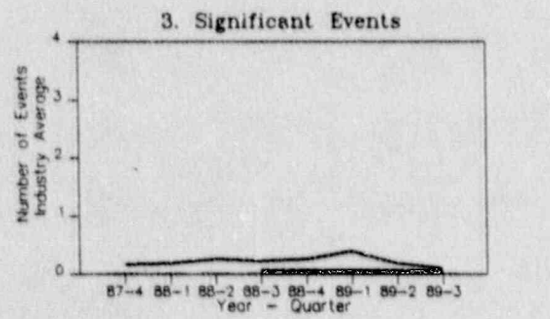
1. Automatic Scrams While Critical



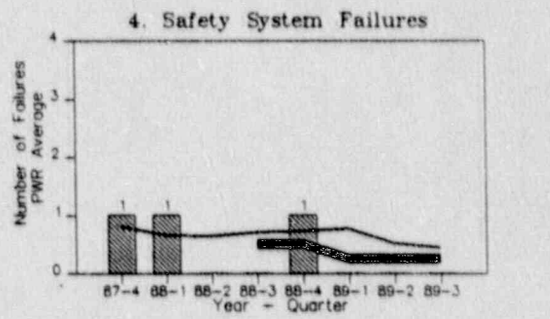
2. Safety System Actuations



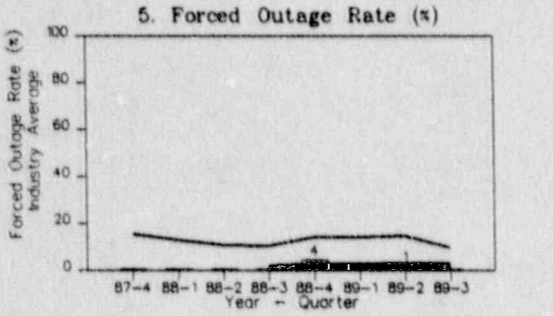
3. Significant Events



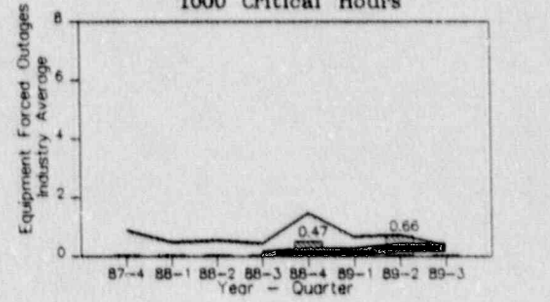
4. Safety System Failures



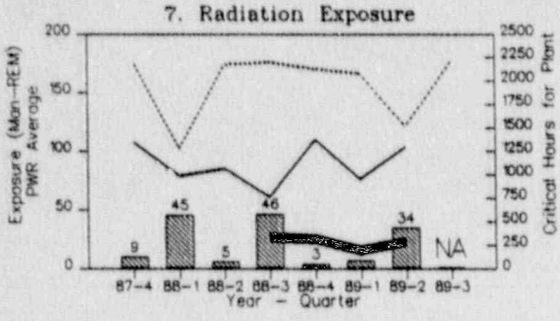
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

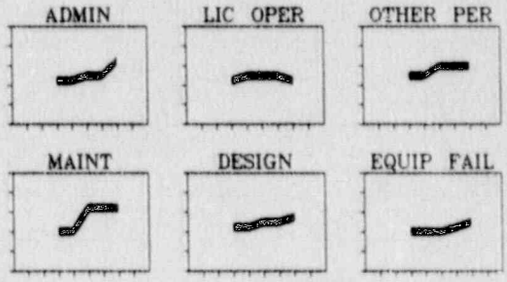


FIGURE 4.76

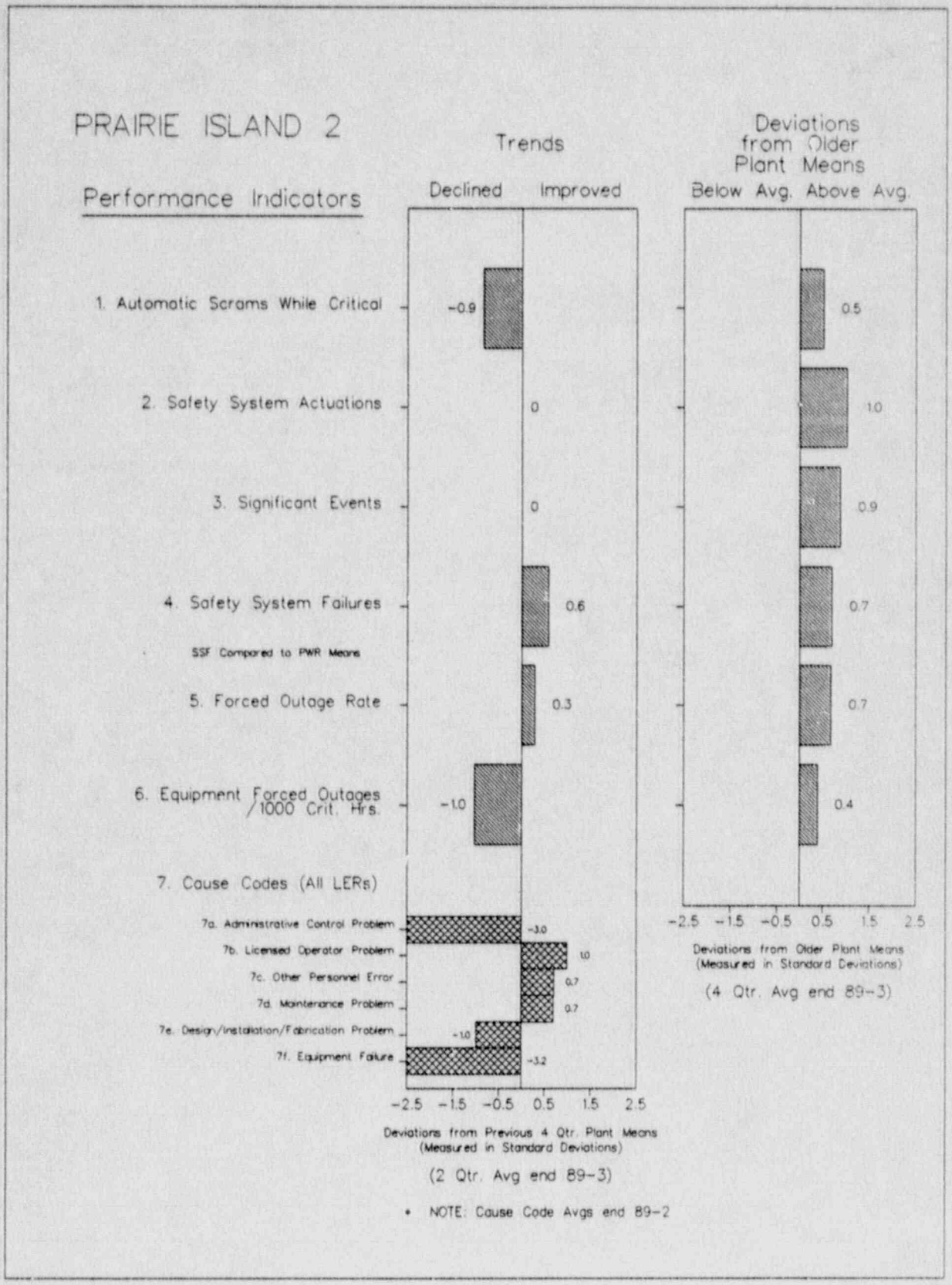

PRAIRIE ISLAND 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0.6
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
0.3
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
-1.0
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-3.0
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
-1.0
7f. Equipment Failure
-3.2
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.77

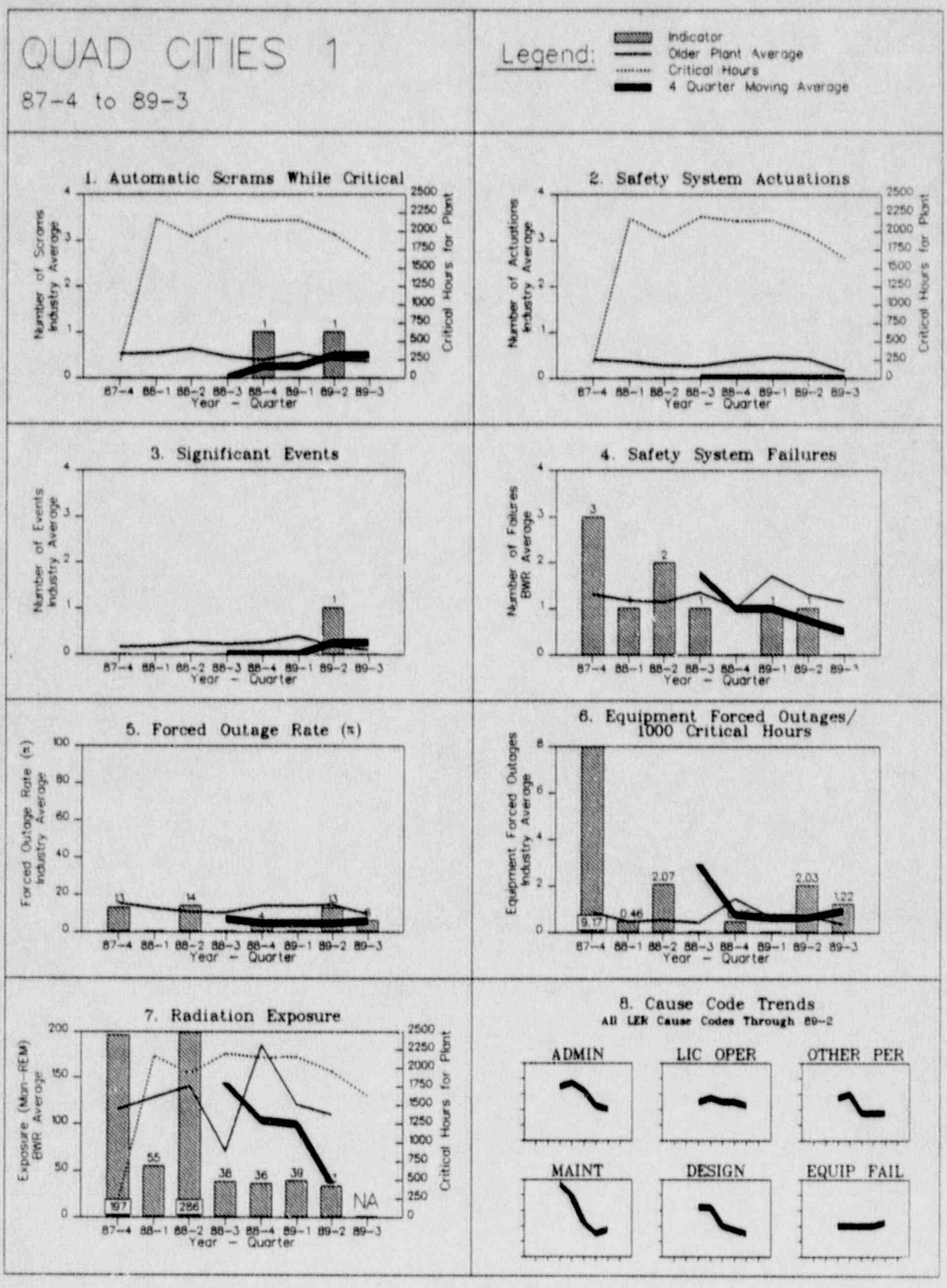

QUAD CITIES 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
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 Critical Hours
Equipment Forced Outages Industry Average
9.17
0.46
2.07
2.03
1.22
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) BWR Average
Critical Hours for Plant
197
55
286
38
36
39
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.77

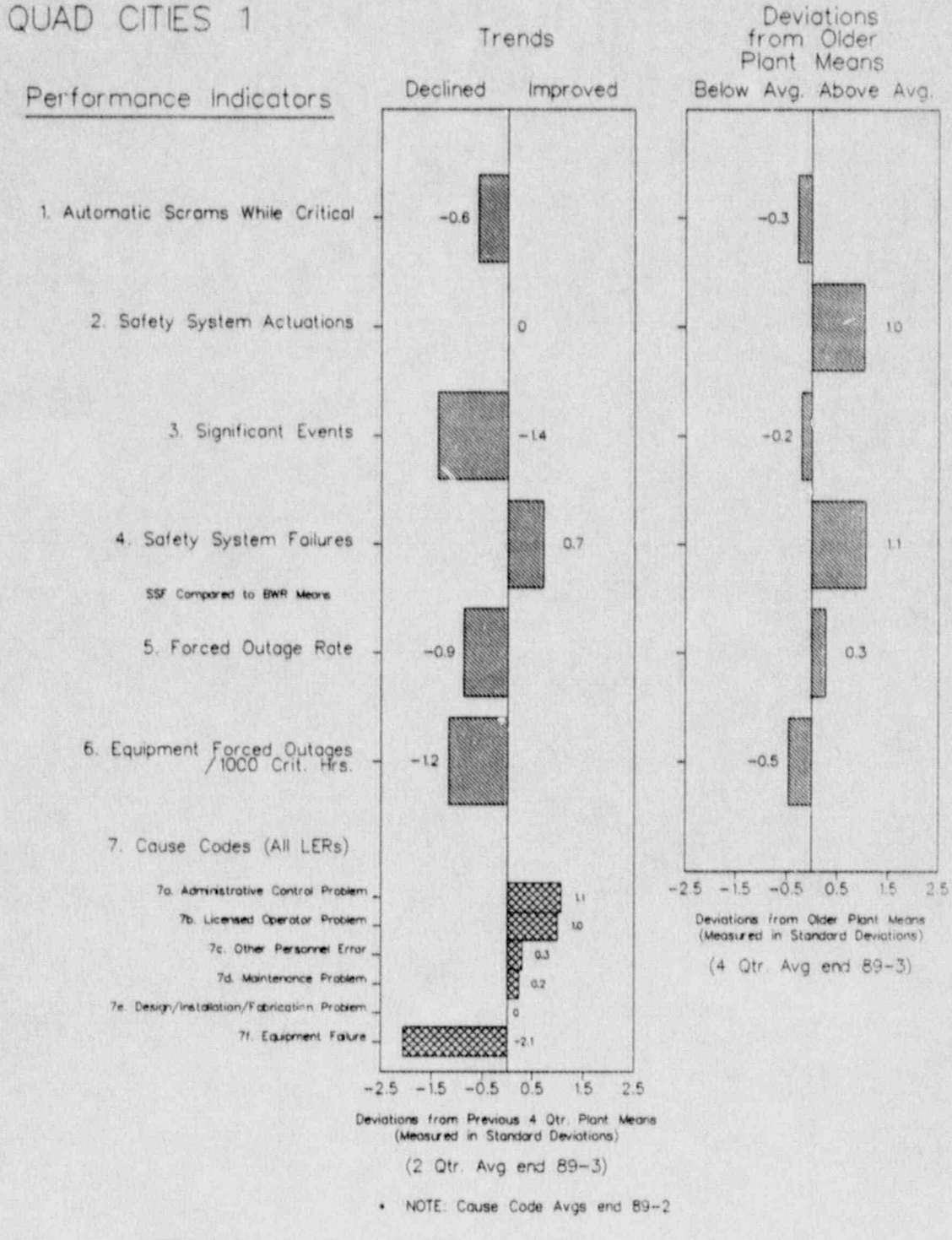
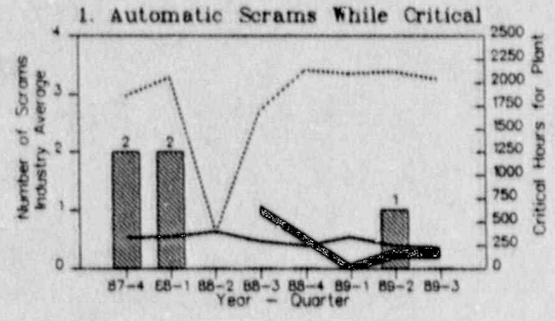

QUAD CITIES 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
0
1.0
3. Significant Events
-1.4
-0.2
4. Safety System Failures
0.7
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
-0.9
0.3
6. Equipment Forced Outages / 1000 Crit. Hrs.
-1.2
-0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.1
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.3
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
-2.1
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

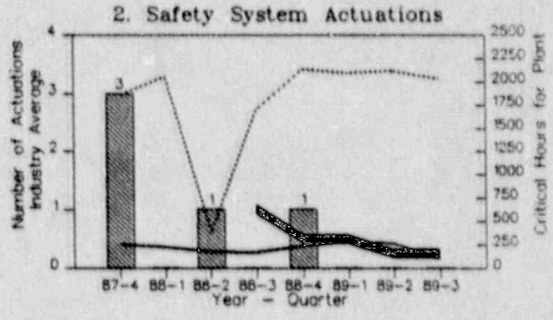
FIGURE 4.78

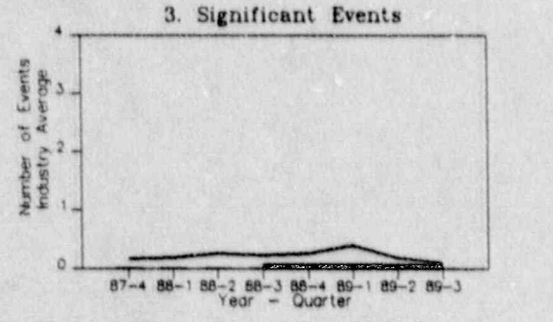
QUAD CITIES 2

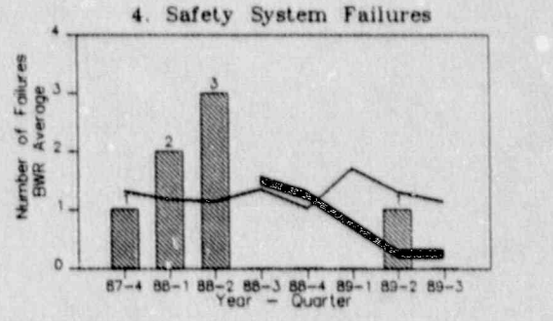
87-4 to 89-3

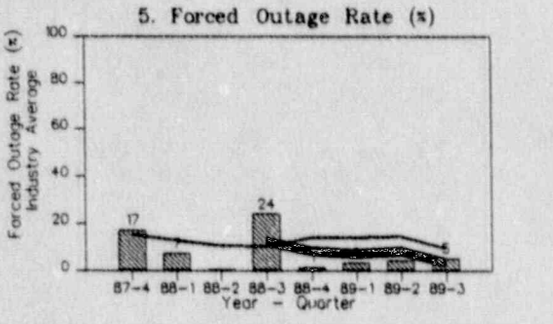
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

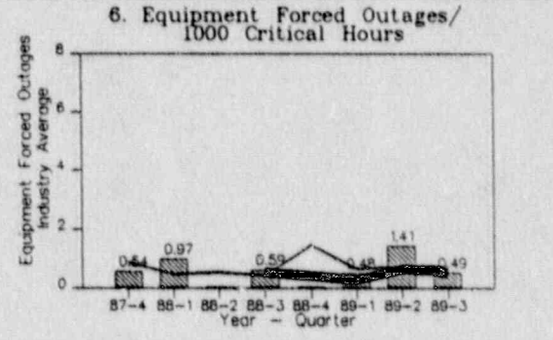


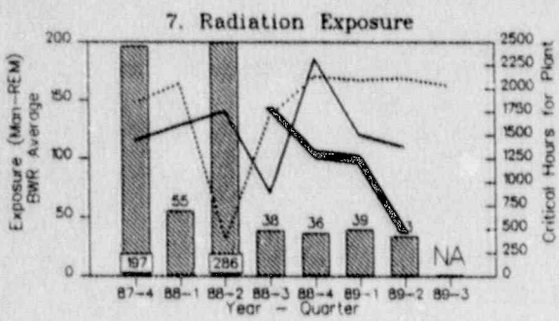












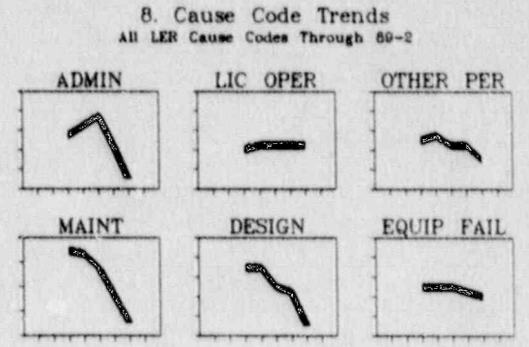


FIGURE 4.78

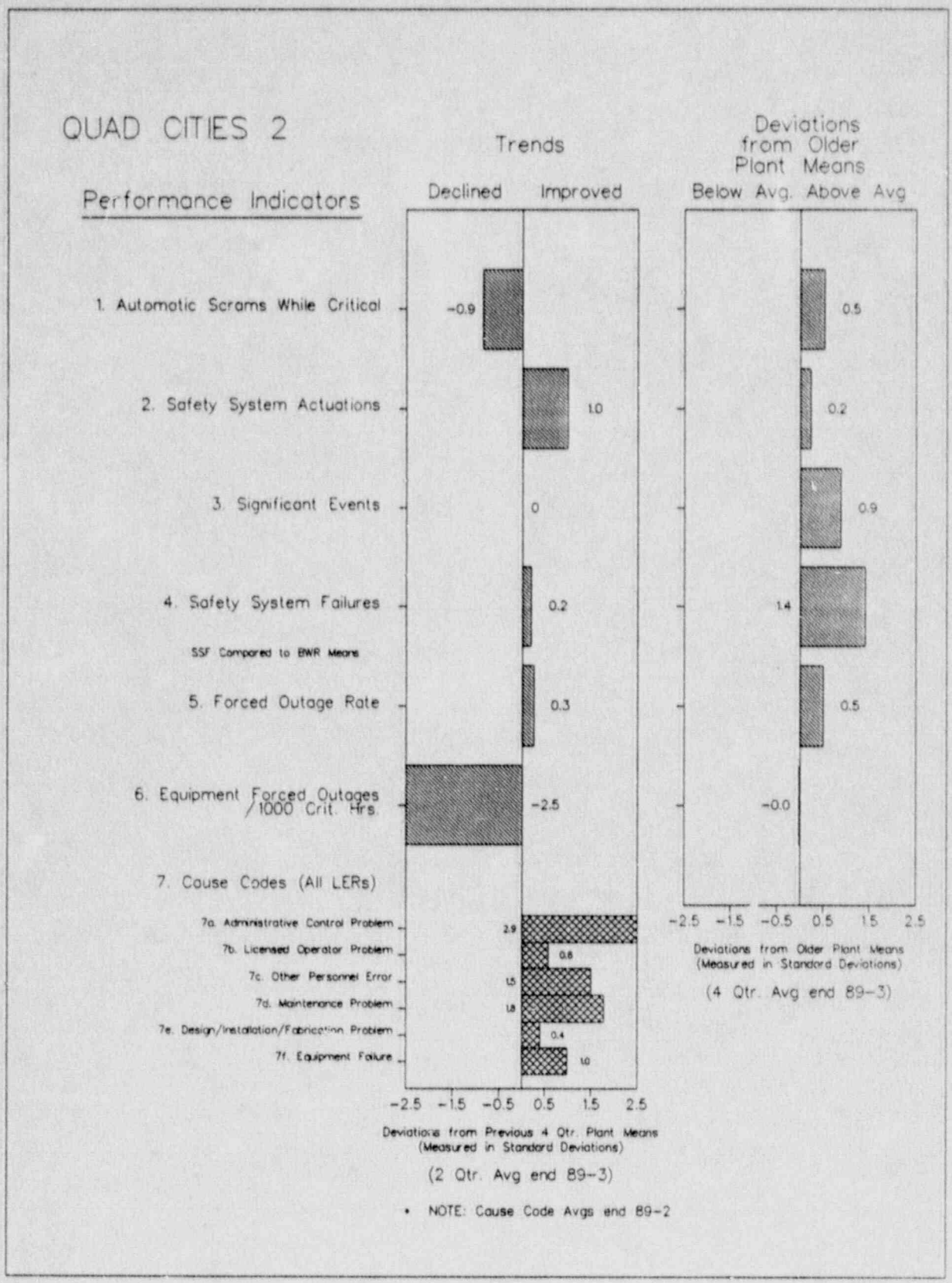

QUAD CITIES 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
1.0
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0.2
1.4
SSF Compared to BWR Means
5. Forced Outage Rate
0.3
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
-2.5
-0.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
2.9
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
1.5
7d. Maintenance Problem
1.8
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 Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.79

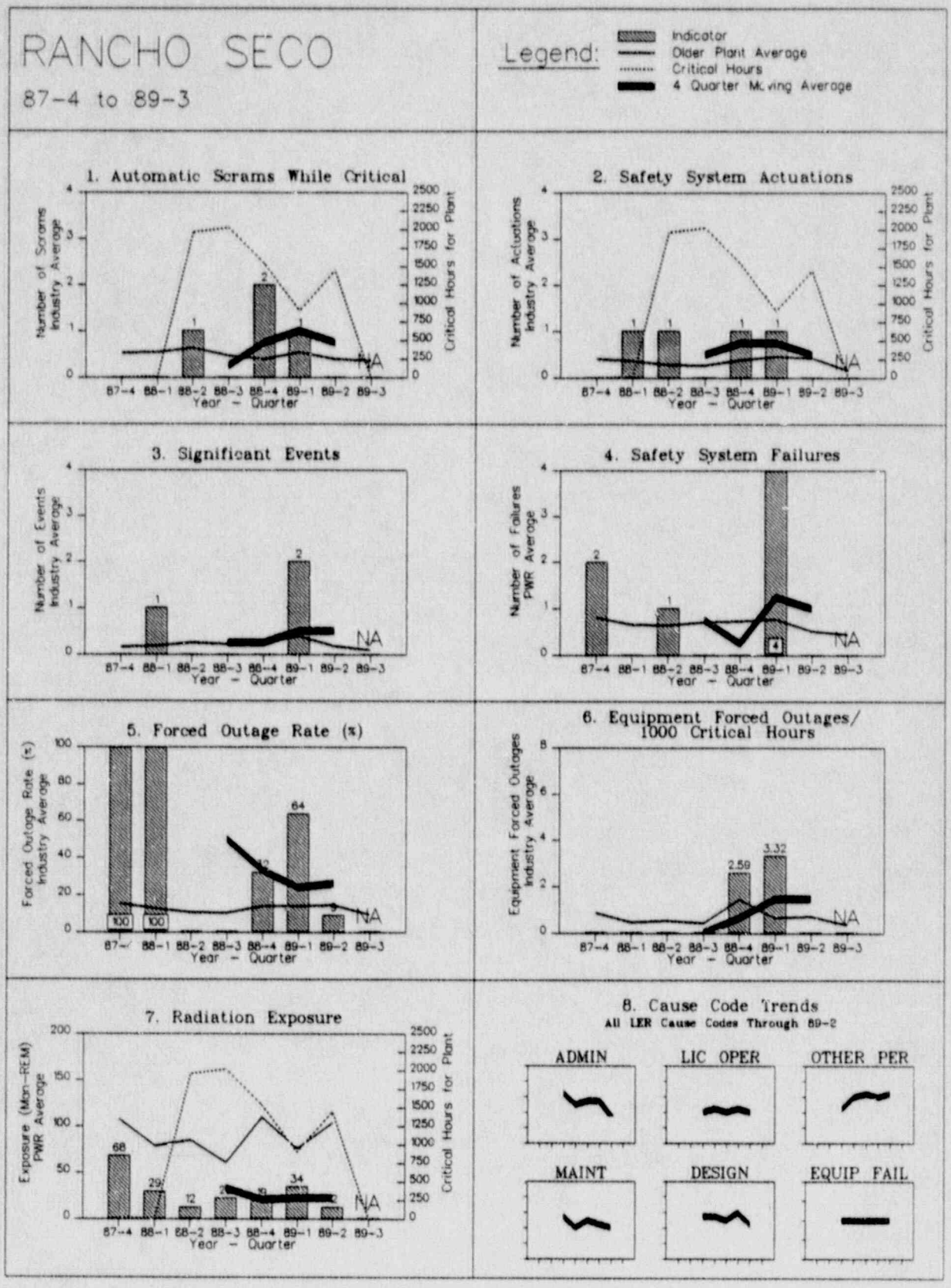

RANCHO SECO
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter
NA

FIGURE 4.79

RANCHO SECO

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

FIGURE 4.80

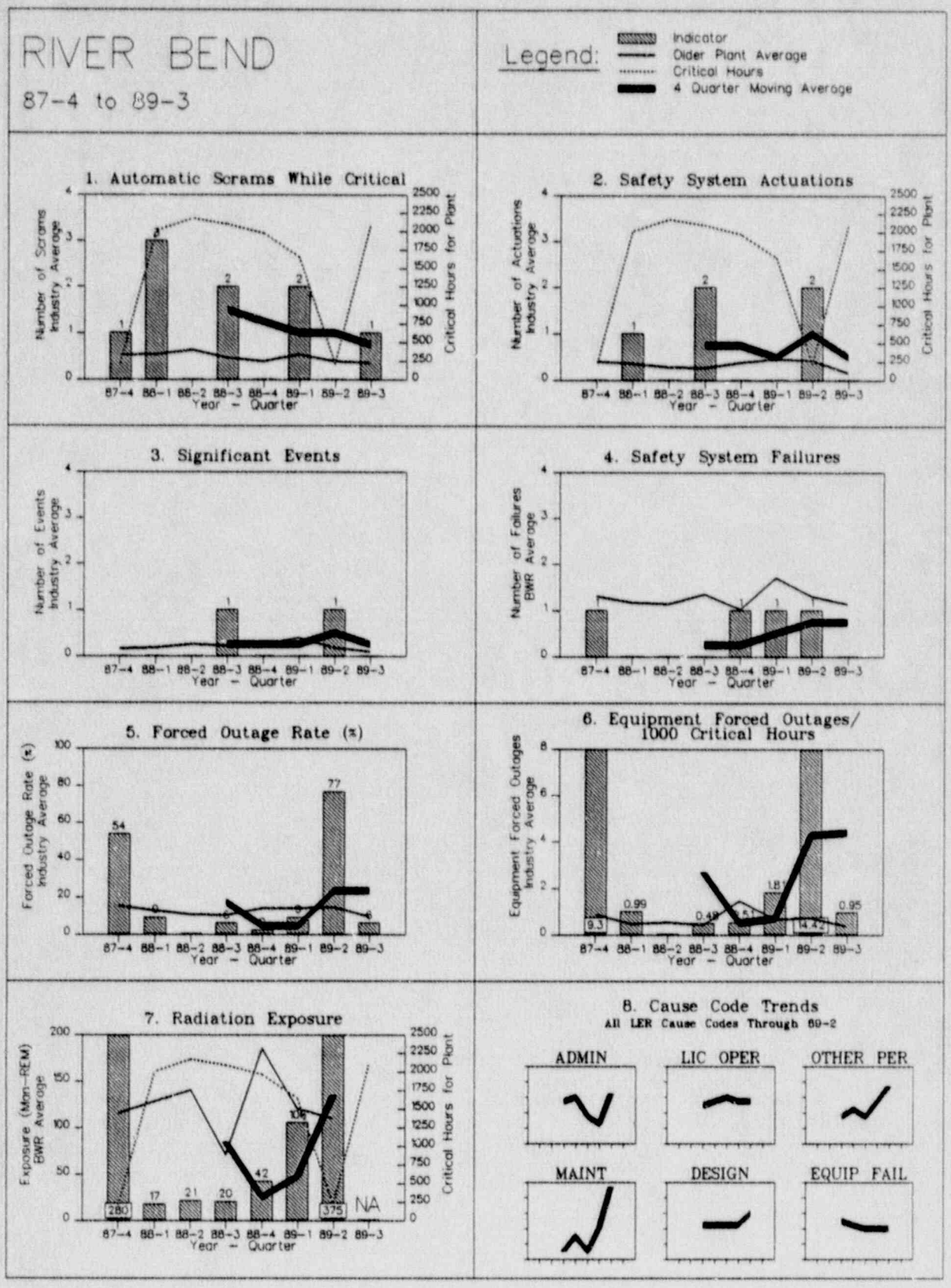

RIVER BEND
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.80

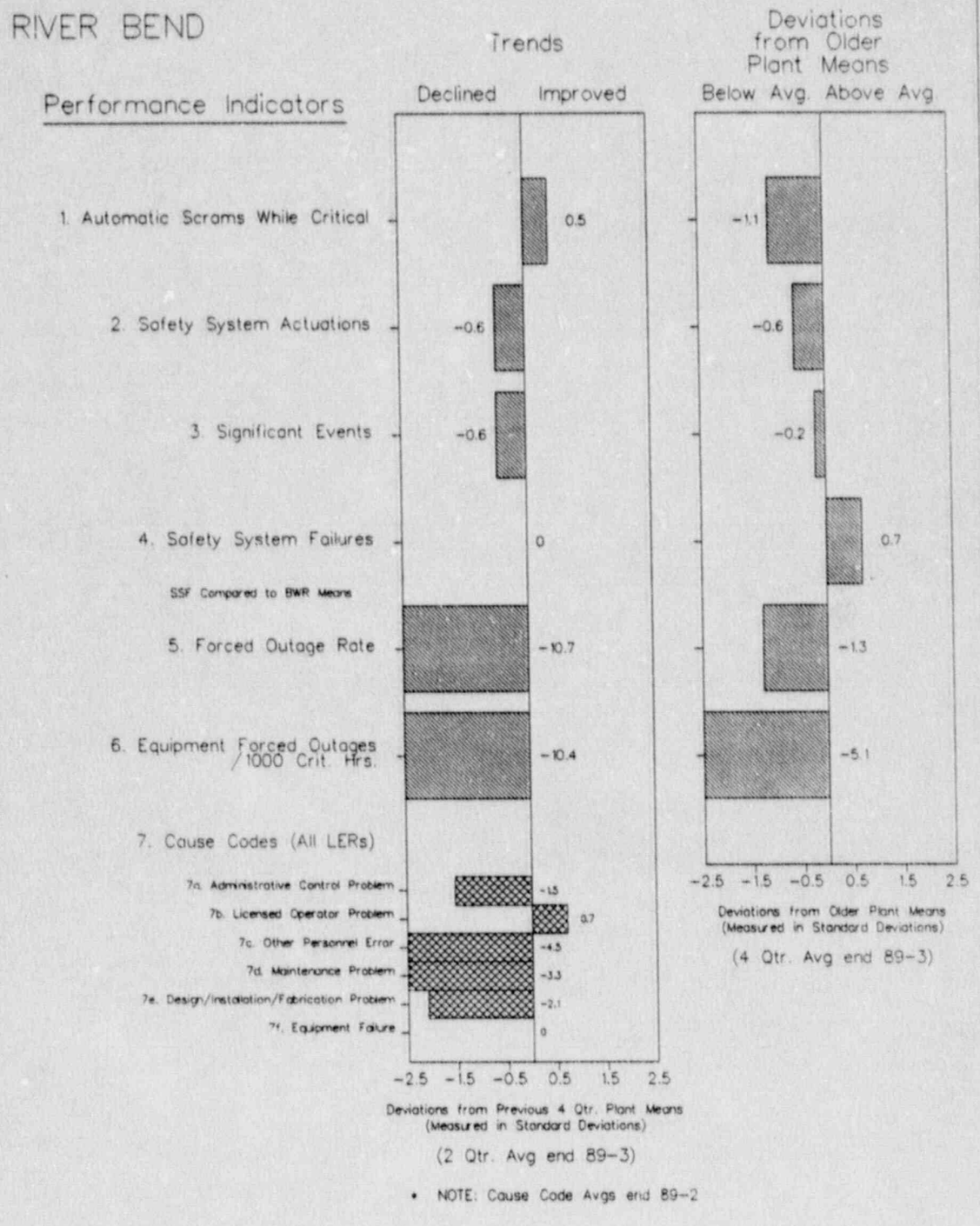

RIVER BEND
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.5
-1.1
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
-0.6
-0.2
4. Safety System Failures
0
0.7
SSF Compared to BWR Means
5. Forced Outage Rate
-10.7
-1.3
6. Equipment Forced Outages / 1000 Crit. Hrs.
-10.4
-5.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.5
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
-4.5
7d. Maintenance Problem
-3.3
7e. Design/Installation/Fabrication Problem
-2.1
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

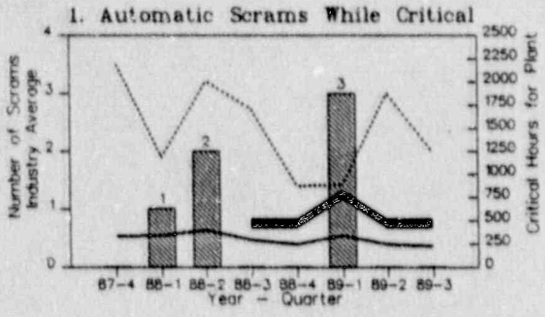
FIGURE 4.81

ROBINSON 2

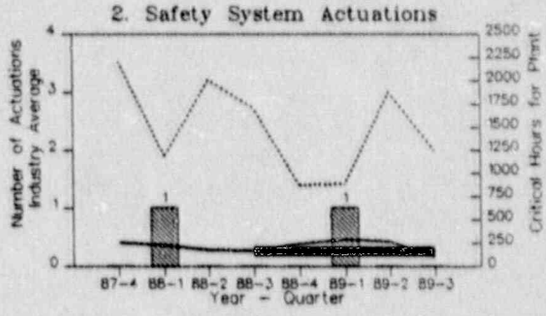
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

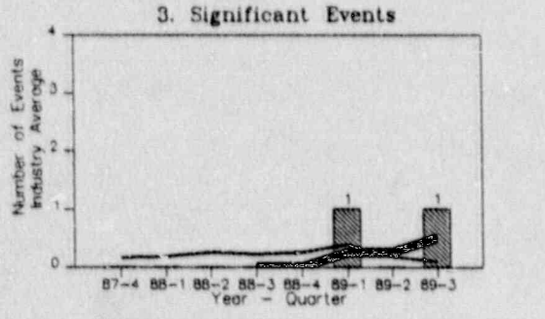
1. Automatic Scrams While Critical



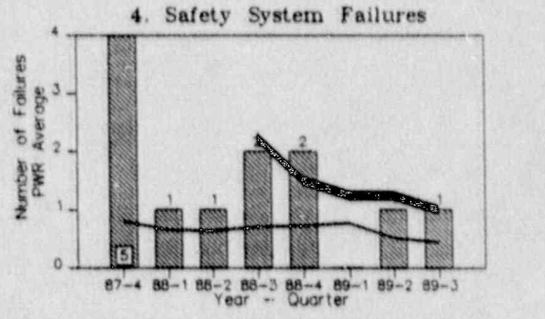
2. Safety System Actuations



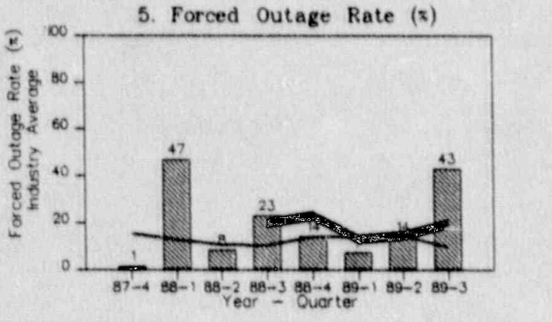
3. Significant Events



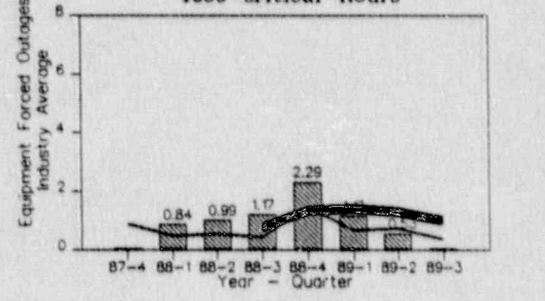
4. Safety System Failures



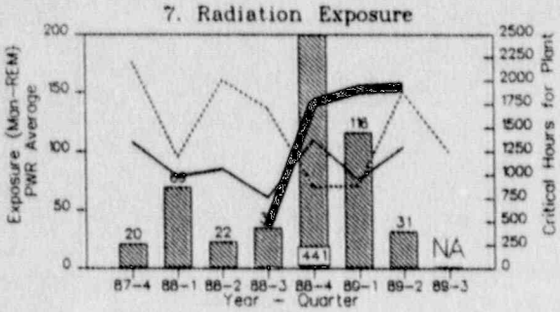
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

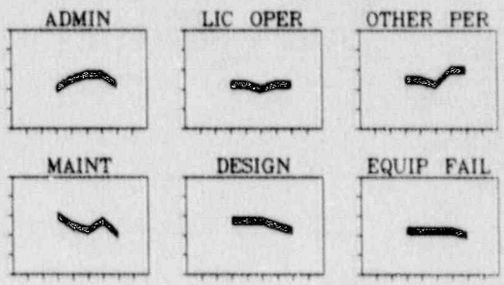


FIGURE 4.81

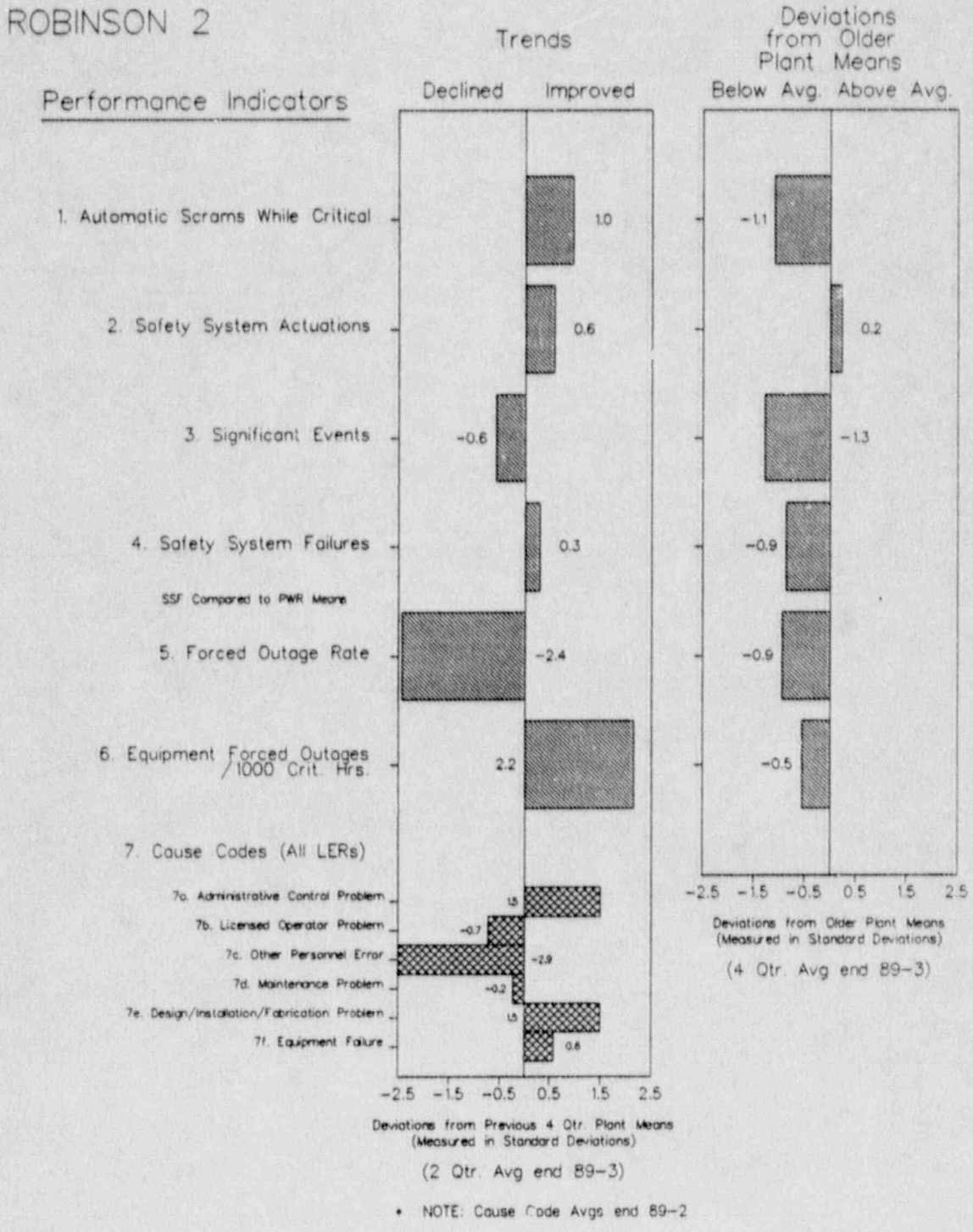
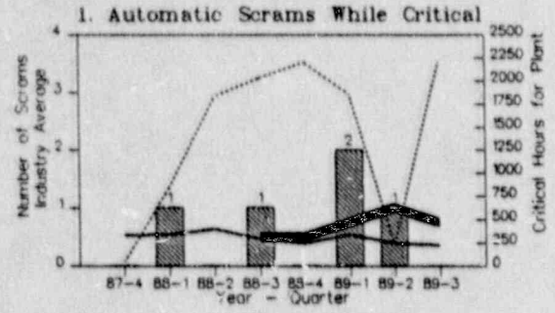

ROBINSON 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.0
-1.1
2. Safety System Actuations
0.6
0.2
3. Significant Events
-0.6
-1.3
4. Safety System Failures
0.3
-0.9
SSF Compared to PWR Means
5. Forced Outage Rate
-2.4
-0.9
6. Equipment Forced Outages / 1000 Crit. Hrs.
2.2
-0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.3
7b. Licensed Operator Problem
-0.7
7c. Other Personnel Error
-2.9
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
1.3
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

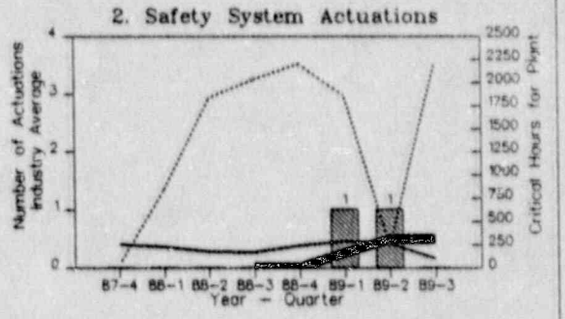
FIGURE 4.82

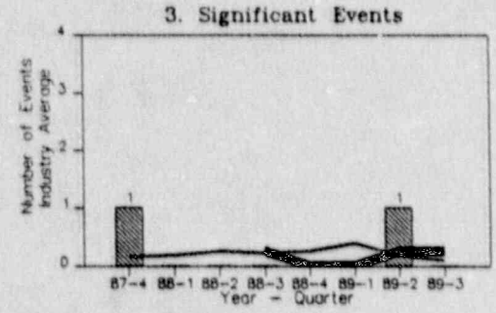
SALEM 1

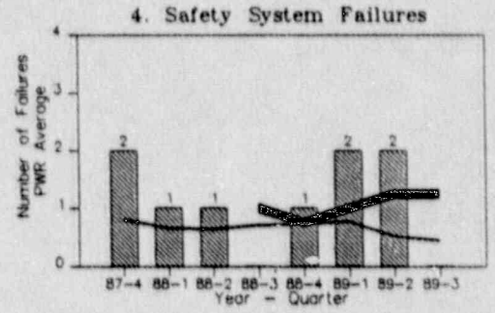
87-4 to 89-3

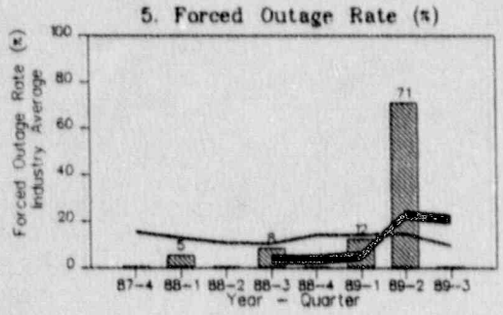
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

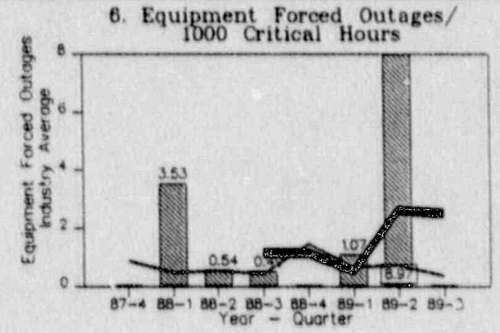


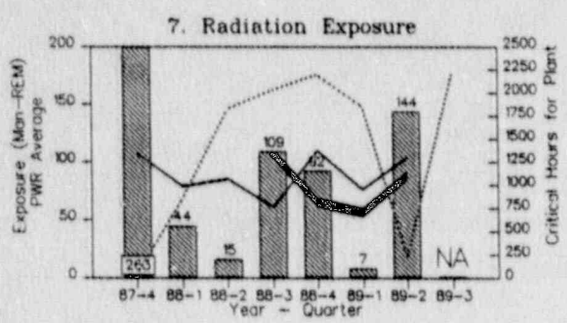












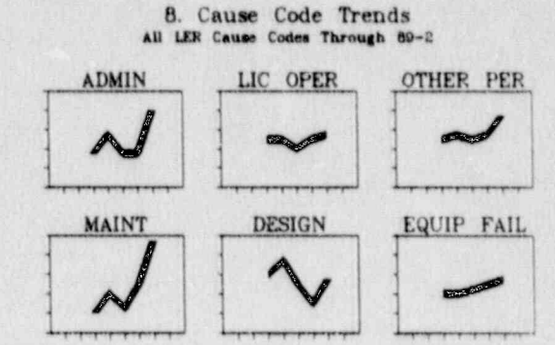


FIGURE 4.82

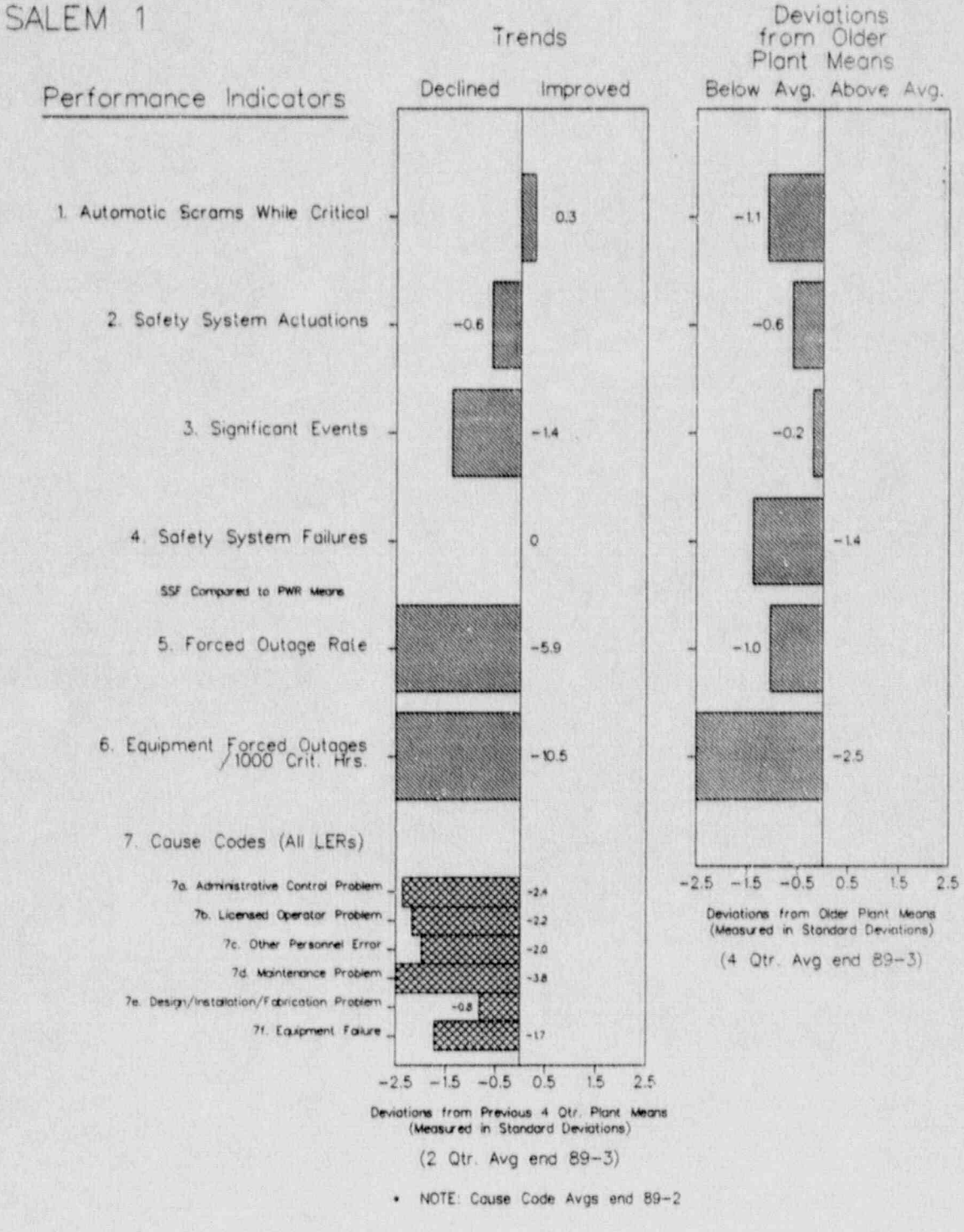

SALEM 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-1.1
2. Safety System Actuations
-0.6
-0.6
3. Significant Events
-1.4
-0.2
4. Safety System Failures
0
-1.4
SSF Compared to PWR Means
5. Forced Outage Rate
-5.9
-1.0
6. Equipment Forced Outages / 1000 Crit. Hrs.
-10.5
-2.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-2.4
7b. Licensed Operator Problem
-2.2
7c. Other Personnel Error
-2.0
7d. Maintenance Problem
-3.8
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
-1.7
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

FIGURE 4.83

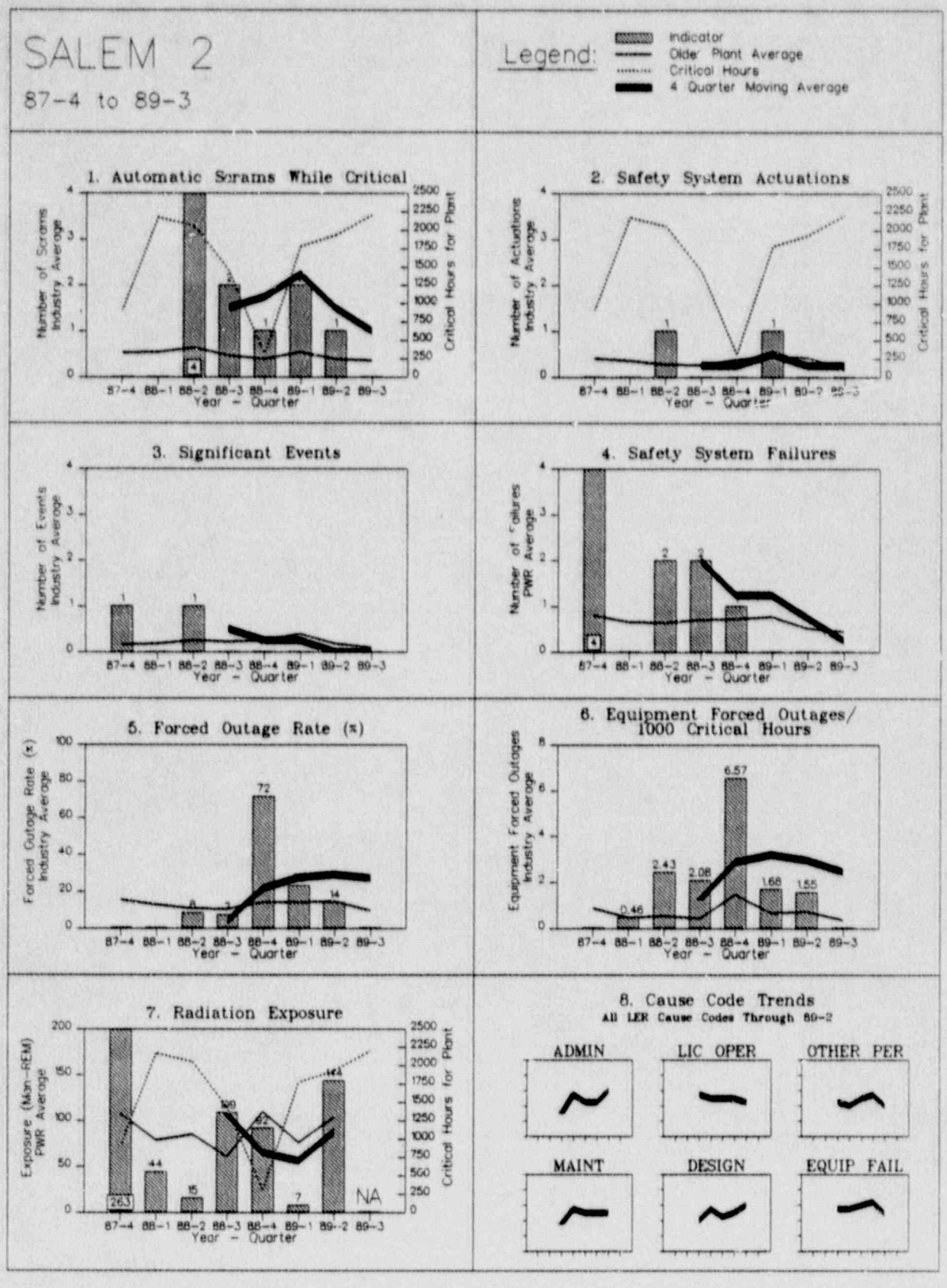
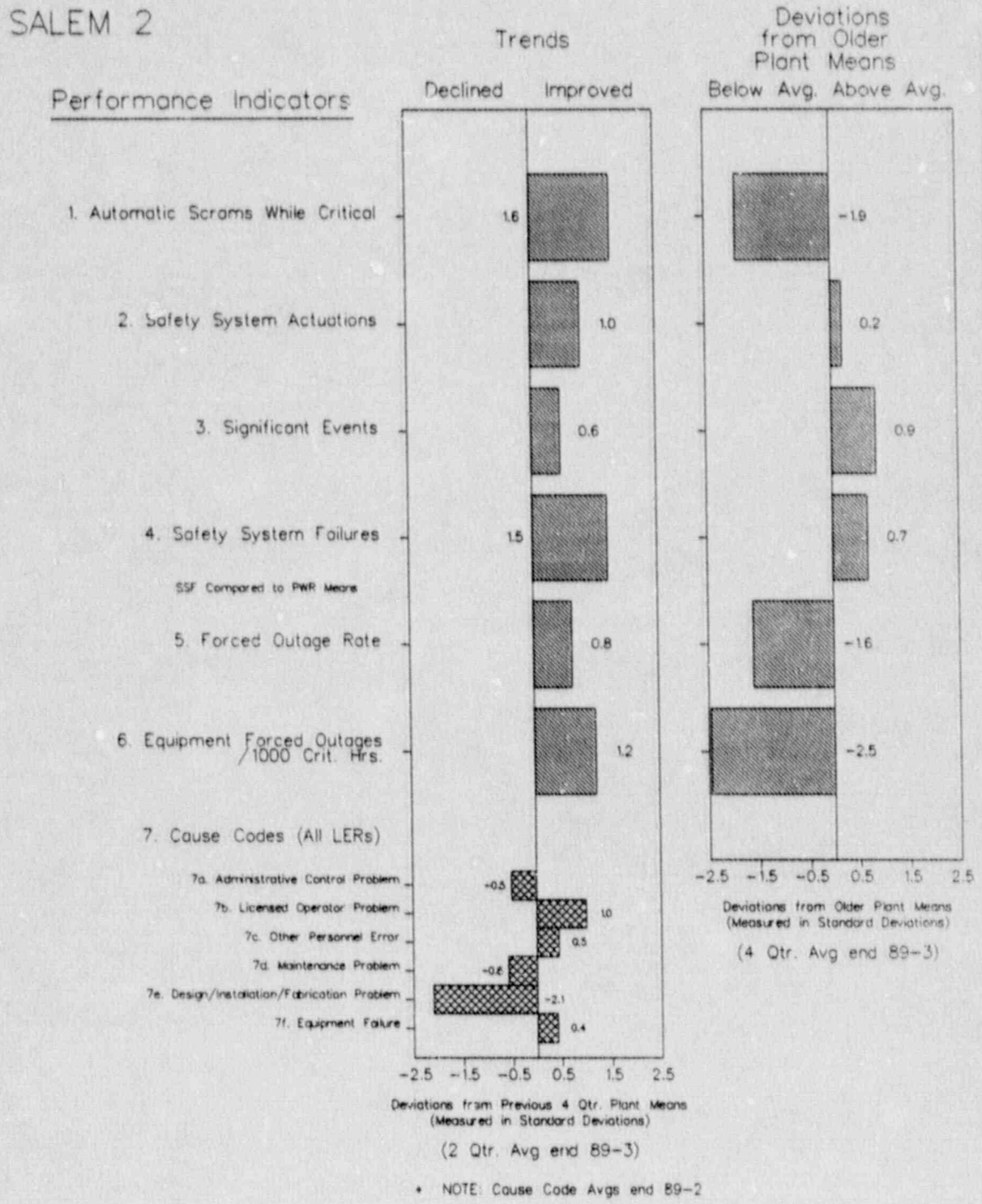

SALEM 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.83



* NOTE: Cause Code Avgs end 89-2

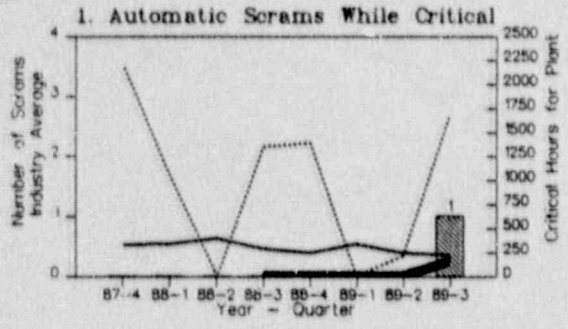
FIGURE 4.84

SAN ONOFRE 1

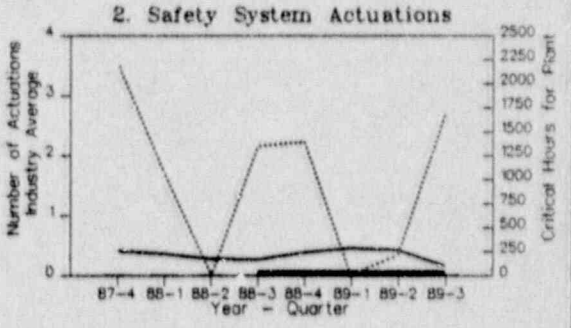
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

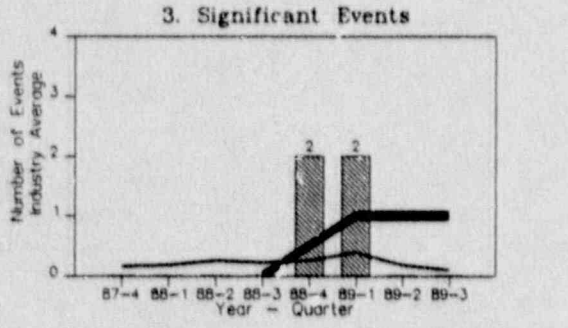
1. Automatic Scrams While Critical



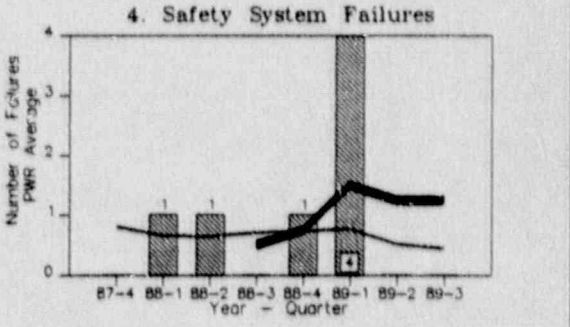
2. Safety System Actuations



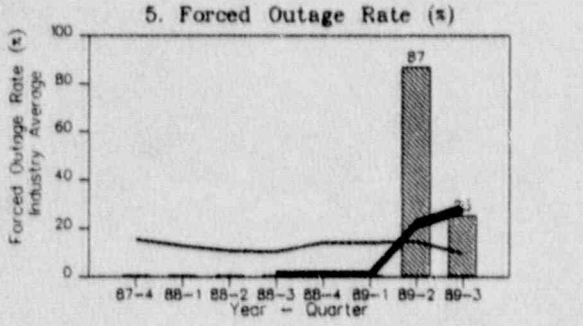
3. Significant Events



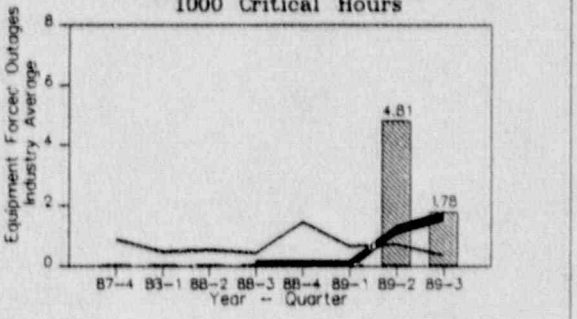
4. Safety System Failures



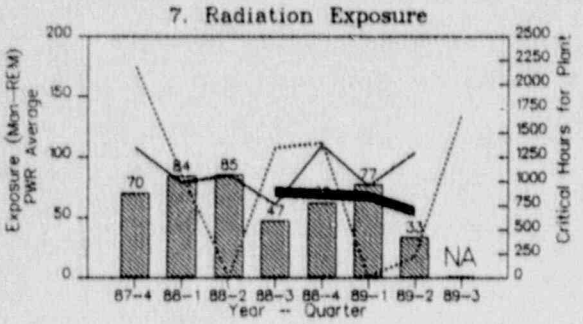
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

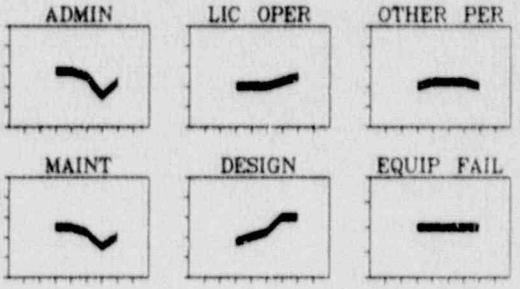


FIGURE 4.84

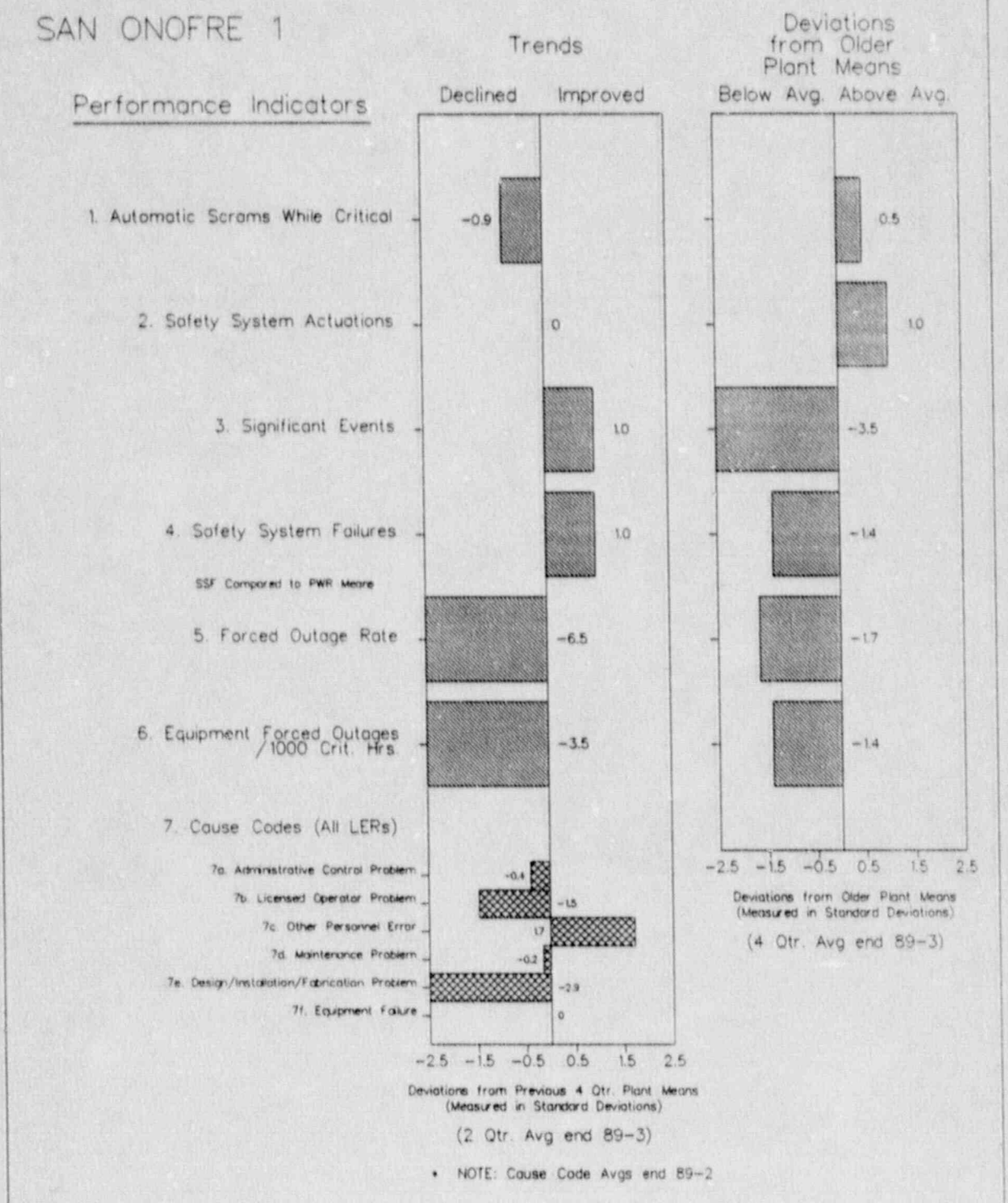
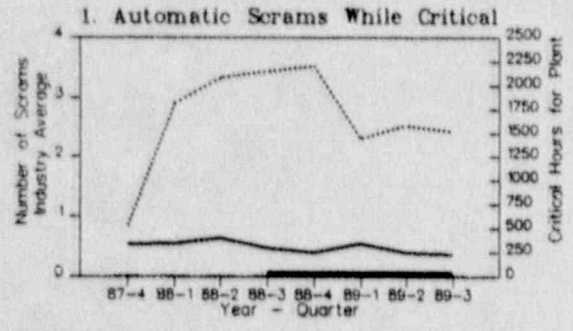

SAN ONOFRE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
1.0
-3.5
4. Safety System Failures
1.0
-1.4
SSF Compared to PWR Mean
5. Forced Outage Rate
-6.5
-1.7
6. Equipment Forced Outages /1000 Crit. Hrs.
-3.5
-1.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.4
7b. Licensed Operator Problem
-1.5
7c. Other Personnel Error
1.7
7d. Maintenance Problem
-0.2
7e. Design/Installation/Fabrication Problem
-2.9
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

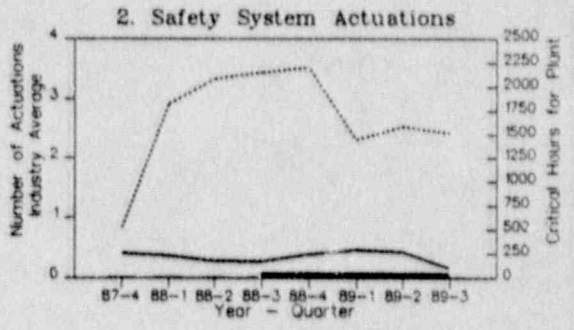
FIGURE 4.85

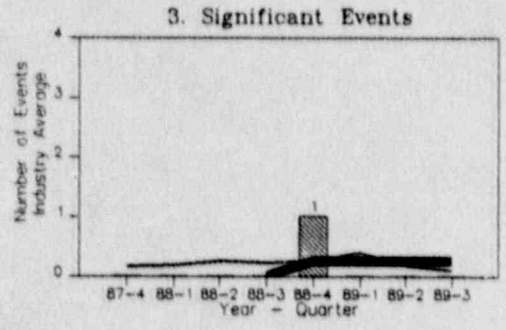
SAN ONOFRE 2

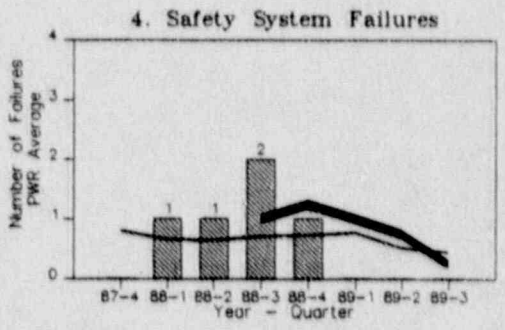
87-4 to 89-3

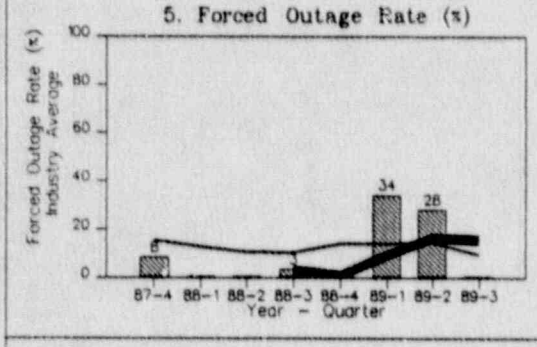
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

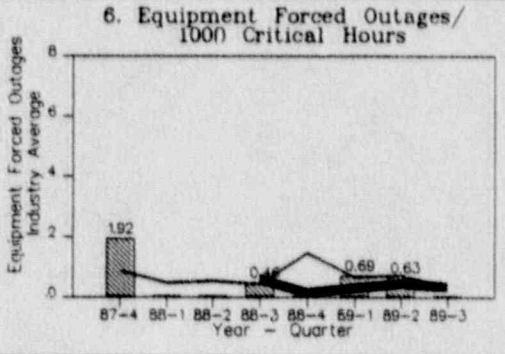


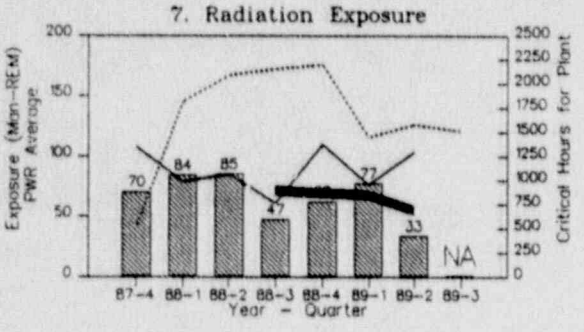












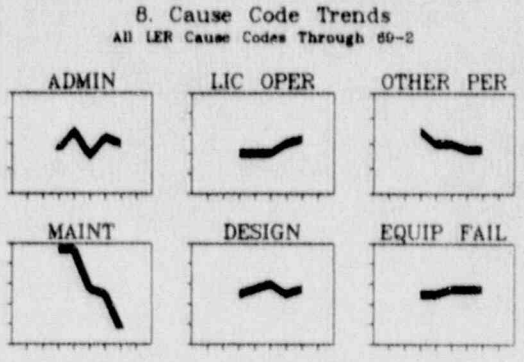


FIGURE 4.85

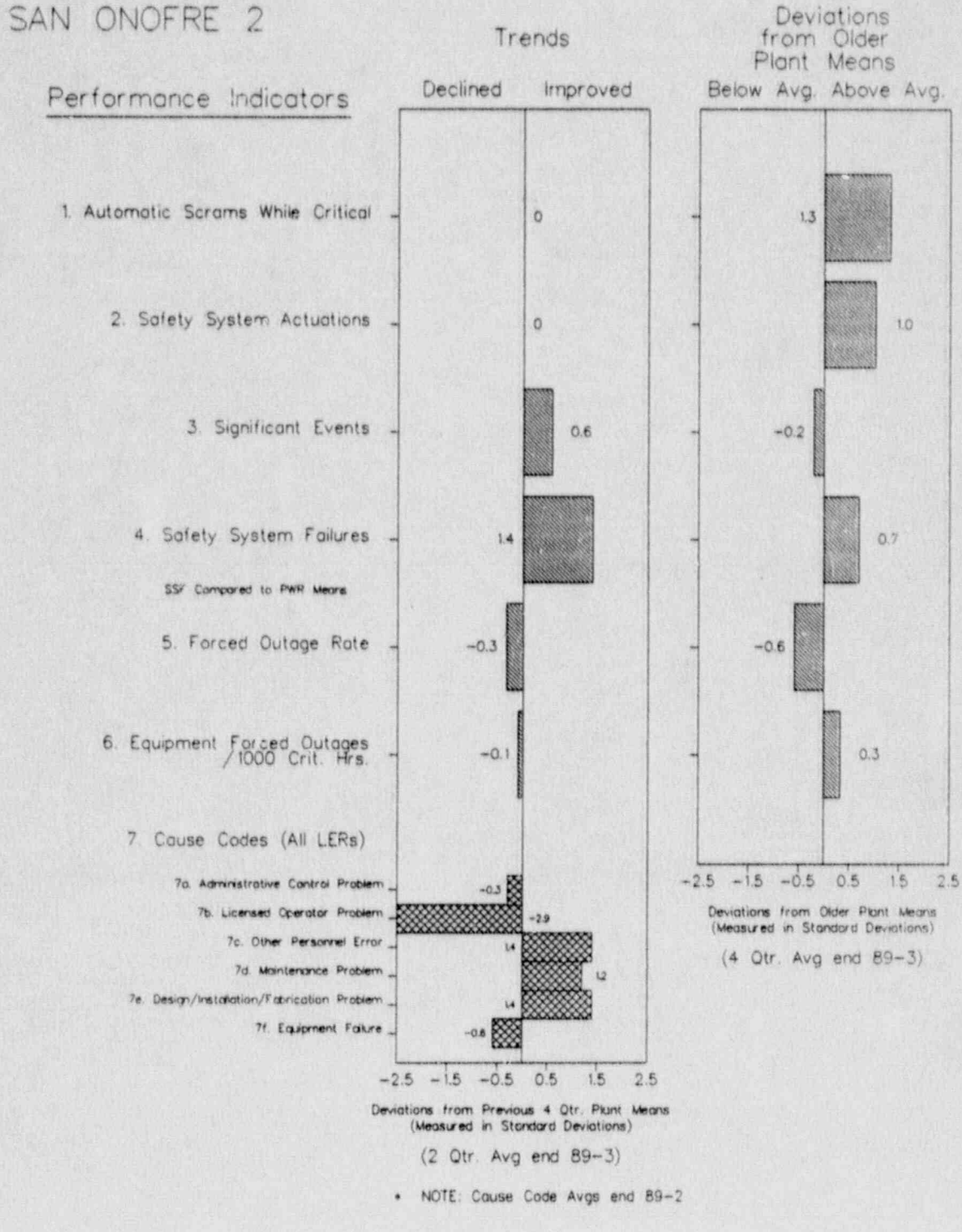

SAN ONOFRE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
-0.2
4. Safety System Failures
1.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.3
-0.6
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.1
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
-2.9
7c. Other Personnel Error
1.4
7d. Maintenance Problem
1.2
7e. Design/Installation/Fabrication Problem
1.4
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

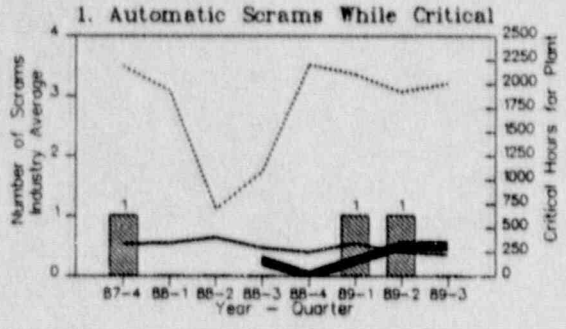
FIGURE 4.86

SAN ONOFRE 3

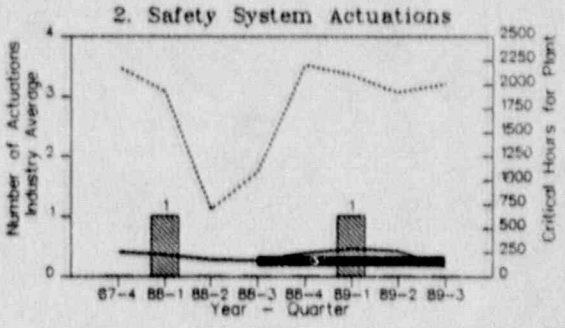
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

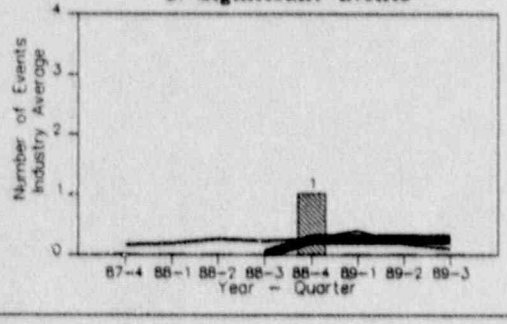
1. Automatic Scrams While Critical



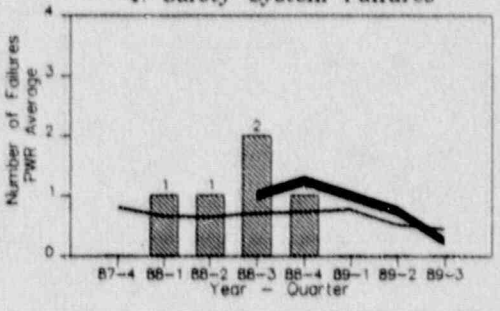
2. Safety System Actuations



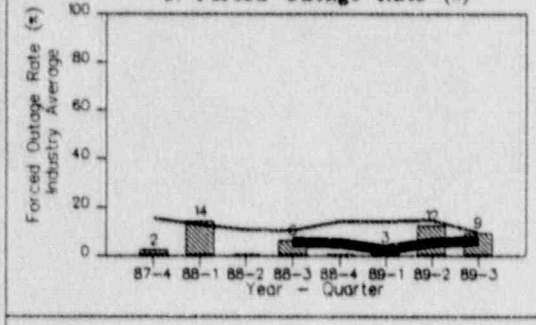
3. Significant Events



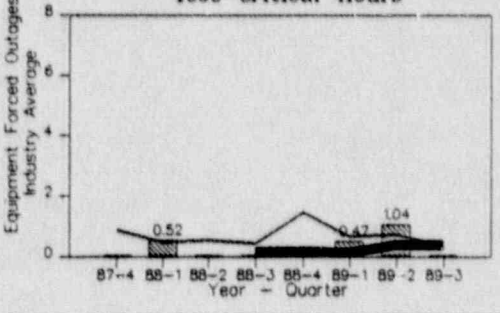
4. Safety System Failures



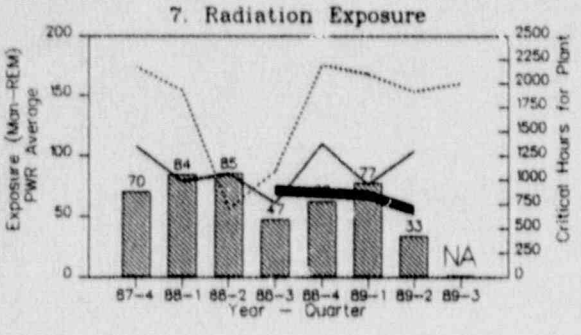
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

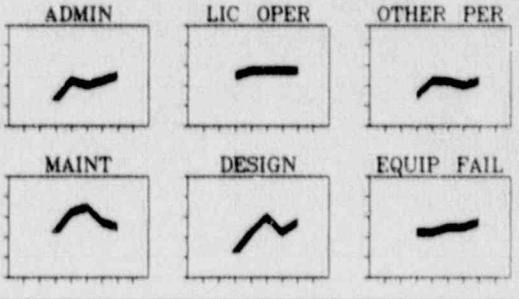


FIGURE 4.86

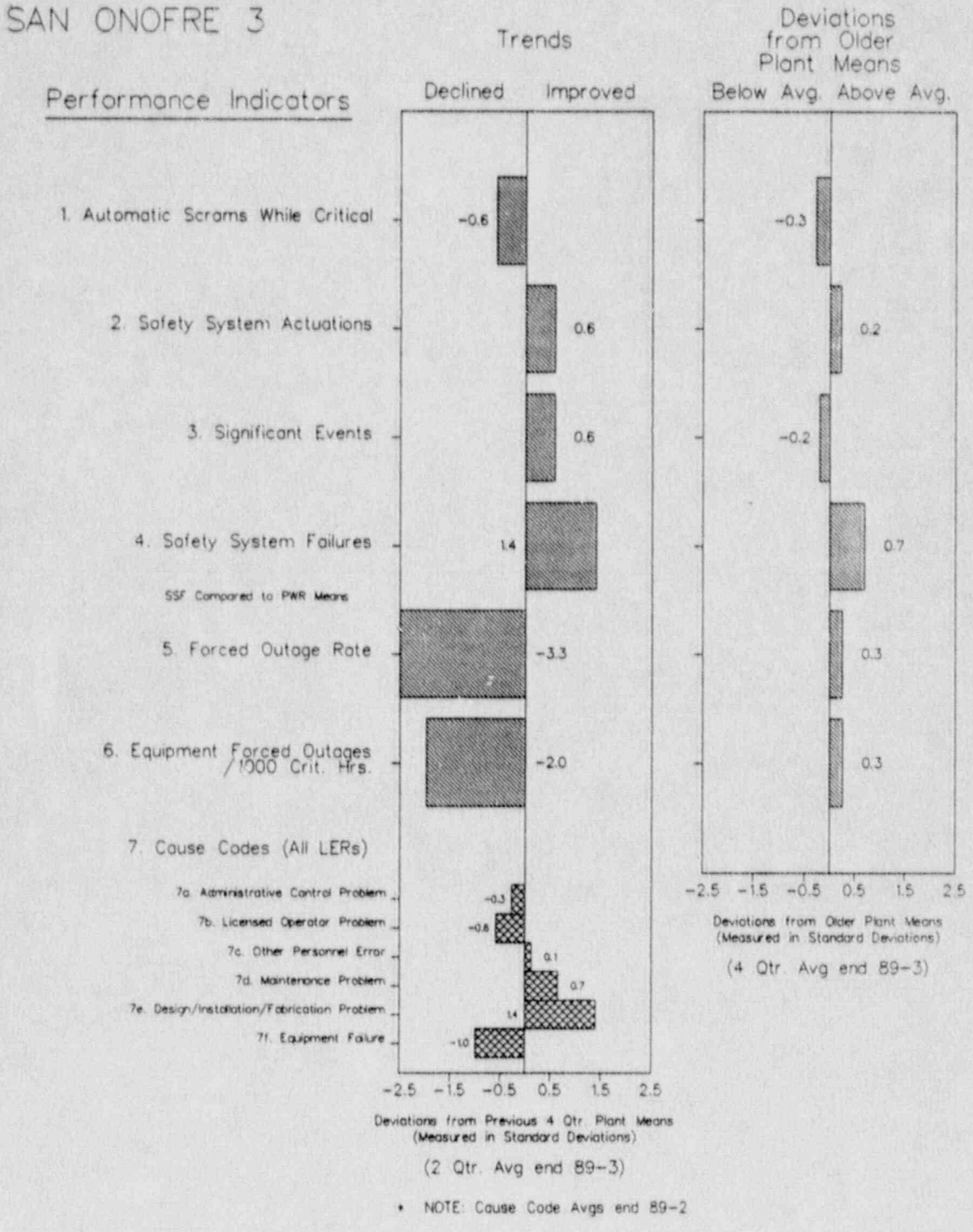

SAN ONOFRE 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
-0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
-0.2
4. Safety System Failures
1.4
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-3.3
0.3
6. Equipment Forced Outages /1000 Crit. Hrs.
-2.0
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
0.1
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
1.4
7f. Equipment Failure
-1.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.87

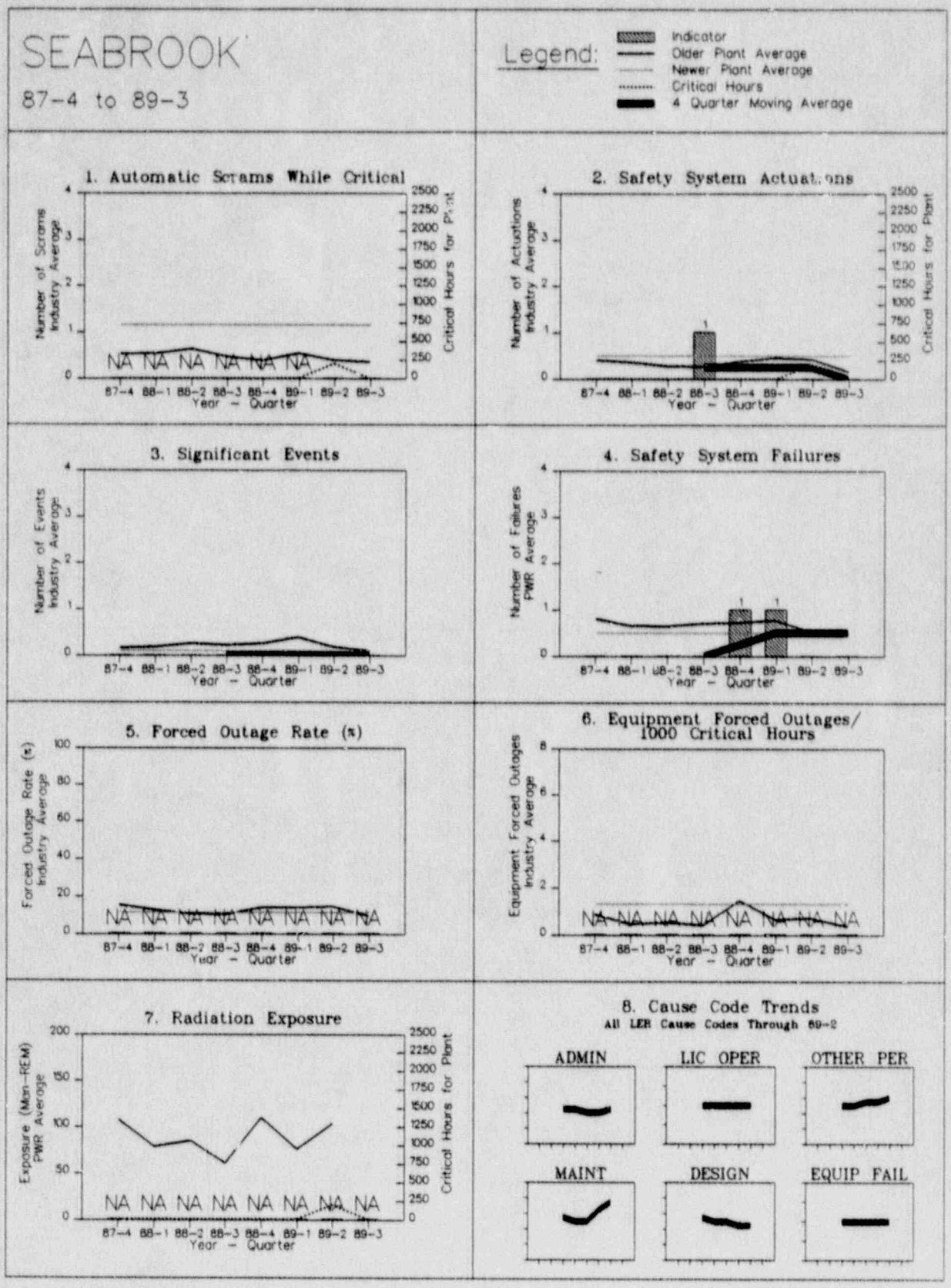

SEABROOK
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Newer Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams
Industry Average
Critical Hours for Plant
NA NA NA NA NA NA
2. Safety System Actuations
Number of Actuations
Industry Average
Critical Hours for Plant
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
NA NA NA NA NA NA NA NA
6. Equipment Forced Outages/
1000 Critical Hours
Equipment Forced Outages
Industry Average
NA NA NA NA NA NA NA NA
7. Radiation Exposure
Exposure (Man-REM)
PWR Average
Critical Hours for Plant
NA NA NA NA NA NA NA NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.87

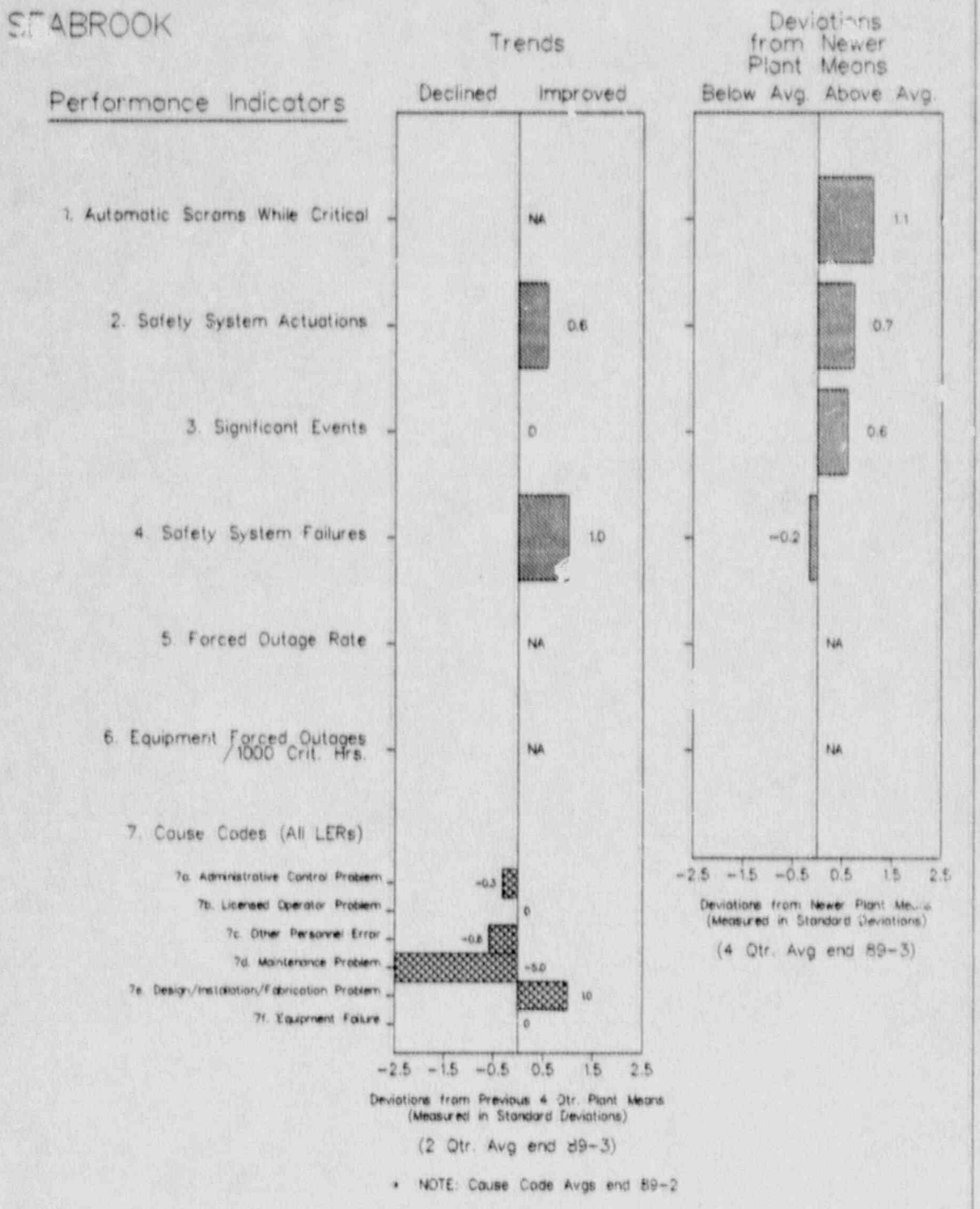

SEABROOK
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
1.1
2. Safety System Actuations
0.6
0.7
3. Significant Events
0
0.6
4. Safety System Failures
1.0
-0.2
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages / 1000 Crit. Hrs.
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-0.8
7d. Maintenance Problem
-5.0
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg. end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg. end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.87

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

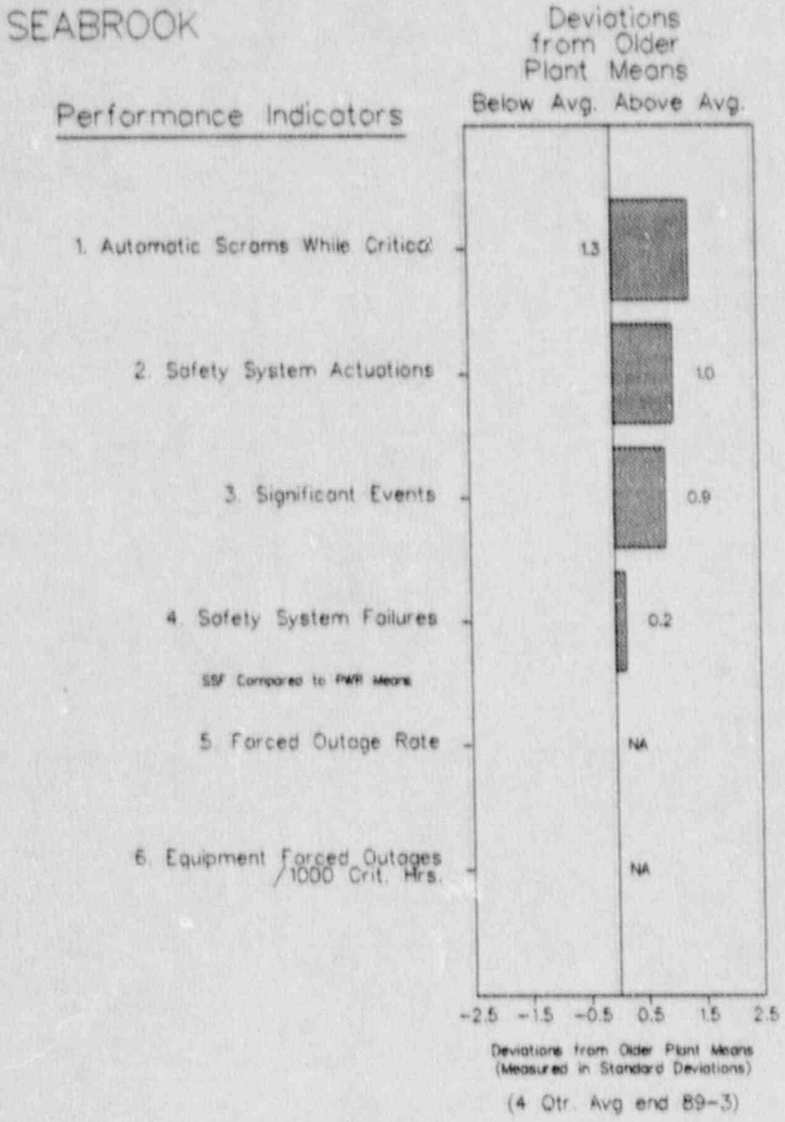


FIGURE 4.88

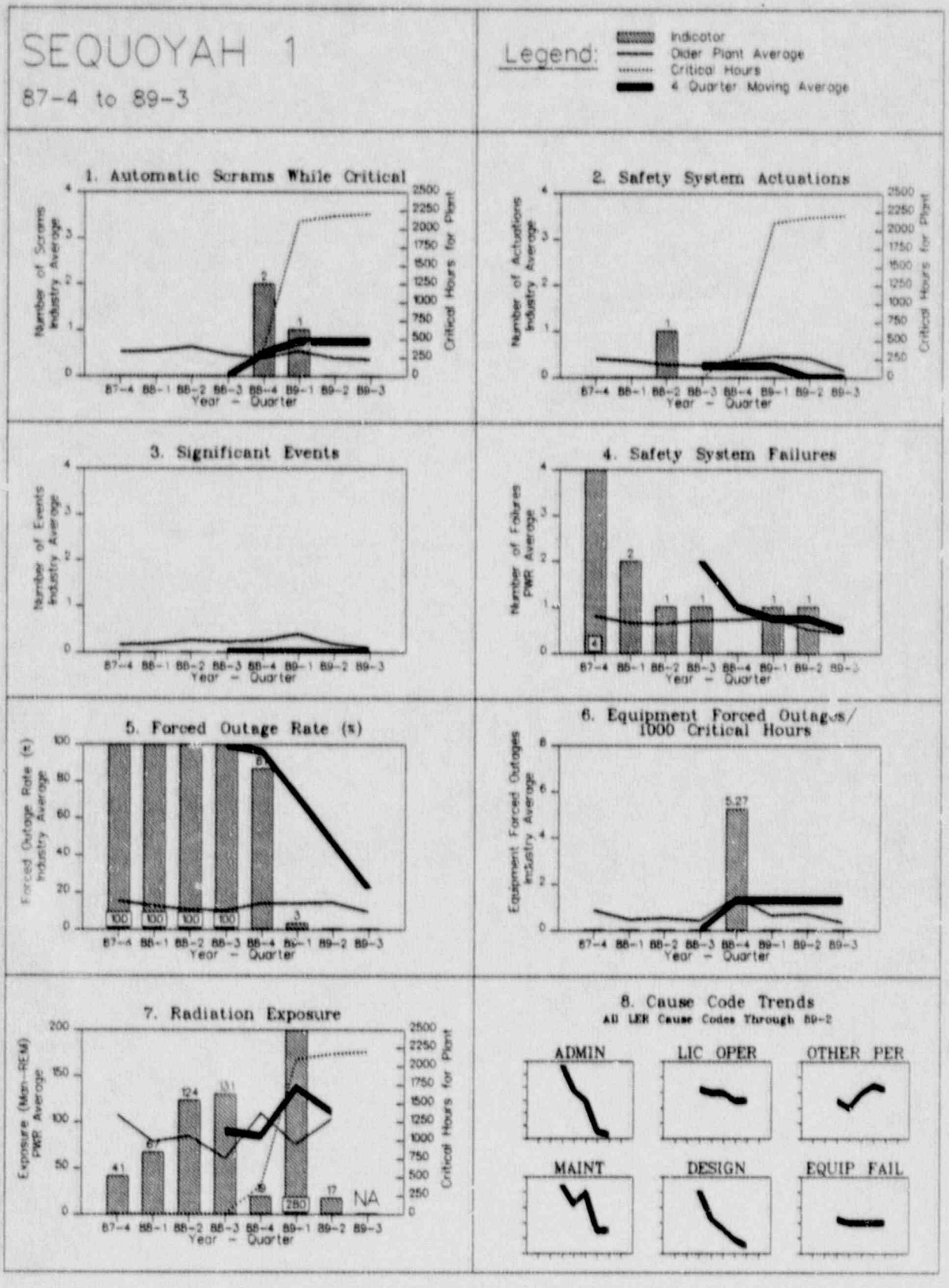

SEQUOYAH 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
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 Critical Hours
Equipment Forced Outages Industry Average
5.27
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
41
67
124
131
19
280
17
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.88

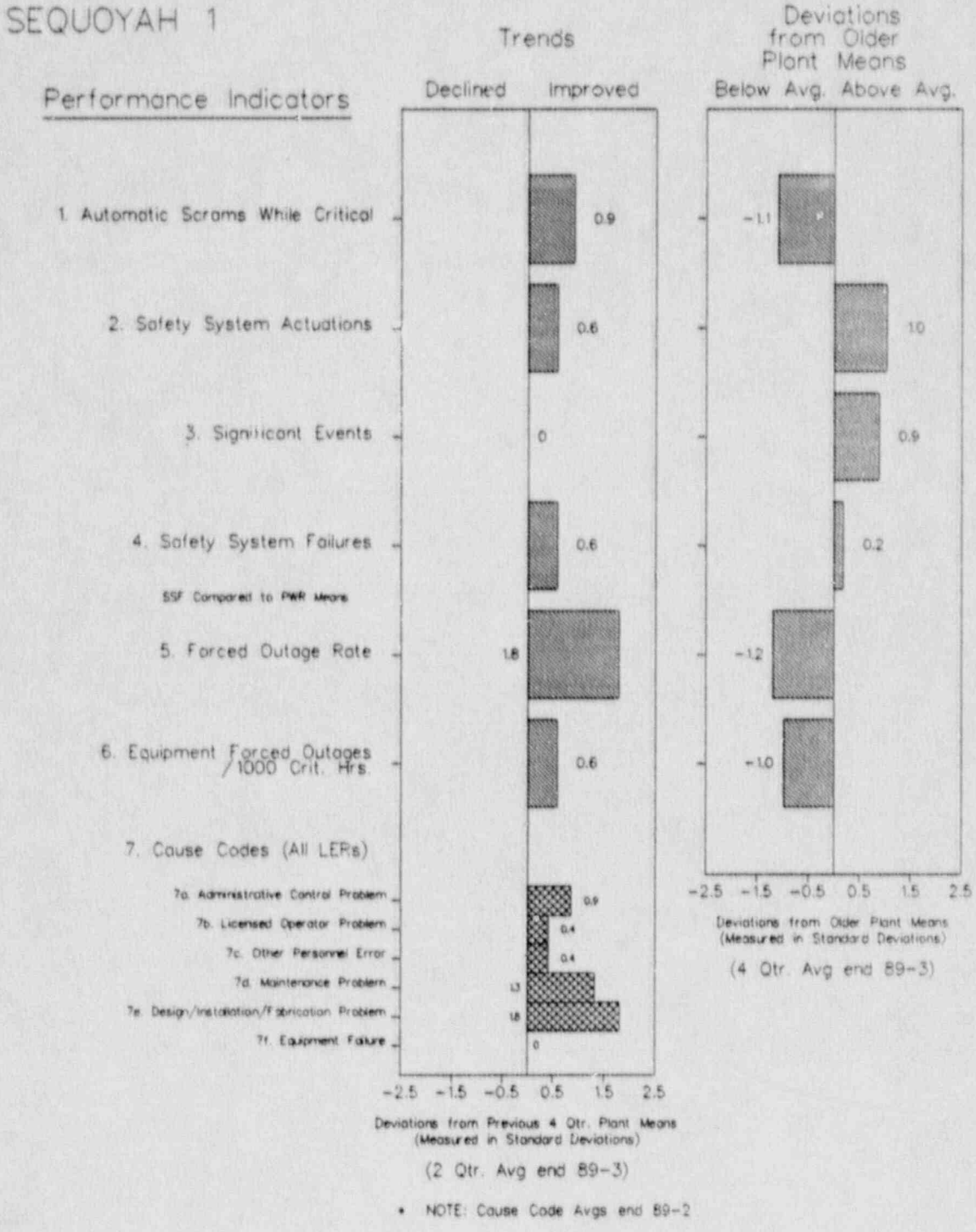

SEQUOYAH 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
-1.1
2. Safety System Actuations
0.6
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0.6
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
1.8
-1.2
6. Equipment Forced Outages /1000 Crit. Hrs.
0.6
-1.0
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0.4
7c. Other Personnel Error
0.4
7d. Maintenance Problem
1.3
7e. Design/Installation/Fabrication Problem
1.8
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

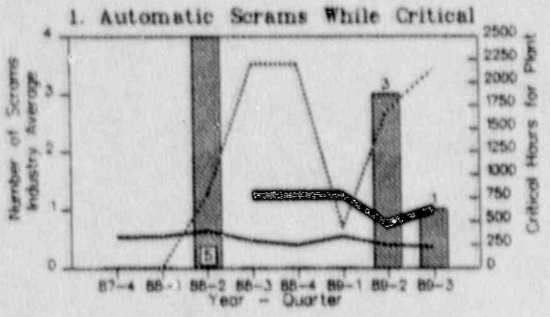
FIGURE 4.89

SEQUOYAH 2

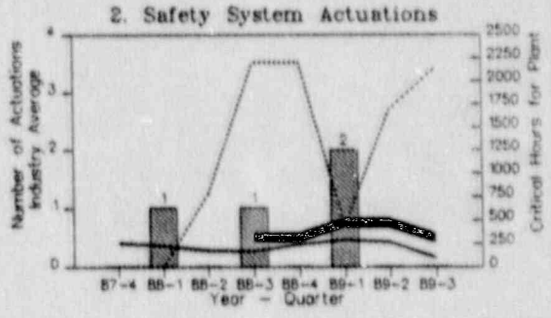
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

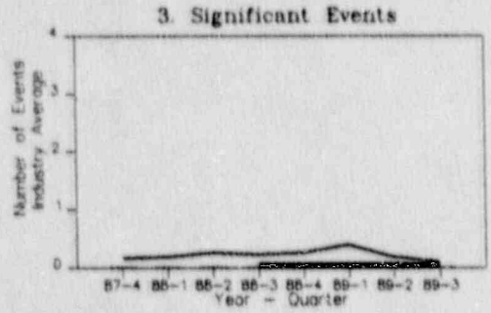
1. Automatic Scrams While Critical



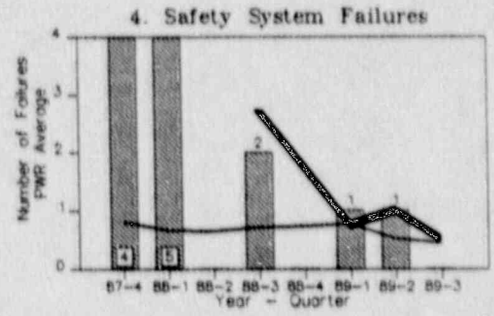
2. Safety System Actuations



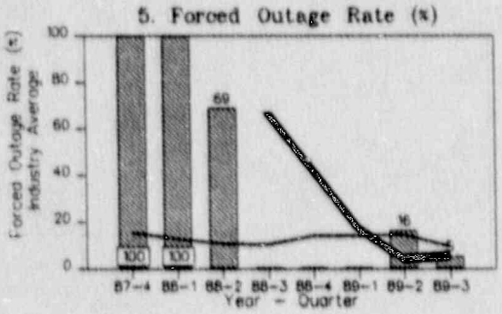
3. Significant Events



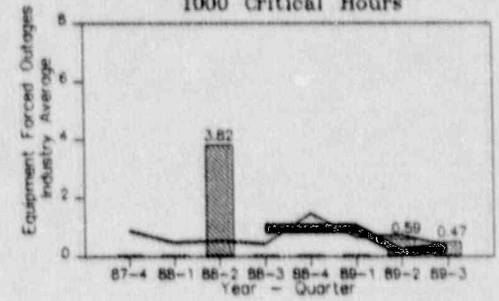
4. Safety System Failures



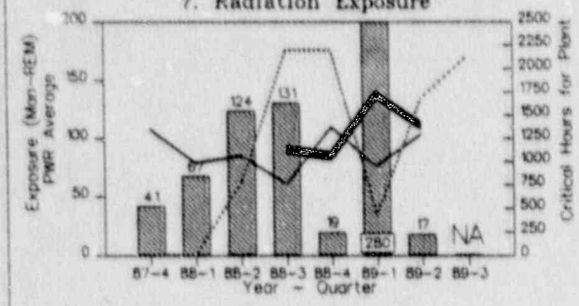
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

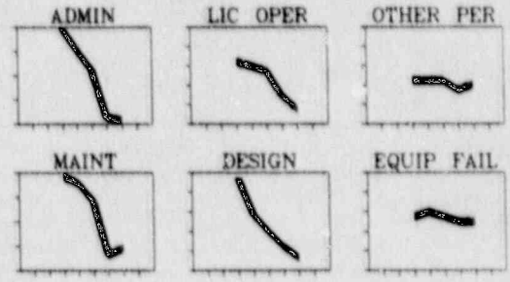


FIGURE 4.89

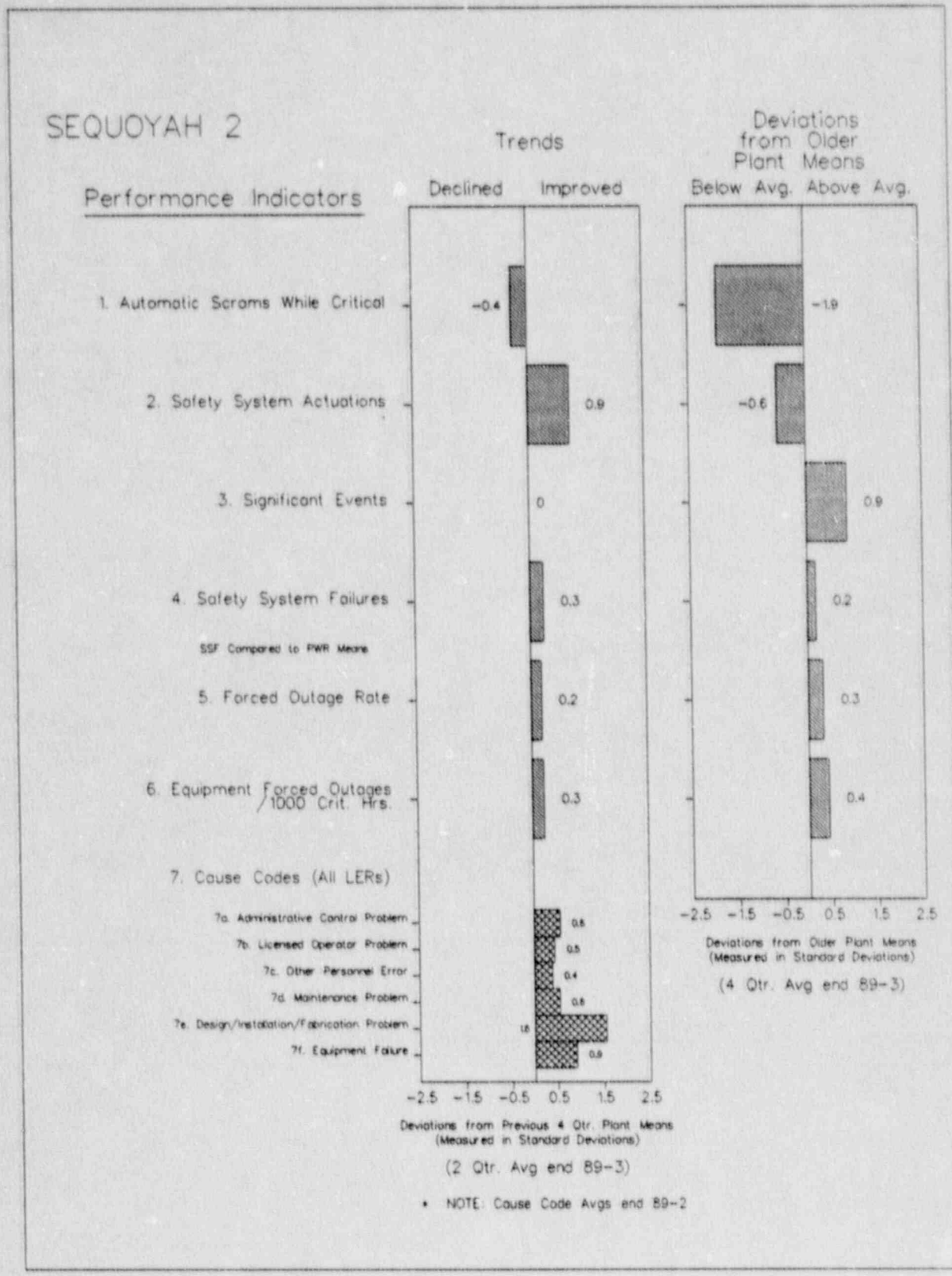

SEQUOYAH 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.4
-1.9
2. Safety System Actuations
0.9
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
0.3
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.2
0.3
6. Equipment Forced Outages /1000 Crit. Hrs.
0.3
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.5
7c. Other Personnel Error
0.4
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
1.5
7f. Equipment Failure
0.9
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.90

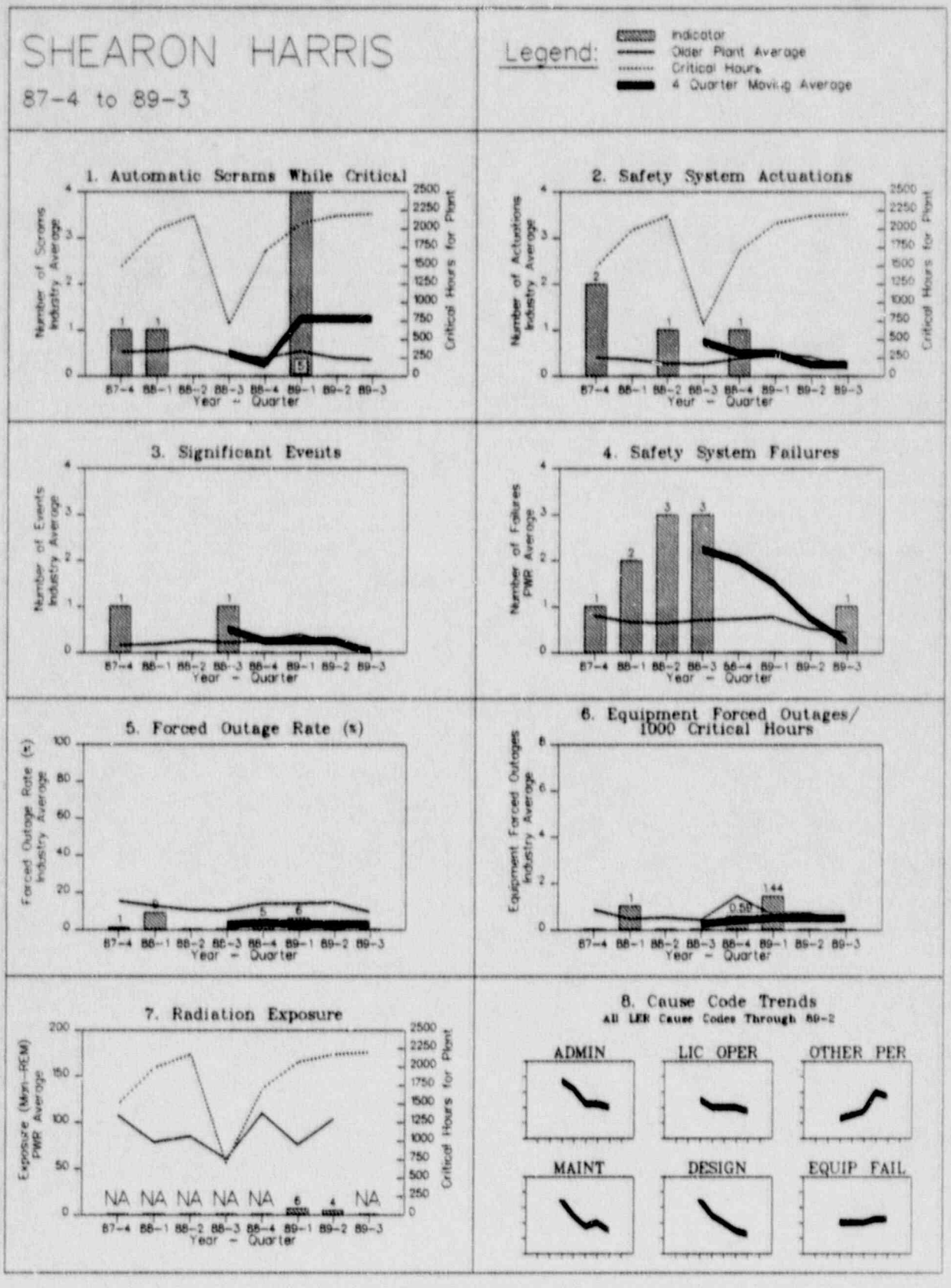

SHEARON HARRIS
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
NA NA NA NA NA 6 4 NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.90

