

**PERFORMANCE INDICATORS FOR OPERATING
COMMERCIAL NUCLEAR POWER REACTORS
Report for Second Quarter 1990
Data through June 1990**

OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

PART I

U.S. NUCLEAR REGULATORY COMMISSION



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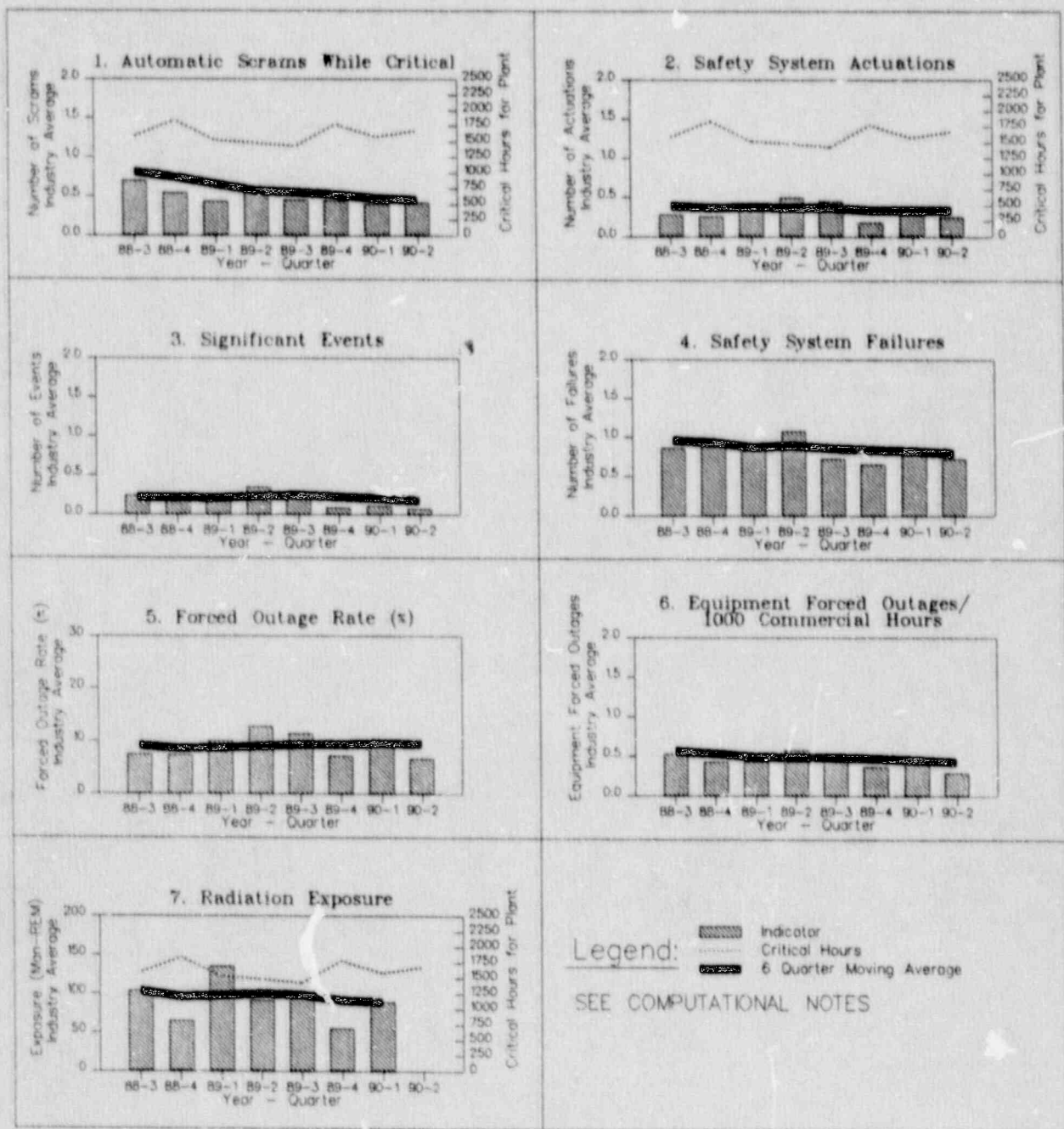


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FIGURE 1

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



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 changes to monthly operating reports submitted by utilities, updates to radiation exposure data, and continuing quality checks on the data.

Adjustments to Industry Average:

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

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

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

Shoreham ceased operation on August 13, 1989, and will be excluded from all performance indicator calculations after the third quarter 1989.

Fort St. Vrain ceased all operations on August 16, 1989, and will be excluded from all performance indicator calculations after the third quarter 1989.

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

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

* Extended shutdown began prior to 88-3

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

AUTOMATIC SCRAMS WHILE CRITICAL

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

SAFETY SYSTEM ACTUATIONS

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

SIGNIFICANT EVENTS

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

SAFETY SYSTEM FAILURES

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

FORCED OUTAGE RATE

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

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

EQUIPMENT FORCED OUTAGES per 1000 COMMERCIAL HOURS

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

COLLECTIVE RADIATION EXPOSURE

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



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.

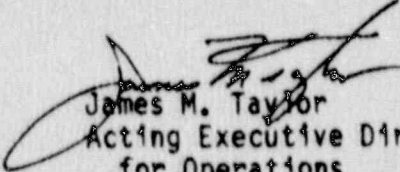
It should be recognized that performance indicators have limitations and are subject to misinterpretation. Therefore, caution is warranted in the interpretation and use of the data. The application of performance indicators for purposes and in manners other than those stated above will be counter to 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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ANALYSIS OF THE PERFORMANCE INDICATOR DATA THROUGH JUNE 1990

1. INTRODUCTION

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

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

2. BACKGROUND

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

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

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

3. DEFINITIONS OF INDICATORS

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

3.1 AUTOMATIC SCRAMS WHILE CRITICAL (SCRAMS)

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

3.2 Safety System Actuations (SSA)

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

3.3 Significant Events (SE)

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

3.4 Safety System Failures (SSF)

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

3.5 Forced Outage Rate (FOR)

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

3.6 Equipment Forced Outages Per 1000 Commercial Hours (EFO)

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

3.7 Collective Radiation Exposure

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

3.8 Cause Code Trends

The cause code indicator captures the plant's trends for licensed operator errors, other personnel errors, equipment failures (electronic piece-part or environmental-related failures), design/construction/installation/fabrication problems, administrative control problems, and maintenance problems. 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 third and fourth quarters of 1989, and the first and second quarters of 1990. Part II also provides a tabular listing of PIs, cause codes and critical hours by quarter for each plant. In addition, overall industry summary tables provide the raw data, the moving average for the most recent two quarters (two-quarter period), and the moving average for the most recent six quarters

(six-quarter period) for each performance indicator (except moving averages for collective radiation exposure and cause codes) for each plant.

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

4. DISPLAY OF PERFORMANCE INDICATOR DATA

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

4.1 Quarterly Data

Figures 4.1 through 4.114 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, quarterly industry mean values¹ to provide a comparative performance level, and the six-quarter moving averages to show trends. Bar charts of older plants include the older plant mean values; charts for newer plants² include both the newer plant and the older plant mean values. These charts give detailed illustrations of the indicator data at given plants. In addition, a cause code trend window provides a graphical depiction of the trends in the six quarter moving averages of the cause codes for each plant.

4.2 Plant Summaries

Figures 4.1 through 4.114 consist of two bar charts that provide profiles of each plant's performance indicator trends and the corresponding performance indicator values.³ The left chart of each figure shows the number of standard deviations by which the moving average for the most recent two-quarter period varies from the plant's own moving average for the current six-quarter period. The right chart of each figure shows the number of standard deviations by which the plant's moving average for the most recent six quarters (current six-quarter period) varies from the industry mean.

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

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

3. For cause codes, Figures 4.1 through 4.114 reflect trends only.

4.3 PLANT SUMMARIES AND QUARTERLY DATA FIGURES

FIGURE 4.1

ARKANSAS 1

88-3 to 90-2

Legend:

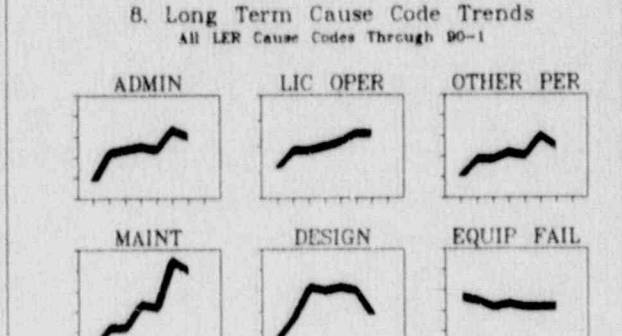
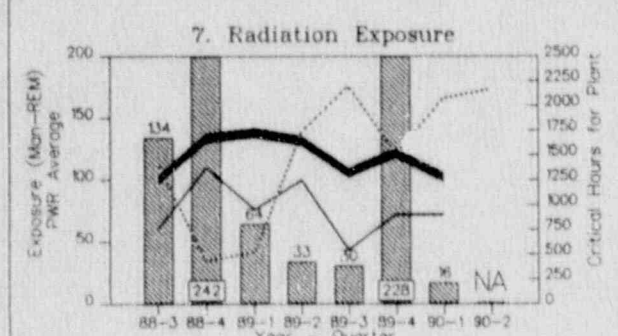
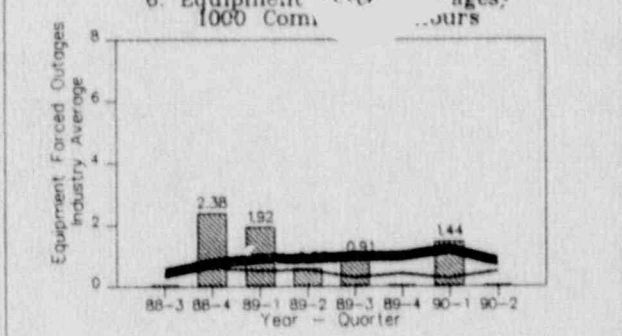
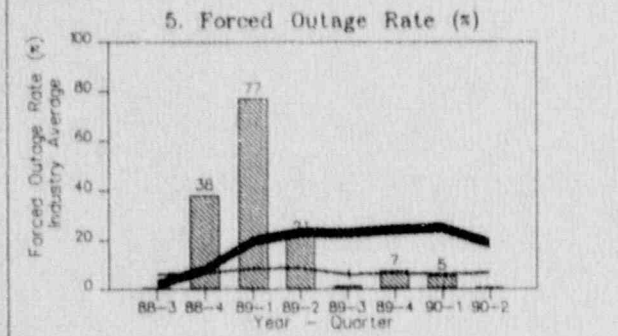
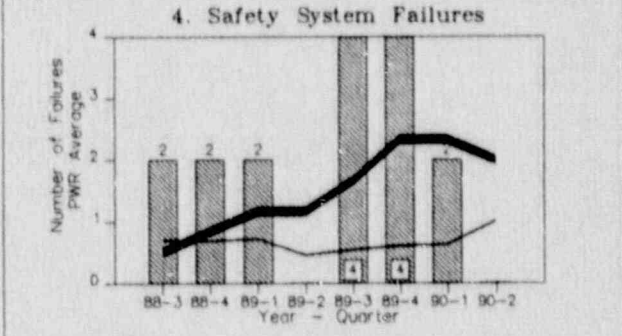
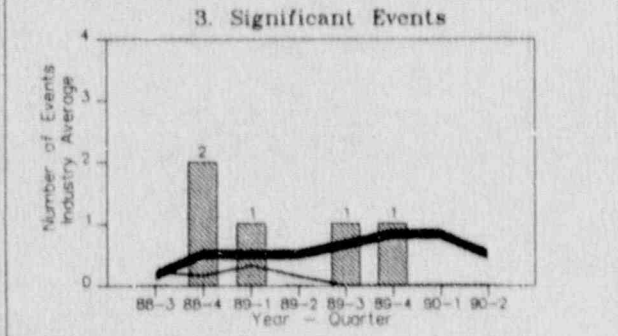
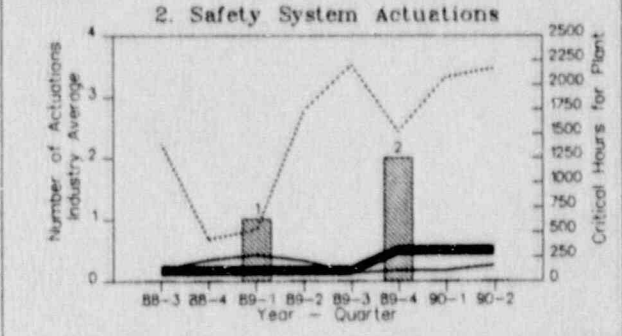
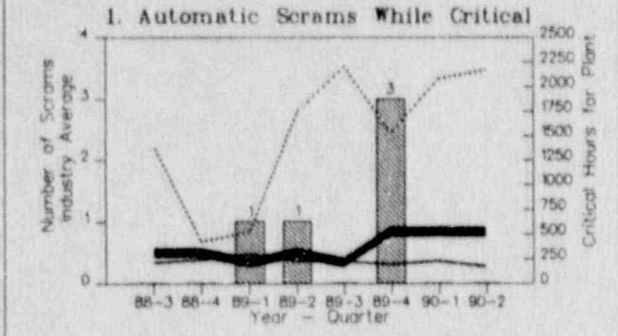


FIGURE 4.1

ARKANSAS 1

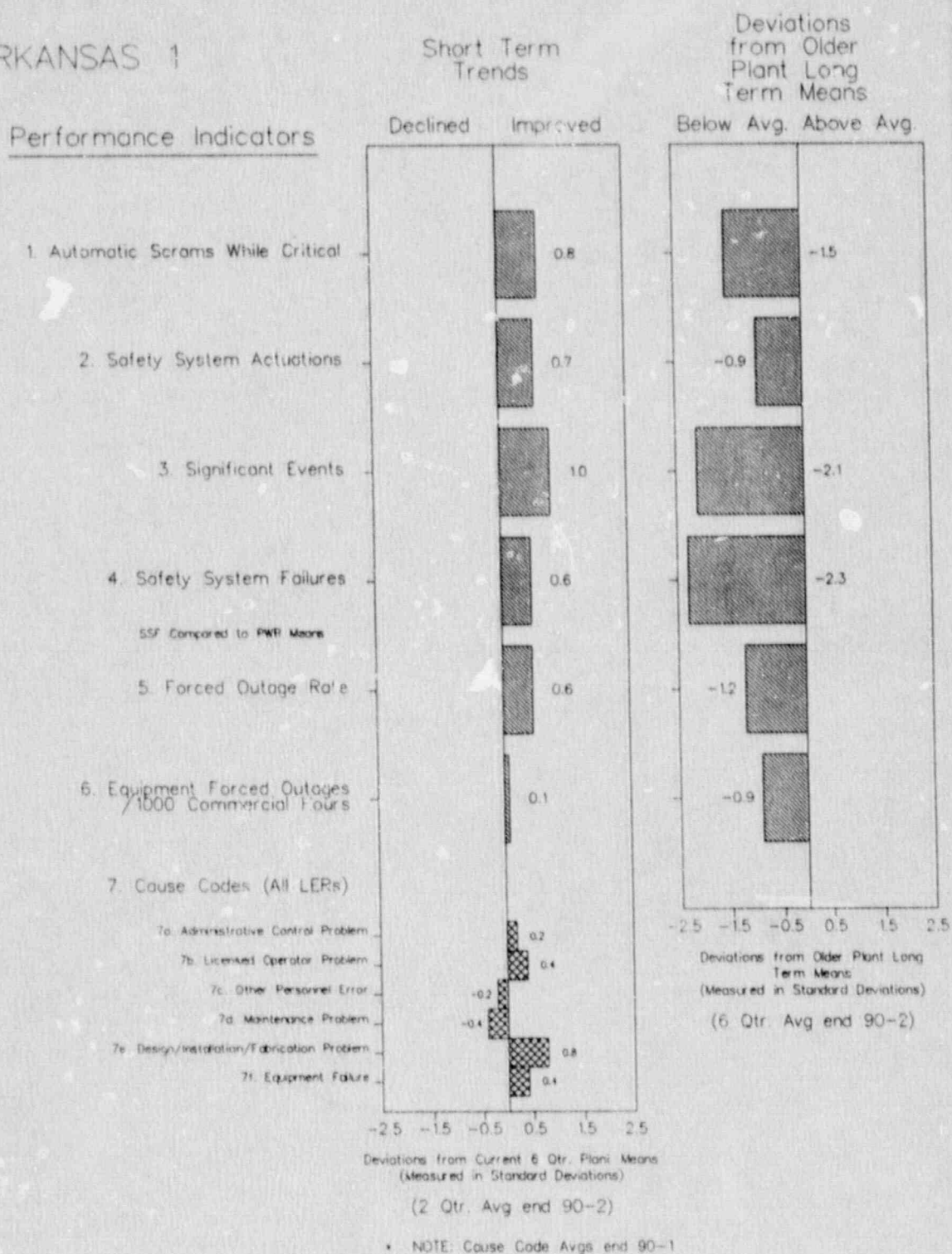


FIGURE 4.2

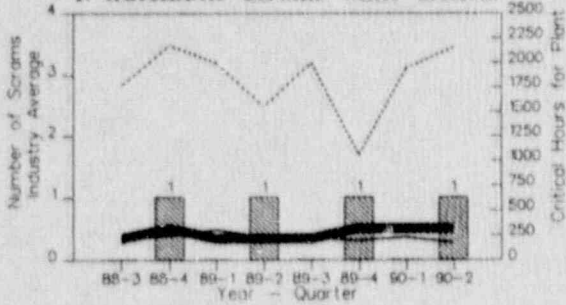
ARKANSAS 2

88-3 to 90-2

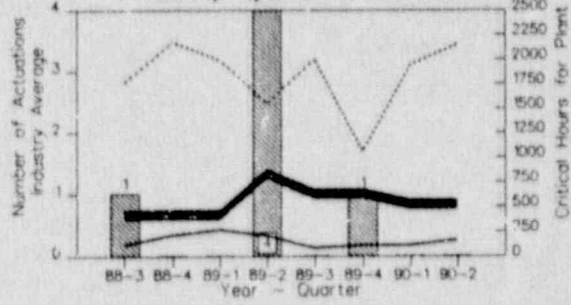
Legend:

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

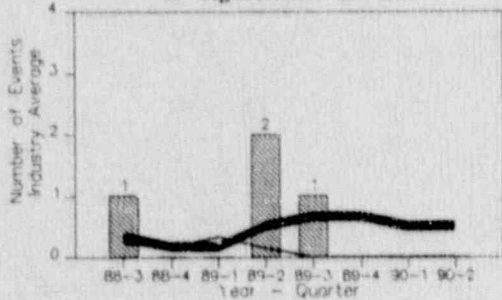
1. Automatic Scrums While Critical



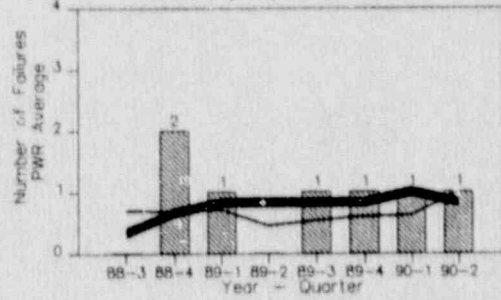
2. Safety System Actuations



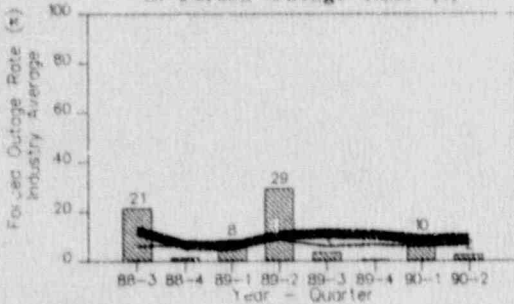
3. Significant Events



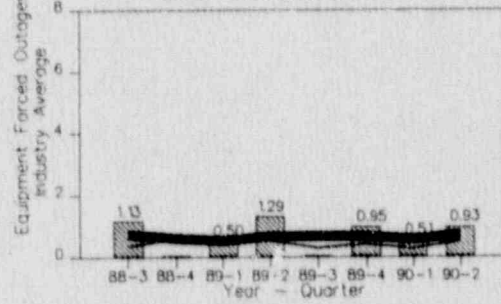
4. Safety System Failures



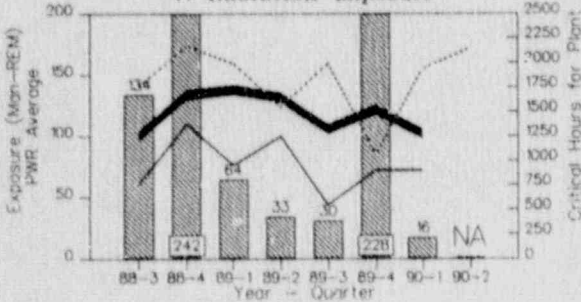
5. Forced Outage Rate (%)



6. Equipment Forced Outages/
1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

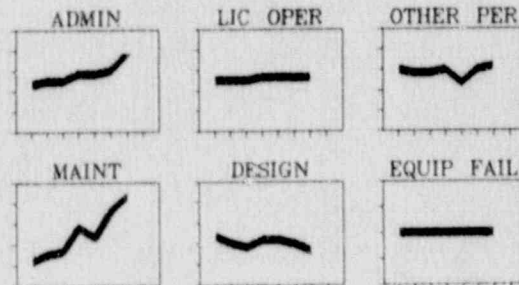


FIGURE 4.2

ARKANSAS 2

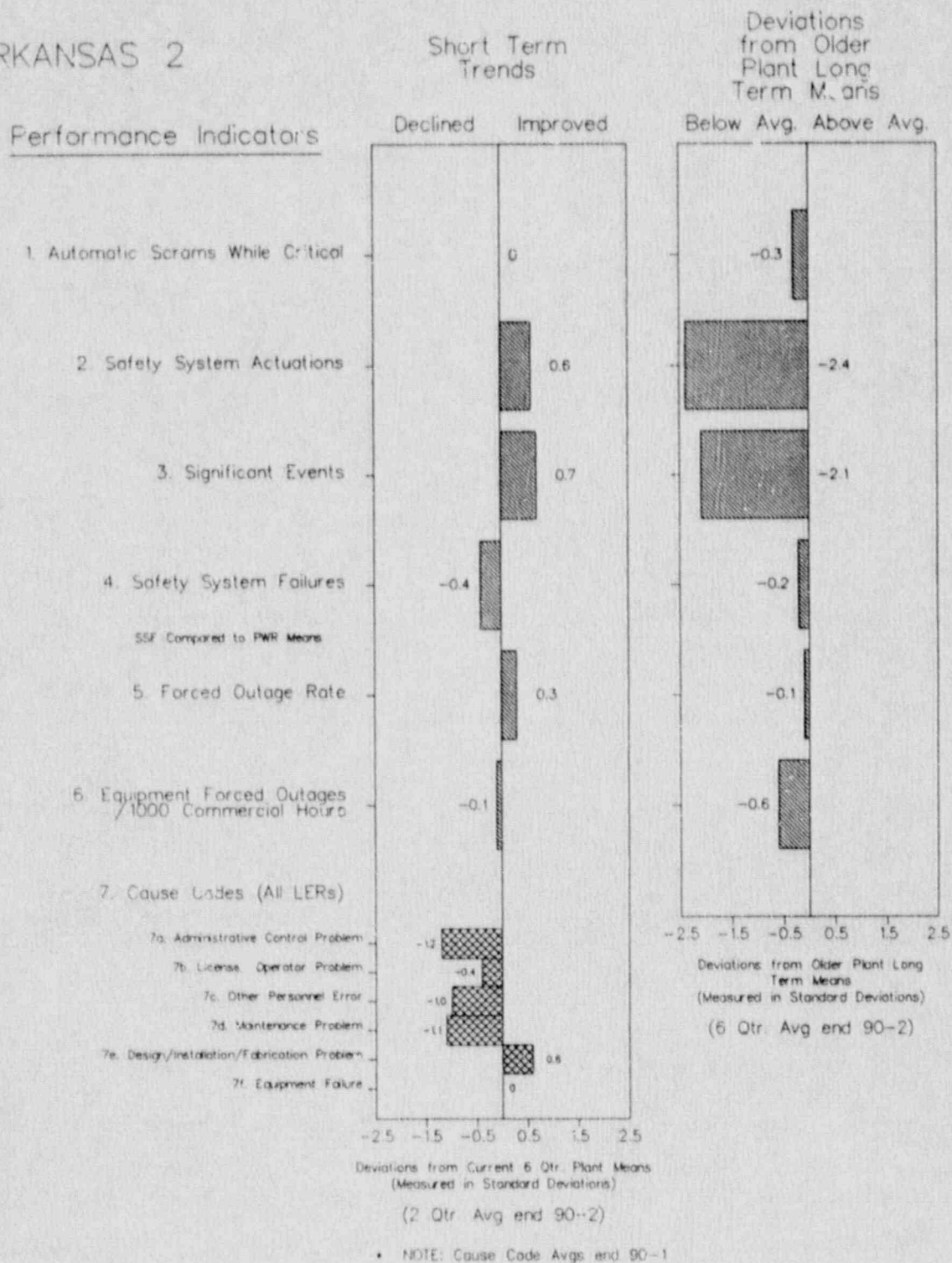


FIGURE 4.3

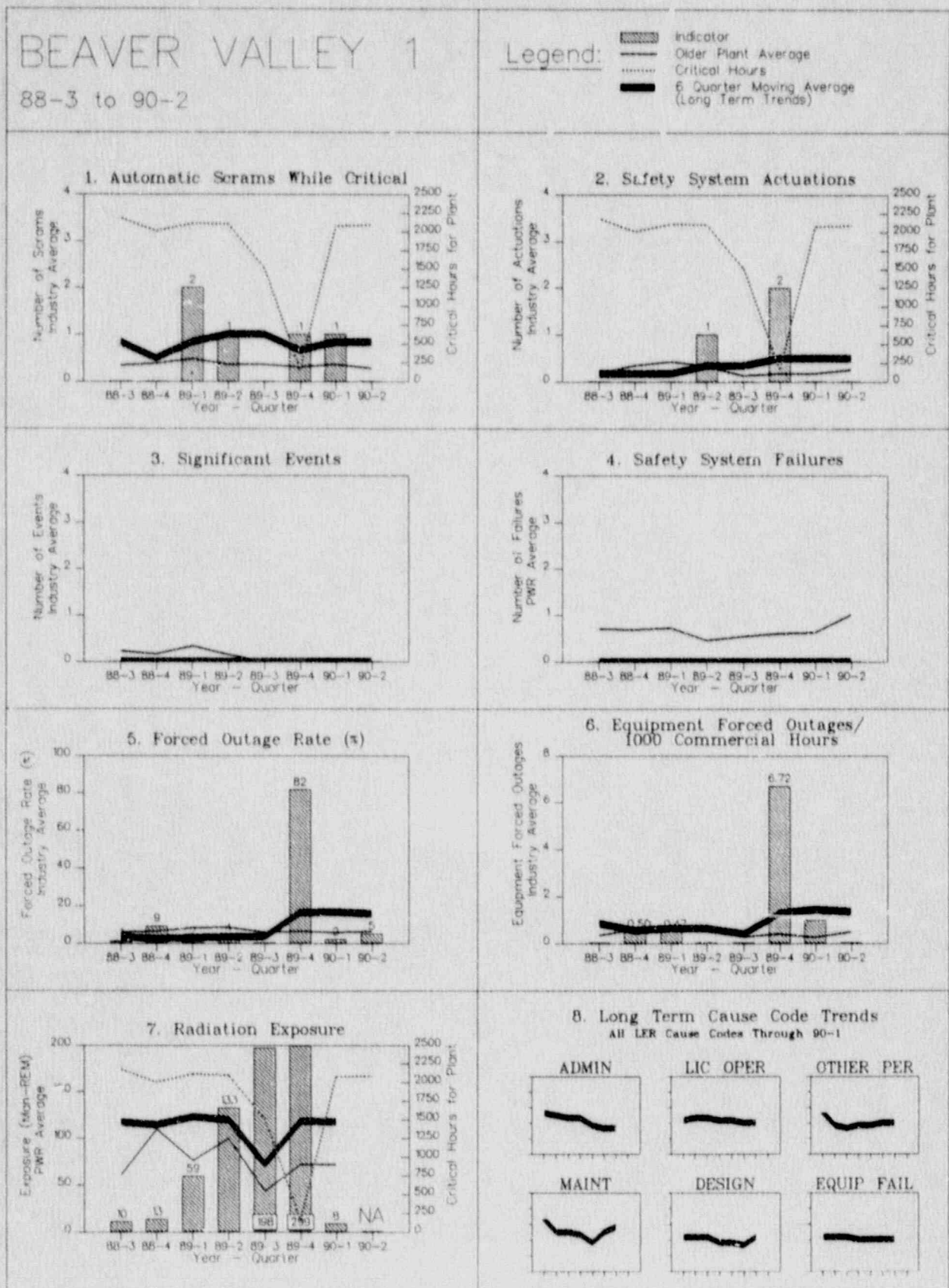


FIGURE 4.3

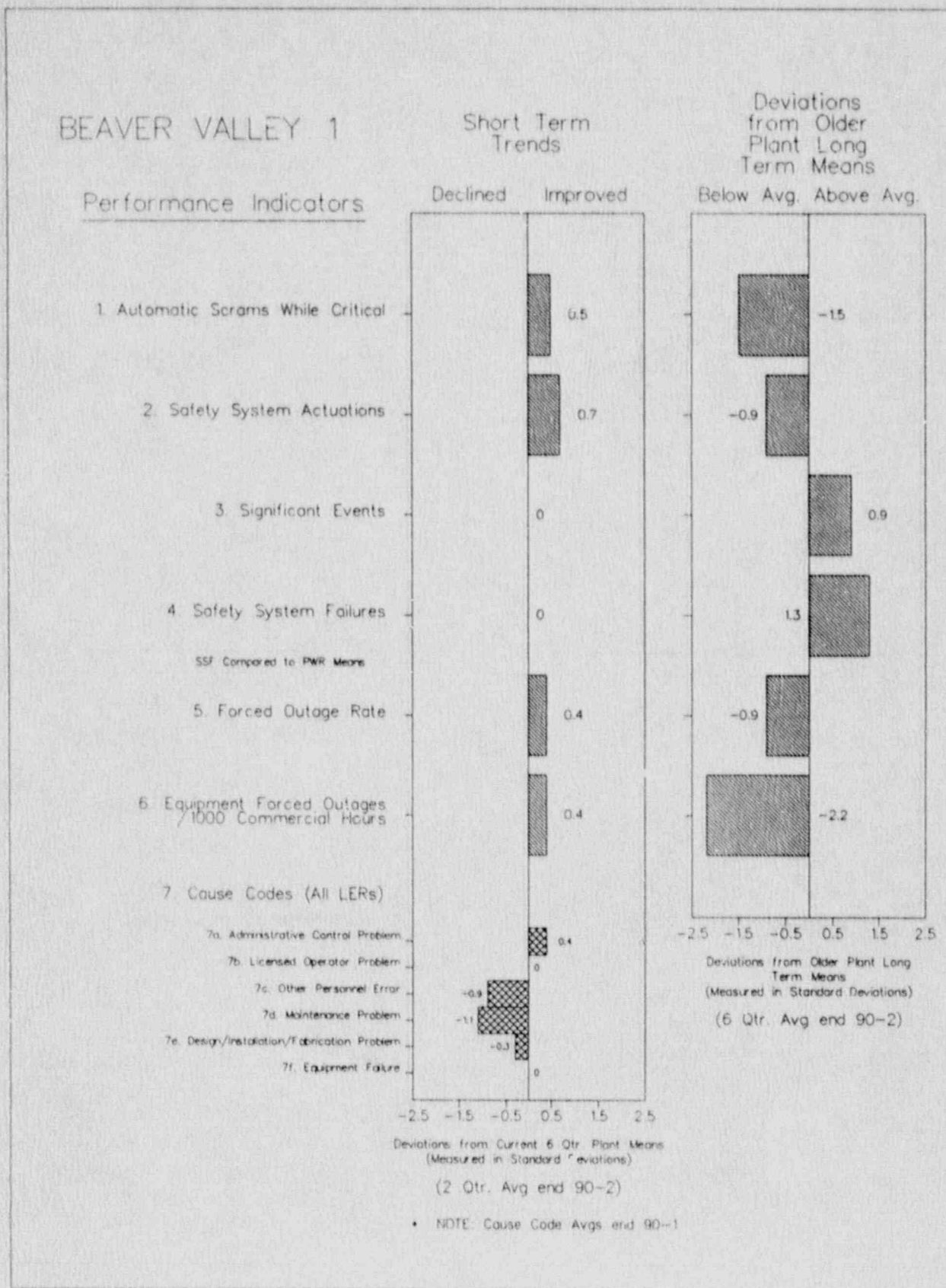


FIGURE 4.4

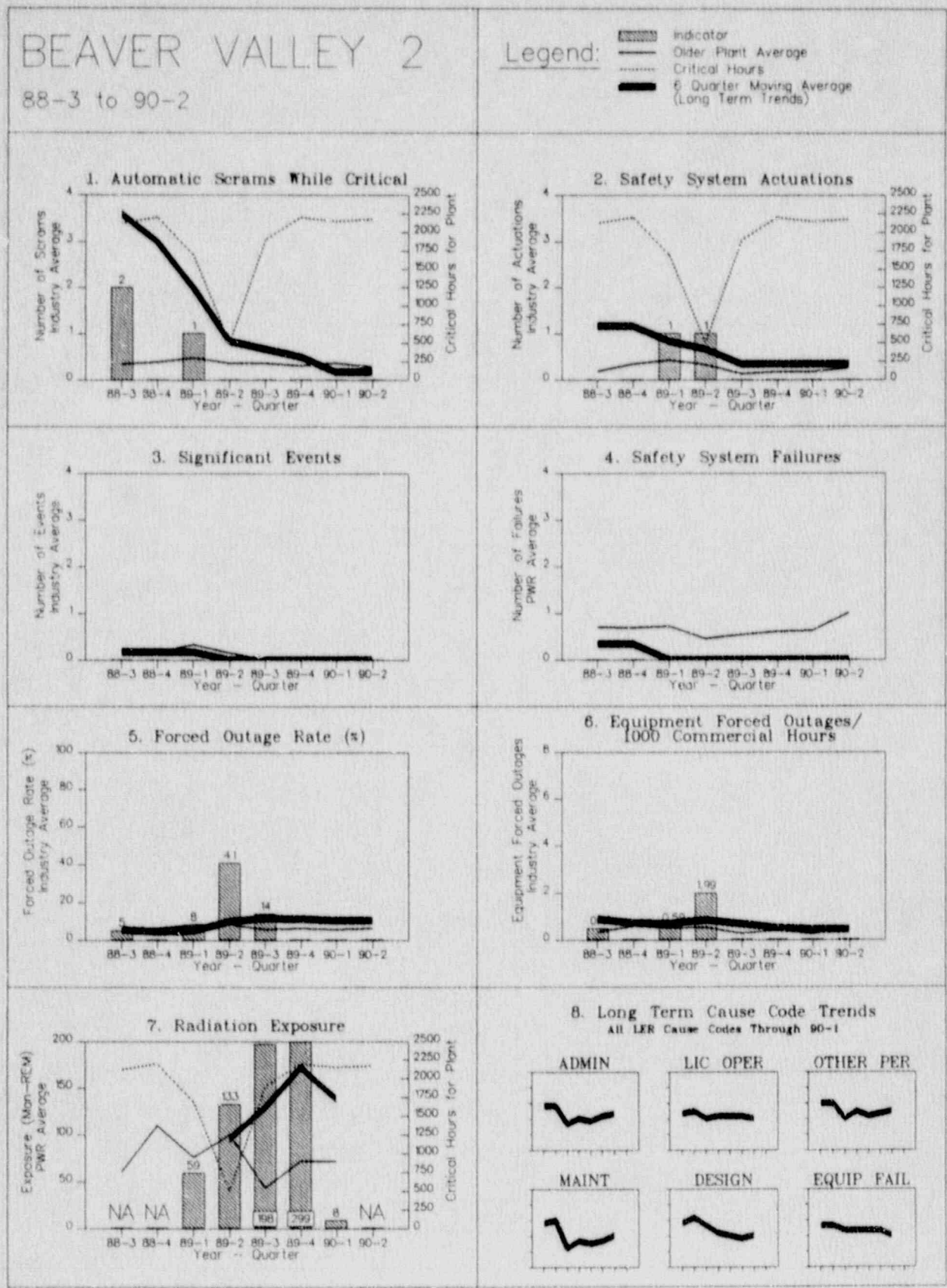


FIGURE 4.4

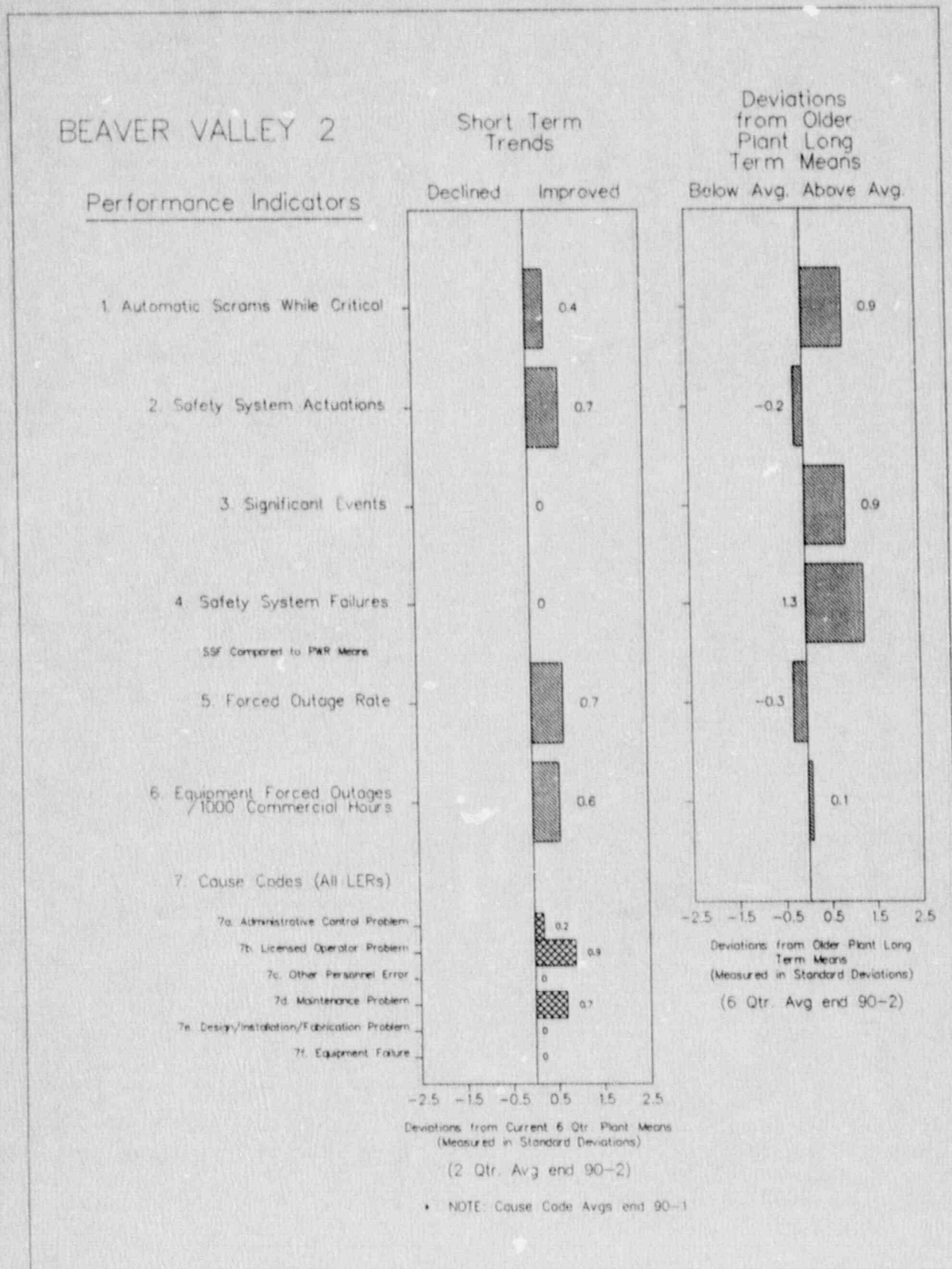


FIGURE 4.5

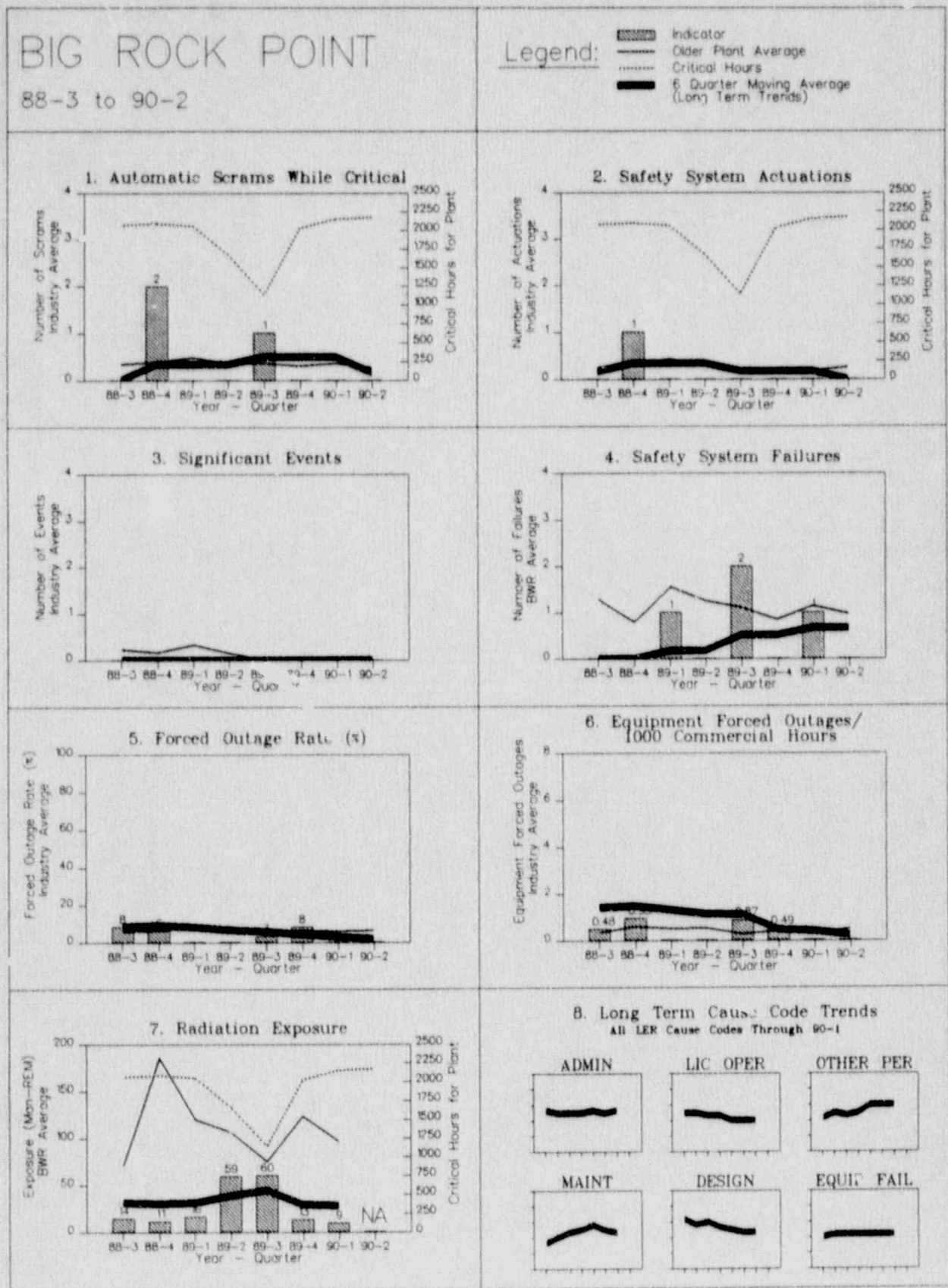


FIGURE 4.5

BIG ROCK POINT

Performance Indicators

Short Term Trends

Declined Improved

Deviations from Older Plant Long Term Means

Below Avg. Above Avg.

1. Automatic Scrams While Critical

0.4

0.9

2. Safety System Actuations

0

1.3

3. Significant Events

0

0.9

4. Safety System Failures

0.2

0.8

SSF Compared to BWR Means

5. Forced Outage Rate

0.6

0.8

6. Equipment Forced Outages / 1000 Commercial Hours

0.7

0.6

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.2

7b. Licensed Operator Problem

0

7c. Other Personnel Error

0.9

7d. Maintenance Problem

1.2

7e. Design/Installation/Fabrication Problem

-0.4

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.6

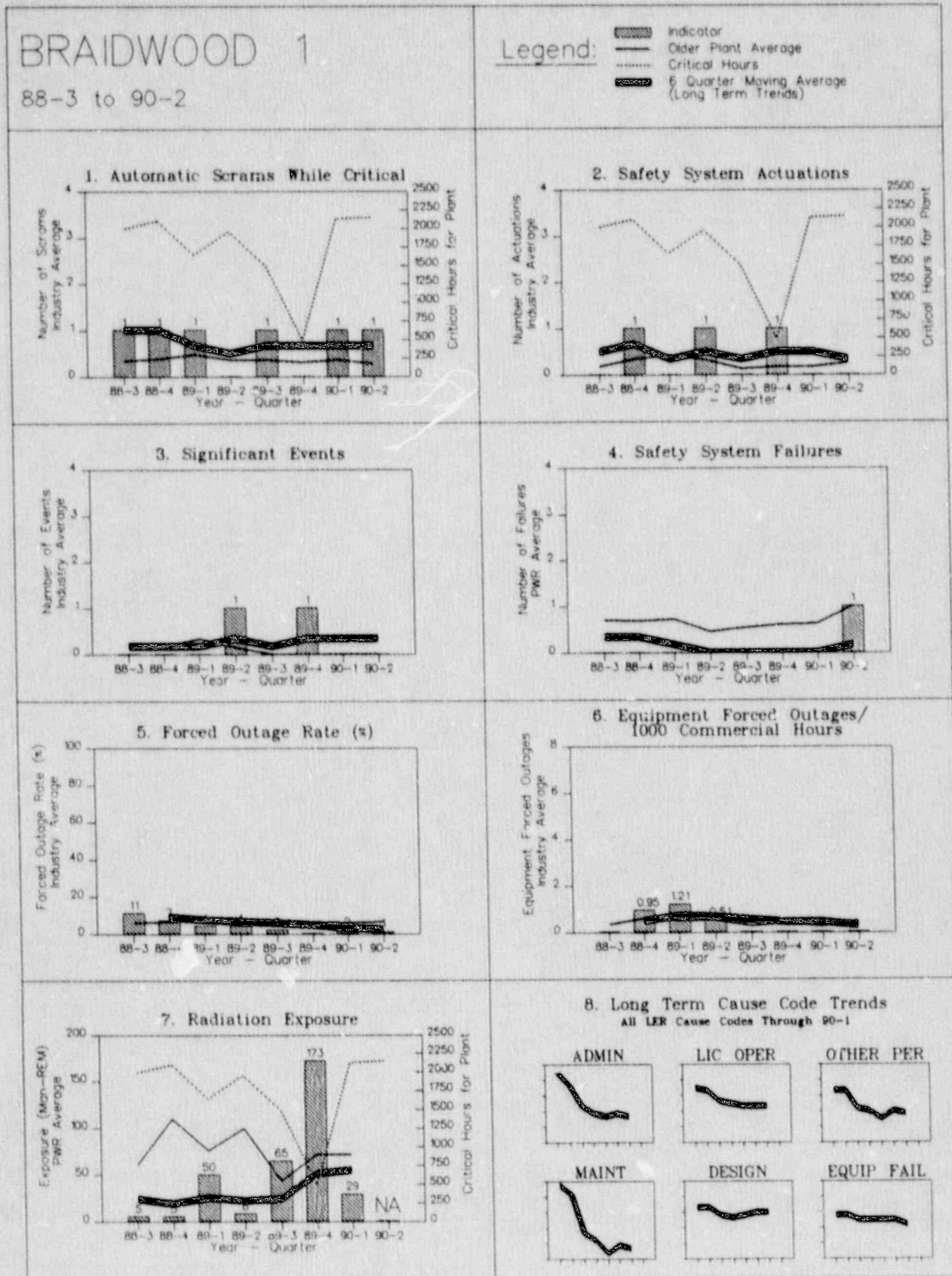


FIGURE 4.6

BRAIDWOOD 1

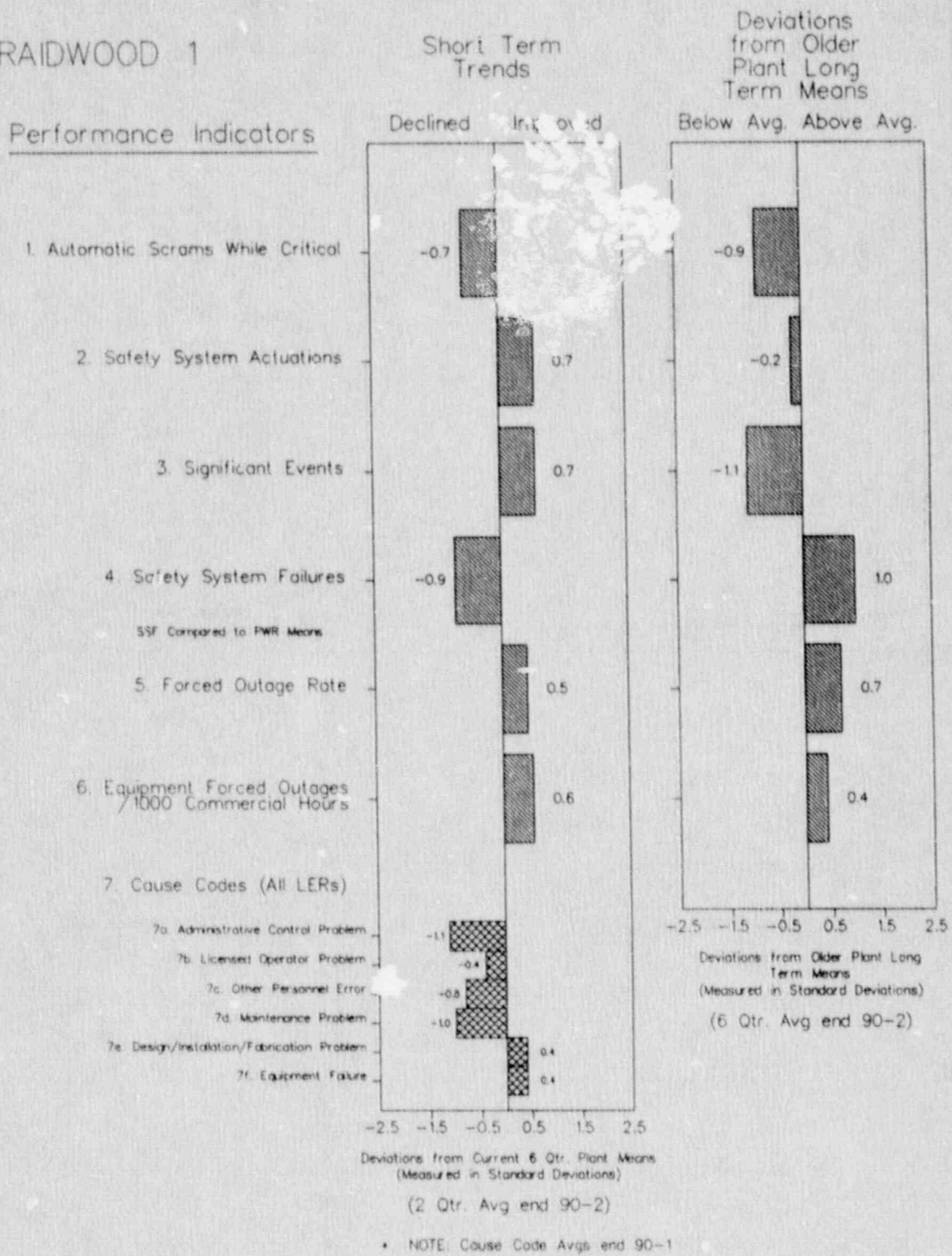


FIGURE 4.7

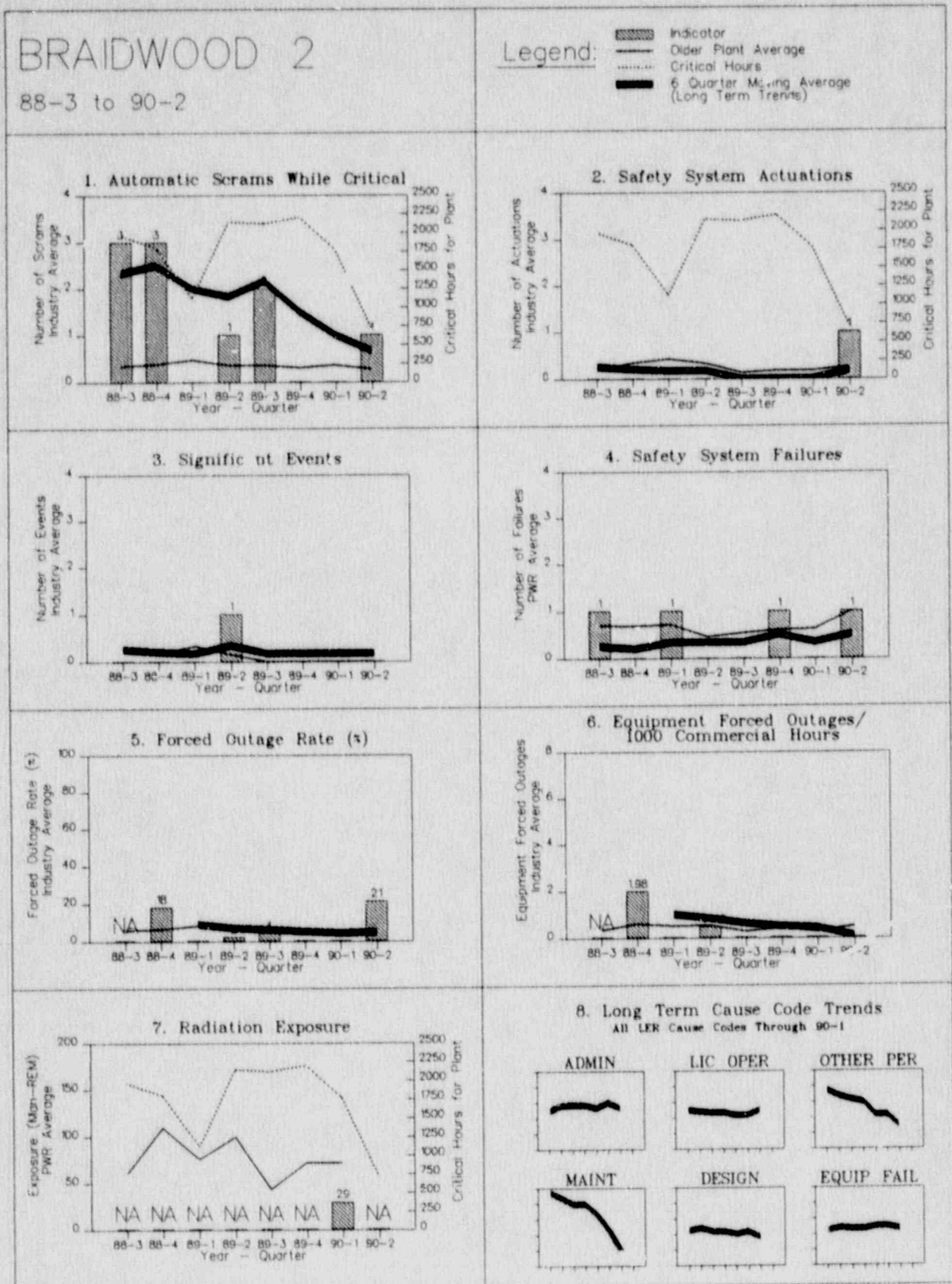


FIGURE 4.7

BRAIDWOOD 2

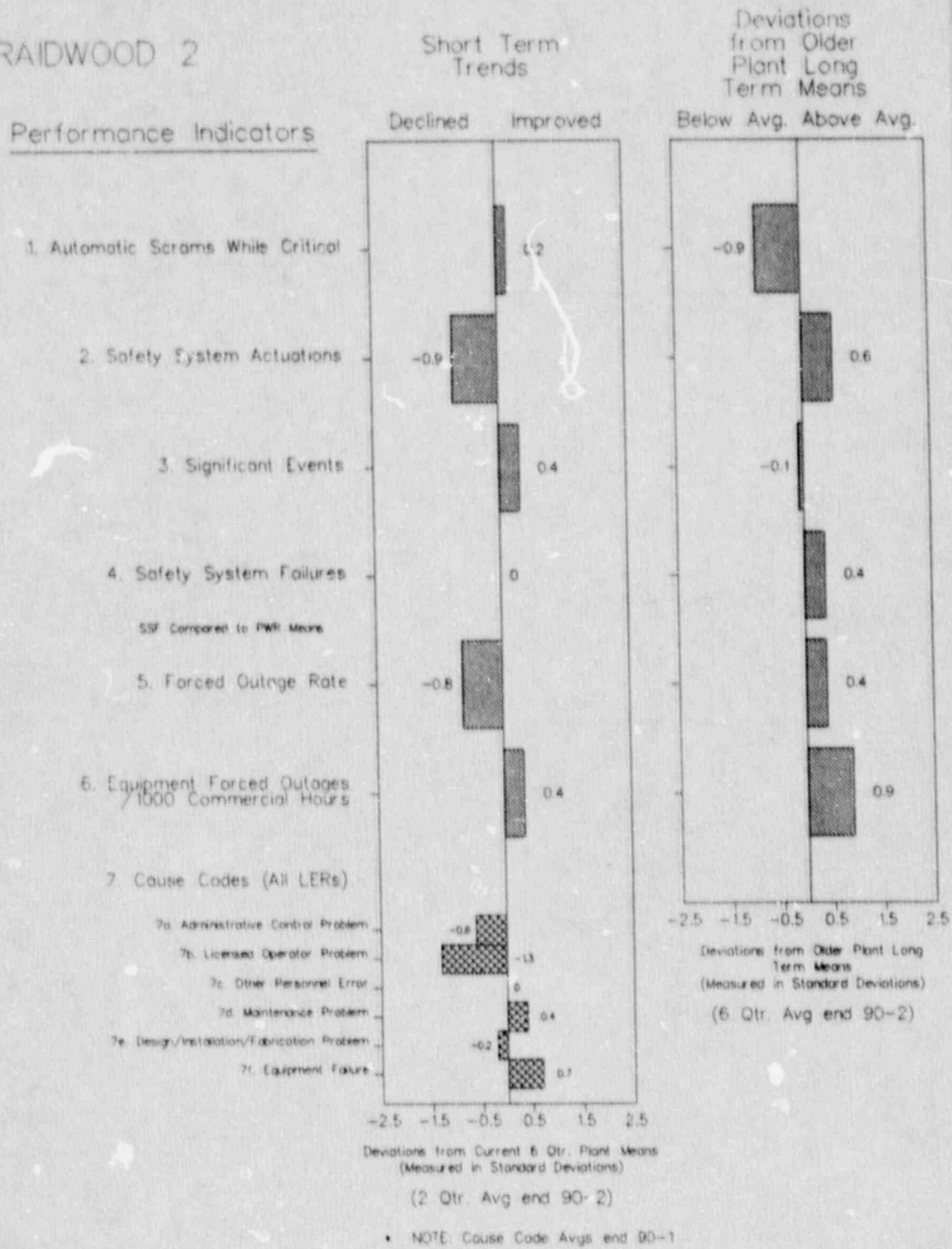


FIGURE 4.8

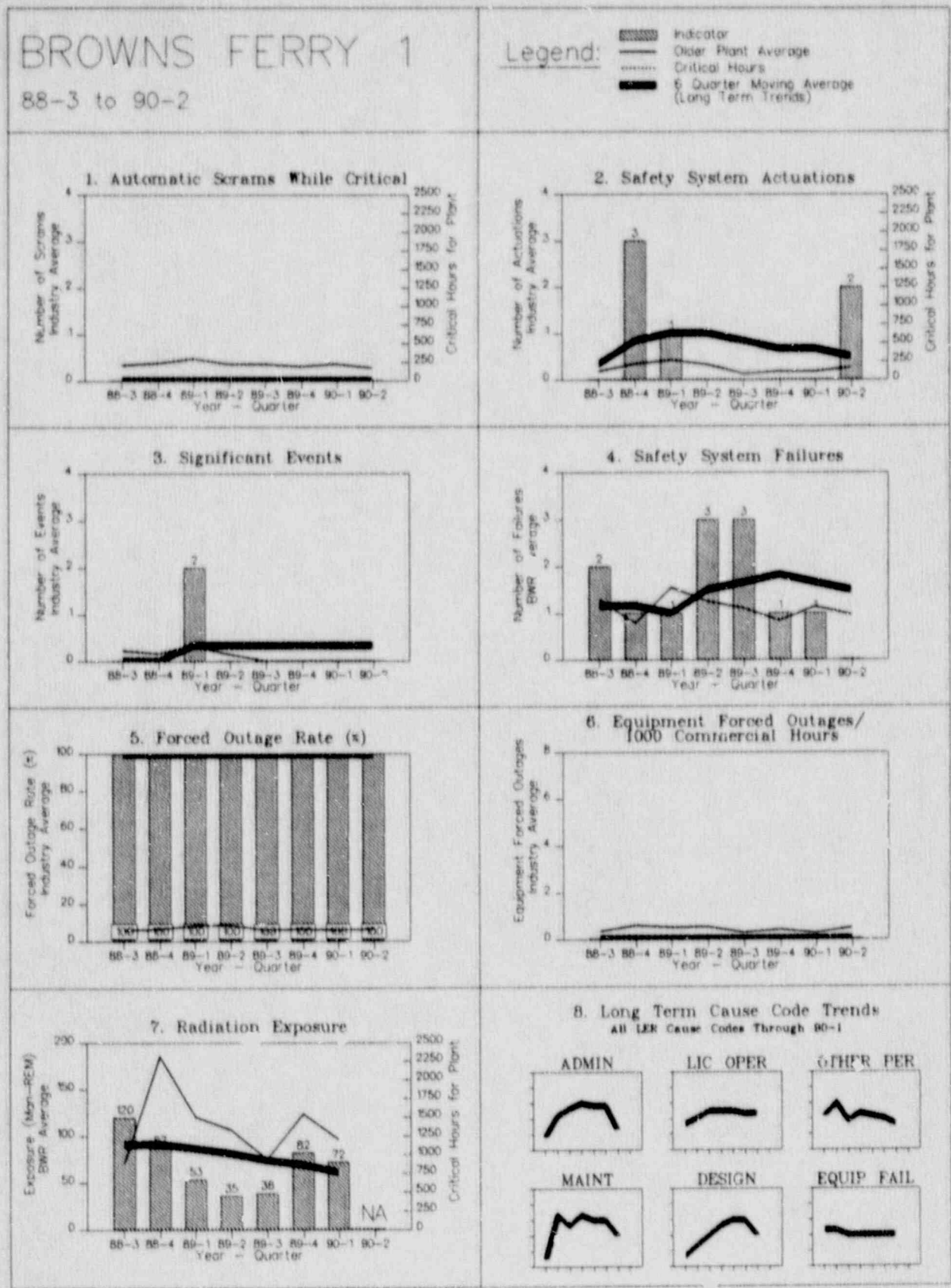


FIGURE 4.8

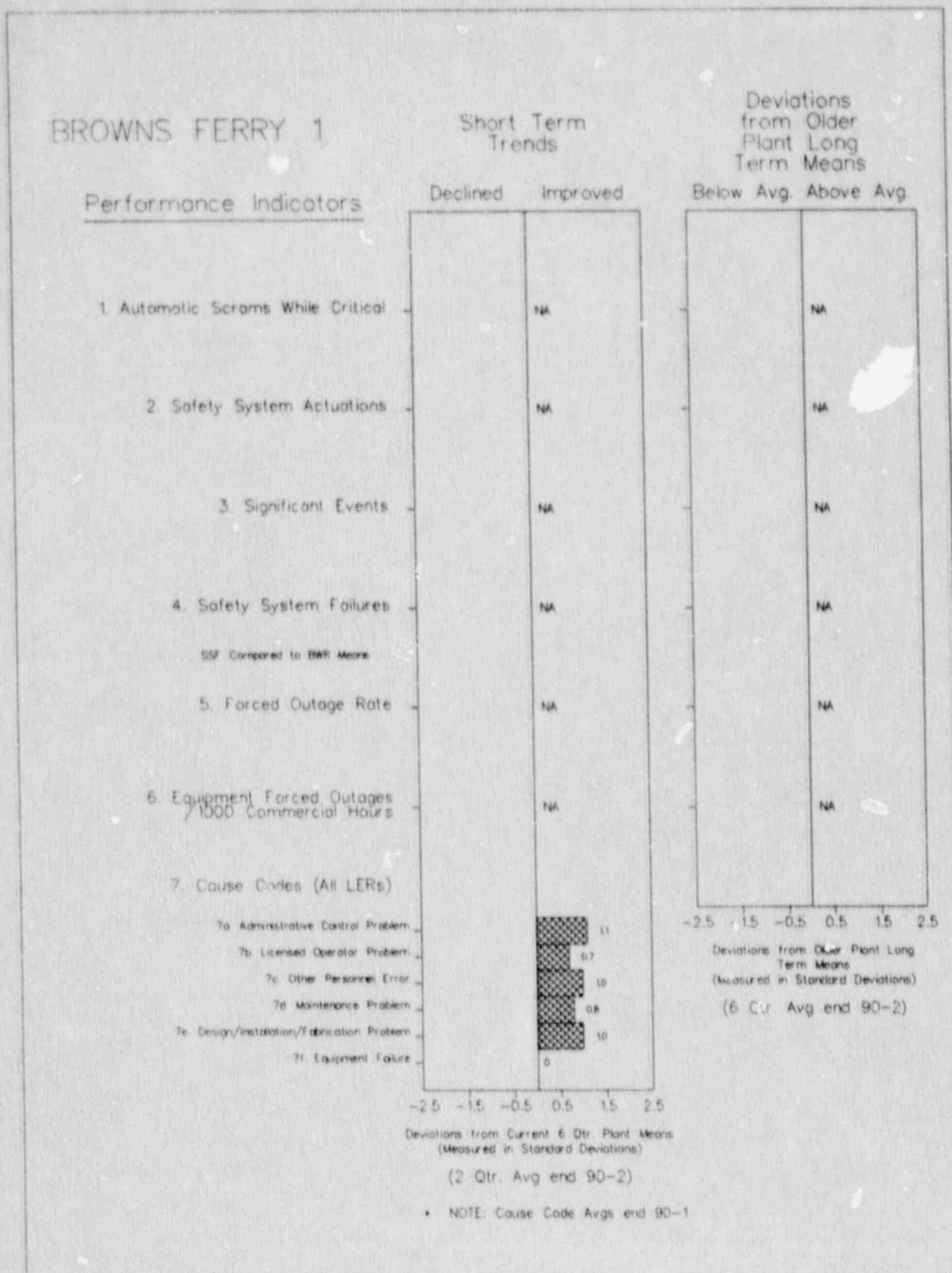


FIGURE 4.9

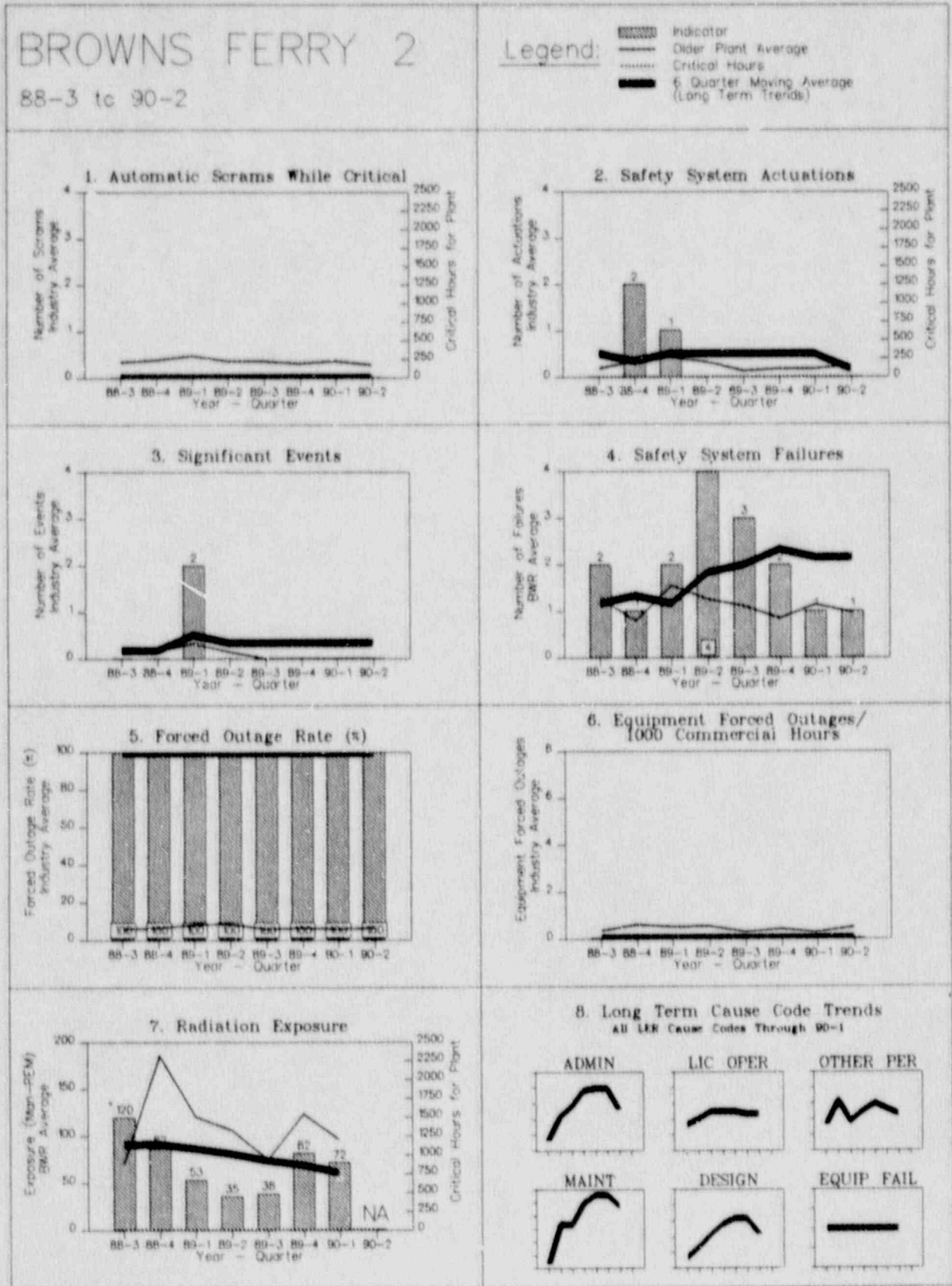


FIGURE 4.9

BROWNS FERRY 2

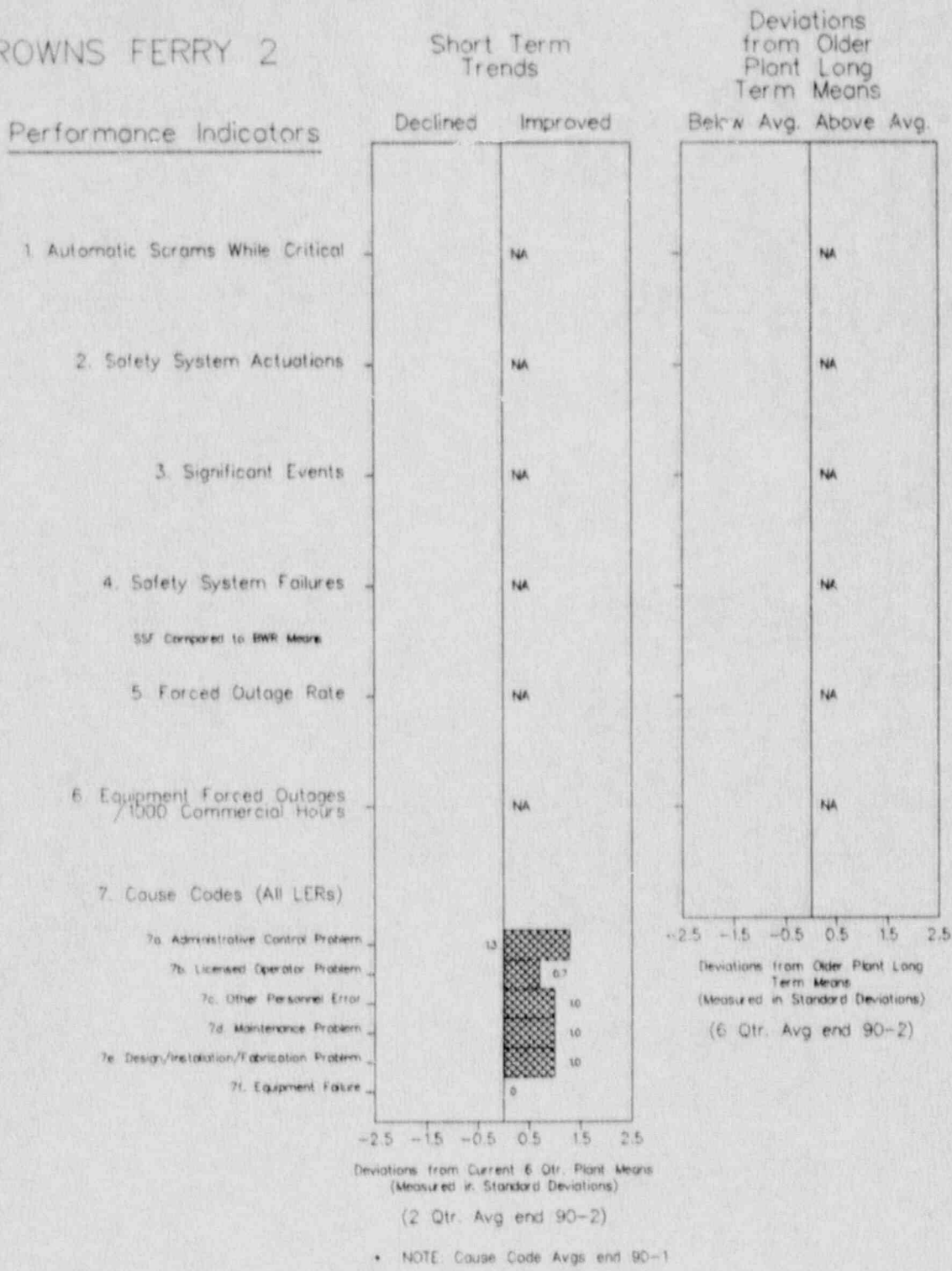


FIGURE 4.10

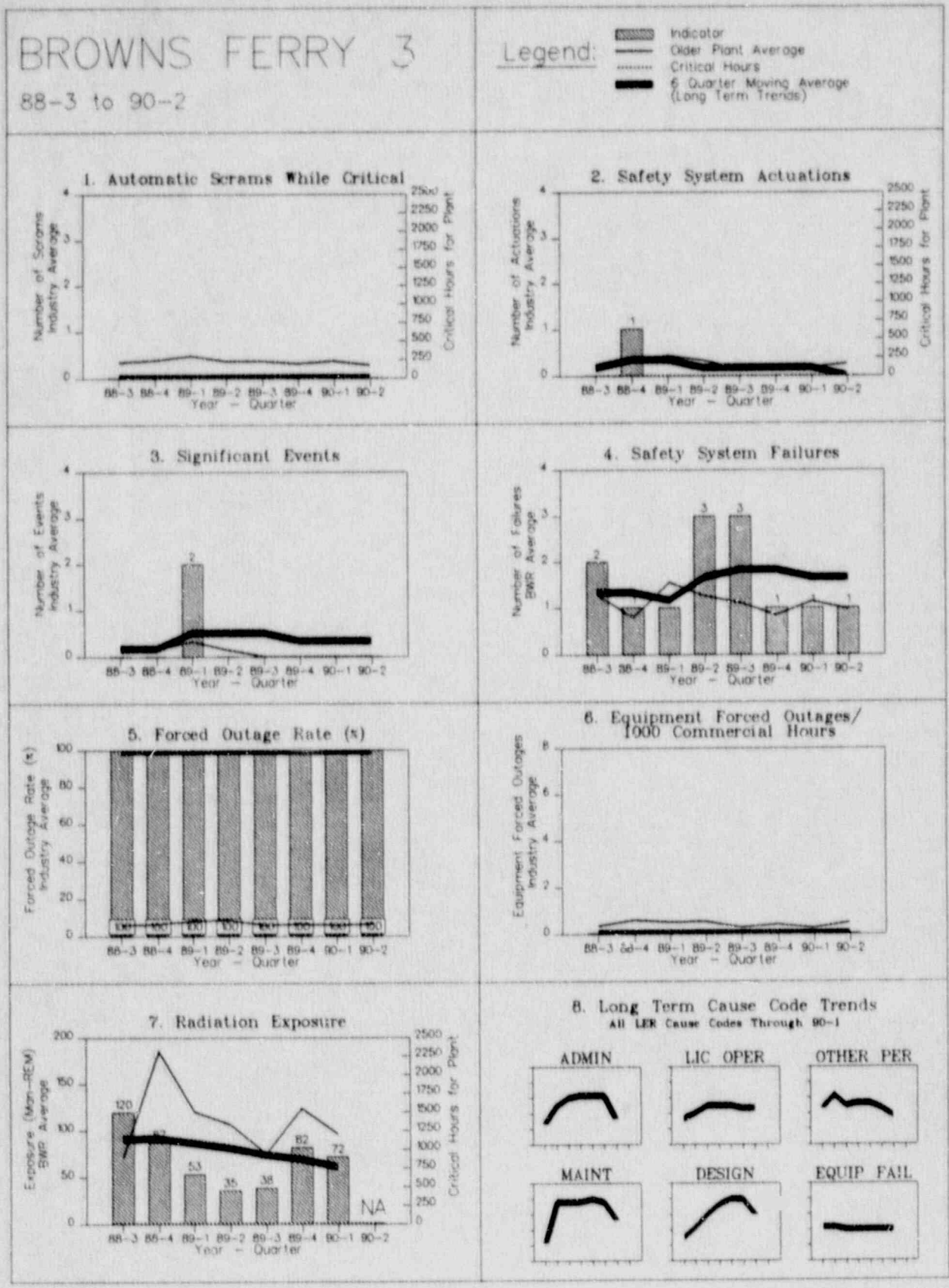


FIGURE 4.10

BROWNS FERRY 3

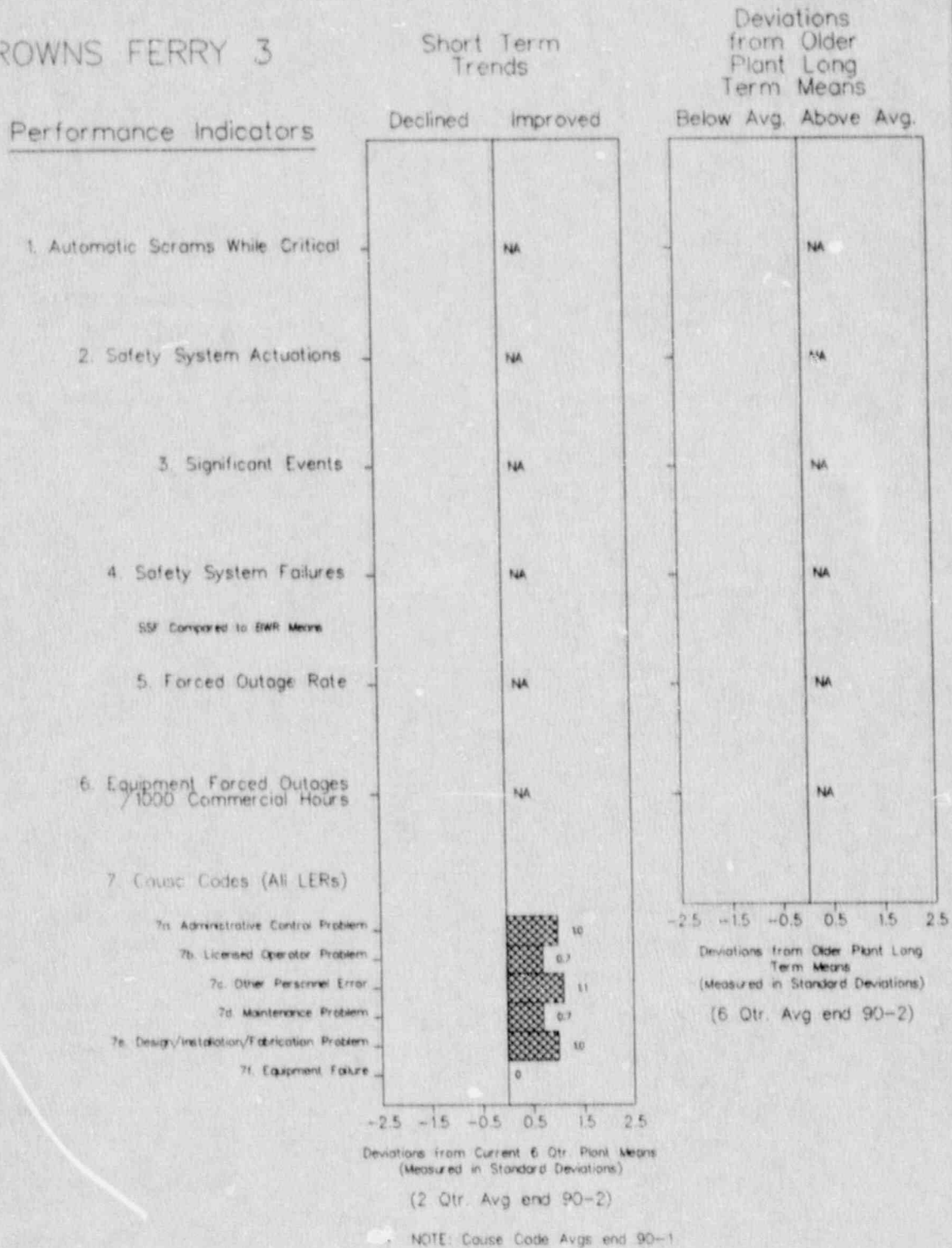


FIGURE 4.11

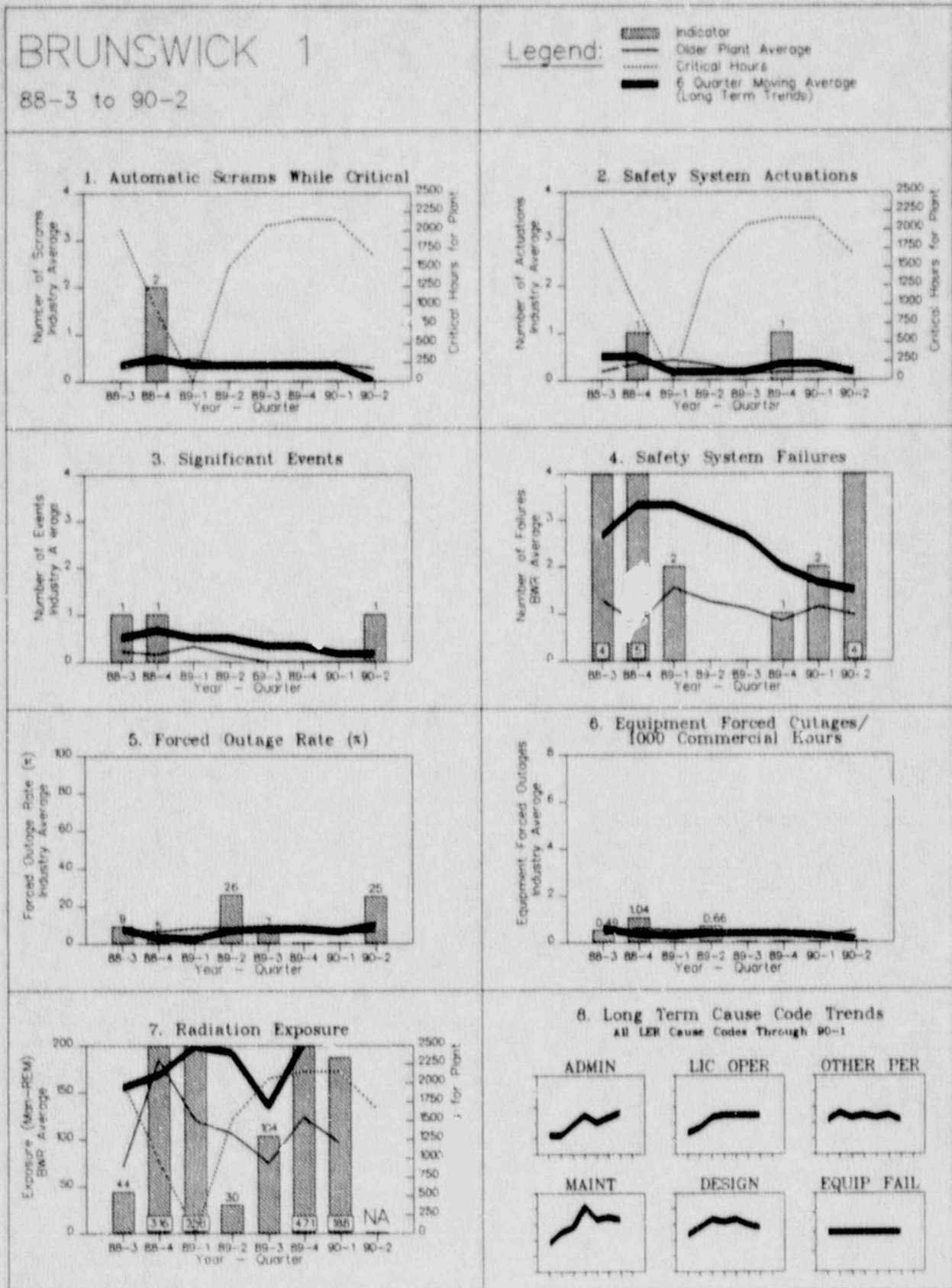


FIGURE 4.11

BRUNSWICK 1

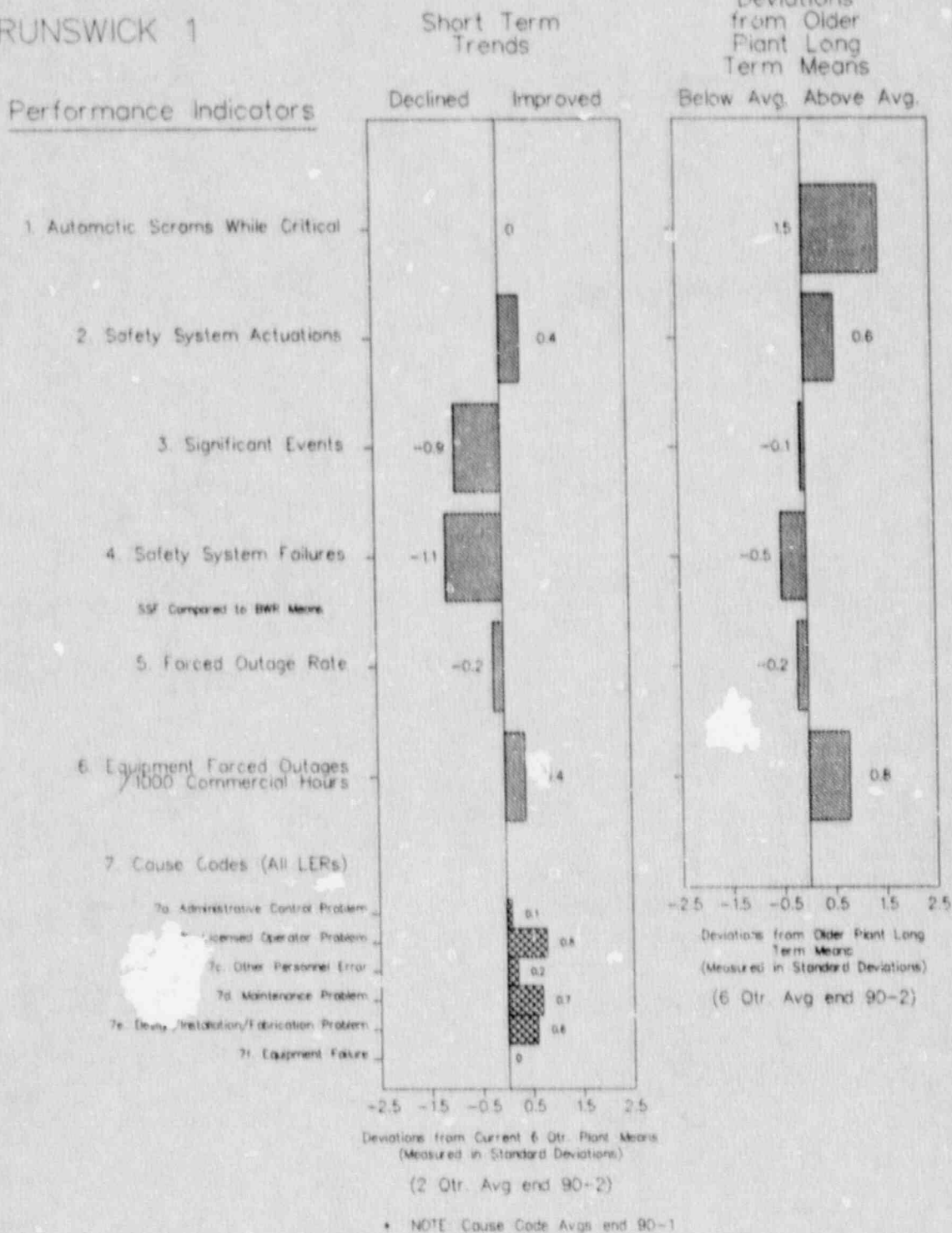


FIGURE 4.12

BRUNSWICK 2

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)

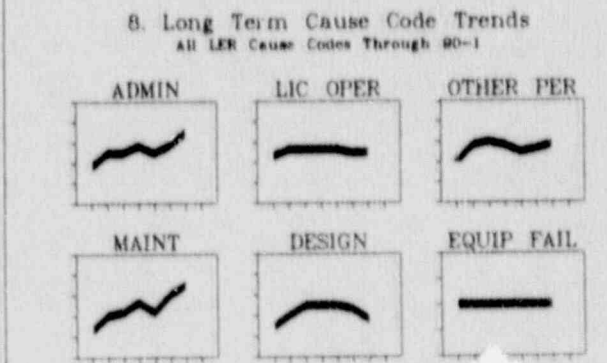
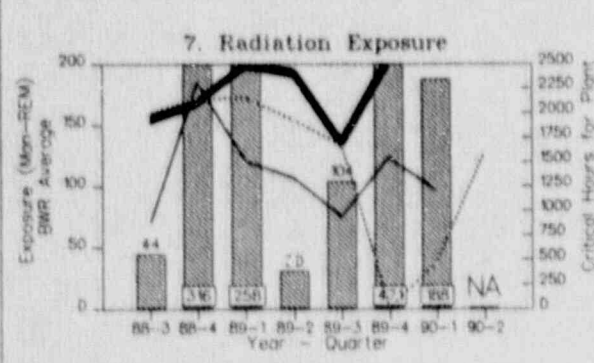
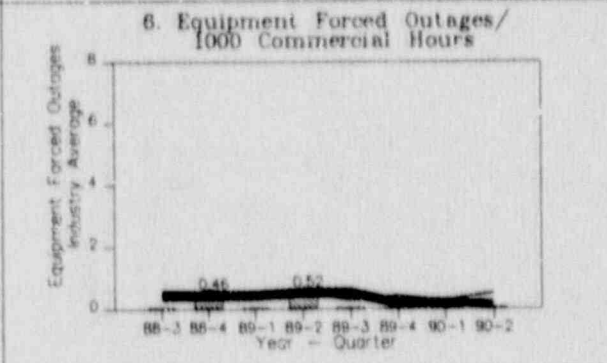
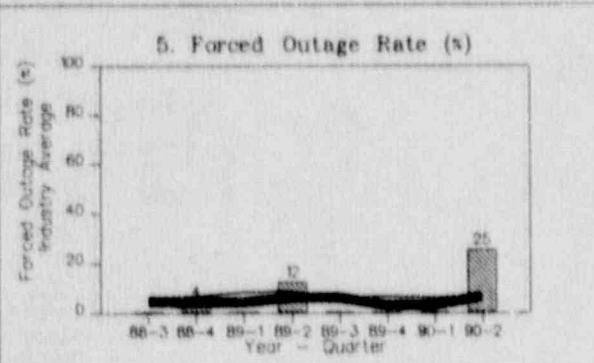
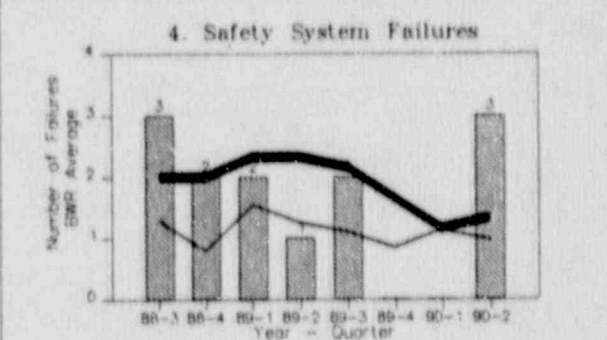
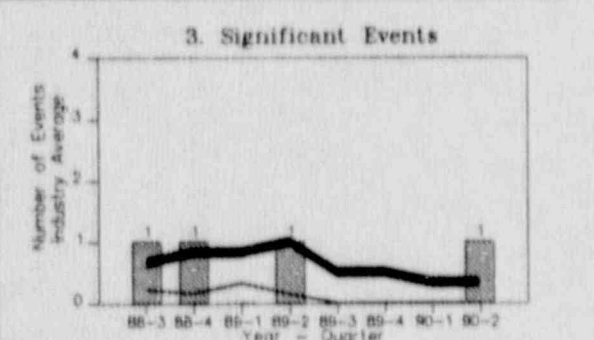
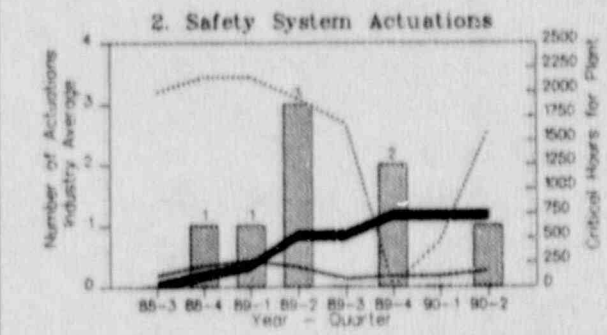
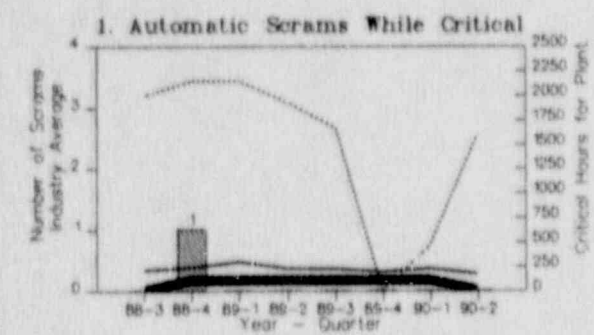


FIGURE 4.12

BRUNSWICK 2

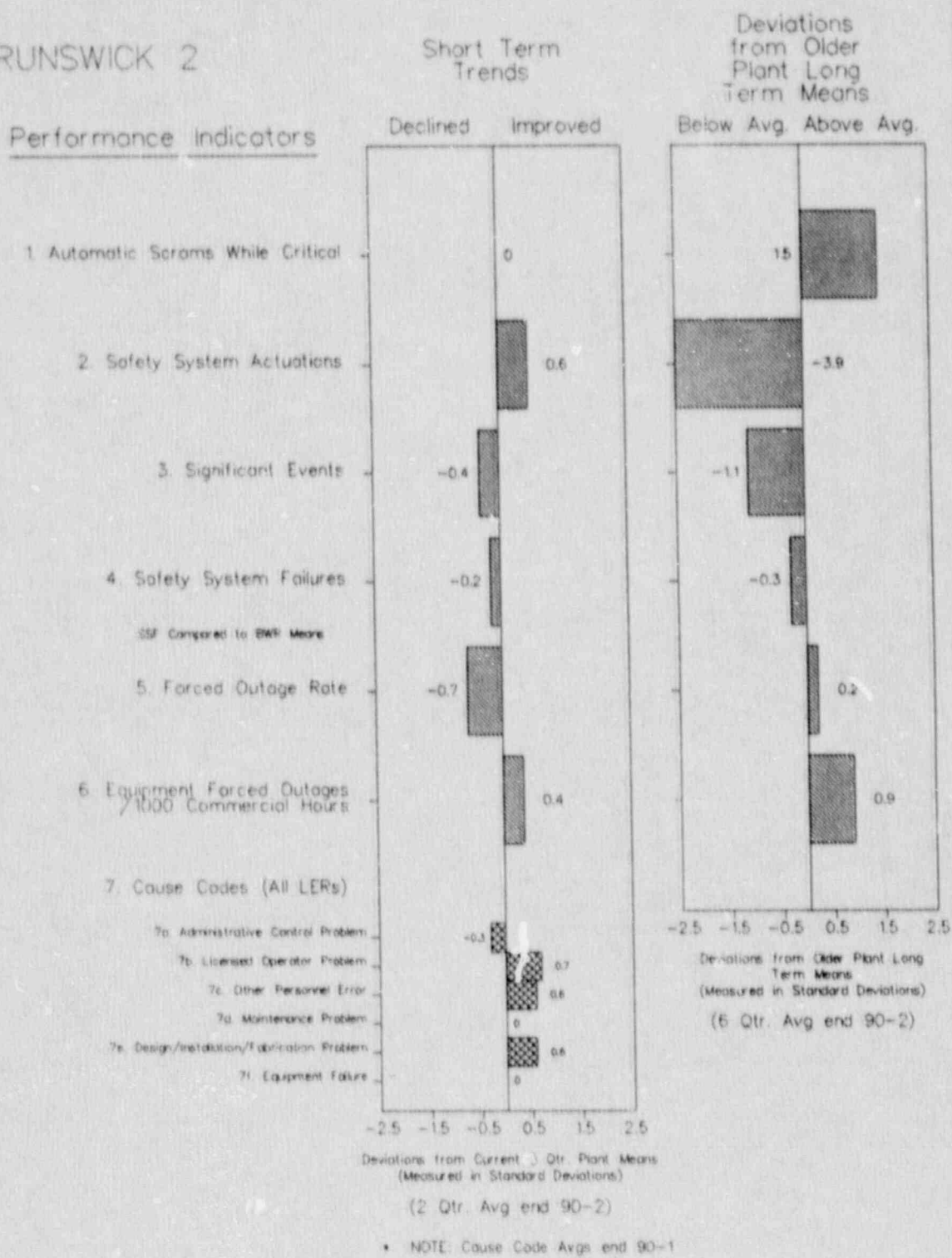


FIGURE 4.13

BYRON 1

88-3 to 90-2

Legend:

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

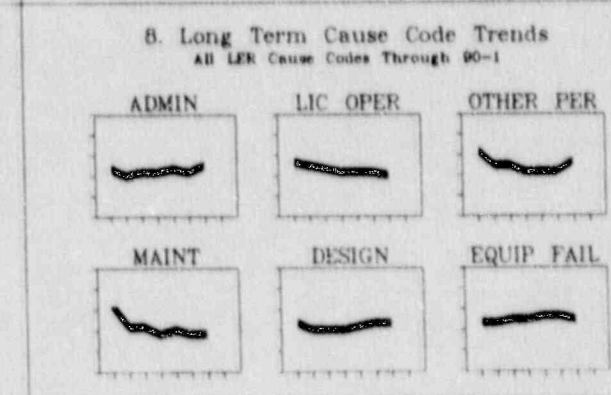
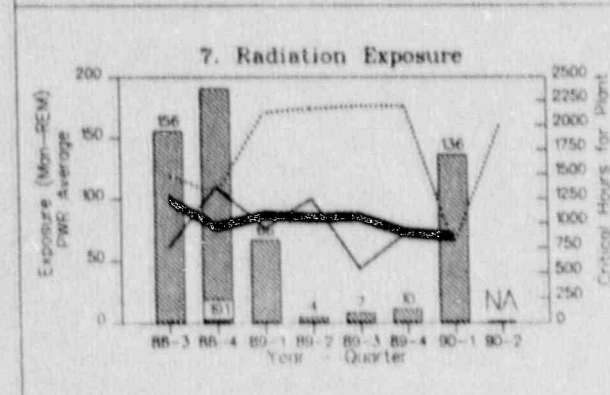
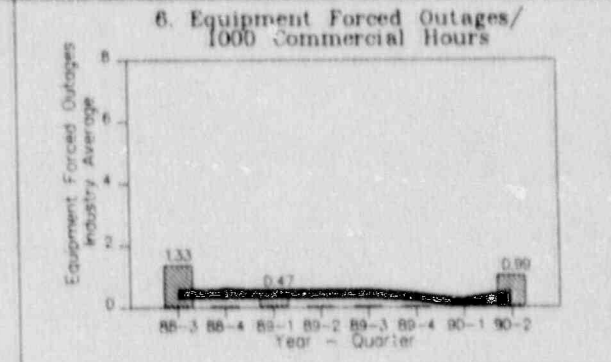
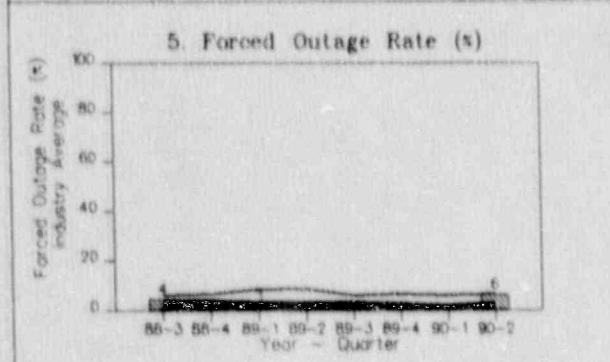
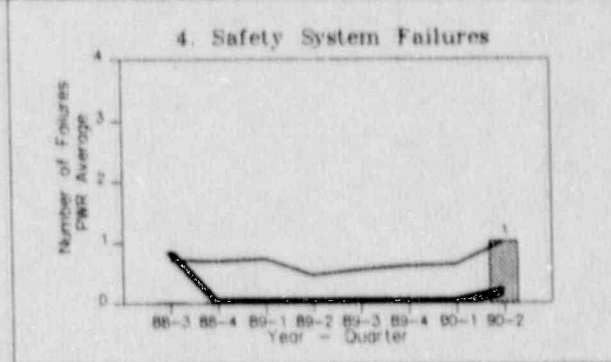
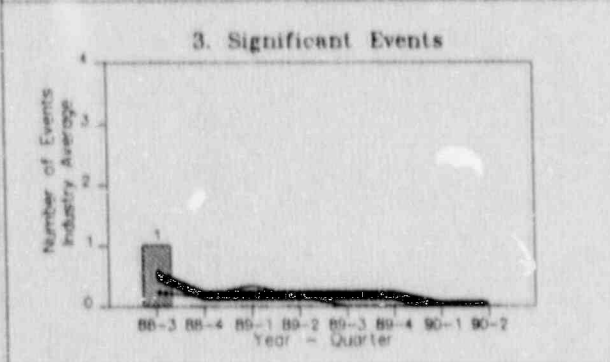
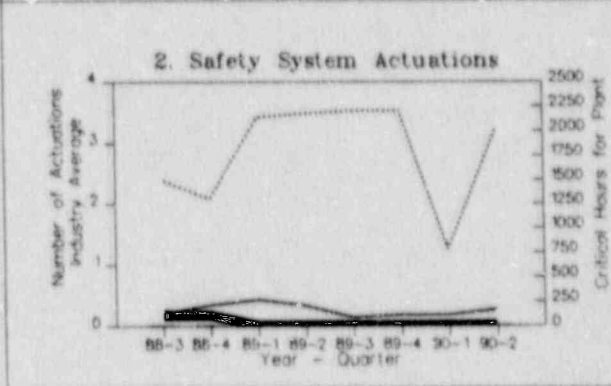
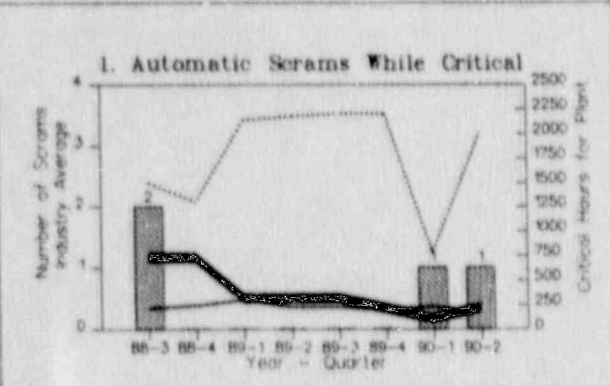


FIGURE 4.13

BYRON 1

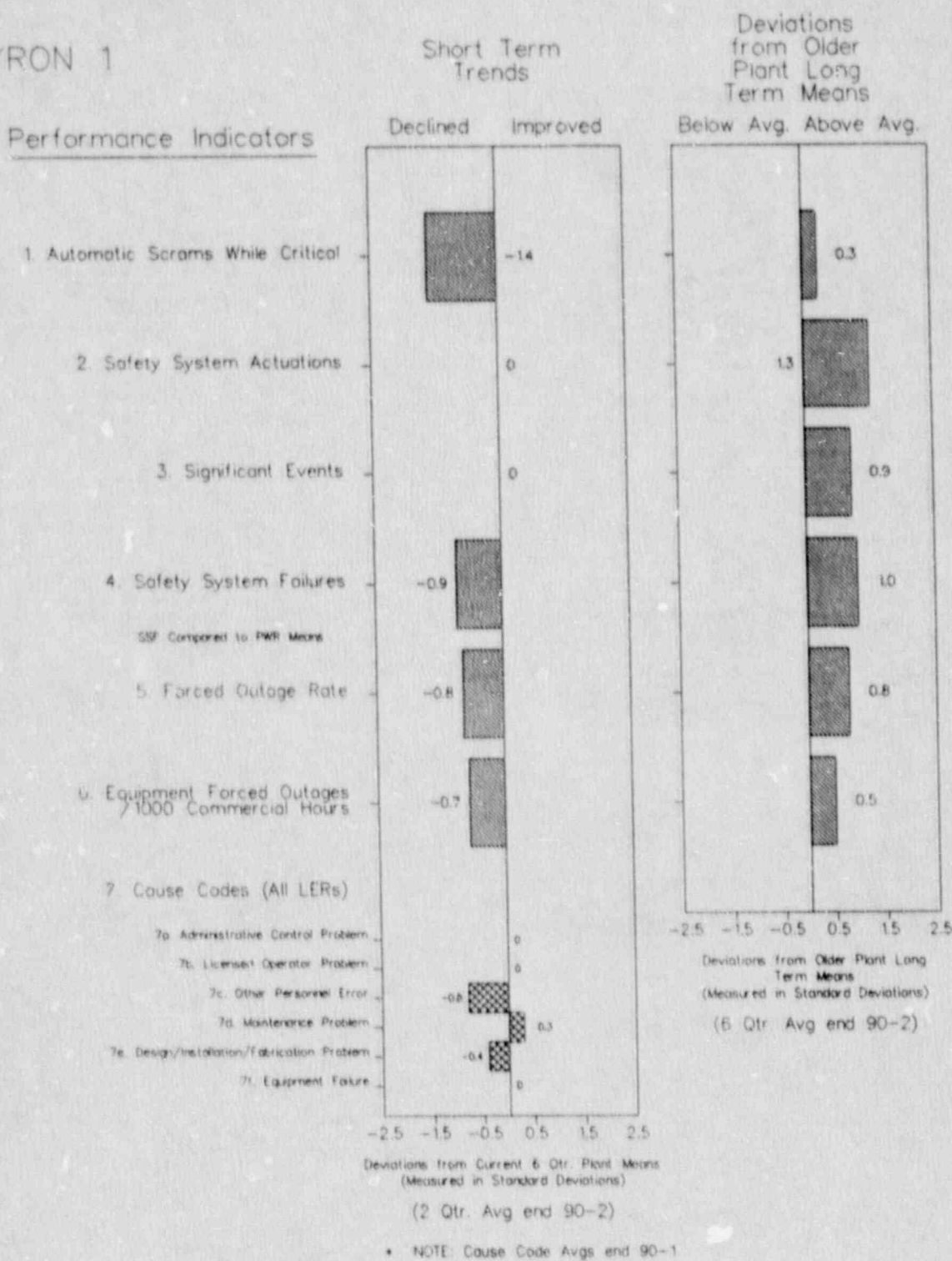


FIGURE 4.14

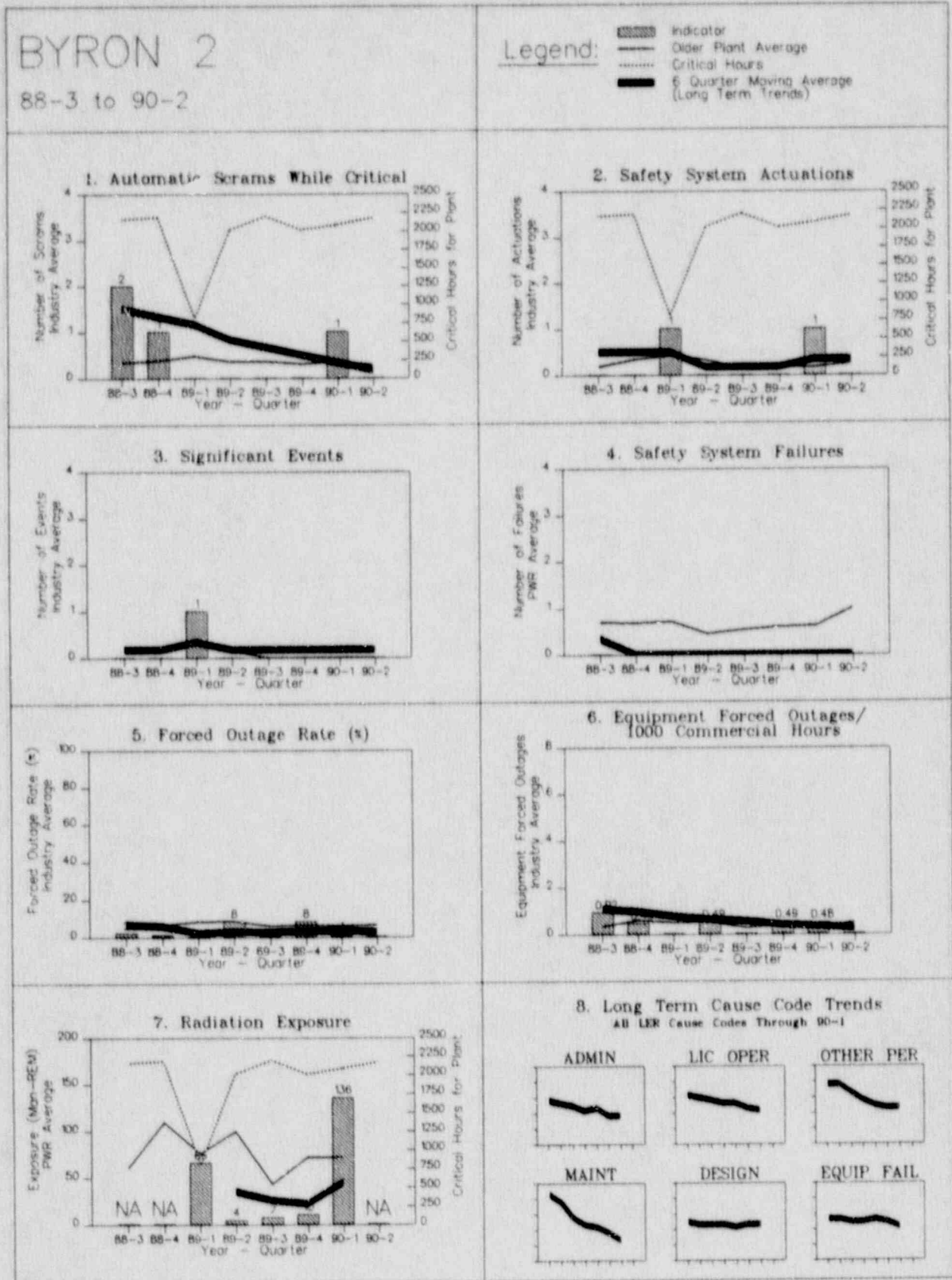


FIGURE 4.14

BYRON 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.9

0.9

2. Safety System Actuations

-0.4

-0.2

3. Significant Events

0.4

-0.1

4. Safety System Failures

0

1.3

SSF Compared to PWR Means

5. Forced Outage Rate

0.6

0.6

6. Equipment Forced Outages
/1000 Commercial Hours

0

0.5

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.5

7b. Licensed Operator Problem

0.4

7c. Other Personnel Error

-0.4

7d. Maintenance Problem

0.4

7e. Design/Installation/Fabrication Problem

-0.4

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means
(Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long
Term Means

(Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Aves end 90-1

FIGURE 4.15

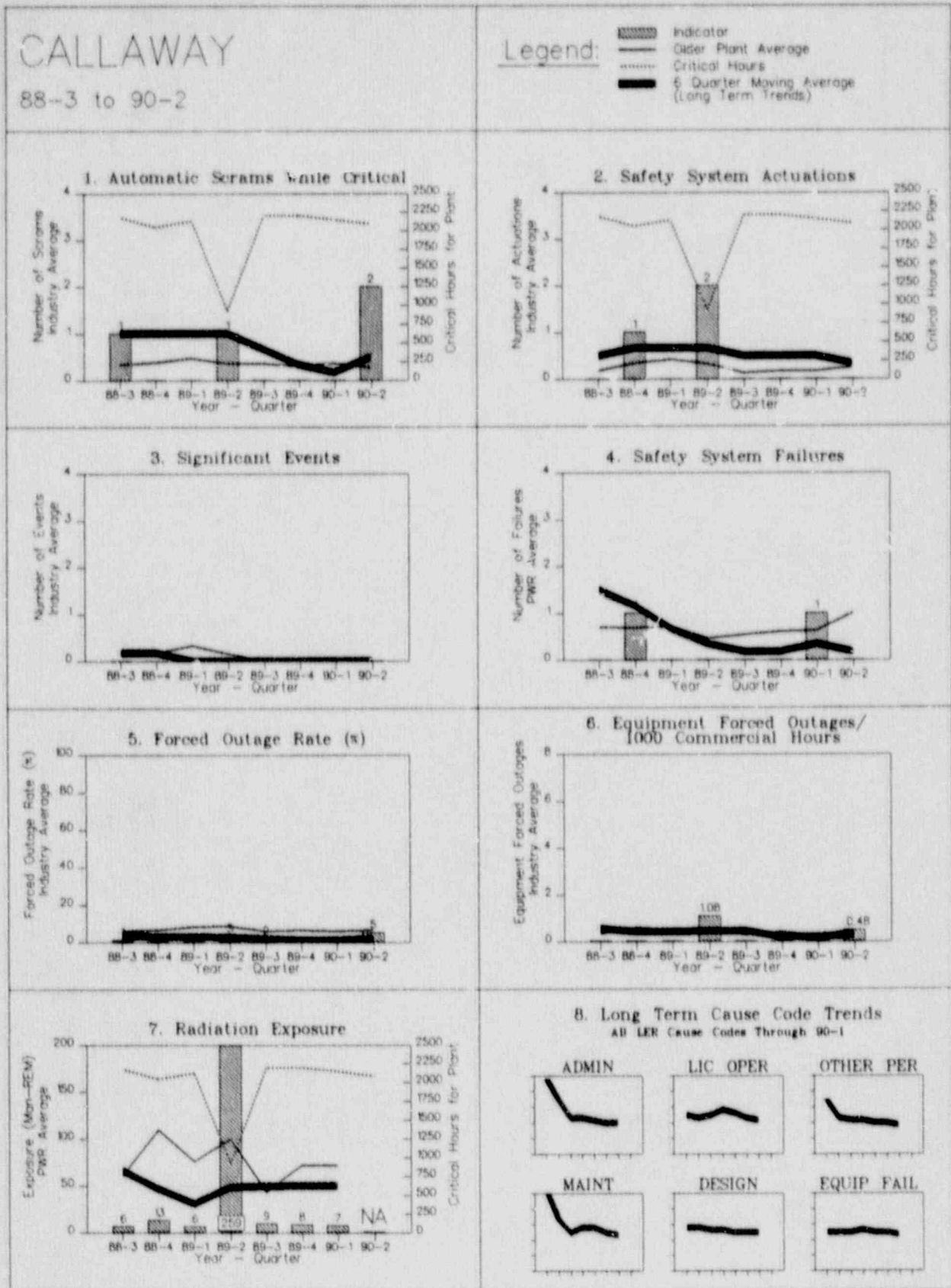


FIGURE 4.15.

CALLAWAY

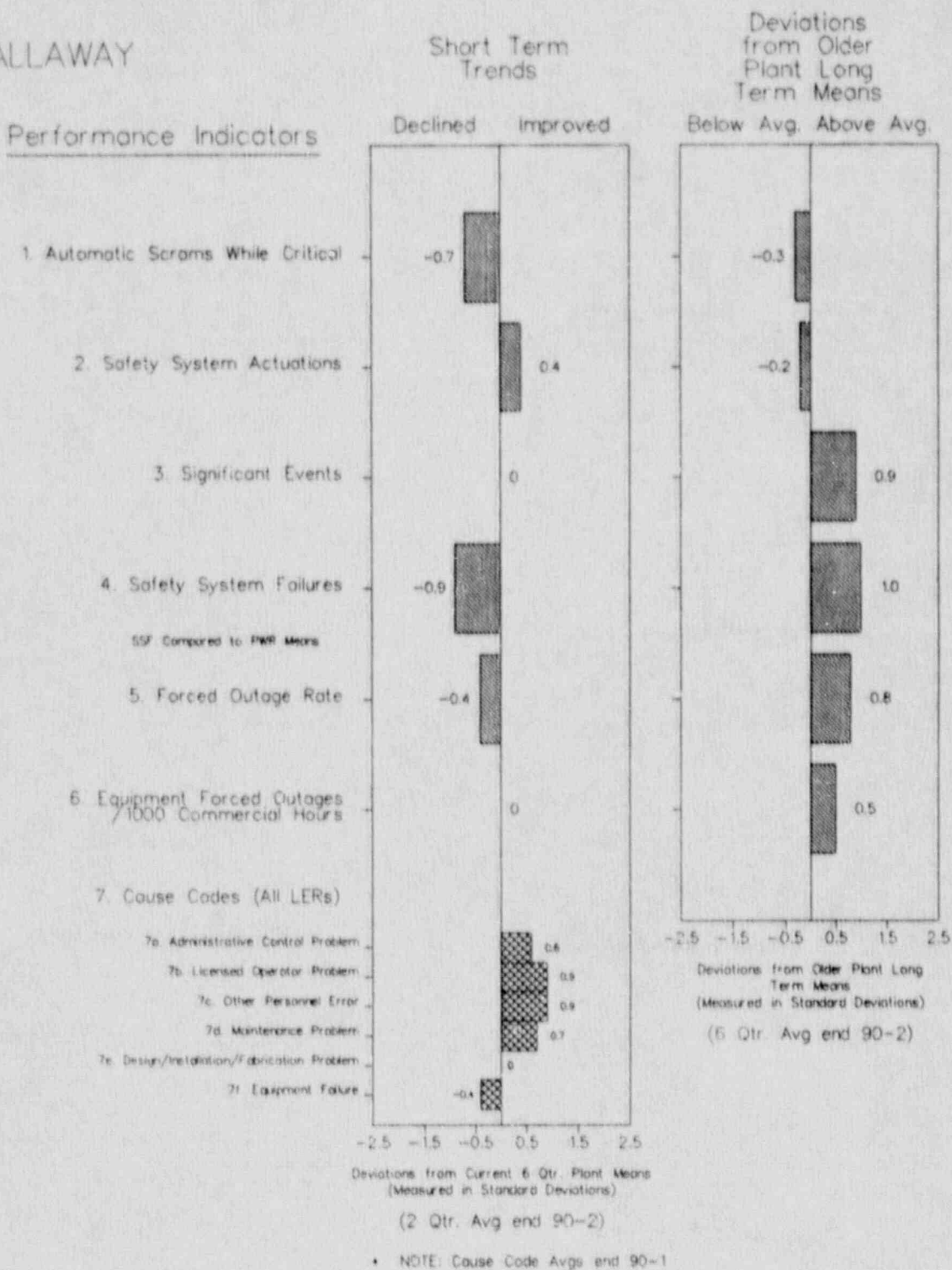


FIGURE 4.16

CALVERT CLIFFS 1

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)

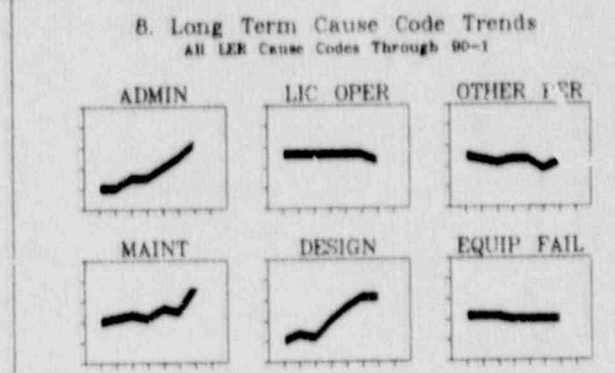
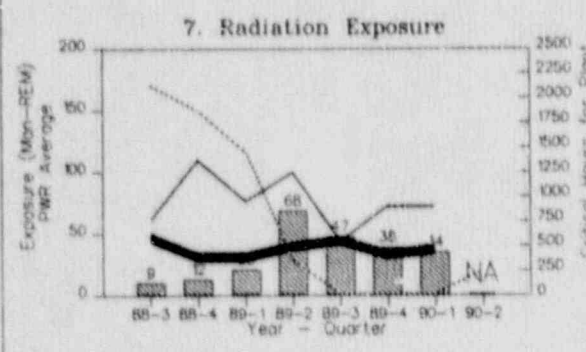
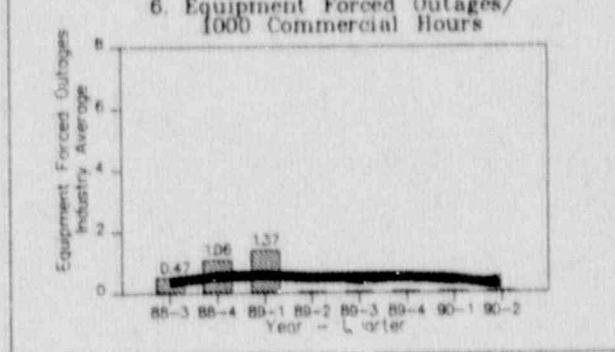
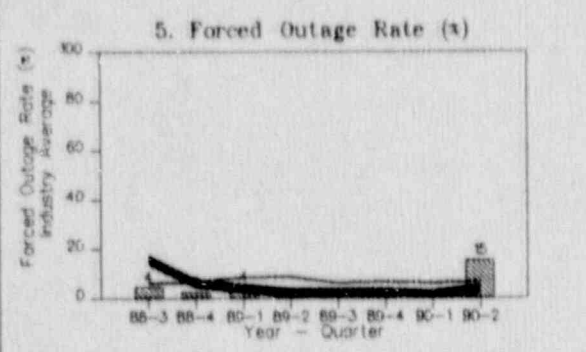
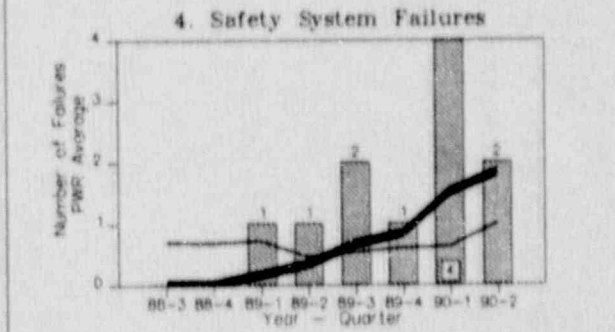
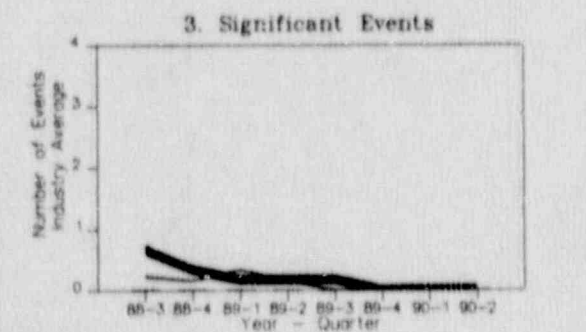
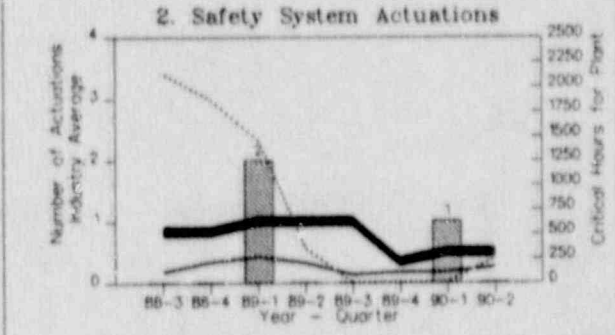
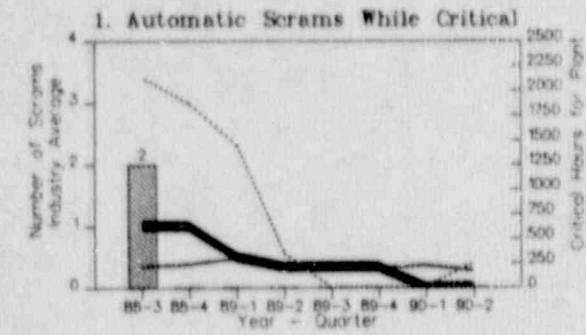


FIGURE 4.16

CALVERT CLIFFS 1

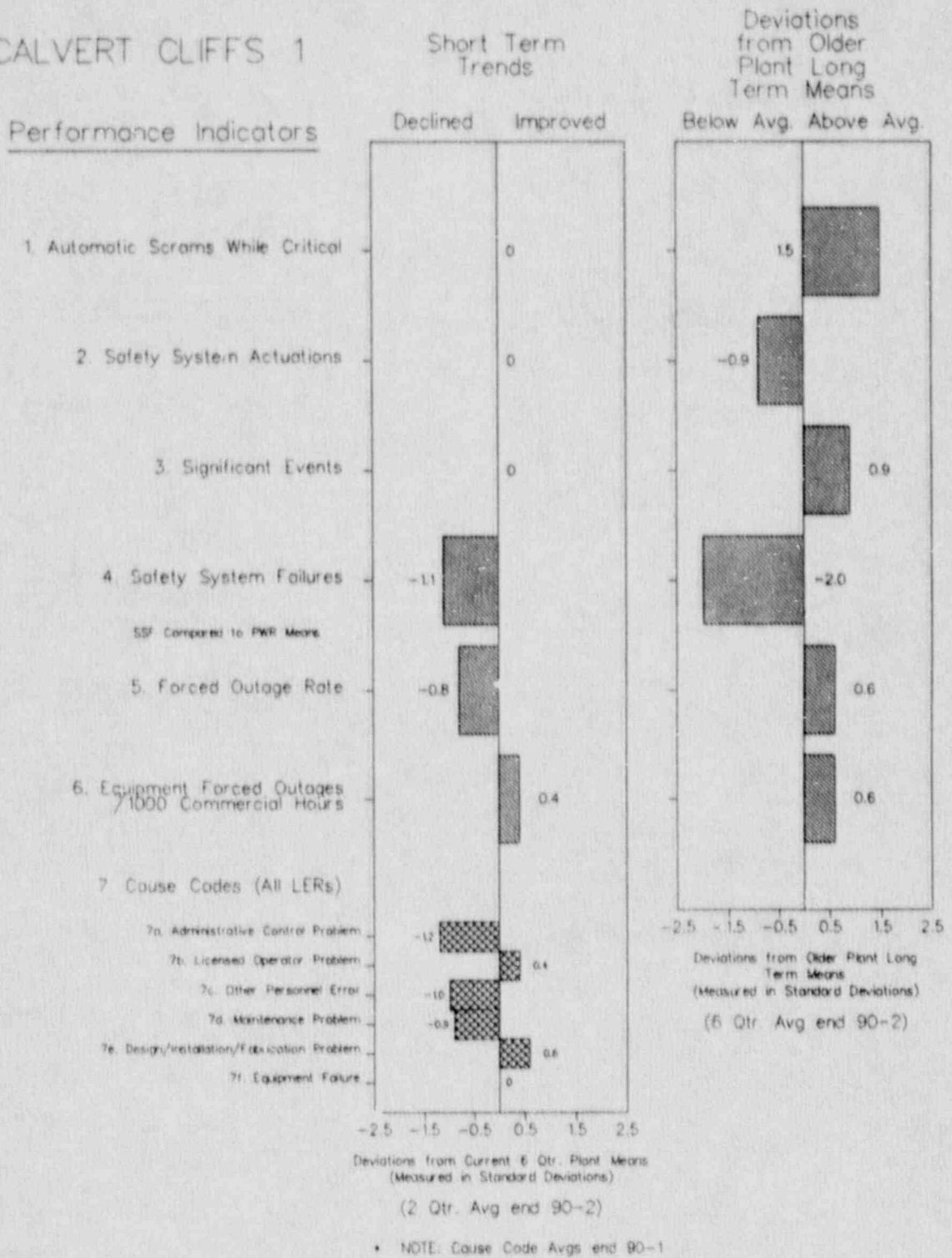


FIGURE 4.17

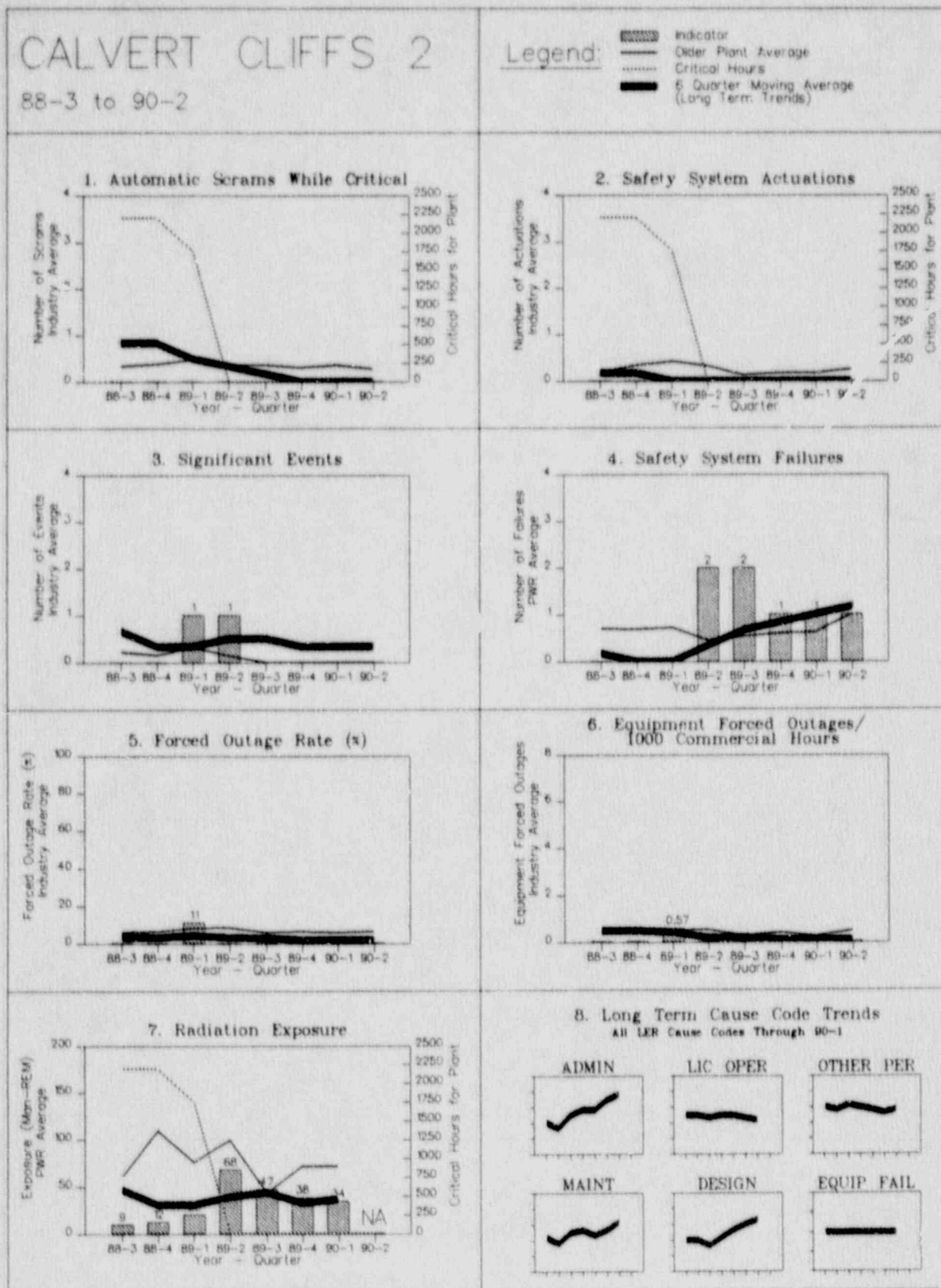


FIGURE 4.17

CALVERT CLIFFS 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

0

15

2. Safety System Actuations

0

12

3. Significant Events

0.7

-1.1

4. Safety System Failures

0.2

-0.8

SSF Compared to PWR Means

5. Forced Outage Rate

0.4

0.8

6. Equipment Forced Outages /1000 Commercial Hours

0.4

0.9

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

-0.3

0.4

-0.2

-0.2

-0.1

0

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations) (6 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5
Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations) (2 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.18

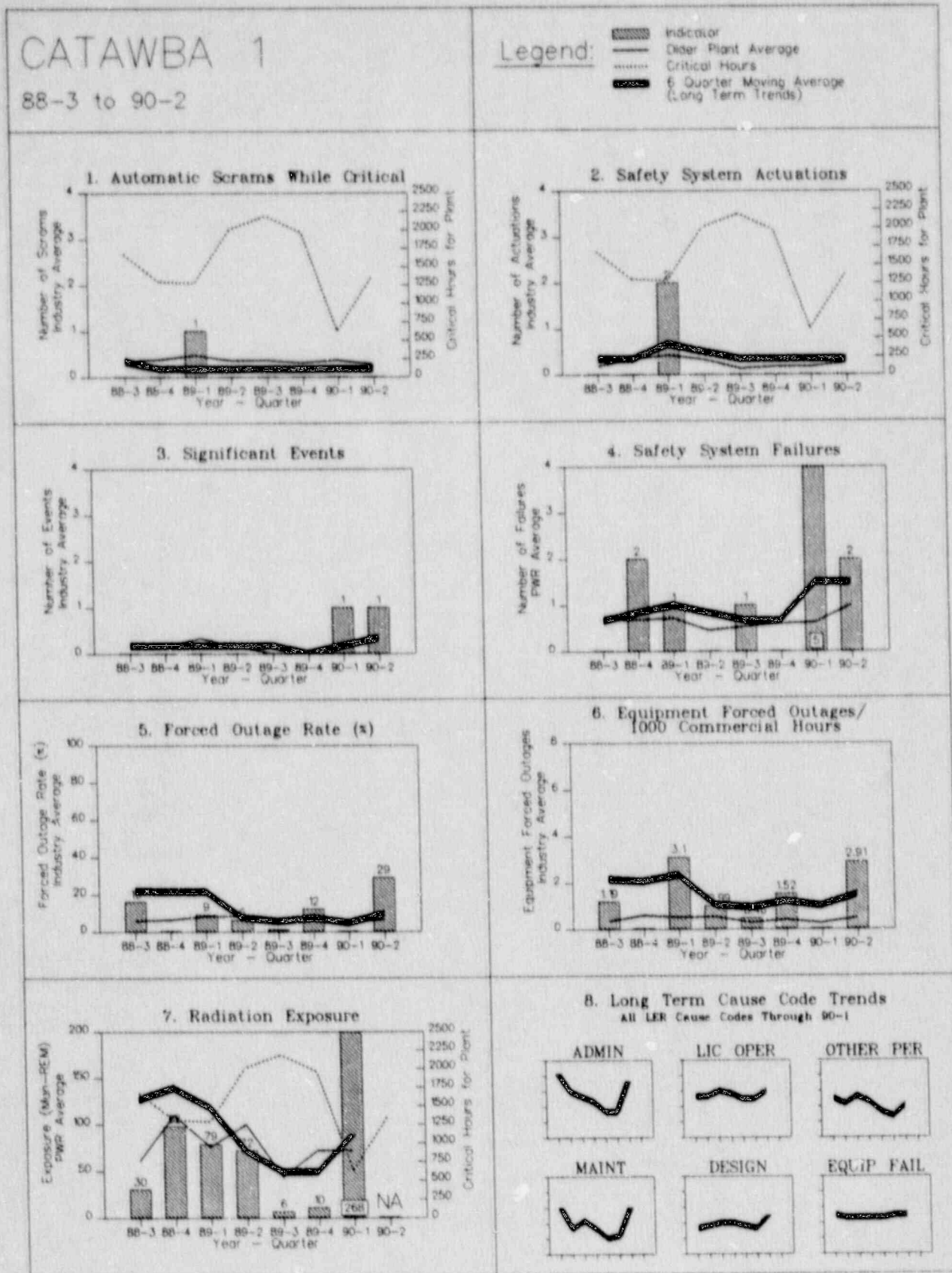


FIGURE 4.18

CATAWBA 1

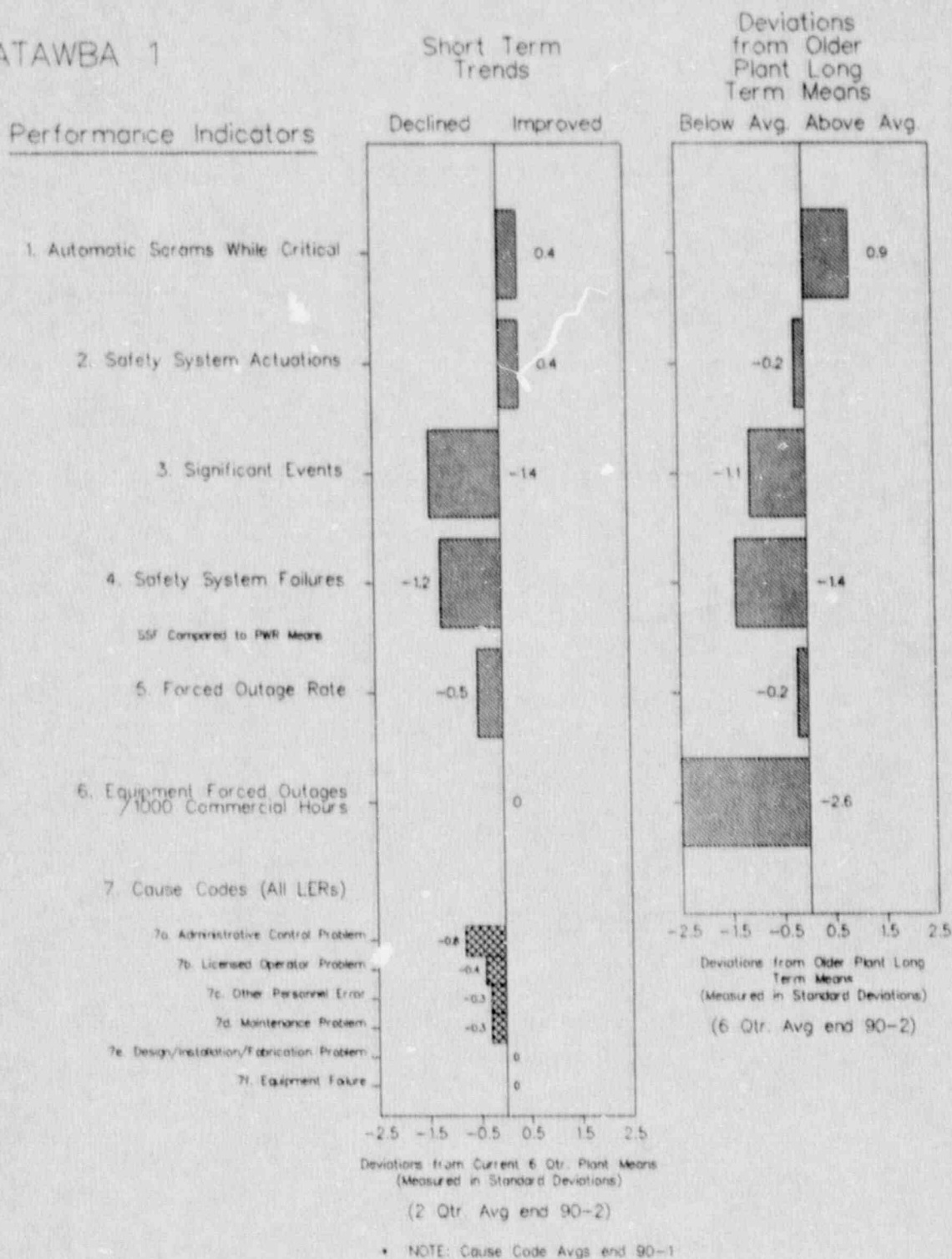


FIGURE 4.19

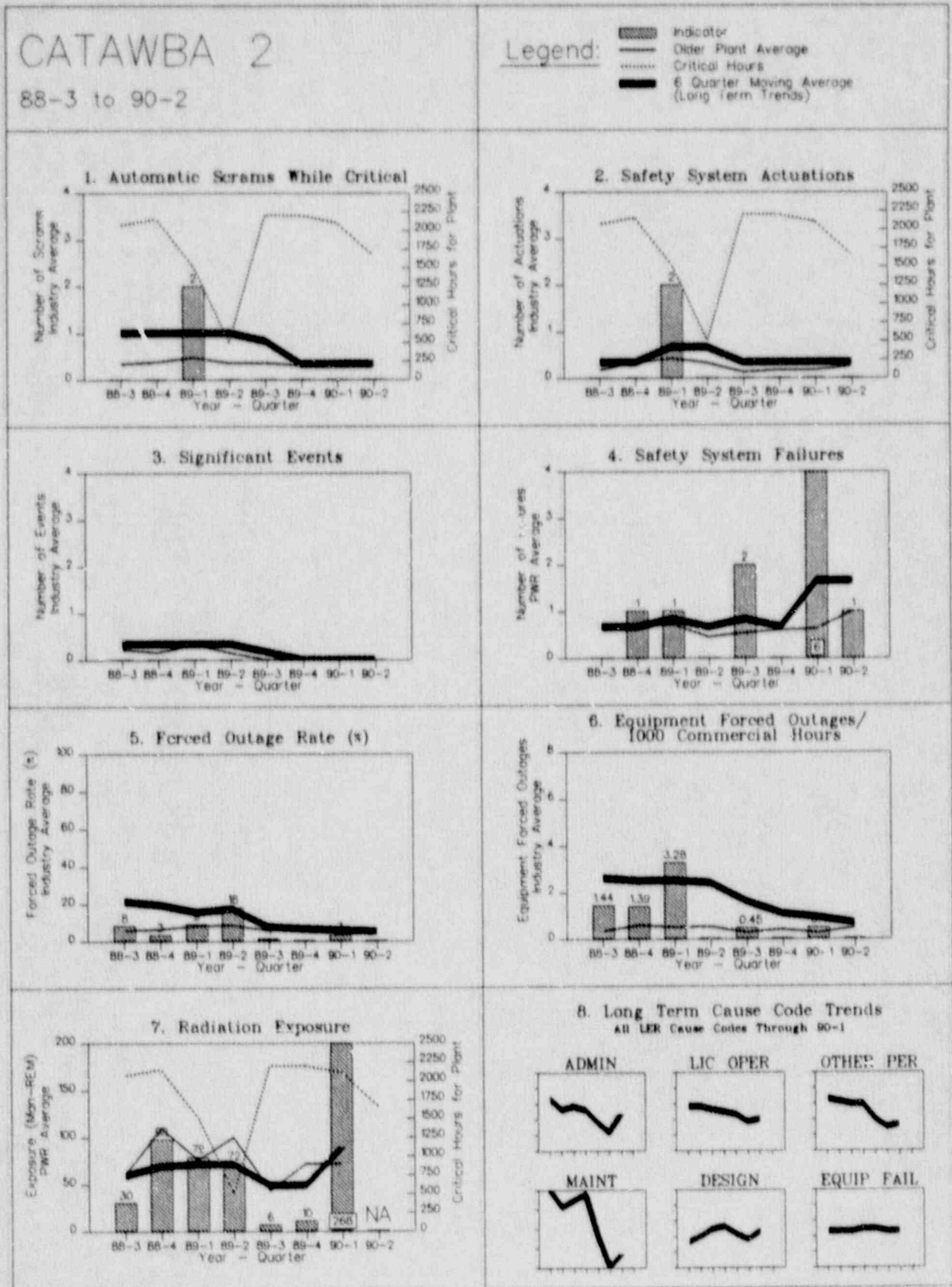


FIGURE 4.19

CATAWBA 2

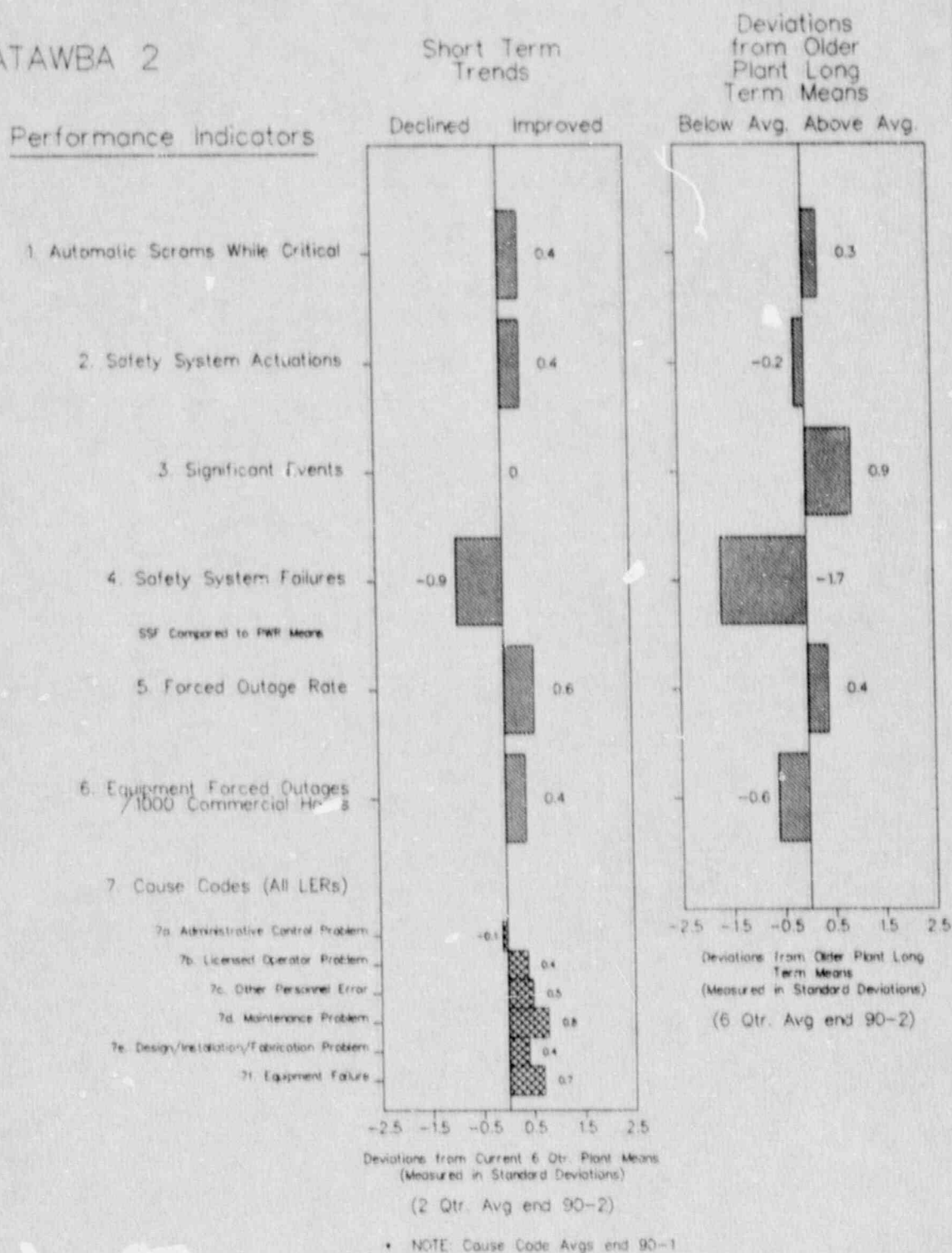


FIGURE 4.20

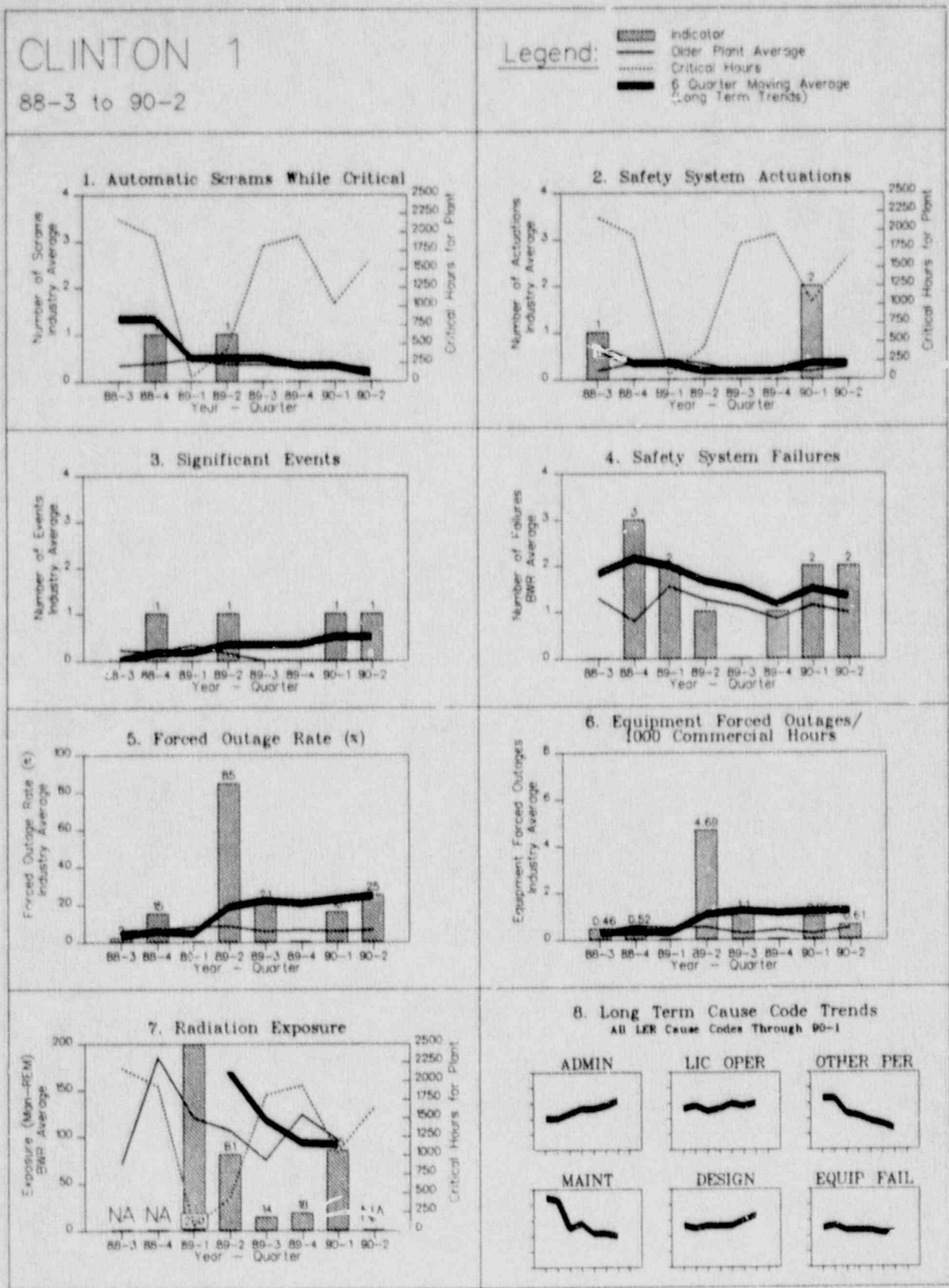


FIGURE 4.20

CLINTON 1

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

0.4

0.9

2. Safety System Actuations

-0.9

-0.2

3. Significant Events

-1.0

-2.1

4. Safety System Failures

-0.9

-0.3

SSF Compared to BWR Means

5. Forced Outage Rate

0.1

-2.0

6. Equipment Forced Outages / 1000 Commercial Hours

0.3

-1.9

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.4

7b. Licensed Operator Problem

0.9

7c. Other Personnel Error

0.8

7d. Maintenance Problem

0.7

7e. Design/Installation/Fabrication Problem

-1.1

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg. end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg. end 90-2)






• NOTE: Cause Code Avgs end 90-1

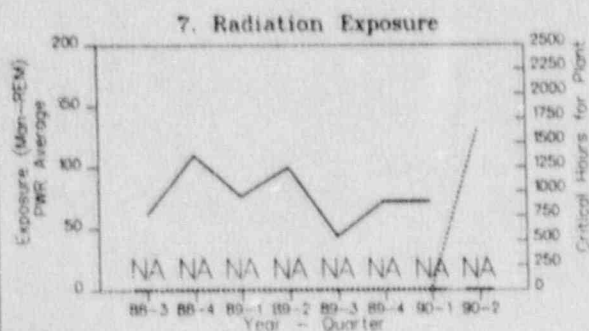
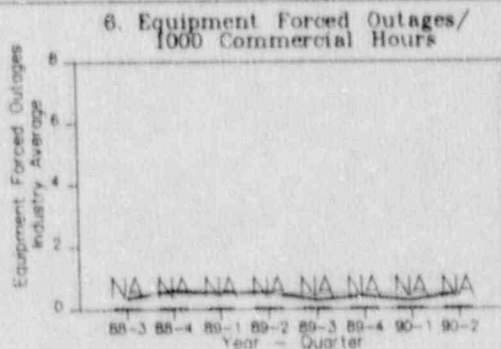
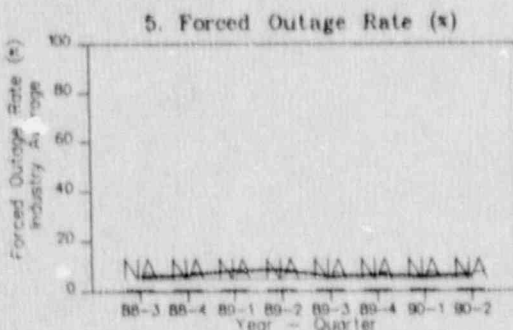
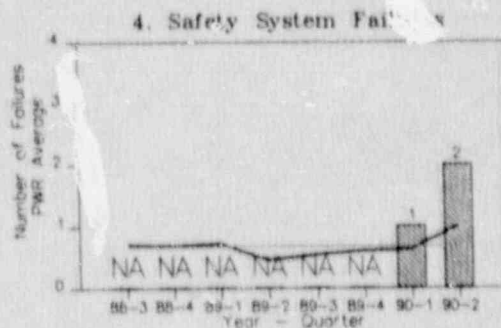
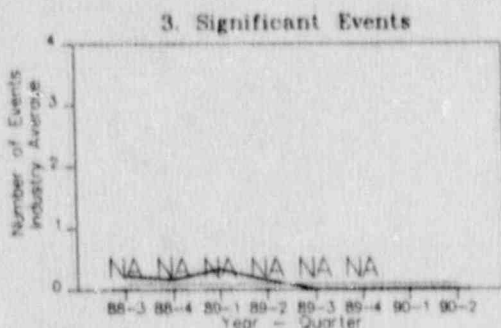
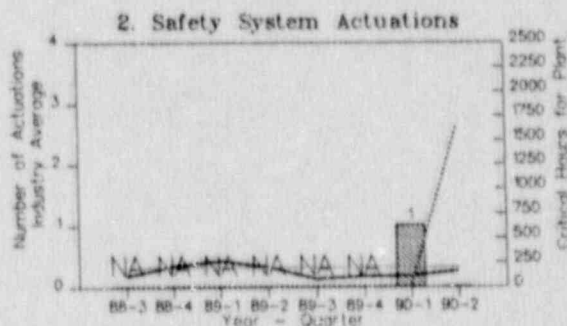
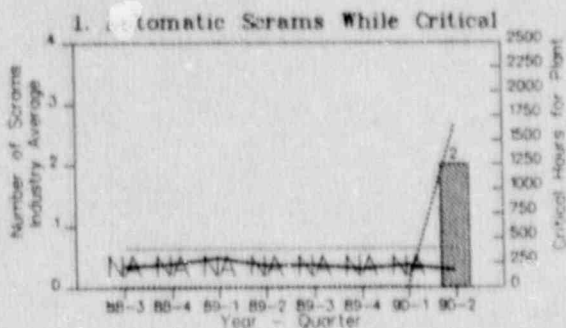
FIGURE 4.21

COMANCHE PEAK 1

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

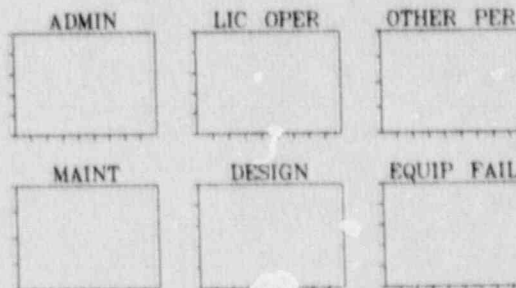
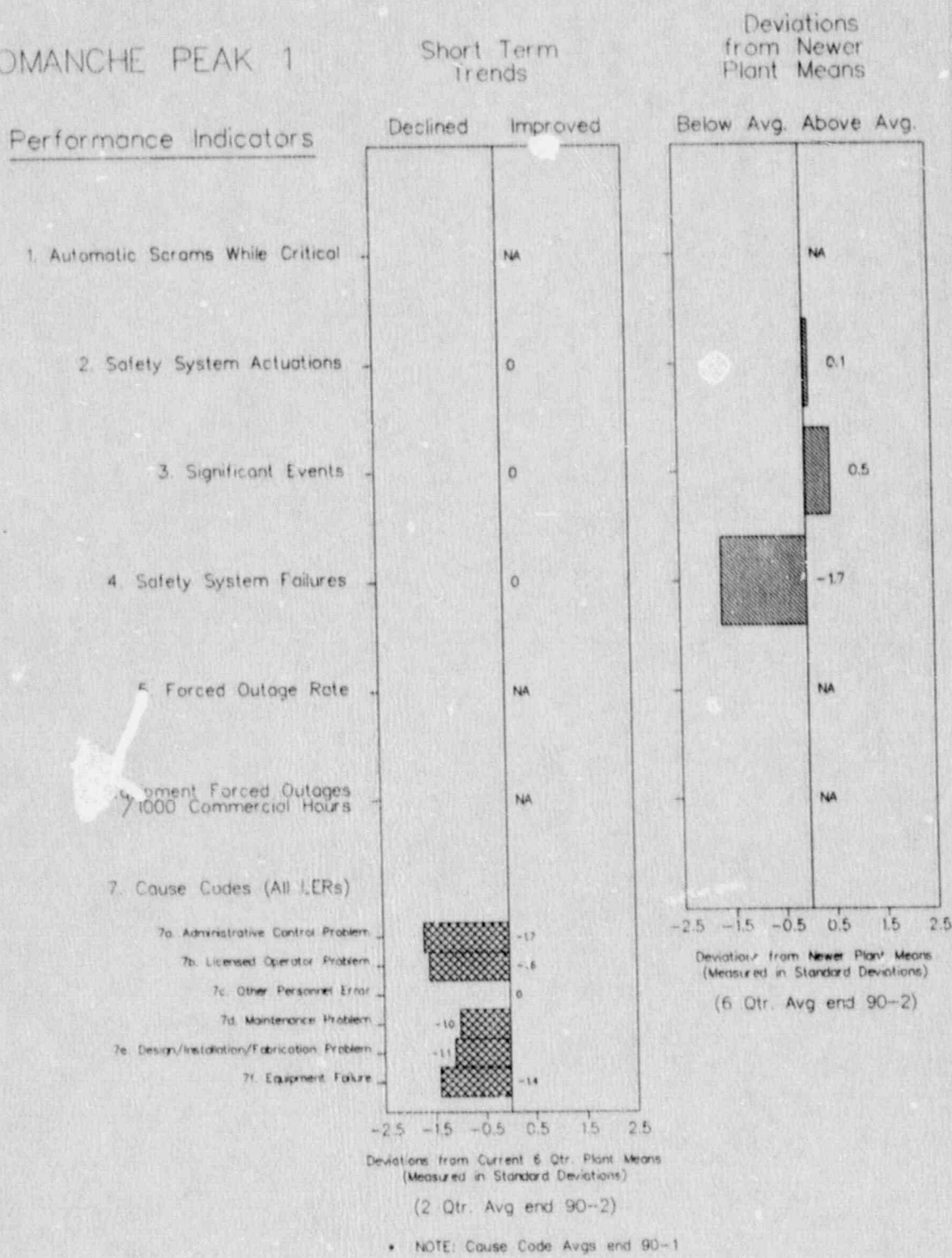


FIGURE 4.21

COMANCHE PEAK 1



THIS
PAGE
INTENTIONALLY
LEFT
BLANK

FIGURE 4.21

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

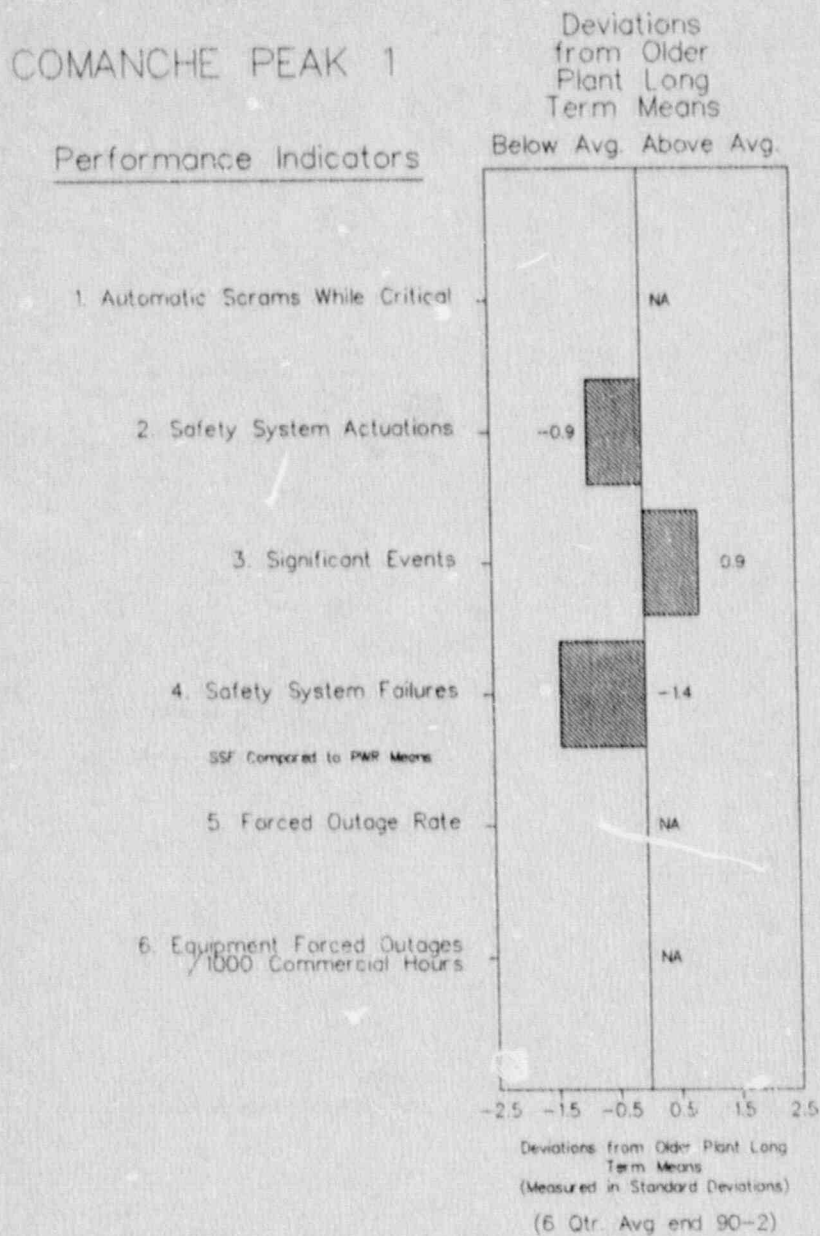


FIGURE 4.22

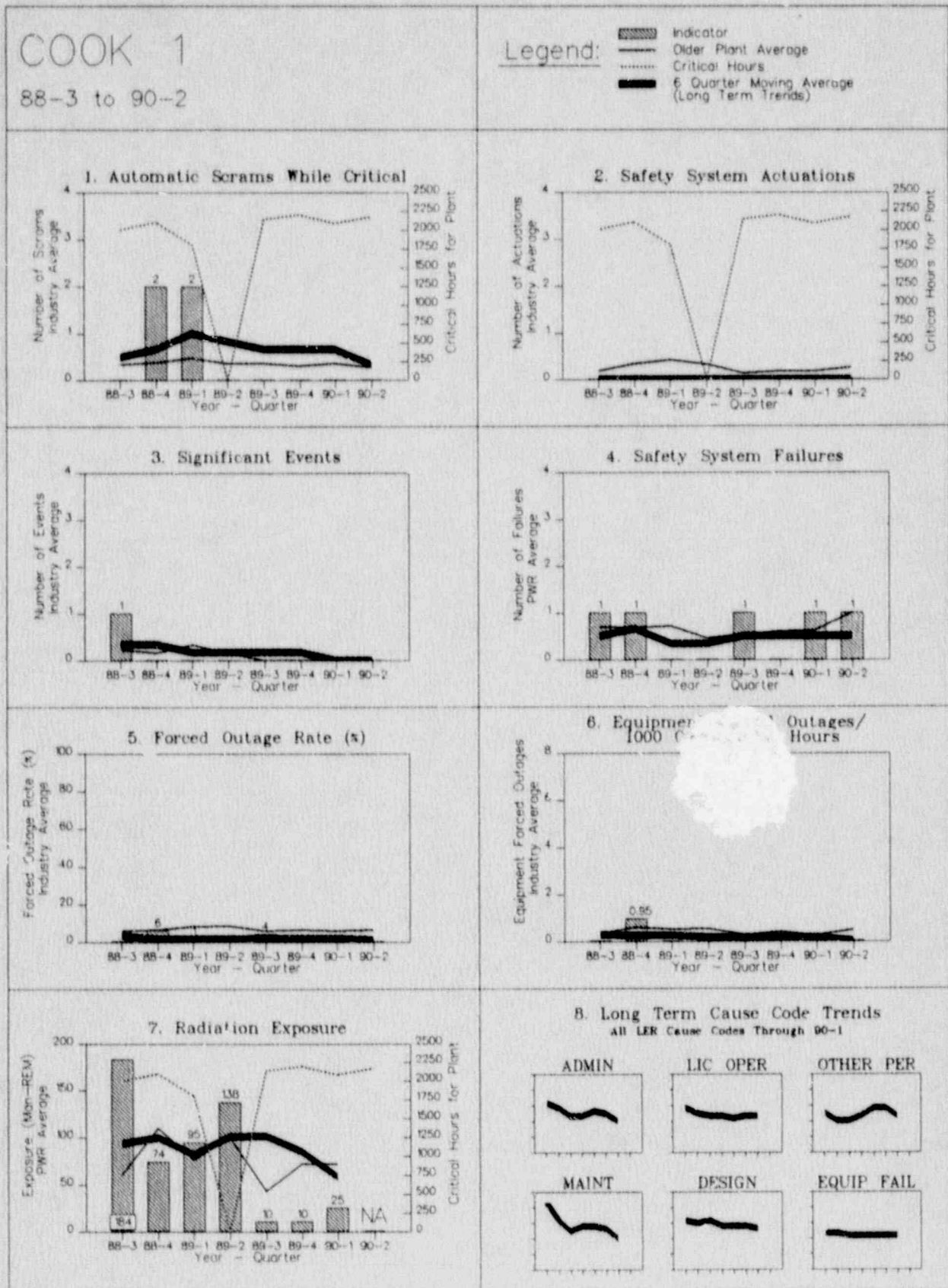


FIGURE 4.22

COOK 1

Performance Indicators

Short Term Trends

Declined Improved

Deviations from Older Plant Long Term Means

Below Avg. Above Avg.