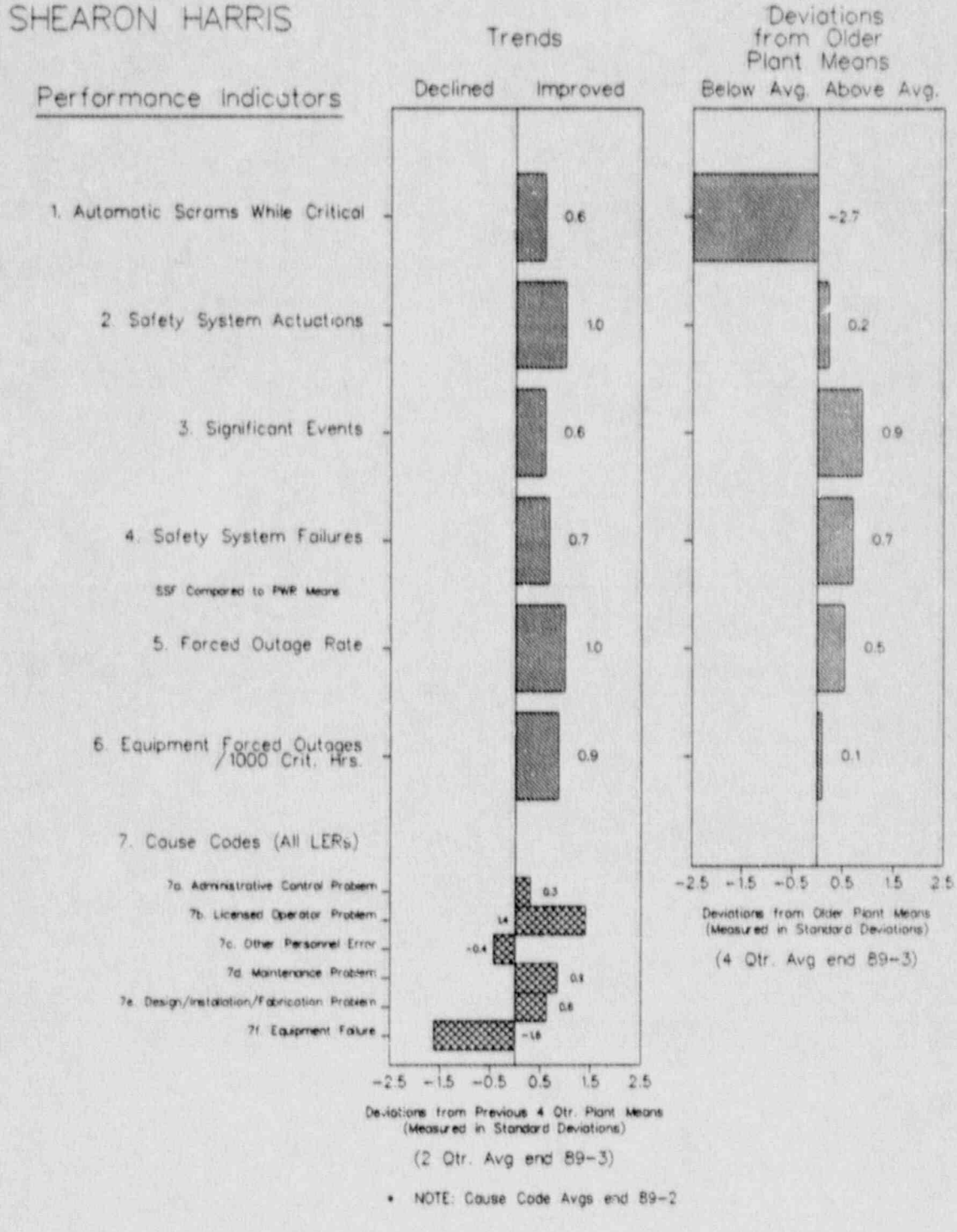

SHEARON HARRIS
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-2.7
2. Safety System Actuations
1.0
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
0.7
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
1.0
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
0.9
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
1.4
7c. Other Personnel Error
-0.4
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
-1.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.91

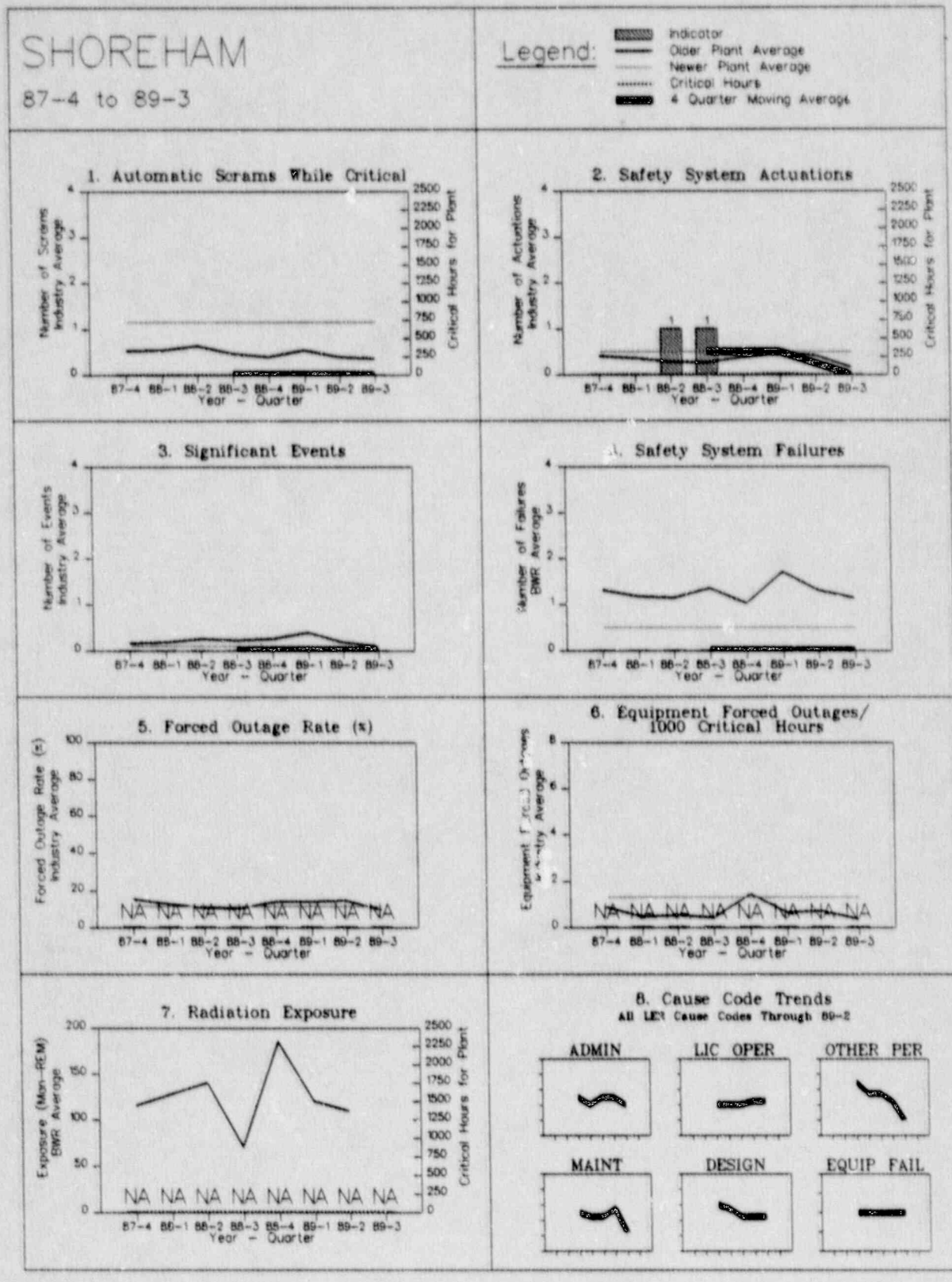

SHOREHAM
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Newer Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
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 Critical Hours
7. Radiation Exposure
Exposure (Man-REM) BWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
Year - Quarter

FIGURE 4.91

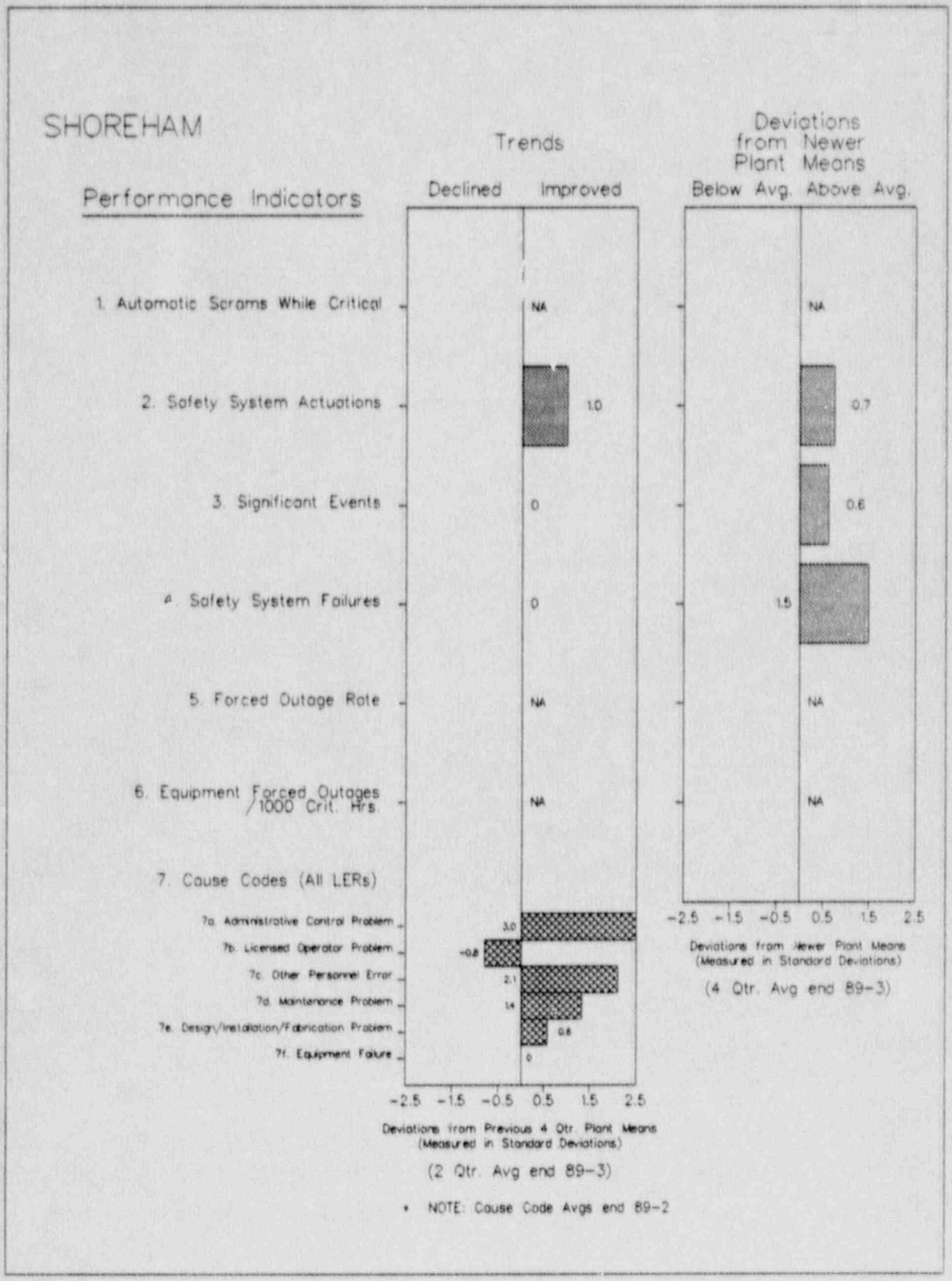

SHOREHAM
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
2. Safety System Actuations
1.0
0.7
3. Significant Events
0
0.6
4. Safety System Failures
0
1.5
5. Forced Outage Rate
NA
NA
6. Equipment Forced Outages / 1000 Crit. Hrs.
NA
NA
7. Cause Codes (All LERs)
7a. Administrative Control Problem
3.0
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
2.1
7d. Maintenance Problem
1.4
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.91

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

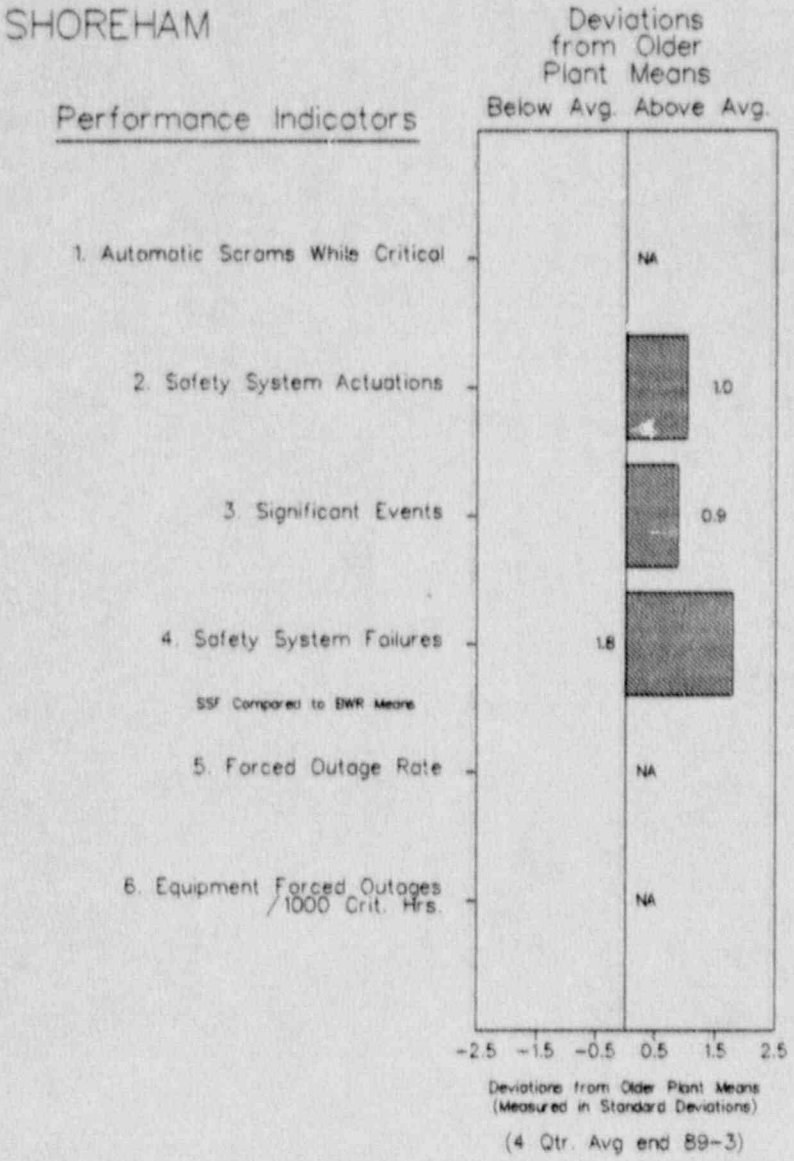
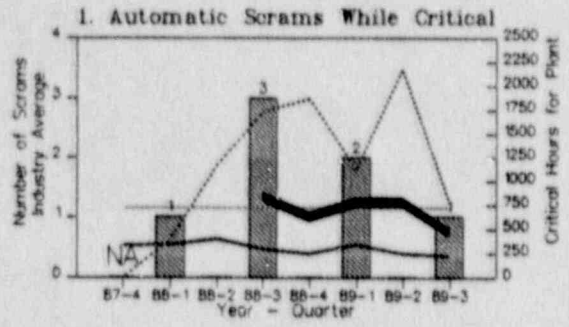


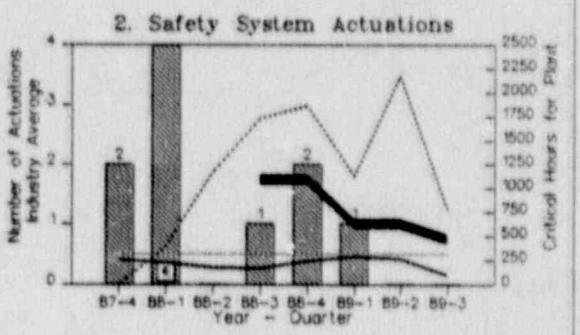
FIGURE 4.92

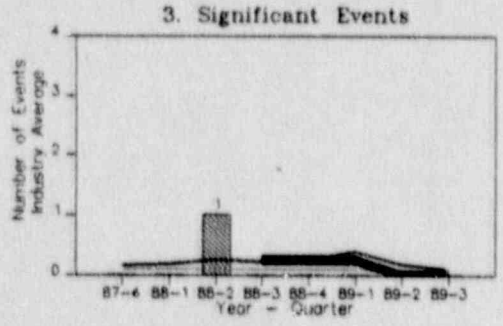
SOUTH TEXAS 1

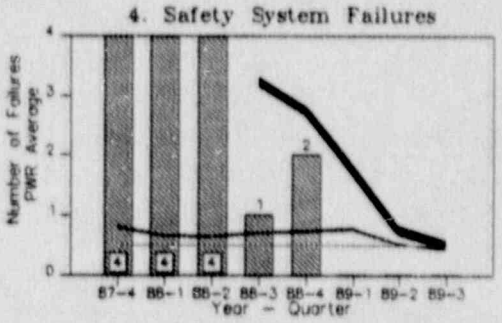
87-4 to 89-3

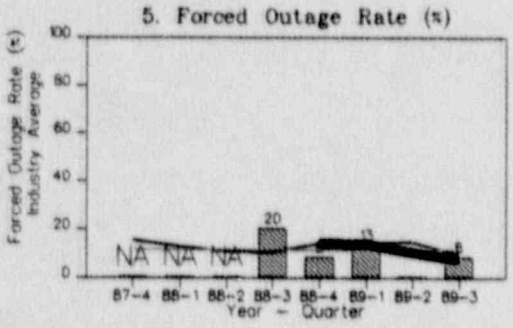
Legend:
- Indicator
- Older Plant Average
- Newer Plant Average
- Critical Hours
- 4 Quarter Moving Average

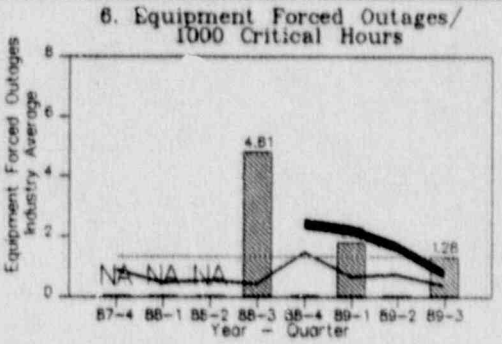


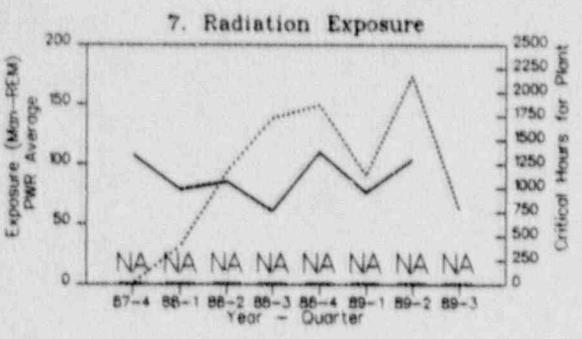












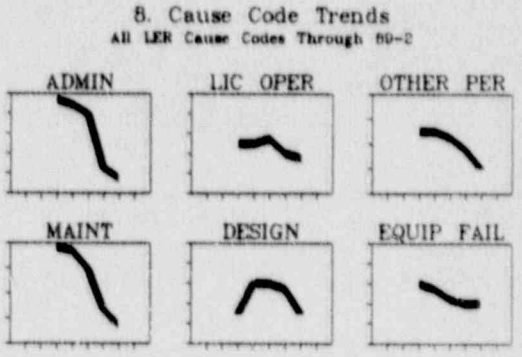


FIGURE 4.92

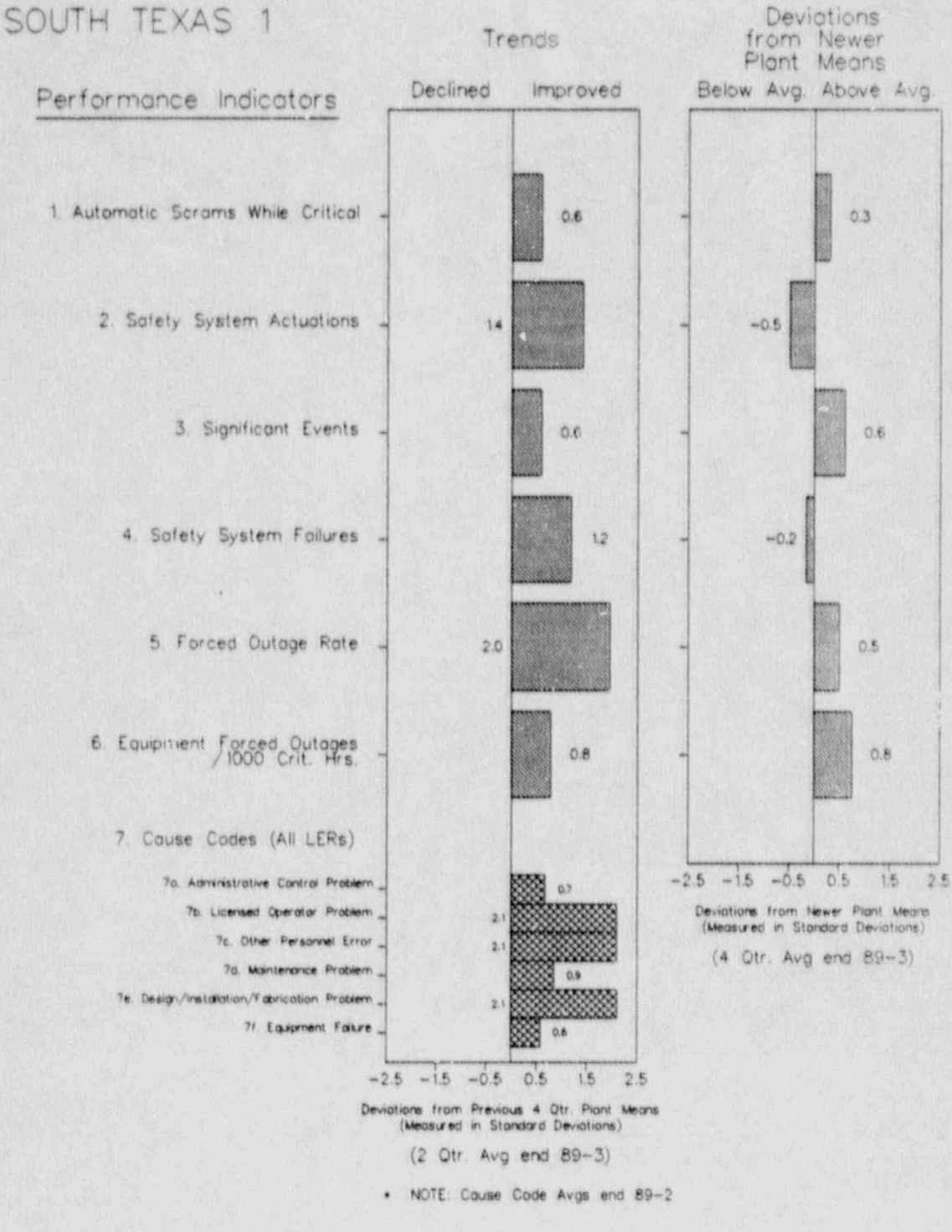

SOUTH TEXAS 1
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.3
2. Safety System Actuations
1.4
-0.5
3. Significant Events
0.6
0.6
4. Safety System Failures
1.2
-0.2
5. Forced Outage Rate
2.0
0.5
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.8
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
2.1
7c. Other Personnel Error
2.1
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
2.1
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.9?

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

SOUTH TEXAS 1

Performance Indicators

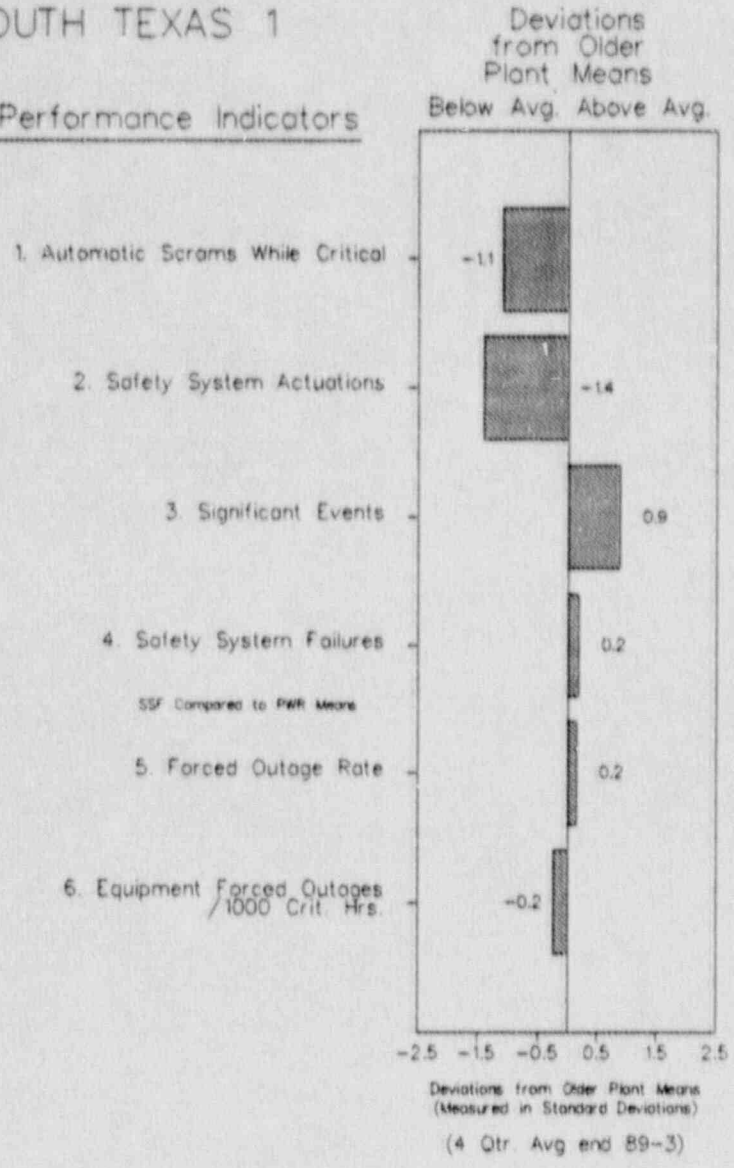
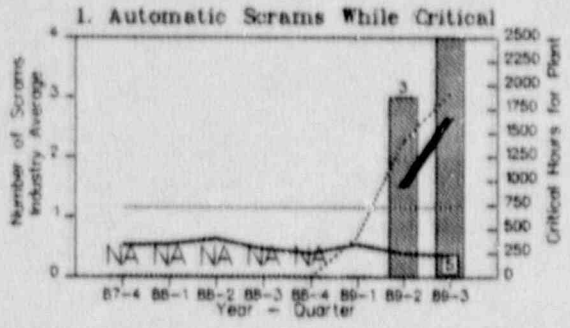


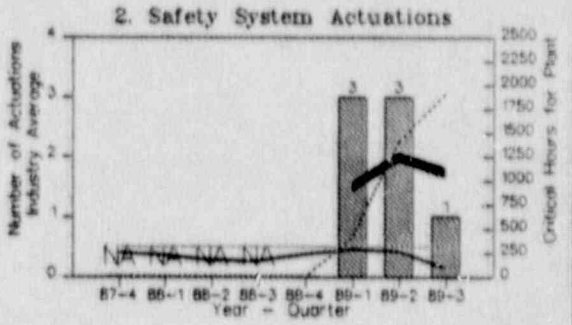
FIGURE 4.93

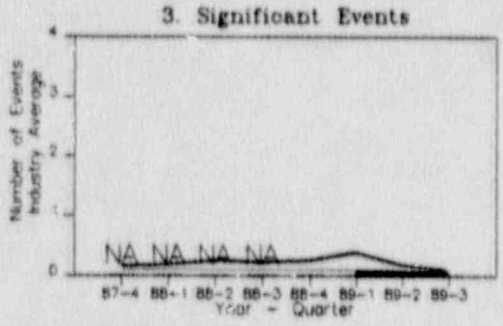
SOUTH TEXAS 2

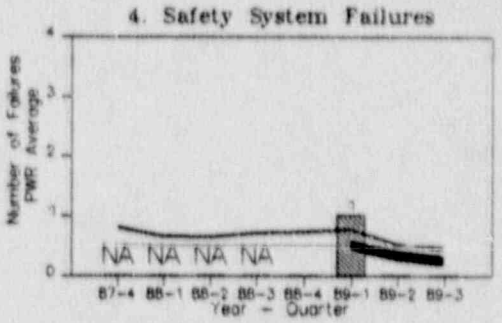
87-4 to 89-3

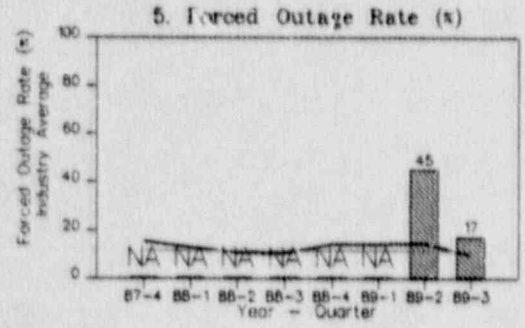
Legend:
- Indicator
- Older Plant Average
- Newer Plant Average
- Critical Hours
- 4 Quarter Moving Average

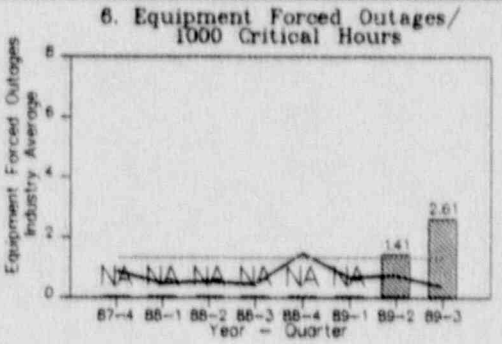


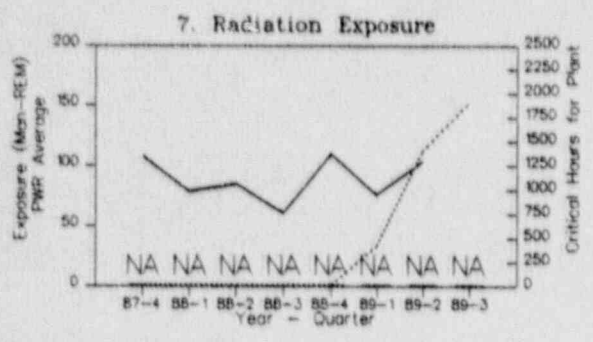












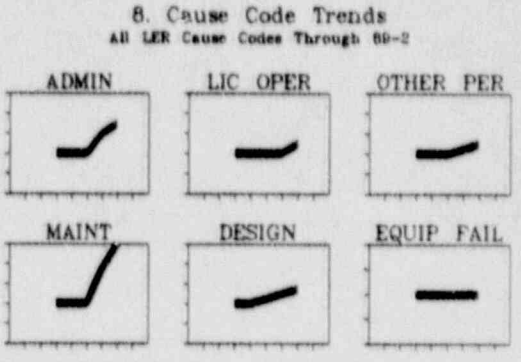


FIGURE 4.93

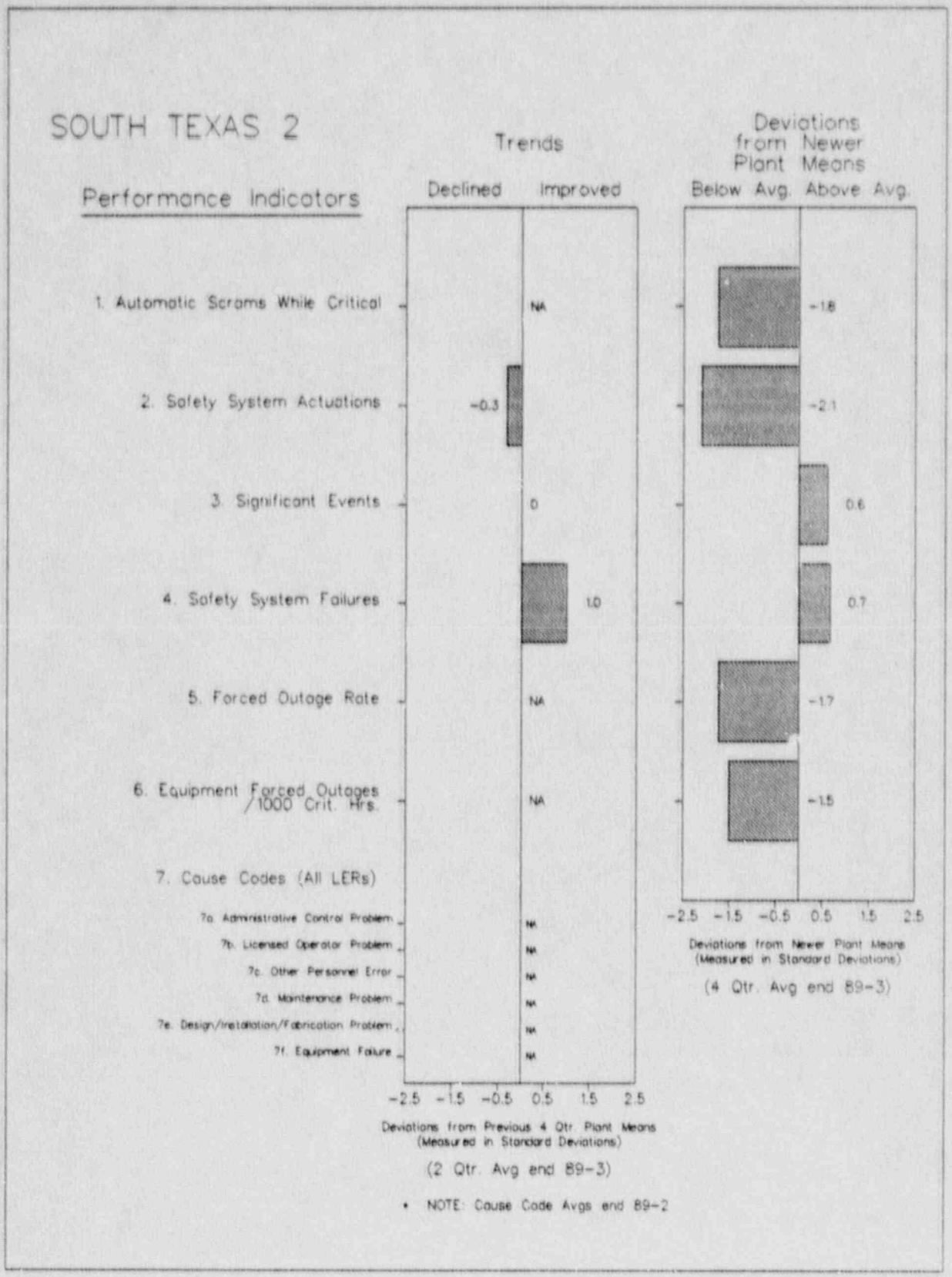

SOUTH TEXAS 2
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
NA
-1.8
2. Safety System Actuations
-0.3
-2.1
3. Significant Events
0
0.6
4. Safety System Failures
1.0
0.7
5. Forced Outage Rate
NA
-1.7
6. Equipment Forced Outages /1000 Crit. Hrs.
NA
-1.5
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
NA
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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FIGURE 4.93

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

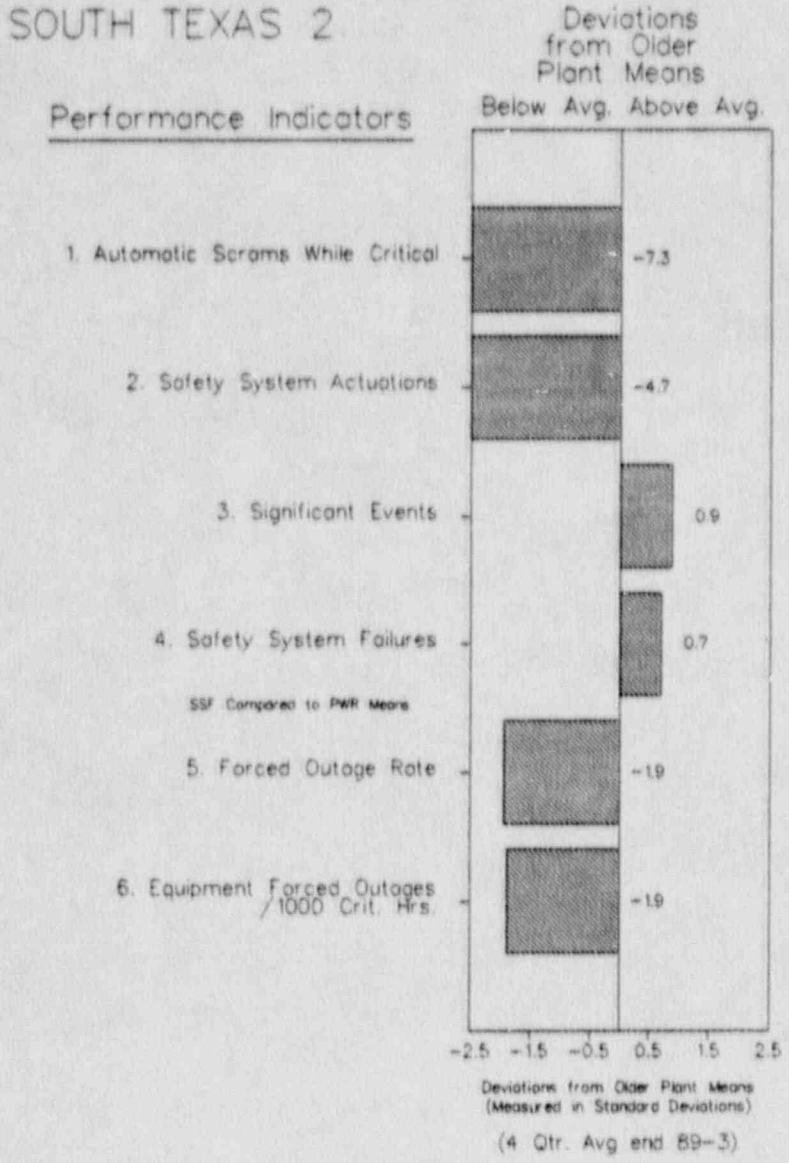


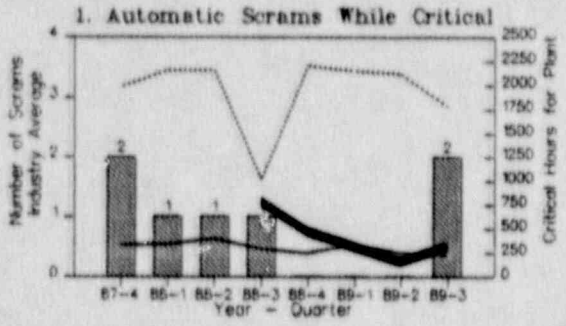
FIGURE 4.94

ST. LUCIE 1

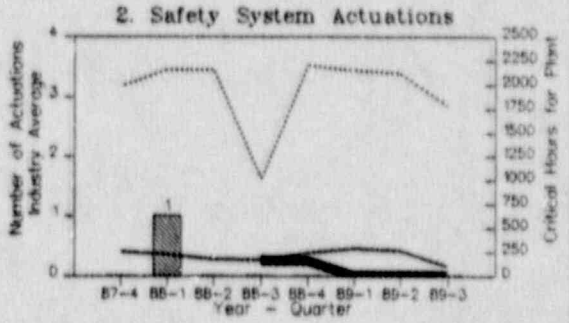
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

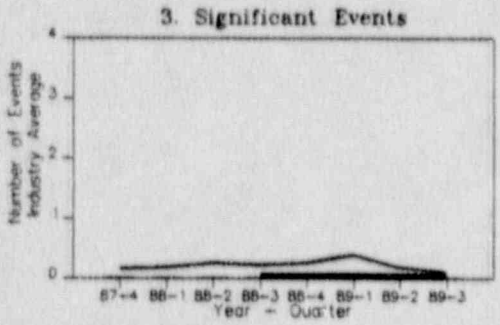
1. Automatic Scrams While Critical



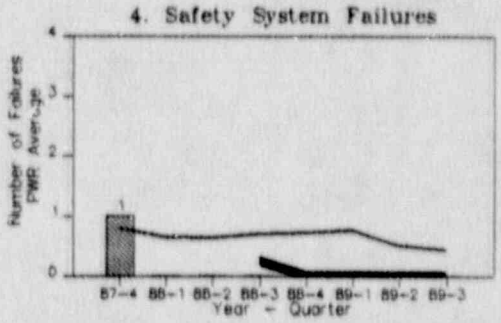
2. Safety System Actuations



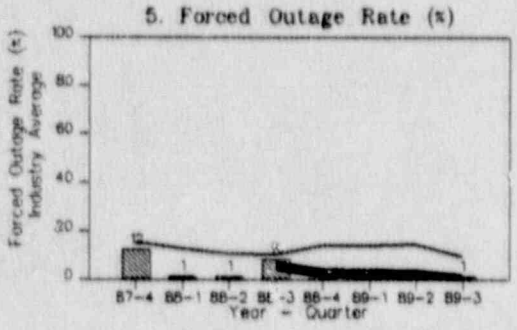
3. Significant Events



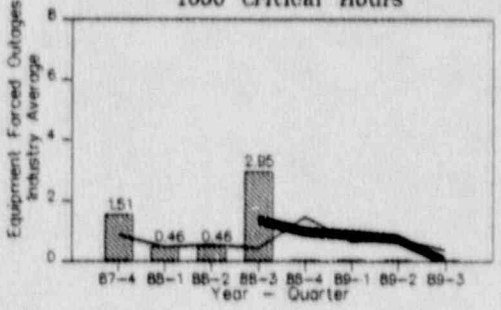
4. Safety System Failures



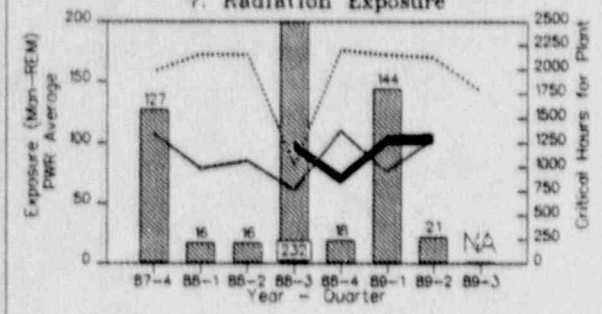
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

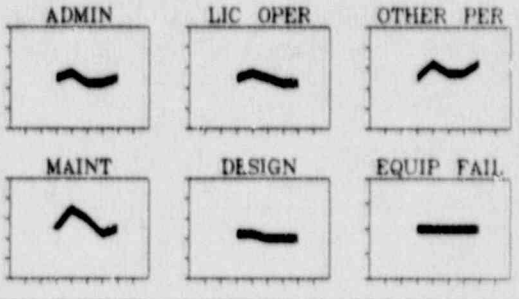


FIGURE 4.94

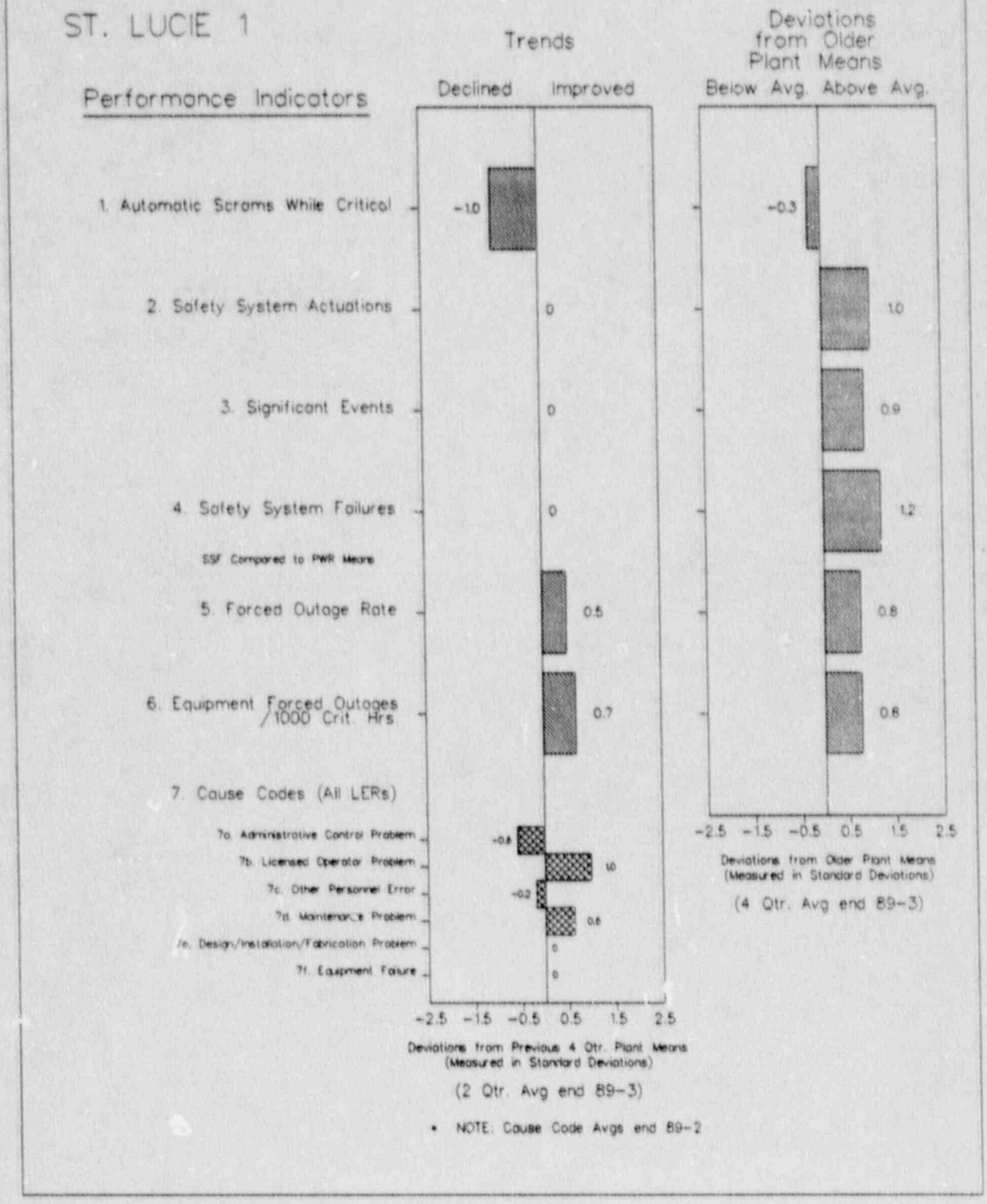

ST. LUCIE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.0
-0.3
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0
1.2
ESF Compared to PWR Means
5. Forced Outage Rate
0.5
0.8
6. Equipment Forced Outages /1000 Crit. Hrs
0.7
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
-0.2
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.95

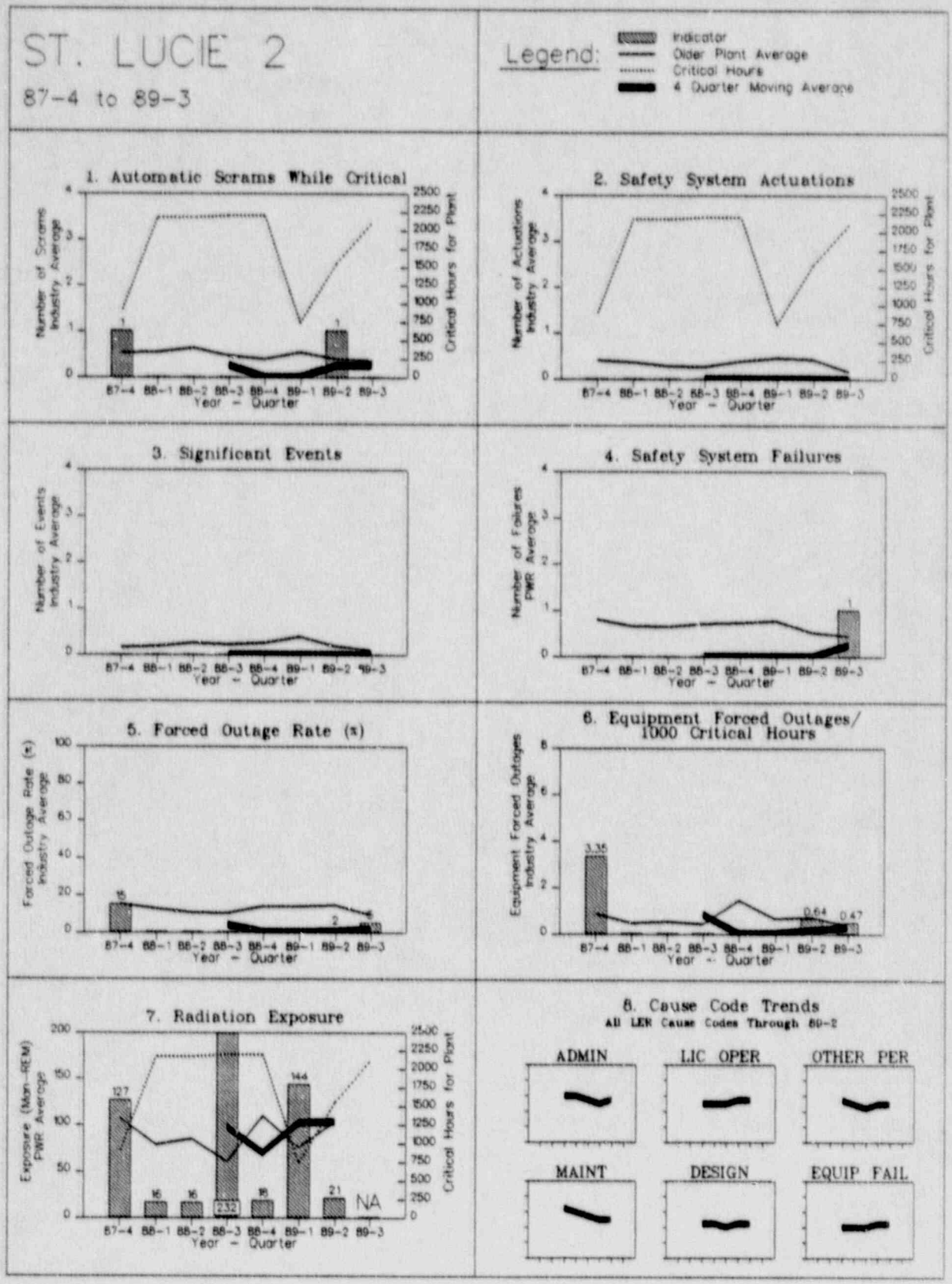

ST. LUCIE 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events 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 Critical Hours
Equipment Forced Outages Industry Average
3.35
0.64
0.47
7. Radiation Exposure
Exposure (Man-REM) PWR Average
127
16
16
232
16
146
21
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.95

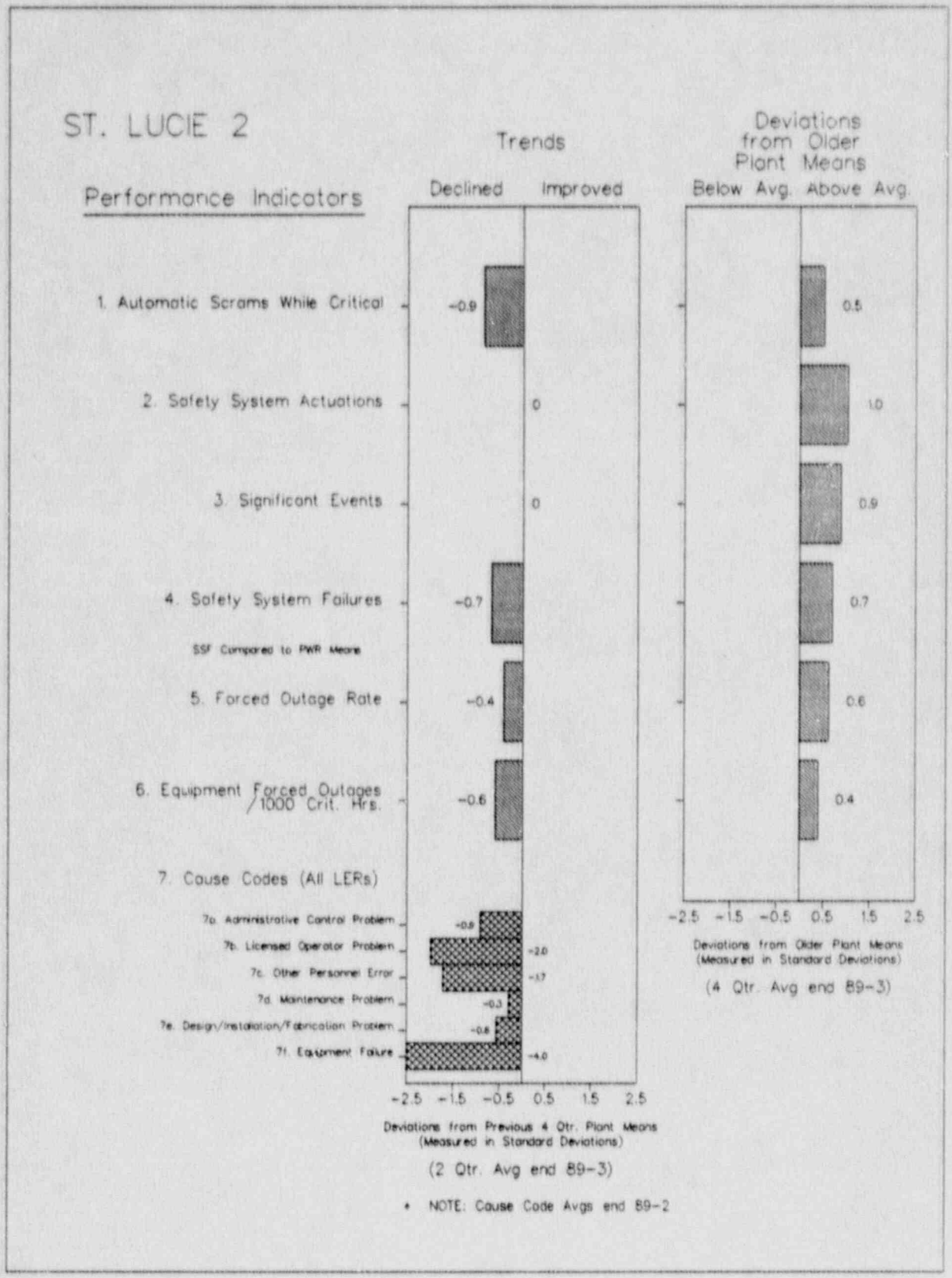

ST. LUCIE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.9
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
-0.7
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
0.6
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.6
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
-2.0
7c. Other Personnel Error
-1.7
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
-0.8
7f. Equipment Failure
-4.0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.96

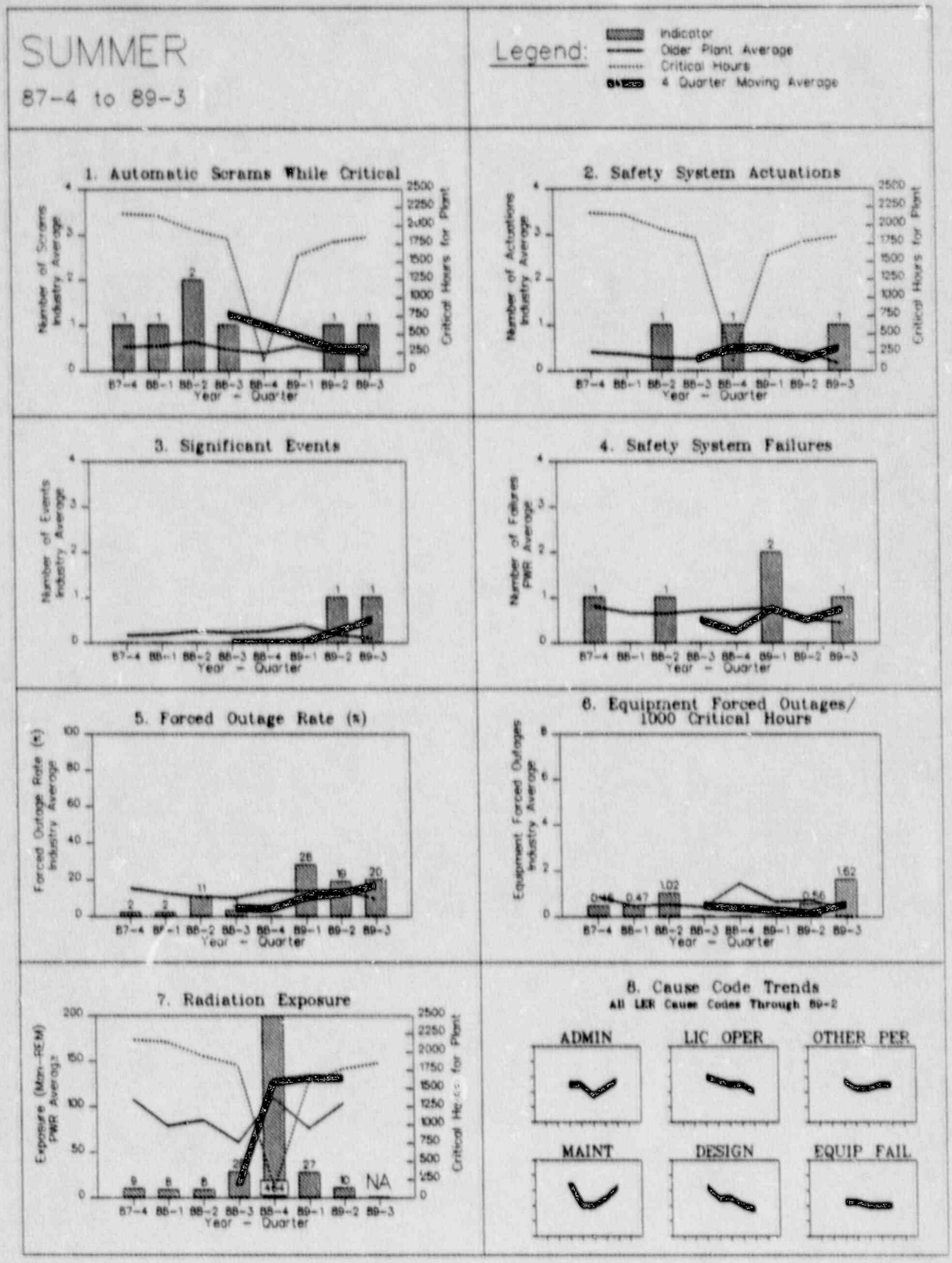

SUMMER
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - 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 Critical Hours
Equipment Forced Outages Industry Average
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.96

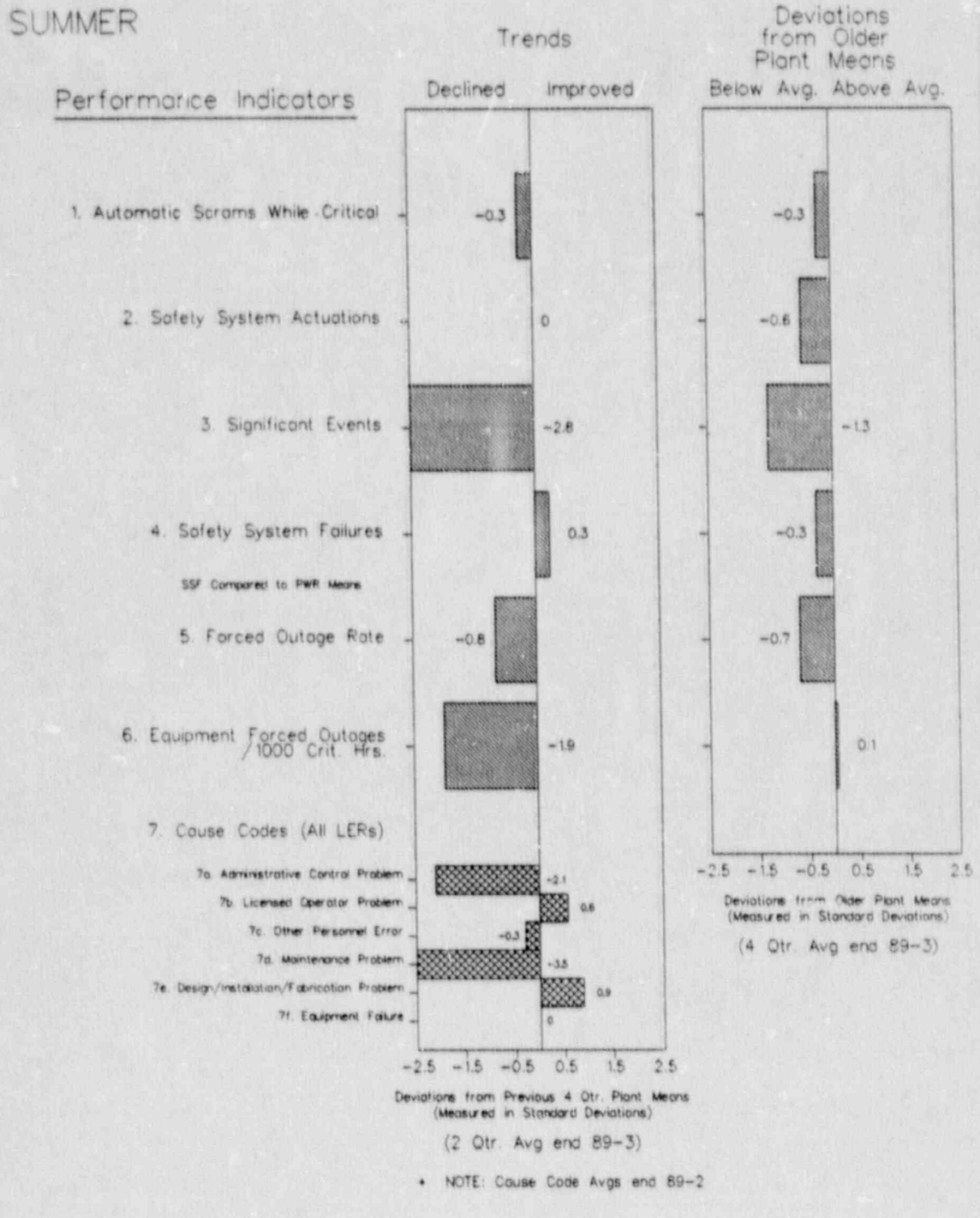

SUMMER
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.3
-0.3
2. Safety System Actuations
0
-0.6
3. Significant Events
-2.8
-1.3
4. Safety System Failures
0.3
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-0.8
-0.7
6. Equipment Forced Outages / 1000 Crit. Hrs.
-1.9
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
+2.1
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
-0.3
7d. Maintenance Problem
+3.5
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.97

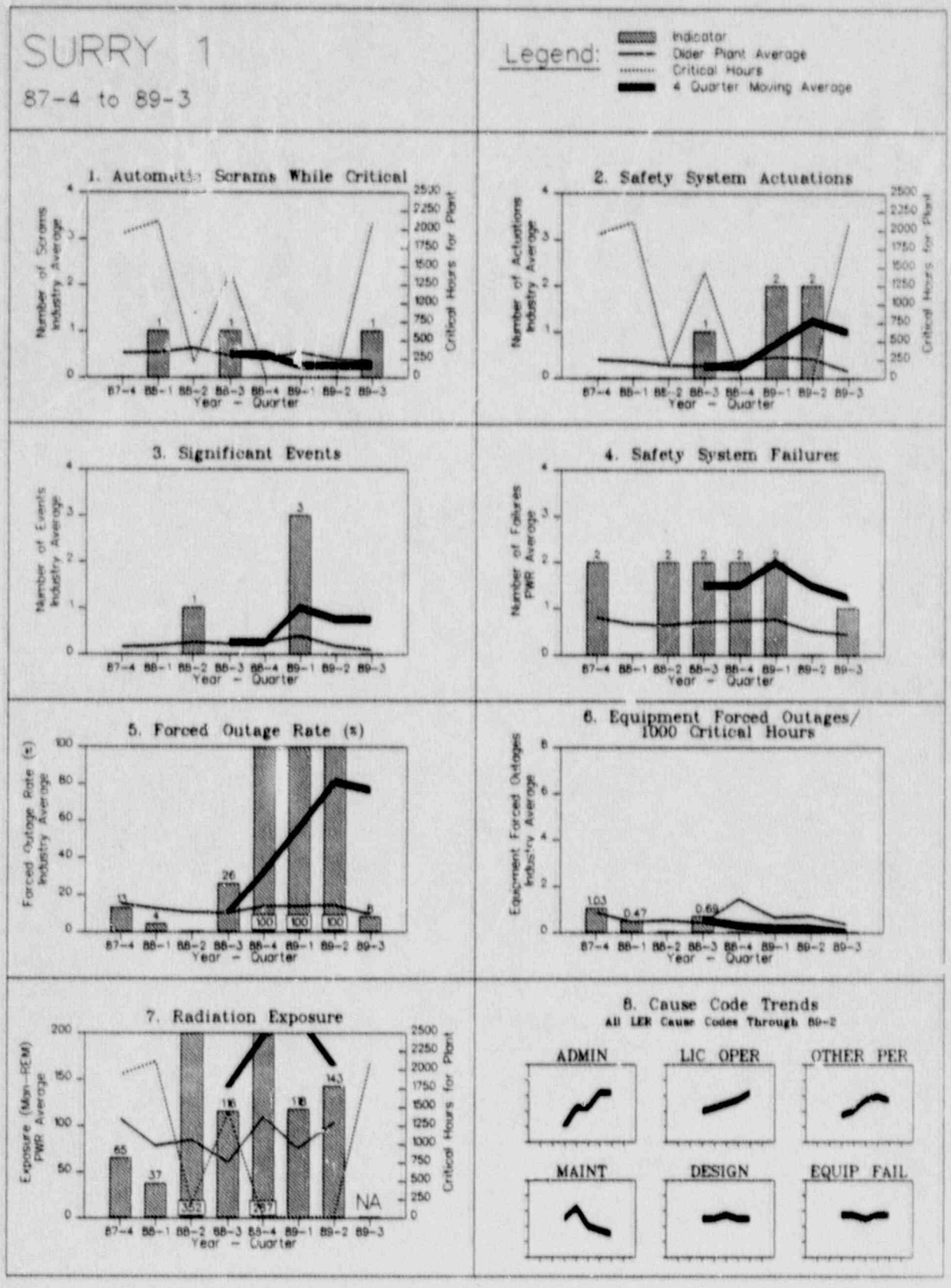

SURRY 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.97

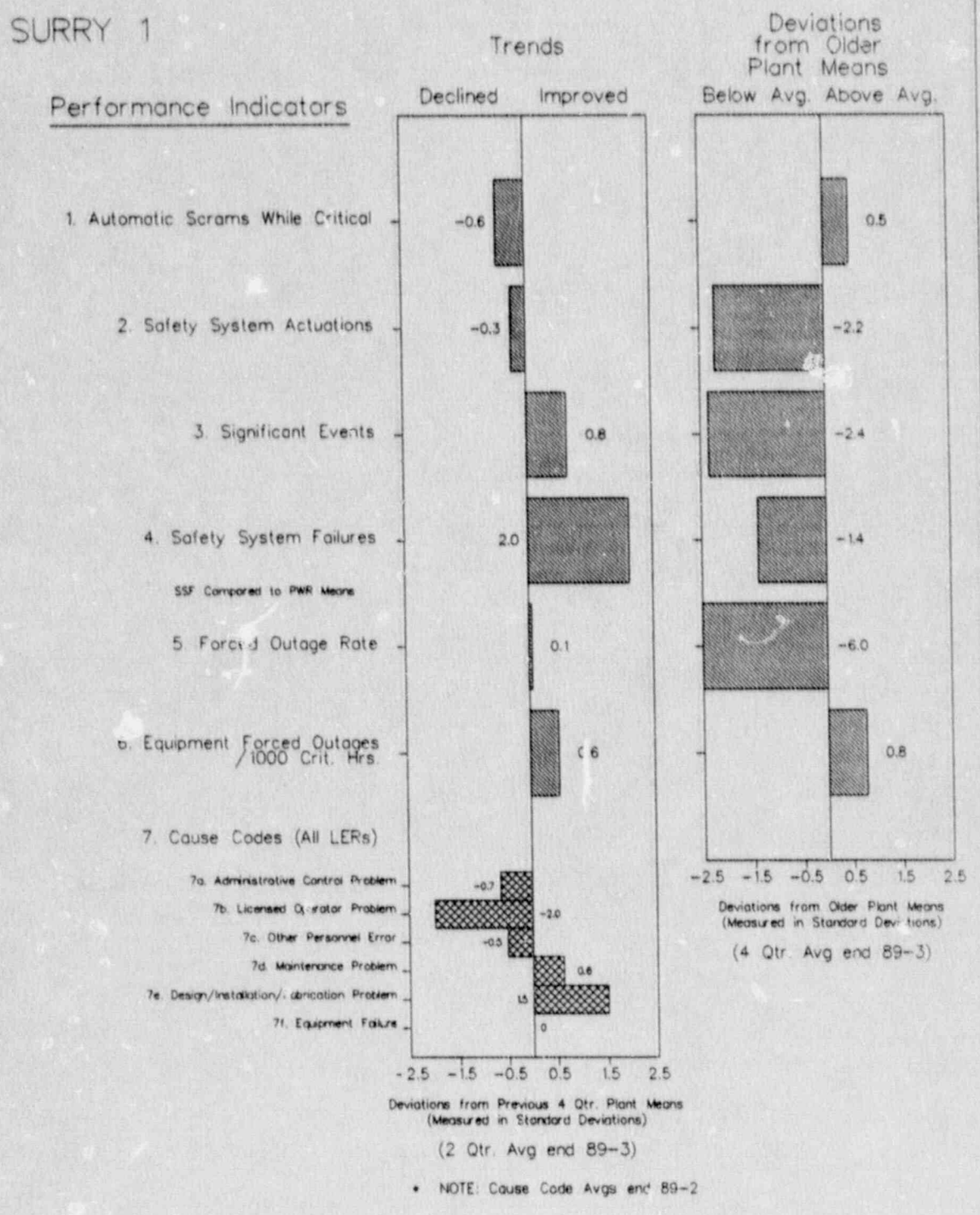

SURRY 1
Trends
Deviations from Older Plant Means
Performance Indicators
Declined
Improved
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-0.6
0.5
2. Safety System Actuations
-0.3
-2.2
3. Significant Events
0.8
-2.4
4. Safety System Failures
2.0
-1.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.1
-6.0
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.7
7b. Licensed Operator Problem
-2.0
7c. Other Personnel Error
-0.5
7d. Maintenance Problem
0.8
7e. Design/Installation/Fabrication Problem
1.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.98

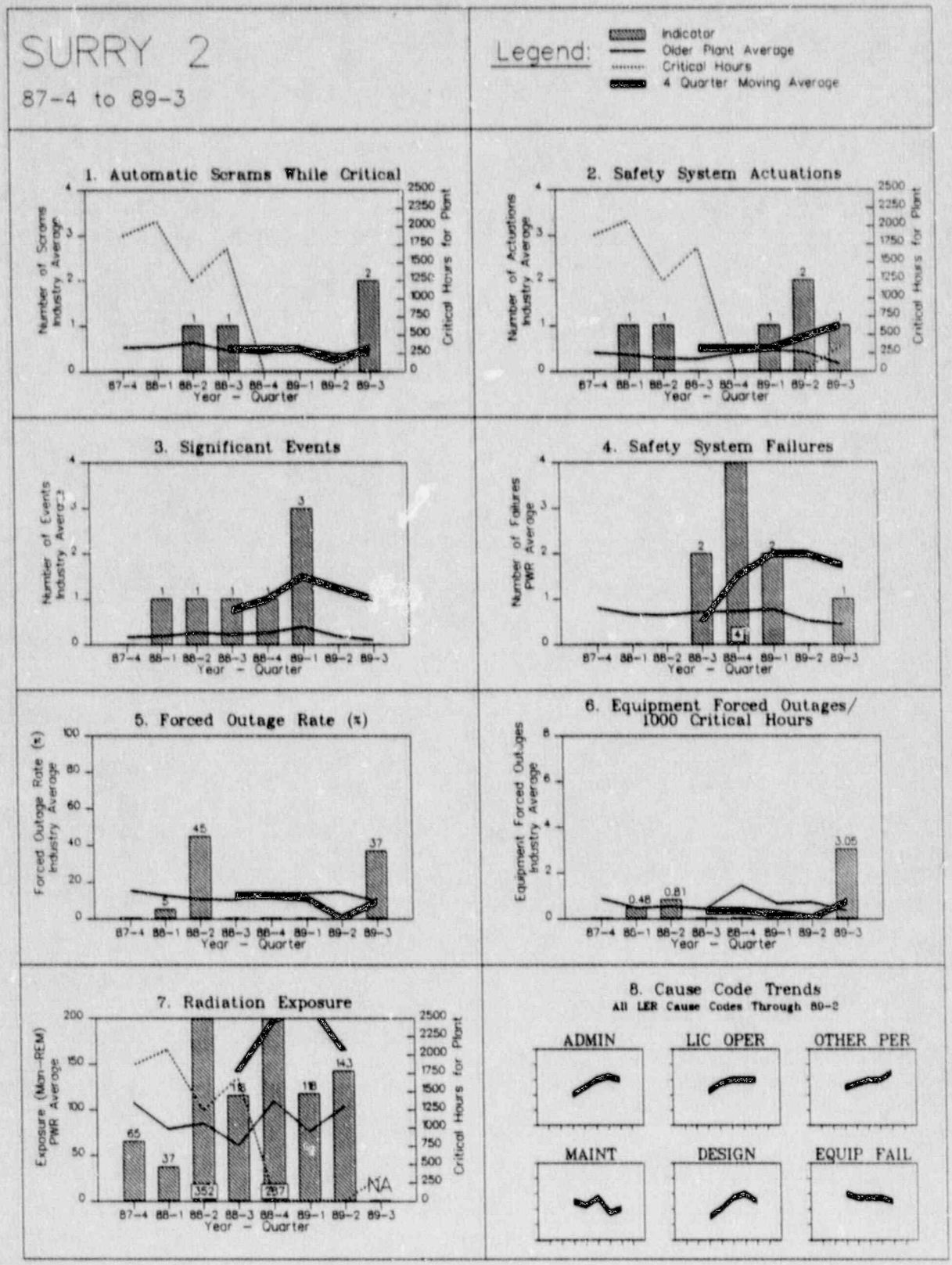

SURRY 2
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number of Events Industry Average
4. Safety System Failures
Number of Failures PWR Average
5. Forced Outage Rate (%)
Forced Outage Rate (%) Industry Average
6. Equipment Forced Outages/ 1000 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL
87-4 88-1 88-2 88-3 88-4 89-1 89-2 89-3
Year - Quarter

FIGURE 4.98

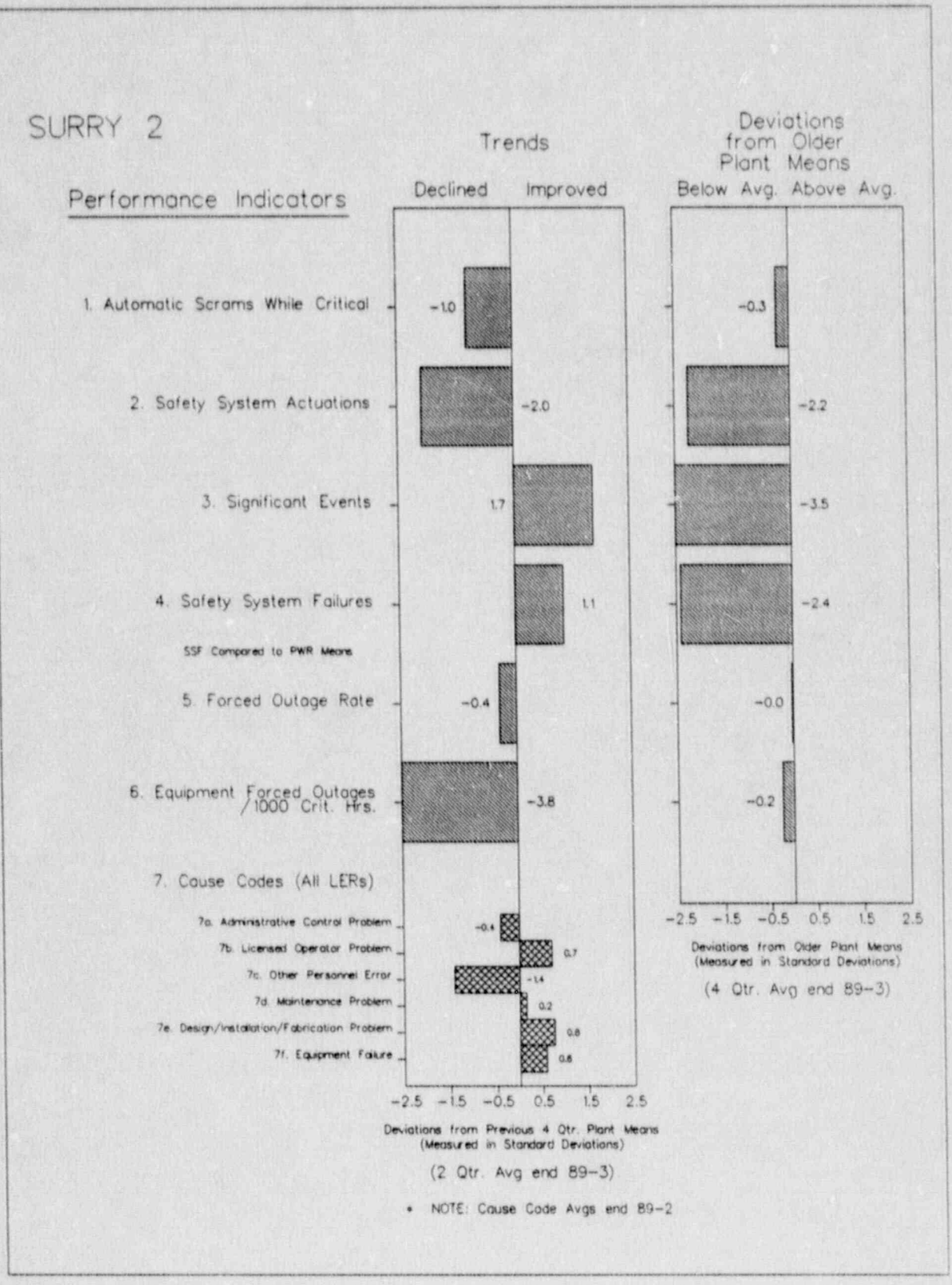

SURRY 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.0
-0.3
2. Safety System Actuations
-2.0
-2.2
3. Significant Events
1.7
-3.5
4. Safety System Failures
1.1
-2.4
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
-0.0
6. Equipment Forced Outages /1000 Crit. Hrs.
-3.8
-0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.4
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
-1.4
7d. Maintenance Problem
0.2
7e. Design/Installation/Fabrication Problem
0.8
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

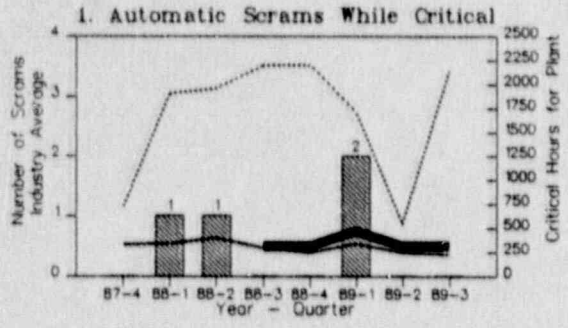
FIGURE 4.99

SUSQUEHANNA 1

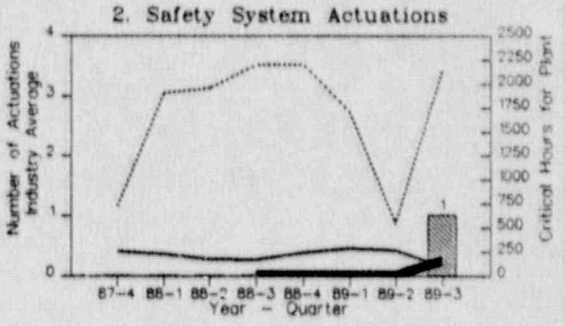
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

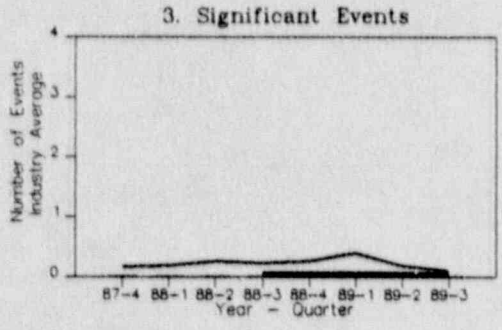
1. Automatic Scrams While Critical



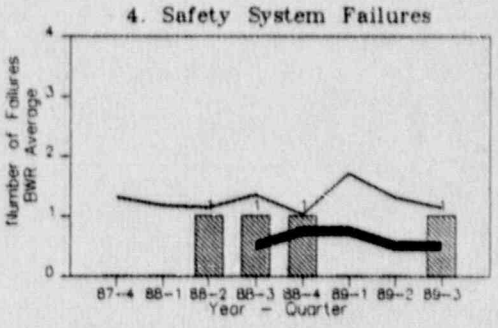
2. Safety System Actuations



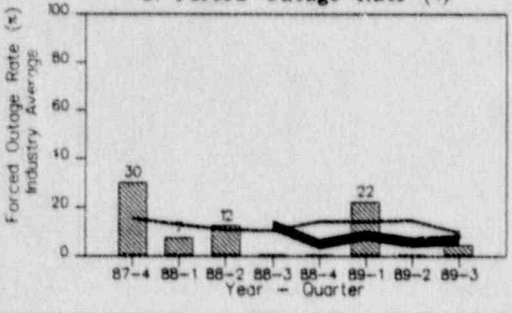
3. Significant Events



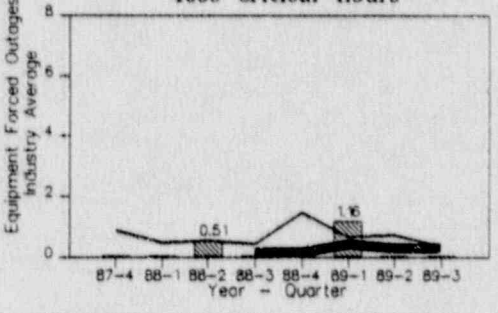
4. Safety System Failures



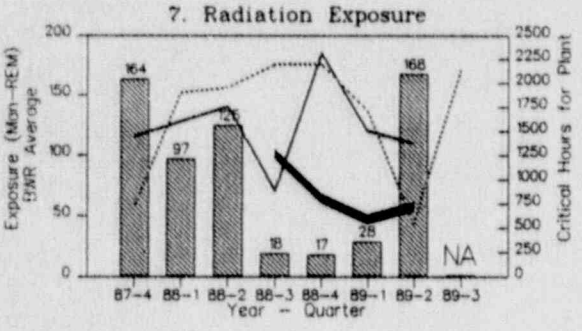
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

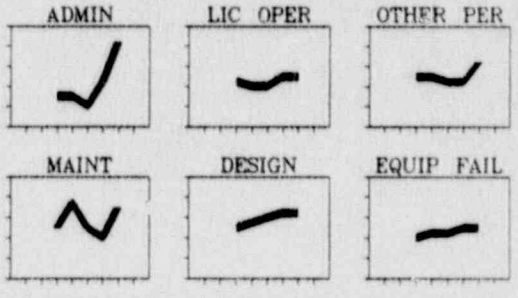


FIGURE 4.99

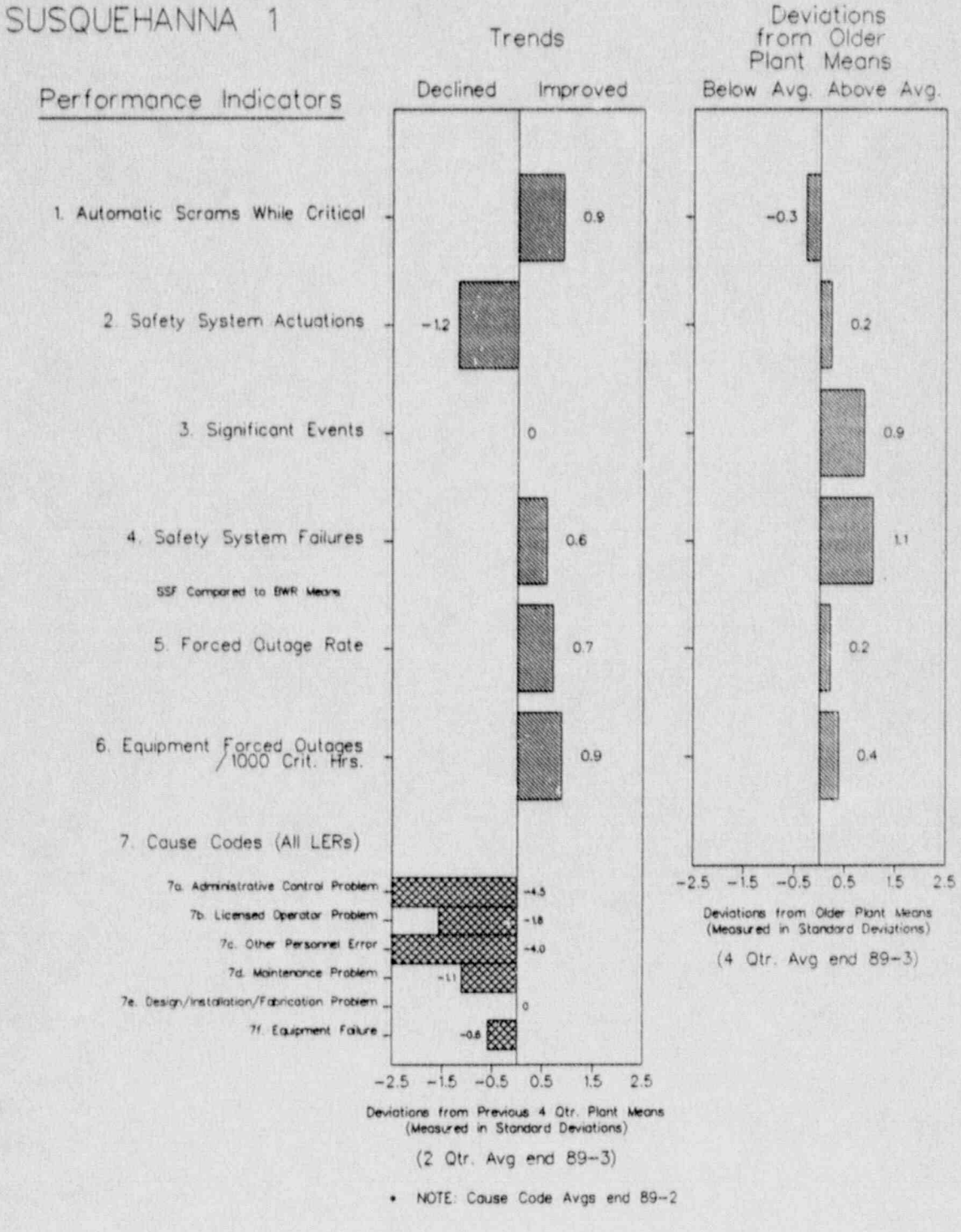

SUSQUEHANNA 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
-0.3
2. Safety System Actuations
-1.2
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0.6
1.1
SSF Compared to EWR Means
5. Forced Outage Rate
0.7
0.2
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.9
0.4
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.5
7b. Licensed Operator Problem
-1.8
7c. Other Personnel Error
-4.0
7d. Maintenance Problem
-1.1
7e. Design/Installation/Fabrication Problem
0
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

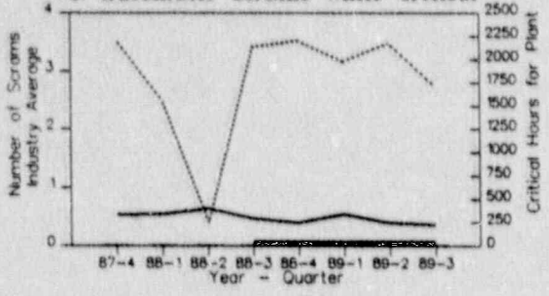
FIGURE 4.100

SUSQUEHANNA 2

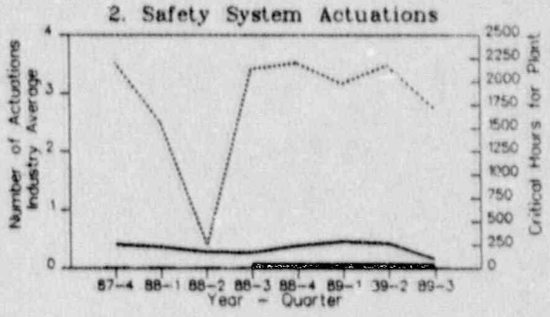
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

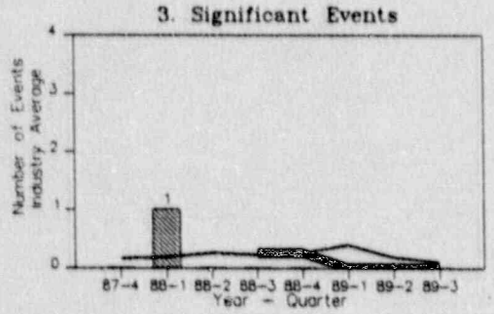
1. Automatic Scrams While Critical



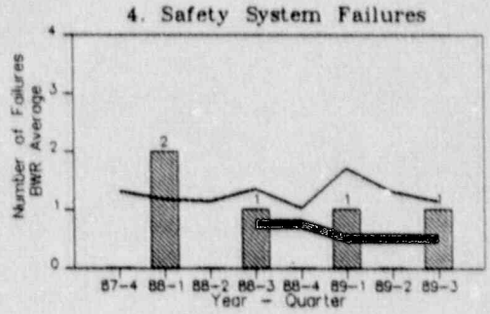
2. Safety System Actuations



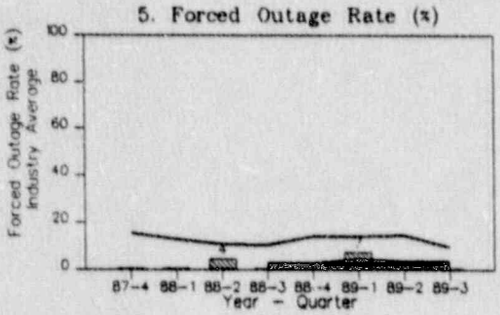
3. Significant Events



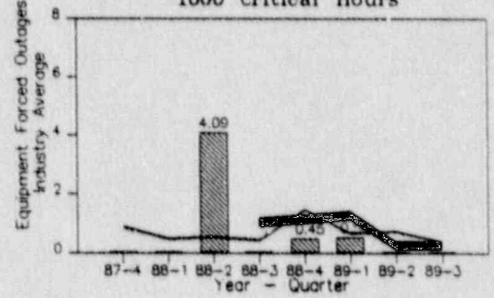
4. Safety System Failures



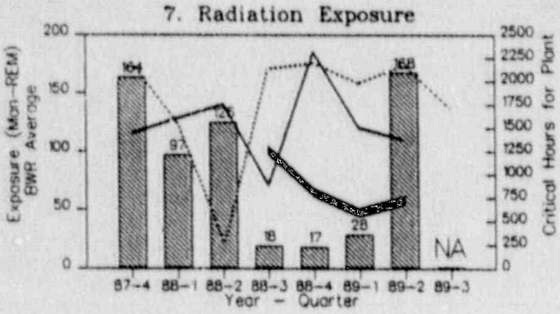
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

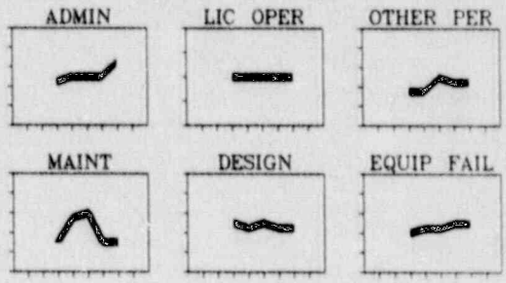


FIGURE 4.100

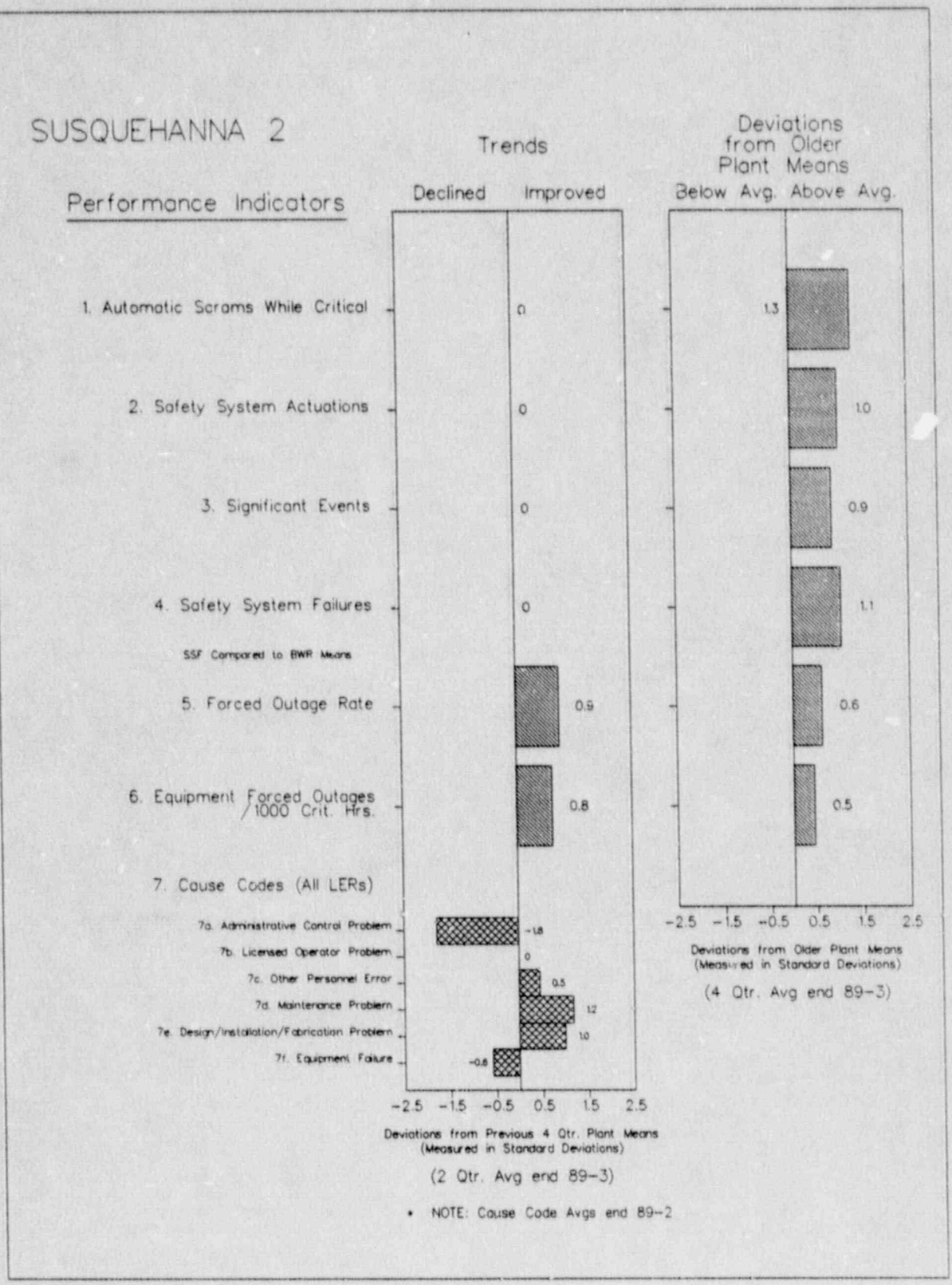

SUSQUEHANNA 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
1.3
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0
1.1
SSF Compared to BWR Means
5. Forced Outage Rate
0.9
0.6
6. Equipment Forced Outages /1000 Crit. Hrs.
0.8
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-1.8
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.5
7d. Maintenance Problem
1.2
7e. Design/Installation/Fabrication Problem
1.0
7f. Equipment Failure
-0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.101

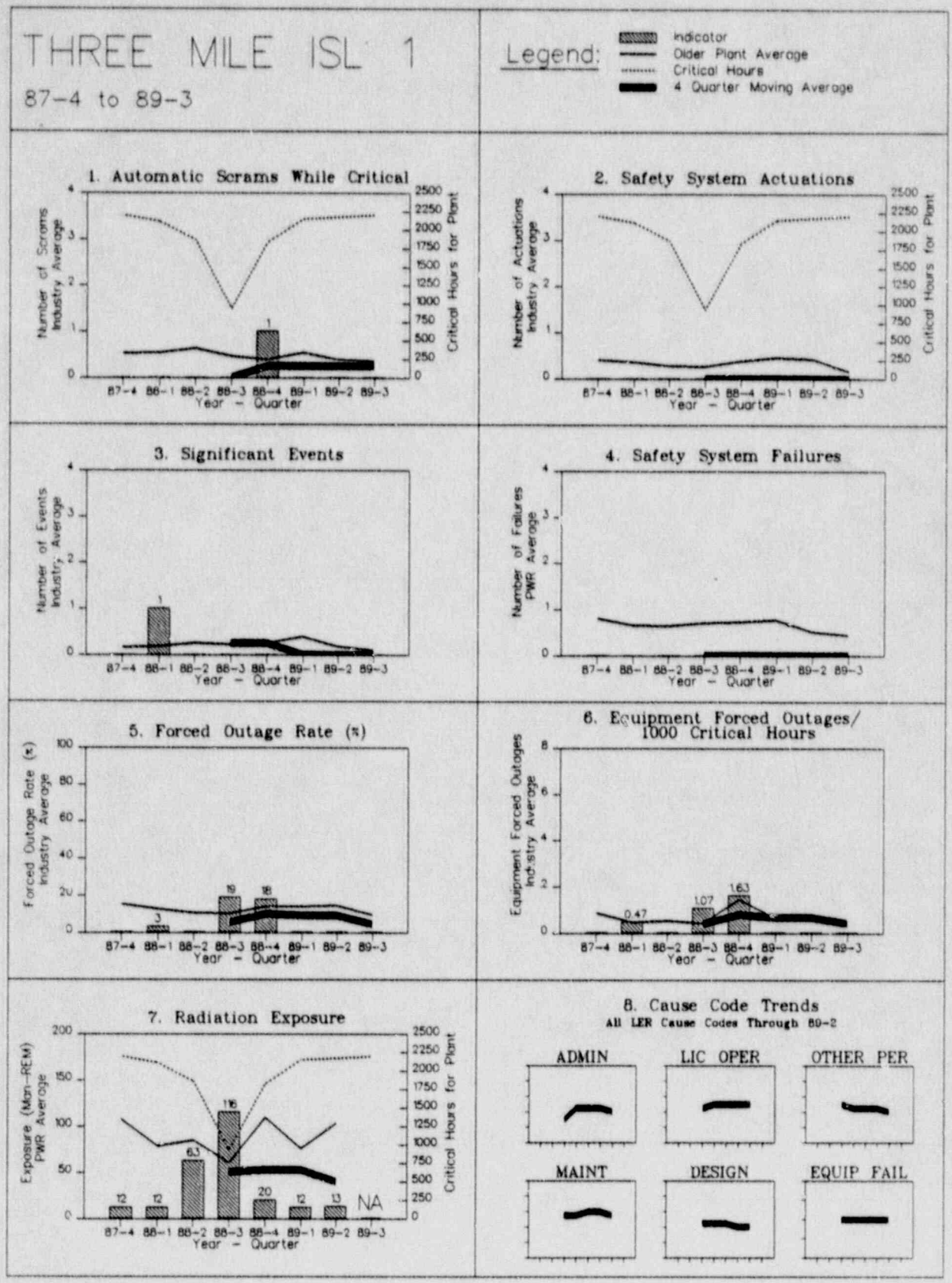

THREE MILE ISL 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
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 Critical Hours
Equipment Forced Outages Industry Average
7. Radiation Exposure
Exposure (Man-REM) PWR Average
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.101

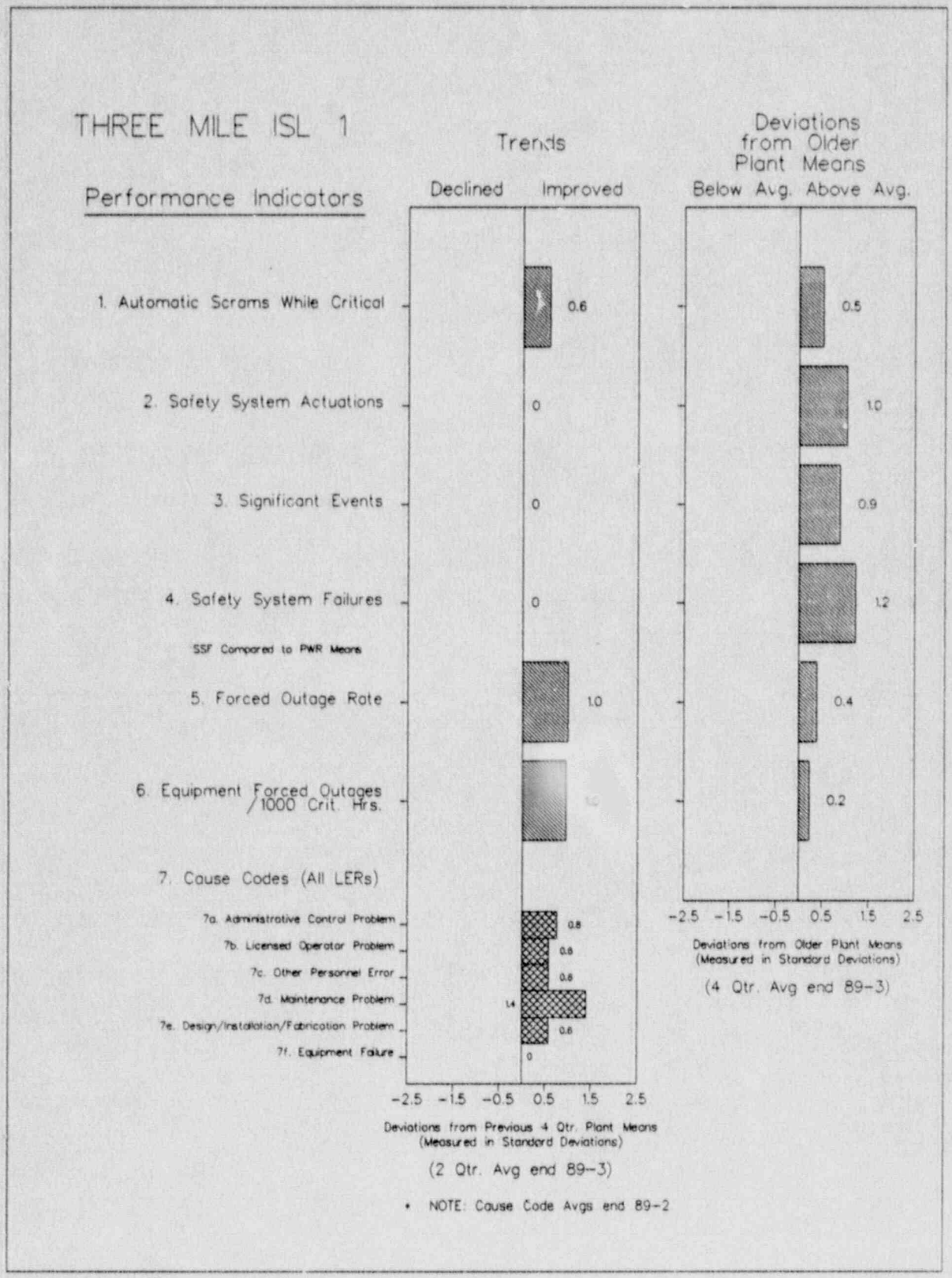
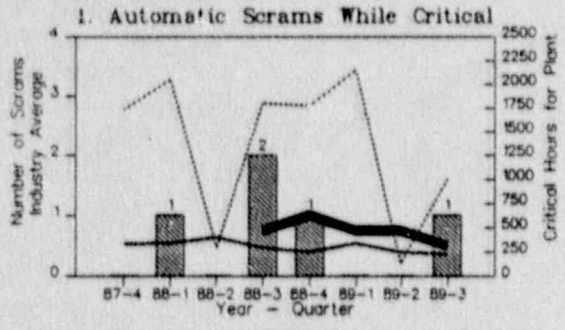

THREE MILE ISL 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
0
1.0
3. Significant Events
0
0.9
4. Safety System Failures
0
1.2
SSF Compared to PWR Means
5. Forced Outage Rate
1.0
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
0.2
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.8
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
0.8
7d. Maintenance Problem
1.4
7e. Design/Installation/Fabrication Problem
0.6
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

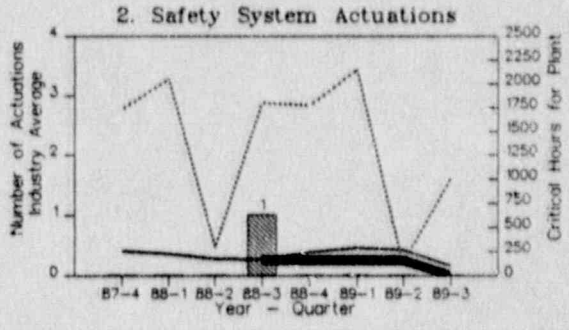
FIGURE 4.102

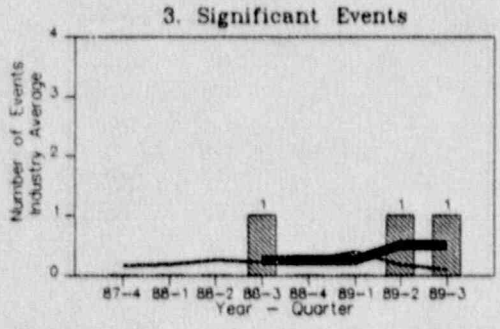
TROJAN

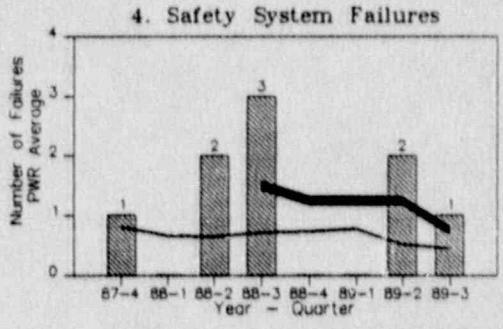
87-4 to 89-3

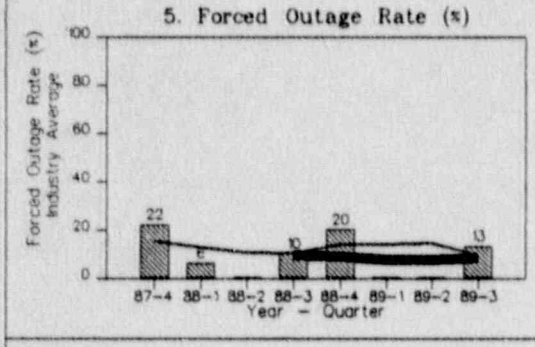
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

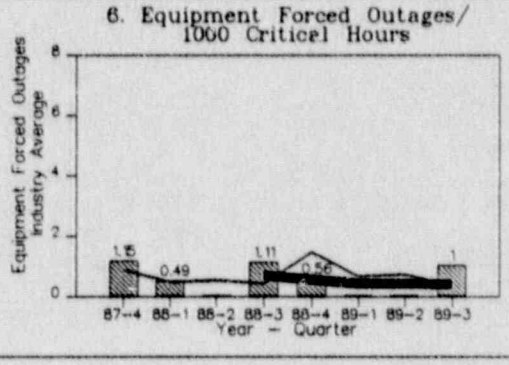


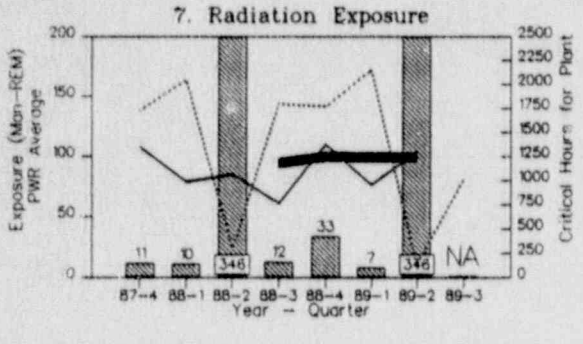












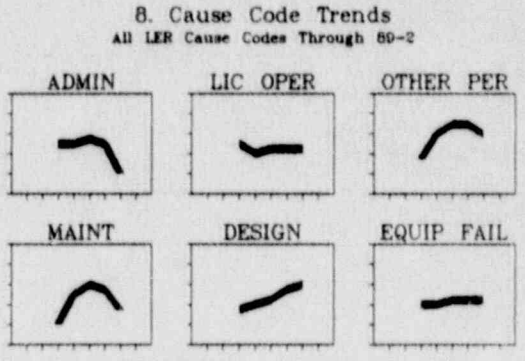


FIGURE 4.102

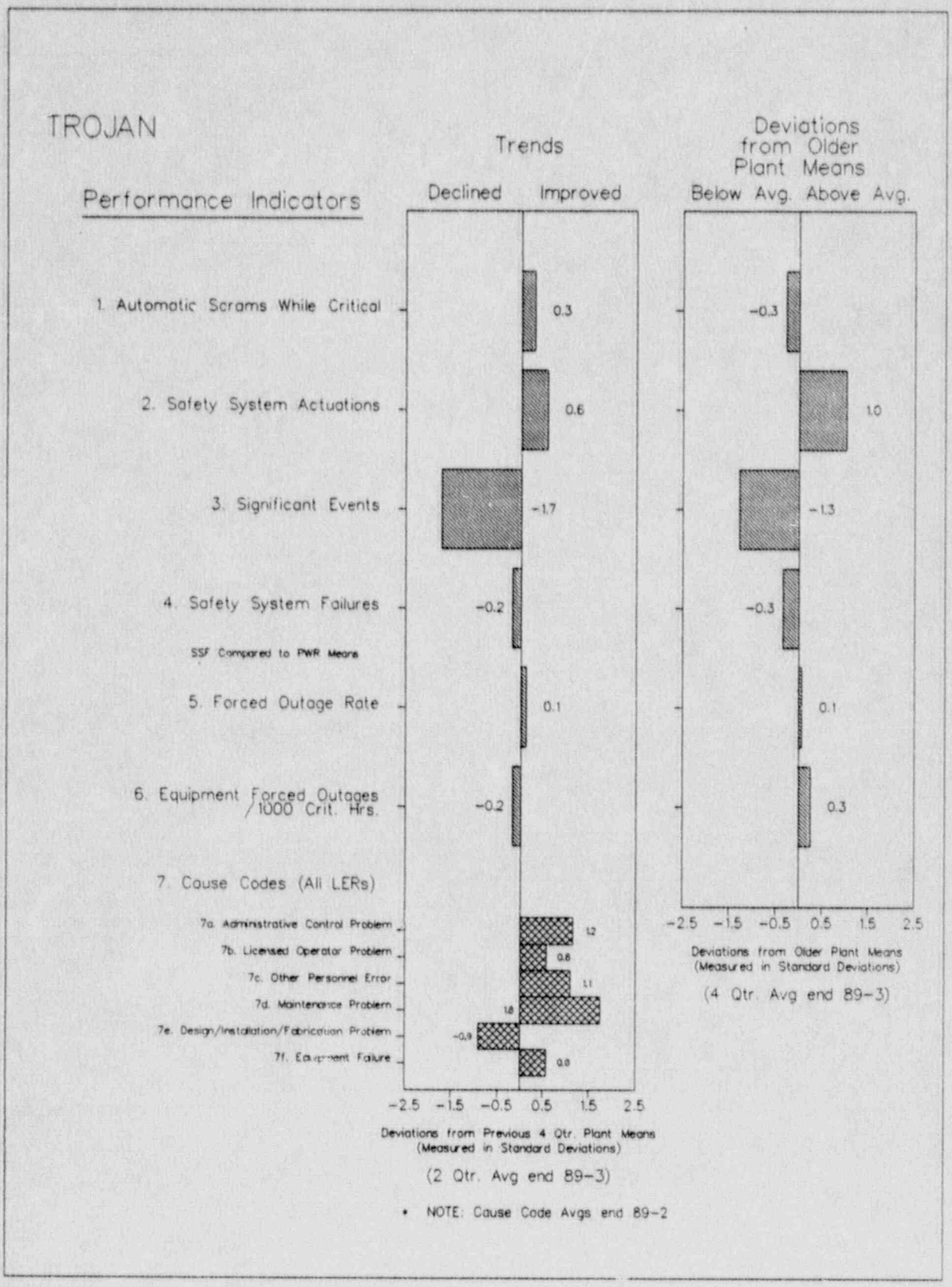

TROJAN
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.3
-0.3
2. Safety System Actuations
0.6
1.0
3. Significant Events
-1.7
-1.3
4. Safety System Failures
-0.2
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
0.1
0.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.2
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.2
7b. Licensed Operator Problem
0.8
7c. Other Personnel Error
1.1
7d. Maintenance Problem
1.8
7e. Design/Installation/Fabrication Problem
-0.9
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

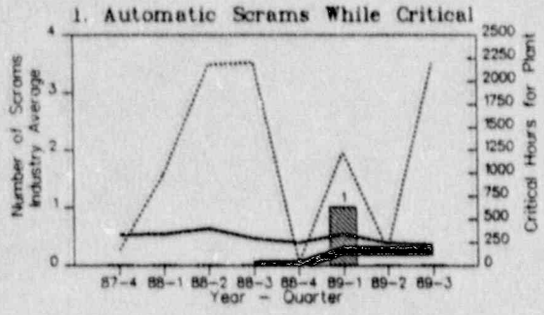
FIGURE 4.103

TURKEY POINT 3

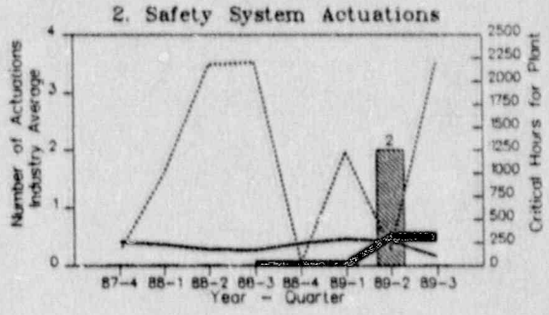
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

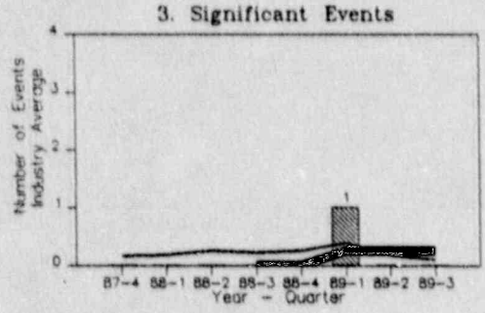
1. Automatic Scrams While Critical



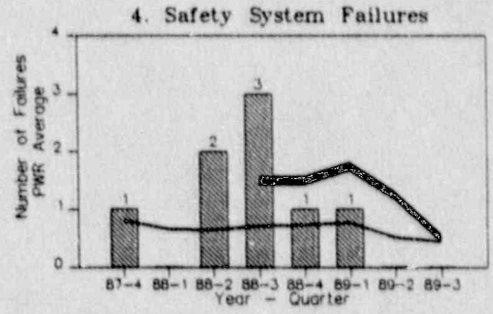
2. Safety System Actuations



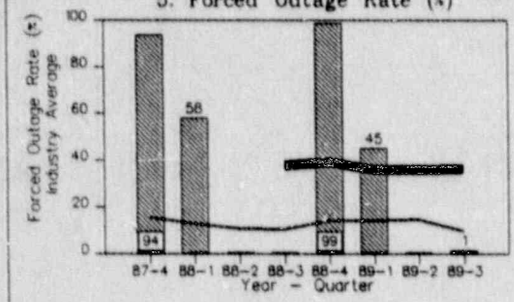
3. Significant Events



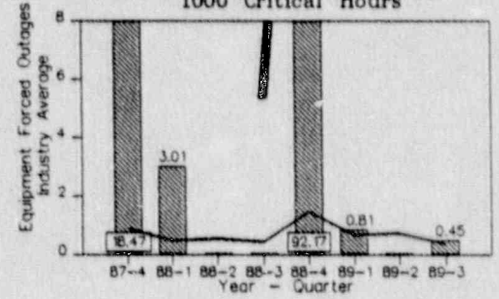
4. Safety System Failures



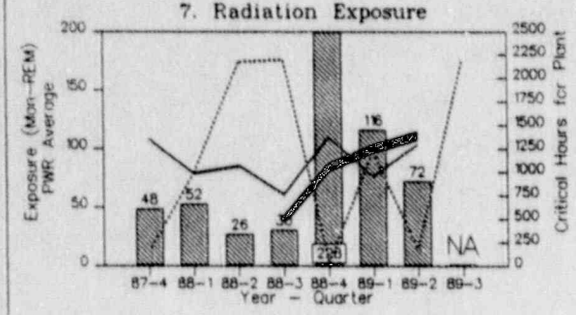
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

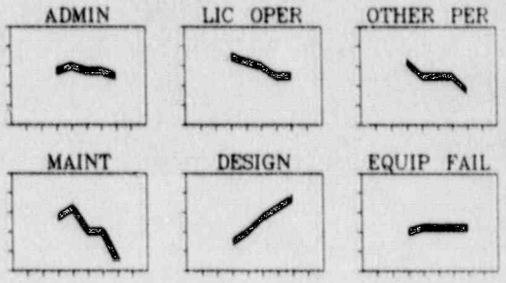


FIGURE 4.103

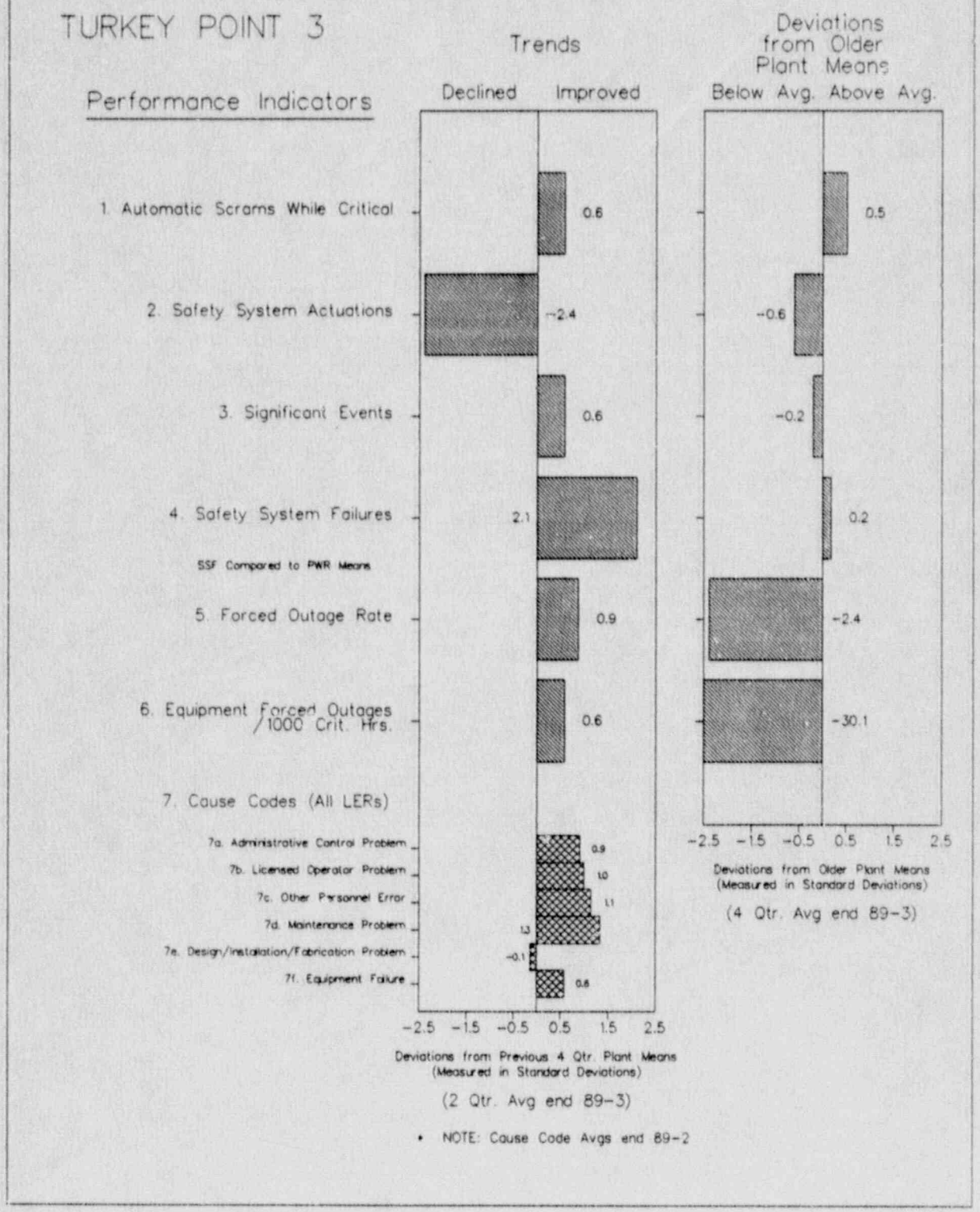

TURKEY POINT 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
0.5
2. Safety System Actuations
-2.4
-0.6
3. Significant Events
0.6
-0.2
4. Safety System Failures
2.1
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.9
-2.4
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.6
-30.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
1.1
7d. Maintenance Problem
1.3
7e. Design/Installation/Fabrication Problem
-0.1
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

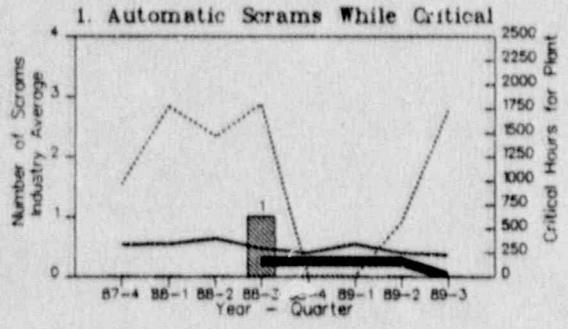
FIGURE 4.104

TURKEY POINT 4

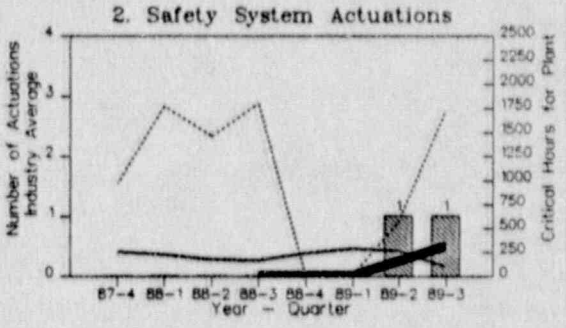
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

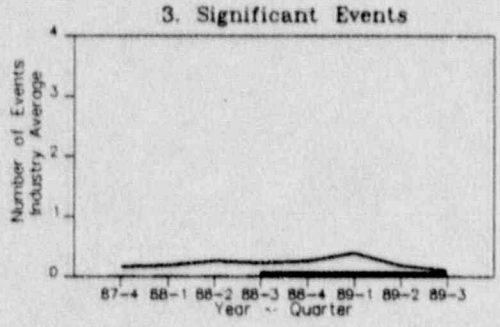
1. Automatic Scrams While Critical



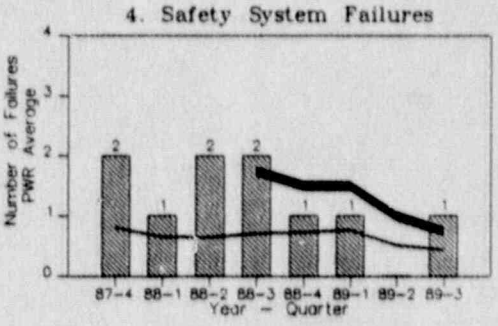
2. Safety System Actuations



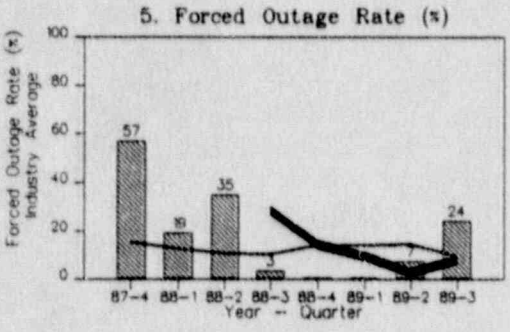
3. Significant Events



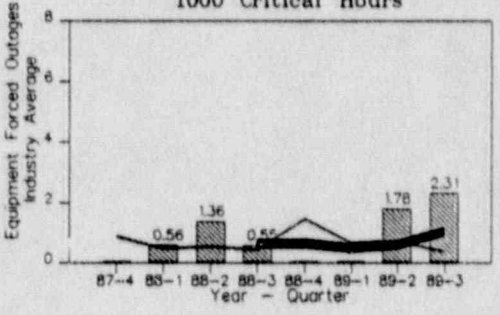
4. Safety System Failures



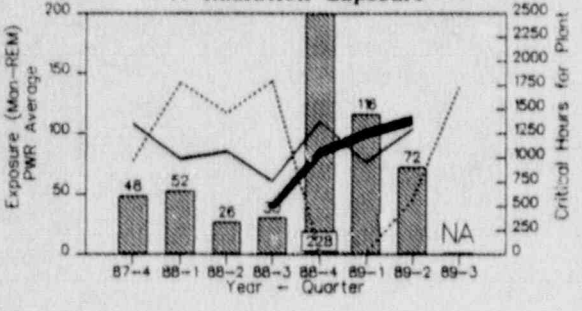
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

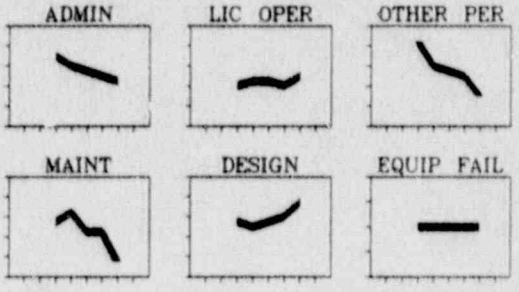


FIGURE 4.104

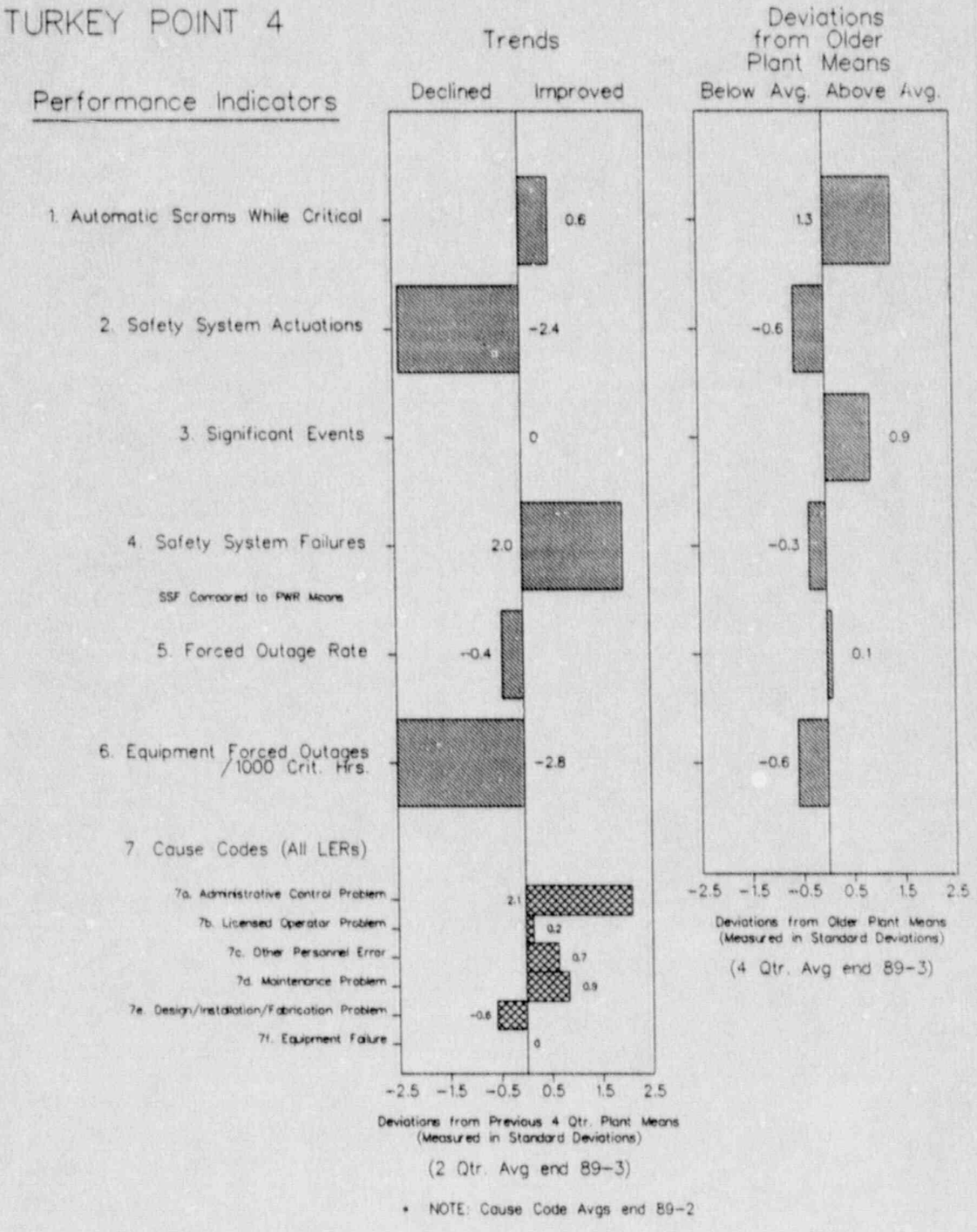
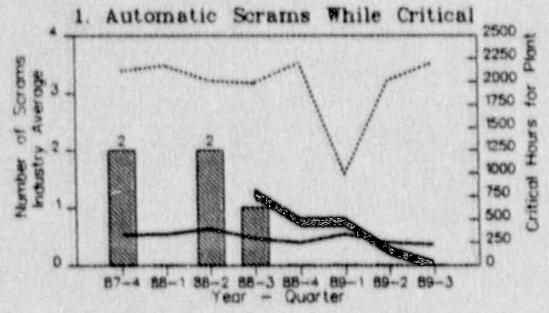

TURKEY POINT 4
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
1.3
2. Safety System Actuations
-2.4
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
2.0
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
-0.4
0.1
6. Equipment Forced Outages /1000 Crit. Hrs.
-2.8
-0.6
7. Cause Codes (All LERs)
7a. Administrative Control Problem
2.1
7b. Licensed Operator Problem
0.2
7c. Other Personnel Error
0.7
7d. Maintenance Problem
0.9
7e. Design/Installation/Fabrication Problem
-0.6
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

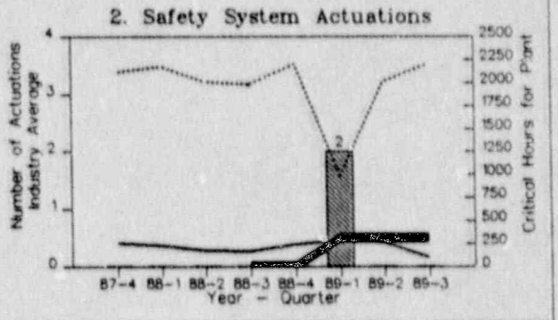
FIGURE 4.105

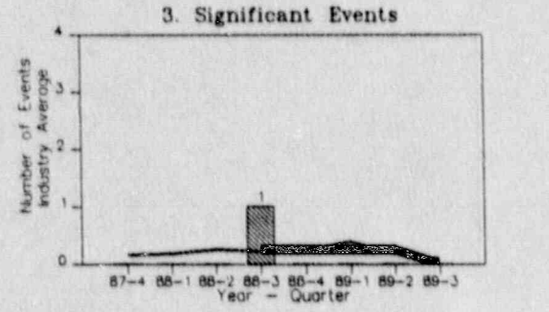
VERMONT YANKEE

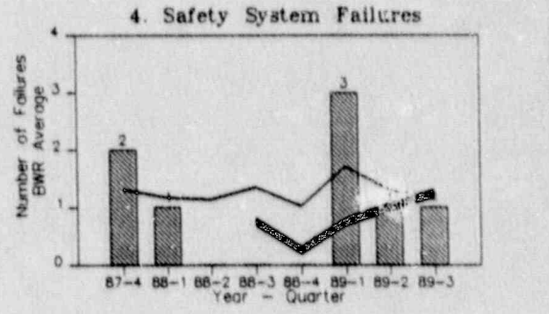
87-4 to 89-3

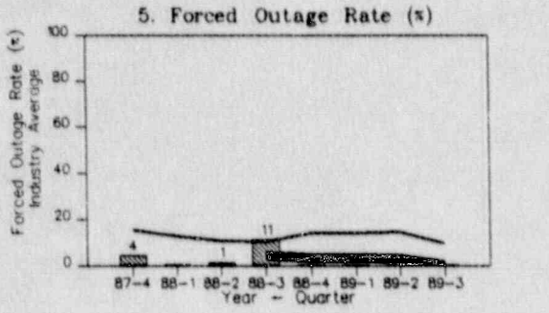
Legend: Indicator; Other Plant Average; Critical Hours; 4 Quarter Moving Average

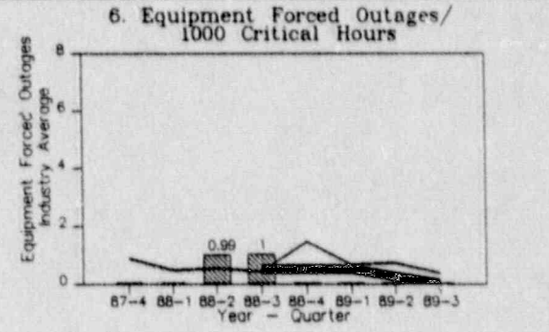


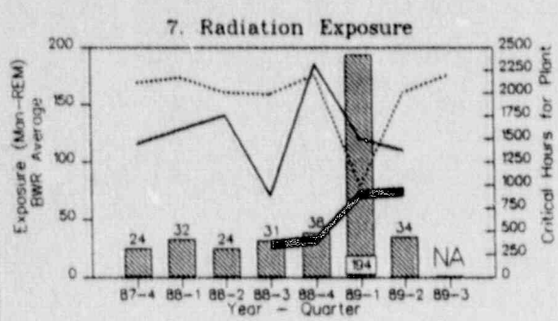












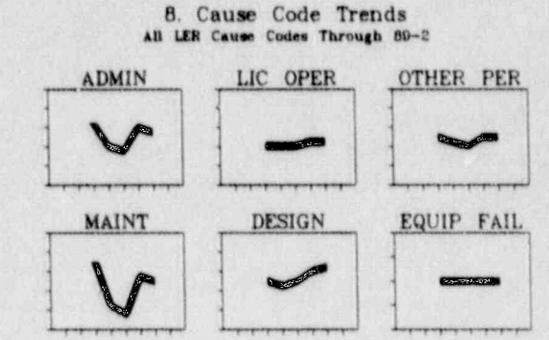


FIGURE 4.105

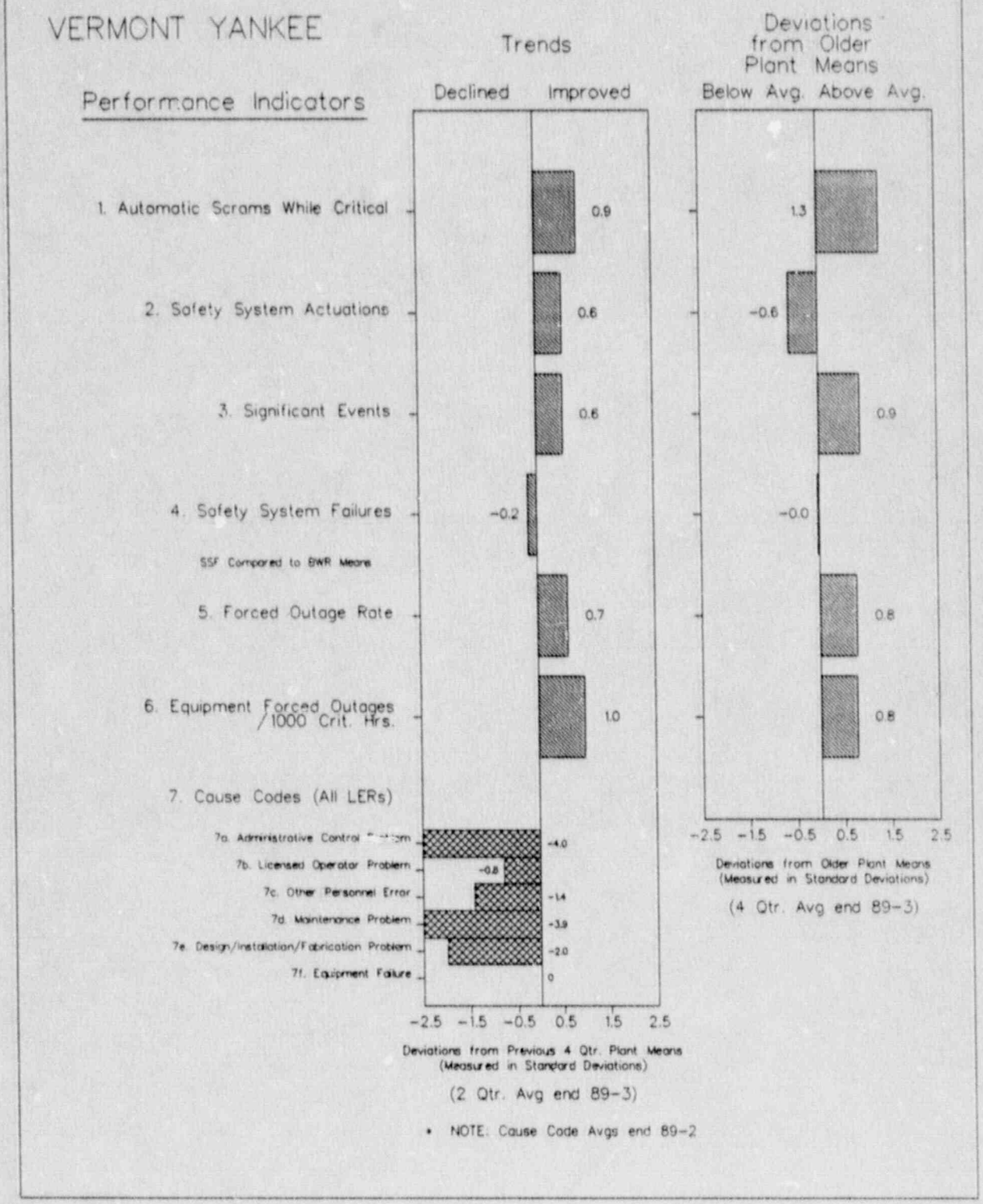

VERMONT YANKEE
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.9
1.3
2. Safety System Actuations
0.6
-0.6
3. Significant Events
0.6
0.9
4. Safety System Failures
-0.2
-0.0
SSF Compared to BWR Means
5. Forced Outage Rate
0.7
0.8
6. Equipment Forced Outages / 1000 Crit. Hrs.
1.0
0.8
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-4.0
7b. Licensed Operator Problem
-0.8
7c. Other Personnel Error
-1.4
7d. Maintenance Problem
-3.9
7e. Design/Installation/Fabrication Problem
-2.0
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

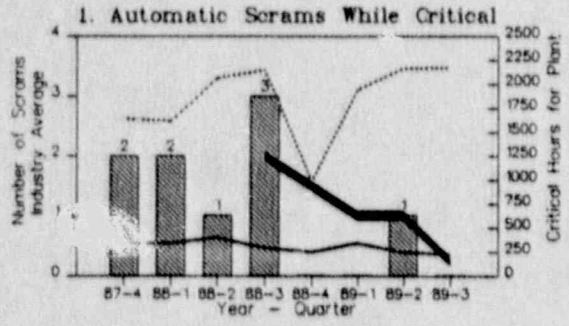
FIGURE 4.106

VOGTLE 1

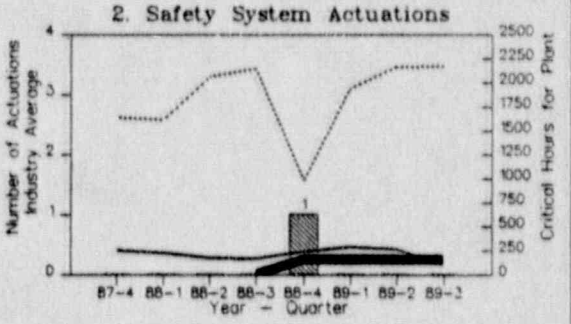
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

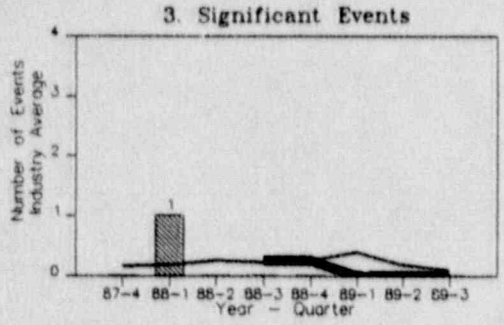
1. Automatic Scrams While Critical



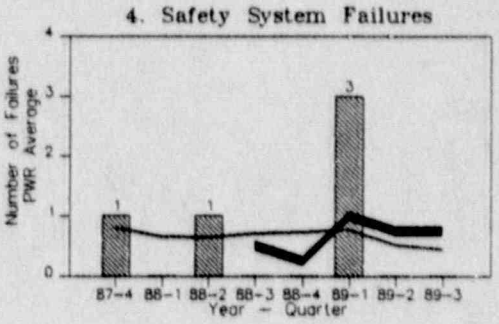
2. Safety System Actuations



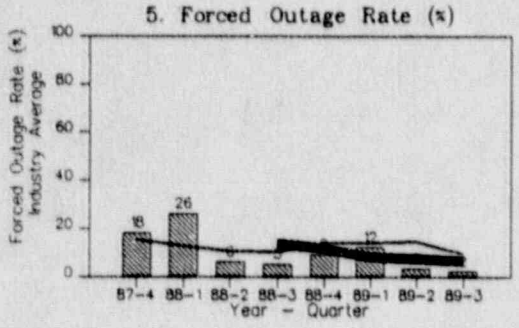
3. Significant Events



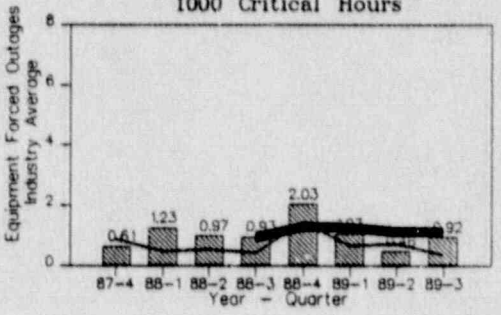
4. Safety System Failures



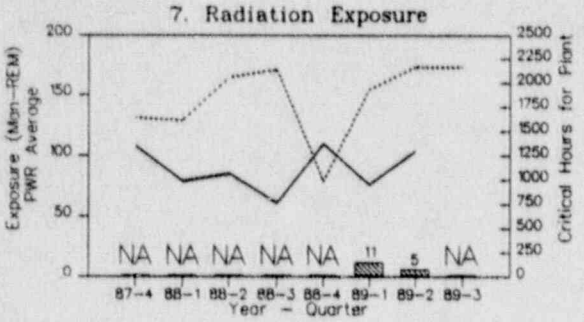
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

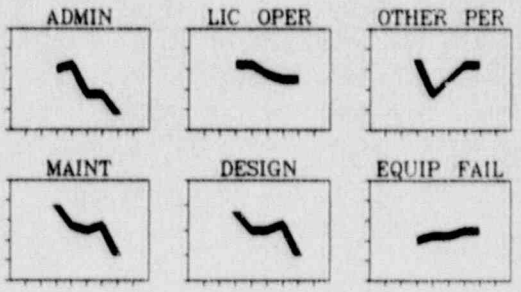


FIGURE 4.106

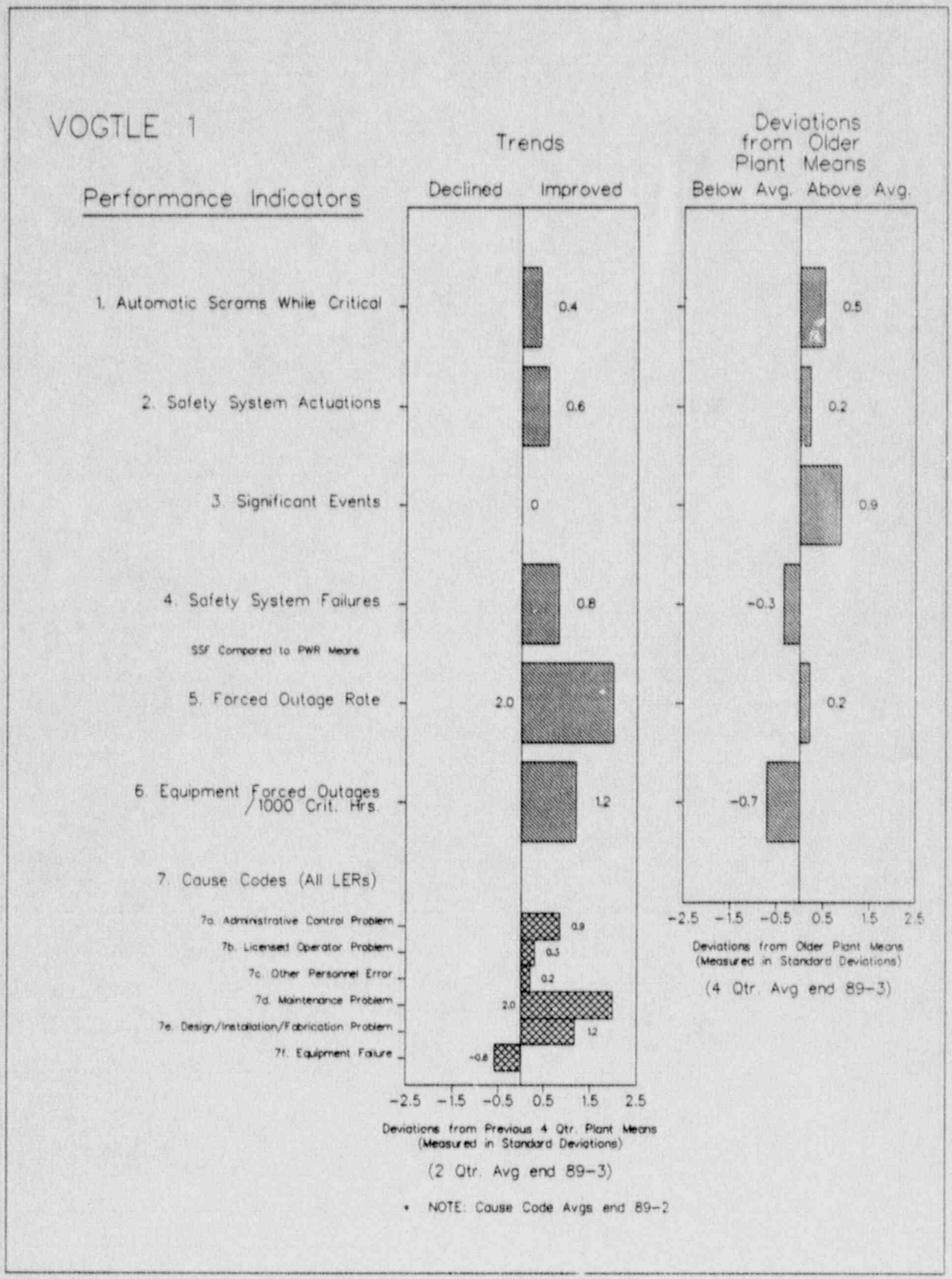
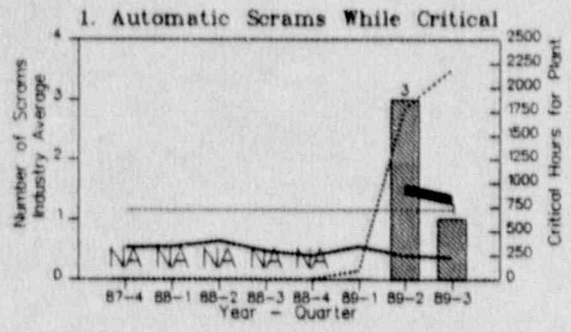

VOGTLE 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.4
0.5
2. Safety System Actuations
0.6
0.2
3. Significant Events
0
0.9
4. Safety System Failures
0.8
-0.3
SSF Compared to PWR Means
5. Forced Outage Rate
2.0
0.2
6. Equipment Forced Outages /1000 Crit. Hrs.
1.2
-0.7
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.9
7b. Licensed Operator Problem
0.3
7c. Other Personnel Error
0.2
7d. Maintenance Problem
2.0
7e. Design/Installation/Fabrication Problem
1.2
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

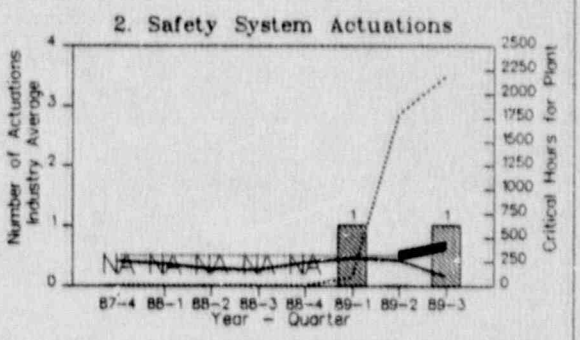
FIGURE 4.107

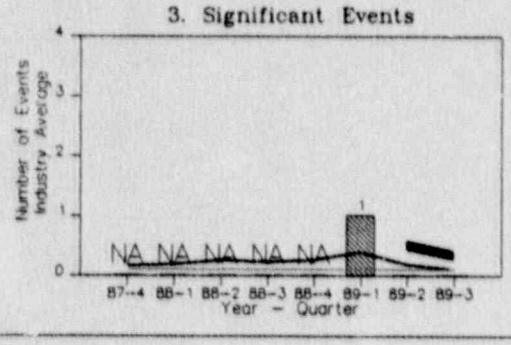
VOGTLE 2

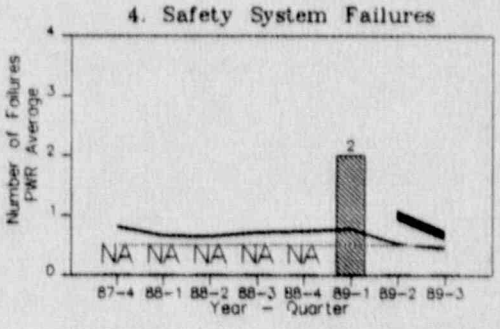
87-4 to 89-3

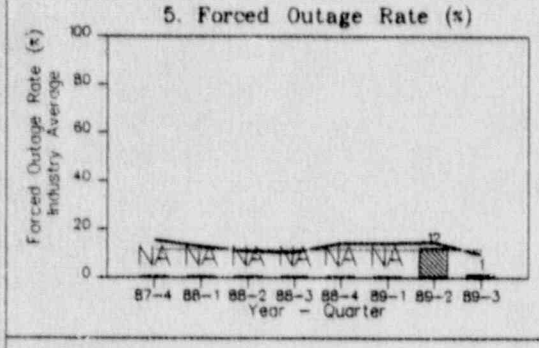
Legend:
- Indicator
- Older Plant Average
- Newer Plant Average
- Critical Hours
- 4 Quarter Moving Average

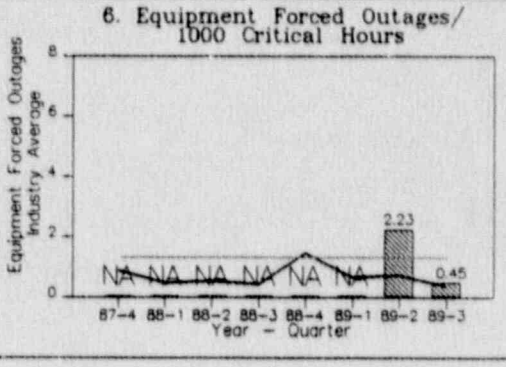


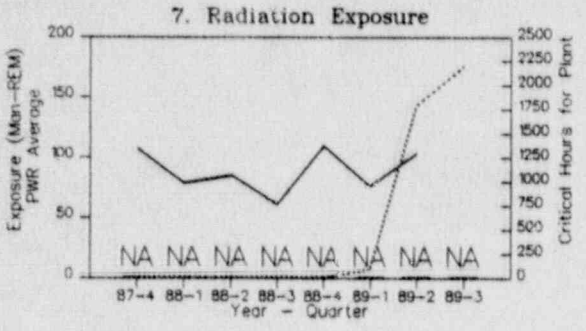












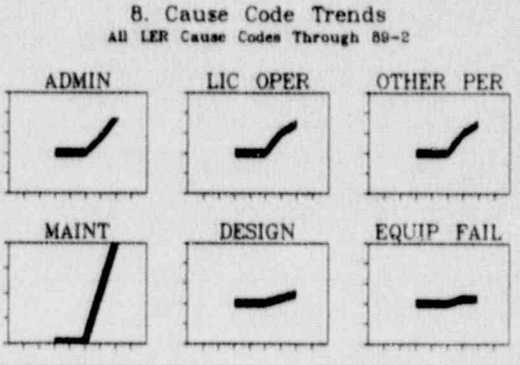
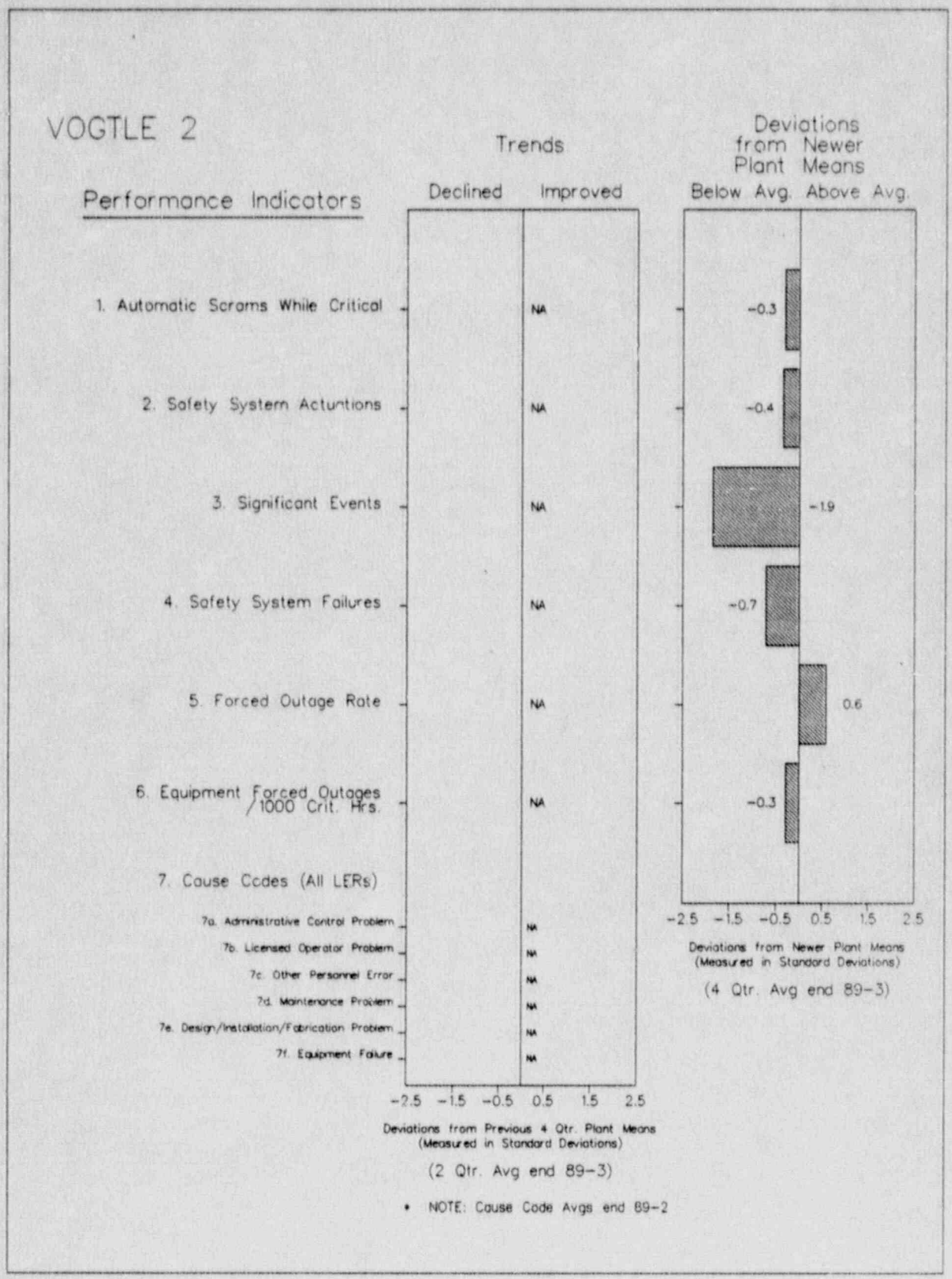


FIGURE 4.107


VOGTLE 2
Performance Indicators
Trends
Declined
Improved
Deviations from Newer Plant Means
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 Crit. Hrs.
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
NA
-0.3
-0.4
-1.9
-0.7
0.6
-0.3
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
Deviations from Newer Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

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INTENTIONALLY

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FIGURE 4.107

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

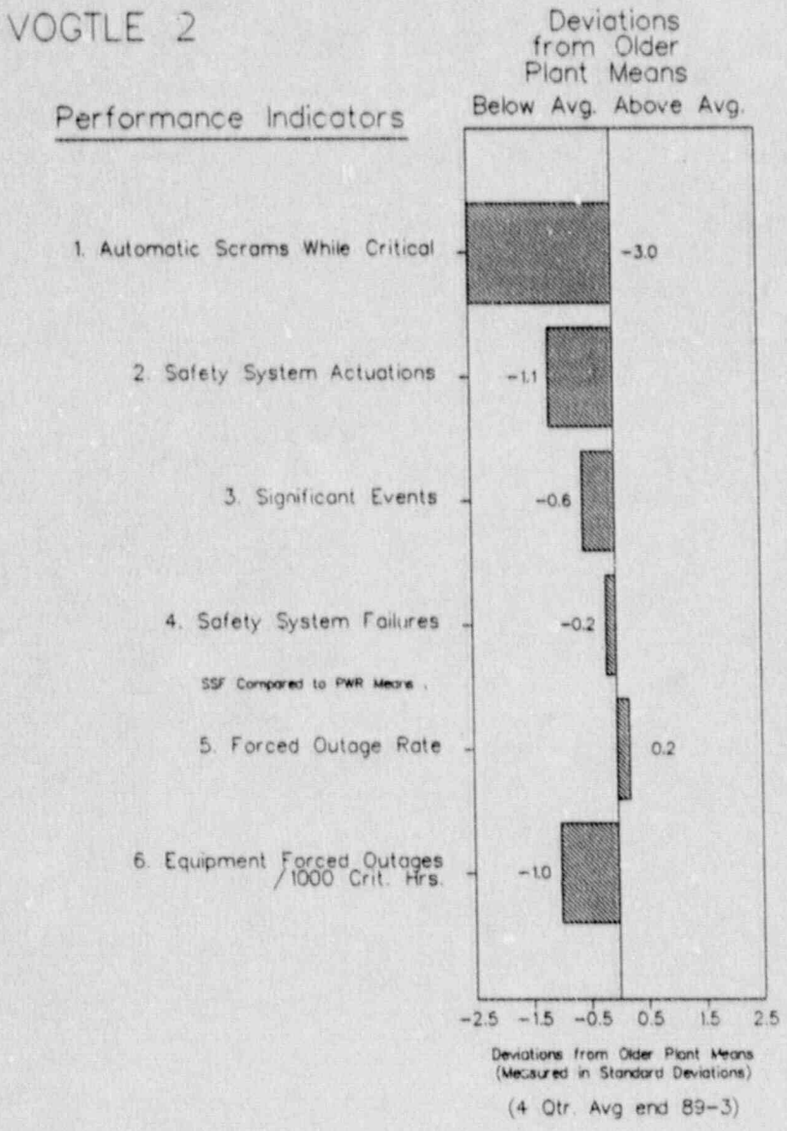
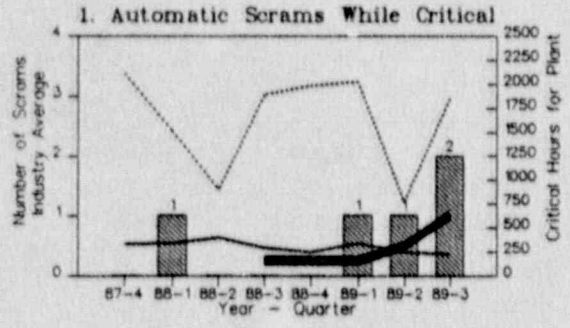


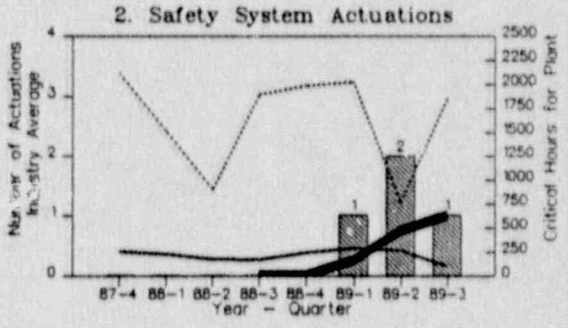
FIGURE 4.108

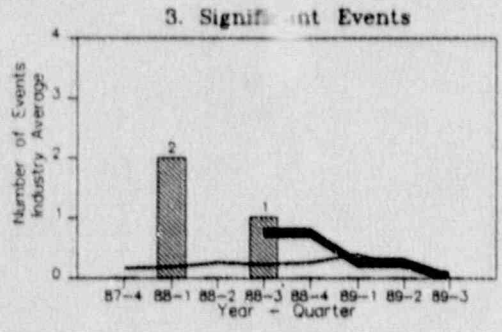
WASH. NUCLEAR 2

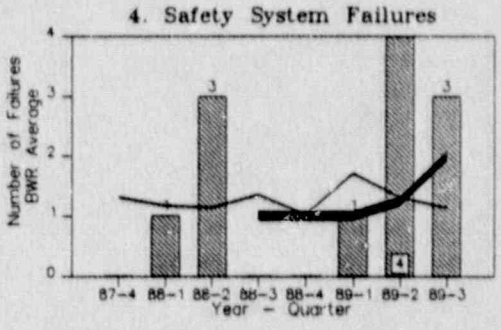
87-4 to 89-3

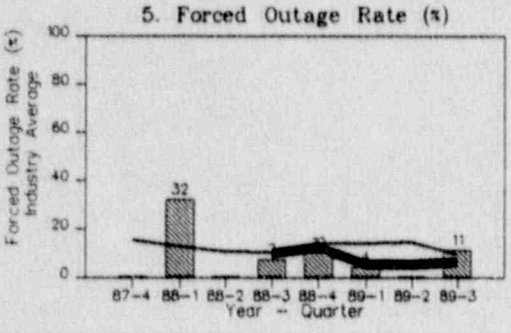
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

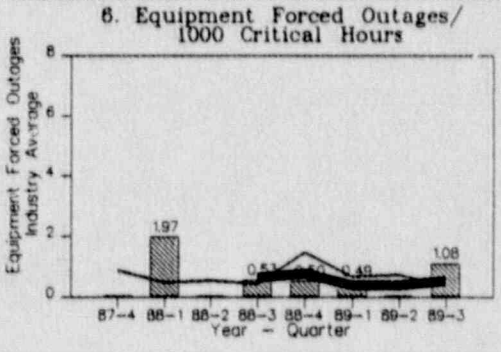


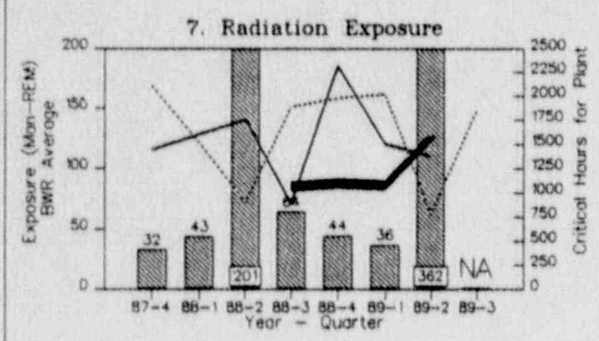












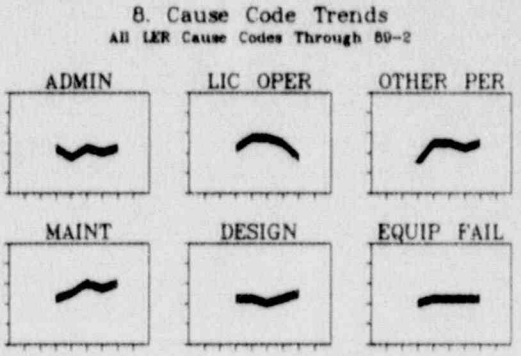


FIGURE 4.108

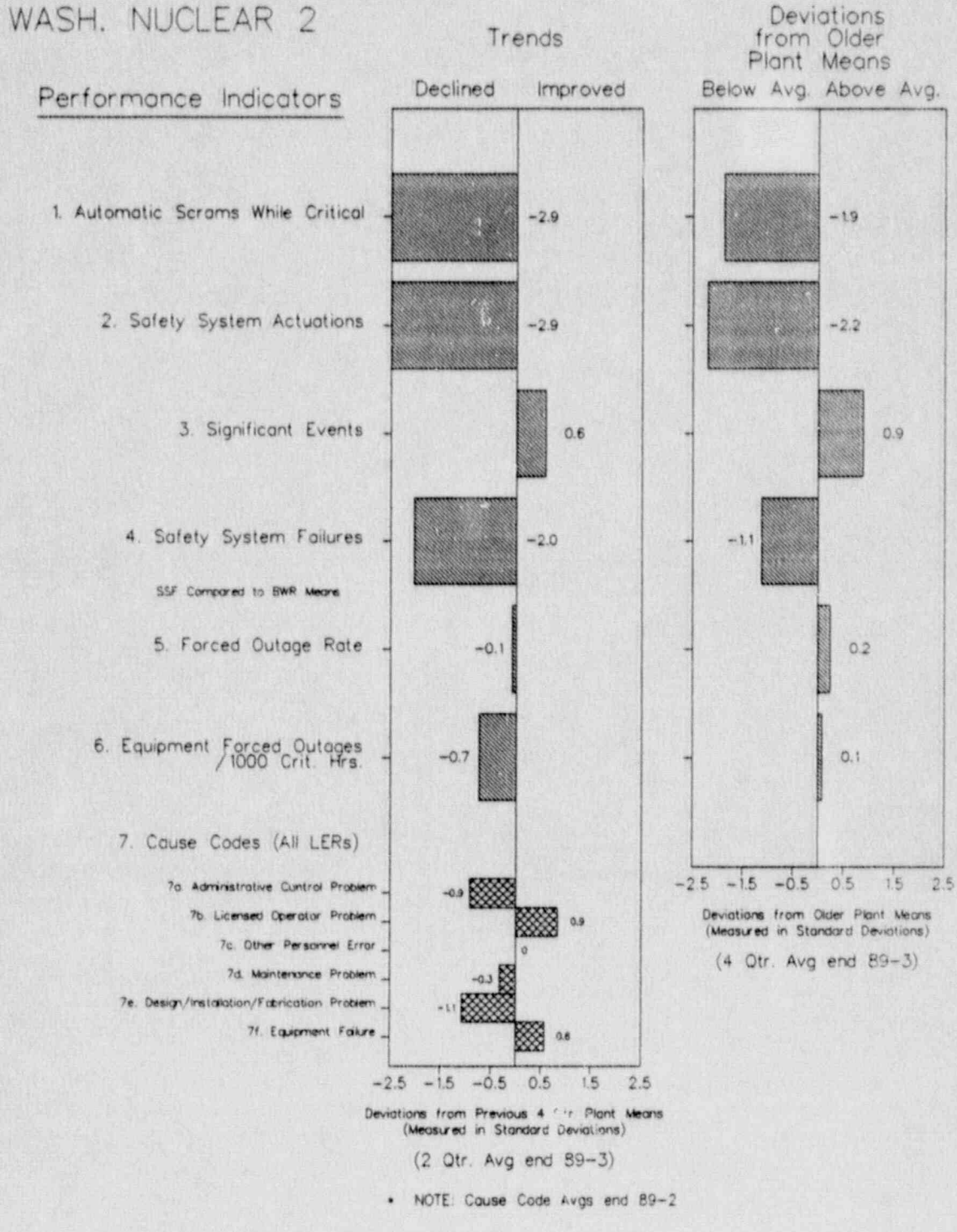

WASH. NUCLEAR 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-2.9
-1.9
2. Safety System Actuations
-2.9
-2.2
3. Significant Events
0.6
0.9
4. Safety System Failures
-2.0
-1.1
SSF Compared to BWR Means
5. Forced Outage Rate
-0.1
0.2
6. Equipment Forced Outages / 1000 Crit. Hrs.
-0.7
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.9
7b. Licensed Operator Problem
0.9
7c. Other Personnel Error
0
7d. Maintenance Problem
-0.3
7e. Design/Installation/Fabrication Problem
-1.1
7f. Equipment Failure
0.6
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

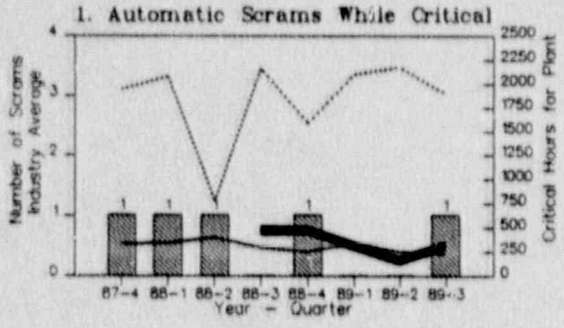
FIGURE 4.109

WATERFORD 3

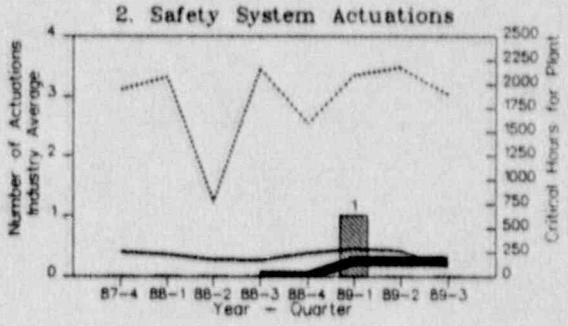
87-4 to 89-3

Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

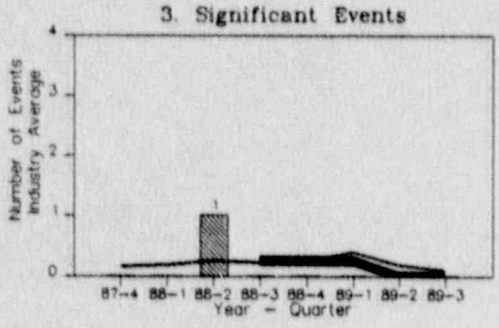
1. Automatic Scrams While Critical



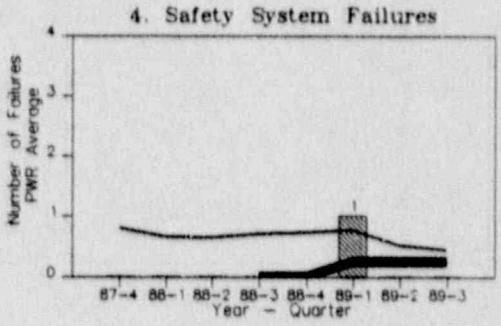
2. Safety System Actuations



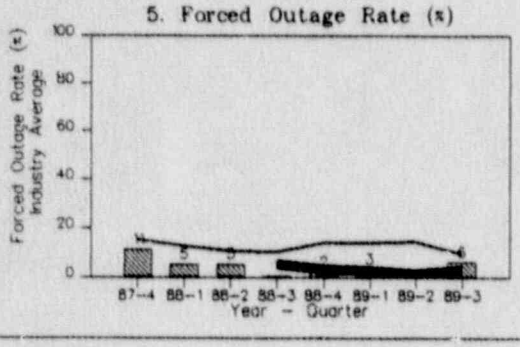
3. Significant Events



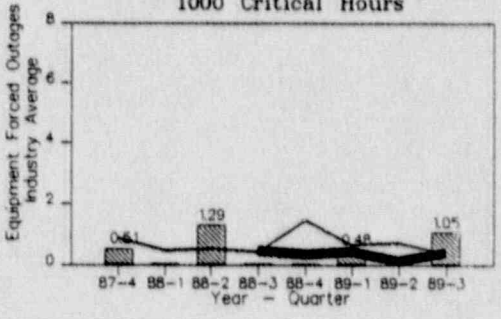
4. Safety System Failures



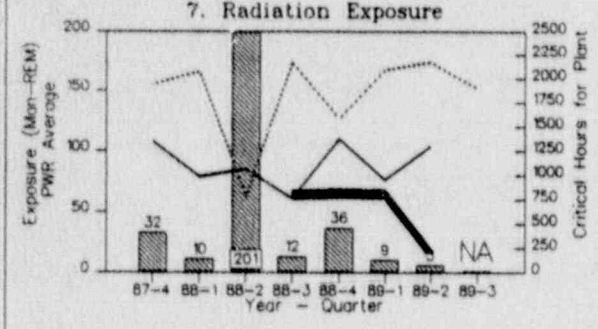
5. Forced Outage Rate (%)



6. Equipment Forced Outages/ 1000 Critical Hours



7. Radiation Exposure



8. Cause Code Trends

All LER Cause Codes Through 89-2

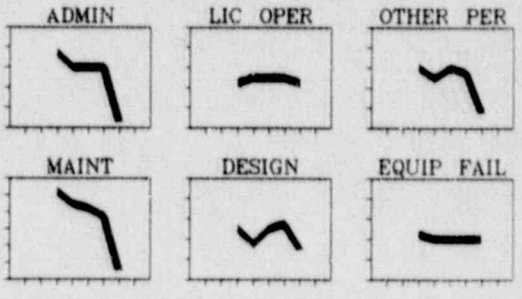


FIGURE 4.109

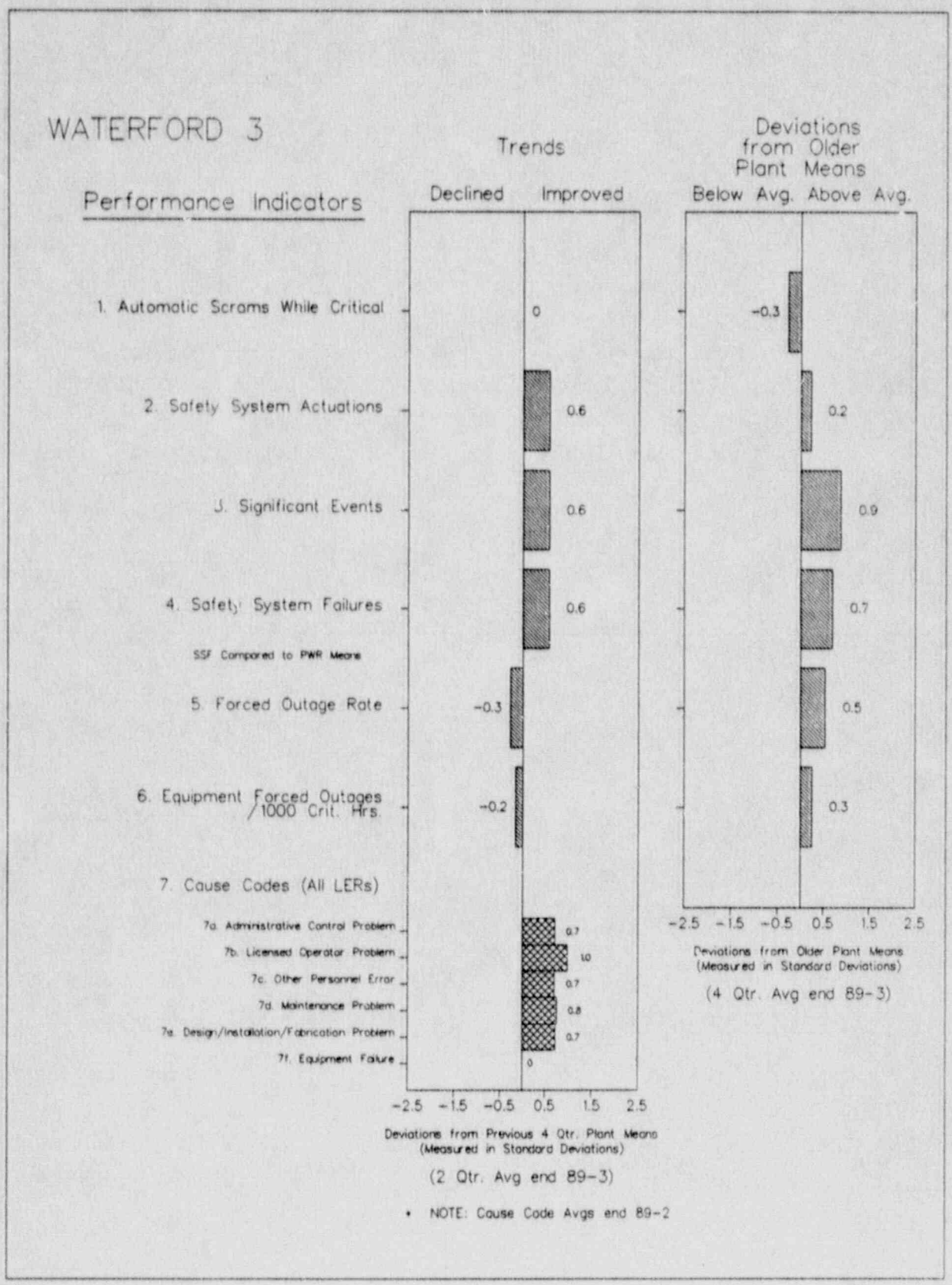
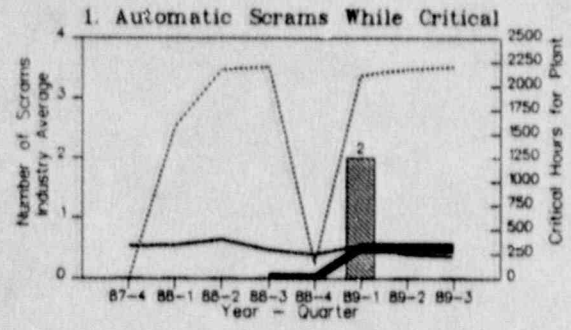

WATERFORD 3
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0
-0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
0.9
4. Safety System Failures
0.6
0.7
SSF Compared to PWR Means
5. Forced Outage Rate
-0.3
0.5
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.2
0.3
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0.7
7b. Licensed Operator Problem
1.0
7c. Other Personnel Error
0.7
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 Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
• NOTE: Cause Code Avgs end 89-2

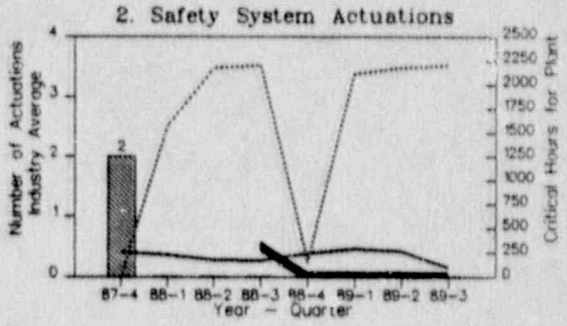
FIGURE 4.110

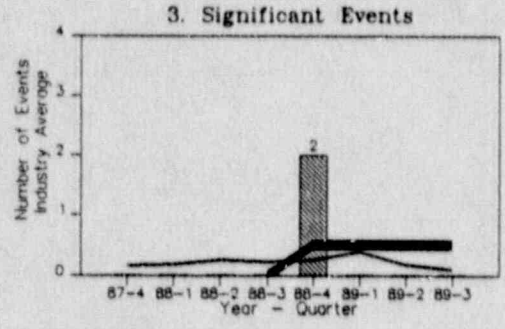
WOLF CREEK

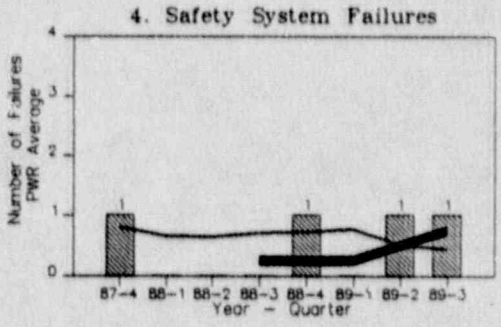
87-4 to 89-3

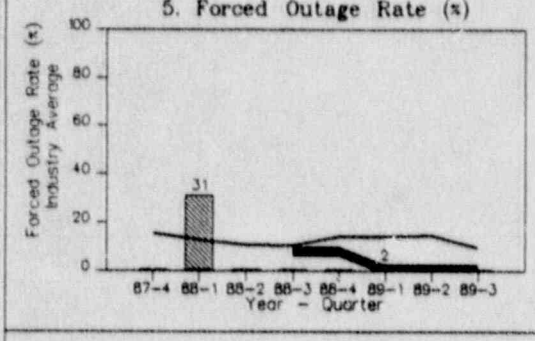
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

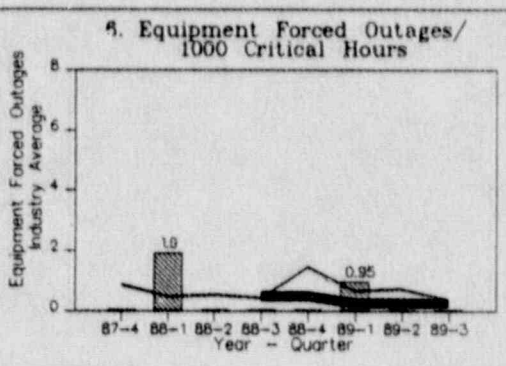


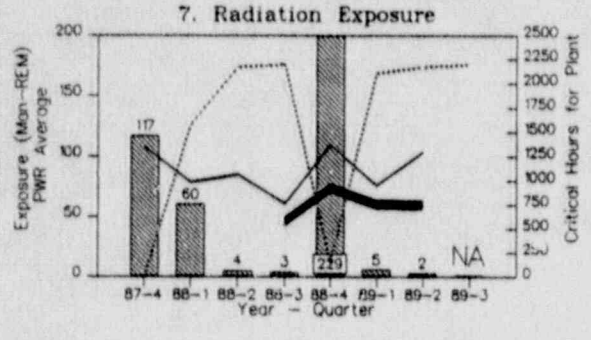












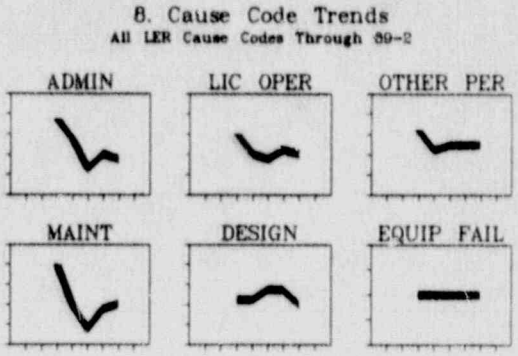


FIGURE 4.110

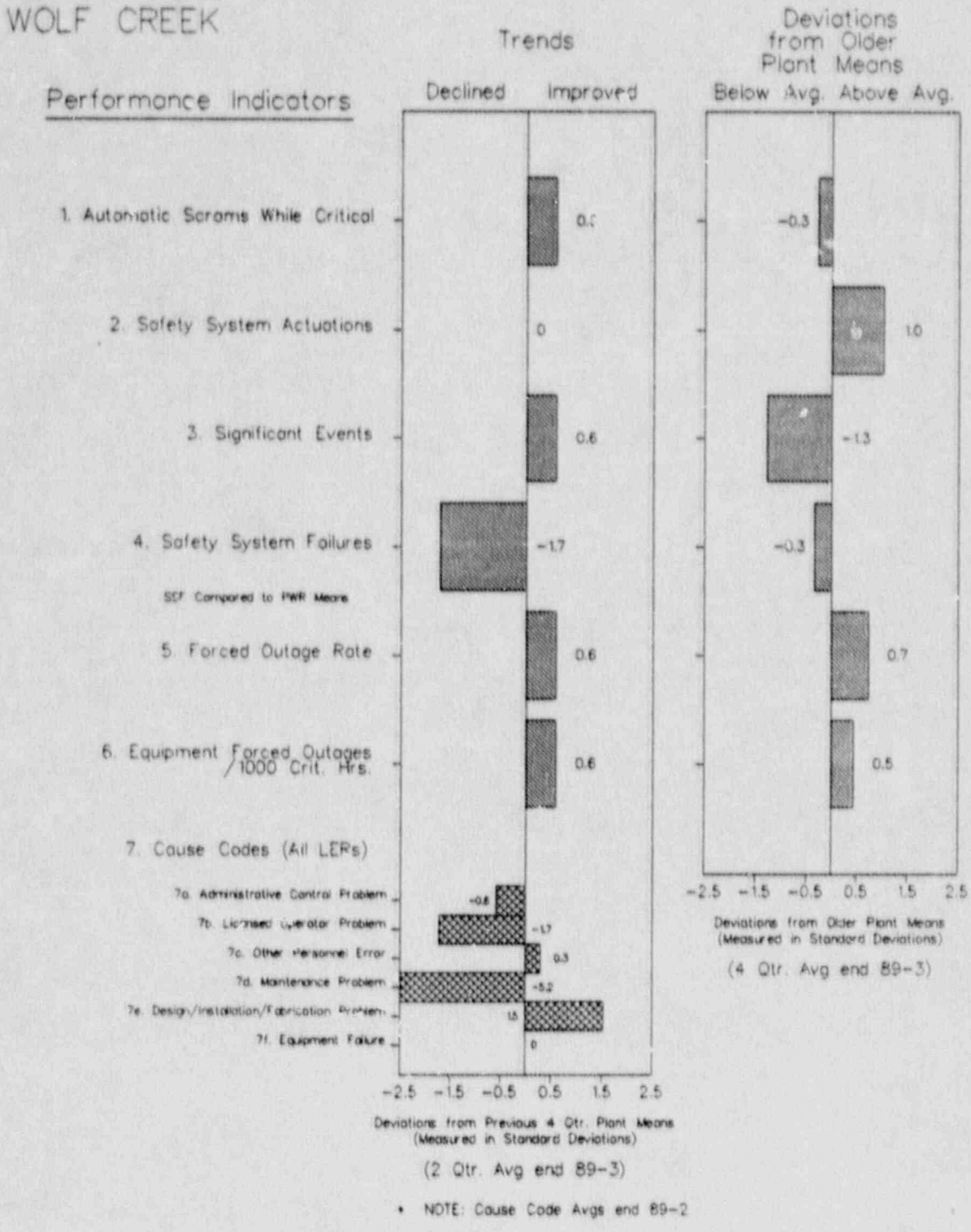

WOLF CREEK
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.0
-0.3
2. Safety System Actuations
0
1.0
3. Significant Events
0.6
-1.3
4. Safety System Failures
-1.7
-0.3
SDF Compared to PWR Means
5. Forced Outage Rate
0.6
0.7
6. Equipment Forced Outages /1000 Crit. Hrs.
0.6
0.5
7. Cause Codes (All LERs)
7a. Administrative Control Problem
-0.8
7b. Licensed Operator Problem
-1.7
7c. Other Personnel Error
0.3
7d. Maintenance Problem
-5.2
7e. Design/Installation/Fabrication Problem
1.5
7f. Equipment Failure
0
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means
(Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means
(Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.111

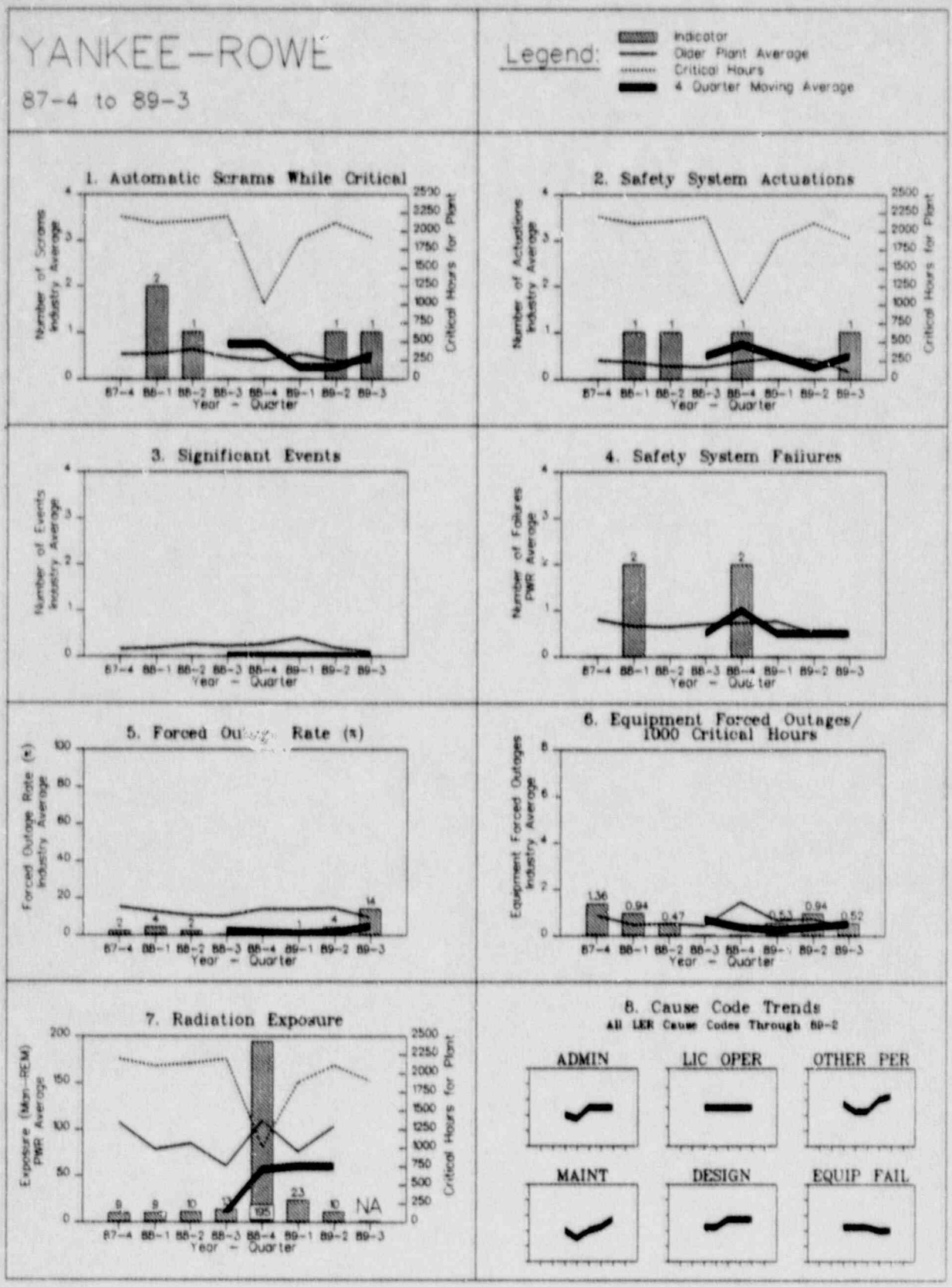

YANKEE-ROWE
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
3. Significant Events
Number 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 Critical Hours
Equipment Forced Outages Industry Average
1.36
0.94
0.47
0.53
0.94
0.52
7. Radiation Exposure
Exposure (Man-REM) PWR Average
NA
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.111

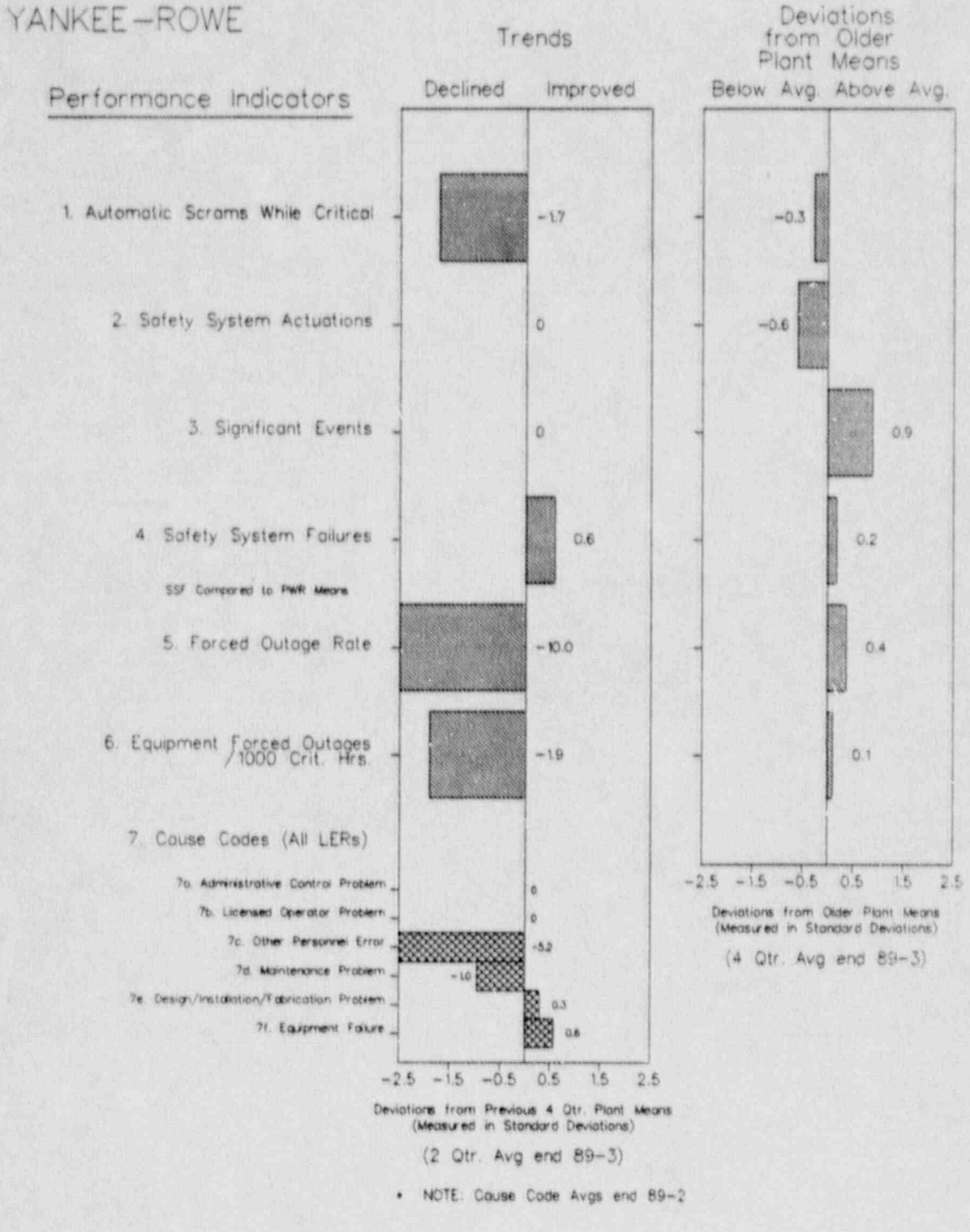

YANKEE-ROWE
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
-1.7
-0.3
2. Safety System Actuations
0
-0.6
3. Significant Events
0
0.9
4. Safety System Failures
0.6
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
-10.0
0.4
6. Equipment Forced Outages /1000 Crit. Hrs.
-1.9
0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
0
7b. Licensed Operator Problem
0
7c. Other Personnel Error
-5.2
7d. Maintenance Problem
-1.0
7e. Design/Installation/Fabrication Problem
0.3
7f. Equipment Failure
0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

FIGURE 4.112

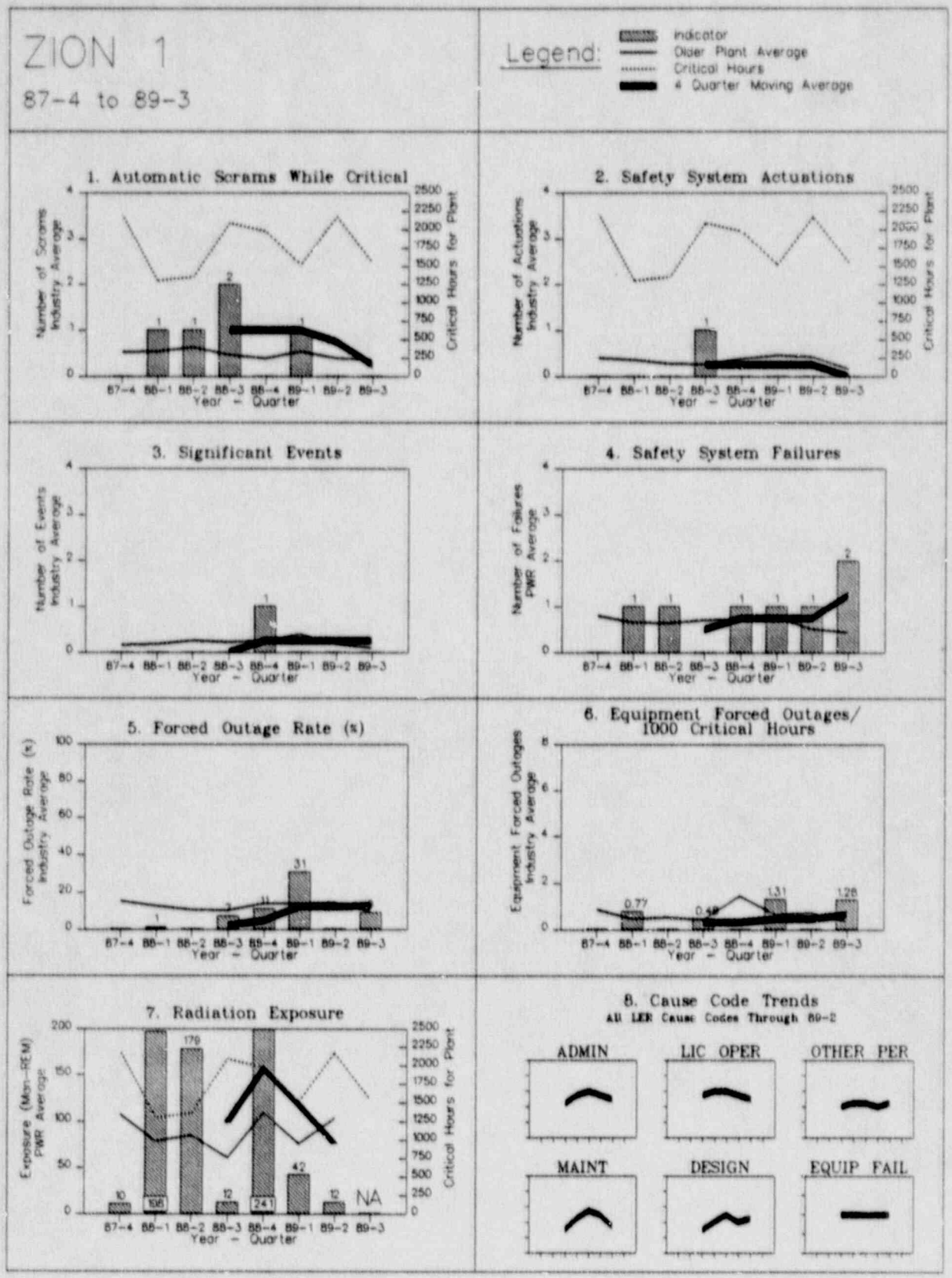

ZION 1
87-4 to 89-3
Legend:
Indicator
Older Plant Average
Critical Hours
4 Quarter Moving Average
1. Automatic Scrams While Critical
Number of Scrams Industry Average
Critical Hours for Plant
Year - Quarter
2. Safety System Actuations
Number of Actuations Industry Average
Critical Hours for Plant
Year - 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 Critical Hours
Equipment Forced Outages Industry Average
0.77
1.31
1.26
Year - Quarter
7. Radiation Exposure
Exposure (Man-REM) PWR Average
Critical Hours for Plant
10
196
179
12
241
42
12
NA
Year - Quarter
8. Cause Code Trends
All LER Cause Codes Through 89-2
ADMIN
LIC OPER
OTHER PER
MAINT
DESIGN
EQUIP FAIL

FIGURE 4.112

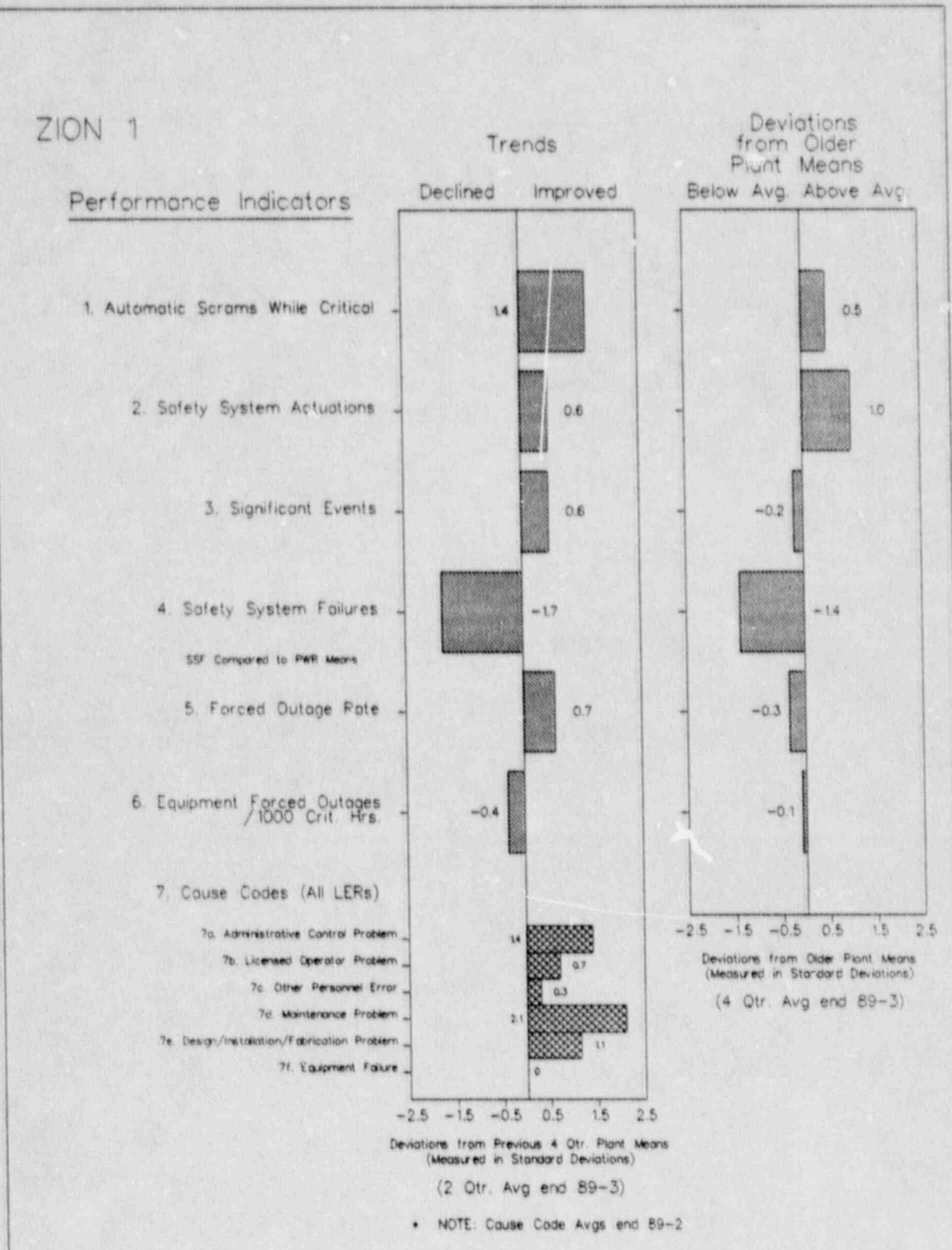
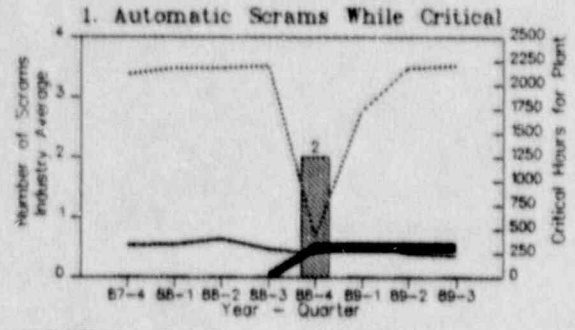

ZION 1
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
1.4
0.5
2. Safety System Actuations
0.6
1.0
3. Significant Events
0.6
-0.2
4. Safety System Failures
-1.7
-1.4
SSF Compared to PWR Means
5. Forced Outage Rate
0.7
-0.3
6. Equipment Forced Outages /1000 Crit. Hrs.
-0.4
-0.1
7. Cause Codes (All LERs)
7a. Administrative Control Problem
1.4
7b. Licensed Operator Problem
0.7
7c. Other Personnel Error
0.3
7d. Maintenance Problem
2.1
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 Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Cause Code Avgs end 89-2

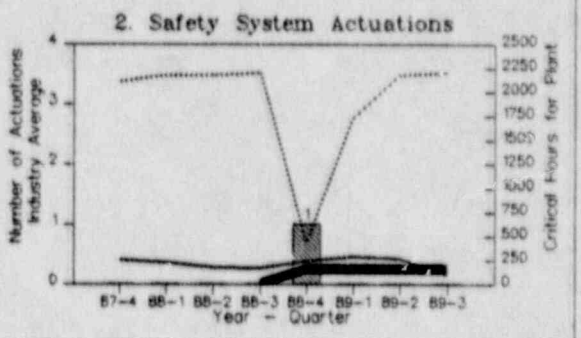
FIGURE 4.113

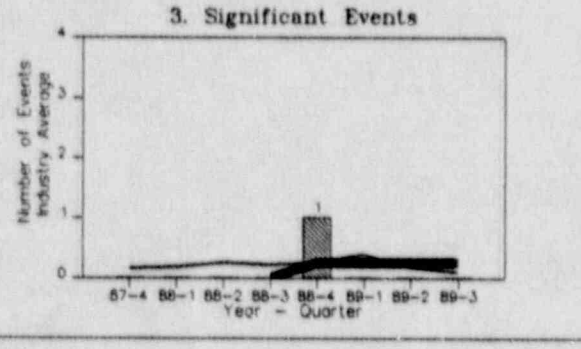
ZION 2

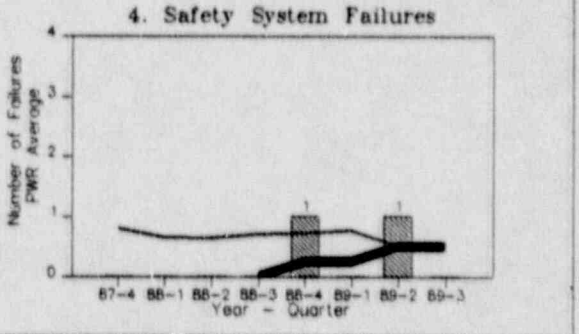
87-4 to 89-3

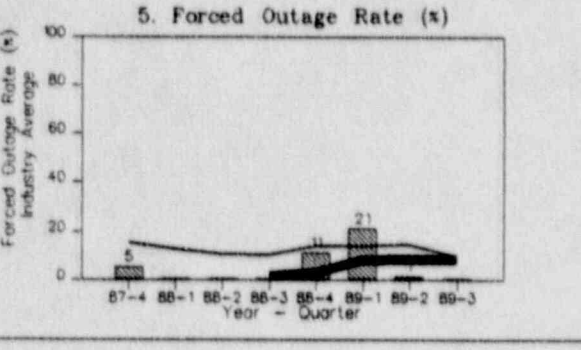
Legend:
- Indicator
- Older Plant Average
- Critical Hours
- 4 Quarter Moving Average

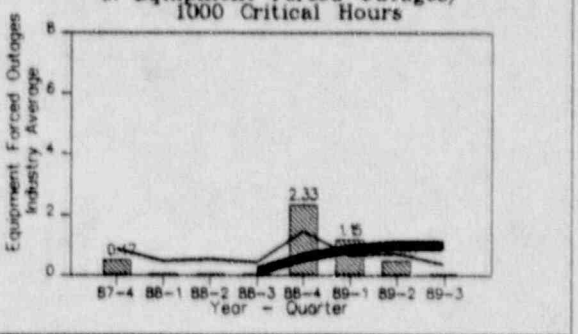


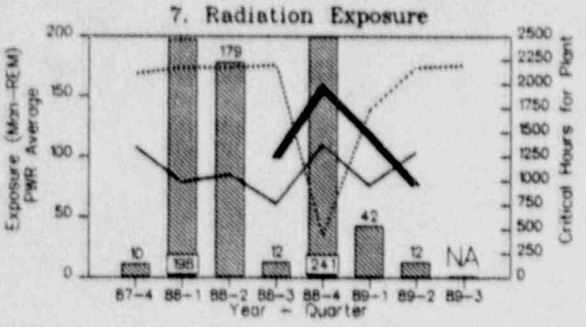












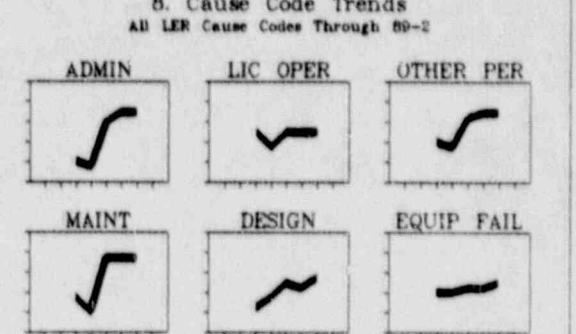
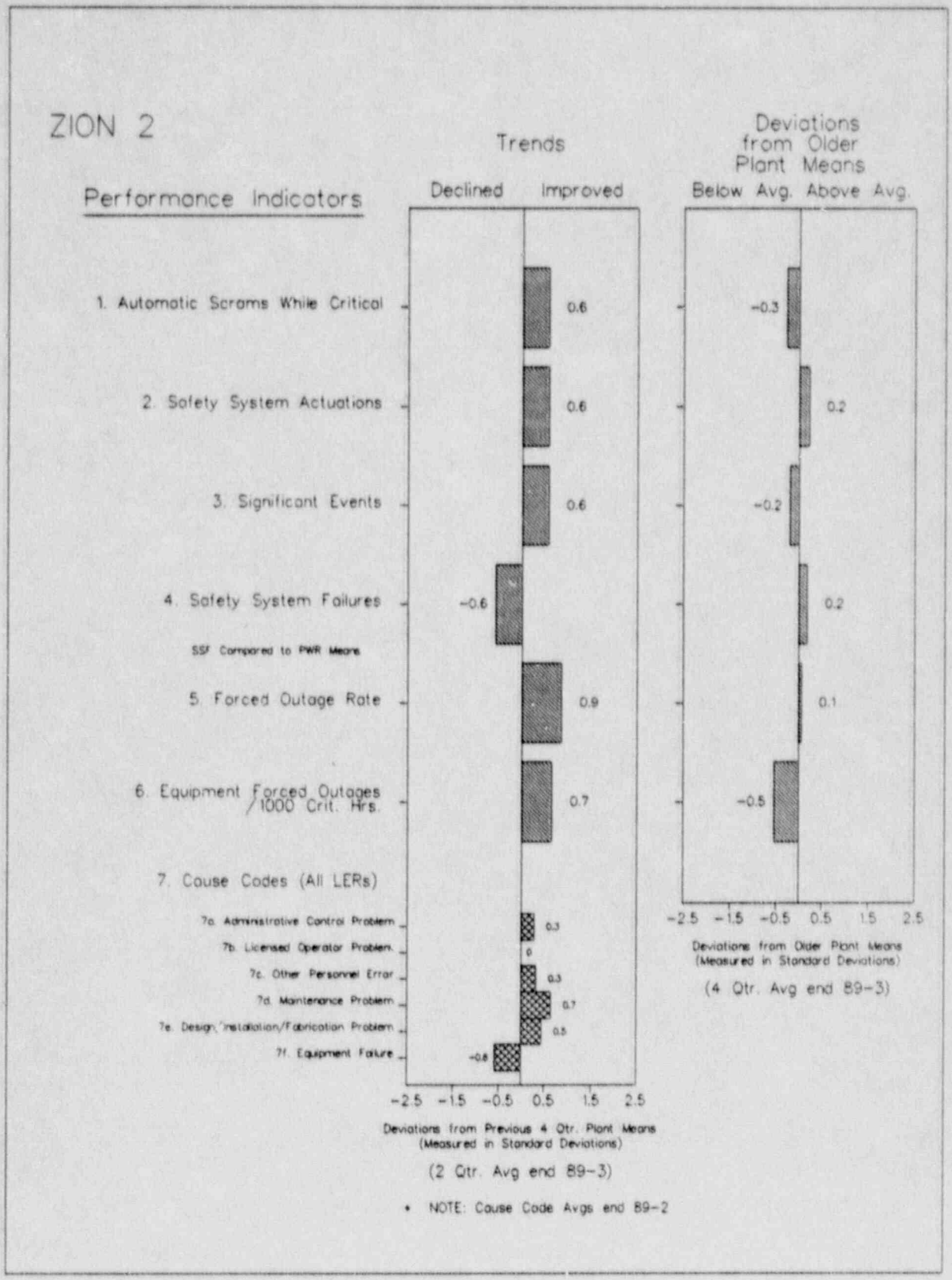


FIGURE 4.113


ZION 2
Performance Indicators
Trends
Declined
Improved
Deviations from Older Plant Means
Below Avg.
Above Avg.
1. Automatic Scrams While Critical
0.6
-0.3
2. Safety System Actuations
0.6
0.2
3. Significant Events
0.6
-0.2
4. Safety System Failures
-0.6
0.2
SSF Compared to PWR Means
5. Forced Outage Rate
0.9
0.1
6. Equipment Forced Outages / 1000 Crit. Hrs.
0.7
-0.5
7. Couse Codes (All LERs)
7a. Administrative Control Problem
0.3
7b. Licensed Operator Problem
0
7c. Other Personnel Error
0.3
7d. Maintenance Problem
0.7
7e. Design/Installation/Fabrication Problem
0.5
7f. Equipment Failure
-0.8
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Previous 4 Qtr. Plant Means (Measured in Standard Deviations)
(2 Qtr. Avg end 89-3)
-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Older Plant Means (Measured in Standard Deviations)
(4 Qtr. Avg end 89-3)
* NOTE: Couse Code Avgs end 89-2

PERFORMANCE INDICATORS FOR OPERATING COMMERCIAL NUCLEAR POWER REACTORS
Data through September 1989

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

THIS

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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 the number of unplanned automatic scrams while the reactor is critical. This indicator is the same as the corresponding INPO indicator, unplanned automatic scrams while critical. Examples of the type 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. This indicator is similar to the Institute for Nuclear Power Operations (INPO) PI definition for unplanned Automatic Scrams While Critical, with the following differences:

- INPO collects scram data on all plants beginning with January 1 of the first calendar year following full power licensing. The NRC scram counts for the PI report includes all critical scrams.

- INPO does not count manual turbine trips which lead to reactor scrams which were effected to protect important equipment or to minimize the effects of transients. The NRC PIs do 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 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 plants in long term shutdown.

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 actuations of the emergency core cooling system (ECCS) (actual or spurious) and the emergency AC power system (actual, 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 items should be included in the data for 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, or fluid does not need to be injection 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 EDGs on the 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 essentially are the same, the body of data to which the definition is applied is different:

- Although it appears that the same ECCS systems are included in the definitions, what is considered a valid actuation seems to be different. The INPO SSA definition requires the actuation of a "major" system, whereas the NRC interprets this actuation as either a valid or spurious signal (whether the equipment starts or not). For both INPO and NRC, an undervoltage signal on a safeguards bus is counted as a diesel start.

- INPO industry averages exclude plant data prior to January 1 of the second full year following commercial operation. NRC industry averages exclude plants in long term shutdown.

- Since INPO has a higher threshold than NRC for classifying SSAs, the NRC indicator would have a higher value than the INPO indicator.

5.3 Significant Events (SE)

Significant events are those events identified by NRC staff through the detailed screening and evaluation of operating experience. The screening process includes the daily review and discussion of all reported operating reactor events and operational data, such as special tests being conducted or construction activity.

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, or 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 excludes plants in long term shutdown from its industry averages.

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 Critical Hours (EFO)

This indicator is the number of forced outages caused by equipment failures per 1000 hours of critical 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 at the site for a given period. To obtain unit values, the site total is divided by the number of units at the site contributing to the radiation exposure. This indicator is the same as that of INPO.

5.8 Cause Code Definitions

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 Licensed 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.

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. Maintenance related errors are subdivided into four subcategories:

5.8.4.1 MAINTENANCE PERSONNEL ERROR. Errors committed by plant or contractor staff during the performance of equipment repair or replacement activities. The personnel error may be one of either omission or commission. The personnel error may be due to either an intrinsic error by personnel performing the task (in which case the maintenance cause code would be accompanied by a code for licensed operator error or other personnel error) or to an error caused by incorrect procedures (in which case the maintenance cause code would be accompanied by a code for administrative control problem).

Examples include:

1. Fasteners torqued incorrectly during valve operator reassembly.

2. Pump shaft misaligned due to inadequate adjustment procedure.

3. Loose parts found in pump casing following rebuild.

5.8.4.2 TEST OR CALIBRATION PERSONNEL ERROR. Personnel error committed by plant or contractor staff during the performance of test, surveillance, or calibration activities. The personnel error may be one of either omission or commission. The personnel error may be due to either an intrinsic error by personnel performing the task (in which cause the maintenance cause code would be accompanied by a code for licensed operator error or other personnel error) or to an error caused by incorrect procedures (in which cause the maintenance cause code would be accompanied by a code for administrative control Problem).

Examples include:

1. Instrument improperly calibrated due to error in procedure.

2. Technician shorts test leads during testing.

3. Test bypass switch moved out of sequence.

4. Test of standby gas treatment charcoal filters not performed within allotted time interval.

5.8.4.3 MAINTENANCE EQUIPMENT FAILURE. Equipment failures that show evidence of time dependent degradation - such as setpoint drift, corrosion, erosion, aging, etc., - are considered preventable through increased surveillance and are therefore categorized as maintenance related.

Examples include:

1. MG set trip on high vibration due to worn out flywheel bearing.

2. Pump suction filter leak due to failed gasket.

3. Instrument calibration drift.

4. Relief valve does not open within tolerance during operation or surveillance.

5. Intergranular stress corrosion cracking.

6. Pipe wall erosion.

7. Cladding degradation (condenser circulating water piping cladding comes loose and clogs pump suction strainers).

8. Bearing failure due to low lube oil level.

5.8.4.4 POTENTIAL MAINTENANCE PROBLEM. This subcategory of maintenance is intended to capture those hardware failures that cannot be readily attributable to a deficiency in maintenance programs, although a maintenance problem may be implied. Some equipment failures may be included in this group because of a lack of sufficient information in the LER necessary to completely ascertain the failure mechanism. This code is used if the problem might be maintenance related.

Examples include:

1. Steam generator tube leaks (when no cause is identified).

2. Fuel cladding degradation (when no cause or previous knowledge of the leak is identified).

3. Valve shaft shearing (root cause determination not yet concluded).

4. Pump impeller failure (root cause determination not yet concluded).

5. Spurious actuations of radiation monitors, toxic gas monitors, etc. when there is no evidence of a design deficiency.

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 <u>not</u> 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 1988, and first, second, and third quarters 1989.

Caution should be used in interpreting equipment forced outages per 1000 critical hours for plants with a small number of critical hours in a quarter. Beginning with this report the actual number of critical hours will be used in all calculations. The former practice of using a minimum value of 200 critical hours in the calculations has been abandoned.

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 dose accumulated by station personnel at a site divided by the number of units at the site.

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

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

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

1. For all indicators, until an operating license is first received,

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

3. For forced outages, until commercial operation is declared.

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

7.3. Blanks 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 "Trends" chart is based on the following numbers:

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

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

   c. A standard deviation based on the plant's current four-quarter period data (if the standard deviation is zero, an average of values for older or newer plants, as appropriate, is used);

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

   a. The plant's moving average for the current four-quarter period (if there are not at least two quarters for this, no value is displayed on the chart),

   b. The average of the current four-quarter period moving averages for older plants or newer plants (outliers more than 2.5 standard deviations from the mean on the first calculation were discarded and the mean and standard deviation were recomputed), and

c. The standard deviation based on the current four-quarter period moving averages for older or newer plants (outliers were discarded as discussed above); and

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

   a. Older plant averages are the averages of older plant values calculated quarter by quarter. Older plant averages for safety system failures and collective radiation exposure are computed separately for BWRs and PWRs.[1]

   b. Newer plant averages are single numbers representing the averages of the values of all new plants.

   c. The plant's moving average for the current four-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, the scram, forced outage rate, and equipment forced outage displays are suppressed in the trends and deviations charts.

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

8. DESCRIPTIONS OF PLANT EVENTS
FOURTH QUARTER 1988,
AND FIRST, SECOND AND THIRD QUARTERS 1989

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TABLE 8.1

ARKANSAS 1

PI EVENTS FOR 88-4

SE 10/26/88 LER# 31388014 50.72#: POWER: 0
DESC: LOSS OF TWO TRAINS OF DECAY HEAT REMOVAL WHEN A TECHNICIAN PULLED THE WRONG FUSE. (MORNING REPORT: 10/27/88)

SSF 10/26/88 LER# 31388016 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: FUSE TO THE CONTROLLERS FOR BOTH DHR COOLER OUTLET VALVES WAS INADVERTENTLY REMOVED (UNLABELED), VALVES CLOSED, WHICH IS INCONSISTENT WITH THEIR DESIGN. POSITIONER OUTLET LINES WERE REVERSED.

SSF 11/12/88 LER# 31388017 50.72#: 13932 POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: EXCESSIVE LEAKAGE (325 GPM VS. T.S. LIMIT OF 3 GPM) OF ESW SLUICE GATES. POTENTIAL FOR LOSS OF ULTIMATE HEAT SINK AS THE EMERGENCY COOLING POND WAS DRAINING. FAILURE TO PERFORM SURVEILLANCE AND MAINT.

SE 12/16/88 LER# 31388023 50.72#: 14275 POWER: 0
DESC: PACKING FAILURE OF 2 1/2 INCH GATE VALVE IN CHARGING LINE DURING MAINTENANCE.

PI EVENTS FOR 89-1

SSA 01/20/89 LER# 31389002 50.72#: 14546 POWER: 100
DESC: "B" FEEDWATER BLOCK VALVE FAILED TO CLOSE DUE TO INCORRECT TORQUE SETTING. "A" AND "B" MFW STARTUP AND LOW LOAD CONTROL VALVES FAILED TO CLOSE DUE TO MISWIRING LEADING TO SG OVERFILLING. HPI MANUALLY STARTED TO COMPENSATE FOR OVERCOOLING AND SHRINK.

SE 01/20/89 LER# 31389002 50.72#: 14546 POWER: 100
DESC: MULTIPLE COMPLICATIONS AND REACTOR COOLANT SYSTEM BOUNDARY CHECK VALVE LEAKAGE.

SCRAM 01/20/89 LER# 31389002 50.72#: 14546 POWER: 100
DESC: A BROKEN CONNECTION STRAP IN THE AC EXCITER FIELD CAUSED MAIN GENERATOR LOCKOUT, A TURBINE TRIP AND A REACTOR TRIP. BUS H1 FAILED TO FAST-TRANSFER TO OFFSITE POWER CAUSING A TRIP OF TWO REACTOR COOLANT PUMPS.

SSF 02/09/89 LER# 31389006 50.72#: 14707 POWER: 0
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: RECENT ANALYSIS HAS SHOWN THAT PORTIONS OF THE PIGGYBACK FLOW PIPING COULD BE EXPOSED TO A WORST CASE TEMPERATURE HIGHER THAN QUALIFIED DESIGN TEMPERATURE. THE PIGGYBACK MODE WAS NOT INCORPORATED IN THE INITIAL DESIGN BASIS.

PI EVENTS FOR 89-2

SCRAM 05/01/89 LER# 31389018 50.72#: 15499 POWER: 50
DESC: THE MAIN TURBINE TRIPPED DURING MAINTENANCE AFTER A WORKER BUMPED A CABINET THAT HOUSES VARIOUS PRESSURE SWITCHES. THE TURBINE TRIP CAUSED A REACTOR TRIP.

PI EVENTS FOR 89-3

SSF 07/24/89 LER# 31388029 50.72#: POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: IF A DESIGN SEISMIC EVENT OCCURRED, PRIMARY CONTAINMENT COULD BE BREACHED DUE TO SEVEN IMPROPERLY INSTALLED PIPING SUPPORTS ON THE REACTOR COOLANT SYSTEM PIPING INSIDE CONTAINMENT.

SSF 08/25/89 LER# 31389029 50.72#: POWER: 74
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: PLANT ENGINEERING PERSONNEL DISCOVERED AN ERROR IN AN OPERATING PROCEDURE THAT COULD HAVE RENDERED THE ESSENTIAL SERVICE WATER SYSTEM INOPERABLE UNDER CERTAIN ACCIDENT CONDITIONS.

TABLE 8.1 (CONT.)

ARKANSAS 1 (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SE 09/13/89 LER# 50.72#: 16583 POWER: 74
DESC: A DISCREPANCY WAS FOUND BETWEEN PLANT ELECTRICAL DRAWINGS AND AS-BUILD ELECTRICAL COMPONENTS/EQUIPMENT. (MORNING REPORT ON 09/13/89)

SSF 09/13/89 LER# 50.72#: 16583 POWER: 74
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: TWO SERVICE WATER PUMPS WERE DECLARED INOPERABLE DUE TO A WIRING DISCREPANCY IN THEIR INITIATION LOGIC.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.46	.00	.00	.00	1.92	.57	.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	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	2	1	0	1
SAFETY SYSTEM FAILURES	0	1	0	2	2	1	0	3
FORCED OUTAGE RATE (%)	1	2	0	0	38	77	21	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.64	.46	.00	.00	2.38	1.92	.57	.91
CRITICAL HOURS	1561	2152	2183	1402	419	520	1744	2208
COLLECTIVE RADIATION EXPOSURE	72	185	133	134	242	64	33	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	1	2	8	3	4	NA
LICENSED OPERATOR	0	0	0	0	4	1	1	NA
OTHER PERSONNEL	1	1	0	3	5	1	3	NA
MAINTENANCE	1	3	1	4	8	4	8	NA
A) MAINT PERSONNEL	0	1	1	2	5	1	3	NA
B) SURV AND TEST	1	2	0	1	4	1	3	NA
C) EQUIPMENT	0	0	0	1	1	2	1	NA
D) POTENTIAL MAINT	0	0	0	0	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	3	2	3	8	6	8	2	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	1	NA

TABLE 8.2

ARKANSAS 2

PI EVENTS FOR 88-4

SSF 11/11/88 LER# 36888019 50.72#: 14026 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: 2 OF 3 SERVICE WATER PUMPS HAD CORRODED SNAP RINGS WHICH RESULTED IN IMPELLER & CASING DAMAGE. 3RD PUMP ALSO CORRODED. PUMPS HAD EXHIBITED HIGH STARTING CURRENT WHICH PROMPTED THE INSPECTIONS.

SSF 11/12/88 LER# 31388017 50.72#: 13932 POWER: 100
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: EXCESSIVE LEAKAGE (325 GPM VS. T.S. LIMIT OF 3 GPM) OF ESW SLUICE GATES. POTENTIAL FOR LOSS OF ULTIMATE HEAT SINK AS THE EMERGENCY COOLING POND WAS DRAINING. FAILURE TO PERFORM SURVEILLANCE AND MAINT.

SCRAM 12/01/88 LER# 36888020 50.72#: 14124 POWER: 100
DESC: WHILE TESTING THE CONTAINMENT COOLING ACTUATION SYSTEM AND SIAS ANOTHER CHANNEL ALARMED CAUSING A REACTOR SCRAM.

PI EVENTS FOR 89-1

SSF 03/01/89 LER# 36889004 50.72#: POWER: 100
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: THE HPSI SYSTEM WAS DECLARED INOPERABLE DURING STARTUP BECAUSE THE STARTUP PROCEDURE ALLOWED ENTERING MODE 4 PRIOR TO LINING UP THE HPSI SUCTION FOR AUTOMATIC TRANSFER FROM THE REFUELING WATER TANK TO THE CONTAINMENT SUMP.

PI EVENTS FOR 89-2

SE 04/18/89 LER# 36889006 50.72#: 15369 POWER: 100
DESC: RUPTURE OF EXTRACTION STEAM PIPE DUE TO EROSION.

SCRAM 04/18/89 LER# 36889006 50.72#: 15369 POWER: 100
DESC: A PIPE RUPTURE DUE TO PIPE WALL THINNING CAUSED SATURATION IN THE TURBINE CONTROL LEADING TO A TURBINE TRIP AND A REACTOR TRIP.

SSA 06/26/89 LER# 36889012 50.72#: 16237 POWER: 0
DESC: HIGH PRESSURE SAFETY INJECTION SYSTEM OPERATED A FOURTH TIME TO ATTEMPT TO STOP BACKLEAKAGE ON A SWING CHECK VALVE. BACKLEAKAGE NOT STOPPED.

SE 06/26/89 LER# 36889012 50.72#: POWER: 0
DESC: SAFETY INJECTION SYSTEM (SIS) CHECK VALVE, WHICH ISOLATES LOW PRESSURE SIS FROM RCS, FAILED TO RESEAT. POTENTIAL FOR OVERPRESSURIZING THE LOW PRESSURE SIS AND CAUSING AN INTERFACING SYSTEM LOCA.

SSA 06/27/89 LER# 36889012 50.72#: 16237 POWER: 0
DESC: HIGH PRESSURE SAFETY INJECTION SYSTEM OPERATED A THIRD TIME TO ATTEMPT TO STOP BACKLEAKAGE ON A SWING CHECK VALVE. BACKLEAKAGE NOT STOPPED.

SSA 06/27/89 LER# 36889012 50.72#: 16237 POWER: 0
DESC: HIGH PRESSURE SAFETY INJECTION SYSTEM OPERATED TO ATTEMPT TO STOP BACKLEAKAGE ON A SWING CHECK VALVE. BACKLEAKAGE NOT STOPPED.

SSA 06/27/89 LER# 36889012 50.72#: 16237 POWER: 0
DESC: HIGH PRESSURE SAFETY INJECTION SYSTEM OPERATED A SECOND TIME TO ATTEMPT TO STOP BACKLEAKAGE ON A SWING CHECK VALVE. BACKLEAKAGE NOT STOPPED.

PI EVENTS FOR 89-3

SE 09/13/89 LER# 50.72#: 16583 POWER: 0
DESC: A DISCREPANCY WAS FOUND BETWEEN PLANT ELECTRICAL DRAWINGS AND AS-BUILD ELECTRICAL COMPONENTS/EQUIPMENT. (MORNING REPORT ON 09/13/89)

TABLE 8.2 (CONT.)

ARKANSAS 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	.46	.00	.64	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	2	1	1	0	0	4	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	2	1
SAFETY SYSTEM FAILURES	0	1	1	0	2	1	0	0
FORCED OUTAGE RATE (%)	1	0	3	21	1	8	29	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.46	.00	.95	1.13	.00	.50	1.29	.00
CRITICAL HOURS	2186	1028	1056	1767	2181	2000	1553	2001
COLLECTIVE RADIATION EXPOSURE	72	185	133	134	242	64	33	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	4	2	3	3	5	NA
LICENSED OPERATOR	0	0	2	0	1	0	2	NA
OTHER PERSONNEL	1	5	2	1	1	1	2	NA
MAINTENANCE	1	3	5	3	5	4	8	NA
A) MAINT PERSONNEL	1	2	3	1	0	1	3	NA
B) SURV AND TEST	0	1	2	2	3	2	2	NA
C) EQUIPMENT	0	0	1	0	3	0	3	NA
D) POTENTIAL MAINT	0	0	0	0	2	1	1	NA
DESIGN/INSTALLATION/FABRICATION	1	3	2	3	0	1	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.3

BEAVER VALLEY 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SCRAM 01/17/89 LER# 33489001 50.72#: 14522 POWER: 90
DESC: OPERATOR OPENED WRONG BREAKER TO FRV INSTEAD OF BYPASS FRV CAUSING LOSS OF FEED AND LOW SG LEVEL FF/SF MISMATCH SCRAM.

SCRAM 02/13/89 LER# 33489002 50.72#: 14745 POWER: 90
DESC: FAULTY PNEUMATIC CONVERTER CAUSED FRV TO FAIL CLOSED CAUSING LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-2

SSA 05/18/89 LER# 33489007 50.72#: 15637 POWER: 90
DESC: SI ON LOW STEAM LINE PRESSURE WHEN POWER WAS LOST TO THE AMSAC PANEL.

SCRAM 05/18/89 LER# 33489007 50.72#: 15637 POWER: 90
DESC: DESIGN DEFICIENCY OF THE ATWS MITIGATING SYSTEM ACTUATION CIRCUITRY (AMSAC) CAUSED LOSS OF POWER TO THE AMSAC PANEL WHICH CAUSED LOW STEAM LINE PRESSURE SI REACTOR TRIP.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.96	.00	.00	.94	.47	.00
SCRAMS < 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	0	3	0	0	2	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	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	4	1	9	2	4	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.30	1.43	.00	.50	.47	.00	.00
CRITICAL HOURS	1727	771	2091	2191	2014	2119	2109	1510
COLLECTIVE RADIATION EXPOSURE	152	483	23	10	13	59	131	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	2	0	1	1	1	NA
LICENSED OPERATOR	1	1	1	2	2	1	0	NA
OTHER PERSONNEL	1	0	2	1	0	0	2	NA
MAINTENANCE	5	5	3	3	2	3	4	NA
A) MAINT PERSONNEL	3	2	1	0	0	0	1	NA
B) SURV AND TEST	0	1	2	1	2	1	2	NA
C) EQUIPMENT	2	2	1	1	0	2	1	NA
D) POTENTIAL MAINT	3	2	0	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	1	1	0	1	0	1	NA
EQUIPMENT FAILURE	1	0	0	0	0	1	0	NA

TABLE 8.4

BEAVER VALLEY 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SCRAM 02/12/89 LER# 41289003 50.72#: 14736 POWER: 55
DESC: ERRATIC OPERATION OF 'C' FRV DUE TO FAILED ANTI-ROTATION PIN AND STEM DETACHING FROM THE VALVE PLUG CAUSED HIGH SG LEVEL TURBINE TRIP SCRAM.

SSA 03/22/89 LER# 41289005 50.72#: 15088 POWER: 0
DESC: SI WHEN TWO SIMULTANEOUS TESTINGS OF PZR CHANNELS CAUSED SI SIGNAL - NO FLOW FROM SI PUMPS DUE TO VALVES BEING TAGGED SHUT. ACCUMULATORS DID INJECT WATER.

PI EVENTS FOR 89-2

SSA 04/27/89 LER# 41289012 50.72#: 15465 POWER: 0
DESC: WHILE TESTING THE UNDERVOLTAGE RELAYS OF THE SAFETY INJECTION PUMP THE FEEDER BREAKER ON "A" EMERGENCY BUS OPENED. THE DIESEL STARTED AND SEQUENCED ON LOADS.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	3.51	.56	.46	.94	.00	.59	.00	.00
SCRAMS < 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	7	1	1	2	0	1	0	0
SAFETY SYSTEM ACTUATIONS	2	2	0	0	0	1	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	J
FORCED OUTAGE RATE (%)	11	4	2	5	0	8	41	14
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.04	1.12	.92	.47	.00	.59	1.99	.00
CRITICAL HOURS	1709	1785	2163	2128	2209	1695	502	1902
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	59	131	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	0	1	1	3	5	NA
LICENSED OPERATOR	1	0	0	1	3	1	2	NA
OTHER PERSONNEL	2	2	0	1	0	1	5	NA
MAINTENANCE	10	4	1	3	3	7	12	NA
A) MAINT PERSONNEL	3	2	0	0	0	0	2	NA
B) SURV AND TEST	2	1	0	1	3	3	4	NA
C) EQUIPMENT	3	1	1	2	0	2	3	NA
D) POTENTIAL MAINT	4	1	1	1	0	3	3	NA
DESIGN/INSTALLATION/FABRICATION	3	1	1	1	2	1	0	NA
EQUIPMENT FAILURE	0	0	0	2	0	0	0	NA

TABLE 8.5

BIG ROCK POINT

PI EVENTS FOR 88-4

88A 10/28/88 LER# 15588008 50.72#: 13843 POWER: 95
DESC: CONTROL ROD DRIVE MG SET FAILED TO TRANSFER ON SCRAM. FIVE SECOND LOSS OF STATION POWER CAUSED A DIESEL START BUT DID NOT LOAD AS AUTOMATIC TRANSFER RESTORED POWER.

SCRAM 10/28/88 LER# 15588008 50.72#: 13843 POWER: 95
DESC: LOSS OF STATION POWER DUE TO OFFSITE FAULT ON GRID CAUSED A REACTOR TRIP.

SCRAM 11/21/88 LER# 15588009 50.72#: 14064 POWER: 93
DESC: THE CONNECTING ROD TO TURBINE CONTROL VALVES FAILED AND CAUSED THE VALVE TO CLOSE. REACTOR PRESSURE AND POWER INCREASED. THE REACTOR TRIPPED ON HIGH WIDE RANGE POWER.

PI EVENTS FOR 89-1

88F 01/20/89 LER# 15589001 50.72#: 14542 POWER: 24
SYSTEM: DC POWER SYSTEM - CLASS 1E
DESC: INSTALLED FUSES IN THE ALTERNATE SHUTDOWN BATTERY SYSTEM WERE NOT SIZED PROPERLY (TOO SMALL AND FAST). THE SYSTEM WAS DECLARED INOPERABLE. CAUSED BY COMMUNICATION PROBLEM DURING DESIGN MODIFICATION REVIEW.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 08/22/89 LER# 15589008 50.72#: 16378 POWER: 74
DESC: FAILURE OF A PRESSURE REGULATOR IN THE TURBINE CONTROL SYSTEM CAUSED A LOW PRESSURE TO BE SENSED. THE ADMISSION VALVE CLOSED CAUSING REACTOR PRESSURE INCREASE AND A REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.95	.00	.00	.87
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	2	0	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	0	0
FORCED OUTAGE RATE (%)	9	8	17	8	6	0	0	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.04	1.00	4.43	.48	.95	.00	.00	.87
CRITICAL HOURS	1922	1997	226	2076	2096	2063	1678	1143
COLLECTIVE RADIATION EXPOSURE	15	25	106	14	11	16	59	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	0	0	1	0	NA
LICENSED OPERATOR	0	2	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	0	0	2	0	1	NA
MAINTENANCE	0	1	2	1	2	2	1	NA
A) MAINT PERSONNEL	0	0	1	0	2	0	0	NA
B) SURV AND TEST	0	0	0	0	0	1	1	NA
C) EQUIPMENT	0	1	1	1	0	1	0	NA
D) POTENTIAL MAINT	0	0	0	1	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.6

BRAIDWOOD 1

PI EVENTS FOR 88-4

SSA 10/16/88 LER# 45688022 50.72#: 13734 POWER: 95
DESC: LOSS OF OFFSITE POWER CAUSED DIESEL TO START AND SUPPLY SAFEGUARDS BUS (XFMR BLEW UP OFFSITE CAUSING VOLTAGE SURGE CAUSING BKRS TO TRIP).