1. Automatic Scrams While Critical



0.3



2. Safety System Actuations

0

1.3



3. Significant Events

0

0.9



4. Safety System Failures

-1.0

0.4



SSF Compared to PWR Means

5. Forced Outage Rate

0.6

0.9



6. Equipment Forced Outages / 1000 Commercial Hours

0

1.1



7. Cause Codes (All LERs)

7a. Administrative Control Problem

1.2

7b. Licensed Operator Problem

-0.4

7c. Other Personnel Error

0.9

7d. Maintenance Problem

1.3

7e. Design/Installation/Fabrication Problem

0.2

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.23

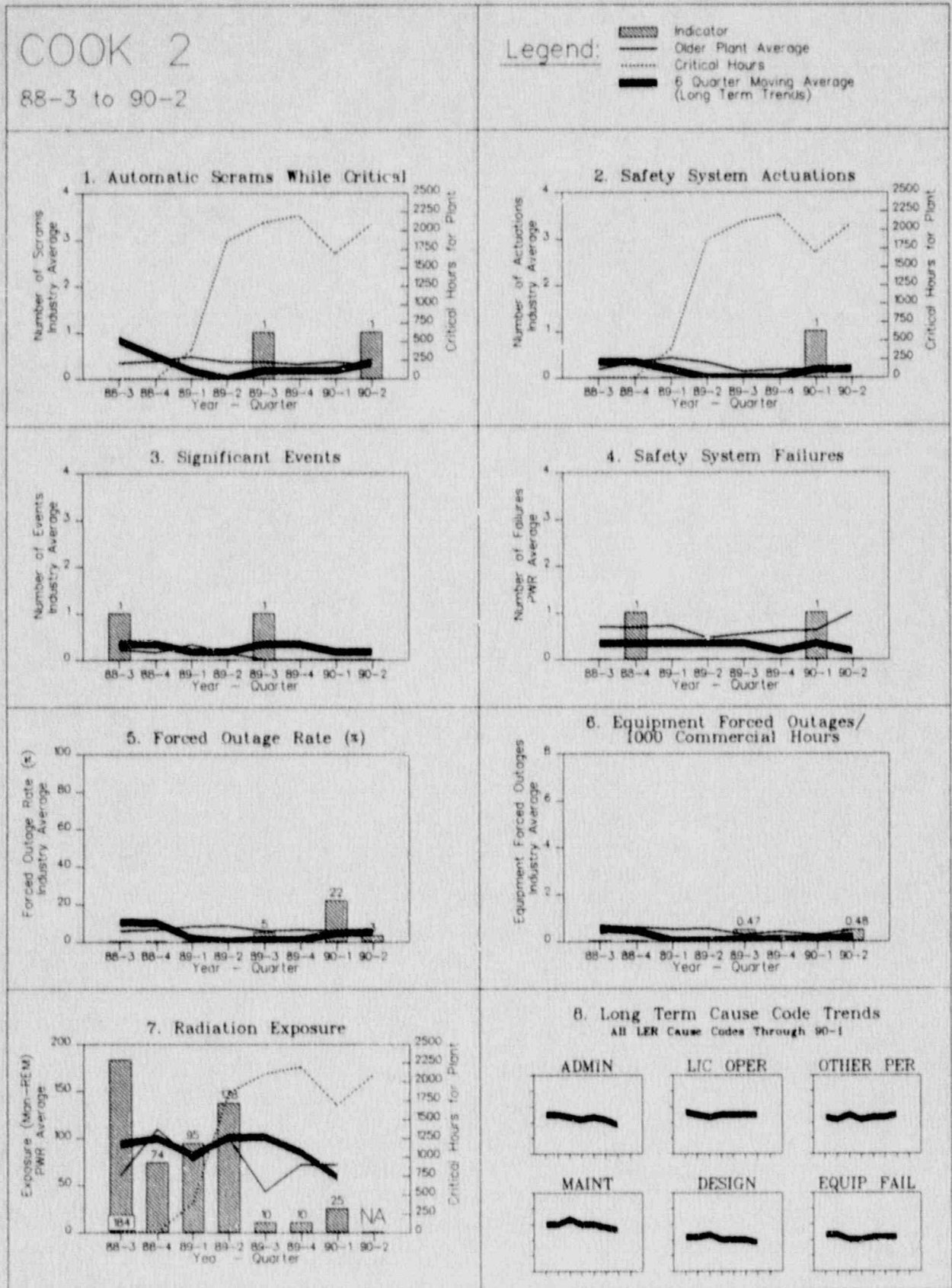


FIGURE 4.23

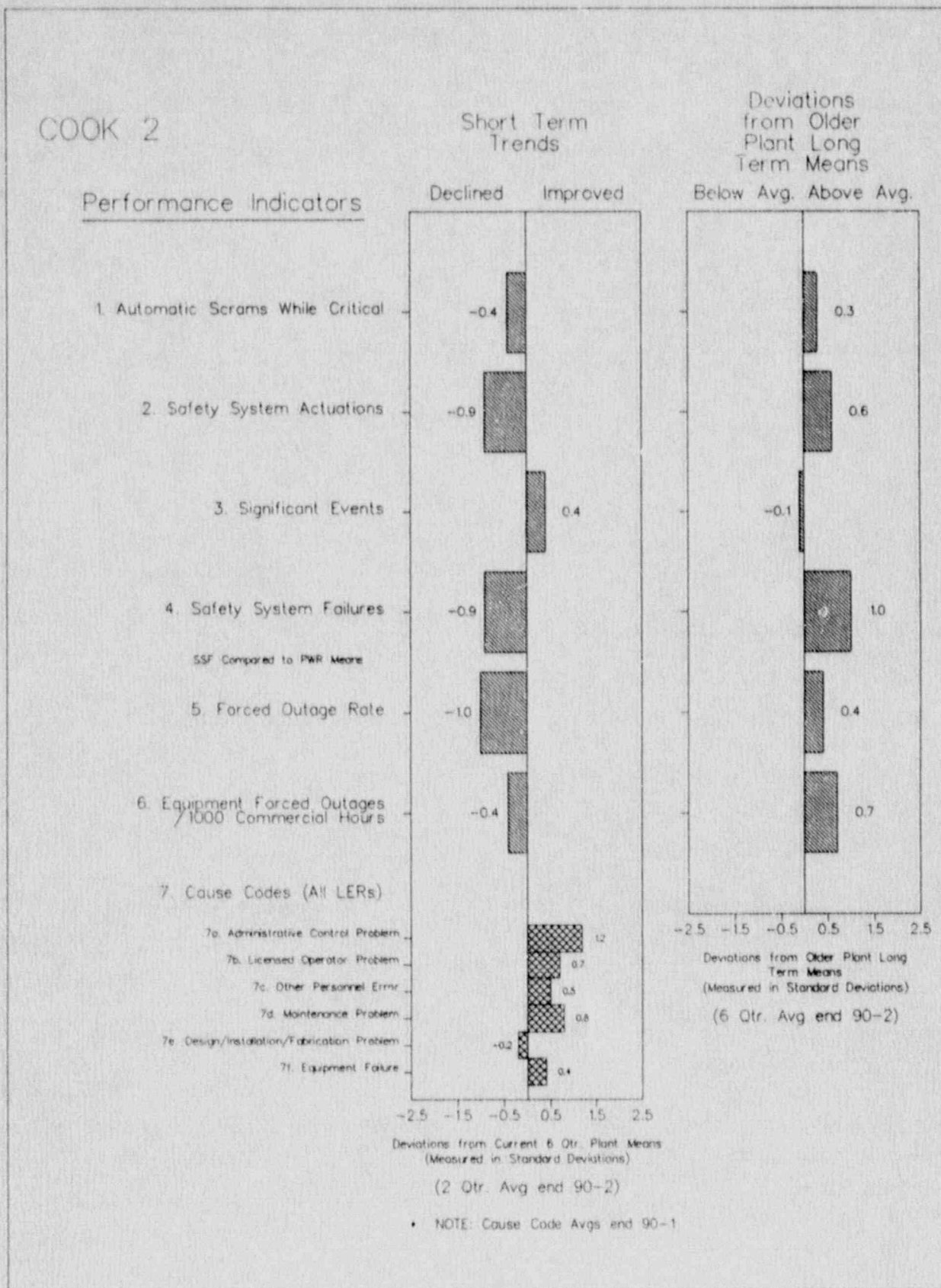


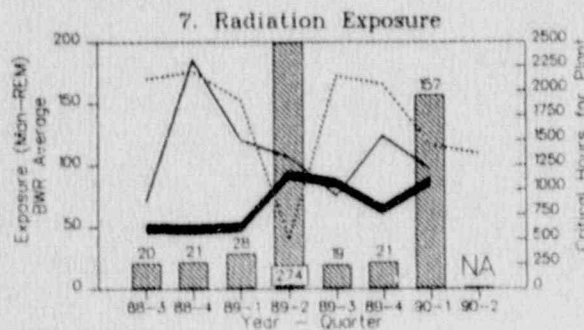
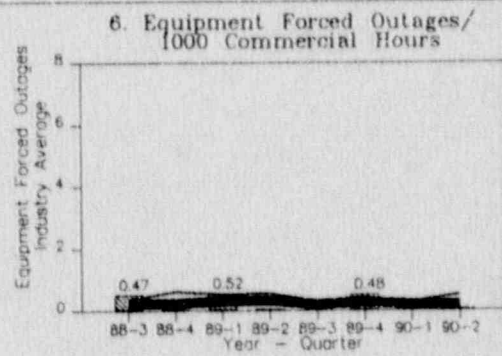
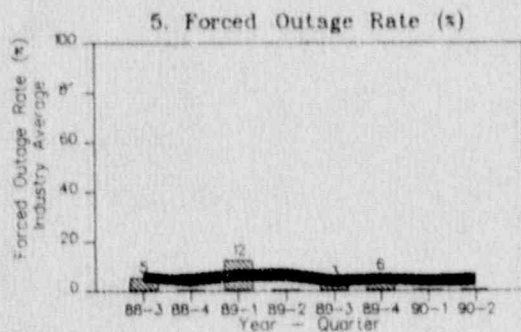
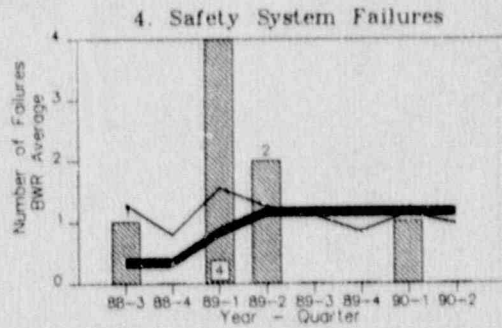
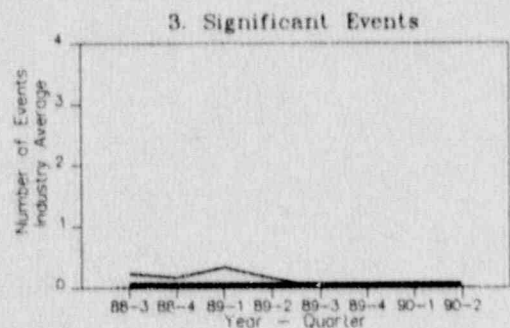
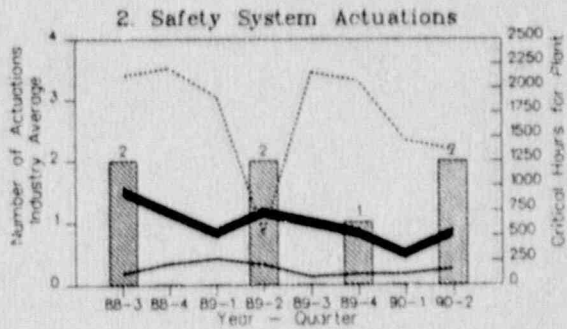
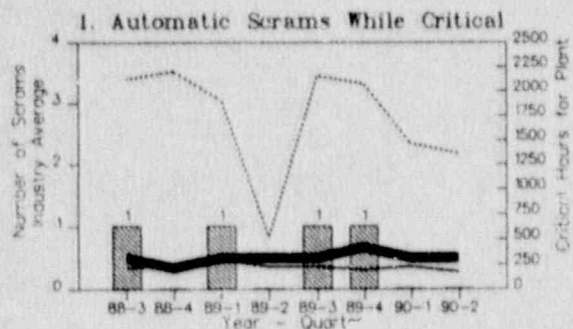
FIGURE 4.2.1

COOPER STATION

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

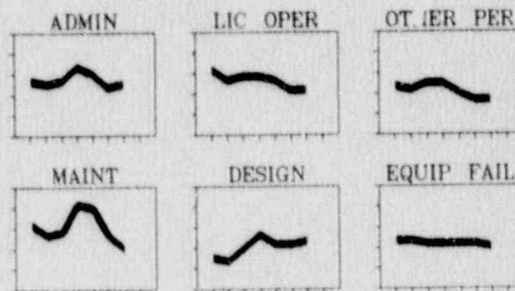


FIGURE 4.24

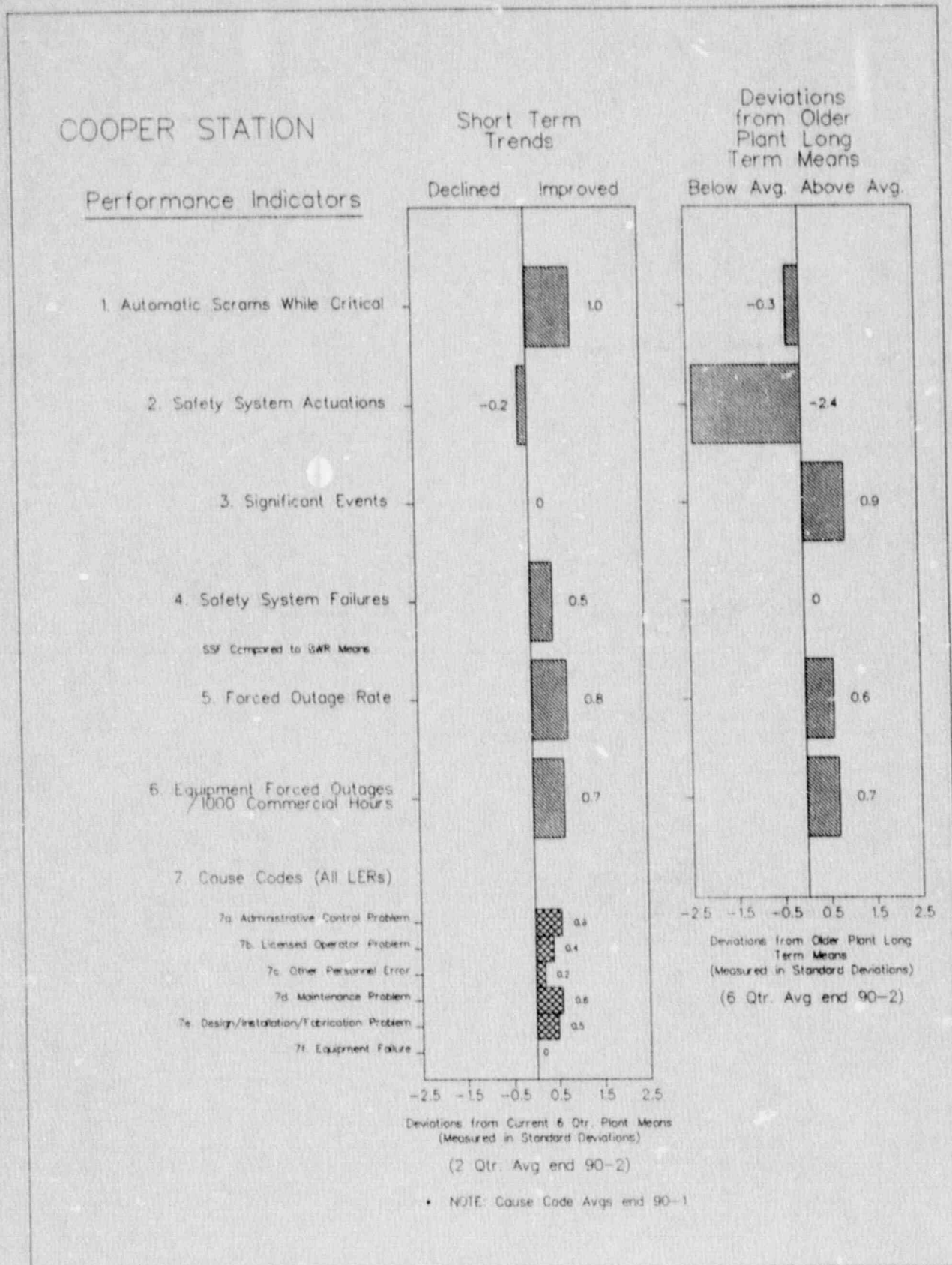


FIGURE 4.25

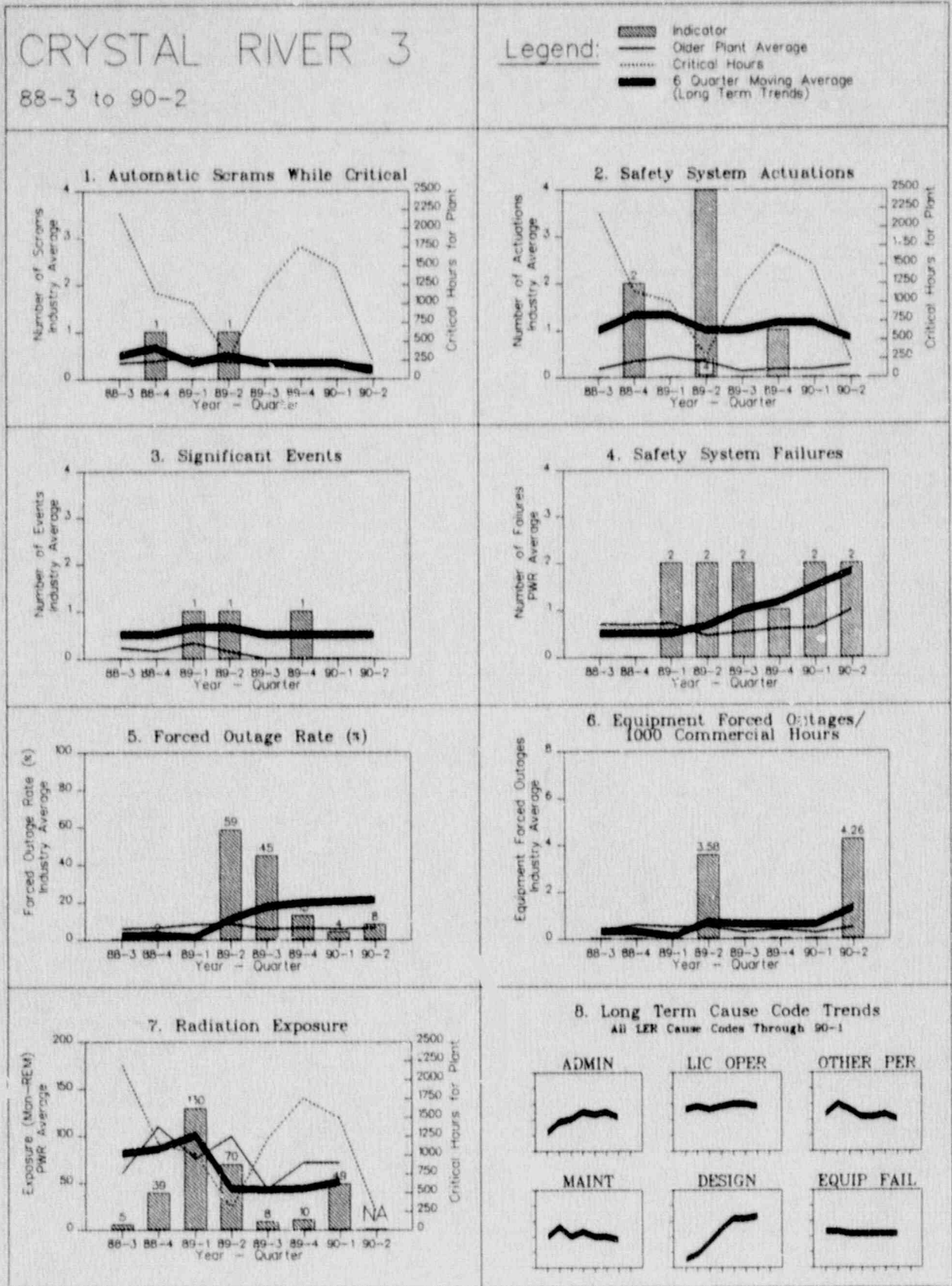


FIGURE 4.25

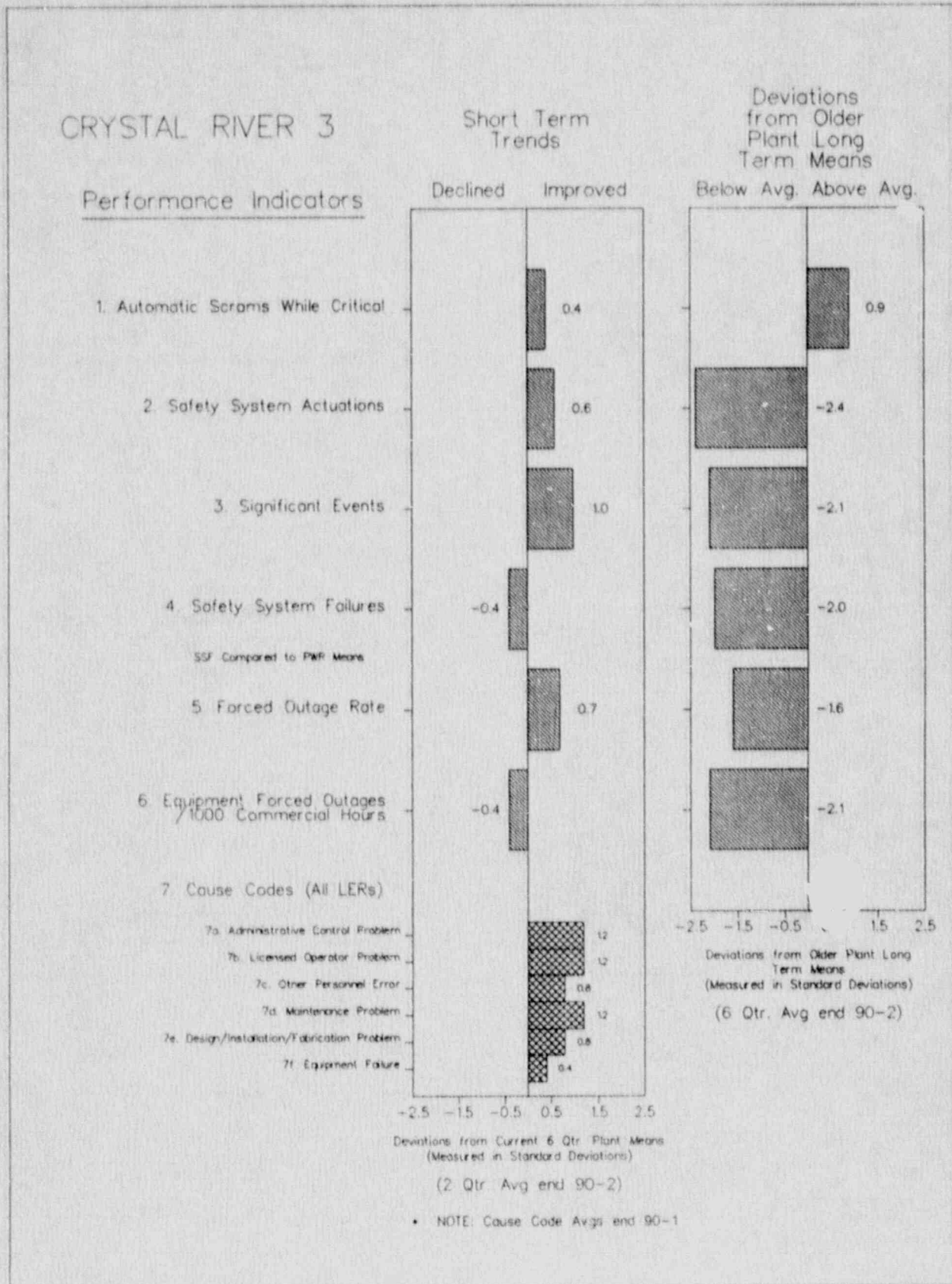






FIGURE 4.26

DAVIS-BESSE

88-3 to 90-2

Legend:

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

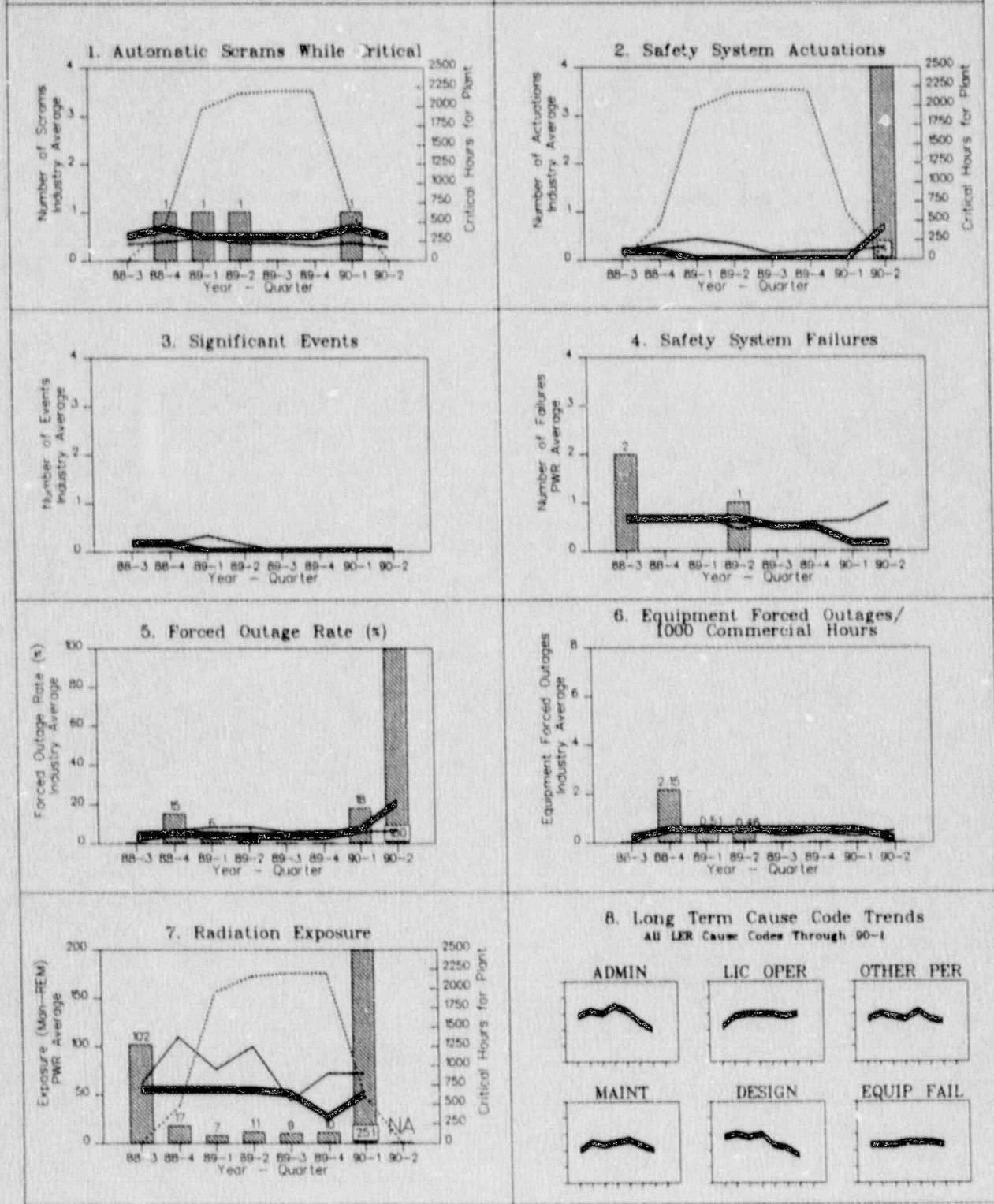


FIGURE 4.26

DAVIS-BESSE

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrums While Critical

0

-0.3

2. Safety System Actuations

-0.9

-1.7

3. Significant Events

0

0.9

4. Safety System Failures

0.4

1.0

SSF Compared to PWR Means

5. Forced Outage Rate

-1.1

-1.5

6. Equipment Forced Outages /1000 Commercial Hours

0.7

0.7

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.8

7b. Licensed Operator Problem

0.4

7c. Other Personnel Error

0.6

7d. Maintenance Problem

1.0

7e. Design/Installation/Fabrication Problem

0.2

7f. Equipment Failure

0.7

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

* NOTE: Cause Code Avgs end 90-1

FIGURE 4.27

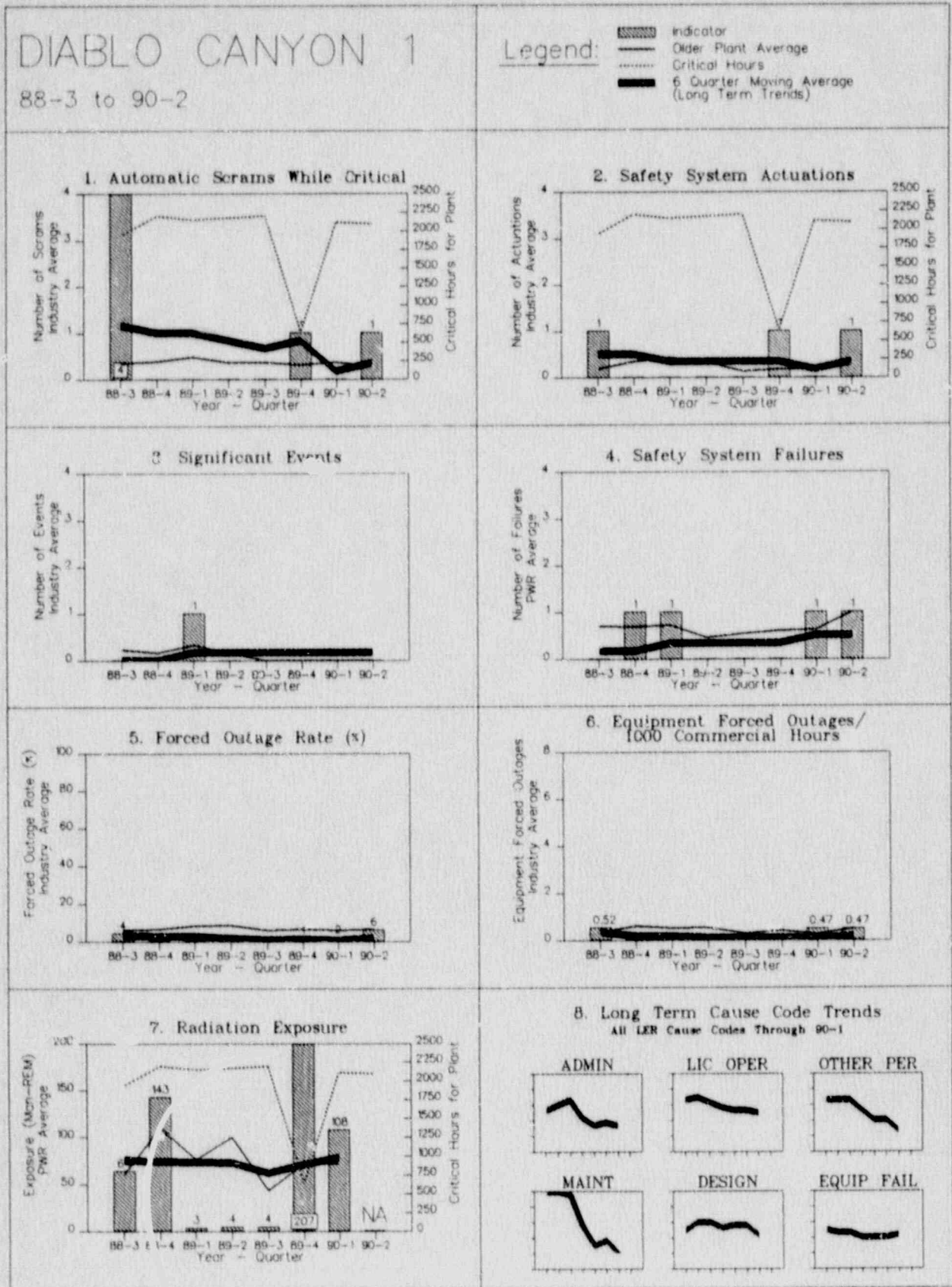


FIGURE 4.27

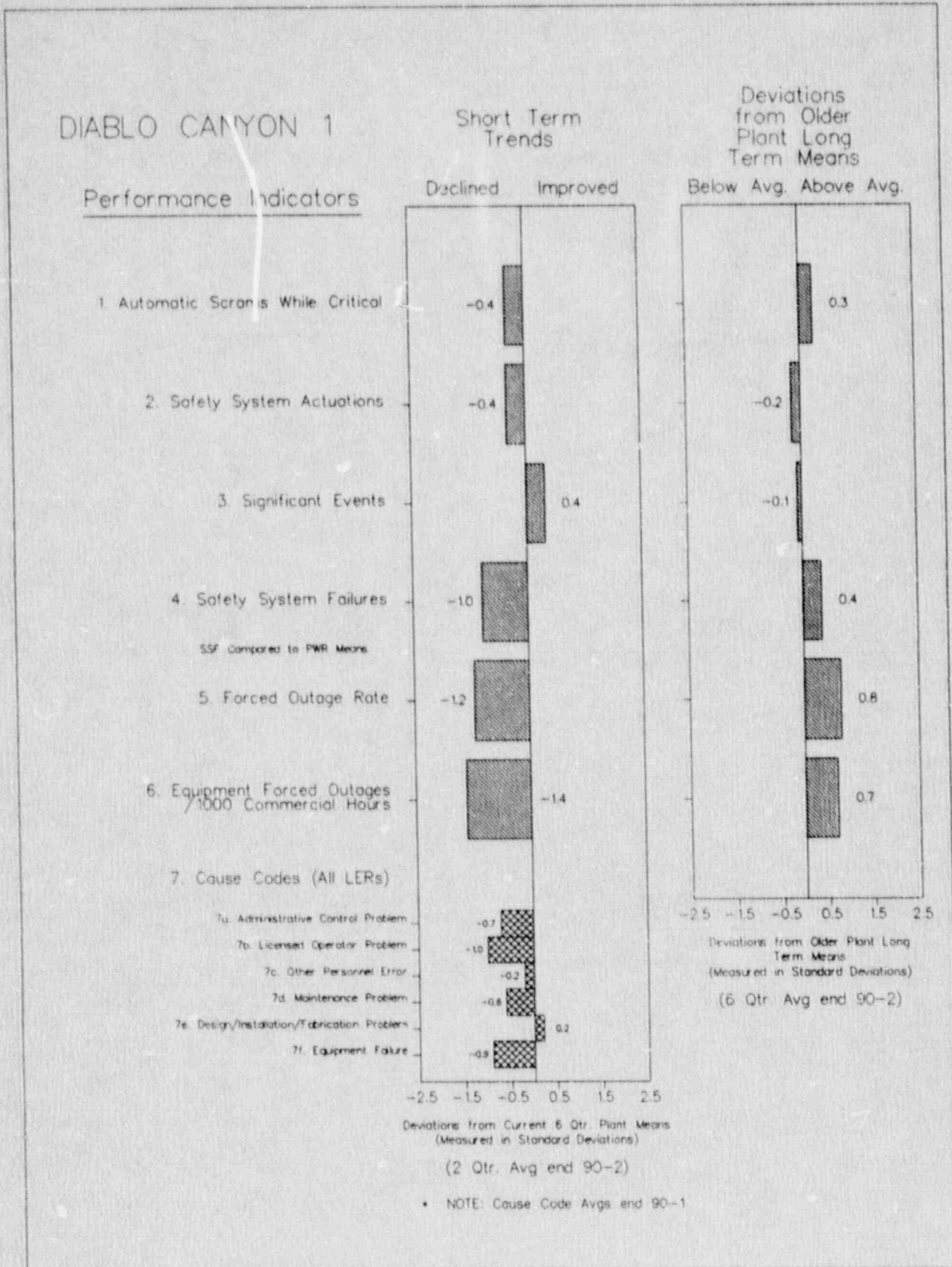


FIGURE 4.28

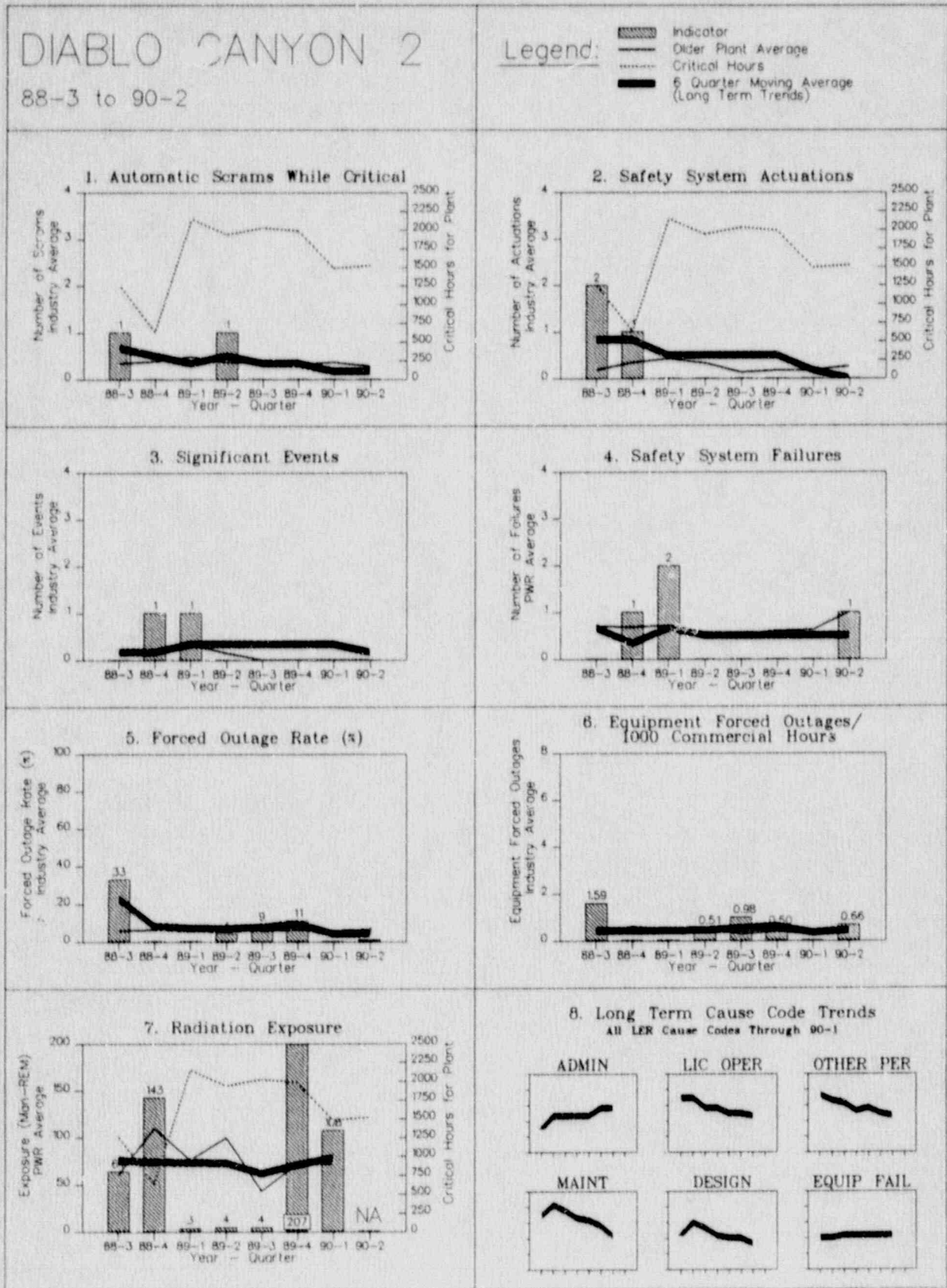


FIGURE 4.28

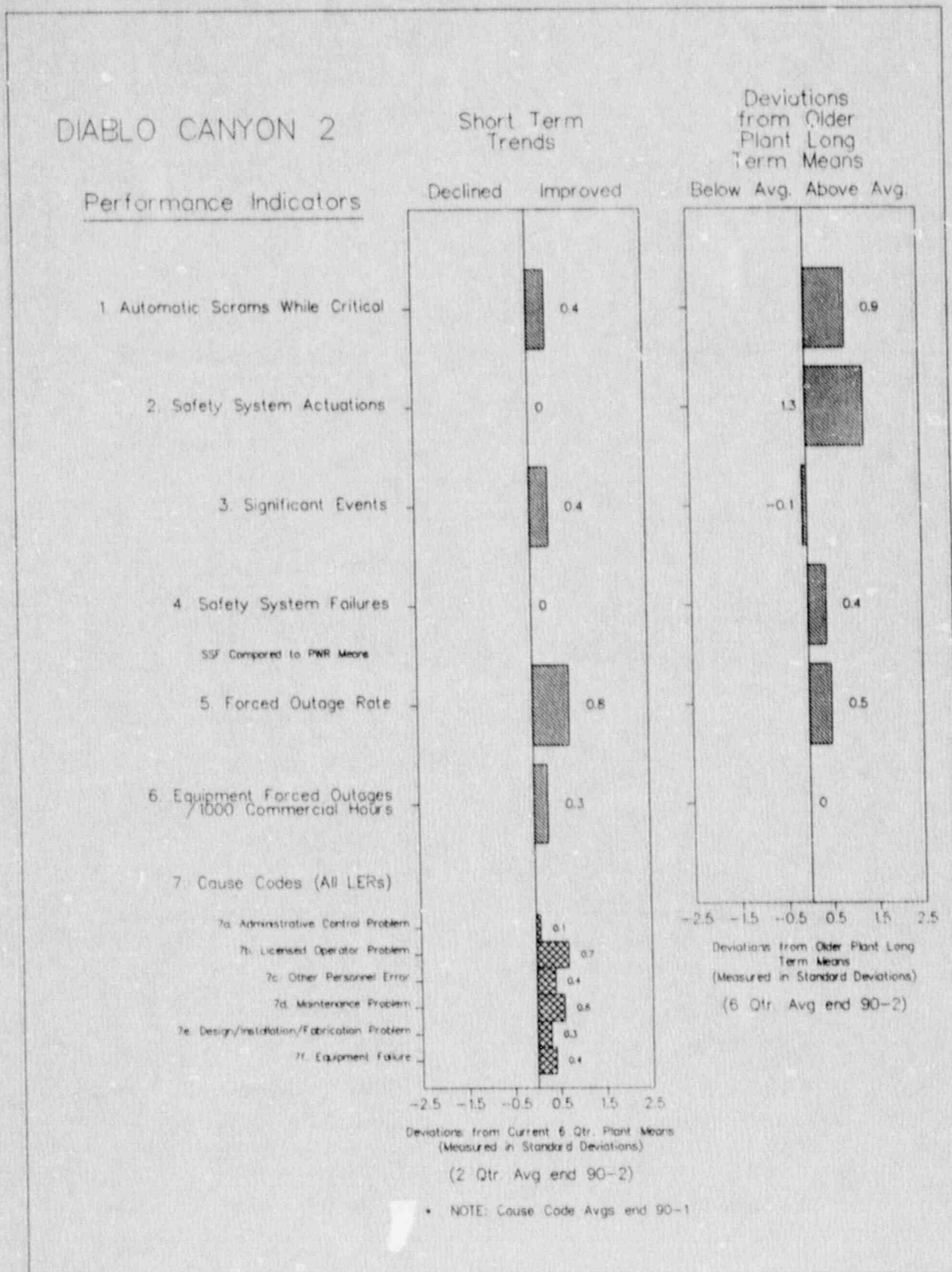


FIGURE 4.29

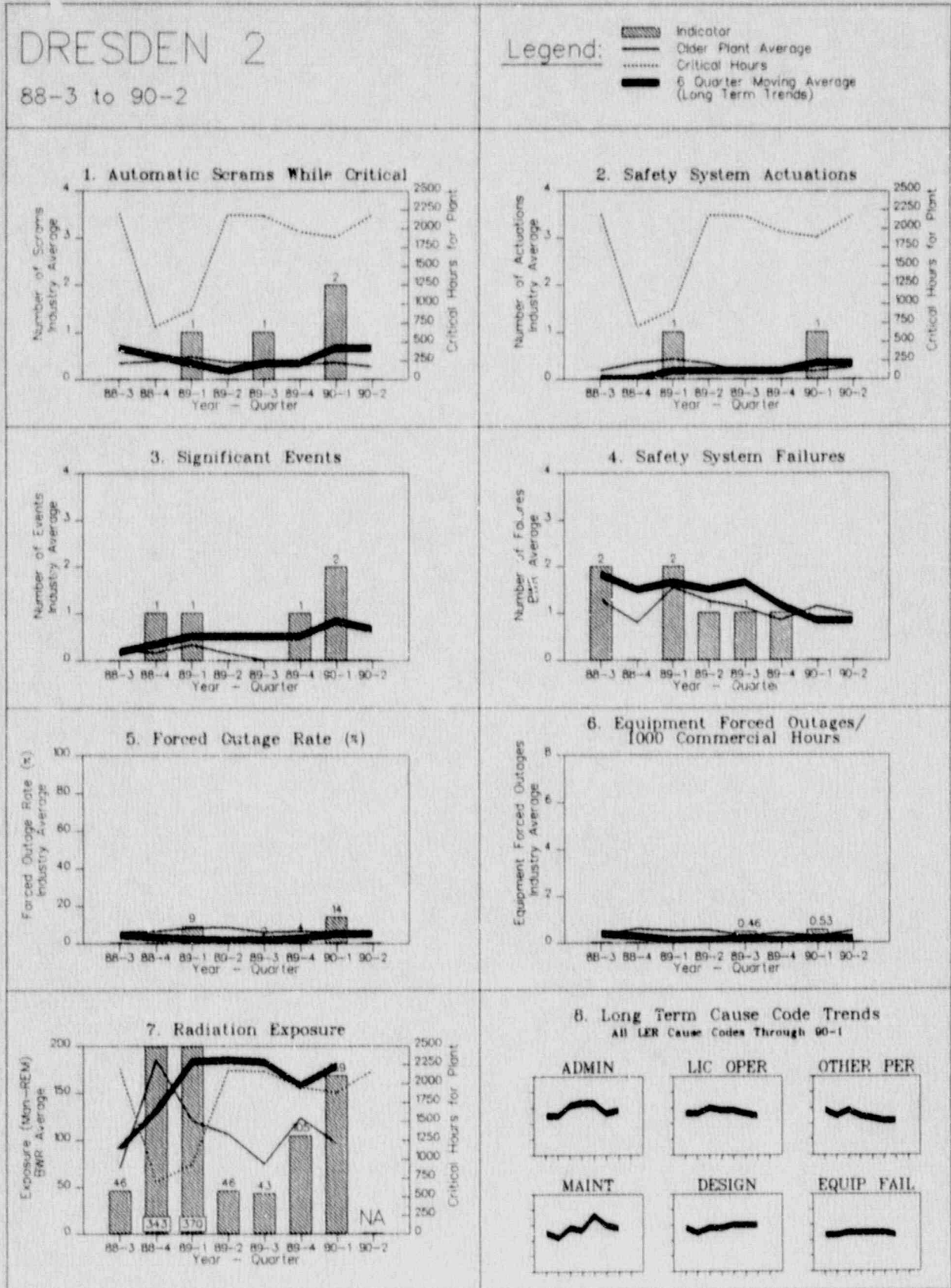


FIGURE 4.29

DRESDEN 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

-0.9

2. Safety System Actuations

-0.4

-0.2

3. Significant Events

-0.4

-3.1

4. Safety System Failures

1.2

0.5

SSF Compared to BWR Means

5. Forced Outage Rate

-0.4

0.4

6. Equipment Forced Outages / 1000 Commercial Hours

-0.4

0.7

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.9

7b. Licensed Operator Problem

0.7

7c. Other Personnel Error

-0.5

7d. Maintenance Problem

1.0

7e. Design/Installation/Fabrication Problem

0.8

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.30

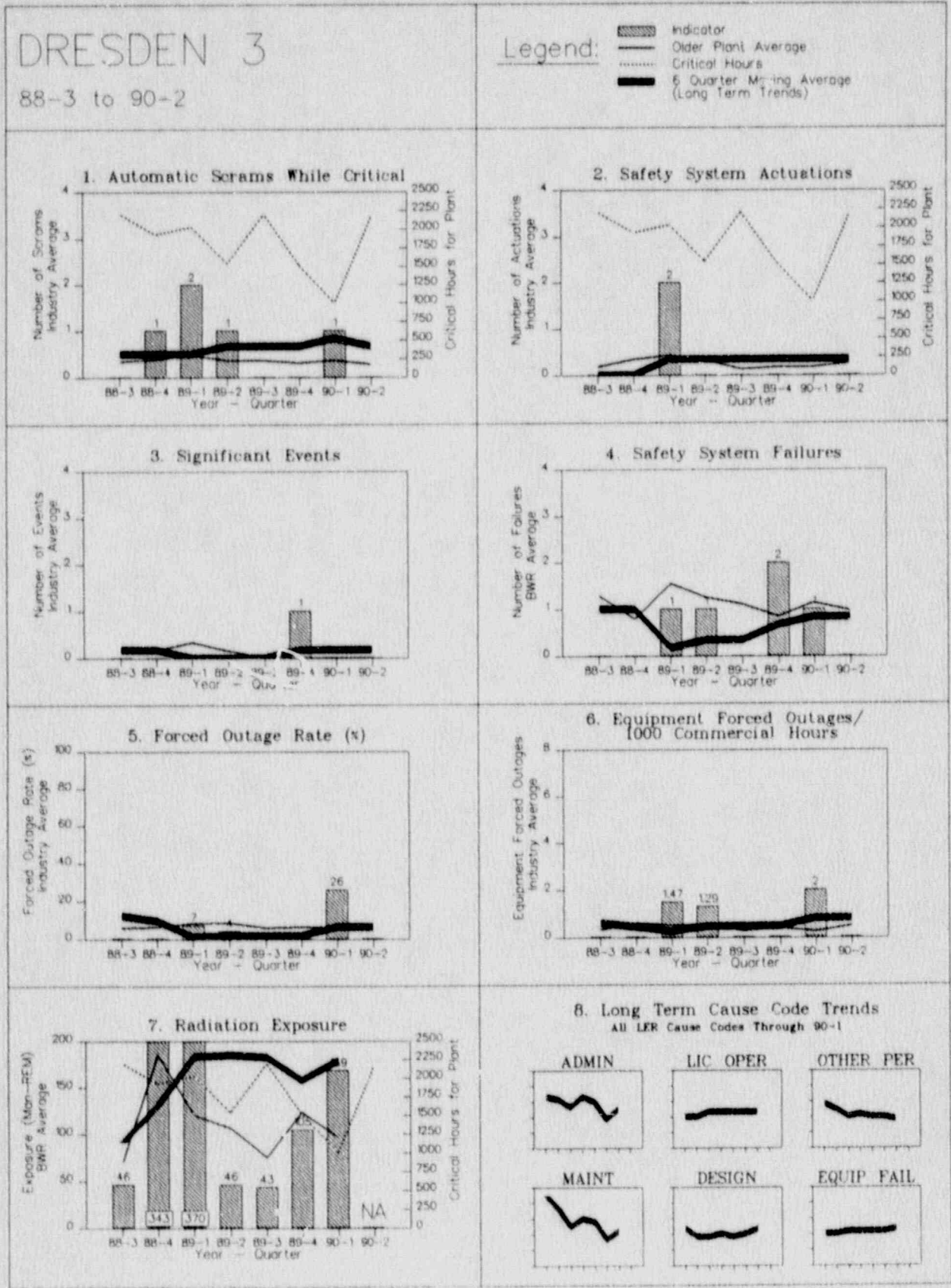


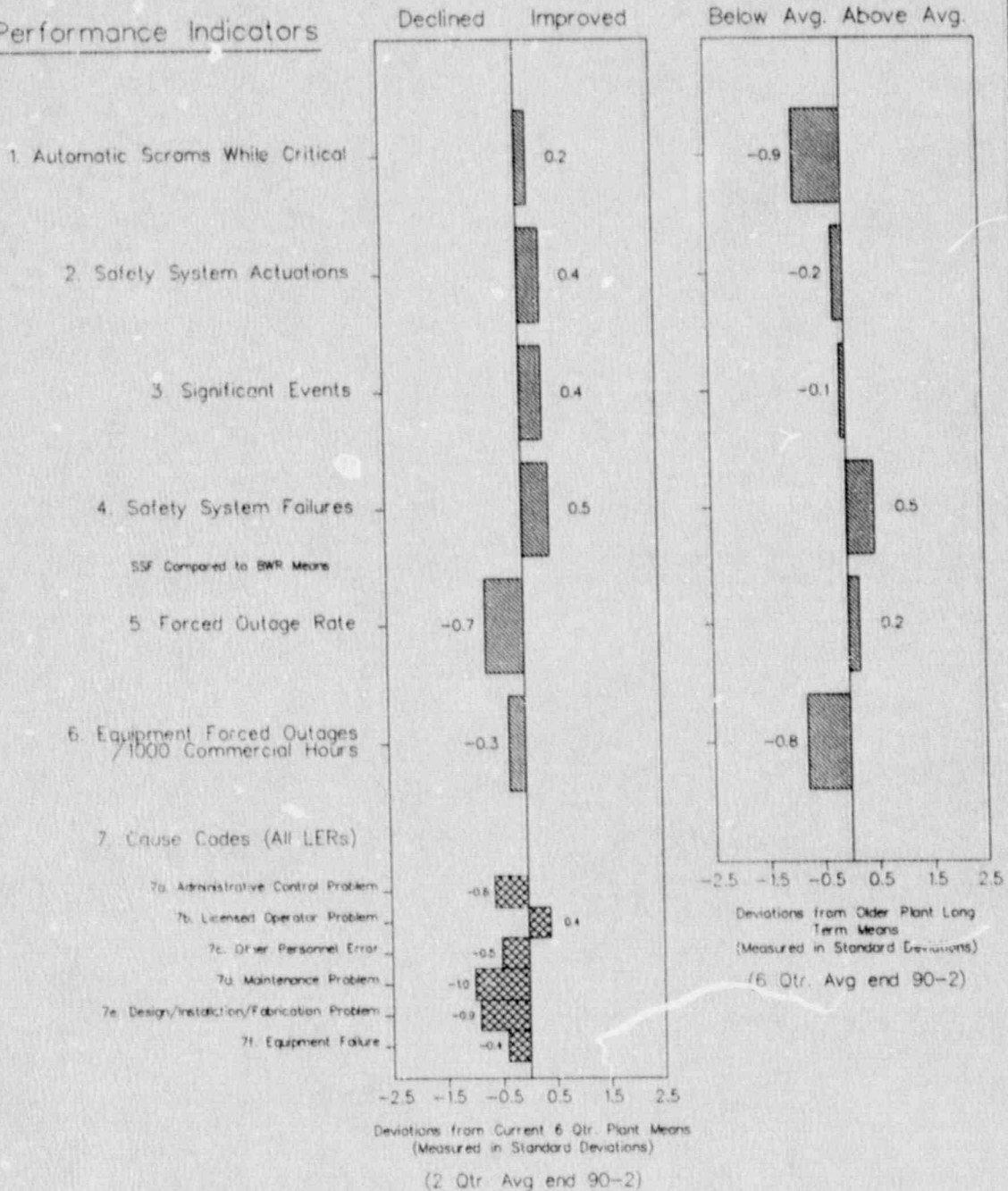
FIGURE 4.30

DRESDEN 3

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means







• NOTE: Cause Code Avgs end 90-1

FIGURE 4.31

DUANE ARNOLD

88-3 to 90-2

Legend:

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

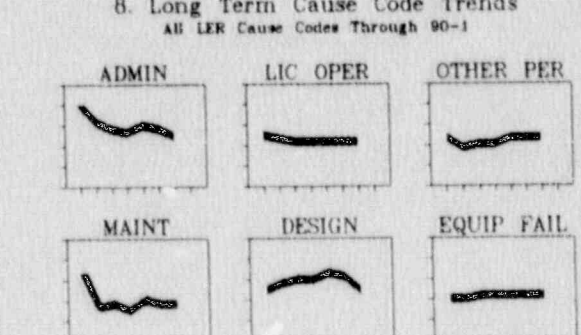
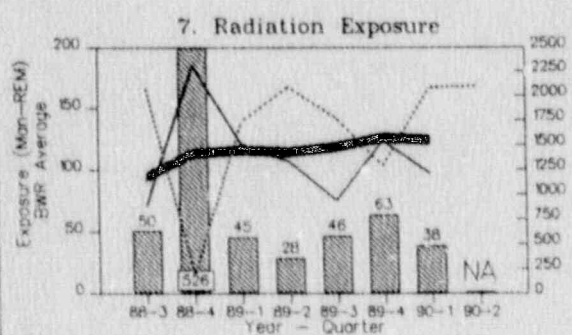
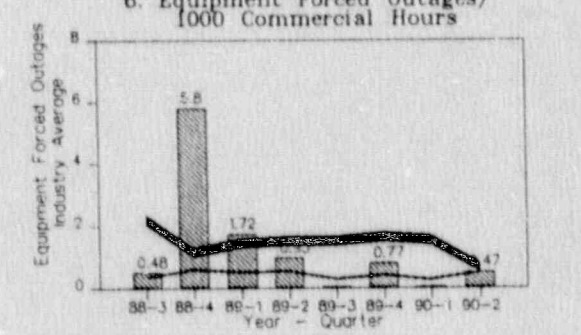
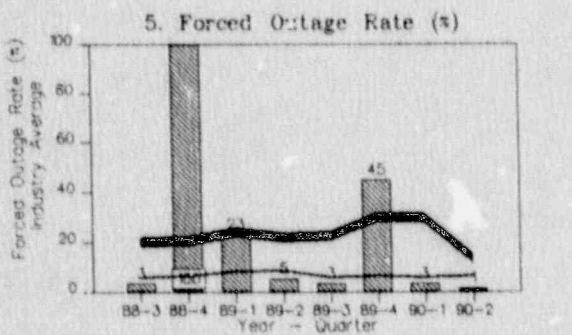
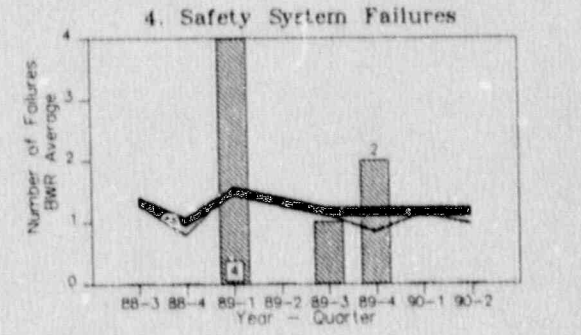
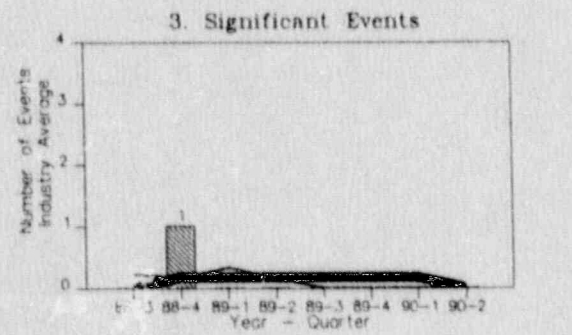
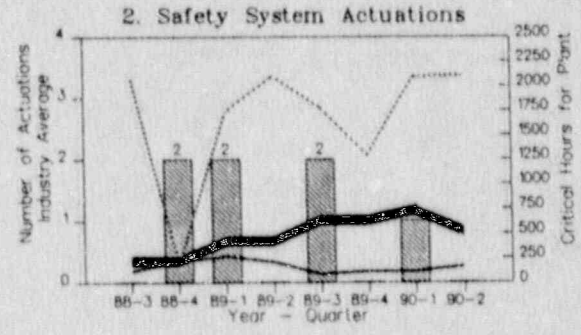
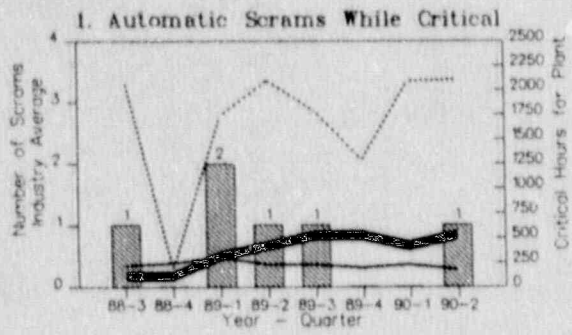


FIGURE 4.31

DUANE ARNOLD

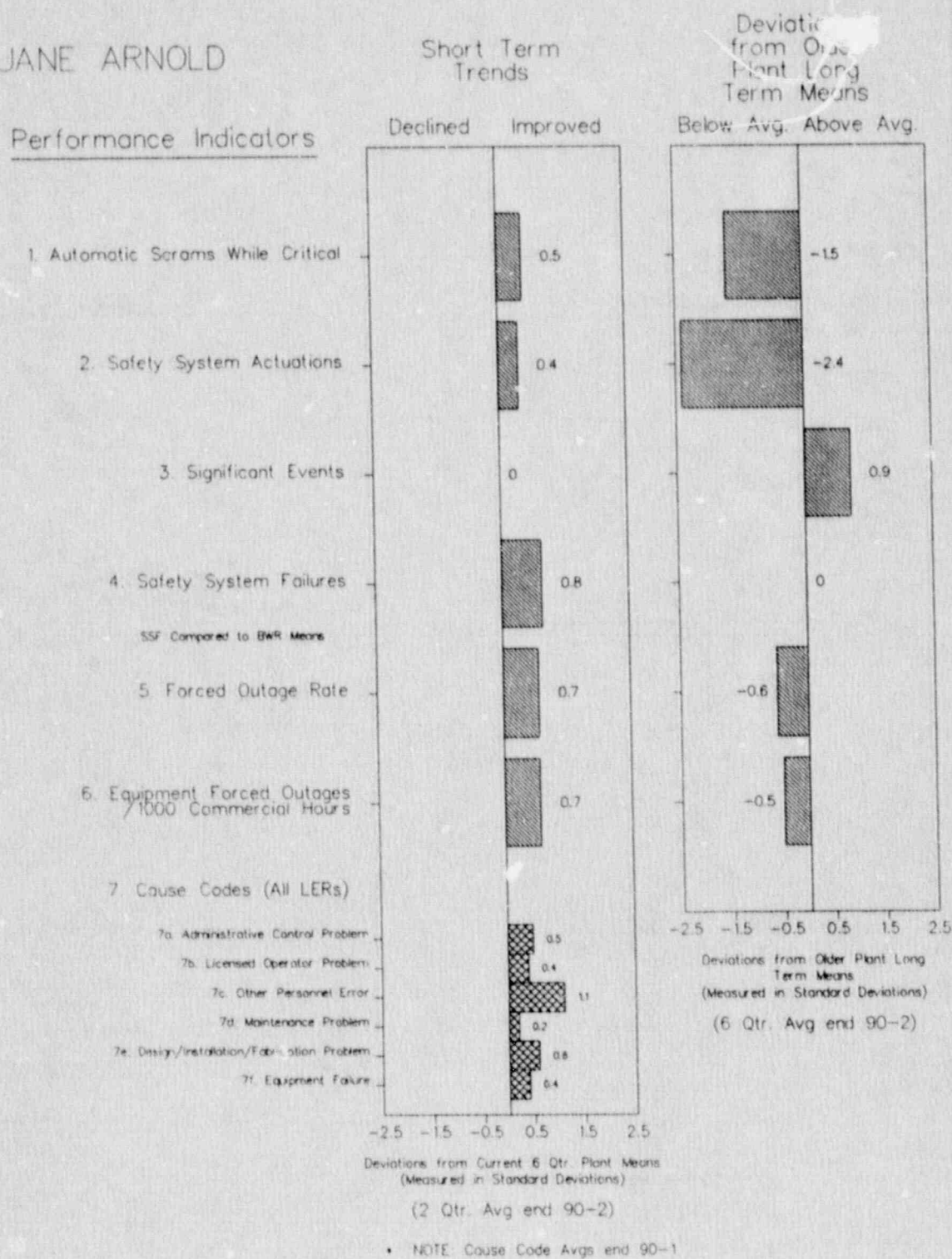


FIGURE 4.32

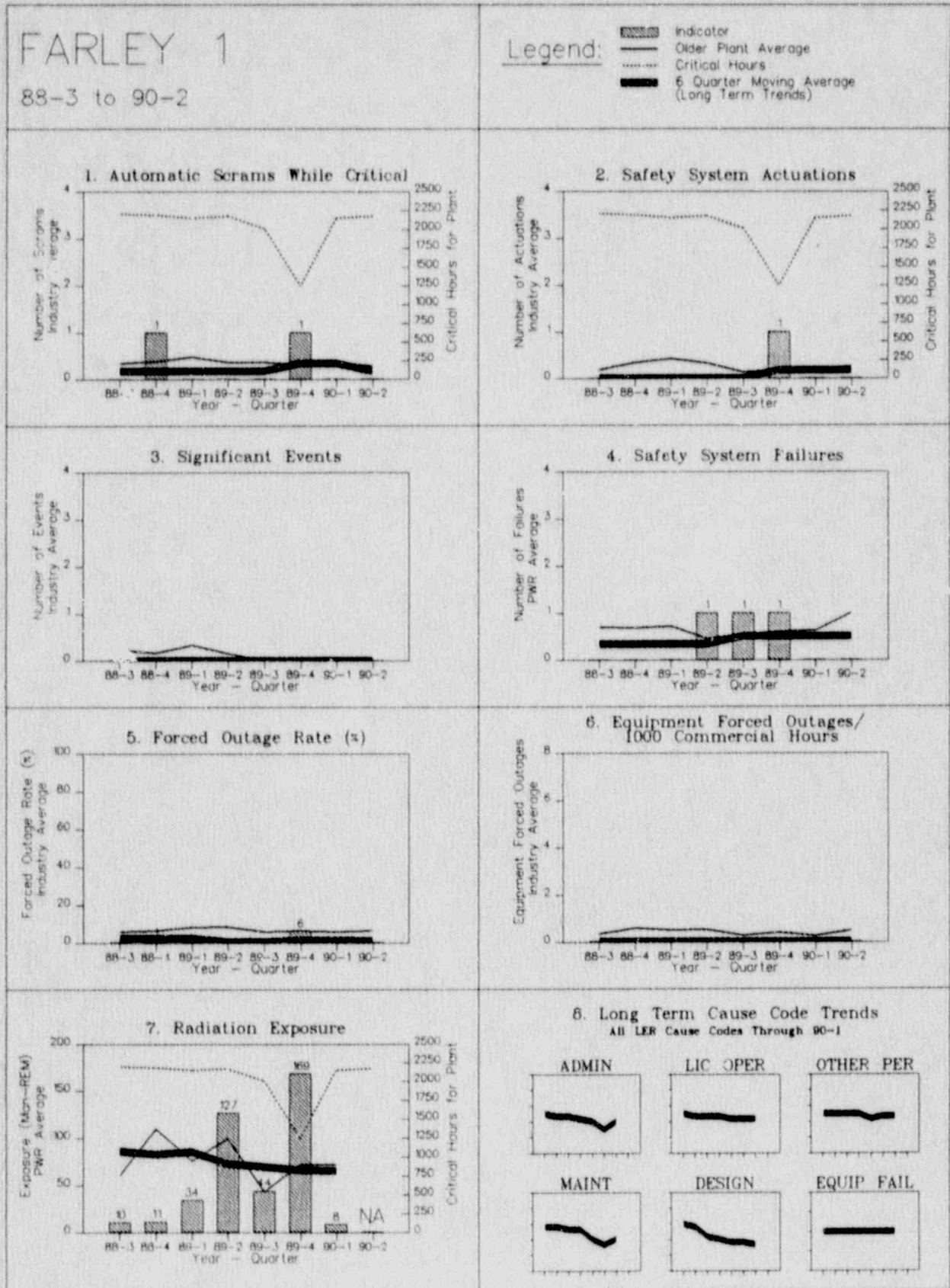


FIGURE 4.32

FARLEY 1

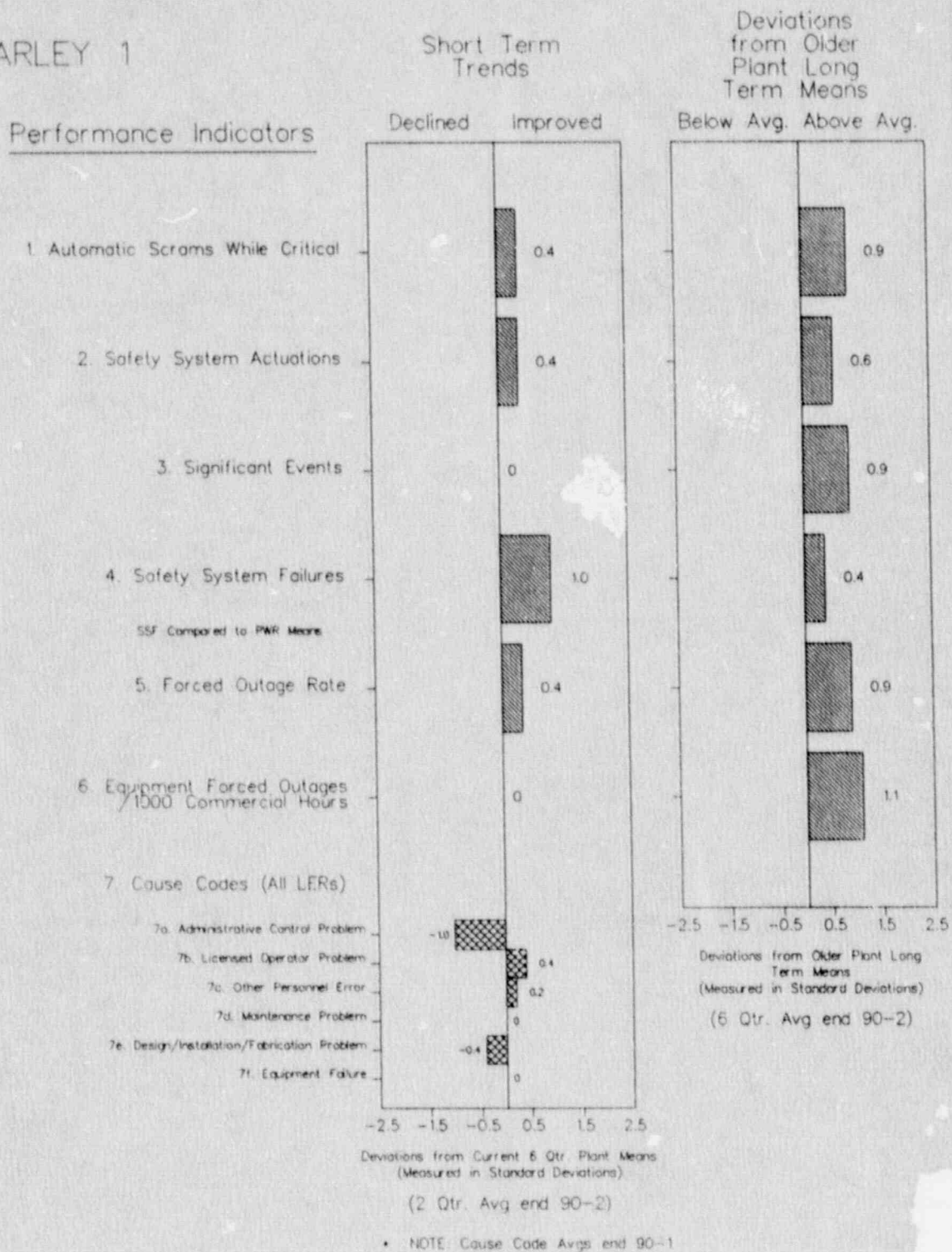


FIGURE 4.33

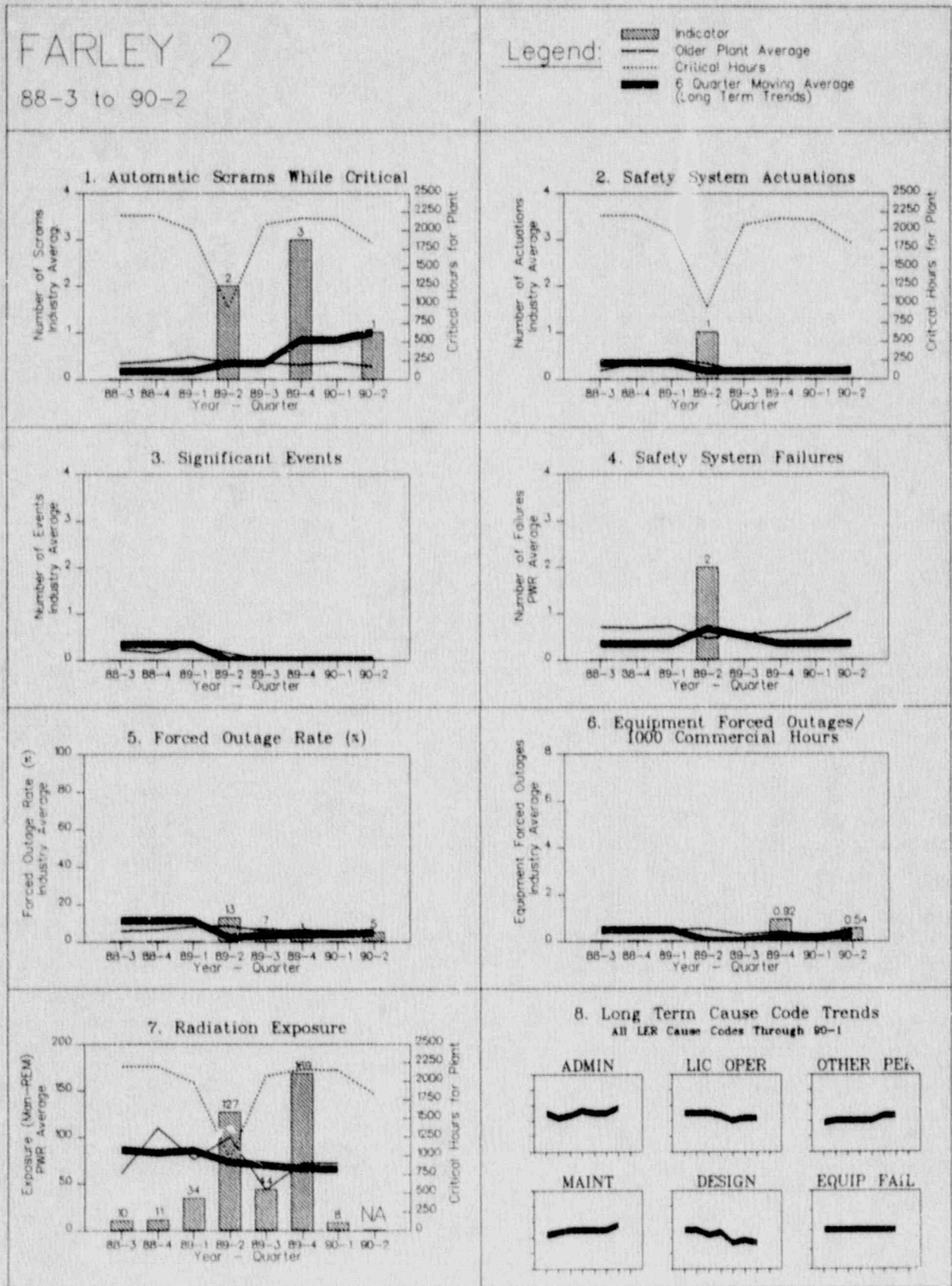


FIGURE 4.33

FARLEY 2

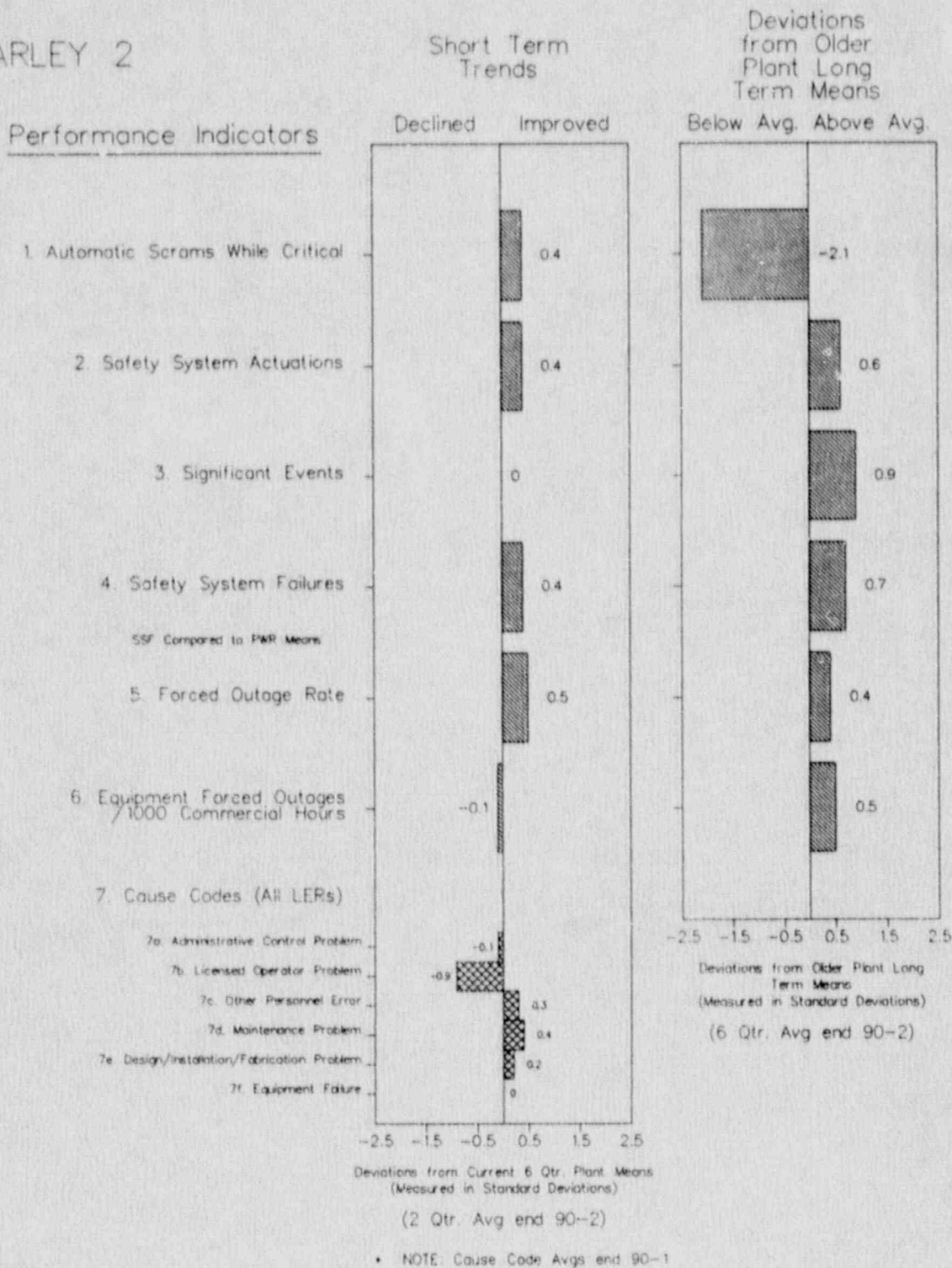


FIGURE 4.34

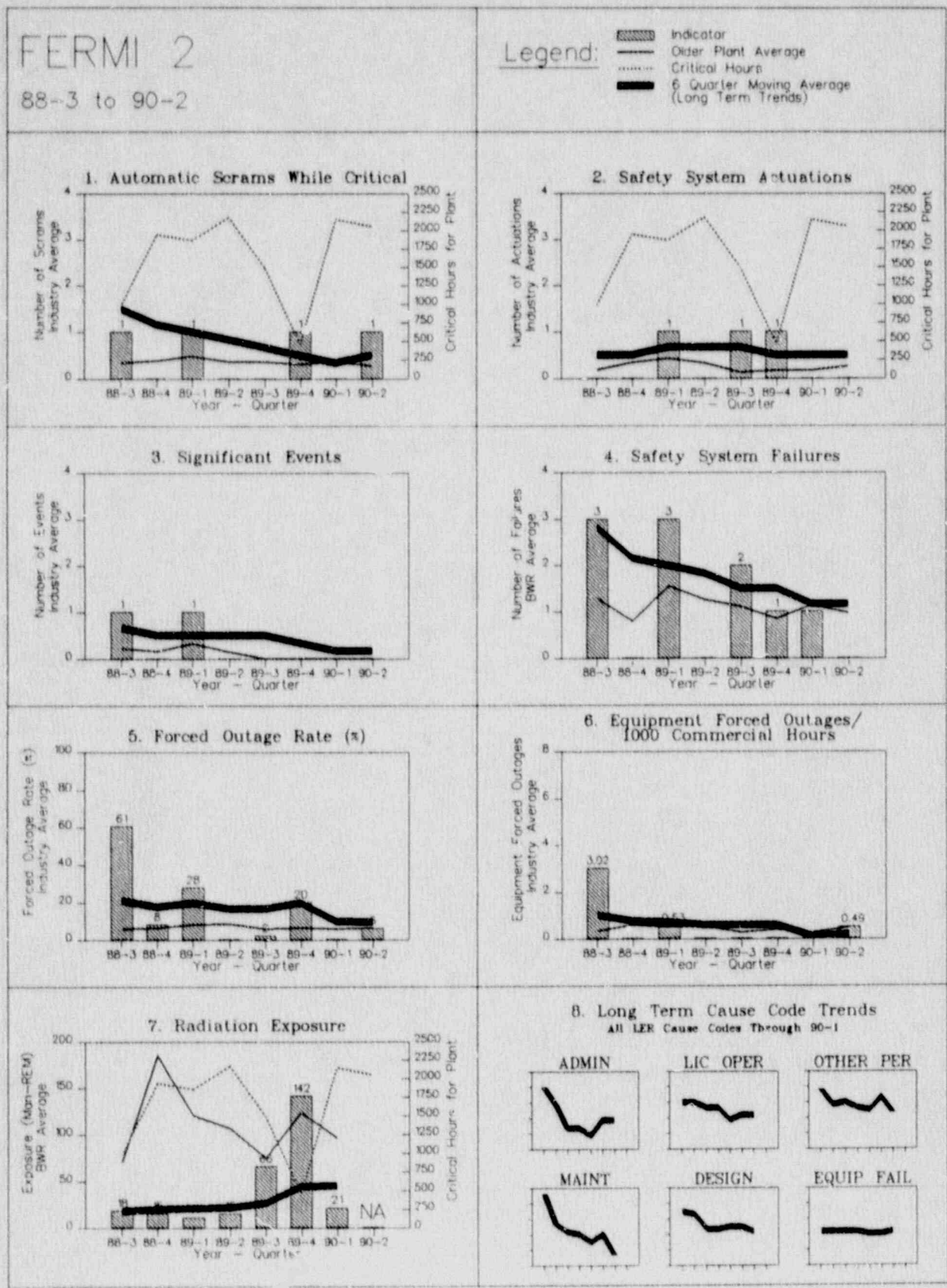


FIGURE 4.34

FERMI 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

1. Automatic Scrams While Critical

2. Safety System Actuations

3. Significant Events

4. Safety System Failures

SSF Compared to BWR Means

5. Forced Outage Rate

6. Equipment Forced Outages / 1000 Commercial Hours

7. Cause Codes (All LERs)

7a. Administrative Control Problem

7b. Licensed Operator Problem

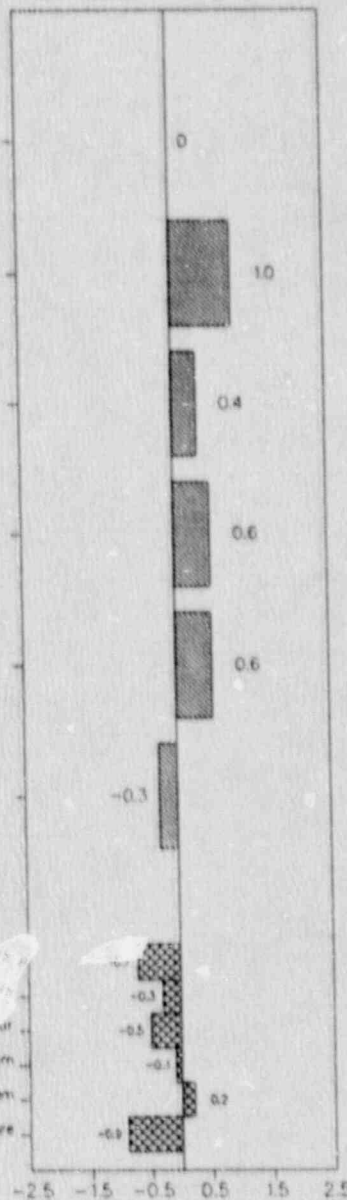
7c. Other Personnel Error

7d. Maintenance Problem

7e. Design/Installation/Fabrication Problem

7f. Equipment Failure

Declined Improved

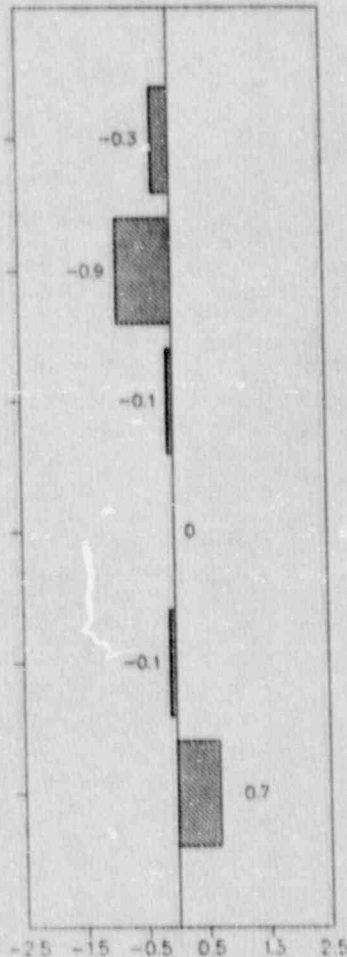


Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

* NOTE: Cause Code Avgs end 90-1

Below Avg. Above Avg.