SCRAM 10/16/88 LER# 45688022 50.72#: 13734 POWER: 95
DESC: LOST OFFSITE POWER DUE TO A TRANSFORMER EXPLOSION OFFSITE CAUSING A REACTOR TRIP ON LOSS OF POWER AUXILIARY FEEDWATER STARTED TO COOLDOWN THE PLANT.

PI EVENTS FOR 89-1

SCRAM 03/06/89 LER# 45689004 50.72#: 14942 POWER: 97
DESC: TURBINE GOVERNOR VALVES CLOSED DUE TO A FAULTY TEST SWITCH CAUSING SG SHRINK AND A REACTOR TRIP ON LOW SG LEVEL.

PI EVENTS FOR 89-2

SSA 04/16/89 LER# 45689002 50.72#: 15355 POWER: 0
DESC: DURING PLANT HEAT UP AND PRESSURIZATION, THE PRESSURIZER PRESSURE WENT ABOVE SAFETY INJECTION SETPOINT WHILE STEAMLINE PRESSURE REMAINED LOW. THIS CAUSED A SAFETY INJECTION INITIATION.

SE 04/18/89 LER# 50.72#: POWER: 0
DESC: INATTENTIVE EMPLOYEES OBSERVED IN CONTROL ROOM AND AT THE AUXILIARY BUILDING RADIOLOGICAL CONTROL EXIT. EVENT INVOLVES UNIT 2 ALSO. (PN-III-89-29)

PI EVENTS FOR 89-3

SCRAM 07/18/89 LER# 45689006 50.72#: 16122 POWER: 86
DESC: LIGHTNING STRIKES ARE SUSPECTED OF CAUSING A REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.50	.00	.00	.50	.47	.61	.00	.67
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	1	1	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	11	7	4	4	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	.00	.95	1.21	.51	.00
CRITICAL HOURS	2000	86	1557	1996	2108	1648	1961	1494
COLLECTIVE RADIATION EXPOSURE	NA	55	10	5	5	50	8	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	5	3	1	0	0	NA
LICENSED OPERATOR	2	1	0	1	0	1	1	NA
OTHER PERSONNEL	1	2	1	1	1	0	0	NA
MAINTENANCE	6	7	6	6	3	3	2	NA
A) MAINT PERSONNEL	1	0	2	1	1	0	0	NA
B) SURV AND TEST	2	4	3	3	0	0	0	NA
C) EQUIPMENT	2	3	1	0	2	0	1	NA
D) POTENTIAL MAINT	3	3	1	2	1	3	1	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	0	2	0	0	NA
EQUIPMENT FAILURE	0	1	0	2	0	0	0	NA

TABLE 8.7

BRAIDWOOD 2

PI EVENTS FOR 88-4

SCRAM 10/17/88 LER# 45688023 50.72#: 13744 POWER: 88
DESC: LIGHTNING INDUCED VOLTAGE TRANSIENT CAUSED VARIOUS PROTECTORS TO REMOVE POWER TO CRD CAUSING RODS TO DROP AND SCRAM ON HIGH NEGATIVE FLUX RATE.

SCRAM 11/05/88 LER# 45788031 50.72#: 13922 POWER: 88
DESC: CRD BECAME DEENERGIZED DUE TO AN INCORRECT OVERVOLTAGE RELAY SETTING WHEN REPLACING FUSES CAUSING RODS TO DROP INTO CORE CAUSING NEGATIVE FLUX RATE SCRAM.

SCRAM 11/17/88 LER# 45788028 50.72#: 14029 POWER: 6
DESC: COLD MAIN FEEDWATER WAS INJECTED INTO SG CAUSING LOW SG LEVEL SCRAM DUE TO A PROCEDURAL DEFICIENCY FOR OPENING MAIN FEEDWATER ISOLATION VALVES AT LOW POWER.

PI EVENTS FOR 89-1

SSF 02/23/89 LER# 45789001 50.72#: 14833 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: WITH THE "A" TRAIN RHR PUMP OUT OF SERVICE FOR TESTING, THE "B" RHR SUCTION VALVE CLOSED AS A RESULT OF A TEST SIGNAL. THE PROCEDURE DID NOT INDICATE THAT PLACING THE SSPS IN THE TEST MODE WOULD NOT BLOCK THE AUTO-CLOSURE OF THE RHR SUCTION VALVES.

PI EVENTS FOR 89-2

SE 04/18/89 LER# 50.72#: POWER: 0
DESC: INATTENTIVE EMPLOYEES OBSERVED IN CONTROL ROOM AND AT THE AUXILIARY BUILDING RADIOLOGICAL CONTROL EXIT. EVENT INVOLVES UNIT 1 ALSO. (PN-III-89-29)

SCRAM 05/11/89 LER# 45789002 50.72#: 15588 POWER: 67
DESC: 345KV OFF-SITE POWER LINE TRIPPED; GENERATOR OUTPUT BREAKERS TRIPPED; TURBINE TRIP SCRAM DUE TO THE MAIN GENERATOR TRIPPING.

PI EVENTS FOR 89-3

SCRAM 07/18/89 LER# 45689006 50.72#: 16122 POWER: 84
DESC: LIGHTNING STRIKES ARE SUSPECTED OF CAUSING A REACTOR TRIP.

SCRAM 09/07/89 LER# 45789004 50.72#: 16527 POWER: 99
DESC: A LIGHTNING STRIKE CAUSED CONTROL ROD DRIVE OVERVOLTAGE PROTECTIVE DEVICES TO ACTUATE. THE CONTROL RODS FELL INTO THE CORE CAUSING A HIGH NEGATIVE FLUX REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	.00	3.62	1.02	1.11	.00	.46	.94
SCRAMS < 15% POWER	NA	0	1	1	1	0	0	0
TOTAL SCRAMS	NA	0	4	3	3	0	1	2
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	0	0	0	1	0	1	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	18	0	2	4
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	1.98	.00	.46	.00
CRITICAL HOURS	NA	192	829	1968	1807	1127	2152	2131
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	2	3	3	1	0	NA
LICENSED OPERATOR	0	1	1	0	0	0	0	NA
OTHER PERSONNEL	1	5	1	4	1	1	0	NA
MAINTENANCE	1	6	8	9	4	2	1	NA
A) MAINT PERSONNEL	1	3	0	3	1	0	0	NA
B) SURV AND TEST	0	2	2	2	2	1	0	NA
C) EQUIPMENT	0	0	4	2	2	0	0	NA
D) POTENTIAL MAINT	0	1	5	3	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	1	2	2	0	0	NA
EQUIPMENT FAILURE	0	0	0	1	1	0	0	NA

TABLE 8.8

BROWNS FERRY 1

PI EVENTS FOR 88-4

SSF 10/18/88 LER# 25988034 50.72#: 13755 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: OVERHEATING OF DIESEL GENERATOR FIELD BREAKERS WHEN LOADED TO 95% OF RATED CAPACITY. HIGH LOCALIZED TEMPERATURES ABOVE THE BREAKER DESIGN EXISTED, COULD HAVE RESULTED IN LOSS OF AC POWER SOURCES.

SSA 11/01/88 LER# 25988044 50.72#: 13879 POWER: 0
DESC: SHIFTING POWER SUPPLIES AND OPERATOR DID NOT HOLD SWITCH LONG ENOUGH TO ENSURE BREAKER SHUT CAUSING DIESEL START ON MOMENTARY LOW VOLTAGE.

SSA 11/01/88 LER# 25988045 50.72#: 13882 POWER: 0
DESC: BREAKER FAILED TO CLOSE WHILE SHIFTING POWER SUPPLIES CAUSING UNDERVOLTAGE ON SHUTDOWN BUS FOR ABOUT 30 SECONDS, DIESEL DID NOT LOAD BUS.

SSA 11/01/88 LER# 25988045 50.72#: 13882 POWER: 0
DESC: BREAKER FAILED TO CLOSE WHILE SHIFTING POWER SUPPLIES CAUSING UNDERVOLTAGE ON SHUTDOWN BUS FOR ABOUT 30 SECONDS, DIESEL DID NOT LOAD BUS.

PI EVENTS FOR 89-1

SE 01/31/89 LER# 25989003 50.72#: 14606 POWER: 0
DESC: UPON LOSS OF INSTRUMENT AIR, CONTAINMENT ISOLATION VALVE (WHICH IS A BUTTERFLY VALVE) WILL FAIL IN THE OPEN POSITION, THUS LOSING ONE OF THE CONTAINMENT ISOLATION BARRIERS. (SIMILAR TO NORTH ANNA 1 & 2, MORNING REPORT 01/13/89, BRIEFING # 89-03).

SE 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
DESC: ALL PARTS OF THE EMERGENCY EQUIPMENT COOLING WATER SYSTEM ARE NOT SEISMIC CLASS I PER THE COMMITMENT IN FSAR 10.10.2.2.

SSF 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: MANY COMPONENTS AND SYSTEMS WERE DECLARED INOPERABLE AT ALL 3 BROWNS FERRY UNITS. DESIGN REVIEW - ESW DISCHARGES INTO UNQUALIFIED HEADERS. FAILURE OF HEADER COULD PREVENT ESW FROM PERFORMING SAFETY FUNCTION.

SSA 03/09/89 LER# 26089008 50.72#: 14980 POWER: 0
DESC: A BUS TO GROUND FAULT ON '2B' UNIT SERVICE STATION TRANSFORMER WHICH LED TO A LOSS OF SHUTDOWN BUS 2 CAUSED DIESELS "C" AND "D" TO START BUT NOT LOAD.

PI EVENTS FOR 89-2

SSF 05/30/89 LER# 26089016 50.72#: POWER: 0
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE HPCS LOOP II OUTBOARD RX INLET ISOLATION VALVE WAS OOS, MAKING LOOP II INOPERABLE. LOOP I WAS DECLARED TECHNICALLY INOPERABLE WHEN THE 480V SHUTDOWN BOARD SEISMIC QUALIFICATION REQUIREMENT WAS NOT MET DUE TO THE BREAKER COMPARTMENT DOOR BEING OPEN.

SSF 06/27/89 LER# 25989015 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING
DESC: A BREACH IN SECONDARY CONTAINMENT FOR APPROXIMATELY FIVE SECONDS RESULTED DUE TO FAILURE OF AN AIRLOCK MECHANICAL INTERLOCK SWITCH MOUNTING BRACKET, WHICH ALLOWED BOTH AIRLOCK DOORS TO BE OPEN AT THE SAME TIME.

PI EVENTS FOR 89-3

SSF 07/12/89 LER# 25989018 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE AREA COOLERS SERVICING THE RHR AND CORE SPRAY PUMPS DID NOT MEET MINIMUM DESIGN FLOW REQUIREMENTS. DURING A DESIGN BASIS EVENT THE COOLERS MAY NOT PROVIDE SUFFICIENT FLOW TO MEET THEIR DESIGN REQUIREMENTS.

TABLE 8.8 (CONT.)

BROWNS FERRY 1 (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SSF 07/23/89 LER# 50.72#: 16140 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: SECONDARY CONTAINMENT WAS DECLARED INOPERABLE BECAUSE OF EQUIPMENT FAILURES OF TWO TRAINS OF THE SBGTS. THE THIRD SBGTS TRAIN WAS LATER DECLARED INOPERABLE BECAUSE OF FAILURE OF ITS POWER SUPPLY. REFUELING OPERATIONS WERE SUSPENDED.

SSF 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: DURING A SCHEDULED SURVEILLANCE TEST OF THE INITIATION LOGIC FOR THE EMERGENCY EQUIPMENT COOLING WATER PUMPS, ALL EIGHT PUMPS WERE INOPERABLE WHICH RENDERED ALL EIGHT EDG'S INOPERABLE. PROCEDURE ERROR EXISTED FOR APPROXIMATELY TWO YEARS.

SSF 08/28/89 LER# 50.72#: 16538 POWER: 0
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: ENGINEERING ANALYSIS CONCLUDED THAT THE CORE SPRAY MINIMUM FLOW VALVES WERE NOT DESIGNED TO MEET ACCIDENT LOAD CONDITIONS OF TORUS MOVEMENT AND SEISMIC LOADING AND FAILURE COULD PREVENT DESIGN SYSTEM FLOW, PUMP DAMAGE OR A HOLE IN THE TORUS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	1	0	3	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	2	0	0
SAFETY SYSTEM FAILURES	0	2	0	2	1	1	2	4
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	65	85	110	120	87	53	35	NA
CAUSE CODES:								
ADMINISTRATIVE	3	8	3	12	11	10	5	NA
LICENSED OPERATOR	0	1	1	1	3	3	0	NA
OTHER PERSONNEL	0	4	2	3	6	2	3	NA
MAINTENANCE	2	11	5	12	20	10	6	NA
A) MAINT PERSONNEL	0	3	3	5	5	6	4	NA
B) SURV AND TEST	0	6	1	5	11	4	1	NA
C) EQUIPMENT	1	1	0	1	6	3	0	NA
D) POTENTIAL MAINT	1	2	1	2	6	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	8	6	7	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.9

BROWNS FERRY 2

PI EVENTS FOR 88-4

SSF 10/18/88 LER# 25988034 50.72#: 13755 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: OVERHEATING OF DIESEL GENERATOR FIELD BREAKERS WHEN LOADED TO 95% OF RATED CAPACITY. HIGH LOCALIZED TEMPERATURES ABOVE THE BREAKER DESIGN EXISTED, COULD HAVE RESULTED IN LOSS OF AC POWER SOURCES.

SSA 12/09/88 LER# 26088016 50.72#: 14195 POWER: 0
DESC: 2D RHR/LPCI PUMP STARTED WHEN AUX OPERATOR PUSHED START BUTTON INSTEAD OF STOP BUTTON.

SSA 12/18/88 LER# 26088017 50.72#: 14286 POWER: 0
DESC: OPERATOR TOOK WRONG SWITCH TO TEST CAUSING '2C' CORE SPRAY PUMP TO START - DISCHARGE VALVE TAGGED SHUT.

PI EVENTS FOR 89-1

SSF 01/20/89 LER# 26089002 50.72#: 14545 POWER: 0
SYSTEM: AUTOMATIC DEPRESSURIZATION SYSTEM
DESC: SEISMIC DOCUMENTATION FOR 6 ADS PRESSURE SWITCHES MISSING. POTENTIAL LOSS OF DRYWELL CONTROL AIR SYSTEM, ADS, AND ABILITY OF OPERATORS TO CONTROL MAIN STEAM RELIEF VALVES AND CLOSE MSIVS.

SE 01/31/89 LER# 25989003 50.72#: 14606 POWER: 0
DESC: UPON LOSS OF INSTRUMENT AIR, CONTAINMENT ISOLATION VALVE (WHICH IS A BUTTERFLY VALVE) WILL FAIL IN THE OPEN POSITION, THUS LOSING ONE OF THE CONTAINMENT ISOLATION BARRIERS. (SIMILAR TO NORTH ANNA 1 & 2, MORNING REPORT 01/13/89, BRIEFING # 89-03).

SE 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
DESC: ALL PARTS OF THE EMERGENCY EQUIPMENT COOLING WATER SYSTEM ARE NOT SEISMIC CLASS I PER THE COMMITMENT IN FSAR 10.10.2.2.

SSF 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: MANY COMPONENTS AND SYSTEMS DECLARED INOPERABLE AT ALL 3 BROWNS FERRY UNITS. DESIGN REVIEW - ESW DISCHARGES INTO UNQUALIFIED HEADER. FAILURE OF HEADER COULD PREVENT ESW FROM PERFORMING SAFETY FUNCTION.

SSA 03/09/89 LER# 26089008 50.72#: 14980 POWER: 0
DESC: A BUS TO GROUND FAULT ON '2B' UNIT SERVICE STATION TRANSFORMER WHICH LED TO A LOSS OF SHUTDOWN BUS 2 CAUSED DIESELS "C" AND "D" TO START BUT NOT LOAD.

PI EVENTS FOR 89-2

SSF 04/05/89 LER# 26089012 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: BOTH TRAINS OF RHR INOPERABLE. TRAIN I INOPERABLE DUE TO IMPROPER ELECTRICAL LOADING DURING ABNORMAL ELECTRICAL LINEUP. LOADING INSTRUCTIONS NOT TRANSMITTED TO SHIFT OPERATORS PRIOR TO LINEUP. TRAIN II WAS OOS FOR MAINTENANCE.

SSF 05/30/89 LER# 26089016 50.72#: POWER: 0
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE HPCS LOOP II OUTBOARD RX INLET ISOLATION VALVE WAS OOS, MAKING LOOP II INOPERABLE. LOOP I WAS DECLARED TECHNICALLY INOPERABLE WHEN THE 480V SHUTDOWN BOARD SEISMIC QUALIFICATION REQUIREMENT WAS NOT MET DUE TO THE BREAKER COMPARTMENT DOOR BEING OPEN.

SSF 06/27/89 LER# 25989015 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING
DESC: A BREACH IN SECONDARY CONTAINMENT FOR APPROXIMATELY FIVE SECONDS RESULTED DUE TO FAILURE OF AN AIRLOCK MECHANICAL INTERLOCK SWITCH MOUNTING BRACKET, WHICH ALLOWED BOTH AIRLOCK DOORS TO BE OPEN AT THE SAME TIME.

TABLE 8.9 (CONT.)

BROWNS FERRY 2 (CONT.)

PI EVENTS FOR 89-3

SSF 07/12/89 LER# 25989018 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE AREA COOLERS SERVICING THE RHR AND CORE SPRAY PUMPS DID NOT MEET MINIMUM DESIGN FLOW REQUIREMENTS. DURING A DESIGN BASIS EVENT THE COOLERS MAY NOT PROVIDE SUFFICIENT FLOW TO MEET THEIR DESIGN REQUIREMENTS.

SSF 07/23/89 LER# 50.72#: 16140 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: SECONDARY CONTAINMENT WAS DECLARED INOPERABLE BECAUSE OF EQUIPMENT FAILURES OF TWO TRAINS OF THE SBGTS. THE THIRD SBGTS TRAIN WAS LATER DECLARED INOPERABLE BECAUSE OF FAILURE OF ITS POWER SUPPLY. REFUELING OPERATIONS WERE SUSPENDED.

SSF 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: DURING A SCHEDULED SURVEILLANCE TEST OF THE INITIATION LOGIC FOR THE EMERGENCY EQUIPMENT COOLING WATER PUMPS, ALL EIGHT PUMPS WERE INOPERABLE WHICH RENDERED ALL EIGHT EDG'S INOPERABLE. PROCEDURE ERROR EXISTED FOR APPROXIMATELY TWO YEARS.

SSF 08/28/89 LER# 50.72#: 16538 POWER: 0
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: ENGINEERING ANALYSIS CONCLUDED THAT THE CORE SPRAY MINIMUM FLOW VALVES WERE NOT DESIGNED TO MEET ACCIDENT LOAD CONDITIONS OF TORUS MOVEMENT AND SEISMIC LOADING AND FAILURE COULD PREVENT DESIGN SYSTEM FLOW, PUMP DAMAGE OR A HOLE IN THE TORUS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	2	1	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	2	0	0
SAFETY SYSTEM FAILURES	0	2	0	2	1	2	3	4
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	65	85	110	120	87	53	35	NA
CAUSE CODES:								
ADMINISTRATIVE	3	7	3	12	13	11	9	NA
LICENSED OPERATOR	0	1	1	1	3	3	0	NA
OTHER PERSONNEL	0	4	3	3	10	3	4	NA
MAINTENANCE	2	9	7	12	23	12	12	NA
A) MAINT PERSONNEL	0	3	4	5	6	6	7	NA
B) SURV AND TEST	0	5	1	5	14	6	2	NA
C) EQUIPMENT	1	0	1	1	5	3	1	NA
D) POTENTIAL MAINT	1	1	2	2	5	0	2	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	8	6	8	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.10

BROWNS FERRY 3

PI EVENTS FOR 88-4

SSF 10/18/88 LER# 25988034 50.72#: 13755 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: OVERHEATING OF DIESEL GENERATOR FIELD BREAKERS WHEN LOADED TO 95% OF RATED CAPACITY. HIGH LOCALIZED TEMPERATURES ABOVE THE BREAKER DESIGN EXISTED, COULD HAVE RESULTED IN LOSS OF AC POWER SOURCES.

SSA 11/08/88 LER# 29688005 50.72#: 13939 POWER: 0
DESC: REBUILT BREAKER FAILED TO SHUT CAUSING LOSS OF 4160 V BUS AND DIESEL START.

PI EVENTS FOR 89-1

SE 01/31/89 LER# 25989003 50.72#: 14606 POWER: 0
DESC: UPON LOSS OF INSTRUMENT AIR, CONTAINMENT ISOLATION VALVE (WHICH IS A BUTTERFLY VALVE) WILL FAIL IN THE OPEN POSITION, THUS LOSING ONE OF THE CONTAINMENT ISOLATION BARRIERS. (SIMILAR TO NORTH ANNA 1 & 2, MORNING REPORT 01/13/89, BRIEFING # 89-03).

SE 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
DESC: ALL PARTS OF THE EMERGENCY EQUIPMENT COOLING WATER SYSTEM ARE NOT SEISMIC CLASS I PER THE COMMITMENT IN FSAR 10.10.2.2.

SSF 02/08/89 LER# 25989002 50.72#: 14689 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: MANY COMPONENTS AND SYSTEMS WERE DECLARED INOPERABLE AT ALL 3 BROWNS FERRY UNITS. DESIGN REVIEW - ESW DISCHARGES INTO UNQUALIFIED HEADER. FAILURE OF HEADER COULD PREVENT ESW FROM PERFORMING SAFETY FUNCTION.

PI EVENTS FOR 89-2

SSF 05/30/89 LER# 26089016 50.72#: POWER: 0
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE HPCS LOOP II OUTBOARD RX INLET ISOLATION VALVE WAS OOS, MAKING LOOP II INOPERABLE. LOOP I WAS DECLARED TECHNICALLY INOPERABLE WHEN THE 480V SHUTDOWN BOARD SEISMIC QUALIFICATION REQUIREMENT WAS NOT MET DUE TO THE BREAKER COMPARTMENT DOOR BEING OPEN.

SSF 06/27/89 LER# 25989015 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING
DESC: A BREACH IN SECONDARY CONTAINMENT FOR APPROXIMATELY FIVE SECONDS RESULTED DUE TO FAILURE OF AN AIRLOCK MECHANICAL INTERLOCK SWITCH MOUNTING BRACKET, WHICH ALLOWED BOTH AIRLOCK DOORS TO BE OPEN AT THE SAME TIME.

PI EVENTS FOR 89-3

SSF 07/12/89 LER# 25989018 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE AREA COOLERS SERVICING THE RHR AND CORE SPRAY PUMPS DID NOT MEET MINIMUM DESIGN FLOW REQUIREMENTS. DURING A DESIGN BASIS EVENT THE COOLERS MAY NOT PROVIDE SUFFICIENT FLOW TO MEET THEIR DESIGN REQUIREMENTS.

SSF 07/23/89 LER# 50.72#: 16140 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: SECONDARY CONTAINMENT WAS DECLARED INOPERABLE BECAUSE OF EQUIPMENT FAILURES OF TWO TRAINS OF THE SBGTS. THE THIRD SBGTS TRAIN WAS LATER DECLARED INOPERABLE BECAUSE OF FAILURE OF ITS POWER SUPPLY. REFUELING OPERATIONS WERE SUSPENDED.

SSF 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: DURING A SCHEDULED SURVEILLANCE TEST OF THE INITIATION LOGIC FOR THE EMERGENCY EQUIPMENT COOLING WATER PUMPS, ALL EIGHT PUMPS WERE INOPERABLE WHICH RENDERED ALL EIGHT EDG'S INOPERABLE. PROCEDURE ERROR EXISTED FOR APPROXIMATELY TWO YEARS.

TABLE 8.10 (CONT.)

BROWNS FERRY 3 (CONT.)

PI EVENTS FOR 89-3 (CONT.)

88F 08/28/89 LER# 50.72#: 16538 POWER: 0
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: ENGINEERING ANALYSIS CONCLUDED THAT THE CORE SPRAY MINIMUM FLOW VALVES WERE NOT DESIGNED TO MEET ACCIDENT LOAD CONDITIONS OF TORUS MOVEMENT AND SEISMIC LOADING AND FAILURE COULD PREVENT DESIGN SYSTEM FLOW, PUMP DAMAGE OR A HOLE IN THE TORUS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	1	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	2	0	0
SAFETY SYSTEM FAILURES	0	2	1	2	1	1	2	4
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	65	85	110	120	87	53	35	NA
CAUSE CODES:								
ADMINISTRATIVE	3	7	3	12	10	8	4	NA
LICENSED OPERATOR	0	1	1	1	3	3	0	NA
OTHER PERSONNEL	2	3	3	4	6	3	3	NA
MAINTENANCE	5	9	6	13	19	9	5	NA
A) MAINT PERSONNEL	1	3	4	6	5	6	3	NA
B) SURV AND TEST	1	5	1	5	11	2	1	NA
C) EQUIPMENT	3	0	0	1	5	3	0	NA
D) POTENTIAL MAINT	2	1	1	2	5	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	8	6	7	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.11

BRUNSWICK 1

PI EVENTS FOR 88-4

SCRAM 10/21/88 LER# 32588023 50.72#: 13783 POWER: 27
DESC: MAIN FEEDWATER SINGLE ELEMENT CONTROL INSTRUMENT FAILED DOWNSIDE CAUSING HIGH REACTOR LEVEL TURBINE TRIP AND A REACTOR TRIP.

SCRAM 11/10/88 LER# 32588024 50.72#: 13964 POWER: 72
DESC: SCRAM WHILE CONDUCTING MAIN TURBINE LOGIC TEST DUE TO AN ELECTRICAL FAULT IN THE ELECTROHYDRAULIC CONTROL SYSTEM.

SSF 11/15/88 LER# 32588025 50.72#: 13999 POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: TOTAL PRIMARY CONTAINMENT LEAKRATE GREATER THAN TECH. SPEC. LIMITS. VARIOUS PRIMARY CONTAINMENT ISOLATION VALVES WOULD NOT PRESSURIZE. CAUSES UNDER INVESTIGATION.

SSA 11/16/88 LER# 32588026 50.72#: 14013 POWER: 0
DESC: DURING LOCA AND OFFSITE POWER LOSS TESTING WHEN MOMENTARY LOSS OF POWER TO UNIT 1 AND 2 COMMON EMERGENCY POWER BUS DUE TO NOT TIGHTENING A TEST AMPHENOL CAUSED DIESEL #2 TO START AND LOAD BUS.

SE 12/14/88 LER# 32588033 50.72#: 14228 POWER: 0
DESC: LICENSEE DISCOVERED SEVERAL LPCI THROTTLE & PCS ISOLATION VALVE BODIES WITH SIGNIFICANT SIGNS OF EROSION. UNIT 1 COLD SHUTDOWN, UNIT 2 IN OPERATION AT TIME OF EVENT.

SSF 12/14/88 LER# 32588033 50.72#: 14228 POWER: 0
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: EROSION OF VALVE BODY INTERNALS IN RHR DUE TO THROTTLING BELOW DESIGN FLOW RANGE. NORMAL FLOW RATE FOR THESE VALVES WAS LESS THAN ACCIDENT FLOW RATES FOR WHICH VALVES WERE DESIGNED. STRUCTURAL INTEGRITY

SSF 12/14/88 LER# 32588032 50.72#: 14231 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: BOTH STANDBY GAS TREATMENT SYSTEM TRAINS' INLET VALVES WERE DISCOVERED TO BE 5-10% OPEN. SYSTEM DECLARED INOPERABLE. DESIGN ERROR OF COMMON DAMPER INDICATION SWITCH.

SSF 12/16/88 LER# 32588034 50.72#: POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: LOSS OF SECONDARY CONTAINMENT DURING IRRADIATED FUEL SHIPPING DUE TO ISOLATION OF AIR SUPPLY TO THE REACTOR BUILDING DAMPERS. DESIGN DEFICIENCIES AND PERSONNEL ERROR.

SSF 12/22/88 LER# 32588035 50.72#: 14320 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: A COMMON PIPE SUPPORT ON THE DISCHARGE OF THE SBGTS WAS FOUND OUTSIDE OF DESIGN BASIS. THIS RENDERS BOTH TRAINS OF THE STANDBY GAS TREATMENT SYSTEM AND SECONDARY CONTAINMENT INOPERABLE.

PI EVENTS FOR 89-1

SSF 03/13/89 LER# 32489005 50.72#: 15010 POWER: 0
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE. AN ERROR IN VENDOR SOFTWARE RESULTED IN A MOTOR ACTUATOR CLOSING TORQUE SWITCH SETPOINT BEING SET TOO LOW. THIS WOULD RESULT IN THE VALVE REACHING THE TORQUE CUTOUT SETPOINT PRIOR TO FULL CLOSURE UNDER CERTAIN CONDITIONS.

SSF 03/17/89 LER# 32589008 50.72#: POWER: 0
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: THE CORE SPRAY AND LPCI/RHR SYSTEMS WERE UNINTENTIONALLY MADE INOPERABLE AT THE SAME TIME (6.5 HRS.). WITH LPCI/RHR OUT OF SERVICE PER LCO, THE BREAKERS ASSOCIATED WITH THE LPCS INJECTION VALVES WERE TAGGED OPEN, PERSONNEL ERROR.

TABLE 8.11 (CONT.)

BRUNSWICK 1 (CONT.)

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 09/03/89 LER# 50.72#: 16478 POWER: 95
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE DUE TO A SMALL OIL LEAK FOUND ON THE AUXILIARY OIL PUMP SHAFT SEAL.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	2.08	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	2	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	1	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	2	2	5	4	5	2	0	1
FORCED OUTAGE RATE (%)	0	0	0	9	5	0	26	7
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.49	1.04	.00	.66	.00
CRITICAL HOURS	2209	1531	2137	2031	962	0	1519	2070
COLLECTIVE RADIATION EXPOSURE	70	448	65	44	316	258	60	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	2	1	5	5	5	NA
LICENSED OPERATOR	0	0	0	0	4	5	1	NA
OTHER PERSONNEL	0	1	1	2	3	1	1	NA
MAINTENANCE	2	6	2	3	10	5	10	NA
A) MAINT PERSONNEL	1	2	2	2	2	3	3	NA
B) SURV AND TEST	0	2	0	0	4	2	3	NA
C) EQUIPMENT	1	2	0	0	3	1	4	NA
D) POTENTIAL MAINT	0	2	0	1	5	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	2	4	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.12

BRUNSWICK 2

PI EVENTS FOR 88-4

SSA 11/16/88 LER# 32488018 50.72#: 14007 POWER: 100
DESC: HPCI RECEIVED INJECTION SIGNAL BUT RECEIVED A TRIP SIGNAL BEFORE INJECTION COULD OCCUR. HPCI STARTED MANUALLY TO CONTROL REACTOR LEVEL.

SCRAM 11/16/88 LER# 32488018 50.72#: 14007 POWER: 100
DESC: YOPAZ INVERTER TO MAIN FEEDWATER CONTROL SYSTEM FAILED CAUSING A TURBINE TRIP AND A REACTOR TRIP.

SE 12/14/88 LER# 32588033 50.72#: 14228 POWER: 100
DESC: LICENSEE DISCOVERED SEVERAL LPCI THROTTLE & PCS ISOLATION VALVE BODIES WITH SIGNIFICANT SIGNS OF EROSION. UNIT 1 COLD SHUTDOWN, UNIT 2 IN OPERATION AT TIME OF EVENT.

SSF 12/14/88 LER# 32588033 50.72#: 14228 POWER: 100
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: EROSION OF VALVE BODY INTERNALS IN RHR DUE TO THROTTLING BELOW DESIGN FLOW RANGE. NORMAL FLOWRATE FOR THESE VALVES WAS LESS THAN ACCIDENT FLOWRATES FOR WHICH VALVES WERE DESIGNED. STRUCTURAL INTEGRITY

SSF 12/22/88 LER# 32588035 50.72#: 14320 POWER: 100
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: A COMMON PIPE SUPPORT ON THE DISCHARGE OF THE SBGTS WAS FOUND OUTSIDE OF DESIGN BASIS. THIS RENDERS BOTH TRAINS OF THE STANDBY GAS TREATMENT SYSTEM AND SECONDARY CONTAINMENT INOPERABLE.

PI EVENTS FOR 89-1

SSA 02/14/89 LER# 32489001 50.72#: 14757 POWER: 100
DESC: HPCI STARTED AND RECIRCED TO SUPPRESSION POOL DUE TO AN ECCS START SIGNAL SUSPECTED TO BE FROM SPURIOUS ELECTRICAL NOISE.

SSF 02/21/89 LER# 32489002 50.72#: 14820 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HIGH PRESSURE COOLANT INJECTION SYSTEM WAS DECLARED INOPERABLE BECAUSE CRACKS WERE DISCOVERED IN TWO STEAM SUPPLY PIPING SUPPORTS. CAUSE IS BELIEVED TO BE POOR QUALITY WELDS.

SSF 03/13/89 LER# 32489005 50.72#: 15010 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE. AN ERROR IN VENDOR SOFTWARE RESULTED IN A MOTOR ACTUATOR CLOSING TORQUE SWITCH SETPOINT BEING SET TOO LOW. THIS WOULD RESULT IN THE VALVE REACHING THE TORQUE CUTOUT SETPOINT PRIOR TO FULL CLOSURE UNDER CERTAIN CONDITIONS.

PI EVENTS FOR 89-2

SSF 04/24/89 LER# 32489006 50.72#: 15428 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: WITH THE HPCI SYSTEM IN STANDBY LINEUP A HPCI HIGH STEAM FLOW ISOLATION INSTRUMENT FAILED IN THE TRIP CONDITION CAUSING ISOLATION OF THE HPCI STEAM SUPPLY INBOARD VALVE. HPCI DECLARED INOPERABLE. TRANSMITTER SENSOR MODULE DETERMINED TO HAVE FAILED.

SSA 06/05/89 LER# 32489008 50.72#: 15787 POWER: 100
DESC: LPCS AND LPCI STARTED ON LOCA SIGNAL WHEN TESTING ECCS LOW-LOW-LOW LEVEL TRIP CALIBRATION UNITS.

SSA 06/17/89 LER# 32489009 50.72#: 15895 POWER: 75
DESC: STARTUP AUXILIARY TRANSFORMER (SAT) LOST POWER, CAUSING LOSS OF OFF-SITE POWER CAUSING DIESEL TO START AND LOAD BUS. HPCI AND RCIC STARTED AFTER THE SCRAM.

SSA 06/17/89 LER# 32489009 50.72#: 15895 POWER: 75
DESC: STARTUP AUXILIARY TRANSFORMER (SAT) LOST POWER, CAUSING LOSS OF OFF-SITE POWER CAUSING DIESEL TO START AND LOAD BUS. HPCI AND RCIC STARTED AFTER THE SCRAM.

TABLE 8.12 (CONT.)

BRUNSWICK 2 (CONT.)

PI EVENTS FOR 89-2 (CONT.)

SE 06/17/89 LER# 32489009 50.72#: 15895 POWER: 75
DESC: LOSS OF OFFSITE POWER FOR APPROX 10 HOURS. ALL SAFETY SYSTEMS (INCLUDING EMERGENCY DIESEL GENERATORS) FUNCTIONED PROPERLY.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.46	.00	.00	.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	1	1	3	0
SIGNIFICANT EVENTS	0	3	0	1	1	0	1	0
SAFETY SYSTEM FAILURES	1	3	3	3	2	2	1	0
FORCED OUTAGE RATE (%)	0	0	20	0	4	0	12	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	2.04	.00	.46	.00	.52	.00
CRITICAL HOURS	2209	24	1467	2001	2154	2160	1939	1680
COLLECTIVE RADIATION EXPOSURE	70	448	65	44	316	258	60	NA
CAUSE CODES:								
ADMINISTRATIVE	2	5	1	1	6	1	4	NA
LICENSED OPERATOR	0	1	1	0	2	1	0	NA
OTHER PERSONNEL	2	3	0	0	5	2	1	NA
MAINTENANCE	3	11	1	3	9	4	6	NA
A) MAINT PERSONNEL	2	4	0	0	1	1	1	NA
B) SURV AND TEST	0	2	1	1	6	2	2	NA
C) EQUIPMENT	2	6	0	1	2	1	3	NA
D) POTENTIAL MAINT	0	3	0	2	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	2	4	4	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.13

BYRON 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.67	1.33	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	2	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	4	4	0	1	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.67	1.33	.00	.47	.00	.00
CRITICAL HOURS	2209	2184	1494	1499	1309	2143	2183	2208
COLLECTIVE RADIATION EXPOSURE	15	4	87	156	191	66	4	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	1	1	1	2	2	NA
LICENSED OPERATOR	1	0	0	1	0	0	0	NA
OTHER PERSONNEL	2	0	0	0	0	1	0	NA
MAINTENANCE	3	1	1	5	2	3	2	NA
A) MAINT PERSONNEL	0	0	0	0	1	1	2	NA
B) SURV AND TEST	2	0	0	1	0	1	0	NA
C) EQUIPMENT	1	0	1	3	1	1	0	NA
D) POTENTIAL MAINT	1	1	1	3	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	2	0	1	0	NA

TABLE 8.14

BYRON 2

PI EVENTS FOR 88-4

SCRAM 12/15/88 LER# 45588012 50.72#: 14251 POWER: 40
DESC: CLEANING BORIC ACID FROM RCS LOOP PRESSURE INSTRUMENT VALVE CAUSED LOW LOOP FLOW SIGNAL SCRAM.

PI EVENTS FOR 89-1

SE 01/16/89 LER# 50.72#: POWER: 0
DESC: INCORRECT PROCEDURE ALLOWED COMBUSTIBLE GAS MIXTURE TO FILL THE ACCUMULATOR. (MORNING REPORT: 01/23/89)

SA 02/11/89 LER# 45589001 50.72#: 14733 POWER: 0
DESC: INADEQUATE PROCEDURE DURING LOAD SEQUENCE TEST CAUSED SI AND DIESEL AUTO START DUE TO SEQUENCER DEENERGIZING.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.64	.46	.47	.46	.46	.00	.00	.00
SCRAMS < 15% POWER	1	0	0	1	0	0	0	0
TOTAL SCRAMS	2	1	1	2	1	0	0	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	4	1	4	2	1	0	8	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.29	.46	1.40	.92	.46	.00	.49	.00
CRITICAL HOURS	1551	2170	2141	2171	2194	806	2021	2208
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	66	4	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	3	1	1	2	0	NA
LICENSED OPERATOR	1	0	2	1	0	1	0	NA
OTHER PERSONNEL	3	2	1	1	1	0	0	NA
MAINTENANCE	3	3	4	6	2	1	1	NA
A) MAINT PERSONNEL	1	0	0	0	2	0	0	NA
B) SURV AND TEST	2	2	1	2	0	1	0	NA
C) EQUIPMENT	0	1	2	4	1	0	0	NA
D) POTENTIAL MAINT	0	2	3	3	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	1	2	0	0	0	NA

TABLE 8.15

CALLAWAY

PI EVENTS FOR 88-4

SSF 10/29/88 LER# 48388013 50.72#: POWER: 100
SYSTEM: ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC: INSTRUMENT AND CONTROL TERMINATIONS FAILED TO MEET EQ REQUIREMENTS: VARIOUS ESF SYSTEMS, RPS,ACCIDENT MONITORING, REMOTE SHUTDOWN MONITORING. INSTRUMENTS DECLARED INOPERABLE.

SSA 11/16/88 LER# 48388015 50.72#: 14015 POWER: 100
DESC: RACKING IN BREAKER WHEN ADJACENT BREAKER OPENED CAUSING LOSS OF OFFSITE POWER TO SAFEGUARDS BUS NB01, DIESEL STARTED AND LOADED BUS.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSA 05/18/89 LER# 48389005 50.72#: 15638 POWER: 0
DESC: OPERATOR TURNED SHUT TRIP CIRCUITRY SWITCH ON REACTOR TRIP BREAKER IN THE WRONG DIRECTION CAUSING A SI SIGNAL, RE STATES 180 GALLONS INJECTED, LER STATES NO SI OCCURRED DUE TO SI BEING IN BLOCK.

SSA 05/18/89 LER# 48389005 50.72#: 15638 POWER: 0
DESC: OPERATOR TURNED SHUT TRIP CIRCUITRY SWITCH ON REACTOR TRIP BREAKER IN THE WRONG DIRECTION CAUSING A SI SIGNAL, RE STATES 180 GALLONS INJECTED, LER STATES NO SI OCCURRED DUE TO SI BEING IN BLOCK.

SCRAM 05/29/89 LER# 48389006 50.72#: 15740 POWER: 97
DESC: LEADS FROM DVM CAUSED A FALSE HIGH RATE TRIP WHEN PREPARING TO DO FLUX MAPS CAUSING A REACTOR SCRAM.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.96	.53	.46	.00	.00	1.08	.00
SCRAMS < 15% POWER	1	0	1	0	0	0	0	0
TOTAL SCRAMS	1	2	2	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	2	1	0	0	1	0	2	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	1	0	0	0
FORCED OUTAGE RATE (%)	5	6	5	1	0	0	3	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.89	.00	1.59	.00	.00	.00	1.08	.00
CRITICAL HOURS	1126	2078	1883	2187	2055	2138	927	2208
COLLECTIVE RADIATION EXPOSURE	154	3	5	6	13	6	259	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	1	1	2	0	2	NA
LICENSED OPERATOR	2	2	2	1	1	1	4	NA
OTHER PERSONNEL	1	2	1	1	1	1	1	NA
MAINTENANCE	3	2	3	3	2	2	5	NA
A) MAINT PERSONNEL	0	1	1	1	1	0	0	NA
B) SURV AND TEST	2	1	1	2	1	1	4	NA
C) EQUIPMENT	2	1	1	2	0	1	0	NA
D) POTENTIAL MAINT	2	0	1	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	1	1	1	0	NA
EQUIPMENT FAILURE	0	1	1	1	0	0	1	NA

TABLE 8.16

CALVERT CLIFFS 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 03/14/89 LER# 31789005 50.72#: 15111 POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: POTENTIAL FOR A LOSS OF THE ULTIMATE HEAT SINK SYSTEM DUE TO A LOSS OF INSTRUMENT AIR. WHILE PERFORMING A TEST PROCEDURE TO IDENTIFY AIR SYSTEM LEAKAGE, A BOUNDARY CHECK VALVE WAS FOUND LEAKING. DESIGN REVIEW FOUND THE VALVE INCORRECT FOR APPLICATION.

SSA 03/19/89 LER# 31789003 50.72#: 15059 POWER: 0
DESC: A LICENSED OPERATOR MISSED A STEP IN A SURVEILLANCE TEST PROCEDURE TO BLOCK THE PRESSURIZER LOW PRESSURE TRIP CAUSING A SAFETY INJECTION.

SSA 03/20/89 LER# 31789004 50.72#: 15070 POWER: 0
DESC: ESFAS LOGIC SIGNAL WHEN OPERATOR MISSED TWO STEPS IN PROCEDURE THEN TRIED TO RETURN TO NORMAL CAUSING 4 HPSI HEADER MOV'S TO OPEN.

PI EVENTS FOR 89-2

SSF 05/08/89 LER# 31789008 50.72#: 15576 POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: POTENTIAL FOR LOSS OF COOLING TO THE ESW AND CCW SYSTEMS DUE TO POSSIBLE LOSS OF INSTRUMENT AIR TO VALVES CAUSING PUMP RUNOUT. REPRESENTS ULIMATE HEAT SINK. THE SAFETY RELATED AIR TUBING TO THE VALVES DID NOT MEET DESIGN BASIS SEISMIC MOUNTING REQUIREMENTS.

PI EVENTS FOR 89-3

SSF 07/10/89 LER# 31889011 50.72#: POWER: 0
SYSTEM: STEAM GENERATING SYSTEM
DESC: ALL OF THE UNIT 1 AND 2 STEAM GENERATORS WERE DECLARED INOPERABLE WHEN STEAM GENERATOR SNUBBER TIE ROD NUTS WERE FOUND TO BE MADE OF INADEQUATE MATERIAL AND DIMENSIONAL PROPERTIES. ONE NUT FRACTURED UPON BEING TORQUED TO ITS SPECIFIED VALUE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.50	.00	.00	.94	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	2	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	4	0	0	2	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	1	1
FORCED OUTAGE RATE (%)	11	1	0	4	2	4	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.50	.00	.00	.47	1.06	1.37	.00	.00
CRITICAL HOURS	1983	2184	194	2139	1881	1455	352	0
COLLECTIVE RADIATION EXPOSURE	17	19	105	9	12	20	68	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	1	2	2	3	1	NA
LICENSED OPERATOR	0	0	0	2	0	2	0	NA
OTHER PERSONNEL	0	0	4	2	1	1	1	NA
MAINTENANCE	2	0	4	1	3	4	2	NA
A) MAINT PERSONNEL	0	0	4	1	2	2	1	NA
B) SURV AND TEST	1	0	0	0	1	3	0	NA
C) EQUIPMENT	1	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	1	0	0	0	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	2	2	2	4	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.17

CALVERT CLIFFS 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SE 03/01/89 LER# 31889004 50.72#: 14893 POWER: 100
DESC: TURBINE DRIVEN AUXILIARY FEED PUMP THROTTLE TRIP VALVE FAILURE WITH RESULTING CONTROL ROOM FIRE.

PI EVENTS FOR 89-2

SE 05/05/89 LER# 31889007 50.72#: 15540 POWER: 0
DESC: BORIC ACID BUILDUP ON PRESSURIZER HEATERS ON BOTTOM OF PRESSURIZER.

SSF 05/08/89 LER# 31789008 50.72#: 15576 POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: POTENTIAL FOR LOSS OF COOLING TO THE ESW AND CCW SYSTEMS DUE TO POSSIBLE LOSS OF INSTRUMENT AIR TO VALVES CAUSING PUMP RUNOUT. REPRESENTS ULIMATE HEAT SINK. THE SAFETY RELATED AIR TUBING TO THE VALVES DID NOT MEET DESIGN BASIS SEISMIC MOUNTING REQUIRMS.

PI EVENTS FOR 89-3

SSF 07/10/89 LER# 31889011 50.72#: POWER: 0
SYSTEM: STEAM GENERATING SYSTEM
DESC: ALL OF THE UNIT 1 AND 2 STEAM GENERATORS WERE DECLARED INOPERABLE WHEN STEAM GENERATOR SNUBBER TIE ROD NUTS WERE FOUND TO BE MADE OF INADEQUATE MATERIAL AND DIMENSIONAL PROPERTIES. ONE NUT FRACTURED UPON BEING TORQUED TO ITS SPECIFIED VALUE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.48	.74	.49	.00	.00	.00	.00	.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	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	1	1	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	1	1
FORCED OUTAGE RATE (%)	6	1	6	0	0	11	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.43	.00	.49	.00	.00	.57	.00	.00
CRITICAL HOURS	2104	1358	2052	2208	2209	1766	0	0
COLLECTIVE RADIATION EXPOSURE	17	19	105	9	12	20	68	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	0	1	0	6	4	NA
LICENSED OPERATOR	0	0	1	1	0	1	1	NA
OTHER PERSONNEL	2	1	1	1	0	2	1	NA
MAINTENANCE	2	3	1	1	0	6	5	NA
A) MAINT PERSONNEL	2	2	0	0	0	4	2	NA
B) SURV AND TEST	0	0	1	1	0	3	2	NA
C) EQUIPMENT	1	2	0	0	0	1	0	NA
D) POTENTIAL MAINT	0	2	0	0	0	0	2	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	0	1	0	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.18

CATAWBA 1

PI EVENTS FOR 88-4

SSF 10/25/88 LER# 41388023 50.72#: POWER: 95
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF CONTROL ROOM VENTILATION INOPERABLE DUE TO DESIGN DEFICIENCY OF THE COOLING WATER FLOW CONTROL VALVE.

SSF 12/30/88 LER# 41388027 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: RHR FLOW WAS BELOW TECH. SPEC. LIMITS APPROXIMATELY 53.5 HOURS. RCS LEVEL WAS LOWERED TO FACILITATE REMOVAL OF S/G NOZZLE DAMS. TO PREVENT RHR LOSS OF PUMP SUCTION FLOW WAS REDUCED. PROCEDURE ERROR.

PI EVENTS FOR 89-1

SSA 01/07/89 LER# 41389001 50.72#: 14436 POWER: 0
DESC: 6900 BREAKER OPENED AND CAUSED LOSS OF POWER TO ESSENTIAL BUS 'A'. THE DIESEL GENERATOR "1A" WAS OUT OF SERVICE FOR MAINTENANCE. BREAKER OPENED DURING RCP STARTING BECAUSE WRONG TYPE RELAY WAS INSTALLED.

SSA 03/05/89 LER# 41389008 50.72#: 14940 POWER: 100
DESC: OPERATOR SHUT 'A' MSIV INSTEAD OF MAIN STEAM PORV DURING TESTING CAUSING A SAFETY INJECTION ON LOW MAIN STEAMLINE PRESSURE. DIESEL GENERATORS ALSO STARTED.

SCRAM 03/05/89 LER# 41389008 50.72#: 14940 POWER: 100
DESC: OPERATOR SHUT 'A' MSIV INSTEAD OF 'A' MAIN STEAM PORV (RIGHT BESIDE EACH OTHER) CAUSING A REACTOR TRIP ON OVER POWER DELTA TEMPERATURE.

SSF 03/31/89 LER# 41389010 50.72#: 15175 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM DECLARED INOPERABLE. ONE TRAIN HAD BEEN OOS FOR MAINTENANCE WHEN THE OTHER TRAIN FAILED DUE TO A FAILED BEARING ON AN AHU MOTOR. BOTH UNITS AFFECTED.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 09/15/89 LER# 50.72#: 16598 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF CREV DECLARED INOPERABLE. TRAIN 'A' COULD NOT MAINTAIN REQUIRED POSITIVE PRESSURE IN THE CONTROL ROOM AND TRAIN 'B' WAS DECLARED INOPERABLE DUE TO CHILLER MAINTENANCE.

TABLE 8.18 (CONT.)

CATAWBA 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.78	.00	.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	1	0	0	0	2	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	0	0	2	1	0	1
FORCED OUTAGE RATE (%)	90	15	0	16	0	9	6	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	8.74	1.05	.00	1.19	.00	3.10	.99	.46
CRITICAL HOURS	114	1898	2183	1681	1308	1289	2020	2197
COLLECTIVE RADIATION EXPOSURE	356	141	8	30	98	79	74	NA
CAUSE CODES:								
ADMINISTRATIVE	5	7	2	1	3	4	3	NA
LICENSED OPERATOR	1	3	0	0	0	2	0	NA
OTHER PERSONNEL	3	5	2	1	1	4	1	NA
MAINTENANCE	6	9	1	1	5	9	4	NA
A) MAINT PERSONNEL	2	4	0	1	1	4	2	NA
B) SURV AND TEST	1	5	1	1	2	2	2	NA
C) EQUIPMENT	4	2	0	0	1	4	0	NA
D) POTENTIAL MAINT	2	2	0	1	2	2	1	NA
DESIGN/INSTALLATION/FABRICATION	2	5	3	0	3	5	2	NA
EQUIPMENT FAILURE	1	1	0	0	0	0	1	NA

TABLE 8.19

CATAWBA 2

PI EVENTS FOR 88-4

SSF 10/[illegible]/88 LER# 41388023 50.72#: POWER: 95
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF CONTROL ROOM VENTILATION INOPERABLE DUE TO DESIGN DEFICIENCY OF THE COOLING WATER FLOW CONTROL VALVE.

PI EVENTS FOR 89-1

SCRAM 01/12/89 LER# 41489001 50.72#: 14481 POWER: 95
DESC: BLOWN FUSE, DUE TO A MANUFACTURING DEFICIENCY, IN FRV CAUSED FRV TO FAIL CLOSED RESULTING IN A LOW SG LEVEL SCRAM.

SSA 02/21/89 LER# 41489003 50.72#: 14808 POWER: 94
DESC: SAFETY INJECTION WHEN MSIV'S WENT <90% OPEN DURING TESTING CAUSING LOW STEAMLINE PRESSURE SCRAM AND SAFETY INJECTION. MSIV'S CLOSED WHEN A TECHNICIAN JUMPERED A SET OF CONTACTS CAUSING A SHORT CIRCUIT.

SSA 02/21/89 LER# 41489004 50.72#: 14817 POWER: 0
DESC: LOW STEAMLINE PRESSURE SETPOINT WAS REACHED WHILE COOLING DOWN CAUSING SAFETY INJECTION AND SYSTEM ISOLATIONS. THE ESSENTIAL SERVICE WATER AND CLOSED COMPONENT COOLING WATER SYSTEMS STARTED.

SCRAM 02/21/89 LER# 41489003 50.72#: 14808 POWER: 94
DESC: LOW STEAMLINE PRESSURE WHEN MSIV'S WENT <90% OPEN CAUSING SCRAM.

SSF 03/31/89 LER# 41389010 50.72#: 15175 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM DECLARED INOPERABLE. ONE TRAIN HAD BEEN OOS FOR MAINTENANCE WHEN THE OTHER TRAIN FAILED DUE TO A FAILED BEARING ON AN AHU MOTOR. BOTH UNITS AFFECTED.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 09/15/89 LER# 50.72#: [illegible] POWER: 98
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF CREV DECLARED INOPERABLE. TRAIN 'A' COULD NOT MAINTAIN REQUIRED POSITIVE PRESSURE IN THE CONTROL ROOM AND TRAIN 'B' WAS DECLARED INOPERABLE DUE TO CHILLER MAINTENANCE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	2.65	1.60	.00	.00	1.31	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	3	0	0	2	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	0	0	2	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	1	0	1	1	0	1
FORCED OUTAGE RATE (%)	6	60	7	8	3	9	18	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.52	5.30	3.20	1.44	1.39	3.28	.00	.45
CRITICAL HOURS	1923	378	1875	2080	2164	1526	505	2208
COLLECTIVE RADIATION EXPOSURE	NA	141	8	30	98	79	74	NA
CAUSE CODES:								
ADMINISTRATIVE	6	10	6	2	4	7	5	NA
LICENSED OPERATOR	1	4	3	0	0	2	0	NA
OTHER PERSONNEL	5	9	4	2	1	3	5	NA
MAINTENANCE	6	17	12	3	7	10	9	NA
A) MAINT PERSONNEL	4	5	5	2	2	2	5	NA
B) SURV AND TEST	2	8	3	1	3	5	4	NA
C) EQUIPMENT	3	7	5	2	3	1	0	NA
D) POTENTIAL MAINT	2	5	3	2	2	3	1	NA
DESIGN/INSTALLATION/FABRICATION	1	6	5	0	4	5	2	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	1	NA

TABLE 8.20

CLINTON 1

PI EVENTS FOR 88-4

SSF 10/26/88 LER# 46188024 50.72#: 13818 POWER: 93
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM INOP. DUE TO UNRELATED EQUIPMENT FAILURES. ONE TRAIN WAS INOPERABLE, OTHER TRAIN DAMPER FAILED, PERSONNEL DID NOT RECOGNIZE INOPERABILITY.

SSF 11/09/88 LER# 46188026 50.72#: POWER: 87
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: LOSS OF SECONDARY CONTAINMENT INTEGRITY DUE TO FAILURE TO PROVIDE A PROGRAM FOR MAINTAINING LOOP SEAL DRAIN TRAPS OPERABLE.

SSF 11/10/88 LER# 46188027 50.72#: POWER: 87
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: DIVISION III DIESEL GENERATOR PROVIDES POWER TO HPCS. A METAL DISK INSTALLED IN THE EXHAUST FLOW PATH COULD HAVE CAUSED EXCESSIVE BACK PRESSURE TO DAMAGE THE DG, AND LOSS OF HPCS. HPCS DECLARED INOPER

SE 11/11/88 LER# 46188028 50.72#: 13970 POWER: 88
DESC: LOSS OF RESERVE TRANSFORMER AND LOSS OF MAIN TRANSFORMER.

SCRAM 11/11/88 LER# 46188028 50.72#: 13970 POWER: 88
DESC: MAIN POWER TRANSFORMER FAULT RESULTS IN TURBINE GENERATOR TRIP AND REACTOR SCRAM.

PI EVENTS FOR 89-1

SSF 01/05/89 LER# 46189001 50.72#: 14416 POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: FIVE MSIVS FAILED THEIR LEAK RATE TEST. TWO OF THE LINES HAD FAILURE OF BOTH INBOARD AND OUTBOARD VALVES. CAUSE ATTRIBUTED TO WEAR RESULTING IN ANOMALIES OF THE SEATING AREAS OF VALVES.

SSF 03/01/89 LER# 46189017 50.72#: POWER: 0
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: DURING A WALKDOWN BY A DG SYSTEMS ENGINEER, THE MOUNTING HARDWARE FOR THE DIV. III DIESEL GENERATOR DG/SX HEAT EXCHANGER WAS FOUND TO BE OUTSIDE DESIGN. THE DIV. III DG AND THE HPCS SYSTEM (DIV III DG LOAD) WERE BOTH DECLARED INOPERABLE.

PI EVENTS FOR 89-2

SSF 04/14/89 LER# 46189019 50.72#: POWER: 0
SYSTEM: INSTRUMENT AND UNINTERRUPTIBLE POWER SYSTEM - CLASS 1E
DESC: 13 ISSUES RELATIVE TO EQ OF ELECTRICAL EQUIP. WERE IDENTIFIED. SYSTEMS AND COMPONENTS: COMBUSTIBLE GAS CONTROL,MSIVS,SBGTS,ECCS,RCIC,INSTRUMENTATION TERMINAL STRIPS,RHR,DRYWELL VACUUM RELIEF. POTENTIAL FOR SOME SYSTEMS TO NOT FULFILL SAFETY FUNCTION.

SE 06/01/89 LER# 50.72#: 15761 POWER: 0
DESC: REBUILT INBOARD AND OUTBOARD SEALS FAILED ON A RECIRCULATION PUMP.

SCRAM 06/28/89 LER# 46189028 50.72#: 15975 POWER: 100
DESC: HIGH TRANSFORMER OIL PRESSURE CAUSED A MAIN GENERATOR TRIP, FAST CLOSURE OF THE TURBINE CONTROL VALVES WHICH CAUSED A REACTOR SCRAM.

PI EVENTS FOR 89-3

NONE

TABLE 8.20 (CONT.)

CLINTON 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.85	.00	.71	.00	.52	.00	2.35	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	1	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	1	0
SAFETY SYSTEM FAILURES	3	1	3	0	3	2	1	0
FORCED OUTAGE RATE (%)	2	0	10	2	15	0	85	21
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.71	.46	.52	.00	4.69	1.10
CRITICAL HOURS	1173	1875	1407	2181	1936	51	426	1817
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	260	70	NA
CAUSE CODES:								
ADMINISTRATIVE	5	2	4	1	4	10	7	NA
LICENSED OPERATOR	1	1	2	0	1	4	2	NA
OTHER PERSONNEL	5	3	3	3	3	3	4	NA
MAINTENANCE	8	8	7	5	7	11	10	NA
A) MAINT PERSONNEL	3	1	2	3	3	1	4	NA
B) SURV AND TEST	4	4	4	1	3	9	5	NA
C) EQUIPMENT	2	5	6	2	1	2	1	NA
D) POTENTIAL MAINT	1	4	0	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	1	1	1	1	3	2	NA
EQUIPMENT FAILURE	0	0	1	0	1	0	0	NA

TABLE 8.21

COOK 1

PI EVENTS FOR 88-4

SSF 10/11/88 LER# 31588010 50.72#: POWER: 90
SYSTEM: REACTOR COOLANT SYSTEM
DESC: CABLES FOR THE PZR AND VESSEL VENT VALVES NOT CONFIGURED PER DESIGN. VENTS PURPOSE IS TO MITIGATE POSSIBLE CONDITIONS OF INADEQUATE CORE COOLING, NATURAL CIRCULATION, OR AN INABILITY TO DEPRESSURIZE RCS.

SCRAM 10/19/88 LER# 31588011 50.72#: 13760 POWER: 90
DESC: AN INDICATING LIGHT SOCKET SHORTED OUT AND CAUSED A FUSE TO BLOW, RESULTING IN A SENSED LOSS OF LOOP 1 FLOW WHICH CAUSED A REACTOR SCRAM.

SCRAM 11/23/88 LER# 31588013 50.72#: 14077 POWER: 90
DESC: A SPURIOUS BUS UNDERFREQUENCY CONDITION CAUSED ALL THREE REACTOR COOLANT PUMP BREAKERS TO OPEN RESULTING IN A REACTOR TRIP ON LOW COOLANT FLOW.

PI EVENTS FOR 89-1

SCRAM 01/16/89 LER# 31589001 50.72#: 14510 POWER: 71
DESC: OPERATOR OPENED AIR OFFTAKES ON STARTUP AIR EJECTORS CAUSING LOSS OF CONDENSOR VACUUM TURBINE TRIP SCRAM.

SCRAM 03/18/89 LER# 31589003 50.72#: 15049 POWER: 10
DESC: IRM BISTABLE OUT OF CALIBRATION CAUSED SCRAM WHEN POWER REDUCED BELOW 10% POWER.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.48	.47	.00	.00	.95	.55	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	1	1	0	0	2	2	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	1	0	0	0
FORCED OUTAGE RATE (%)	1	1	0	0	6	1	0	4
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.48	.00	.00	.00	.95	.00	.00	.00
CRITICAL HOURS	2104	2131	2183	2010	2109	1810	0	2151
COLLECTIVE RADIATION EXPOSURE	24	7	109	184	74	95	181	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	2	4	2	2	2	NA
LICENSED OPERATOR	0	1	0	0	0	1	0	NA
OTHER PERSONNEL	0	0	0	4	1	1	2	NA
MAINTENANCE	3	4	2	5	4	5	5	NA
A) MAINT PERSONNEL	0	0	0	2	1	0	0	NA
B) SURV AND TEST	2	2	2	3	1	2	4	NA
C) EQUIPMENT	1	2	0	0	2	3	1	NA
D) POTENTIAL MAINT	1	0	0	0	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	2	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.22

COOK 2

PI EVENTS FOR 88-4

SSF 10/11/88 LER# 31588010 50.72#: POWER: 0
SYSTEM: REACTOR COOLANT SYSTEM
DESC: CABLES FOR THE PZR AND VESSEL VENT VALVES NOT CONFIGURED PER DESIGN. VENTS PURPOSE IS TO MITIGATE POSSIBLE CONDITIONS OF INADEQUATE CORE COOLING, NATURAL CIRCULATION, OR AN INABILITY TO DEPRESSURIZE RCS.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SE 08/14/89 LER# 31689014 50.72#: 16318 POWER: 0
DESC: FAILURE OF A 120 VAC INSTRUMENT BUS CAUSED REACTOR TRIP. PARTIAL LOSS OF CONTROL ROOM INSTRUMENTATION AND FAILURE OF ONE TRAIN OF THE PLANT PROTECTION SYSTEM. (MORNING REPORT ON 08/15/89)

SCRAM 08/14/89 LER# 31689014 50.72#: 16318 POWER: 100
DESC: THE REACTOR TRIPPED DUE TO AN INDICATED LOSS OF VOLTAGE ON A REACTOR COOLANT PUMP. THREE ROD BOTTOM LIGHTS DID NOT FUNCTION. A SILICON CONTROLLED RECTIFIER IN THE UNINTERRUPTABLE POWER SUPPLY STATIC SWITCH FAILED.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.47
SCRAMS < 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	1
SAFETY SYSTEM FAILURES	0	0	1	0	1	0	0	0
FORCED OUTAGE RATE (%)	11	0	0	0	0	0	0	5
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.47
CRITICAL HOURS	1974	2184	532	0	0	395	1863	2114
COLLECTIVE RADIATION EXPOSURE	24	7	109	184	74	95	181	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	2	3	3	2	2	NA
LICENSED OPERATOR	1	0	0	0	0	2	2	NA
OTHER PERSONNEL	4	0	0	1	1	3	2	NA
MAINTENANCE	7	2	3	3	3	8	5	NA
A) MAINT PERSONNEL	2	0	0	1	1	2	0	NA
B) SURV AND TEST	4	1	2	2	2	2	4	NA
C) EQUIPMENT	2	1	1	0	0	4	1	NA
D) POTENTIAL MAINT	2	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	2	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.23

COOPER STATION

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SCRAM 01/25/89 LER# 29889001 50.72#: 14570 POWER: 100
DESC: APRM HIGH TRIP SIGNAL DUE TO A FAILED DISC (DISC CAME LOOSE FROM STEM) ON A MSIV SEATING CAUSING A PRESSURE SPIKE AND HIGH NEUTRON FLUX SIGNAL SCRAM.

SSF 02/16/89 LER# 29889004 50.72#: POWER: 61
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: BOTH DIESEL GENERATORS WERE INOPERABLE AT THE SAME TIME. THE"B"EDG WAS OUT OF SERVICE FOR MAINTENANCE WHEN THE "A" EDG OVERSPEED TRIP VALVE WAS ACCIDENTLY TRIPPED. THIS CONDITION WOULD HAVE PREVENTED THE EDG, WHICH WAS IN STANDBY, FROM STARTING IF NEEDED

SSF 02/17/89 LER# 29889005 50.72#: 14780 POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: THE NRC SAFETY SYSTEM FUNCTIONAL INSPECTION TEAM FOUND THAT DUE TO DESIGN ERRORS, DURING A DESIGN BASIS ACCIDENT THE LOADING ON THE STARTUP AND EMERGENCY TRANSFORMERS BY INITIATION OF ECCS EQUIPMENT WOULD TRIP UNDERVOLTAGE RELAYS DEENERGIZING THE LOADS.

SSF 02/17/89 LER# 29889006 50.72#: 14782 POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE NRC SSFI TEAM FOUND THAT SINCE THE HVAC SYSTEM WAS A NON-ESSENTIAL SYSTEM ITS PROBABLE LOSS DURING CERTAIN DESIGN BASIS ACCIDENTS WOULD RESULT IN LOSS OF ESSENTIAL ELECTRICAL SUPPLY SWITCHGEAR TO ECCS LOADS.

SSF 02/17/89 LER# 29889010 50.72#: 14781 POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE NRC SSFI TEAM FOUND THAT LOSS OF A NONESSENTIAL SERVICE AIR SYSTEM SUPPLY TO THE DIESEL GENERATOR H&V SYSTEM AND DG COOLING WATER BYPASS VALVES COULD CAUSE THE DIESEL GENERATORS TO SHUTDOWN DUE TO ROOM OVERTEMPERATURE.

PI EVENTS FOR 89-2

SSA 05/10/89 LER# 29889016 50.72#: 15592 POWER: 0
DESC: RELAYS NOT LABELED AND A PLASTIC BOOT TO PREVENY A CORE SPRAY ACTUATION WAS PLACED ON THE WRONG RELAY SO THAT WHEN AN INITIATION SIGNAL SIMULATED CORE SPRAY STARTED.

SSA 05/29/89 LER# 29889020 50.72#: 15739 POWER: 0
DESC: PLANT LOST F4160V BUS WHILE PERFORMING ACCEPTANCE TEST OF RELAYS. DIESEL OOS FOR MAINTENANCE.

SSF 06/02/89 LER# 29889021 50.72#: 15789 POWER: 0
SYSTEM: ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC: UNDOCUMENTED WIRING CONFIGURATIONS ASSOCIATED WITH SAFETY RELATED EQUIPMENT DISCOVERD DURING DESIGN CHANGE ACTIVITIES. INSTRUMENTATION FOR TRIPS AND MONITORING: REACTOR WATER LEVEL(SCRAM,PRIMARY AND SECONDARY ISOLATION FUNCTIONS, HPCI, RCIC, SBGTS).

SSF 06/13/89 LER# 29889022 50.72#: POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: BOTH TRAINS OF THE STANDBY GAS TREATMENT SYSTEM COULD BE RENDERED INOPERABLE BY THE FAILURE OF A SINGLE E/P CONVERTER. ALSO, THE SOLENOID PILOT VALVES SUPPLYING THE DIFF. PRESSURE CV'S COULD NOT BE VENTED DUE TO INSTRUMENT AIR CONNECTED TO EXHAUST PORT.

PI EVENTS FOR 89-3

SCRAM 09/28/89 LER# 50.72#: 16726 POWER: 100
DESC: THE ELECTRO HYDRAULIC CONTROL VALVE FAST CLOSED DUE TO A SPURIOUS LOW RESERVOIR LEVEL SIGNAL. THIS CAUSED A REACTOR TRIP.

TABLE 8.23 (CONT.)

COOPER STATION (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.77	.00	.47	.00	.52	.00	.46
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	1	2	2	0	0	2	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	0	4	2	0
FORCED OUTAGE RATE (%)	0	17	0	5	0	12	0	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.77	.00	.47	.00	.52	.00	.00
CRITICAL HOURS	2209	1297	332	2130	2209	1913	512	2164
COLLECTIVE RADIATION EXPOSURE	20	60	149	20	21	28	274	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	4	0	0	4	3	NA
LICENSED OPERATOR	0	1	3	0	0	3	0	NA
OTHER PERSONNEL	0	3	2	1	0	4	0	NA
MAINTENANCE	0	3	9	7	1	5	7	NA
A) MAINT PERSONNEL	0	2	2	0	0	3	4	NA
B) SURV AND TEST	0	1	3	1	0	2	1	NA
C) EQUIPMENT	0	0	4	5	1	0	0	NA
D) POTENTIAL MAINT	0	0	3	6	0	0	2	NA
DESIGN/INSTALLATION/FABRICATION	2	3	1	0	0	6	5	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.24

CRYSTAL RIVER 3

PI EVENTS FOR 88-4

SSA 10/14/88 LER# 30288021 50.72#: 13710 POWER: 0
DESC: ESFAS LOGIC SIGNAL AND INADEQUATE TRAINING ON THE PROCEDURE CAUSED LPIS TO INJECT, HPIS TAGGED OUT.

SSA 10/28/88 LER# 30288024 50.72#: 13838 POWER: 21
DESC: SI STARTED MANUALLY TO MAINTAIN PZR PRESSURE.

SCRAM 10/28/88 LER# 30288024 50.72#: 13838 POWER: 21
DESC: A RECENT MAIN TURBINE GOVERNOR VALVE SETTING CHANGE RESULTED IN AN EXCESSIVE STEAM DEMAND WHEN THE GENERATOR WAS LOADED. THIS DEMAND CAUSED LOW SG PRESSURE AND LED TO A REACTOR TRIP.

PI EVENTS FOR 89-1

SE 01/17/89 LER# 50.72#: POWER: 0
DESC: RCP SHAFT FAILURE. (MORNING REPORT: 01/18/89, RO LETTER SUBMITTED 03/01/89)

SSF 01/31/89 LER# 30289004 50.72#: 14613 POWER: 70
SYSTEM: DC POWER SYSTEM - CLASS 1E
DESC: PERSONNEL ERROR IN OVERFILLING STATION 125 VDC STATION BATTERIES. BATTERIES DECLARED INOPERABLE UPON THE DISCOVERY OF HIGH ELECTROLYTE LEVELS (ABOVE TECH. SPEC. LIMIT). DISCOVERED DURING SURVEILLANCE.

SSF 03/15/89 LER# 30289009 50.72#: 15024 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: CHANGE IN VENDOR GUIDANCE RESULTED IN THE DETERMINATION THAT THE DECAY HEAT REMOVAL PUMPS WERE UNABLE TO PERFORM THEIR SAFETY FUNCTION.

PI EVENTS FOR 89-2

SSA 04/09/89 LER# 30289013 50.72#: 15271 POWER: 0
DESC: DIESEL GENERATORS STARTED WHEN 4160V BUS VOLTAGE DROOPED DOWN TO 3680V DURING START OF BOILER FEED PUMP IN UNIT 1. DIESEL GENERATORS DID NOT LOAD TO THE BUS.

SSA 06/16/89 LER# 30289023 50.72#: 15886 POWER: 12
DESC: TECHNICIAN BUMPED A CARRIER TRIP BUTTON CAUSING LOSS OF OFF-SITE POWER, DIESELS STARTED ON LOSS OF OFF-SITE POWER, 1 HPIS INJECTION VALVE OPENED TO MAINTAIN PRESSURIZER LEVEL.

SSA 06/16/89 LER# 30289023 50.72#: 15886 POWER: 12
DESC: TECHNICIAN BUMPED A CARRIER TRIP BUTTON CAUSING LOSS OF OFF-SITE POWER, DIESELS STARTED ON LOSS OF OFF-SITE POWER, 1 HPIS INJECTION VALVE OPENED TO MAINTAIN PRESSURIZER LEVEL.

SE 06/16/89 LER# 50.72#: 15923 POWER: 0
DESC: LOOP AND CLASS 1E ELECTRIC POWER DISTRIBUTION ANOMALIES.

SCRAM 06/16/89 LER# 30289023 50.72#: 15886 POWER: 12
DESC: TECHNICIAN BUMPED A CARRIER TRIP BUTTON CAUSING LOSS OF OFF-SITE POWER WHICH CAUSED THE REACTOR COOLANT PUMPS TO TRIP ON UNDERVOLTAGE AND REACTOR SCRAM ON LOSS OF REACTOR COOLANT PUMPS.

SSA 06/29/89 LER# 30289025 50.72#: 15986 POWER: 0
DESC: LOST OFFSITE POWER WHEN STARTUP TRANSFORMER BREAKERS OPENED, 'B' EMERGENCY DIESEL HAD TO BE MANUALLY ALIGNED TO SU TRANSFORMER BECAUSE 'B' DIESEL OOS. THE EMERGENCY FEEDWATER PUMP WAS MANUALLY STARTED.

PI EVENTS FOR 89-3

SSF 08/28/89 LER# 50.72#: 16421 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: SHUTDOWN DECAY HEAT REMOVAL VIA CLOSED CYCLE COOLING WAS LOST. TRAIN 'A' DECAY HEAT CLOSED CYCLE COOLING PUMP LOST DUE TO FAULTED STEPDOWN SUPPLY TRANSFORMER. TRAIN 'B' DECAY HEAT REMOVAL RAW WATER PUMP OOS FOR MAINTENANCE.

TABLE 6.24 (CONT.)

CRYSTAL RIVER 3 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.52	.00	.00	.87	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	1	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	5	0	0	0	2	0	4	0
SIGNIFICANT EVENTS	1	1	1	0	0	1	1	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	2	0	1
FORCED OUTAGE RATE (%)	0	5	0	0	2	0	12	45
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.52	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	1913	2183	2208	1153	1016	279	1216
COLLECTIVE RADIATION EXPOSURE	414	16	3	5	39	130	70	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	2	2	7	5	6	NA
LICENSED OPERATOR	1	0	0	1	1	1	2	NA
OTHER PERSONNEL	6	3	0	2	5	0	3	NA
MAINTENANCE	7	9	2	2	7	4	9	NA
A) MAINT PERSONNEL	4	3	0	0	3	1	5	NA
B) SURV AND TEST	3	3	1	2	4	3	1	NA
C) EQUIPMENT	0	1	1	0	0	0	1	NA
D) POTENTIAL MAINT	1	4	1	0	0	0	2	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	3	3	7	5	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	1	NA

TABLE 8.25

DAVIS-BESSE

PI EVENTS FOR 88-4

SCRAM 12/17/88 LER# 34688028 50.72#: 14278 POWER: 28
DESC: MAIN FEEDWATER FLOW OSCILLATIONS CAUSED POWER FLUCTUATIONS AND SCRAM ON INTERMEDIATE HIGH FLUX DUE TO FAILURE TO ESTABLISH HI FLUX TRIP SETPOINTS COMING OFF LOW LEVEL LIMITS AND AN ERROR IN HEAT BALANCE.

PI EVENTS FOR 89-1

SCRAM 01/18/89 LER# 34619003 50.72#: 14527 POWER: 100
DESC: LOGIC DID NOT RESET WHEN TESTING CRD WHICH CAUSED THE FRV TO CLOSE AND TURBINE TRIPPED CAUSING HIGH PRESSURE SCRAM.

PI EVENTS FOR 89-2

SCRAM 05/30/89 LER# 34689005 50.72#: 15750 POWER: 100
DESC: REACTOR SCRAM WHEN THE TURBINE TRIPPED ON LOW CONDENSER VACUUM DUE TO THE LOSS OF 13.8KV BUDS 'F4' CAUSED LOSS OF CIRC WATER PUMPS.

SSF 06/29/89 LER# 34689009 50.72#: 15991 POWER: 100
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: THE TWO TRAINS OF THE HPSI SYSTEM WERE RENDERED INOPERABLE WHEN THE ISOLATION VALVES IN BOTH TRAINS FAILED TO FULLY OPEN IN THE REQUIRED AMOUNT OF TIME IN RESPONSE TO A SAFETY FEATURES ACTUATION SYSTEM SIGNAL.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	2.15	.51	.46	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	1	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	1	1	0	2	0	0	1	0
FORCED OUTAGE RATE (%)	2	0	0	0	15	6	1	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.46	.00	.00	.00	2.15	.51	.46	.00
CRITICAL HOURS	2176	1661	0	0	465	1962	2168	2208
COLLECTIVE RADIATION EXPOSURE	14	26	162	102	17	7	12	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	4	5	3	2	3	NA
LICENSED OPERATOR	0	0	1	0	4	1	0	NA
OTHER PERSONNEL	2	2	4	1	2	0	2	NA
MAINTENANCE	3	4	4	4	4	2	4	NA
A) MAINT PERSONNEL	1	2	3	2	1	0	2	NA
B) SURV AND TEST	1	1	1	3	2	1	2	NA
C) EQUIPMENT	1	0	0	0	1	0	0	NA
D) POTENTIAL MAINT	1	2	0	0	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	4	1	4	1	0	2	NA
EQUIPMENT FAILURE	0	0	0	1	0	1	1	NA

TABLE 8.26

DIABLO CANYON 1

PI EVENTS FOR 88-4

SSF 10/14/88 LER# 27588028 50.72#: POWER: 100
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: MAIN STEAM ISOLATION VALVES DECLARED INOPERABLE BECAUSE OF INADEQUATE ENVIRONMENTAL QUALIFICATION OF SURGE SUPPRESSORS WITH ELECTRICAL CONNECTIONS. BOTH UNITS

PI EVENTS FOR 89-1

SE 01/17/89 LER# 32389001 50.72#: POWER: 0
DESC: UNRECOGNIZED INOPERABILITY OF AUX FEEDWATER SYSTEM DUE TO CLOSURE OF ONE OF TWO REDUNDANT STEAM SUPPLY VALVES TO TURBINE. (SOURCE NOT GIVEN)

SSF 02/24/89 LER# 27589002 50.72#: 14853 POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: FAILURE TO REINSTALL BACKWATER CHECK VALVES IN FUEL OIL TRANSFER PUMP VAULT DRAIN DUE TO INADEQUATE INSTRUCTIONS TO CONTRACTOR PERSONNEL. POTENTIAL FOR EDGS NOT TO PERFORM THEIR SAFETY FUNCTION.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.47	.65	.00	1.03	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	2	0	0	0	0
TOTAL SCRAMS	1	1	0	4	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	1	1	0	0
FORCED OUTAGE RATE (%)	7	4	0	4	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.47	.00	.00	.52	.00	.00	.00	.00
CRITICAL HOURS	2121	1532	0	1942	2209	2160	2183	2208
COLLECTIVE RADIATION EXPOSURE	7	69	154	64	143	3	4	NA
CAUSE CODES:								
ADMINISTRATIVE	7	5	5	3	3	3	0	NA
LICENSED OPERATOR	2	1	1	1	1	0	0	NA
OTHER PERSONNEL	4	4	2	4	3	2	0	NA
MAINTENANCE	13	11	7	6	4	3	0	NA
A) MAINT PERSONNEL	5	2	1	2	2	2	0	NA
B) SURV AND TEST	5	5	4	4	2	1	0	NA
C) EQUIPMENT	5	2	2	2	0	0	0	NA
D) POTENTIAL MAINT	2	4	2	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	[illegible]	3	3	1	0	NA
EQUIPMENT FAILURE	2	0	0	0	0	0	0	NA

TABLE 8.27

DIABLO CANYON 2

PI EVENTS FOR 88-4

SSA 10/10/88 LER# 32388012 50.72#: 13667 POWER: 0
DESC: ELECTRICIAN JUMPERED ACROSS WRONG RELAY CAUSING OPENING OF CIRCUIT BREAKER TO ONE OFFSITE POWER SOURCE. DIESEL 1-3 STARTED AND SUPPLIED ITS BUS.

SE 10/10/88 LER# 50.72#: POWER: 0
DESC: FAILURE OF STUDS ON ANCHOR DARLING CHECK VALVES. (MORNING REPORT: 10/17/88)

SSF 10/14/88 LER# 27588028 50.72#: POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: MAIN STEAM ISOLATION VALVES DECLARED INOPERABLE BECAUSE OF INADEQUATE ENVIRONMENTAL QUALIFICATION OF SURGE SUPPRESSORS WITH ELECTRICAL CONNECTIONS. BOTH UNITS

PI EVENTS FOR 89-1

SE 01/17/89 LER# 32389001 50.72#: POWER: 100
DESC: UNRECOGNIZED INOPERABILITY OF AUX FEEDWATER SYSTEM DUE TO CLOSURE OF ONE OF TWO REDUNDANT STEAM SUPPLY VALVES TO TURBINE. (SOURCE NOT GIVEN)

SSF 01/17/89 LER# 32389001 50.72#: POWER: 100
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: WITH AFW PUMP 2-3 INOPERABLE FOR VALVE REPAIR, AFW PUMP 2-1 WAS INADVERTENTLY RENDERED INOPERABLE FOR MAINTENANCE. THE AFW SYSTEM DID NOT MEET DESIGN BASIS REQUIREMENTS WHILE BOTH AFW PUMPS WERE INOPERABLE.

SSF 02/24/89 LER# 27589002 50.72#: 14853 POWER: UNK
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: FAILURE TO REINSTALL BACKWATER CHECK VALVES IN FUEL OIL TRANSFER PUMP VAULT DRAIN DUE TO INADEQUATE INSTRUCTIONS TO CONTRACTOR PERSONNEL. POTENTIAL FOR EDGS NOT TO PERFORM THEIR SAFETY FUNCTION.

PI EVENTS FOR 89-2

SCRAM 04/16/89 LER# 32389005 50.72#: 15357 POWER: 50
DESC: THE GENERATOR BACKUP RELAY ACTUATED WHICH TRIPPED THE GENERATOR OUTPUT. A CIRCULATOR WATER PUMP FAILED TO START. CONDENSER VACUUM WAS LOST. THE REACTOR TRIPPED ON LOW SG LEVEL.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.47	.00	.79	.00	.00	.51	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	2	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	1	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	1	2	0	0
FORCED OUTAGE RATE (%)	7	3	0	33	0	0	4	9
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.49	.47	.00	1.59	.00	.00	.51	.98
CRITICAL HOURS	2058	2117	2183	1258	632	2160	1946	2035
COLLECTIVE RADIATION EXPOSURE	7	69	154	64	143	3	4	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	3	1	9	4	1	NA
LICENSED OPERATOR	1	2	0	0	1	0	1	NA
OTHER PERSONNEL	3	0	2	1	6	0	0	NA
MAINTENANCE	5	5	6	3	12	3	2	NA
A) MAINT PERSONNEL	3	1	1	1	7	2	1	NA
B) SURV AND TEST	1	2	3	1	5	1	1	NA
C) EQUIPMENT	1	2	2	0	1	0	0	NA
D) POTENTIAL MAINT	1	2	2	1	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	2	1	2	6	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.28

DRESDEN 2

PI EVENTS FOR 88-4

SE 11/15/88 LER# 23788022 50.72#: POWER: 0
DESC: DEGRADATION OF SAFETY-RELATED EQUIPMENT (STM SUPPLY VALVES TO HPCI & ISOLATION CONDENSER) & ELECTRICAL WIRING CAUSED BY HIGH TEMP IN UPPER REGION OF DRYWELL. VENTILATION PORTS LEFT IN CLOSED POSITION 04/19/87, PROCS MISINTERPRETED. (MR: 11/15/88)

PI EVENTS FOR 89-1

SE 01/30/89 LER# 50.72#: 14597 POWER: 0
DESC: MISSING BALLS IN 2 CRD ACCUMULATOR CHARGING WATER CHECK VALVES.

SSA 02/05/89 LER# 23789005 50.72#: 14657 POWER: 0
DESC: FALSE HIGH DRYWELL PRESSURE FROM TEST EQUIPMENT DUE TO A LEAKING INLET VALVE CAUSED LPCI AND LPCS INJECTION.

SSF 02/21/89 LER# 23789013 50.72#: 14814 POWER: 16
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: POSSIBLE SINGLE FAILURE LOSS OF BOTH STANDBY GAS TREATMENT TRAINS DUE TO A DESIGN DEFICIENCY.

SCRAM 03/04/89 LER# 23789012 50.72#: 14926 POWER: 92
DESC: TECHNICIAN TRIPPED WRONG BREAKER CAUSING RFP TO TRIP CAUSING LOW REACTOR LEVEL SCRAM.

SSF 03/14/89 LER# 23789011 50.72#: 15016 POWER: 99
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEMS WAS DECLARED INOPERABLE. THE HPCI GLAND SEAL LEAKOFF PUMP FAILED DUE TO DEGRADED MOTOR START CIRCUIT CAPACITOR. POTENTIAL FOR CONDENSATE OVERFLOW INTO HPCI ROOM RESULTING IN HPCI ISOLATION.

PI EVENTS FOR 89-2

SSF 04/07/89 LER# 23789014 50.72#: 15245 POWER: 95
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM MINIMUM FLOW VALVE FAILED TO OPEN DURING SURVEILLANCE TEST. THE VALVE BREAKER TRIPPED DUE TO A THERMAL OVERLOAD CONDITION CAUSED BY MOISTURE INTRUSION AT THE MOTOR WINDINGS. MOISTURE FROM CEILING/FOUNDATION. HPCI DECLARED INOPERABLE.

PI EVENTS FOR 89-3

SCRAM 07/12/89 LER# 23789019 50.72#: 16072 POWER: 63
DESC: A SPURIOUS HIGH STEAMLINE TEMPERATURE SIGNAL DURING A SURVEILLANCE TEST CAUSED A REACTOR TRIP.

SSF 08/09/89 LER# 50.72#: 16277 POWER: 0
SYSTEM: ISOLATION CONDENSER SYSTEM
DESC: THE ISO CONDENSER WAS RENDERED INOPERABLE AS A RESULT OF A GROUP V ISOLATION VALVE ESF ACTUATION. A WIRE WAS BROKEN WHILE TAKING THE MSIV'S OUT OF SERVICE.

SSF 08/27/89 LER# 23789022 50.72#: 16418 POWER: 93
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO BROKEN BELTS FOUND ON THE HPCI ROOM COOLER BLOWER WHILE INVESTIGATING HIGH HPCI ROOM AMBIENT TEMPERATURE. CAUSE OF HIGH ROOM TEMP. WAS FEEDWATER LEAKING PAST HPCI DISCHARGE VALVES. LPCI ALSO INOPERABLE.

TABLE 8.28 (CONT.)

DRESDEN 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	.00	1.08	.00	.46
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	1	0	1	1	0	0
SAFETY SYSTEM FAILURES	2	0	4	2	0	2	1	2
FORCED OUTAGE RATE (%)	3	0	0	0	0	9	0	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.53	.00	.00	.00	.00	.46
CRITICAL HOURS	2183	2184	1882	2208	700	929	2183	2177
COLLECTIVE RADIATION EXPOSURE	37	56	253	46	343	370	46	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	5	0	3	7	2	NA
LICENSED OPERATOR	1	0	1	1	1	2	0	NA
OTHER PERSONNEL	3	1	3	1	1	2	1	NA
MAINTENANCE	5	4	7	3	7	11	3	NA
A) MAINT PERSONNEL	0	1	4	0	4	4	0	NA
B) SURV AND TEST	4	3	2	2	1	3	1	NA
C) EQUIPMENT	1	0	1	2	3	2	1	NA
D) POTENTIAL MAINT	1	1	2	2	3	3	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	1	0	1	3	0	NA
EQUIPMENT FAILURE	0	0	0	1	0	2	0	NA

TABLE 8.29

DRESDEN 3

PI EVENTS FOR 88-4

SCRAM 11/27/88 LER# 24988017 50.72#: 14091 POWER: 17
DESC: THE MAIN TURBINE TRIPPED DUE TO HIGH VIBRATION. MSIV'S CLOSED DUE TO A VIBRATION INDUCED SPURIOUS LOW STEAM LINE SIGNAL. THIS CAUSED A REACTOR TRIP.

PI EVENTS FOR 89-1

SSF 02/21/89 LER# 23789013 50.72#: 14814 POWER: 94
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: POSSIBLE SINGLE FAILURE LOSS OF BOTH STANDBY GAS TREATMENT TRAINS DUE TO A DESIGN DEFICIENCY.

SSA 03/25/89 LER# 24989001 50.72#: 15116 POWER: 89
DESC: REACTOR SCRAM CAUSED LOSS OF OFFSITE POWER. ALL DIESELS STARTED AND LOADED THE SAFETY BUSES.

SSA 03/25/89 LER# 24989001 50.72#: 15116 POWER: 89
DESC: REACTOR SCRAM CAUSED LOSS OF OFFSITE POWER, HPCI MANUALLY STARTED TO RESTORE REACTOR LEVEL AFTER SCRAM.

SCRAM 03/25/89 LER# 24989001 50.72#: 15116 POWER: 89
DESC: AUX TRANSFORMER TRIPPED, POWER SUPPLY SHIFTED, MFP TRIPPED, STANDBY PUMP STARTED AND RAISED LEVEL TO HIGH TURBINE TRIP SETPOINT CAUSING SCRAM ON TURBINE TRIP.

SCRAM 03/30/89 LER# 24989002 50.72#: 15167 POWER: 70
DESC: SUPPLY BREAKER TO 'B' RPS BUS OPENED CONCURRENTLY WITH THE LOCKUP OF THE '3A' MAIN STEAM RADIATION MONITOR CAUSING A SCRAM.

PI EVENTS FOR 89-2

SSF 04/12/89 LER# 24989005 50.72#: 15303 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO AN EQ PROBLEM ON THE TURBINE STEAM SUPPLY ISOLATION VALVE MOTOR TERMINAL BOX. SYSTEM WAS DECLARED INOPERABLE DUE TO THE QUESTIONABLE OPERABILITY STATUS OF THE VALVE.

SCRAM 04/15/89 LER# 24989006 50.72#: 15342 POWER: 92
DESC: A REACTOR TRIP OCCURRED AFTER ALL MAIN STEAM STOP VALVES WENT CLOSED DURING TESTING.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.52	.98	.65	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	2	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	2	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	7	4	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	1.47	1.29	.00
CRITICAL HOURS	2209	2066	133	2208	1939	2040	1548	2208
COLLECTIVE RADIATION EXPOSURE	37	56	253	46	343	370	46	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	10	0	1	1	5	NA
LICENSED OPERATOR	0	0	0	0	0	2	0	NA
OTHER PERSONNEL	1	1	3	1	0	0	2	NA
MAINTENANCE	1	4	12	1	2	2	4	NA
A) MAINT PERSONNEL	0	1	7	0	1	1	3	NA
B) SURV AND TEST	1	2	4	1	0	0	1	NA
C) EQUIPMENT	0	1	5	0	0	1	0	NA
D) POTENTIAL MAINT	0	0	3	0	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	2	0	0	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.30

DUANE ARNOLD

PI EVENTS FOR 88-4

SSA 10/17/88 LER# 33188016 50.72#: 13747 POWER: 0
DESC: LOW VOLTS ON 1A3 BUS - "A" DIESEL LOCKED-OUT FOR MAINTENANCE.

SSA 10/26/88 LER# 33188013 50.72#: 13817 POWER: 0
DESC: MOISTURE IN RX LEVEL SWITCHES CAUSED LOW LEVEL SIGNAL AND HPCS START.

SE 11/21/88 LER# 50.72#: POWER: 0
DESC: OPERATING ENVIRONMENT MORE SEVERE THAN DESIGN. (MORNING REPORT: 11/25/88)

PI EVENTS FOR 89-1

SSF 01/26/89 LER# 33189002 50.72#: 14575 POWER: 90
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE AFTER STEAM ISOLATION VALVE WENT CLOSED DURING SURVEILLANCE TEST (TWICE). HIGH STEAM FLOW WAS SENSED BUT DID NOT EXIST. CAUSED BY ELECTRONIC FAILURE IN THE TURBINE GOVERNOR.

SSA 02/02/89 LER# 33189003 50.72#: 14627 POWER: 100
DESC: HPCI AND RCIC AUTO STARTED WHEN MSIV SHUT DUE TO ADDING HYDROGEN TO THE RCS(CAUSED HIGH RADIATION) AND CAUSED LOW REACTOR LEVEL DUE TO SHRINK - WHEN RELIEF VALVE OPENED, SWELLED TO HIGH LEVEL, TRIPPED HPCI AND RCIC - HPCI USED MANUALLY TO CONTROL LEVEL.

SCRAM 02/02/89 LER# 33189003 50.72#: 14627 POWER: 100
DESC: DURING A TEST - TOO MUCH HYDROGEN WAS ADDED CAUSING HIGH MAINSTEAM LINE RADIATION AND MSIV CLOSURE - REACTOR SCRAM ON MSIV CLOSURE.

SSF 02/24/89 LER# 33189007 50.72#: 14847 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: WITH RCIC DECLARED INOPERABLE (RE 14846), HPCI DECLARED INOPERABLE AFTER TURBINE OVERSPEED AND STEAM LINE ISOLATED DURING PERFORMANCE OF SURVEILLANCE. THE TURBINE GOVERNOR CONTROL WOULD NOT CONTROL STEAM FLOW ON TURBINE STARTUP. CAUSE UNKNOWN.

SSF /24/89 LER# 33189006 50.72#: 14846 POWER: 100
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: RCIC DECLARED INOPERABLE AFTER SYSTEM ISOLATED ON SPURIOUS STEAM LEAK. TC WIRE FOUND NEARLY BROKEN AT TEMPERATURE DETECTION MODULE TERMINATION AND LOOSE CONNECTIONS WERE ALSO TIGHTENED.

SSF 03/02/89 LER# 33189006 50.72#: 14908 POWER: 0
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI SYSTEM EXPERIENCED TWO ESF ISOLATIONS ON HIGH AMBIENT TEMPERATURE. HPCI WAS DECLARED INOPERABLE. THE CAUSE WAS FOUND TO BE A POOR CONNECTION OF TEST SWITCH INTERNAL CONTACTS BETWEEN THE THERMOCOUPLE AND THE TEMPERATURE DETECTION MODULE.

SSA 03/05/89 LER# 33189008 50.72#: 14937 POWER: 100
DESC: (SPECIAL TEST PROCEDURE 156) CAUSED MSIV CLOSURE SCRAM. RCIC AND HPCI STARTED ON LOW RX LEVEL.

SCRAM 03/05/89 LER# 33189008 50.72#: 14937 POWER: 100
DESC: (SPECIAL TEST PROCEDURE 156) RESULTED IN A MSIV CLOSURE CAUSED REACTOR SCRAM WHEN INCREASING THE HIGH RADIATION SETPOINT.

PI EVENTS FOR 89-2

SCRAM 06/12/89 LER# 33189009 50.72#: 15841 POWER: 100
DESC: SPURIOUS APRM UPSCALE TRIP CAUSED A REACTOR SCRAM DUE TO HAND HELD RADIOS BEING KEYED IN THE VICINITY OF THE APRM FLOW BIASING TRANSMITTERS.

TABLE 8.30 (CONT.)

DUANE ARNOLD (CONT.)

PI EVENTS FOR 89-3

SSA 08/26/89 LER# 33189011 50.72#: 16415 POWER: 0
DESC: HIGH PRESSURE COOLANT INJECTION AND REACTOR CORE ISOLATION COOLING WERE MANUALLY STARTED TO CONTROL REACTOR VESSEL WATER LEVEL.

SSA 08/26/89 LER# 33189011 50.72#: 16415 POWER: 100
DESC: SINCE THE AUXILIARY TRANSFORMER CIRCUIT BREAKER FAILED TO OPEN ESSENTIAL AND NONESSENTIAL POWER BUSES WERE LOST RESULTING IN ESF ACTUATIONS.

SCRAM 08/26/89 LER# 33189011 50.72#: 16415 POWER: 100
DESC: DURING A WEEKLY POWER LOAD UNBALANCE RELAY TEST A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP. THE AUXILIARY TRANSFORMER CIRCUIT BREAKER FAILED TO OPEN.

SSF 09/20/89 LER# 50.72#: 16646 POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: THE ABILITY OF THE SECONDARY CONTAINMENT SYSTEM TO PERFORM ITS DESIGN FUNCTION IS IN QUESTION DUE TO AN OPENING IN A VENTILATION SHAFT TO THE STANDBY GAS TREATMENT SYSTEM. LAST SECONDARY CONTAINMENT TEST WAS CONDUCTED 12/88.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.48	.00	1.15	.48	.56
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	2	1	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	2	2	0	2
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	2	2	0	0	4	0	1
FORCED OUTAGE RATE (%)	19	0	0	3	100	23	5	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.55	.00	.00	.48	5.80	1.72	.95	.00
CRITICAL HOURS	1823	2184	2162	2091	173	1741	2103	1785
COLLECTIVE RADIATION EXPOSURE	37	22	17	50	526	45	28	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	2	3	2	3	0	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	1	0	1	0	2	2	1	NA
MAINTENANCE	3	1	3	3	1	6	1	NA
A) MAINT PERSONNEL	2	0	3	1	0	2	1	NA
B) SURV AND TEST	0	0	2	1	1	2	0	NA
C) EQUIPMENT	1	1	0	1	0	1	0	NA
D) POTENTIAL MAINT	0	1	0	2	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	4	5	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.31

FARLEY 1

PI EVENTS FOR 88-4

SCRAM 10/21/88 LER# 34888021 50.72#: 13782 POWER: 100
DESC: LOSS OF DIGITAL EHC DUE TO A PERSONNEL ERROR DURING TESTING CAUSED TURBINE TRIP AND REACTOR TRIP.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.45	.00	.00	.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	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	0	0	0	0
FORCED OUTAGE RATE (%)	11	0	2	0	1	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	2007	2041	982	2208	2198	2160	2183	2016
COLLECTIVE RADIATION EXPOSURE	205	64	192	10	11	34	127	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	4	0	1	0	1	NA
LICENSED OPERATOR	0	2	0	0	0	0	0	NA
OTHER PERSONNEL	2	2	1	0	4	0	2	NA
MAINTENANCE	3	4	4	0	6	0	3	NA
A) MAINT PERSONNEL	3	2	0	0	3	0	2	NA
B) SURV AND TEST	0	0	1	0	1	0	1	NA
C) EQUIPMENT	0	2	3	0	2	0	2	NA
D) POTENTIAL MAINT	1	1	3	0	3	0	1	NA
DESIGN/INSTALLATION/FABRICATION	3	1	2	1	0	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.32

FARLEY 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSA 04/29/89 LER# 36489005 50.72#: 15479 POWER: 0
DESC: INSTRUMENTATION AND CONTROL PERSONNEL PROVIDED THE OPERATORS WITH THE WRONG PROCEDURE CAUSING A SAFETY INJECTION ACTUATION DURING TESTING.

SCRAM 05/22/89 LER# 36489007 50.72#: 15676 POWER: 35
DESC: LOOSE CABLE TO MFP TRIP THROTTLE AND GOVERNOR VALVES WAS BUMPED BY PERSONNEL CLEANING CAUSING MFP TO TRIP AND A REACTOR SCRAM ON LOW SG LEVEL.

SCRAM 05/27/89 LER# 36489008 50.72#: 15727 POWER: 88
DESC: EXCITATION TO MAIN GENERATOR LOST DUE TO A FAILED BEARING ON THE EXCITER CAUSING TURBINE TRIP REACTOR SCRAM.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	2.09	.00
SCRAMS < 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	2	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	2	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	0	0	0	0
FORCED OUTAGE RATE (%)	67	0	0	0	0	0	13	7
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	2.91	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	344	2184	2183	2208	2209	1995	959	2082
COLLECTIVE RADIATION EXPOSURE	205	64	192	10	11	34	127	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	2	0	0	1	5	NA
LICENSED OPERATOR	1	2	0	0	0	0	0	NA
OTHER PERSONNEL	3	1	0	0	2	0	3	NA
MAINTENANCE	7	2	2	0	3	1	6	NA
A) MAINT PERSONNEL	4	1	0	0	1	0	4	NA
B) SURV AND TEST	2	1	1	0	0	1	1	NA
C) EQUIPMENT	3	0	1	0	1	0	3	NA
D) POTENTIAL MAINT	2	0	1	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	4	0	1	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.33

FERMI 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SE 01/04/89 LER# 34189002 50.72#: 14402 POWER: 0
DESC: ATWS RECIRCULATION PUMP TRIP BREAKER FAILURE.

SSF 01/04/89 LER# 34189002 50.72#: 14402 POWER: 0
SYSTEM: ANTICIPATED TRANSIENT WITHOUT SCRAM SYSTEM
DESC: "B" MG SET FIELD BREAKER FAILED TO OPEN UPON SHUTDOWN OF THE "B" RECIRC PUMP. THE FAILURE OF THE BREAKER TO TRIP WOULD HAVE PREVENTED ATWS IF PLANT HAD BEEN OPERATING. BOTH BREAKER'S TRIP COILS BURNED.

SSA 01/10/89 LER# 34189003 50.72#: 14456 POWER: 0
DESC: LOST DIVISION 101 ESF BUS DUE TO IMPROPERLY INSTALLED EPOXY SEAL IN MAY OF 1988 CAUSED DIESEL TO START AND LOAD BUSES 64B AND 64C.

SSF 01/18/89 LER# 34189004 50.72#: 14528 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE WHEN THE STEAM LINE FLOW ISOLATION CHECK FAILED TEST (NON-CONSERVATIVE). CAUSED BY STUCK INDICATOR ON THE OUTPUT OF D/P TRANSMITTER AND ERROR IN HEAD CORRECTION FACTOR.

SSF 02/08/89 LER# 34189005 50.72#: 14691 POWER: 100
SYSTEM: REACTOR BUILDING
DESC: TESTING SHOWED THAT IF A SEISMIC EVENT CAUSED A LOSS OF REACTOR BUILDING RAILROAD DOOR SEAL AIR SUPPLY, THE REQUIRED SECONDARY CONTAINMENT VACUUM COULD NOT BE MAINTAINED.

SCRAM 02/26/89 LER# 34189006 50.72#: 14863 POWER: 100
DESC: TURBINE TRIP WHEN CONDUCTING TURBINE OVERSPEED TRIP TESTING CAUSED A REACTOR TRIP WHEN THE NUCLEAR SUPERVISING OPERATOR PRESSED THE OVERSPEED RESET OUT OF SEQUENCE.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 08/20/89 LER# 34189019 50.72#: 16368 POWER: 96
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH OF THE CREVS TRAINS DECLARED INOPERABLE AS A RESULT OF A RECIRC FAN WITH A SEIZED BEARING AND BROKEN DRIVE BELTS. BOTH TRAINS WERE INOPERABLE AS THE FILTER TRAIN HOUSING COMMON TO BOTH TRAINS HAD TO BE BREACHED TO REPAIR THE FAN, ENTERED TS 3.0.3.

SSF 09/05/89 LER# 50.72#: 16505 POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: PRIMARY CONTAINMENT INTEGRITY IS IN QUESTION DUE TO FAILURE OF THE MSIVS TO PASS THE COMBINED LLRT (>100 SCFH).

SSF 09/21/89 LER# 50.72#: 16665 POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: PRIMARY CONTAINMENT INTEGRITY IS IN QUESTION DUE TO COMBINED LOCAL LEAK RATE TESTS EXCEEDING THE TECHNICAL SPECIFICATION WATER AND AIR LEAKAGE REQUIREMENTS.

SSA 09/24/89 LER# 34189023 50.72#: 16697 POWER: 0
DESC: A SYSTEM MAINTENANCE WORKER PULLED A PROTECTIVE COIL TRIPPING RELAY WITHOUT CHECKING THE PRINTS WHILE FOLLOWING A GENERIC PROCEDURE CAUSING A LOSS OF POWER TO TWO ESF BUSES AND GROUPS 2, 10, 12, 15, 16, 17, AND 18 ISOLATION SIGNALS.

TABLE 8.3[illegible] (CONT.)

FERMI 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.50	.88	.80	1.01	.00	.53	.00	.00
SCRAMS < 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	1	1	2	1	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	2	0	0	1	0	1
SIGNIFICANT EVENTS	0	0	1	1	0	1	0	0
SAFETY SYSTEM FAILURES	1	4	1	3	0	3	0	3
FORCED OUTAGE RATE (%)	NA	2	0	61	8	28	0	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	.00	.00	3.02	.00	.53	.00	.00
CRITICAL HOURS	1986	1134	1247	994	1950	1870	2183	1488
COLLECTIVE RADIATION EXPOSURE	10	38	32	18	15	11	15	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	2	1	1	2	3	NA
LICENSED OPERATOR	0	6	1	0	2	1	0	NA
OTHER PERSONNEL	3	4	2	6	1	2	1	NA
MAINTENANCE	5	11	8	10	3	7	4	NA
A) MAINT PERSONNEL	1	6	1	3	0	2	1	NA
B) SURV AND TEST	3	5	3	3	2	3	3	NA
C) EQUIPMENT	2	2	4	2	2	0	0	NA
D) POTENTIAL MAINT	1	2	4	3	2	3	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	2	2	0	2	2	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	1	NA

TABLE 8.34

FITZPATRICK

PI EVENTS FOR 88-4

SE 10/24/88 LER# 33388009 50.72#: 13804 POWER: 0
DESC: AREA COOLERS REQUIRED FOR ECCS OPERABILITY INOPERABLE BECAUSE OF SILT IMPEDING COOLING WATER FLOW.

SSF 10/24/88 LER# 33388009 50.72#: 13804 POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: PRESS. AND TEMP. MEASUREMENTS OF THE COOLING WATER SUPPLY TO ROOM COOLERS IN RX BUILDING CRESCENT AREA DELTA PRESS. VALUES OUTSIDE OF DESIGN SPECS. PROCEDURE ERROR.

SSA 10/31/88 LER# 33388011 50.72#: 13863 POWER: 0
DESC: HIGH WINDS CAUSED A LOSS OF OFFSITE POWER, DIESEL STARTED AND REENERGIZED ELECTRICAL BUSES.

SSF 11/17/88 LER# 33388013 50.72#: POWER: 0
SYSTEM: LOW PRESSURE COOLANT INJECTION SYSTEM
DESC: POTENTIAL INOPERABILITY OF CONTAINMENT SPRAY VALVES OF LPCI DUE TO MISINTERPRETATION OF PURCHASE SPECS. PRESSURIZED FLUID BETWEEN DISCS OF DOUBLE DISC GATE VALVES RESULTED IN D/P GREATER THAN DESIGN.

SSF 12/05/88 LER# 33388014 50.72#: POWER: 0
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: FAILURE OF A CIRCUIT BREAKER TO TRIP PROMPTED AN INVESTIGATION WHICH RESULTED IN THE DISCOVERY OF MISALIGNMENT INTERNAL TO BREAKER LINKAGE WHICH RESULTED FROM PROCEDURE ERROR. OTHER BREAKERS ARE SUSCEPTIBLE TO SAME PROBLEM.

PI EVENTS FOR 89-1

SSF 02/28/89 LER# 33389001 50.72#: 14879 POWER: 100
SYSTEM: LOW PRESSURE COOLANT INJECTION SYSTEM
DESC: LOOSE TERMINAL BOX DISCOVERED ON A LPCI/RHR PUMP MOTOR (ONLY ONE BOLT HOLDING BOX ON MOTOR). ADDITIONAL INSPECTION REVEALED SAME PROBLEM ON ALL PUMP MOTORS IN THE LPCI/RHR AND LPCS SYSTEMS. CAUSED BY AGE HARDENING OF GASKET OR SHALLOW THREAD ENGAGEMENT.

SSF 02/28/89 LER# 33389001 50.72#: 14879 POWER: 100
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: LOOSE TERMINAL BOX DISCOVERED ON A LPCI/RHR PUMP MOTOR (ONLY ONE BOLT HOLDING BOX ON MOTOR). ADDITIONAL INSPECTION REVEALED SAME PROBLEM ON ALL PUMP MOTORS IN THE LPCI/RHR AND LPCS SYSTEMS. CAUSED BY AGE HARDENING OF GASKET OR SHALLOW THREAD ENGAGEMENT.

SSF 03/02/89 LER# 33389002 50.72#: 14900 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI WAS DECLARED INOPERABLE BY T.S. WHEN TURBINE STOP VALVE FAILED TO OPEN WITHIN THE IN-SERVICE INSPECTION REQUIRED TIME. AFTER DISCUSSION WITH VENDORS THE STROKE TIME WAS INCREASED AND THE VALVE OPENING TIME WAS ACCEPTED.

SSF 03/09/89 LER# 33389004 50.72#: POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: TEMPERATURE CONTROL VALVES FOR CW TO THE VENTILATION AND COOLING OF ELECTRICAL AREAS INCLUDING SAFETY AND NON-SAFETY RELATED EQUIPMENT WOULD CLOSE ON LOSS OF NON-SAFETY RELATED DESIGN INSTR. AIR. INCORRECT VALVES PURCHASED DURING ORIGINAL CONSTRUCTION.

PI EVENTS FOR 89-2

SSF 04/12/89 LER# 33389005 50.72#: 15300 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN A GROUND WAS DISCOVERED. GROUND WAS FOUND IN THE HPCI TURBINE GOVERNOR ACTUATOR.

TABLE 8.34 (CONT.)

FITZPATRICK (CONT.)

PI EVENTS FOR 89-2 (CONT.)

SSF 04/19/89 LER# 33389006 50.72#: 15376 POWER: 100
SYSTEM: STANDBY LIQUID CONTROL SYSTEM
DESC: BOTH TRAINS OF THE STANDBY LIQUID CONTROL SYSTEM WERE RENDERED INOPERABLE. 'B' TRAIN WAS INOP. DUE TO A SLOW LEAK IN THE ACCUMULATOR CHARGING CONNECTION, 'A' TRAIN WAS INOP. WHEN ITS CHARGING CONNECTION WAS BROKEN DURING CONNECTION OF A PRESSURE GAUGE.

SSF 05/17/89 LER# 33389008 50.72#: 15630 POWER: 100
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: THE PRIMARY CONTAINMENT ISOLATION SYSTEM WAS DECLARED INOPERABLE WHEN THE INSTALLED TIME DELAY RELAYS IN THE HPCI AND RCIC LEAK DETECTION SYSTEM WERE FOUND TO ACTUATE IN 15 MINUTES. OUTSIDE DB LIMITS. TDRS HAD NEVER BEEN TESTED.

PI EVENTS FOR 89-3

SSF 07/14/89 LER# 33389012 50.72#: POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: ELECTRICAL POWER TO THE EMERGENCY BUS AND ECCS MAY BE LOST IF A THREE PHASE BOLTED BUS FAULT OCCURRED DURING PERFORMANCE OF A MONTHLY ONE-HOUR FULL LOAD EDG TEST DUE TO CURRENT EXCEEDING THE MOMENTARY DUTY RATINGS FOR CERTAIN 4160 V CB'S BY 23-27%.

SSF /10/89 LER# 50.72#: 16292 POWER: 100
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: BOTH TRAINS OF THE STANDBY GAS TREATMENT SYSTEM DECLARED INOPERABLE DUE TO PROBLEMS INVOLVING THE ELAPSED TIME METERS.

SSF 08/17/89 LER# 33389014 50.72#: 16337 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI SYSTEM DECLARED INOPERABLE DUE TO WATER IN THE LUBE OIL SYSTEM. CAUSED BY STEAM LEAKING BY CLOSED ISOLATION VALVE OVER A PERIOD OF TIME; STEAM CONDENSES IN THE TURBINE CASING AND ACCUMULATED WATER ENTERS LUBE OIL SYSTEM VIA SEALS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.93	.00	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	0	2	1	1	3	4	3	3
FORCED OUTAGE RATE (%)	3	0	0	0	42	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.47	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	2149	1802	2183	1386	690	2160	2183	1854
COLLECTIVE RADIATION EXPOSURE	53	139	87	224	335	58	52	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	1	0	4	0	2	NA
LICENSED OPERATOR	1	0	0	0	0	1	0	NA
OTHER PERSONNEL	2	1	0	1	0	0	3	NA
MAINTENANCE	5	2	3	2	3	2	5	NA
A) MAINT PERSONNEL	1	1	0	1	2	0	1	NA
B) SURV AND TEST	3	1	1	0	2	1	3	NA
C) EQUIPMENT	1	0	2	2	0	1	2	NA
D) POTENTIAL MAINT	1	0	2	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	4	2	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.35

FORT CALHOUN

PI EVENTS FOR 88-4

SSA 10/03/88 LER# 28588024 50.72#: 13609 POWER: 0
DESC: MOMENTARY LOW VOLTAGE CONDITION ON 1A4 4160V SAFEGUARDS BUS WHEN EQUIPMENT OPERATOR OPENED SWITCHGEAR CABINETS AND A DIESEL START OCCURRED.

SSF 10/20/88 LER# 28588028 50.72#: POWER: 0
SYSTEM: ESSENTIAL AIR SYSTEM
DESC: CHECK VALVE ON AIR ACCUMULATOR FOR STEAM ISOLATION VALVE WAS LEAKING PAST ITS SEAT DUE TO FORIEGN MATERIAL INTRODUCED INTO THE AIR SYSTEM BY TEST EQUIPMENT. SAFETY FUNCTION OF ACCUMULATOR RENDERED INOPERABLE. POTENTIAL PATH FROM S/G TO ATMOSPHERE.

SSF 11/01/88 LER# 28588032 50.72#: 13877 POWER: 0
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: RECIRC FLOW CAPABILITIES ASSOCIATED WITH SAFETY INJECTION WERE DISCOVERED TO BE INADEQUATE. FLOW IS RESTRICTED BY TWO VALVES LOCATED IN RECIRC PIPING.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSF 06/30/89 LER# 28589017 50.72#: POWER: 10
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: CHECK VALVE FAILED IN 'A' TRAIN & EXCESSIVE LEAKAGE OF 'C' AND 'D' TRAIN CHECK VALVES EXISTED WHICH COULD HAVE RENDERED THE RAW WATER SYSTEM INOPERABLE DURING A DESIGN BASIS FAILURE OF A SINGLE DC BUS CAUSING IMMEDIATE OPENING OF 2 DISCHARGE VALVES.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	1	2	0	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	9	5
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.47
CRITICAL HOURS	2209	2184	2183	2143	0	1479	2022	2107
COLLECTIVE RADIATION EXPOSURE	21	20	17	30	213	48	16	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	2	3	5	5	5	NA
LICENSED OPERATOR	1	0	0	0	0	0	1	NA
OTHER PERSONNEL	4	4	3	2	7	2	1	NA
MAINTENANCE	5	5	6	5	8	7	6	NA
A) MAINT PERSONNEL	1	2	2	1	3	0	3	NA
B) SURV AND TEST	4	4	2	1	3	7	2	NA
C) EQUIPMENT	0	1	0	1	1	0	0	NA
D) POTENTIAL MAINT	0	0	3	2	2	0	2	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	3	4	2	4	NA
EQUIPMENT FAILURE	0	0	1	1	0	0	0	NA

TABLE 8.36

FORT ST. VRAIN

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 03/17/89 LER# 26789003 50.72#: 15039 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: THE EMER ON-SITE DG'S MAY NOT HAVE BEEN ABLE TO OPERATE TO DESIGN RQMT'S DUE TO DISLODGING OF 8 OF 90 UNROLLED CYL HEAD CW FLOW DIRECTORS. THE UNROLLED PARTS RESULTED FROM LOCAL VENDOR REFURBISHMENT USING MANUF. O&M, WHICH CALLED FOR PRESSING ONLY.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 08/27/89 LER# 26789018 50.72#: 16420 POWER: 0
SYSTEM: STEAM GENERATING SYSTEM
DESC: CRACK INDICATIONS WERE DISCOVERED IN MAIN STEAM RINGHEADERS IN 8 OF 12 STEAM GENERATOR MODULES. CONDITION COULD CONCEIVABLY HAVE IMPARED THE SAFE SHUTDOWN COOLING CAPABILITY OF FORT ST. VRAIN.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	2.02	.00	.65	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	0	1	0	1
FORCED OUTAGE RATE (%)	90	4	42	0	0	100	29	48
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	2.02	.93	1.31	.00	.00	.00	1.52	.86
CRITICAL HOURS	496	2149	1530	119	0	193	1971	1168
COLLECTIVE RADIATION EXPOSURE	0	0	0	0	0	1	1	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
A) MAINT PERSONNEL	NA	NA	NA	NA	NA	NA	NA	NA
B) SURV AND TEST	NA	NA	NA	NA	NA	NA	NA	NA
C) EQUIPMENT	NA	NA	NA	NA	NA	NA	NA	NA
D) POTENTIAL MAINT	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

TABLE 8.37

GINNA

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSA 05/06/89 LER# 24489002 50.72#: 15552 POWER: 0
DESC: PROCEDURE IDENTIFIED WRONG TERMINAL TO BE DISCONNECTED CAUSING SUPPLY BREAKER TO VITAL BUS '14' TO TRIP. DIESEL STARTED AND ENERGIZED BUS.

SSA 05/18/89 LER# 24489003 50.72#: 15640 POWER: 0
DESC: 'A' TRAIN SI LOGIC SIGNAL DURING A SAFEGUARD LOGIC TEST CAUSING 'A' TRAIN EQUIPMENT NOT IN PULL TO LOCK TO OPERATE.

SCRAM 06/01/89 LER# 24489004 50.72#: 15764 POWER: 53
DESC: AN INADEQUATE PROCEDURE FAILED TO REQUIRE CHECKS THAT SHOULD HAVE IDENTIFIED PLANT CONDITIONS THAT DID NOT AGREE WITH PROCEDURAL NEEDS, CAUSING A REACTOR SCRAM.

PI EVENTS FOR 89-3

SSA 07/30/89 LER# 24489010 50.72#: 16198 POWER: 0
DESC: LOW VOLT SIGNAL CAUSED DG TO START DUE TO A LOOSE CONNECTION ON THE SECONDARY POTENTIAL TRANSFORMER FUSE CONNECTION AS A RESULT OF AN ISOLATED INSTALLATION OVERSIGHT.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.86	.47	.00	.00	.00	1.41	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	1	0	0	2	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	17	4	1	0	1	12	14
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.86	.47	.46	.00	.55	.00	.52
CRITICAL HOURS	2209	1166	2111	2193	2209	1806	708	1925
COLLECTIVE RADIATION EXPOSURE	13	226	12	13	21	124	440	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	1	1	0	4	NA
LICENSED OPERATOR	0	1	0	1	0	0	2	NA
OTHER PERSONNEL	1	2	0	1	0	0	1	NA
MAINTENANCE	0	3	1	4	0	0	5	NA
A) MAINT PERSONNEL	0	1	0	1	0	0	0	NA
B) SURV AND TEST	0	1	0	0	0	0	4	NA
C) EQUIPMENT	0	2	1	2	0	0	1	NA
D) POTENTIAL MAINT	0	0	1	2	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	1	0	0	2	NA
EQUIPMENT FAILURE	0	0	1	2	0	0	0	NA

TABLE 8.38

GRAND GULF

PI EVENTS FOR 88-4

SSA 10/10/88 LER# 41688019 50.72#: 13659 POWER: 100
DESC: HPCS INITIATED - DUE TO KEYING A TWO-WAY RADIO IN THE VICINITY OF THE LOW LEVEL INSTRUMENT TRANSMITTERS.