Deviations from Older Plant Long Term Means

(Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

FIGURE 4.35

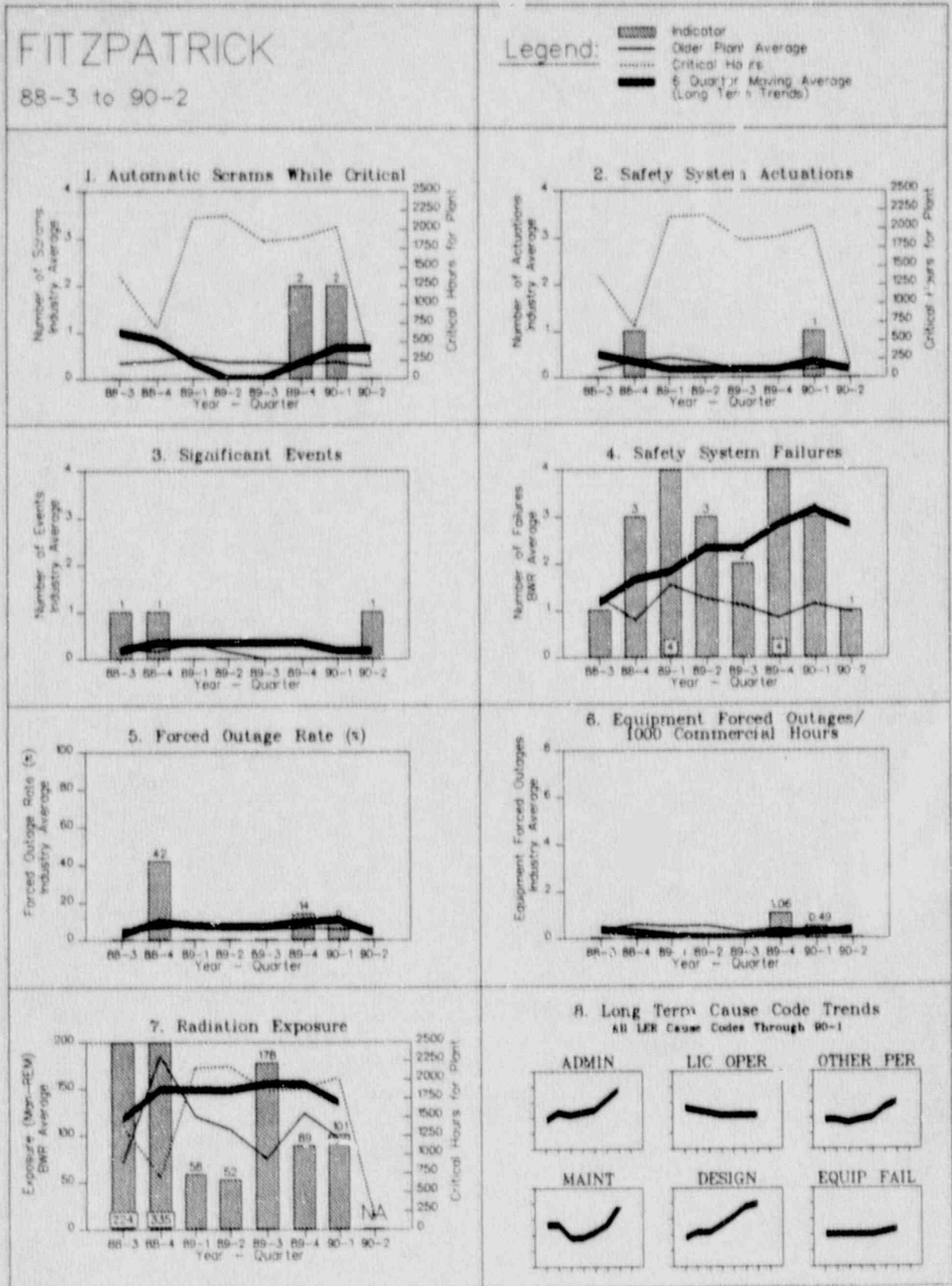


FIGURE 4.35

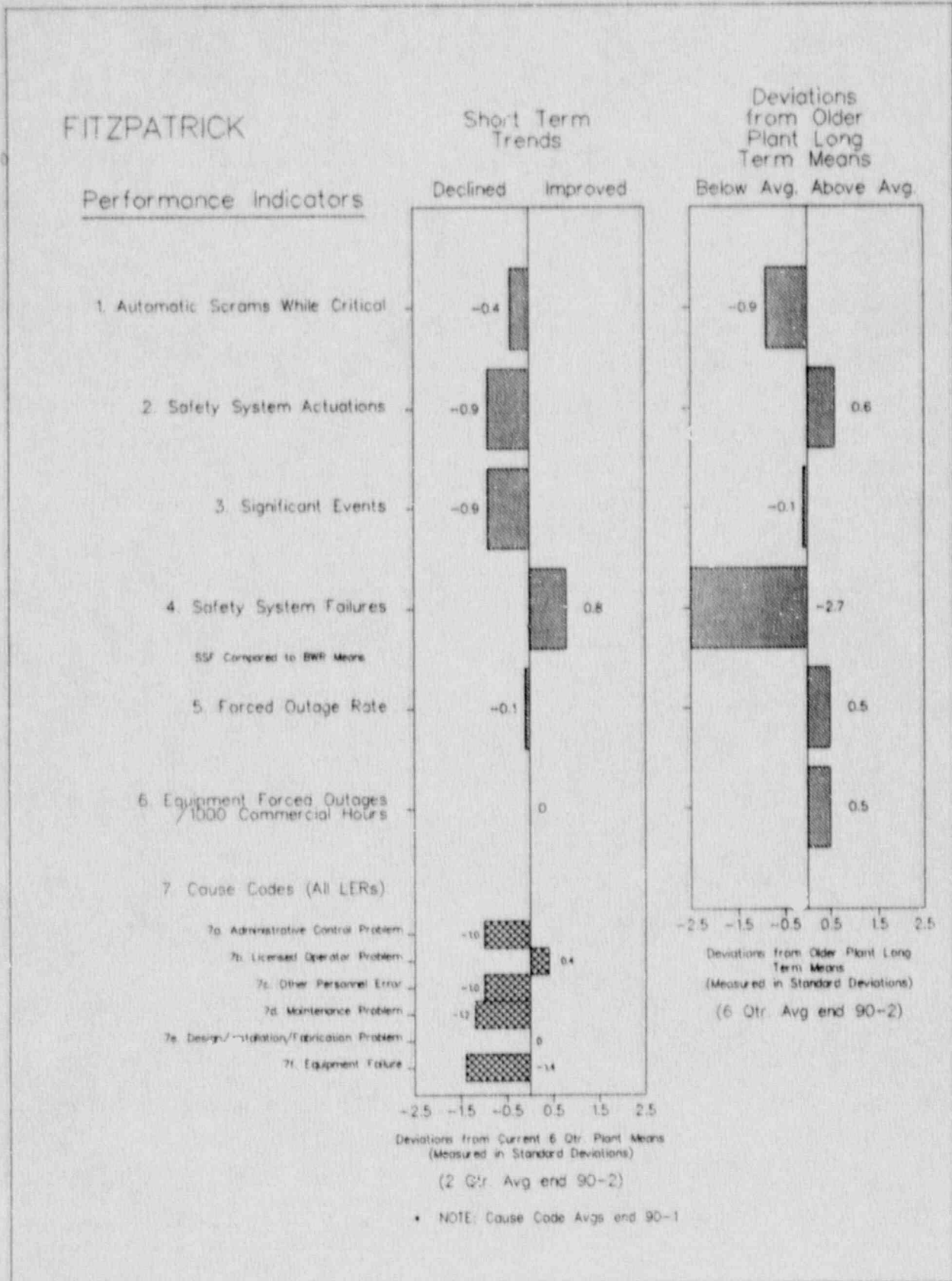


FIGURE 4.36

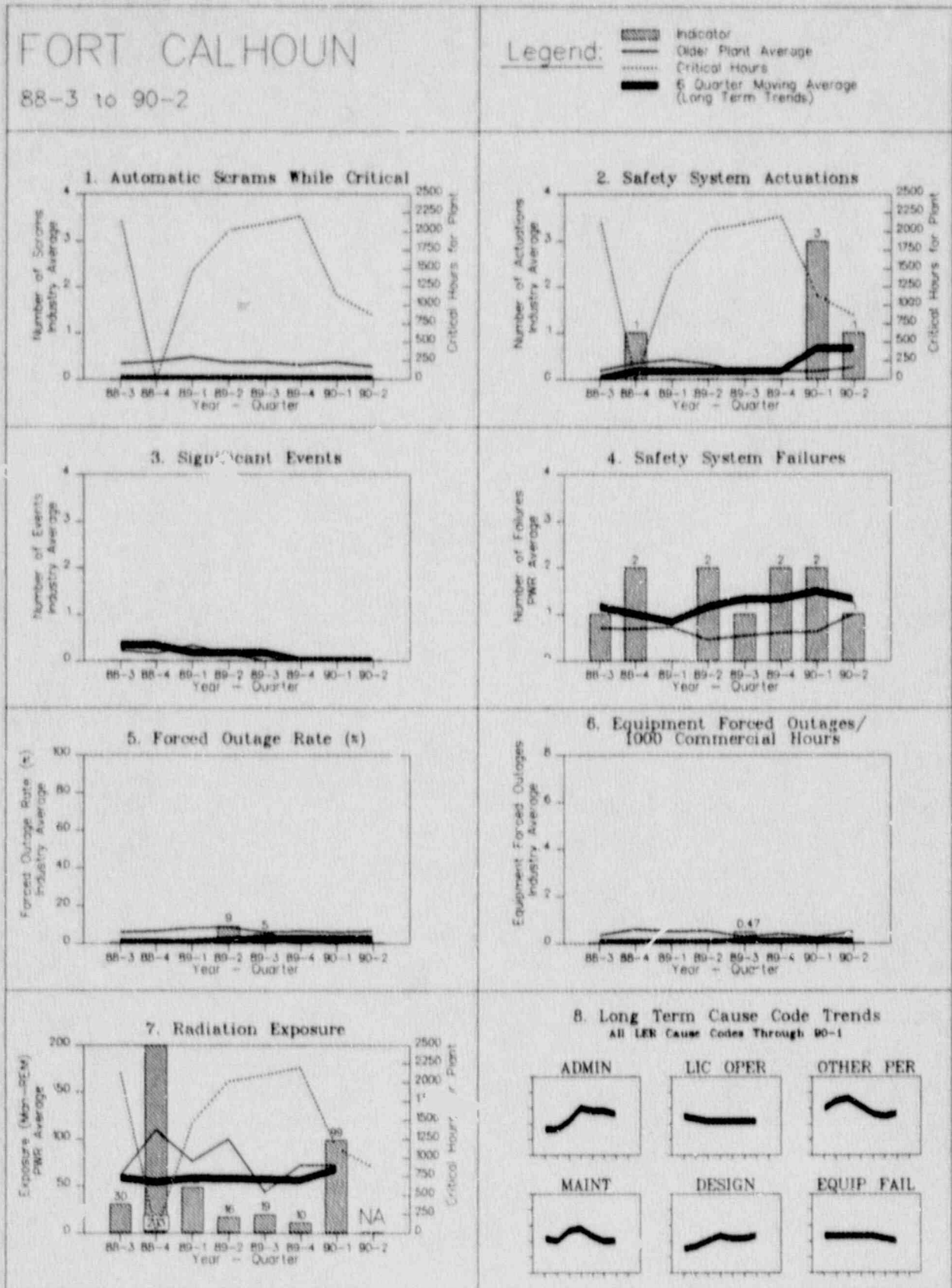


FIGURE 4.36

FORT CALHOUN

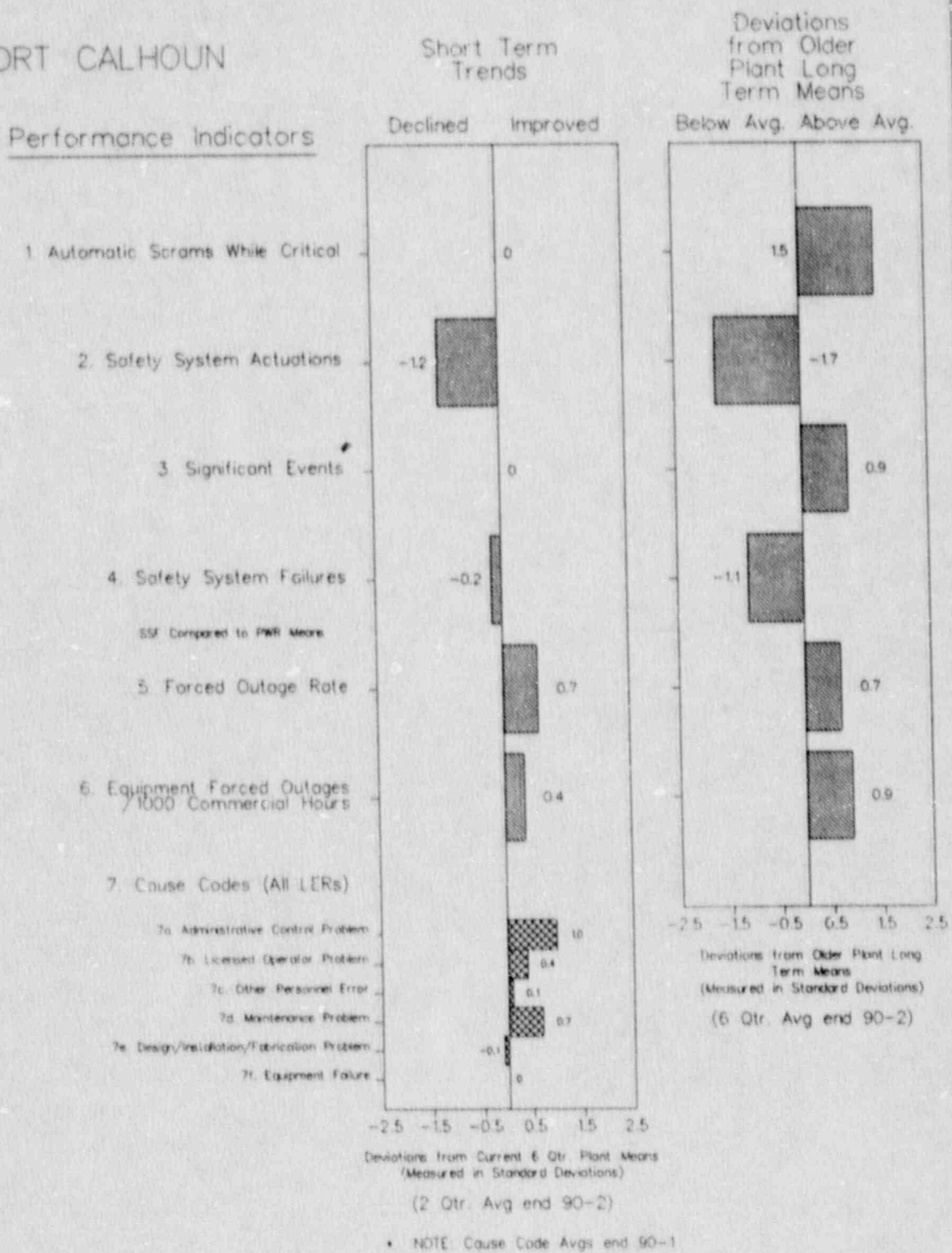


FIGURE 4.37

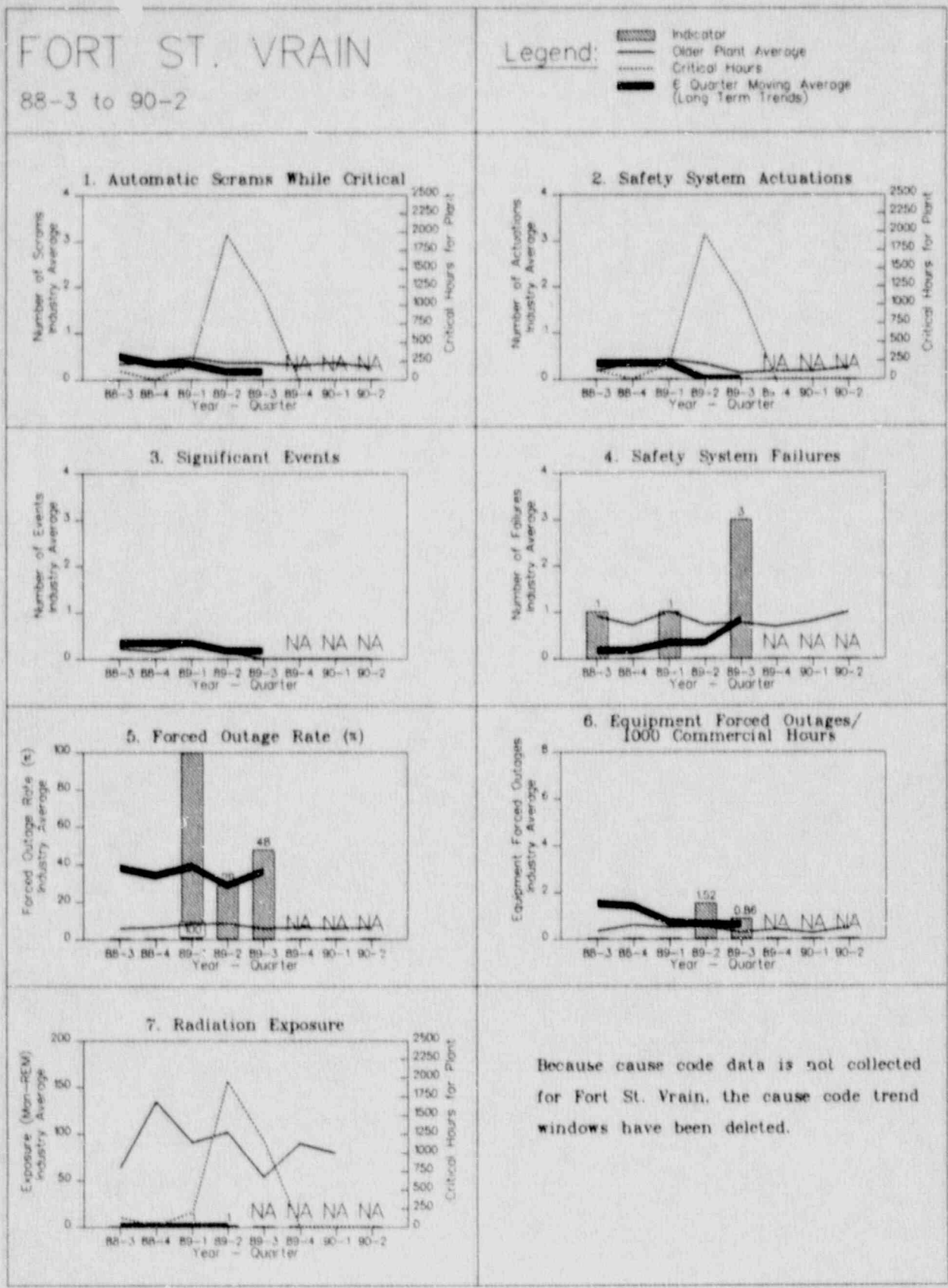


FIGURE 4.37

FORT ST. VRAIN

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

FIGURE 4.38

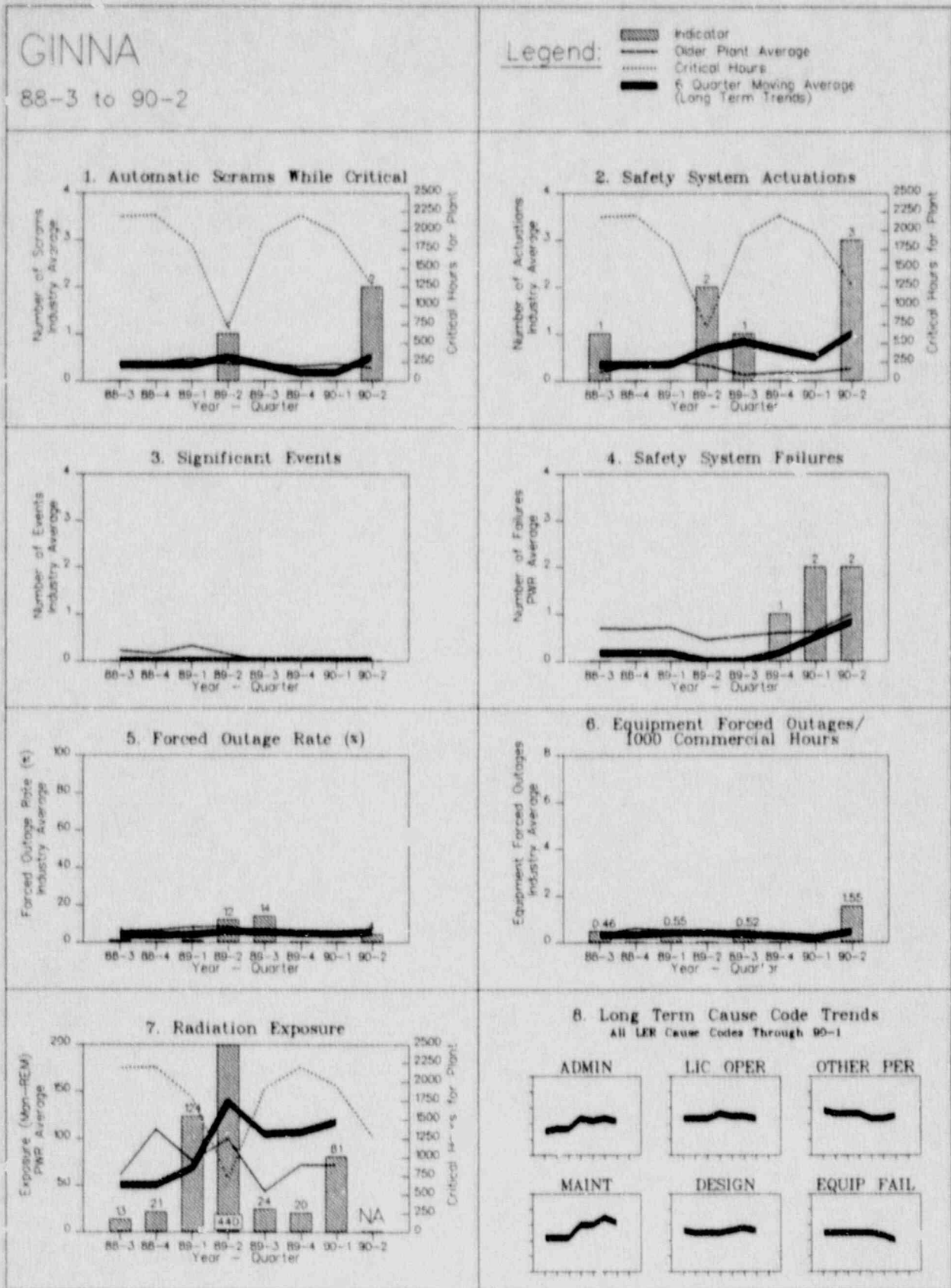


FIGURE 4.38

GINNA

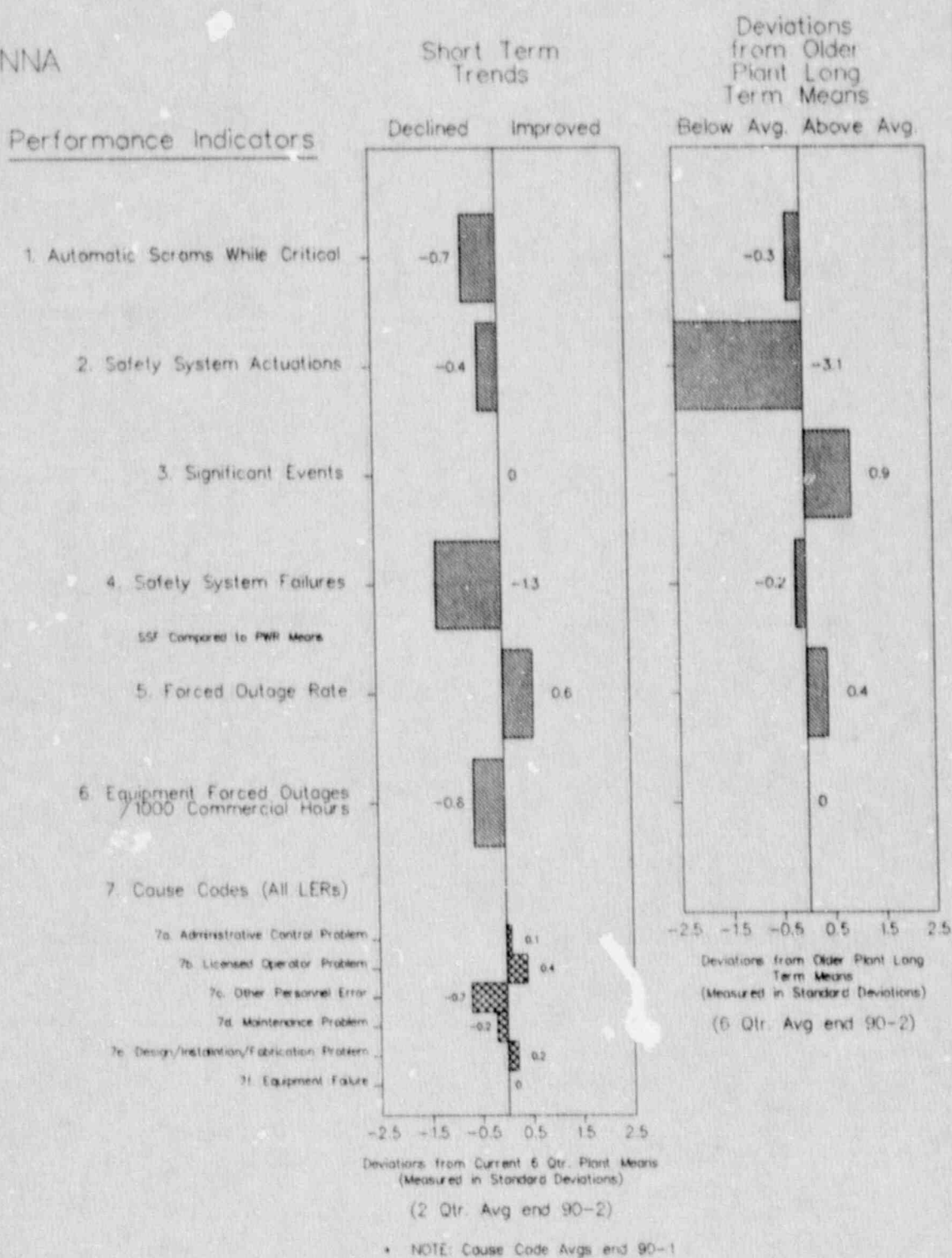


FIGURE 4.39

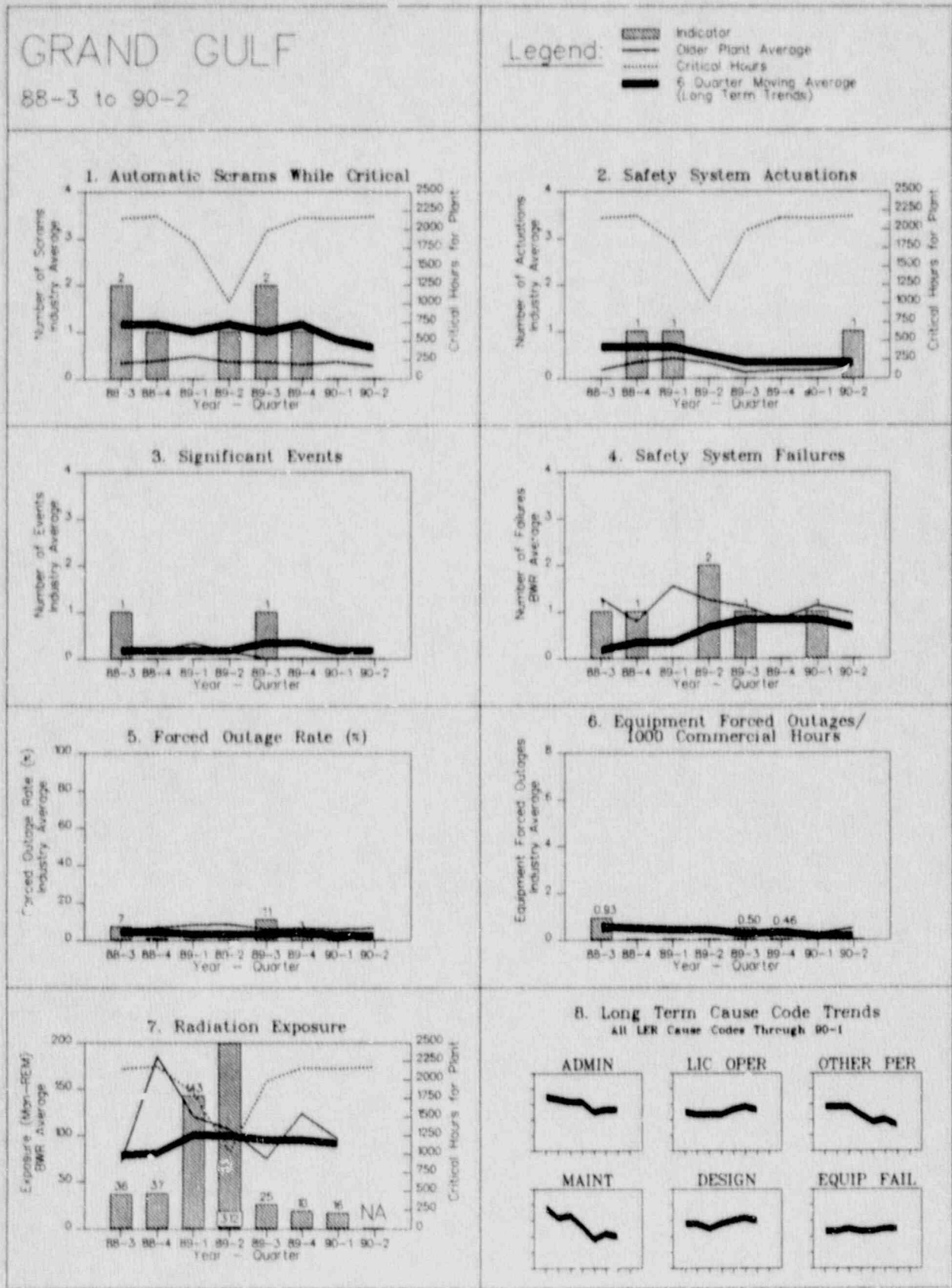


FIGURE 4.39

GRAND GULF

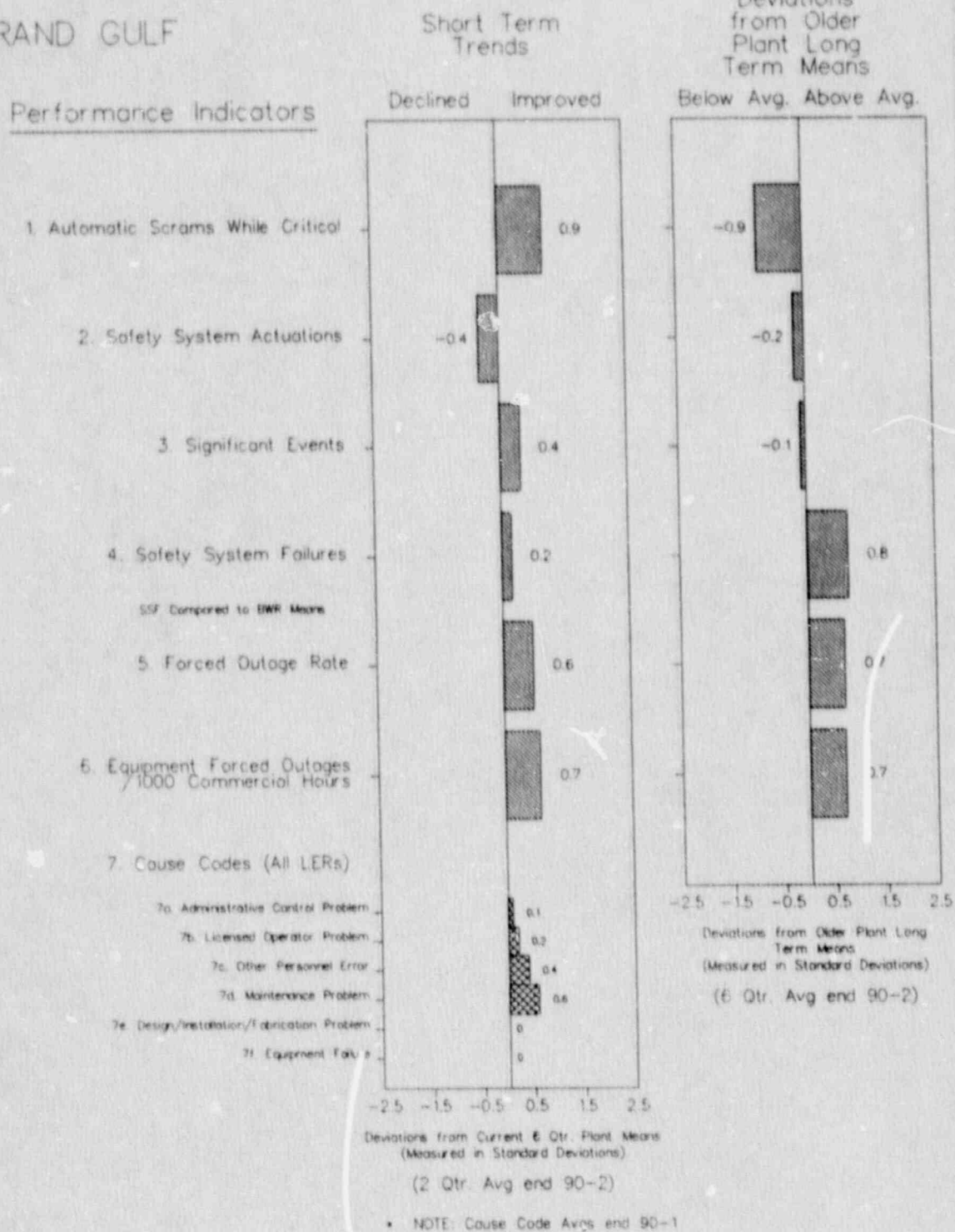


FIGURE 4.40

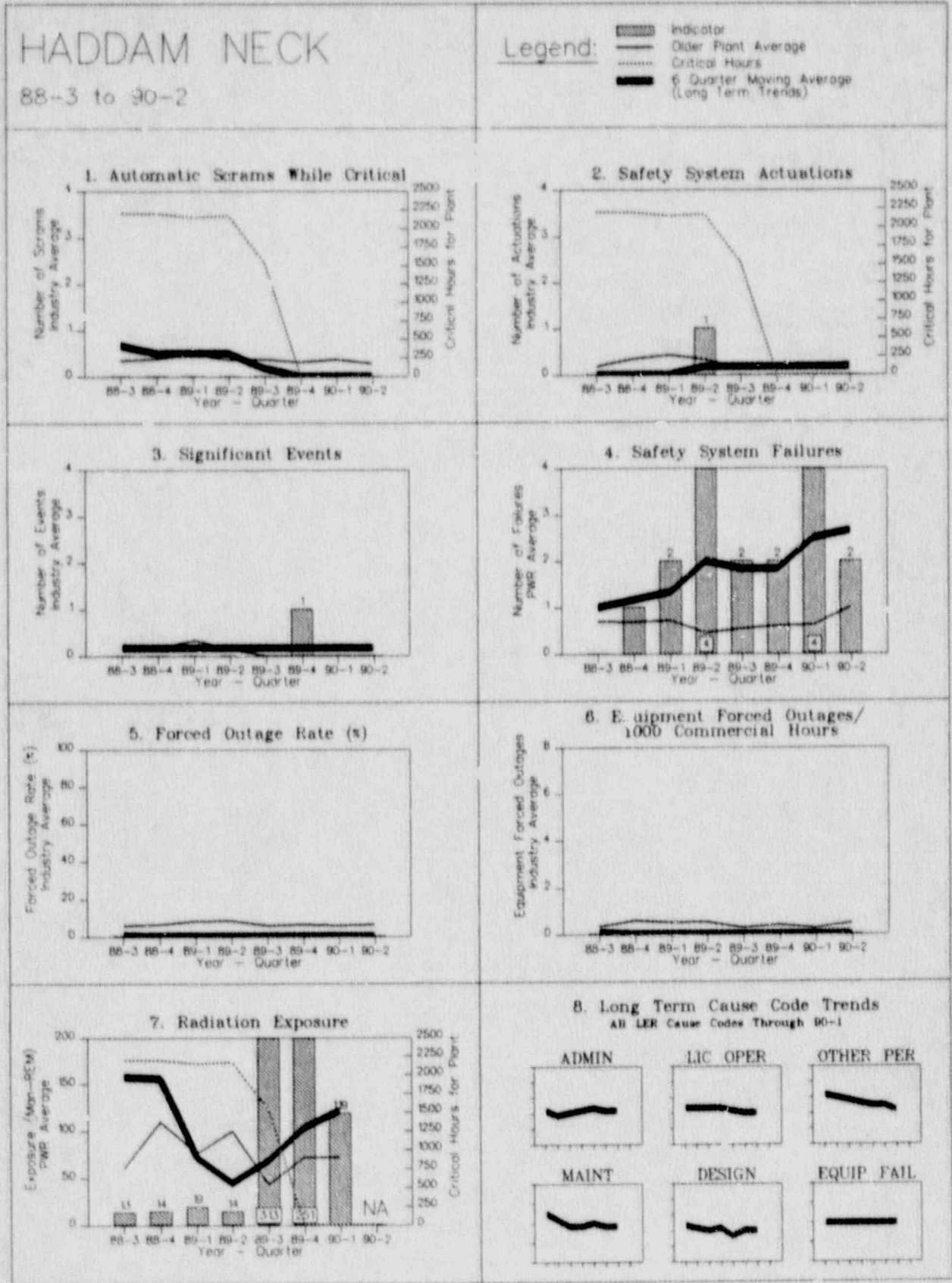


FIGURE 4.40

HADDAM NECK

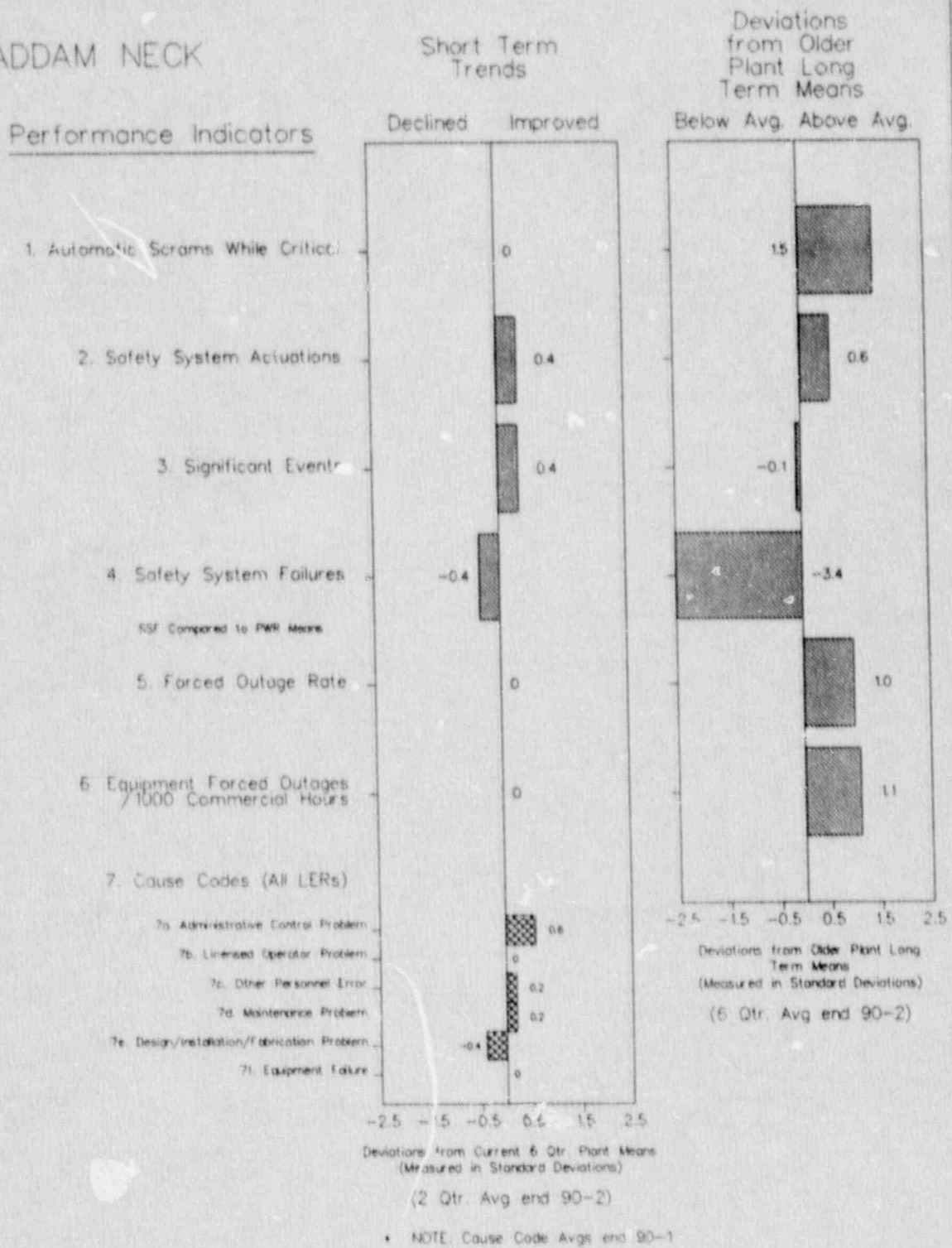


FIGURE 4.41

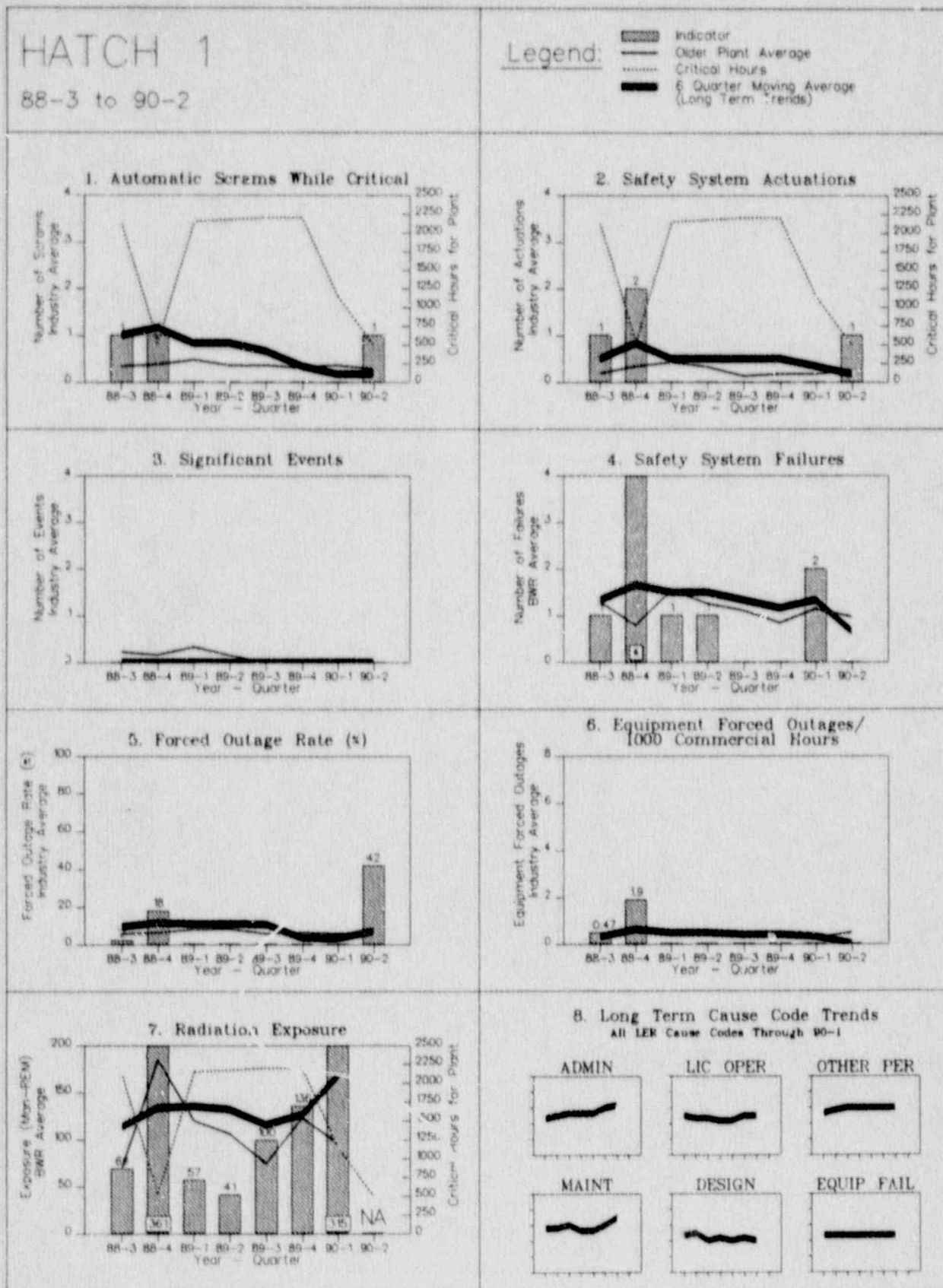


FIGURE 4.41

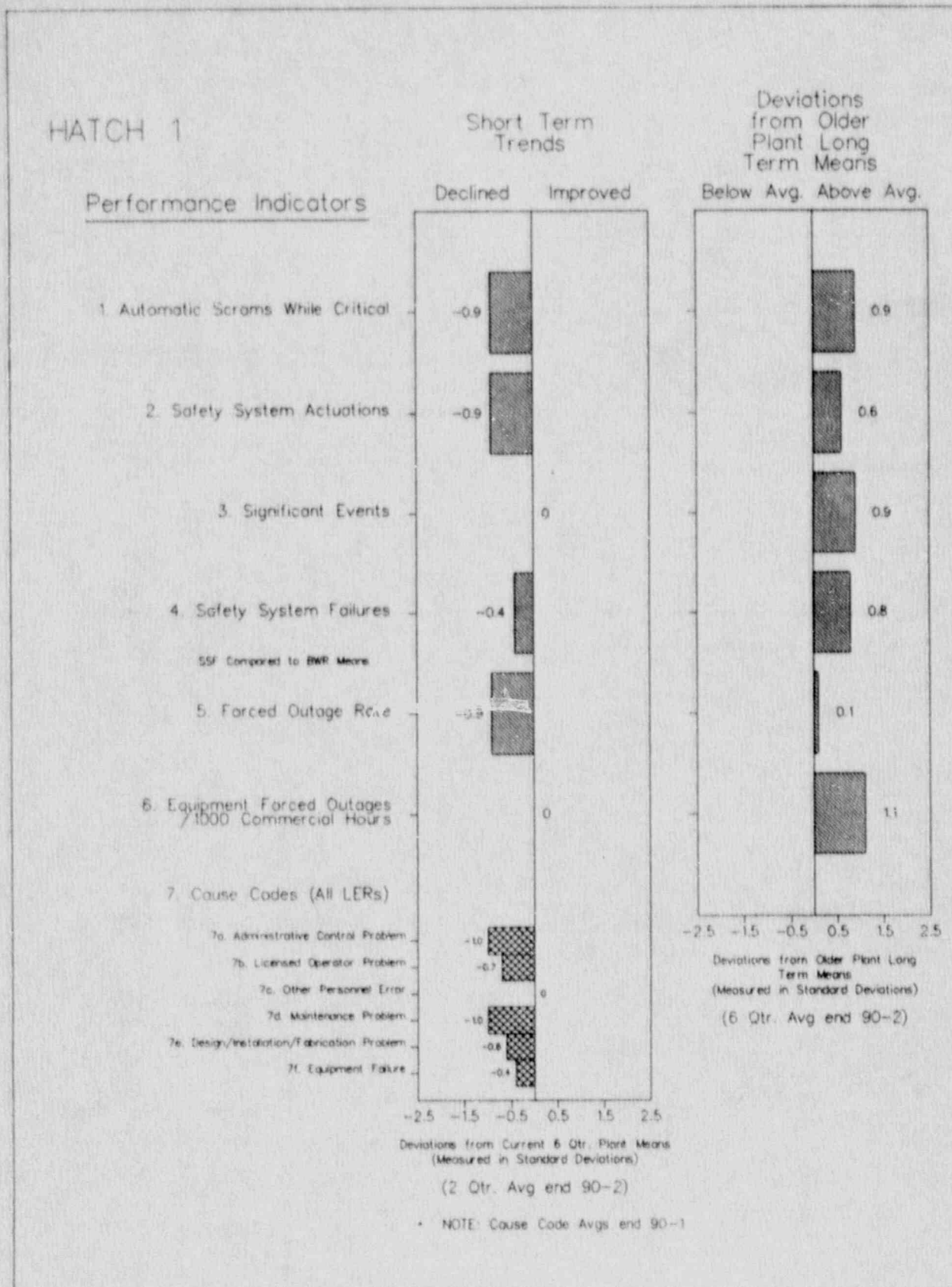


FIGURE 4.42

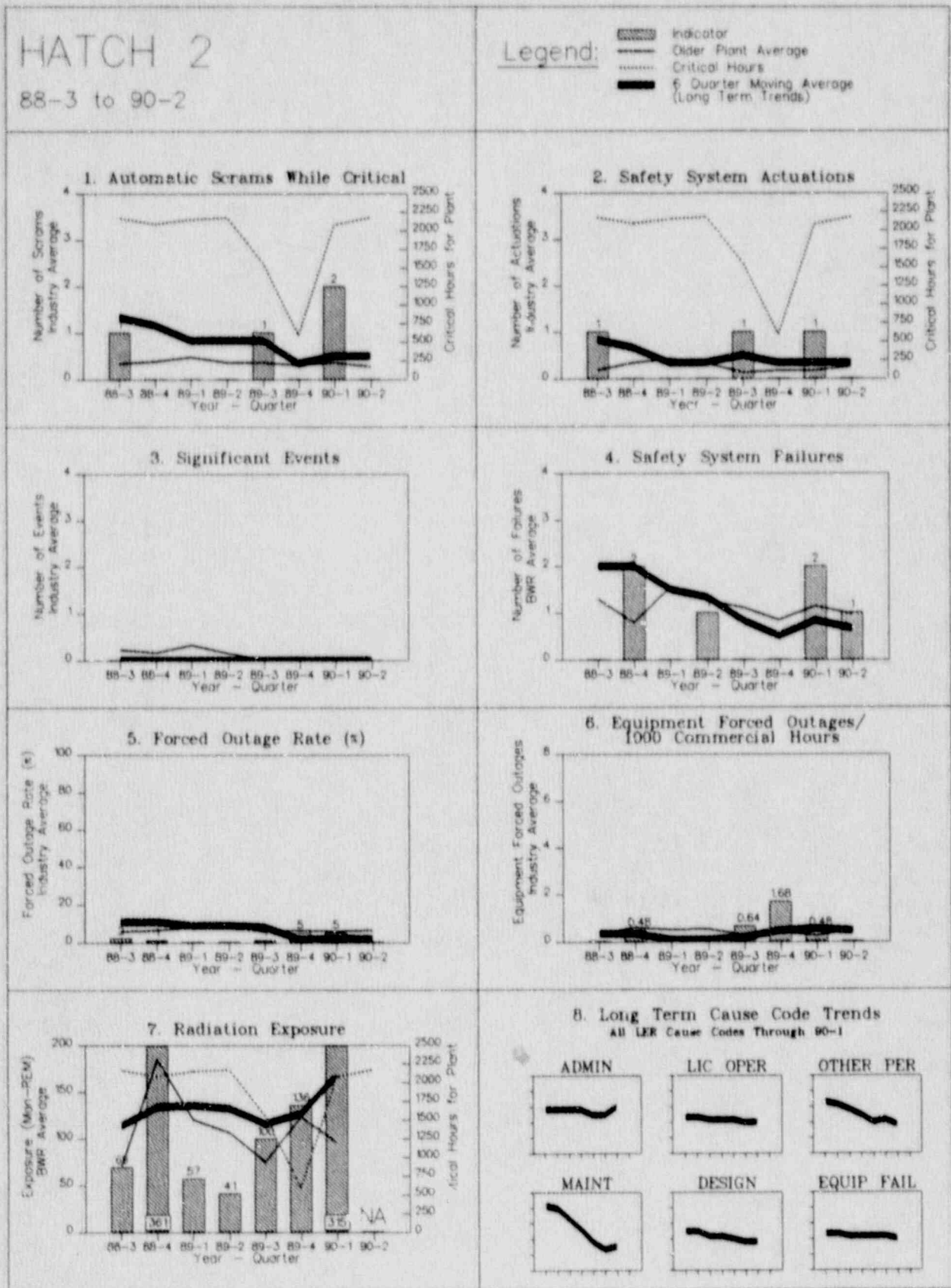


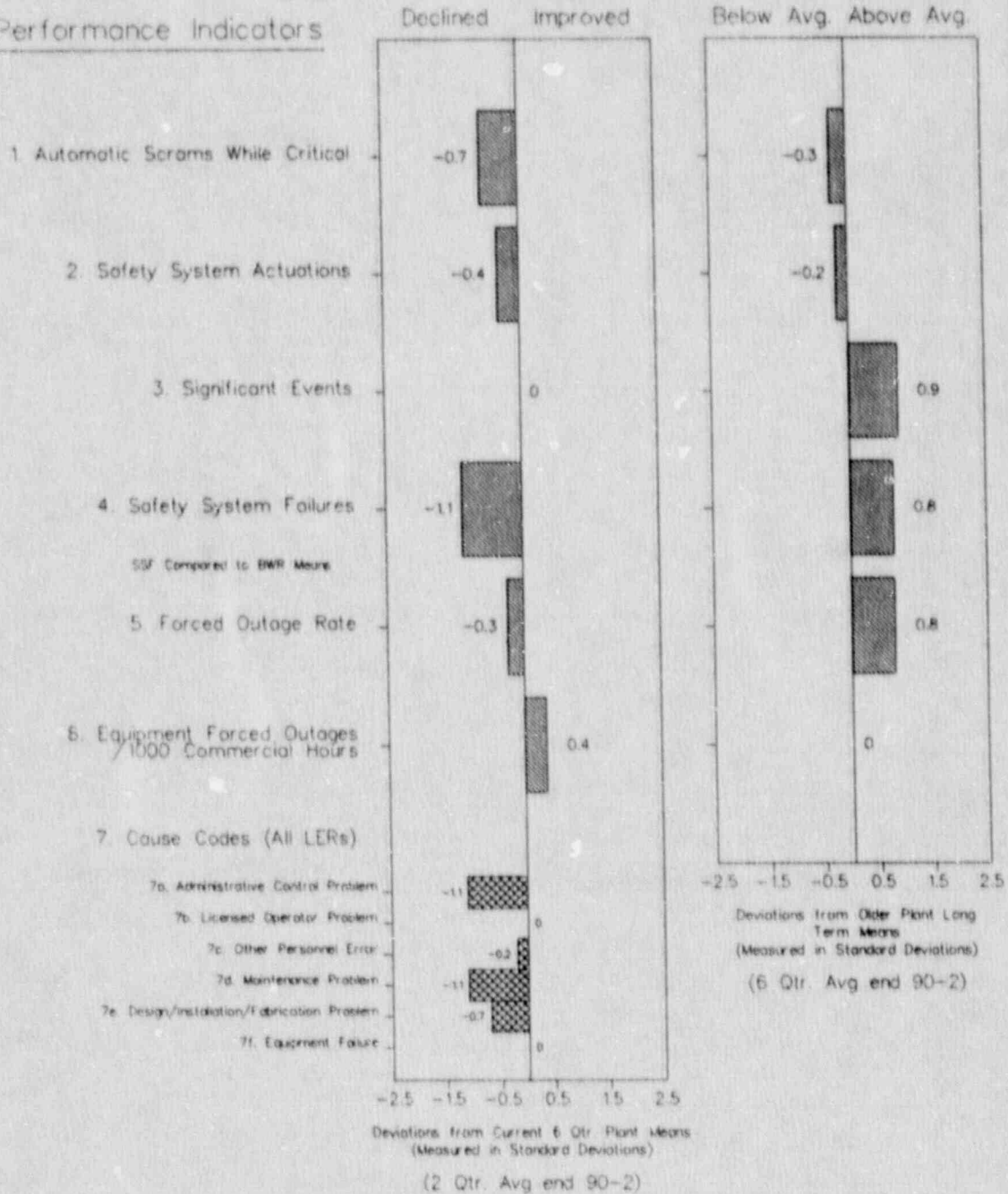
FIGURE 4.42

HATCH 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means







• NOTE: Cause Code Aves end 90-1

FIGURE 4.43

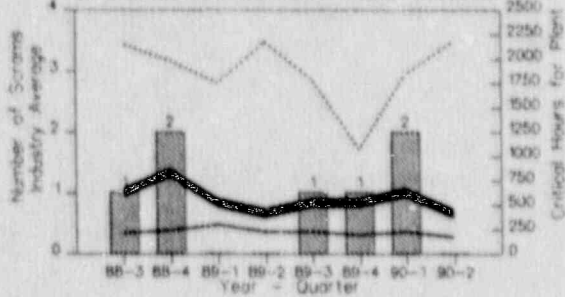
HOPE CREEK

88-3 to 90-2

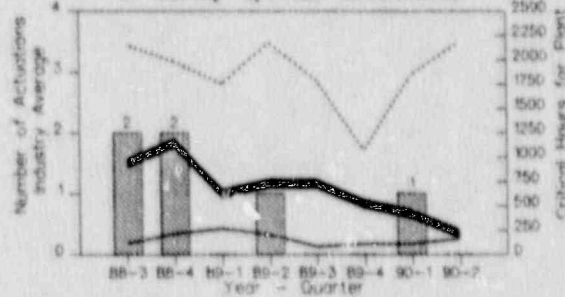
Legend:

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

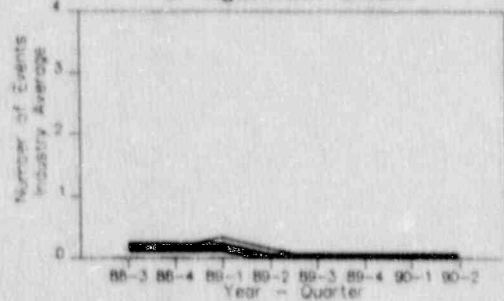
1. Automatic Scrams While Critical



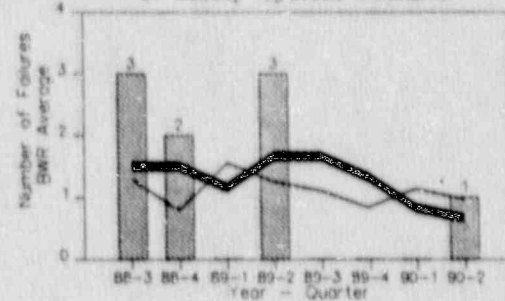
2. Safety System Actuations



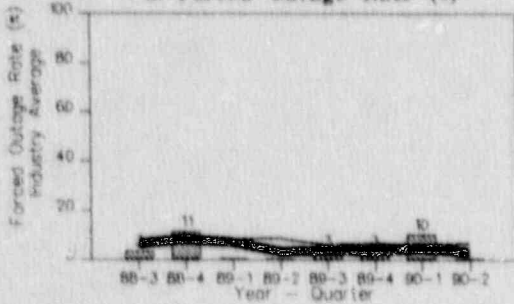
3. Significant Events



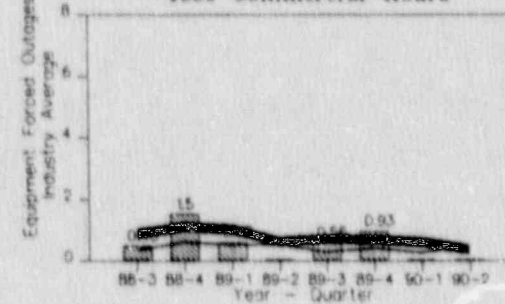
4. Safety System Failures



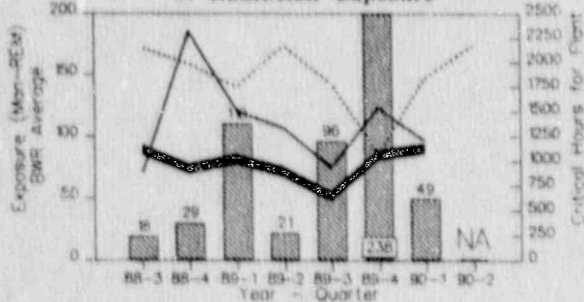
5. Forced Outage Rate (%)



6. Equipment Forced Outages/1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends
All LER Cause Codes Through 90-1

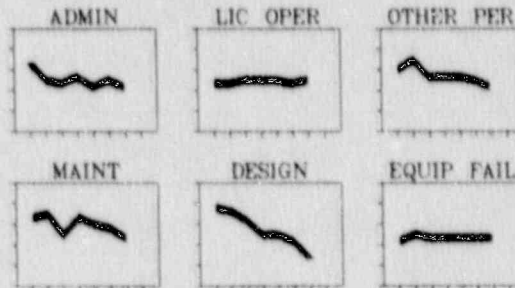


FIGURE 4.43

HOPE CREEK

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

-0.9

2. Safety System Actuations

-0.4

-0.2

3. Significant Events

0

0.9

4. Safety System Failures

0.2

0.8

SSF Compared to BWR Means

5. Forced Outage Rate

-0.7

0.7

6. Equipment Forced Outages / 1000 Commercial Hours

0.9

0.3

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.1

7b. Licensed Operator Problem

0

7c. Other Personnel Error

0.3

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 Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE Cause Code Avgs end 90-1

FIGURE 4.44

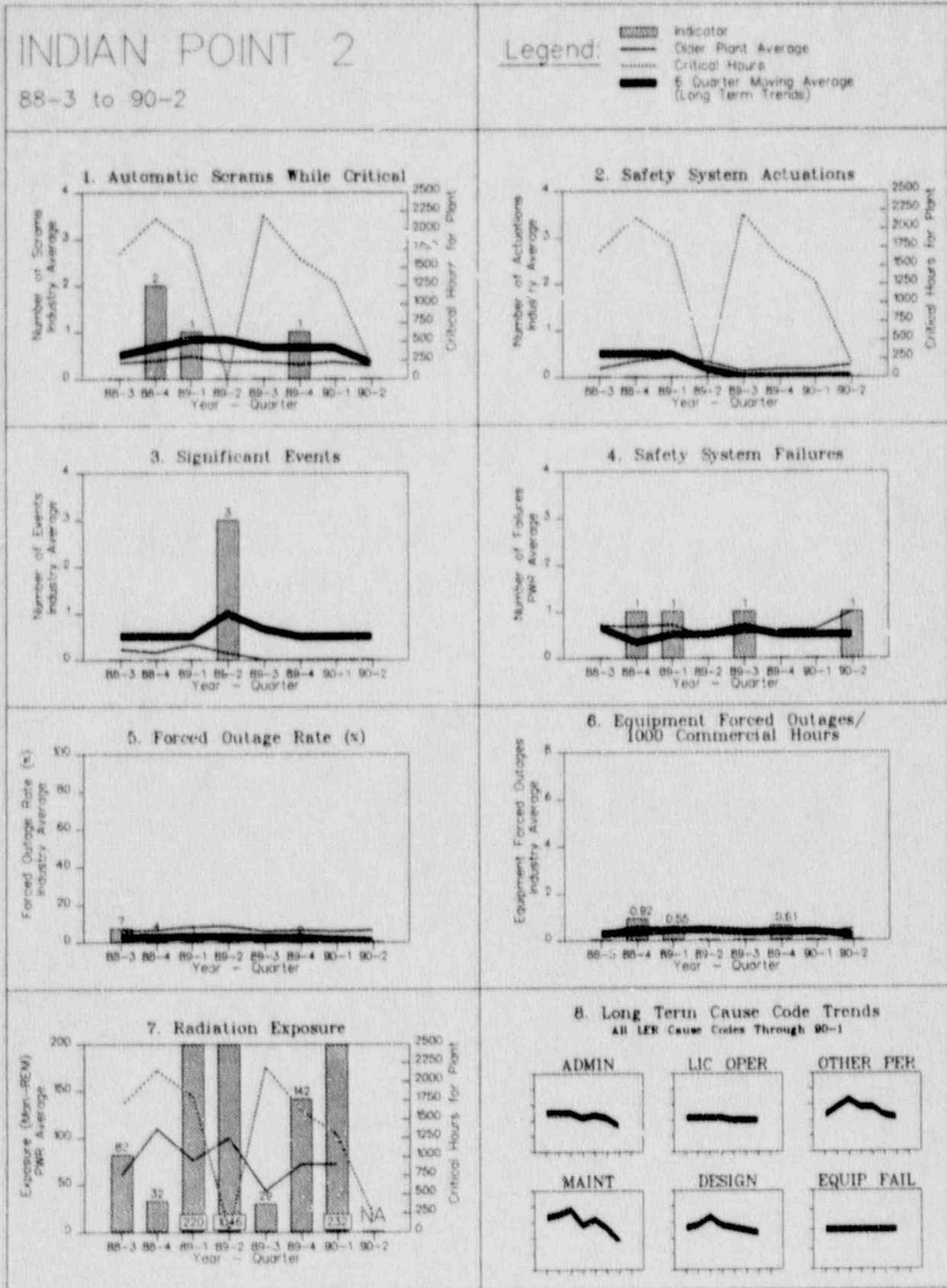


FIGURE 4.44

INDIAN POINT 2

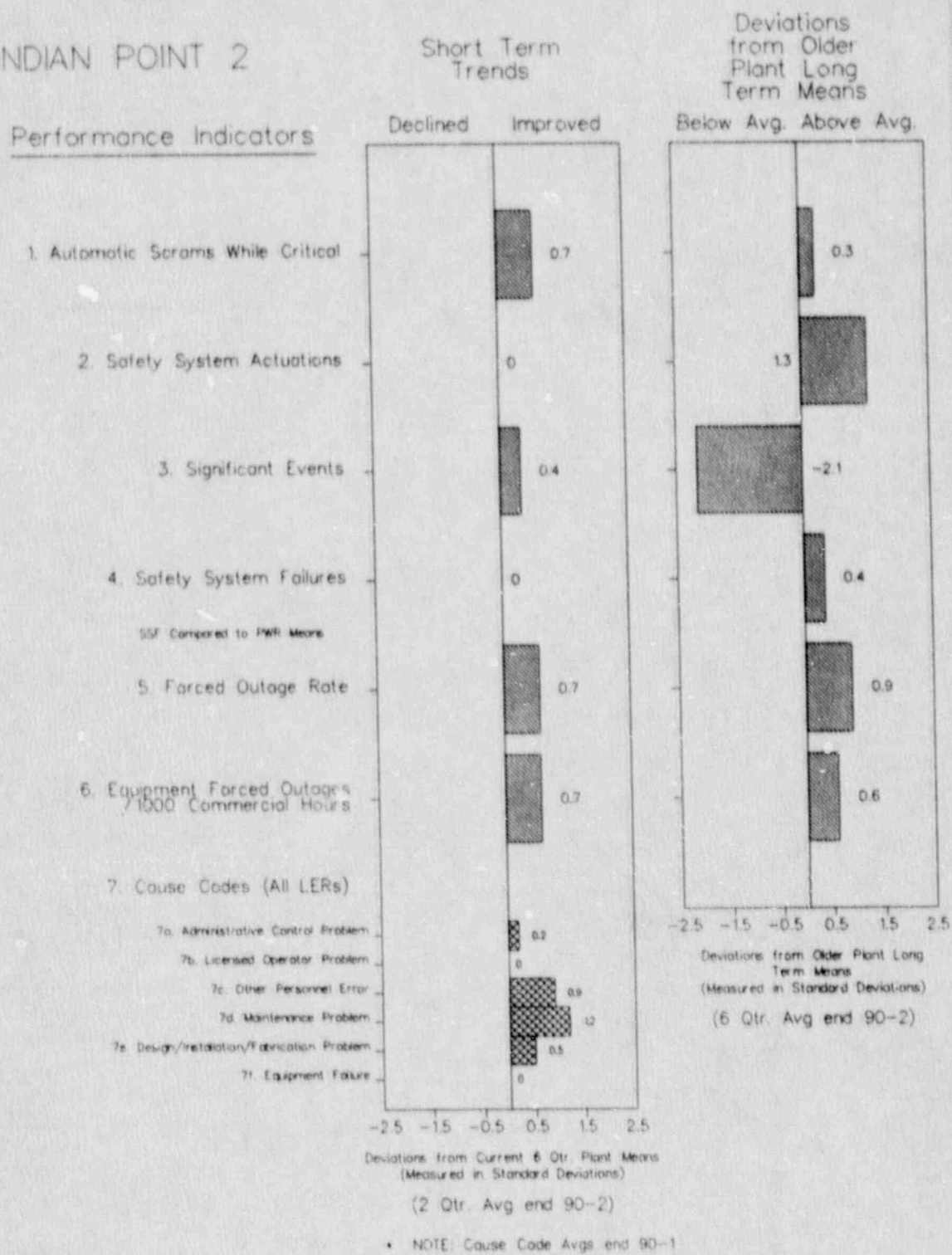


FIGURE 4.45

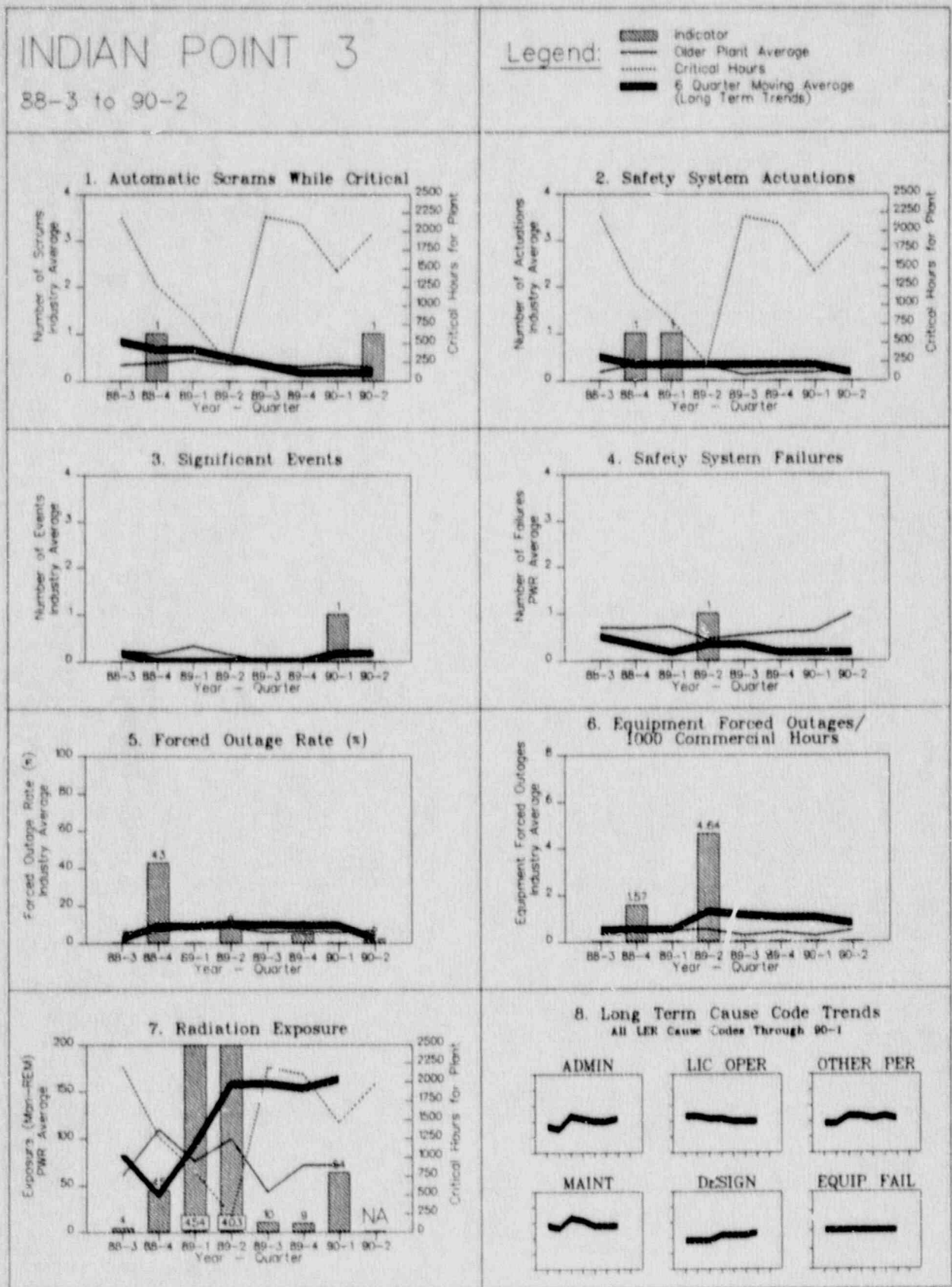


FIGURE 4.45

INDIAN POINT 3

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

1. Automatic Scrams While Critical

2. Safety System Actuations

3. Significant Events

4. Safety System Failures

SSF Compared to PWR Means

5. Forced Outage Rate

6. Equipment Forced Outages / 1000 Commercial Hours

7. Cause Codes (All LERs)

7a. Administrative Control Problem

7b. Licensed Operator Problem

7c. Other Personnel Error

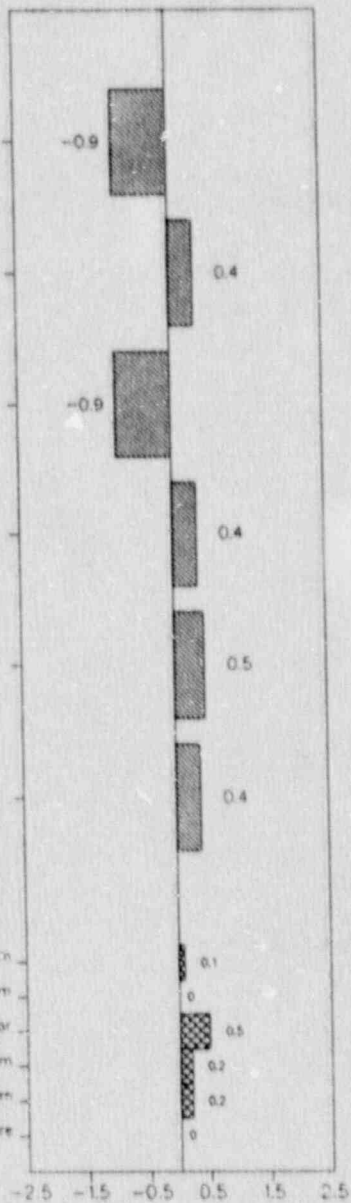
7d. Maintenance Problem

7e. Design/Installation/Fabrication Problem

7f. Equipment Failure

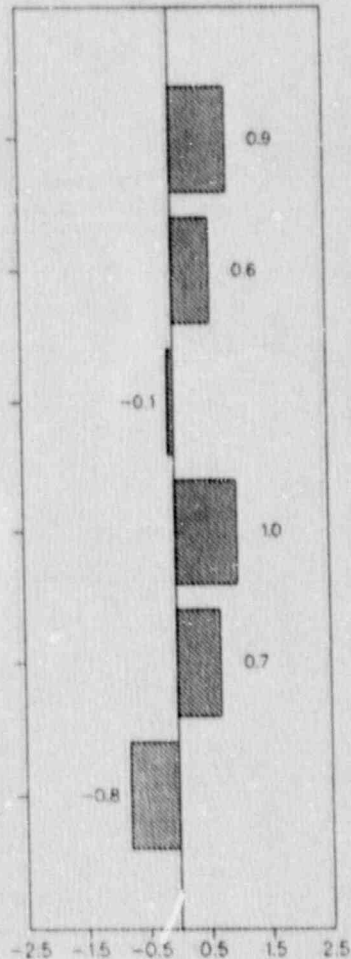
Declined Improved

Below Avg. Above Avg.



Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)



Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.46

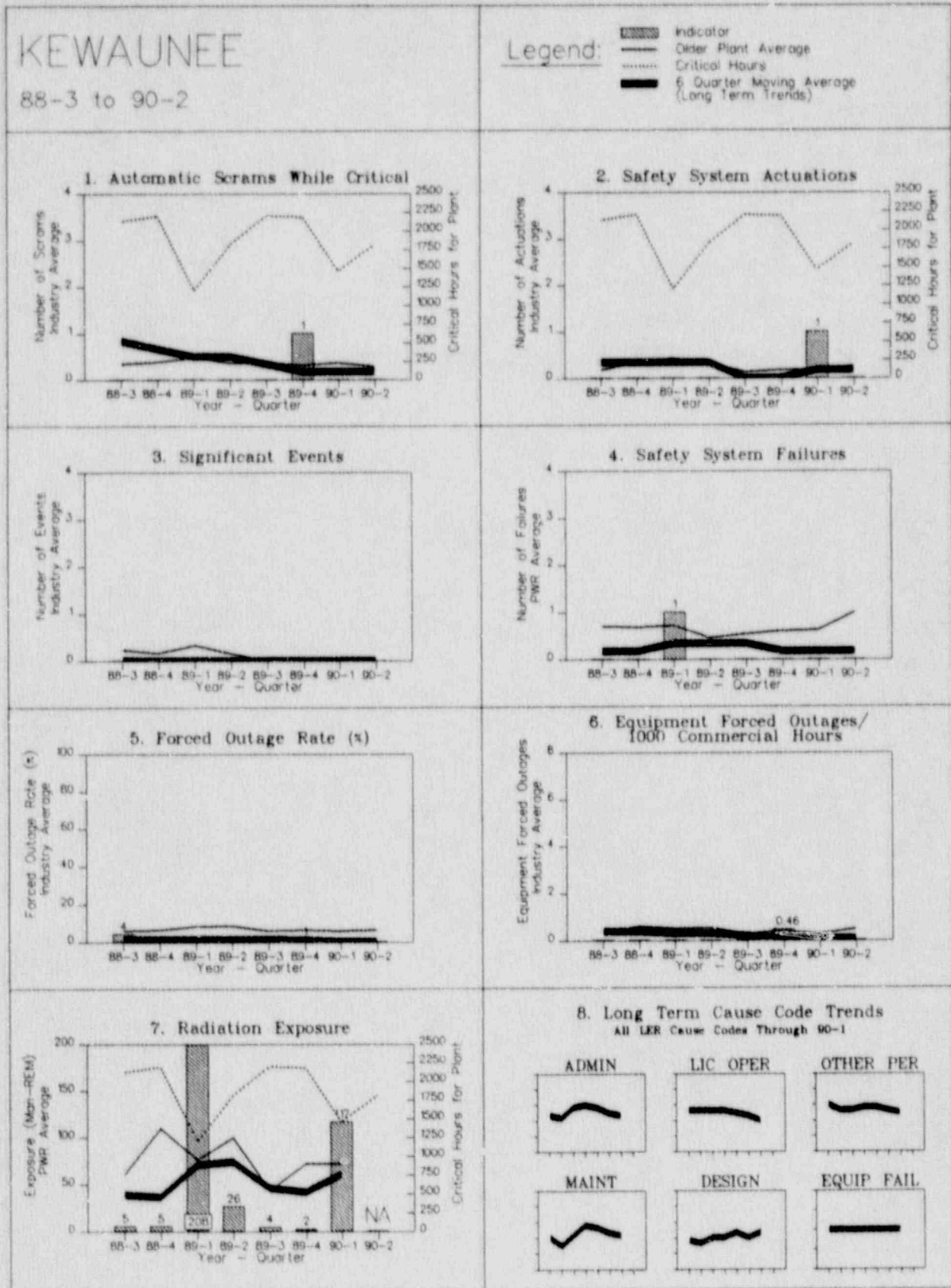


FIGURE 4.46

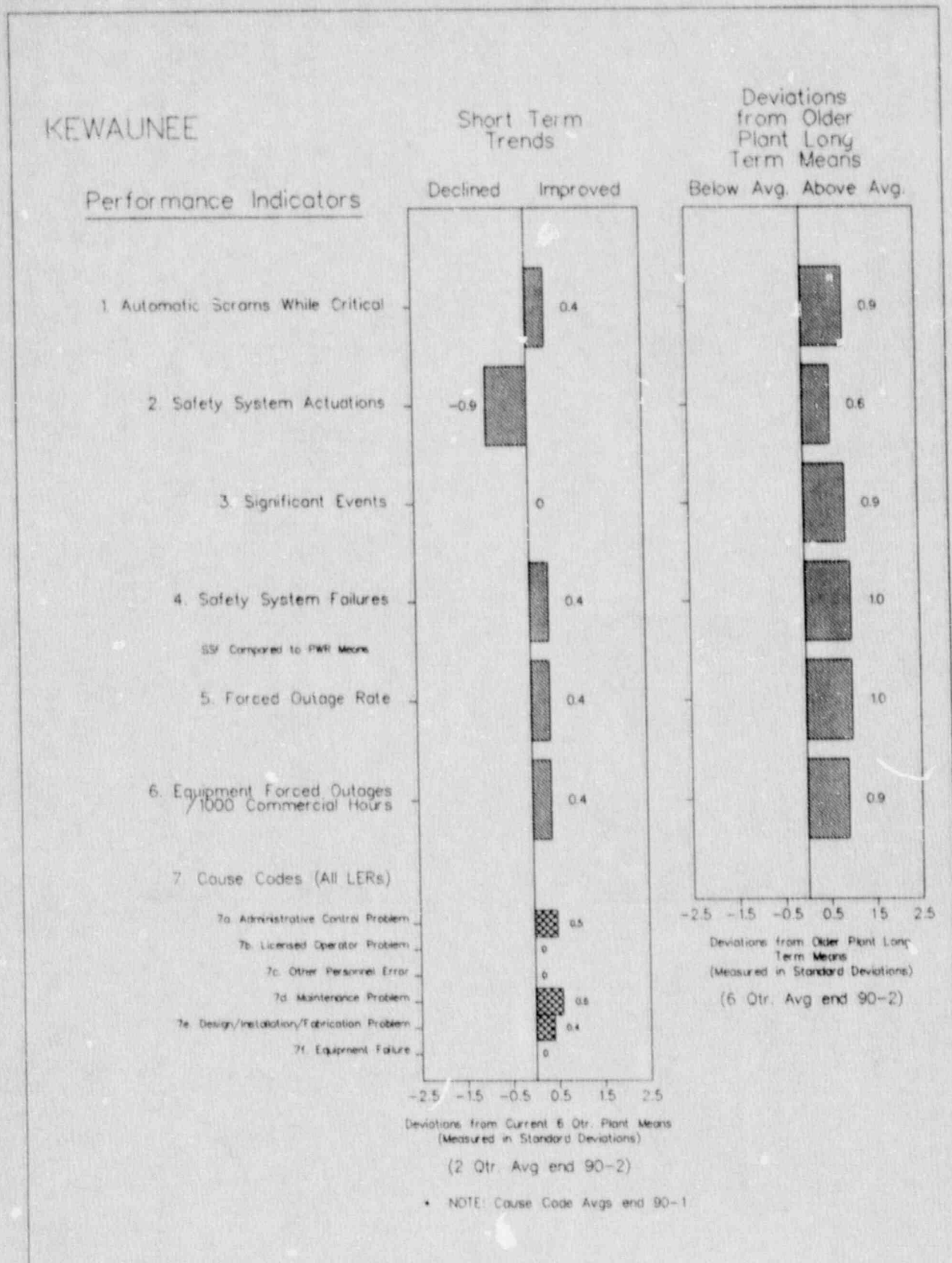


FIGURE 4.47

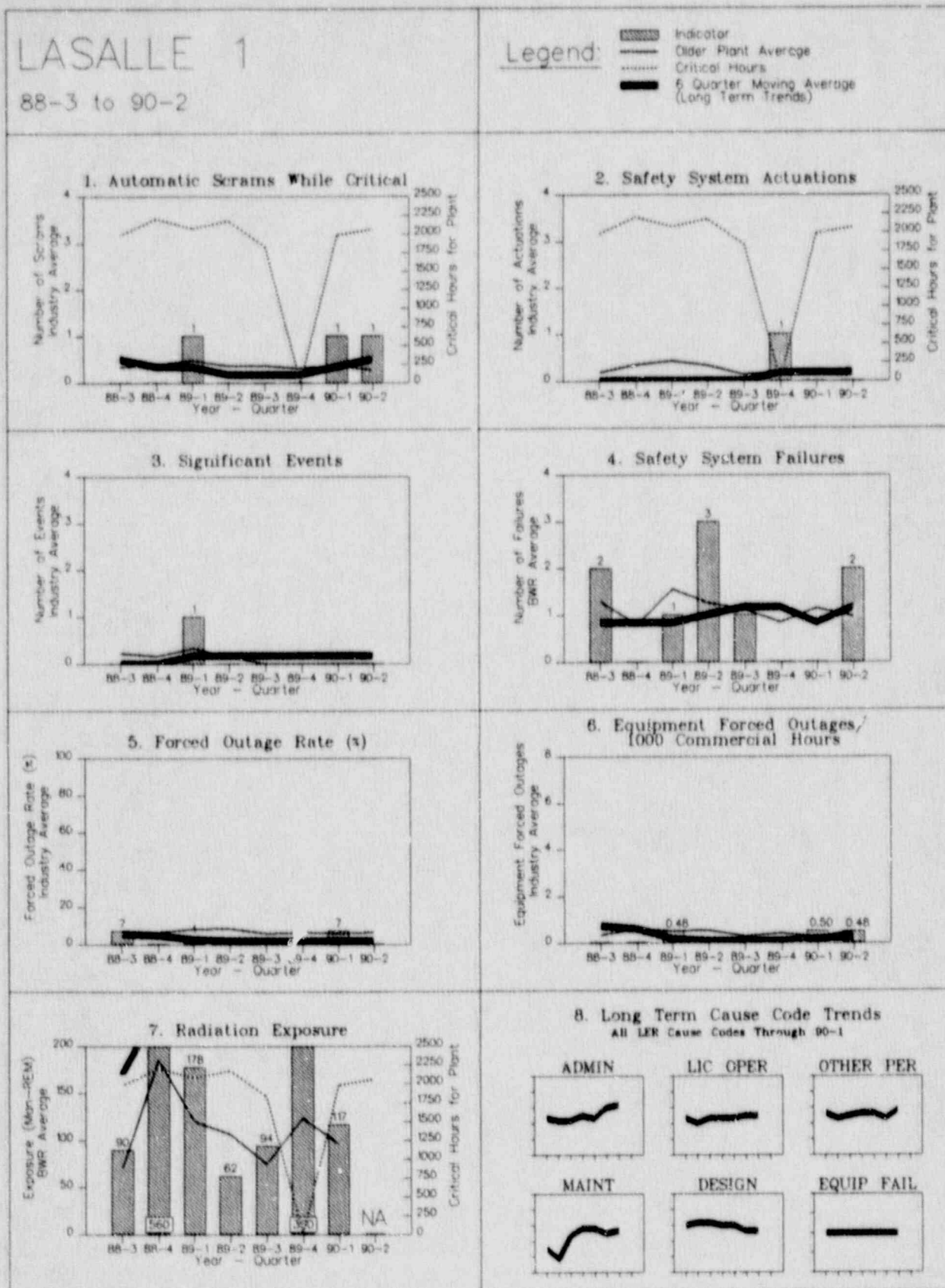


FIGURE 4.47

LASALLE 1

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-1.0

-0.3

2. Safety System Actuations

0.4

0.6

3. Significant Events

0.4

-0.1

4. Safety System Failures

0.2

0

SSF Compared to BWR Means

5. Forced Outage Rate

-0.6

0.8

6. Equipment Forced Outages / 1000 Commercial Hours

-1.0

0.5

7. Cause Codes (All LERs)

7a. Administrative Control Problem

-0.8

7b. Licensed Operator Problem

0

7c. Other Personnel Error

-0.8

7d. Maintenance Problem

0.5

7e. Design/Installation/Fabrication Problem

0.1

7f. Equipment Failure

0

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

(6 Qtr. Avg end 90-2)

* NOTE: Cause Code Avgs end 90-1

FIGURE 4.48

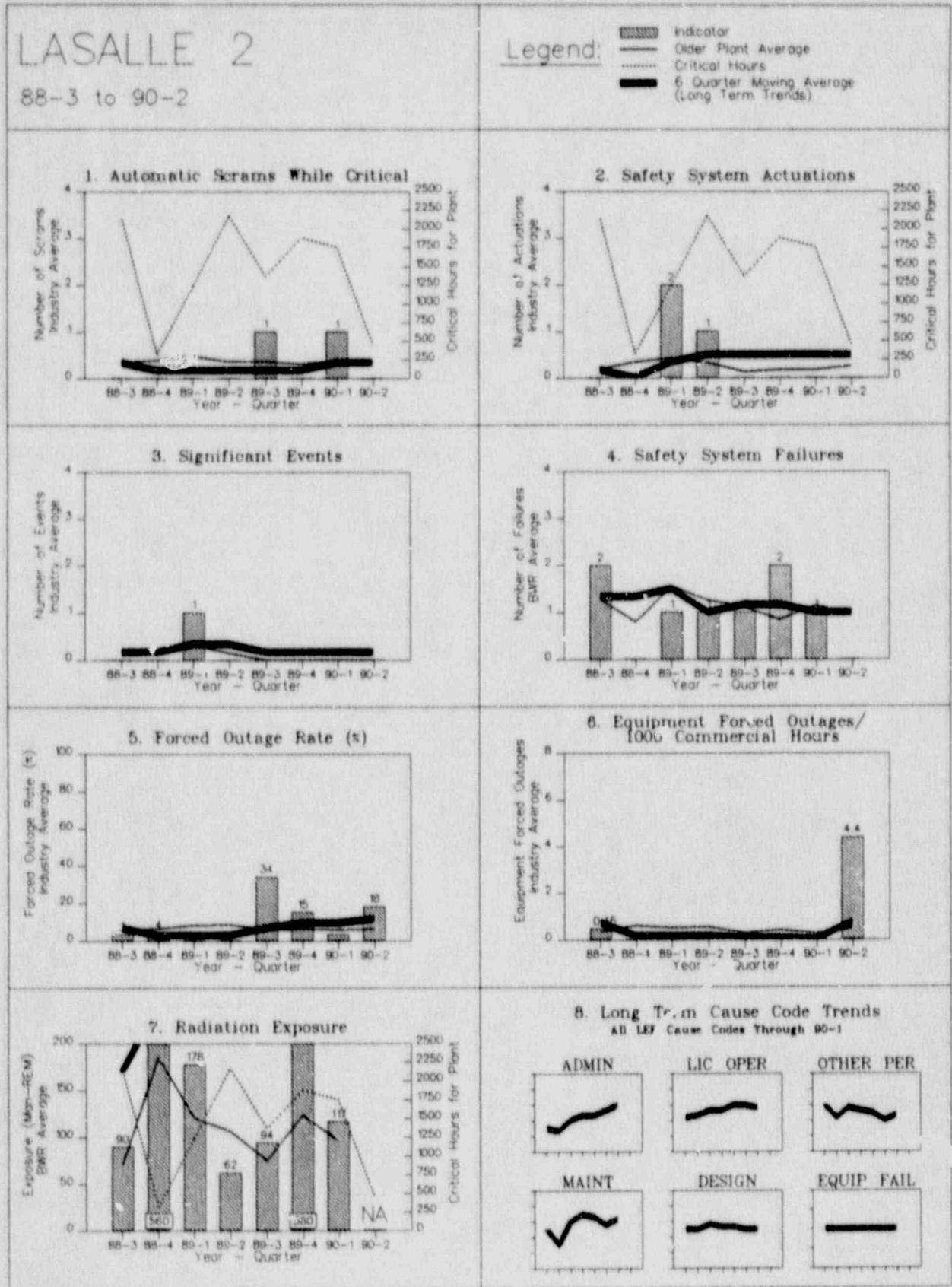


FIGURE 4.48

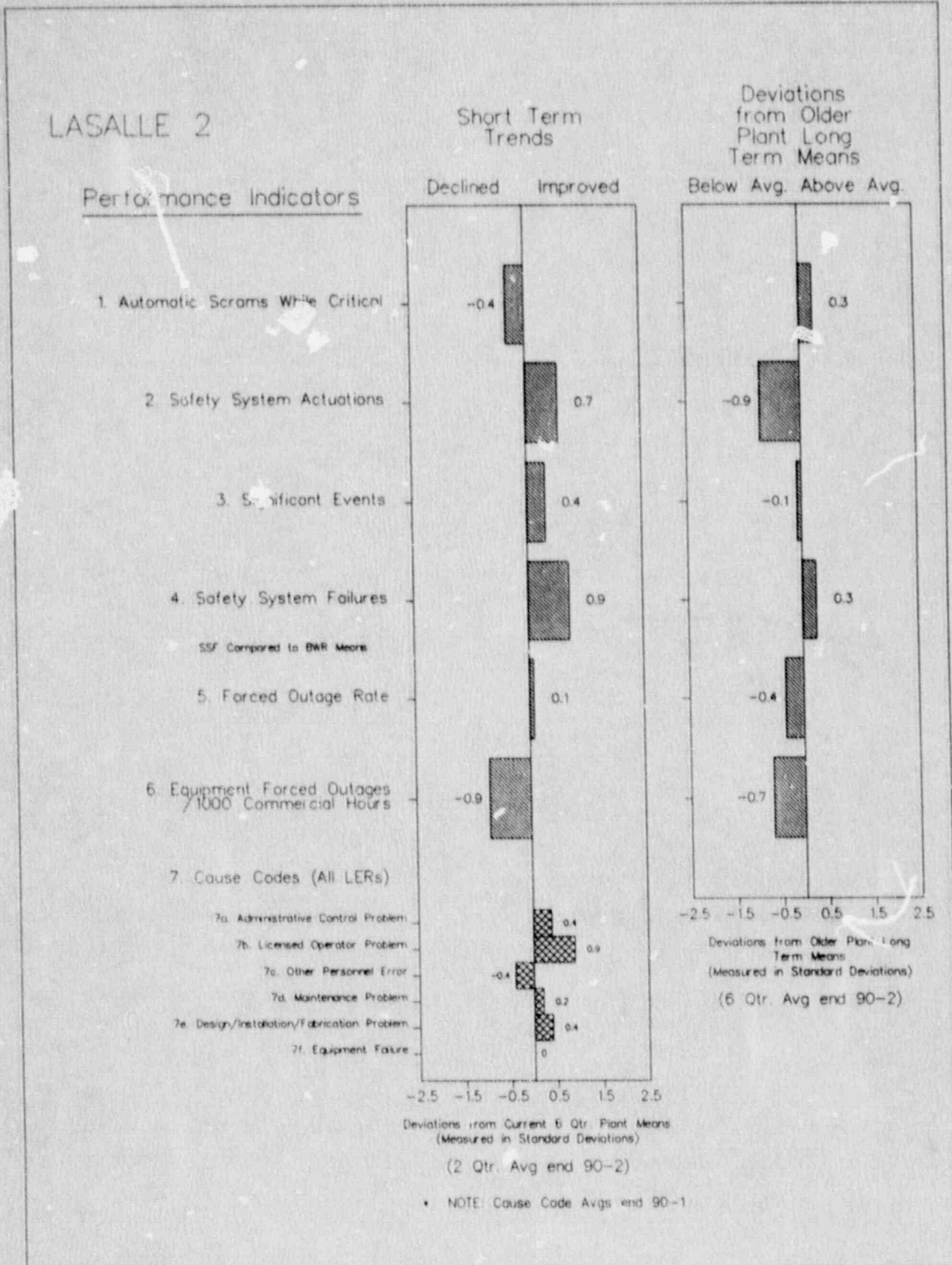


FIGURE 4.49

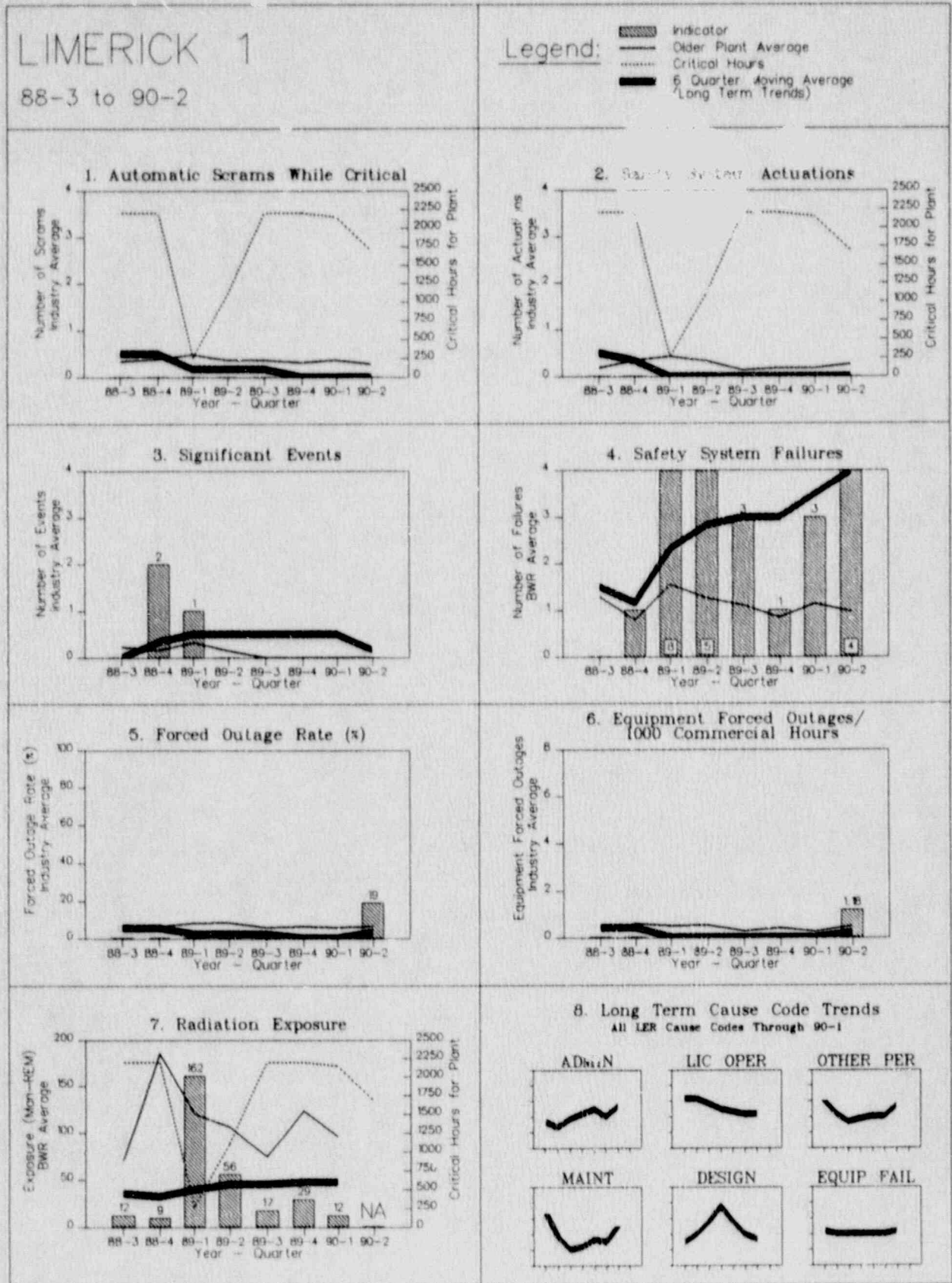


FIGURE 4.49

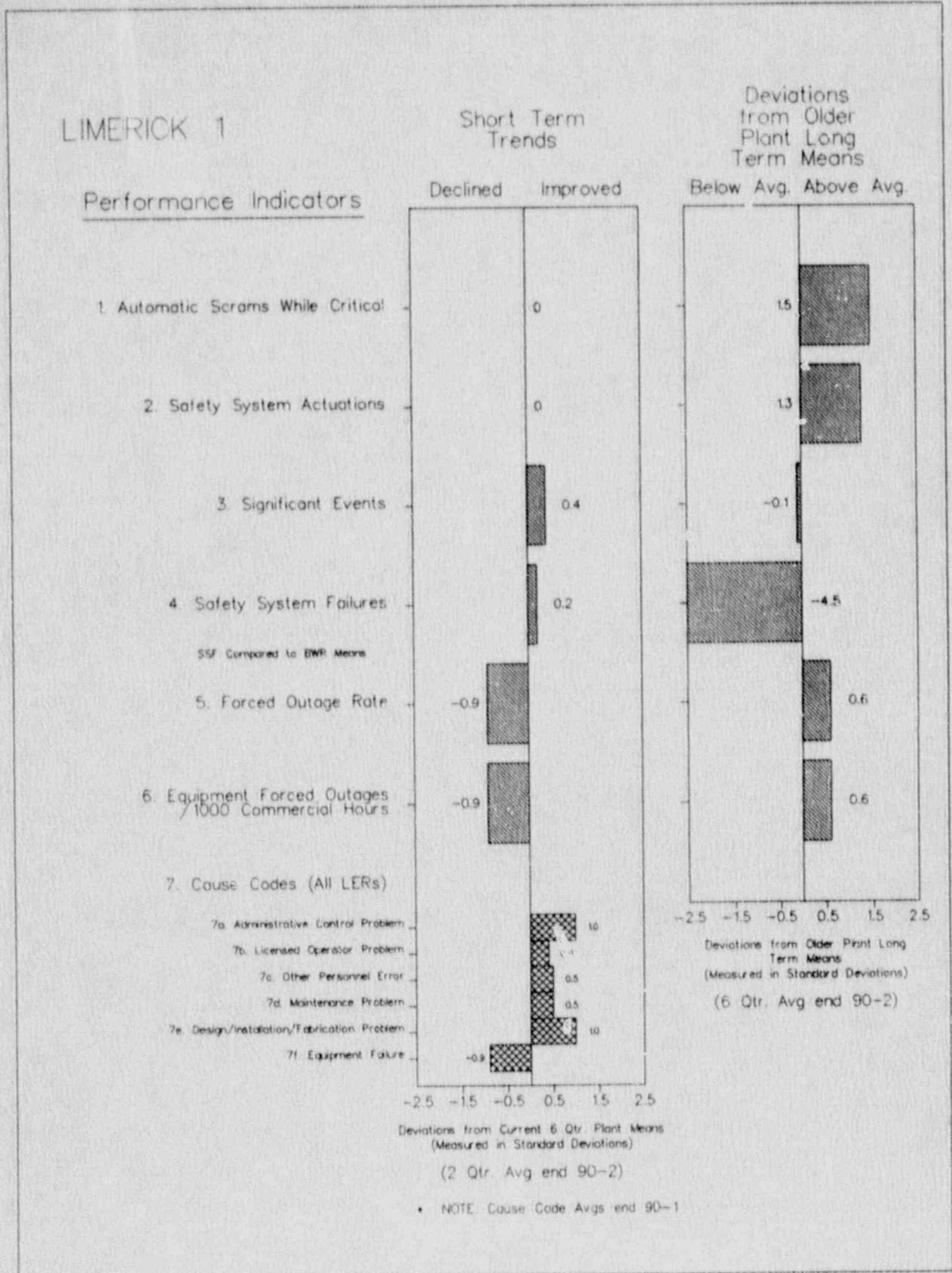


FIGURE 4.50

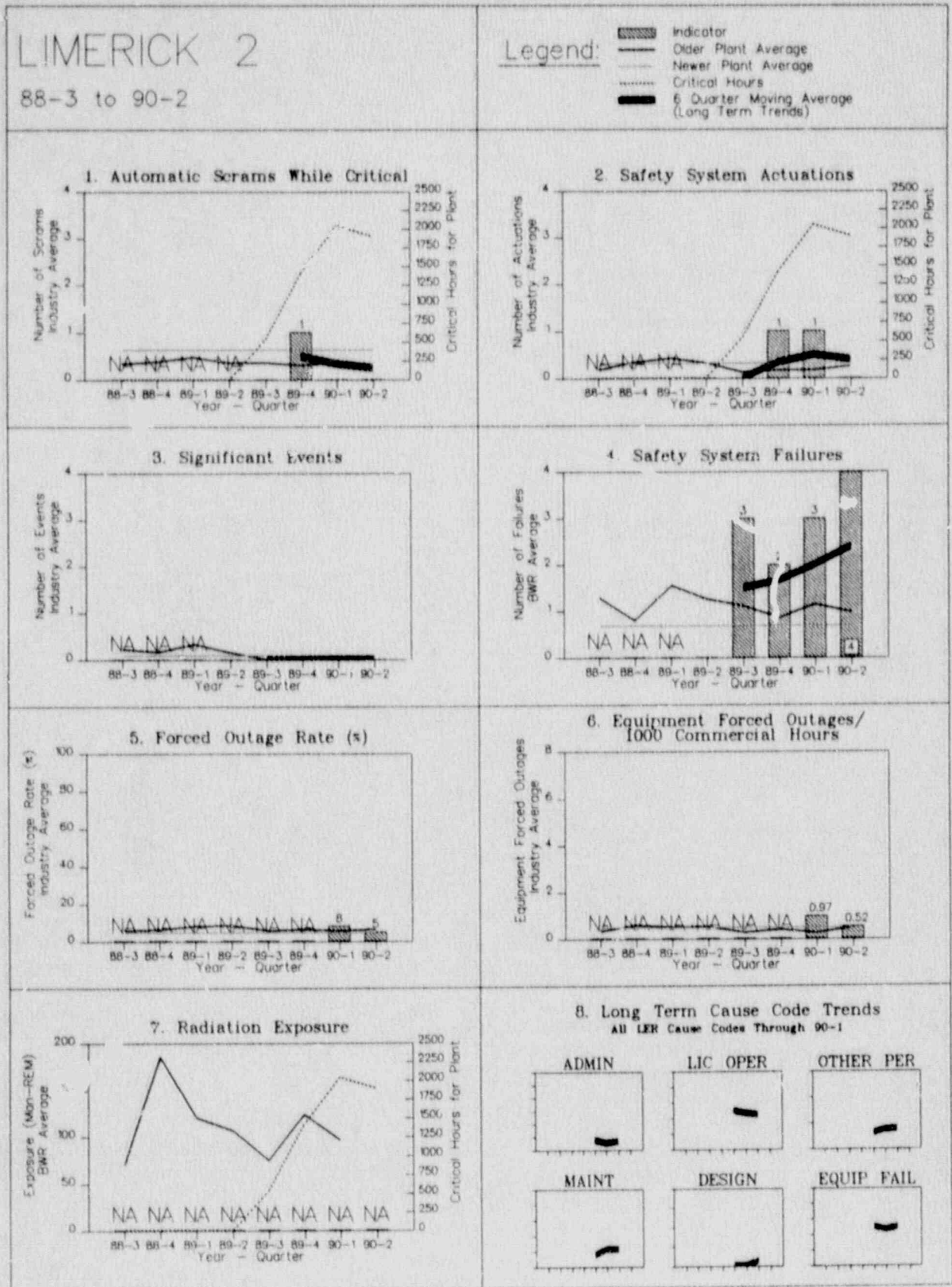
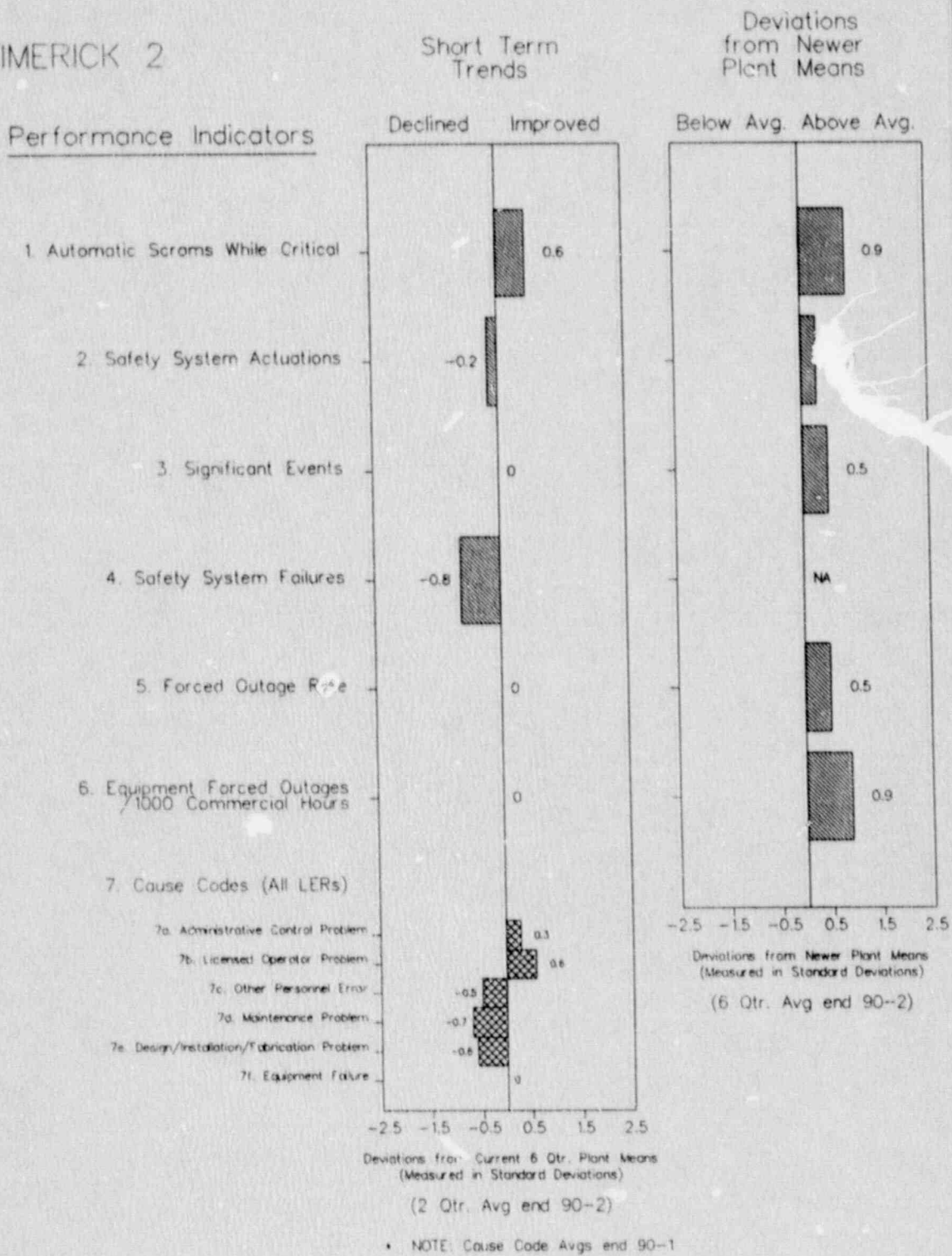


FIGURE 4.50

LIMERICK 2



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PAGE
INTENTIONALLY
LEFT
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FIGURE 4.50

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

LIMERICK 2

Performance Indicators

Deviations
from Older
Plant Long
Term Means

Below Avg. Above Avg.

1. Automatic Scrams While Critical

0.6

2. Safety System Actuations

-0.5

3. Significant Events

0.9

4. Safety System Failures

-2.0

SSF Compared to BWR Means

5. Forced Outage Rate

0.2

6. Equipment Forced Outages
/1000 Commercial Hours

-0.7

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long
Term Means
(Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

FIGURE 4.51

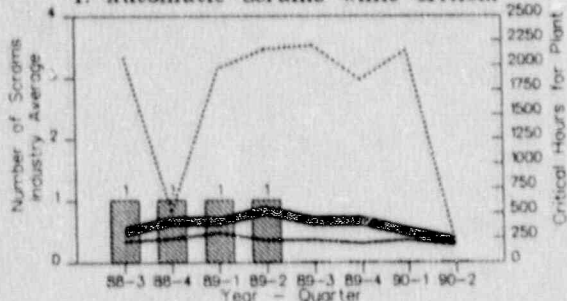
MAINE YANKEE

88-3 to 90-2

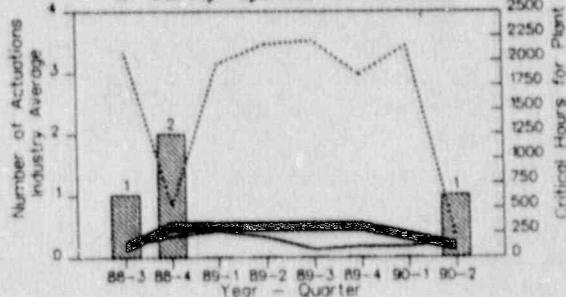
Legend:

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

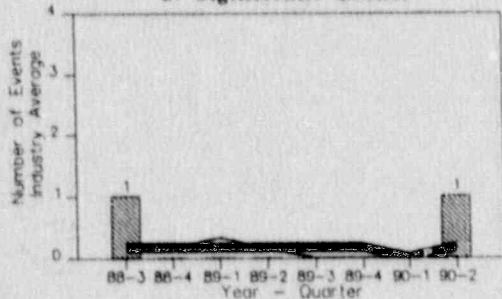
1. Automatic Scrams While Critical



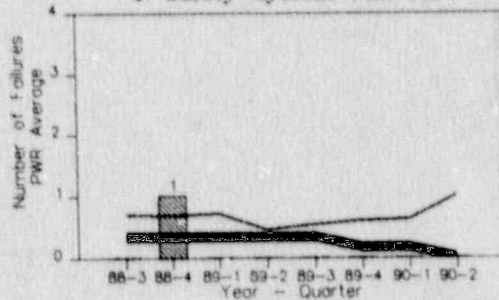
2. Safety System Actuations



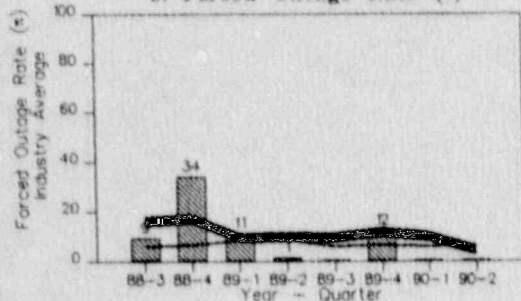
3. Significant Events



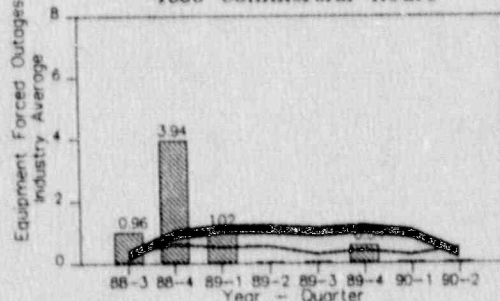
4. Safety System Failures



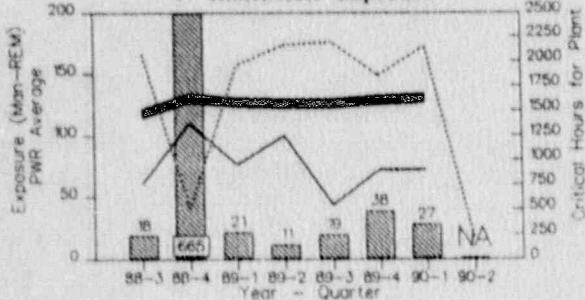
5. Forced Outage Rate (%)



6. Equipment Forced Outages/1000 Commercial Hours



7. Radiation Exposure



8. Long Term Cause Code Trends
All LER Cause Codes Through 90-1

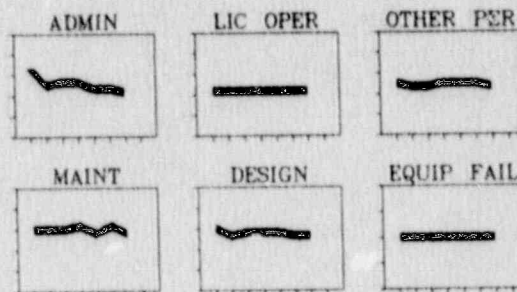


FIGURE 4.51

MAINE YANKEE

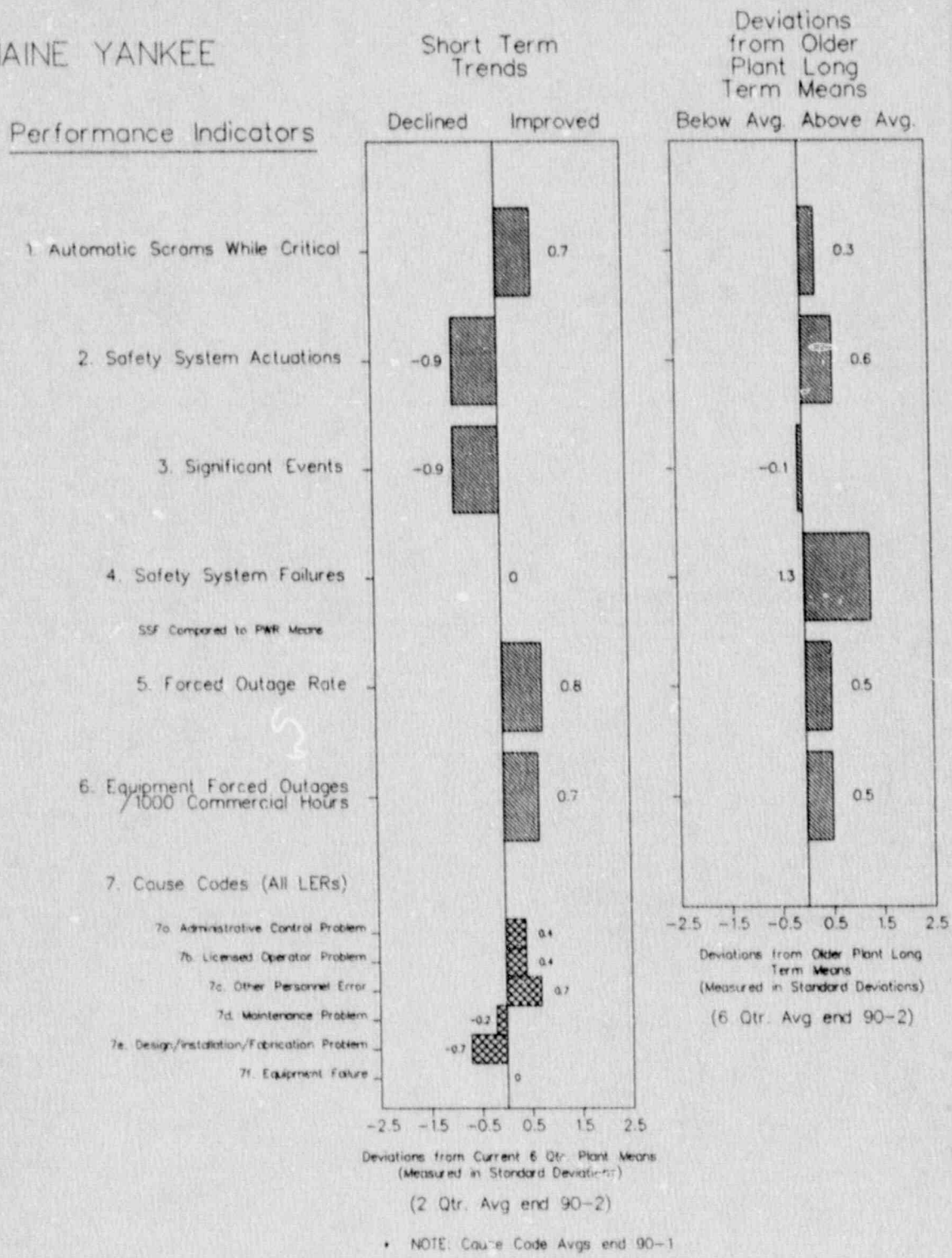


FIGURE 4.52

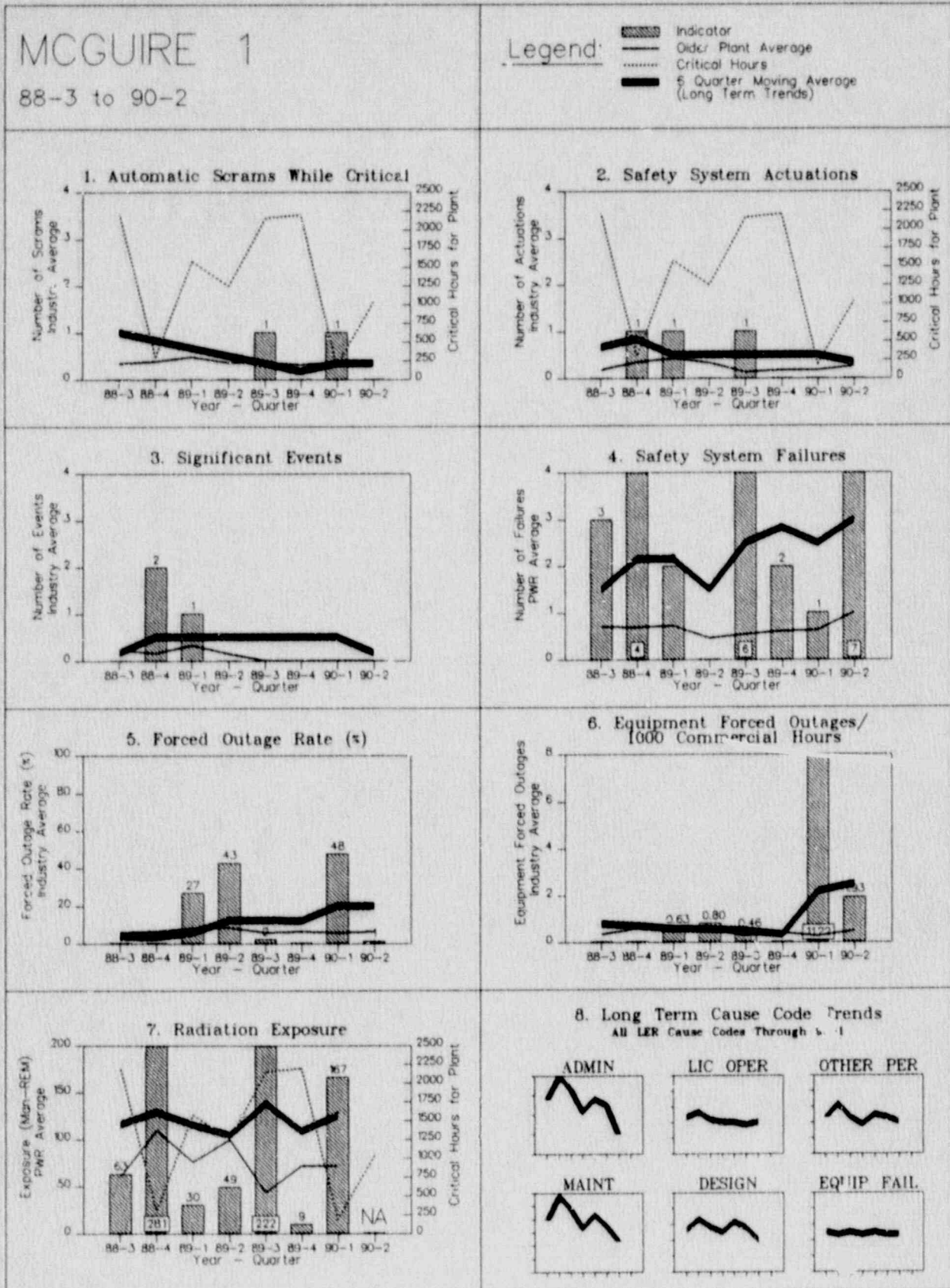


FIGURE 4.52

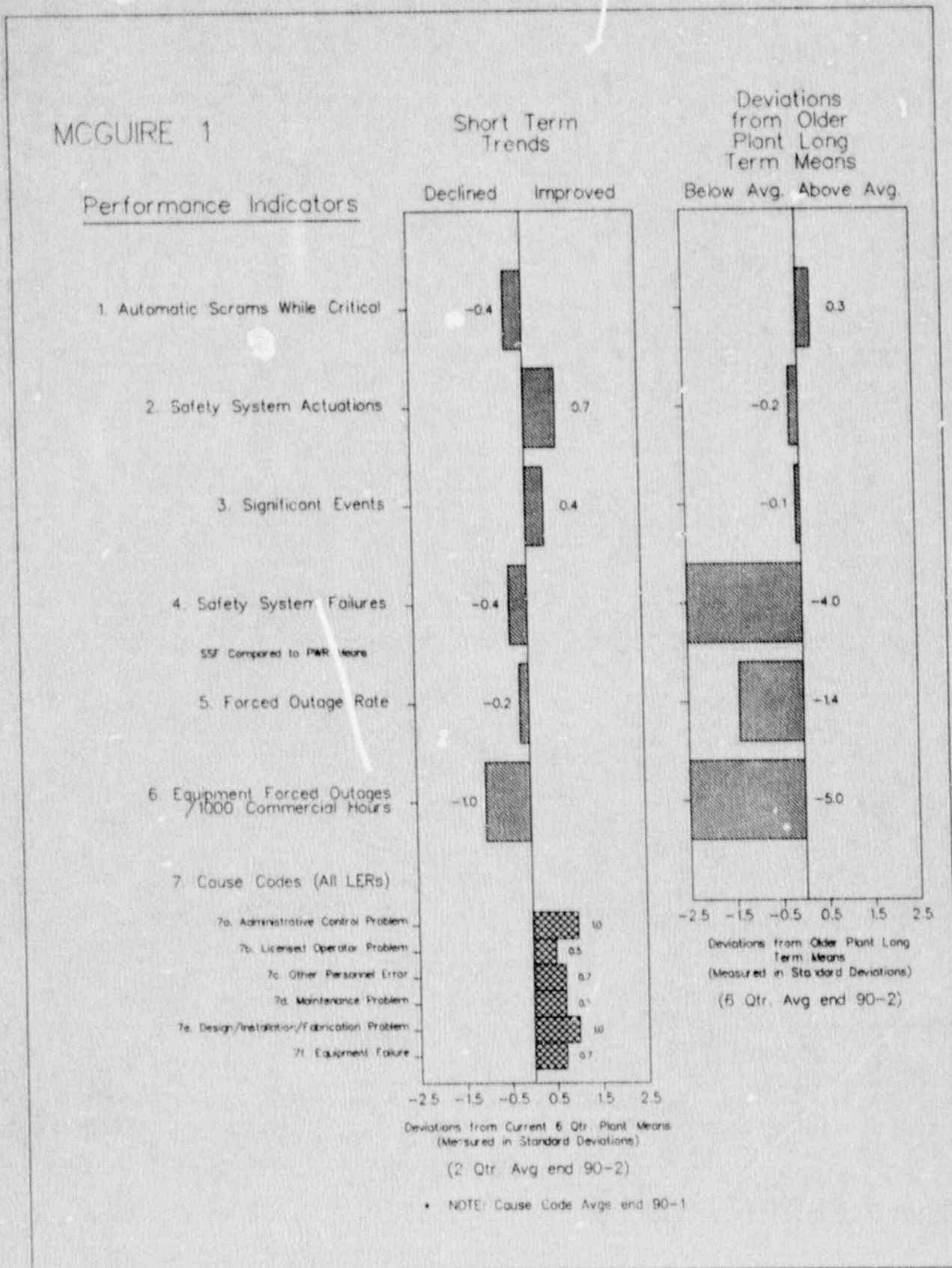


FIGURE 4.53

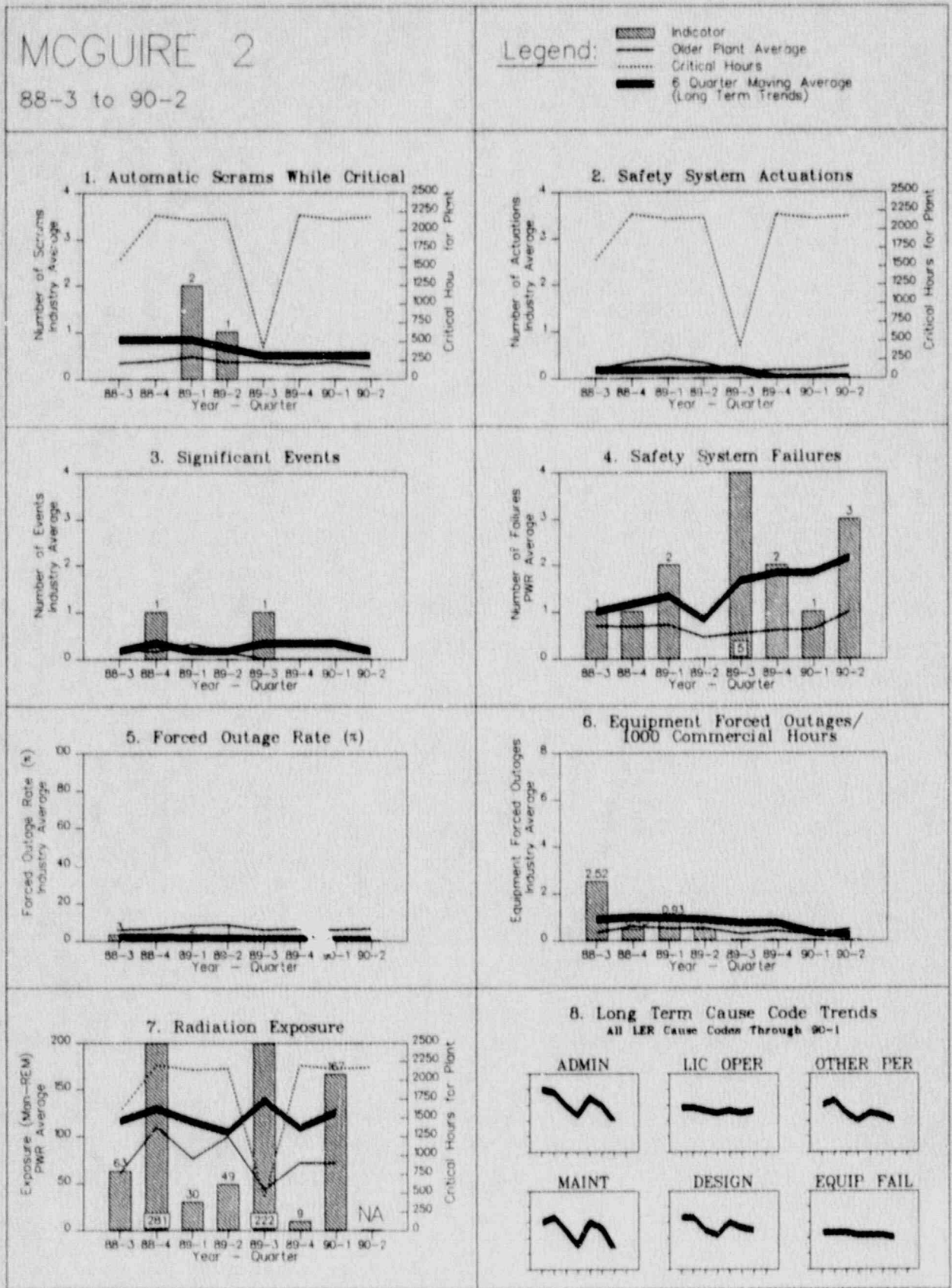


FIGURE 4.53

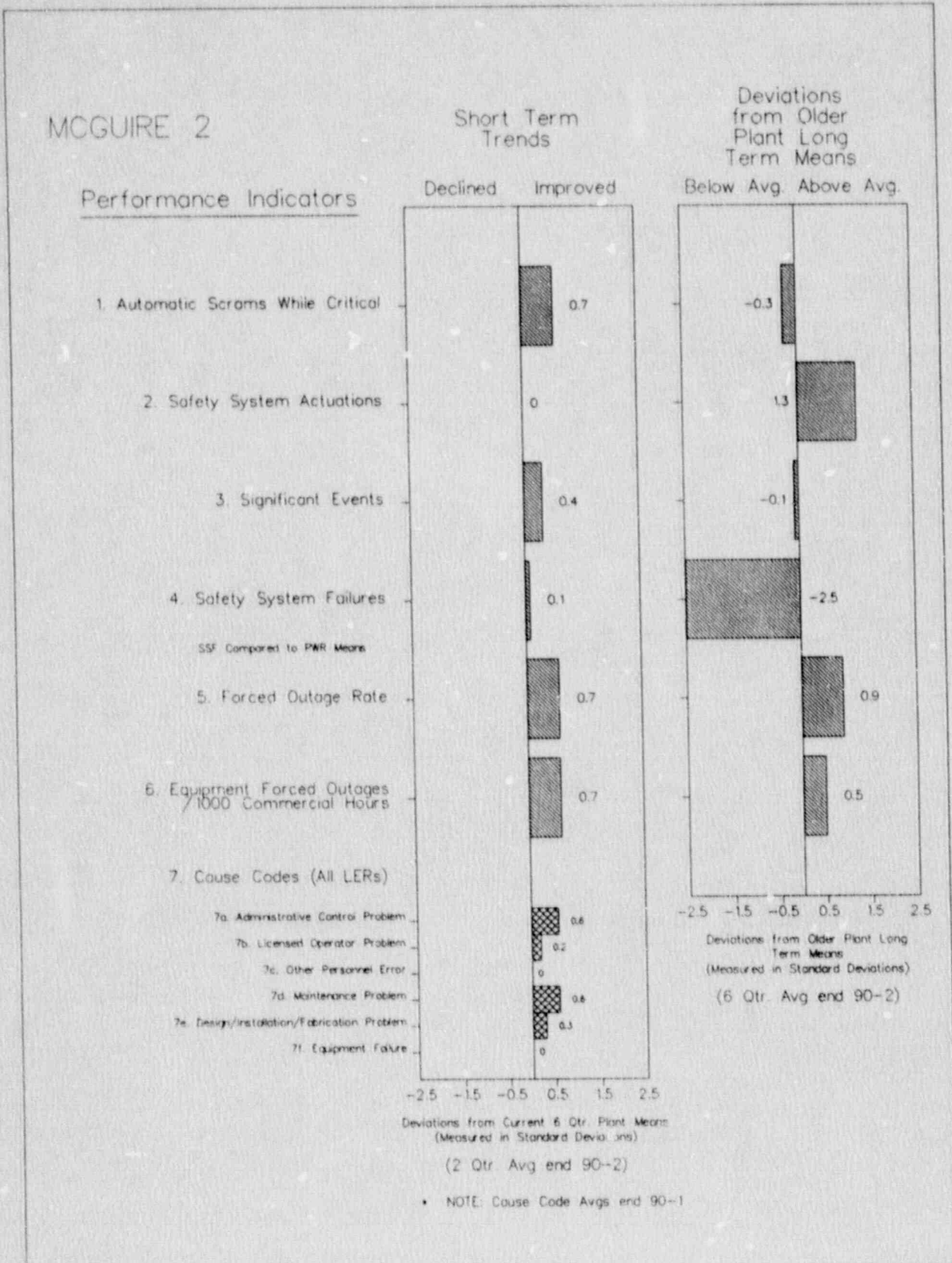


FIGURE 4.54

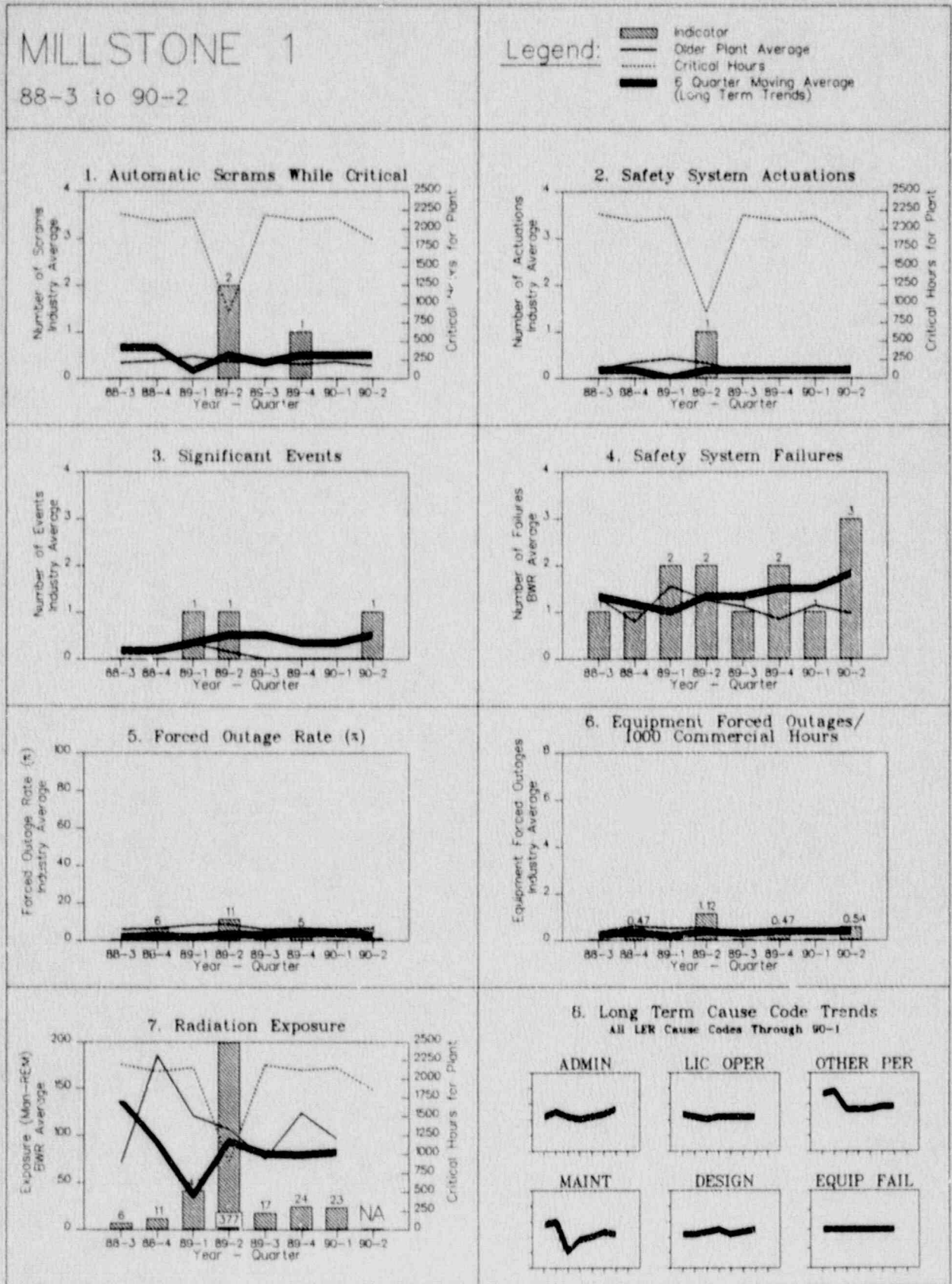


FIGURE 4.54

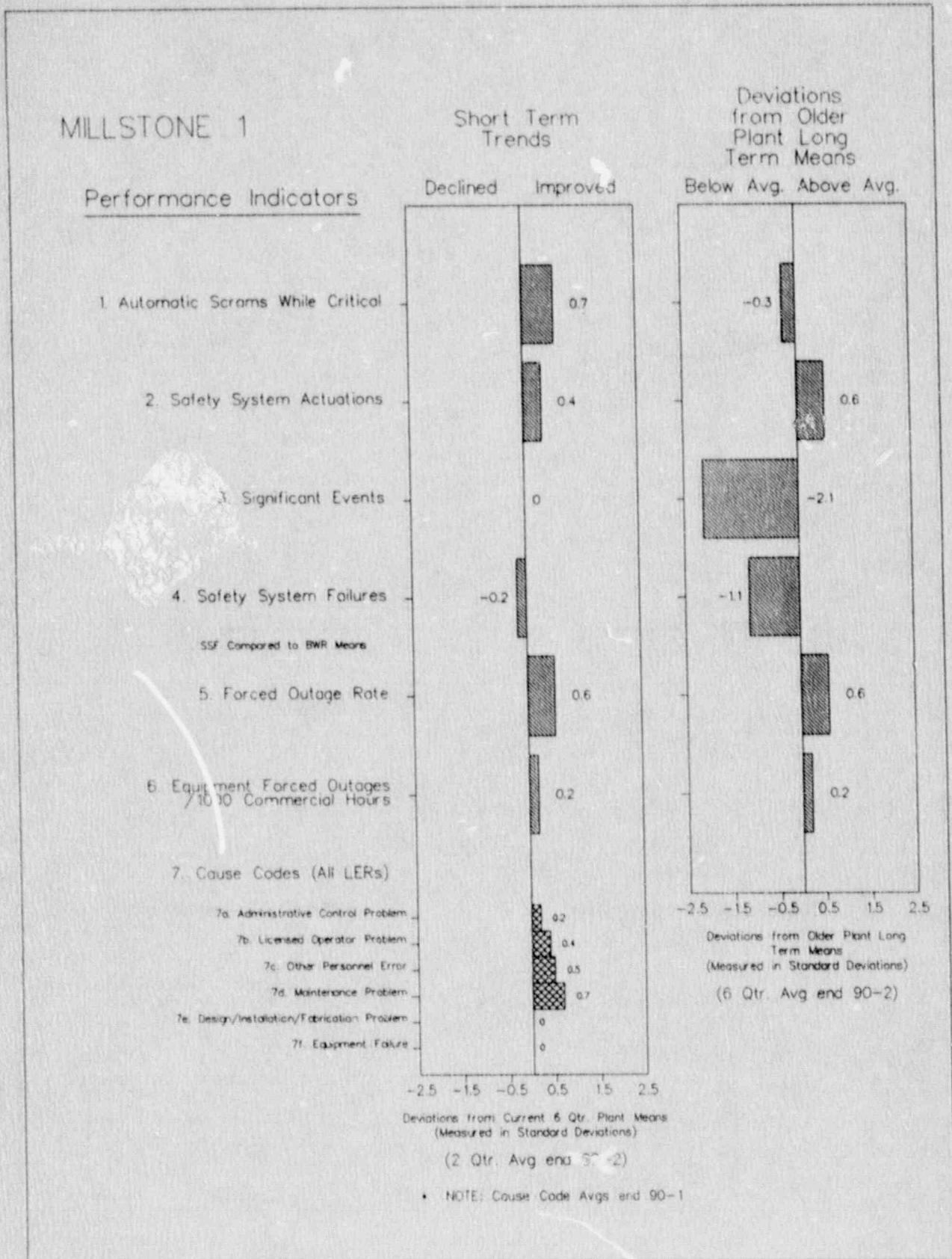


FIGURE 4.55

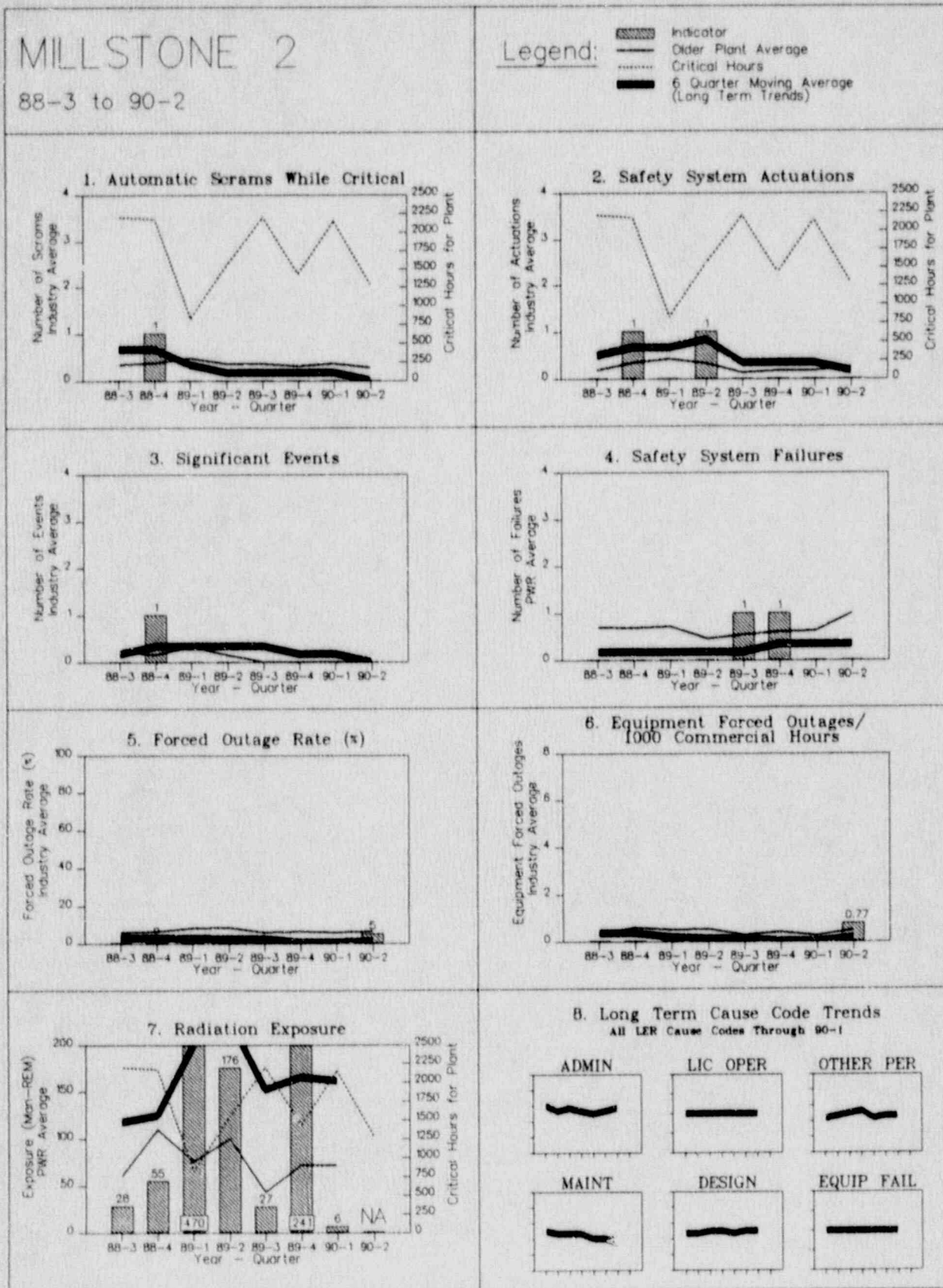


FIGURE 4.55

MILLSTONE 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

0

15

2. Safety System Actuations

0.4

0.6

3. Significant Events

0

0.9

4. Safety System Failures

0.7

0.7

SSF Compared to PWR Means

5. Forced Outage Rate

-0.9

0.9

6. Equipment Forced Outages /1000 Commercial Hours

-0.9

0.8

7. Cause Codes (All LERs)

7a. Administrative Control Problem

-0.4

7b. Licensed Operator Problem

0

7c. Other Personnel Error

0.7

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 Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

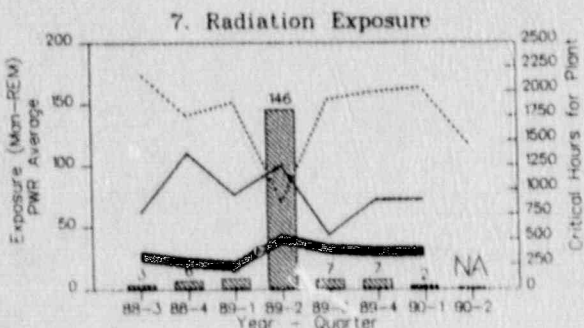
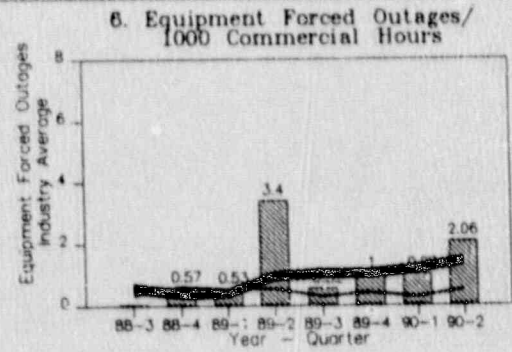
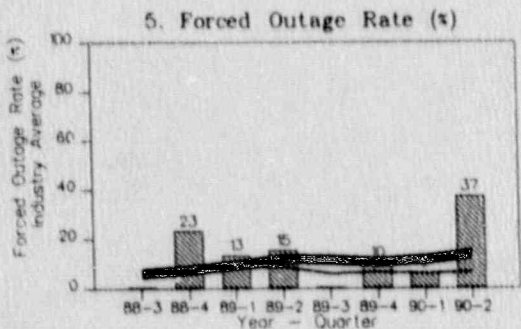
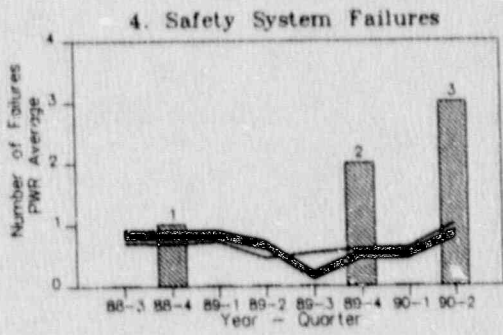
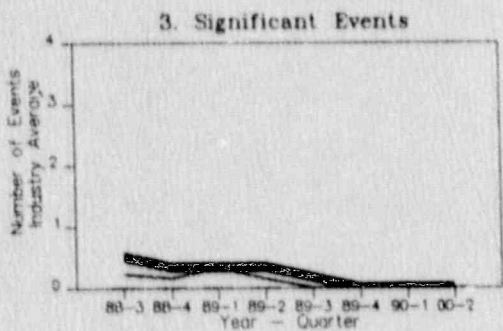
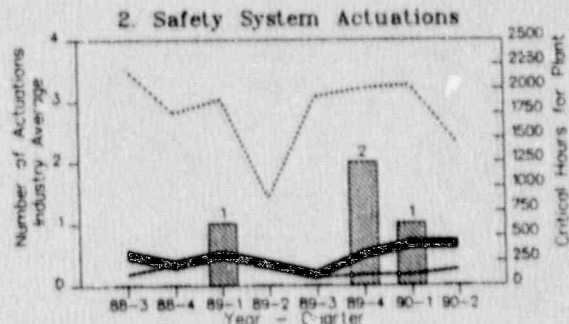
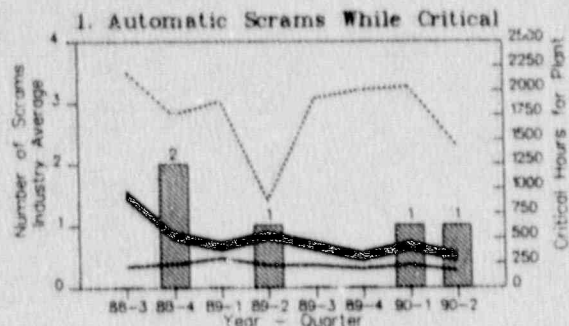
* NOTE: Cause Code Avgs end 90-1

FIGURE 4.56

MILLSTONE 3

88-3 to 90-2

Legend:



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

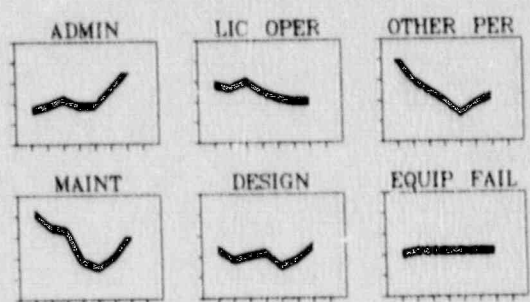


FIGURE 4.56

MILLSTONE 3

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-1.0

-0.3

2. Safety System Actuations

0.2

-1.7

3. Significant Events

0

0.9

4. Safety System Failures

-0.5

-0.2

SSF Compared to PWR Means

5. Forced Outage Rate

-0.7

-0.6

6. Equipment Forced Outages / 1000 Commercial Hours

-0.1

-2.4

7. Cause Codes (All LERs)

7a. Administrative Control Problem

-0.9

7b. Licensed Operator Problem

0.4

7c. Other Personnel Error

-1.0

7d. Maintenance Problem

-1.0

7e. Design/Installation/Fabrication Problem

-1.2

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Older Plant Long Term Means

(Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avg end 90-1

FIGURE 4.57

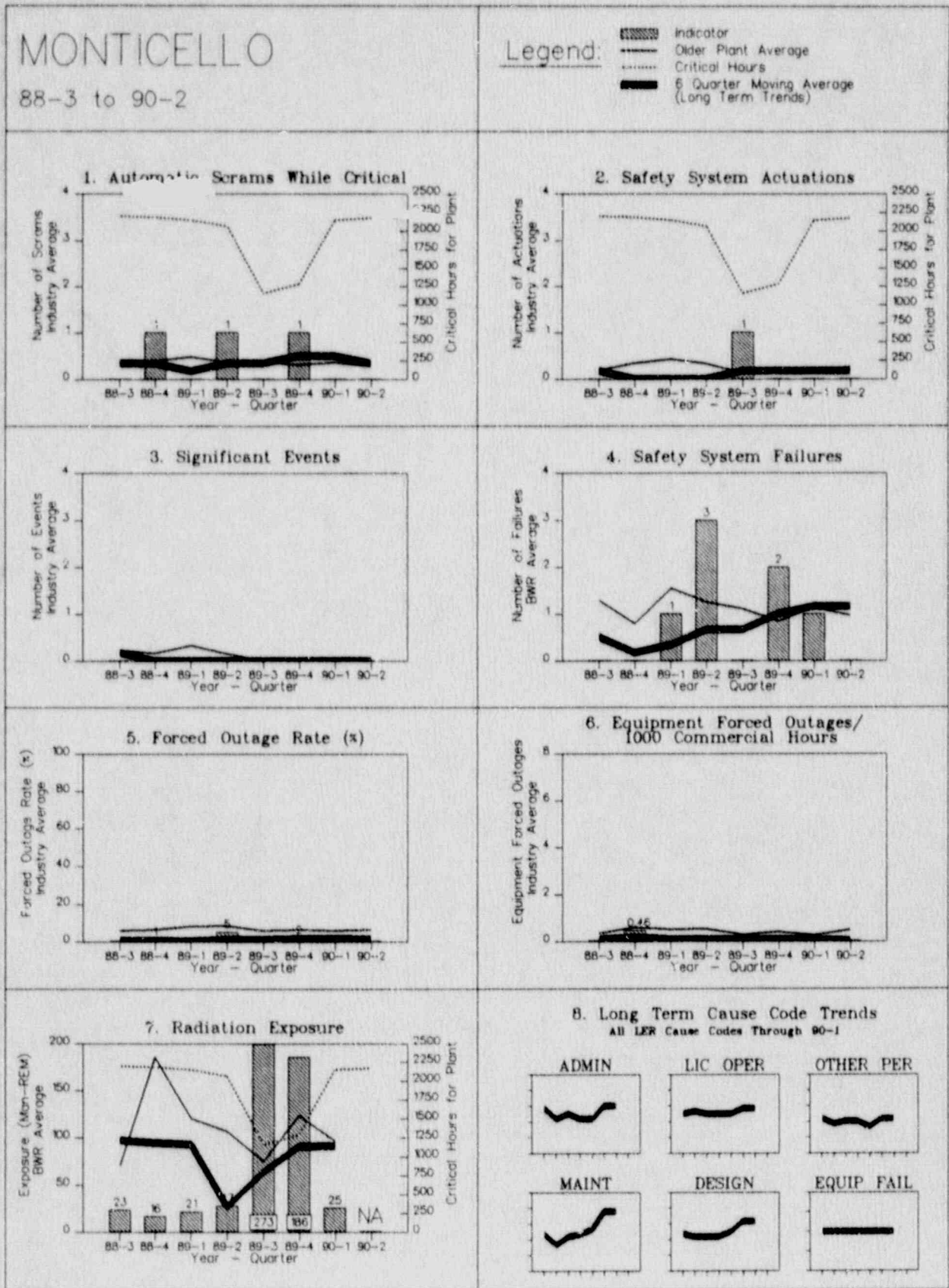


FIGURE 4.57

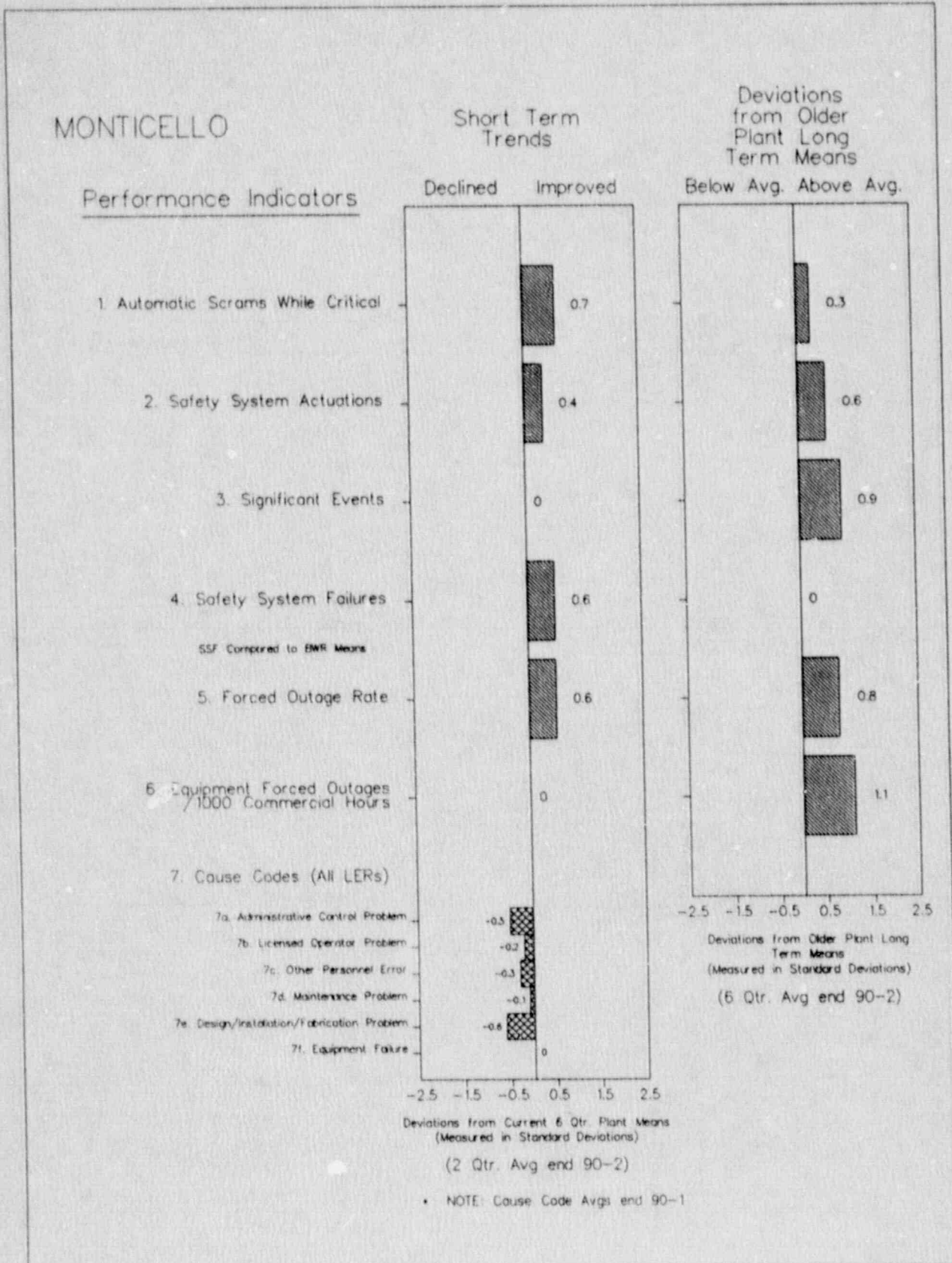


FIGURE 4.58

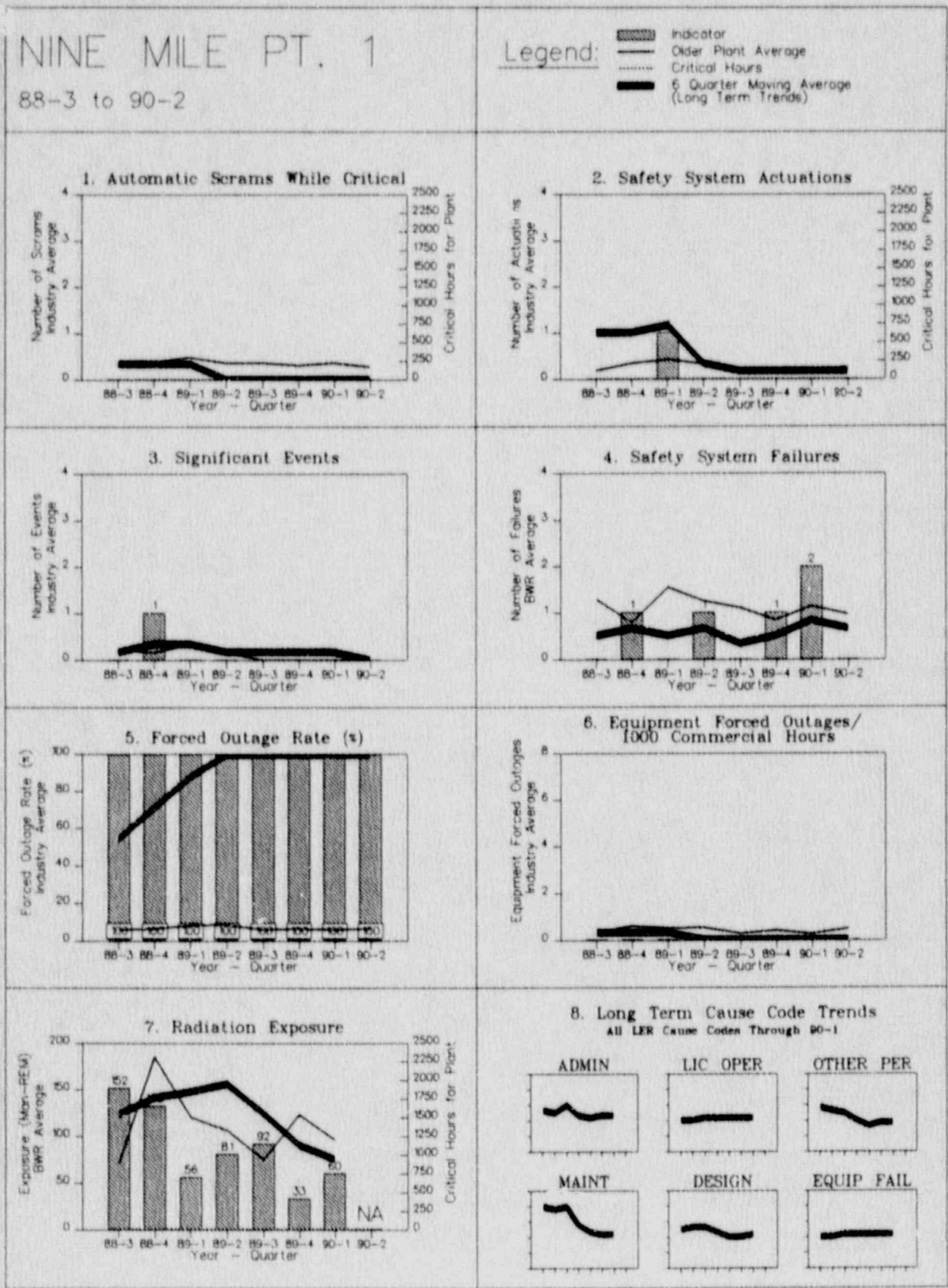


FIGURE 4.58

NINE MILE PT. 1

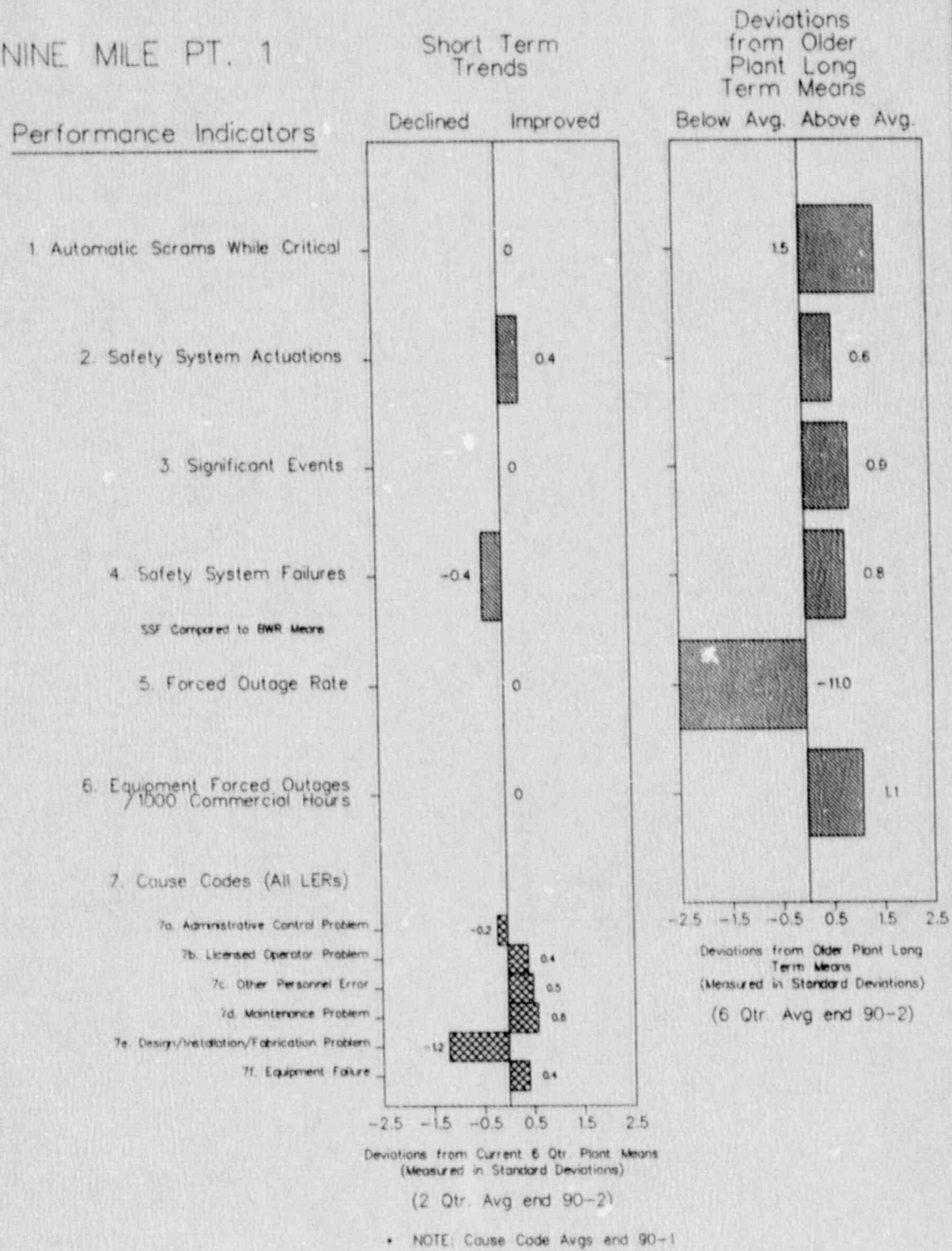


FIGURE 4.59

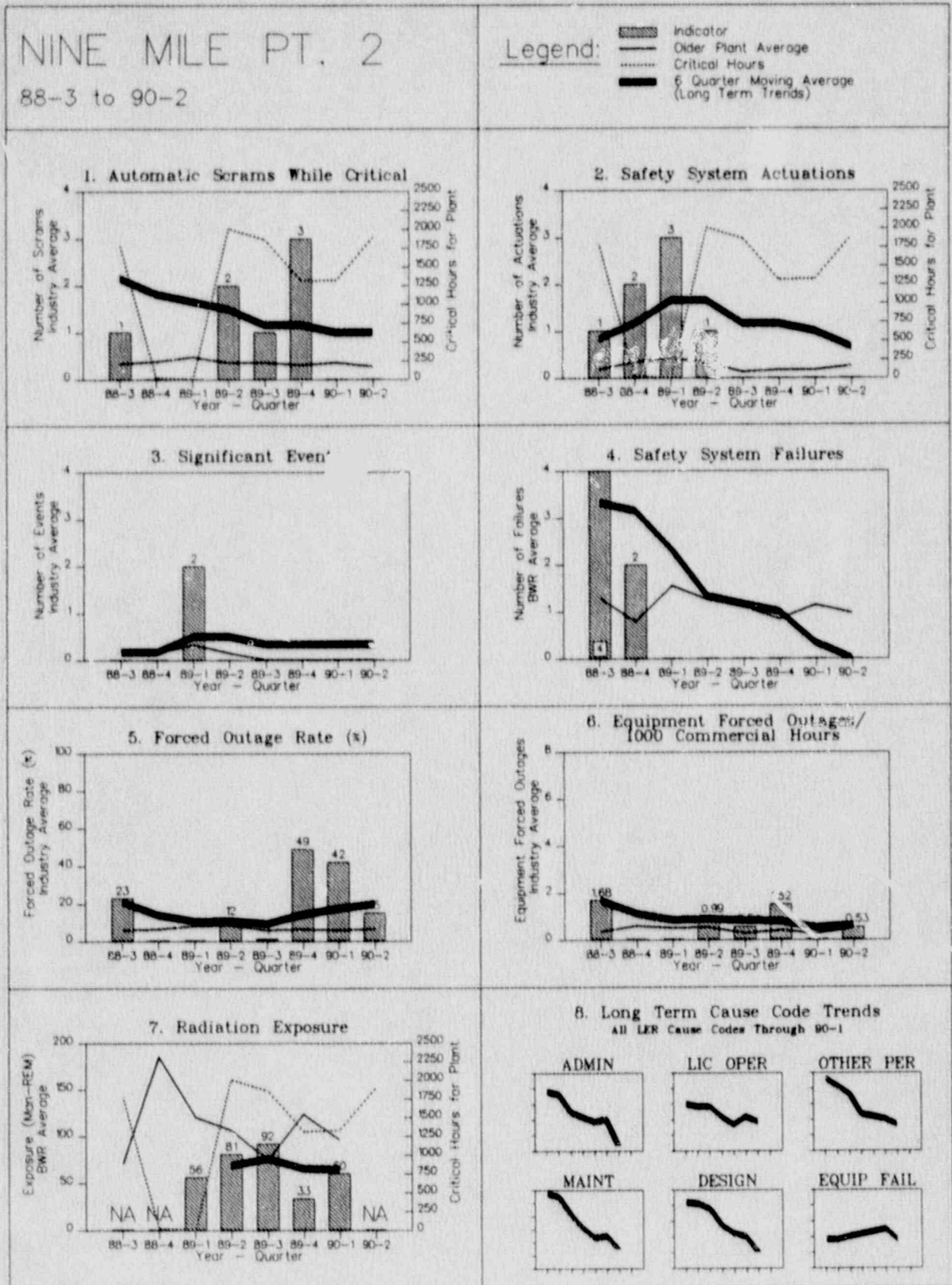


FIGURE 4.59

NINE MILE PT. 2

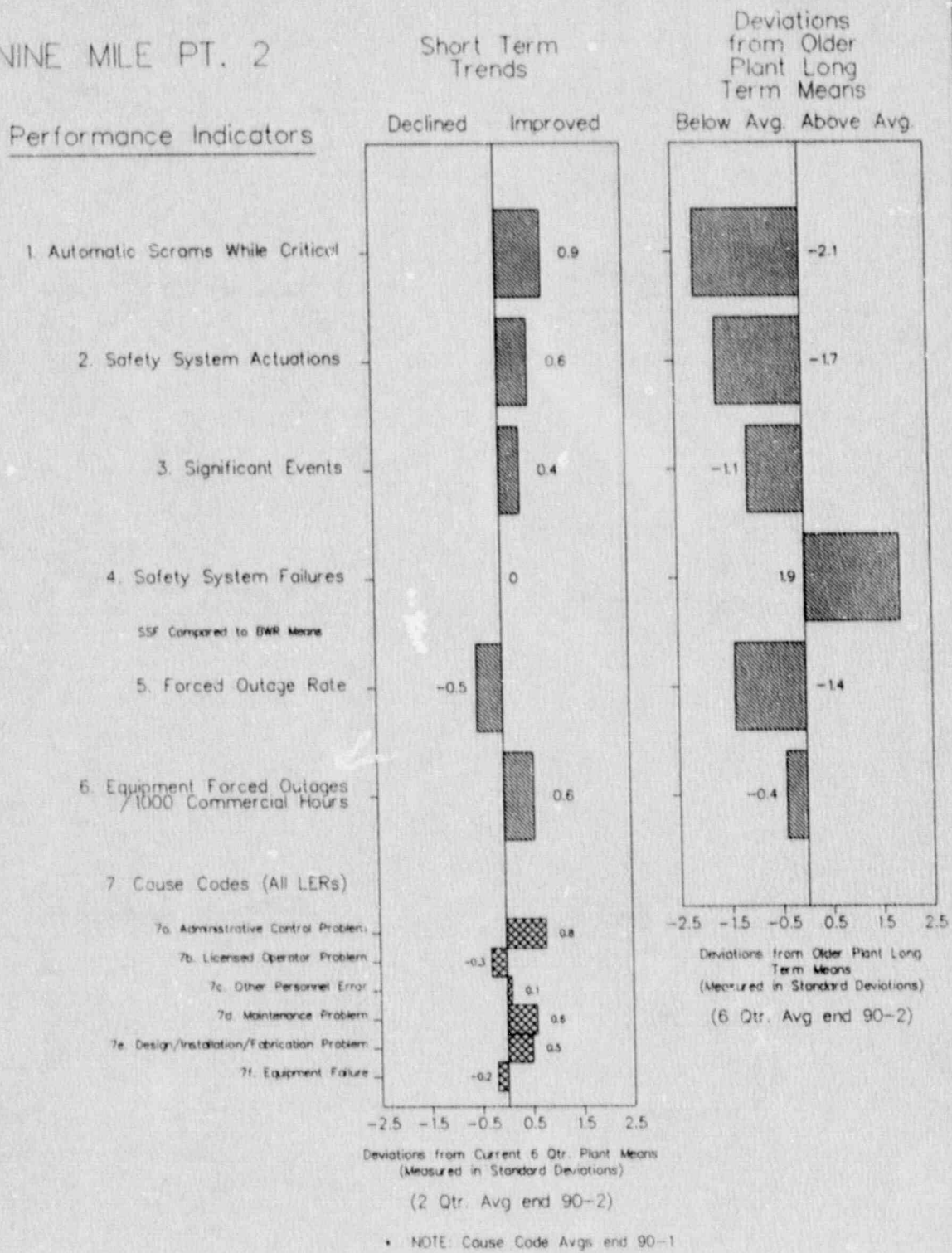


FIGURE 4.60

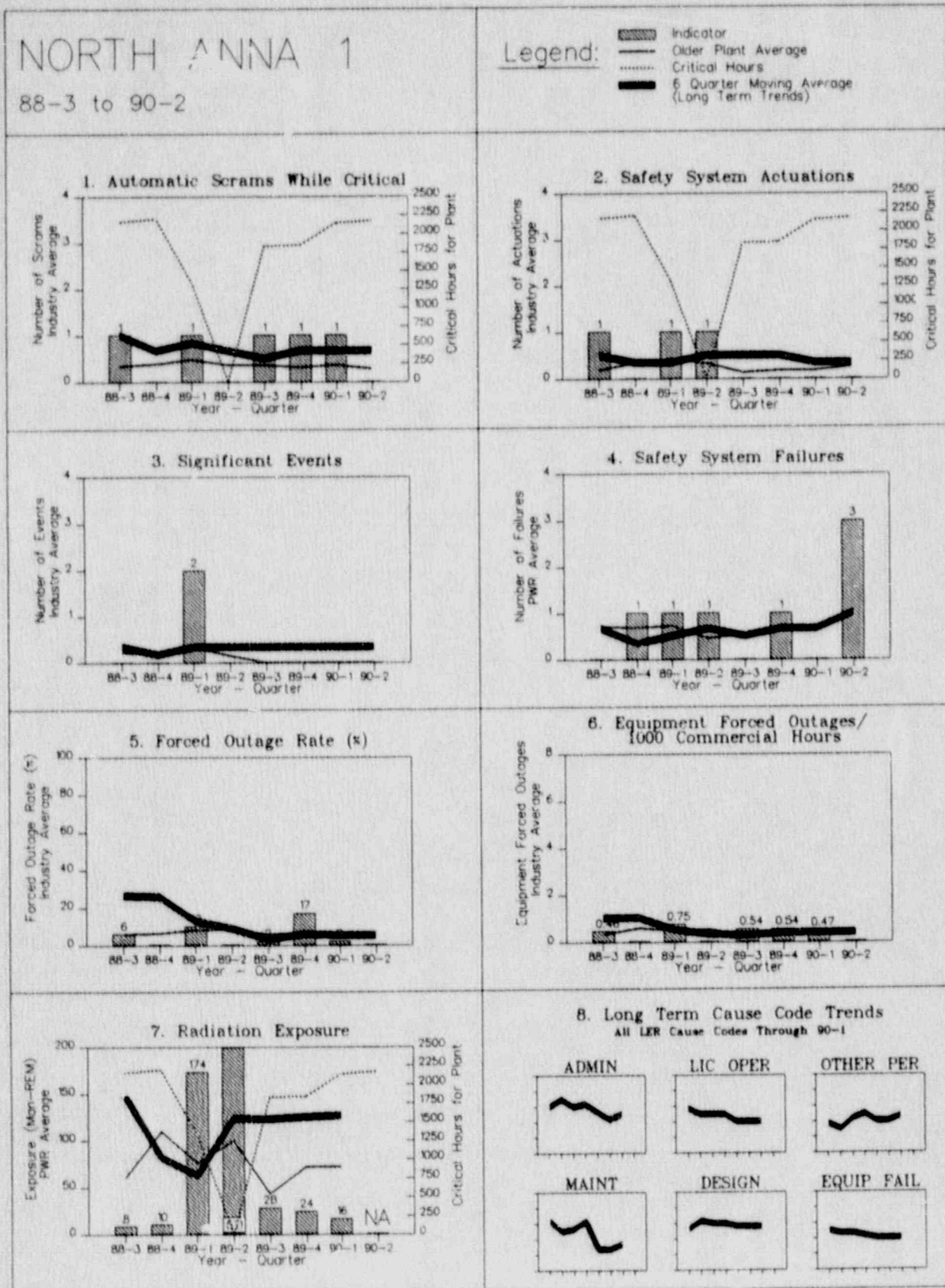


FIGURE 4.60

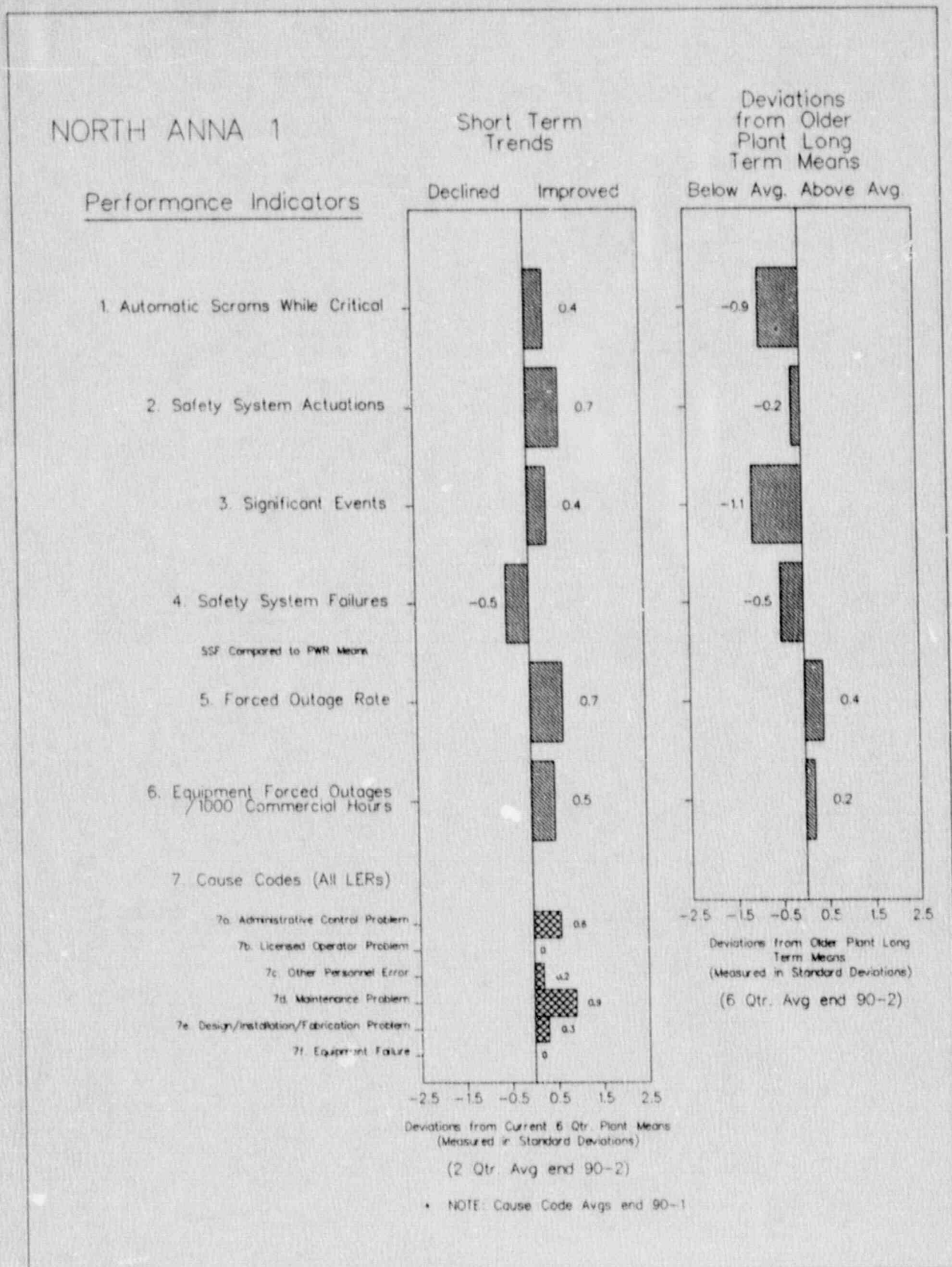


FIGURE 4.61

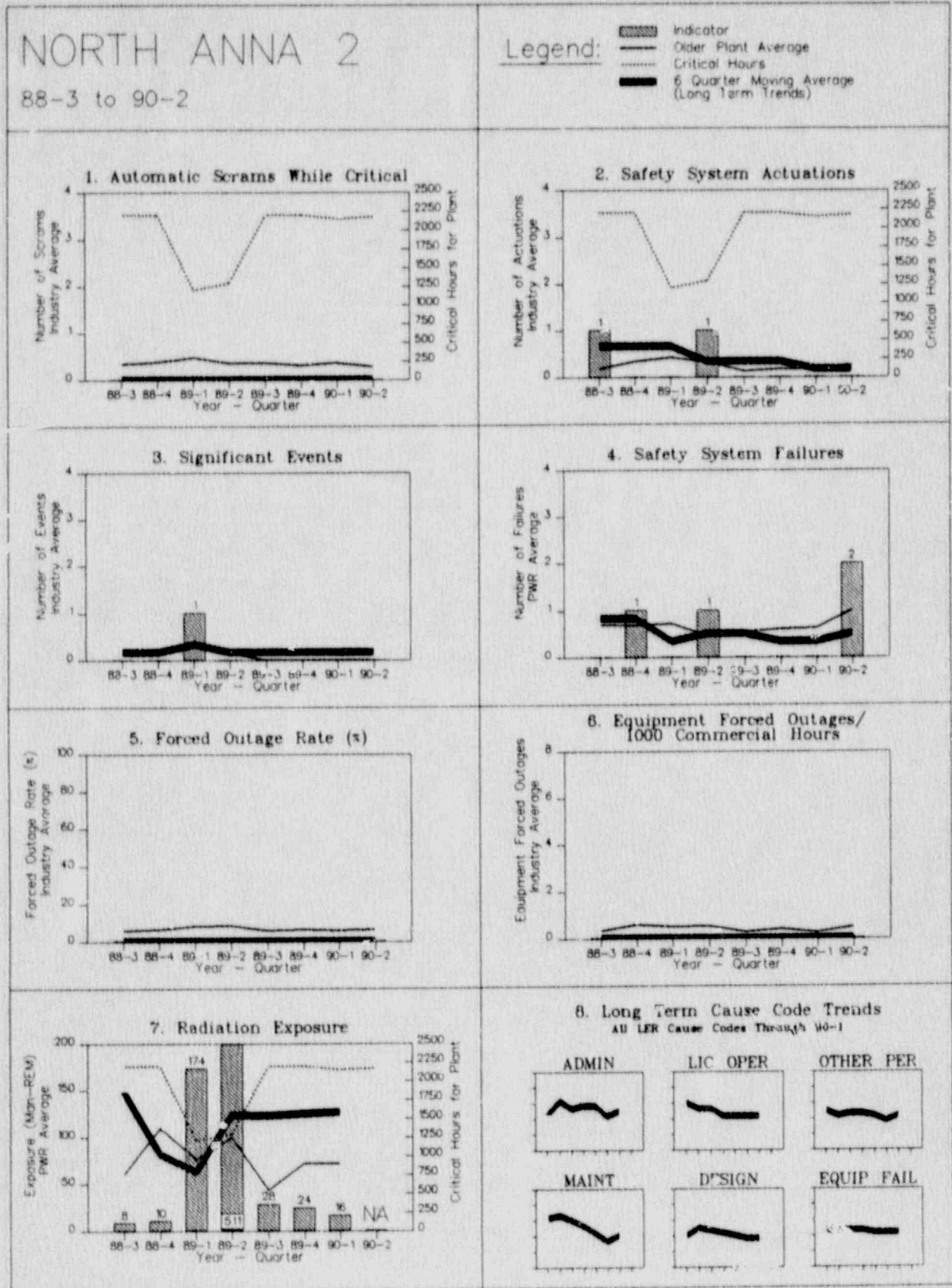


FIGURE 4.61

NORTH ANNA 2

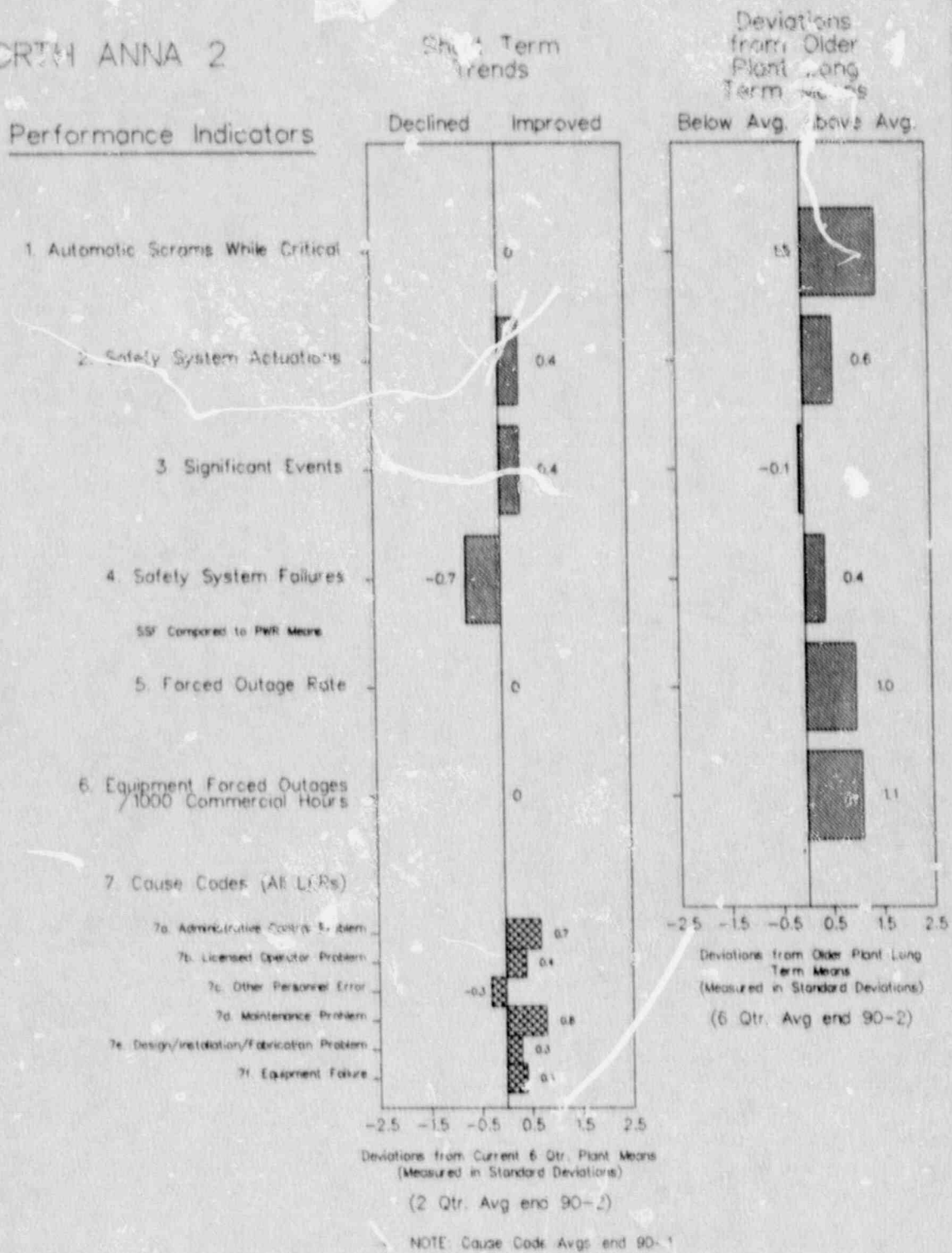


FIGURE 4.62

OCONEE 1
88-3 to 90-2

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

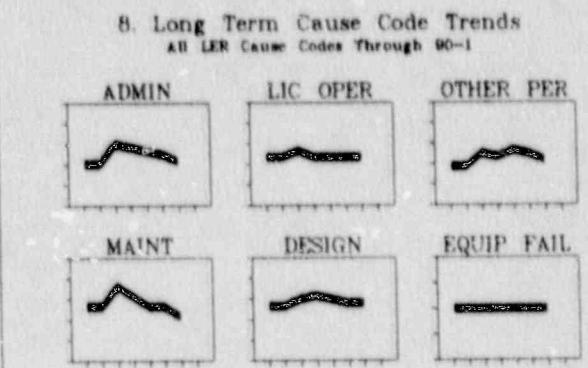
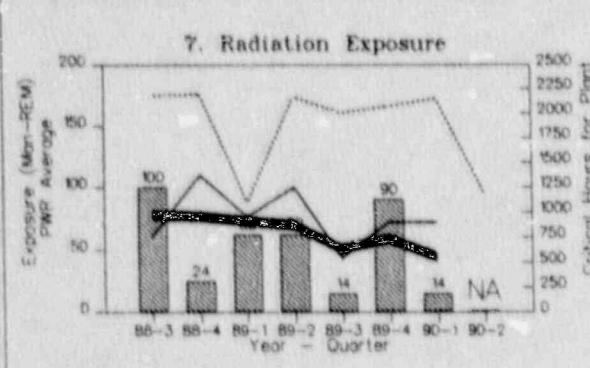
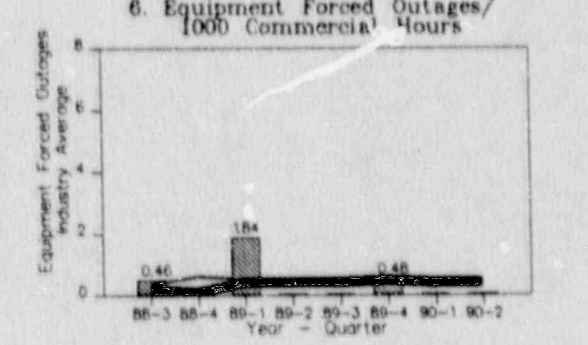
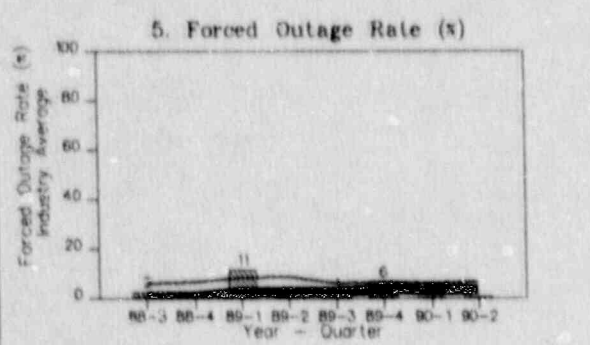
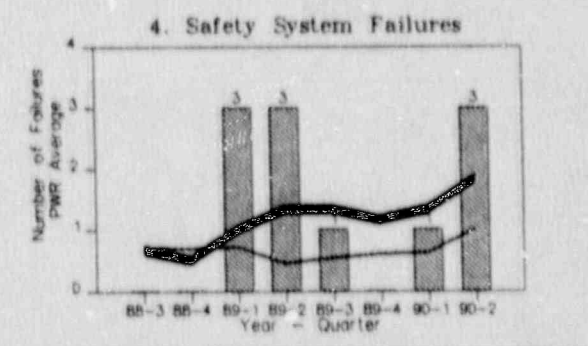
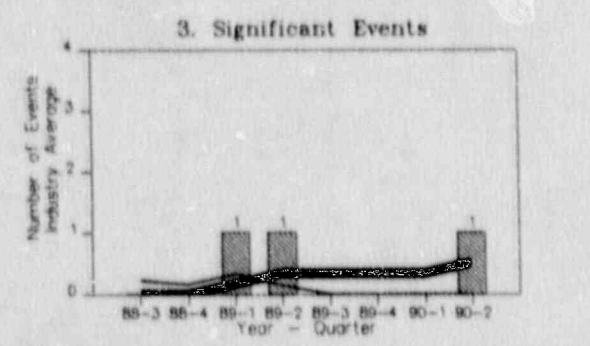
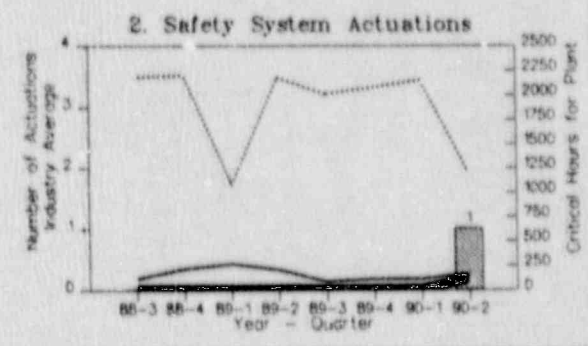
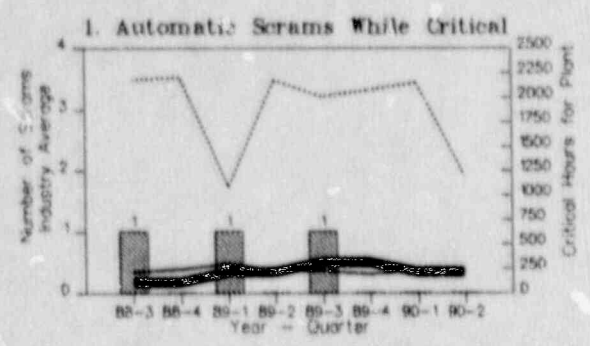


FIGURE 4.62

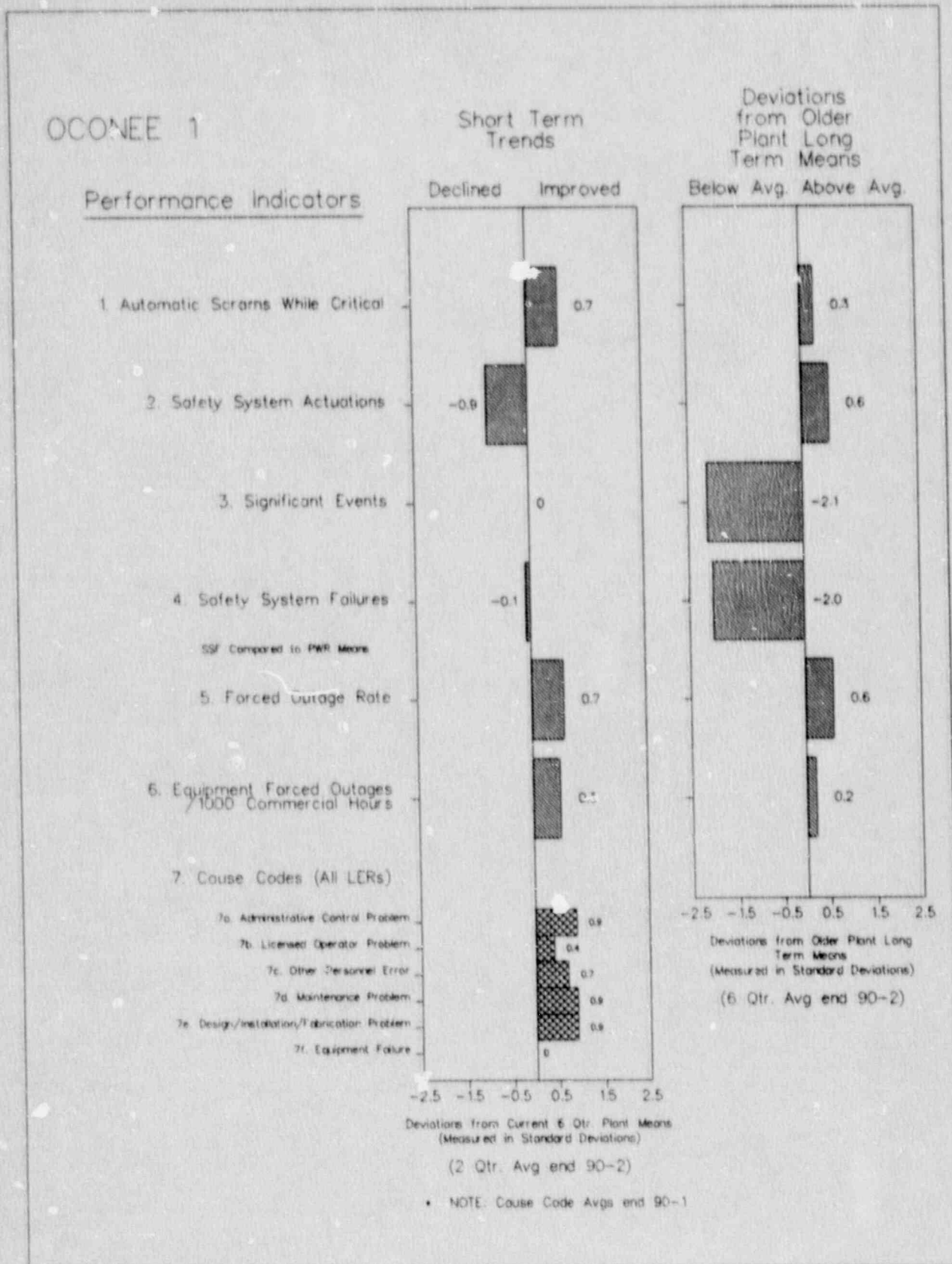


FIGURE 4.63

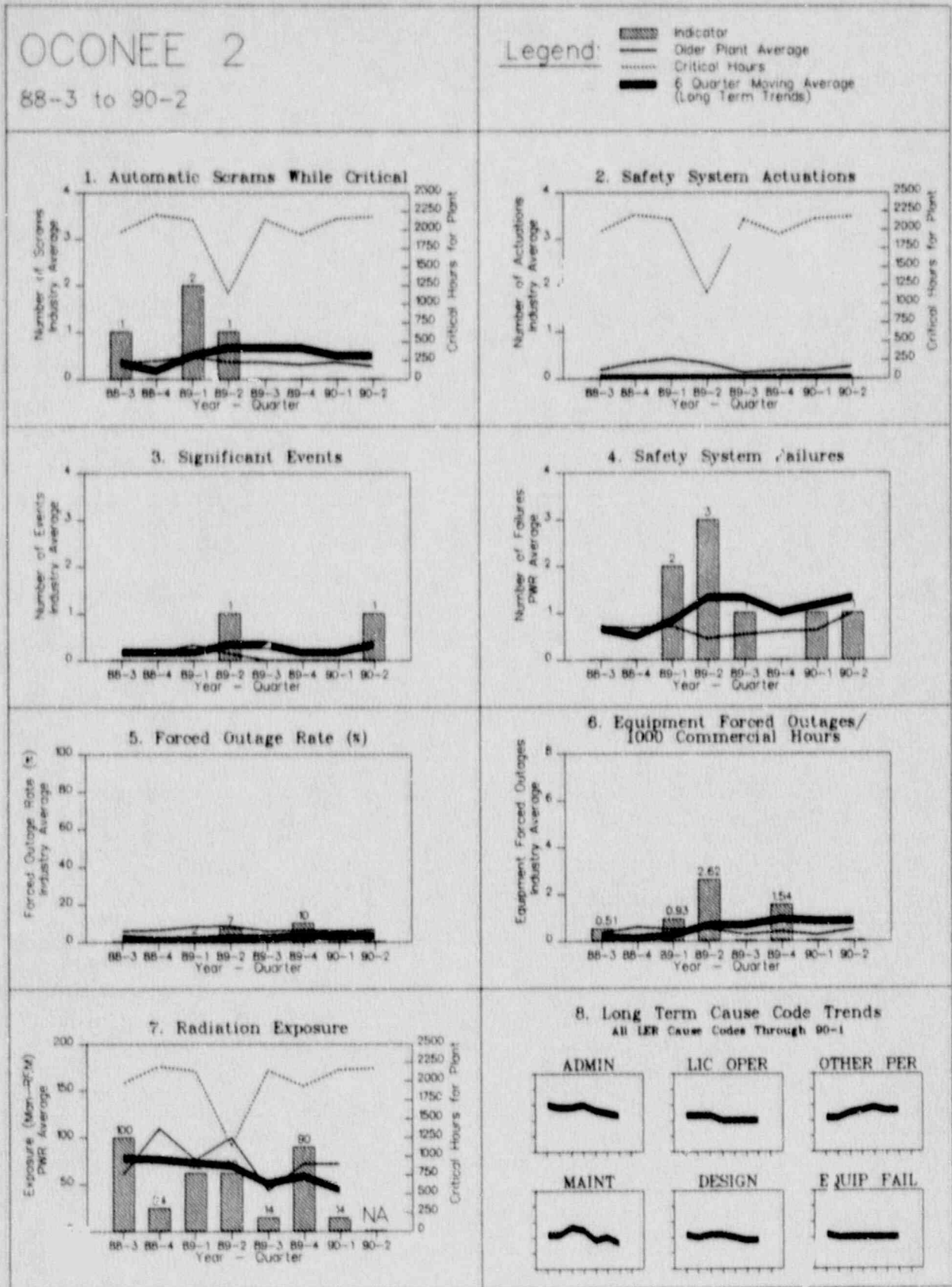


FIGURE 4.63

OCONEE 2

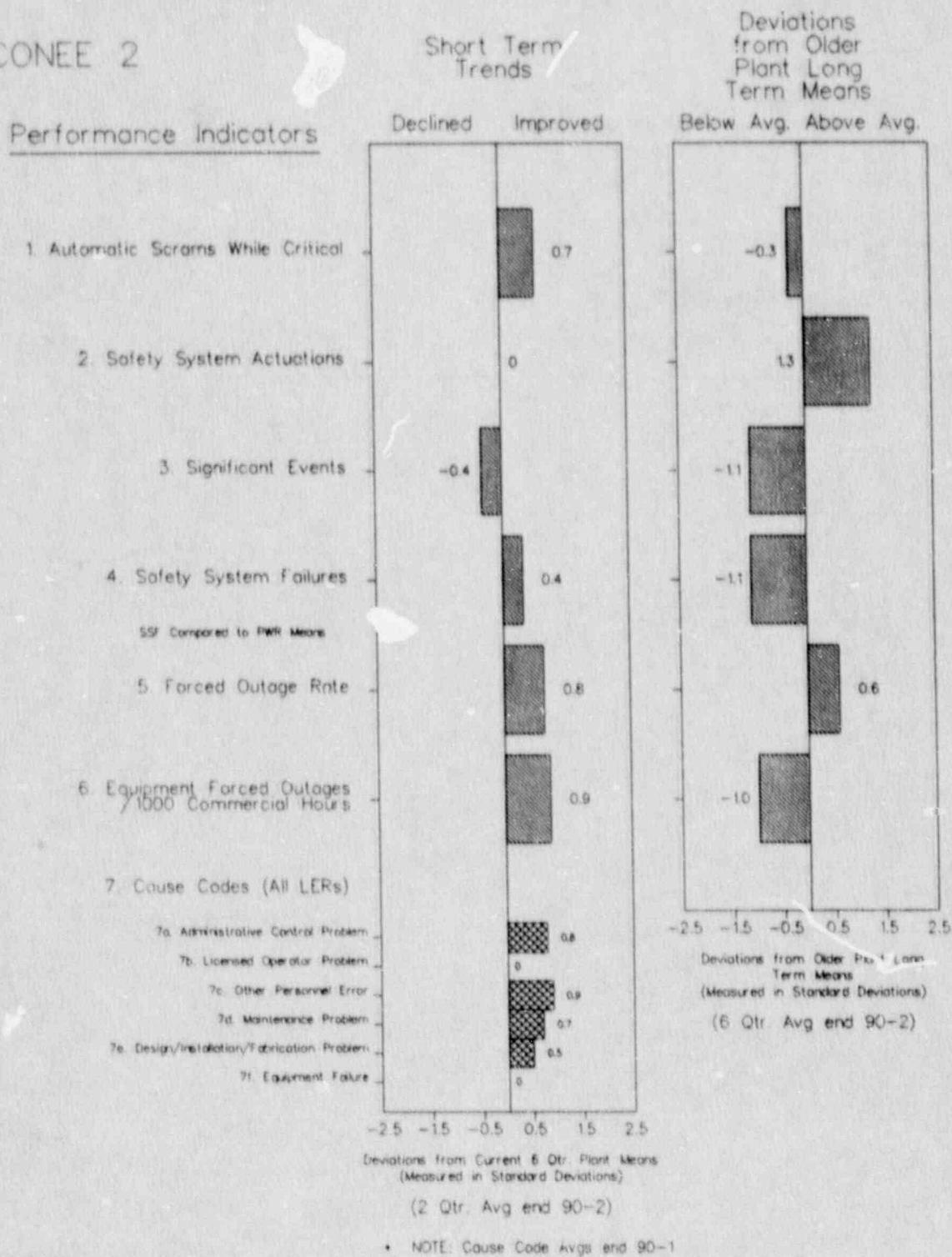


FIGURE 4.64

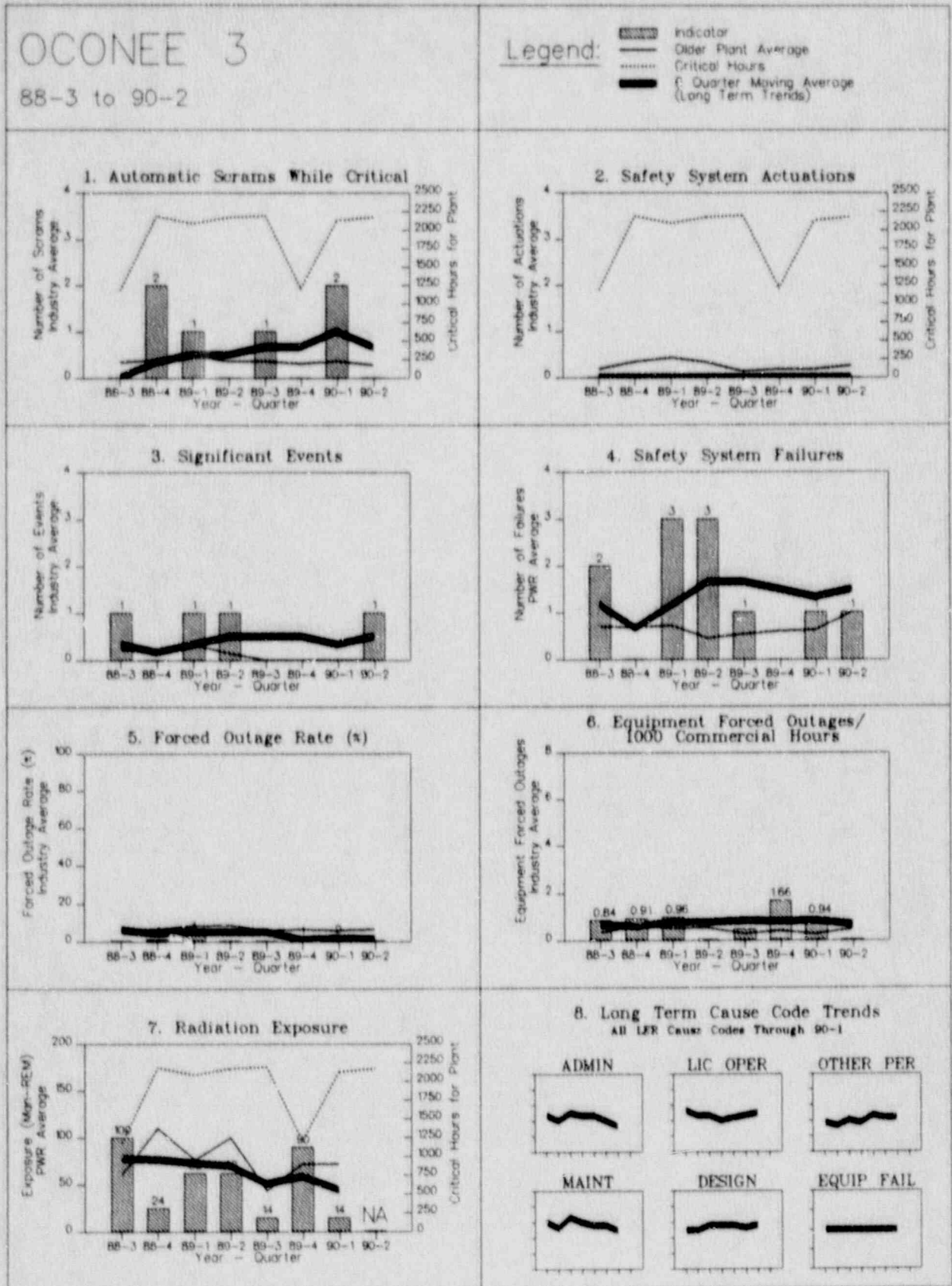


FIGURE 4.64

OCONEE 3

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

-0.9

2. Safety System Actuations

0

1.3

3. Significant Events

0

-2.1

4. Safety System Failures

0.4

-1.4

5. Forced Outage Rate

0.1

0.8

6. Equipment Forced Outages / 1000 Commercial Hours

0.3

-0.5

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

0.5

7f. Equipment Failure

0

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

(6 Qtr. Avg end 90-2)

* NOTE: Cause Code Avgs end 90-1

FIGURE 4.65

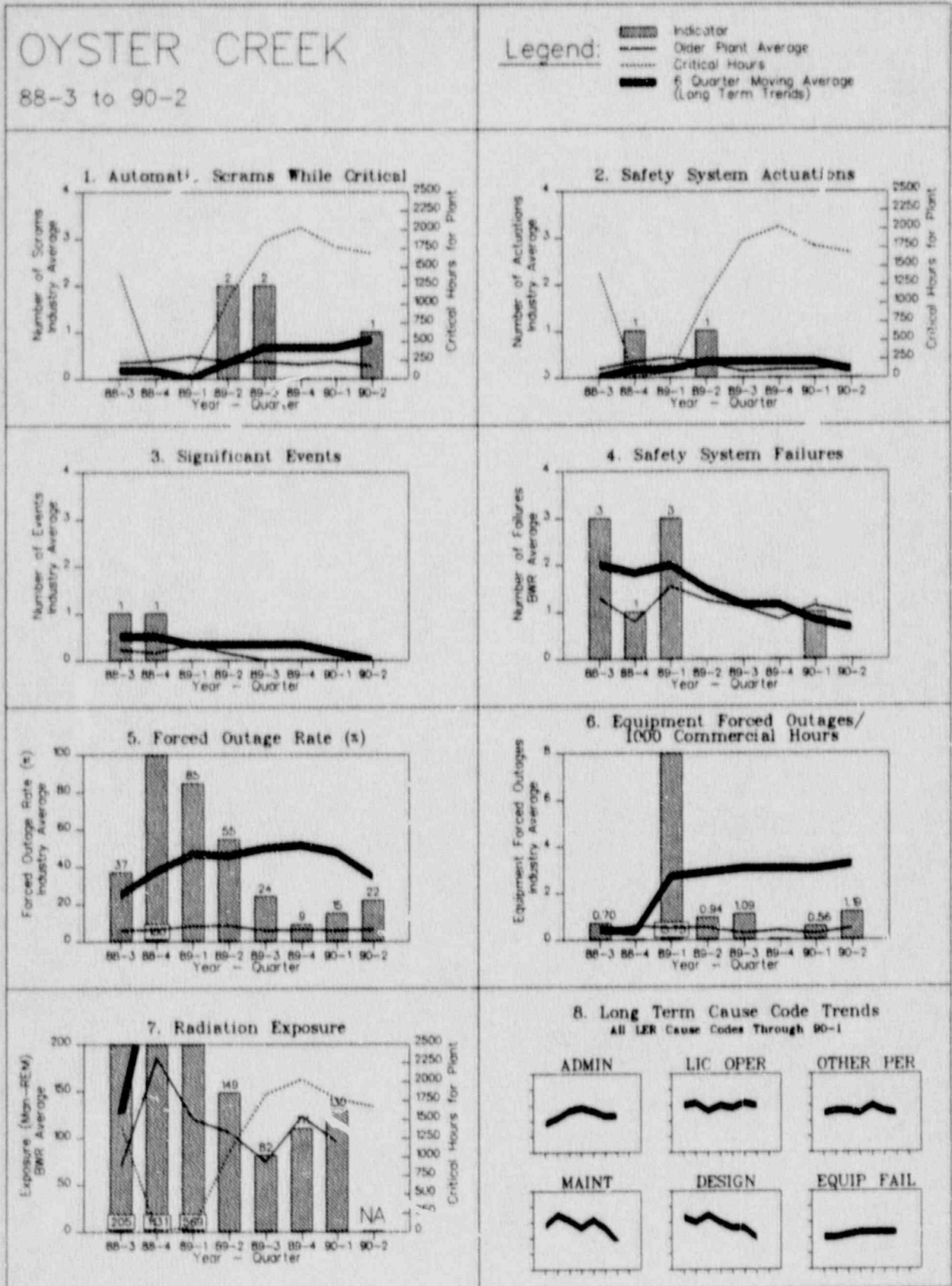


FIGURE 4.65

OYSTER CREEK

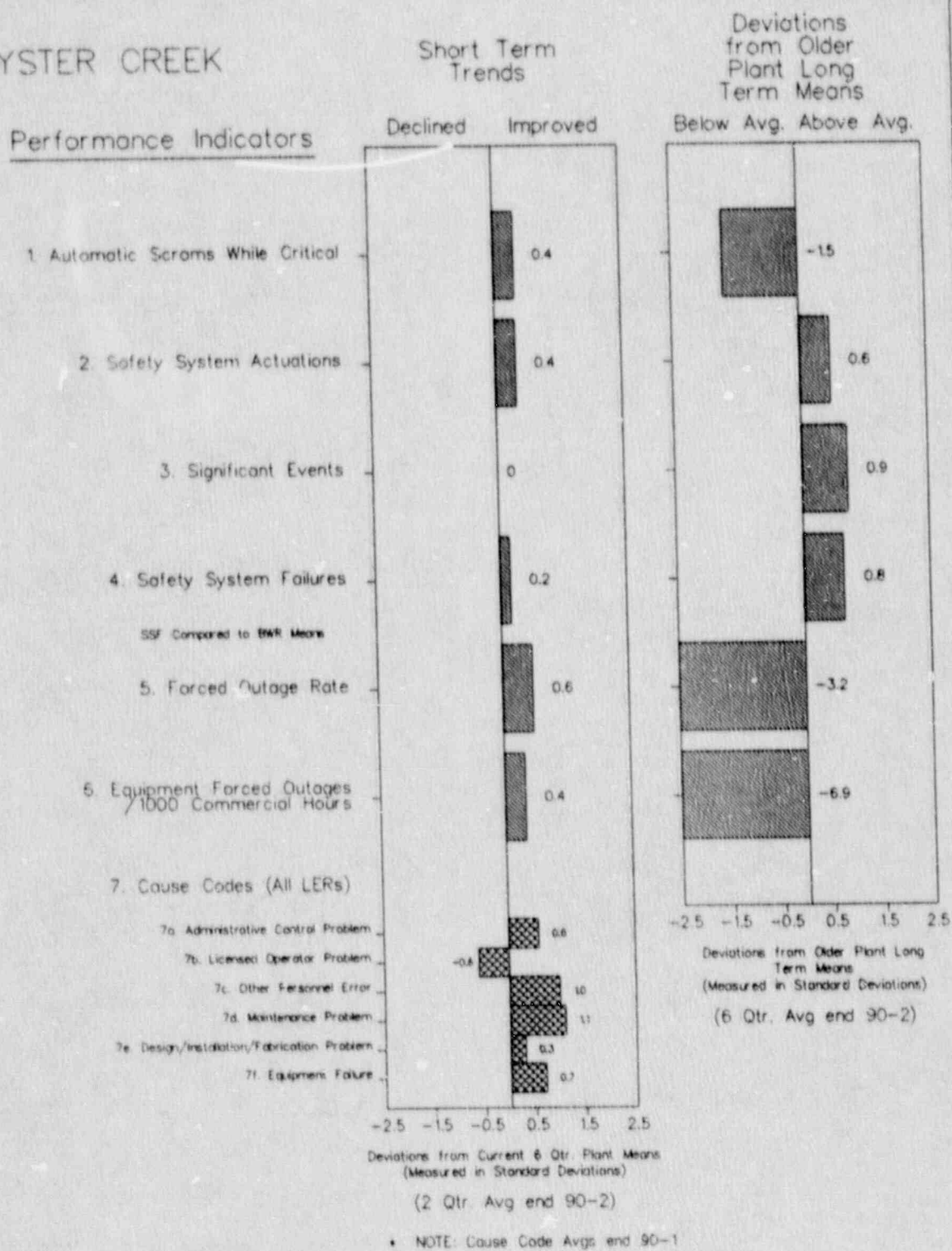


FIGURE 4.66

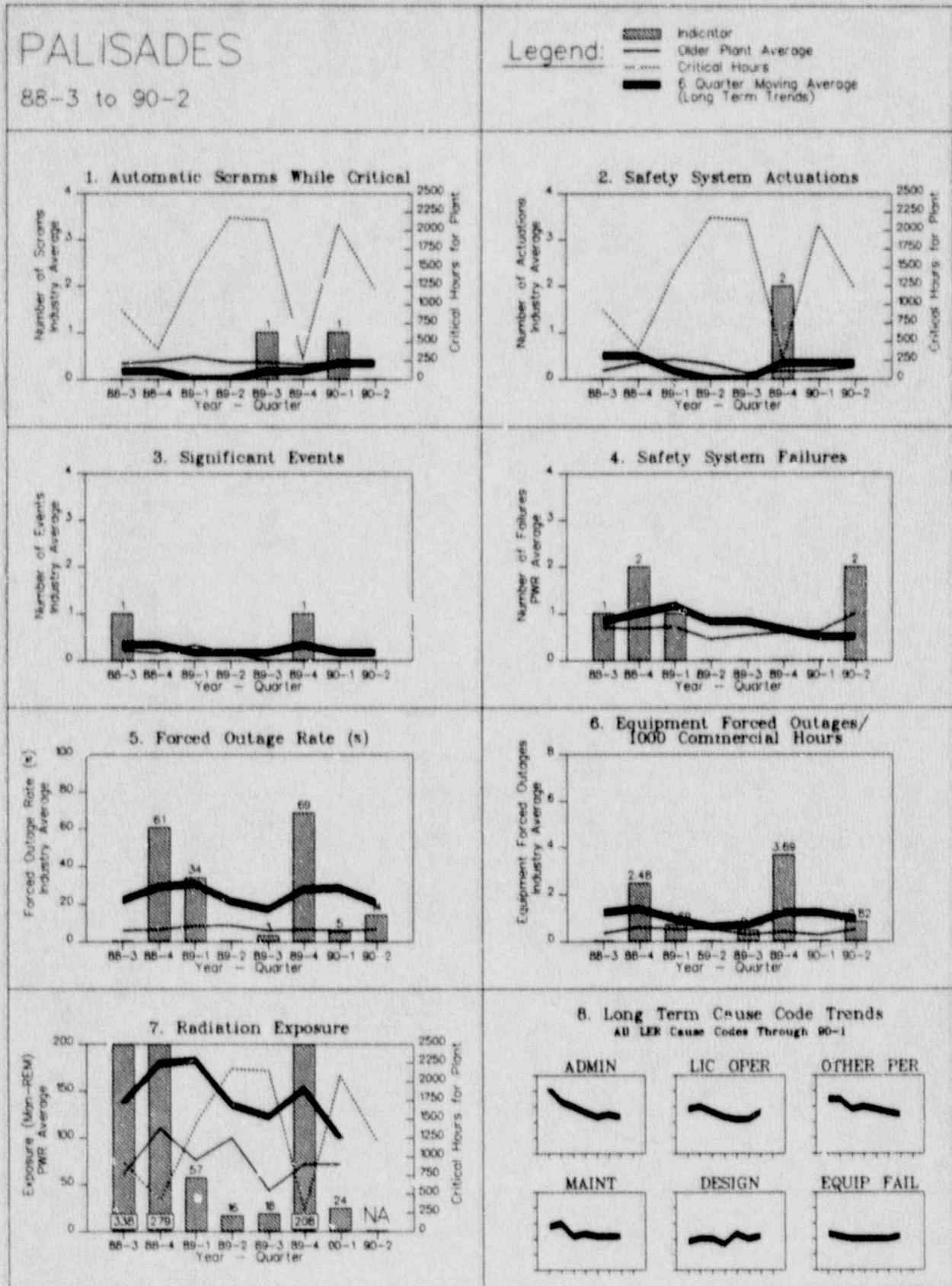


FIGURE 4.66

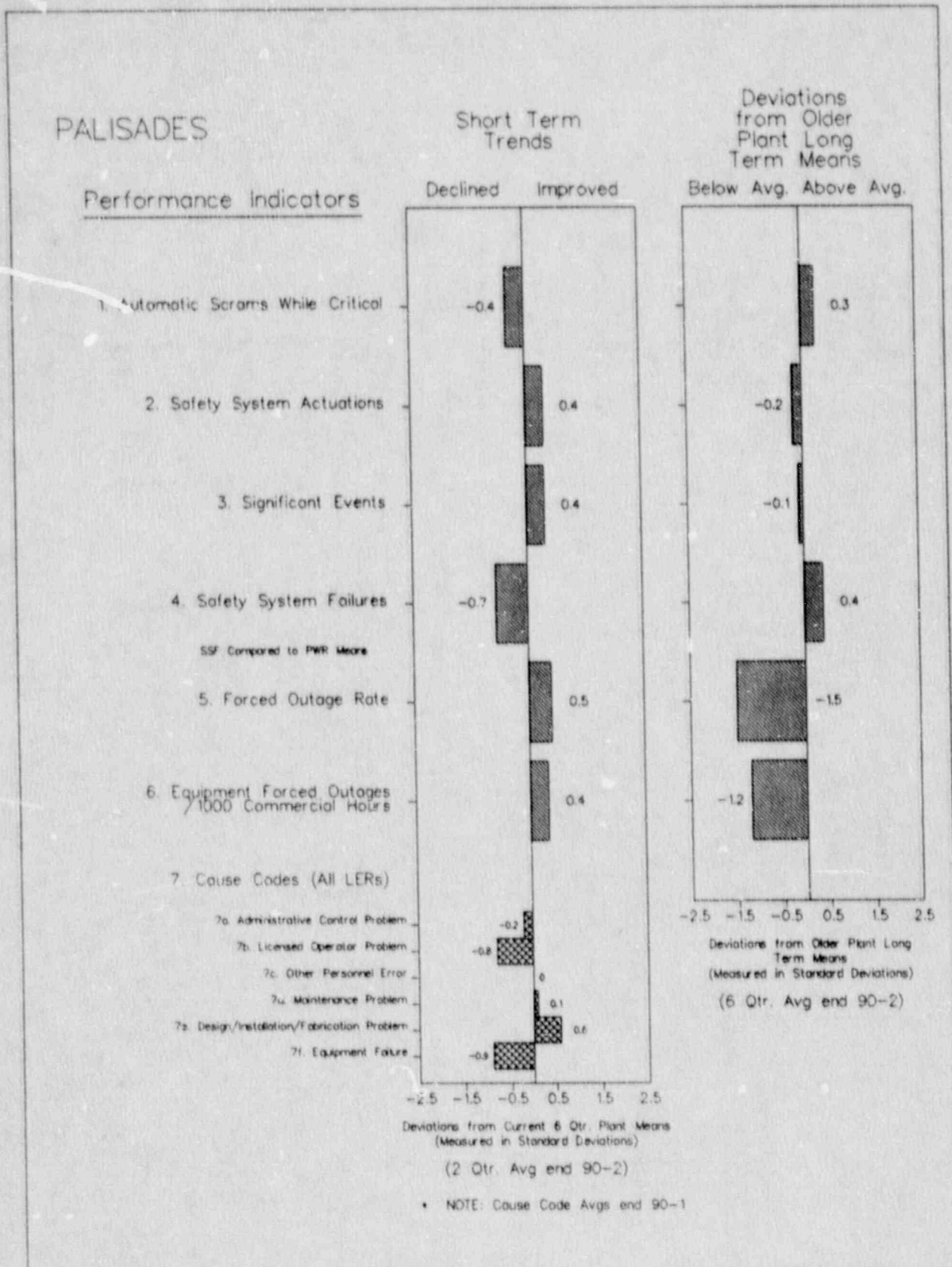


FIGURE 4.67

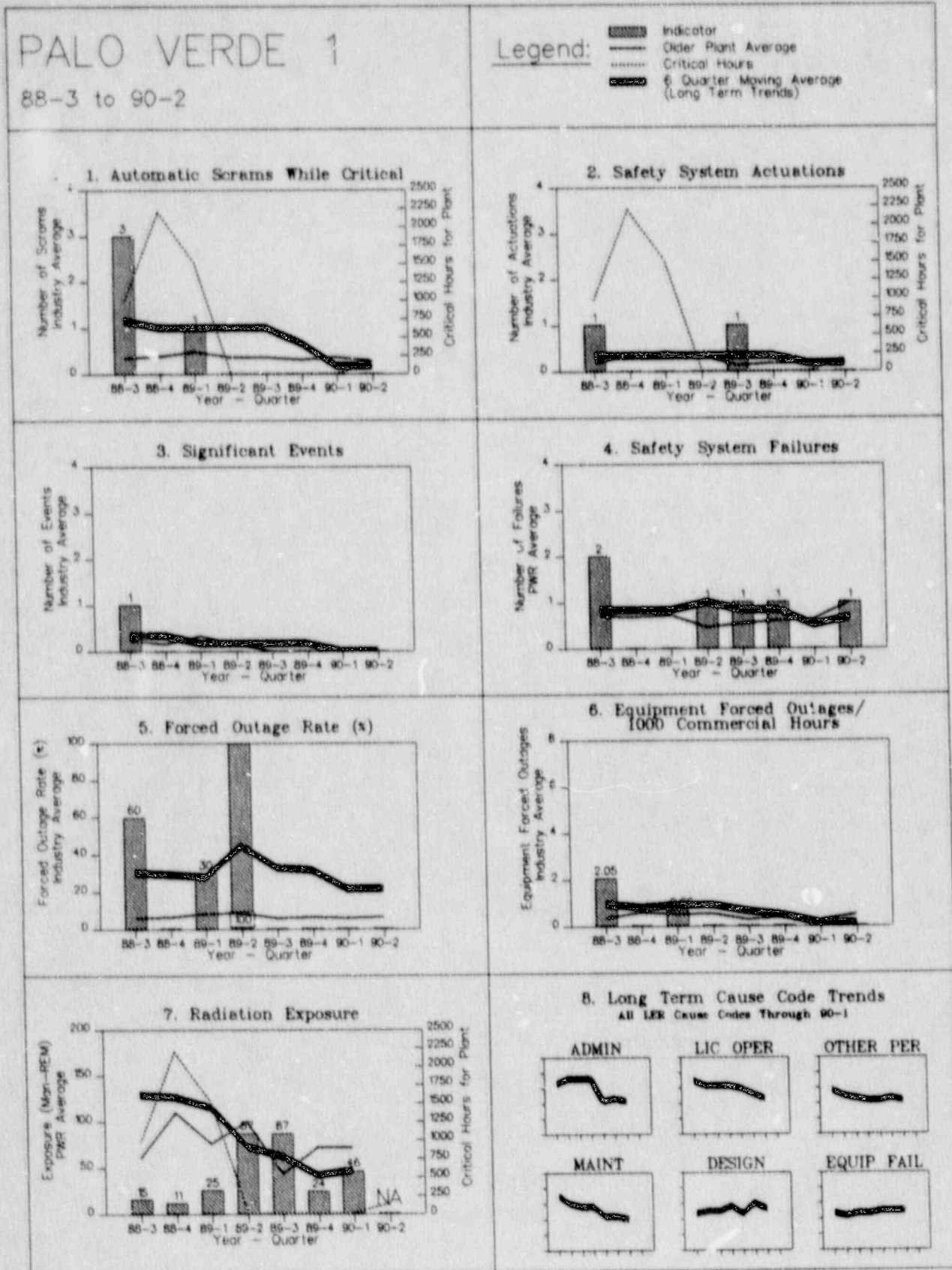


FIGURE 4.67

PALO VERDE 1

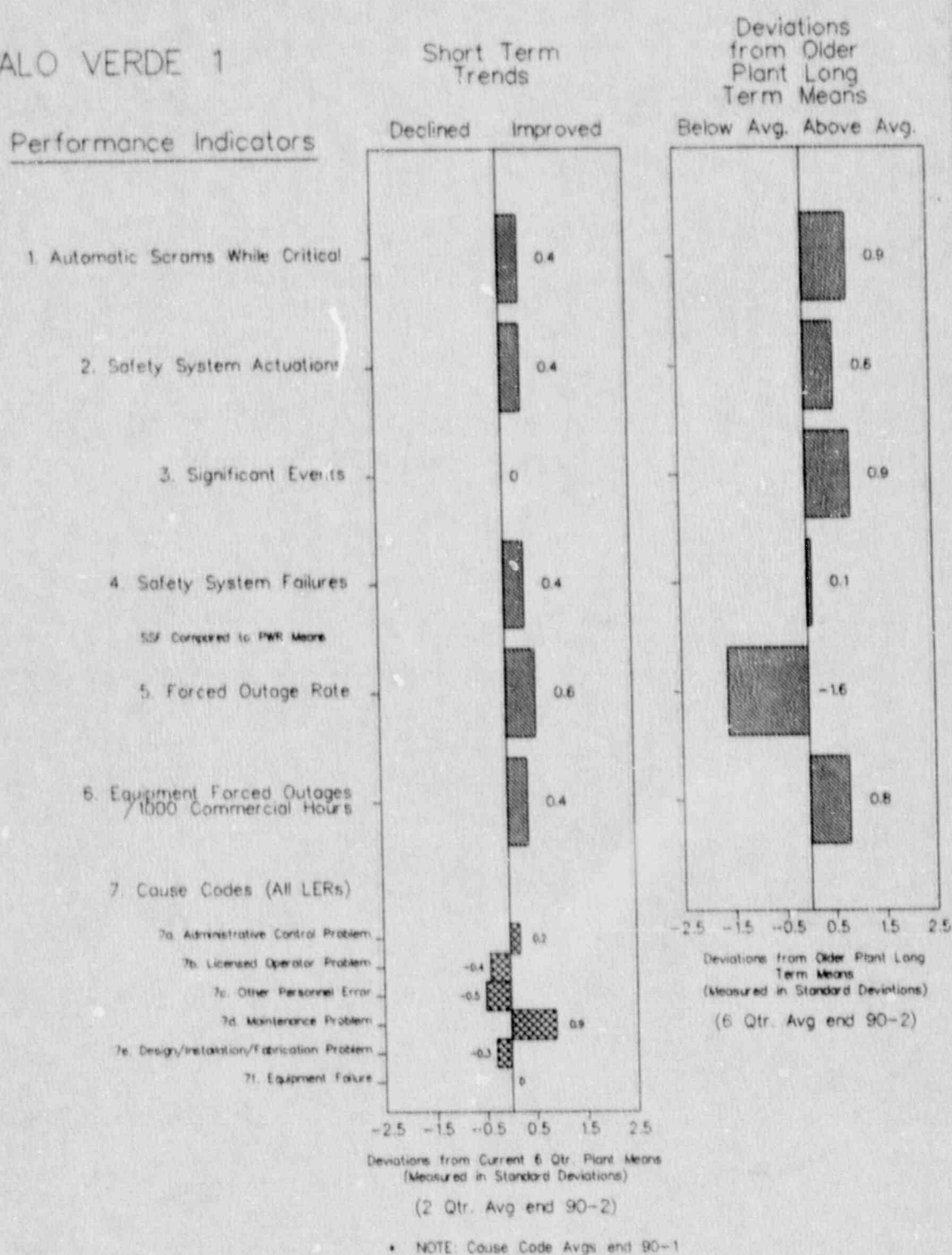
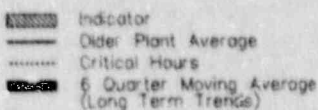
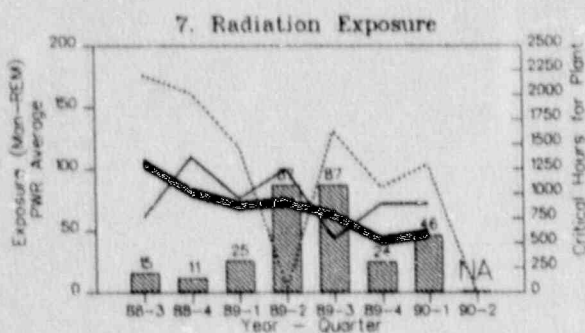
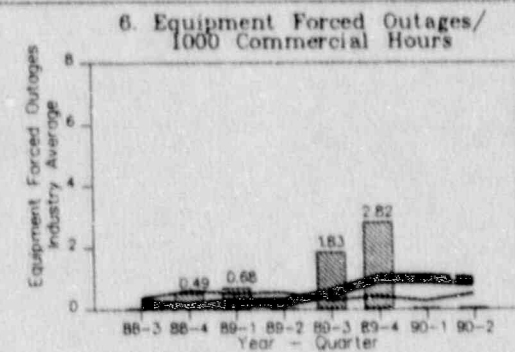
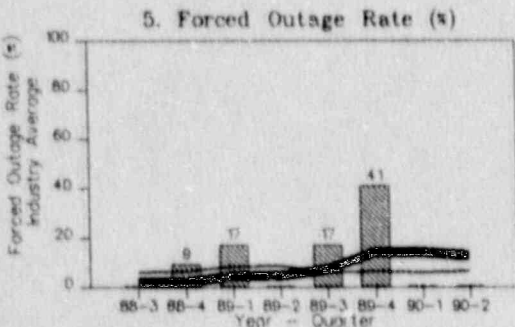
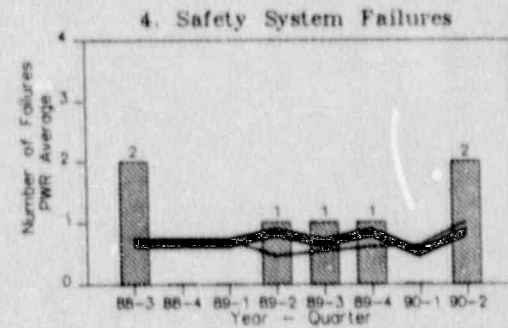
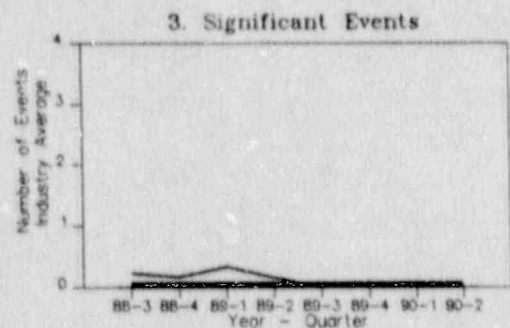
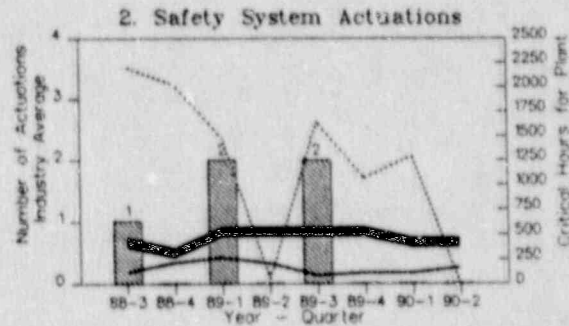
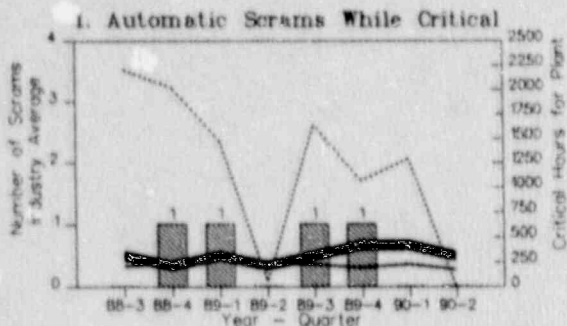


FIGURE 4.68

PALO VERDE 2

88-3 to 90-2

Legend:




8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

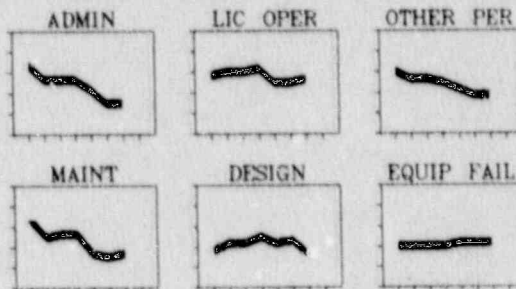


FIGURE 4.68

PALO VERDE 2

Performance Indicators

Short Term Trends

Declined Improved

Deviations from Older Plant Long Term Means

Below Avg. Above Avg.