SCRAM 10/10/88 LER# 41688019 50.72#: 13659 POWER: 100
DESC: SCRAM AFTER HPCS INITIATED - DUE TO KEYING A TWO-WAY RADIO IN THE VICINITY OF THE LOW LEVEL INSTRUMENT TRANSMITTERS.

SSF 12/06/88 LER# 41688020 50.72#: POWER: 100
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: HPCS DECLARED INOPERABLE WHEN MIN FLOW VALVE BREAKER TRIPPED, COULD NOT BE DUPLICATED. ECCS DIV I, LPCS, AND "A" LPCI WERE INOPERABLE AT THIS TIME DUE TO PLANNED MAINT. TECH. SPEC. 3.0.3 ENTERED.

PI EVENTS FOR 89-1

SSA 03/27/89 LER# 41689001 50.72#: 15127 POWER: 0
DESC: MOMENTARY POWER LOSS OCCURRED WHEN A MANUAL DISCONNECT WAS OPENED. DIESEL OUT-OF-SERVICE FOR MAINTENANCE SO DID NOT START ON LOW VOLTAGE ON THE DIVISION 1 ESF BUS.

PI EVENTS FOR 89-2

SSF 04/20/89 LER# 41689004 50.72#: 15399 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: THE "A" TRAIN RHR PUMP TRIPPED AS A RESULT OF A FALSE SUCTION TRIP SIGNAL GENERATED WHEN A RCIC FUSE WAS REPLACED. THE "B" TRAIN RHR WAS OUT OF SERVICE AT THIS TIME. RHR RESTORED IN 25 MINS. CONDITION COULD ONLY OCCUR WITH RCIC IN TRIPPED CONDITION.

SCRAM 05/05/89 LER# 41689006 50.72#: 15542 POWER: 5
DESC: SHUTTING DOWN TO REPAIR MFW ISOLATION VALVE WHEN STARTUP FEEDWATER REGULATING VALVE STARTED MALFUNCTIONING AND A SCRAM ON LOW REACTOR LEVEL OCCURRED.

SSF 05/23/89 LER# 41689008 50.72#: 15686 POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: TWO REDUNDANT SECONDARY CONTAINMENT ISOLATION DAMPERS FAILED TO CLOSE. FAILURE OF THE DAMPERS TO CLOSE COULD ADVERSELY AFFECT THE SBGTS DRAWDOWN TIME. POSSIBLE CAUSE MAY BE USE OF A TYPE OF GREASE WHICH COULD CAUSE SWELLING OF THE ACTUATOR SEALS.

PI EVENTS FOR 89-3

SCRAM 07/22/89 LER# 41689010 50.72#: 16148 POWER: 100
DESC: LIGHTNING INDUCED APRM UPSCALE SPIKE CAUSED A REACTOR SCRAM.

SE 08/14/89 LER# 41689012 50.72#: 16313 POWER: 0
DESC: FAILURE OF THE CONDENSER BOOT SEAL RESULTED IN A SCRAM WITH COMPLICATIONS. ONE MSIV FAILED TO CLOSE ON MANUAL AND AUTO DEMAND. ONE CONTROL ROD FAILED TO INSERT BEYOND POSITION 08. SCRAM DISCHARGE VOLUME FAILED TO DRAIN. (MORNING REPORT 08/15/89)

SSF 08/14/89 LER# 41689013 50.72#: 16313 POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: FOLLOWING A REACTOR SCRAM ONE MSIV FAILED TO CLOSE ON DEMAND DUE TO EXTRUSION OF ELASTOMER SEAT MATERIAL INTO THE EXHAUST PORT VENT HOLE OF A SOLENOID VALVE. INSPECTION OF ALL 8 MSIV DUAL SOLENOID VALVE SEATS INDICATED SIMILAR PATTERN OF EXTRUSION.

SCRAM 08/14/89 LER# 41689012 50.72#: 16313 POWER: 80
DESC: LOSS OF CONDENSER VACUUM DUE TO A MAIN CONDENSOR EXPANSION JOINT FAILURE CAUSED A TURBINE TRIP AND THEN A REACTOR TRIP. ROD 32-45 ONLY INSERTED TO THE 08 POSITION AND WAS MANUALLY INSERTED.

TABLE 8.38 (CONT.)

GRAND GULF (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	1.52	.00	.93	.46	.00	.00	1.01
SCRAMS < 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	3	0	2	1	0	1	2
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	1	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	1
SAFETY SYSTEM FAILURES	0	0	0	1	1	0	2	1
FORCED OUTAGE RATE (%)	0	11	0	7	1	0	0	11
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.52	.00	.93	.00	.00	.00	.50
CRITICAL HOURS	891	1970	2183	2154	2191	1829	1025	1987
COLLECTIVE RADIATION EXPOSURE	315	54	20	36	37	143	312	NA
CAUSE CODES:								
ADMINISTRATIVE	5	5	0	2	1	0	5	NA
LICENSED OPERATOR	1	0	0	1	0	0	1	NA
OTHER PERSONNEL	3	4	0	2	1	1	0	NA
MAINTENANCE	9	8	0	2	2	1	3	NA
A) MAINT PERSONNEL	1	2	0	0	0	1	0	NA
B) SURV AND TEST	6	3	0	1	1	0	2	NA
C) EQUIPMENT	0	3	0	0	0	1	0	NA
D) POTENTIAL MAINT	2	4	0	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	2	0	0	2	NA
EQUIPMENT FAILURE	1	1	0	0	0	1	0	NA

TABLE 8.39

HADDAM NECK

PI EVENTS FOR 88-4

SSF 12/16/88 LER# 21388022 50.72#: 14270 POWER: 100
SYSTEM: CONTAINMENT FAN COOLING SYSTEM
DESC: HEAT LOAD ON CONTAINMENT COOLING SYSTEM WOULD BE EXCESSIVE AND CAUSE FLASHING ACROSS ISOLATION VALVES AND REDUCE FLOW IF RIVER WATER > 85 DEG. UNIT HAS OPERATED UP TO 90 DEGREES IN THE PAST.

PI EVENTS FOR 89-1

SSF 01/25/89 LER# 21389004 50.72#: POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: DESIGN REVIEW OF THE REQUIRED CAPACITY OF THE EMERGENCY DIESEL GENERATOR FUEL OIL TANK IN THE EVENT OF A DESIGN BASIS FLOOD REVEALED THAT THE EMERGENCY DIESEL GENERATORS WOULD RUN APPROXIMATELY 44 HOURS, NOT 166 HOURS AS REQUIRED.

SSF 03/17/89 LER# 21389002 50.72#: 15044 POWER: 100
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: DESIGN DEFICIENCY IDENTIFIED IN THE AUX. FEEDWATER SYSTEM SUCH THAT THE SYSTEM COULD BE COMPROMISED DURING CERTAIN DBAS DUE TO POSTULATED FAILURES.

PI EVENTS FOR 89-2

SSF 04/13/89 LER# 21389005 50.72#: 15315 POWER: 100
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: DUE TO INSTRUMENT UNCERTAINTY OF THE CONTAINMENT PRESSURE INSTRUMENTATION THE EOPS WOULD ALLOW CONTAINMENT SPRAY ACTUATION BELOW THE REQUIRED 40 PSIG WHICH IS BEYOND THE DESIGN BASIS. THIS IS A PROCEDURAL ERROR.

SSF 04/14/89 LER# 21389006 50.72#: 15330 POWER: 100
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: CONTAINMENT INTEGRITY COULD NOT BE MAINTAINED DUE TO FAILURE OF THE TWO HEATING STEAM CONTAINMENT ISOLATION VALVES TO OPERATE DURING SURVEILLANCE TESTING.

SSF 04/21/89 LER# 21389007 50.72#: 15404 POWER: 100
SYSTEM: STEAM GENERATING SYSTEM
DESC: AS A RESULT OF A WESTINGHOUSE ANALYSIS, 53 STEAM GENERATOR HOT LEG TUBE PLUGS WERE IDENTIFIED AS BEING SUSCEPTIBLE TO CIRCUMFERENTIAL STRESS CORROSION CRACKING. INDICATES THAT PLUG FAILURE COULD OCCUR WITHOUT WARNING. PLUGS WERE IMPROPERLY MANUFACTURED.

SSF 04/25/89 LER# 21389008 50.72#: 15435 POWER: 100
SYSTEM: REACTOR VESSEL SYSTEM
DESC: AN ERROR IN THE LBLOCA ANAYLSIS WAS DISCOVERED SUCH THAT PEAK CLAD TEMPERATURES WOULD EXCEED THE IAC LIMITS. A NON CONSERVATIVE REACTOR VESSEL VOLUME WAS USED IN THE ANALYSIS, WHICH RESULTED IN TOO HIGH A LINEAR HEAT GENERATION T.S. LIMIT.

SSF 05/23/89 LER# 21389009 50.72#: 15694 POWER: 100
DESC: OPERATOR OPENED WRONG BREAKER (EMERGENCY TIE VERSUS DG OUTPUT); THE DIESEL WHICH WAS ALREADY RUNNING FOR A TEST AUTOMATICALLY CLOSED BACK ONTO THE EMERGENCY BUS.

PI EVENTS FOR 89-3

NONE

TABLE 8.39 (CONT.)

HADDAM NECK (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.67	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	2	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	1	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	3	2	0	1	2	4	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	258	1502	2208	2209	2160	2183	1540
COLLECTIVE RADIATION EXPOSURE	178	170	39	13	14	19	14	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	1	1	0	2	3	NA
LICENSED OPERATOR	0	1	1	0	0	0	0	NA
OTHER PERSONNEL	2	4	2	2	0	1	1	NA
MAINTENANCE	3	4	4	3	2	1	3	NA
A) MAINT PERSONNEL	2	3	1	0	0	1	0	NA
B) SURV AND TEST	0	2	2	1	0	0	2	NA
C) EQUIPMENT	1	1	1	2	2	0	0	NA
D) POTENTIAL MAINT	1	0	1	1	2	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	5	2	1	1	3	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.40

HATCH 1

PI EVENTS FOR 88-4

SSF 10/03/88 LER# 32188014 50.72#: 13662 POWER: 0
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: EXCESSIVE LEAK RATES OF VARIOUS PRIMARY CONTAINMENT ISOLATION PENETRATIONS (28 PENETRATIONS). COULD HAVE PREVENTED PRIMARY CONTAINMENT ISOLATION CONTROL SYSTEM FROM FULFILLMENT OF ITS SAFETY FUNCTION.

SSF 10/26/88 LER# 32188015 50.72#: 13821 POWER: 0
SYSTEM: AUTOMATIC DEPRESSURIZATION SYSTEM
DESC: A DESIGN ERROR WAS FOUND IN THE ADS POWER SUPPLY CIRCUIT. LOSS OF "A" BATTERY WILL CAUSE LOSS OF "B" ADS LOGIC AND "A" TRAIN TRANSMITTER TRIP SYSTEM (ATTS) SENSOR INPUTS. AUTO ADS INITIATION WOULD BE LOST.

SSF 12/09/88 LER# 32188017 50.72#: 14193 POWER: 21
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI PUMP COULD NOT ATTAIN RATED FLOW DURING AN OPERABILITY TEST. HPCI DECLARED INOPERABLE. FLOW CONTROLLER NULL VOLTAGE SETTINGS WERE FOUND TO BE SET INCORRECTLY, CAUSED BY PERSONNEL ERROR.

SSA 12/17/88 LER# 32188018 50.72#: 14276 POWER: 0
DESC: HPCI MANUALLY STARTED AFTER SCRAM TO CONTROL RX WATER LEVEL.

SSA 12/17/88 LER# 32188018 50.72#: 14276 POWER: 85
DESC: "C" AND "D" 4160 BUSES LOST WHEN STARTUP TRANSFORMER DID NOT AUTO TRANSFER. DIESELS STARTED BUT DID NOT LOAD.

SCRAM 12/17/88 LER# 32188018 50.72#: 14276 POWER: 85
DESC: TURBINE TRIP ON LOW EHC PRESSURE CAUSED SCRAM DUE TO UNIT 2 OPERATOR TAGGING OUT UNIT 1 EHC INSTEAD OF UNIT 2 EHC.

SSF 12/19/88 LER# 32188019 50.72#: POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: PROCEDURE ERROR COULD HAVE RESULTED IN ISOLATION TIMES OF PRIMARY CONTAINMENT VALVES TO BE EXCESSIVE.

PI EVENTS FOR 89-1

SSF 03/29/89 LER# 32189006 50.72#: 15154 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: LOSS OF CONTROL POWER TO THE HPCI SYSTEM WAS CAUSED BY A DIODE FAILURE IN THE INVERTER. HPCI DECLARED INOPERABLE.

PI EVENTS FOR 89-2

SSF 06/08/89 LER# 32189008 50.72#: POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: INADEQUATE ANALYSIS OF THE FSAR RESULTED IN INSUFFICIENT TECH. SPEC. REQUIREMENTS FOR THE AMOUNT OF ON-SITE FUEL OIL TO SUPPORT FOUR EDGS FOR SEVEN DAYS UNDER ACCIDENT CONDITIONS.

PI EVENTS FOR 89-3

NONE

TABLE 8.40 (CONT.)

HATCH 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.47	1.65	.47	1.90	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	2	1	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	1	1	4	1	1	0
FORCED OUTAGE RATE (%)	0	2	44	2	18	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.47	.00	.47	1.90	.00	.00	.00
CRITICAL HOURS	2209	2144	1210	2128	527	2160	2183	2208
COLLECTIVE RADIATION EXPOSURE	59	198	73	69	361	57	52	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	4	2	3	3	1	NA
LICENSED OPERATOR	1	0	0	0	0	1	0	NA
OTHER PERSONNEL	0	0	2	0	3	1	0	NA
MAINTENANCE	2	3	4	2	5	4	0	NA
A) MAINT PERSONNEL	0	0	1	1	2	0	0	NA
B) SURV AND TEST	1	2	1	1	2	4	0	NA
C) EQUIPMENT	0	1	2	0	1	0	0	NA
D) POTENTIAL MAINT	1	1	2	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	1	2	2	0	2	NA
EQUIPMENT FAILURE	0	0	0	1	0	1	0	NA

TABLE 8.41

HATCH 2

PI EVENTS FOR 88-4

SSF 10/26/88 LER# 32188015 50.72#: 13821 POWER: 100
SYSTEM: AUTOMATIC DEPRESSURIZATION SYSTEM
DESC: A DESIGN ERROR WAS FOUND IN THE ADS POWER SUPPLY CIRCUIT. LOSS OF "A" BATTERY WILL CAUSE LOSS OF "B" ADS LOGIC AND "A" TRAIN TRANSMITTER TRIP SYSTEM (ATTS) SENSOR INPUTS. AUTO ADS INITIATION WOULD BE LOST.

SSF 12/05/88 LER# 36688025 50.72#: 14153 POWER: 100
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: A DESIGN ERROR WAS DISCOVERED WHERE SBGTS WOULD NOT AUTO START ON LOSS OF OFFSITE POWER AND DIESEL GENERATOR START. JUMPER WAS INSTALLED TO TEMPORARILY CORRECT.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSF 06/08/89 LER# 32189008 50.72#: POWER: 89
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: INADEQUATE ANALYSIS OF THE FSAR RESULTED IN INSUFFICIENT TECH. SPEC. REQUIREMENTS FOR THE AMOUNT OF ON-SITE FUEL OIL TO SUPPORT FOUR EDGS FOR SEVEN DAYS UNDER ACCIDENT CONDITIONS.

PI EVENTS FOR 89-3

SSA 09/03/89 LER# 36689005 50.72#: 16484 POWER: 70
DESC: THE FEEDWATER MASTER CONTROLLER MALFUNCTIONED, ITS OUTPUT WENT TO ZERO, HPCI AND RCIC STARTED ON LOW REACTOR LEVEL BUT DISCHARGE VALVE DID NOT OPEN AS LEVEL RECOVERED.

SCRAM 09/03/89 LER# 36689005 50.72#: 16484 POWER: 70
DESC: REACTOR TRIP ON LOW REACTOR LEVEL DUE TO MALFUNCTION OF FEEDWATER MASTER CONTROLLER. ROD POSITION INDICATION WAS MOMENTARILY LOST.

SSF 09/04/89 LER# 50.72#: 16485 POWER: 0
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE DUE TO AN ERRATIC FLOW CONTROLLER.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	2.04	.46	.00	.00	.00	.64
SCRAMS < 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	1	3	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	1	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	3	2	0	2	0	1	1
FORCED OUTAGE RATE (%)	0	6	45	2	1	0	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.48	.00	.00	.64
CRITICAL HOURS	2209	616	1471	2178	2095	2160	2183	1559
COLLECTIVE RADIATION EXPOSURE	59	198	73	69	361	57	52	NA
CAUSE CODES:								
ADMINISTRATIVE	1	6	6	1	1	2	0	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	2	4	1	2	1	1	0	NA
MAINTENANCE	4	9	10	4	2	3	0	NA
A) MAINT PERSONNEL	1	2	1	2	1	0	0	NA
B) SURV AND TEST	2	8	6	1	0	3	0	NA
C) EQUIPMENT	1	2	2	1	2	0	0	NA
D) POTENTIAL MAINT	1	2	3	1	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	2	2	0	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.42

HOPE CREEK

PI EVENTS FOR 88-4

SSA 10/15/88 LER# 35488027 50.72#: 13725 POWER: 100
DESC: HPCI AND RCIC INITIATED ON LEVEL 2 LOW REACTOR LEVEL AFTER SCRAM.

SCRAM 10/15/88 LER# 35488027 50.72#: 13725 POWER: 100
DESC: MFPS TRIPPED ON SPURIOUS HIGH DISCHARGE PRESSURE CAUSING LOW REACTOR LEVEL SCRAM.

SSF 10/18/88 LER# 35488028 50.72#: POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: WITH "A" TRAIN CREF SYSTEM OUT OF SERVICE FOR MAINTENANCE, THE "B" TRAIN CREF TRIPPED SEVERAL TIMES UNTIL IT WAS DISCOVERED THAT THE OUTLET DAMPER HAD FAILED TO OPEN.

SSA 11/01/88 LER# 35488029 50.72#: 13874 POWER: 100
DESC: HPCI AND RCIC STARTED ON LOW RX LEVEL AFTER THE SCRAM.

SCRAM 11/01/88 LER# 35488029 50.72#: 13874 POWER: 100
DESC: EXCITER FIELD BRUSH HOLDERS CONTACTED THE ROTOR DUE TO A FAILURE OF THE HOLDER CAUSING A LOSS OF FIELD TURBINE TRIP SCRAM AND A REACTOR TRIP.

SSF 11/04/88 LER# 35488030 50.72#: POWER: 0
SYSTEM: REACTOR RECIRCULATION SYSTEM
DESC: PRESSURE BOUNDARY LEAKAGE DISCOVERED ON "B" RECIRC PUMP DISCHARGE VALVE AND THE "A" RECIRC PUMP DISCHARGE VALVE. CAUSED BY OVERSTRESSED WELDS.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSF 04/06/89 LER# 35489007 50.72#: POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CREVS SYSTEM INOPERABLE. TRAIN A DUE TO A SEAL FAILURE IN THE ASSOCIATED CHILLER AND TRAIN B DUE TO A FAILED DAMPER.

SSA 04/14/89 LER# 35489009 50.72#: 15331 POWER: 100
DESC: A VOLTAGE TRANSIENT OCCURRED WHILE RESTORING "C" CHANNEL INSTRUMENT TOPAZ INVERTER. MAJOR ECC COMPONENTS STARTED. CLASS 3 DIESEL GENERATOR START WAS NOT DUE TO A LOW BUS VOLTAGE.

SSF 04/14/89 LER# 35489009 50.72#: 15331 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI SYSTEM DECLARED INOPERABLE WHEN A CHANNEL "C" 125VDC BATTERY CHARGER WAS MISTAKENLY SELECTED TO EQUALIZE MODE. THE ECCS INSTRUMENTATION INVERTER TRIPPED. THE REDUNDANT CH. "C" 125VDC BATTERY CHARGER WAS ON EQUALIZE CHARGE.

SSF 06/07/89 LER# 35489012 50.72#: 15797 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI SYSTEM DECLARED INOPERABLE WHEN IT WAS TAKEN OUT OF SERVICE IN ORDER TO REPAIR A MINOR STEAM LEAK ON THE OUTBOARD STEAM SUPPLY MOTOR OPERATED VALVE.

PI EVENTS FOR 89-3

SSF 08/04/89 LER# 50.72#: 16234 POWER: 89
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI WAS DECLARED INOPERABLE AFTER THE STEAM SUPPLY ISOLATION VALVE TRIPPED ITS BREAKER ON OVERLOAD WHILE ATTEMPTING TO OPEN. THE CLOSING TORQUE SWITCH HAD FALLEN OFF DUE TO LOSS OF A COTTER PIN AND THE VALVE HAD OVERTORQUED WHEN LAST CLOSED.

TABLE 8.42 (CONT.)

HOPE CREEK (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SCRAM 08/30/89 LER# 35489017 50.72#: 16440 POWER: 82
DESC: A SOLDERED JOINT ON THE AIR SUPPLY TO ONE HCU FAILED CAUSING ROD INSERTION. THE RAPID POWER REDUCTION DECREASED VOIDS CAUSING LEVEL TO DECREASE RESULTING IN A REACTOR TRIP. AN INSTALLATION DEFICIENCY DURING CONSTRUCTION.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.62	.00	.53	.46	1.00	.00	.00	.56
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	1	2	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	2	2	2	0	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	3	2	0	3	1
FORCED OUTAGE RATE (%)	22	0	5	3	11	0	0	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	2.49	.00	1.06	.46	1.50	.57	.00	.56
CRITICAL HOURS	1609	1045	1891	2159	1994	1758	2183	1798
COLLECTIVE RADIATION EXPOSURE	NA	215	35	18	29	110	17	NA
CAUSE CODES:								
ADMINISTRATIVE	2	5	3	3	2	5	4	NA
LICENSED OPERATOR	1	0	1	0	0	1	1	NA
OTHER PERSONNEL	2	1	3	3	7	0	2	NA
MAINTENANCE	3	5	6	6	11	5	7	NA
A) MAINT PERSONNEL	1	2	4	0	4	1	3	NA
B) SURV AND TEST	1	3	1	5	5	3	3	NA
C) EQUIPMENT	0	1	2	1	2	0	0	NA
D) POTENTIAL MAINT	1	1	1	1	2	1	1	NA
DESIGN/INSTALLATION/FABRICATION	4	3	5	5	2	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	2	0	0	NA

TABLE 8.43

INDIAN POINT 2

PI EVENTS FOR 88-4

SSF 11/02/88 LER# 24788017 50.72#: 13895 POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: LICENSEE DISCOVERED POTENTIAL FOR DEGRADED PERFORMANCE OF EMERGENCY DIESEL GENERATORS. FAILURE OF AIR SUPPLY TO VENTILATION SYSTEM - DESIGN ERROR

SCRAM 11/22/88 LER# 24788018 50.72#: 14066 POWER: 100
DESC: A MAIN TURBINE TRIP DUE TO A SPURIOUS TRIP SIGNAL FROM THE GENERATOR VOLTS/HERTZ TRIP CIRCUITRY RESULTED IN A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP.

SCRAM 11/26/88 LER# 24788019 50.72#: 14085 POWER: 100
DESC: A FUSE ON THE MAIN FEEDWATER ISOLATION VALVE FAILED CAUSING THE VALVE TO SHUT AND A REACTOR TRIP ON LOW SG LEVEL.

PI EVENTS FOR 89-1

SCRAM 02/28/89 LER# 24789002 50.72#: 14885 POWER: 100
DESC: AIR LINE TO HEATER DRAIN PUMPS BROKE CAUSING TURBINE RUNBACK AND REACTOR SCRAM ON OVERPOWER DELTA-T.

SSF 03/24/89 LER# 24789006 50.72#: 15114 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: DESIGN REVIEW OF EMERGENCY DIESEL LOADING INDICATED THAT UNDER CERTAIN CONDITIONS THE EMERGENCY DIESEL GENERATORS MAY BE LOADED BEYOND THEIR TWO HOUR EMERGENCY RATING.

PI EVENTS FOR 89-2

SE 04/08/89 LER# 50.72#: 15253 POWER: 0
DESC: STEAM DAMAGE TO REDUNDANT TRAINS OF SERVICE WATER SYSTEM CABLES.

SE 05/07/89 LER# 50.72#: POWER: 0
DESC: SINGLE FAILURE OF A SELECTOR SWITCH FOR A VOLTMETER COULD RESULT IN LOSS OF ALL AC BUSES. OEAB NOTIFIED BY PROJECT MANAGER FROM A TELCON PM HAD WITH RI.

PI EVENTS FOR 89-3

SSF 08/01/89 LER# 24789011 50.72#: 16208 POWER: 100
SYSTEM: DIESEL COOLING WATER SYSTEM
DESC: SERVICE WATER TO THE EDG#23 WAS DECLARED INOPERABLE DUE TO HIGH DIFFERENTIAL PRESSURE ACROSS THE SERVICE WATER PUMP STRAINERS. THE PUMP STRAINERS WERE FOULED BY DEBRIS FROM THE HUDSON RIVER.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.51	.00	.92	.55	.00	.00
SCRAMS < 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	2	1	0	0
SAFETY SYSTEM ACTUATIONS	1	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	1	0	0	0	2	0
SAFETY SYSTEM FAILURES	0	0	1	0	1	1	0	1
FORCED OUTAGE RATE (%)	0	2	2	7	4	1	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.60	.51	.00	.92	.55	.00	.00
CRITICAL HOURS	96	1673	1963	1692	2164	1811	0	2206
COLLECTIVE RADIATION EXPOSURE	1118	76	44	82	32	220	1045	NA
CAUSE CODES:								
ADMINISTRATIVE	4	0	2	3	0	0	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	4	0	3	1	3	3	0	NA
MAINTENANCE	9	1	4	6	3	2	1	NA
A) MAINT PERSONNEL	2	0	2	1	3	2	0	NA
B) SURV AND TEST	4	0	2	2	0	0	1	NA
C) EQUIPMENT	2	1	1	1	0	0	0	NA
D) POTENTIAL MAINT	3	1	0	3	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	1	2	1	4	3	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.44

INDIAN POINT 3

PI EVENTS FOR 88-4

SSA 10/09/88 LER# 28688006 50.72#: 13656 POWER: 100
DESC: BKR 52/5A OPENED DUE TO SENSED LOW VOLTAGE, CAUSED DIESEL TO START.

SCRAM 10/09/88 LER# 28688006 50.72#: 13656 POWER: 100
DESC: THE TURBINE GOVERNOR ASSEMBLY SHIFTED DUE TO A SHEARED RETAINING PIN. THIS LED TO A LOSS OF AUTO STOP OIL RESULTED IN A TURBINE TRIP AND A REACTOR TRIP.

PI EVENTS FOR 89-1

SSA 02/04/89 LER# 28689001 50.72#: 14649 POWER: 0
DESC: HIGH HEAD SAFETY INJECTION PUMPS IN PULL TO LOCK. REFILLING SG SENSING LINES CAUSED UNEVEN REFILLING AND A FALSE HIGH STEAM FLOW SIGNAL SAFETY INJECTION.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.46	.60	.00	.78	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	0	0	0	0
FORCED OUTAGE RATE (%)	2	1	7	0	43	0	8	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.93	.60	.00	1.57	.00	4.64	.00
CRITICAL HOURS	2181	2158	1670	2208	1277	817	215	2208
COLLECTIVE RADIATION EXPOSURE	18	7	39	4	45	454	403	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	1	0	0	5	0	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	0	1	1	4	1	NA
MAINTENANCE	2	2	2	1	1	6	1	NA
A) MAINT PERSONNEL	1	2	0	1	1	3	0	NA
B) SURV AND TEST	0	0	1	0	0	3	1	NA
C) EQUIPMENT	0	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	1	0	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	0	2	0	4	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.45

KEWAUNEE

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 03/10/89 LER# 305890005 50.72#: 14991 POWER: 0
SYSTEM: DIESEL GENERATOR STARTING AIR SYSTEM
DESC: LICENSEE MANAGEMENT REVIEW DISCOVERED DESIGN DEFICIENCIES IN THE DIESEL AIR START SYSTEM. SEVERAL RATINGS WERE LOWER THAN SYSTEM OPERATING CONDITIONS AND MODIFICATION SEISMIC DOC. COULD NOT BE FOUND. BOTH DIESEL GENERATORS WERE DECLARED INOPERABLE.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.68	1.04	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	2	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	0	0	1	0	0	1	0	0
FORCED OUTAGE RATE (%)	0	0	3	4	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.68	1.04	.00	.00	.00	.00	.00
CRITICAL HOURS	2209	1478	1932	2137	2209	1208	1825	2208
COLLECTIVE RADIATION EXPOSURE	5	175	26	5	5	208	26	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	2	0	5	2	NA
LICENSED OPERATOR	0	1	1	2	0	0	0	NA
OTHER PERSONNEL	0	0	1	2	0	1	1	NA
MAINTENANCE	0	2	3	3	0	6	4	NA
A) MAINT PERSONNEL	0	0	1	0	0	1	1	NA
B) SURV AND TEST	0	1	1	2	0	5	2	NA
C) EQUIPMENT	0	1	1	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	1	1	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	0	2	0	0	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.46

LASALLE 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SE 03/02/89 LER# 37389009 50.72#: 14910 POWER: 86
DESC: FAULT ON UNIT 2 SAT RESULTED IN UNIT 1 REACTOR TRIP WITH SUBSEQUENT EQUIPMENT MALFUNCTIONS; INSTRUMENT AIR, PROCESS COMPUTER, CREVAS, ALTERNATE RPS BREAKERS, AND A RECIRC FCV. AIT TO SITE.

SCRAM 03/02/89 LER# 37389009 50.72#: 14910 POWER: 86
DESC: STATION AUXILIARY TRANSFORMER TRIPPED DUE TO DIFFERENTIAL OVERCURRENT CAUSED BY A FAILED LIGHTNING ARRESTOR. THE MAIN GENERATOR LOCKED OUT CAUSING A TURBINE TRIP AND A REACTOR TRIP.

SSF 03/04/89 LER# 37389011 50.72#: 14933 POWER: 0
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: HPCS WAS DECLARED INOPERABLE WHEN A CROSS TIE OF UNIT 1 DIV III BATTERY CHARGER TO THE UNIT 2 DIVISION III BATTERY BUS WAS PERFORMED (UNIT 2 LOSS OF DIV III AC, RE 14932). THIS REQUIRED THE UNIT 1 HPCS BE DECLARED INOPERABLE.

PI EVENTS FOR 89-2

SSF 06/09/89 LER# 37389021 50.72#: 15833 POWER: 100
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: THE RCIC SYSTEM WAS DECLARED INOPERABLE WHEN DURING A TECH. SPEC. SURVEILLANCE TEST A RCIC TURBINE STEAM SUPPLY LINE ISOLATION VALVE FAILED. VALVE MECHANICAL FAILURE CAUSED BY BUILD UP OF CORROSION PRODUCTS BETWEEN STEM AND STEM NUT.

PI EVENTS FOR 89-3

SSF 07/15/89 LER# 37489010 50.72#: POWER: 91
SYSTEM: DC POWER SYSTEM - CLASS 1E
DESC: UNIT 2 DIV III BATTERY CHARGER DECLARED INOPERABLE DUE TO VOLTAGE OSCILLATIONS APPARENTLY CAUSED BY FAILURE OF HIGH VOLTAGE SHUTDOWN RELAY. BOTH UNIT 1 & 2 HPCS DECLARED INOPERABLE WHEN THE UNIT 2 DIV III BUS WAS CROSS-TIED WITH UNIT 1 DIV III CHARGER.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.47	.00	.00	.00	.00	.48	.00	.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	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	2	0	0	2	0	1	1	1
FORCED OUTAGE RATE (%)	4	0	0	7	0	4	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.47	.00	.00	.00	.00	.48	.00	.00
CRITICAL HOURS	2135	1730	0	1992	2209	2086	2183	1846
COLLECTIVE RADIATION EXPOSURE	58	173	413	90	560	178	62	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	0	1	1	3	3	NA
LICENSED OPERATOR	0	0	0	0	0	2	0	NA
OTHER PERSONNEL	0	0	4	0	3	2	1	NA
MAINTENANCE	6	4	7	5	5	13	9	NA
A) MAINT PERSONNEL	1	0	4	1	1	0	1	NA
B) SURV AND TEST	0	0	0	0	1	4	4	NA
C) EQUIPMENT	5	4	3	2	3	6	2	NA
D) POTENTIAL MAINT	5	3	3	4	2	4	3	NA
DESIGN/INSTALLATION/FABRICATION	2	0	3	2	2	4	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.47

LASALLE 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSA 01/25/89 LER# 37489002 50.72#: 14569 POWER: 0
DESC: '2B' DIESEL STARTED ON ECCS DIV 3 LOW LEVEL AND HPCS START SIGNAL, BUT PUMP IN PULL TO LOCK DUE TO OPENING WRONG INSTRUMENT DRAIN VALVE AND CAUSING LOW RX LEVEL CONDITION.

SSA 03/02/89 LER# 37389009 50.72#: 14910 POWER: 89
DESC: STATION AUXILIARY TRANSFORMER TRIPPED DUE TO DIFFERENTIAL OVERCURRENT CAUSED BY A FAILED LIGHTNING ARRESTOR. "2B" DIESEL GENERATOR AUTO-STARTED ON UNDERVOLTAGE AND LOADED.

SE 03/02/89 LER# 37389009 50.72#: 14910 POWER: 89
DESC: FAULT ON UNIT 2 SAT RESULTED IN UNIT 1 REACTOR TRIP WITH SUBSEQUENT EQUIPMENT MALFUNCTIONS, INSTRUMENT AIR, PROCESS COMPUTER, CREVAS, ALTERNATE RPS BREAKERS, AND A RECIRC FCV. AIT TO SITE.

SSF 03/04/89 LER# 37389011 50.72#: 14932 POWER: 87
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: HPCS WAS DECLARED INOPERABLE WHEN THE DIV. III DIESEL DEVELOPED A FUEL LEAK (SPRAYED FUEL OIL IN DIESEL AND HPCS ROOM). LOSS OF DIV III AC POWER LEAVES HPCS WITH NO EMERGENCY POWER SOURCE.

PI EVENTS FOR 89-2

SSA 06/12/89 LER# 37489007 50.72#: 15843 POWER: 99
DESC: AUXILIARY TRANSFORMER POWER LOST - DIESELS OOS FOR MAINTENANCE - DIESEL STARTED MANUALLY TO RESTORE POWER TO THE BUS.

SSF 06/14/89 LER# 37489008 50.72#: POWER: 96
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE DIV III HPCS DIESEL POWERED GENERATOR WINDINGS WERE DAMAGED WHEN IT WAS BEING PARALLELED WITH THE SAT OFFSITE POWER SOURCE FEEDER BREAKER. THE FEEDER BREAKER HAD BENT SEC. STABS WHICH CAUSED THE BREAKER TO AUTO-CLOSE IN AN OUT OF PHASE CONDITION.

PI EVENTS FOR 89-3

SSF 07/15/89 LER# 37489010 50.72#: POWER: 95
SYSTEM: DC POWER SYSTEM - CLASS 1F
DESC: UNIT 2 DIV III BATTERY CHARGER DECLARED INOPERABLE DUE TO VOLTAGE OSCILLATIONS APPARENTLY CAUSED BY FAILURE OF HIGH VOLTAGE SHUTDOWN RELAY. BOTH UNIT 1 & 2 HPCS DECLARED INOPERABLE WHEN THE UNIT 2 DIV III BUS WAS CROSS-TIED WITH UNIT 1 DIV III CHARGER.

SCRAM 08/26/89 LER# 37489011 50.72#: 16411 POWER: 10
DESC: THE RPS ACTUATION WAS DUE TO A SPURIOUS SIGNAL.

TABLE 8.47 (CONT.)

LASALLE 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER,1000 CRITICAL HOURS	.00	.50	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	0	1	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	2	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	4	0	2	2	0	1	1	1
FORCED OUTAGE RATE (%)	0	10	0	3	4	0	0	38
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.50	.00	.46	.00	.00	.00	.00
CRITICAL HOURS	2209	1983	2183	2159	323	1246	2183	1372
COLLECTIVE RADIATION EXPOSURE	58	173	413	90	560	178	62	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	0	1	2	5	4	NA
LICENSED OPERATOR	0	0	0	1	1	2	0	NA
OTHER PERSONNEL	1	1	5	0	0	4	0	NA
MAINTENANCE	5	4	9	6	7	12	8	NA
A) MAINT PERSONNEL	2	0	4	1	0	0	2	NA
B) SURV AND TEST	0	2	1	0	3	6	3	NA
C) EQUIPMENT	3	2	3	3	4	4	1	NA
D) POTENTIAL MAINT	3	2	3	5	4	3	3	NA
DESIGN/INSTALLATION/FABRICATION	2	0	2	1	2	4	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.48

LIMERICK 1

PI EVENTS FOR 88-4

SE 10/03/88 LER# 35288030 50.72#: 13611 POWER: 0
DESC: THREE FIRE DAMPER ACCESS DOORS WERE NOT STRUCTURALLY QUALIFIED TO WITHSTAND THE STEAM PRESSURE FROM A HIGH ENERGY LINE BREAK, THUS, STEAM COULD PENETRATE AREAS WITH SAFETY-RELATED EQUIPMENT RENDERING THEM INOPERABLE.

SE 10/06/88 LER# 35288031 50.72#: 13637 POWER: 0
DESC: REACTOR PRESSURE & REACTOR LEVEL INSTRUMENTATION AS WELL AS THE RCIC FLOW CONTROL INSTRUMENTS ON REMOTE SHUTDOWN PANEL COULD BE UNAVAILABLE DURING A FIRE EVENT IN MAIN CONTROL ROOM. THESE INSTRUMENTS ARE NECESSARY TO CONDUCT A REMOTE SAFE SHUTDOWN.

SSF 11/01/88 LER# 35288033 50.72#: POWER: 57
SYSTEM: DC POWER SYSTEM - CLASS 1E
DESC: INOPERABILITY OF UNIT 1 CLASS 1E DIVISION 1 AND II DC POWER SOURCE DUE TO UNACCEPTABLE ELECTRICAL ISOLATION WITH UNIT 2 NON-CLASS 1E CIRCUITS. DEC 1987 THRU NOV 1988.

PI EVENTS FOR 89-1

SSF 01/04/89 LER# 35289002 50.72#: 14410 POWER: 41
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: DUE TO INSUFFICIENT CABLE FIRE PROTECTION, A FIRE IN CERTAIN AREAS OF THE PLANT COULD CAUSE THE RCIC INBOARD STEAM SUPPLY ISOLATION VALVE TC CLOSE AND NOT BE REOPENED DUE TO DAMAGED CONTROL AND POWER CABLES. THIS WOULD RENDER THE RCIC INOPERABLE.

SSF 01/04/89 LER# 35289002 50.72#: 14410 POWER: 41
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: DUE TO INSUFFICIENT CABLE FIRE PROTECTION, A FIRE IN CERTAIN AREAS OF THE PLANT COULD CAUSE THE HPCI TO INITIATE AND NOT BE SHUTDOWN. THE REACTOR VESSEL WOULD OVERFILL AND WATER CARRYOVER INTO THE RCIC TURBINE. THIS WOULD RENDER THE RCIC INOPERABLE.

SSF 01/10/89 LER# 35289004 50.72#: 14459 POWER: 41
SYSTEM: LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: REVIEW OF 4KV SAFEGUARD BUSES' UV SETPOINTS REVEALED THAT SETPOINTS ARE NOT HIGH ENOUGH TO ENSURE THE 480 V LOAD CENTER VOLTAGE WOULD BE ABLE TO TRANSFER DURING DEGRADED VOLTAGE CONDITIONS.

SSF 01/26/89 LER# 35289008 50.72#: POWER: 0
SYSTEM: LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: THE REQUIRED SEPARATION BETWEEN CLASS 1E AND NON-CLASS 1E CIRCUITS IN PANELS CONTAINING SCIS, SGTS, RERS AND NSSSS SYSTEM CABLING WAS NOT MET, WHICH RENDERED THE SYSTEMS INOPERABLE.

SE 02/10/89 LER# 50.72#: POWER: 0
DESC: EXCESSIVE CORROSION OF FUEL CLADDING DUE TO CILC. (MORNING REPORT: 02/10/89)

SSF 02/15/89 LER# 35289012 50.72#: 14762 POWER: 0
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: THE CONTROL CABLES TO THE MAINTENANCE FW ISOLATION VALVE HAVE INSUFFICIENT FIRE PROTECTION. IN THE EVENT OF A FIRE IN THE CONTROL CABLES, A SHORT CIRCUIT CONDITION COULD CLOSE THE MAINTENANCE FW ISOLATION VALVE AND ISOLATE THE RCIC SYSTEM.

SSF 02/16/89 LER# 35289014 50.72#: 14775 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: BOTH TRAINS OF THE STANDBY GAS TREATMENT SYSTEM WERE DECLARED INOPERABLE. "B" TRAIN TRIPPED ON LOW AIR FLOW, "A" TRAIN BECAUSE OF FAULTY FILTER TRAIN HEATER DIFFERENTIAL TEMPERATURE TRANSMITTER.

SSF 03/02/89 LER# 35289017 50.72#: 14906 POWER: 0
SYSTEM: CONTAINMENT COMBUSTIBLE GAS CONTROL SYSTEM
DESC: INSPECTION DETERMINED THAT DUE TO LACK OF SEALS, LOW FLOW SWITCHES FOR THE DRYWELL HYDROGEN GAS MIXERS MAY BE SUBJECT TO MOISTURE INTRUSION DURING A LOCA. POTENTIAL TO TRIP FANS RESULTING IN HIGH HYDROGEN CONCENTRATIONS.

TABLE 8.48 (CONT.)

LIMERICK 1 (CONT.)

PI EVENTS FOR 89-1 (CONT.)

SSF 03/30/89 LER# 35289022 50.72#: POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CONTROL ROOM EMERGENCY FRESH AIR SUPPLY SYSTEM TRAINS WERE DECLARED INOPERABLE DUE TO INADEQUATE PHYSICAL SEPARATION BETWEEN CLASS 1E DIVISION CABLES. THIS CONDITION WAS IDENTIFIED BY A NRC INSPECTOR.

PI EVENTS FOR 89-2

SSF 04/05/89 LER# 35289023 50.72#: 15214 POWER: 0
SYSTEM: POST-ACCIDENT MONITORING SYSTEM
DESC: IN THE EVENT OF A FIRE, SUPPRESSION POOL LEVEL AND TEMPERATURE INDICATION MAY BE LOST DUE TO NON-SAFETY RELATED CABLING IN THOSE SYSTEMS. THIS COULD IMPACT SAFE SHUTDOWN OPERATIONS: LOSS OF RHR.

SSF 05/12/89 LER# 35289034 50.72#: 15702 POWER: 0
SYSTEM: POST-ACCIDENT MONITORING SYSTEM
DESC: SEALS IN 19 EXCESS FLOW CHECK VALVES THAT FORMED PRESSURE BOUNDARY WOULD BREAK DOWN DURING POST LOCA CONDITIONS. POTENTIAL FOR INACCURATE REACTOR LEVEL AND PRESSURE, MSIV LEAKAGE CONTROL, AND REACTOR RECIRC. PUMP FLOW. CAUSED BY INADEQUATE DESIGN REVIEW.

SSF 05/25/89 LER# 35289036 50.72#: POWER: 0
SYSTEM: AUTOMATIC DEPRESSURIZATION SYSTEM
DESC: PRESSURE TESTING OF THE MAIN STEAM RELIEFS REVEALED THAT ONLY ONE OF 14 SRVS LIFTED WITHIN THE TECH. SPEC. REQUIRED LIMITS. CAUSED BY CORROSION INDUCED BONDING BETWEEN THE PILOT DISC AND SEAT. THIS HAS BEEN A REPETITIVE PROBLEM.

SSF 06/01/89 LER# 35289039 50.72#: POWER: 79
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: THE RCIC SYSTEM MAY BECOME INOPERABLE IN THE EVENT OF A FIRE INVOLVING THE RCIC BAROMETRIC CONDENSER AND RCIC COMPARTMENT UNIT COOLER DUE TO MOISTURE RELATED PROBLEMS WITH RCIC CIRCUITRY. THIS WAS FOUND AS A RESULT OF A SAFE SHUTDOWN CAPABILITY STUDY.

PI EVENTS FOR 89-3

SSF 07/19/89 LER# 35289046 50.72#: 16125 POWER: 90
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: A TECHNICIAN REMOVED THE SBGTS CHARCOAL SAMPLE INLET FILTERS RATHER THAN THE ROOM FILTERS. THE POTENTIAL FOR AN UNACCEPTABLE SBGTS BYPASS FLOW WAS CREATED AND COULD HAVE PREVENTED THE SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

SSF 08/25/89 LER# 35289050 50.72#: POWER: 100
DESC: RCIC PUMP ALIGNMENT PINS WERE NEVER INSTALLED. POTENTIAL CONSEQUENCES OF THE MISSING PINS COULD RENDER THE RCIC SYSTEM INOPERABLE DURING A SEISMIC EVENT. VENDOR SUPPLIED RCIC PUMP INSTALLATION INSTRUCTIONS WERE INADEQUATE.

TABLE 8.4B (CONT.)

LIMERICK 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	2	1	0	0
SAFETY SYSTEM FAILURES	2	2	1	0	1	8	4	2
FORCED OUTAGE RATE (%)	0	0	14	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	2209	2184	1875	2208	2209	258	1110	2208
COLLECTIVE RADIATION EXPOSURE	22	17	16	12	9	162	57	NA
CAUSE CODES:								
ADMINISTRATIVE	8	3	4	0	4	10	10	NA
LICENSED OPERATOR	2	1	1	0	1	0	0	NA
OTHER PERSONNEL	6	2	3	1	5	5	7	NA
MAINTENANCE	14	5	9	0	6	11	12	NA
A) MAINT PERSONNEL	3	2	3	0	3	4	3	NA
B) SURV AND TEST	2	2	3	0	2	4	7	NA
C) EQUIPMENT	7	0	3	0	0	1	1	NA
D) POTENTIAL MAINT	6	1	2	0	1	2	1	NA
DESIGN/INSTALLATION/FABRICATION	2	7	5	3	8	10	7	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.49

LIMERICK 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 07/19/89 LER# 35289046 50.72#: 16125 POWER: 0
SYSTEM: EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC: A TECHNICIAN REMOVED THE SBGTS CHARCOAL SAMPLE INLET FILTERS RATHER THAN THE ROOM FILTERS. THE POTENTIAL FOR AN UNACCEPTABLE SBGTS BYPASS FLOW WAS CREATED AND COULD HAVE PREVENTED THE SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

SSF 08/25/89 LER# 35289050 50.72#: POWER: 0
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: RCIC PUMP ALIGNMENT PINS WERE NEVER INSTALLED. POTENTIAL CONSEQUENCES OF THE MISSING PINS COULD RENDER THE RCIC SYSTEM INOPERABLE DURING A SEISMIC EVENT. VENDOR SUPPLIED RCIC PUMP INSTALLATION INSTRUCTIONS WERE INADEQUATE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	.00
SCRAMS < 15% POWER	NA	NA	NA	NA	NA	NA	NA	0
TOTAL SCRAMS	NA	NA	NA	NA	NA	NA	NA	0
SAFETY SYSTEM ACTUATIONS	NA	NA	NA	NA	NA	NA	0	0
SIGNIFICANT EVENTS	NA	NA	NA	NA	NA	NA	0	0
SAFETY SYSTEM FAILURES	NA	NA	NA	NA	NA	NA	0	2
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	541
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	NA	NA	3	NA
LICENSED OPERATOR	NA	NA	NA	NA	NA	NA	0	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	NA	1	NA
MAINTENANCE	NA	NA	NA	NA	NA	NA	2	NA
A) MAINT PERSONNEL	NA	NA	NA	NA	NA	NA	0	NA
B) SURV AND TEST	NA	NA	NA	NA	NA	NA	1	NA
C) EQUIPMENT	NA	NA	NA	NA	NA	NA	0	NA
D) POTENTIAL MAINT	NA	NA	NA	NA	NA	NA	1	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	NA	NA	NA	NA	1	NA
EQUIPMENT FAILURE	NA	NA	NA	NA	NA	NA	0	NA

TABLE 8.50

MAINE YANKEE

PI EVENTS FOR 88-4

SBF 11/08/88 LER# 30988009 50.72#: POWER: 0
SYSTEM: INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC: 2 NEUTRON FLUX MONITOR CABLE ASSEMBLIES FAILED MANUFACTURER'S PRESSURE TEST AND DEVELOPED LEAKS IN THE CABLE ASSEMBLY. POTENTIAL CONSEQUENCE OF FAILURE WAS LOSS OF WR FLUX INDICATION DURING ACCIDENT.

SCRAM 12/16/88 LER# 30988010 50.72#: 14265 POWER: 18
DESC: HEATER DRAIN TANK DRAIN VALVE WAS NOT ALIGNED TO DRAIN THE TANK DUE TO AN IMPROPER VALVE LINEUP. THIS CAUSED A TURBINE TRIP ON HIGH LEVEL IN THE HEATER DRAIN TANK WHICH CAUSED A REACTOR TRIP.

SSA 12/22/88 LER# 30988011 50.72#: 14312 POWER: 0
DESC: OPERATOR ALLOWED RCS PRESSURE TO DROP BELOW SIAS SETPOINT CAUSING SIAS.

SSA 12/22/88 LER# 30988011 50.72#: 14312 POWER: 0
DESC: OPERATOR ALLOWED RCS PRESSURE TO DROP BELOW SIAS SETPOINT AFTER RESETTING SIAS FROM FIRST EVENT CAUSING ANOTHER SIAS.

PI EVENTS FOR 89-1

SCRAM 01/10/89 LER# 30989001 50.72#: 14461 POWER: 100
DESC: POWER LOST TO EHC FOR UNKNOWN REASON CAUSING TURBINE TRIP SCRAM.

PI EVENTS FOR 89-2

SCRAM 04/05/89 LER# 30989003 50.72#: 15217 POWER: 100
DESC: MAIN TURBINE GENERATOR TRIPPED FOLLOWING A LOAD REJECTION PROTECTION EVENT. THE TURBINE TRIP CAUSED THE REACTOR TO TRIP.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.46	.00	.48	1.97	.51	.46	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	1	1	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	1	0	0	0
FORCED OUTAGE RATE (%)	0	1	0	9	34	11	1	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.46	.00	.96	3.94	1.02	.00	.00
CRITICAL HOURS	2209	2168	2183	2091	508	1970	2172	2208
COLLECTIVE RADIATION EXPOSURE	16	20	23	18	665	21	10	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	0	1	0	1	0	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	0	0	0	1	1	0	1	NA
MAINTENANCE	0	2	0	2	1	1	1	NA
A) MAINT PERSONNEL	0	1	0	0	1	0	0	NA
B) SURV AND TEST	0	0	0	1	0	0	1	NA
C) EQUIPMENT	0	1	0	1	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	1	1	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.51

MCGUIRE 1

PI EVENTS FOR 88-4

SSF 10/12/88 LER# 36988032 50.72#: 13684 POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTAINMENT ANNULUS VENTILATION SYSTEM DECLARED INOPERABLE. SYSTEM FAILED PERIODIC TEST INVOLVING THE SYSTEM'S CAPABILITY TO MAINTAIN REQUIRED PRESSURE. CAUSED BY LEAKING DOOR SEALS

SSF 10/24/88 LER# 36988034 50.72#: 13811 POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: WITH MCGUIRE 1 TRAIN "B" OF THE CONTROL ROOM EMERGENCY VENTILATION OUT OF SERVICE, FLUSH OF "A" TRAIN COOLING PERFORMED AT MCGUIRE 2. REDUCED FLOWS FOR UNIT 1, BOTH TRAINS INOPERABLE.

SSF 10/25/88 LER# 36988040 50.72#: POWER: 0
SYSTEM: REACTOR CONTAINMENT BUILDING
DESC: CONTAINMENT INTEGRITY BREACHED WHEN 3 TEMPORARY PENETRATIONS WERE FOUND LEAKING. FUEL MOVEMENT HAD TAKEN PLACE. CAUSED BY MANAGEMENT DEFICIENCY BECAUSE OF INSUFFICIENT SUPERVISION.

SE 11/18/88 LER# 36988036 50.72#: 14035 POWER: 0
DESC: CROSS CONNECTS FROM DIESEL STARTING AIR TO INSTRUMENT AIR TANKS PROVIDE BACKUP AIR. HOWEVER, THIS COULD RESULT IN AN INADEQUATE SUPPLY OF STARTING AIR DURING A BLACKOUT. MCGUIRE 2 LICENSED 1983. MCGUIRE 2 AT TIME OF EVENT, AT 100% POWER.

SSF 11/18/88 LER# 36988036 50.72#: 14035 POWER: 0
SYSTEM: DIESEL GENERATOR STARTING AIR SYSTEM
DESC: POTENTIAL FAILURE MODE FOR EDGS DISCOVERED. REG VALVES THAT CONNECT THE STARTING AIR COMPRESSORS TO THE INSTRUMENT AIR SYSTEM PASS TOO MUCH AIR, LEAVING AN INSUFFICIENT SUPPLY TO START THE EDGS.

SSA 11/29/88 LER# 36988038 50.72#: 14107 POWER: 0
DESC: THE DIESEL GENERATOR STARTED AND LOADED WHEN POWER TO SWITCHGEAR GROUP 1TD WAS LOST BECAUSE INADEQUATE INSTRUCTIONS WERE GIVEN TO PERSONNEL WHILE TESTING THE STANDBY BREAKER 1TD-6.

SE 12/11/88 LER# 36988036 50.72#: 14271 POWER: 0
DESC: TWO COLD LEG AND ONE HOT LEG "EVENT V" CHECK VALVES FAILED.

PI EVENTS FOR 89-1

SSF 01/17/89 LER# 36989001 50.72#: POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM INOPERABLE APPROXIMATELY 5 HOURS. ERROR IN MAINT. SCHEDULING ALLOWED MAINT. TO BE PERFORMED ON BOTH TRAINS AT THE SAME TIME.

SSA 03/07/89 LER# 36989004 50.72#: 14963 POWER: 100
DESC: SG TUBE RUPTURED NECESSITATING STARTING CVCS IN HPI MODE TO RECOVER PZR LEVEL.

SE 03/07/89 LER# 36989004 50.72#: 14963 POWER: 0
DESC: A STEAM GENERATOR TUBE RUPTURE OCCURRED IN THE "B" STEAM GENERATOR WITH A MAXIMUM LEAK RATE OF ABOUT 500 PGM. AIT ON SITE. BRIEFING 89-10 & 89-11 (VERBAL, NO SLIDES).

SSF 03/10/89 LER# 36989007 50.72#: 15237 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMER VENTILATION COOLING WATER SYSTEM WERE DECLARED INOP. UPON THE DISCOVERY OF CONTROL VALVE POSITIONERS THAT WERE NOT SEISMICALLY QUALIFIED. NON SAFETY POSITIONERS COULD PREVENT SOLENIODS FROM FAILING OPEN AS DESIGNED.

PI EVENTS FOR 89-2

NONE

TABLE 8.51 (CONT.)

MCGUIRE 1 (CONT.)

PI EVENTS FOR 89-3

SSF 07/05/89 LER# 36989013 50.72#: POWER: 100
SYSTEM: PLANT PROTECTION SYSTEM
DESC: THE POWER RANGE NUCLEAR INSTRUMENTATION WAS INOPERABLE DURING POWER ESCALATION ABOVE 86% DUE TO LOCKED-OUT STEAM GENERATOR ANALOG PARAMETERS INTO THE OAC THERMAL OUTPUT POWER CALCULATION WHICH RESULTED IN A 5% NON-CONSERVATIVE POWER INDICATION.

SSF 07/14/89 LER# 36989017 50.72#: POWER: 100
SYSTEM: SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC: BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM DECLARED INOPERABLE DUE TO NON-EQ QUALIFIED TEFLON JACKET WIRING IN THE ANNULUS VENTILATION FILTER UNIT PREHEATER. THE CAUSE IS MANUFACTURING DEFICIENCY BECAUSE OF IMPROPER MATERIAL SELECTION.

SSF 07/22/89 LER# 36989015 50.72#: POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CREVS SYSTEM COULD NOT BE MAINTAINED AT THE REQUIRED T.S. POSIVITIVE PRESS. DURING A TEST. THIS TEST HAD ALWAYS BEEN PERFORMED USING THE D/P BETWEEN THE CABLE SPREADING ROOM AND THE CONTROL ROOM, INSTEAD OF OUTSIDE PRESSURE. LEAKAGE WAS EXCESSIVE.

SSF 08/21/89 LER# 50.72#: 16371 POWER: 0
SYSTEM: CLOSED/COMPONENT COOLING WATER SYSTEM
DESC: BOTH TRAINS OF COMPONENT COOLING WATER INOPERABLE TO UNIT 1 AS A RESULT OF INADEQUATE TEST PROCEDURES OF THE ZETA SEQUENCER ON UNIT 2.

SSF 08/24/89 LER# 36989021 50.72#: 16394 POWER: 100
SYSTEM: SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC: BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM WERE FOUND TO BE INOPERABLE BECAUSE OF A DESIGN DEFICIENCY IN THE SELECTION OF SETPOINTS. DID NOT TAKE INTO ACCOUNT TEMPERATURE GRADIENTS INSIDE AND OUTSIDE THE ANNULUS. POTENTIAL POSITIVE PRESS. DURING LOCA.

SCRAM 08/26/89 LER# 36989022 50.72#: 16412 POWER: 100
DESC: A FAULTY COMPUTER CARD IN THE SOLID STATE PROTECTION SYSTEM CAUSED A REACTOR TRIP.

SSF 09/04/89 LER# 50.72#: 16491 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CONTROL ROOM VENTILATION SYSTEM WAS RENDERED INOPERABLE DUE TO A BROKEN DUCT TAPE SEAL ON A CONTROL ACCESS DOOR.

SSF 09/18/89 LER# 50.72#: 16622 POWER: 100
SYSTEM: SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC: THE SHIELD ANNULUS VENTILATION SYSTEM WAS INOPERABLE WHEN AN I&C TECHNICIAN JUMPERED OUT A PRESSURE SWITCH OF THE OPERABLE TRAIN WHILE THE OTHER TRAIN WAS INOPERABLE.

SSA 09/22/89 LER# 36989029 50.72#: 16674 POWER: 83
DESC: HURRICANE WINDS CAUSED A LOSS OF BUS LINE '1A'. THE DIESEL GENERATOR STARTED BUT DID NOT LOAD AS THE LOADS TRANSFERRED TO BUS LINE 'B'.

TABLE 8.51 (CONT.)

MCGUIRE 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.86	.93	.47	.00	.00	.00	.00	.46
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	2	1	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	1	0	1
SIGNIFICANT EVENTS	0	0	0	0	2	1	0	0
SAFETY SYSTEM FAILURES	4	0	0	3	4	2	0	7
FORCED OUTAGE RATE (%)	4	2	2	0	0	27	43	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.86	.93	.93	.00	.00	.63	.80	.46
CRITICAL HOURS	1160	2146	2141	2208	289	1584	1256	2162
COLLECTIVE RADIATION EXPOSURE	115	17	190	63	281	30	51	NA
CAUSE CODES:								
ADMINISTRATIVE	9	3	3	10	9	4	2	NA
LICENSED OPERATOR	2	1	1	0	3	0	1	NA
OTHER PERSONNEL	5	2	2	4	6	1	2	NA
MAINTENANCE	13	5	7	11	15	4	3	NA
A) MAINT PERSONNEL	6	3	2	3	8	1	2	NA
B) SURV AND TEST	4	1	2	5	4	3	1	NA
C) EQUIPMENT	3	1	3	4	5	1	0	NA
D) POTENTIAL MAINT	3	1	3	2	4	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	2	3	6	5	3	1	NA
EQUIPMENT FAILURE	1	0	1	0	0	1	0	NA

TABLE 8.52

MCGUIRE 2

PI EVENTS FOR 88-4

SE 11/18/88 LER# 36988036 50.72#: 14035 POWER: 100
DESC: CROSS CONNECTS FROM DIESEL STARTING AIR TO INSTRUMENT AIR TANKS PROVIDE BACKUP AIR. HOWEVER, THIS COULD RESULT IN AN INADEQUATE SUPPLY OF STARTING AIR DURING A BLACKOUT. MCGUIRE 2 LICENSED 1983. MCGUIRE 2 AT TIME OF EVENT, AT 100% POWER.

SSF 11/18/88 LER# 36988036 50.72#: 14035 POWER: 100
SYSTEM: DIESEL GENERATOR STARTING AIR SYSTEM
DESC: POTENTIAL FAILURE MODE FOR EDGS DISCOVERED. REG VALVES THAT CONNECT THE STARTING AIR COMPRESSORS TO THE INSTRUMENT AIR SYSTEM PASS TOO MUCH AIR, LEAVING AN INSUFFICIENT SUPPLY TO START THE EDGS.

PI EVENTS FOR 89-1

SCRAM 03/03/89 LER# 37089001 50.72#: 14915 POWER: 100
DESC: TWO OUT OF FOUR LOGIC NEGATIVE POWER RANGE RATE TRIP SIGNALS WHEN PERFORMING ROD CONTROL CLUSTER ASSEMBLY MOVEMENT TEST AND SHUTDOWN BANK "E" WAS BEING WITHDRAWN WHEN TRIP OCCURRED.

SSF 03/10/89 LER# 36989007 50.72#: 15237 POWER: UNK
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMER VENTILATION COOLING WATER SYSTEM WERE DECLARED INOP. UPON THE DISCOVERY OF CONTROL VALVE POSITIONERS THAT WERE NOT SEISMICALLY QUALIFIED. NON SAFETY POSITIONERS COULD PREVENT SOLENOIDS FROM FAILING OPEN AS DESIGNED.

SCRAM 03/14/89 LER# 37089002 50.72#: 15011 POWER: 70
DESC: GENERATOR LOAD REJECTION BYPASS VALVE FAILED TO OPEN CAUSING A LOW SG LEVEL REACTOR TRIP AND AUXILIARY FEEDWATER ACTUATION. A FAILED PRESSURE SWITCH AND A BROKEN AIR SUPPLY LINE CONTRIBUTED.

PI EVENTS FOR 89-2

SCRAM 04/06/89 LER# 37089003 50.72#: 15226 POWER: 100
DESC: LOW-LOW STEAM GENERATOR LEVEL CAUSED REACTOR TRIP WHEN A FRV CLOSED DUE TO A FAILED POSITIONER.

PI EVENTS FOR 89-3

SSF 07/14/89 LER# 36989017 50.72#: POWER: 0
SYSTEM: SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
DESC: BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM DECLARED INOPERABLE DUE TO NON-EQ QUALIFIED TEFLON JACKET WIRING IN THE ANNULUS VENTILATION FILTER UNIT PREHEATER. THE CAUSE IS MANUFACTURING DEFICIENCY BECAUSE OF IMPROPER MATERIAL SELECTION.

SSF 07/22/89 LER# 36989015 50.72#: POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CREVS SYSTEM COULD NOT BE MAINTAINED AT THE REQUIRED T.S. POSIVITIVE PRESS. DURING A TEST. THIS TEST HAD ALWAYS BEEN PERFORMED USING THE D/P BETWEEN THE CABLE SPREADING ROOM AND THE CONTROL ROOM, INSTEAD OF OUTSIDE PRESSURE. LEAKAGE WAS EXCESSIVE.

SSF 09/04/89 LER# 50.72#: 16491 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CONTROL ROOM VENTILATION SYSTEM WAS RENDERED INOPERABLE DUE TO A BROKEN DUCT TAPE SEAL ON A CONTROL ACCESS DOOR.

SE 09/05/89 LER# 50.72#: POWER: 0
DESC: OVERPRESSURIZATION OF THE CONTAINMENT SPRAY SYSTEM RESULTED IN LEAK OF REACTOR COOLANT AND REFUELING WATER. (MORNING REPORT ON 09/06/89)

TABLE 8.52 (CONT.)

MCGUIRE 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.92	.46	.00	.00	.00	.93	.46	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	1	0	0	0	2	1	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	3	0	1	1	1	1	0	3
FORCED OUTAGE RATE (%)	2	1	0	3	0	2	1	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.92	.92	.00	2.52	.45	.93	.46	.00
CRITICAL HOURS	2170	2166	1349	1590	2209	2149	2165	421
COLLECTIVE RADIATION EXPOSURE	115	17	190	63	281	30	51	NA
CAUSE CODES:								
ADMINISTRATIVE	6	2	6	8	4	4	2	NA
LICENSED OPERATOR	2	1	1	0	0	0	1	NA
OTHER PERSONNEL	4	1	4	3	2	1	1	NA
MAINTENANCE	8	2	7	10	6	6	2	NA
A) MAINT PERSONNEL	4	2	6	4	2	1	0	NA
B) SURV AND TEST	4	0	1	4	2	3	1	NA
C) EQUIPMENT	1	1	1	4	3	2	0	NA
D) POTENTIAL MAINT	0	0	1	1	0	2	1	NA
DESIGN/INSTALLATION/FABRICATION	4	1	3	4	2	1	1	NA
EQUIPMENT FAILURE	1	0	0	1	0	1	0	NA

TABLE 8.53

MILLSTONE 1

PI EVENTS FOR 88-4

SSF 12/12/88 LER# 24588013 50.72#: POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: SEISMIC QUALIFICATION OF ONE 4160 V BUS WAS OMITTED FROM REVIEW PROGRAM. CONDITION COULD HAVE RESULTED IN SHIFTING OF SWITCHGEAR, AFFECTING OTHER BUSES AND FAILURE OF EDG. POTENTIAL LOSS OF ALL AC.

PI EVENTS FOR 89-1

SSF 01/31/89 LER# 24589001 50.72#: 14605 POWER: 100
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: ANALYSIS OF A SMALL BREAK LOCA RESULTED IN DETERMINATION THAT THE RWCU SYSTEM CONTAINMENT ISOLATION VALVES MAY NOT CLOSE FOLLOWING A BREAK IN THE DRYWELL. EQ OF ISOLATION VALVES IN QUESTION.

SE 03/22/89 LER# 24589003 50.72#: 15092 POWER: 100
DESC: THE LICENSEE RECOGNIZED THAT A HIGH ENERGY LINE BREAK INSIDE CONTAINMENT COULD CAUSE DEGRADATION OF CONTAINMENT INTEGRITY. THE RBCCW SYSTEM WOULD NOT REMAIN A CLOSED SYSTEM.

SSF 03/22/89 LER# 24589003 50.72#: POWER: 100
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: AN ENGINEERING DESIGN REVIEW DETERMINED THAT THE REACTOR BUILDING CLOSED COOLING WATER SYSTEM DID NOT MEET TEMPERATURE DESIGN REQUIREMENTS OF A HIGH ENERGY LINE BREAK EVENT. THIS COULD RESULT IN A BREACH OF CONTAINMENT INTEGRITY DURING A HELB EVENT.

PI EVENTS FOR 89-2

SCRAM 04/07/89 LER# 24589005 50.72#: 15246 POWER: 80
DESC: TURBINE TRIPPED DUE TO A MOISTURE SEPARATOR DRAIN TANK HI-HI WATER LEVEL, DUE TO A FAILED LEVEL CONTROL VALVE, RESULTING IN A REACTOR TRIP.

SSA 04/29/89 LER# 24589012 50.72#: 15478 POWER: 0
DESC: THE REMOVAL OF POWER TO THE RESERVE STATION SERVICE TRANSFORMER ALONG WITH THE EFFECT OF ONGOING MODIFICATIONS CAUSED THE EMERGENCY DIESEL GENERATOR TO START AND LOAD.

SSF 05/02/89 LER# 24589013 50.72#: POWER: 0
SYSTEM: LOW PRESSURE CORE SPRAY SYSTEM
DESC: DURING A HYDROSTATIC TEST, IT WAS NOTED THAT THE INSTALLED CORE SPRAY ORIFICE FLANGES WERE RATED AT 150 PSIG INSTEAD OF DESIGN REQUIRED 300 PSIG FLANGES. BASED ON STRESS CALCULATIONS, THE 150 PSIG FLANGES ARE NOT ADEQUATE FOR THE C.S. DESIGN PARAMETERS.

SSF 05/11/89 LER# 24589011 50.72#: 15595 POWER: 0
SYSTEM: AUTOMATIC DEPRESSURIZATION SYSTEM
DESC: FOUR OF SIX MAIN STEAM SAFETY RELIEF VALVES FAILED TO OPEN DURING TESTING AT THEIR T.S. REQUIRED SET PRESSURES. SETPOINT DRIFT POSTULATED AS BEING MILD OXIDIC BONDING BETWEEN THE PILOT DISC AND SEAT.

SE 05/29/89 LER# 24589014 50.72#: 15741 POWER: 100
DESC: NEW INBOARD AND OUTBOARD SEALS FAILED ON A RECIRCULATION PUMP.

SCRAM 06/02/89 LER# 24589015 50.72#: 15771 POWER: 1
DESC: LOW CONDENSER VACUUM WHILE CONDUCTING A STARTUP CAUSED A REACTOR SCRAM DUE TO THE OPERATOR'S INATTENTION TO DETAIL.

PI EVENTS FOR 89-3

NONE

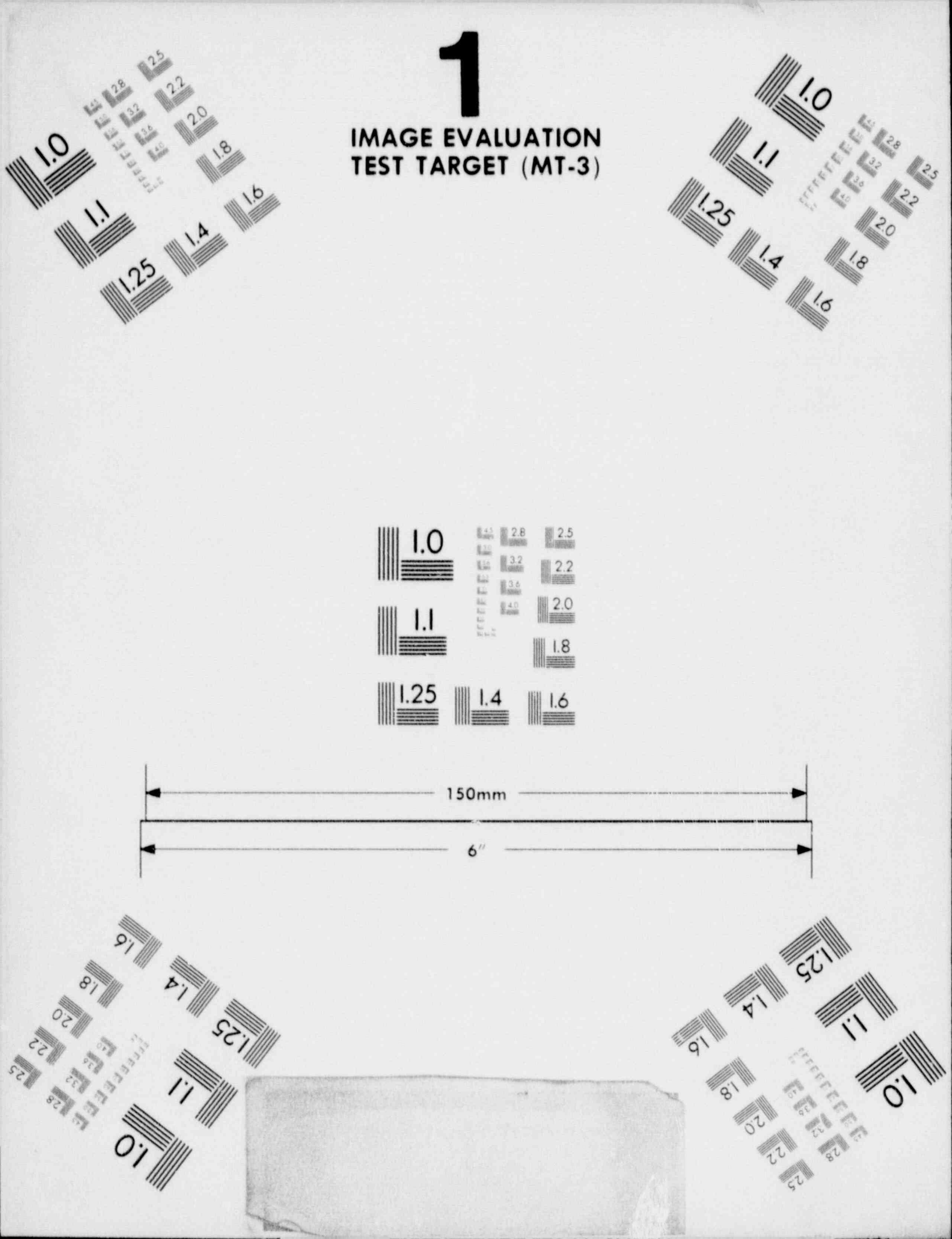
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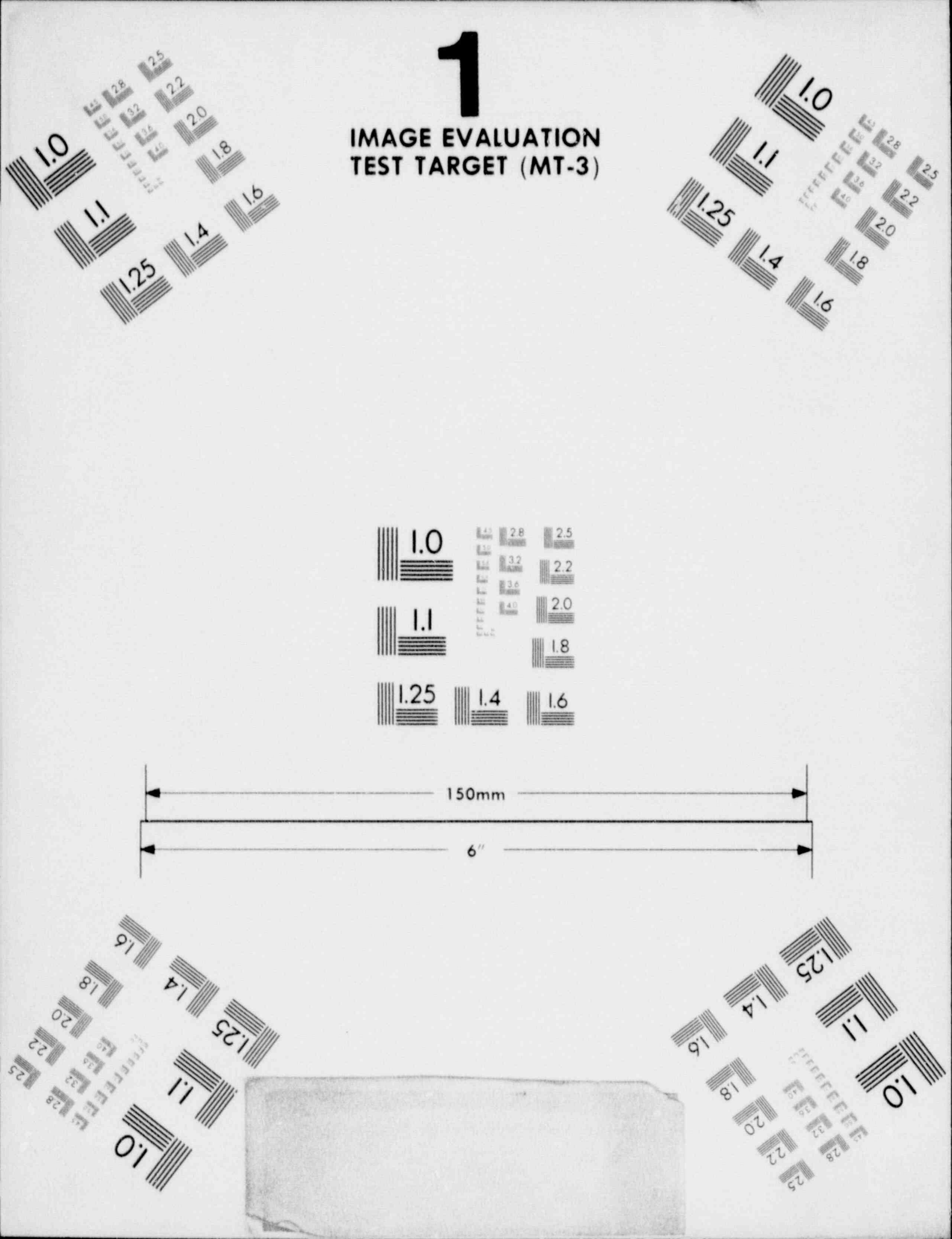
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"


1
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

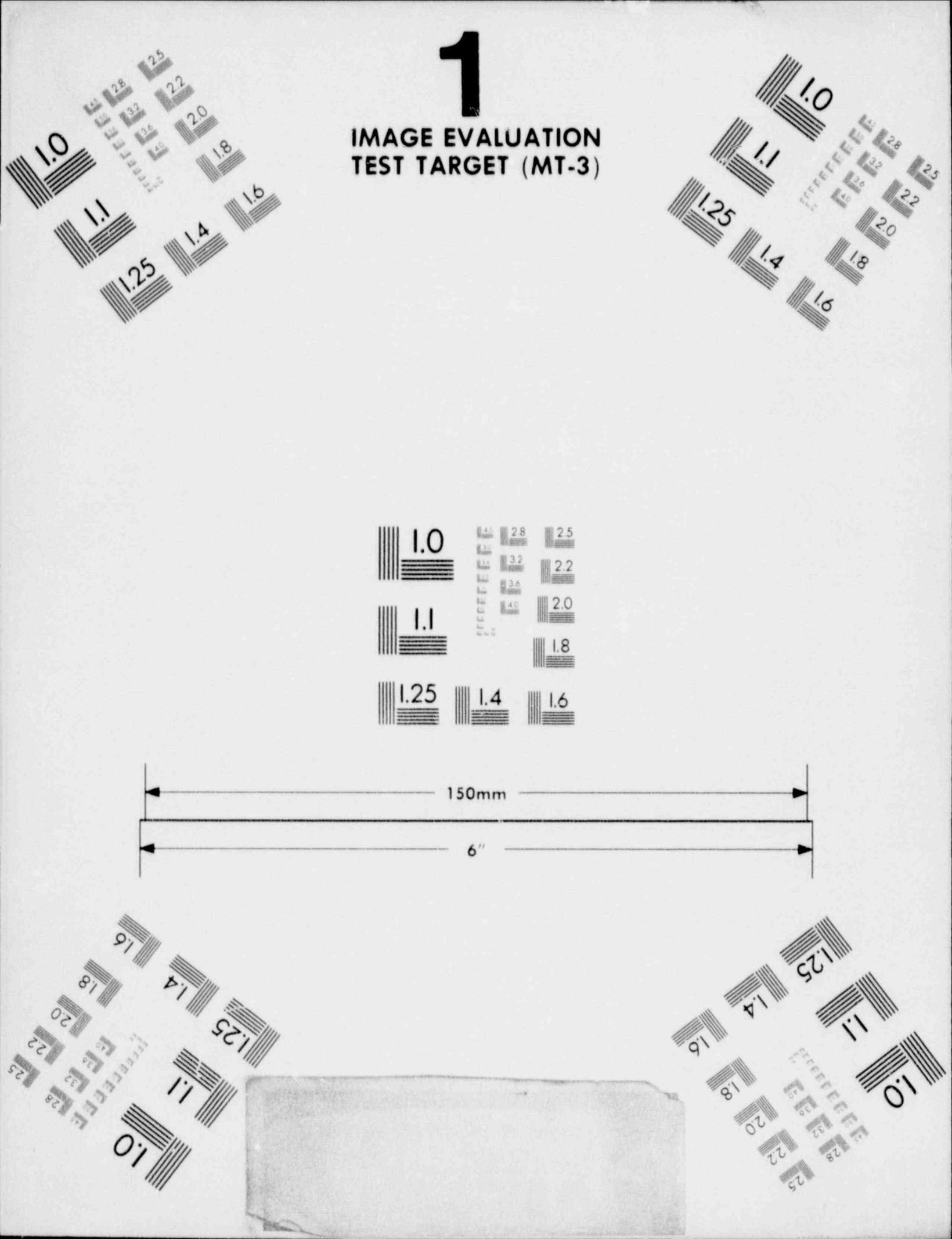

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IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

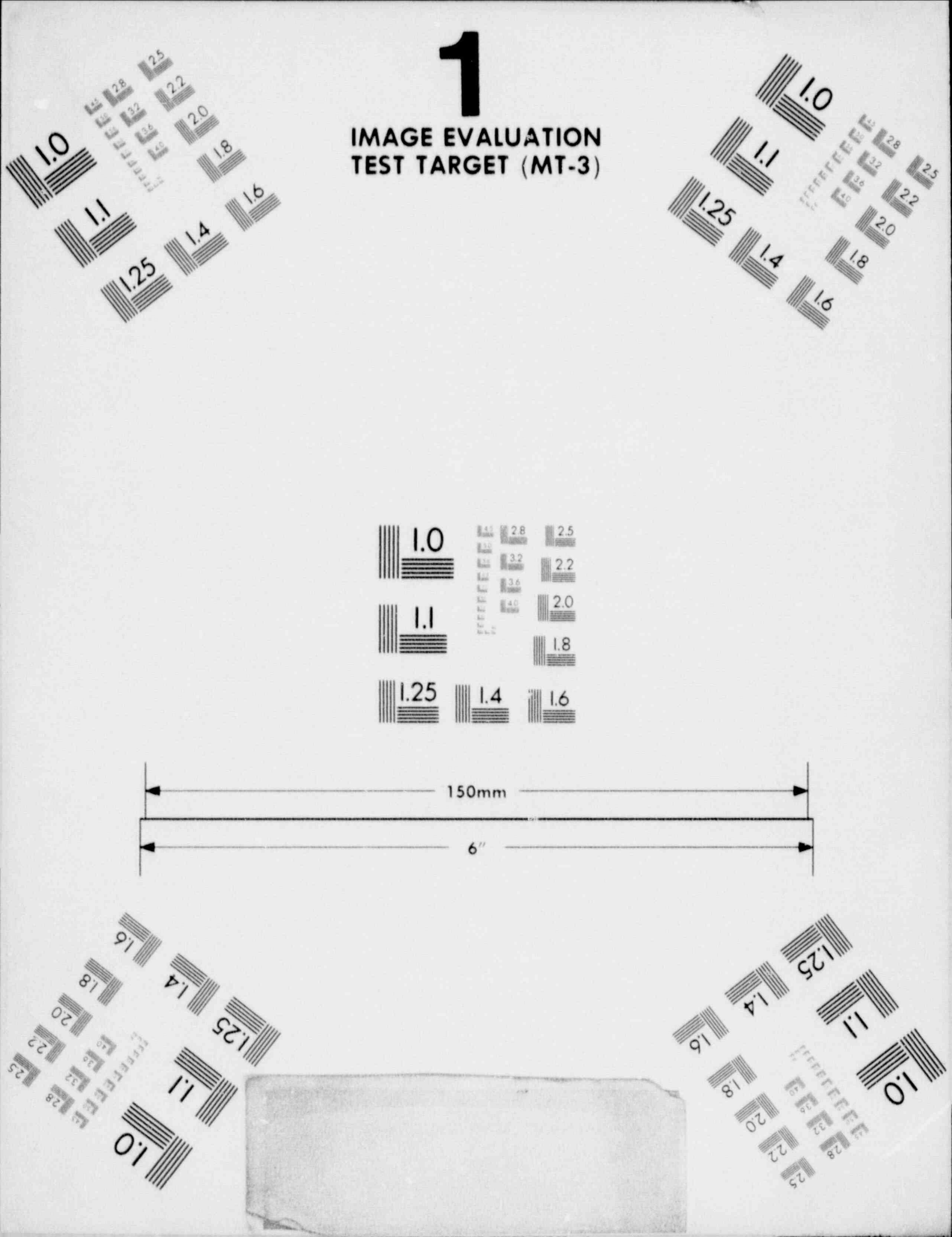
1
IMAGE EVALUATION
TEST TARGET (MT-3)
1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
150mm
6"

TABLE 8.53 (CONT.)

MILLSTONE 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.46	.00	.00	.00	.00	1.12	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	1	0	0	0	0	2	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	1	0	0	1	1	0
SAFETY SYSTEM FAILURES	0	1	1	1	1	2	2	0
FORCED OUTAGE RATE (%)	0	2	0	0	6	0	11	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.46	.00	.00	.47	.00	1.12	.00
CRITICAL HOURS	2158	2155	2183	2208	2116	2160	890	2200
COLLECTIVE RADIATION EXPOSURE	32	96	32	6	11	41	377	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	0	0	2	2	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	1	NA
OTHER PERSONNEL	1	2	0	0	1	0	1	NA
MAINTENANCE	3	2	0	2	4	1	8	NA
A) MAINT PERSONNEL	0	0	0	0	1	0	2	NA
B) SURV AND TEST	3	1	0	0	1	1	2	NA
C) EQUIPMENT	0	1	0	2	2	0	4	NA
D) POTENTIAL MAINT	0	1	0	2	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	2	1	0	1	3	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.54

MILLSTONE 2

PI EVENTS FOR 88-4

SSA 10/25/88 LER# 33688011 50.72#: 13809 POWER: 100
DESC: MAINTENANCE TECH INSTALLED GROUNDING DEVICE ON LINE SIDE INSTEAD OF LOAD SIDE CAUSING LOSS OF ONSITE POWER. BOTH DIESELS STARTED AND LOADED BUSES.

SE 10/25/88 LER# 33688011 50.72#: 13809 POWER: 100
DESC: LOSS OF ALL ONSITE VITAL A.C. POWER DUE TO A SINGLE FAILURE.

SCRAM 10/25/88 LER# 33688011 50.72#: 13809 POWER: 100
DESC: LOSS OF ONSITE POWER CAUSED A REACTOR TRIP DUE TO TECH INSTALLING GROUNDING DEVICE ON LINE SIDE INSTEAD OF LOAD SIDE OF 4160V BREAKER.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSA 04/30/89 LER# 33689005 50.72#: 15484 POWER: 0
DESC: A PARTIAL SAFETY INJECTION ACTUATION SIGNAL OCCURRED WHILE A TEST MODULE WAS BEING INSTALLED IN THE ENGINEERED SAFETY FEATURES ACTUATION SYSTEM CABINET. THE ONLY EQUIPMENT THAT OPERATED WAS THE BORIC ACID TRANSFER PUMP.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	.46	.00	.00	.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	3	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	0	1	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	1	0	12	0	2	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.46	.00	.66	.00	.00	.00	.00	.00
CRITICAL HOURS	2170	1037	1526	2208	2183	826	1560	2208
COLLECTIVE RADIATION EXPOSURE	15	476	160	28	55	470	176	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	0	0	0	0	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	5	0	1	1	1	2	NA
MAINTENANCE	3	5	2	1	1	2	3	NA
A) MAINT PERSONNEL	1	4	0	0	1	0	1	NA
B) SURV AND TEST	0	2	0	1	0	1	2	NA
C) EQUIPMENT	2	0	2	0	0	1	0	NA
D) POTENTIAL MAINT	0	0	2	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.55

MILLSTONE 3

PI EVENTS FOR 88-4

SCRAM 10/05/88 LER# 42388023 50.72#: 13623 POWER: 100
DESC: MSIV CLOSED DURING MSIV TESTING CAUSING SCRAM DUE TO PROCEDURE NOT PLACING ADEQUATE JUMPERS TO PERFORM TEST.

SSF 11/18/88 LER# 42388026 50.72#: 14370 POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: CONDITIONS DISCOVERED THAT COULD CAUSE LOSS OF BOTH VITAL BUSES. MAIN GEN. BKR WOULD NOT TRIP UNDER CERTAIN CONDITIONS,LEAVING VITAL BUSES CONNECTED, VOLT/FREQ DECAY DURING COASTDOWN. DAMAGE TO BUSES.

SCRAM 12/29/88 LER# 42388028 50.72#: 14369 POWER: 75
DESC: DURING DIESEL TESTING - CROSS-TIE BETWEEN VITAL AND NON-VITAL BUS OPENED CAUSING LOSS OF NON-VITAL BUS - POWER LOST TO CONTROL RODS (CRD) AND CRD UNLATCHED AND A SCRAM ON NEGATIVE FLUX RATE.

PI EVENTS FOR 89-1

SSA 02/17/89 LER# 42389005 50.72#: 14790 POWER: 0
DESC: OPERATOR TOOK PZR PRESSURE SI BLOCK SWITCH TO RESET VERSUS BLOCK CAUSING SI INJECTION - INJECTION VALVE SHUT REMOTELY, BUT WOULD NOT SHUT COMPLETELY, HAD TO BE LOCALLY SHUT.

PI EVENTS FOR 89-2

SCRAM 05/11/89 LER# 42389009 50.72#: 15596 POWER: 100
DESC: WHILE DEENERGIZING THE ROD DROP TIME RECORDING SYSTEM, A NEGATIVE RATE REACTOR SCRAM OCCURRED DUE TO AN INADEQUATE PROCEDURE.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.74	.54	.00	1.14	.00	1.13	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	2	0	1	0
SAFETY SYSTEM ACTUATIONS	1	1	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	3	0	0	1	0	0	0
FORCED OUTAGE RATE (%)	0	3	16	0	23	13	15	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	1.07	.00	.57	.53	3.40	.52
CRITICAL HOURS	731	1359	1869	2208	1760	1900	882	1926
COLLECTIVE RADIATION EXPOSURE	NA	55	19	3	6	8	146	NA
CAUSE CODES:								
ADMINISTRATIVE	7	7	3	1	4	3	3	NA
LICENSED OPERATOR	5	2	2	0	0	3	2	NA
OTHER PERSONNEL	6	5	0	2	2	0	1	NA
MAINTENANCE	16	9	5	3	5	2	4	NA
A) MAINT PERSONNEL	4	5	0	0	0	0	0	NA
B) SURV AND TEST	9	3	3	2	3	2	2	NA
C) EQUIPMENT	1	1	2	1	2	0	1	NA
D) POTENTIAL MAINT	2	1	2	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	4	0	0	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.56

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PI EVENTS FOR 88-4

SCRAM 12/16/88 LER# 26388007 50.72#: 14263 POWER: 100
DESC: A TURBINE TRIP ON HIGH REACTOR LEVEL SIGNAL CAUSED A REACTOR TRIP. THE CAUSE WAS A DEGRADED LEVEL TRANSMITTER PRESSURIZING VALVE.

PI EVENTS FOR 89-1

SSF 01/15/89 LER# 26389002 50.72#: POWER: 100
SYSTEM: FIRE DETECTION SYSTEM
DESC: THE FIRE DETECTION SYSTEM REMOTE ANNUNCIATOR SYSTEM WAS INOPERABLE FOR APPROX. 60 HOURS. POWER WAS INADVERTENTLY REMOVED FOR MODIFICATION ACTIVITY. ROOT CAUSE WAS INADEQUATE WORK CONTROLS.

PI EVENTS FOR 89-2

SSF 04/03/89 LER# 26389005 50.72#: 15193 POWER: 77
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM FAILED OPERABILITY TEST. THE CAUSE OF AN ISOLATION SIGNAL IS UNKNOWN AND THE ISOLATION COULD NOT BE DUPLICATED. THE SYSTEMS WERE DECLARED INOPERABLE.

SSF 04/14/89 LER# 26389006 50.72#: POWER: 74
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: THE RCIC SYSTEM WAS DECLARED INOPERABLE DUE TO TURBINE STM SUPPLY LINE BEING FILLED WITH CONDENSATE. THE STEAM LINE WAS FILLED AS A RESULT OF DRAIN POT LEVEL SWITCH TEST WHICH LEFT THE DRAIN VALVE SHUT. THE HPCI SYSTEM WAS INOPERABLE.

SCRAM 06/19/89 LER# 26389009 50.72#: 15905 POWER: 59
DESC: CHECK VALVE ON DISCHARGE OF 12" MFP FAILED TO SEAT WHEN PUMP SECURED FOR MAINTENANCE CAUSING REVERSE FLOW THROUGH PUMP AND A LOW REACTOR LEVEL SCRAM.

SSF 06/28/89 LER# 26389011 50.72#: 15978 POWER: 0
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI INJECTION FLOW CAPABILITY WOULD BE DEGRADED DUE TO EXCESSIVE LEAKAGE PAST THE REACTOR WATER CLEANUP (RWCU) RETURN CHECK VALVE IN THE EVENT OF FAILURE OF RWCU SYSTEM NON-SAFETY, NON-SEISMIC PIPING.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.46	.00	.48	.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	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	1	3	0
FORCED OUTAGE RATE (%)	0	0	0	0	1	0	5	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.46	.00	.00	.00
CRITICAL HOURS	857	2184	2183	2208	2194	2160	2074	1157
COLLECTIVE RADIATION EXPOSURE	428	47	24	23	16	21	27	NA
CAUSE CODES:								
ADMINISTRATIVE	5	1	1	0	0	2	2	NA
LICENSED OPERATOR	2	0	0	0	1	0	2	NA
OTHER PERSONNEL	2	3	0	0	0	1	3	NA
MAINTENANCE	6	2	1	0	0	4	7	NA
A) MAINT PERSONNEL	1	0	0	0	0	2	2	NA
B) SURV AND TEST	5	2	1	0	0	1	4	NA
C) EQUIPMENT	1	0	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	1	0	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	3	0	1	1	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.57

NINE MILE PT. 1

PI EVENTS FOR 88-4

SE 11/18/88 LER# 22088020 50.72#: 14039 POWER: 0
DESC: VOLTAGE DROP IN 125 VDC SYSTEM.

SSF 11/18/88 LER# 22088020 50.72#: 14039 POWER: 0
SYSTEM: DC POWER SYSTEM - CLASS 1E
DESC: 125V DC SYSTEM CAN NOT MEET ITS TECH. SPEC. DESIGN BASIS OF A MIN. BATTERY VOLTAGE OF 106 V BECAUSE OF UNDERSIZED CABLES. PLANS ARE TO REPLACE CABLES FROM THE BATTERIES TO THE MG SETS.

PI EVENTS FOR 89-1

SSA 03/08/89 LER# 22089002 50.72#: 14970 POWER: 0
DESC: AUTO TRANSFER OF BUS DID NOT OCCUR. DIESEL TAGGED OUT AND DID NOT START. LOSS OF I&C BUS 130 WHEN OFFSITE TRANSFORMER WAS LOST CAUSING A LOW VOLT CONDITION.

PI EVENTS FOR 89-2

SSF 06/30/89 LER# 22089010 50.72#: POWER: 0
SYSTEM: RADIATION MONITORING SYSTEM
DESC: THE SERVICE WATER EFFLUENT RADIATION MONITOR SYSTEM COULD BE RENDERED INOPERABLE DUE TO FAILURES WHICH DO NOT RESULT IN DOWNSCALE INDICATION WHICH WOULD NOT PROVIDE FAILURE ANNUNCIATION. THIS CONDITION IS DUE TO INADEQUATE MODIFICATION DESIGN REVIEW.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.23	.00	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	5	1	0	0	0	1	0	0
SIGNIFICANT EVENTS	1	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	0	1	0	1	0
FORCED OUTAGE RATE (%)	28	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.85	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	1620	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	32	283	236	152	133	56	81	NA
CAUSE CODES:								
ADMINISTRATIVE	8	4	4	2	2	4	4	NA
LICENSED OPERATOR	0	0	0	0	0	1	0	NA
OTHER PERSONNEL	4	4	0	0	1	0	1	NA
MAINTENANCE	10	6	4	1	2	4	1	NA
A) MAINT PERSONNEL	1	3	0	0	0	0	0	NA
B) SURV AND TEST	4	2	2	1	2	4	1	NA
C) EQUIPMENT	2	2	1	0	0	0	0	NA
D) POTENTIAL MAINT	5	1	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	3	2	1	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.58

NINE MILE PT. 2

PI EVENTS FOR 88-4

SSA 10/08/88 LER# 41088043 50.72#: 13646 POWER: 0
DESC: TECH HAD DIGITAL VOLT METER IN RESISTENCE MODE VERSUS VOLTAGE MODE CAUSING LOW REACTOR LEVEL SIGNAL HPCS START.

SSF 10/11/88 LER# 41088055 50.72#: POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: PRIMARY CONTAINMENT INTEGRITY DISCOVERED TO BE IN A DEGRADED CONDITION. A PLUG WAS FOUND MISSING FROM A TEST CONNECTION ON THE DRYWELL HEAD SEAL ASSEMBLY BYPASSING ONE OF THE REQUIRED REDUNDANT SEALS.

SSF 11/23/88 LER# 41088065 50.72#: POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: EMERGENCY DIESEL GENERATORS DECLARED INOPERABLE UPON THE DISCOVERY THAT NON-SAFETY RELATED POST LUBE PILOT VALVES HAD BEEN INSTALLED. EDG VENDOR ERROR.

SSA 12/26/88 LER# 41088062 50.72#: 14346 POWER: 0
DESC: LOST ALL OFFSITE POWER WHEN PERFORMING MAINTENANCE ON ONE LINE AND STARTUP TRANSFORMER BLEW UP AND CAUGHT FIRE. DIESELS STARTED AND LOADED BUSES.

PI EVENTS FOR 89-1

SE 02/04/89 LER# 50.72#: 14648 POWER: 0
DESC: PENETRATIONS HAVE BEEN FOUND WITHOUT SEALS AND WITH INADEQUATE SEALS. AS A RESULT, INTERNAL FLOODING BYPASS WATER TIGHT DAMS AND AFFECT ESF CABLING, HENCE ESF OPERABILITY.

SSA 02/19/89 LER# 41089006 50.72#: 14801 POWER: 0
DESC: PRESSURE SPIKE WHEN BACKFILLING A LEVEL TRANSMITTER REFERENCE LEG CAUSED HPCS ACTUATION AND HPCS DIESEL GENERATOR TO START.

SE 02/23/89 LER# 50.72#: POWER: 0
DESC: LOSS OF OFFSITE POWER WITH A SINGLE FAILURE IN 1 EDG COULD LEAD TO LOSS OF 2ND DUE TO FAILURE TO ISOLATE SW TRAINS AND SUBSEQUENT EDG UNDERCOOLING. CAUSED BY CONTROL LOGIC DESIGN FLAW WHICH SHOULD AUTOMATICALLY ISOLATE THE 2 SW DIV. (MR: 02/23/89)

SSA 02/28/89 LER# 41089004 50.72#: 14881 POWER: 0
DESC: PORTION OF AN ELECTRICAL MAINTENANCE TEST PROCEDURE MISSED CAUSING THE DIVISION I LOW PRESSURE COOLANT INJECTION PUMP TO START.

SSA 03/21/89 LER# 41089010 50.72#: 15080 POWER: 0
DESC: DEGRADED VOLTAGE ON 4160 EMERGENCY BUS 103 CAUSED DIESEL START AND LOAD TO BUS.

PI EVENTS FOR 89-2

SSA 04/13/89 LER# 41089014 50.72#: 15318 POWER: 100
DESC: LOSS OF 13.8KV NON-SAFETY RELATED BUS CAUSED A REACTOR TRIP ON LOW REACTOR LEVEL HPCS AND RCIC INJECTIONS INITIATED AND MSIV CLOSED ON LOSS OF CONDENSER VACUUM.

SCRAM 04/13/89 LER# 41089014 50.72#: 15318 POWER: 100
DESC: LOSS OF 13.8KV NON-SAFETY RELATED BUS DUE TO LOOSE WIRE CONNECTIONS IN THE MAIN GENERATOR POTENTIAL TRANSFORMER CAUSED A TURBINE TRIP REACTOR SCRAM.

SCRAM 04/22/89 LER# 41089009 50.72#: 15423 POWER: 100
DESC: THE REACTOR TRIPPED DUE TO AN AVERAGE POWER RANGE MONITOR UPSCALE READING WHEN A PORTABLE HANDHELD RADIO WAS KEYED NEXT TO THE EHC CABINET CAUSING MOVEMENT OF TURBINE CONTROL AND BYPASS VALVES.

TABLE 8.58 (CONT.)

NINE MILE PT. 2 (CONT.)

PI EVENTS FOR 89-3

SCRAM 09/08/89 LER# 41089024 50.72#: 16543 POWER: 88
DESC: REACTOR RECIRCULATION PUMPS AUTOMATICALLY DOWN-SHIFTED FROM FAST TO SLOW SPEED. THE REACTOR HAD AN AUTOMATIC TRIP WHEN THE MODE SELECTOR SWITCH WAS TAKEN TO SHUTDOWN AND PASSED THROUGH STARTUP WITH POWER GREATER THAN 15 PERCENT.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.80	2.07	1.56	.56	.00	.00	.99	.54
SCRAMS < 15% POWER	1	0	1	0	0	0	0	0
TOTAL SCRAMS	3	3	3	1	0	0	2	1
SAFETY SYSTEM ACTUATIONS	1	3	0	1	2	3	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	2	0	0
SAFETY SYSTEM FAILURES	6	1	1	4	2	0	0	0
FORCED OUTAGE RATE (%)	NA	NA	19	23	0	0	12	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	1.56	1.68	.00	.00	.99	.54
CRITICAL HOURS	1113	1448	1279	1782	16	0	2020	1869
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	56	81	NA
CAUSE CODES:								
ADMINISTRATIVE	8	8	4	12	7	5	6	NA
LICENSED OPERATOR	9	3	1	3	0	1	5	NA
OTHER PERSONNEL	9	3	2	5	5	3	1	NA
MAINTENANCE	15	12	5	16	11	6	8	NA
A) MAINT PERSONNEL	4	3	0	3	2	1	1	NA
B) SURV AND TEST	8	7	3	7	7	5	6	NA
C) EQUIPMENT	6	1	3	9	2	1	2	NA
D) POTENTIAL MAINT	3	2	3	6	3	0	0	NA
DESIGN/INSTALLATION/FABRICATION	14	7	5	12	6	2	1	NA
EQUIPMENT FAILURE	0	0	1	4	0	1	1	NA

TABLE 8.59

NORTH ANNA 1

PI EVENTS FOR 88-4

SSF 10/13/88 LER# 33888024 50.72#: 13718 POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: OPERATION WITH 2 COMPONENT COOLING WATER HXS INSTEAD OF ONE HX PER FSAR. THIS COULD RESULT IN A POTENTIAL LOSS OF ESW PUMPS OR INADEQUATE FLOW TO HXS. VARIOUS TIMES OVER LIFE OF BOTH NORTH ANNA 1,2

PI EVENTS FOR 89-1

SE 01/07/89 LER# 33889002 50.72#: POWER: 100
DESC: INSTRUMENT AIR SYSTEM CONTAMINATION/DEGRADATION FROM WATER AND OIL. NORTH ANNA 2 LICENSED IN 1980. (MORNING REPORT: 01/13/89)

SE 02/25/89 LER# 33889005 50.72#: 14858 POWER: 76
DESC: A STEAM GENERATOR TUBE PLUG FAILED. PRIMARY-TO-SECONDARY LEAK RATE REACHED APPROX 70 GPM. CAUSE OF PLUG FAILURE IS STILL UNDER INVESTIGATION.

SSF 02/25/89 LER# 33889005 50.72#: 14860 POWER: 76
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: THE RESIDUAL HEAT REMOVAL SYSTEM WAS RENDERED INOPERABLE WHEN THE SUCTION ISOLATION VALVE FAILED CLOSED DUE TO THE FAILURE OF THE HIGH PRESSURE AUTO-CLOSURE RELAY.

SCRAM 02/25/89 LER# 33889005 50.72#: 14858 POWER: 76
DESC: AIR SUPPLY LINE TO "C" FRV FAILED CAUSING FF/SF MISMATCH/LOW SG LEVEL SCRAM. SUBSEQUENT SG TUBE LEAK FOUND AFTER SCRAM.

SSA 03/23/89 LER# 33889006 50.72#: 15096 POWER: 0
DESC: PERSONNEL ERROR DID NOT PLACE BREAKER UNDERVOLTAGE SWITCHES IN THE BLOCKED POSITION DURING TESTING CAUSING ALTERNATE FEEDER BREAKER TO OPEN AND LOSS OF POWER TO EMERGENCY BUS H AND DIESEL START AND LOAD.

PI EVENTS FOR 89-2

SSF 04/[illegible]/89 LER# 33889008 50.72#: POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: ESSENTIAL SERVICE WATER FLOW WAS FOUND TO BE LESS THAN THAT REQUIRED BY THE FSAR (15,990 VS 18,000 GPM). UNDER DESIGN BASIS ACCIDENT CONDITIONS CONTAINMENT DEPRESSURIZATION REQUIREMENTS MAY NOT HAVE BEEN MET.

SSA 04/16/89 LER# 33889010 50.72#: 15352 POWER: 0
DESC: A LEAD WAS INADVERTANTLY LIFTED FROM THE WRONG RELAY CAUSING A LOSS OF THE EMERGENCY BUS. THE DIESEL GENERATOR STARTED AND PICKED UP THE BUS.

PI EVENTS FOR 89-3

SCRAM 07/19/89 LER# 33889014 50.72#: 16128 POWER: 90
DESC: THE MAIN TURBINE TRIPPED CAUSING A REACTOR TRIP WHEN AN O-RING ON THE TURBINE TRIP SOLENOID OPERATED VALVE FAILED.

TABLE 8.59 (CONT.)

NORTH ANNA 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.60	.00	.00	.46	.00	.75	.00	.54
SCRAMS < 15% POWER	0	2	0	0	0	0	0	0
TOTAL SCRAMS	1	2	0	1	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	1	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	2	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	1	1	1	0
FORCED OUTAGE RATE (%)	25	37	0	6	0	10	0	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.19	.69	.00	.46	.00	.75	.00	.54
CRITICAL HOURS	1680	1459	2183	2169	2209	1334	0	1840
COLLECTIVE RADIATION EXPOSURE	145	31	10	8	10	174	560	NA
CAUSE CODES:								
ADMINISTRATIVE	1	5	3	0	8	1	2	NA
LICENSED OPERATOR	0	3	0	0	0	0	0	NA
OTHER PERSONNEL	0	3	0	0	0	4	2	NA
MAINTENANCE	3	14	1	1	5	5	5	NA
A) MAINT PERSONNEL	0	1	0	0	2	3	2	NA
B) SURV AND TEST	1	5	1	0	3	1	1	NA
C) EQUIPMENT	2	8	0	1	1	1	1	NA
D) POTENTIAL MAINT	2	5	0	1	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	0	3	0	1	NA
EQUIPMENT FAILURE	1	1	0	0	0	0	0	NA

TABLE 8.60

NORTH ANNA 2

PI EVENTS FOR 88-4

88F 10/13/88 LER# 33888024 50.72#: 13718 POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: OPERATION WITH 2 COMPONENT COOLING WATER HXS INSTEAD OF ONE HX PER FSAR. THIS COULD RESULT IN A POTENTIAL LOSS OF ESW PUMPS OR INADEQUATE FLOW TO HXS. VARIOUS TIMES OVER LIFE OF BOTH NORTH ANNA 1,2

PI EVENTS FOR 89-1

8E 01/07/89 LER# 33889002 50.72#: POWER: 80
DESC: INSTRUMENT AIR SYSTEM CONTAMINATION/DEGRADATION FROM WATER AND OIL. NORTH ANNA 2 LICENSED IN 1980. (MORNING REPORT: 01/13/89)

PI EVENTS FOR 89-2

8EF 04/03/89 LER# 33989007 50.72#: 15199 POWER. 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: COOLING WATER WAS LOST TO THE RHR HEAT EXCHANGERS (ABOUT 22 MINS.) WHEN THE COOLING WATER ISOLATION VALVES CLOSED, RESULTING IN A LOSS OF RHR CAPABILITY. AN INST. AIR SUPPLY VALVE WAS FOUND CLOSED. CAUSED BY A CONTRACTOR PAINTER BUMPED VALVE.

8BA 04/16/89 LER# 33889010 50.72#: 15352 POWER: 0
DESC: A LEAD WAS INADVERTANTLY LIFTED FROM THE WRONG RELAY CAUSING A LOSS OF THE EMERGENCY BUS. THE DIESEL GENERATOR STARTED AND PICKED UP THE BUS.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	0	0	1	0	0	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	1	0	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	1413	2135	2183	2208	2209	1205	1297	2208
COLLECTIVE RADIATION EXPOSURE	145	31	10	8	10	174	560	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	4	0	7	1	3	NA
LICENSED OPERATOR	3	0	0	0	0	1	0	NA
OTHER PERSONNEL	2	1	2	1	1	1	2	NA
MAINTENANCE	7	5	3	1	5	3	4	NA
A) MAINT PERSONNEL	1	0	1	0	2	1	2	NA
B) SURV AND TEST	5	2	2	1	3	0	2	NA
C) EQUIPMENT	1	3	0	0	1	1	0	NA
D) POTENTIAL MAINT	2	2	0	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	0	3	0	1	NA
EQUIPMENT FAILURE	1	1	0	0	0	0	1	NA

TABLE 8.61

OCONEE 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SCRAM 01/02/89 LER# 26989001 50.72#: 14387 POWER: 100
DESC: TECH FAILED TO FOLLOW PROCEDURE AND DID NOT BYPASS CHANNEL 'A' CAUSING HIGH RCS TEMP SCRAM DURING RPS CALIBRATION.

SE 01/03/89 LER# 26989002 50.72#: 14399 POWER: 26
DESC: ELECTRICAL FIRE, LOSS OF FORCED COOLANT FLOW, AND EXCESSIVE COOLDOWN RATE.

SSF 01/03/89 LER# 26989002 50.72#: 14399 POWER: 26
SYSTEM: INTEGRATED CONTROL SYSTEM
DESC: THE INTEGRATED CONTROL SYSTEM (ICS) FAILED TO ACTUATE AFTER ALL RCS PUMPS TRIPPED AS A RESULT OF A SWITCHGEAR FIRE. THE FIRE DAMAGED THE ICS SIGNAL CABLES RESULTING IN ERRONEOUS SIGNALS.

SSF 01/07/89 LER# 26989003 50.72#: 14441 POWER: 0
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: REACTOR BUILDING COOLING UNITS DECLARED INOPERABLE, FAILED SURVEILLANCE TEST. DROP OUT PLATES FAILED TO SATISFY DESIGN REQUIREMENT AND SOME OF THE FUSIBLE LINKS WERE SOLID METAL. NO PREVIOUS TESTING.

SSF 03/01/89 LER# 26989006 50.72#: POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: A DESIGN STUDY FOUND THAT THE EMERGENCY POWER SWITCHING LOGIC SYSTEM COULD BE RENDERED INOPERABLE BY SINGLE RELAY FAILURE. THIS WOULD PREVENT THE BACKUP POWER SOURCE FROM SUPPLYING POWER TO THE MAIN FEEDER BUS UNDER CERTAIN ACCIDENT SCENARIOS.

PI EVENTS FOR 89-2

SE 06/07/89 LER# 26989009 50.72#: 15805 POWER: 100
DESC: UNANALYZED PLANT CONDITION THAT COULD RESULT IN LOSS OF ALL AC POWER TO SAFETY-RELATED LOADS. EVENT INVOLVES UNITS 2 AND 3 ALSO.

SSF 06/07/89 LER# 26989009 50.72#: 15805 POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN BASIS ANALYSIS REVIEW DETERMINED THAT SEVERAL CASES INVOLVING THE STANDBY BUS DURING A LOCA COULD RESULT IN A LOSS OF ELECTRICAL POWER. THE CASES INCLUDE DEGRADED OFF-SITE VOLTAGE AND FAILURE OF STBY BREAKER WITH ONE STBY BUS INOPERABLE.

SSF 06/08/89 LER# 26989010 50.72#: POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN ENGINEERING ANALYSIS OF THE ADEQUACY OF THE CENTRAL SWITCHYARD AS AN OFFSITE POWER SUPPLY DETERMINED THAT IT IS NOT QUALIFIED AS SUCH DUE TO INADEQUATE PROTECTIVE RELAYING.

SSF 06/18/89 LER# 26989011 50.72#: 15943 POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: AN ERROR IN A TEST PROCEDURE RESULTED IN BOTH INDEPENDENT TRAINS OF THE ON-SITE EMERGENCY POWER SYSTEM TO BE INOPERABLE. 21 MINUTES DURATION.

PI EVENTS FOR 89-3

SCRAM 08/10/89 LER# 26989013 50.72#: 16293 POWER: 40
DESC: I & C TECHNICIAN PLACED SWITCH TO WRONG POSITION CAUSING REACTOR SCRAM.

TABLE 8.61 (CONT.)

OCONEE 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.46	.00	.92	.00	.50
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	1	0
SAFETY SYSTEM FAILURES	1	1	1	0	0	3	3	0
FORCED OUTAGE RATE (%)	0	0	0	2	0	11	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.46	.00	1.84	.00	.00
CRITICAL HOURS	1375	2184	2183	2193	2209	1090	2183	2016
COLLECTIVE RADIATION EXPOSURE	82	129	42	100	24	62	76	NA
CAUSE CODES:								
ADMINISTRATIVE		5	3	2	1	7	4	NA
LICENSED OPERATOR		0	0	0	0	2	0	NA
OTHER PERSONNEL		1	1	2	0	3	0	NA
MAINTENANCE		5	0	3	1	6	1	NA
A) MAINT PERSONNEL	1	0	0	2	1	2	0	NA
B) SURV AND TEST	2	4	0	1	0	3	1	NA
C) EQUIPMENT	2	2	0	0	0	0	0	NA
D) POTENTIAL MAINT	1	1	0	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	3	2	1	1	3	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.62

OCONEE 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 01/07/89 LER# 26989003 50.72#: 14441 POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: REACTOR BUILDING COOLING UNITS DECLARED INOPERABLE, FAILED SURVEILLANCE TEST. DROP OUT PLATES FAILED TO SATISFY DESIGN REQUIREMENT AND SOME OF THE FUSIBLE LINKS WERE SOLID METAL. NO PREVIOUS TESTING.

SCRAM 02/03/89 LER# 27089002 50.72#: 14635 POWER: 100
DESC: INSTALLING FUSE IN 125 VDC TO EHC CAUSED TURBINE TRIP SCRAM DUE TO MANAGEMENT DEFICIENCY IN NOT DIRECTING HOW INDEPENDENT VERIFICATION WERE TO BE PERFORMED.

SCRAM 02/05/89 LER# 27089003 50.72#: 14653 POWER: 100
DESC: TURBINE TRIP SCRAM WHILE CONDUCTING SURVEILLANCE TEST DUE TO UNKNOWN CAUSES. A SIMILAR TRIP OCCURRED AT UNIT 3 (LER 28788006) DUE TO AN UNKNOWN CAUSE.

SSF 03/01/89 LER# 26989006 50.72#: POWER: 15
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: A DESIGN STUDY FOUND THAT THE EMERGENCY POWER SWITCHING LOGIC SYSTEM COULD BE RENDERED INOPERABLE BY SINGLE RELAY FAILURE. THIS WOULD PREVENT THE BACKUP POWER SOURCE FROM SUPPLYING POWER TO THE MAIN FEEDER BUS UNDER CERTAIN ACCIDENT SCENARIOS.

PI EVENTS FOR 89-2

SCRAM 04/03/89 LER# 27089004 50.72#: 15194 POWER: 100
DESC: PIECE OF THREADED STOCK FELL THREE STORIES ONTO THE CONDENSATE BOOSTER PUMP PRESSURE SWITCH. THE CONDENSATE BOOSTER PUMPS TRIPPED CAUSING MFP TRIP AND REACTOR TRIP DUE TO POOR HOUSEKEEPING A MANAGEMENT DEFICIENCY.

SE 06/07/89 LER# 26989009 50.72#: 15805 POWER: 100
DESC: UNANALYZED PLANT CONDITION THAT COULD RESULT IN LOSS OF ALL AC POWER TO SAFETY-RELATED LOADS. EVENT INVOLVES UNITS 1 AND 3 ALSO.

SSF 06/07/89 LER# 26989009 50.72#: 15805 POWER: 0
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN BASIS ANALYSIS REVIEW DETERMINED THAT SEVERAL CASES INVOLVING THE STANDBY BUS DURING A LOCA COULD RESULT IN A LOSS OF ELECTRICAL POWER. THE CASES INCLUDE DEGRADED OFF-SITE VOLTAGE AND FAILURE OF STBY BREAKER WITH ONE STBY BUS INOPERABLE.

SSF 06/08/89 LER# 26989010 50.72#: POWER: 0
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN ENGINEERING ANALYSIS OF THE ADEQUACY OF THE CENTRAL SWITCHYARD AS AN OFFSITE POWER SUPPLY DETERMINED THAT IT IS NOT QUALIFIED AS SUCH DUE TO INADEQUATE PROTECTIVE RELAYING.

PI EVENTS FOR 89-3

NONE

TABLE 8.62 (CONT.)

OCONEE 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.51	.00	.93	.87	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	2	1	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	1	2	0	0	2	2	0
FORCED OUTAGE RATE (%)	0	0	3	0	0	2	7	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.51	.00	.93	2.62	.00
CRITICAL HOURS	2209	797	2003	1930	2209	2144	1147	2152
COLLECTIVE RADIATION EXPOSURE	82	129	42	100	24	62	76	NA
CAUSE CODES:								
ADMINISTRATIVE	4	4	3	1	1	2	5	NA
LICENSED OPERATOR	2	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	1	0	0	1	1	NA
MAINTENANCE	3	4	0	2	1	3	2	NA
A) MAINT PERSONNEL	1	1	0	1	1	1	1	NA
B) SURV AND TEST	2	2	0	0	0	1	1	NA
C) EQUIPMENT	0	1	0	1	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	3	3	1	1	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.63

OCONEE 3

PI EVENTS FOR 88-4

SCRAM 11/14/88 LER# 28788006 50.72#: 13988 POWER: 35
DESC: A GROUNDED ONCE THROUGH STEAM GENERATOR HIGH LEVEL TRIP SIGNAL MONITOR CAUSED A TURBINE TRIP AND A REACTOR TRIP.

SCRAM 11/14/88 LER# 28788006 50.72#: 13980 POWER: 100
DESC: A GROUNDED ONCE THROUGH STEAM GENERATOR HIGH LEVEL TRIP SIGNAL MONITOR CAUSED A TURBINE TRIP AND A REACTOR TRIP.

PI EVENTS FOR 89-1

SSF 01/07/89 LER# 26989003 50.72#: 14441 POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: REACTOR BUILDING COOLING UNITS DECLARED INOPERABLE, FAILED SURVEILLANCE TEST. DROP OUT PLATES FAILED TO SATISFY DESIGN REQUIREMENT AND SOME OF THE FUSIBLE LINKS WERE SOLID METAL. NO PREVIOUS TESTING.

SE 01/11/89 LER# 28789001 50.72#: 14474 POWER: 0
DESC: REACTOR BUILDING COOLING UNIT WAS DECLARED INOPERABLE WHEN TWO OF THE THREE UNITS WERE FOUND TO BE FOULED, RESULTING IN A HEAT TRANSFER RATE BELOW SAFETY ANALYSES ASSUMPTIONS.

SSF 01/12/89 LER# 28789001 50.72#: 14474 POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: TESTING OF THE "A" AND "C" REACTOR BUILDING COOLING UNITS INDICATED AIR SIDE FOULING HAD OCCURRED. RENDERED SYSTEM INOPERABLE AS POST-LOCA COOLING MIGHT NOT HAVE BEEN SUFFICIENT.

SSF 03/01/89 LER# 26989006 50.72#: POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: A DESIGN STUDY FOUND THAT THE EMERGENCY POWER SWITCHING LOGIC SYSTEM COULD BE RENDERED INOPERABLE BY SINGLE RELAY FAILURE. THIS WOULD PREVENT THE BACKUP POWER SOURCE FROM SUPPLYING POWER TO THE MAIN FEEDER BUS UNDER CERTAIN ACCIDENT SCENARIOS.

SCRAM 03/06/89 LER# 28789002 50.72#: 14943 POWER: 100
DESC: A LOSS OF GENERATOR EXCITATION CAUSED A MAIN TURBINE TRIP AND A SUBSEQUENT REACTOR TRIP. WATER HAMMER IN THE MAIN STEAM TURBINE BYPASS LINE DAMAGED THREE PIPE SUPPORTS.

PI EVENTS FOR 89-2

SE 06/07/89 LER# 26989009 50.72#: 15805 POWER: 100
DESC: UNANALYZED PLANT CONDITION THAT COULD RESULT IN LOSS OF ALL AC POWER TO SAFETY-RELATED LOADS. EVENT INVOLVES UNITS 1 AND 2 ALSO.

SSF 06/07/89 LER# 26989009 50.72#: 15805 POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN BASIS ANALYSIS REVIEW DETERMINED THAT SEVERAL CASES INVOLVING THE STANDBY BUS DURING A LOCA COULD RESULT IN A LOSS OF ELECTRICAL POWER. THE CASES INCLUDE DEGRADED OFF-SITE VOLTAGE AND FAILURE OF STBY BREAKER WITH ONE STBY BUS INOPERABLE.

SSF 06/08/89 LER# 26989010 50.72#: POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: A DESIGN ENGINEERING ANALYSIS OF THE ADEQUACY OF THE CENTRAL SWITCHYARD AS AN OFFSITE POWER SUPPLY DETERMINED THAT IT IS NOT QUALIFIED AS SUCH DUE TO INADEQUATE PROTECTIVE RELAYING.

SSF 06/18/89 LER# 26989011 50.72#: 15943 POWER: 100
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: AN ERROR IN A TEST PROCEDURE RESULTED IN BOTH INDEPENDENT TRAINS OF THE ON-SITE EMERGENCY POWER SYSTEM TO BE INOPERABLE. 21 MINUTES DURATION.

TABLE 8.63 (CONT.)

OCONEE 3 (CONT.)

PI EVENTS FOR 89-3

SCRAM 08/18/89 LER# 28789004 50.72#: 16353 POWER: 100
DESC: A CLEANING CONTRACTOR GOT WATER IN THE 125V DC TURBINE TRIP BUS CAUSING A TURBINE TRIP AND A REACTOR TRIP. A MAIN STEAM RELIEF VALVE STUCK OPEN FOR 22 MINUTES AFTER SCRAM.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.91	.48	.00	.45
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	2	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	1	1	0
SAFETY SYSTEM FAILURES	0	1	1	2	0	3	3	0
FORCED OUTAGE RATE (%)	0	0	24	0	1	4	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	1.80	.84	.91	.96	.00	.45
CRITICAL HOURS	2209	2184	1667	1184	2195	2094	2183	2203
COLLECTIVE RADIATION EXPOSURE	82	129	42	100	24	62	76	NA
CAUSE CODES:								
ADMINISTRATIVE	5	3	4	3	1	3	4	NA
LICENSED OPERATOR	2	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	0	2	1	0	1	0	NA
MAINTENANCE	4	3	2	3	2	3	1	NA
A) MAINT PERSONNEL	2	0	1	1	1	1	0	NA
B) SURV AND TEST	3	2	1	2	0	1	1	NA
C) EQUIPMENT	0	1	1	1	0	1	0	NA
D) POTENTIAL MAINT	0	1	1	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	1	1	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.64

OYSTER CREEK

PI EVENTS FOR 88-4

SSA 10/02/88 LER# 21988022 50.72#: 13603 POWER: 0
DESC: FAULT ON 'B' SIDE ELECTRICAL DISTRIBUTION - 'B' DG DID NOT START AND LOAD THE BUS (REASON DG DID NOT START WAS A PROBLEM IN DG CABLING TO VITAL BUS).

SE 10/02/88 LER# 21988022 50.72#: 13603 POWER: 0
DESC: FAULT ON "B" SIDE OF ELECTRICAL DISTRIBUTION PANEL CAUSED LOSS OF SEVERAL PUMPS USED FOR SHUTDOWN COOLING.

SSF 11/08/88 LER# 21988030 50.72#: 13927 POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: LOSS OF SECONDARY CONTAINMENT DUE TO AN OPEN HEAT EXCHANGER HEAD. AIR FLOWED THROUGH HEAT EXCHANGER INTO SECONDARY CONTAINMENT. CAUSE NOT CLEAR, BUT SEEMS TO BE MISCOMMUNICATIONS BETWEEN OPS AND MAINT

PI EVENTS FOR 89-1

SSF 01/11/89 LER# 21989001 50.72#: POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: POSSIBLE LOSS OF MAIN STEAM LINE ISOLATION CAPABILITY DUE TO EXCESSIVE MAIN STEAM ISOLATION VALVE CONTROL AIR LEAKAGE (ACCUMULATORS). CAUSE: COMPONENT MATERIALS, ASSEMBLY METHOD, AND MAINT. PERFORMED.

SSF 03/03/89 LER# 21989008 50.72#: POWER: UNK
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: ALL 24 CONTAINMENT ISOLATION VALVES WERE DETERMINED TO BE IN A DEGRADED CONDITION AND COULD NOT BE CONSIDERED OPERABLE. A SPECIAL TEST WAS PERFORMED AND ALL VALVES FAILED TO MEET ACCEPTANCE CRITERIA. NO FORMAL SURVEILLANCE OR PM PROGRAM EXISTED.

SSF 03/09/89 LER# 21989009 50.72#: POWER: 0
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: POTENTIAL LOSS OF ADEQUATE CONTAINMENT COOLING DURING A LOCA DUE TO A DESIGN DEFICIENCY IN THE CONTAINMENT SPRAY SYSTEM. LOGIC DESIGN WOULD PREVENT THE OPERATOR FROM COOLING THE TORUS DURING A DBA RESULTING IN TEMP. INCREASE AND LOSS OF NPSH TO PUMPS.

PI EVENTS FOR 89-2

SSA 05/18/89 LER# 21989015 50.72#: 15641 POWER: 100
DESC: OPERATORS OVER-EXCITED MAIN GENERATOR. STARTUP TRANSFORMER DID NOT TRANSFER POWER AND DIESELS STARTED AND LOADED BUSES.

SCRAM 05/18/89 LER# 21989015 50.72#: 15641 POWER: 100
DESC: OPERATORS OVER-EXCITED MAIN GENERATOR WHEN TRYING TO RESTORE GENERATOR VAR'S, DUE TO TECHNICIAN CONDUCTING TESTING WITHOUT INFORMING CONTROL ROOM OF WHEN HE WAS STARTING THE TEST, CAUSING GENERATOR/TURBINE REACTOR SCRAM.

SCRAM 06/25/89 LER# 21989016 50.72#: 15952 POWER: 97
DESC: MAIN GENERATOR TRIPPED DUE TO A PHASE DIFFERENTIAL CONDITION CAUSED BY A FAULT IN ONE OF THE MAIN OUTPUT TRANSFORMERS. THIS CAUSED A REACTOR TRIP.

PI EVENTS FOR 89-3

SCRAM 07/11/89 LER# 21989017 50.72#: 16059 POWER: 57
DESC: FAILURE OF AN INTERNAL WINDING OF THE MAIN OUTPUT TRANSFORMER CAUSED MAIN TURBINE TRIP THEN REACTOR TRIP.

TABLE 8.64 (CONT.)

OYSTER CREEK (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SSF 07/25/89 LER# 50.72#: 16170 POWER: 70
SYSTEM: CONTAINMENT VACUUM RELIEF SYSTEM
DESC: CONTAINMENT INTEGRITY MAY BE IN QUESTION DUE TO FAILURE OF A VACUUM BREAKER D/P RESET SWITCH TO RESET WITHIN AN ALLOWABLE TIME AFTER THE RESET SETPOINT WAS REACHED.

SCRAM 09/22/89 LER# 50.72#: 16679 POWER: 100
DESC: A VALVING ERROR BY A TECHNICIAN CAUSED DRAINING OF AN INSTRUMENT REFERENCE LEG RESULTING IN TURBINE AND REACTOR TRIPS ON HIGH REACTOR LEVEL.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	1.87	1.09
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	2	2
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	0	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	3	2	0	3	1	3	0	1
FORCED OUTAGE RATE (%)	59	0	0	37	100	85	55	24
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.70	.00	15.75	.94	1.09
CRITICAL HOURS	952	2184	2183	1422	0	64	1069	1842
COLLECTIVE RADIATION EXPOSURE	172	82	82	205	1131	569	148	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	3	3	7	5	3	NA
LICENSED OPERATOR	0	1	0	2	1	0	2	NA
OTHER PERSONNEL	3	0	2	2	2	1	2	NA
MAINTENANCE	6	2	3	9	7	5	4	NA
A) MAINT PERSONNEL	0	1	1	2	4	3	0	NA
B) SURV AND TEST	4	0	1	4	2	2	2	NA
C) EQUIPMENT	1	2	3	2	2	0	0	NA
D) POTENTIAL MAINT	2	0	0	2	2	0	2	NA
DESIGN/INSTALLATION/FABRICATION	3	2	1	4	0	6	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	1	NA

TABLE 8.65

PALISADES

PI EVENTS FOR 88-4

SSF 10/07/88 LER# 25589008 50.72#: POWER: 80
SYSTEM: FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE CHARCOAL ABSORBERS FOR THE SPENT FUEL POOL VENTILATION SYSTEM DID NOT MEET T.S. REQUIREMENT FOR REMOVAL EFFICIENCY (89.855% VS. 94% RQMT).

SSF 11/04/88 LER# 25588021 50.72#: POWER: UNK
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: SINCE 02/05/88, SEVERAL SPURIOUS TRIPS OF THE ESW PUMPS HAVE OCCURRED. OVERCURRENT RELAY SETPOINTS IN ERROR. CONDITION COULD HAVE RESULTED IN A COMPLETE LOSS OF ESW PUMPS.

PI EVENTS FOR 89-1

SSF 03/03/89 LER# 25589005 50.72#: 14919 POWER: 90
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: LICENSEE DISCOVERED THAT THE TECH. SPEC. REQUIREMENTS FOR EDG FUEL OIL SUPPLY DID NOT MEET DESIGN SASIS. CAUSED BY FAILURE TO UPDATE DIESEL FUEL OIL CONSUMPTION CALCULATIONS FOR ADDED EQUIPMENT LOADING SINCE INITIAL PLANT DESIGN.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 08/04/89 LER# 25589020 50.72#: 16243 POWER: 80
DESC: A BLOWN FUSE IN A FEEDWATER REGULATING VALVE CONTROLLER CAUSED A LOW SG LEVEL WHICH RESULTED IN A REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.46
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	1	2	1	0	0
FORCED OUTAGE RATE (%)	56	29	5	0	61	34	0	3
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.89	.00	.48	.00	2.48	.69	.00	.46
CRITICAL HOURS	528	1574	2083	931	403	1445	2183	2152
COLLECTIVE RADIATION EXPOSURE	302	95	29	338	279	57	20	NA
CAUSE CODES:								
ADMINISTRATIVE	5	5	2	3	0	3	3	NA
LICENSED OPERATOR	2	1	0	0	1	0	0	NA
OTHER PERSONNEL	1	1	1	4	3	1	2	NA
MAINTENANCE	4	5	2	7	5	3	5	NA
A) MAINT PERSONNEL	2	0	0	4	1	1	1	NA
B) SURV AND TEST	2	3	2	2	1	2	1	NA
C) EQUIPMENT	0	0	0	0	2	0	0	NA
D) POTENTIAL MAINT	1	2	0	2	3	1	2	NA
DESIGN/INSTALLATION/FABRICATION	3	0	3	1	2	3	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.66

PALO VERDE 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SCRAM 03/05/89 LER# 52889004 50.72#: 14938 POWER: 100
DESC: REACTOR SCRAM ON LOW DNBR SIGNAL DUE TO A FAILURE OF A CONTROL ELEMENT ASSEMBLY CALCULATOR. DURING THE EVENT A LOSS OF 13.8KV BUS OCCURRED DUE TO A FIRE RELATED TO ITS FEEDER BREAKER TRIP COIL.

PI EVENTS FOR 89-2

SSF 04/12/89 LER# 52889005 50.72#: POWER: 0
SYSTEM: MAIN/REHEAT STEAM SYSTEM
DESC: THE ATMOSPHERIC DUMP VALVES MAY NOT OPERATE DUE TO EXCESSIVE INTERNAL LEAKAGE BY AN INTERNAL PISTON RING WHICH DOES NOT SEAT PROPERLY. DECAY HEAT HEAT REMOVAL CAPABLILITY VIA THIS SYSTEM MAY BE DEGRADED. CAUSE MAY BE CORROSION ON SEAL SURFACE.

PI EVENTS FOR 89-3

SSA 09/02/89 LER# 52889016 50.72#: 16471 POWER: 0
DESC: THE LOAD SEQUENCER IN THE BALANCE OF PLANT ESF ACTUATION CABINET MALFUNCTIONED CAUSING ESF ACTUATIONS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	1.00	2.05	.00	.66	.00	.00
SCRAMS < 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	2	3	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	1	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	1	2	0	0	1	0
FORCED OUTAGE RATE (%)	0	69	9	60	0	30	100	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.72	1.00	2.05	.00	.66	.00	.00
CRITICAL HOURS	47	580	1999	976	2208	1522	0	0
COLLECTIVE RADIATION EXPOSURE	345	152	148	15	11	25	85	NA
CAUSE CODES:								
ADMINISTRATIVE	3	10	2	2	3	2	2	NA
LICENSED OPERATOR	0	1	3	2	0	1	0	NA
OTHER PERSONNEL	2	2	1	2	1	0	1	NA
MAINTENANCE	4	9	3	3	4	2	5	NA
A) MAINT PERSONNEL	1	4	1	2	0	1	1	NA
B) SURV AND TEST	3	5	0	1	2	1	2	NA
C) EQUIPMENT	0	1	1	1	0	0	2	NA
D) POTENTIAL MAINT	0	1	1	1	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	4	0	1	0	2	2	NA
EQUIPMENT FAILURE	0	0	1	0	0	1	0	NA

TABLE 8.67

PALO VERDE 2

PI EVENTS FOR 88-4

SCRAM 11/16/88 LER# 52988014 50.72#: 14003 POWER: 10
DESC: THE REACTOR TRIPPED ON LOW SG LEVEL WHILE SHUTTING DOWN. FEED PUMP SPEED WAS TOO LOW FOR PLANT CONDITIONS CAUSING LOW FEEDWATER FLOW AND FINALLY A LOW SG LEVEL.

PI EVENTS FOR 89-1

SSA 01/03/89 LER# 52989001 50.72#: 14400 POWER: 100
DESC: LIGHTNING STRIKE BROKE DOWN TRANSFORMER BUSHING INSULATION DUE TO RAIN SATURATION OF CONTAMINATION ON THE BUSHING CAUSED LOSS OF OFFSITE POWER AND DIESEL START AND LOAD BUSES - REACTOR DID NOT SCRAM.

SSA 02/16/89 LER# 52989003 50.72#: 14771 POWER: 100
DESC: THE FEEDWATER REGULATING VALVE STUCK CAUSING A LOW SG LEVEL AND AUXILIARY FEEDWATER ACTUATION. THE SG THEN OVERFED CAUSING A SAFETY INJECTION ACTUATION, CONTAINMENT ISOLATION, AND MAIN STEAM ISOLATION.

SCRAM 02/16/89 LER# 52989003 50.72#: 14771 POWER: 100
DESC: CONTROLLER ON FEEDWATER REGULATING VALVE STUCK CAUSING A LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-2

SSF 04/12/89 LER# 52889005 50.72#: POWER: 0
SYSTEM: MAIN/REHEAT STEAM SYSTEM
DESC: THE ATMOSPHERIC DUMP VALVES MAY NOT OPERATE DUE TO EXCESSIVE INTERNAL LEAKAGE BY AN INTERNAL PISTON RING WHICH DOES NOT SEAT PROPERLY. DECAY HEAT HEAT REMOVAL CAPABLILITY VIA THIS SYSTEM MAY BE DEGRADED. CAUSE MAY BE CORROSION ON SEAL SURFACE.

PI EVENTS FOR 89-3

SSA 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
DESC: 13.8KV BUS DEENERGIZED CAUSING REACTOR TRIP. DIESEL STARTED ON SAFETY INJECTION BUT DID NOT LOAD.

SSA 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
DESC: 13.8KV BUS DEENERGIZED CAUSING REACTOR TRIP AND SAFETY INJECTION ACTUATION ON LOW REACTOR PRESSURE. DIESEL STARTED ON SAFETY INJECTION BUT DID NOT LOAD.

SCRAM 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
DESC: 13.8KV BUS DEENERGIZED CAUSING A REACTOR TRIP ON DEPARTURE FROM NUCLEATE BOILING.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.68	.00	.61
SCRAMS < 15% POWER	1	0	0	0	1	0	0	0
TOTAL SCRAMS	1	0	0	0	1	1	0	1
SAFETY SYSTEM ACTUATIONS	0	2	0	1	0	2	0	2
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	2	0	0	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	9	17	0	17
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.49	.68	.00	1.83
CRITICAL HOURS	2146	1202	311	2208	2029	1475	44	1643
COLLECTIVE RADIATION EXPOSURE	NA	152	148	15	11	25	85	NA
CAUSE CODES:								
ADMINISTRATIVE	3	4	4	2	2	1	3	NA
LICENSED OPERATOR	0	4	0	0	0	1	1	NA
OTHER PERSONNEL	2	2	3	1	2	1	2	NA
MAINTENANCE	5	9	4	1	3	2	5	NA
A) MAINT PERSONNEL	2	2	0	0	0	1	1	NA
B) SURV AND TEST	1	6	4	1	2	1	3	NA
C) EQUIPMENT	1	1	0	0	1	2	1	NA
D) POTENTIAL MAINT	2	2	0	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	3	1	3	2	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.68

PALO VERDE 3

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSA 03/03/89 LER# 53089001 50.72#: 14912 POWER: 45
DESC: A GRID DISTURBANCE RESULTED IN THE MAIN GENERATOR BREAKER OPENING, A REACTOR POWER CUTBACK, A REACTOR TRIP, A TURBINE TRIP, AND SAFETY INJECTION AND CONTAINMENT ISOLATION ON LOW PRESSURIZER PRESSURE.

SE 03/03/89 LER# 53089001 50.72#: 14912 POWER: 45
DESC: UNIT 3 HAD SEVERAL EQUIPMENT FAILURES FOLLOWING A LOAD REJECT: FAILURE OF FAST TRANSFER TO REACTOR COOLANT PUMPS, FAILURE OF ADVS TO OPEN ON LOSS OF CONDENSER, FAILURE OF SEVERAL DRAIN VALVES AND LEAKAGE IN RCP SEAT. (AIT TO SITE).

SCRAM 03/03/89 LER# 53089001 50.72#: 14912 POWER: 45
DESC: A GRID DISTURBANCE RESULTED IN THE MAIN GENERATOR BREAKER OPENING, A REACTOR POWER CUTBACK, AND A REACTOR TRIP ON LOW SG PRESSURE WHEN A STEAM BYPASS CONTROL SYSTEM FAILURE OCCURRED.

PI EVENTS FOR 89-2

SSF 04/12/89 LER# 52889005 50.72#: POWER: 0
SYSTEM: MAIN/REHEAT STEAM SYSTEM
DESC: THE ATMOSPHERIC DUMP VALVES MAY NOT OPERATE DUE TO EXCESSIVE INTERNAL LEAKAGE BY AN INTERNAL PISTON RING WHICH DOES NOT SEAT PROPERLY. DECAY HEAT HEAT REMOVAL CAPABLILITY VIA THIS SYSTEM MAY BE DEGRADED. CAUSE MAY BE CORROSION ON SEAL SURFACE.

SSF 05/03/89 LER# 53089007 50.72#: 15518 POWER: 0
SYSTEM: ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC: FAILURE OF 25 PERCENT OF POTTER AND BRUMFIELD MDR RELAYS INSTALLED IN THE NSSS ESFAS, BOP ESFAS AND REACTOR TRIP SWITCHGEAR OCCURED DURING POST-INSTALLATION TESTING. THESE RELAYS CONTROL ESF ACTUATION CONTROL OF VALVES, MOTORS, DAMPERS AND EDG'S.

PI EVENTS FOR 89-3

SE 09/06/89 LER# 50.72#: 16513 POWER: 0
DESC: LICENSEE DISCOVERED INPROPERLY SET RING SETTINGS ON PALO VERDE UNIT 3 STEAM SAFETY VALVES. LICENSEE SHUTDOWN UNIT 2 AND FOUND NO PROBLEM.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.06	.00	.00	.00	.00	.90	.00	.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	0	1	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	1
SAFETY SYSTEM FAILURES	0	1	0	2	0	0	2	0
FORCED OUTAGE RATE (%)	NA	0	0	20	0	31	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	.00	.00	.00	.00	1.81	.00	.00
CRITICAL HOURS	946	2184	2184	1794	2208	1106	0	0
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	25	85	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	1	0	0	0	2	NA
LICENSED OPERATOR	0	0	0	0	0	1	1	NA
OTHER PERSONNEL	0	2	0	3	0	0	2	NA
MAINTENANCE	2	5	1	3	0	3	5	NA
A) MAINT PERSONNEL	0	2	0	2	0	0	1	NA
B) SURV AND TEST	0	3	1	1	0	1	4	NA
C) EQUIPMENT	2	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	2	0	0	0	0		1	NA
DESIGN/INSTALLATION/FABRICATION	0	3	0	0	1		4	NA
EQUIPMENT FAILURE	2	0	0	0	0	1	0	NA

TABLE 8.69

PEACH BOTTOM 2

PI EVENTS FOR 88-4

SSA 11/04/88 LER# 27788028 50.72#: 13918 POWER: 0
DESC: START SIGNAL TO A & C RHR PUMP STARTED IN THE LPCI MODE DUE TO AN ERROR BY THE TEST ENGINEER WHO PLACED A JUMPER ON THE WRONG TERMINAL BLOCK.

PI EVENTS FOR 89-1

SSF 02/02/89 LER# 27789002 50.72#: POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: EMERGENCY COOLING SYSTEM (ULTIMATE HEAT SINK) INOPERABLE DUE TO INADEQUATE DESIGN INSTALLATION AND TESTING WHICH COULD RESULT IN THE LOSS OF REDUNDANT SAFE SHUTDOWN EQUIPMENT WHEN NORMAL HEAT SINK IS LOST.

SSF 02/09/89 LER# 27789006 50.72#: POWER: 0
SYSTEM: CONTAINMENT PURGE SYSTEM
DESC: CONTAINMENT PURGE SYSTEM OPERATION MAY BE DEGRADED DURING POST-LOCA EVENTS DUE TO INADEQUATE SUPPORTS ON THE SAFETY RELATED PNEUMATIC SUPPLY TUBING TO VARIOUS ISOLATION VALVES. INADEQUATE SUPPORTS DUE TO PLANT MODIFICATION AND CONFIGURATION CONTROL.

SSF 03/20/89 LER# 27789004 50.72#: 15216 POWER: 0
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI SYSTEM MAY NOT PERFORM ITS SAFETY FUNCTION DURING DESIGN BASIS EVENTS WHERE REDUCED DC POWER AND HIGH AMBIENT TEMP. OCCUR AT THE TURBINE STEAM ADMISSION VALVE AND PUMP DISCHARGE ISOLATION VALVE. INSUFFICIENT STARTING CURRENT AVAILABLE.

PI EVENTS FOR 89-2

SSF 04/06/89 LER# 27789005 50.72#: POWER: 0
SYSTEM: LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: PULL APART TERMINAL BLOCKS LOCATED IN 250 VDC AND 480 VAC MOTOR CONTROL CENTER BREAKER COMPARTMENTS DID NOT MEET SEISMIC REQUIREMENTS. INITIAL DESIGN REQUIRED ADDITIONAL FASTENING SCREWS BUT SUBSEQUENT WORK RESULTED IN LOSS OF OVER HALF OF THE SCREWS.

SSF 04/11/89 LER# 27789007 50.72#: 15289 POWER: 0
SYSTEM: MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: WHILE PLACING THE STARTUP SOURCE AND EMERGENCY BUS IN SERVICE, GREEN DISCOLORATION WAS FOUND IN THE GREASE ON THE STABS OF SEVERAL CONTROL FUSES. THIS MAY CAUSE A VOLTAGE DROP BEYOND WHAT IS ASSUMED IN THE DESIGN ANALYSIS.

SSF 05/05/89 LER# 27789009 50.72#: 15541 POWER: 4
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: DURING PERFORMANCE OF A TECH. SPEC. SURVEILLANCE TEST ON THE HPCI SYSTEM THE HPCI FLOW CONTROLLER FAILED HIGH DUE TO AN ELECTRICAL MALFUNCTION, THE HPCI SYSTEM WAS DECLARED INOPERABLE. THE INSTALLED ANALOG ISOLATOR WAS FOUND TO BE WIRED INCORRECTLY.

SCRAM 05/19/89 LER# 27789012 50.72#: 15652 POWER: 24
DESC: FAILURE OF A CONTACT IN THE REACTOR LEVEL CONTROL CIRCUITRY INDICATED A LEVEL ERROR CAUSING MFP TO RAISE LEVEL TO HIGH LEVEL MFP TRIP SETPOINT AND SUBSEQUENT SCRAM ON LOW REACTOR LEVEL.

PI EVENTS FOR 89-3

SCRAM 07/21/89 LER# 27789015 50.72#: 16141 POWER: 79
DESC: MSIV CLOSURE ON LOW REACTOR PRESSURE WHILE TROUBLESHOOTING EHC REGULATING ELECTRONICS CAUSED A REACTOR SCRAM.

TABLE 8.69 (CONT.)

PEACH BOTTOM 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.74	.48
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	1	0	1	1	0	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	2	0	3	3	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	6	8
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	1.47	.96
CRITICAL HOURS	0	0	0	0	0	0	1359	2082
COLLECTIVE RADIATION EXPOSURE	291	360	434	214	151	58	65	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	3	4	7	3	7	NA
LICENSED OPERATOR	0	1	0	0	0	1	2	NA
OTHER PERSONNEL	5	1	5	2	4	1	1	NA
MAINTENANCE	8	5	7	4	8	4	9	NA
A) MAINT PERSONNEL	3	2	2	2	2	2	3	NA
B) SURV AND TEST	2	1	5	1	5	2	5	NA
C) EQUIPMENT	1	2	0	2	0	1	1	NA
D) POTENTIAL MAINT	2	2	0	2	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	1	1	3	3	3	2	NA
EQUIPMENT FAILURE	2	0	0	1	0	0	0	NA

TABLE 8.70

PEACH BOTTOM 3

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 02/02/89 LER# 27789002 50.72#: 15233 POWER: 0
SYSTEM: ULTIMATE HEAT SINK SYSTEM
DESC: EMERGENCY COOLING SYSTEM (ULTIMATE HEAT SINK) INOPERABLE DUE TO INADEQUATE DESIGN INSTALLATION AND TESTING WHICH COULD RESULT IN THE LOSS OF REDUNDANT SAFE SHUTDOWN EQUIPMENT WHEN NORMAL HEAT SINK IS LOST.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	2	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	2	0	1	0	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	291	360	434	214	151	58	65	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	1	2	4	1	3	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	4	1	4	3	2	1	0	NA
MAINTENANCE	6	2	6	6	4	2	3	NA
A) MAINT PERSONNEL	2	1	1	3	2	0	1	NA
B) SURV AND TEST	3	0	3	1	2	2	2	NA
C) EQUIPMENT	1	1	2	2	0	0	0	NA
D) POTENTIAL MAINT	0	1	1	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	1	3	2	2	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.71

PERRY

PI EVENTS FOR 88-4

SSF 10/07/88 LER# 44088040 50.72#: 13639 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS CONTROL ROOM CHILLERS WERE OUT OF SERVICE. COULD HAVE PREVENTED THE SYSTEM FROM MITIGATING THE CONSEQUENCES OF AN ACCIDENT. ONE TRAIN OUT FOR MAINT, OTHER BLOWN FUSE

SSA 10/30/88 LER# 44088043 50.72#: 13862 POWER: 0
DESC: HPCS PUMP ROOM COOLER STARTED DURING HPCS PUMP BREAKER OPERATIONAL CHECK. HPCS PUMP DID NOT START DUE TO BREAKER BEING RACKED OUT.

SSF 11/21/88 LER# 44088045 50.72#: POWER: 100
SYSTEM: STANDBY LIQUID CONTROL SYSTEM
DESC: BOTH TRAINS OF THE STANDBY LIQUID CONTROL SYSTEM BECAME INOPERABLE WHEN THE CONCENTRATION OF SODIUM PENTABORATE SOLUTION EXCEEDED THE TECH. SPEC. LIMIT. CAUSED BY ABSENCE OF PROCEDURAL GUIDELINES.

SSF 12/01/88 LER# 44088046 50.72#: POWER: 100
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: IN RESPONSE TO INFORMATION NOTICE 88-76, IT WAS IDENTIFIED THAT THE SECONDARY CONTAINMENT PRESSURE (ANNULUS) MAY NOT HAVE BEEN MAINTAINED AT A UNIFORM NEGATIVE PRESSURE RELATIVE TO OUTSIDE ATMOSPHERE.

SSF 12/08/88 LER# 44088047 50.72#: POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: WITH TRAIN 'B' OF THE CONTROL ROOM HVAC OUT OF SERVICE FOR MAINTENANCE, THE 'A' TRAIN WAS DECLARED INOPERABLE BECAUSE OF A FAILED FLOW SWITCH AND VALVE ACTUATOR.

PI EVENTS FOR 89-1

SSF 01/11/89 LER# 44089001 50.72#: 14469 POWER: 70
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: WITH DIV.I AND III DIESEL GENERATORS OUT OF SERVICE FOR MAINTENANCE, THE DIV. II EDG WAS DECLARED INOPERABLE WHEN FUEL OIL SAMPLE FAILED TO MEET SPECS. (FILTER PLUGGED UP). SHELF LIFE OF FUEL EXCEEDED.

SSF 02/24/89 LER# 44089005 50.72#: 14849 POWER: 0
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: WHILE REMOVING THE DRYWELL HEAD, ALL 144 DRYWELL NUTS WERE FOUND HAND TIGHT. NUTS WERE TORQUED ACCORDING TO VENDOR SUPPLIED VALUES, WHICH WERE TOO LOW. STRUCTURAL INTEGRITY & DRYWELL BYPASS LEAKAGE OF CONCERN.

SSF 02/24/89 LER# 44089006 50.72#: 14851 POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: TYPE B AND C LEAKAGE RATES FOR ALL FOUR MAIN STEAM LINES EXCEEDED TECH. SPEC. LIMITS. SAFETY CONCERN -PRIMARY CONTAINMENT INTEGRITY. MAIN STEAM ISOLATION VALVES IN LINES A, C, AND D REQUIRED REPAIRS.

SE 02/28/89 LER# 44089010 50.72#: POWER: 0
DESC: TEMP IN EXCESS OF 330 DEGREES F WERE CALCULATED TO HAVE EXISTED IN THE UPPER PORTION OF THE DRYWELL. THE REGION INVOLVED CONTAINS APPROX 73 SAFETY-RELATED CABLES AND 35 SNUBBERS. EQ TEMP FOR THE CABLES IS 195 DEGREES F, FOR SNUBBERS 300 DEGREES F.

PI EVENTS FOR 89-2

SSF 05/25/89 LER# 44089017 50.72#: 15711 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: INOPERABILITY OF DIV. I AND II EMERGENCY DIESEL GENERATORS DUE TO A DESIGN DEFICIENCY IN THE GROUND FAULT DETECTION TRIP CIRCUIT. POTENTIAL FOR A TRIP OF EDG DURING A POSTULATED FIRE OR SEISMIC EVENT.

TABLE 8.71 (CONT.)

PERRY (CONT.)

PI EVENTS FOR 89-3

SSF 09/14/89 LER# 50.72#: 16589 POWER: 100
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE HPCS SYSTEM WAS DECLARED INOPERABLE DUE TO A LINE BREAK ALARM.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.71	.00	3.92	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	1	1	0	0	0	0	0
TOTAL SCRAMS	1	1	7	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	1	0	1	0	0	0
SIGNIFICANT EVENTS	2	0	2	1	0	1	0	0
SAFETY SYSTEM FAILURES	5	1	2	4	4	3	1	1
FORCED OUTAGE RATE (%)	26	7	35	14	0	2	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	3.70	1.31	1.96	1.02	.00	.80	.00	.65
CRITICAL HOURS	1402	1526	1530	1953	1931	1255	0	1534
COLLECTIVE RADIATION EXPOSURE	NA	20	17	25	30	258	439	NA
CAUSE CODES:								
ADMINISTRATIVE	2	7	4	4	3	6	6	NA
LICENSED OPERATOR	3	1	5	1	0	1	3	NA
OTHER PERSONNEL	0	4	4	3	2	3	3	NA
MAINTENANCE	5	10	11	9	5	9	8	NA
A) MAINT PERSONNEL	0	3	0	2	2	5	2	NA
B) SURV AND TEST	2	5	3	3	1	4	5	NA
C) EQUIPMENT	2	2	7	3	3	1	1	NA
D) POTENTIAL MAINT	3	1	6	4	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	3	3	3	3	0	3	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.72

PILGRIM

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SE 01/10/89 LER# 29389002 50.72#: 14463 POWER: 1
DESC: UPON LOSS OF AIR, THE AIR ACCUMULATORS, WHICH ARE UNDERSIZED, DEPLETES ITS AIR SUPPLY IN ABOUT 50 MIN. THIS WILL CAUSE ONE OF THE CONTAINMENT ISOLATION VALVES TO FAIL IN THE OPEN POSITION, THUS LOSING ONE OF THE CONTAINMENT ISOLATION BARRIERS.

SSF 02/16/89 LER# 29389008 50.72#: 14768 POWER: 3
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: PRIMARY CONTAINMENT INTEGRITY WAS VIOLATED FOR APPROXIMATELY 5 SECONDS DUE TO IMPROPERLY ADJUSTED MECHANICAL INTERLOCKS OF THE INNER DRYWELL PERSONNEL AIRLOCK DOOR, ALLOWING BOTH HATCHES TO BE OPENED SIMULTANEOUSLY.

SSA 02/21/89 LER# 29389010 50.72#: 14809 POWER: 0
DESC: LOST OFFSITE POWER TO STARTUP TRANSFORMER - DIESEL STARTED AND ASSUMED LOAD.

SCRAM 03/04/89 LER# 29389011 50.72#: 14930 POWER: 10
DESC: HIGH VIBRATION ON TURBINE THRUST BEARINGS - TURBINE REMOVED FROM GRID & COASTING DOWN WHEN TURBINE BYPASS VALVE SHUT & THEN OPENED CAUSING MSIV TO SHUT ON LOW REACTOR PRESSURE AND SCRAM ON MSIV <90% OPEN.

SSF 03/24/89 LER# 29389013 50.72#: 15120 POWER: 25
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI STEAM INLET VALVE WOULD NOT OPEN DURING A SURVEILLANCE TEST (VALVE CLOSED). LIMITORQUE VALVE TORQUE SWITCH SCREWS WERE FOUND LOOSE. DAMAGE TO VALVE OPERATOR INTERNALS AND MOTOR OPERATOR RESULTED. HPCI INOPERABLE.

PI EVENTS FOR 89-2

SE 04/12/89 LER# 29389014 50.72#: 15310 POWER: 25
DESC: AN RCIC INJECTION BLOCK VALVE WAS INADVERTANTLY OPENED DURING A TEST AND AN RCIC CHECK VALVE LEAKED FEEDWATER BACK TRHOUGH RCIC SUCTION PIPING AND OUT A RELIEF VALVE.

SCRAM 05/03/89 LER# 29389015 50.72#: 15514 POWER: 24
DESC: WHILE TROUBLESHOOTING THE FEEDWATER REGULATING VALVE, THE REACTOR WATER LEVEL INCREASED TO ITS TRIP SETPOINT CAUSING A TURBINE TRIP AND THEN A REACTOR TRIP.

SSA 05/20/89 LER# 29389017 50.72#: 15666 POWER: 0
DESC: LOW PRESSURE COOLANT INJECTION LOOP ACTIVATION DURING TESTING DUE TO AN ELECTRICAL ENGINEER NOT PLACING TAPE CORRECTLY ON RELAY CONTACTS TO PREVENT THE RELAY FROM ACTUATING.

SSA 05/21/89 LER# 29389017 50.72#: 15669 POWER: 0
DESC: LPCI/RHR ACTUATION SIGNAL DURING TESTING DUE TO AN ELECTRICAL ENGINEER NOT PLACING HEAT SHRINK TUBING CORRECTLY ON RELAY CONTACTS TO PREVENT THE RELAY FROM ACTUATING.

PI EVENTS FOR 89-3

SSF 08/05/89 LER# 29389025 50.72#: 16244 POWER: 50
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE WHEN THE TURBINE GLAND SEAL CONDENSER BLOWER MOTOR DID NOT START WHEN ITS CONTROL SWITCH WAS SELECTED TO START DUE TO WEAR OF THE BLOWER MOTOR BRUSHES.

SCRAM 08/30/89 LER# 29389026 50.72#: 16447 POWER: 65
DESC: PLANT HAD A TURBINE RUNBACK AND A SCRAM ON HIGH REACTOR PRESSURE SIGNAL DUE TO A COMBINATION OF INCORRECT ELECTRICAL WIRING AND FAILURE OF THE PRIMARY IN A 24KV POTENTIAL TRANSFORMER.

TABLE 8.72 (CONT.)

PILGRIM (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SSA 09/05/89 LER# 29389027 50.72#: 16501 POWER: 0
DESC: THE 'A' DIESEL GENERATOR STARTED BUT DID NOT LOAD. THE RESIDUAL HEAT REMOVAL SYSTEM ALIGNED TO THE LOW PRESSURE COOLANT INJECTION MODE. BOTH ACTUATIONS WHILE TECHNICIAN CHECKING RELAYS.

SSF 09/07/89 LER# 50.72#: 16525 POWER: 25
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI SYSTEM DECLARED INOPERABLE DUE TO PRESSURE AND FLOW OSCILLATIONS NOTED DURING SURVEILLANCE TESTING.

SSF 09/07/89 LER# 50.72#: 16526 POWER: 25
SYSTEM: REACTOR BUILDING
DESC: SECONDARY CONTAINMENT BREACHED WHEN INNER AND OUTER DOORS OF A CONTAINMENT ENTRY WERE OPENED AT THE SAME TIME. THE INNER DOOR ELECTRICAL INTERLOCK WAS INOPERABLE DUE TO REPAIRS AND GUARDS WERE POSTED AT THE TIME.

SSF 09/20/89 LER# 50.72#: 16638 POWER: 75
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: RCIC WAS DECLARED INOPERABLE WHEN OPERATORS NOTICED OIL LEAKING FROM THE RCIC TURBINE BEARING FOLLOWING A PERIODIC SURVEILLANCE TEST.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.79	.54
SCRAMS < 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	0	0	0	0	0	1	1	1
SAFETY SYSTEM ACTUATIONS	1	0	0	1	0	1	2	1
SIGNIFICANT EVENTS	1	0	0	0	0	1	1	0
SAFETY SYSTEM FAILURES	1	1	0	1	0	2	0	4
FORCED OUTAGE RATE (%)	0	0	0	0	0	29	42	17
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.54
CRITICAL HOURS	0	0	0	0	0	969	1259	1855
COLLECTIVE RADIATION EXPOSURE	281	163	57	96	75	49	59	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	2	3	3	5	5	NA
LICENSED OPERATOR	0	1	0	0	3	1	3	NA
OTHER PERSONNEL	4	2	3	0	0	5	3	NA
MAINTENANCE	7	8	4	3	4	9	5	NA
A) MAINT PERSONNEL	3	2	4	2	0	2	1	NA
B) SURV AND TEST	3	4	0	1	1	5	5	NA
C) EQUIPMENT	2	1	2	0	1	2	0	NA
D) POTENTIAL MAINT	1	2	0	0	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	4	3	2	1	1	4	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.73

POINT BEACH 1

PI EVENTS FOR 88-4

SSF 11/18/88 LER# 26688009 50.72#: POWER: 100
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: PROCEDURE INADEQUACY COULD HAVE RESULTED IN SECURING ALL SAFEGUARDS PUMPS FOR A SHORT PERIOD OF TIME IN THE EVENT OF A LARGE BREAK LOCA.

PI EVENTS FOR 89-1

SSF 03/22/89 LER# 26689001 50.72#: 15091 POWER: 87
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: BOTH TRAINS OF THE CORE SPRAY SYSTEM WERE RENDERED INOPERABLE BECAUSE THE B TRAIN DG WAS TAKEN OUT OF SERVICE FOR TESTING AND THE A TRAIN CORE SPRAY WAS TAKEN OUT OF SERVICE FOR A LEAK TEST. SYSTEM DID NOT MEET TECH. SPEC. OPERABILITY REQUIREMENTS.

PI EVENTS FOR 89-2

SSF 04/21/89 LER# 26689004 50.72#: POWER: 100
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: NONCONSERVATIVE ANALYSIS OF TRANSFER TO CONTAINMENT SUMP RECIRCULATION SUCH THAT THE TIME ALLOWED BY PROCEDURE WAS EXCESSIVE. PROCEDURE ALLOWED SHORT DURATION SHUTDOWN OF ALL ECCS FLOW TO PERFORM TRANSFER, POSSIBLE CORE UNCOVERY AS TIME WAS EXCESSIVE.

SSF 05/03/89 LER# 26689005 50.72#: POWER: 0
SYSTEM: LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC: THE OPENNING TIMES FOR THE PORVS DURING A TEST OF THE LOW TEMP. OVERPRESSURE PROTECTION (LTOP) SYSTEM EXCEEDED THE TECH. SPEC. REQUIREMENTS. DETERMINED THAT THE SYSTEM WAS NOT DESIGNED TO OPERATE WITH N2 AS THE OPERATING GAS (BACKUP TO INSTRUMENT AIR).

SSF 06/25/89 LER# 26689007 50.72#: 15954 POWER: 100
SYSTEM: ANTICIPATED TRANSIENT WITHOUT SCRAM SYSTEM
DESC: AN INOPERATIVE BYSTABLE WAS DISCOVERED WHICH COULD HAVE PREVENTED OPERATION OF THE ATWS. CAUSED BY FAILED CONTACTS, BYSTABLE WAS REPLACED.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	2	1	1	3	0
FORCED OUTAGE RATE (%)	1	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.46	.00	.00	.00	.00	.00	.00	.00
CRITICAL HOURS	2194	2184	1247	2208	2209	2160	1151	2208
COLLECTIVE RADIATION EXPOSURE	164	11	74	11	98	9	83	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	1	2	1	3	NA
LICENSED OPERATOR	0	0	0	0	0	1	0	NA
OTHER PERSONNEL	0	0	0	1	0	1	1	NA
MAINTENANCE	1	1	1	1	1	1	4	NA
A) MAINT PERSONNEL	0	0	0	1	1	1	0	NA
B) SURV AND TEST	0	1	1	0	0	0	2	NA
C) EQUIPMENT	1	0	0	0	0	0	1	NA
D) POTENTIAL MAINT	1	0	0	0	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	1	2	0	1	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.74

POINT BEACH 2

PI EVENTS FOR 88-4

SSF 11/18/88 LER# 26688009 50.72#: POWER: UNK
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: PROCEDURE INADEQUACY COULD HAVE RESULTED IN SECURING ALL SAFEGUARDS PUMPS FOR A SHORT PERIOD OF TIME IN THE EVENT OF A LARGE BREAK LOCA.

PI EVENTS FOR 89-1

SSA 03/29/89 LER# 30189002 50.72#: 15148 POWER: 100
DESC: DIESEL STARTED ON UNDERVOLTAGE ON VITAL BUSES AFTER BREAKER ACTIONS IN SWITCHYARD REDUCED OFFSITE SERVICES FROM 4 TO 1 DUE TO DELUGE SYSTEM ACTUATING.

SCRAM 03/29/89 LER# 30189002 50.72#: 15148 POWER: 100
DESC: SCRAM ON TURBINE TRIP WHEN DELUGE SYSTEM ACTUATED DUE TO A FAILED BUSHING CAUSING GENERATOR LOCKOUT TURBINE TRIP.

PI EVENTS FOR 89-2

SSF 05/03/89 LER# 26689005 50.72#: POWER: 100
SYSTEM: LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC: THE OPENNING TIMES FOR THE PORVS DURING A TEST OF THE LOW TEMP. OVERPRESSURE PROTECTION (LTOP) SYSTEM EXCEEDED THE TECH. SPEC. REQUIREMENTS. DETERMINED THAT THE SYSTEM WAS NOT DESIGNED TO OPERATE WITH N2 AS THE OPERATING GAS (BACKUP TO INSTRUMENT AIR).

PI EVENTS FOR 89-3

SCRAM 08/20/89 LER# 30189004 50.72#: 16370 POWER: 100
DESC: A REACTOR TRIP OCCURRED AFTER A LOAD REDUCTION AND A TURBINE TRIP WHEN THE MAIN STEPUP TRANSFORMER SUDDEN PRESSURE SWITCH ACTUATED. THE SOURCE RANGE NI FAILED TO ENERGIZE AND A CROSSOVER STEAM DUMP VALVE FAILED TO CLOSE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.46	.00	.00	.47	.00	.50
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	2	1	0	1	0
FORCED OUTAGE RATE (%)	0	0	1	0	0	3	2	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.46	.00	.00	.47	.00	.50
CRITICAL HOURS	1137	2184	2164	2208	1152	2144	2183	2004
COLLECTIVE RADIATION EXPOSURE	164	11	74	11	98	9	85	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	2	0	1	0	3	NA
LICENSED OPERATOR	1	0	1	0	1	0	0	NA
OTHER PERSONNEL	1	0	0	0	0	1	1	NA
MAINTENANCE	3	1	2	0	0	2	2	NA
A) MAINT PERSONNEL	1	0	1	0	0	1	0	NA
B) SURV AND TEST	0	1	1	0	0	0	2	NA
C) EQUIPMENT	1	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	2	0	0	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	1	2	2	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.75

PRAIRIE ISLAND 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 07/21/89 LER# 28289010 50.72#: 16142 POWER: 100
DESC: LOSS OF #11 NON-SAFEGUARDS BUS CAUSED LOSS OF #11 RCP CAUSING REACTOR SCRAM ON LOSS OF FLOW. GALVANIC REACTION CAUSED A HIGH RESISTANCE CONNECTION ON THE BUS RESULTING IN ELEVATED TEMPERATURE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.46
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	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	1	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	0	3	0	0	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.75	.45	.00	.00	.00
CRITICAL HOURS	2209	2102	2183	1341	2209	2160	2183	2189
COLLECTIVE RADIATION EXPOSURE	9	45	5	46	3	6	34	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	0	1	3	1	3	NA
LICENSED OPERATOR	0	0	1	0	1	0	0	NA
OTHER PERSONNEL	2	0	1	1	2	0	1	NA
MAINTENANCE	2	0	2	2	6	0	3	NA
A) MAINT PERSONNEL	1	0	1	1	0	0	0	NA
B) SURV AND TEST	1	0	0	1	3	0	1	NA
C) EQUIPMENT	0	0	1	0	3	0	2	NA
D) POTENTIAL MAINT	0	0	1	0	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	2	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.76

PRAIRIE ISLAND 2

PI EVENTS FOR 88-4

SSF 12/08/88 LER# 30688002 50.72#: 14171 POWER: 100
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: WITH EMERGENCY DIESEL GENERATOR 1D OUT OF SERVICE FOR MAINTENANCE, DIESEL GENERATOR D2'S OUTPUT BREAKER DID NOT CLOSE AS REQUIRED DURING TESTING. CAUSE SUSPECTED TO BE INTERNAL TO BREAKER.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SCRAM 05/26/89 LER# 30689002 50.72#: 15718 POWER: 100
DESC: FAILED CAPACITOR IN TURBINE CONTROL SPEED ERROR CARD CAUSED TURBINE CONTROL VALVES TO CLOSE CAUSING LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.66	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	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	1	1	0	0	1	0	0	0
FORCED OUTAGE RATE (%)	0	0	0	0	4	0	1	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.47	.00	.66	.00
CRITICAL HOURS	2209	1286	2183	2208	2137	2088	1521	2208
COLLECTIVE RADIATION EXPOSURE	9	45	5	46	3	6	34	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	0	0	1	1	3	NA
LICENSED OPERATOR	0	0	1	1	0	0	0	NA
OTHER PERSONNEL	0	0	1	1	2	0	1	NA
MAINTENANCE	0	0	2	2	5	0	2	NA
A) MAINT PERSONNEL	0	0	1	1	0	0	0	NA
B) SURV AND TEST	0	0	0	1	2	0	1	NA
C) EQUIPMENT	0	0	1	0	2	0	1	NA
D) POTENTIAL MAINT	0	0	1	0	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	1	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	1	NA

TABLE 8.77

QUAD CITIES 1

PI EVENTS FOR 88-4

SCRAM 12/05/88 LER# 25488016 50.72#: 14157 POWER: 100
DESC: SPURIOUS TURBINE TRIP CAUSED SCRAM.

PI EVENTS FOR 89-1

SSF 01/06/89 LER# 25489001 50.72#: 14431 POWER: 96
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: RCIC DECLARED INOPERABLE DUE TO A BROKEN TORQUE SWITCH ON A DISCHARGE VALVE. CAM ON THE TORQUE SWITCH ON THE VALVE OPERATOR WAS BINDING.

PI EVENTS FOR 89-2

SE 04/17/89 LER# 25489004 50.72#: 15358 POWER: 0
DESC: DURING TESTING OF ELECTROMATIC RELIEF VALVE "D", THE VALVE FAILED TO CLOSE. OPERATORS MANUALLY SCRAMMED THE REACTOR PER PROCEDURES. REACTOR COOLDOWN RATE EXCEEDED TECH SPEC LIMIT OF 100 DEGREES F DURING THE FIRST TWO HOURS OF THE BLOWDOWN.

SSF 05/22/89 LER# 25489005 50.72#: 15680 POWER: 100
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: RCIC DECLARED INOPERABLE. ONE OF TWO HIGH FLOW ISOLATION SWITCHES WOULD NOT TRIP DUE TO A STRIPPED LOCKING SCREW WHICH ALLOWED THE INSTRUMENT TO DRIFT.

SCRAM 06/29/89 LER# 25489010 50.72#: 15994 POWER: 94
DESC: LOOSE CONNECTION TO A LIGHT SOCKET FOR A LOW VACUUM SWITCH IN THE TURBINE CONTROL PANEL CAUSED A TURBINE TRIP SCRAM.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.46	.00	.51	.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	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	3	1	2	1	0	1	1	0
FORCED OUTAGE RATE (%)	13	0	14	0	4	0	13	6
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	9.17	.46	2.07	.00	.46	.00	2.03	1.22
CRITICAL HOURS	218	2184	1934	2208	2152	2160	1967	1640
COLLECTIVE RADIATION EXPOSURE	197	55	286	38	36	39	33	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	1	2	1	1	0	NA
LICENSED OPERATOR	1	0	1	1	0	0	0	NA
OTHER PERSONNEL	5	0	1	2	0	0	1	NA
MAINTENANCE	9	5	3	3	2	2	4	NA
A) MAINT PERSONNEL	4	2	2	2	0	0	1	NA
B) SURV AND TEST	0	3	0	1	1	1	0	NA
C) EQUIPMENT	5	0	1	0	0	1	1	NA
D) POTENTIAL MAINT	3	0	1	0	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	5	1	3	0	0	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.78

QUAD CITIES 2

PI EVENTS FOR 88-4

SSA 11/14/88 LER# 26588027 50.72#: 13989 POWER: 98
DESC: TECHNICIAN SHORTED ACROSS LEADS CAUSING HPCI START - OPERATOR SECURED FLOW BEFORE INJECTION OCCURRED.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SCRAM 04/06/89 LER# 26589001 50.72#: 15225 POWER: 80
DESC: THE MAIN TURBINE TRIPPED DURING SURVEILLANCE TESTING RESULTING IN A REACTOR TRIP.

SSF 05/29/89 LER# 26589003 50.72#: POWER: 98
SYSTEM: REACTOR BUILDING
DESC: LOSS OF SECONDARY CONTAINMENT DURING SEARCH FOR GROUNDS ON 125V DC. A BREAKER WAS CYCLED AND THE DOORS BETWEEN THE TURBINE BUILDING AND THE REACTOR BUILDING WERE LATER (4.75 HOURS) FOUND OPEN. POSSIBLE DESIGN ERROR IN INTERLOCKS.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.07	.97	.00	.00	.00	.00	.47	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	2	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	3	0	1	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	3	0	0	0	1	0
FORCED OUTAGE RATE (%)	17	7	0	24	1	3	4	5
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.54	.97	.00	.59	.00	.48	1.41	.49
CRITICAL HOURS	1866	2061	380	1708	2144	2103	2124	2045
COLLECTIVE RADIATION EXPOSURE	197	55	286	38	36	39	33	NA
CAUSE CODES:								
ADMINISTRATIVE	4	6	8	3	6	0	1	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OTHER PERSONNEL	6	0	3	2	4	0	0	NA
MAINTENANCE	11	9	12	3	6	0	3	NA
A) MAINT PERSONNEL	4	4	6	2	2	0	1	NA
B) SURV AND TEST	1	2	2	1	5	0	0	NA
C) EQUIPMENT	4	2	5	0	1	0	2	NA
D) POTENTIAL MAINT	5	3	4	1	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	1	9	0	0	0	2	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	0	NA

TABLE 8.79

RANCHO SECO

PI EVENTS FOR 88-4

SCRAM 10/14/88 LER# 31288015 50.72#: 13709 POWER: 92
DESC: POWER IMBALANCE CAUSED LOSS OF THE 6.9KV BUSES. ALL RCPS TRIPPED CAUSING A REACTOR SCRAM.

SSA 12/09/88 LER# 31288018 50.72#: 14199 POWER: 60
DESC: 'B' HPI PUMP INJECTED THROUGH FOUR HPI NOZZLES TO MAINTAIN RCS PRESSURE AND PZR LEVEL CONTROL AFTER THE SCRAM.

SCRAM 12/09/88 LER# 31288018 50.72#: 14199 POWER: 60
DESC: AFTER TAKING CONTROL FROM MANUAL TO AUTO FOLLOWING CALIBRATION, A FAILURE IN THE INTEGRATED CONTROL SYSTEM CAUSED MFW OSCILLATIONS AND LED TO HIGH REACTOR COOLANT PRESSURE AND A SUBSEQUENT REACTOR TRIP.

PI EVENTS FOR 89-1

SSF 01/12/89 LER# 31289003 50.72#: POWER: 92
SYSTEM: CONTAINMENT ISOLATION CONTROL SYSTEM
DESC: AS A RESULT OF A NOTICE FROM LIMITORQUE CORP., 5 CONTAIN. ISOL. VALVES WERE FOUND TO HAVE TORQUE SWITCH CONTACT CASING DESIGN DEFICIENCIES AND 3 CONTAINMENT ISOLATION VALVES DID NOT MEET EQ REQUIREMENTS DUE TO INADEQUATE VENDOR QUALIFICATION.

SE 01/30/89 LER# 31289001 50.72#: 14610 POWER: 92
DESC: AUXILIARY FEEDWATER SYSTEM OVERPRESSURIZATION DUE TO TURBINE/PUMP OVERSPEED.

SSF 01/31/89 LER# 31289001 50.72#: 14610 POWER: 93
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: AFW SYSTEM DECLARED INOPERABLE. TURBINE DRIVEN AFW PUMP TRIPPED ON OVERSPEED. DISCHARGE PRESSURE DURING THE TRANSIENT CALCULATED TO BE 3800 PSIG - PIPE DESIGN IS 1325 PSIG. GOVERNOR SPEED CONTROL AND OVERSPEED TRIP FAILURES CAUSED OVERPRESSURE CONDITION.

SE 02/14/89 LER# 50.72#: 14755 POWER: 0
DESC: REACTOR COOLANT PUMP SEAL INJECTION LINE CHECK VALVE INOPERABLE.

SSF 02/18/89 LER# 31289005 50.72#: POWER: 0
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: SIX AUXILIARY FEEDWATER SYSTEM ESSENTIAL FLOW TRANSMITTERS HAD PLASTIC PLUGS INSTALLED IN THE SPARE CONDUIT CONNECTION OPENINGS (DID NOT MEET ENVIRONMENT QUALIFICATION REQUIREMENTS) AND COULD RESULT IN ERRONEOUS INDICATION DURING A DBA.

SSF 02/28/89 LER# 31289002 50.72#: 14880 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: DHR CAPABILITY LOST FOR APPROXIMATELY 10 MINS WHEN THE COMMON SUCTION VALVE FOR THE TWO TRAINS CLOSED. THIS WAS CAUSED BY RCS PRESSURE BEING NEAR THE SETPOINT (SETPOINT SET TOO LOW) OF THE ISOLATION PRESSURE SWITCH.

SSA 03/28/89 LER# 31289004 50.72#: 15145 POWER: 84
DESC: HPI 'A' AND 'B' STARTED MANUALLY AND HPI 'A' VALVE OPENED TO RESTORE PZR LEVEL AFTER THE SCRAM.

SCRAM 03/28/89 LER# 31289004 50.72#: 15145 POWER: 84
DESC: UNKNOWN CAUSE FOR MFW INSTABILITY AND SPEED REDUCTION RESULTED IN LOW SG INVENTORY AND SUBSEQUENT HIGH REACTOR PRESSURE SCRAM.

PI EVENTS FOR 89-2

NONE

TABLE 8.79 (CONT.)

RANCHO SECO (CONT.)

PI EVENTS FOR 89-3

Rancho Seco ceased commerical operations in June 1989. There, any performance indicator events Occurring after the second quarter 1989 will not be included in this report.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.51	.00	1.30	1.11	.00	NA
SCRAMS < 15% POWER	0	0	0	0	0	0	0	NA
TOTAL SCRAMS	0	0	1	0	2	1	0	NA
SAFETY SYSTEM ACTUATIONS	0	1	1	0	1	1	0	NA
SIGNIFICANT EVENTS	0	1	0	0	0	2	0	NA
SAFETY SYSTEM FAILURES	2	0	1	0	0	4	0	NA
FORCED OUTAGE RATE (%)	100	100	0	0	32	64	9	NA
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	2.59	3.32	.00	NA
CRITICAL HOURS	0	4	1970	2029	1542	903	1452	NA
COLLECTIVE RADIATION EXPOSURE	68	29	12	22	19	34	12	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	4	2	3	2	0	NA
LICENSED OPERATOR	2	1	1	1	1	2	0	NA
OTHER PERSONNEL	1	3	0	4	2	2	1	NA
MAINTENANCE	4	4	2	2	6	3	1	NA
A) MAINT PERSONNEL	0	0	1	1	2	1	0	NA
B) SURV AND TEST	4	4	1	1	2	1	1	NA
C) EQUIPMENT	0	1	0	0	1	1	0	NA
D) POTENTIAL MAINT	0	0	1	0	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	3	1	1	3	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

The unit ceased commercial operation in June 1989 and all performance indicator data after the second quarter 1989 will be NA.

TABLE 8.80

RIVER BEND

PI EVENTS FOR 88-4

SSF 12/19/88 LER# 45888027 50.72#: POWER: 95
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: DURING A DESIGN REVIEW, THE LICENSEE DISCOVERED THAT THE RCIC TURBINE HAD NOT BEEN INSTALLED AS DESIGNED (SEISMIC SUPPORT). RCIC WAS DECLARED INOPERABLE AND THE CONDITION WAS CORRECTED.

PI EVENTS FOR 89-1

SCRAM 02/20/89 LER# 45889007 50.72#: 14802 POWER: 2
DESC: DURING STARTUP, WHILE MAIN STEAMLINE DRAINS WERE BEING OPENED NUMEROUS AIR LEAKS IN THE FEEDWATER REGULATING VALVE OPERATOR CAUSED SLUGGISH RESPONSE. MFW FED COLD WATER CAUSING A REACTIVITY ADDITION RESULTING IN AN IRM SCRAM.

SCRAM 02/25/89 LER# 45889008 50.72#: 14854 POWER: 78
DESC: DURING TURBINE BEARING WEAR DETECTOR TESTING THE TRIP BYPASS RELAY FAILED TO OPEN THE TURBINE TRIP CIRCUIT. THIS CAUSED A TURBINE TRIP AND A SUBSEQUENT REACTOR TRIP.

SSF 03/21/89 LER# 45889011 50.72#: POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: THE REACTOR CONTAINMENT BUILDING INTEGRATED LEAK RATE WAS IN EXCESS OF T.S. REQUIREMENTS DUE TO LEAKAGE THROUGH ESW PENETRATIONS. THE VALVES, MOTOR OPERATED GATE VALVES AND SWING CHECK VALVES, COULD NOT SEAL DUE TO BUILDUP OF CORROSION PRODUCTS ON SEATS.

PI EVENTS FOR 89-2

SSF 04/10/89 LER# 45889024 50.72#: 15648 POWER: 0
SYSTEM: ESSENTIAL AIR SYSTEM
DESC: SOLENOID VALVES ASSOCIATED WITH THE ESSENTIAL AIR SYSTEM ACCUMULATORS WERE NOT ORIENTATED CORRECTLY. AIR PRESSURE IN THE ACCUMULATORS COULD NOT BE MAINTAINED AS WAS DEMONSTRATED BY TESTING.

SE 04/20/89 LER# 45889020 50.72#: 15384 POWER: 0
DESC: FREEZE PLUG IN SERVICE WATER PIPE FAILED CAUSING FLOODING AND LOSS OF POWER TO RHR, SPENT FUEL POOL, AND OTHER EQUIPMENT.

SSA 05/28/89 LER# 45889027 50.72#: 15735 POWER: 0
DESC: WHEN PLACING REMOTE TRANSFER SWITCH TO NORMAL, GOT A HPCS START SIGNAL. THE HPCS BREAKER WAS RACKED OUT. THE HPCS DIESEL STARTED.

SSA 06/13/89 LER# 45889029 50.72#: 15855 POWER: 0
DESC: POWER WAS LOST TO PREFERRED TRANSFORMER THAT FEEDS DIVISION 2 SWITCHGEAR. DIVISION 3 DIESEL STARTED AND LOADED THE BUS.

PI EVENTS FOR 89-3

SCRAM 09/30/89 LER# 45889035 50.72#: 16739 POWER: 78
DESC: A REACTOR TRIP OCCURRED DURING A MAIN STEAM ISOLATION VALVE PARTIAL CLOSURE TEST WHEN THE TEST SWITCH MALFUNCTIONED.

TABLE 8.80 (CONT.)

RIVER BEND (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.99	.00	.95	.00	.60	.00	.48
SCRAMS < 15% POWER	1	1	0	0	0	1	0	0
TOTAL SCRAMS	1	3	0	2	0	2	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	2	0	0	2	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	1	0
SAFETY SYSTEM FAILURES	1	0	0	0	1	1	1	0
FORCED OUTAGE RATE (%)	54	9	0	6	2	9	77	6
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	9.30	.99	.00	.48	.51	1.81	14.42	.95
CRITICAL HOURS	215	2017	2183	2104	1976	1656	208	2104
COLLECTIVE RADIATION EXPOSURE	280	17	21	20	42	106	375	NA
CAUSE CODES:								
ADMINISTRATIVE	8	5	0	3	3	3	8	NA
LICENSED OPERATOR	0	2	0	1	1	1	0	NA
OTHER PERSONNEL	3	1	2	3	1	5	6	NA
MAINTENANCE	9	7	2	8	5	13	13	NA
A) MAINT PERSONNEL	0	0	0	3	0	3	4	NA
B) SURV AND TEST	6	4	1	1	2	5	7	NA
C) EQUIPMENT	1	1	1	1	3	3	2	NA
D) POTENTIAL MAINT	3	3	0	4	1	2	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	1	0	2	2	4	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.81

ROBINSON 2

PI EVENTS FOR 88-4

SSF 10/27/88 LER# 26188024 50.72#: 13837 POWER: 100
SYSTEM: CONTAINMENT FAN COOLING SYSTEM
DESC: ALL 4 CONTAINMENT HVAC UNITS WERE DECLARED INOPERABLE AFTER LICENSEE INSPECTION DETERMINED THAT THE SPLICES IN THE 480 VOLT POWER SUPPLIES TO UNITS WERE NOT ENVIRONMENTALLY QUALIFIED TO WITHSTAND LOCA CONDITIONS.

SSF 11/21/88 LER# 26188028 50.72#: POWER: UNK
SYSTEM: CONTAINMENT COMBUSTIBLE GAS CONTROL SYSTEM
DESC: A REVIEW OF THE HYDROGEN RECOMBINER SYSTEM DETERMINED THAT DURING POST-LOCA CONDITIONS, SYSTEM OPERATION REQUIRES ACCESS TO 11 LOCKED CLOSED VALVES LOCATED IN RADIOLOGICALLY HARSH ENVIRONMENTS.

PI EVENTS FOR 89-1

SE 01/07/89 LER# 26189001 50.72#: 14435 POWER: 0
DESC: HYDROGEN FROM MAIN GENERATOR COOLING SYSTEM WAS INTRODUCED TO PLANT AND INSTRUMENT AIR SYSTEMS DUE TO PERSONNEL ERROR.

SSA 02/27/89 LER# 26189004 50.72#: 14874 POWER: 30
DESC: A SHORT CIRCUIT INDUCED BY A TECHNICIAN CAUSED THE GOVERNOR VALVES TO CLOSE. WHEN THE SHORT WAS REMOVED, THE STEAM DUMP OPENED LEADING TO A HIGH STEAM FLOW/LOW STEAMLINE PRESSURE/LOW RCS TEMPERATURE AND A SAFETY INJECTION.

SCRAM 02/27/89 LER# 26189004 50.72#: 14874 POWER: 30
DESC: A SAFETY INJECTION ON HIGH STEAM FLOW/LOW STEAMLINE PRESSURE/LOW RCS TEMPERATURE CAUSED A REACTOR TRIP.

SCRAM 03/22/89 LER# 26189005 50.72#: 15086 POWER: 100
DESC: OPERATOR INADVERTENTLY SHUT MSIV INSTEAD OF STEAM SUPPLY TO THE AFW PUMP CAUSING A LOW SG LEVEL SCRAM.

SCRAM 03/30/89 LER# 26189006 50.72#: 15161 POWER: 100
DESC: LOSS OF POWER TO THE EHC SYSTEM CAUSED TURBINE TRIP SCRAM DUE TO HARDWARE AND SETPOINT PROBLEMS.

PI EVENTS FOR 89-2

SSF 04/10/89 LER# 26189008 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: AN INTERNAL SSFI TEAM FIELD VALIDATION OF THE DESIGN BASIS DOCUMENT FOR THE SAFETY INJ SYSTEM FOUND THAT A NON-SAFETY PENETRATION CROSS-CONNECTED THE RHR PUMP BAYS WHICH MAY ALLOW POST-LOCA FLOODING OF BOTH BAYS RENDERING BOTH TRAINS INOPERABLE.

PI EVENTS FOR 89-3

SE 08/16/89 LER# 26189010 50.72#: 16331 POWER: 0
DESC: INADEQUATE NPSH FOR AUX FEEDWATER PUMPS CAUSED THIS EVENT.

SSF 08/16/89 LER# 26189010 50.72#: 16331 POWER: 100
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: DUE TO DESIGN DEFICIENCY IN THE AFW SUCTION PIPING ARRANGEMENT, 2 OF THE 3 AFW PUMPS WERE DECLARED INOPERABLE. INSUFFICIENT NPSH COULD RESULT IN CERTAIN ARRANGEMENTS OF OPERATING PUMPS AND CST LEVELS.

TABLE 8.81 (CONT.)

ROBINSON 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.84	.99	.00	.00	3.38	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	2	0	0	3	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	1
SAFETY SYSTEM FAILURES	5	1	[illegible]	2	2	0	1	1
FORCED OUTAGE RATE (%)	1	47	8	23	14	7	14	43
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.84	.99	1.17	2.29	1.13	.53	.00
CRITICAL HOURS	2209	1189	2016	1714	873	888	1886	1250
COLLECTIVE RADIATION EXPOSURE	20	69	22	34	441	116	31	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	3	4	2	2	1	NA
LICENSED OPERATOR	1	0	0	0	0	1	0	NA
OTHER PERSONNEL	1	0	0	1	0	3	0	NA
MAINTENANCE	3	3	5	3	2	5	2	NA
A) MAINT PERSONNEL	1	1	0	3	1	2	0	NA
B) SURV AND TEST	0	1	2	0	0	2	1	NA
C) EQUIPMENT	2	1	4	0	1	1	0	NA
D) POTENTIAL MAINT	1	1	4	0	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	4	3	2	2	4	2	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.82

SALEM 1

PI EVENTS FOR 88-4

SSF 11/17/88 LER# 27288020 50.72#: POWER: 100
SYSTEM: RADIATION MONITORING SYSTEM
DESC: SEVERAL OF THE RADIATION MONITORING SYSTEM CHANNELS USED TO ISOLATE THE CONTAINMENT PRESSURE/PURGE - VACUUM RELIEF SYSTEM WERE SET SUCH THAT SIGNIFICANTLY HIGHER LEVELS OF ACTIVITY WOULD HAVE BEEN REQUIRED FOR AUTO ISOLATION.

PI EVENTS FOR 89-1

SSF 01/27/89 LER# 27289005 50.72#: POWER: 100
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: BOTH ECCS TRAINS WERE DECLARED INOPERABLE WHEN ONE TRAIN WAS PLACED OUT OF SERVICE FOR MAINTENANCE AND THE EDG THAT SUPPLIES THE OTHER TRAIN WAS MADE INOPERABLE DUE TO AN EQUIPMENT FAILURE. LPSI WAS ALSO INOPERABLE.

SCRAM 02/06/89 LER# 27289007 50.72#: 14664 POWER: 100
DESC: WHILE TESTING THE SG PRESSURE CHANNEL, RECEIVED S*/FF MISMATCH - LOW SG LEVEL SIGNAL SCRAM DUE TO OPERATOR NOT SELECTING CORRECT CHANNEL.

SSA 02/07/89 LER# 27289008 50.72#: 14675 POWER: 0
DESC: OPERATOR FAILED TO BYPASS UNDERVOLTAGE RELAYS PRIOR TO STARTING RCP CAUSING '1C' VITAL BUS TO UNLOAD AND DIESEL TO START.

SSF 02/09/89 LER# 27289010 50.72#: POWER: 100
SYSTEM: RADIATION MONITORING SYSTEM
DESC: CONTAINMENT PARTICULATE RADIATION MONITORING SYSTEM AIR SAMPLE PUMP SEIZED AND RESULTED IN RADIATION MONITOR CHANNELS (ESF) BEING INOPERABLE. THESE CHANNELS FEED THE CONTAINMENT PURGE/PRESSURE-VACUUM RELIEF SYSTEM.

SCRAM 02/18/89 LER# 27289012 50.72#: 14794 POWER: 0
DESC: I & C TECH DID NOT FOLLOW TEST PROCEDURE. THIS CAUSED SENSED POWER TO EXCEED 10% ALLOWING FOR A TURBINE TRIP SIGNAL WHICH GENERATED A SCRAM.

PI EVENTS FOR 89-2

SSF 05/02/89 LER# 27289018 50.72#: POWER: 0
SYSTEM: SOLID STATE CONTROL SYSTEM/AUXILIARY LOGIC CONTROL SYSTEM
DESC: AN INSPECTION REVEALED INADEQUATE CONNECTIONS IN BOTH CABINETS OF THE SOLID STATE PROTECTION SYSTEM. CAUSE WAS ATTRIBUTED TO INITIAL FABRICATION PERFORMED BY THE VENDOR. THE FAILURE OF THESE CONNECTIONS COULD PREVENT AUTO REACTOR TRIP OR ESF FUNCTIONS.

SE 05/20/89 LER# 27289019 50.72#: 15675 POWER: 0
DESC: LOSS OF RHR DUE TO INADVERTENT ACCUMULATOR NITROGEN DISCHARGE.

SSF 05/20/89 LER# 27289019 50.72#: 15675 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: LOSS OF RHR SYSTEM DUE TO GAS BINDING OF PUMPS DURING TESTING. NITROGEN GAS ENTERED THE RCS DURING ACCUMULATOR DISCHARGE CHECK VALVE TESTING. PERSONNEL DID NOT COMPLY WITH SPECIFIC REQUIREMENTS OF THE PROCEDURE.

SSA 06/09/89 LER# 27289024 50.72#: 15831 POWER: 0
DESC: A SI OCCURRED WHEN A MAIN STEAMLINE SAFETY POPPED OPEN CAUSING SI ON HIGH STEAMLINE DIFFERENTIAL PRESSURE DUE TO EITHER AN INADEQUATE PROCEDURE OR A FAILURE TO COMPLY WITH STATION ADMINISTRATIVE PROCEDURES.

SCRAM 06/19/89 LER# 27289027 50.72#: 15910 POWER: 45
DESC: POSSIBLE DESIGN PROBLEM WITH MSIV TESTING CIRCUIT CAUSED MSIV CLOSURE DURING TESTING, WHICH RESULTED IN A LOW SG LEVEL SCRAM WHEN THE MSIV'S SHUT.

TABLE 8.82 (CONT.)

SALEM 1 (CONT.)

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.49	.00	.54	4.48	.00
SCRAMS < 15% POWER	0	1	0	0	0	1	0	0
TOTAL SCRAMS	0	1	0	1	0	2	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	2	1	1	0	1	2	2	0
FORCED OUTAGE RATE (%)	0	5	0	8	0	12	71	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	3.53	.54	.49	.00	1.07	8.97	.00
CRITICAL HOURS	46	849	1839	2040	2209	1862	223	2208
COLLECTIVE RADIATION EXPOSURE	263	44	15	109	92	7	144	NA
CAUSE CODES:								
ADMINISTRATIVE	5	4	1	5	1	4	10	NA
LICENSED OPERATOR	2	0	0	0	0	2	1	NA
OTHER PERSONNEL	2	4	0	1	1	5	4	NA
MAINTENANCE	5	5	1	5	2	10	10	NA
A) MAINT PERSONNEL	2	0	0	0	0	5	2	NA
B) SURV AND TEST	3	4	1	3	0	4	6	NA
C) EQUIPMENT	0	2	0	1	2	2	0	NA
D) POTENTIAL MAINT	0	0	0	1	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	5	5	2	3	0	1	7	NA
EQUIPMENT FAILURE	0	0	0	0	1	1	1	NA

TABLE 8.83

SALEM 2

PI EVENTS FOR 88-4

SSF 11/14/88 LER# 31188023 50.72#: POWER: 0
SYSTEM: RADIATION MONITORING SYSTEM
DESC: SEVERAL OF THE RADIATION MONITORING SYSTEM CHANNELS USED TO ISOLATE THE CONTAINMENT PRESSURE/PURGE - VACUUM RELIEF SYSTEM WERE SET SUCH THAT SIGNIFICANTLY HIGHER LEVELS OF ACTIVITY WOULD HAVE BEEN REQUIRED FOR AUTO ISOLATION

SCRAM 11/28/88 LER# 31188024 50.72#: 14098 POWER: 25
DESC: AN INADEQUATE PROCEDURE THAT SPECIFIED AN IMPROPER SETPOINT CAUSED POOR FEEDWATER REGULATING VALVE RESPONSE AND LEAD TO A HIGH SG LEVEL, A MFP TRIP, A LOW SG LEVEL, AND THEN A REACTOR TRIP.

PI EVENTS FOR 89-1

SCRAM 02/05/89 LER# 31189003 50.72#: 14654 POWER: 60
DESC: MFP TRIPPED CAUSING LOW SG LEVEL SCRAM DUE TO AN INADEQUATE PROCEDURE ASSOCIATED WITH OPERATING PLANT CIRCULATING WATER SYSTEM WITH AN INOPERABLE HEATER DRAIN PUMP.

SSA 03/12/89 LER# 31189005 50.72#: 15000 POWER: 100
DESC: LOST '2D' VITAL INSTRUMENT INVERTER DUE TO A FUSE FALLING OUT OF ITS HOLDER CAUSING A LOW SG LEVEL AND A SAFETY INJECTION ON HIGH STEAMLINE FLOW CONCIDENT WITH LOW STEAMLINE PRESSURE.

SCRAM 03/12/89 LER# 31189005 50.72#: 15000 POWER: 100
DESC: LOST '2D' VITAL INSTRUMENT BUS WHEN A FUSE FELL OUT OF ITS HOLDER AND CAUSED A LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-2

SCRAM 04/11/89 LER# 31189008 50.72#: 15290 POWER: 100
DESC: DURING STROKE TIME TESTING OF THE MSIV'S ONE MSIV WENT CLOSED. THIS CAUSED A LOW SG LEVEL AND A SUBSEQUENT REACTOR TRIP.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	1.94	1.39	3.29	1.12	.52	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	4	2	1	2	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	1	0	0
SIGNIFICANT EVENTS	1	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	0	2	2	1	0	0	0
FORCED OUTAGE RATE (%)	0	0	8	7	72	23	14	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.46	2.43	2.08	6.57	1.68	1.55	.00
CRITICAL HOURS	912	2184	2061	1444	304	1783	1939	2208
COLLECTIVE RADIATION EXPOSURE	263	44	15	109	92	7	144	NA
CAUSE CODES:								
ADMINISTRATIVE	5	4	1	5	3	4	4	NA
LICENSED OPERATOR	1	0	1	0	1	0	0	NA
OTHER PERSONNEL	0	1	3	0	2	2	0	NA
MAINTENANCE	6	5	7	5	5	5	7	NA
A) MAINT PERSONNEL	2	1	1	0	1	2	2	NA
B) SURV AND TEST	4	3	2	4	2	2	3	NA
C) EQUIPMENT	0	3	4	1	3	1	1	NA
D) POTENTIAL MAINT	0	2	3	1	2	0	1	NA
DESIGN/INSTALLATION/FABRICATION	3	2	3	3	1	3	5	NA
EQUIPMENT FAILURE	0	0	3	0	1	1	0	NA

TABLE 8.84

SAN ONOFRE 1

PI EVENTS FOR 88-4

SE 12/12/88 LER# 20688018 50.72#: 14215 POWER: 0
DESC: 195 STEAM GENERATOR TUBES MAY NOT HAVE BEEN HARD ROLLED. THE POTENTIAL EXISTS FOR THEM TO PULL OUT OF THE TUBE SHEET IN THE EVENT OF A STEAM LINE BREAK ACCIDENT.

SE 12/12/88 LER# 20688019 50.72#: 14223 POWER: 0
DESC: AN ELECTRICAL DESIGN DEFICIENCY COULD CAUSE A NON-CLASS 1E SWING BUS NOT TO LOAD SHED ON A D/G START WITH AN SI SIGNAL PRESENT. A SINGLE FAILURE COULD CAUSE LOSS OF A DIESEL GENERATOR SINCE DIESEL WOULD BE REQUIRED TO OPERATE ABOVE ITS T/S RATING.

SSF 12/13/88 LER# 20688019 50.72#: 14223 POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: EMERGENCY DIESEL GENERATOR LOAD COULD EXCEED T.S. LOAD LIMITS DUE TO DESIGN DEFICIENCIES IN THE AUTO LOAD CONTROLS.

PI EVENTS FOR 89-1

SSF 01/27/89 LER# 20689003 50.72#: 14581 POWER: 0
SYSTEM: CLOSED/COMPONENT COOLING WATER SYSTEM
DESC: AS A RESULT OF DESIGN REVIEW OF THE NON-ESSENTIAL INSTRUMENT AIR SYSTEM (RESPONSE TO GENERIC LTR 88-14) CCW FLOW TO THE RHR HX DURING A LOCA COULD BE DEGRADED BELOW THE SAFETY ANALYSIS LEVEL WITH LOSS OF THE INSTRUMENT AIR SYSTEM.

SE 02/02/89 LER# 50.72#: POWER: 0
DESC: FASTENERS ON THERMAL SHIELD SUPPORT BLOCKS WERE FOUND BROKEN. EVENT DATE UNKNOWN. NRR NOTIFIED BY A TELECON ON 02/02/89.

SSF 02/27/89 LER# 20689007 50.72#: 14877 POWER: 0
SYSTEM: PLANT PROTECTION SYSTEM
DESC: AN ERROR WAS DISCOVERED IN THE RPS SINGLE FAILURE ANALYSIS SUCH THAT FAILURE OF MEASURED FLOW AND A SEIZED RCP ROTOR IN THE SAME LOOP WOULD HAVE RESULTED IN EXCESSIVE FUEL CLADDING TEMPERATURE ABOVE ACCEPTANCE CRITERIA.

SE 03/02/89 LER# 20689004 50.72#: 14907 POWER: 0
DESC: A DESIGN DEFICIENCY WAS FOUND IN THE EDG LOAD SEQUENCER LOGIC.

SSF 03/03/89 LER# 20689008 50.72#: 14921 POWER: 0
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: DESIGN REVIEW FOUND THAT SINGLE FAILURE OF A HANDSWITCH COULD ENERGIZE A SOLENOID AND OPEN THE CONTAINMENT FIRE SUPPRESSION SYSTEM CONTROL VALVE AND DIVERT FLOW FROM THE CONTAINMENT SPRAY SYSTEM, CAUSING DEGRADATION OF ITS SAFETY FUNCTION DURING A LOCA.

SSF 03/23/89 LER# 20689011 50.72#: 15100 POWER: 0
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: MFPS FUNCTION AS HPSI PUMPS AT UNIT 1. THE MINIMUM FLOW VALVES WOULD NOT CLOSE WITHIN REQUIRED TIME CAUSING ACTUAL SI FLOW LESS THAN ASSUMED DURING CERTAIN ACCIDENT SCENARIOS. POTENTIAL TO EXCEED PEAK FUEL CLAD TEMPERATURE (TOO MUCH FLOW DIVERTED).

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 08/03/89 LER# 20689021 50.72#: 16229 POWER: 91
DESC: DEGRADED INSULATION IN THE RCS LOOP 'C' TRANSMITTER CABLE CAUSED A LOSS OF FLOW SIGNAL THAT RESULTED IN A REACTOR TRIP.

TABLE 8.84 (CONT.)

SAN ONOFRE 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.59
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	2	2	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	1	4	0	0
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	87	25
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	0	4.81	1.78
CRITICAL HOURS	2209	1069	0	1354	1395	0	208	1687
COLLECTIVE RADIATION EXPOSURE	70	84	85	47	62	77	33	NA
CAUSE CODES:								
ADMINISTRATIVE	2	7	1	1	1	3	4	NA
LICENSED OPERATOR	0	0	0	0	0	1	1	NA
OTHER PERSONNEL	2	1	1	1	2	1	0	NA
MAINTENANCE	4	6	2	2	3	3	4	NA
A) MAINT PERSONNEL	2	1	0	0	2	0	0	NA
B) SURV AND TEST	0	4	2	1	1	1	3	NA
C) EQUIPMENT	2	0	0	1	1	1	0	NA
D) POTENTIAL MAINT	1	3	0	1	0	1	2	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	2	3	5	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.85

SAN ONOFRE 2

PI EVENTS FOR 88-4

SE 12/15/88 LER# 36188034 50.72#: 14250 POWER: 0
DESC: 19 VALVES IN CCW SYSTEM MAY FAIL DURING A SEISMIC EVENT RENDERING THE CCW INOPERABLE.

SSF 12/15/88 LER# 36188034 50.72#: 14250 POWER: 100
SYSTEM: CLOSED/COMPONENT COOLING WATER SYSTEM
DESC: CCW DID NOT MEET ITS DESIGN BASIS: 15 SAFETY RELATED VALVES IN THE SYSTEM ARE PROVIDED WITH NON-1E CONTROL CIRCUITS WHICH MIGHT SPURIOUSLY OPERATE IN CONJUNCTION WITH DBA.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	0	1	1	2	1	0	0	0
FORCED OUTAGE RATE (%)	8	0	0	3	0	34	28	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.92	.00	.00	.46	.00	.69	.63	.00
CRITICAL HOURS	522	1826	2092	2160	2209	1449	1584	1518
COLLECTIVE RADIAYION EXPOSURE	70	84	85	47	62	77	33	NA
CAUSE CODES:								
ADMINISTRATIVE	5	1	3	5	1	4	2	NA
LICENSED OPERATOR	0	0	0	0	0	2	1	NA
OTHER PERSONNEL	2	2	1	3	2	1	1	NA
MAINTENANCE	10	6	8	7	2	5	1	NA
A) MAINT PERSONNEL	4	1	2	1	0	2	1	NA
B) SURV AND TEST	4	0	2	4	0	3	0	NA
C) EQUIPMENT	1	5	5	1	1	1	0	NA
D) POTENTIAL MAINT	3	4	4	2	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	3	2	4	3	1	3	NA
EQUIPMENT FAILURE	0	1	1	0	1	1	1	NA

TABLE 8.86

SAN ONOFRE 3

PI EVENTS FOR 88-4

SE 12/15/88 LER# 36188034 50.72#: 14250 POWER: 0
DESC: 19 VALVES IN CCW SYSTEM MAY FAIL DURING A SEISMIC EVENT RENDERING THE CCW INOPERABLE.

SSF 12/15/88 LER# 36188034 50.72#: 14250 POWER: 0
SYSTEM: CLOSED/COMPONENT COOLING WATER SYSTEM
DESC: CCW DID NOT MEET ITS DESIGN BASIS: 15 SAFETY RELATED VALVES IN THE SYSTEM WAS PROVIDED WITH NON-1E CONTROL CIRCUITS WHICH MIGHT SPURIOUSLY OPERATE IN CONJUNCTION WITH DBE.

PI EVENTS FOR 89-1

SSA 01/06/89 LER# 36289001 50.72#: 14437 POWER: 100
DESC: FAULT IN UNINTERRUPTABLE POWER SUPPLY CAUSED VOLTAGE TRANSIENT TO MFW CAUSED SCRAM AND SIAS ACTUATION.

SCRAM 01/06/89 LER# 36289001 50.72#: 14437 POWER: 100
DESC: FAULT ON UNINTERRUPTABLE POWER SUPPLY TRANSMFORMER CAUSED VOLTAGE TRANSIENT TO MFW CAUSING LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-2

SCRAM 04/07/89 LER# 36289006 50.72#: 15243 POWER: 100
DESC: MOTOR GENERATOR VOLTAGE DIPPED FAR ENOUGH TO CAUSE A TURBINE TRIP. THE TURBINE TRIP CAUSED THE REACTOR TRIP.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.00	.00	.00	.00	.47	.52	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	2	1	0	0	0
FORCED OUTAGE RATE (%)	2	14	0	6	0	3	12	9
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.52	.00	.00	.00	.47	1.04	.00
CRITICAL HOURS	2190	1936	697	1090	2209	2110	1924	2009
COLLECTIVE RADIATION EXPOSURE	70	84	85	47	62	77	33	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	2	6	1	4	3	NA
LICENSED OPERATOR	0	1	1	1	0	1	1	NA
OTHER PERSONNEL	0	3	1	5	0	2	2	NA
MAINTENANCE	1	8	3	9	2	5	2	NA
A) MAINT PERSONNEL	0	1	2	2	0	4	2	NA
B) SURV AND TEST	1	2	0	7	1	1	1	NA
C) EQUIPMENT	0	6	2	0	0	0	0	NA
D) POTENTIAL MAINT	0	4	1	1	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	3	2	4	3	0	4	NA
EQUIPMENT FAILURE	0	1	0	0	1	1	1	NA

TABLE 8.87

SEABROOK

PI EVENTS FOR 88-4

SSF 12/08/88 LER# 44388009 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: TEST OF THE RHR PUMP THRUST BEARING INDICATED PREMATURE DEGRADATION COULD OCCUR WHICH COULD RESULT IN THE UNANTICIPATED SHUTDOWN OF THE SYSTEM. EXCESSIVE VIBRATION PROMTED TEST. DESIGN ERROR - BEARING

PI EVENTS FOR 89-1

SSF 03/25/89 LER# 44389005 50.72#: POWER: 0
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: THE B TRAIN EDG WAS DECLARED INOPERABLE DUE TO A SERVICE WATER VALVE FAILURE TO OPEN WHEN EDG STARTED FOR TEST. THE A TRAIN EDG WAS OUT OF SERVICE DURING THE PERIOD THAT THE B TRAIN EDG WAS CONSIDERED INOPERABLE.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	.00	.00
SCRAMS < 15% POWER	NA	NA	NA	NA	NA	NA	0	0
TOTAL SCRAMS	NA	NA	NA	NA	NA	NA	0	0
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	0	0	1	1	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	NA	NA	NA	NA	NA	NA	194	0
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	1	1	1	1	2	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	1	0	1	1	1	1	NA
MAINTENANCE	2	2	1	1	2	5	3	NA
A) MAINT PERSONNEL	1	1	0	0	1	0	0	NA
B) SURV AND TEST	1	1	1	1	0	2	2	NA
C) EQUIPMENT	0	0	0	0	0	2	0	NA
D) POTENTIAL MAINT	0	0	0	0	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	0	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.88

SEQUOYAH 1

PI EVENTS FOR 88-4

SCRAM 11/18/88 LER# 32788045 50.72#: 14032 POWER: 72
DESC: GROUND FAULT INTERNAL TO THE GENERATOR FOR 'C' PHASE STATOR BAR CAUSED A TURBINE TRIP AND A REACTOR TRIP.

SCRAM 12/26/88 LER# 32788047 50.72#: 14341 POWER: 7
DESC: WHEN PLACING TURBINE ONLINE - SPARKS CAME FROM GENERATOR HOUSING NECESSITATING A TURBINE TRIP - MFP TRIPPED ON HIGH SG LEVEL - AFW COULD NOT CONTROL SG LEVEL CAUSING LOW SG LEVEL AND A REACTOR TRIP.

PI EVENTS FOR 89-1

SCRAM 02/10/89 LER# 32789005 50.72#: 14724 POWER: 100
DESC: FF/SF MISMATCH SCRAM WHEN TECHNICIAN TOUCHED A SCREWDRIVER TO TWO TEST LUGS ON CONDENSATE RECORDER CAUSING SOLID STATE PROTECTION SYSTEM SIGNAL SCRAM.

SSF 03/20/89 LER# 32789008 50.72#: 15073 POWER: 100
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: TORNADO DAMPERS FOR THE CONTROL ROOM FRESH AIR INTAKE WERE CLOSED TO FACILITATE REPLACEMENT OF SMOKE DETECTORS IN THE PRESSURIZING FAN SUPPLY DUCTS. THIS REMOVED THE SUCTION TO BOTH PRESSURIZING FANS MAKING BOTH TRAINS INOPERABLE.

PI EVENTS FOR 89-2

SSF 04/13/89 LER# 32789011 50.72#: POWER: 100
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: DUE TO DEFICIENCIES IN RHR PUMP TEST PROCEDURES WHICH CLOSE THE RHR CROSS-TIE VALVES AND COLD LEG INJECTION VALVES, THE RHR INJECTION MAY NOT MEET DESIGN BASIS REQUIREMENTS OF 4 LEG INJECTION AND MINIMUM FLOW DURING A GUILLOTINE BREAK EVENT.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	2.63	.47	.00	.00
SCRAMS < 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	0	0	0	2	1	0	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	4	2	1	1	0	1	1	0
FORCED OUTAGE RATE (%)	100	100	100	100	87	3	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.00	.00	5.27	.00	.00	.00
CRITICAL HOURS	0	0	0	0	380	2111	2183	2208
COLLECTIVE RADIATION EXPOSURE	41	67	124	131	19	280	17	NA
CAUSE CODES:								
ADMINISTRATIVE	9	15	5	6	6	5	4	NA
LICENSED OPERATOR	1	3	0	0	1	1	0	NA
OTHER PERSONNEL	2	5	3	6	6	7	2	NA
MAINTENANCE	9	16	7	9	12	6	7	NA
A) MAINT PERSONNEL	0	5	6	2	5	3	2	NA
B) SURV AND TEST	7	11	1	5	4	3	3	NA
C) EQUIPMENT	1	4	1	2	5	1	0	NA
D) POTENTIAL MAINT	1	2	1	2	3	1	2	NA
DESIGN/INSTALLATION/FABRICATION	6	6	3	3	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.89

SEQUOYAH 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 03/20/89 LER# 32789008 50.72#: 15073 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: TORNADO DAMPERS FOR THE CONTROL ROOM FRESH AIR INTAKE WERE CLOSED TO FACILITATE REPLACEMENT OF SMOKE DETECTORS IN THE PRESSURIZING FAN SUPPLY DUCTS. THIS REMOVED THE SUCTION TO BOTH PRESSURIZING FANS MAKING BOTH TRAINS INOPERABLE.

SSA 03/25/89 LER# 32889002 50.72#: 15122 POWER: 0
DESC: NOT PROMPTLY ADDRESSING AN EARLIER EVENT LEAD TO A SAFETY INJECTION ON HIGH STEAM FLOW COINCIDENT WITH LOW-LOW AVERAGE REACTOR COOLANT TEMPERATURE.

SSA 03/25/89 LER# 32889002 50.72#: 15121 POWER: 0
DESC: INADEQUATE PROCEDURE ALLOWED THE PRESSURIZER LOW PRESSURE SETPOINT TO BECOME UNBLOCKED CAUSING A SAFETY INJECTION SIGNAL.

PI EVENTS FOR 89-2

SSF 04/13/89 LER# 32789011 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: DUE TO DEFICIENCIES IN RHR PUMP TEST PROCEDURES WHICH CLOSE THE RHR CROSS-TIE VALVES AND COLD LEG INJECTION VALVES, THE RHR INJECTION MAY NOT MEET DESIGN BASIS REQUIREMENTS OF 4 LEG INJECTION AND MINIMUM FLOW DURING A GUILLOTINE BREAK EVENT.

SCRAM 04/15/89 LER# 32889005 50.72#: 15339 POWER: 30
DESC: PERSONNEL ERROR ALONG WITH PROCEDURAL INADEQUACY LEAD TO A REACTOR TRIP ON LOW-LOW SG LEVEL WHILE TESTING THE MAIN TURBINE OVERSPEED CIRCUIT.

SCRAM 04/16/89 LER# 32889005 50.72#: 15350 POWER: 16
DESC: OPERATOR WAS CONTROLLING STEAM GENERATOR LEVEL MANUALLY WITH THE FEEDWATER REGULATING VALVE. A LOW-LOW SG LEVEL WAS REACHED RESULTING IN A REACTOR TRIP.

SCRAM 04/19/89 LER# 32889005 50.72#: 15377 POWER: 18
DESC: DURING POWER ESCALATION AND TRANSFER OF FEEDWATER REGULATOR CONTROL FROM BYPASS TO MAIN REGULATOR THE MFP'S TRIPPED, AUXILIARY FEEDWATER INITIATED, AND THE REACTOR TRIPPED ON LOW SG LEVEL.

PI EVENTS FOR 89-3

SCRAM 07/10/89 LER# 32889008 50.72#: 16051 POWER: 100
DESC: A SPURIOUS CONTROL CHANNEL ERROR CAUSED A ROD TO DROP AND RESULTED IN A REACTOR TRIP.

TABLE 8.89 (CONT.)

SEQUOYAH 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	5.10	.00	.00	.00	1.78	.47
SCRAMS < 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	0	5	0	0	0	3	1
SAFETY SYSTEM ACTUATIONS	0	1	0	1	0	2	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	5	0	2	0	1	1	0
FORCED OUTAGE RATE (%)	100	100	69	0	0	0	16	5
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	3.82	.00	.00	.00	.59	.47
CRITICAL HOURS	0	0	785	2208	2209	429	1687	2142
COLLECTIVE RADIATION EXPOSURE	41	67	124	131	19	280	17	NA
CAUSE CODES:								
ADMINISTRATIVE	8	20	6	7	1	4	5	NA
LICENSED OPERATOR	1	6	5	0	0	1	2	NA
OTHER PERSONNEL	2	5	3	7	2	3	4	NA
MAINTENANCE	9	22	10	12	3	4	12	NA
A) MAINT PERSONNEL	0	8	5	2	1	1	5	NA
B) SURV AND TEST	6	13	4	7	1	2	5	NA
C) EQUIPMENT	2	5	1	4	0	2	0	NA
D) POTENTIAL MAINT	2	5	1	4	1	0	2	NA
DESIGN/INSTALLATION/FABRICATION	8	7	5	3	1	1	0	NA
EQUIPMENT FAILURE	1	1	0	2	0	0	0	NA

TABLE 8.90

SHEARON HARRIS

PI EVENTS FOR 88-4

SSA 12/21/88 LER# 40088035 50.72#: 14303 POWER: 100
DESC: WHILE SECURING FROM TESTING OF THE 6.9KV BUSES, '1A-SA' EMERGENCY BUS DEENERGIZED DUE TO A FAULTY RELAY AND 1A-SA DIESEL STARTED AND LOADED THE BUS.

PI EVENTS FOR 89-1

SCRAM 01/16/89 LER# 40089001 50.72#: 14511 POWER: 100
DESC: A VALVE ON AUXILIARY STEAM WAS PARTIALLY OPENED AND DECLARED INOPERABLE AS A RESULT OF AN IMPROPERLY HUNG DANGER TAG. THE RESULTING DIRECT PATH TO ATMOSPHERE CAUSED A LOSS OF CONDENSOR VACUUM, A TURBINE TRIP, AND A REACTOR SCRAM.

SCRAM 02/06/89 LER# 40089003 50.72#: 14659 POWER: 60
DESC: 'A' MFP TRIPPED DUE TO A SHEARED SHAFT, CAUSING A RUNBACK TO 60% POWER. THIS CAUSED SG SHRINK AND A LOW SG LEVEL SCRAM.

SCRAM 02/07/89 LER# 40089004 50.72#: 14679 POWER: 48
DESC: FAILURE OF HYDROPNEUMATIC TANK LEVEL CONTROL SWITCH CAUSED LOSS OF CIRCULATING WATER DUE TO LOSS OF SEAL WATER. A LOW CONDENSER VACUUM TURBINE TRIP SCRAM FOLLOWED.

SCRAM 02/22/89 LER# 40089005 50.72#: 14828 POWER: 100
DESC: A PROCEDURAL INEXPLICITY ON SG LEVEL CALIBRATION PROCEDURE CAUSED FF/SF MISMATCH SCRAM.

SCRAM 03/14/89 LER# 40089006 50.72#: 15012 POWER: 100
DESC: MFP ELECTRICAL MOTOR TERMINAL BOX WAS NOT WATERPROOF. WATER FROM THE DELUGE SYSTEM WAS INADVERTENTLY SPRAYED DURING MAINTENANCE. THIS CAUSED A MFP TRIP AND SCRAM ON LOW SG LEVEL.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 08/27/89 LER# 40089015 50.72#: POWER: 95
SYSTEM: FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: FUEL HANDLING BUILDING EQUIPMENT HATCH NOT INSTALLED AS REQUIRED DURING FUEL MOVEMENT, DUE TO PROCEDURAL DEFICIENCIES. THE REMOVAL OF THIS HATCH COVER WOULD PREVENT THE FUEL HANDLING BUILDING EMERENCY EXHAUST SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.50	.00	.00	.00	2.41	.00	.00
SCRAMS < 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	0	0	0	5	0	0
SAFETY SYSTEM ACTUATIONS	2	0	1	0	1	0	0	0
SIGNIFICANT EVENTS	1	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	3	3	0	0	0	1
FORCED OUTAGE RATE (%)	1	9	0	0	5	6	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.00	.00	.00	.59	1.44	.00	.00
CRITICAL HOURS	1495	1994	2183	700	1708	2078	2183	2208
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	6	4	NA
CAUSE CODES:								
ADMINISTRATIVE	6	3	4	4	2	3	3	NA
LICENSED OPERATOR	2	0	1	1	2	0	0	NA
OTHER PERSONNEL	5	1	4	4	6	6	3	NA
MAINTENANCE	9	5	7	9	6	6	5	NA
A) MAINT PERSONNEL	0	0	1	1	5	3	0	NA
B) SURV AND TEST	8	3	3	6	3	3	4	NA
C) EQUIPMENT	2	3	4	5	1	0	1	NA
D) POTENTIAL MAINT	1	1	2	3	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	4	1	3	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.91

SHOREHAM

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	0	.00	.00	.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	1	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 (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	0	0	0	0	0	3	0	0
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	2	3	3	2	0	NA
LICENSED OPERATOR	0	0	0	0	0	1	0	NA
OTHER PERSONNEL	2	2	5	2	2	0	0	NA
MAINTENANCE	3	3	6	5	3	5	0	NA
A) MAINT PERSONNEL	0	1	1	0	0	1	0	NA
B) SURV AND TEST	3	2	5	3	2	2	0	NA
C) EQUIPMENT	0	0	0	2	0	1	0	NA
D) POTENTIAL MAINT	0	0	0	0	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	0	0	0	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.92

SOUTH TEXAS 1

PI EVENTS FOR 88-4

SSA 10/04/88 LER# 49888057 50.72#: 13616 POWER: 0
DESC: DIESEL STARTED AND THE 4.16 KV ESF BUS STRIPPED ITS LOADS. THE LOAD SEQUENCER WOULD NOT SHIFT BACK TO NORMAL WHEN RETURNING TO NORMAL DUE TO ELECTRICIAN BREAKING A SEQUENCER STATUS LIGHT.

SSA 10/06/88 LER# 49888059 50.72#: 13642 POWER: 0
DESC: HIGH HEAD HPI PUMP STARTED INSTEAD OF LOW HEAD HPI PUMP WHEN OPERATOR OPERATED WRONG CONTROL SWITCH.

SSF 10/27/88 LER# 49888061 50.72#: POWER: 100
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: AN EMERGENCY OPERATING PROCEDURE CONTAINED AN ERROR WHICH COULD HAVE RESULTED IN THE TERMINATION OF LPSI AND HPSI AS REQUIRED ACTIONS IN THE MITIGATION OF A STEAM GENERATOR TUBE RUPTURE.

SSF 11/29/88 LER# 49888063 50.72#: 14109 POWER: 100
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: ALL 3 TRAINS OF SAFETY INJECTION WERE DECLARED INOPERABLE WHEN IT WAS DISCOVERED THAT DUE TO A DESIGN ERROR VORTEX WATER BREAKERS WERE NOT INSTALLED IN THE EMERGENCY CONTAINMENT SUMPS.

PI EVENTS FOR 89-1

SCRAM 01/03/89 LER# 49889001 50.72#: 14396 POWER: 100
DESC: POOR CONNECTION ON INTERCONNECTING WIRE IN EHC CAUSED GOVERNOR VALVES TO SHUT AND SCRAM ON RATE COMPENSATED OVERTEMPERATURE.

SCRAM 01/20/89 LER# 49889005 50.72#: 14541 POWER: 100
DESC: FIRE IN #9 BEARING ON MAIN GENERATOR NECESSITATED A MANUAL SCRAM DUE A HYDROGEN LEAK AND CAUSED A LOSS OF HYDROGEN COOLING.

SSA 01/21/89 LER# 49889006 50.72#: 14556 POWER: 0
DESC: TEST PUSHBUTTON WAS INADVERTENTLY PUSHED WHILE BLEEDING DOWN AIR RECEIVERS. THE MAIN TRANSFORMER LOCKED OUT CAUSING LOSS OF POWER TO 'A' ESF BUS. THE DIESEL STARTED AND LOADED THE BUS.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 07/04/89 LER# 49689015 50.72#: 16021 POWER: 100
DESC: MAIN GENERATOR OUTPUT BREAKER TRIPPED CAUSING AN OVERTEMPERATURE-DELTA TEMPERATURE REACTOR TRIP. A RELAY UNDERSIZED FOR THE OPERATION SHORTED CAUSING THE EVENT.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	.00	.00	1.73	.00	1.77	.00	1.28
SCRAMS < 15% POWER	NA	1	0	0	0	0	0	0
TOTAL SCRAMS	NA	1	0	3	0	2	0	1
SAFETY SYSTEM ACTUATIONS	2	4	0	1	2	1	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	4	4	1	2	0	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	20	8	13	0	8
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	4.81	.00	1.77	.00	1.28
CRITICAL HOURS	NA	384	1181	1735	1873	1129	2183	783
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	7	16	4	3	5	5	2	NA
LICENSED OPERATOR	1	3	1	1	2	0	0	NA
OTHER PERSONNEL	3	4	4	3	2	2	1	NA
MAINTENANCE	11	20	8	7	5	7	3	NA
A) MAINT PERSONNEL	4	1	2	2	3	2	1	NA
B) SURV AND TEST	5	13	5	5	2	4	2	NA
C) EQUIPMENT	3	3	1	3	0	0	0	NA
D) POTENTIAL MAINT	1	4	1	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	4	6	6	8	4	5	1	NA
EQUIPMENT FAILURE	2	1	0	0	0	0	0	NA

TABLE 8.93

SOUTH TEXAS 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSA 01/06/89 LER# 49989001 50.72#: 14432 POWER: 0
DESC: STANDBY TRANSFORMER DELUGE SYSTEM ACTUATED CAUSING PARTIAL LOSS OF OFFSITE POWER. 'B' AND 'C' DIESELS STARTED AND LOADED.

SSA 02/03/89 LER# 49989003 50.72#: 14628 POWER: 0
DESC: DIESEL #23 STARTED WHEN FEEDER BREAKER TO 4160 ESF BUS 'C' OPENED DUE TO MISOPERATION OF A DIFFERENTIAL RELAY.

SSA 03/20/89 LER# 49989005 50.72#: 15065 POWER: 0
DESC: FAULT ON STANDBY TRANSFORMER CAUSED TRANSFORMER LOCKOUT AND DIESEL #22 AND #23 STARTED AND LOADED.

SSF 03/22/89 LER# 49989007 50.72#: 15098 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: A JUMPER WAS FOUND TO BE INSTALLED IN ONE TOXIC GAS MONITOR TRAIN WHICH PREVENTED THE CONTROL ROOM ENVELOPE INTAKE DAMPERS FROM ACTIVATING AS DESIGNED. THE OTHER TOXIC GAS MONITOR WAS OUT OF SERVICE FOR MAINTENANCE.

PI EVENTS FOR 89-2

SSA 04/05/89 LER# 49989009 50.72#: 15213 POWER: 10
DESC: AN AUXILIARY TRANSFORMER TRIPPED OFF-LINE. THIS CAUSED A LOSS OF VITAL POWER. DIESEL GENERATOR STARTED & LOADED.

SCRAM 04/05/89 LER# 49989009 50.72#: 15213 POWER: 10
DESC: REACTOR TRIPPED DUE TO LOW REACTOR COOLANT FLOW RESULTING FROM A LOSS OF ALL REACTOR COOLANT PUMPS DUE TO AUXILIARY TRANSFORMER TRIPPING. ONE REACTOR COOLANT PUMP CIRCUIT BREAKER INITIALLY FAILED TO OPEN.

SSA 04/10/89 LER# 49989011 50.72#: 15274 POWER: 0
DESC: OPERATOR MISSED HOLD POINT WHILE HEATING UP. SAFETY INJECTION ACTUATED ON LOW STEAMLINE PRESSURE. DIESEL STARTED BUT DID NOT LOAD AS BUS REMAINED ENERGIZED. 'A' TRAIN CONTROL ROOM HVAC CLEANUP FAN DIDN'T START.

SCRAM 04/15/89 LER# 49989013 50.72#: 15343 POWER: 24
DESC: THE REACTOR TRIP BREAKER OPENED WITHOUT AN INITIATING SIGNAL CAUSING A REACTOR TRIP AND A TURBINE TRIP.

SSA 04/18/89 LER# 49989014 50.72#: 15374 POWER: 0
DESC: A FAULT SENSED BY THE MAIN GENERATOR FAULT PROTECTION SYSTEM CAUSED A LOCKOUT AND A LOSS OF POWER TO EMERGENCY EQUIPMENT. THE DIESEL GENERATOR STARTED AND PICKED UP THE LOAD.

SCRAM 06/02/89 LER# 49989016 50.72#: 15769 POWER: 76
DESC: TURBINE TRIPPED WHILE PERFORMING MAIN TURBINE STEAM INLET VALVE OPERABILITY TEST CAUSING A REACTOR SCRAM WHEN A DEFECTIVE LIMIT SWITCH CAUSED A TRIP BISTABLE TO REMAIN LOCKED IN. A DEFICIENT PROCEDURE DID NOT VERIFY THE CONDITION PRIOR TO CONTINUING.

PI EVENTS FOR 89-3

SSA 07/13/89 LER# 49989017 50.72#: 16085 POWER: 99
DESC: ONE MAIN TRANSFORMER LOCKED OUT DUE TO AN EXPLOSION OF THE TRANSFORMER. THE DIESEL GENERATOR STARTED AND LOADED. AUXILIARY FEED STARTED ON LOW SG LEVEL.

TABLE 8.93 (CONT.)

SOUTH TEXAS 2 (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SCRAM 07/13/89 LER# 49989017 50.72#: 16085 POWER: 99
DESC: ONE MAIN TRANSFORMER LOCKED OUT DUE TO AN EXPLOSION OF THE TRANSFORMER RESULTING IN A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP.

SCRAM 08/23/89 LER# 49989019 50.72#: 16383 POWER: 100
DESC: A LOW SG LEVEL LEAD TO A REACTOR TRIP WHEN THE FEEDWATER ISOLATION VALVE WENT SHUT DURING VALVE OPERABILITY TESTING.

SCRAM 09/05/89 LER# 49989021 50.72#: 16503 POWER: 100
DESC: A BAD FEEDWATER PUMP CONTROL CARD CONNECTION CAUSED FEEDWATER PUMP FLUCTUATIONS, A LOW-LOW SG LEVEL, AND A REACTOR TRIP.

SCRAM 09/19/89 LER# 49989022 50.72#: 16633 POWER: 100
DESC: A TURBINE RUNBACK CAUSED AN OVER TEMPERATURE DELTA TEMPERATURE SIGNAL THAT RESULTED IN A REACTOR TRIP.

SCRAM 09/22/89 LER# 49989023 50.72#: 16672 POWER: 94
DESC: A TURBINE TRIP RESULTED IN A REACTOR TRIP WHEN POWER WAS LOST TO THE FOUR MAIN TURBINE AUTO STOP SOLENOIDS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	.00	1.41	2.61
SCRAMS < 15% POWER	NA	NA	NA	NA	NA	0	1	0
TOTAL SCRAMS	NA	NA	NA	NA	NA	0	3	5
SAFETY SYSTEM ACTUATIONS	NA	NA	NA	NA	0	3	3	1
SIGNIFICANT EVENTS	NA	NA	NA	NA	0	0	0	0
SAFETY SYSTEM FAILURES	NA	NA	NA	NA	0	1	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	45	17
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	1.41	2.61
CRITICAL HOURS	NA	NA	NA	NA	NA	411	1414	1918
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	0	4	2	NA
LICENSED OPERATOR	NA	NA	NA	NA	0	0	2	NA
OTHER PERSONNEL	NA	NA	NA	NA	0	1	1	NA
MAINTENANCE	NA	NA	NA	NA	0	7	5	NA
A) MAINT PERSONNEL	NA	NA	NA	NA	0	2	1	NA
B) SURV AND TEST	NA	NA	NA	NA	0	3	1	NA
C) EQUIPMENT	NA	NA	NA	NA	0	1	1	NA
D) POTENTIAL MAINT	NA	NA	NA	NA	0	1	3	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	NA	NA	1	1	1	NA
EQUIPMENT FAILURE	NA	NA	NA	NA	0	0	0	NA

TABLE 8.94

ST. LUCIE 1

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 07/17/89 LER# 33589003 50.72#: 16103 POWER: 5
DESC: MAIN FEED BLOCK VALVES WERE NOT OPENED BEFORE TRANSFERRING FROM AUXILIARY TO MAIN FEED. THE REACTOR TRIPPED ON LOW SG LEVEL.

SCRAM 09/13/89 LER# 33589005 50.72#: 16578 POWER: 98
DESC: A COMBINATION OF PERSONNEL ERRORS AND A PROCEDURE INADEQUACY CAUSED A REACTOR TRIP DURING PREVENTATIVE MAINTENANCE ON REACTOR TRIP CIRCUIT BREAKERS.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.01	.46	.46	.98	.00	.00	.00	.56
SCRAMS < 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	2	1	1	1	0	0	0	2
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	12	1	1	8	0	0	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.51	.46	.46	2.95	.00	.00	.00	.00
CRITICAL HOURS	1988	2163	2165	1017	2209	2160	2132	1789
COLLECTIVE RADIATION EXPOSURE	127	16	16	232	18	144	21	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	0	1	0	0	1	NA
LICENSED OPERATOR	1	1	0	1	0	0	0	NA
OTHER PERSONNEL	2	0	0	3	0	0	2	NA
MAINTENANCE	2	3	1	4	0	0	2	NA
A) MAINT PERSONNEL	1	1	0	2	0	0	2	NA
B) SURV AND TEST	1	0	0	2	0	0	0	NA
C) EQUIPMENT	1	2	0	2	0	0	0	NA
D) POTENTIAL MAINT	0	2	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.95

ST. LUCIE 2

PI EVZNTS FOR 88-4

NONE

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SCRAM 06/27/89 LER# 38989005 50.72#: 15970 POWER: 22
DESC: HIGH-HIGH SG LEVEL CAUSED A TURBINE TRIP SCRAM.

PI EVENTS FOR 89-3

SSF 09/23/89 LER# 50.72#: 16685 POWER: 100
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: BOTH TRAINS OF THE AUXILIARY FEEDWATER SYSTEMS WERE DECLARED INOPERABLE. THE A TRAIN MOV WAS STUCK OPEN ALLOWING 200 GPM FLOW. THE B TRAIN MOV WOULD NOT CONTROL ELECTRICALLY FROM THE CONTROL ROOM (IT COULD SHUT BUT NOT OPEN).

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.12	.00	.00	.00	.00	.00	.64	.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	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	1
FORCED OUTAGE RATE (%)	15	0	0	0	0	0	2	5
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	3.35	.00	.00	.00	.00	.00	.64	.47
CRITICAL HOURS	894	2184	2183	2208	2209	742	1560	2116
COLLECTIVE RADIATION EXPOSURE	127	16	16	232	18	144	21	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	1	0	0	1	2	NA
LICENSED OPERATOR	0	1	1	0	0	2	1	NA
OTHER PERSONNEL	1	0	1	0	0	1	1	NA
MAINTENANCE	1	2	1	0	0	1	1	NA
A) MAINT PERSONNEL	1	0	0	0	0	1	1	NA
B) SURV AND TEST	0	0	1	0	0	1	0	NA
C) EQUIPMENT	0	1	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.96

SUMMER

PI EVENTS FOR 88-4

SSA 12/11/88 LER# 39588013 50.72#: 14209 POWER: 0
DESC: TECHNICIANS BECAME CONFUSED WHEN TESTING SOLID STATE PROTECTION SYSTEM AND BACKED-OUT OF PROCEDURE CAUSING 'B' TRAIN SAFETY INJECTION.

PI EVENTS FOR 89-1

SSF 01/15/89 LER# 39589002 50.72#: 14504 POWER: 100
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: SCAFFOLDING AND SHIELDING STORED IN PENETRATION ROOMS COULD HAVE IMPACTED THE OPERABILITY OF SAFETY RELATED SYSTEMS DURING A SEISMIC EVENT. OPERABILITY OF HPSI COULD NOT BE ASSURED.

SSF 02/17/89 LER# 39589003 50.72#: 14788 POWER: 0
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: ALL THREE MAIN STEAM ISOLATION VALVES WERE DECLARED INOPERABLE FOLLOWING A DESIGN REVIEW. SPURIOUS ACTUATIONS DUE TO CIRCUIT GROUNDS COULD CAUSE THE VALVES TO OPEN UNDER CERTAIN ACCIDENT CONDITIONS.

PI EVENTS FOR 89-2

SCRAM 04/01/89 LER# 39589006 50.72#: 15184 POWER: 30
DESC: MFW ISOLATION VALVE SHUT DUE TO AIR IN FLOW TRANSMITTER SENDING A FALSE LOW SG LEVEL SIGNAL CAUSING LOW SG LEVEL SCRAM.

SE 05/28/89 LER# 39589011 50.72#: 15732 POWER: 0
DESC: SPURIOUS OPENING OF PRESSURIZER SAFETY VALVE.

PI EVENTS FOR 89-3

SSA 07/11/89 LER# 39589012 50.72#: 16061 POWER: 100
DESC: MAIN TURBINE TRIPPED DUE TO GENERATOR STATOR COOLING SIGNAL. GRID VOLTAGE DEGRADED AND DIESEL GENERATOR STARTED ON LOW VOLTS. AUXILIARY FEED STARTED FROM REACTOR TRIP.

SCRAM 07/11/89 LER# 39589012 50.72#: 16061 POWER: 100
DESC: REACTOR TRIPPED DUE TO MAIN TURBINE TRIP WHEN MAIN GENERATOR STATOR COOLING WATER SIGNAL WAS RECEIVED.

SSF 08/08/89 LER# 39589013 50.72#: 16272 POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: BOTH TRAINS OF THE ESSENTIAL SERVICE WATER SYSTEM MAY BE LOST IF A PIPING FAILURE OF NON-SAFETY RELATED COOLING WATER SYSTEM IN PUMPHOUSE OCCURRED CAUSING FLOODING IN ASSOCIATED SWITCHGEAR.

SE 08/25/89 LER# 50.72#: 16404 POWER: 0
DESC: PRESSURIZER CODE SAFETY VALVE LIFTED SPURIOUSLY, RELIEVING REACTOR COOLANT.

TABLE 8.96 (CONT.)

SUMMER (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.46	.47	1.02	.55	.00	.00	.56	.54
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	2	1	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	1	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	1
SAFETY SYSTEM FAILURES	1	0	1	0	0	2	0	1
FORCED OUTAGE RATE (%)	2	2	11	3	0	28	19	20
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.46	.47	1.02	.00	.00	.00	.56	1.62
CRITICAL HOURS	2175	2149	1956	1832	131	1588	1779	1854
COLLECTIVE RADIATION EXPOSURE	9	8	8	28	464	27	10	NA
CAUSE CODES:								
ADMINISTRATIVE	3	0	1	2	0	2	3	NA
LICENSED OPERATOR	1	0	2	0	0	0	0	NA
OTHER PERSONNEL	2	2	0	1	2	3	0	NA
MAINTENANCE	3	2	2	1	3	4	5	NA
A) MAINT PERSONNEL	1	0	0	1	0	2	1	NA
B) SURV AND TEST	2	2	2	1	2	2	1	NA
C) EQUIPMENT	0	0	0	0	0	0	2	NA
D) POTENTIAL MAINT	0	0	0	0	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	3	1	0	2	1	0	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.97

SURRY 1

PI EVENTS FOR 88-4

SSF 10/12/88 LER# 28088040 50.72#: 13688 POWER: 0
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: LICENSEE DETERMINED THAT POTENTIAL GAS ACCUMULATION IN SUCTION OF HPSI PUMP COULD CAUSE THE PUMPS CAPACITY TO BE EXCEEDED.

SSF 11/02/88 LER# 28088033 50.72#: 13886 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: CONTROL ROOM HVAC UNITS DO NOT HAVE CAPABILITY TO MAINTAIN DESIGN TEMPERATURE DURING LOCA WORST CASE CONDITIONS.

PI EVENTS FOR 89-1

SE 01/26/89 LER# 28089003 50.72#: 14576 POWER: 0
DESC: DEGRADED POWER CABLE INSULATION ON THE INSIDE RECIRC SPRAY PUMPS. EVENT INVOLVES UNIT 2 ALSO.

SE 01/31/89 LER# 50.72#: 13961 POWER: 0
DESC: NUMEROUS MOVS AND OPERATORS HAD DEFICIENCIES MAKING THEM INOPERABLE. FOUND DURING ENGINEERING EVALUATION. NUMEROUS SAFETY SYSTEMS MAY HAVE BEEN INOPERABLE.

SSA 02/04/89 LER# 28089005 50.72#: 14652 POWER: 0
DESC: LOSS OF POWER TO EMERGENCY BUSES WHEN CONDUCTING MAINTENANCE ON 'C' RESERVE TRANSFORMER DUE TO A FAILED 4160V BREAKER. THE DIESELS STARTED AND LOADED THE 1H BUS.