1. Automatic Scrams While Critical

1.0

-0.3

2. Safety System Actuations

0.7

-1.7

3. Significant Events

0

0.9

4. Safety System Failures

-0.2

-0.2

SSF Compared to PWR Means

5. Forced Outage Rate

0.8

-0.5

6. Equipment Forced Outages /1000 Commercial Hours

0.8

-1.1

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.5

7b. Licensed Operator Problem

0.4

7c. Other Personnel Error

-0.4

7d. Maintenance Problem

0.2

7e. Design/Installation/Fabrication Problem

0.7

7f. Equipment Failure

0.4

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.69

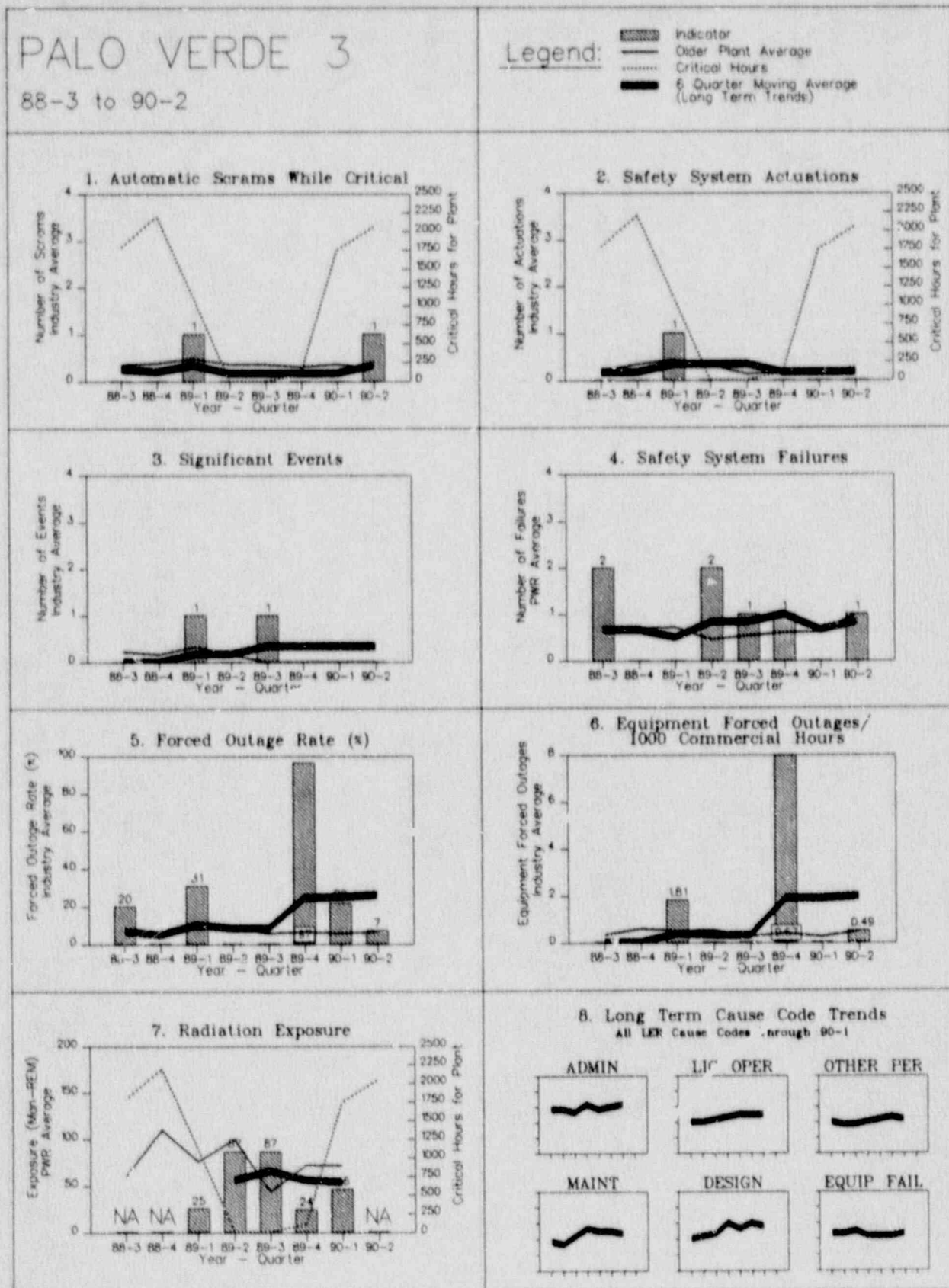


FIGURE 4.69

PALO VERDE 3

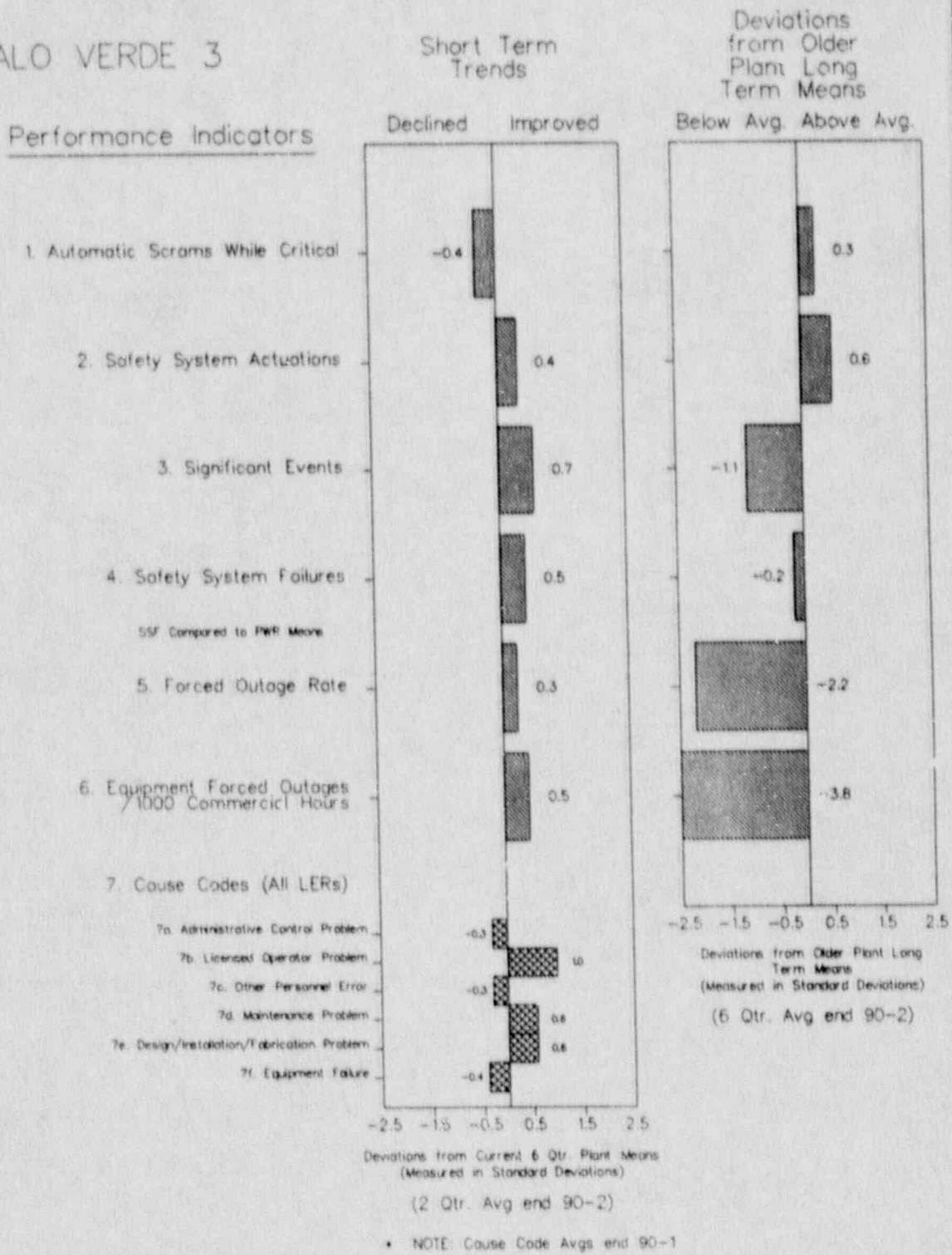


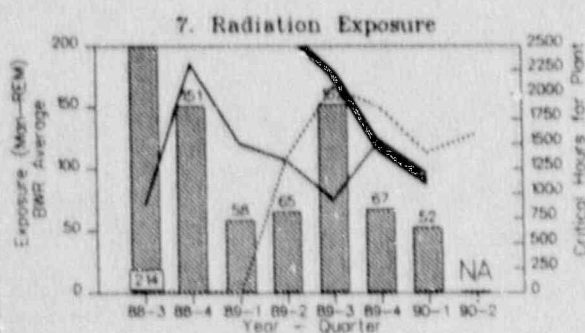
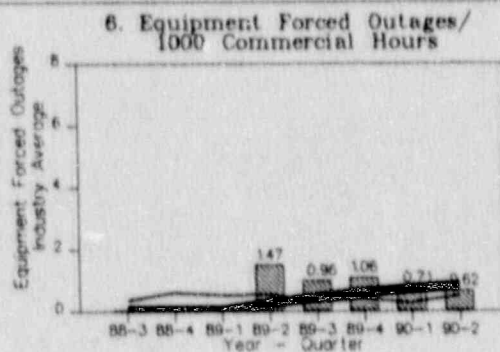
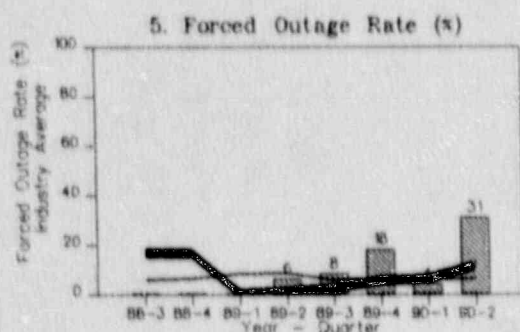
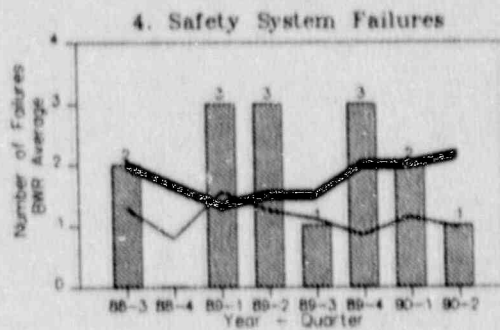
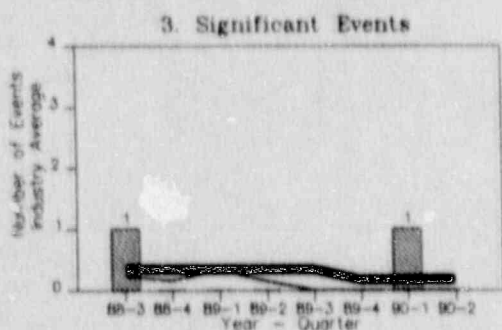
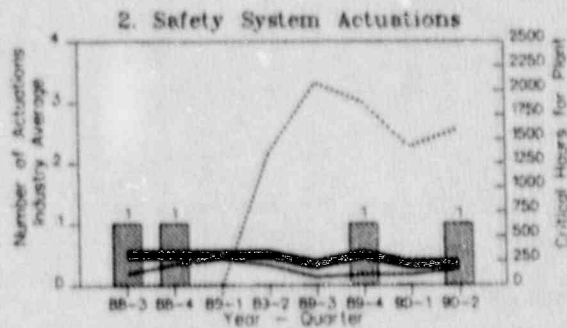
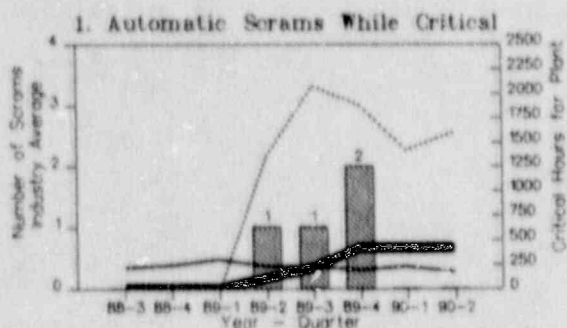
FIGURE 4.70

PEACH BOTTOM 2

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

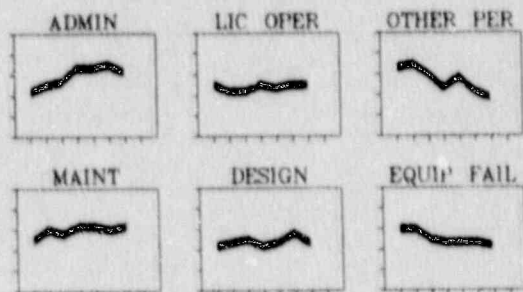


FIGURE 4.70

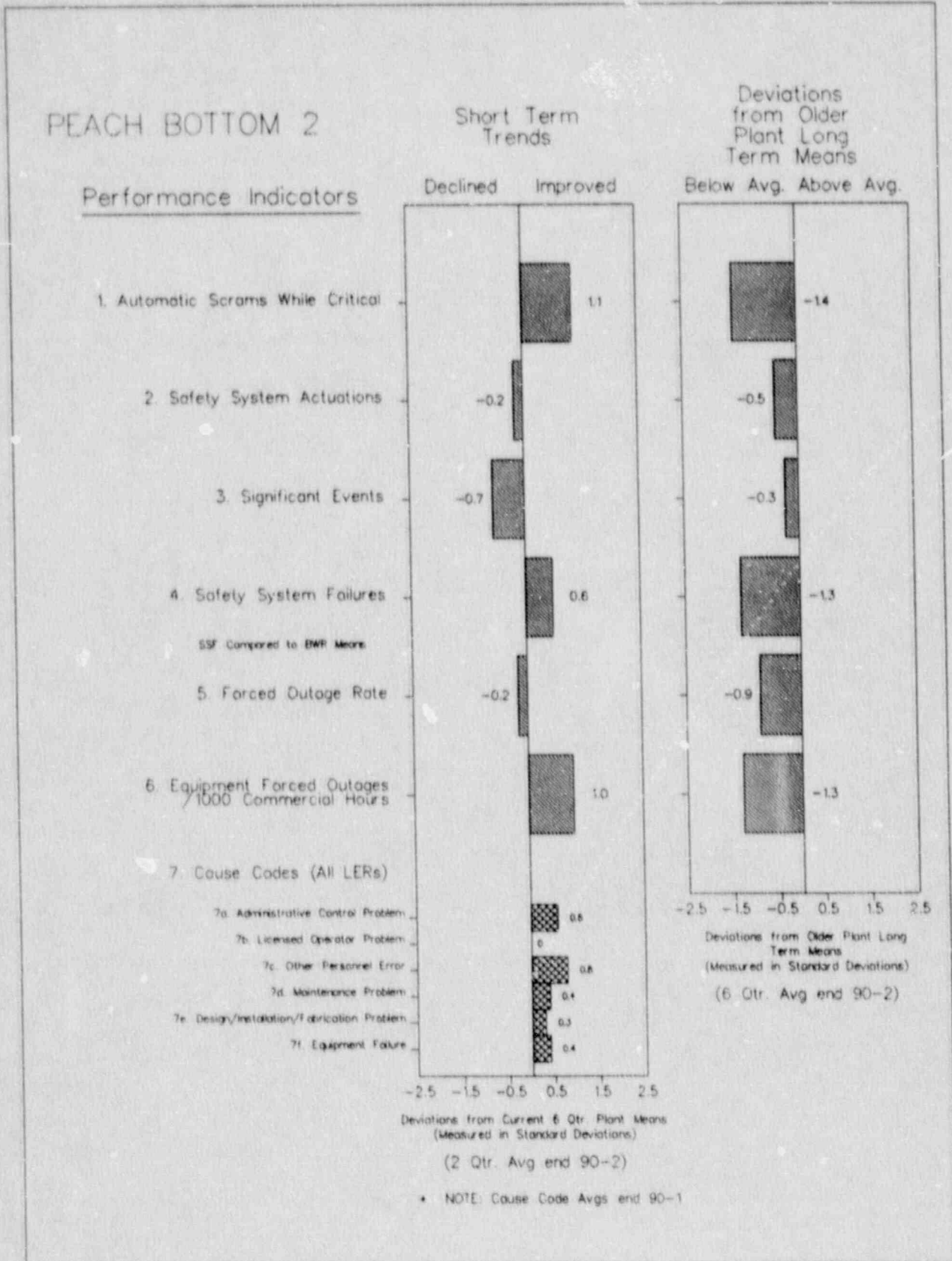


FIGURE 4.71

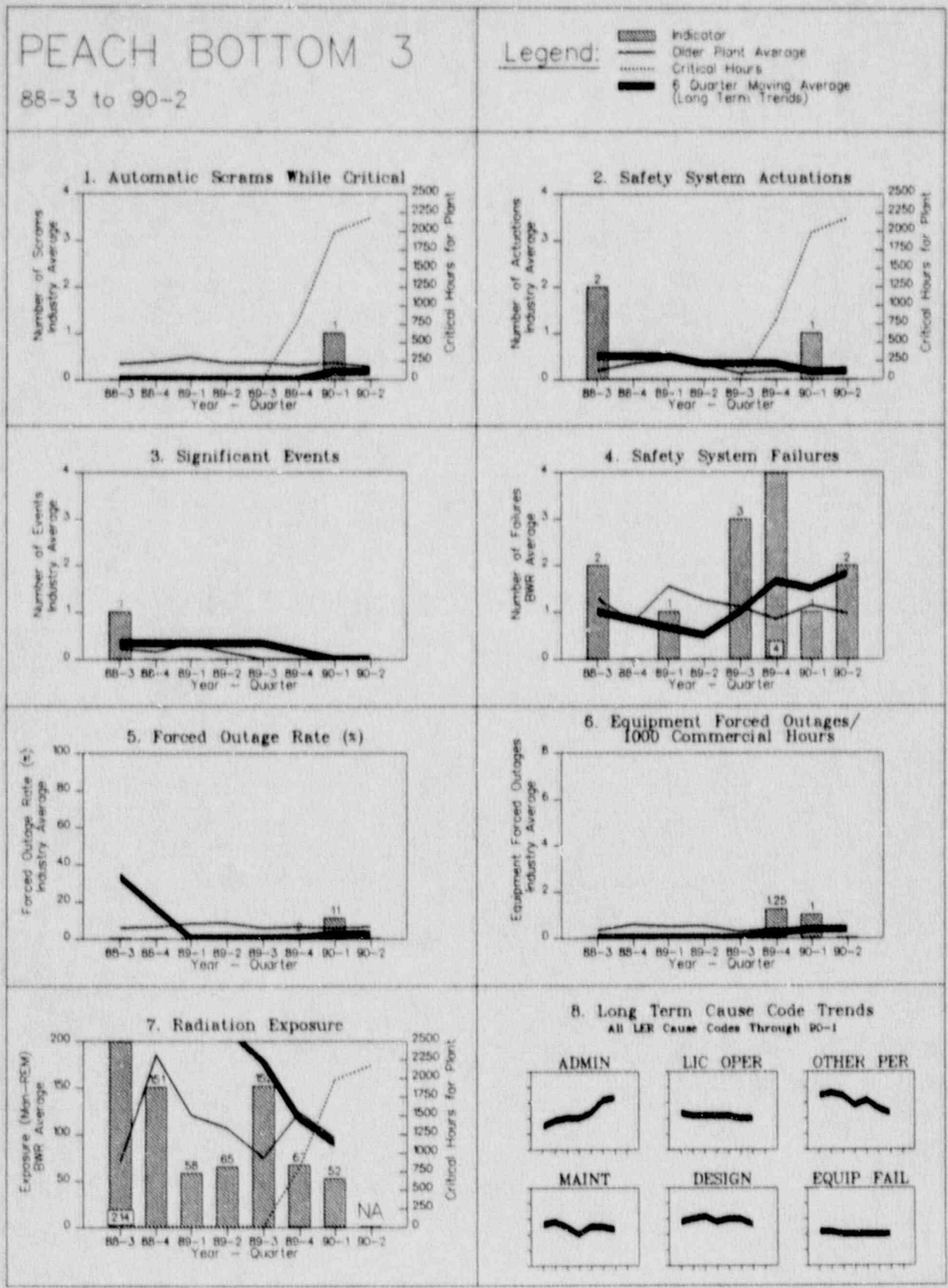


FIGURE 4.71

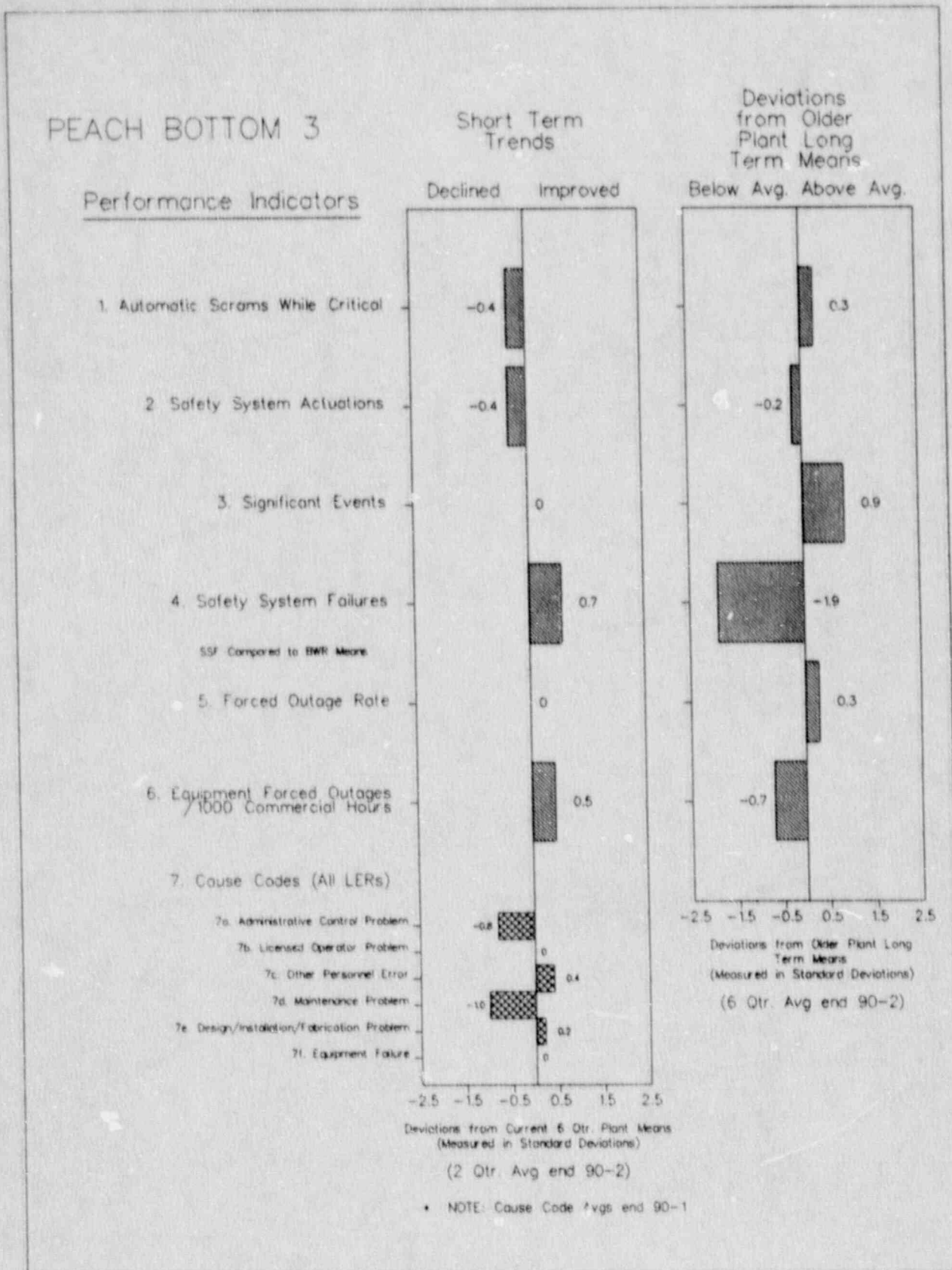
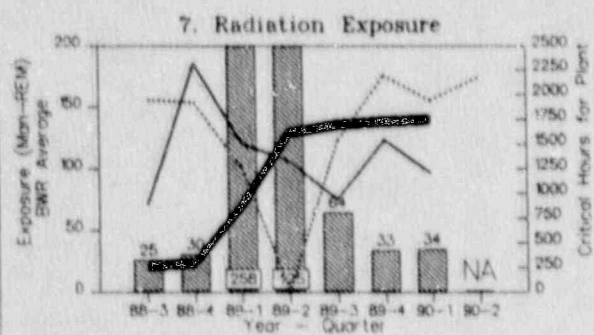
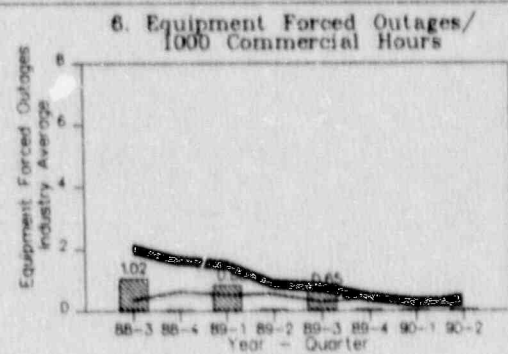
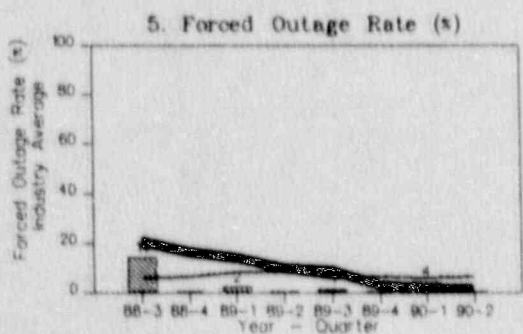
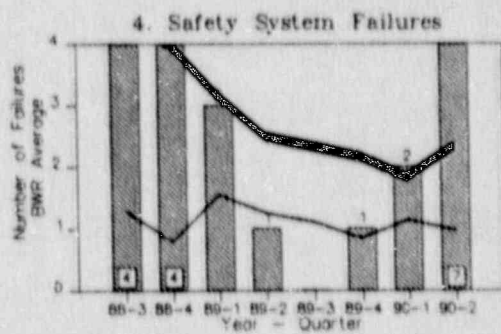
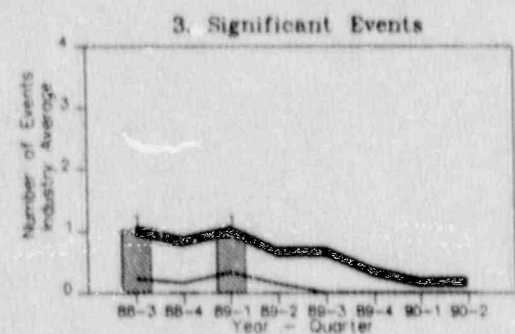
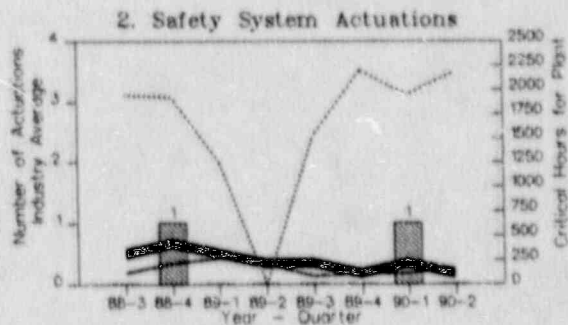
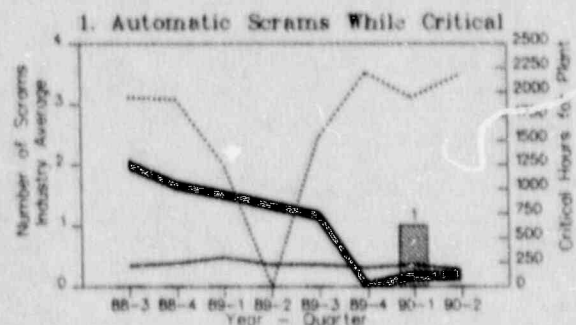


FIGURE 4.72

PERRY

88-3 to 90-2

Legend:



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

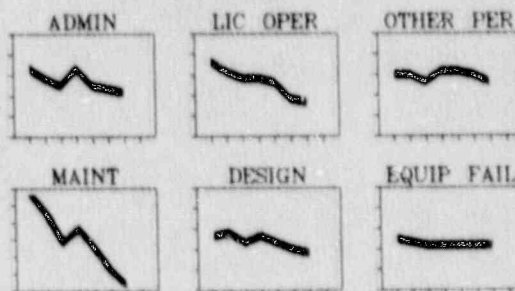


FIGURE 4.72

PERRY

Performance Indicators

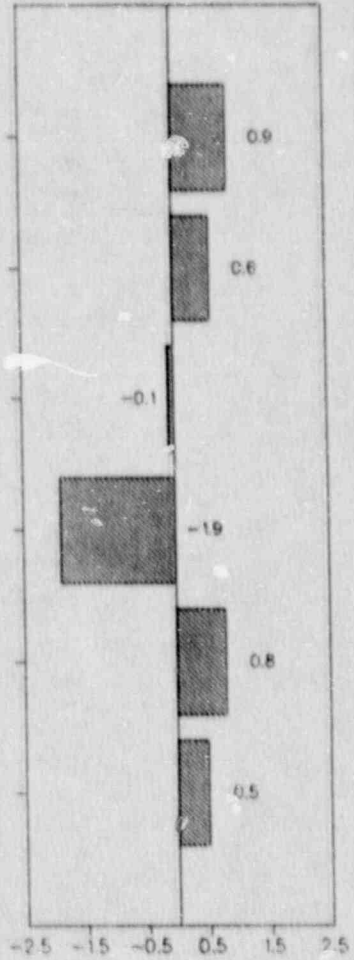
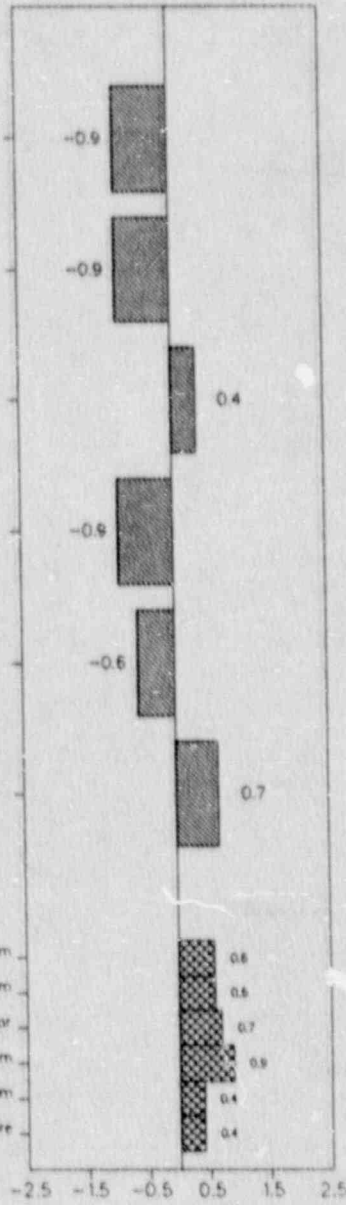
Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

- 1. Automatic Scrams While Critical
- 2. Safety System Actuations
- 3. Significant Events
- 4. Safety System Failures
SSF Compared to BWR Means
- 5. Forced Outage Rate
- 6. Equipment Forced Outages
/ 1000 Commercial Hours
- 7. Cause Codes (All LERs)
 - 7a. Administrative Control Problem
 - 7b. Licensed Operator Problem
 - 7c. Other Personnel Error
 - 7d. Maintenance Problem
 - 7e. Design/Installation/Fabrication Problem
 - 7f. Equipment Failure



Deviations from Current 6 Qtr. Plant Means
(Measured in Standard Deviations)

Deviations from Older Plant Long Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg end 90-2)

(2 Qtr. Avg end 90-2)

• NOTE: Cause Code Aves end 90-1

FIGURE 4.73

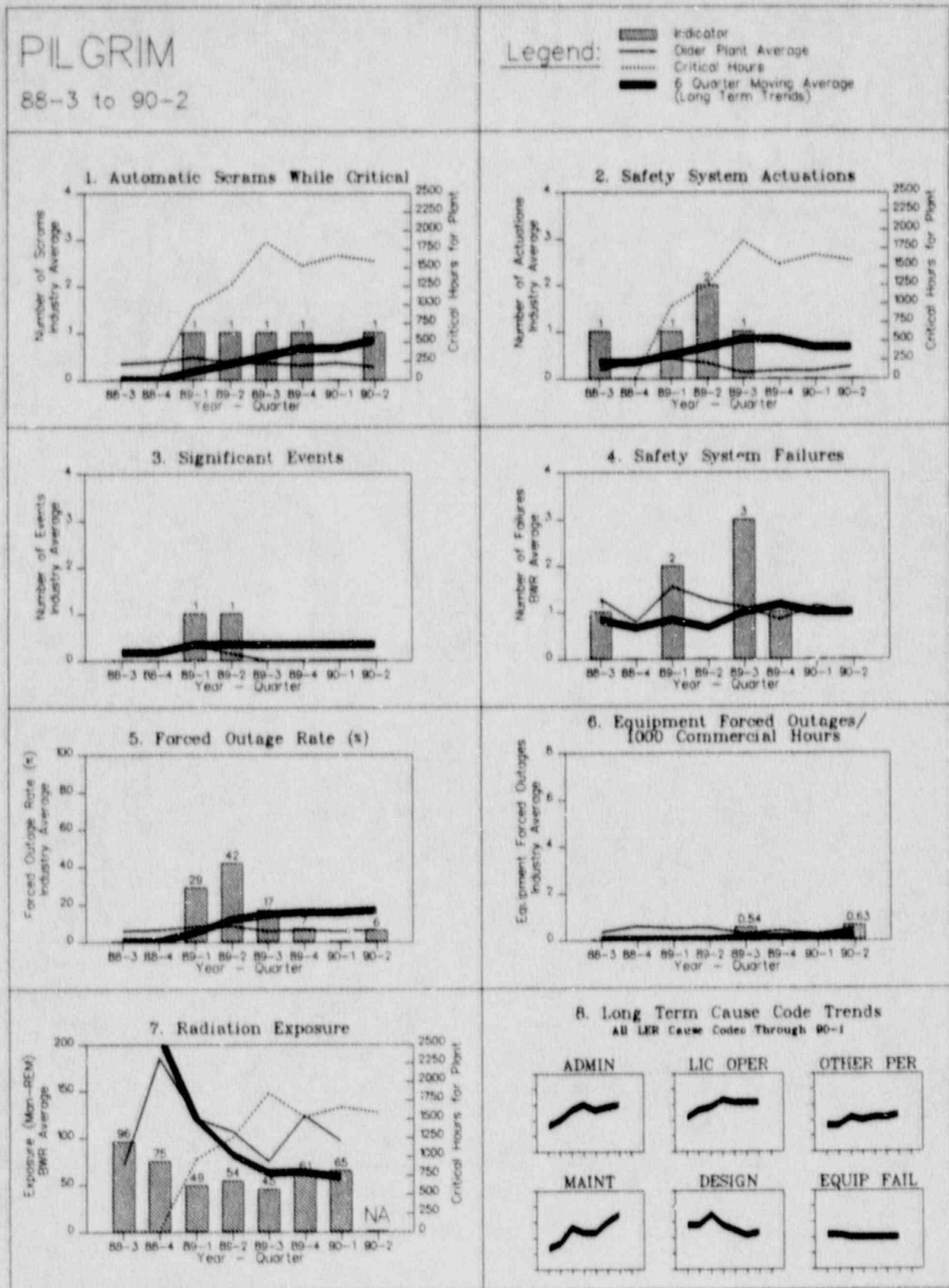


FIGURE 4.73

PILGRIM

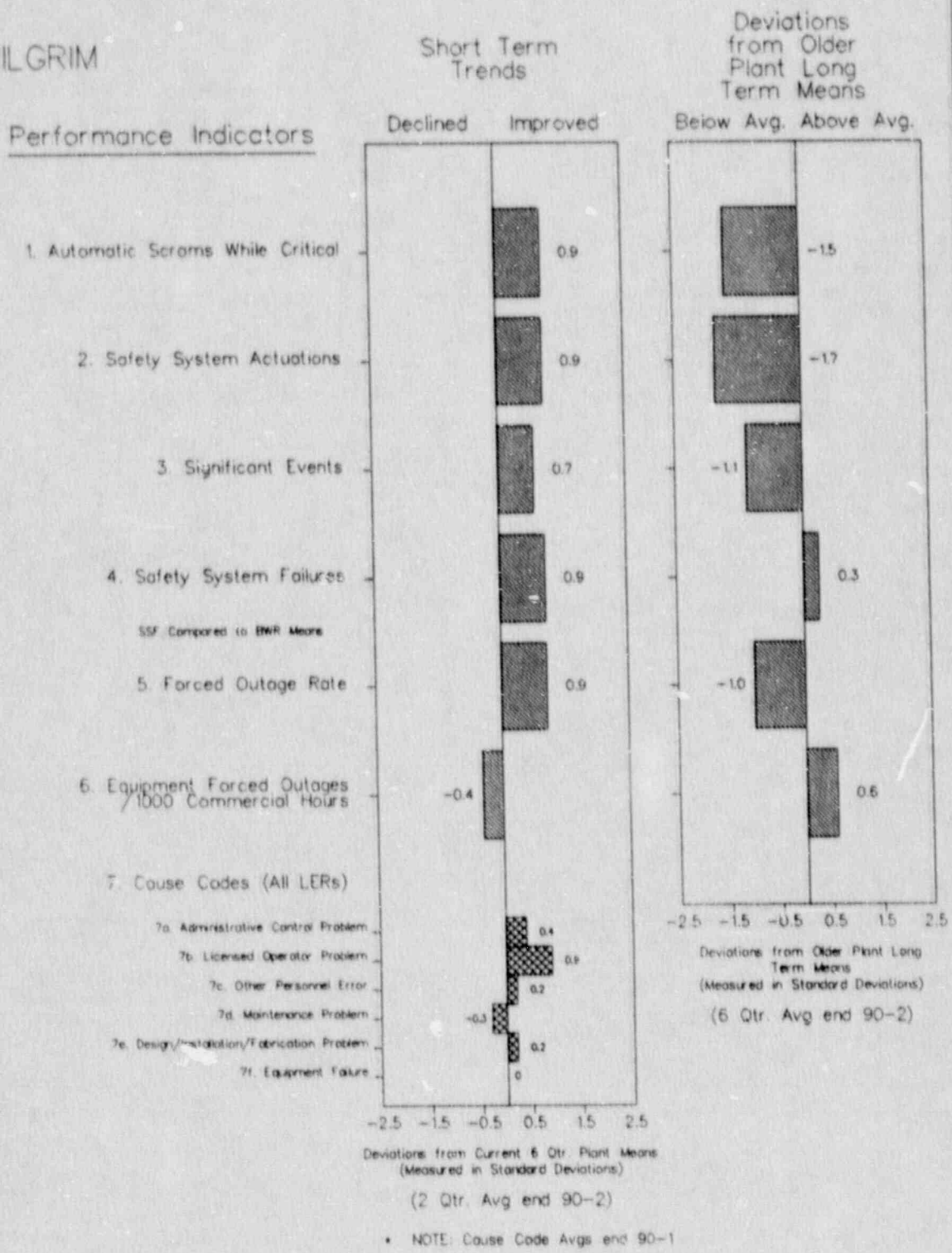


FIGURE 4.74

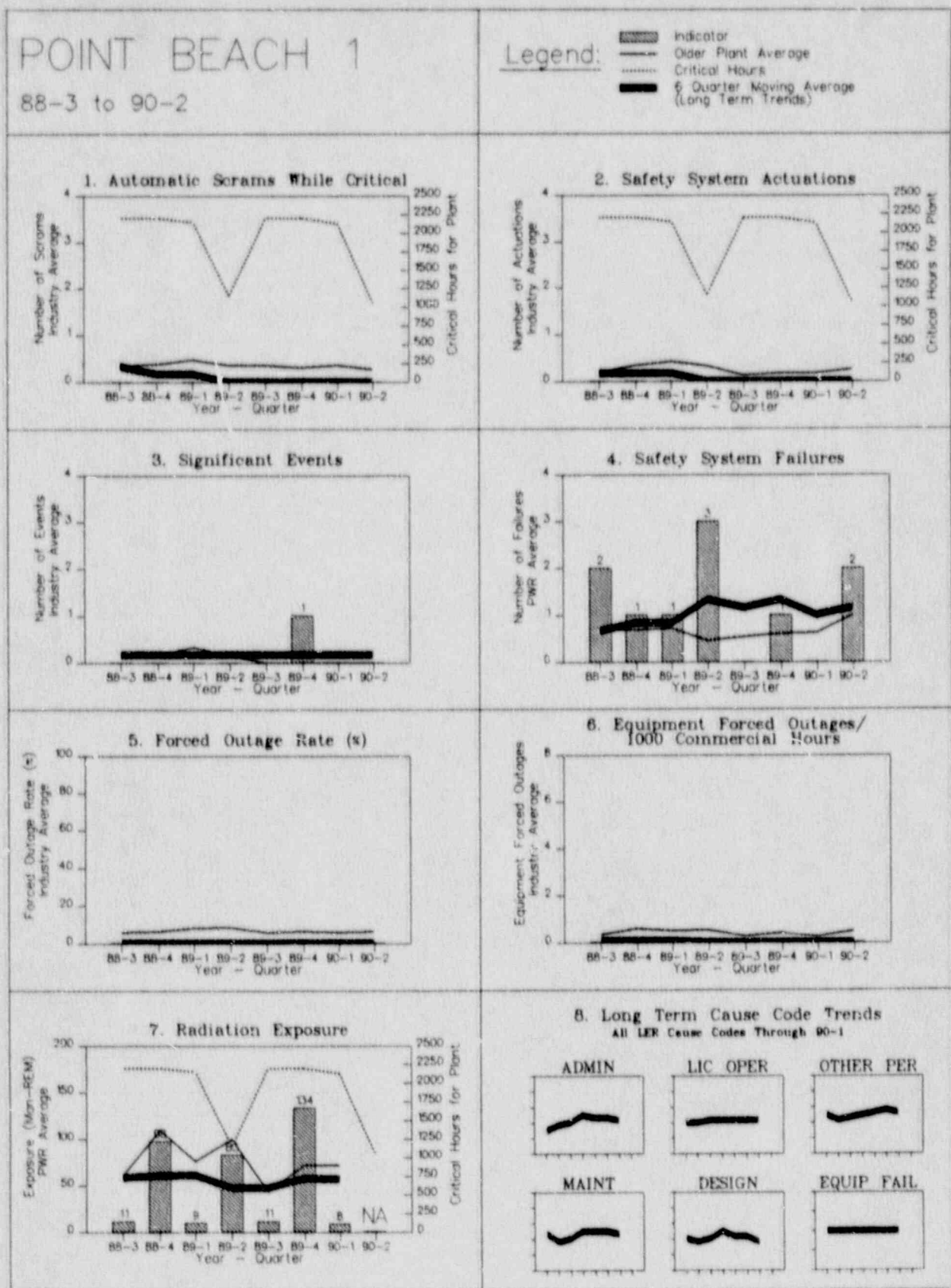


FIGURE 4.74

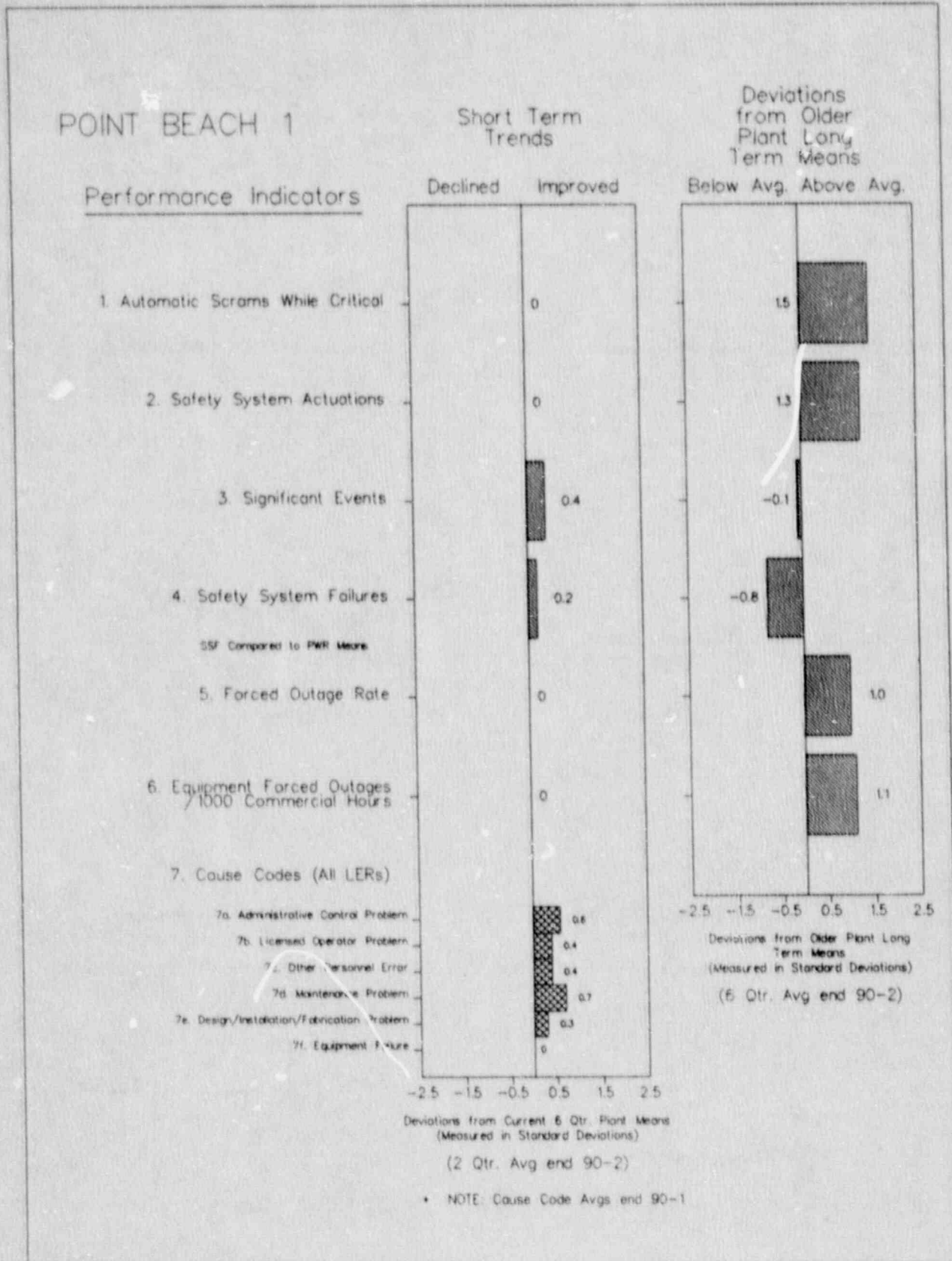


FIGURE 4.75

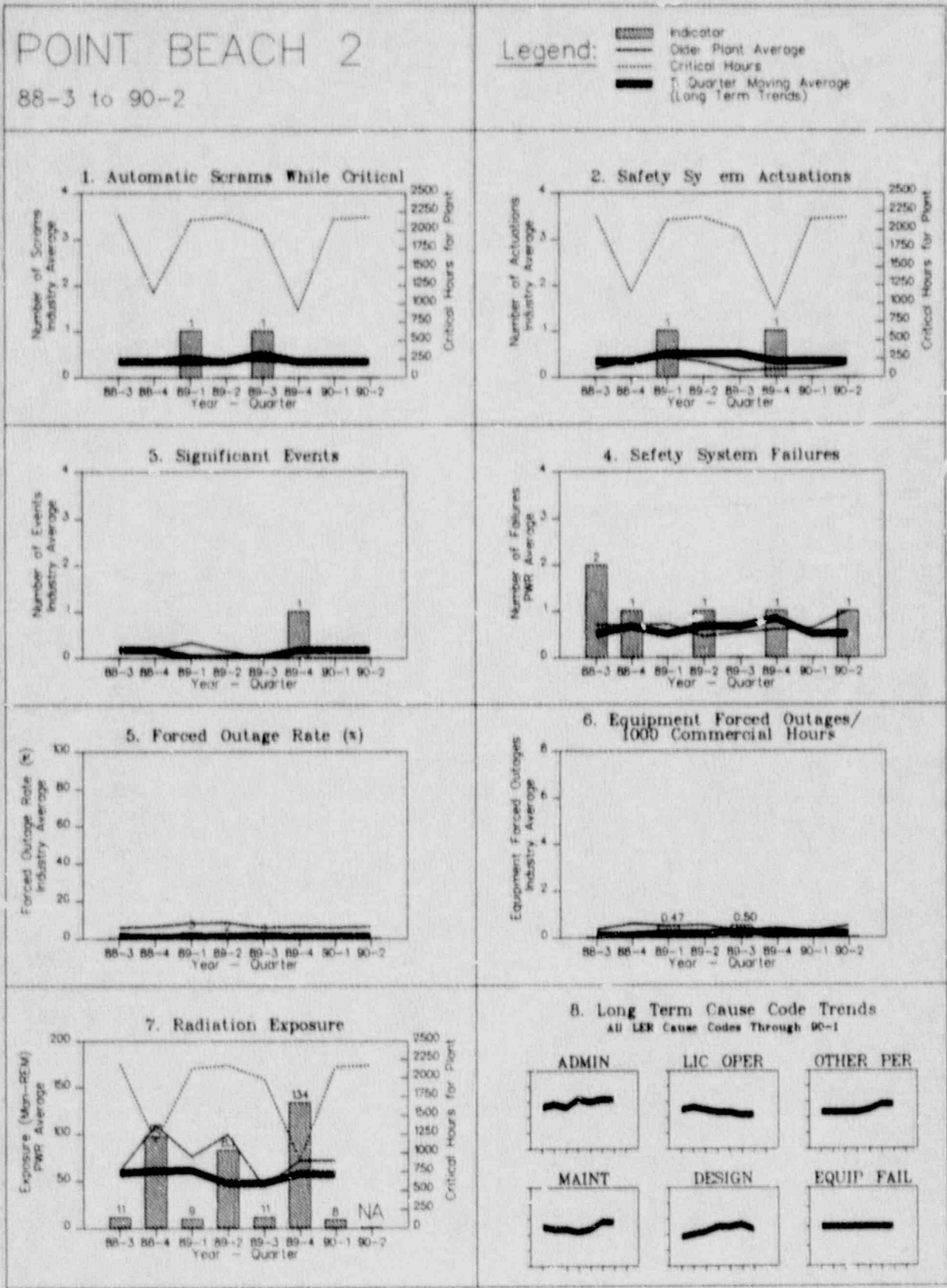


FIGURE 4.75

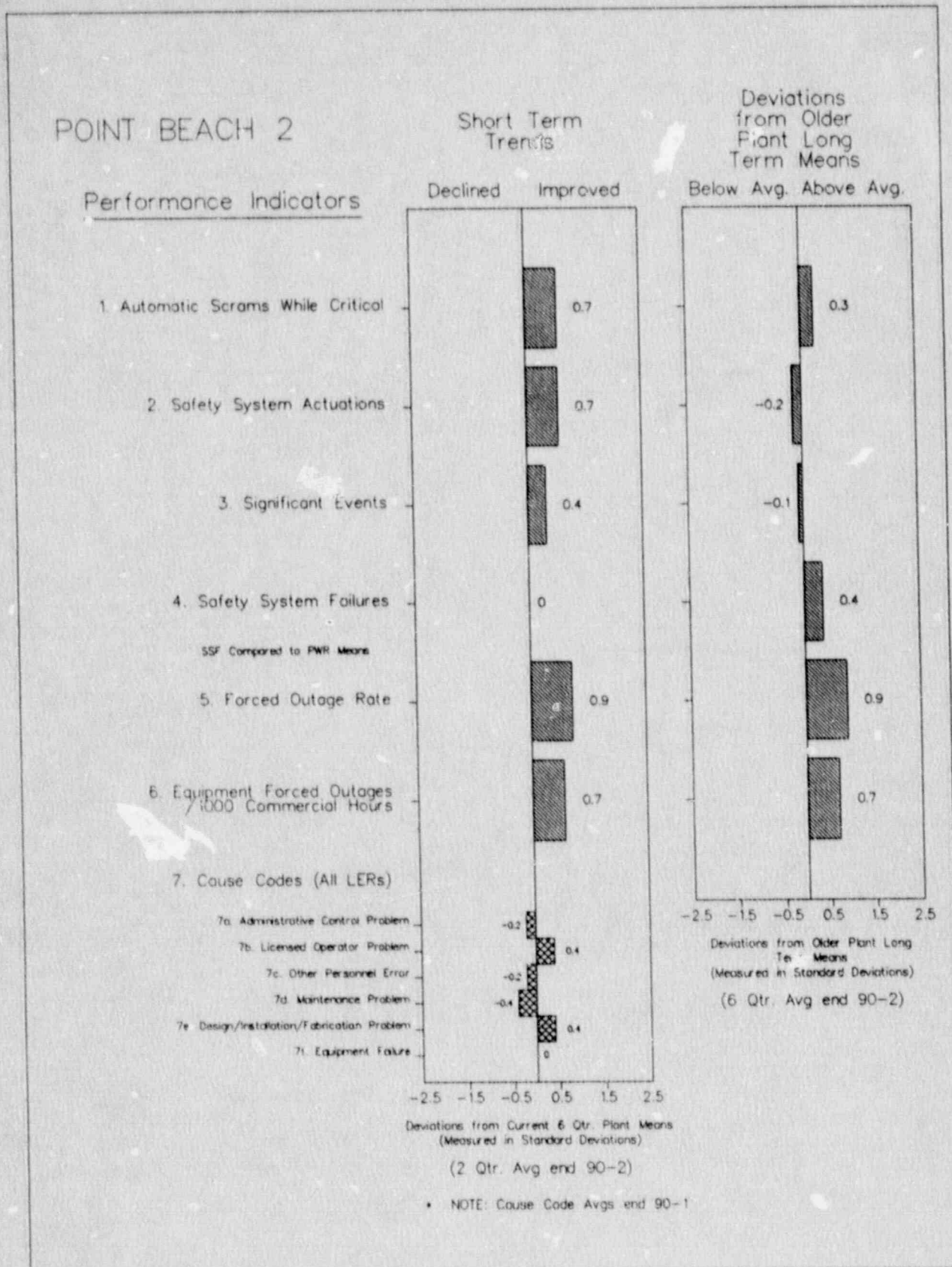


FIGURE 4.76

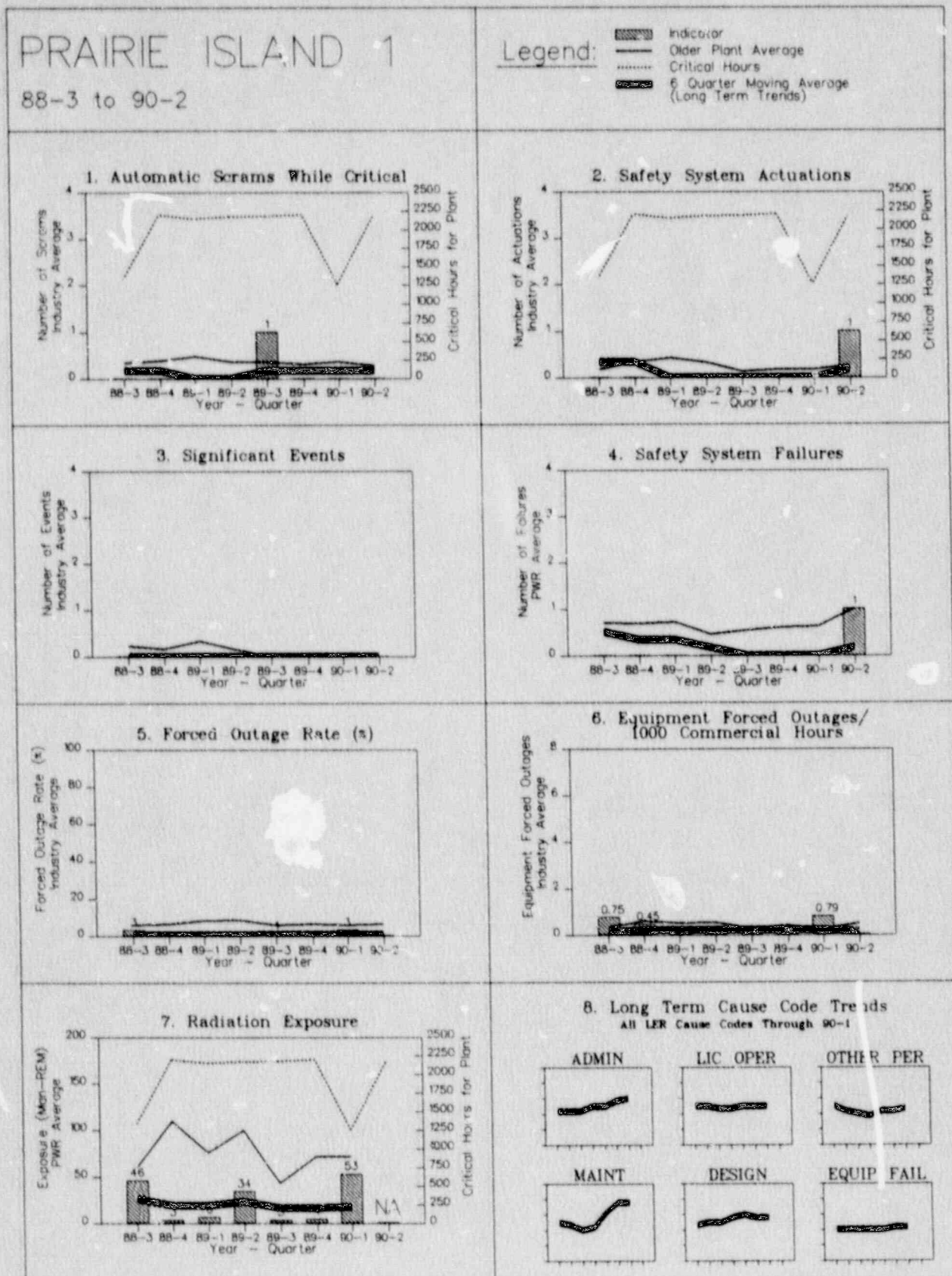


FIGURE 4.76

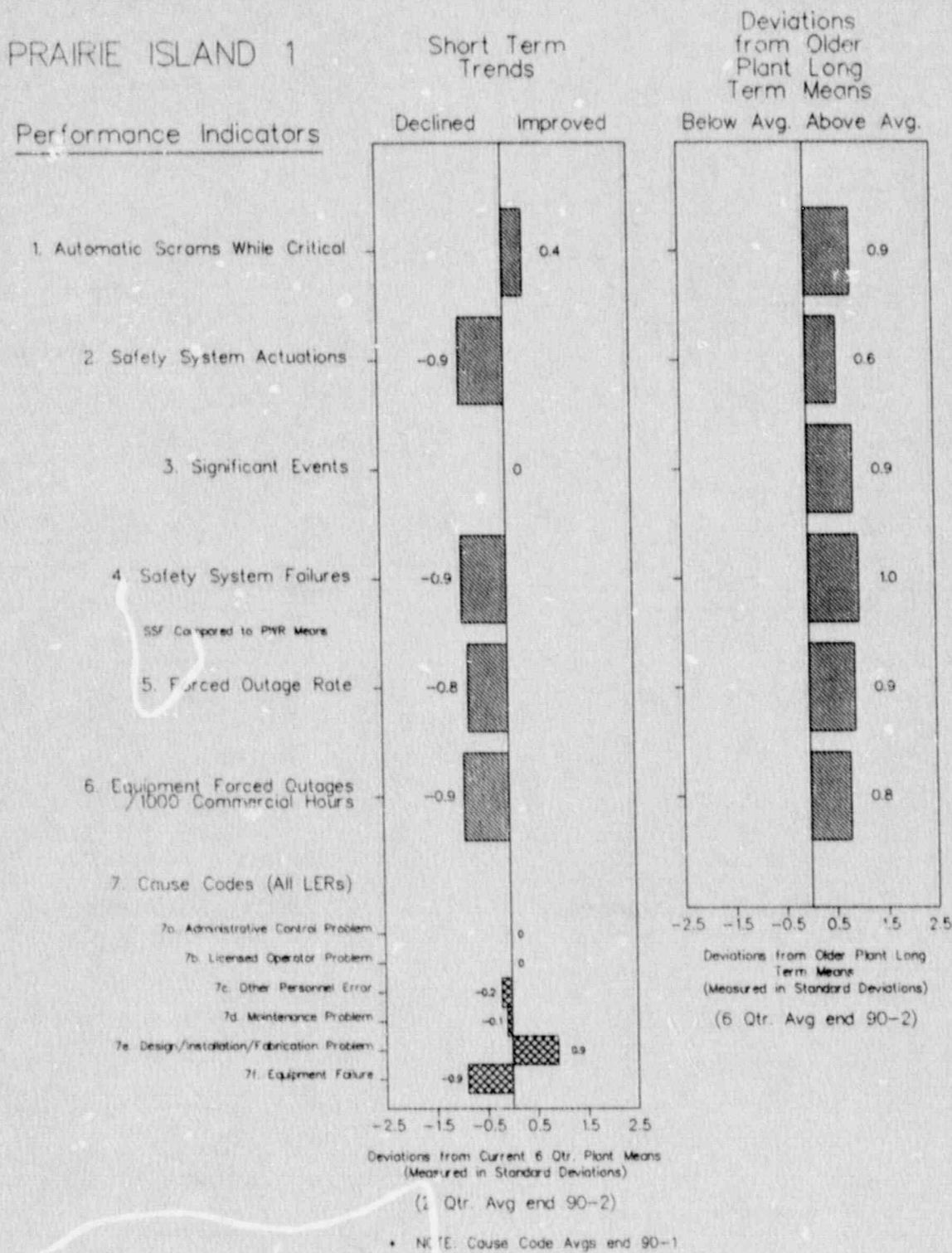


FIGURE 4.77

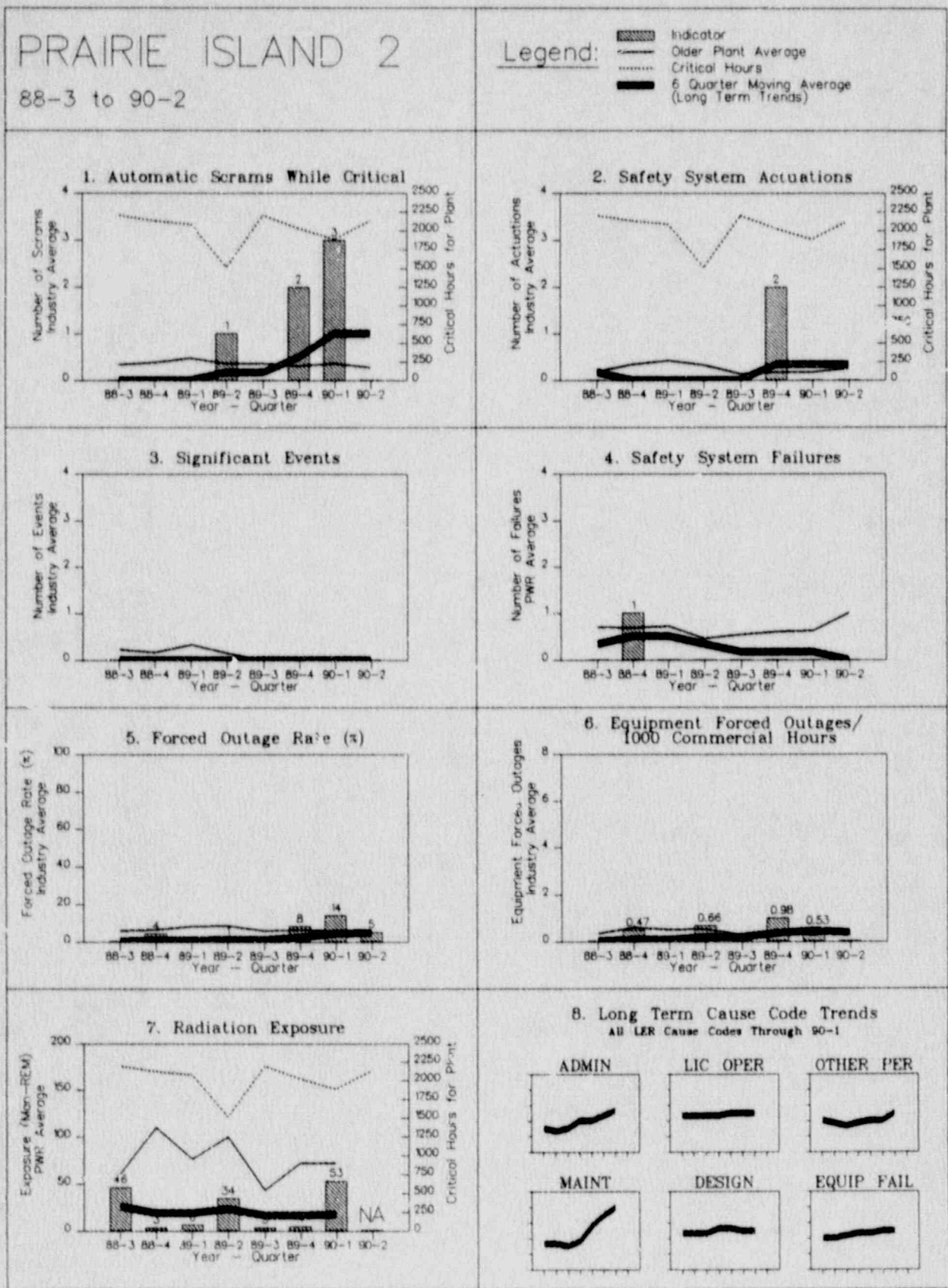


FIGURE 4.77

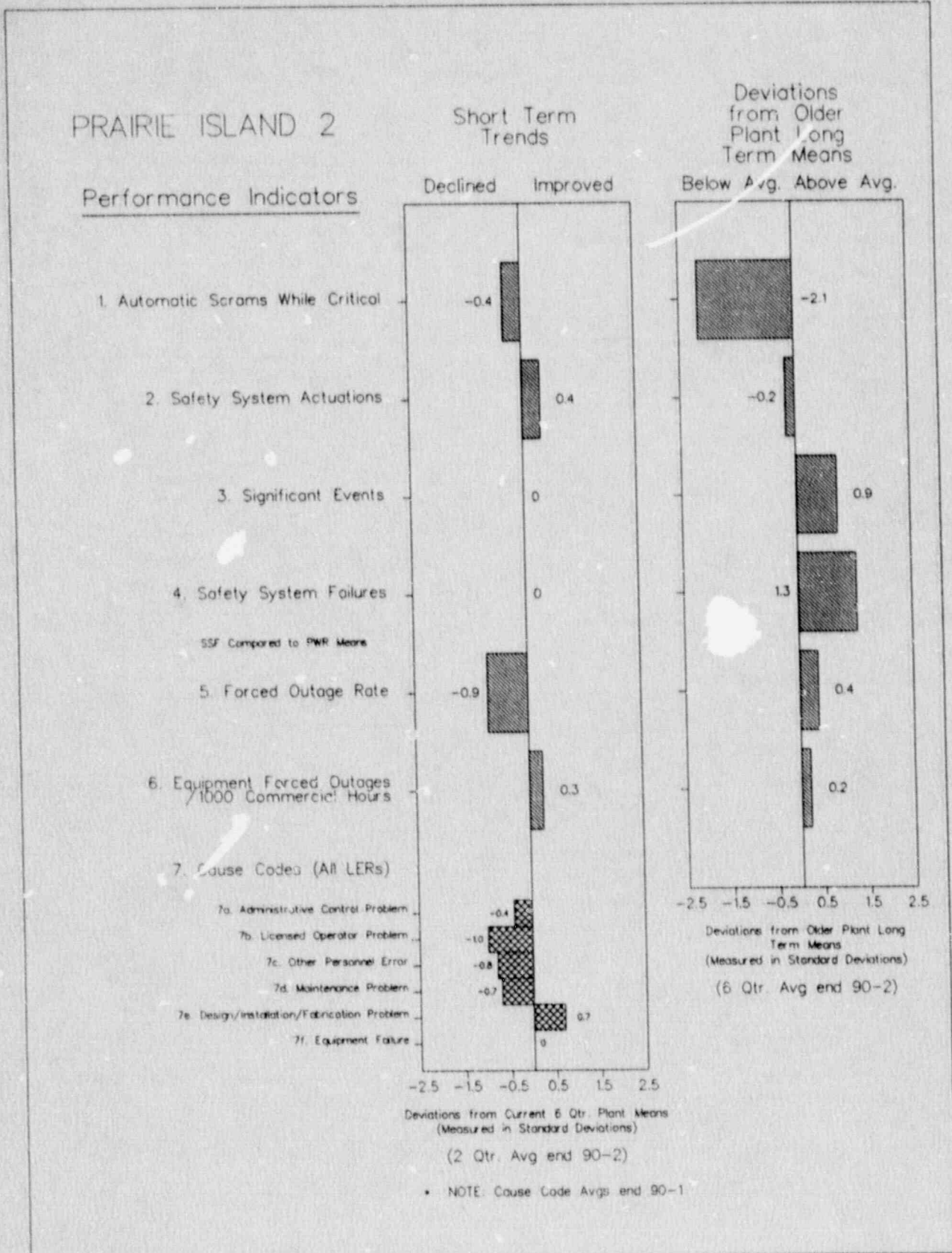


FIGURE 4.78

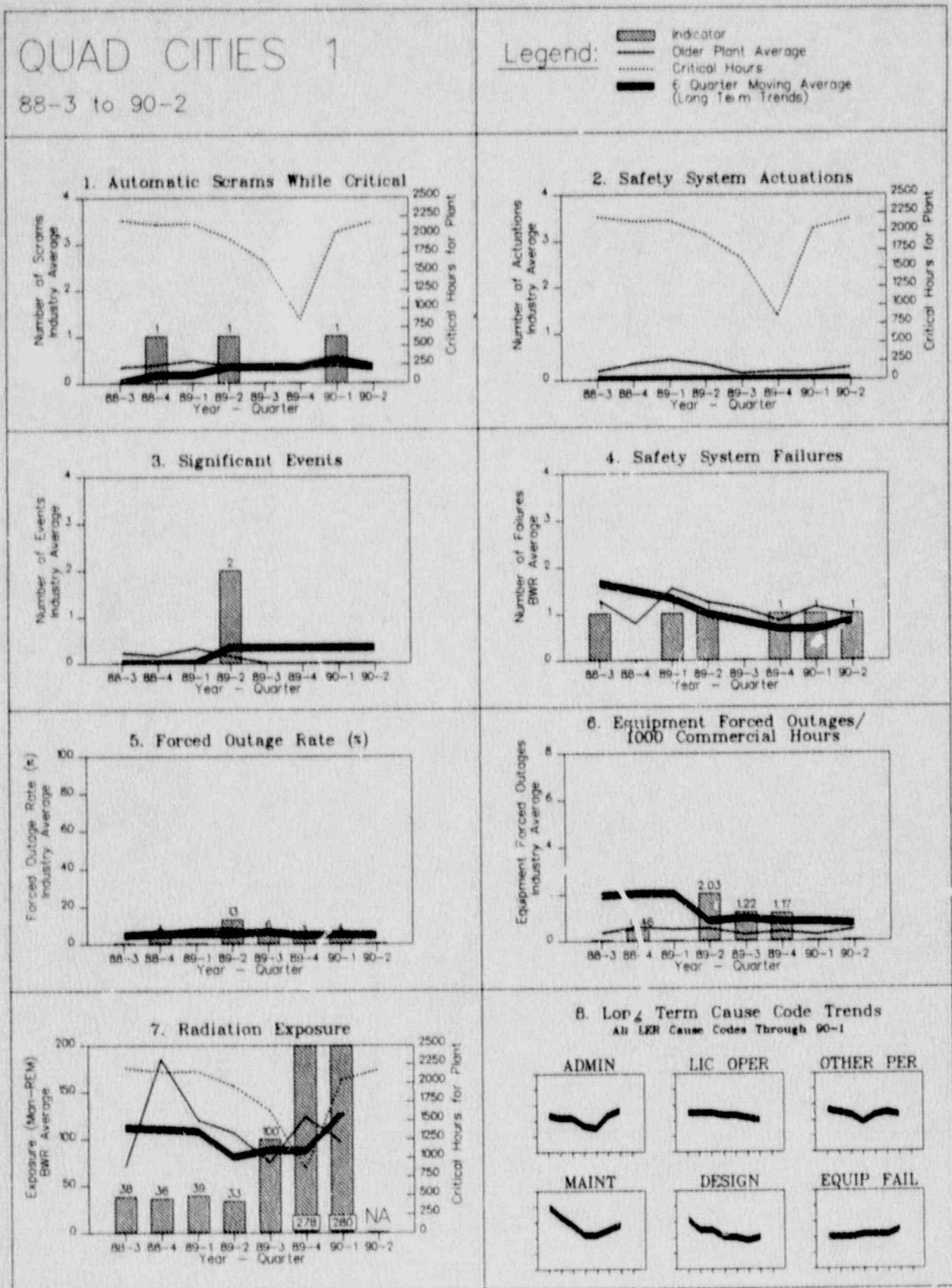


FIGURE 4.78

QUAD CITIES 1

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

0.3

2. Safety System Actuations

0

1.3

3. Significant Events

0.4

-1.1

4. Safety System Failures

-0.4

0.5

SSF Compared to BWR Means

5. Forced Outage Rate

0.5

0.5

6. Equipment Forced Outages /1000 Commercial Hours

0.9

-0.7

7. Cause Codes (All LERs)

7a. Administrative Control Problem

-1.1

7b. Licensed Operator Problem

0

7c. Other Personnel Error

-0.7

7d. Maintenance Problem

-0.8

7e. Design/Installation/Fabrication Problem

-0.7

7f. Equipment Failure

-0.7

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

(6 Qtr. Avg end 90-2)

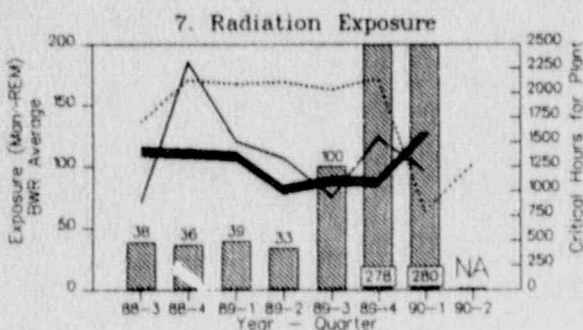
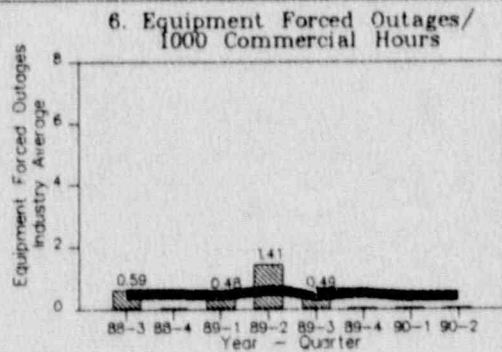
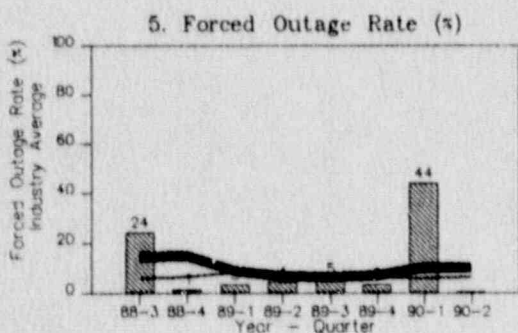
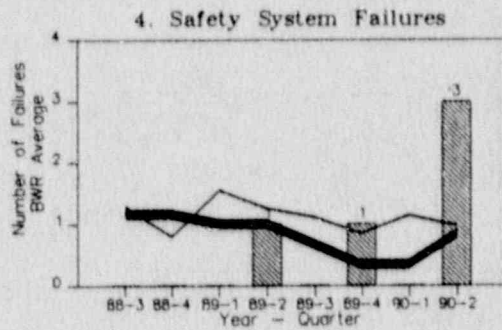
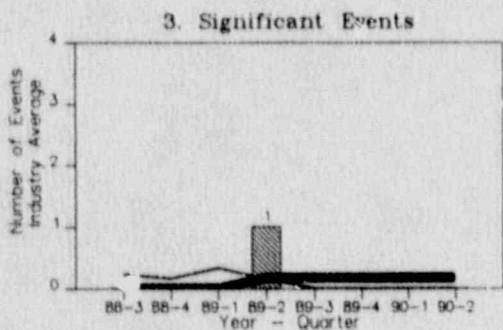
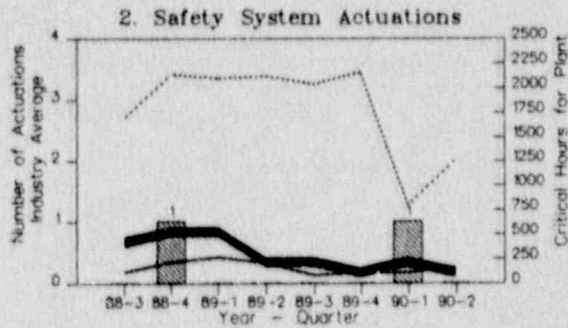
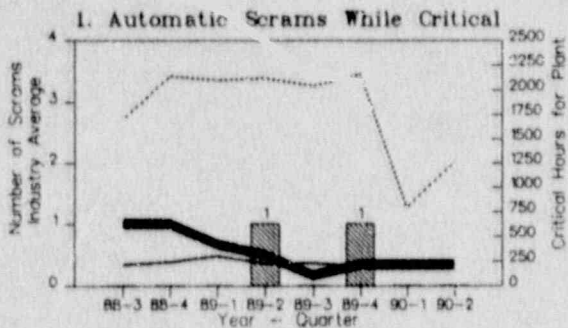
* NOTE: Cause Code Avgs end 90-1

FIGURE 4.79

QUAD CITIES 2

88-3 to 90-2

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



B. Long Term Cause Code Trends All LER Cause Codes Through 90-1

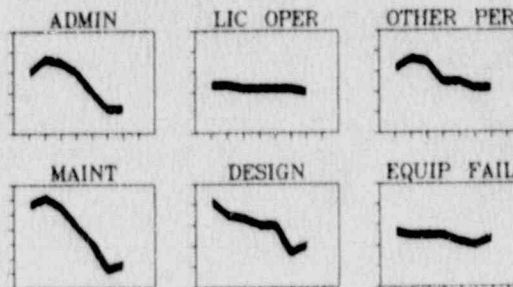


FIGURE 4.79

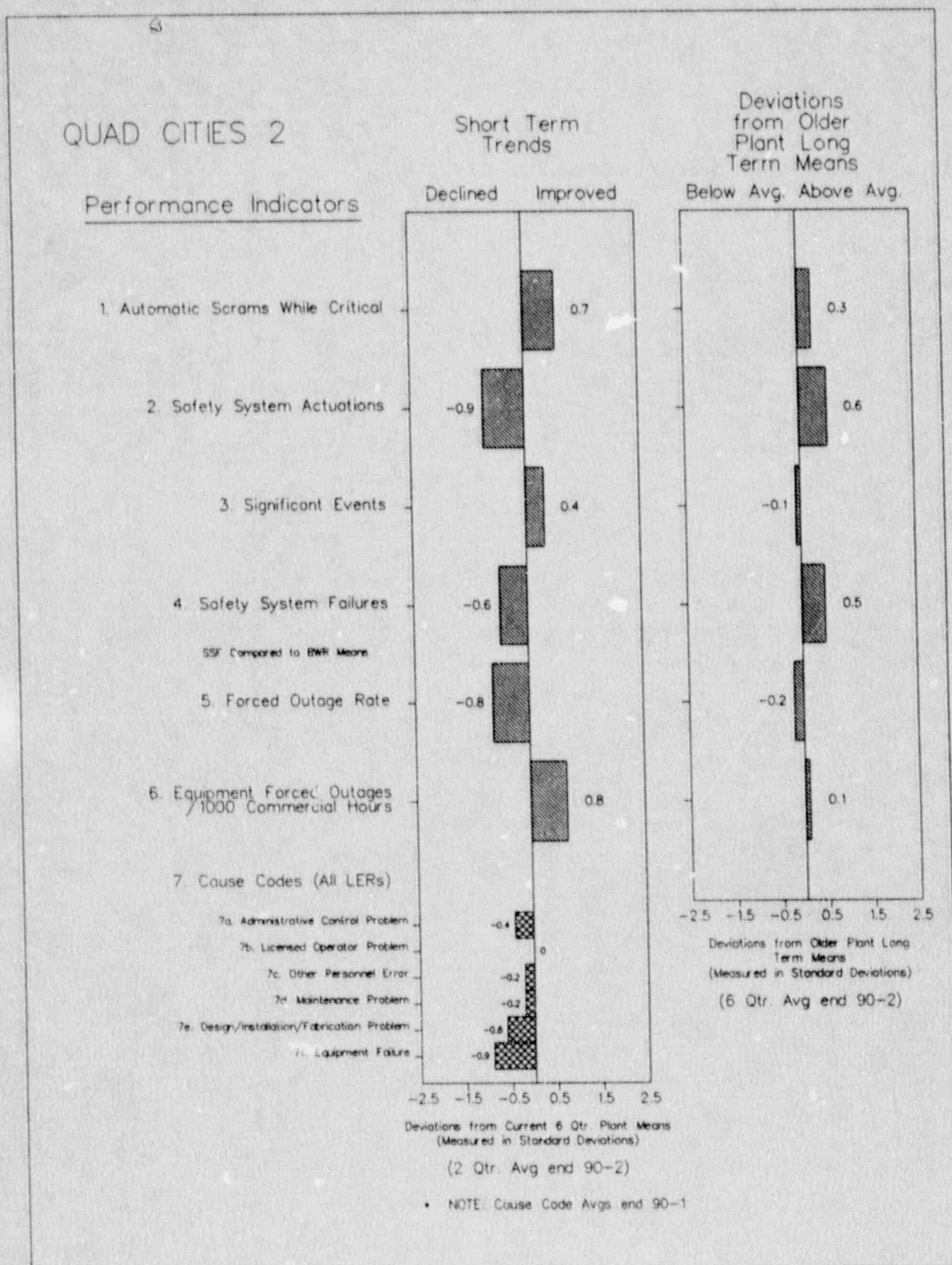


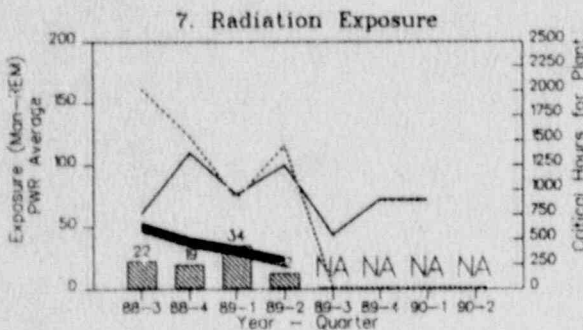
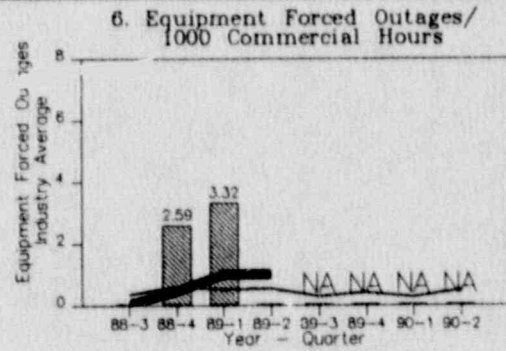
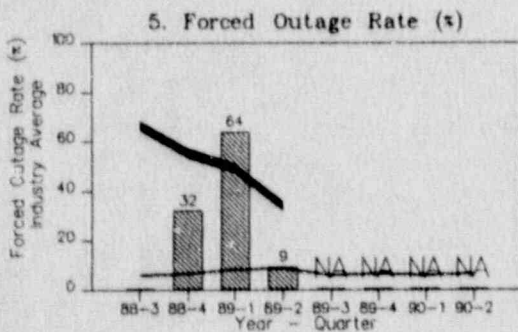
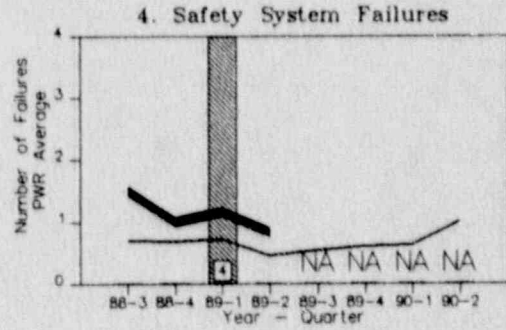
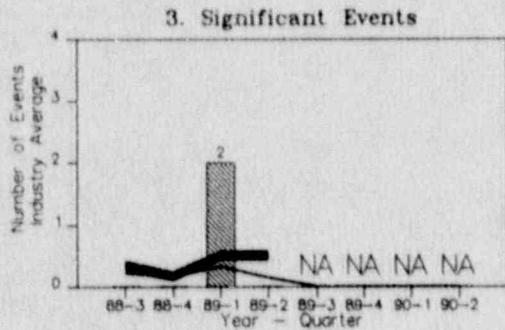
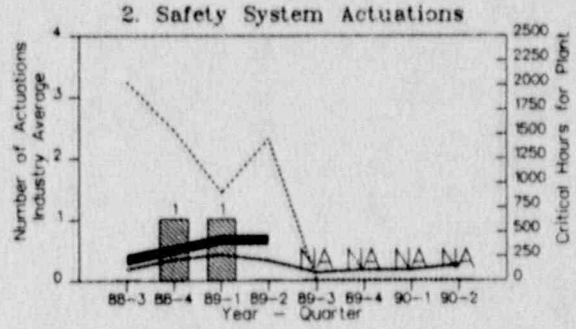
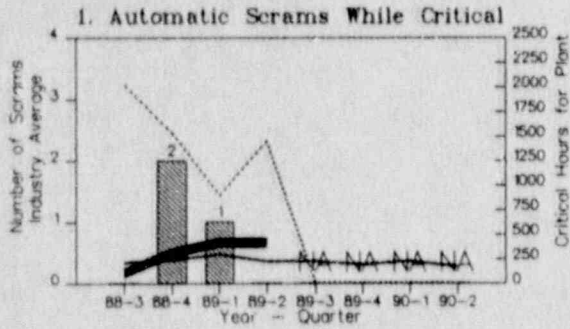
FIGURE 4.80