SSA 02/08/89 LER# 28089006 50.72#: 14694 POWER: 0
DESC: WHEN CONDUCTING A TEST, A RELAY WAS DEENERGIZED CAUSING A SI WHICH WAS NOT CORRECTLY IDENTIFIED IN THE PROCEDURE.

SE 03/10/89 LER# 28089008 50.72#: 14988 POWER: 0
DESC: UNQUALIFIED SAFETY-RELATED PARTS SUPPLIED BY NON-ORIGINAL EQUIPMENT MANUFACTURER WERE DISCOVERED.

SSF 03/10/89 LER# 28089008 50.72#: 14988 POWER: 0
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: AS A RESULT OF AN INSPECTION, A DETERMINATION WAS MADE THAT THE CONTAINMENT SPRAY PUMP'S REPLICATOR SHAFT SLEEVES DID NOT CONFORM TO SPECS AND WERE UNQUALIFIED FOR NUCLEAR SERVICE.

SSF 03/18/89 LER# 28089009 50.72#: 15051 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: PERSONNEL ERROR RESULTED IN A LOSS OF RHR COOLING FOR ELEVEN HOURS. A SYSTEM CONFIGURATION CHANGE WAS MADE BUT CCW FLOW WAS NOT LINED UP THROUGH ONE HEAT EXCHANGER, AND RHR FLOW WAS NOT PROVIDED TO THE OTHER HEAT EXCHANGER.

PI EVENTS FOR 89-2

SSA 04/06/89 LER# 28089010 50.72#: 15227 POWER: 0
DESC: THE DIESEL GENERATOR RECEIVED A VALID BUS LOW VOLTAGE SIGNAL WHEN A LIGHTNING ARRESTOR FAILED AND INTERRUPTED POWER TO THE VITAL BUS. DIESEL WAS IN EXERCISE MODE BUT WAS MANUALLY STARTED AND LOADED.

SSA 04/13/89 LER# 28089013 50.72#: 15322 POWER: 0
DESC: SUBSTATION PERSONNEL NOT USING A PROCEDURE, MISSED A STEP WHILE TESTING THE NUMBER 3 BUS, AND CAUSED LOSS OF SEVERAL 4160V BUSES. ONE EDG WAS OOS FOR MAINTENANCE, 3 EDG STARTED AND LOADED.

PI EVENTS FOR 89-3

SCRAM 07/09/89 LER# 28089026 50.72#: 16047 POWER: 63
DESC: DURING NI CALIBRATION A ROD DROPPED CAUSING A TURBINE RUNBACK. THIS CAUSED A MFW TRANSIENT (FRV IN MANUAL) AND RESULTED IN HIGH SG LEVEL TURBINE AND REACTOR TRIPS.

TABLE 8.97 (CONT.)

SURRY 1 (CONT.)

PI EVENTS FOR 89-3 (CONT.)

SSF 07/18/89 LER# 28089030 50.72#: POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: BOTH UNIT 1 AND 2 CHARGING PUMP SERVICE WATER PUMPS WERE RENDERED INOPERABLE DUE TO AIR BINDING. THE AIR ENTERED THE SYSTEM AS A RESULT OF MAINTENANCE WORK.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.47	.00	.69	.00	.00	.00	.48
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	1	0	2	2	0
SIGNIFICANT EVENTS	0	0	1	0	0	3	0	0
SAFETY SYSTEM FAILURES	2	0	2	2	2	2	0	1
FORCED OUTAGE RATE (%)	13	4	0	26	100	100	100	8
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.03	.47	.00	.69	.00	.00	.00	.00
CRITICAL HOURS	1950	2119	194	1443	0	0	0	2088
COLLECTIVE RADIATION EXPOSURE	65	37	352	116	287	118	143	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	4	6	2	5	4	NA
LICENSED OPERATOR	0	0	0	1	1	1	2	NA
OTHER PERSONNEL	1	3	6	2	4	4	5	NA
MAINTENANCE	13	7	11	10	8	6	10	NA
A) MAINT PERSONNEL	0	1	5	1	4	4	1	NA
B) SURV AND TEST	3	2	3	2	2	3	7	NA
C) EQUIPMENT	8	4	5	6	4	0	3	NA
D) POTENTIAL MAINT	9	0	2	6	2	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	4	3	1	2	NA
EQUIPMENT FAILURE	2	0	0	1	1	1	0	NA

TABLE 8.98

SURRY 2

PI EVENTS FOR 88-4

SSF 10/07/88 LER# 28188024 50.72#: 13640 POWER: 0
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: DURING DISASSEMBLY OF CONTAINMENT SPRAY PUMPS, DISCOVERED PIECES OF PUMP COMPONENTS AND OTHER SMALL DEBRIS. INVESTIGATION DETERMINED PUMPS WOULD START, BUT LONG TERM OPERATION COULD NOT BE ASSURED.

SSF 10/12/88 LER# 28088040 50.72#: 13688 POWER: 0
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: IN RESPONSE TO IE NOTICE 88-23, LICENSEE DETERMINED THAT POTENTIAL GAS ACCUMULATION IN THE SUCTION OF THE HPSI PUMP COULD CAUSE THE PUMPS CAPACITY TO BE EXCEEDED.

SSF 11/02/88 LER# 28088033 50.72#: 13886 POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: DESIGN DEFICIENCY DISCOVERED. CONTROL ROOM HVAC UNITS DO NOT HAVE CAPABILITY TO MAINTAIN DESIGN TEMPERATURE DURING LOCA WORST CASE CONDITIONS.

SE 12/08/88 LER# 28188025 50.72#: 14180 POWER: 0
DESC: "PIGGY BACK" VALVES POWERED FROM OPPOSITE TRAIN FROM LPSI PUMPS. THEREFORE A SINGLE FAILURE WOULD RESULT IN LOSS OF AN ECCS FLOW.

SSF 12/08/88 LER# 28188025 50.72#: 14180 POWER: 0
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: TWO LPSI VALVES WERE DISCOVERED TO BE MIS-LABELED. THE AS-BUILT CONFIGURATION OF VALVES WAS REVERSED FROM THE STATION DRAWINGS. THIS CONDITION COULD HAVE RENDERED LPSI INOPERABLE IN RECIRCULATION MODE.

PI EVENTS FOR 89-1

SSF 01/05/89 LER# 28189001 50.72#: POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: LOSS OF SECONDARY CONTAINMENT DURING REFUELING OPERATIONS DUE TO INADEQUATE ADMINISTRATIVE CONTROL. A S/G SAFETY VALVE WAS REMOVED AND THE BLANK FLANGE INSTALLED TO SEAL THE OPENING WAS NOT PROPERLY INSTALLED.

SE 01/26/89 LER# 28089003 50.72#: 14576 POWER: 0
DESC: DEGRADED POWER CABLE INSULATION ON THE INSIDE RECIRC SPRAY PUMPS. EVENT INVOLVES UNIT 1 ALSO.

SE 01/31/89 LER# 50.72#: 13961 POWER: 0
DESC: NUMEROUS MOVS AND OPERATORS HAD DEFICIENCIES MAKING THEM INOPERABLE. FOUND DURING ENGINEERING EVALUATION. NUMEROUS SAFETY SYSTEMS MAY HAVE BEEN INOPERABLE.

SSA 02/04/89 LER# 28089005 50.72#: 14652 POWER: 0
DESC: LOSS OF POWER TO EMERGENCY BUSES WHEN CONDUCTING MAINTENANCE ON 'C' RESERVE TRANSFORMER DUE TO A FAILED 4160V BREAKER. THE DIESEL STARTED AND LOADED THE 2J BUS.

SE 03/10/89 LER# 28089008 50.72#: 14988 POWER: UNK
DESC: UNQUALIFIED SAFETY-RELATED PARTS SUPPLIED BY NON-ORIGINAL EQUIPMENT MANUFACTURER WERE DISCOVERED.

SSF 03/10/89 LER# 28089008 50.72#: 14988 POWER: UNK
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: AS A RESULT OF AN INSPECTION, A DETERMINATION WAS MADE THAT THE CONTAINMENT SPRAY PUMP'S REPLICATOR SHAFT SLEEVES DID NOT CONFORM TO SPECS AND WERE UNQUALIFIED FOR NUCLEAR SERVICE.

PI EVENTS FOR 89-2

SSA 04/06/89 LER# 28089010 50.72#: 15227 POWER: 0
DESC: FAILURE OF A LIGHTNING ARRESTOR RESULTED IN A LOSS OF THE 4160V VITAL BUS. THE DIESEL GENERATOR STARTED AND PICKED UP THE VITAL BUS.

TABLE 8.9B (CONT.)

SURRY 2 (CONT.)

PI EVENTS FOR 89-2 (CONT.)

SSA 04/13/89 LER# 28089013 50.72#: 15322 POWER: 0
DESC: SUBSTATION PERSONNEL NOT USING A PROCEDURE, MISSED A STEP WHILE TESTING THE NUMBER 3 BUS, AND CAUSED LOSS OF SEVERAL 4160V BUSES. ONE EDG WAS OOS FOR MAINTENANCE, 3 EDG STARTED AND LOADED.

PI EVENTS FOR 89-3

SSF 07/18/89 LER# 28089030 50.72#: POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: BOTH UNIT 1 AND 2 CHARGING PUMP SERVICE WATER PUMPS WERE RENDERED INOPERABLE DUE TO AIR BINDING. THE AIR ENTERED THE SYSTEM AS A RESULT OF MAINTENANCE WORK.

SSA 08/18/89 LER# 28189004 50.72#: 16351 POWER: 0
DESC: THE RECIRCULATION MODE TRANSFER SYSTEM ACTUATED DURING A JUMPER INSTALLATION ON UNRELATED TERMINAL POINTS.

SCRAM 09/18/89 LER# 28189009 50.72#: 16619 POWER: 14
DESC: WHILE ATTEMPTING TO INCREASE GENERATOR VOLTAGE, THE SPURIOUS ACTUATION OF THE GENERATOR BACKUP IMPEDANCE RELAY CAUSED GENERATOR, TURBINE AND REACTOR TRIPS.

SCRAM 09/19/89 LER# 28189010 50.72#: 16627 POWER: 25
DESC: WHILE FEEDWATER WAS BEING CONTROLLED IN MANUAL AND POWER WAS BEING RAMPED UP AFTER PUTTING THE PLANT ON LINE, A LOW SG LEVEL RESULTED IN A REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.81	.00	.00	.00	.00	3.05
SCRAMS < 15% POWER	0	0	0	1	0	0	0	1
TOTAL SCRAMS	0	0	1	1	0	0	0	2
SAFETY SYSTEM ACTUATIONS	0	1	1	0	0	1	2	1
SIGNIFICANT EVENTS	0	1	1	1	1	3	0	0
SAFETY SYSTEM FAILURES	0	0	0	2	4	2	0	1
FORCED OUTAGE RATE (%)	0	5	45	0	0	0	0	37
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.48	.81	.00	.00	.00	.00	3.05
CRITICAL HOURS	1871	2080	1242	1706	0	0	0	328
COLLECTIVE RADIATION EXPOSURE	65	37	352	116	287	118	143	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	5	3	2	3	4	NA
LICENSED OPERATOR	0	0	1	2	1	0	1	NA
OTHER PERSONNEL	2	2	2	1	3	2	4	NA
MAINTENANCE	5	8	8	4	7	4	9	NA
A) MAINT PERSONNEL	1	1	2	0	4	4	0	NA
B) SURV AND TEST	1	1	1	1	1	1	7	NA
C) EQUIPMENT	2	5	6	3	3	0	3	NA
D) POTENTIAL MAINT	4	4	2	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	1	0	4	3	4	1	2	NA
EQUIPMENT FAILURE	1	1	1	0	1	1	0	NA

TABLE 8.99

SUSQUEHANNA 1

PI EVENTS FOR 88-4

SSF 11/04/88 LER# 38788022 50.72#: 13912 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: THE HPCI TURBINE TRIP LOGIC WAS MISTAKENLY DISABLED DUE TO A TECHNICIAN PULLING THE WRONG FUSE WHILE ATTEMPTING TO REMOVE UNIT 2 HPCI FROM SERVICE. THE HPCI WAS RESTORED TO SERVICE IN APPROX. 1.5 HRS.

PI EVENTS FOR 89-1

SCRAM 01/04/89 LER# 38789001 50.72#: 14401 POWER: 60
DESC: OPERATORS INADVERTENTLY ISOLATED INSTRUMENT AIR TO CIRCULATING WATER BASIN LEVEL INDICATION CAUSING LOSS OF CIRCULATING WATER FLOW, LOWERING CONDENSER VACUUM, AND TURBINE TRIP SCRAM.

SCRAM 01/12/89 LER# 38789002 50.72#: 14476 POWER: 20
DESC: MFW DID NOT RESPOND TO MANUAL CONTROL DUE TO BEING PLACED IN SERVICE INCORRECTLY RESULTING IN A HIGH REACTOR LEVEL AND TURBINE TRIP SCRAM.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSA 08/09/89 LER# 38789022 50.72#: 16289 POWER: 100
DESC: HPCI SUCTION SWAPPED FROM CONDENSATE STORAGE TANK TO SUPPRESSION POOL WHEN THE TECHNICIAN SKIPPED A STEP IN THE PROCEDURE EVEN THOUGH HE WAS VERY FAMILIAR WITH THE TEST.

SSF 09/08/89 LER# 50.72#: 16539 POWER: 100
SYSTEM: CONTAINMENT VACUUM RELIEF SYSTEM
DESC: THE SUPPRESSION CHAMBER/DRYWELL VACUUM BREAKER VALVES WERE DECLARED INOPERABLE DUE TO MISSING ORIFICES FROM AIR TUBING TO THE DRYWELL VACUUM BREAKERS. THE ORIFICES WERE REMOVED DURING A MODIFICATION AND NOT REINSTALLED.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.52	.51	.00	.00	1.16	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	0	2	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	1	0	0	1
FORCED OUTAGE RATE (%)	30	7	12	0	0	22	0	4
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.51	.00	.00	1.16	.00	.00
CRITICAL HOURS	726	1909	1964	2208	2209	1721	539	2145
COLLECTIVE RADIATION EXPOSURE	164	97	125	18	17	28	168	NA
CAUSE CODES:								
ADMINISTRATIVE	3	0	0	3	1	5	8	NA
LICENSED OPERATOR	0	0	0	0	0	2	0	NA
OTHER PERSONNEL	4	2	2	2	3	2	6	NA
MAINTENANCE	7	5	4	7	2	3	10	NA
A) MAINT PERSONNEL	0	1	0	1	0	2	1	NA
B) SURV AND TEST	4	1	2	2	2	0	7	NA
C) EQUIPMENT	2	0	2	4	0	0	1	NA
D) POTENTIAL MAINT	3	3	1	3	0	1	2	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	2	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	1	0	NA

TABLE 8.100

SUSQUEHANNA 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 01/18/89 LER# 38889001 50.72#: POWER: 100
SYSTEM: MAIN STEAM ISOLATION VALVES
DESC: MOTOR SPLICES ON 3 MSIV LEAKAGE CONTROL VALVES NOT QUALIFIED (EQ). SYSTEM MINIMIZES THE RELEASE OF FISSION PRODUCTS FOLLOWING A LOCA. SYSTEM DID NOT MEET TECH. SPEC. REQUIREMENTS FOR OPERABILITY.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SSF 08/10/89 LER# 50.72#: 16288 POWER: 100
SYSTEM: HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC: HPCI DECLARED INOPERABLE DUE TO THE SPORADIC OPENING PATTERN OF THE HPCI TURBINE STOP VALVE. THE VALVE WOULD OPEN TO 30% AND THEN CLOSE FOR 4 SECONDS AND THEN OPEN FULLY.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.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	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	1	0	1	0	1
FORCED OUTAGE RATE (%)	0	0	4	0	0	7	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	4.09	.00	.45	.50	.00	.00
CRITICAL HOURS	2209	1560	245	2143	2209	1987	2183	1720
COLLECTIVE RADIATION EXPOSURE	164	97	125	18	17	28	168	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	1	2	0	3	4	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	2	3	1	4	1	3	NA
MAINTENANCE	2	8	3	6	3	2	3	NA
A) MAINT PERSONNEL	0	4	1	0	1	1	0	NA
B) SURV AND TEST	0	0	2	2	2	0	3	NA
C) EQUIPMENT	1	2	0	4	0	0	0	NA
D) POTENTIAL MAINT	2	4	0	3	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	1	2	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	1	0	NA

TABLE 8.101

THREE MILE ISL 1

PI EVENTS FOR 88-4

SCRAM 10/30/88 LER# 28988006 50.72#: 13854 POWER: 100
DESC: A POWER SUPPLY FAILURE ON THE EHC CAUSED A TURBINE TRIP AND A REACTOR SCRAM ON HIGH RCS PRESSURE.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.54	.00	.00	.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	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	3	0	19	18	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.47	.00	1.07	1.63	.00	.00	.00
CRITICAL HOURS	2209	2122	1869	932	1837	2160	2183	2209
COLLECTIVE RADIATION EXPOSURE	12	12	63	116	20	12	13	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	1	4	0	0	0	NA
LICENSED OPERATOR	0	0	0	2	0	0	0	NA
OTHER PERSONNEL	0	0	1	0	0	0	0	NA
MAINTENANCE	0	0	1	2	1	0	0	NA
A) MAINT PERSONNEL	0	0	0	0	0	0	0	NA
B) SURV AND TEST	0	0	1	2	0	0	0	NA
C) EQUIPMENT	0	0	0	0	1	0	0	NA
D) POTENTIAL MAINT	0	0	0	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.102

TROJAN

PI EVENTS FOR 88-4

SCRAM 11/13/88 LER# 34488043 50.72#: 13974 POWER: 100
DESC: "B" FRV FAILED OPEN CAUSING A HIGH SG LEVEL, A TURBINE TRIP, AND A REACTOR TRIP.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SE 04/09/89 LER# 34489009 50.72#: 15268 POWER: 0
DESC: INOPERABLE RHR ISOLATION VALVE DUE TO WIRING ERROR. RESULTS IN DEGRADATION OF PRESSURE BOUNDARY PROTECTION.

SSF 04/21/89 LER# 34489008 50.72#: 15403 POWER: 0
SYSTEM: FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: THE SPENT FUEL EXHAUST SYSTEM WAS RENDERED INOPERABLE (5-10 MINS.) WHILE FUEL WAS BEING MOVED. THE BUILDING DIFFERENTIAL PRESSURE DID NOT MEET T.S. REQUIREMENTS WHEN A DOOR WAS PROPPED OPEN. CAUSED BY LACK OF ADMINSTRATIVE CONTROLS.

SSF 06/02/89 LER# 34489012 50.72#: POWER: 0
SYSTEM: CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC: BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM WERE DECLARED INOPERABLE. SOME DUCT SUPPORT HANGERS DO NOT MATCH DESIGN CONFIGURATION. INCORRECT CONFIGURATION ORIGINALLY NOTED BY NRC TEAM INSPECTION.

PI EVENTS FOR 89-3

SE 07/12/89 LER# 34489016 50.72#: 16074 POWER: 0
DESC: A NUMBER OF ITEMS AND DEBRIS WERE FOUND IN THE CONTAINMENT SUMP WITH THE INNER SUMP SCREEN MISSING.

SCRAM 08/09/89 LER# 34489017 50.72#: 16281 POWER: 50
DESC: A SPURIOUS OVERTEMPERATURE DELTA TEMPERATURE SIGNAL RECEIVED DURING TESTING CAUSED A REACTOR TRIP.

SSF 09/08/89 LER# 50.72#: 16544 POWER: 100
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: BOTH TRAINS OF RHR SYSTEM WERE INOPERABLE FOR 3 HOURS. TRAIN 'A' INOPERABLE DUE TO THE 'A' TRAIN OF CCW SYSTEM OOS FOR CLEANING. THE 'B' TRAIN WAS INOPERABLE FOR DETERMINATION OF THE PROPER RHR PUMP RECIRC VALVE FLOW INDICATING SWITCH SETPOINT.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.49	.00	1.11	.56	.00	.00	1.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	2	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	1	1
SAFETY SYSTEM FAILURES	1	0	2	3	0	0	2	1
FORCED OUTAGE RATE (%)	22	6	0	10	20	0	0	13
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.15	.49	.00	1.11	.56	.00	.00	1.00
CRITICAL HOURS	1736	2057	287	1803	1778	2160	120	1001
COLLECTIVE RADIATION EXPOSURE	11	10	346	12	33	7	346	NA
CAUSE CODES:								
ADMINISTRATIVE	3	4	8	3	4	3	2	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	2	2	5	7	4	2	3	NA
MAINTENANCE	8	5	9	12	10	4	5	NA
A) MAINT PERSONNEL	0	2	2	4	1	1	1	NA
B) SURV AND TEST	4	3	6	4	7	3	2	NA
C) EQUIPMENT	3	1	2	4	2	0	1	NA
D) POTENTIAL MAINT	2	1	0	5	4	0	1	NA
DESIGN/INSTALLATION/FABRICATION	1	0	1	2	2	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.103

TURKEY POINT 3

PI EVENTS FOR 88-4

SSF 10/13/88 LER# 25088025 50.72#: POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: A POTENTIAL INTERACTION BETWEEN THE EDG SEQUENCER AND ESW SYSTEM DISCOVERED. IF "A" TRAIN ESW TRIPPED AND "B" TRAIN WAS ALREADY RUNNING, "C"TRAIN ESW PUMP WOULD START AND OVERLOAD EDG.

PI EVENTS FOR 89-1

SSF 01/10/89 LER# 25089001 50.72#: 14455 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: AN EMERGENCY SOURCE OF POWER WAS NOT AVAILABLE TO THE RHR SYSTEM. "B" EDG WAS INOPERABLE FOR TESTING WHEN THE 3A INTAKE COOLING WATER PUMP WAS SECURED (THOUGHT IT HAD A PROBLEM).

SE 01/16/89 LER# 25089002 50.72#: 14512 POWER: 0
DESC: LICENSEE FOUND LEAKS IN 3 REACTOR CORE THIMBLE GUIDE TUBES.

SCRAM 02/10/89 LER# 25089004 50.72#: 14714 POWER: 0
DESC: REACTOR TRIP DUE TO DEFECTIVE PROCEDURE DURING SG PROTECTION CHANNEL TESTING.

PI EVENTS FOR 89-2

SSA 06/16/89 LER# 25089011 50.72#: 15892 POWER: 0
DESC: ESF SAFEGUARDS SIGNAL CAUSED ECCS TRAIN 'B' START SIGNAL, BUT NO WATER WAS INJECTED.

SSA 06/17/89 LER# 25089011 50.72#: 15894 POWER: 0
DESC: INADEQUATE LABELING OF BLOCK/UNBLOCK SWITCH CAUSED ESF SAFEGUARDS TRAIN 'A' TO ACTUATE CAUSING ECCS START SIGNAL BUT NO WATER WAS INJECTED.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	0	0	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	2	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	1	0	2	3	1	1	0	0
FORCED OUTAGE RATE (%)	94	58	0	0	99	45	0	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	18.47	3.01	.00	.00	92.17	.81	.00	.45
CRITICAL HOURS	162	995	2183	2208	22	1231	167	2199
COLLECTIVE RADIATION EXPOSURE	48	52	26	30	228	116	72	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	2	7	3	3	1	NA
LICENSED OPERATOR	1	2	0	2	0	0	0	NA
OTHER PERSONNEL	2	2	4	2	2	2	1	NA
MAINTENANCE	8	5	7	9	3	5	1	NA
A) MAINT PERSONNEL	3	2	1	3	1	0	1	NA
B) SURV AND TEST	3	1	5	5	2	3	0	NA
C) EQUIPMENT	4	2	1	1	0	1	0	NA
D) POTENTIAL MAINT	4	2	2	2	0	2	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	5	4	3	3	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.104

TURKEY POINT 4

PI EVENTS FOR 88-4

SSF 10/13/88 LER# 25088025 50.72#: POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: A POTENTIAL INTERACTION BETWEEN THE EDG SEQUENCER AND ESW SYSTEM DISCOVERED. IF "A" TRAIN ESW TRIPPED AND "B" TRAIN WAS ALREADY RUNNING, "C"TRAIN ESW PUMP WOULD START AND OVERLOAD EDG.

PI EVENTS FOR 89-1

SSF 02/09/89 LER# 25189001 50.72#: 14704 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: RHR PUMP "4A" (THE ONLY OPERABLE RHR PUMP) WAS RENDERED TECHNICALLY INOPERABLE WHEN ITS EMERGENCY EDG WAS TESTED. CAUSED BY MISCOMMUNICATION BETWEEN OPERATIONS PERSONNEL.

PI EVENTS FOR 89-2

SSA 04/12/89 LER# 25189002 50.72#: 15304 POWER: 0
DESC: THE INCORRECT PROCEDURE WAS USED TO RE-INSTALL FUSES IN THE SAFEGUARDS RACKS. THIS CAUSED AN ACTUATION OF SAFETY INJECTION PUMPS, DIESEL GENERATOR, AUXILIARY FEED, AND INTAKE CHILLED WATER PUMPS.

PI EVENTS FOR 89-3

SSF 07/13/89 LER# 25189006 50.72#: POWER: 25
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: DEGRADED FLOW CONDITION RESULTED IN LESS THAN DESIGN BASIS ESSENTIAL SERVICE WATER (ICW) TO COMPONENT COOLING WATER HX'S. THIS OCCURRED WHEN AN ICW BASKET STRAINER WAS TAKEN OOS FOR CLEANING. THE CAUSE WAS A FAILED ISOLATION VALVE IN OTHER ICW HEADER.

SSA 09/15/89 LER# 25189011 50.72#: 16594 POWER: 100
DESC: MANUAL SAFETY INJECTION, A FEEDWATER ISOLATION FOLLOWED BY THE FEED REGULATING VALVE FAILING TO COMPLETELY CLOSE LEAD TO AN AUXILIARY FEED ACTUATION. THE OIL LEAK THAT STARTED THIS EVENT WAS ATTRIBUTED TO AN INADEQUATE FIELD INSTALLATION.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.55	.00	.00	.00	.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	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	2	2	1	1	0	1
FORCED OUTAGE RATE (%)	57	19	35	3	0	0	7	24
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.56	1.36	.55	.00	.00	1.78	2.31
CRITICAL HOURS	971	1780	1466	1804	0	0	562	1730
COLLECTIVE RADIATION EXPOSURE	48	52	26	30	228	116	72	NA
CAUSE CODES:								
ADMINISTRATIVE	4	2	2	4	3	1	1	NA
LICENSED OPERATOR	0	1	0	4	0	0	2	NA
OTHER PERSONNEL	2	1	5	0	1	0	1	NA
MAINTENANCE	6	3	9	11	2	3	3	NA
A) MAINT PERSONNEL	3	1	1	1	1	0	1	NA
B) SURV AND TEST	2	1	6	5	1	1	0	NA
C) EQUIPMENT	3	1	3	3	0	1	0	NA
D) POTENTIAL MAINT	3	1	3	6	0	2	1	NA
DESIGN/INSTALLATION/FABRICATION	2	1	0	3	3	2	3	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.105

VERMONT YANKEE

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 01/04/89 LER# 27189001 50.72#: 14409 POWER: 90
SYSTEM: REACTOR BUILDING
DESC: RTR BUILDING RAILROAD ACCESS DOOR SEALS ARE SUPPLIED WITH NON-SAFETY, NON-SEISMIC INSTRUMENT AIR. TEMPORARY PASSIVE SEALS WERE INSTALLED AND LATER DISCOVERED TO HAVE DEPRESSURIZED WITH OUTER DOOR OPEN.

SSA 03/10/89 LER# 27189015 50.72#: 14990 POWER: 0
DESC: ECCS INITIATION SIGNAL WHEN REENERGIZING AN ECCS INITIATION CABINET - CAUSED 'B' DIESEL, 'B' RHR, RCIC, AND HPCI TO RECEIVE INITIATION SIGNALS.

SSF 03/10/89 LER# 27189013 50.72#: 14986 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: REACTOR VESSEL WATER INVENTORY WAS LOST DUE TO RACKING OUT OF RHR SUCTION VALVE BREAKERS WHICH CAUSED THE MINIMUM FLOW BYPASS VALVE TO OPEN, CREATING A FLOW PATH TO THE SUPPRESSION POOL WITH THE OTHER RHR TRAIN ON-LINE FOR SHUTDOWN HEAT REMOVAL.

SSA 03/30/89 LER# 27189016 50.72#: 15162 POWER: 0
DESC: PROCEDURE DID NOT ADDRESS THAT CORE SPRAY PUMPS OR RHR WOULD ACTUATE WHEN TESTING HIGH DRYWELL PRESSURE.

SSF 03/30/89 LER# 27189017 50.72#: 15164 POWER: 0
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: CHECK VALVES IN BOTH TRAINS OF THE ESSENTIAL SERVICE WATER SYSTEM WERE FOUND STUCK OPEN BECAUSE OF MICROBIAL INDUCED INTERNAL CORROSION FROM AEROBIC BACTERIA. THE SYSTEMS COULD NOT FULFILL THEIR SAFETY FUNCTION UNDER CERTAIN CONDITIONS.

PI EVENTS FOR 89-2

SSF 06/28/89 LER# 27189009 50.72#: 15981 POWER: 100
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: UPON A LOSS OF OFF-SITE POWER AND FAILURE OF THE A EMERGENCY DIESEL GENERATOR TO START, BOTH TRAINS OF RHR WOULD BE LOST DUE TO LOSS OF POWER TO BOTH TRAINS HX SERVICE WATER OUTLET VALVES. THESE VALVES DO NOT HAVE REDUNDANT POWER SUPPLIES.

PI EVENTS FOR 89-3

SSF 07/18/89 LER# 27189014 50.72#: 15796 POWER: 92
SYSTEM: REACTOR CORE ISOLATION COOLING SYSTEM
DESC: THE RCIC SYSTEM WAS DECLARED INOPERABLE WHEN DURING A MONTHLY SURVEILLANCE TEST OF THE RCIC SYSTEM THE RCIC PUMP DISCHARGE VALVE BREAKER TRIPPED TWICE WHILE STROKING THE VALVE CLOSED. THE VALVE DC MOTOR OPERATOR ARMATURE WINDINGS OVERHEATED AND SHORTED.

TABLE 8.105 (CONT.)

VERMONT YANKEE (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.94	.00	.99	.00	.00	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	2	0	2	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	2	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	0	3	1	1
FORCED OUTAGE RATE (%)	4	0	1	11	0	0	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.00	.99	1.00	.00	.00	.00	.00
CRITICAL HOURS	2122	2184	2017	1994	2209	985	2014	2208
COLLECTIVE RADIATION EXPOSURE	24	32	24	31	38	194	34	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	1	2	2	7	0	NA
LICENSED OPERATOR	0	0	0	0	0	1	0	NA
OTHER PERSONNEL	2	0	2	1	1	2	2	NA
MAINTENANCE	5	3	4	1	3	11	3	NA
A) MAINT PERSONNEL	2	0	1	0	0	3	1	NA
B) SURV AND TEST	2	1	1	0	3	5	1	NA
C) EQUIPMENT	0	2	2	1	1	2	0	NA
D) POTENTIAL MAINT	1	1	2	1	0	2	2	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	1	1	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.106

VOGTLE 1

PI EVENTS FOR 88-4

SSA 10/16/88 LER# 42488028 50.72#: 13730 POWER: 0
DESC: SYSTEM ENGINEER FAILED TO COMPLETE PREREQUISITE FOR A SAFETY INJECTION TEST CAUSING INADVERTENT SAFETY INJECTION.

PI EVENTS FOR 89-1

SSF 01/06/89 LER# 42489002 50.72#: 14429 POWER: 100
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: IMPROPER FUSES MAY HAVE PREVENTED FULFILLMENT OF A SAFETY SYSTEM FUNCTION. WRONG SIZE FUSES IN THE ESW CONTROL CIRCUIT. INVESTIGATING IF FUSES SUPPLIED BY ORIGINAL VENDOR.

SSF 03/06/89 LER# 42587081 50.72#: POWER: 75
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: THE HPSI SYSTEM MAY NOT PERFORM ITS REQUIRED SAFETY FUNCTION DURING A DESIGN BASIS EVENT DUE TO INCORRECT VALVE WEIGHT AND FAILURE POINT LOCATION INFO USED FOR SUPPORT PLACEMENT, WHICH COULD HAVE DRAINED THE RWST BELOW MIN RQMTS FOR A PLANT SHUTDOWN.

SSF 03/19/89 LER# 42589011 50.72#: POWER: 0
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: IT WAS FOUND DURING PROCEDURE REVIEW THAT THE LPSI WAS ISOLATED IN MODE 3 TO FILL ACCUMULATORS WHICH VIOLATES T.S. REQUIREMENTS FOR SYSTEM OPERABILITY DURING THIS MODE. ISOLATION WAS CAUSED BY SHUTTING THE SI PUMP COLD LEG INJECTION VALVE TO THE RCS.

PI EVENTS FOR 89-2

SCRAM 05/09/89 LER# 42489012 50.72#: 15581 POWER: 100
DESC: MFP TRIPPED ON HIGH VIBRATION AND OPERATORS NOT ABLE TO REGAIN SG LEVEL. A SCRAM OCCURRED TWO MINUTES AFTER MFP TRIP. A BROKEN SOLDER CONNECTION WAS FOUND ON THE VIBRATION CARD.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.22	1.23	.48	1.40	.00	.00	.46	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	2	1	3	0	0	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	1	0	1	0	0	3	0	0
FORCED OUTAGE RATE (%)	18	26	6	5	9	12	3	2
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.61	1.23	.97	.93	2.03	1.03	.46	.92
CRITICAL HOURS	1642	1620	2069	2148	985	1944	2172	2175
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	11	5	NA
CAUSE CODES:								
ADMINISTRATIVE	11	4	7	3	5	4	3	NA
LICENSED OPERATOR	3	2	0	0	1	1	0	NA
OTHER PERSONNEL	4	3	0	4	7	6	0	NA
MAINTENANCE	12	8	8	7	11	9	2	NA
A) MAINT PERSONNEL	2	1	1	2	3	2	1	NA
B) SURV AND TEST	10	6	6	3	6	4	1	NA
C) EQUIPMENT	1	1	1	2	3	3	0	NA
D) POTENTIAL MAINT	2	2	1	1	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	5	0	5	2	5	1	0	NA
EQUIPMENT FAILURE	0	0	0	1	0	1	0	NA

TABLE 8.107

VOGTLE 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SE 03/09/89 LER# 42589003 50.72#: 14982 POWER: 0
DESC: TWO RHR COLD LEG INJECTION VALVES FAILED WITH A FLOW PATH TO RWST OPEN.

SSF 03/09/89 LER# 42589003 50.72#: POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: THE SS DECIDED, WITHOUT AN APPROVED PROCEDURE, TO DEPRESSURIZE THE RHR SYSTEM USING THE RHR TEST RETURN VALVES. IF RHR WOULD HAVE BEEN NEEDED SOME OF THE FLOW WOULD HAVE BEEN DIVERTED TO THE RWST. CONDITION EXISTED APPROX. 14 HRS., TS 3.0.3 ENTERED.

SSA 03/18/89 LER# 42589006 50.72#: 15055 POWER: 0
DESC: MAIN STEAMLINE LOW PRESSURE SIGNAL BECAME UNBLOCKED DURING TESTING, CAUSING SAFETY INJECTION DUE TO AN OPERATOR RESETTING THE WRONG SWITCH.

SSF 03/19/89 LER# 42589011 50.72#: POWER: 0
SYSTEM: LOW PRESSURE SAFETY INJECTION SYSTEM
DESC: IT WAS FOUND DURING PROCEDURE REVIEW THAT THE LPSI WAS ISOLATED IN MODE 3 TO FILL ACCUMULATORS WHICH VIOLATES T.S. REQUIREMENTS FOR SYSTEM OPERABILITY DURING THIS MODE. ISOLATION WAS CAUSED BY SHUTTING THE SAFETY INJECTION PUMP COLD LEG INJECTION VALVE TO THE RCS.

PI EVENTS FOR 89-2

SCRAM 05/02/89 LER# 42589019 50.72#: 15508 POWER: 60
DESC: WHILE INVESTIGATING A TEST MALFUNCTION ALARM A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP OCCURRED POSSIBLY DUE TO A LEAKY WELD WHICH CAUSED CONDENSATION TO INITIATE THE TURBINE TRIP.

SCRAM 05/12/89 LER# 42589020 50.72#: 15606 POWER: 78
DESC: ELECTRICAL FAILURE TO NI'S DURING TESTING CAUSED A HIGH FLUX SCRAM ON 2 OF 4 RATE TRIPS.

SCRAM 05/22/89 LER# 42589021 50.72#: 15681 POWER: 12
DESC: CONTROL POWER TO TURBINE INTERCEPT VALVES CHANGED (.1 VOLTS) AFFECTED BIAS ON LOGIC CARD AND VALVE WOULD NOT OPEN CAUSING SCRAM ON LOW SG LEVEL WHEN MSR RELIEF LIFTED WHEN PLACING TURBINE ON LINE.

PI EVENTS FOR 89-3

SSA 07/20/89 LER# 42589023 50.72#: 16136 POWER: 100
DESC: LOSS OF 4KV BUS WHEN SHIFTING POWER SUPPLIES CAUSED DIESEL START AND LOADING OF BUS DUE TO AN INADEQUACY IN THE ORIGINAL DESIGN.

SCRAM 07/26/89 LER# 42589024 50.72#: 16172 POWER: 100
DESC: PRESSURIZER PRESSURE PROCESSING CARD FAILED WHILE REPLACING AN OVERTEMPERATURE DELTA-T (BISTABLE CARD CAUSED AN OTDT SCRAM).

TABLE 8.107 (CONT.)

VOGTLE 2 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	.00	1.12	.45
SCRAMS < 15% POWER	NA	NA	NA	NA	NA	0	1	0
TOTAL SCRAMS	NA	NA	NA	NA	NA	0	3	1
SAFETY SYSTEM ACTUATIONS	NA	NA	NA	NA	NA	1	0	1
SIGNIFICANT EVENTS	NA	NA	NA	NA	NA	1	0	0
SAFETY SYSTEM FAILURES	NA	NA	NA	NA	NA	2	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	12	1
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	2.23	.45
CRITICAL HOURS	NA	NA	NA	NA	NA	83	1793	2199
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	NA	3	4	NA
LICENSED OPERATOR	NA	NA	NA	NA	NA	4	2	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	4	2	NA
MAINTENANCE	NA	NA	NA	NA	NA	8	8	NA
A) MAINT PERSONNEL	NA	NA	NA	NA	NA	3	2	NA
B) SURV AND TEST	NA	NA	NA	NA	NA	2	3	NA
C) EQUIPMENT	NA	NA	NA	NA	NA	2	2	NA
D) POTENTIAL MAINT	NA	NA	NA	NA	NA	1	1	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	NA	NA	NA	1	1	NA
EQUIPMENT FAILURE	NA	NA	NA	NA	NA	1	0	NA

TABLE 8.108

WASH. NUCLEAR 2

PI EVENTS FOR 88-4

NONE

PI EVENTS FOR 89-1

SSF 01/12/89 LER# 39789001 50.72#: 14470 POWER: 61
SYSTEM: EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC: FOUR FAILURE MODES WERE DISCOVERED OF THE CONTAINMENT INERTING SYSTEM, WHICH COULD RENDER SAFETY RELATED EQUIPMENT INOPERABLE. LIQUID NITROGEN COULD ENTER OTHER SYSTEMS. POTENTIAL TO STARVE EDGS OF OXYGEN.

SSA 01/30/89 LER# 39789002 50.72#: 14591 POWER: 100
DESC: INAPPROPRIATE INSULATORS ON MAIN TRANSFORMER CAUSED VOLTAGE TRANSIENT, MAIN TURBINE TRIP, AND DIESEL START.

SCRAM 01/30/89 LER# 39789002 50.72#: 14591 POWER: 100
DESC: FLASH IN TRANSFORMER YARD DUE TO INSULATOR FAILURE CAUSED THE LOCKOUT RELAY OF THE MAIN SETUP TRANSFORMER TO ACTUATE CAUSING TURBINE TRIP SCRAM.

PI EVENTS FOR 89-2

SSF 05/05/89 LER# 39789022 50.72#: POWER: 0
SYSTEM: SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: LOSS OF SECONDARY CONTAINMENT INTEGRITY DURING CORE ALTERATIONS DUE TO UNISOLATABLE LINES CAUSED BY POOR MAINTENANCE ACTIVITY SCHEDULING.

SSA 05/14/89 LER# 39789016 50.72#: 15616 POWER: 0
DESC: OPERATOR PULLED FUSES IN STARTUP TRANSFORMER VOLTAGE MONITOR CAUSING LOSS OF POWER TO BUS SM-7 AND DIESEL START AND LOAD.

SSF 05/27/89 LER# 39789020 50.72#: 15725 POWER: 0
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
DESC: THE RHR SYSTEM COULD NOT BE RESTORED WITHIN THE TECH. SPEC. TIME RESTRICTIONS AFTER PERFORMING A LLRT. THE INBOARD SUCTION ISOLATION VALVE CLOSED DUE TO UNANTICIPATED SYSTEMS INTERACTION (PROCEDURE ERROR) AND COULD NOT BE OPENED BECAUSE OF HYDRAULIC LOCK.

SSF 06/14/89 LER# 39789024 50.72#: POWER: 0
SYSTEM: REACTOR BUILDING
DESC: A LEAKAGE PATH WAS DISCOVERED THROUGH THE CONTROL ROD DRIVE SYSTEM HYDRAULIC CONTROL UNITS WHICH WOULD BYPASS THE SECONDARY CONTAINMENT SYSTEMS AND VIOLATE THE DESIGN BASIS LIMITS FOR CONTROL ROOM HABITABILITY DURING A LOCA AND CONCURRENT SEISMIC EVENT.

SSA 06/18/89 LER# 39789025 50.72#: 15899 POWER: 0
DESC: HPCS SYSTEM ALIGNED FOR INJECTION WHEN A TECHNICIAN VENTED THE HIGH SIDE OF REACTOR LEVEL TRANSMITTER INSTEAD OF THE LOW SIDE SENDING A FALSE LOW REACTOR LEVEL SIGNAL.

SCRAM 06/29/89 LER# 39789028 50.72#: 15987 POWER: 25
DESC: WHILE TURBINE WAS COASTING DOWN AFTER AN OVERSPEED TEST, CONTROL SWITCH TAKEN TO INSERVICE POSITION, TURBINE TRIED TO MATCH SPEEDS RAISING PRESSURE TO 30% REACTOR POWER SCRAM SETPOINT.

SSF 06/30/89 LER# 39789027 50.72#: POWER: 25
SYSTEM: PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC: AN ENGINEERING EVALUATION DETERMINED THAT 2 MISSING SEISMIC SUPPORTS ON EACH OF 2 POST ACCIDENT SAMPLING SYSTEM CONTAINMENT ISOLATION VALVES COULD RESULT IN AN UNISOLABLE BREACH OF PRIMARY CONTAINMENT DURING A DESIGN BASIS EARTHQUAKE.

TABLE 8.108 (CONT.)

WASH. NUCLEAR 2 (CONT.)

PI EVENTS FOR 89-3

SSF 07/28/89 LER# 39789030 50.72#: POWER: 78
SYSTEM: HIGH PRESSURE CORE SPRAY SYSTEM
DESC: THE HPCS SYSTEM WAS RENDERED INOPERABLE DUE TO A SUCTION VALVE FROM THE SUPPRESSION POOL WHICH OPENED ONLY 14% DURING A SURVEILLANCE TEST. THE VALVE MOTOR OPERATOR WAS NOT MADE PER DESIGN BY THE MANUFACTURER, A PART WAS MISSING.

SCRAM 08/06/89 LER# 39789031 50.72#: 16257 POWER: 100
DESC: A MAIN FEEDWATER PUMP TRIPPED LEADING TO A LOW REACTOR VESSEL LEVEL AND A REACTOR TRIP. THE ROOT CAUSE WAS THAT THE REACTOR RECIRCULATION SYSTEM FLOW CONTROL VALVE RUNBACK SETPOINT WAS IMPROPERLY SET.

SSF 08/11/89 LER# 39789032 50.72#: POWER: 100
SYSTEM: LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: SEVERAL NON-CLASS 1E CIRCUITS DID NOT MEET SEPARATION REQUIREMENTS FROM ITS CLASS 1E SOURCE POWER PANEL. TWO CIRCUIT PROTECTIVE DEVICES ARE NECESSARY AND ONLY ONE EXISTED.

SSF 08/11/89 LER# 39789034 50.72#: POWER: 100
SYSTEM: LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC: SIX CLASS 1E 480 VAC MCCS WERE DECLARED INOPERABLE WHEN A DESIGN DEFICIENCY WAS IDENTIFIED IN THE FAULT TRIPPING COORDINATION TO THE INDIVIDUAL LOADS. DURING A DBA SOME OR ALL OF THESE MCCS COULD BE LOST AS A RESULT OF DAMAGED LOADS.

SCRAM 08/17/89 LER# 39789035 50.72#: 16342 POWER: 67
DESC: DURING A SURVEILLANCE TEST, AN ISOLATION VALVE TO A REACTOR WATER LEVEL INSTRUMENT WAS OPENED INCORRECTLY CAUSING A REACTOR TRIP ON A LOW WATER LEVEL SIGNAL.

SSA 08/31/89 LER# 50.72#: 16455 POWER: 70
DESC: TECHNICIANS WORKED ON THE WRONG LEVEL SWITCH AND CAUSED A LOW CONDENSATE STORAGE LEVEL SIGNAL- HIGH PRESSURE CORE SPRAY SUCTION SWAPPED TO THE SUPPRESSION POOL.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.66	.00	.00	.00	.49	1.30	1.08
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	1	1	2
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	2	1
SIGNIFICANT EVENTS	0	2	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	3	0	0	1	4	3
FORCED OUTAGE RATE (%)	0	32	0	7	10	4	0	11
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.97	.00	.53	.50	.49	.00	1.08
CRITICAL HOURS	2117	1520	904	1895	1992	2028	770	1850
COLLECTIVE RADIATION EXPOSURE	32	43	201	64	44	36	362	NA
CAUSE CODES:								
ADMINISTRATIVE	2	6	6	5	4	5	7	NA
LICENSED OPERATOR	0	1	4	2	0	0	1	NA
OTHER PERSONNEL	2	3	4	5	2	2	5	NA
MAINTENANCE	3	4	12	7	5	3	13	NA
A) MAINT PERSONNEL	0	2	5	4	1	3	5	NA
B) SURV AND TEST	3	2	4	4	4	1	5	NA
C) EQUIPMENT	0	0	1	1	2	0	1	NA
D) POTENTIAL MAINT	0	0	2	0	1	0	2	NA
DESIGN/INSTALLATION/FABRICATION	1	3	5	4	0	4	6	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.109

WATERFORD 3

PI EVENTS FOR 88-4

SCRAM 12/08/88 LER# 38288033 50.72#: 14177 POWER: 100
DESC: THE PDP COVER STRUCK SEVERAL DISTRIBUTION PANEL BREAKERS WHILE BEING REMOVED FOR MAINTENANCE. WHEN THE BREAKERS WERE CLOSED THE RPCS SENSED A LARGE LOAD REDUCTION, RESULTING IN RUNBACK, SG SHRINK, AND A LOW SG LEVEL SCRAM.

PI EVENTS FOR 89-1

SSA 02/04/89 LER# 38289003 50.72#: 14703 POWER: 70
DESC: LPSI START SIGNAL WHEN TESTING HPSI DUE TO NOT PLACING CONTROL SWITCH TO THE 'OFF' POSITION CAUSED LPSI PUMP TO START.

SSF 03/03/89 LER# 38289004 50.72#: POWER: 100
SYSTEM: REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC: ESSENTIAL CHILLER "A" TRAIN DUE TO STUCK FLOAT SWITCH (FLOAT DEVELOPED A CRACK, FILLED WITH FREON AND SANK). REPLACED FLOATS ON OTHER TRAINS. POTENTIAL FOR SYSTEM INABILITY TO MAINTAIN TEMPERATURE.

PI EVENTS FOR 89-2

NONE

PI EVENTS FOR 89-3

SCRAM 08/19/89 LER# 38289017 50.72#: 16365 POWER: 23
DESC: A PROBLEM WITH A MISALIGNED CONTROL ELEMENT ASSEMBLY LEAD TO AXIAL FLUX DISTRIBUTION PROBLEMS AND A REACTOR TRIP ON CORE PROTECTION CALCULATOR AXIAL SHAPE INDEX.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.51	.00	1.29	.00	.63	.00	.00	.52
SCRAMS < 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	0	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	0	0
FORCED OUTAGE RATE (%)	11	5	5	0	2	3	0	6
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.51	.00	1.29	.00	.00	.48	.00	1.05
CRITICAL HOURS	1950	2084	777	2173	1590	2101	2183	1907
COLLECTIVE RADIATION EXPOSURE	32	10	201	12	36	9	5	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	12	1	4	3	1	NA
LICENSED OPERATOR	0	0	1	1	0	0	0	NA
OTHER PERSONNEL	1	2	10	1	3	1	2	NA
MAINTENANCE	4	3	16	3	3	1	3	NA
A) MAINT PERSONNEL	1	2	4	0	1	0	0	NA
B) SURV AND TEST	2	0	12	3	2	1	3	NA
C) EQUIPMENT	0	2	2	0	0	0	0	NA
D) POTENTIAL MAINT	1	2	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	5	0	4	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.110

WOLF CREEK

PI EVENTS FOR 88-4

SE 11/08/88 LER# 50.72#: POWER: 0
DESC: PLANNED INSPECTION OF HAFNIUM CONTROL RODS REVEALED UNEXPECTED SWELLING OF THE CONTROL RODS CLADDING. (MORNING REPORT: 11/08/88)

SE 11/30/88 LER# 50.72#: POWER: 0
DESC: BROKEN BOLTS IN FUEL INJECTOR FOR DIESEL GENERATOR "A". BOLTS FAILED MECHANICAL PROPERTY TESTS. CORRECT CHEMICAL COMPOSITION. (MORNING REPORT: 12/01/88)

SSF 12/01/88 LER# 48288027 50.72#: POWER: 0
SYSTEM: POST-ACCIDENT MONITORING SYSTEM
DESC: NOTICE FROM THE VENDOR, IDENTIFIED A SIGNIFICANT POSSIBILITY OF LEAKAGE IN THE CABLE ASSEMBLIES OF THE NEUTRON FLUX MONITORING SYSTEMS. NOT QUALIFIED FOR POST ACCIDENT CONDITIONS.

PI EVENTS FOR 89-1

SCRAM 01/23/89 LER# 48289002 50.72#: 14561 POWER: 100
DESC: FAULTY CIRCUIT CARD IN BEARING VIBRATION SENSOR CAUSED TURBINE TRIP - SCRAM ON #7 BEARING HIGH VIBRATION.

SCRAM 02/02/89 LER# 48289004 50.72#: 14623 POWER: 100
DESC: TECH BUMPED A TERMINAL STRIP WHICH HAD A LOOSE SCREW WHEN TESTING HVAC DAMPERS CAUSING MSIV CLOSURE CAUSING LOW SG LEVEL SHRINK AND SCRAM.

PI EVENTS FOR 89-2

SSF 04/19/89 LER# 48289009 50.72#: POWER: 100
SYSTEM: FIRE PROTECTION SYSTEM
DESC: SIGNIFICANT DEGRADATION OF THE FIRE PROTECTION SYSTEM CAUSED BY INCOMPLETE PENETRATION OF THE PIPE SEAM WELDS.

PI EVENTS FOR 89-3

SSF 09/19/89 LER# 50.72#: 16634 POWER: 100
SYSTEM: HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC: BOTH TRAINS OF HPSI RENDERED INOPERABLE. TRAIN 'A' DUE TO INOPERABILITY OF A CHARGING PUMP RECIRCULATION VALVE AND TRAIN 'B' DUE TO MAINTENANCE.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	.00	.95	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	2	0	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	2	0	0	0
SAFETY SYSTEM FAILURES	1	0	0	0	1	0	1	1
FORCED OUTAGE RATE (%)	0	31	0	0	0	2	0	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	1.90	.00	.00	.00	.95	.00	.00
CRITICAL HOURS	0	1581	2183	2208	146	2115	2183	2208
COLLECTIVE RADIATION EXPOSURE	117	60	4	3	229	5	2	NA
CAUSE CODES:								
ADMINISTRATIVE	6	0	2	3	0	3	1	NA
LICENSED OPERATOR	2	1	1	0	1	3	0	NA
OTHER PERSONNEL	3	2	0	0	4	2	0	NA
MAINTENANCE	8	3	2	3	3	7	3	NA
A) MAINT PERSONNEL	2	2	0	1	2	1	0	NA
B) SURV AND TEST	5	1	2	2	1	5	1	NA
C) EQUIPMENT	1	0	0	1	1	1	0	NA
D) POTENTIAL MAINT	1	0	0	0	0	1	2	NA
DESIGN/INSTALLATION/FABRICATION	4	1	4	4	6	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.111

YANKEE-ROWE

PI EVENTS FOR 88-4

SSF 11/09/88 LER# 02988009 50.72#: POWER: 58
SYSTEM: PLANT PROTECTION SYSTEM
DESC: PROCEDURE ERROR RESULTED IN NEUTRON FLUX TRIP SETPOINTS (GAIN ADJUSTMENTS OF INTERMEDIATE RANGE AND POWER RANGE) IN ERROR, COULD HAVE RESULTED IN REACTOR TRIP IN EXCESS OF TECH. SPEC. 2.2.1 LIMITS.

SSA 11/16/88 LER# 02988010 50.72#: 14008 POWER: 0
DESC: TESTING MAIN GENERATOR STATIC EXCITER WHEN A BREAKER OPENED CAUSING LOSS OF 480 V BUSES. ONE DIESEL STARTED, OTHERS OOS FOR MAINTENANCE DUE TO INADEQUATE TROUBLESHOOTING PROCEDURE.

SSF 12/08/88 LER# 02988014 50.72#: POWER: 0
SYSTEM: PLANT PROTECTION SYSTEM
DESC: LOW TRIP SETPOINTS OF CHANNELS 7 AND 8 OF THE POWER RANGE NIS WERE FOUND TO HAVE EXCEEDED TECH. SPEC. LIMITS. AUTO TRIP FEATURE OF PPS MAY NOT HAVE BEEN AVAILABLE AT CERTAIN POWER LEVELS. FAULTY RELAY

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SCRAM 04/23/89 LER# 02989007 50.72#: 15427 POWER: 100
DESC: A REACTOR TRIP OCCURRED ON LOW REACTOR COOLANT PRESSURE WHEN GROUP C CONTROL RODS DROPPED.

PI EVENTS FOR 89-3

SSA 07/25/89 LER# 02989011 50.72#: 16164 POWER: 100
DESC: CONTROL POWER FUSES WERE REMOVED FOR MAINTENANCE ON THE REVERSE POWER RELAY. THIS CAUSED THE EMERGENCY DIESEL GENERATOR LOAD SEQUENCE RELAY TO ACTIVATE AND GIVE A START SIGNAL.

SCRAM 08/29/89 LER# 02989013 50.72#: 16436 POWER: 1
DESC: A CONTROL SWITCH WAS INADVERTENTLY OPERATED WHILE MANIPULATING MAIN STEAM LINE ISOLATION SYSTEM INSTRUMENTATION RESULTING IN A REACTOR TRIP.

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.94	.47	.00	.00	.00	.47	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	0	2	1	0	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	1	1	0	1	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	0	2	0	0	0
FORCED OUTAGE RATE (%)	2	4	2	0	0	1	4	14
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	1.36	.94	.47	.00	.00	.53	.94	.52
CRITICAL HOURS	2209	2117	2148	2208	1014	1891	2122	1915
COLLECTIVE RADIATION EXPOSURE	9	9	10	13	195	23	10	NA
CAUSE CODES:								
ADMINISTRATIVE	0	2	1	0	3	2	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	1	0	0	3	2	NA
MAINTENANCE	2	3	1	0	4	4	3	NA
A) MAINT PERSONNEL	0	0	0	0	0	3	0	NA
B) SURV AND TEST	0	1	1	0	2	1	2	NA
C) EQUIPMENT	2	0	0	0	2	0	0	NA
D) POTENTIAL MAINT	2	2	0	0	2	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	2	0	1	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.112

ZION 1

PI EVENTS FOR 88-4

SE 10/25/88 LER# 29588019 50.72#: 13812 POWER: 50
DESC: ANTI PUMP FEATURE OF MOTOR CIRCUIT BREAKERS COULD PREVENT ACTIVATION OF CCW SWS AND AFW PUMPS ON SAFETY INJECTION WITH LOSS OF NON-VITAL POWER.

SSF 10/25/88 LER# 29588019 50.72#: 13812 POWER: 50
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: DURING A REVIEW OF TEST RESULTS, A DETERMINATION WAS MADE THAT THE AFW AND THE CCW PUMPS MIGHT NOT START AS REQUIRED DURING A BLACKOUT. DESIGN ERROR - BREAKERS WOULD LOCKOUT ON ANTI-PUMP FEATURE

PI EVENTS FOR 89-1

SCRAM 01/27/89 LER# 29589002 50.72#: 14579 POWER: 99
DESC: WHILE TROUBLESHOOTING AN INDICATION PROBLEM WITH A CONTINUITY LIGHT WITH THE TURBINE ONLINE - A TURBINE TRIP/SCRAM OCCURRED DUE TO TECH PLACING TEST LEADS ACROSS WRONG TERMINAL POINTS.

SSF 03/11/89 LER# 29589007 50.72#: POWER: 60
SYSTEM: CONTAINMENT SPRAY SYSTEM
DESC: CONTAINMENT SPRAY SYSTEM COULD NOT PERFORM ITS DESIGN FUNCTION OF DELIVERING CS DURING THE COLD LEG RECIRCULATION PHASE FOLLOWING A LOCA DUE TO TRAIN A RHR SUPPLY VALVE FAILURE (BORIC ACID BUILDUP) AND TRAIN B RHR INOPERABLE DUE TO SUMP VALVE FAILURE.

PI EVENTS FOR 89-2

SSF 06/09/89 LER# 29589008 50.72#: POWER: 99
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: THE CONTAINMENT SPRAY PUMP CUBICLE ROOM COOLER SERVICE WATER MAY NOT BE ABLE TO SUPPLY REQUIRED AMOUNT OF COOLING WATER DURING A SAFETY INJECTION ACTUATION AT ONE UNIT DUE TO CROSS-TIE VALVE CONFIGURATION.

PI EVENTS FOR 89-3

SSF 08/26/89 LER# 50.72#: 16416 POWER: 49
SYSTEM: MAIN/REHEAT STEAM SYSTEM
DESC: SIXTEEN OF TWENTY MAIN STEAM CODE SAFETY RELIEF VALVES WERE DECLARED INOPERABLE DURING SETPOINT TESTING WHEN TEST PRESSURE GAUGES WERE INDICATING CONFLICTING READINGS WHICH MADE LIFT SETPOINTS QUESTIONABLE.

SSF 09/21/89 LER# 50.72#: 16663 POWER: 0
SYSTEM: REACTOR CONTAINMENT BUILDING
DESC: CONTAINMENT INTEGRITY WAS NOT MAINTAINED DURING FUEL MOVEMENT DUE TO A RELEASE PATH TO ATMOSPHERE VIA AN AFW CHECK VALVE WITH INTERNALS REMOVED AND PLASTIC COVERING, THROUGH THE FW RING IN THE STEAM GENERATOR AND OUT OPEN ATMOSPHERIC RELIEF VALVES.

TABLE 8.112 (CONT.)

ZION 1 (CONT.)

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.77	.00	.48	.00	.65	.00	.00
SCRAMS < 15% POWER	0	0	1	1	0	0	0	0
TOTAL SCRAMS	0	1	1	2	0	1	0	0
SAFETY SYSTEM ALTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	1	1	1	2
FORCED OUTAGE RATE (%)	0	1	0	7	11	31	0	9
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.00	.77	.00	.48	.00	1.31	.00	1.28
CRITICAL HOURS	2209	1306	1362	2099	1981	1527	2183	1559
COLLECTIVE RADIATION EXPOSURE	10	198	179	12	241	42	12	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	3	4	2	2	2	NA
LICENSED OPERATOR	0	2	1	1	0	1	0	NA
OTHER PERSONNEL	1	2	0	2	1	1	1	NA
MAINTENANCE	2	6	4	5	4	5	1	NA
A) MAINT PERSONNEL	1	2	0	1	1	1	0	NA
B) SURV AND TEST	0	3	2	3	1	1	1	NA
C) EQUIPMENT	0	2	2	1	1	1	0	NA
D) POTENTIAL MAINT	1	2	3	1	2	3	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	2	2	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.113

ZION 2

PI EVENTS FOR 88-4

SCRAM 10/08/88 LER# 30488007 50.72#: 13643 POWER: 56
DESC: DURING WEEKLY ROD MOVEMENT TEST, AN URGENT FAILURE ALARM OCCURRED. DURING TROUBLESHOOTING, A BLOWN FUSE WAS INDICATED. THE FUSE WAS REMOVED FOR REPLACEMENT. THIS CAUSED A ROD TO DROP WHICH CAUSED A SCRAM.

SCRAM 10/12/88 LER# 30488009 50.72#: 13689 POWER: 94
DESC: AN INADEQUATE PROCEDURE THAT DID NOT SPECIFY ISOLATING THE VACUUM ALARM SWITCH RESULTED IN A SENSED LOW VACUUM TURBINE TRIP AND A REACTOR TRIP.

SE 10/25/88 LER# 30488019 50.72#: 13812 POWER: 0
DESC: ANTI PUMP FEATURE OF MOTOR CIRCUIT BREAKERS COULD PREVENT ACTIVATION OF CCW SWS AND AFW PUMPS ON SI WITH LOSS OF NON-VITAL POWER.

SSF 10/25/88 LER# 29588019 50.72#: 13812 POWER: 0
SYSTEM: AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC: DURING A REVIEW OF TEST RESULTS, A DETERMINATION WAS MADE THAT THE AFW AND THE CCW PUMPS MIGHT NOT START AS REQUIRED DURING A BLACKOUT. DESIGN ERROR - BREAKERS WOULD LOCKOUT ON ANTI-PUMP FEATURE

SSA 12/11/88 LER# 30488012 50.72#: 14210 POWER: 0
DESC: POOR COMMUNICATIONS BETWEEN TEST ENGINEER AND SHIFT ENGINEER CAUSED BREAKER TO BE SHUT BEFORE TESTING COMPLETE CAUSING SAFETY INJECTION.

PI EVENTS FOR 89-1

NONE

PI EVENTS FOR 89-2

SSF 06/09/89 LER# 29589008 50.72#: POWER: UNK
SYSTEM: ESSENTIAL SERVICE WATER SYSTEM
DESC: THE CONTAINMENT SPRAY PUMP CUBICLE ROOM COOLER SERVICE WATER MAY NOT BE ABLE TO SUPPLY REQUIRED AMOUNT OF COOLING WATER DURING A SAFETY INJECTION ACTUATION AT ONE UNIT DUE TO CROSS-TIE VALVE CONFIGURATION.

PI EVENTS FOR 89-3

NONE

TYPE	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
SCRAMS > 15% POWER/1000 CRITICAL HOURS	.00	.00	.00	.00	4.65	.00	.00	.00
SCRAMS < 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	2	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	1	0	1	0
FORCED OUTAGE RATE (%)	5	0	0	0	11	21	1	0
EQUIP. FORCED OUTAGES/1000 CRITICAL HOURS	.47	.00	.00	.00	2.33	1.15	.46	.00
CRITICAL HOURS	2118	2184	2183	2208	430	1734	2183	2208
COLLECTIVE RADIATION EXPOSURE	10	198	179	12	261	42	12	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	2	2	10	4	2	NA
LICENSED OPERATOR	0	2	1	0	3	2	1	NA
OTHER PERSONNEL	0	2	0	1	6	3	0	NA
MAINTENANCE	2	4	2	4	13	4	2	NA
A) MAINT PERSONNEL	0	3	0	1	4	4	0	NA
B) SURV AND TEST	0	1	1	2	7	1	1	NA
C) EQUIPMENT	1	1	1	1	5	0	0	NA
D) POTENTIAL MAINT	1	1	2	1	2	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	2	3	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	1	NA

9. DATA TABLES

OVERALL INDUSTRY SUMMARY

PERFORMANCE INDICATORS

CRITICAL HOURS

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TABLE 9.1

OVERALL INDUSTRY SUMMARY

	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 CRIT HRS	
	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END
PLANT	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3
ARKANSAS 1	0.25	0.50	0.25	0.00	0.75	0.50	1.25	1.50	28.75	11.00	1.07	0.74
ARKANSAS 2	0.25	0.50	0.50	2.00	0.25	1.50	1.00	0.00	8.25	16.00	0.65	0.65
BEAVER VALLEY 1	1.25	0.50	0.25	0.50	0.00	0.00	0.00	0.00	4.00	2.00	0.60	0.00
BEAVER VALLEY 2	1.00	0.00	0.25	0.50	0.00	0.00	0.00	0.00	3.75	27.50	0.50	1.00
BIG ROCK POINT	0.50	0.50	0.25	0.00	0.00	0.00	0.25	0.00	7.75	1.50	1.46	0.44
BRAIDWOOD 1	0.75	0.50	0.25	0.50	0.00	0.50	0.00	0.00	7.33	3.00	0.72	0.26
BRAIDWOOD 2	2.50	1.50	0.00	0.00	0.00	0.50	0.50	0.00	9.00	3.00	0.99	0.23
BROWNS FERRY 1	0.00	0.00	1.25	0.00	0.50	0.00	1.00	3.00	100.00	100.00	0.00	0.00
BROWNS FERRY 2	0.00	0.00	0.75	0.00	0.50	0.00	1.25	3.50	100.00	100.00	0.00	0.00
BROWNS FERRY 3	0.00	0.00	0.25	0.00	0.75	0.00	1.25	3.00	100.00	100.00	0.00	0.00
BRUNSWICK 1	0.50	0.00	0.25	0.00	0.50	0.00	4.00	0.50	3.50	16.50	0.38	0.33
BRUNSWICK 2	0.25	0.00	0.50	1.50	0.50	0.50	2.50	0.50	6.00	6.00	0.63	0.26
BYRON 1	0.75	0.00	0.00	0.00	0.25	0.00	0.00	0.00	2.25	0.00	0.62	0.00
BYRON 2	1.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	1.75	4.00	0.70	0.25
CALLAWAY	0.75	0.50	0.25	1.00	0.00	0.00	0.25	0.00	1.50	2.50	0.40	0.54
CALVERT CLIFFS 1	0.50	0.00	1.50	0.00	0.25	0.00	0.25	1.00	2.50	0.00	0.73	0.00
CALVERT CLIFFS 2	0.25	0.00	0.00	0.00	0.50	0.50	0.00	1.00	4.25	0.00	0.27	0.00
CATAWBA 1	0.25	0.00	0.50	0.00	0.50	0.00	0.75	0.50	6.25	3.50	1.07	0.73
CATAWBA 2	1.25	0.00	0.50	0.00	0.25	0.00	0.75	0.50	6.75	9.50	2.33	0.23

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 4 QTR AVG 89-1	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 89-3	SAFETY SYSTEM ACTUATIONS 4 QTR AVG 89-1	SAFETY SYSTEM ACTUATIONS 2 QTR END 89-3	SIGNIFICANT EVENTS 4 QTR AVG 89-1	SIGNIFICANT EVENTS 2 QTR END 89-3	SAFETY SYSTEM FAILURES 4 QTR AVG 89-1	SAFETY SYSTEM FAILURES 2 QTR END 89-3	FORCED OUTAGE RATE (%) 4 QTR AVG 89-1	FORCED OUTAGE RATE (%) 2 QTR END 89-3	EQUIPMENT OUTAGES PER 1000 CRIT HRS 4 QTR AVG 89-1	EQUIPMENT OUTAGES PER 1000 CRIT HRS 2 QTR END 89-3
CLINTON 1	0.50	0.50	0.25	0.00	0.25	0.00	2.00	0.50	6.75	53.00	0.42	2.89
COOK 1	1.00	0.00	0.00	0.00	0.25	0.00	0.50	0.00	1.75	2.00	0.24	0.00
COOK 2	0.00	0.50	0.00	0.00	0.25	0.50	0.50	0.00	0.00	2.50	0.00	0.24
COOPER STATION	0.50	0.50	1.00	1.00	0.00	0.00	1.25	1.00	4.25	1.50	0.25	0.00
CRYSTAL RIVER 3	0.25	0.50	0.50	2.00	0.50	0.50	0.50	0.50	0.50	28.50	0.00	0.00
DAVIS-BESSE	0.50	0.50	0.00	0.00	0.00	0.00	0.50	0.50	5.25	0.50	0.67	0.23
DIABLO CANYON 1	1.00	0.00	0.50	0.00	0.25	0.00	0.50	0.00	1.00	0.00	0.13	0.00
DIABLO CANYON 2	0.25	0.50	0.75	0.00	0.50	0.00	0.75	0.00	8.25	6.50	0.40	0.75
DRESDEN 2	0.25	0.50	0.25	0.00	0.75	0.00	2.00	1.50	2.25	1.00	0.13	0.23
DRESDEN 3	0.75	0.50	0.50	0.00	0.00	0.00	0.25	0.50	1.75	2.00	0.37	0.65
DUANE ARNOLD	0.75	1.00	1.00	1.00	0.25	0.00	1.50	0.50	31.50	4.00	2.00	0.48
FARLEY 1	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.00	0.00
FARLEY 2	0.00	1.00	0.00	0.50	0.00	0.00	0.25	0.00	0.00	10.00	0.00	0.00
FERMI 2	1.00	0.00	0.75	0.50	0.75	0.00	1.75	1.50	24.25	1.00	0.89	0.00
FITZPATRICK	0.00	0.00	0.25	0.00	0.50	0.00	2.25	3.00	10.50	0.00	0.00	0.00
FORT CALHOUN	0.00	0.00	0.25	0.00	0.25	0.00	1.25	0.50	0.00	7.00	0.00	0.24

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PERFORMANCE INDICATORS													
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIP PER TH	OUTAGES CRIT HRS
	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	2 QTR AVG END
PLANT	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3			89-3
FORT ST. VRAIN	0.25	0.00	0.00	0.00	0.25	0.00	0.50	0.50	35.50	38.50	0.33		1.19
GINNA	0.25	0.50	0.50	1.50	0.00	0.00	0.00	0.00	1.50	13.00	0.37		0.26
GRAND GULF	0.75	1.50	0.50	0.00	0.25	0.50	0.50	1.50	2.00	5.50	0.23		0.25
HADDAM NECK	0.25	0.00	0.00	0.50	0.25	0.00	1.25	2.00	0.00	0.00	0.00		0.00
HATCH 1	1.00	0.00	0.75	0.00	0.00	0.00	1.75	0.50	15.00	0.00	0.59		0.00
HATCH 2	1.00	0.50	0.50	0.50	0.00	0.00	1.00	1.00	12.00	0.50	0.12		0.32
HOPE CREEK	1.00	0.50	1.50	0.50	0.00	0.00	1.75	2.00	4.75	1.50	0.90		0.28
INDIAN POINT 2	1.00	0.00	0.00	0.00	0.25	1.00	0.75	0.50	3.50	0.00	0.50		0.00
INDIAN POINT 3	0.50	0.00	0.50	0.00	0.00	0.00	0.25	0.00	12.50	4.00	0.54		2.32
KEWAUNEE	0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	1.75	0.00	0.26		0.00
LASALLE 1	0.25	0.00	0.00	0.00	0.25	0.00	0.75	1.00	2.75	0.00	0.12		0.00
LASALLE 2	0.00	0.50	0.50	0.50	0.25	0.00	1.25	1.00	1.75	19.00	0.12		0.00
LIMERICK 1	0.25	0.00	0.00	0.00	0.75	0.00	2.50	3.00	3.50	0.00	0.00		0.00
LIMERICK 2		0.00		0.00		0.00		1.00					
MAINE YANKEE	0.75	0.50	0.75	0.50	0.75	0.00	0.50	0.00	13.50	0.50	1.48		0.00
MCGUIRE 1	0.25	0.50	0.50	0.50	0.75	0.00	2.25	3.50	7.25	22.50	0.39		0.63

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 CRIT HRS	
	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END
PLANT	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3
MCGUIRE 2	0.50	0.50	0.25	0.00	0.25	0.50	1.00	1.50	1.25	9.50	0.98	0.23
MILLSTONE 1	0.00	1.00	0.00	0.50	0.50	0.50	1.25	1.00	1.50	5.50	0.12	0.56
MILLSTONE 2	0.25	0.00	0.25	0.50	0.50	0.00	0.00	0.00	3.50	0.00	0.17	0.00
MILLSTONE 3	0.75	0.50	0.25	0.00	0.25	0.00	0.25	0.00	12.00	7.50	0.54	1.96
MONTICELLO	0.25	0.50	0.00	0.00	0.00	0.00	0.25	1.50	0.25	2.50	0.12	0.00
NINE MILE PT. 1	0.00	0.00	0.25	0.00	0.25	0.00	0.25	0.50	100.00	100.00	0.00	0.00
NINE MILE PT. 2	1.00	1.50	1.50	0.50	0.50	0.00	1.75	0.00	10.50	6.50	0.81	0.77
NORTH ANNA 1	0.50	0.50	0.50	0.50	0.50	0.00	0.50	0.50	4.00	1.00	0.30	0.27
NORTH ANNA 2	0.00	0.00	0.25	0.50	0.25	0.00	0.50	0.50	0.00	0.00	0.00	0.00
OCONEE 1	0.50	0.50	0.00	0.00	0.25	0.00	1.00	1.50	3.25	0.50	0.58	0.00
OCONEE 2	0.75	0.50	0.00	0.00	0.25	0.50	1.00	1.00	1.25	3.50	0.36	1.31
OCONEE 3	0.75	0.50	0.00	0.00	0.50	0.50	1.50	1.50	7.25	0.00	1.13	0.23
OYSTER CREEK	0.00	2.00	0.25	0.50	0.50	0.00	1.75	0.50	55.50	39.50	4.11	1.02
PALISADES	0.00	0.50	0.00	0.00	0.25	0.00	1.25	0.00	25.00	1.50	0.91	0.23
PALO VERDE 1	1.50	0.00	0.25	0.50	0.25	0.00	0.75	0.50	24.75	50.00	0.93	0.00
PALO VERDE 2	0.50	0.50	0.75	1.00	0.00	0.00	0.50	0.50	6.50	8.50	0.29	0.92
PALO VERDE 3	0.25	0.00	0.50	0.00	0.25	0.50	0.50	1.00	12.75	0.00	0.45	0.00
PEACH BOTTOM 2	0.00	1.00	0.50	0.00	0.50	0.00	1.25	1.50	0.00	7.00	0.00	1.21
PEACH BOTTOM 3	0.00	0.00	0.50	0.00	0.50	0.00	0.75	0.00	0.00	0.00	0.00	0.00

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 CRIT HRS	
	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END
PLANT	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3
PERRY	1.75	0.00	0.50	0.00	1.00	0.00	3.25	1.00	12.75	0.50	0.95	0.33
PILGRIM	0.25	1.00	0.50	1.50	0.25	0.50	0.75	2.00	7.25	29.50	0.00	0.27
POINT BEACH 1	0.00	0.00	0.00	0.00	0.25	0.00	1.00	1.50	0.00	0.00	0.00	0.00
POINT BEACH 2	0.50	0.50	0.75	0.00	0.00	0.00	0.75	0.50	1.00	1.50	0.23	0.25
PRAIRIE ISLAND 1	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.50	0.30	0.00
PRAIRIE ISLAND 2	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.00	1.00	0.50	0.12	0.33
QUAD CITIES 1	0.25	0.50	0.00	0.00	0.00	0.50	1.00	0.50	4.50	9.50	0.63	1.62
QUAD CITIES 2	0.00	0.50	0.50	0.00	0.00	0.00	0.75	0.50	7.00	4.50	0.27	0.95
RANCHO SECO	1.00	0.00	0.75	0.00	0.50	0.00	1.25	0.00	24.00	9.00	1.48	0.00
RIVER BEND	1.00	0.50	0.50	1.00	0.25	0.50	0.50	0.50	4.25	41.50	0.70	7.68
ROBINSON 2	1.25	0.00	0.25	0.00	0.25	0.50	1.25	1.00	13.00	28.50	1.39	0.27
SALEM 1	0.75	0.50	0.25	0.50	0.00	0.50	1.00	1.00	5.00	35.50	0.52	4.49
SALEM 2	2.25	0.50	0.50	0.00	0.25	0.00	1.25	0.00	27.50	7.00	3.19	0.78
SAN ONOFRE 1	0.00	0.50	0.00	0.00	1.00	0.00	1.50	0.00	0.00	56.00	0.00	3.30
SAN ONOFRE 2	0.00	0.00	0.00	0.00	0.25	0.00	1.00	0.00	9.25	14.00	0.29	0.32
SAN ONOFRE 3	0.25	0.50	0.25	0.00	0.25	0.00	1.00	0.00	2.25	10.50	0.12	0.52
SEABROOK		0.00	0.25	0.00	0.00	0.00	0.50	0.00				

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PERFORMANCE INDICATORS

PLANT	AUTOMATIC SCRAMS WHILE CRITICAL 4 QTR AVG 89-1	AUTOMATIC SCRAMS WHILE CRITICAL 2 QTR END 89-3	SAFETY SYSTEM ACTUATIONS 4 QTR AVG 89-1	SAFETY SYSTEM ACTUATIONS 2 QTR END 89-3	SIGNIFICANT EVENTS 4 QTR AVG 89-1	SIGNIFICANT EVENTS 2 QTR END 89-3	SAFETY SYSTEM FAILURES 4 QTR AVG 89-1	SAFETY SYSTEM FAILURES 2 QTR END 89-3	FORCED OUTAGE RATE (%) 4 QTR AVG 89-1	FORCED OUTAGE RATE (%) 2 QTR END 89-3	EQUIPMENT OUTAGES PER 1000 CRIT HRS 4 QTR AVG 89-1	EQUIPMENT OUTAGES PER 1000 CRIT HRS 2 QTR END 89-3
SEQUOYAH 1	0.75	0.00	0.25	0.00	0.00	0.00	0.75	0.50	12.50	0.00	1.32	0.00
SEQUOYAH 2	1.25	2.00	0.75	0.00	0.00	0.00	0.75	0.50	17.25	10.50	0.96	0.53
SHEARON HARRIS	1.25	0.00	0.50	0.00	0.25	0.00	1.50	0.50	2.75	0.00	0.51	0.00
SHOREHAM	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00				
SOUTH TEXAS 1	1.25	0.50	1.00	0.00	0.25	0.00	1.75	0.00	13.67	4.00	2.19	0.64
SOUTH TEXAS 2	0.00	4.00	1.50	2.00	0.00	0.00	0.50	0.50		31.00		2.01
ST. LUCIE 1	0.50	1.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.50	0.85	0.00
ST. LUCIE 2	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	3.50	0.00	0.56
SUMMER	0.75	1.00	0.50	0.50	0.00	1.00	0.75	2.50	19.50	19.50	0.26	1.09
SURRY 1	0.25	0.50	0.75	1.00	1.00	0.00	2.00	0.50	56.50	54.90	0.17	0.00
SURRY 2	0.50	1.00	0.50	1.50	1.50	0.00	2.00	0.50	11.25	18.50	0.20	1.52
SUSQUEHANNA 1	0.75	0.00	0.00	0.50	0.00	0.00	0.75	0.50	3.50	2.00	0.42	0.00
SUSQUEHANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	2.75	0.00	1.26	0.00
THREE MILE ISL 1	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.25	0.00	0.68	0.00
TROJAN	0.75	0.50	0.25	0.00	0.25	1.00	1.25	1.50	7.50	6.50	0.42	0.50
TURKEY POINT 3	0.25	0.00	0.00	1.00	0.25	0.00	1.75	0.00	36.00	0.50	23.25	0.23
TURKEY POINT 4	0.25	0.00	0.00	1.00	0.00	0.00	1.50	0.50	9.50	15.50	0.48	2.04

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PERFORMANCE INDICATORS												
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 CRIT HRS	
	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END	4 QTR AVG	2 QTR END
PLANT	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3	89-1	89-3
VERMONT YANKEE	0.75	0.00	0.50	0.00	0.25	0.00	0.75	1.00	3.00	0.00	0.50	0.00
VOGTLE 1	1.00	0.50	0.25	0.00	0.00	0.00	1.00	0.00	8.00	2.50	1.24	0.69
VOGTLE 2	0.00	2.00	1.00	0.50	1.00	0.00	2.00	0.00		6.50		1.34
WASH. NUCLEAR 2	0.25	1.50	0.25	1.50	0.25	0.00	1.00	3.50	5.25	5.50	0.38	0.54
WATERFORD 3	0.50	0.50	0.25	0.00	0.25	0.00	0.25	0.00	2.39	3.00	0.44	0.53
WOLF CREEK	0.50	0.00	0.00	0.00	0.50	0.00	0.25	1.00	0.50	0.00	0.24	0.00
YANKEE-ROWE	0.25	1.00	0.50	0.50	0.00	0.00	0.50	0.00	0.75	9.00	0.25	0.73
ZION 1	1.00	0.00	0.25	0.00	0.25	0.00	0.75	1.50	12.25	4.50	0.45	0.64
ZION 2	0.50	0.00	0.25	0.00	0.25	0.00	0.25	0.50	6.00	0.50	0.87	0.23

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL

(The latest quarter data are preliminary)

Plant Name	Year - Calender Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	1	0	0	0	1	1	0
ARKANSAS 2	1	0	0	0	1	0	1	0
BEAVER VALLEY 1	0	0	3	0	0	2	1	0
BEAVER VALLEY 2	7	1	1	2	0	1	0	0
BIG ROCK POINT	0	0	0	0	2	0	0	1
BRAIDWOOD 1	1	0	0	1	1	1	0	1
BRAIDWOOD 2	NA	0	4	3	3	0	1	2
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	2	0	0	0
BRUNSWICK 2	0	0	0	0	1	0	0	0
BYRON 1	0	0	1	2	0	0	0	0
BYRON 2	2	1	1	2	1	0	0	0
CALLAWAY	1	2	2	1	0	0	1	0
CALVERT CLIFFS 1	1	0	0	2	0	0	0	0
CALVERT CLIFFS 2	1	1	1	0	0	0	0	0
CATAWBA 1	0	0	0	0	0	1	0	0
CATAWBA 2	0	1	3	0	0	2	0	0
CLINTON 1	1	0	1	0	1	0	1	0
COOK 1	1	1	0	0	2	2	0	0
COOK 2	1	0	0	0	0	0	0	1
COOPER STATION	0	1	0	1	0	1	0	1
CRYSTAL RIVER 3	0	1	0	0	1	0	1	0
DAVIS-BESSE	1	0	0	0	1	1	1	0
DIABLO CANYON 1	1	1	0	4	0	0	0	0
DIABLO CANYON 2	0	1	0	1	0	0	1	0
DRESDEN 2	1	0	0	0	0	1	0	1
DRESDEN 3	0	0	0	0	1	2	1	0
DUANE ARNOLD	0	0	0	1	0	2	1	1
FARLEY 1	0	0	0	0	1	0	0	0
FARLEY 2	1	0	0	0	0	0	2	0
FERMI 2	1	1	2	1	0	1	0	0
FITZPATRICK	2	0	0	0	0	0	0	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	1	0	1	0	0	0	0	0
GINNA	0	1	1	0	0	0	1	0
GRAND GULF	0	3	0	2	1	0	1	2
HADDAM NECK	0	2	1	0	0	0	0	0
HATCH 1	0	1	2	1	1	0	0	0
HATCH 2	0	1	3	1	0	0	0	1
HOPE CREEK	1	0	1	1	2	0	0	1
INDIAN POINT 2	0	1	1	0	2	1	0	0
INDIAN POINT 3	1	1	1	0	1	0	0	0
KEWAUNEE	0	1	2	0	0	0	0	0
LASALLE 1	1	0	0	0	0	1	0	0
LASALLE 2	0	1	0	0	0	0	0	1
LIMERICK 1	0	0	1	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	0
MAINE YANKEE	0	1	0	1	1	1	1	0

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	1	2	1	0	0	0	0	1
MCGUIRE 2	2	1	0	0	0	2	1	0
MILLSTONE 1	0	1	0	0	0	0	2	0
MILLSTONE 2	1	0	0	0	1	0	0	0
MILLSTONE 3	0	1	1	0	2	0	1	0
MONTICELLO	0	0	0	0	1	0	1	0
NINE MILE PT. 1	2	0	0	0	0	0	0	0
NINE MILE PT. 2	3	3	3	1	0	0	2	1
NORTH ANNA 1	1	2	0	1	0	1	0	1
NORTH ANNA 2	0	0	0	0	0	0	0	0
OCONEE 1	0	0	0	1	0	1	0	1
OCONEE 2	0	0	0	1	0	2	1	0
OCONEE 3	0	0	0	0	2	1	0	1
OYSTER CREEK	0	0	0	0	0	0	2	2
PALISADES	0	0	0	0	0	0	0	1
PALO VERDE 1	0	0	2	3	0	1	0	0
PALO VERDE 2	1	0	0	0	1	1	0	1
PALO VERDE 3	1	0	0	0	0	1	0	0
PEACH BOTTOM 2	0	0	0	0	0	0	1	1
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	1	1	7	0	0	0	0	0
PILGRIM	0	0	0	0	0	1	1	1
POINT BEACH 1	1	0	0	0	0	0	0	0
POINT BEACH 2	0	0	1	0	0	1	0	1
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	1
PRAIRIE ISLAND 2	0	0	0	0	0	0	1	0
QUAD CITIES 1	0	0	0	0	1	0	1	0
QUAD CITIES 2	2	2	0	0	0	0	1	0
RANCHO SECO	0	0	1	0	2	1	0	NA
RIVER BEND	1	3	0	2	0	2	0	1
ROBINSON 2	0	1	2	0	0	3	0	0
SALEM 1	0	1	0	1	0	2	1	0
SALEM 2	0	0	4	2	1	2	1	0
SAN ONOFRE 1	0	0	0	0	0	0	0	1
SAN ONOFRE 2	0	0	0	0	0	0	0	0
SAN ONOFRE 3	1	0	0	0	0	1	1	0
SEABROOK	NA	NA	NA	NA	NA	NA	0	0
SEQUOYAH 1	0	0	0	0	2	1	0	0
SEQUOYAH 2	0	0	5	0	0	0	3	1
SHEARON HARRIS	1	1	0	0	0	5	0	0
SHOREHAM	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	NA	1	0	3	0	2	0	1
SOUTH TEXAS 2	NA	NA	NA	NA	NA	0	3	5
ST. LUCIE 1	2	1	1	1	0	0	0	2
ST. LUCIE 2	1	0	0	0	0	0	1	0
SUMMER	1	1	2	1	0	0	1	1
SURRY 1	0	1	0	1	0	0	0	1
SURRY 2	0	0	1	1	0	0	0	2
SUSQUEHANNA 1	0	1	1	0	0	2	0	0
SUSQUEHANNA 2	0	0	0	0	0	0	0	0

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	1	0	0	0
TROJAN	0	1	0	2	1	0	0	1
TURKEY POINT 3	0	0	0	0	0	1	0	0
TURKEY POINT 4	0	0	0	1	0	0	0	0
VERMONT YANKEE	2	0	2	1	0	0	0	0
VOGTLE 1	2	2	1	3	0	0	1	0
VOGTLE 2	NA	NA	NA	NA	NA	0	2	1
WASH. NUCLEAR 2	0	1	0	0	0	1	1	2
WATERFORD 3	1	1	1	0	1	0	0	1
WOLF CREEK	0	0	0	0	0	2	0	0
YANKEE-ROWE	0	2	1	0	0	0	1	1
ZION 1	0	1	1	2	0	1	0	0
ZION 2	0	0	0	0	2	0	0	0

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.

TABLE 9.3 AUTOMATIC SCRAMS >15% POWER/1000 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0.00	0.46	0.00	0.00	0.00	1.92	0.57	0.00
ARKANSAS 2	0.46	0.00	0.00	0.00	0.46	0.00	0.64	0.00
BEAVER VALLEY 1	0.00	0.00	0.96	0.00	0.00	0.94	0.47	0.00
BEAVER VALLEY 2	3.51	0.56	0.46	0.94	0.00	0.59	0.00	0.00
BIG ROCK POINT	0.00	0.00	0.00	0.00	0.95	0.00	0.00	0.87
BRAIDWOOD 1	0.50	0.00	0.00	0.50	0.47	0.61	0.00	0.67
BRAIDWOOD 2	NA	0.00	3.62	1.02	1.11	0.00	0.46	0.9[illegible]
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	0.00	0.00	0.00	0.00	2.08	0.00	0.00	0.00
BRUNSWICK 2	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
BYRON 1	0.00	0.00	0.67	1.33	0.00	0.00	0.00	0.00
BYRON 2	0.64	0.46	0.47	0.46	0.46	0.00	0.00	0.00
CALLAWAY	0.00	0.96	0.53	0.46	0.00	0.00	1.08	0.00
CALVERT CLIFFS 1	0.50	0.00	0.00	0.93	0.00	0.00	0.00	0.00
CALVERT CLIFFS 2	0.48	0.74	0.39	0.00	0.00	0.00	0.00	0.00
CATAWBA 1	0.00	0.00	0.00	0.00	0.00	0.78	0.00	0.00
CATAWBA 2	0.00	2.65	1.60	0.00	0.00	1.31	0.00	0.00
CLINTON 1	0.85	0.00	0.71	0.00	0.52	0.00	2.35	0.00
COOK 1	0.48	0.47	0.00	0.00	0.95	0.55	0.00	0.00
COOK 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
COOPER STATION	0.00	0.77	0.00	0.47	0.00	0.52	0.00	0.46
CRYSTAL RIVER 3	0.00	0.52	0.00	0.00	0.87	0.00	0.00	0.00
DAVIS-BESSE	0.46	0.00	0.00	0.00	2.15	0.51	0.46	0.00
DIABLO CANYON 1	0.47	0.65	0.00	1.03	0.00	0.00	0.00	0.00
DIABLO CANYON 2	0.00	0.47	0.00	0.79	0.00	0.00	0.51	0.00
DRESDEN 2	0.46	0.00	0.00	0.00	0.00	1.08	0.00	0.46
DRESDEN 3	0.00	0.00	0.00	0.00	0.52	0.98	0.65	0.00
DUANE ARNOLD	0.00	0.00	0.00	0.48	0.00	1.15	0.48	0.56
FARLEY 1	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
FARLEY 2	0.00	0.00	0.00	0.00	0.00	0.00	2.09	0.00
FERMI 2	0.50	0.88	0.80	1.01	0.00	0.53	0.00	0.00
FITZPATRICK	0.93	0.00	0.00	0.00	0.00	0.00	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	2.02	0.00	0.65	0.00	0.00	0.00	0.00	0.00
GINNA	0.00	0.86	0.47	0.00	0.00	0.00	1.41	0.00
GRAND GULF	0.00	1.52	0.00	0.93	0.46	0.00	0.00	1.01
HADDAM NECK	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00
HATCH 1	0.00	0.47	1.65	0.47	1.90	0.00	0.00	0.00
HATCH 2	0.00	0.00	2.04	0.46	0.00	0.00	0.00	0.64
HOPE CREEK	0.62	0.00	0.53	0.46	1.00	0.00	0.00	0.56
INDIAN POINT 2	0.00	0.00	0.51	0.00	0.92	0.55	0.00	0.00
INDIAN POINT 3	0.46	0.46	0.60	0.00	0.78	0.00	0.00	0.00
KEWAUNEE	0.00	0.68	1.04	0.00	0.00	0.00	0.00	0.00
LASALLE 1	0.47	0.00	0.00	0.00	0.00	0.48	0.00	0.00
LASALLE 2	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	0.00
MAINE YANKEE	0.00	0.46	0.00	0.48	1.97	0.51	0.46	0.00

TABLE 9.3 AUTOMATIC SCRAMS >15% POWER (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	0.86	0.93	0.47	0.00	0.00	0.00	0.00	0.46
MCGUIRE 2	0.92	0.46	0.00	0.00	0.00	0.93	0.46	0.00
MILLSTONE 1	0.00	0.46	0.00	0.00	0.00	0.00	1.12	0.00
MILLSTONE 2	0.46	0.00	0.00	0.00	0.46	0.00	0.00	0.00
MILLSTONE 3	0.00	0.74	0.53	0.00	1.14	0.00	1.13	0.00
MONTICELLO	0.00	0.00	0.00	0.00	0.46	0.00	0.48	0.00
NINE MILE PT. 1	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 2	1.80	2.07	1.56	0.56	0.00	0.00	0.99	0.54
NORTH ANNA 1	0.60	0.00	0.00	0.46	0.00	0.75	0.00	0.54
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.00	0.00	0.00	0.46	0.00	0.92	0.00	0.50
OCONEE 2	0.00	0.00	0.00	0.51	0.00	0.93	0.87	0.00
OCONEE 3	0.00	0.00	0.00	0.00	0.91	0.48	0.00	0.45
OYSTER CREEK	0.00	0.00	0.00	0.00	0.00	0.00	1.87	1.09
PALISADES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
PALO VERDE 1	0.00	0.00	1.00	2.05	0.00	0.66	0.00	0.00
PALO VERDE 2	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.61
PALO VERDE 3	1.06	0.00	0.00	0.00	0.00	0.90	0.00	0.00
PEACH BOTTOM 2	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.48
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERRY	0.71	0.00	3.92	0.00	0.00	0.00	0.00	0.00
PILGRIM	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.54
POINT BEACH 1	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.00	0.46	0.00	0.00	0.47	0.00	0.50
PRAIRIE ISLAND 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46
PRAIRIE ISLAND 2	0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00
QUAD CITIES 1	0.00	0.00	0.00	0.00	0.46	0.00	0.51	0.00
QUAD CITIES 2	1.07	0.97	0.00	0.00	0.00	0.00	0.47	0.00
RANCHO SECO	0.00	0.00	0.51	0.00	1.30	1.11	0.00	NA
RIVER BEND	0.00	0.99	0.00	0.95	0.00	0.60	0.00	0.48
ROBINSON 2	0.00	0.84	0.99	0.00	0.00	3.38	0.00	0.00
SALEM 1	0.00	0.00	0.00	0.49	0.00	0.54	4.49	0.00
SALEM 2	0.00	0.00	1.94	1.39	3.29	1.12	0.52	0.00
SAN ONOFRE 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
SAN ONOFRE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN ONOFRE 3	0.46	0.00	0.00	0.00	0.00	0.47	0.52	0.00
SEABROOK	NA	NA	NA	NA	NA	NA	0.00	0.00
SEQUOYAH 1	0.00	0.00	0.00	0.00	2.64	0.47	0.00	0.00
SEQUOYAH 2	0.00	0.00	5.09	0.00	0.00	0.00	1.78	0.47
SHEARON HARRIS	0.00	0.50	0.00	0.00	0.00	2.41	0.00	0.00
SHOREHAM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH TEXAS 1	NA	0.00	0.00	1.73	0.00	1.77	0.00	1.28
SOUTH TEXAS 2	NA	NA	NA	NA	NA	0.00	1.41	2.61
ST. LUCIE 1	1.01	0.46	0.46	0.98	0.00	0.00	0.00	0.56
ST. LUCIE 2	1.12	0.00	0.00	0.00	0.00	0.00	0.64	0.00
SUMMER	0.46	0.47	1.02	0.55	0.00	0.00	0.56	0.54
SURRY 1	0.00	0.47	0.00	0.69	0.00	0.00	0.00	0.48
SURRY 2	0.00	0.00	0.81	0.00	0.00	0.00	0.00	3.05
SUSQUEHANNA 1	0.00	0.52	0.51	0.00	0.00	1.16	0.00	0.00
SUSQUEHANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 9.3 AUTOMATIC SCRAMS >15% POWER (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.00
TROJAN	0.00	0.49	0.00	1.91	0.56	0.00	0.00	1.00
TURKEY POINT 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TURKEY POINT 4	0.00	0.00	0.00	0.55	0.00	0.00	0.00	0.00
VERMONT YANKEE	0.94	0.00	0.99	0.00	0.00	0.00	0.00	0.00
VOGTLE 1	1.22	1.23	0.48	1.40	0.00	0.00	0.46	0.00
VOGTLE 2	NA	NA	NA	NA	NA	0.00	1.12	0.45
WASH. NUCLEAR 2	0.00	0.66	0.00	0.00	0.00	0.49	1.30	1.08
WATERFORD 3	0.51	0.00	1.29	0.00	0.63	0.00	0.00	0.52
WOLF CREEK	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.00
YANKEE-ROWE	0.00	0.94	0.47	0.00	0.00	0.00	0.47	0.00
ZION 1	0.00	0.77	0.00	0.48	0.00	0.66	0.00	0.00
ZION 2	0.00	0.00	0.00	0.00	4.66	0.00	0.00	0.00

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.

TABLE 9.4 AUTOMATIC SCRAMS <=15% POWER

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
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	1	0	0	0	0	0
BEAVER VALLEY 2	1	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	NA	0	1	1	1	0	0	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	1	0	0
BRUNSWICK 2	0	0	0	0	0	0	0	0
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	1	0	0	1	0	0	0	0
CALLAWAY	1	0	1	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
COOK 1	0	0	0	0	0	1	0	0
COOK 2	1	0	0	0	0	0	0	0
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	0	0	0	0	0	0	1	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	0	0	2	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	0	0
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	1	0	0	0	0	0	0	0
FERMI 2	0	0	1	0	0	0	0	0
FITZPATRICK	0	0	0	0	0	0	0	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	0	0	0	0
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	0	0	0	0	0	0	1	0
HADDAM NECK	0	2	0	0	0	0	0	0
HATCH 1	0	0	0	0	0	0	0	0
HATCH 2	0	1	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0	0	0
INDIAN POINT 2	0	1	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	0	0	0	0	1
LIMERICK 1	0	0	1	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	0
MAINE YANKEE	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							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	0	0	0	0	0	0	0	0
MCGUIRE 2	0	0	0	0	0	0	0	0
MILLSTONE 1	0	0	0	0	0	0	1	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	1	0	1	0	0	0	0	0
NORTH ANNA 1	0	2	0	0	0	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	1	0	0	0	0
PALO VERDE 2	1	0	0	0	1	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	1	1	0	0	0	0	0
PILGRIM	0	0	0	0	0	1	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	0	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	0	0	0	0	NA
RIVER BEND	1	1	0	0	0	1	0	0
ROBINSON 2	0	0	0	0	0	0	0	0
SALEM 1	0	1	0	0	0	1	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	NA	NA	NA	NA	0	0
SEQUOYAH 1	0	0	0	0	1	0	0	0
SEQUOYAH 2	0	0	1	0	0	0	0	0
SHEARON HARRIS	1	0	0	0	0	0	0	0
SHOREHAM	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	NA	1	0	0	0	0	0	0
SOUTH TEXAS 2	NA	NA	NA	NA	NA	0	1	0
ST. LUCIE 1	0	0	0	0	0	0	0	1
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	1
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							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	0	0	0	0
TROJAN	0	0	0	0	0	0	0	0
TURKEY POINT 3	0	0	0	0	0	1	0	0
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	0	0	0	1	0	0	0	0
VOGTLE 1	0	0	0	0	0	0	0	0
VOGTLE 2	NA	NA	NA	NA	NA	0	1	0
WASH. NUCLEAR 2	0	0	0	0	0	0	0	0
WATERFORD 3	0	1	0	0	0	0	0	0
WOLF CREEK	0	0	0	0	0	0	0	0
YANKEE-ROWE	0	0	0	0	0	0	0	1
ZION 1	0	0	1	1	0	0	0	0
ZION 2	0	0	0	0	0	0	0	0

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.

TABLE 9.5 SAFETY SYSTEM ACTUATIONS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	0	0	0	0	1	0	0
ARKANSAS 2	0	2	1	1	0	0	4	0
BEAVER VALLEY 1	0	0	1	0	0	0	1	0
BEAVER VALLEY 2	2	2	0	0	0	1	1	0
BIG ROCK POINT	0	1	0	0	1	0	0	0
BRAIDWOOD 1	0	1	0	0	1	0	1	0
BRAIDWOOD 2	0	1	0	0	0	0	0	0
BROWNS FERRY 1	0	1	1	0	3	1	0	0
BROWNS FERRY 2	0	0	0	0	2	1	0	0
BROWNS FERRY 3	1	0	0	0	1	0	0	0
BRUNSWICK 1	0	0	0	0	1	0	0	0
BRUNSWICK 2	0	0	0	0	1	1	3	0
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	2	0	0	0	0	1	0	0
CALLAWAY	2	1	0	0	1	0	2	0
CALVERT CLIFFS 1	0	0	4	0	0	2	0	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	1	1	0	0	0	2	0	0
CATAWBA 2	0	2	0	0	0	2	0	0
CLINTON 1	1	0	0	1	0	0	0	0
COOK 1	0	0	0	0	0	0	0	0
COOK 2	1	0	0	0	0	0	0	0
COOPER STATION	0	1	2	2	0	0	2	0
CRYSTAL RIVER 3	5	0	0	0	2	0	4	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	0	1	1	0	0	0	0
DIABLO CANYON 2	0	0	0	2	1	0	0	0
DRESDEN 2	0	0	0	0	0	1	0	0
DRESDEN 3	0	0	0	0	0	2	0	0
DUANE ARNOLD	0	0	0	0	2	2	0	2
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	2	0	0	0	0	0	1	0
FERMI 2	0	1	2	0	0	1	0	1
FITZPATRICK	0	0	0	0	1	0	0	0
FORT CALHOUN	0	0	0	0	1	0	0	0
FORT ST. VRAIN	2	0	0	0	0	0	0	0
GINNA	0	0	1	1	0	0	2	1
GRAND GULF	0	1	0	0	1	1	0	0
HADDAM NECK	0	0	0	0	0	0	1	0
HATCH 1	0	0	0	1	2	0	0	0
HATCH 2	0	0	1	1	0	0	0	1
HOPE CREEK	0	0	2	2	2	0	1	0
INDIAN POINT 2	1	1	0	0	0	0	0	0
INDIAN POINT 3	0	0	0	0	1	1	0	0
KEWAUNEE	0	2	0	0	0	0	0	0
LASALLE 1	0	0	0	0	0	0	0	0
LASALLE 2	0	0	0	0	0	2	1	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	0
MAINE YANKEE	0	0	0	1	2	0	0	0

TABLE 9.5 SAFETY SYSTEM ACTUATIONS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	0	1	0	0	1	1	0	1
MCGUIRE 2	0	0	1	0	0	0	0	0
MILLSTONE 1	0	0	0	0	0	0	1	0
MILLSTONE 2	0	3	0	0	1	0	1	0
MILLSTONE 3	1	1	0	0	0	1	0	0
MONTICELLO	0	0	0	0	0	0	0	0
NINE MILE PT. 1	5	1	0	0	0	1	0	0
NINE MILE PT. 2	1	3	0	1	2	3	1	0
NORTH ANNA 1	0	0	0	1	0	1	1	0
NORTH ANNA 2	3	0	0	1	0	0	1	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	1	0	1	0
PALISADES	1	0	0	0	0	0	0	0
PALO VERDE 1	0	1	0	1	0	0	0	1
PALO VERDE 2	0	2	0	1	0	2	0	2
PALO VERDE 3	0	0	1	0	0	1	0	0
PEACH BOTTOM 2	0	1	0	1	1	0	0	0
PEACH BOTTOM 3	1	0	0	2	0	0	0	0
PERRY	1	0	1	0	1	0	0	0
PILGRIM	1	0	0	1	0	1	2	1
POINT BEACH 1	1	0	0	0	0	0	0	0
POINT BEACH 2	0	0	2	0	0	1	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	0	0	0	0	0	0
QUAD CITIES 2	3	0	1	0	1	0	0	0
RANCHO SECO	0	1	1	0	1	1	0	NA
RIVER BEND	0	1	0	2	0	0	2	0
ROBINSON 2	0	1	0	0	0	1	0	0
SALEM 1	0	0	0	0	0	1	1	0
SALEM 2	0	0	1	0	0	1	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	1	0	0	0	1	0	0
SEABROOK	0	0	0	1	0	0	0	0
SEQUOYAH 1	0	0	1	0	0	0	0	0
SEQUOYAH 2	0	1	0	1	0	2	0	0
SHEARON HARRIS	2	0	1	0	1	0	0	0
SHOREHAM	0	0	1	1	0	0	0	0
SOUTH TEXAS 1	2	4	0	1	2	1	0	0
SOUTH TEXAS 2	NA	NA	NA	NA	0	3	3	1
ST. LUCIE 1	0	1	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	0	0	1	0	1	0	0	1
SURRY 1	0	0	0	1	0	2	2	0
SURRY 2	0	1	1	0	0	1	2	1
SUSQUEHANNA 1	0	0	0	0	0	0	0	1
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							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	0	0	0	0
TROJAN	0	0	0	1	0	0	0	0
TURKEY POINT 3	0	0	0	0	0	0	2	0
TURKEY POINT 4	0	0	0	0	0	0	1	1
VERMONT YANKEE	0	0	0	0	0	2	0	0
VOGTLE 1	0	0	0	0	1	0	0	0
VOGTLE 2	NA	NA	NA	NA	NA	1	0	1
WASH. NUCLEAR 2	0	0	0	0	0	1	2	1
WATERFORD 3	0	0	0	0	0	1	0	0
WOLF CREEK	2	0	0	0	0	0	0	0
YANKEE-ROWE	0	1	1	0	1	0	0	1
ZION 1	0	0	0	1	0	0	0	0
ZION 2	0	0	0	0	1	0	0	0

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.

TABLE 9.6 SIGNIFICANT EVENTS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	0	0	0	2	1	0	1
ARKANSAS 2	0	0	0	1	0	0	2	1
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	1	0	0	0	0	0	0	0
BIG ROCK POINT	0	0	0	0	0	0	0	0
BRAIDWOOD 1	0	1	0	0	0	0	1	0
BRAIDWOOD 2	0	1	0	0	0	0	1	0
BROWNS FERRY 1	0	0	0	0	0	2	0	0
BROWNS FERRY 2	1	0	0	0	0	2	0	0
BROWNS FERRY 3	0	0	1	0	0	2	0	0
BRUNSWICK 1	0	1	0	1	1	0	0	0
BRUNSWICK 2	0	3	0	1	1	0	1	0
BYRON 1	0	0	0	1	0	0	0	0
BYRON 2	1	0	0	0	0	1	0	0
CALLAWAY	0	0	0	0	0	0	0	0
CALVERT CLIFFS 1	0	0	1	0	0	0	0	0
CALVERT CLIFFS 2	0	0	0	0	0	1	1	0
CATAWBA 1	0	0	2	0	0	0	0	0
CATAWBA 2	0	1	1	0	0	0	0	0
CLINTON 1	0	0	0	0	1	0	1	0
COOK 1	0	0	0	1	0	0	0	0
COOK 2	0	0	0	1	0	0	0	1
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	1	1	1	0	0	1	1	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	0	0	0	0	1	0	0
DIABLO CANYON 2	0	0	0	0	1	1	0	0
DRESDEN 2	0	0	1	0	1	1	0	0
DRESDEN 3	0	0	0	0	0	0	0	0
DUANE ARNOLD	0	0	0	0	1	0	0	0
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	2	0	0	0	0	0	0	0
FERMI 2	0	0	1	1	0	1	0	0
FITZPATRICK	0	0	0	1	1	0	0	0
FORT CALHOUN	0	0	1	0	0	0	0	0
FORT ST. VRAIN	1	0	1	0	0	0	0	0
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	0	0	0	1	0	0	0	1
HADDAM NECK	0	0	1	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	1	0	0	0	0	0	0	0
INDIAN POINT 2	0	2	1	0	0	0	2	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	1	0	0
LASALLE 2	0	1	0	0	0	1	0	0
LIMERICK 1	0	0	0	0	2	1	0	0
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	0
MAINE YANKEE	0	0	0	1	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	0	0	0	0	2	1	0	0
MCGUIRE 2	0	0	0	0	1	0	0	1
MILLSTONE 1	0	0	1	0	0	1	1	0
MILLSTONE 2	0	0	1	0	1	0	0	0
MILLSTONE 3	0	1	1	0	0	0	0	0
MONTICELLO	0	0	0	0	0	0	0	0
NINE MILE PT. 1	1	0	0	0	1	0	0	0
NINE MILE PT. 2	0	1	0	0	0	2	0	0
NORTH ANNA 1	0	0	0	0	0	2	0	0
NORTH ANNA 2	1	0	0	0	0	1	0	0
OCONEE 1	0	0	0	0	0	1	1	0
OCONEE 2	0	0	1	0	0	0	1	0
OCONEE 3	0	0	0	1	0	1	1	0
OYSTER CREEK	0	0	0	1	1	0	0	0
PALISADES	0	0	0	1	0	0	0	0
PALO VERDE 1	0	0	0	1	0	0	0	0
PALO VERDE 2	0	0	0	0	0	0	0	0
PALO VERDE 3	0	0	0	0	0	1	0	1
PEACH BOTTOM 2	0	0	1	1	0	0	0	0
PEACH BOTTOM 3	0	0	1	1	0	0	0	0
PERRY	2	0	2	1	0	1	0	0
PILGRIM	1	0	0	0	0	1	1	0
POINT BEACH 1	0	0	1	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	0	0	0
QUAD CITIES 1	0	0	0	0	0	0	1	0
QUAD CITIES 2	0	0	0	0	0	0	0	0
RANCHO SECO	0	1	0	0	0	2	0	NA
RIVER BEND	0	0	0	1	0	0	1	0
ROBINSON 2	0	0	0	0	0	1	0	1
SALEM 1	1	0	0	0	0	0	1	0
SALEM 2	1	0	1	0	0	0	0	0
SAN ONOFRE 1	0	0	0	0	2	2	0	0
SAN ONOFRE 2	0	0	0	0	1	0	0	0
SAN ONOFRE 3	0	0	0	0	1	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	0
SHEARON HARRIS	1	0	0	1	0	0	0	0
SHOREHAM	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	0	0	1	0	0	0	0	0
SOUTH TEXAS 2	NA	NA	NA	NA	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	0	0	0	0	1	1
SURRY 1	0	0	1	0	0	3	0	0
SURRY 2	0	1	1	1	1	3	0	0
SUSQUEHANNA 1	0	0	0	0	0	0	0	0
SUSQUEHANNA 2	0	1	0	0	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	1	0	0	0	0	0	0
TROJAN	0	0	0	1	0	0	1	1
TURKEY POINT 3	0	0	0	0	0	1	0	0
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	0	0	0	1	0	0	0	0
VOGTLE 1	0	1	0	0	0	0	0	0
VOGTLE 2	NA	NA	NA	NA	NA	1	0	0
WASH. NUCLEAR 2	0	2	0	1	0	0	0	0
WATERFORD 3	0	0	1	0	0	0	0	0
WOLF CREEK	0	0	0	0	2	0	0	0
YANKEE-ROWE	0	0	0	0	0	0	0	0
ZION 1	0	0	0	0	1	0	0	0
ZION 2	0	0	0	0	1	0	0	0

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.

TABLE 9.7 SAFETY SYSTEM FAILURES

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	1	0	2	2	1	0	3
ARKANSAS 2	0	1	1	0	2	1	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	1	0	0
BRAIDWOOD 1	1	0	0	0	0	0	0	0
BRAIDWOOD 2	0	0	0	1	0	1	0	0
BROWNS FERRY 1	0	2	0	[illegible]	1	1	2	4
BROWNS FERRY 2	0	2	0	2	1	2	3	4
BROWNS FERRY 3	0	2	1	2	1	1	2	4
BRUNSWICK 1	2	2	5	4	5	2	0	1
BRUNSWICK 2	1	3	3	3	2	2	1	0
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	0	0	0	0	0	0	0	0
CALLAWAY	2	1	0	0	1	0	0	0
CALVERT CLIFFS 1	0	0	0	0	0	1	1	1
CALVERT CLIFFS 2	0	0	0	0	0	0	1	1
CATAWBA 1	1	2	0	0	2	2	0	1
CATAWBA 2	1	1	1	0	1	1	0	1
CLINTON 1	3	1	3	0	3	2	1	0
COOK 1	0	0	0	1	1	0	0	0
COOK 2	0	0	1	0	1	0	0	0
COOPER STATION	0	0	0	1	0	4	2	0
CRYSTAL RIVER 3	1	0	0	0	0	2	0	1
DAVIS-BESSE	1	1	0	2	0	0	1	0
DIABLO CANYON 1	0	0	0	0	1	1	0	0
DIABLO CANYON 2	1	0	0	0	1	2	0	0
DRESDEN 2	2	0	4	2	0	2	1	2
DRESDEN 3	0	0	0	0	0	1	1	0
DUANE ARNOLD	1	2	2	0	0	4	0	1
FARLEY 1	1	0	1	0	0	0	0	0
FARLEY 2	0	1	1	0	0	0	0	0
FERMI 2	1	4	1	3	0	3	0	3
FITZPATRICK	0	2	1	1	3	4	3	3
FORT CALHOUN	0	0	2	1	2	0	1	0
FORT ST. VRAIN	0	0	0	1	0	1	0	1
GINNA	1	0	0	0	0	0	0	0
GRAND GULF	0	0	0	1	1	0	2	1
HADDAM NECK	0	3	2	0	1	2	4	0
HATCH 1	1	1	1	1	4	1	1	0
HATCH 2	2	3	2	0	2	0	1	1
HOPE CREEK	0	0	2	3	2	0	3	1
INDIAN POINT 2	0	0	1	0	1	1	0	1
INDIAN POINT 3	0	0	1	0	0	0	0	0
KEWAUNEE	0	0	1	0	0	1	0	0
LASALLE 1	2	0	0	2	0	1	1	1
LASALLE 2	4	0	2	2	0	1	1	1
LIMERICK 1	2	2	1	0	1	8	4	2
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	2
MAINE YANKEE	0	0	1	0	1	0	0	0

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	4	0	0	3	4	2	0	7
MCGUIRE 2	3	0	1	1	1	1	0	3
MILLSTONE 1	0	1	1	1	1	2	2	0
MILLSTONE 2	0	1	0	0	0	0	0	0
MILLSTONE 3	1	3	0	0	1	0	0	0
MONTICELLO	1	0	0	0	0	1	3	0
NINE MILE PT. 1	0	2	0	0	1	0	1	0
NINE MILE PT. 2	6	1	1	4	2	0	0	0
NORTH ANNA 1	0	1	0	0	1	1	1	0
NORTH ANNA 2	0	0	1	0	1	0	1	0
OCONEE 1	1	1	1	0	0	3	3	0
OCONEE 2	0	1	2	0	0	2	2	0
OCONEE 3	0	1	1	2	0	3	3	0
OYSTER CREEK	3	2	0	3	1	3	0	1
PALISADES	2	0	1	1	2	1	0	0
PALO VERDE 1	0	2	1	2	0	0	1	0
PALO VERDE 2	0	2	0	2	0	0	1	0
PALO VERDE 3	0	1	0	2	0	0	2	0
PEACH BOTTOM 2	2	1	0	2	0	3	3	0
PEACH BOTTOM 3	1	0	0	2	0	1	0	0
PERRY	5	1	2	4	4	3	1	1
PILGRIM	1	1	0	1	0	2	0	4
POINT BEACH 1	0	1	0	2	1	1	3	0
POINT BEACH 2	0	0	0	2	1	0	1	0
PRAIRIE ISLAND 1	1	1	0	0	0	0	0	0
PRAIRIE ISLAND 2	1	1	0	0	1	0	0	0
QUAD CITIES 1	3	1	2	1	0	1	1	0
QUAD CITIES 2	1	2	3	0	0	0	1	0
RANCHO SECO	2	0	1	0	0	4	0	NA
RIVER BEND	1	0	0	0	1	1	1	0
ROBINSON 2	5	1	1	2	2	0	1	1
SALEM 1	2	1	1	0	1	2	2	0
SALEM 2	4	0	2	2	1	0	0	0
SAN ONOFRE 1	0	1	1	0	1	4	0	0
SAN ONOFRE 2	0	1	1	2	1	0	0	0
SAN ONOFRE 3	0	1	1	2	1	0	0	0
SEABROOK	0	0	0	0	1	1	0	0
SEQUOYAH 1	4	2	1	1	0	1	1	0
SEQUOYAH 2	4	5	0	2	0	1	1	0
SHEARON HARRIS	1	2	3	3	0	0	0	1
SHOREHAM	0	0	0	0	0	0	0	0
SOUTH TEXAS 1	4	4	4	1	2	0	0	0
SOUTH TEXAS 2	NA	NA	NA	NA	0	1	0	0
ST. LUCIE 1	1	0	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	1
SUMMER	1	0	1	0	0	2	0	1
SURRY 1	2	0	2	2	2	2	0	1
SURRY 2	0	0	0	2	4	2	0	1
SUSQUEHANNA 1	0	0	1	1	1	0	0	1
SUSQUEHANNA 2	0	2	0	1	0	1	0	1

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	0	0	0	0
TROJAN	1	0	2	3	0	0	2	1
TURKEY POINT 3	1	0	2	3	1	1	0	0
TURKEY POINT 4	2	1	2	2	1	1	0	1
VERMONT YANKEE	2	1	0	0	0	3	1	1
VOGTLE 1	1	0	1	0	0	3	0	0
VOGTLE 2	NA	NA	NA	NA	NA	2	0	0
WASH. NUCLEAR 2	0	1	3	0	0	1	4	3
WATERFORD 3	0	0	0	0	0	1	0	0
WOLF CREEK	1	0	0	0	1	0	1	1
YANKEE-ROWE	0	2	0	0	2	0	0	0
ZION 1	0	1	1	0	1	1	1	2
ZION 2	0	0	0	0	1	0	1	0

NA - The plant is not yet licensed. In the case of Rancho Seco, the unit caused commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

TABLE 9.8 FORCED OUTAGE RATE(%)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	1	2	0	0	38	77	21	1
ARKANSAS 2	1	0	3	21	1	8	29	3
BEAVER VALLEY 1	0	0	4	1	9	2	4	0
BEAVER VALLEY 2	11	4	2	5	0	8	41	14
BIG ROCK POINT	9	8	17	8	6	0	0	3
BRAIDWOOD 1	NA	NA	NA	11	7	4	4	2
BRAIDWOOD 2	NA	NA	NA	NA	18	0	2	4
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	0	0	0	9	5	0	26	7
BRUNSWICK 2	0	0	20	0	4	0	12	0
BYRON 1	0	0	4	4	0	1	0	0
BYRON 2	4	1	4	2	1	0	8	0
CALLAWAY	5	6	5	1	0	0	3	2
CALVERT CLIFFS 1	11	1	0	4	2	4	0	0
CALVERT CLIFFS 2	6	1	6	0	0	11	0	0
CATAWBA 1	90	15	0	16	0	9	6	1
CATAWBA 2	6	60	7	8	3	9	18	1
CLINTON 1	2	0	10	2	15	0	85	21
COOK 1	1	1	0	0	6	1	0	4
COOK 2	11	0	6	0	0	0	0	8
COOPER STATION	0	17	0	5	0	12	8	3
CRYSTAL RIVER 3	6	5	0	0	2	0	12	45
DAVIS-BESSE	2	0	0	0	15	6	1	0
DIABLO CANYON 1	7	6	0	4	0	0	0	0
DIABLO CANYON 2	7	3	9	33	0	0	4	9
DRESDEN 2	3	0	0	0	0	9	0	1
DRESDEN 3	0	0	0	0	0	7	4	0
DUANE ARNOLD	19	0	0	3	100	23	9	3
FARLEY 1	11	0	2	0	1	0	0	0
FARLEY 2	67	0	0	0	0	0	13	7
FERMI 2	NA	2	0	61	8	28	0	2
FITZPATRICK	3	0	0	0	42	0	0	0
FORT CALHOUN	0	0	0	0	0	0	9	5
FORT ST. VRAIN	90	4	42	0	0	100	29	48
GINNA	0	17	4	1	0	1	12	14
GRAND GULF	0	11	0	7	1	0	0	11
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	0	2	44	2	18	0	0	0
HATCH 2	0	6	45	2	1	0	0	1
HOPE CREEK	22	0	5	3	11	0	0	3
INDIAN POINT 2	0	2	2	7	4	1	0	0
INDIAN POINT 3	2	1	7	0	43	0	8	0
KEWAUNEE	0	0	3	4	0	0	0	0
LASALLE 1	4	0	0	7	0	4	0	0
LASALLE 2	0	10	0	3	4	0	0	38
LIMERICK 1	0	0	14	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	NA
MAINE YANKEE	0	1	0	9	34	11	1	0

TABLE 9.8 FORCED OUTAGE RATE(%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	4	2	2	0	0	27	43	2
MCGUIRE 2	2	1	0	3	0	2	1	0
MILLSTONE 1	0	2	0	0	6	0	11	0
MILLSTONE 2	1	0	12	0	2	0	0	0
MILLSTONE 3	0	3	16	0	23	13	15	0
MONTICELLO	0	0	0	0	1	0	5	0
NINE MILE PT. 1	28	100	100	100	100	100	100	100
NINE MILE PT. 2	NA	NA	19	23	0	0	12	1
NORTH ANNA 1	25	37	0	6	0	10	0	2
NORTH ANNA 2	0	0	0	0	0	0	0	0
OCONEE 1	0	0	0	2	0	11	0	1
OCONEE 2	0	0	3	0	0	2	7	0
OCONEE 3	0	0	24	0	1	4	0	0
OYSTER CREEK	59	0	0	37	100	85	55	24
PALISADES	56	29	5	0	61	34	0	3
PALO VERDE 1	0	69	9	60	0	30	100	0
PALO VERDE 2	0	0	0	0	9	17	0	17
PALO VERDE 3	NA	0	0	20	0	31	0	0
PEACH BOTTOM 2	0	0	0	0	0	0	6	8
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	26	7	35	14	0	2	0	1
PILGRIM	0	0	0	0	0	29	42	17
POINT BEACH 1		0	0	0	0	0	0	0
POINT BEACH 2		0	1	0	0	3	2	1
PRAIRIE ISLAND 1		0	0	3	0	0	0	1
PRAIRIE ISLAND 2		0	0	0	4	0	1	0
QUAD CITIES 1		0	14	0	4	0	13	6
QUAD CITIES 2		7	0	24	1	3	4	5
RANCHO SECO		100	0	0	32	64	9	NA
RIVER BEND		9	0	6	2	9	77	6
ROBINSON 2	1	47	8	23	14	7	14	43
SALEM 1	0	5	0	8	0	12	71	0
SALEM 2	0	0	8	7	72	23	14	0
SAN ONOFRE 1	0	0	0	0	0	0	87	25
SAN ONOFRE 2	8	0	0	3	0	34	28	0
SAN ONOFRE 3	2	14	0	6	0	3	12	9
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	100	100	100	100	87	3	0	0
SEQUOYAH 2	100	100	69	0	0	0	16	5
SHEARON HARRIS	1	9	0	0	5	6	0	0
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	NA	NA	NA	20	8	13	0	8
SOUTH TEXAS 2	NA	NA	NA	NA	NA	NA	45	17
ST. LUCIE 1	12	1	1	8	0	0	0	1
ST. LUCIE 2	15	0	0	0	0	0	2	5
SUMMER	2	2	11	3	0	28	19	20
SURRY 1	13	4	0	26	100	100	100	8
SURRY 2	0	5	45	0	0	0	0	37
SUSQUEHANNA 1	30	7	12	0	0	22	0	4
SUSQUEHANNA 2	0	0	4	0	0	7	0	0

TABLE 9.8 FORCED OUTAGE RATE(%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	3	0	19	18	0	0	0
TROJAN	22	6	0	10	20	0	0	13
TURKEY POINT 3	94	58	0	0	99	45	0	1
TURKEY POINT 4	57	19	35	3	0	0	7	24
VERMONT YANKEE	4	0	1	11	0	0	0	0
VOGTLE 1	18	26	6	5	9	12	3	2
VOGTLE 2	NA	NA	NA	NA	NA	NA	12	1
WASH. NUCLEAR 2	0	32	0	7	10	4	0	11
WATERFORD 3	11	5	5	0	2	3	0	6
WOLF CREEK	0	31	0	0	0	2	0	0
YANKEE-ROWE	2	4	2	0	0	1	4	14
ZION 1	0	1	0	7	11	1	0	9
ZION 2	5	0	0	0	11	21	1	0

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.

TABLE 9.9 EQUIPMENT FORCED OUTAGES/1000 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0.64	0.46	0.00	0.00	2.38	1.92	0.57	0.91
ARKANSAS 2	0.46	0.00	0.95	1.13	0.00	0.50	1.29	0.00
BEAVER VALLEY 1	0.00	1.30	1.43	0.00	0.50	0.47	0.00	0.00
BEAVER VALLEY 2	1.04	1.12	0.92	0.47	0.00	0.59	1.99	0.00
BIG ROCK POINT	1.04	1.00	4.43	0.48	0.95	0.00	0.00	0.87
BRAIDWOOD 1	NA	NA	NA	0.00	0.95	1.21	0.51	0.00
BRAIDWOOD 2	NA	NA	NA	NA	1.98	0.00	0.46	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	0.00	0.00	0.00	0.49	1.04	0.00	0.66	0.00
BRUNSWICK 2	0.00	0.00	2.04	0.00	0.46	0.00	0.52	0.00
BYRON 1	0.00	0.00	0.67	1.33	0.00	0.47	0.00	0.00
BYRON 2	1.29	0.46	1.40	0.92	0.46	0.00	0.49	0.00
CALLAWAY	0.89	0.00	1.59	0.00	0.00	0.00	1.08	0.00
CALVERT CLIFFS 1	0.50	0.00	0.00	0.47	1.06	1.37	0.00	0.00
CALVERT CLIFFS 2	1.43	0.00	0.49	0.00	0.00	0.57	0.00	0.00
CATAWBA 1	8.74	1.05	0.00	1.19	0.00	3.10	0.99	0.46
CATAWBA 2	0.52	5.30	3.20	1.44	1.39	3.28	0.00	0.45
CLINTON 1	0.00	0.00	0.71	0.46	0.52	0.00	4.69	1.10
COOK 1	0.48	0.00	0.00	0.00	0.95	0.00	0.00	0.00
COOK 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
COOPER STATION	0.00	0.77	0.00	0.47	0.00	0.52	0.00	0.00
CRYSTAL RIVER 3	0.00	0.52	0.00	0.00	0.00	0.00	0.00	0.00
DAVIS-BESSE	0.46	0.00	0.00	0.00	2.15	0.51	0.46	0.00
DIABLO CANYON 1	0.47	0.00	0.00	0.52	0.00	0.00	0.00	0.00
DIABLO CANYON 2	0.49	0.47	0.00	1.59	0.00	0.00	0.51	0.98
DRESDEN 2	0.00	0.00	0.53	0.00	0.00	0.00	0.00	0.46
DRESDEN 3	0.00	0.00	0.00	0.00	0.00	1.47	1.29	0.00
DUANE ARNOLD	0.55	0.00	0.00	0.48	5.80	1.72	0.95	0.00
FARLEY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FARLEY 2	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FERMI 2	NA	0.00	0.00	3.02	0.00	0.53	0.00	0.00
FITZPATRICK	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORT CALHOUN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
FORT ST. VRAIN	2.02	0.93	1.31	0.00	0.00	0.00	1.52	0.86
GINNA	0.00	0.86	0.47	0.46	0.00	0.55	0.00	0.52
GRAND GULF	0.00	1.52	0.00	0.93	0.00	0.00	0.00	0.50
HADDAM NECK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 1	0.00	0.47	0.00	0.47	1.90	0.00	0.00	0.00
HATCH 2	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.64
HOPE CREEK	2.49	0.00	1.06	0.46	1.50	0.57	0.00	0.56
INDIAN POINT 2	0.00	0.60	0.51	0.00	0.92	0.55	0.00	0.00
INDIAN POINT 3	0.00	0.93	0.60	0.00	1.57	0.00	4.64	0.00
KEWAUNEE	0.00	0.68	1.04	0.00	0.00	0.00	0.00	0.00
LASALLE 1	0.47	0.00	0.00	0.00	0.00	0.48	0.00	0.00
LASALLE 2	0.00	0.50	0.00	0.46	0.00	0.00	0.00	0.00
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	NA
MAINE YANKEE	0.00	0.46	0.00	0.96	3.94	1.02	0.00	0.00

TABLE 9.9 EQUIPMENT FORCED OUTAGES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	0.86	0.93	0.93	0.00	0.00	0.63	0.80	0.46
MCGUIRE 2	0.92	0.92	0.00	2.52	0.45	0.93	0.46	0.00
MILLSTONE 1	0.00	0.46	0.00	0.00	0.47	0.00	1.12	0.00
MILLSTONE 2	0.46	0.00	0.66	0.00	0.00	0.00	0.00	0.00
MILLSTONE 3	0.00	0.00	1.07	0.00	0.57	0.53	3.40	0.52
MONTICELLO	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
NINE MILE PT. 1	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 2	NA	NA	1.56	1.68	0.00	0.00	0.99	0.54
NORTH ANNA 1	1.19	0.69	0.00	0.46	0.00	0.75	0.00	0.54
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.00	0.00	0.00	0.46	0.00	1.84	0.00	0.00
OCONEE 2	0.00	0.00	0.00	0.51	0.00	0.93	2.62	0.00
OCONEE 3	0.00	0.00	1.80	0.84	0.91	0.96	0.00	0.45
OYSTER CREEK	0.00	0.00	0.00	0.70	0.00	15.75	0.94	1.09
PALISADES	1.89	0.00	0.48	0.00	2.48	0.69	0.00	0.46
PALO VERDE 1	0.00	1.72	1.00	2.05	0.00	0.66	0.00	0.00
PALO VERDE 2	0.00	0.00	0.00	0.00	0.49	0.68	0.00	1.83
PALO VERDE 3	NA	0.00	0.00	0.00	0.00	1.81	0.00	0.00
PEACH BOTTOM 2	0.00	0.00	0.00	0.00	0.00	0.00	1.47	0.96
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERRY	3.70	1.31	1.96	1.02	0.00	0.80	0.00	0.65
PILGRIM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54
POINT BEACH 1	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.00	0.46	0.00	0.00	0.47	0.00	0.50
PRAIRIE ISLAND 1	0.00	0.00	0.00	0.75	0.45	0.00	0.00	0.00
PRAIRIE ISLAND 2	0.00	0.00	0.00	0.00	0.47	0.00	0.66	0.00
QUAD CITIES 1	9.17	0.46	2.07	0.00	0.46	0.00	2.03	1.22
QUAD CITIES 2	0.54	0.97	0.00	0.59	0.00	0.48	1.41	0.49
RANCHO SECO	0.00	0.00	0.00	0.00	2.59	3.32	0.00	NA
RIVER BEND	9.30	0.99	0.00	0.48	0.51	1.81	14.42	0.95
ROBINSON 2	0.00	0.84	0.99	1.17	2.29	1.13	0.53	0.00
SALEM 1	0.00	3.53	0.54	0.49	0.00	1.07	8.97	0.00
SALEM 2	0.00	0.46	2.43	2.08	6.57	1.68	1.55	0.00
SAN ONOFRE 1	0.00	0.00	0.00	0.00	0.00	0.00	4.81	1.78
SAN ONOFRE 2	1.92	0.00	0.00	0.46	0.00	0.69	0.63	0.00
SAN ONOFRE 3	0.00	0.52	0.00	0.00	0.00	0.47	1.04	0.00
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	0.00	0.00	0.00	0.00	5.27	0.00	0.00	0.00
SEQUOYAH 2	0.00	0.00	3.82	0.00	0.00	0.00	0.59	0.47
SHEARON HARRIS	0.00	1.00	0.00	0.00	0.59	1.44	0.00	0.00
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	NA	NA	NA	4.81	0.00	1.77	0.00	1.28
SOUTH TEXAS 2	NA	NA	NA	NA	NA	NA	1.41	2.61
ST. LUCIE 1	1.51	0.46	0.46	2.95	0.00	0.00	0.00	0.00
ST. LUCIE 2	3.35	0.00	0.00	0.00	0.00	0.00	0.64	0.47
SUMMER	0.46	0.47	1.02	0.00	0.00	0.00	0.56	1.62
SURRY 1	1.03	0.47	0.00	0.69	0.00	0.00	0.00	0.00
SURRY 2	0.00	0.48	0.81	0.00	0.00	0.00	0.00	3.05
SUSQUEHANNA 1	0.00	0.00	0.51	0.00	0.00	1.16	0.00	0.00
SUSQUEHANNA 2	0.00	0.00	4.09	0.00	0.45	0.50	0.00	0.00

TABLE 9.9 EQUIPMENT FORCED OUTAGES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calender Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0.00	0.47	0.00	1.07	1.63	0.00	0.00	0.00
TROJAN	1.15	0.49	0.00	1.11	0.56	0.00	0.00	1.00
TURKEY POINT 3	18.47	3.01	0.00	0.00	92.17	0.81	0.00	0.45
TURKEY POINT 4	0.00	0.56	1.36	0.55	0.00	0.00	1.78	2.31
VERMONT YANKEE	0.00	0.00	0.99	1.00	0.00	0.00	0.00	0.00
VOGTLE 1	0.61	1.23	0.97	0.93	2.03	1.03	0.46	0.92
VOGTLE 2	NA	NA	NA	NA	NA	NA	2.23	0.45
WASH. NUCLEAR 2	0.00	1.97	0.00	0.53	0.50	0.49	0.00	1.08
WATERFORD 3	0.51	0.00	1.29	0.00	0.00	0.48	0.00	1.05
WOLF CREEK	0.00	1.90	0.00	0.00	0.00	0.95	0.00	0.00
YANKEE-ROWE	1.36	0.94	0.47	0.00	0.00	0.53	0.94	0.52
ZION 1	0.00	0.77	0.00	0.48	0.00	1.31	0.00	1.28
ZION 2	0.47	0.00	0.00	0.00	2.33	1.15	0.46	0.00

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.

TABLE 9.10 COLLECTIVE RADIATION EXPOSURE

Data Source: INPO

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	72	185	133	134	242	64	33	NA
ARKANSAS 2	72	185	133	134	242	64	33	NA
BEAVER VALLEY 1	152	483	23	10	13	59	131	NA
BEAVER VALLEY 2	NA	NA	NA	NA	NA	59	131	NA
BIG ROCK POINT	15	25	106	14	11	16	59	NA
BRAIDWOOD 1	NA	55	10	5	5	50	8	NA
BRAIDWOOD 2	NA	NA	NA	NA	NA	NA	NA	NA
BROWNS FERRY 1	65	85	110	120	87	53	35	NA
BROWNS FERRY 2	65	85	110	120	87	53	35	NA
BROWNS FERRY 3	65	85	110	120	87	53	35	NA
BRUNSWICK 1	70	448	65	44	316	258	60	NA
BRUNSWICK 2	70	448	65	44	316	258	60	NA
BYRON 1	15	4	87	156	191	66	4	NA
BYRON 2	NA	NA	NA	NA	NA	66	4	NA
CALLAWAY	154	3	5	6	13	6	259	NA
CALVERT CLIFFS 1	17	19	105	9	12	20	68	NA
CALVERT CLIFFS 2	17	19	105	9	12	20	68	NA
CATAWBA 1	356	141	9	30	98	79	74	NA
CATAWBA 2	NA	141	8	30	98	79	74	NA
CLINTON 1	NA	NA	NA	NA	NA	260	70	NA
COOK 1	24	7	109	184	74	95	181	NA
COOK 2	24	7	109	184	74	95	181	NA
COOPER STATION	20	60	149	20	21	28	274	NA
CRYSTAL RIVER 3	414	16	3	5	39	130	70	NA
DAVIS-BESSE	14	26	162	102	17	7	12	NA
DIABLO CANYON 1	7	69	154	64	143	3	4	NA
DIABLO CANYON 2	7	69	154	64	143	3	4	NA
DRESDEN 2	37	56	253	46	343	370	46	NA
DRESDEN 3	37	56	253	46	343	370	46	NA
DUANE ARNOLD	37	22	17	50	526	45	28	NA
FARLEY 1	205	64	192	10	11	34	127	NA
FARLEY 2	205	64	192	10	11	34	127	NA
FERMI 2	10	38	32	18	15	11	15	NA
FITZPATRICK	53	139	87	224	335	58	52	NA
FORT CALHOUN	21	20	17	30	213	48	16	NA
FORT ST. VRAIN	0	0	0	0	0	1	1	NA
GINNA	13	226	12	13	21	124	440	NA
GRAND GULF	315	54	20	36	37	143	312	NA
HADDAM NECK	178	170	39	13	14	19	14	NA
HATCH 1	59	198	73	69	361	57	52	NA
HATCH 2	59	198	73	69	361	57	52	NA
HOPE CREEK	NA	215	35	18	29	110	17	NA
INDIAN POINT 2	1118	76	44	82	32	220	1045	NA
INDIAN POINT 3	18	7	39	4	45	454	403	NA
KEWAUNEE	5	175	26	5	5	208	26	NA
LASALLE 1	58	173	413	90	560	178	62	NA
LASALLE 2	58	173	413	90	560	178	62	NA
LIMERICK 1	22	17	16	12	9	162	57	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	NA
MAINE YANKEE	16	20	23	18	665	21	10	NA

TABLE 9.10 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

Data Source: INPO (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	115	17	190	63	281	30	51	NA
MCGUIRE 2	115	17	190	63	281	30	51	NA
MILLSTONE 1	32	96	32	6	11	41	377	NA
MILLSTONE 2	15	476	160	28	55	470	176	NA
MILLSTONE 3	NA	55	19	3	6	8	146	NA
MONTICELLO	428	47	24	23	16	21	27	NA
NINE MILE PT. 1	32	283	236	152	133	56	81	NA
NINE MILE PT. 2	NA	NA	NA	NA	NA	56	81	NA
NORTH ANNA 1	145	31	10	8	10	174	560	NA
NORTH ANNA 2	145	31	10	8	10	174	560	NA
OCONEE 1	82	129	42	100	24	62	76	NA
OCONEE 2	82	129	42	100	24	62	76	NA
OCONEE 3	82	129	42	100	24	62	76	NA
OYSTER CREEK	172	82	82	205	1131	569	148	NA
PALISADES	302	95	29	338	279	57	20	NA
PALO VERDE 1	345	152	148	15	11	25	85	NA
PALO VERDE 2	NA	152	148	15	11	25	85	NA
PALO VERDE 3	NA	NA	NA	NA	NA	25	85	NA
PEACH BOTTOM 2	291	360	434	214	151	58	65	NA
PEACH BOTTOM 3	291	360	434	214	151	58	65	NA
PERRY	NA	20	17	25	30	258	439	NA
PILGRIM	281	163	57	96	75	49	59	NA
POINT BEACH 1	164	11	74	11	98	9	83	NA
POINT BEACH 2	164	11	74	11	98	9	83	NA
PRAIRIE ISLAND 1	9	45	5	46	3	6	34	NA
PRAIRIE ISLAND 2	9	45	5	46	3	6	34	NA
QUAD CITIES 1	197	55	286	38	36	39	33	NA
QUAD CITIES 2	197	55	286	38	36	39	33	NA
RANCHO SECO	68	29	12	22	19	34	12	NA
RIVER BEND	280	17	21	20	42	106	375	NA
ROBINSON 2	20	69	22	34	441	116	31	NA
SALEM 1	263	44	15	109	92	7	144	NA
SALEM 2	263	44	15	109	92	7	144	NA
SAN ONOFRE 1	70	84	85	47	62	77	33	NA
SAN ONOFRE 2	70	84	85	47	62	77	33	NA
SAN ONOFRE 3	70	84	85	47	62	77	33	NA
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	41	67	124	131	19	280	17	NA
SEQUOYAH 2	41	67	124	131	19	280	17	NA
SHEARON HARRIS	NA	NA	NA	NA	NA	6	4	NA
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 2	NA	NA	NA	NA	NA	NA	NA	NA
ST. LUCIE 1	127	16	16	232	18	144	21	NA
ST. LUCIE 2	127	16	16	232	18	144	21	NA
SUMMER	9	8	8	28	464	27	10	NA
SURRY 1	65	37	352	116	287	118	143	NA
SURRY 2	65	37	352	116	287	118	143	NA
SUSQUEHANNA 1	164	97	125	18	17	28	168	NA
SUSQUEHANNA 2	164	97	125	18	17	28	168	NA

TABLE 9.10 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

Data Source: INPO

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	12	12	63	116	20	12	13	NA
TROJAN	11	10	346	12	33	7	346	NA
TURKEY POINT 3	48	52	26	30	228	116	72	NA
TURKEY POINT 4	48	52	26	30	228	116	72	NA
VERMONT YANKEE	24	32	24	31	38	194	34	NA
VOGTLE 1	NA	NA	NA	NA	NA	11	5	NA
VOGTLE 2	NA	NA	NA	NA	NA	NA	NA	NA
WASH. NUCLEAR 2	32	43	201	64	44	36	362	NA
WATERFORD 3	32	10	201	12	36	9	5	NA
WOLF CREEK	117	60	4	3	229	5	2	NA
YANKEE-ROWE	9	9	10	13	195	23	10	NA
ZION 1	10	198	179	12	241	42	12	NA
ZION 2	10	198	179	12	241	42	12	NA

NA - Data were not available for this quarter. 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.

TABLE 9.11 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	1561	2152	2183	1402	419	520	1744	2208
ARKANSAS 2	2186	1028	1056	1767	2181	2000	1553	2001
BEAVER VALLEY 1	1727	771	2091	2191	2014	2119	2109	1510
BEAVER VALLEY 2	1709	1785	2163	2128	2209	1695	502	1902
BIG ROCK POINT	1922	1997	226	2076	2096	2013	1678	1143
BRAIDWOOD 1	2000	86	1557	1996	2108	1648	1961	1494
BRAIDWOOD 2	NA	192	829	1968	1807	1127	2152	2131
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	2209	1531	2137	2031	962	0	1519	2070
BRUNSWICK 2	2209	24	1467	2001	2154	2160	1939	1680
BYRON 1	2209	2184	1494	1499	1309	2143	2183	2208
BYRON 2	1551	2170	2141	2171	2194	806	2021	2208
CALLAWAY	1126	2078	1883	2187	2055	2138	927	2208
CALVERT CLIFFS 1	1983	2184	194	2139	1881	1455	352	0
CALVERT CLIFFS 2	2104	1358	2052	2208	2209	1766	0	0
CATAWBA 1	114	1898	2183	1681	1308	1289	2020	2197
CATAWBA 2	1923	378	1875	2080	2164	1526	505	2208
CLINTON 1	1173	1875	1407	2181	1936	51	426	1817
COOK 1	2104	2131	2183	2010	2109	1810	0	2151
COOK 2	1974	2184	532	0	0	395	1863	2114
COOPER STATION	2209	1297	332	2130	2209	1913	512	2164
CRYSTAL RIVER 3	0	1913	2183	2208	1153	1016	279	1216
DAVIS-BESSE	2176	1661	0	0	465	1962	2168	2208
DIABLO CANYON 1	2121	1532	0	1942	2209	2160	2183	2208
DIABLO CANYON 2	2058	2117	2183	1258	632	2160	1946	2035
DRESDEN 2	2183	2184	1882	2208	700	929	2183	2177
DRESDEN 3	2209	2066	133	2208	1939	2040	1548	2208
DUANE ARNOLD	1823	2184	2162	2091	173	1741	2103	1785
FARLEY 1	2007	2041	982	2208	2198	2160	2183	2016
FARLEY 2	344	2184	2183	2208	2209	1995	959	2082
FERMI 2	1986	1134	1247	994	1950	1870	2183	1488
FITZPATRICK	2149	1802	2183	1386	690	2160	2183	1854
FORT CALHOUN	2209	2184	2183	2143	0	1479	2022	2107
FORT ST. VRAIN	496	2149	1530	119	0	193	1971	1168
GINNA	2209	1166	2111	2193	2209	1806	708	1925
GRAND GULF	891	1970	2183	2154	2191	1829	1025	1987
HADDAM NECK	0	258	1502	2208	2209	2160	2183	1540
HATCH 1	2209	2144	1210	2128	527	2160	2183	2208
HATCH 2	2209	616	1471	2178	2095	2160	2183	1559
HOPE CREEK	1609	1045	1891	2159	1994	1758	2183	1798
INDIAN POINT 2	96	1673	1963	1692	2164	1811	0	2206
INDIAN POINT 3	2181	2158	1670	2208	1277	817	215	2208
KEWAUNEE	2209	1478	1932	2137	2209	1208	1825	2208
LASALLE 1	2135	1730	0	1992	2209	2086	2183	1846
LASALLE 2	2209	1983	2183	2159	323	1246	2183	1372
LIMERICK 1	2209	2184	1875	2208	2209	258	1110	2208
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	541
MAINE YANKEE	2209	2168	2183	2091	508	1970	2172	2208

TABLE 9.11 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	1160	2146	2141	2208	289	1584	1256	2162
MCGUIRE 2	2170	2166	1349	1590	2209	2149	2165	421
MILLSTONE 1	2158	2155	2183	2208	2116	2160	890	2200
MILLSTONE 2	2170	1037	1526	2208	2183	826	1560	2208
MILLSTONE 3	731	1359	1869	2208	1760	1900	882	1926
MONTICELLO	857	2184	2183	2208	2194	2160	2074	1157
NINE MILE PT. 1	1620	0	0	0	0	0	0	0
NINE MILE PT. 2	1113	1448	1279	1782	16	0	2020	1869
NORTH ANNA 1	1680	1459	2183	2169	2209	1334	0	1840
NORTH ANNA 2	1413	2135	2183	2208	2209	1205	1297	2208
OCONEE 1	1375	2184	2183	2193	2209	1090	2183	2016
OCONEE 2	2209	797	2003	1980	2209	2144	1147	2152
OCONEE 3	2209	2184	1667	1184	2195	2094	2183	2203
OYSTER CREEK	952	2184	2183	1422	0	64	1069	1842
PALISADES	528	1574	2083	931	403	1445	2183	2152
PALO VERDE 1	47	580	1999	976	2208	1522	0	0
PALO VERDE 2	2146	1202	311	2208	2029	1475	44	1643
PALO VERDE 3	946	2184	2184	1794	2208	1106	0	0
PEACH BOTTOM 2	0	0	0	0	0	0	1359	2082
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	1402	1526	1530	1953	1931	1255	0	1534
PILGRIM	0	0	0	0	0	969	1259	1855
POINT BEACH 1	2194	2184	1247	2208	2209	2160	1151	2208
POINT BEACH 2	1137	2184	2164	2208	1152	2144	2183	2004
PRAIRIE ISLAND 1	2209	2102	2183	1341	2209	2160	2183	2189
PRAIRIE ISLAND 2	2209	1286	2183	2208	2137	2088	1521	2208
QUAD CITIES 1	218	2184	1934	2208	2152	2160	1967	1640
QUAD CITIES 2	1866	2061	380	1708	2144	2103	2124	2045
RANCHO SECO	0	4	1970	2029	1542	903	1452	NA
RIVER BEND	215	2017	2183	2104	1976	1656	208	2104
ROBINSON 2	2209	1189	2016	1714	873	888	1886	1250
SALEM 1	46	849	1839	2040	2209	1862	223	2208
SALEM 2	912	2184	2061	1444	304	1783	1939	2208
SAN ONOFRE 1	2209	1069	0	1354	1395	0	208	1687
SAN ONOFRE 2	522	1826	2092	2160	2209	1449	1584	1518
SAN ONOFRE 3	2190	1936	697	1090	2209	2110	1924	2009
SEABROOK	NA	NA	NA	NA	NA	NA	194	0
SEQUOYAH 1	0	0	0	0	380	2111	2183	2208
SEQUOYAH 2	0	0	785	2208	2209	429	1687	2142
SHEARON HARRIS	1495	1994	2183	700	1708	2078	2183	2208
SHOREHAM	0	0	0	0	0	3	0	0
SOUTH TEXAS 1	NA	384	1181	1735	1873	1129	2183	783
SOUTH TEXAS 2	NA	NA	NA	NA	NA	411	1414	1918
ST. LUCIE 1	1988	2163	2165	1017	2209	2160	2132	1789
ST. LUCIE 2	894	2184	2183	2208	2209	742	1560	2116
SUMMER	2175	2149	1956	1832	131	1588	1779	1854
SURRY 1	1950	2119	194	1443	0	0	0	2088
SURRY 2	1871	2080	1242	1706	0	0	0	328
SUSQUEHANNA 1	726	1909	1964	2208	2209	1721	539	2145
SUSQUEHANNA 2	2209	1560	245	2143	2209	1987	2183	1720

TABLE 9.11 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calender Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	2209	2122	1869	932	1837	2160	2183	2208
TROJAN	1736	2057	287	1803	1778	2160	120	1001
TURKEY POINT 3	162	995	2183	2208	22	1231	167	2199
TURKEY POINT 4	971	1780	1466	1804	0	0	562	1730
VERMONT YANKEE	2122	2184	2017	1994	2209	985	2014	2208
VOGTLE 1	1642	1620	2069	2148	985	1944	2172	2175
VOGTLE 2	NA	NA	NA	NA	NA	83	1793	2199
WASH. NUCLEAR 2	2117	1520	904	1895	1992	2028	770	1850
WATERFORD 3	1950	2084	777	2173	1590	2101	2183	1907
WOLF CREEK	0	1581	2183	2208	146	2115	2183	2208
YANKEE-ROWE	2209	2117	2148	2208	1014	1891	2122	1915
ZION 1	2209	1306	1362	2099	1981	1527	2183	1559
ZION 2	2118	2184	2183	2208	430	1734	2183	2208

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.

TABLE 9.12 CAUSE CODES

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	3	3	1	2	8	3	4	NA
ARKANSAS 2	2	1	4	2	3	3	5	NA
BEAVER VALLEY 1	1	3	2	0	1	1	1	NA
BEAVER VALLEY 2	3	2	0	1	1	3	5	NA
BIG ROCK POINT	0	1	1	0	0	1	0	NA
BRAIDWOOD 1	3	2	5	3	1	0	0	NA
BRAIDWOOD 2	0	1	2	3	3	1	0	NA
BROWNS FERRY 1	3	8	3	12	11	10	5	NA
BROWNS FERRY 2	3	7	3	12	13	11	9	NA
BROWNS FERRY 3	3	7	3	12	10	8	4	NA
BRUNSWICK 1	1	4	2	1	5	5	5	NA
BRUNSWICK 2	2	5	1	1	6	1	4	NA
BYRON 1	2	0	1	1	1	2	2	NA
BYRON 2	2	0	3	1	1	2	0	NA
CALLAWAY	2	2	1	1	2	0	2	NA
CALVERT CLIFFS 1	1	0	1	2	2	3	1	NA
CALVERT CLIFFS 2	1	1	0	1	0	6	4	NA
CATAWBA 1	5	7	2	1	3	4	3	NA
CATAWBA 2	6	10	6	2	4	7	5	NA
CLINTON 1	5	2	4	1	4	10	7	NA
COOK 1	3	1	2	4	2	2	2	NA
COOK 2	3	1	2	3	3	2	2	NA
COOPER STATION	0	2	4	0	0	4	3	NA
CRYSTAL RIVER 3	3	5	2	2	7	5	6	NA
DAVIS-BESSE	1	3	4	5	3	2	3	NA
DIABLO CANYON 1	7	5	5	3	3	3	0	NA
DIABLO CANYON 2	1	2	3	1	9	4	1	NA
DRESDEN 2	1	3	5	0	3	7	2	NA
DRESDEN 3	1	3	10	0	1	1	5	NA
DUANE ARNOLD	1	0	2	3	2	3	0	NA
FARLEY 1	2	1	4	0	1	0	1	NA
FARLEY 2	3	2	2	0	0	1	5	NA
FERMI 2	3	5	2	1	1	2	3	NA
FITZPATRICK	1	1	1	0	4	0	2	NA
FORT CALHOUN	1	3	2	3	5	5	5	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	1	1	1	1	0	4	NA
GRAND GULF	5	5	0	2	1	0	5	NA
HADDAM NECK	2	0	1	1	0	2	3	NA
HATCH 1	2	2	4	2	3	3	1	NA
HATCH 2	1	6	6	1	1	2	0	NA
HOPE CREEK	2	5	3	3	2	5	4	NA
INDIAN POINT 2	4	0	2	3	0	0	2	NA
INDIAN POINT 3	1	1	1	0	0	5	0	NA
KEWAUNEE	1	1	2	2	0	5	2	NA
LASALLE 1	1	1	0	1	1	3	3	NA
LASALLE 2	2	2	0	1	2	5	4	NA
LIMERICK 1	8	3	4	0	4	10	10	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	3	NA
MAINE YANKEE	0	2	0	1	0	1	0	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	9	3	3	10	9	4	2	NA
MCGUIRE 2	6	2	6	8	4	4	2	NA
MILLSTONE 1	2	0	0	0	2	2	1	NA
MILLSTONE 2	2	2	0	0	0	0	1	NA
MILLSTONE 3	7	7	3	1	4	3	3	NA
MONTICELLO	5	1	1	0	0	2	2	NA
NINE MILE PT. 1	8	4	4	2	2	4	4	NA
NINE MILE PT. 2	8	8	4	12	7	5	6	NA
NORTH ANNA 1	1	5	3	0	8	1	2	NA
NORTH ANNA 2	2	2	4	0	7	1	3	NA
OCONEE 1	5	5	3	2	1	7	4	NA
OCONEE 2	4	4	3	1	1	2	5	NA
OCONEE 3	5	3	4	3	1	3	4	NA
OYSTER CREEK	2	2	3	3	7	5	3	NA
PALISADES	5	5	2	3	0	3	3	NA
PALO VERDE 1	3	10	2	2	3	2	2	NA
PALO VERDE 2	3	4	4	2	2	1	3	NA
PALO VERDE 3	0	3	1	0	0	0	2	NA
PEACH BOTTOM 2	3	2	3	4	7	3	7	NA
PEACH BOTTOM 3	3	1	1	2	4	1	3	NA
PERRY	2	7	4	4	3	6	6	NA
PILGRIM	3	5	2	3	3	5	5	NA
POINT BEACH 1	0	1	1	1	2	1	3	NA
POINT BEACH 2	0	1	2	0	1	0	3	NA
PRAIRIE ISLAND 1	1	1	0	1	3	1	3	NA
PRAIRIE ISLAND 2	0	1	0	0	1	1	3	NA
QUAD CITIES 1	3	5	1	2	1	1	0	NA
QUAD CITIES 2	4	6	8	3	6	0	1	NA
RANCHO SECO	2	2	4	2	3	2	0	NA
RIVER BEND	8	5	0	3	3	3	8	NA
ROBINSON 2	1	2	3	4	2	2	1	NA
SALEM 1	5	4	1	5	1	4	10	NA
SALEM 2	5	4	1	5	3	4	4	NA
SAN ONOFRE 1	2	7	1	1	1	3	4	NA
SAN ONOFRE 2	5	1	3	5	1	4	2	NA
SAN ONOFRE 3	2	3	2	6	1	4	3	NA
SEABROOK	2	1	1	1	1	1	2	NA
SEQUOYAH 1	9	15	5	6	6	5	4	NA
SEQUOYAH 2	8	20	6	7	1	4	5	NA
SHEARON HARRIS	6	3	4	4	2	3	3	NA
SHOREHAM	1	2	2	3	3	2	0	NA
SOUTH TEXAS 1	7	16	4	3	5	5	2	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	4	2	NA
ST. LUCIE 1	2	0	0	1	0	0	1	NA
ST. LUCIE 2	1	2	1	0	0	1	2	NA
SUMMER	3	0	1	2	0	2	3	NA
SURRY 1	2	1	4	6	2	5	4	NA
SURRY 2	0	2	5	3	2	3	4	NA
SUSQUEHANNA 1	3	0	0	3	1	5	8	NA
SUSQUEHANNA 2	0	3	1	2	0	3	4	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	1	4	0	0	0	NA
TROJAN	3	4	8	3	4	3	2	NA
TURKEY POINT 3	4	3	2	7	3	3	1	NA
TURKEY POINT 4	4	2	2	4	3	1	1	NA
VERMONT YANKEE	3	2	1	2	2	7	0	NA
VOGTLE 1	11	4	7	3	5	4	3	NA
VOGTLE 2	NA	NA	NA	NA	NA	3	4	NA
WASH. NUCLEAR 2	2	6	6	5	4	5	7	NA
WATERFORD 3	4	3	12	1	4	3	1	NA
WOLF CREEK	6	0	2	3	0	3	1	NA
YANKEE-ROWE	0	2	1	0	3	2	1	NA
ZION 1	1	3	3	4	2	2	2	NA
ZION 2	1	2	2	2	10	4	2	NA

NA - Data were not available for this quarter. 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.

TABLE 9.13 CAUSE CODES

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	0	0	0	4	1	1	NA
ARKANSAS 2	0	0	2	0	1	0	2	NA
BEAVER VALLEY 1	1	1	1	2	2	1	0	NA
BEAVER VALLEY 2	1	0	0	1	3	1	2	NA
BIG ROCK POINT	0	2	0	0	0	0	0	NA
BRAIDWOOD 1	2	1	0	1	0	1	1	NA
BRAIDWOOD 2	0	1	1	0	0	0	0	NA
BROWNS FERRY 1	0	1	1	1	3	3	0	NA
BROWNS FERRY 2	0	1	1	1	3	3	0	NA
BROWNS FERRY 3	0	1	1	1	3	3	0	NA
BRUNSWICK 1	0	0	0	0	4	5	1	NA
BRUNSWICK 2	0	1	1	0	2	1	0	NA
BYRON 1	1	0	0	1	0	0	0	NA
BYRON 2	1	0	2	1	0	1	0	NA
CALLAWAY	2	2	2	1	1	1	4	NA
CALVERT CLIFFS 1	0	0	0	2	0	2	0	NA
CALVERT CLIFFS 2	0	0	1	1	0	1	1	NA
CATAWBA 1	1	3	0	0	0	2	0	NA
CATAWBA 2	1	4	3	0	0	2	0	NA
CLINTON 1	1	1	2	0	1	4	2	NA
COOK 1	0	1	0	0	0	1	0	NA
COOK 2	1	0	0	0	0	2	2	NA
COOPER STATION	0	1	3	0	0	3	0	NA
CRYSTAL RIVER 3	1	0	0	1	1	1	2	NA
DAVIS-BESSE	0	0	1	0	4	1	0	NA
DIABLO CANYON 1	2	1	1	1	1	0	0	NA
DIABLO CANYON 2	1	2	0	0	1	0	1	NA
DRESDEN 2	1	0	1	1	1	2	0	NA
DRESDEN 3	0	0	0	0	0	2	0	NA
DUANE ARNOLD	0	0	0	0	1	0	0	NA
FARLEY 1	0	2	0	0	0	0	0	NA
FARLEY 2	1	2	0	0	0	0	0	NA
FERMI 2	0	6	1	0	2	1	0	NA
FITZPATRICK	1	0	0	0	0	1	0	NA
FORT CALHOUN	1	0	0	0	0	0	1	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	1	0	1	0	0	2	NA
GRAND GULF	1	0	0	1	0	0	1	NA
HADDAM NECK	0	1	1	0	0	0	0	NA
HATCH 1	1	0	0	0	0	1	0	NA
HATCH 2	0	0	1	0	0	0	0	NA
HOPE CREEK	1	0	1	0	0	1	1	NA
INDIAN POINT 2	0	1	0	0	0	0	0	NA
INDIAN POINT 3	0	1	0	0	0	0	0	NA
KEWAUNEE	0	1	1	2	0	0	0	NA
LASALLE 1	0	0	0	0	0	2	0	NA
LASALLE 2	0	0	0	1	1	2	0	NA
LIMERICK 1	2	1	1	0	1	0	0	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	NA
MAINE YANKEE	0	0	0	0	1	0	0	NA

TABLE 9.13 CAUSE CODES (CONTINUED)

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	2	1	1	0	3	0	1	NA
MCGUIRE 2	2	1	1	0	0	0	1	NA
MILLSTONE 1	0	0	0	0	0	0	1	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	5	2	2	0	0	3	2	NA
MONTICELLO	2	0	0	0	1	0	2	NA
NINE MILE PT. 1	0	0	0	0	0	1	0	NA
NINE MILE PT. 2	9	3	1	3	0	1	5	NA
NORTH ANNA 1	0	3	0	0	0	0	0	NA
NORTH ANNA 2	3	0	0	0	0	1	0	NA
OCONEE 1	2	0	0	0	0	2	0	NA
OCONEE 2	2	0	0	0	0	0	0	NA
OCONEE 3	2	0	0	0	0	0	0	NA
OYSTER CREEK	0	1	0	2	1	0	2	NA
PALISADES	2	1	0	0	1	0	0	NA
PALO VERDE 1	0	1	3	2	0	1	0	NA
PALO VERDE 2	0	4	0	0	0	1	1	NA
PALO VERDE 3	0	0	0	0	0	1	1	NA
PEACH BOTTOM 2	0	1	0	0	0	1	2	NA
PEACH BOTTOM 3	0	0	1	0	0	0	0	NA
PERRY	3	1	5	1	0	1	3	NA
PILGRIM	0	1	0	0	3	1	3	NA
POINT BEACH 1	0	0	0	0	0	1	0	NA
POINT BEACH 2	1	0	1	0	1	0	0	NA
PRAIRIE ISLAND 1	0	0	1	0	1	0	0	NA
PRAIRIE ISLAND 2	0	0	1	1	0	0	0	NA
QUAD CITIES 1	1	0	1	1	0	0	0	NA
QUAD CITIES 2	0	0	0	1	0	0	0	NA
RANCHO SECO	2	1	1	1	1	2	0	NA
RIVER BEND	0	2	0	1	1	1	0	NA
ROBINSON 2	1	0	0	0	0	1	0	NA
SALEM 1	2	0	0	0	0	2	1	NA
SALEM 2	1	0	1	0	1	0	0	NA
SAN ONOFRE 1	0	0	0	0	0	1	1	NA
SAN ONOFRE 2	0	0	0	0	0	2	1	NA
SAN ONOFRE 3	0	1	1	1	0	1	1	NA
SEABROOK	0	0	0	0	0	0	0	NA
SEQUOYAH 1	1	3	0	0	1	1	0	NA
SEQUOYAH 2	1	6	5	0	0	1	2	NA
SHEARON HARRIS	2	0	1	1	2	0	0	NA
SHOREHAM	0	0	0	0	0	1	0	NA
SOUTH TEXAS 1	1	3	1	1	2	0	0	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	0	2	NA
ST. LUCIE 1	1	1	0	1	0	0	0	NA
ST. LUCIE 2	0	1	1	0	0	2	1	NA
SUMMER	1	0	2	0	0	0	0	NA
SURRY 1	0	0	0	1	1	1	2	NA
SURRY 2	0	0	1	2	1	0	1	NA
SUSQUEHANNA 1	0	0	0	0	0	2	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							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	2	0	0	0	NA
TROJAN	0	0	0	0	1	0	0	NA
TURKEY POINT 3	1	2	0	2	0	0	0	NA
TURKEY POINT 4	0	1	0	4	0	0	2	NA
VERMONT YANKEE	0	0	0	0	0	1	0	NA
VOGTLE 1	3	2	0	0	1	1	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	4	2	NA
WASH. NUCLEAR 2	0	1	4	2	0	0	1	NA
WATERFORD 3	0	0	1	1	0	0	0	NA
WOLF CREEK	2	1	1	0	1	3	0	NA
YANKEE-ROWE	0	0	0	0	0	0	0	NA
ZION 1	0	2	1	1	0	1	0	NA
ZION 2	0	2	1	0	3	2	1	NA

NA - Data were not available for this quarter. 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.

TABLE 9.14 CAUSE CODES

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	1	1	0	3	5	1	3	NA
ARKANSAS 2	1	5	2	1	1	1	2	NA
BEAVER VALLEY 1	1	0	2	1	0	0	2	NA
BEAVER VALLEY 2	2	2	0	1	0	1	5	NA
BIG ROCK POINT	0	0	0	0	2	0	1	NA
BRAIDWOOD 1	1	2	1	1	1	0	0	NA
BRAIDWOOD 2	1	5	1	4	1	1	0	NA
BROWNS FERRY 1	0	4	2	3	6	2	3	NA
BROWNS FERRY 2	0	4	3	3	10	3	4	NA
BROWNS FERRY 3	2	3	3	4	6	3	3	NA
BRUNSWICK 1	0	1	1	2	3	1	1	NA
BRUNSWICK 2	2	3	0	0	5	2	1	NA
BYRON 1	2	0	0	0	0	1	0	NA
BYRON 2	3	2	1	1	1	0	0	NA
CALLAWAY	1	2	1	1	1	1	1	NA
CALVERT CLIFFS 1	0	0	4	2	1	1	1	NA
CALVERT CLIFFS 2	2	1	1	1	0	2	1	NA
CATAWBA 1	3	5	2	1	1	4	1	NA
CATAWBA 2	5	9	4	2	1	3	5	NA
CLINTON 1	5	3	3	3	3	3	4	NA
COOK 1	0	0	0	4	1	1	2	NA
COOK 2	4	0	0	1	1	3	2	NA
COOPER STATION	0	3	2	1	0	4	0	NA
CRYSTAL RIVER 3	6	3	0	2	5	0	3	NA
DAVIS-BESSE	2	2	4	1	2	0	2	NA
DIABLO CANYON 1	4	4	2	4	3	2	0	NA
DIABLO CANYON 2	3	0	2	1	6	0	0	NA
DRESDEN 2	3	1	3	1	1	2	1	NA
DRESDEN 3	1	1	3	1	0	0	2	NA
DUANE ARNOLD	1	0	1	0	2	2	1	NA
FARLEY 1	2	2	1	0	4	0	2	NA
FARLEY 2	3	1	0	0	2	0	3	NA
FERMI 2	3	4	2	6	1	2	1	NA
FITZPATRICK	2	1	0	1	0	0	3	NA
FORT CALHOUN	4	4	3	2	7	2	1	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	2	0	1	0	0	1	NA
GRAND GULF	3	4	0	2	1	1	0	NA
HADDAM NECK	2	4	2	2	0	1	1	NA
HATCH 1	0	0	2	0	3	1	0	NA
HATCH 2	2	4	1	2	1	1	0	NA
HOPE CREEK	2	1	3	3	7	0	2	NA
INDIAN POINT 2	4	0	3	1	3	3	0	NA
INDIAN POINT 3	1	1	0	1	1	4	1	NA
KEWAUNEE	0	0	1	2	0	1	1	NA
LASALLE 1	0	0	4	0	3	2	1	NA
LASALLE 2	1	1	5	0	0	4	0	NA
LIMERICK 1	6	2	3	1	5	5	7	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	1	NA
MAINE YANKEE	0	0	0	1	1	0	1	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	5	2	2	4	6	1	2	NA
MCGUIRE 2	4	1	4	3	2	1	1	NA
MILLSTONE 1	1	2	0	0	1	0	1	NA
MILLSTONE 2	1	5	0	1	1	1	2	NA
MILLSTONE 3	6	5	0	2	2	0	1	NA
MONTICELLO	2	3	0	0	0	1	3	NA
NINE MILE PT. 1	4	4	0	0	1	0	1	NA
NINE MILE PT. 2	9	3	2	5	5	3	1	NA
NORTH ANNA 1	0	3	0	0	0	4	2	NA
NORTH ANNA 2	2	1	2	1	1	1	2	NA
OCONEE 1	1	1	1	2	0	3	0	NA
OCONEE 2	0	0	1	0	0	1	1	NA
OCONEE 3	1	0	2	1	0	1	0	NA
OYSTER CREEK	3	0	2	2	2	1	2	NA
PALISADES	1	1	1	4	3	1	2	NA
PALO VERDE 1	2	2	1	2	1	0	1	NA
PALO VERDE 2	2	2	3	1	2	1	2	NA
PALO VERDE 3	0	2	0	3	0	0	2	NA
PEACH BOTTOM 2	5	1	5	2	4	1	1	NA
PEACH BOTTOM 3	4	1	4	3	2	1	0	NA
PERRY	0	4	4	3	2	3	3	NA
PILGRIM	4	2	3	0	0	5	3	NA
POINT BEACH 1	0	0	0	1	0	1	1	NA
POINT BEACH 2	1	0	0	0	0	1	1	NA
PRAIRIE ISLAND 1	2	0	1	1	2	0	1	NA
PRAIRIE ISLAND 2	0	0	1	1	2	0	1	NA
QUAD CITIES 1	5	0	1	2	0	0	1	NA
QUAD CITIES 2	6	0	3	2	4	0	0	NA
RANCHO SECO	1	3	0	4	2	2	1	NA
RIVER BEND	3	1	2	3	1	5	6	NA
ROBINSON 2	1	0	0	1	0	3	0	NA
SALEM 1	2	4	0	1	1	5	4	NA
SALEM 2	0	1	3	0	2	2	0	NA
SAN ONOFRE 1	2	1	1	1	2	1	0	NA
SAN ONOFRE 2	2	2	1	3	2	1	1	NA
SAN ONOFRE 3	0	3	1	5	0	2	2	NA
SEABROOK	0	1	0	1	1	1	1	NA
SEQUOYAH 1	2	5	3	6	6	7	2	NA
SEQUOYAH 2	2	5	3	7	2	3	4	NA
SHEARON HARRIS	5	1	4	4	6	6	3	NA
SHOREHAM	2	2	5	2	2	0	0	NA
SOUTH TEXAS 1	3	4	4	3	2	2	1	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	1	1	NA
ST. LUCIE 1	2	0	0	3	0	0	2	NA
ST. LUCIE 2	1	0	1	0	0	1	1	NA
SUMMER	2	2	0	1	2	3	0	NA
SURRY 1	1	3	6	2	4	4	5	NA
SURRY 2	2	2	2	1	3	2	4	NA
SUSQUEHANNA 1	4	2	2	2	3	2	6	NA
SUSQUEHANNA 2	1	2	3	1	4	1	3	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	1	0	0	0	0	NA
TROJAN	2	2	5	7	4	2	3	NA
TURKEY POINT 3	2	2	4	2	2	2	1	NA
TURKEY POINT 4	2	1	5	0	1	0	1	NA
VERMONT YANKEE	2	0	2	1	1	2	2	NA
VOGTLE 1	4	3	0	4	7	6	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	4	2	NA
WASH. NUCLEAR 2	2	3	4	5	2	2	5	NA
WATERFORD 3	1	2	10	1	3	1	2	NA
WOLF CREEK	3	2	0	0	4	2	0	NA
YANKEE-ROWE	0	0	1	0	0	3	2	NA
ZION 1	1	2	0	2	1	1	1	NA
ZION 2	0	2	0	1	6	3	0	NA

NA - Data were not available for this quarter. 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.

TABLE 9.15 CAUSE CODES

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	1	3	1	4	8	4	8	NA
ARKANSAS 2	1	3	5	3	5	4	8	NA
BEAVER VALLEY 1	5	5	3	3	2	3	4	NA
BEAVER VALLEY 2	10	4	1	3	3	7	12	NA
BIG ROCK POINT	0	1	2	1	2	2	1	NA
BRAIDWOOD 1	6	7	6	6	3	3	2	NA
BRAIDWOOD 2	1	6	8	9	4	2	1	NA
BROWNS FERRY 1	2	11	5	12	20	10	6	NA
BROWNS FERRY 2	2	9	7	12	23	12	12	NA
BROWNS FERRY 3	5	9	6	13	19	9	5	NA
BRUNSWICK 1	2	6	2	3	10	5	10	NA
BRUNSWICK 2	3	11	1	3	9	4	6	NA
BYRON 1	3	1	1	5	2	3	2	NA
BYRON 2	3	3	4	6	2	1	1	NA
CALLAWAY	3	2	3	3	2	2	5	NA
CALVERT CLIFFS 1	2	0	4	1	3	4	2	NA
CALVERT CLIFFS 2	2	3	1	1	0	6	5	NA
CATAWBA 1	6	9	1	1	5	9	4	NA
CATAWBA 2	6	17	12	3	7	10	9	NA
CLINTON 1	8	8	7	5	7	11	10	NA
COOK 1	3	4	2	5	4	5	5	NA
COOK 2	7	2	3	3	3	8	5	NA
COOPER STATION	0	3	9	7	1	5	7	NA
CRYSTAL RIVER 3	7	9	2	2	7	4	9	NA
DAVIS-BESSE	3	4	4	4	4	2	4	NA
DIABLO CANYON 1	13	11	7	6	4	3	0	NA
DIABLO CANYON 2	5	5	6	3	12	3	2	NA
DRESDEN 2	5	4	7	3	7	11	3	NA
DRESDEN 3	1	4	12	1	2	2	4	NA
DUANE ARNOLD	3	1	3	3	1	6	1	NA
FARLEY 1	3	4	4	0	6	0	3	NA
FARLEY 2	7	2	2	0	3	1	6	NA
FERMI 2	5	11	8	10	3	7	4	NA
FITZPATRICK	5	2	3	2	3	2	5	NA
FORT CALHOUN	5	5	6	5	8	7	6	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	3	1	4	0	0	5	NA
GRAND GULF	9	8	0	2	2	1	3	NA
HADDAM NECK	3	4	4	3	2	1	3	NA
HATCH 1	2	3	4	2	5	4	0	NA
HATCH 2	4	9	10	4	2	3	0	NA
HOPE CREEK	3	5	6	6	11	5	7	NA
INDIAN POINT 2	9	1	4	6	3	2	1	NA
INDIAN POINT 3	2	2	2	1	1	6	1	NA
KEWAUNEE	0	2	3	3	0	6	4	NA
LASALLE 1	6	4	7	5	5	13	9	NA
LASALLE 2	5	4	9	6	7	12	8	NA
LIMERICK 1	14	5	9	0	6	11	12	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	2	NA
MAINE YANKEE	0	2	0	2	1	1	1	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	13	5	7	11	15	4	3	NA
MCGUIRE 2	8	2	7	10	6	6	2	NA
MILLSTONE 1	3	2	0	2	4	1	8	NA
MILLSTONE 2	3	5	2	1	1	2	3	NA
MILLSTONE 3	16	9	5	3	5	2	4	NA
MONTICELLO	6	2	1	0	0	4	7	NA
NINE MILE PT. 1	10	6	4	1	2	4	1	NA
NINE MILE PT. 2	15	12	5	16	11	6	8	NA
NORTH ANNA 1	3	14	1	1	5	5	5	NA
NORTH ANNA 2	7	5	3	1	5	3	4	NA
OCONEE 1	5	5	0	3	1	6	1	NA
OCONEE 2	3	4	0	2	1	3	2	NA
OCONEE 3	4	3	2	3	2	3	1	NA
OYSTER CREEK	6	2	3	9	7	5	4	NA
PALISADES	4	5	2	7	5	3	5	NA
PALO VERDE 1	4	9	3	3	4	2	5	NA
PALO VERDE 2	5	9	4	1	3	2	5	NA
PALO VERDE 3	2	5	1	3	0	3	5	NA
PEACH BOTTOM 2	8	5	7	4	8	4	9	NA
PEACH BOTTOM 3	6	2	6	6	4	2	3	NA
PERRY	5	10	11	9	5	9	8	NA
PILGRIM	7	8	4	3	4	9	5	NA
POINT BEACH 1	1	1	1	1	1	1	4	NA
POINT BEACH 2	3	1	2	0	0	2	2	NA
PRAIRIE ISLAND 1	2	0	2	2	6	0	3	NA
PRAIRIE ISLAND 2	0	0	2	2	5	0	2	NA
QUAD CITIES 1	9	5	3	3	2	2	4	NA
QUAD CITIES 2	11	9	12	3	6	0	3	NA
RANCHO SECO	4	4	2	2	6	3	1	NA
RIVER BEND	9	7	2	8	5	13	13	NA
ROBINSON 2	3	3	5	3	2	5	2	NA
SALEM 1	5	5	1	5	2	10	10	NA
SALEM 2	6	5	7	5	5	5	7	NA
SAN ONOFRE 1	4	6	2	2	3	3	4	NA
SAN ONOFRE 2	10	6	8	7	2	5	1	NA
SAN ONOFRE 3	1	8	3	9	2	5	2	NA
SEABROOK	2	2	1	1	2	5	3	NA
SEQUOYAH 1	9	16	7	9	12	6	7	NA
SEQUOYAH 2	9	22	10	12	3	4	12	NA
SHEARON HARRIS	9	5	7	9	6	6	5	NA
SHOREHAM	3	3	6	5	3	5	0	NA
SOUTH TEXAS 1	11	20	8	7	5	7	3	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	7	5	NA
ST. LUCIE 1	2	3	1	4	0	0	2	NA
ST. LUCIE 2	1	2	1	0	0	1	1	NA
SUMMER	3	2	2	1	3	4	5	NA
SURRY 1	13	7	11	10	8	6	10	NA
SURRY 2	5	8	8	4	7	4	9	NA
SUSQUEHANNA 1	7	5	4	7	2	3	10	NA
SUSQUEHANNA 2	2	8	3	6	3	2	3	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	1	2	1	0	0	NA
TROJAN	8	5	9	12	10	4	5	NA
TURKEY POINT 3	8	5	7	9	3	5	1	NA
TURKEY POINT 4	6	3	9	11	2	3	3	NA
VERMONT YANKEE	5	3	4	1	3	11	3	NA
VOGTLE 1	12	8	8	7	11	9	2	NA
VOGTLE 2	NA	NA	NA	NA	NA	8	8	NA
WASH. NUCLEAR 2	3	4	12	7	5	3	13	NA
WATERFORD 3	4	3	16	3	3	1	3	NA
WOLF CREEK	8	3	2	3	3	7	3	NA
YANKEE-ROWE	2	3	1	0	4	4	3	NA
ZION 1	2	6	4	5	4	5	1	NA
ZION 2	2	4	2	4	13	4	2	NA

NA - Data were not available for this quarter. 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.

TABLE 9.16 CAUSE CODES - MAINTENANCE SUB-CATEGORIES

MAINTENANCE PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	1	1	2	5	1	3	NA
ARKANSAS 2	1	2	3	1	0	1	3	NA
BEAVER VALLEY 1	3	2	1	0	0	0	1	NA
BEAVER VALLEY 2	3	2	0	0	0	0	2	NA
BIG ROCK POINT	0	0	1	0	2	0	0	NA
BRAIDWOOD 1	1	0	2	1	1	0	0	NA
BRAIDWOOD 2	1	3	0	3	1	0	0	NA
BROWNS FERRY 1	0	3	3	5	5	6	4	NA
BROWNS FERRY 2	0	3	4	5	6	6	7	NA
BROWNS FERRY 3	1	3	4	6	5	6	3	NA
BRUNSWICK 1	1	2	2	2	2	3	3	NA
BRUNSWICK 2	2	4	0	0	1	1	1	NA
BYRON 1	0	0	0	0	1	1	2	NA
BYRON 2	1	0	0	0	2	0	0	NA
CALLAWAY	0	1	1	1	1	0	0	NA
CALVERT CLIFFS 1	0	0	4	1	2	2	1	NA
CALVERT CLIFFS 2	2	2	0	0	0	4	2	NA
CATAWBA 1	2	4	0	1	1	4	2	NA
CATAWBA 2	4	5	5	2	2	2	5	NA
CLINTON 1	3	1	2	3	3	1	4	NA
COOK 1	0	0	0	2	1	0	0	NA
COOK 2	2	0	0	1	1	2	0	NA
COOPER STATION	0	2	2	0	0	3	4	NA
CRYSTAL RIVER 3	4	3	0	0	3	1	5	NA
DAVIS-BESSE	1	2	3	2	1	0	2	NA
DIABLO CANYON 1	5	2	1	2	2	2	0	NA
DIABLO CANYON 2	3	1	1	1	7	2	1	NA
DRESDEN 2	0	1	4	0	4	4	0	NA
DRESDEN 3	0	1	7	0	1	1	3	NA
DUANE ARNOLD	2	0	3	1	0	2	1	NA
FARLEY 1	3	2	0	0	3	0	2	NA
FARLEY 2	4	1	0	0	1	0	4	NA
FERMI 2	1	6	1	3	0	2	1	NA
FITZPATRICK	1	1	0	1	2	0	1	NA
FORT CALHOUN	1	2	2	1	3	0	3	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	1	0	1	0	0	0	NA
GRAND GULF	1	2	0	0	0	1	0	NA
HADDAM NECK	2	3	1	0	0	1	0	NA
HATCH 1	0	0	1	1	2	0	0	NA
HATCH 2	1	2	1	2	1	0	0	NA
HOPE CREEK	1	2	4	0	4	1	3	NA
INDIAN POINT 2	2	0	2	1	3	2	0	NA
INDIAN POINT 3	1	2	0	1	1	3	0	NA
KEWAUNEE	0	0	1	0	0	1	1	NA
LASALLE 1	1	0	4	1	1	0	1	NA
LASALLE 2	2	0	4	1	0	0	2	NA
LIMERICK 1	3	2	3	0	3	4	3	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	NA
MAINE YANKEE	0	1	0	0	1	0	0	NA

TABLE 9.16 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	6	3	2	3	8	1	2	NA
MCGUIRE 2	4	2	6	4	2	1	0	NA
MILLSTONE 1	0	0	0	0	1	0	2	NA
MILLSTONE 2	1	4	0	0	1	0	1	NA
MILLSTONE 3	4	5	0	0	0	0	0	NA
MONTICELLO	1	0	0	0	0	2	2	NA
NINE MILE PT. 1	1	3	0	0	0	0	0	NA
NINE MILE PT. 2	4	3	0	3	2	1	1	NA
NORTH ANNA 1	0	1	0	0	2	3	2	NA
NORTH ANNA 2	1	0	1	0	2	1	2	NA
OCONEE 1	1	0	0	2	1	2	0	NA
OCONEE 2	1	1	0	1	1	1	1	NA
OCONEE 3	2	0	1	1	1	1	0	NA
OYSTER CREEK	0	1	1	2	4	3	0	NA
PALISADES	2	0	0	4	1	1	1	NA
PALO VERDE 1	1	4	1	2	0	1	1	NA
PALO VERDE 2	2	2	0	0	0	1	1	NA
PALO VERDE 3	0	2	0	2	0	0	1	NA
PEACH BOTTOM 2	3	2	2	2	2	2	3	NA
PEACH BOTTOM 3	2	1	1	3	2	0	1	NA
PERRY	0	3	0	2	2	5	2	NA
PILGRIM	3	2	4	2	0	2	1	NA
POINT BEACH 1	0	0	0	1	1	1	0	NA
POINT BEACH 2	1	0	1	0	0	1	0	NA
PRAIRIE ISLAND 1	1	0	1	1	0	0	0	NA
PRAIRIE ISLAND 2	0	0	1	1	0	0	0	NA
QUAD CITIES 1	4	2	2	2	0	0	1	NA
QUAD CITIES 2	4	4	6	2	2	0	1	NA
RANCHO SECO	0	0	1	1	2	1	0	NA
RIVER BEND	0	0	0	3	0	3	4	NA
ROBINSON 2	1	1	0	3	1	2	0	NA
SALEM 1	2	0	0	0	0	5	2	NA
SALEM 2	2	1	1	0	1	2	2	NA
SAN ONOFRE 1	2	1	0	0	2	0	0	NA
SAN ONOFRE 2	4	1	2	1	0	2	1	NA
SAN ONOFRE 3	0	1	2	2	0	4	2	NA
SEABROOK	1	1	0	0	1	0	0	NA
SEQUOYAH 1	0	5	6	2	5	3	2	NA
SEQUOYAH 2	0	8	5	2	1	1	5	NA
SHEARON HARRIS	0	0	1	1	5	3	0	NA
SHOREHAM	0	1	1	0	0	1	0	NA
SOUTH TEXAS 1	4	1	2	2	3	2	1	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	2	1	NA
ST. LUCIE 1	1	1	0	2	0	0	2	NA
ST. LUCIE 2	1	0	0	0	0	1	1	NA
SUMMER	1	0	0	1	0	2	1	NA
SURRY 1	0	1	5	1	4	4	1	NA
SURRY 2	1	1	2	0	4	4	0	NA
SUSQUEHANNA 1	0	1	0	1	0	2	1	NA
SUSQUEHANNA 2	0	4	1	0	1	1	0	NA

TABLE 9.16 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	0	0	0	NA
TROJAN	0	2	2	4	1	1	1	NA
TURKEY POINT 3	3	2	1	3	1	0	1	NA
TURKEY POINT 4	3	1	1	1	1	0	1	NA
VERMONT YANKEE	2	0	1	0	0	3	1	NA
VOGTLE 1	2	1	1	2	3	2	1	NA
VOGTLE 2	NA	NA	NA	NA	NA	3	2	NA
WASH. NUCLEAR 2	0	2	5	4	1	3	5	NA
WATERFORD 3	1	2	4	0	1	0	0	NA
WOLF CREEK	2	2	0	1	2	1	0	NA
YANKEE-ROWE	0	0	0	0	0	3	0	NA
ZION 1	1	2	0	1	1	1	0	NA
ZION 2	0	3	0	1	4	4	0	NA

NA - Data were not available for this quarter. 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.

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES

PERSONNEL ERROR DURING TEST/CALIB. (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	1	2	0	1	4	1	3	NA
ARKANSAS 2	0	1	2	2	3	2	2	NA
BEAVER VALLEY 1	0	1	2	1	2	1	2	NA
BEAVER VALLEY 2	2	1	0	1	3	3	4	NA
BIG ROCK POINT	0	0	0	0	0	1	1	NA
BRAIDWOOD 1	2	4	3	3	0	0	0	NA
BRAIDWOOD 2	0	2	2	2	2	1	0	NA
BROWNS FERRY 1	0	6	1	5	11	4	1	NA
BROWNS FERRY 2	0	5	1	5	14	6	2	NA
BROWNS FERRY 3	1	5	1	5	11	2	1	NA
BRUNSWICK 1	0	2	0	0	4	2	3	NA
BRUNSWICK 2	0	2	1	1	6	2	2	NA
BYRON 1	2	0	0	1	0	1	0	NA
BYRON 2	2	2	1	2	0	1	0	NA
CALLAWAY	2	1	1	2	1	1	4	NA
CALVERT CLIFFS 1	1	0	0	0	1	3	0	NA
CALVERT CLIFFS 2	0	0	1	1	0	3	2	NA
CATAWBA 1	1	5	1	1	2	2	2	NA
CATAWBA 2	2	8	3	1	3	5	4	NA
CLINTON 1	4	4	4	1	3	9	5	NA
COOK 1	2	2	2	3	1	2	4	NA
COOK 2	4	1	2	2	2	2	4	NA
COOPER STATION	0	1	3	1	0	2	1	NA
CRYSTAL RIVER 3	3	3	1	2	4	3	1	NA
DAVIS-BESSE	1	1	1	3	2	1	2	NA
DIABLO CANYON 1	5	5	4	4	2	1	0	NA
DIABLO CANYON 2	1	2	3	1	5	1	1	NA
DRESDEN 2	4	3	2	2	1	3	1	NA
DRESDEN 3	1	2	4	1	0	0	1	NA
DUANE ARNOLD	0	0	2	1	1	2	0	NA
FARLEY 1	0	0	1	0	1	0	1	NA
FARLEY 2	2	1	1	0	0	1	1	NA
FERMI 2	3	5	3	3	2	3	3	NA
FITZPATRICK	3	1	1	0	2	1	3	NA
FORT CALHOUN	4	4	2	1	3	7	2	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	1	0	0	0	0	4	NA
GRAND GULF	6	3	0	1	1	0	2	NA
HADDAM NECK	0	2	2	1	0	0	2	NA
HATCH 1	1	2	1	1	2	4	0	NA
HATCH 2	2	8	6	1	0	3	0	NA
HOPE CREEK	1	3	1	5	5	3	3	NA
INDIAN POINT 2	4	0	2	2	0	0	1	NA
INDIAN POINT 3	0	0	1	0	0	3	1	NA
KEWAUNEE	0	1	1	2	0	5	2	NA
LASALLE 1	0	0	0	0	1	4	4	NA
LASALLE 2	0	2	1	0	3	6	3	NA
LIMERICK 1	2	2	3	0	2	4	7	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	1	NA
MAINE YANKEE	0	0	0	1	0	0	1	NA

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

PERSONNEL ERROR DURING TEST/CALIB. (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	4	1	2	5	4	3	1	NA
MCGUIRE 2	4	0	1	4	2	3	1	NA
MILLSTONE 1	3	1	0	0	1	1	2	NA
MILLSTONE 2	0	2	0	1	0	1	2	NA
MILLSTONE 3	9	3	3	2	3	2	2	NA
MONTICELLO	5	2	1	0	0	1	4	NA
NINE MILE PT. 1	4	2	2	1	2	4	1	NA
NINE MILE PT. 2	8	7	3	7	7	5	6	NA
NORTH ANNA 1	1	5	1	0	3	1	1	NA
NORTH ANNA 2	5	2	2	1	3	0	2	NA
OCONEE 1	2	4	0	1	0	3	1	NA
OCONEE 2	2	2	0	0	0	1	1	NA
OCONEE 3	3	2	1	2	0	1	1	NA
OYSTER CREEK	4	0	1	4	2	2	2	NA
PALISADES	2	3	2	2	1	2	1	NA
PALO VERDE 1	3	5	0	1	2	1	2	NA
PALO VERDE 2	1	6	4	1	2	1	3	NA
PALO VERDE 3	0	3	1	1	0	1	4	NA
PEACH BOTTOM 2	2	1	5	1	5	2	5	NA
PEACH BOTTOM 3	3	0	3	1	2	2	2	NA
PERRY	2	5	3	3	1	4	5	NA
PILGRIM	3	4	0	1	1	5	5	NA
POINT BEACH 1	0	1	1	0	0	0	2	NA
POINT BEACH 2	0	1	1	0	0	0	2	NA
PRAIRIE ISLAND 1	1	0	0	1	3	0	1	NA
PRAIRIE ISLAND 2	0	0	0	1	2	0	1	NA
QUAD CITIES 1	0	3	0	1	1	1	0	NA
QUAD CITIES 2	1	2	2	1	5	0	0	NA
RANCHO SECO	4	4	1	1	2	1	1	NA
RIVER BEND	6	4	1	1	2	5	7	NA
ROBINSON 2	0	1	2	0	0	2	1	NA
SALEM 1	3	4	1	3	0	4	6	NA
SALEM 2	4	3	2	4	2	2	3	NA
SAN ONOFRE 1	0	4	2	1	1	1	3	NA
SAN ONOFRE 2	4	0	2	4	0	3	0	NA
SAN ONOFRE 3	1	2	0	7	1	1	1	NA
SEABROOK	1	1	1	1	0	2	2	NA
SEQUOYAH 1	7	11	1	5	4	3	3	NA
SEQUOYAH 2	6	13	4	7	1	2	5	NA
SHEARON HARRIS	8	3	3	6	3	3	4	NA
SHOREHAM	3	2	5	3	2	2	0	NA
SOUTH TEXAS 1	5	13	5	5	2	4	2	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	3	1	NA
ST. LUCIE 1	1	0	0	2	0	0	0	NA
ST. LUCIE 2	0	0	1	0	0	1	0	NA
SUMMER	2	2	2	1	2	2	1	NA
SURRY 1	3	2	3	2	2	3	7	NA
SURRY 2	1	1	1	1	1	1	7	NA
SUSQUEHANNA 1	4	1	2	2	2	0	7	NA
SUSQUEHANNA 2	0	0	2	2	2	0	3	NA

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

PERSONNEL ERROR DURING TEST/CALIB. (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	1	2	0	0	0	NA
TROJAN	4	3	6	4	7	3	2	NA
TURKEY POINT 3	3	1	5	5	2	3	0	NA
TURKEY POINT 4	2	1	6	5	1	1	0	NA
VERMONT YANKEE	2	1	1	0	3	5	1	NA
VOGTLE 1	10	6	6	3	6	4	1	NA
VOGTLE 2	NA	NA	NA	NA	NA	2	3	NA
WASH. NUCLEAR 2	3	2	4	4	4	1	5	NA
WATERFORD 3	2	0	12	3	2	1	3	NA
WOLF CREEK	5	1	2	2	1	5	1	NA
YANKEE-ROWE	0	1	1	0	2	1	2	NA
ZION 1	0	3	2	3	1	1	1	NA
ZION 2	0	1	1	2	7	1	1	NA

NA - Data were not available for this quarter. 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.

TABLE 9.18 CAUSE CODES - MAINTENANCE SUB-CATEGORIES

MAINTENANCE EQUIPMENT FAILURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	0	0	1	1	2	1	NA
ARKANSAS 2	0	0	1	0	3	0	3	NA
BEAVER VALLEY 1	2	2	1	1	0	2	1	NA
BEAVER VALLEY 2	3	1	1	2	0	2	3	NA
BIG ROCK POINT	0	1	1	1	0	1	0	NA
BRAIDWOOD 1	2	3	1	0	2	0	1	NA
BRAIDWOOD 2	0	0	4	2	2	0	0	NA
BROWNS FERRY 1	1	1	0	1	6	3	0	NA
BROWNS FERRY 2	1	0	1	1	5	3	1	NA
BROWNS FERRY 3	3	0	0	1	5	3	0	NA
BRUNSWICK 1	1	2	0	0	3	1	4	NA
BRUNSWICK 2	2	6	0	1	2	1	3	NA
BYRON 1	1	0	1	3	1	1	0	NA
BYRON 2	0	1	2	4	1	0	0	NA
CALLAWAY	2	1	1	2	0	1	0	NA
CALVERT CLIFFS 1	1	0	1	0	0	0	0	NA
CALVERT CLIFFS 2	1	2	0	0	0	1	0	NA
CATAWBA 1	4	2	0	0	1	4	0	NA
CATAWBA 2	3	7	5	2	3	1	0	NA
CLINTON 1	2	5	6	2	1	2	1	NA
COOK 1	1	2	0	0	2	3	1	NA
COOK 2	2	1	1	0	0	4	1	NA
COOPER STATION	0	0	4	5	1	0	0	NA
CRYSTAL RIVER 3	0	1	1	0	0	0	1	NA
DAVIS-BESSE	1	0	0	0	1	0	0	NA
DIABLO CANYON 1	5	2	2	2	0	0	0	NA
DIABLO CANYON 2	1	2	2	0	1	0	0	NA
DRESDEN 2	1	0	1	2	3	2	1	NA
DRESDEN 3	0	1	3	0	0	1	0	NA
DUANE ARNOLD	1	1	0	1	0	1	0	NA
FARLEY 1	0	2	3	0	2	0	2	NA
FARLEY 2	3	0	1	0	1	0	3	NA
FERMI 2	2	2	4	2	2	0	0	NA
FITZPATRICK	1	0	2	2	0	1	2	NA
FORT CALHOUN	0	1	0	1	1	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	2	1	2	0	0	1	NA
GRAND GULF	0	3	0	0	0	1	0	NA
HADDAM NECK	1	1	1	2	2	0	0	NA
HATCH 1	0	1	2	0	1	0	0	NA
HATCH 2	1	2	2	1	2	0	0	NA
HOPE CREEK	0	1	2	1	2	0	0	NA
INDIAN POINT 2	2	1	1	1	0	0	0	NA
INDIAN POINT 3	0	0	1	0	0	0	0	NA
KEWAUNEE	0	1	1	0	0	0	0	NA
LASALLE 1	5	4	3	2	3	6	2	NA
LASALLE 2	3	2	3	3	4	4	1	NA
LIMERICK 1	7	0	3	0	0	1	1	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	NA
MAINE YANKEE	0	1	0	1	0	0	0	NA

TABLE 9.18 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE EQUIPMENT FAILURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	3	1	3	4	5	1	0	NA
MCGUIRE 2	1	1	1	4	3	2	0	NA
MILLSTONE 1	0	1	0	2	2	0	4	NA
MILLSTONE 2	2	0	2	0	0	1	0	NA
MILLSTONE 3	1	1	2	1	2	0	1	NA
MONTICELLO	1	0	0	0	0	0	1	NA
NINE MILE PT. 1	2	2	1	0	0	0	0	NA
NINE MILE PT. 2	6	1	3	9	2	1	2	NA
NORTH ANNA 1	2	8	0	1	1	1	1	NA
NORTH ANNA 2	1	3	0	0	1	1	0	NA
OCONEE 1	2	2	0	0	0	0	0	NA
OCONEE 2	0	1	0	1	0	0	0	NA
OCONEE 3	0	1	1	1	0	1	0	NA
OYSTER CREEK	1	2	3	2	2	0	0	NA
PALISADES	0	0	0	0	2	0	0	NA
PALO VERDE 1	0	1	1	1	0	0	2	NA
PALO VERDE 2	1	1	0	0	1	2	1	NA
PALO VERDE 3	2	0	0	0	0	0	0	NA
PEACH BOTTOM 2	1	2	0	2	0	1	1	NA
PEACH BOTTOM 3	1	1	2	2	0	0	0	NA
PERRY	2	2	7	3	3	1	1	NA
PILGRIM	2	1	2	0	1	2	0	NA
POINT BEACH 1	1	0	0	0	0	0	1	NA
POINT BEACH 2	1	0	0	0	0	0	0	NA
PRAIRIE ISLAND 1	0	0	1	0	3	0	2	NA
PRAIRIE ISLAND 2	0	0	1	0	2	0	1	NA
QUAD CITIES 1	5	0	1	0	0	1	1	NA
QUAD CITIES 2	4	2	5	0	1	0	2	NA
RANCHO SECO	0	1	0	0	1	1	0	NA
RIVER BEND	1	1	1	1	3	3	2	NA
ROBINSON 2	2	1	4	0	1	1	0	NA
SALEM 1	0	2	0	1	2	2	0	NA
SALEM 2	0	3	4	1	3	1	1	NA
SAN ONOFRE 1	2	0	0	1	1	1	0	NA
SAN ONOFRE 2	1	5	5	1	1	1	0	NA
SAN ONOFRE 3	0	6	2	0	0	0	0	NA
SEABROOK	0	0	0	0	0	2	0	NA
SEQUOYAH 1	1	4	1	2	5	1	0	NA
SEQUOYAH 2	2	5	1	4	0	2	0	NA
SHEARON HARRIS	2	3	4	5	1	0	1	NA
SHOREHAM	0	0	0	2	0	1	0	NA
SOUTH TEXAS 1	3	3	1	3	0	0	0	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	1	1	NA
ST. LUCIE 1	1	2	0	2	0	0	0	NA
ST. LUCIE 2	0	1	0	0	0	0	0	NA
SUMMER	0	0	0	0	0	0	2	NA
SURRY 1	8	4	5	6	4	0	3	NA
SURRY 2	2	5	6	3	3	0	3	NA
SUSQUEHANNA 1	2	0	2	4	0	0	1	NA
SUSQUEHANNA 2	1	2	0	4	0	0	0	NA

TABLE 9.18 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE EQUIPMENT FAILURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	1	0	0	NA
TROJAN	3	1	2	4	2	0	1	NA
TURKEY POINT 3	4	2	1	1	0	1	0	NA
TURKEY POINT 4	3	1	3	3	0	1	0	NA
VERMONT YANKEE	0	2	2	1	1	2	0	NA
VOGTLE 1	1	1	1	2	3	3	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	2	2	NA
WASH. NUCLEAR 2	0	0	1	1	2	0	1	NA
WATERFORD 3	0	2	2	0	0	0	0	NA
WOLF CREEK	1	0	0	1	1	1	0	NA
YANKEE-ROWE	2	0	0	0	2	0	0	NA
ZION 1	0	2	2	1	1	1	0	NA
ZION 2	1	1	1	1	5	0	0	NA

NA - Data were not available for this quarter. 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.

TABLE 9.19 CAUSE CODES - MAINTENANCE SUB-CATEGORIES

POTENTIAL MAINTENANCE PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	0	0	0	1	1	1	NA
ARKANSAS 2	0	0	0	0	2	1	1	NA
BEAVER VALLEY 1	3	2	0	1	0	1	0	NA
BEAVER VALLEY 2	4	1	1	1	0	3	3	NA
BIG ROCK POINT	0	0	0	1	0	0	1	NA
BRAIDWOOD 1	3	3	1	2	1	3	1	NA
BRAIDWOOD 2	0	1	5	3	1	1	1	NA
BROWNS FERRY 1	1	2	1	2	6	0	1	NA
BROWNS FERRY 2	1	1	2	2	5	0	2	NA
BROWNS FERRY 3	2	1	1	2	5	0	1	NA
BRUNSWICK 1	0	2	0	1	5	1	0	NA
BRUNSWICK 2	0	3	0	2	2	1	0	NA
BYRON 1	1	1	1	3	1	0	0	NA
BYRON 2	0	2	3	3	0	0	1	NA
CALLAWAY	2	0	1	0	0	1	1	NA
CALVERT CLIFFS 1	1	0	0	0	0	0	1	NA
CALVERT CLIFFS 2	0	2	0	0	0	0	2	NA
CATAWBA 1	2	2	0	1	2	2	1	NA
CATAWBA 2	2	5	3	2	2	3	1	NA
CLINTON 1	1	4	0	1	1	0	1	NA
COOK 1	1	0	0	0	2	0	0	NA
COOK 2	2	0	0	0	0	0	0	NA
COOPER STATION	0	0	3	6	0	0	2	NA
CRYSTAL RIVER 3	1	4	1	0	0	0	2	NA
DAVIS-BESSE	1	2	0	0	1	1	0	NA
DIABLO CANYON 1	2	4	2	1	0	0	0	NA
DIABLO CANYON 2	1	2	2	1	2	0	0	NA
DRESDEN 2	1	1	2	2	3	3	1	NA
DRESDEN 3	0	0	3	0	1	1	0	NA
DUANE ARNOLD	0	1	0	2	0	1	0	NA
FARLEY 1	1	1	3	0	3	0	1	NA
FARLEY 2	2	0	1	0	1	0	0	NA
FERMI 2	1	2	4	3	2	3	0	NA
FITZPATRICK	1	0	2	1	0	0	0	NA
FORT CALHOUN	0	0	3	2	2	0	2	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	1	2	0	0	0	NA
GRAND GULF	2	4	0	1	1	0	1	NA
HADDAM NECK	1	0	1	1	2	0	1	NA
HATCH 1	1	1	2	0	1	0	0	NA
HATCH 2	1	2	3	1	1	0	0	NA
HOPE CREEK	1	1	1	1	2	1	1	NA
INDIAN POINT 2	3	1	0	3	0	0	0	NA
INDIAN POINT 3	1	0	1	0	0	0	0	NA
KEWAUNEE	0	1	1	1	0	0	1	NA
LASALLE 1	5	3	3	4	2	4	3	NA
LASALLE 2	3	2	3	5	4	3	3	NA
LIMERICK 1	6	1	2	0	1	2	1	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	1	NA
MAINE YANKEE	0	1	0	1	0	1	0	NA

TABLE 9.19 CAUSE CODES - MAINTENANCE (CONTINUED)

POTENTIAL MAINTENANCE PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	3	1	3	2	4	0	0	NA
MCGUIRE 2	0	0	1	1	0	2	1	NA
MILLSTONE 1	0	1	0	2	1	0	0	NA
MILLSTONE 2	0	0	2	0	0	0	0	NA
MILLSTONE 3	2	1	2	1	1	0	1	NA
MONTICELLO	0	1	0	0	0	1	1	NA
NINE MILE PT. 1	5	1	1	0	0	0	0	NA
NINE MILE PT. 2	3	2	3	6	3	0	0	NA
NORTH ANNA 1	2	5	0	1	0	0	1	NA
NORTH ANNA 2	2	2	0	0	0	1	0	NA
OCONEE 1	1	1	0	0	0	1	0	NA
OCONEE 2	0	1	0	1	0	1	0	NA
OCONEE 3	0	1	1	0	1	0	0	NA
OYSTER CREEK	2	0	0	2	2	0	2	NA
PALISADES	1	2	0	2	3	1	2	NA
PALO VERDE 1	0	1	1	1	2	0	0	NA
PALO VERDE 2	2	2	0	0	1	0	0	NA
PALO VERDE 3	2	0	0	0	0	2	1	NA
PEACH BOTTOM 2	2	2	0	2	2	0	0	NA
PEACH BOTTOM 3	0	1	1	1	0	0	0	NA
PERRY	3	1	6	4	2	1	0	NA
PILGRIM	1	2	0	0	2	1	0	NA
POINT BEACH 1	1	0	0	0	0	0	1	NA
POINT BEACH 2	2	0	0	0	0	1	0	NA
PRAIRIE ISLAND 1	0	0	1	0	1	0	1	NA
PRAIRIE ISLAND 2	0	0	1	0	2	0	0	NA
QUAD CITIES 1	3	0	1	0	1	1	2	NA
QUAD CITIES 2	5	3	4	1	1	0	0	NA
RANCHO SECO	0	0	1	0	2	0	0	NA
RIVER BEND	3	3	0	4	1	2	1	NA
ROBINSON 2	1	1	4	0	1	0	1	NA
SALEM 1	0	0	0	1	1	1	2	NA
SALEM 2	0	2	3	1	2	0	1	NA
SAN ONOFRE 1	1	3	0	1	0	1	2	NA
SAN ONOFRE 2	3	4	4	2	1	0	0	NA
SAN ONOFRE 3	0	4	1	1	1	0	0	NA
SEABROOK	0	0	0	0	1	1	2	NA
SEQUOYAH 1	1	2	1	2	3	1	2	NA
SEQUOYAH 2	2	5	1	4	1	0	2	NA
SHEARON HARRIS	1	1	2	3	0	0	0	NA
SHOREHAM	0	0	0	0	1	1	0	NA
SOUTH TEXAS 1	1	4	1	1	0	1	0	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	1	3	NA
ST. LUCIE 1	0	2	1	0	0	0	0	NA
ST. LUCIE 2	0	1	0	0	0	0	0	NA
SUMMER	0	0	0	0	1	0	1	NA
SURRY 1	9	0	2	6	2	0	1	NA
SURRY 2	4	4	2	1	1	0	1	NA
SUSQUEHANNA 1	3	3	1	3	0	1	2	NA
SUSQUEHANNA 2	2	4	0	3	1	1	0	NA

TABLE 9.19 CAUSE CODES - MAINTENANCE (CONTINUED)

POTENTIAL MAINTENANCE PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	1	0	0	NA
TROJAN	2	1	0	5	4	0	1	NA
TURKEY POINT 3	4	2	2	2	0	2	0	NA
TURKEY POINT 4	3	1	3	6	0	2	1	NA
VERMONT YANKEE	1	1	2	1	0	2	2	NA
VOGTLE 1	2	2	1	1	2	1	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	1	1	NA
WASH. NUCLEAR 2	0	0	2	0	1	0	2	NA
WATERFORD 3	1	2	0	0	0	0	0	NA
WOLF CREEK	1	0	0	0	0	1	2	NA
YANKEE-ROWE	2	2	0	0	2	0	1	NA
ZION 1	1	2	3	1	2	3	0	NA
ZION 2	1	1	2	1	2	1	1	NA

NA - Data were not available for this quarter. 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.

TABLE 9.20 CAUSE CODES

DESIGN/FABRICATION/INSTALLATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	3	2	3	8	6	8	2	NA
ARKANSAS 2	1	3	2	3	0	1	3	NA
BEAVER VALLEY 1	3	1	1	0	1	0	1	NA
BEAVER VALLEY 2	3	1	1	1	2	1	0	NA
BIG ROCK POINT	2	1	2	0	0	1	0	NA
BRAIDWOOD 1	1	1	0	0	2	0	0	NA
BRAIDWOOD 2	0	2	1	2	2	0	0	NA
BROWNS FERRY 1	0	1	2	8	6	7	3	NA
BROWNS FERRY 2	0	1	2	8	6	8	3	NA
BROWNS FERRY 3	0	1	2	8	6	7	3	NA
BRUNSWICK 1	1	1	3	2	4	2	0	NA
BRUNSWICK 2	0	2	2	4	4	2	0	NA
BYRON 1	0	0	0	0	0	0	0	NA
BYRON 2	0	2	0	0	0	1	0	NA
CALLAWAY	0	1	0	1	1	1	0	NA
CALVERT CLIFFS 1	0	0	0	2	2	2	4	NA
CALVERT CLIFFS 2	1	1	1	0	1	0	3	NA
CATAWBA 1	2	5	3	0	3	5	2	NA
CATAWBA 2	1	6	5	0	4	5	2	NA
CLINTON 1	2	1	1	1	1	3	2	NA
COOK 1	2	0	0	2	1	1	0	NA
COOK 2	2	0	1	2	1	2	0	NA
COOPER STATION	2	3	1	0	0	6	5	NA
CRYSTAL RIVER 3	0	1	2	3	3	7	5	NA
DAVIS-BESSE	1	4	1	4	1	0	2	NA
DIABLO CANYON 1	2	0	2	3	3	1	0	NA
DIABLO CANYON 2	3	2	1	2	6	1	0	NA
DRESDEN 2	0	1	1	0	1	3	0	NA
DRESDEN 3	0	2	2	0	0	2	1	NA
DUANE ARNOLD	0	0	2	4	5	1	0	NA
FARLEY 1	3	1	2	1	0	0	1	NA
FARLEY 2	1	4	0	1	1	0	1	NA
FERMI 2	2	0	2	2	0	2	2	NA
FITZPATRICK	0	0	1	0	4	2	3	NA
FORT CALHOUN	1	1	1	3	4	2	4	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	2	0	0	1	0	0	2	NA
GRAND GULF	0	1	0	2	0	0	2	NA
HADDAM NECK	0	5	2	1	1	3	1	NA
HATCH 1	0	1	1	2	2	0	2	NA
HATCH 2	0	1	2	2	2	0	1	NA
HOPE CREEK	4	3	5	5	2	0	0	NA
INDIAN POINT 2	3	1	2	1	4	3	0	NA
INDIAN POINT 3	2	0	1	0	2	0	4	NA
KEWAUNEE	2	0	2	0	0	2	2	NA
LASALLE 1	2	0	3	2	2	4	1	NA
LASALLE 2	2	0	2	1	2	4	1	NA
LIMERICK 1	2	7	5	3	8	10	7	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	1	NA
MAINE YANKEE	0	0	2	1	1	1	0	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/FABRICATION/INSTALLATION

(The latest quarter data are preliminary)

Plant Name	Year - Calender Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	4	2	3	6	5	3	1	NA
MCGUIRE 2	4	1	3	4	2	1	1	NA
MILLSTONE 1	1	2	1	0	1	3	2	NA
MILLSTONE 2	0	1	0	0	0	2	0	NA
MILLSTONE 3	0	4	0	0	1	1	1	NA
MONTICELLO	3	0	1	1	1	1	2	NA
NINE MILE PT. 1	3	3	2	1	1	0	1	NA
NINE MILE PT. 2	14	7	5	12	6	2	1	NA
NORTH ANNA 1	1	1	1	0	3	0	1	NA
NORTH ANNA 2	2	1	2	0	3	0	1	NA
OCONEE 1	2	3	2	1	1	3	3	NA
OCONEE 2	2	3	3	1	1	2	2	NA
OCONEE 3	2	2	2	1	1	2	2	NA
OYSTER CREEK	3	2	1	4	0	6	0	NA
PALISADES	3	0	3	1	2	3	1	NA
PALO VERDE 1	0	4	0	1	0	2	2	NA
PALO VERDE 2	1	3	1	3	2	2	2	NA
PALO VERDE 3	0	3	0	0	1	3	4	NA
PEACH BOTTOM 2	4	1	1	3	3	3	2	NA
PEACH BOTTOM 3	3	1	3	2	2	2	1	NA
PERRY	1	3	3	3	3	0	3	NA
PILGRIM	4	3	2	1	1	4	0	NA
POINT BEACH 1	0	2	1	2	0	1	3	NA
POINT BEACH 2	0	1	1	2	2	1	2	NA
PRAIRIE ISLAND 1	0	0	1	0	2	0	2	NA
PRAIRIE ISLAND 2	0	0	1	0	1	0	2	NA
QUAD CITIES 1	5	1	3	0	0	0	2	NA
QUAD CITIES 2	4	1	9	0	0	0	2	NA
RANCHO SECO	2	1	3	1	1	3	0	NA
RIVER BEND	2	2	1	0	2	2	4	NA
ROBINSON 2	4	3	2	2	4	2	1	NA
SALEM 1	5	5	2	3	0	1	7	NA
SALEM 2	3	2	3	3	1	3	5	NA
SAN ONOFRE 1	2	2	2	2	3	5	2	NA
SAN ONOFRE 2	2	3	2	4	3	1	3	NA
SAN ONOFRE 3	0	3	2	4	3	0	4	NA
SEABROOK	1	1	0	0	1	0	0	NA
SEQUOYAH 1	6	6	3	3	1	0	0	NA
SEQUOYAH 2	8	7	5	3	1	1	0	NA
SHEARON HARRIS	2	4	1	3	0	2	0	NA
SHOREHAM	3	0	0	0	1	0	0	NA
SOUTH TEXAS 1	4	6	6	8	4	5	1	NA
SOUTH TEXAS 2	NA	NA	NA	NA	1	1	1	NA
ST. LUCIE 1	1	0	0	0	0	0	0	NA
ST. LUCIE 2	1	0	0	0	0	1	0	NA
SUMMER	2	3	1	0	2	1	0	NA
SURRY 1	2	2	2	4	3	1	2	NA
SURRY 2	1	0	4	3	4	1	2	NA
SUSQUEHANNA 1	0	0	1	2	1	1	1	NA
SUSQUEHANNA 2	0	2	1	2	1	1	1	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/FABRICATION/INSTALLATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	1	0	0	0	0	0	NA
TROJAN	1	0	1	2	2	2	2	NA
TURKEY POINT 3	1	1	1	5	4	3	3	NA
TURKEY POINT 4	2	1	0	3	3	2	3	NA
VERMONT YANKEE	0	0	0	1	1	2	1	NA
VOGTLE 1	5	0	5	2	5	1	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	1	1	NA
WASH. NUCLEAR 2	1	3	5	4	0	4	6	NA
WATERFORD 3	1	1	5	0	4	2	0	NA
WOLF CREEK	4	1	4	4	6	1	1	NA
YANKEE-ROWE	0	0	1	0	2	0	1	NA
ZION 1	0	2	0	2	2	0	1	NA
ZION 2	0	1	0	2	3	0	2	NA

NA - Data were not available for this quarter. 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.

TABLE 9.21 CAUSE CODES

EQUIPMENT FAILURE(ELEC./ENVIRON.) (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
ARKANSAS 1	0	1	0	0	0	0	1	NA
ARKANSAS 2	0	0	0	0	0	0	0	NA
BEAVER VALLEY 1	1	0	0	0	0	1	0	NA
BEAVER VALLEY 2	0	0	0	2	0	0	0	NA
BIG ROCK POINT	0	0	0	0	1	0	0	NA
BRAIDWOOD 1	0	1	0	2	0	0	0	NA
BRAIDWOOD 2	0	0	0	1	1	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	0	0	2	0	1	0	NA
BYRON 2	0	0	1	2	0	0	0	NA
CALLAWAY	0	1	1	1	0	0	1	NA
CALVERT CLIFFS 1	1	0	0	0	0	0	0	NA
CALVERT CLIFFS 2	0	0	0	0	0	0	0	NA
CATAWBA 1	1	1	0	0	0	0	1	NA
CATAWBA 2	0	1	1	0	0	0	1	NA
CLINTON 1	0	0	1	0	1	0	0	NA
COOK 1	0	0	0	0	1	0	0	NA
COOK 2	0	0	0	0	0	0	0	NA
COOPER STATION	0	0	0	1	0	0	0	NA
CRYSTAL RIVER 3	1	0	0	0	0	0	1	NA
DAVIS-BESSE	0	0	0	1	0	1	1	NA
DIABLO CANYON 1	2	0	0	0	0	0	0	NA
DIABLO CANYON 2	0	0	0	0	0	1	0	NA
DRESDEN 2	0	0	0	1	0	2	0	NA
DRESDEN 3	0	0	0	0	0	1	0	NA
DUANE ARNOLD	0	0	0	0	0	1	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	1	0	0	0	0	1	NA
FITZPATRICK	0	0	0	0	0	0	0	NA
FORT CALHOUN	0	0	1	1	0	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	1	2	0	0	0	NA
GRAND GULF	1	1	0	0	0	1	0	NA
HADDAM NECK	0	0	0	0	0	0	0	NA
HATCH 1	0	0	0	1	0	1	0	NA
HATCH 2	0	0	0	1	0	0	0	NA
HOPE CREEK	0	0	0	0	2	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	0	0	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	0	NA
MAINE YANKEE	0	0	0	0	0	0	0	NA

TABLE 9.21 CAUSE CODES (CONTINUED)

EQUIPMENT FAILURE(ELEC./ENVIRON.) (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
MCGUIRE 1	1	0	1	0	0	1	0	NA
MCGUIRE 2	1	0	0	1	0	1	0	NA
MILLSTONE 1	0	0	0	0	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	0	0	0	0	1	0	0	NA
MONTICELLO	0	0	0	0	0	0	0	NA
NINE MILE PT. 1	0	0	0	0	0	1	0	NA
NINE MILE PT. 2	0	0	1	4	0	1	1	NA
NORTH ANNA 1	1	1	0	0	0	0	0	NA
NORTH ANNA 2	1	1	0	0	0	0	1	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	0	0	0	0	1	1	NA
PALISADES	0	0	0	0	0	0	0	NA
PALO VERDE 1	0	0	1	0	0	1	0	NA
PALO VERDE 2	0	0	0	0	0	0	0	NA
PALO VERDE 3	2	0	0	0	0	1	0	NA
PEACH BOTTOM 2	2	0	0	1	0	0	0	NA
PEACH BOTTOM 3	0	0	0	0	0	0	0	NA
PERRY	0	0	0	0	1	0	0	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	0	0	0	0	1	1	NA
QUAD CITIES 1	0	0	0	0	0	0	1	NA
QUAD CITIES 2	0	1	1	0	0	0	0	NA
RANCHO SECO	0	0	0	0	0	0	0	NA
RIVER BEND	1	0	0	0	0	0	0	NA
ROBINSON 2	0	0	1	0	0	0	0	NA
SALEM 1	0	0	0	0	1	1	1	NA
SALEM 2	0	0	3	0	1	1	0	NA
SAN ONOFRE 1	0	0	0	0	0	0	0	NA
SAN ONOFRE 2	0	1	1	0	1	1	1	NA
SAN ONOFRE 3	0	1	0	0	1	1	0	NA
SEABROOK	0	0	0	0	0	0	0	NA
SEQUOYAH 1	0	0	0	0	0	0	0	NA
SEQUOYAH 2	1	1	0	2	0	0	0	NA
SHEARON HARRIS	0	0	0	0	0	1	0	NA
SHOREHAM	0	0	0	0	0	0	0	NA
SOUTH TEXAS 1	2	1	0	0	0	0	0	NA
SOUTH TEXAS 2	NA	NA	NA	NA	0	0	0	NA
ST. LUCIE 1	0	0	0	0	0	0	0	NA
ST. LUCIE 2	0	0	0	0	0	1	0	NA
SUMMER	1	0	0	0	0	0	0	NA
SURRY 1	2	0	0	1	1	1	0	NA
SURRY 2	1	1	1	0	1	1	0	NA
SUSQUEHANNA 1	0	0	0	1	0	1	0	NA
SUSQUEHANNA 2	0	0	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 - Calender Quarter							
	87-4	88-1	88-2	88-3	88-4	89-1	89-2	89-3
THREE MILE ISL 1	0	0	0	0	0	0	0	NA
TROJAN	0	0	0	0	1	0	0	NA
TURKEY POINT 3	0	0	0	1	0	0	0	NA
TURKEY POINT 4	0	0	0	0	0	0	0	NA
VERMONT YANKEE	0	0	0	0	0	0	0	NA
VOGTLE 1	0	0	0	1	0	1	0	NA
VOGTLE 2	NA	NA	NA	NA	NA	1	0	NA
WASH. NUCLEAR 2	0	0	0	1	0	0	0	NA
WATERFORD 3	0	0	0	0	0	0	0	NA
WOLF CREEK	0	0	0	0	0	0	0	NA
YANKEE-ROWE	0	1	0	0	0	0	0	NA
ZION 1	0	0	0	0	0	0	0	NA
ZION 2	0	0	0	0	1	0	1	NA

NA - Data were not available for this quarter. 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.

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10. REVISION OF DATA CONTAINED IN THE SECOND QUARTER 1989 REPORT

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10. REVISION OF DATA CONTAINED IN THE SECOND QUARTER 1989 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 1989 report. These changes are summarized in Tables 10.1 through 10.8. In aggregate, they do not significantly alter the overall picture presented in the second quarter 1989 report.

TABLE 10.1 REVISIONS TO SCRAMS ABOVE 15% POWER/1000 CRITICAL HOURS (TABLE 9-3 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BEAVER VALLEY 2	4-87	3.50	3.51
PALO VERDE 1	3-88	3.07	2.05

TABLE 10.2 REVISIONS TO SCRAMS LESS THAN OR EQUAL TO 15% POWER (TABLE 9-4 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
PALO VERDE 1	3-88	0	1

TABLE 10.3 REVISIONS TO SAFETY SYSTEM ACTUATIONS (TABLE 9-5 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	2-89	0	4
BEAVER VALLEY 2	2-89	2	1
CRYSTAL RIVER 3	4-87	6	5
GRAND GULF	4-87	1	0
HOPE CREEK	2-89	2	1
INDIAN POINT 2	4-87	2	1
PEACH BOTTOM 2	2-89	1	0
YANKEE-ROWE	1-88	0	1

TABLE 10.4 REVISIONS TO SIGNIFICANT EVENTS (TABLE 9-6 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	2-89	1	2
MILLSTONE 1	2-88	0	1

TABLE 10.5 REVISIONS TO SAFETY SYSTEM FAILURES (TABLE 9-7 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BROWNS FERRY 1	2-89	0	2
BROWNS FERRY 2	2-89	1	3
BROWNS FERRY 3	2-89	0	2
BRUNSWICK 1	2-89	1	0
DRESDEN 3	2-89	2	1
FORT CALHOUN	2-89	0	1
MILLSTONE 1	2-89	4	2
NINE MILE PT. 1	2-89	0	1
OCONEE 2	2-89	3	2
OCONEE 3	2-89	2	3
PALO VERDE 1	2-89	0	1
PALO VERDE 2	2-89	0	1
PALO VERDE 3	2-89	1	2
PERRY	2-89	2	1
PILGRIM	2-89	4	0
QUAD CITIES 1	2-89	2	1
QUAD CITIES 2	2-89	2	1
SAN ONOFRE 3	2-89	1	0
TROJAN	2-89	4	2
VERMONT YANKEE	2-89	2	1
WASH. NUCLEAR 2	2-89	3	4

TABLE 10.6 REVISIONS TO FORCED OUTAGE RATE (TABLE 9-8 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
CLINTON 1	4-87	0	2
CLINTON 1	2-89	69	85
SOUTH TEXAS 2	2-89	0	45
VOGTLE 2	2-89	4	12

TABLE 10.7 REVISIONS TO EQUIPMENT FORCED OUTAGES/1000 CRITICAL HOURS (TABLE 9-9 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
CLINTON 1	4-87	3.41	0.00
CLINTON 1	1-88	2.67	0.00
CLINTON 1	4-88	1.03	0.52
DRESDEN 3	2-89	1.94	1.29
NINE MILE PT. 2	2-88	1.69	1.56
SALEM 2	2-89	2.06	1.55
SOUTH TEXAS 2	2-89	0.00	1.41
VOGTLE 2	2-89	1.12	2.23

TABLE 10.8 REVISIONS TO COLLECTIVE RADIATION EXPOSURE (TABLE 9-10 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BROWNS FERRY 1	3-88	36	120
BROWNS FERRY 1	4-88	76	87
BROWNS FERRY 1	1-89	42	53
BROWNS FERRY 2	3-88	36	120
BROWNS FERRY 2	4-88	76	87
BROWNS FERRY 2	1-89	42	53
BROWNS FERRY 3	3-88	36	120
BROWNS FERRY 3	4-88	76	87
BROWNS FERRY 3	1-89	42	53
FARLEY 1	1-89	35	34
FARLEY 2	1-89	35	34
HADDAM NECK	1-89	17	19
HOPE CREEK	1-89	117	110
MILLSTONE 1	1-89	47	41
MILLSTONE 2	1-89	533	470
PALO VERDE 1	1-89	23	25
PALO VERDE 2	1-89	23	25
PALO VERDE 3	1-89	23	25
PERRY	1-89	246	258
RANCHO SECO	1-89	27	34
RIVER BEND	1-89	105	106
ROBINSON 2	1-89	117	116
SALEM 1	1-89	9	7
SALEM 2	1-89	9	7
SEQUOYAH 1	1-88	NA	67
SEQUOYAH 1	1-89	302	[illegible]
SEQUOYAH 2	1-88	NA	67
SEQUOYAH 2	1-89	302	280

TABLE 10.9 REVISIONS TO CRITICAL HOURS (TABLE 9-11 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BEAVER VALLEY 2	4-87	1715	1709
SHOREHAM	1-89	0	3

TABLE 10.10 REVISIONS TO CAUSE CODES ADMINISTRATIVE CONTROL PROBLEM (TABLE 9.12 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	3-88	1	2
ARKANSAS 1	4-88	7	8
ARKANSAS 2	4-88	2	3
ARKANSAS 2	1-89	2	3
BROWNS FERRY 1	1-89	9	10
BROWNS FERRY 2	4-87	2	3
BROWNS FERRY 2	4-88	12	13
BROWNS FERRY 2	1-89	10	11
BROWNS FERRY 3	1-89	7	8
BRUNSWICK 1	4-88	4	5
BRUNSWICK 1	1-89	4	5
BRUNSWICK 2	4-88	5	6
CALVERT CLIFFS 1	3-88	1	2
CALVERT CLIFFS 2	1-89	5	6
CATAWBA 1	4-88	2	3
CATAWBA 1	1-89	3	4
CATAWBA 2	4-88	3	4
CATAWBA 2	1-89	6	7
CLINTON 1	1-89	9	10
DIABLO CANYON 1	1-88	3	5
DIABLO CANYON 1	4-88	2	3
DIABLO CANYON 2	1-88	1	2
DIABLO CANYON 2	4-88	8	9
INDIAN POINT 3	1-89	4	5
KEWAUNEE	1-89	4	5
LIMERICK 1	2-88	3	4
LIMERICK 1	1-89	9	10
MCGUIRE 2	3-88	7	8
NORTH ANNA 1	4-88	7	8
NORTH ANNA 2	4-88	6	7
PALISADES	1-89	2	3
QUAD CITIES 2	2-88	7	8
RANCHO SECO	1-89	1	2
RIVER BEND	4-87	7	8
SHOREHAM	1-89	1	2
SURRY 1	1-89	4	5
VOGTLE 1	4-87	10	11
WASH. NUCLEAR 2	4-88	3	4
WASH. NUCLEAR 2	1-89	4	5
WATERFORD 3	2-88	11	12

TABLE 10.10 REVISIONS TO CAUSE CODES (CONTINUED)
ADMINISTRATIVE CONTROL PROBLEM
(TABLE 9.12 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ZION 2	4-88	9	10

TABLE 10.11 REVISIONS TO CAUSE CODES LICENSED OPERATOR ERROR (TABLE 9.13 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	2-88	0	2
BEAVER VALLEY 1	4-87	0	1
BEAVER VALLEY 2	1-89	0	1
BRUNSWICK 1	4-88	3	4
BRUNSWICK 1	1-89	4	5
BYRON 1	4-87	0	1
BYRON 2	4-87	0	1
DIABLO CANYON 1	4-87	1	2
DIABLO CANYON 1	1-88	0	1
DIABLO CANYON 2	4-87	0	1
DIABLO CANYON 2	1-88	1	2
DRESDEN 2	3-88	0	1
GINNA	3-88	0	1
HOPE CREEK	4-87	0	1
KEWAUNEE	2-88	0	1
MCGUIRE 1	4-87	1	2
MCGUIRE 2	4-87	1	2
MONTICELLO	4-87	1	2
NINE MILE PT. 2	4-87	8	9
OYSTER CREEK	4-88	0	1
PALISADES	1-88	0	1
PEACH BOTTOM 3	2-88	0	1
PERRY	2-88	3	5
ROBINSON 2	4-87	0	1
SALEM 1	4-87	1	2
SEQUOYAH 2	2-88	4	5
SHEARON HARRIS	4-88	1	2
SURRY 2	3-88	1	2
WASH. NUCLEAR 2	3-88	1	2
WOLF CREEK	1-88	0	1
ZION 1	1-88	1	2
ZION 1	2-88	0	1

TABLE 10.12 REVISIONS TO CAUSE CODES OTHER PERSONNEL ERROR (TABLE 9.4 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	4-88	4	5
ARKANSAS 2	1-88	4	5
BRAIDWOOD 1	3-88	0	1
BRAIDWOOD 2	3-88	2	4
BRAIDWOOD 2	1-89	0	1
BROWNS FERRY 1	1-88	3	4
BROWNS FERRY 2	1-88	3	4
BROWNS FERRY 3	4-87	1	2
BROWNS FERRY 3	1-88	2	3
BRUNSWICK 2	4-88	4	5
BYRON 1	4-87	1	2
CALLAWAY	2-88	0	1
CALVERT CLIFFS 2	1-88	0	1
CATAWBA 1	2-88	1	2
CATAWBA 2	1-88	7	9
CLINTON 1	1-88	2	3
COOK 1	3-88	3	4
COOPER STATION	1-88	2	3
DAVIS-BESSE	1-88	1	2
DIABLO CANYON 1	4-87	3	5
DIABLO CANYON 2	4-88	5	6
DRESDEN 2	1-89	3	2
DRESDEN 3	1-88	0	1
DRESDEN 3	1-89	1	0
FARLEY 1	4-87	1	2
FARLEY 1	4-88	3	4
FERMI 2	4-87	2	3
FERMI 2	2-88	1	2
GRAND GULF	4-87	2	3
HADDAM NECK	3-88	1	2
HADDAM NECK	1-89	0	1
HATCH 2	3-88	1	2
HOPE CREEK	3-38	2	3
HOPE CREEK	4-88	6	7
INDIAN POINT 2	4-87	3	4
LASALLE 1	2-88	3	4
LASALLE 1	4-88	2	3
LASALLE 2	2-88	4	5
MCGUIRE 2	2-88	3	4
MILLSTONE 3	4-87	5	6

TABLE 10.12 REVISIONS TO CAUSE CODES (CONTINUED)
OTHER PERSONNEL ERROR
(TABLE 9.14 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
NINE MILE PT. 1	1-88	3	4
NINE MILE PT. 2	4-87	8	11
NINE MILE PT. 2	1-88	2	3
OYSTER CREEK	3-88	1	2
PALO VERDE 1	3-88	1	2
PEACH BOTTOM 2	2-88	4	5
PEACH BOTTOM 2	4-88	3	4
PEACH BOTTOM 3	2-88	3	5
PERRY	1-88	3	4
PRAIRIE ISLAND 2	2-88	0	1
QUAD CITIES 2	2-88	2	3
RIVER BEND	1-88	0	1
RIVER BEND	3-88	2	3
ROBINSON 2	1-89	2	3
SALEM 1	4-88	0	1
SALEM 2	4-88	1	2
SAN ONOFRE 2	2-88	2	1
SEQUOYAH 1	4-87	1	2
SEQUOYAH 1	3-88	4	6
SEQUOYAH 2	4-87	1	2
SEQUOYAH 2	3-88	5	7
SOUTH TEXAS 2	1-89	0	1
SUMMER	1-88	1	2
SUMMER	1-89	2	3
SURRY 1	1-89	3	4
SUSQUEHANNA 1	2-88	1	2
SUSQUEHANNA 1	3-88	1	2
SUSQUEHANNA 2	2-88	2	3
SUSQUEHANNA 2	3-88	0	1
VOGTLE 1	4-87	1	4
VOGTLE 1	3-88	3	4
WASH. NUCLEAR 2	2-88	3	5
WATERFORD 3	2-88	9	10
ZION 2	4-88	4	6

TABLE 10.13 REVISIONS TO CAUSE CODES MAINTENANCE RELATED (TABLE 9.15 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	4-88	7	8
ARKANSAS 1	1-89	3	4
ARKANSAS 2	1-88	2	3
ARKANSAS 2	1-89	3	4
BIG ROCK POINT	1-89	1	2
BROWNS FERRY 2	4-88	22	23
BROWNS FERRY 2	1-89	11	12
BRUNSWICK 1	1-89	3	5
CALVERT CLIFFS 2	1-89	5	6
CATAWBA 1	4-88	4	5
CATAWBA 1	1-89	8	9
CATAWBA 2	1-88	15	17
CATAWBA 2	1-89	9	10
CLINTON 1	1-89	10	11
DIABLO CANYON 1	1-88	9	11
DIABLO CANYON 1	4-88	3	4
DIABLO CANYON 2	1-88	4	5
DIABLO CANYON 2	4-88	10	12
HADDAM NECK	1-89	0	1
KEWAUNEE	1-89	5	6
LIMERICK 1	1-89	8	11
MCGUIRE 2	3-88	9	10
NORTH ANNA 2	4-87	6	7
NORTH ANNA 2	1-89	2	3
PALISADES	1-89	2	3
PALO VERDE 2	1-89	1	2
PALO VERDE 3	1-89	2	3
PEACH BOTTOM 3	1-88	1	2
PILGRIM	1-88	7	8
PILGRIM	2-88	5	4
PRAIRIE ISLAND 2	2-88	1	2
QUAD CITIES 1	2-88	2	3
QUAD CITIES 2	2-88	11	12
ROBINSON 2	1-89	4	5
SALEM 1	1-89	9	10
SHOREHAM	1-89	4	5
SOUTH TEXAS 2	1-89	6	7
SUMMER	1-89	3	4
SURRY 1	1-89	5	6
VOGTLE 1	4-87	11	12

TABLE 10.13 REVISIONS TO CAUSE CODES (CONTINUED)
MAINTENANCE RELATED
(TABLE 9.15 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
WASH. NUCLEAR 2	4-88	4	5
WATERFORD 3	2-88	15	16
WOLF CREEK	1-88	2	3
YANKEE-ROWE	2-88	2	1
ZION 1	1-89	4	5
ZION 2	2-88	1	2
ZION 2	4-88	12	13

TABLE 10.14 REVISIONS TO CAUSE CODES
MAINTENANCE SUB-CATEGORIES
MAINTENANCE PERSONNEL ERROR
(TABLE 9.16 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	4-88	4	5
ARKANSAS 2	1-88	1	2
CALVERT CLIFFS 2	1-89	3	4
CATAWBA 2	1-88	4	5
DIABLO CANYON 2	4-88	6	7
HADDAM NECK	1-89	0	1
INDIAN POINT 3	1-89	2	3
LIMERICK 1	1-89	3	4
MCGUIRE 2	3-88	3	4
PRAIRIE ISLAND 2	2-88	0	1
QUAD CITIES 2	2-88	5	6
ROBINSON 2	1-89	1	2
SOUTH TEXAS 2	1-89	1	2
SUMMER	1-89	1	2
SURRY 1	1-89	3	4
ZION 2	4-88	3	4

TABLE 10.15 REVISIONS TO CAUSE CODES MAINTENANCE SUB-CATEGORIES PERSONNEL ERROR DURING TEST/CALIB. (TABLE 9.17 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	4-88	3	4
ARKANSAS 2	1-89	1	2
BROWNS FERRY 2	4-88	13	14
BROWNS FERRY 2	1-89	5	6
BRUNSWICK 1	1-89	1	2
CATAWBA 1	4-88	1	2
CATAWBA 1	1-89	1	2
CATAWBA 2	1-88	6	8
CATAWBA 2	4-88	2	3
CATAWBA 2	1-89	4	5
CLINTON 1	1-89	8	9
DIABLO CANYON 1	1-88	3	5
DIABLO CANYON 1	4-88	1	2
DIABLO CANYON 2	1-88	1	2
DIABLO CANYON 2	4-88	4	5
KEWAUNEE	1-89	4	5
PALISADES	1-89	1	2
RANCHO SECO	1-89	0	1
SAN ONOFRE 2	2-88	3	2
SHOREHAM	1-89	1	2
VOGTLE 1	4-87	9	10
WASH. NUCLEAR 2	4-88	3	4
WATERFORD 3	2-88	11	12
WOLF CREEK	1-88	0	1

TABLE 10.16 REVISIONS TO CAUSE CODES MAINTENANCE SUB-CATEGORIES MAINTENANCE EQUIPMENT FAILURE (TABLE 9.18 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	1-89	1	2
BIG ROCK POINT	1-89	0	1
BRUNSWICK 1	1-89	0	1
BYRON 2	1-89	1	0
CATAWBA 2	1-88	6	7
CATAWBA 2	4-88	4	3
DRESDEN 2	1-89	3	2
DRESDEN 3	1-89	2	1
INDIAN POINT 3	1-89	1	0
LIMERICK 1	1-89	0	1
NORTH ANNA 2	4-87	0	1
NORTH ANNA 2	1-89	0	1
PALO VERDE 2	1-89	1	2
PEACH BOTTOM 3	1-88	0	1
PILGRIM	1-88	0	1
PILGRIM	2-88	3	2
QUAD CITIES 1	2-88	0	1
RANCHO SECO	1-89	2	1
SAN ONOFRE 2	2-88	4	5
SEQUOYAH 1	1-89	2	1
ZION 1	1-89	0	1
ZION 2	2-88	0	1

TABLE 10.17 REVISIONS TO CAUSE CODES MAINTENANCE SUB-CATEGORIES POTENTIAL MAINTENANCE PROBLEM (TABLE 9.19 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
BRUNSWICK 1	1-89	0	1
CATAWBA 2	1-88	4	5
CATAWBA 2	4-88	3	2
LIMERICK 1	1-89	1	2
NORTH ANNA 2	4-87	1	2
PALO VERDE 3	1-89	1	2
PEACH BOTTOM 3	1-88	0	1
PILGRIM	1-88	1	2
PILGRIM	2-88	1	0
QUAD CITIES 1	2-88	0	1
RANCHO SECO	1-89	1	0
SALEM 1	1-89	0	1
SAN ONOFRE 2	2-88	3	4
YANKEE-ROWE	2-88	1	0
ZION 2	2-88	1	2

TABLE 10.18 REVISIONS TO CAUSE CODES DESIGN/FABRICATION/INSTALLATION (TABLE 9.20 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 1	2-88	0	3
ARKANSAS 1	3-88	5	8
ARKANSAS 1	4-88	4	6
ARKANSAS 1	1-89	3	8
ARKANSAS 2	1-88	2	3
ARKANSAS 2	1-89	0	1
BEAVER VALLEY 2	4-88	1	2
BROWNS FERRY 1	1-89	6	7
BROWNS FERRY 2	1-89	7	8
BROWNS FERRY 3	1-89	6	7
BRUNSWICK 1	1-89	3	2
CALVERT CLIFFS 1	1-89	1	2
CATAWBA 1	1-89	4	5
CATAWBA 2	1-88	5	6
CATAWBA 2	2-88	4	5
CATAWBA 2	4-88	3	4
CATAWBA 2	1-89	4	5
DIABLO CANYON 1	4-88	2	3
DIABLO CANYON 2	4-88	5	6
DRESDEN 2	4-88	0	1
FORT CALHOUN	1-89	1	2
NORTH ANNA 1	4-88	1	3
NORTH ANNA 2	4-88	1	3
PILGRIM	2-88	1	2
PRAIRIE ISLAND 2	2-88	0	1
QUAD CITIES 2	2-88	8	9
RANCHO SECO	1-89	2	3
ROBINSON 2	1-89	1	2
SALEM 1	4-87	4	5
SALEM 2	1-88	1	2
WASH. NUCLEAR 2	1-89	3	4
WATERFORD 3	2-88	4	5
YANKEE-ROWE	2-88	0	1

TABLE 10.19 REVISIONS TO CAUSE CODES EQUIPMENT FAILURE (ELEC./ENVIRON.) (TABLE 9.21 OF THE SEPTEMBER 1989 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
MCGUIRE 2	3-88	0	1
PALO VERDE 2	1-89	1	0
ROBINSON 2	1-89	1	0
SAN ONOFRE 2	1-88	0	1
SAN ONOFRE 3	1-88	0	1
SAN ONOFRE 3	1-89	0	1