RANCHO SECO

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

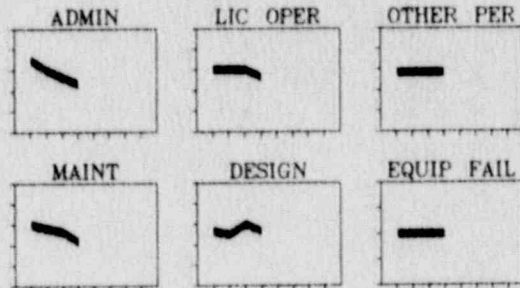


FIGURE 4.80

RANCHO SECO

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

FIGURE 4.81

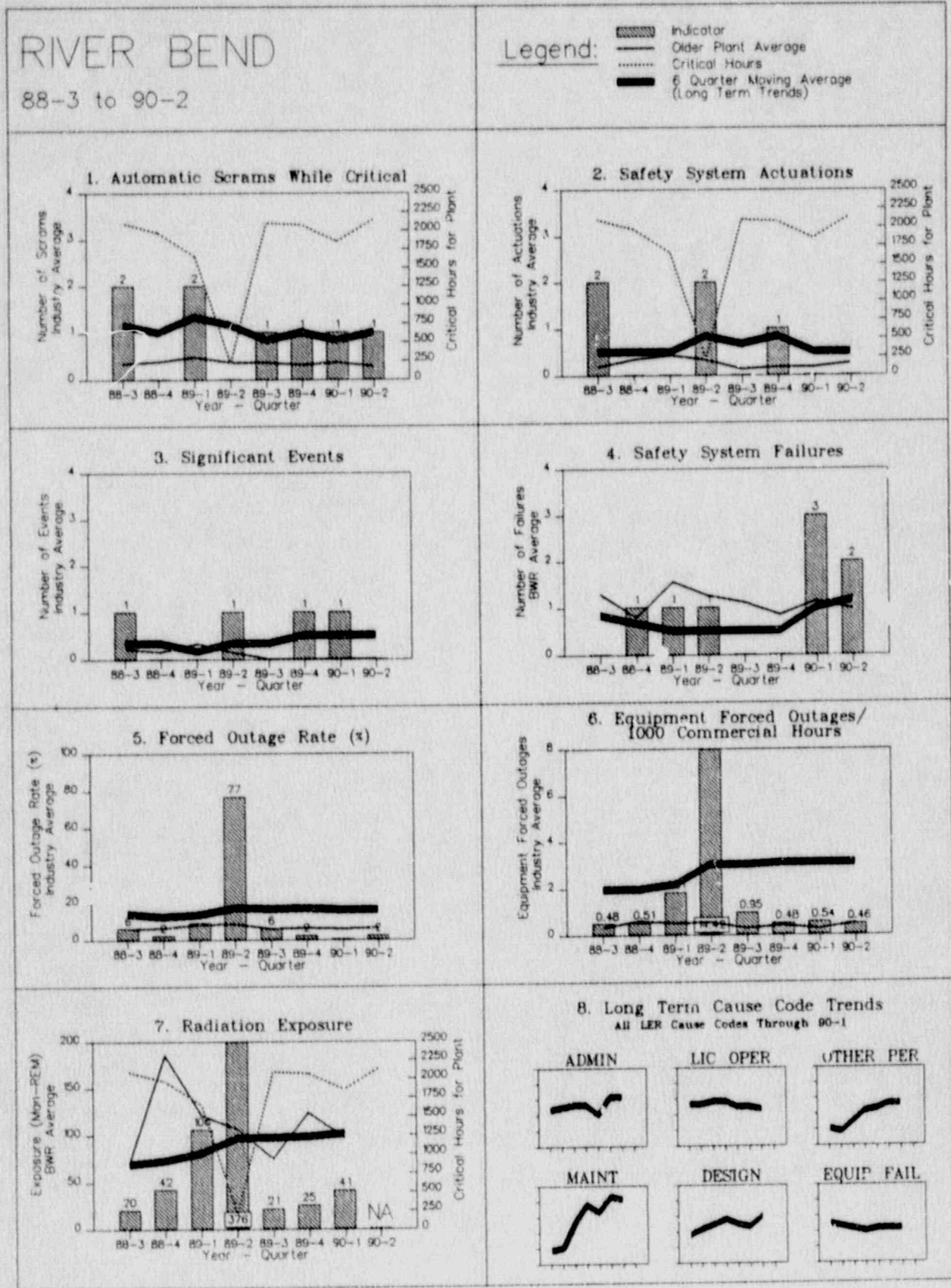


FIGURE 4.81

RIVER BEND

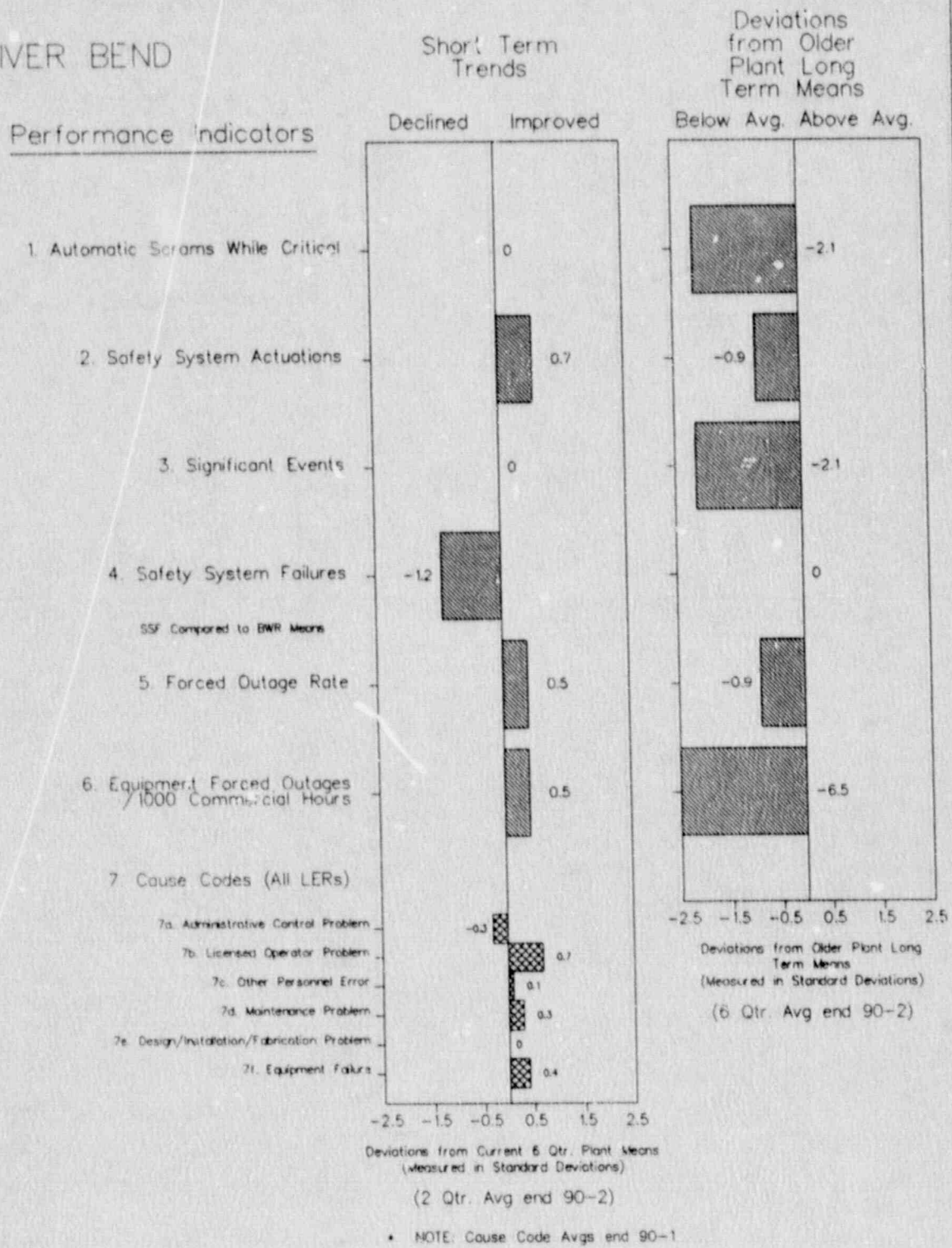


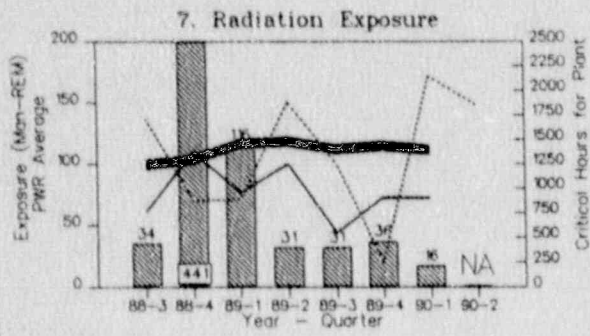
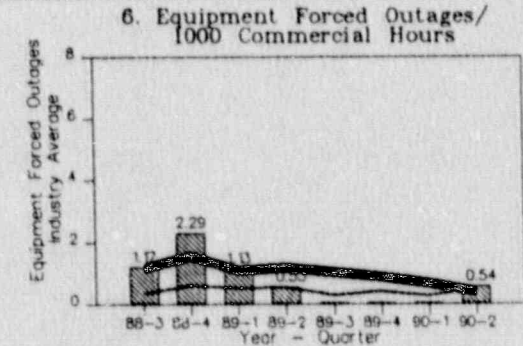
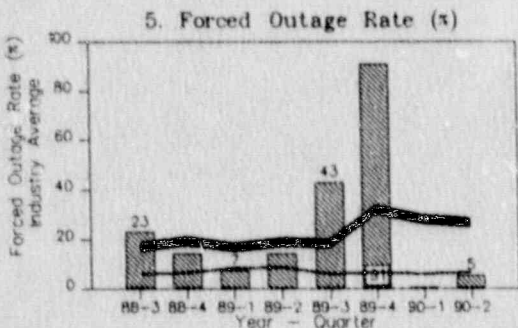
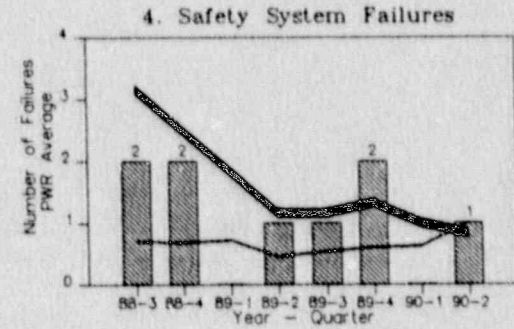
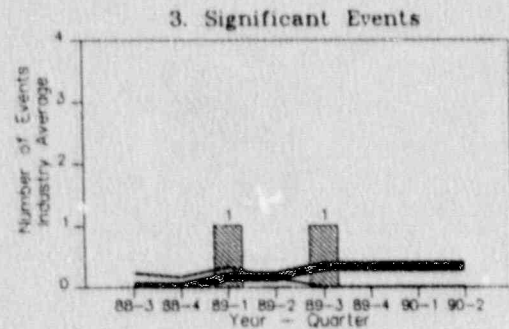
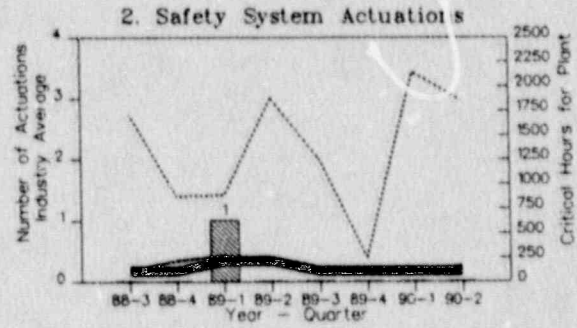
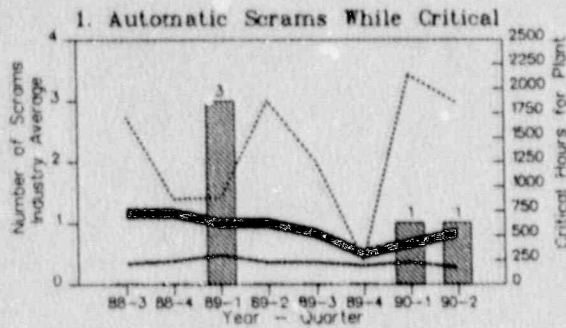
FIGURE 4.82

ROBINSON 2

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

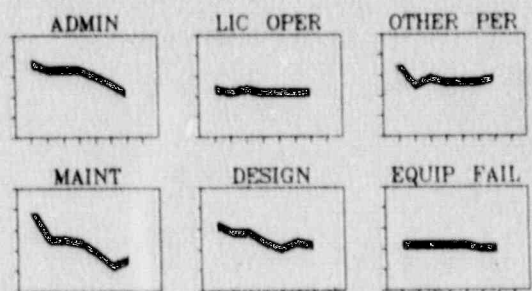


FIGURE 4.82

ROBINSON 2

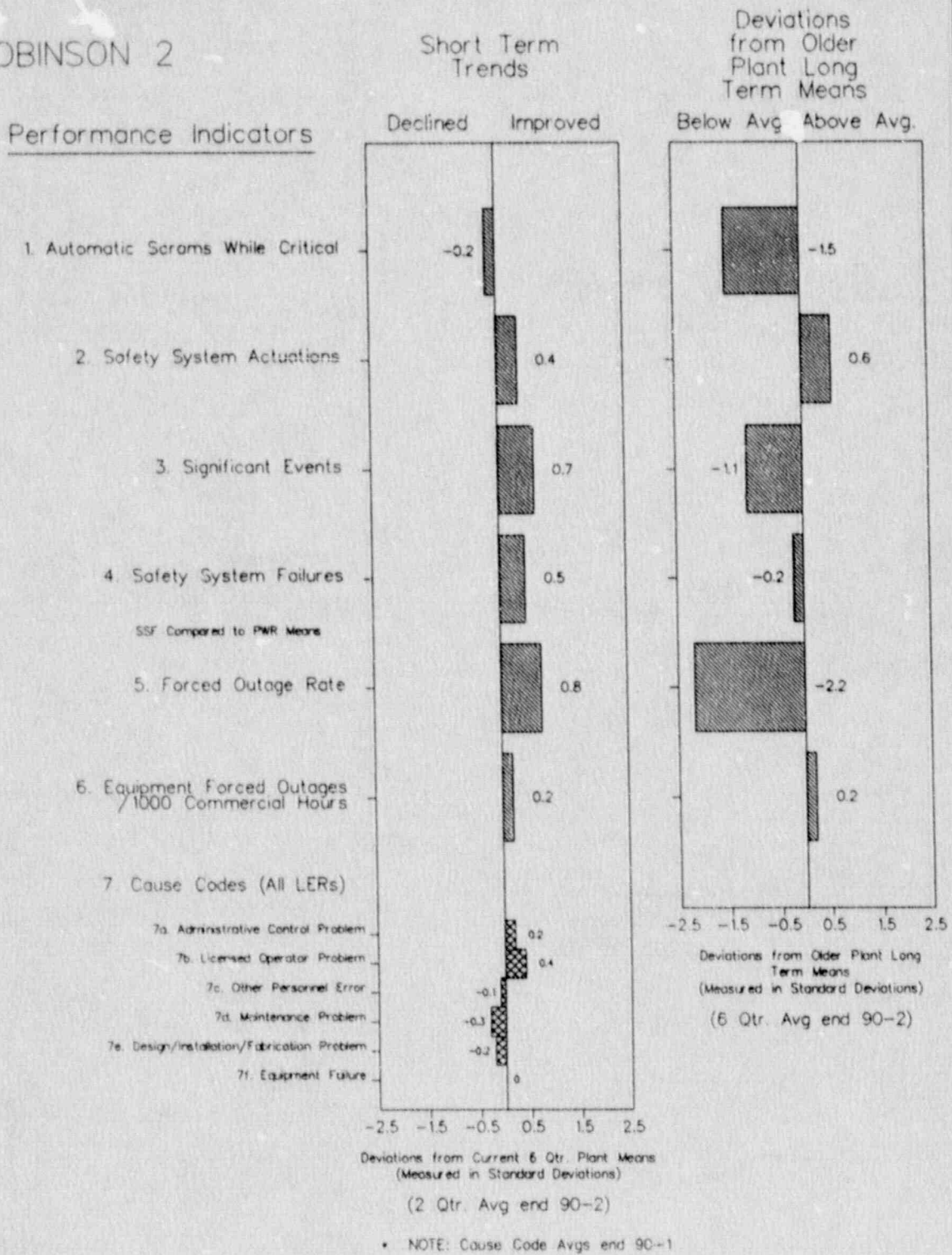
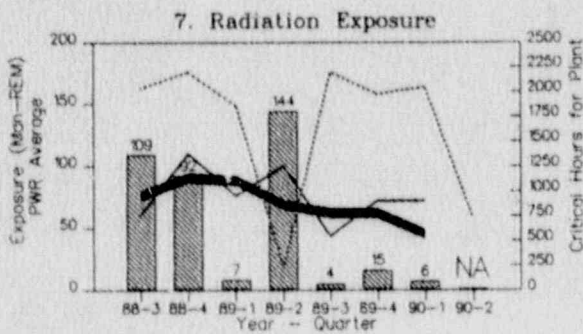
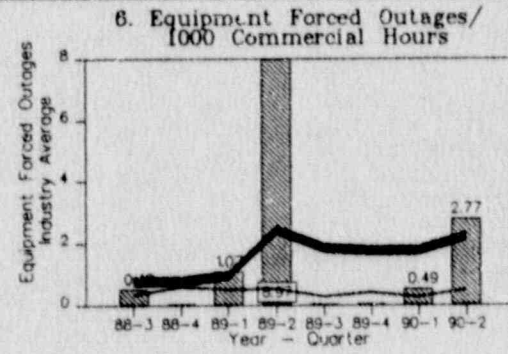
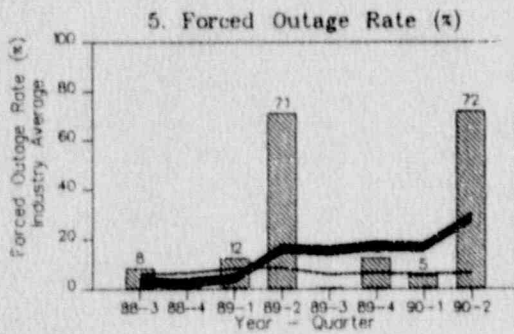
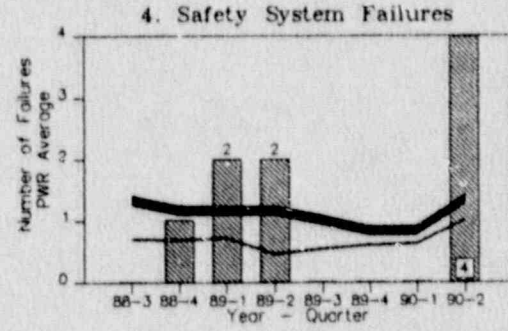
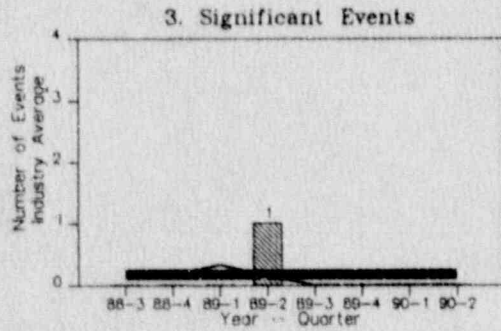
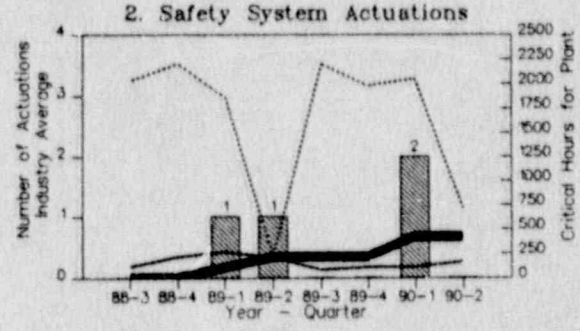
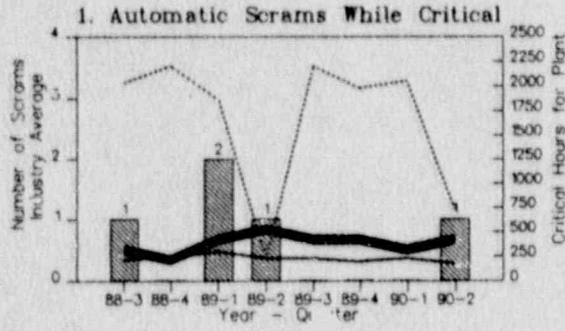


FIGURE 4.83

SALEM 1

88-3 to 90-2

Legend:



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

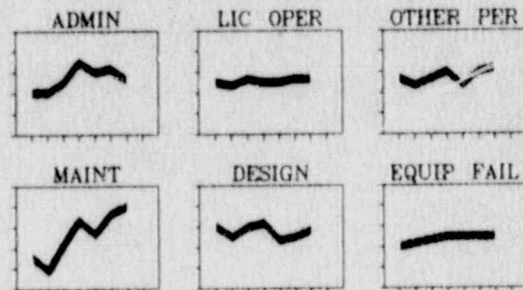


FIGURE 4.83

SALEM 1

Performance Indicators

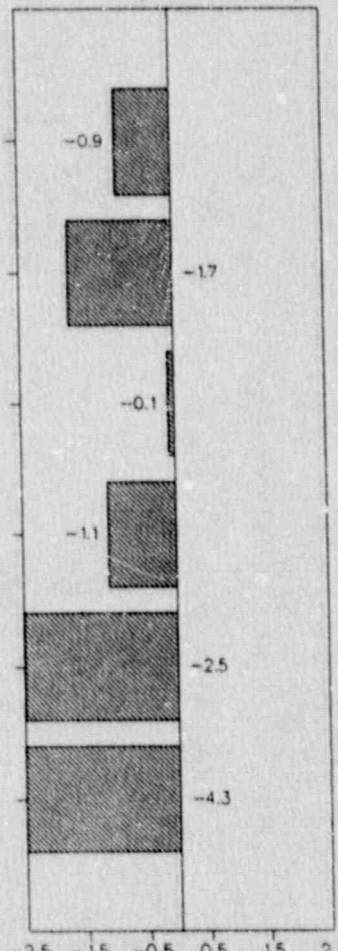
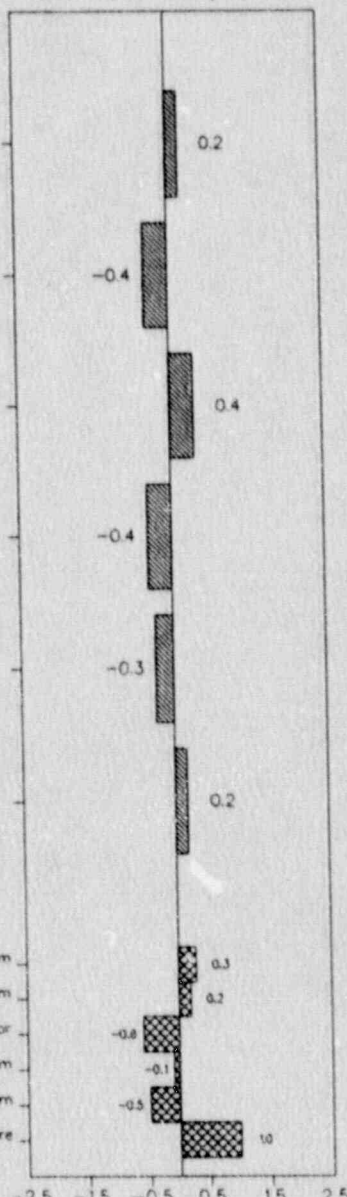
Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

- 1. Automatic Scrams While Critical
- 2. Safety System Actuations
- 3. Significant Events
- 4. Safety System Failures
- SSF Compared to PWR Means
- 5. Forced Outage Rate
- 6. Equipment Forced Outages /1000 Commercial Hours
- 7. Cause Codes (All LERs)
 - 7a. Administrative Control Problem
 - 7b. Licensed Operator Problem
 - 7c. Other Personnel Error
 - 7d. Maintenance Problem
 - 7e. Design/Installation/Fabrication Problem
 - 7f. Equipment Failure



Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations) (6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.84

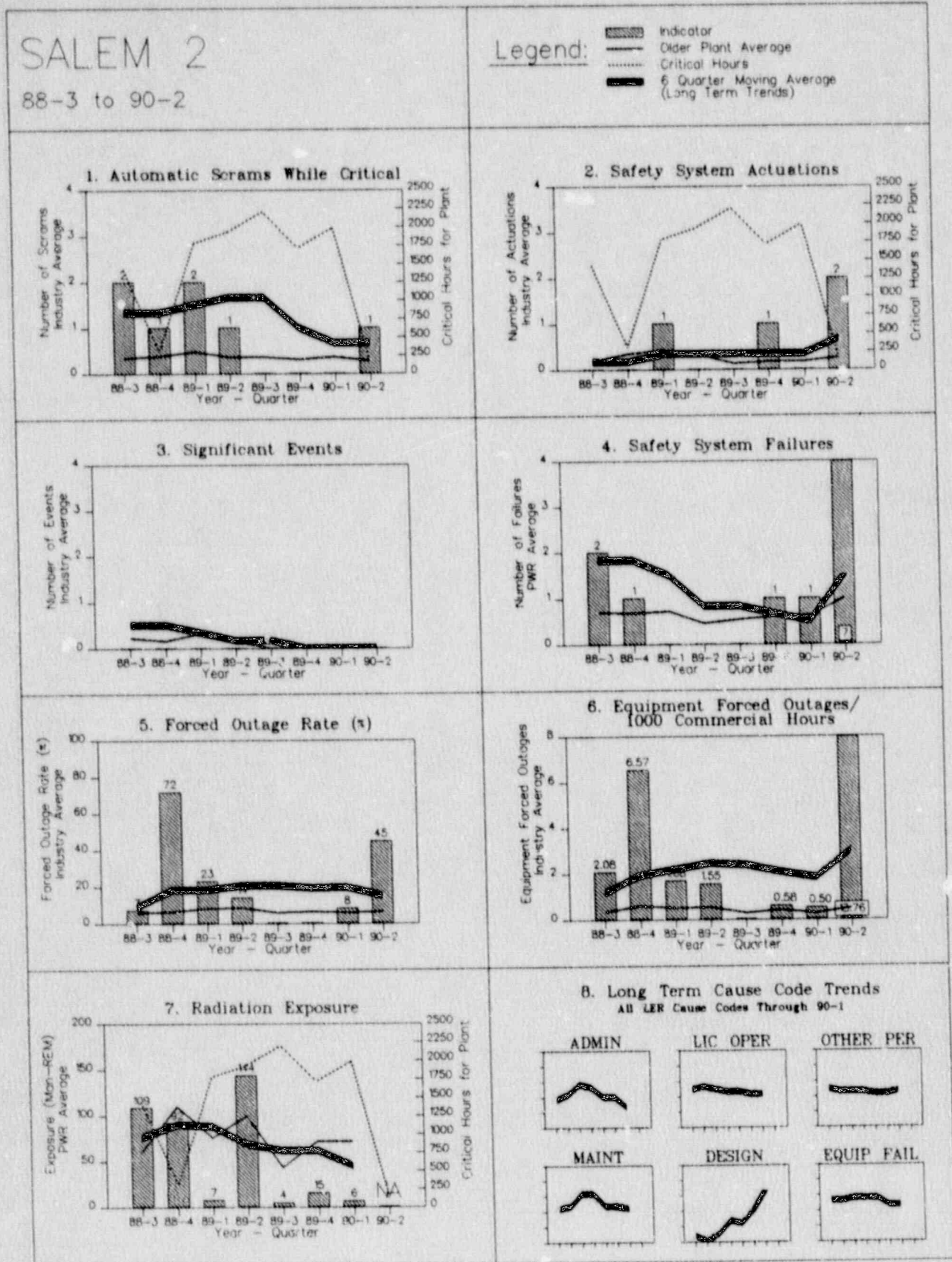


FIGURE 4.84

SALEM 2

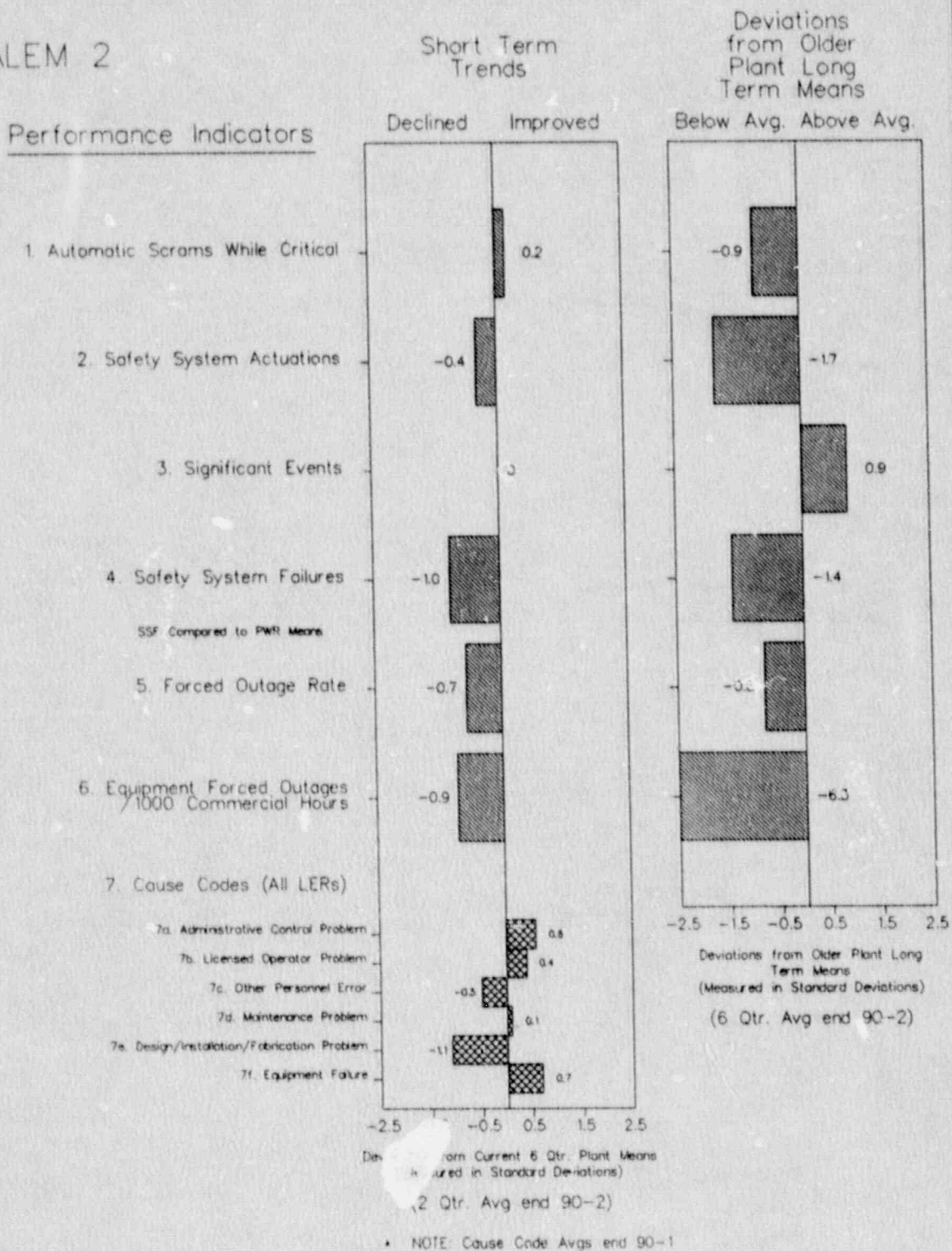


FIGURE 4.85

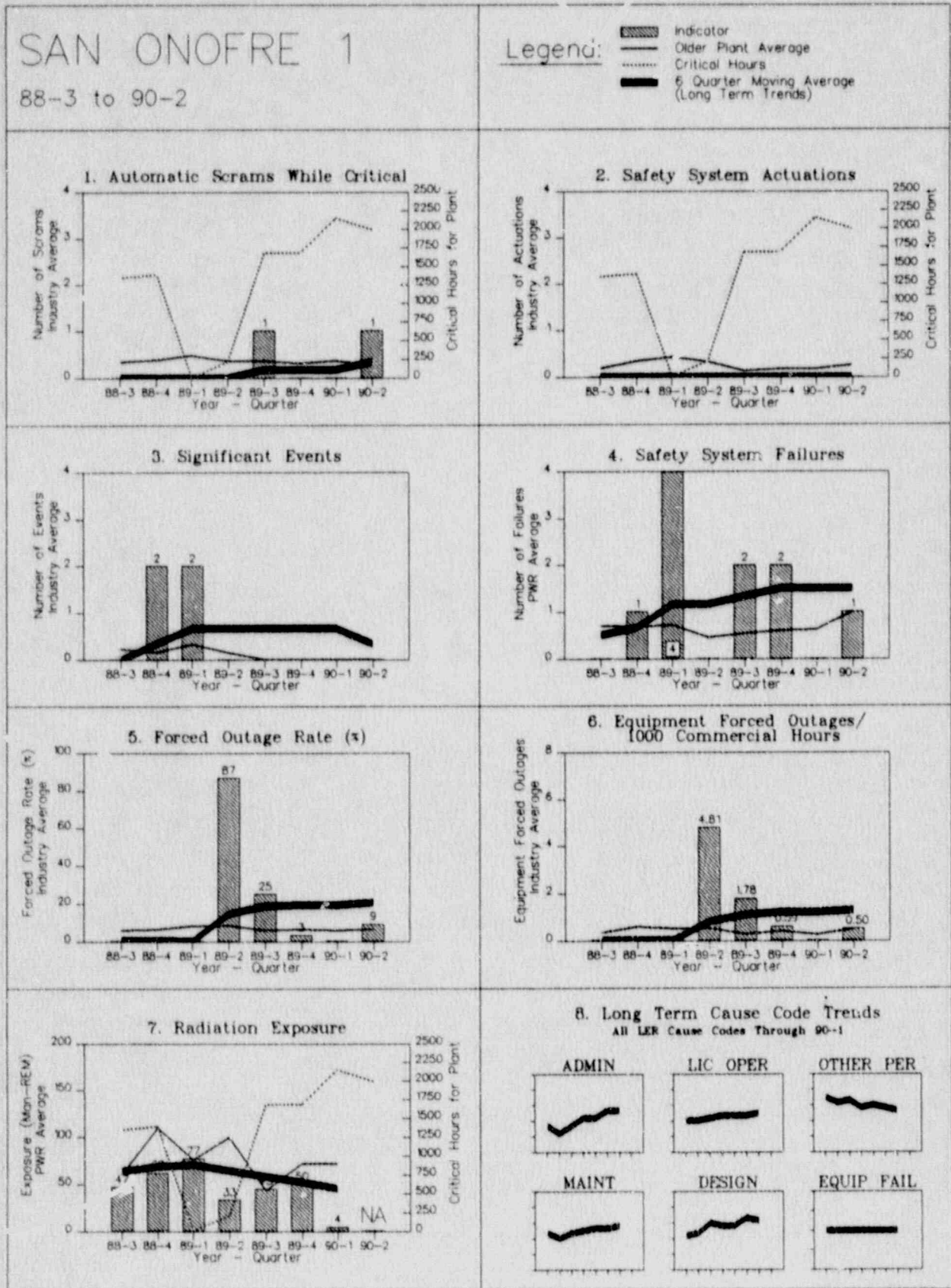


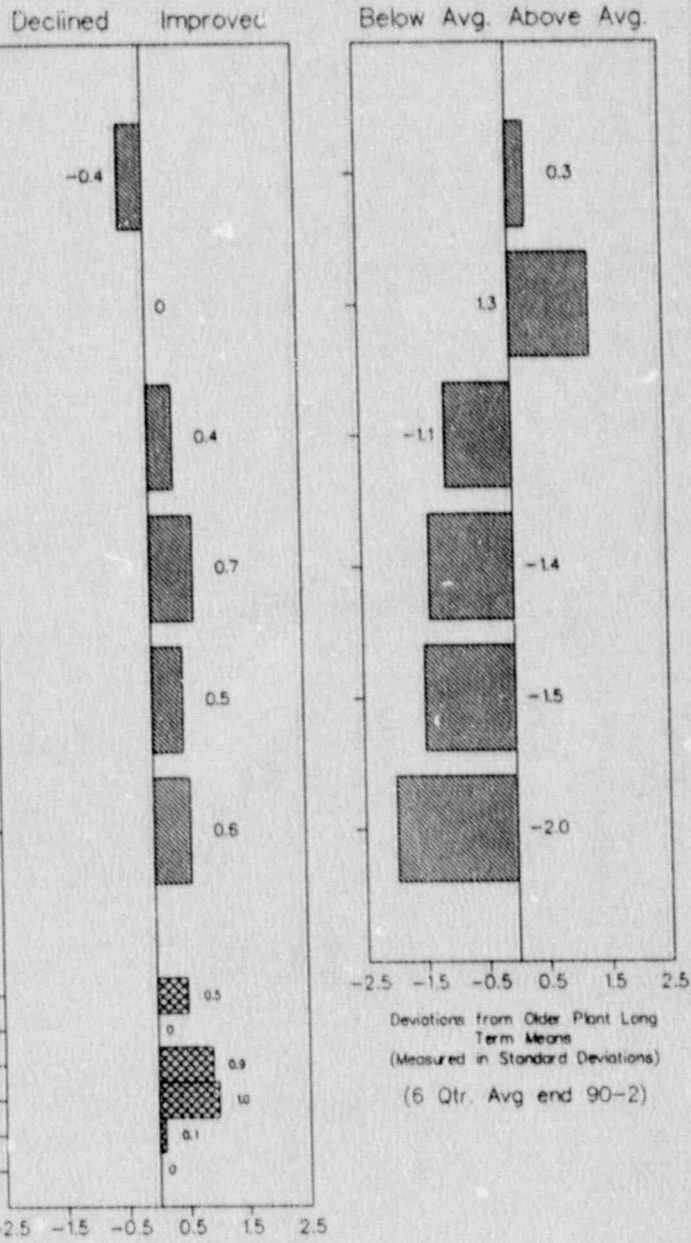
FIGURE 4.85

SAN ONOFRE 1

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means



Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

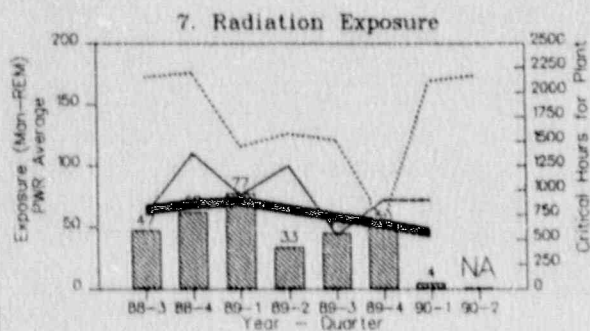
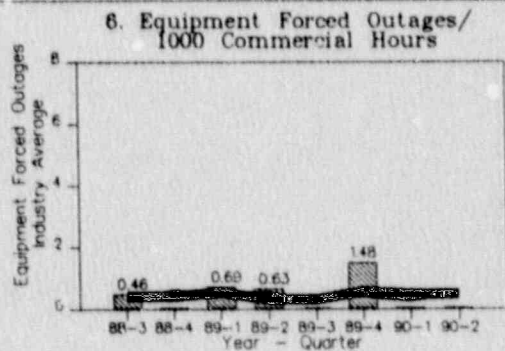
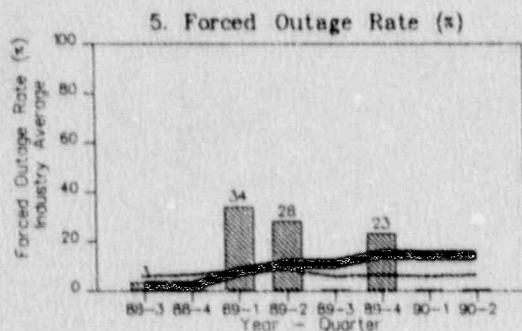
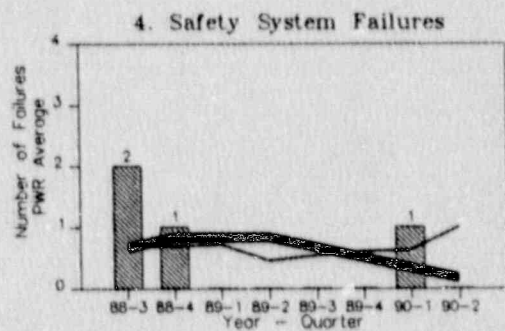
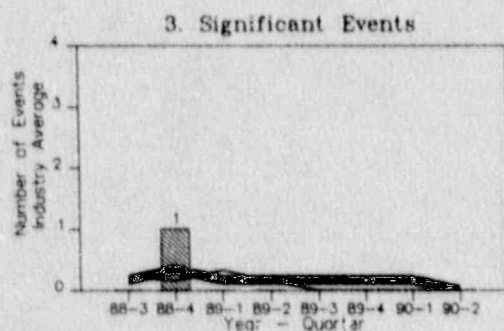
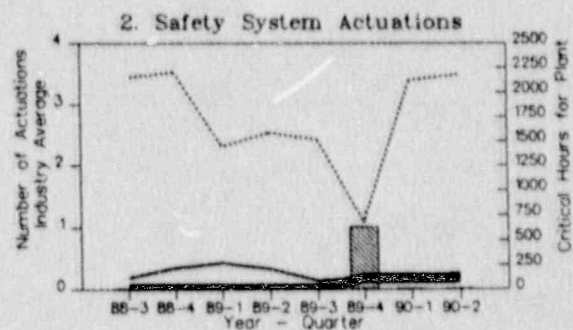
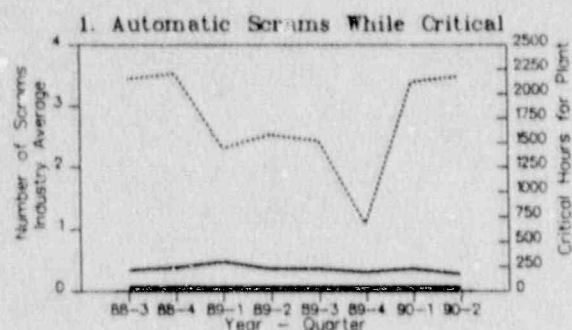
FIGURE 4.86

SAN ONOFRE 2

88-3 to 90-2

Legend:

- Indicator
- Older Plant Average
- Critical Hours
- 5 Quarter Moving Average (Long Term Trends)



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

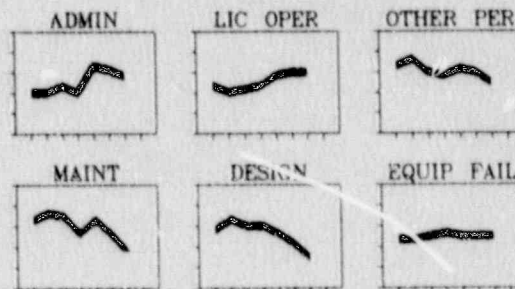


FIGURE 4.86

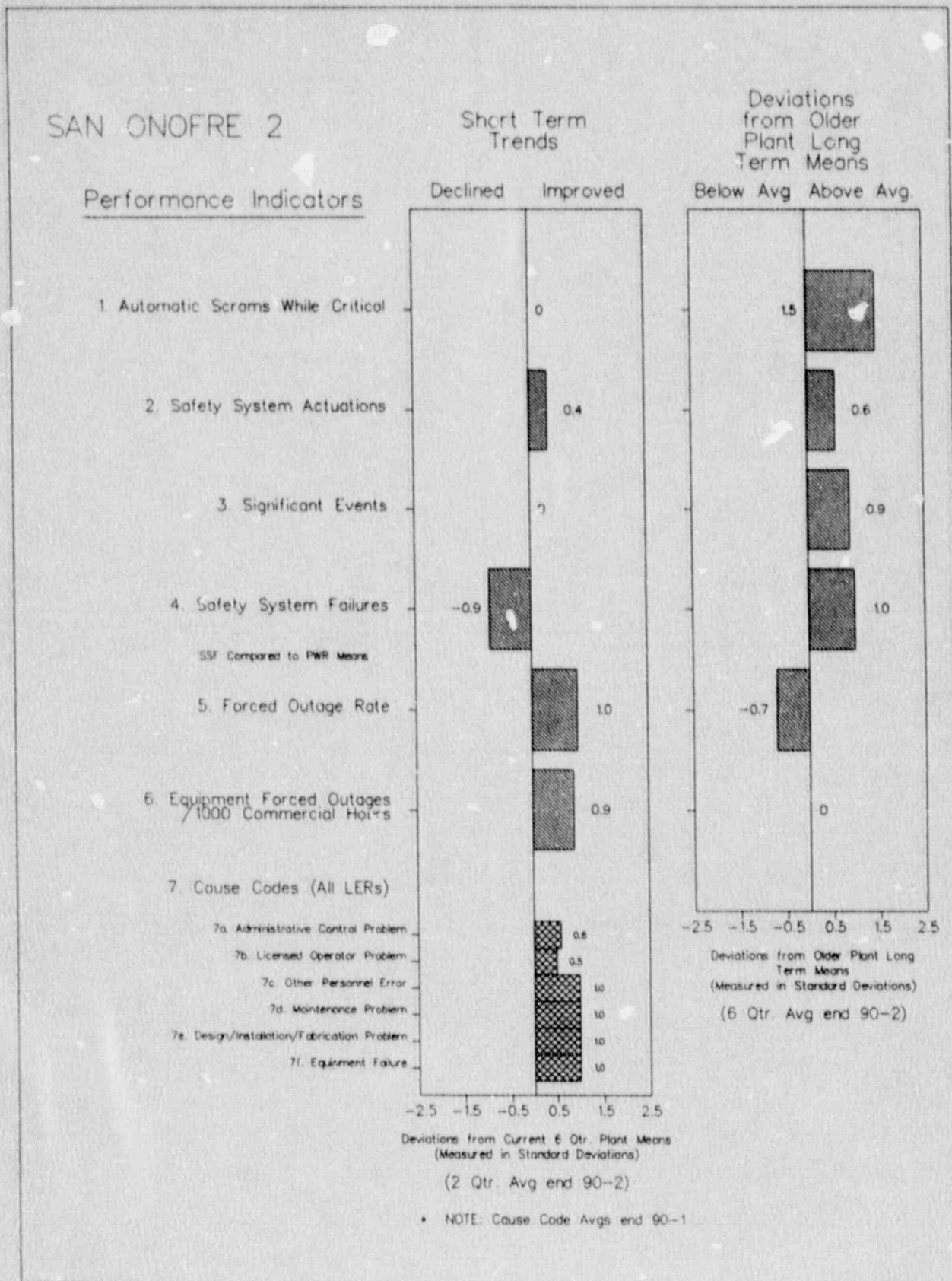


FIGURE 4.87

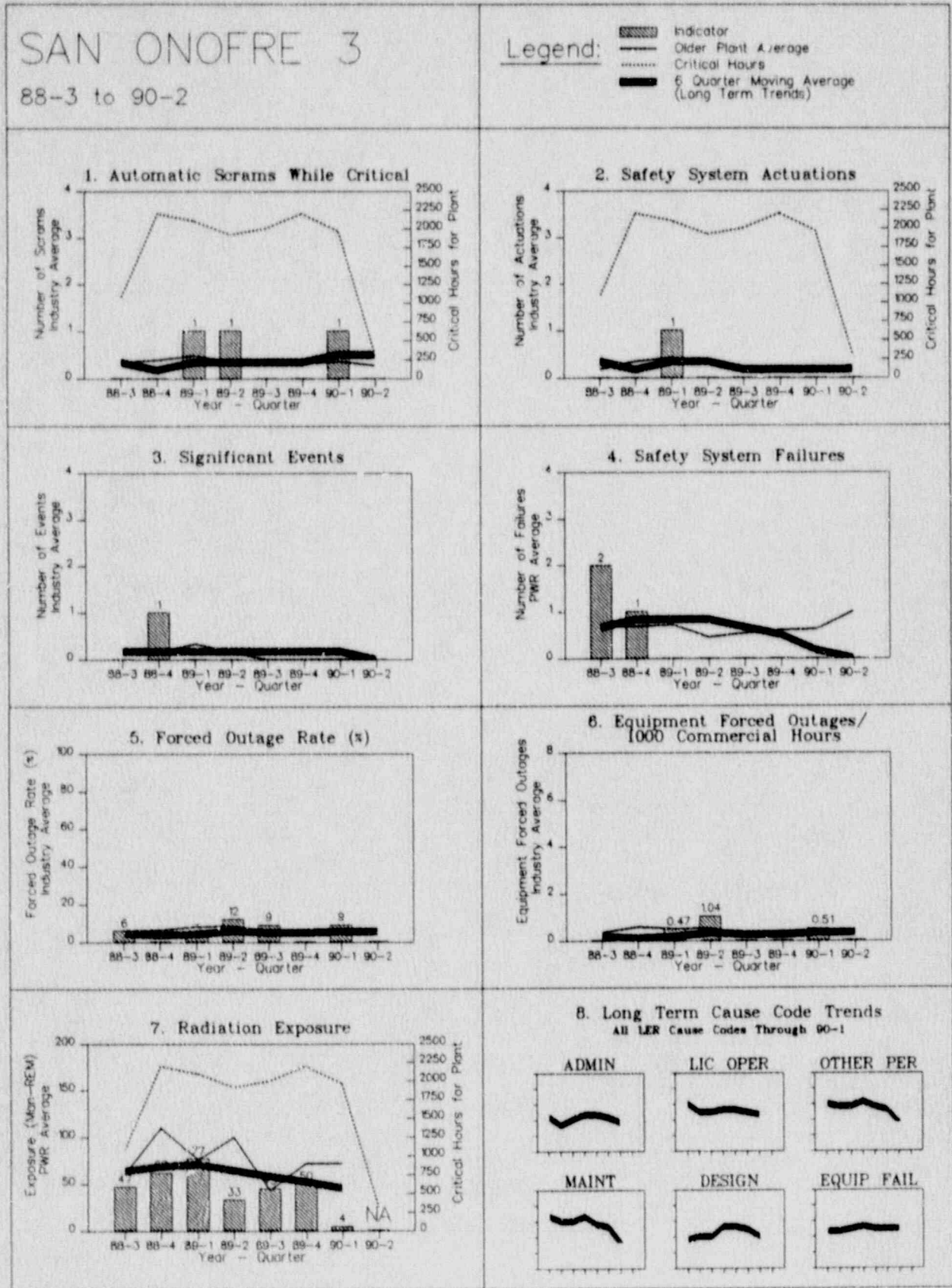


FIGURE 4.87

SAN ONOFRE 3

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

1. Automatic Scrams While Critical

2. Safety System Actuations

3. Significant Events

4. Safety System Failures

SSF Compared to PWR Means

5. Forced Outage Rate

6. Equipment Forced Outages /1000 Commercial Hours

7. Cause Codes (All LERs)

7a. Administrative Control Problem

7b. Licensed Operator Problem

7c. Other Personnel Error

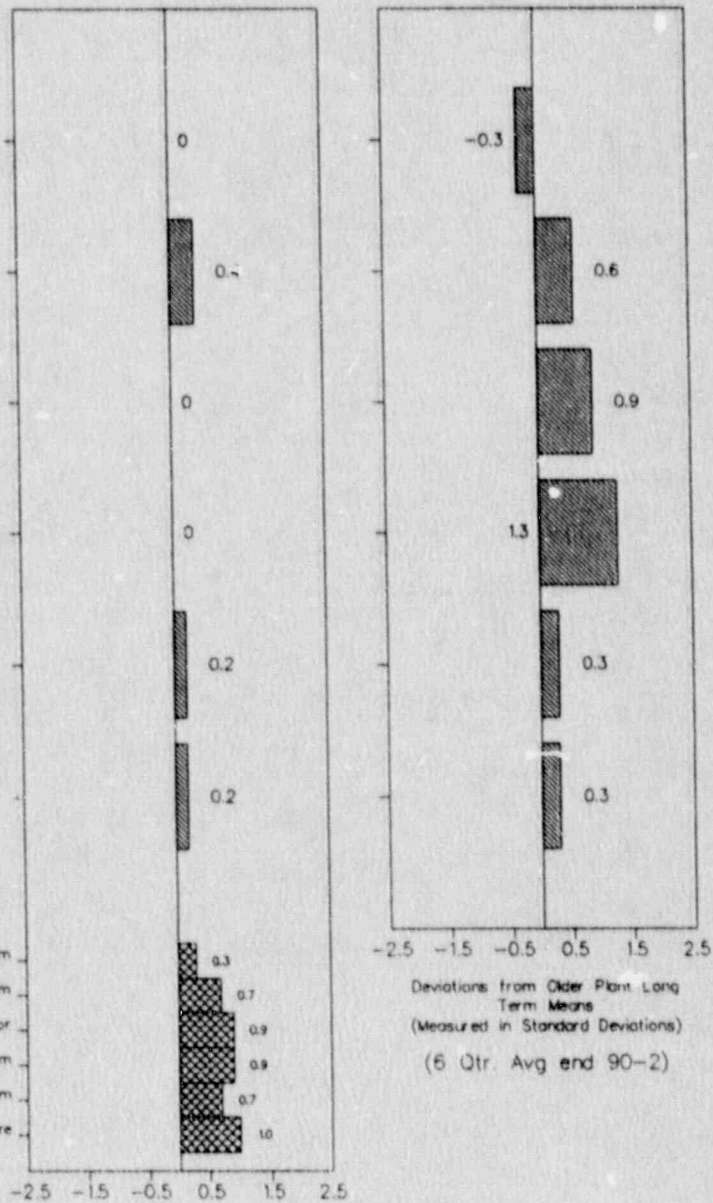
7d. Maintenance Problem

7e. Design/Installation/Fabrication Problem

7f. Equipment Failure

Declined Improved

Below Avg. Above Avg.



Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

FIGURE 4.88

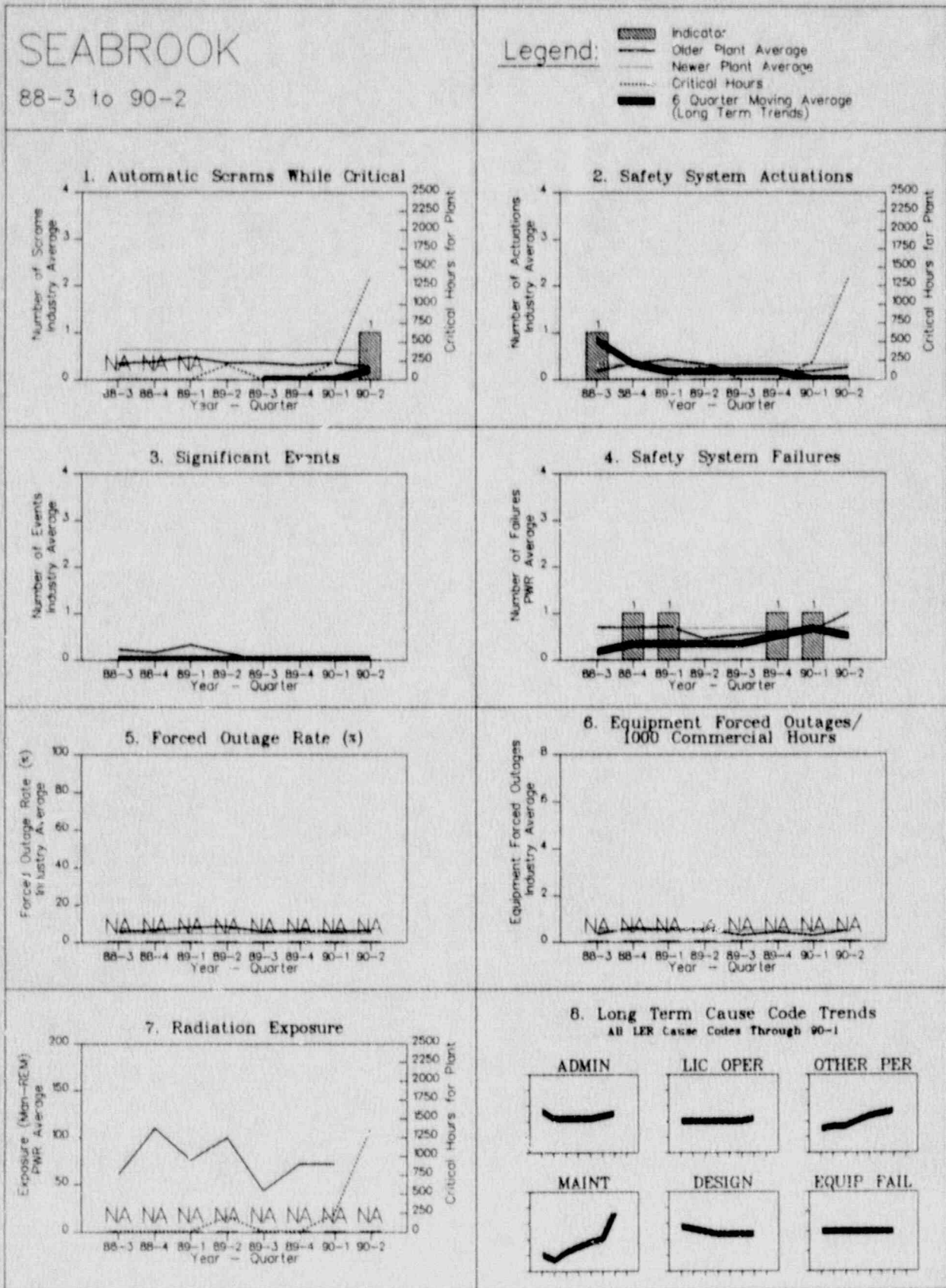
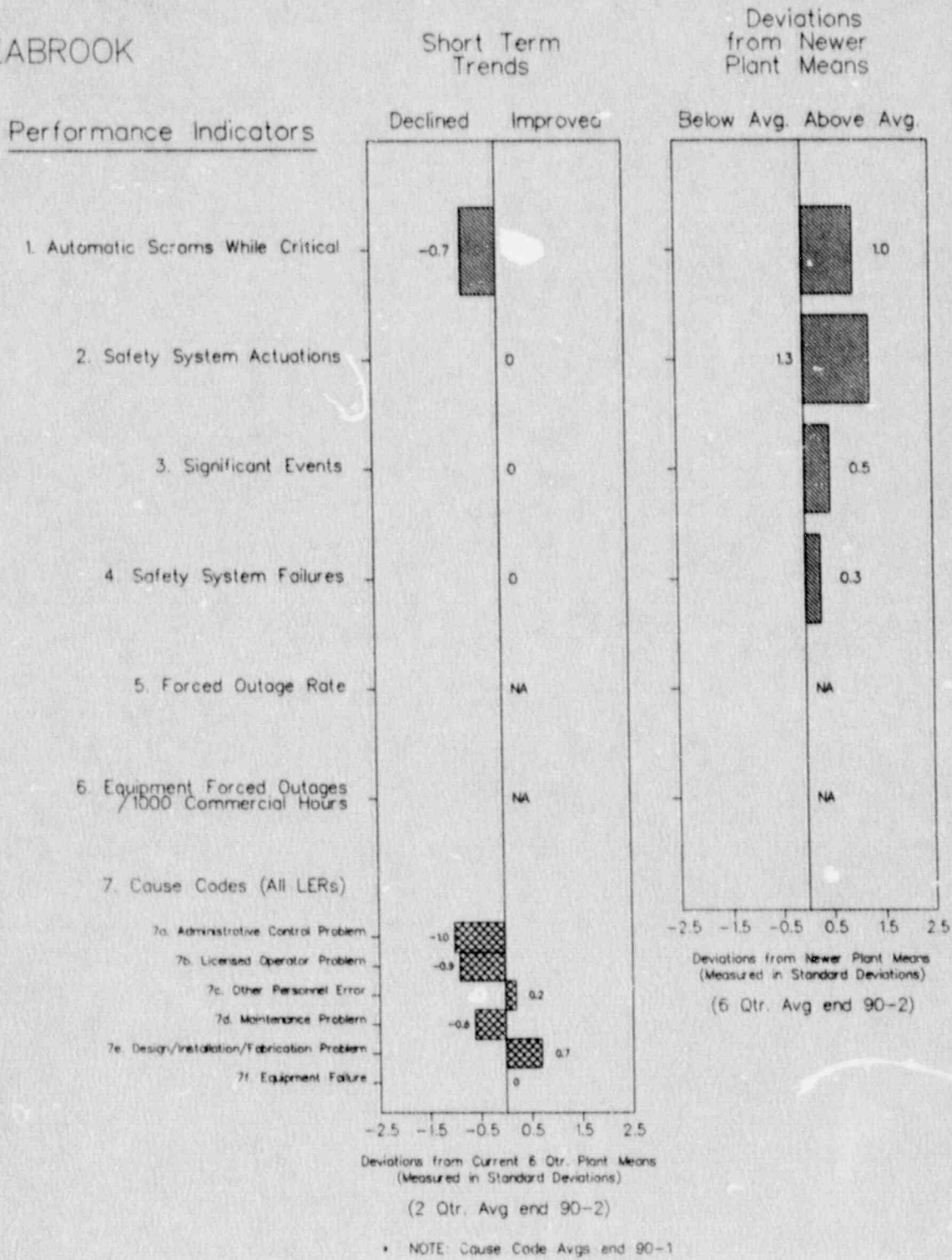


FIGURE 4.88

SEABROOK



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FIGURE 4.88

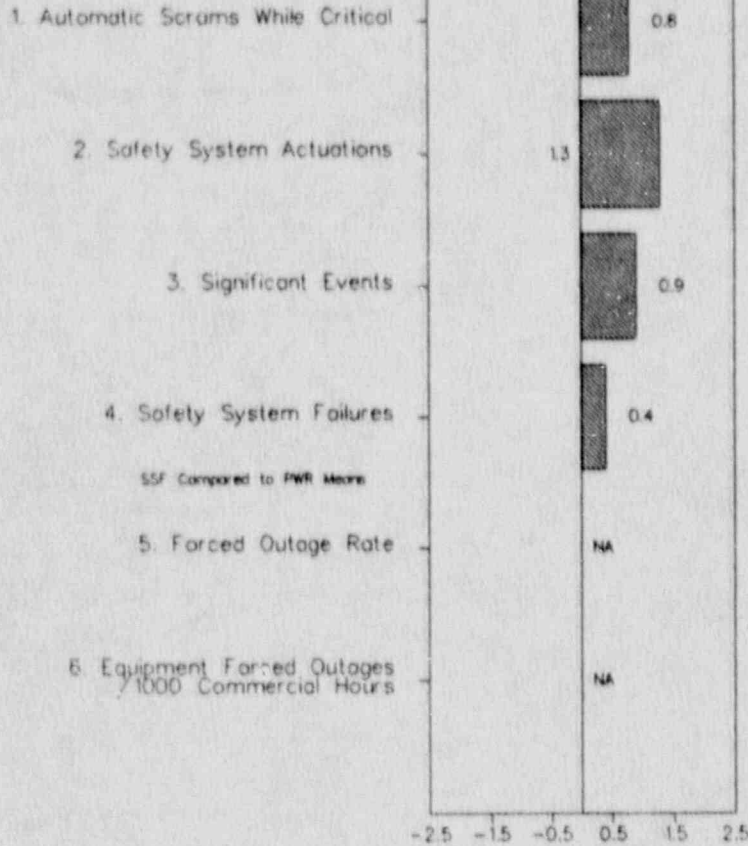
Note: This is a comparison of SEABROOK
(a newer plant) against older plant means.

SEABROOK

Deviations
from Older
Plant Long
Term Means

Performance Indicators

Below Avg. Above Avg.



Deviations from Older Plant Long
Term Means
(Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

FIGURE 4.89

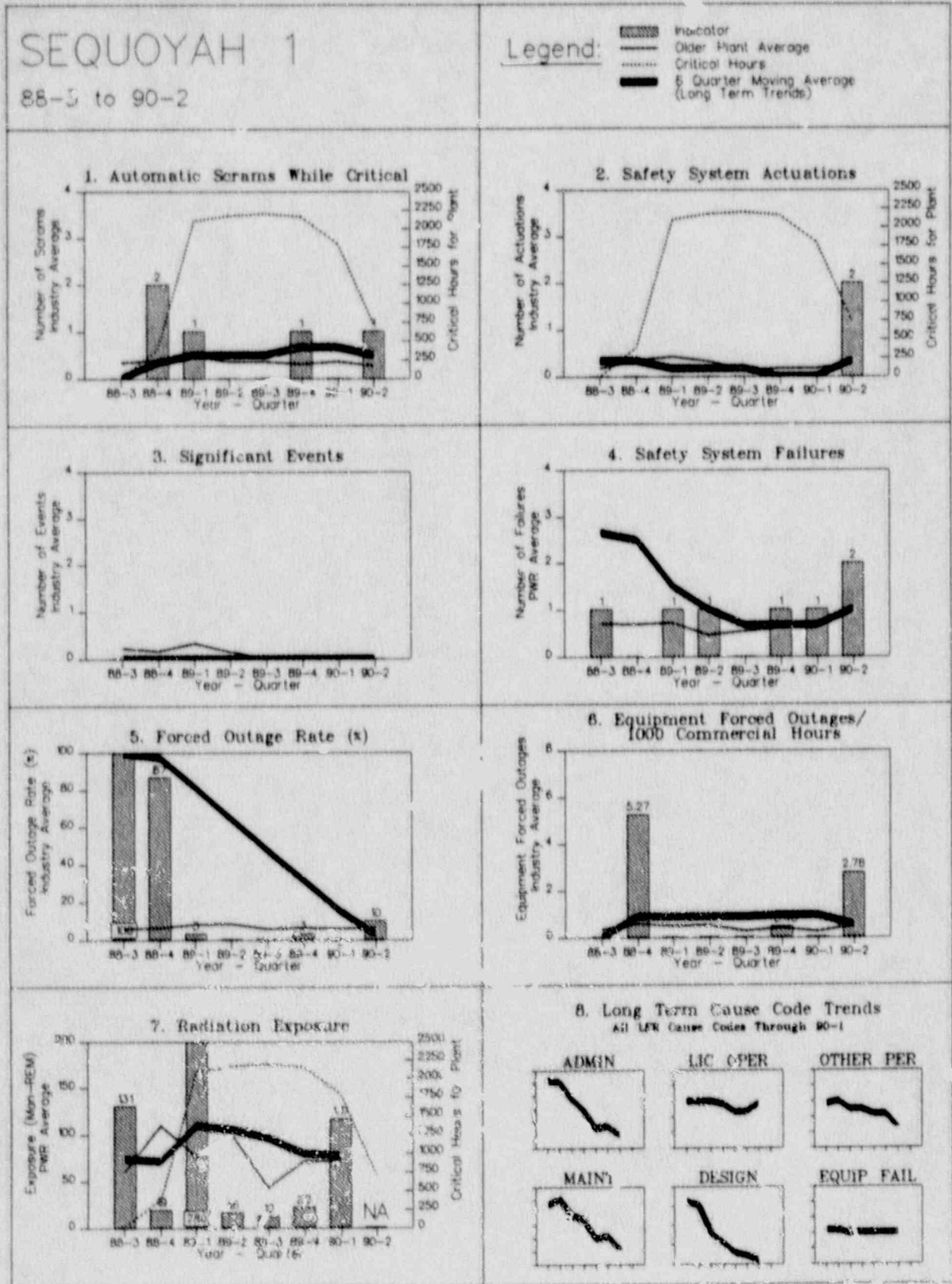


FIGURE 4.89

SEQUOYAH 1

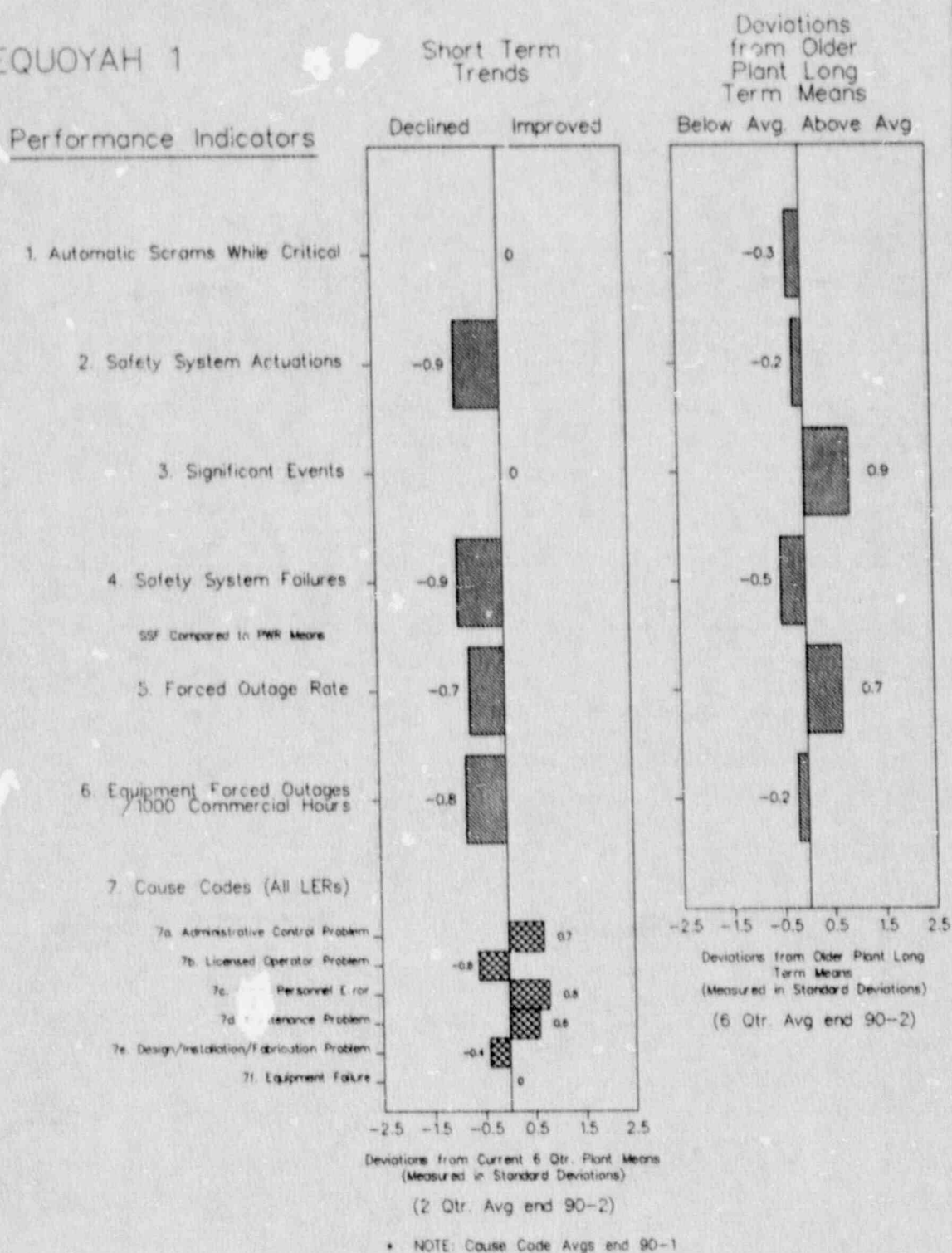


FIGURE 4.90

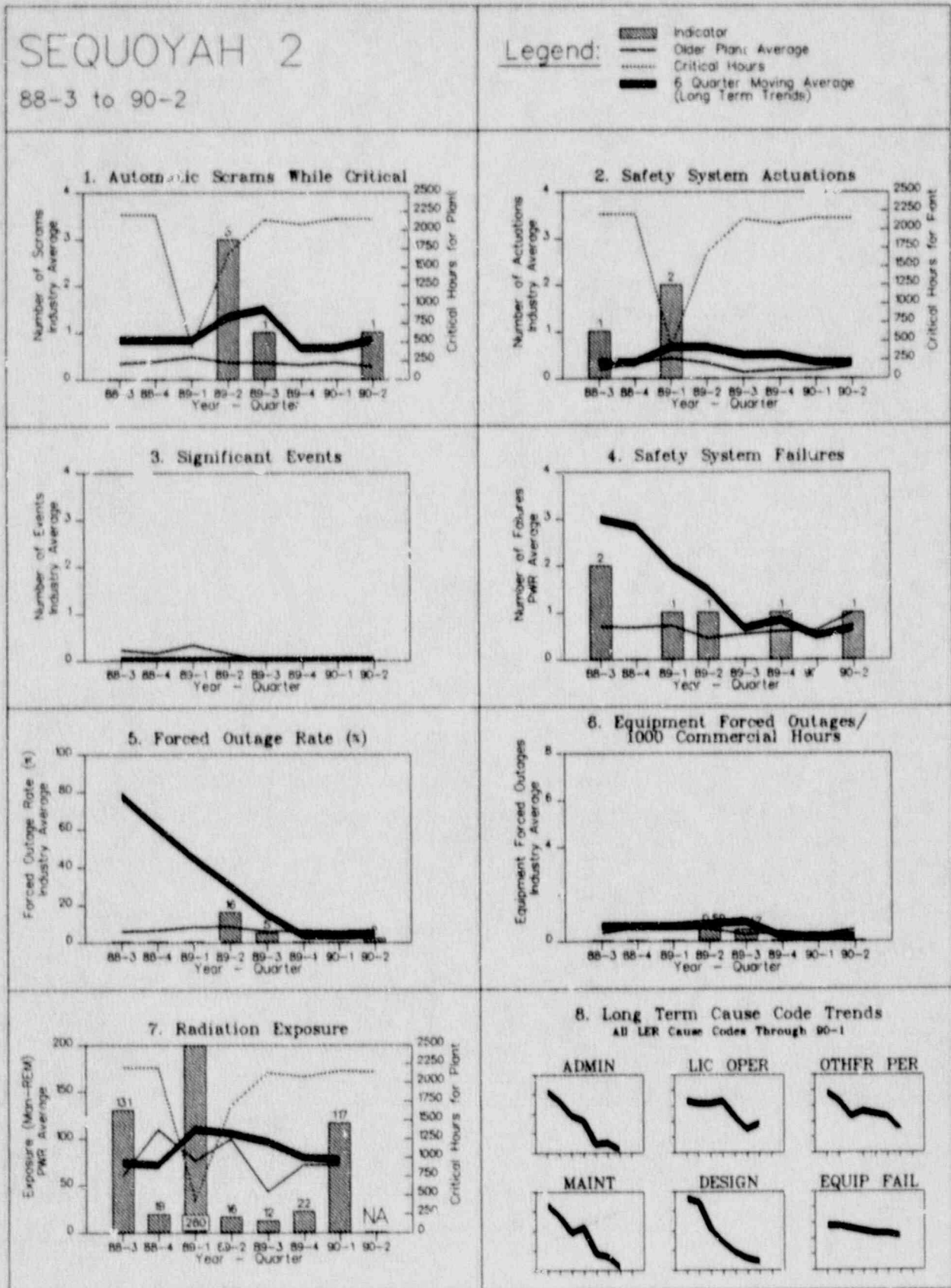


FIGURE 4.90

SEQUOYAH 2

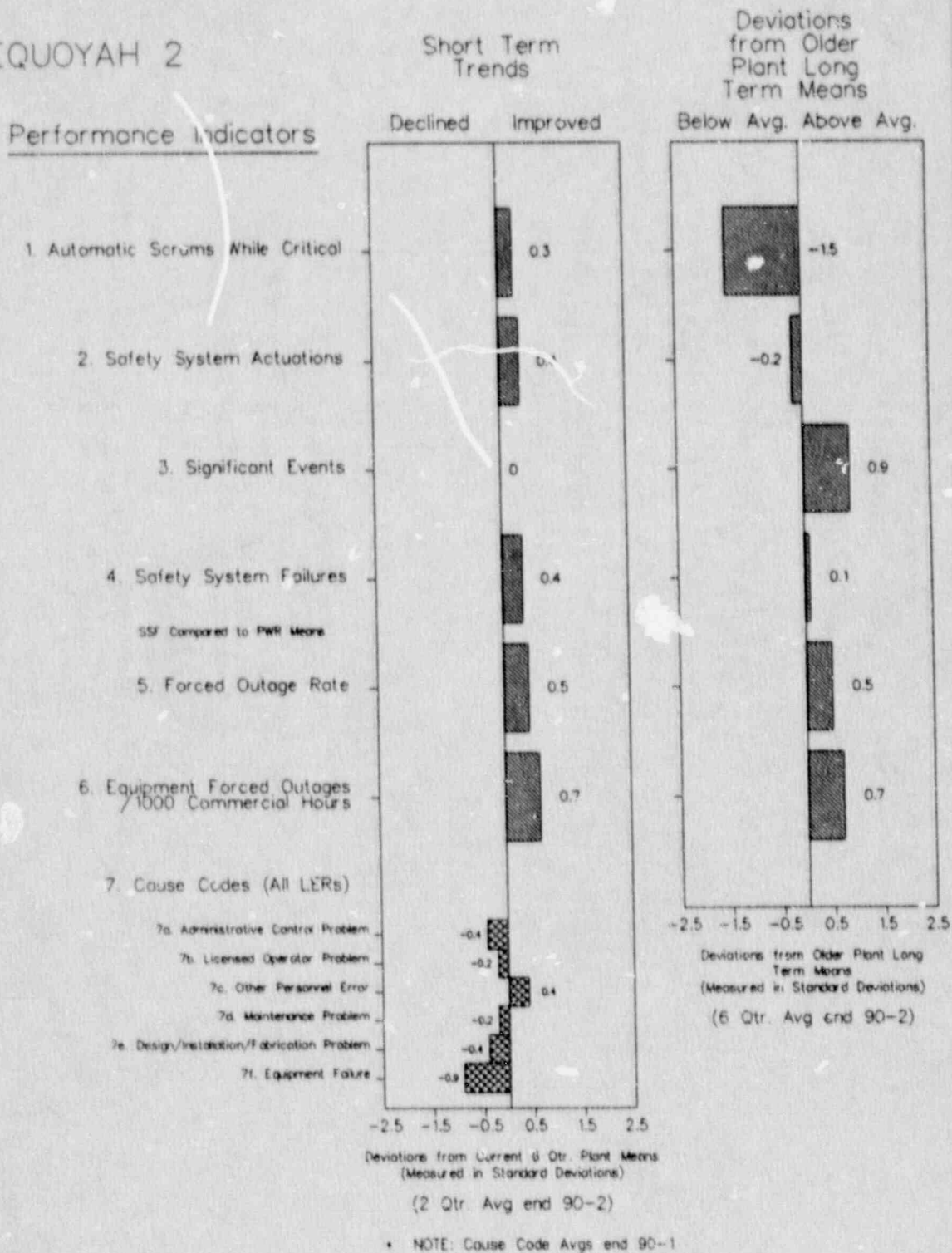
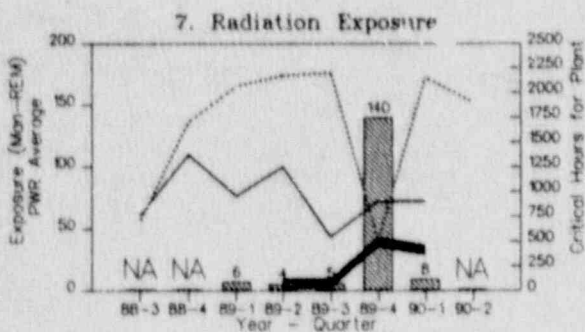
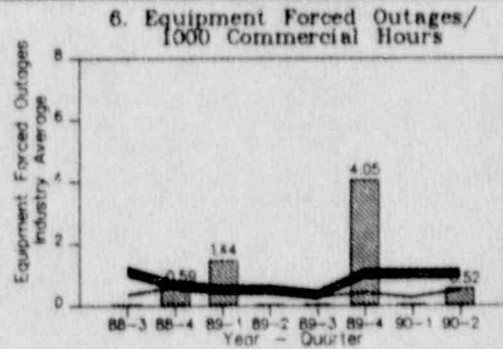
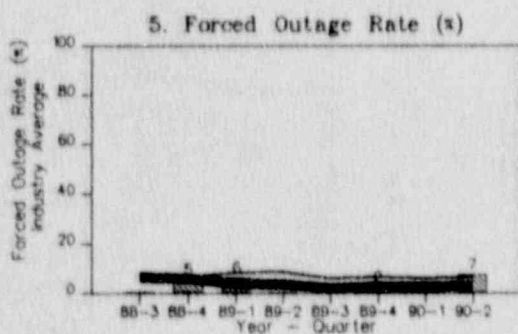
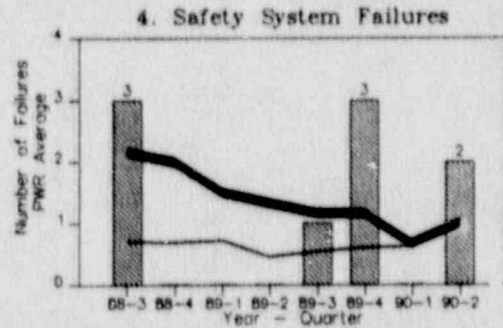
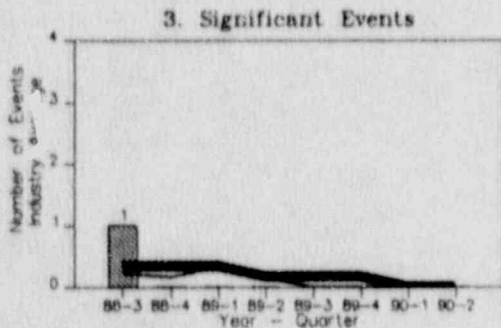
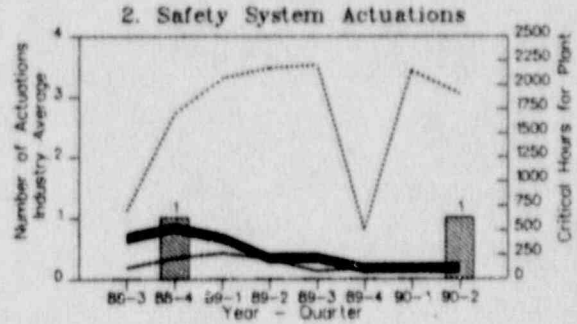
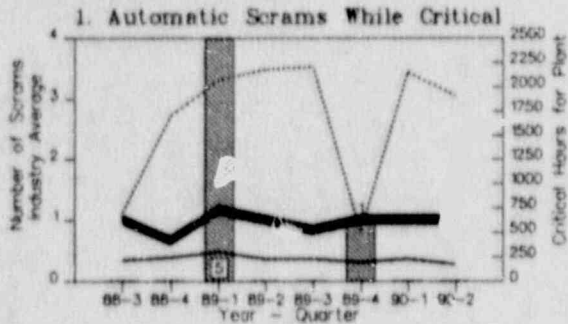


FIGURE 4.91

SHEARON HARRIS

88-3 to 90-2

Legend:



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

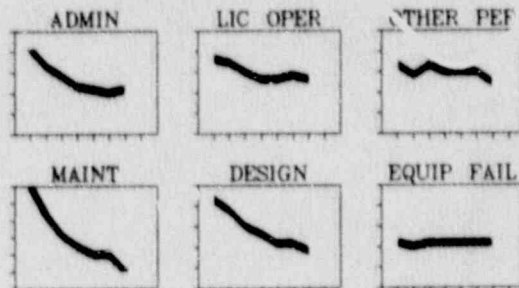


FIGURE 4.91

SHEARON HARRIS

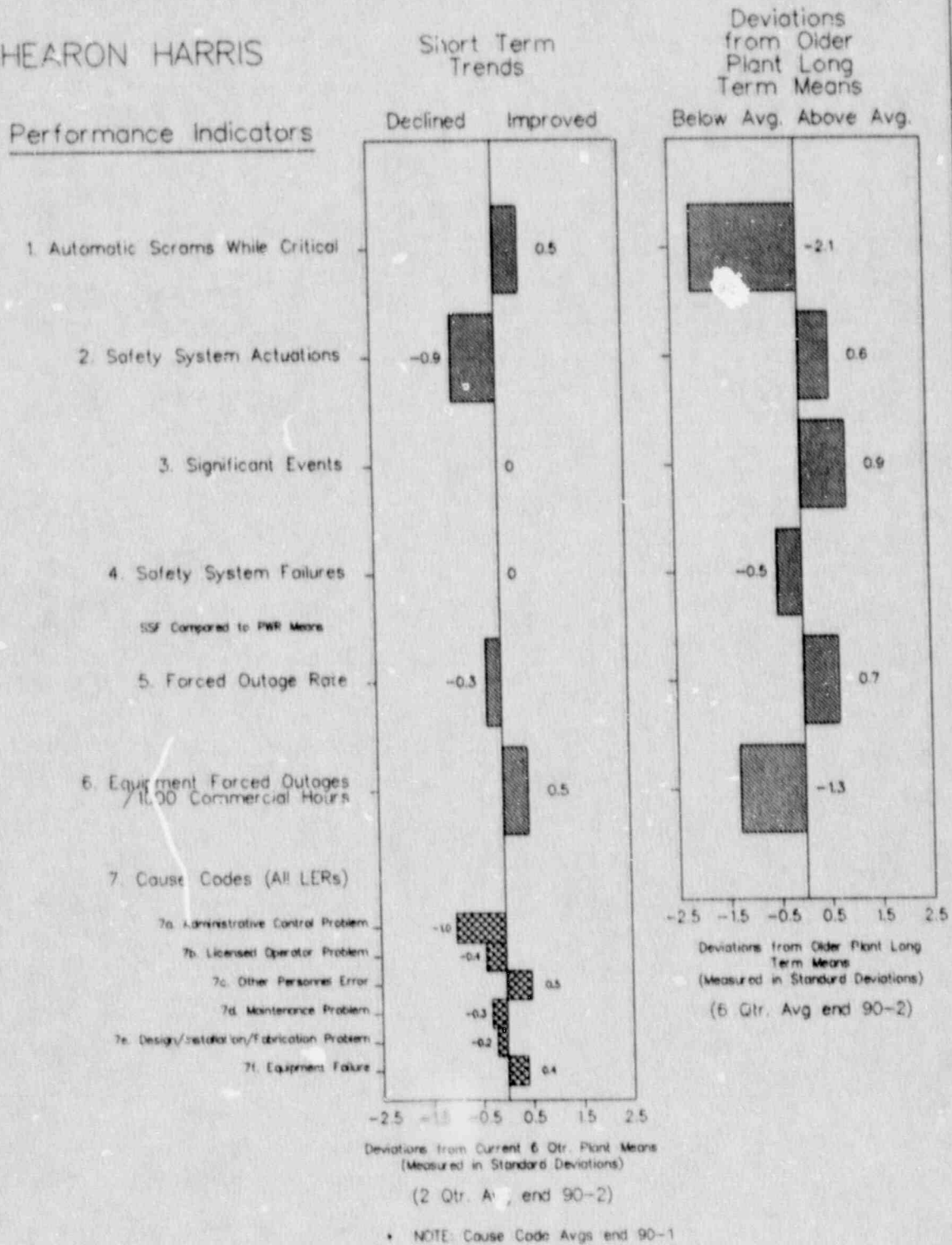


FIGURE 4.92

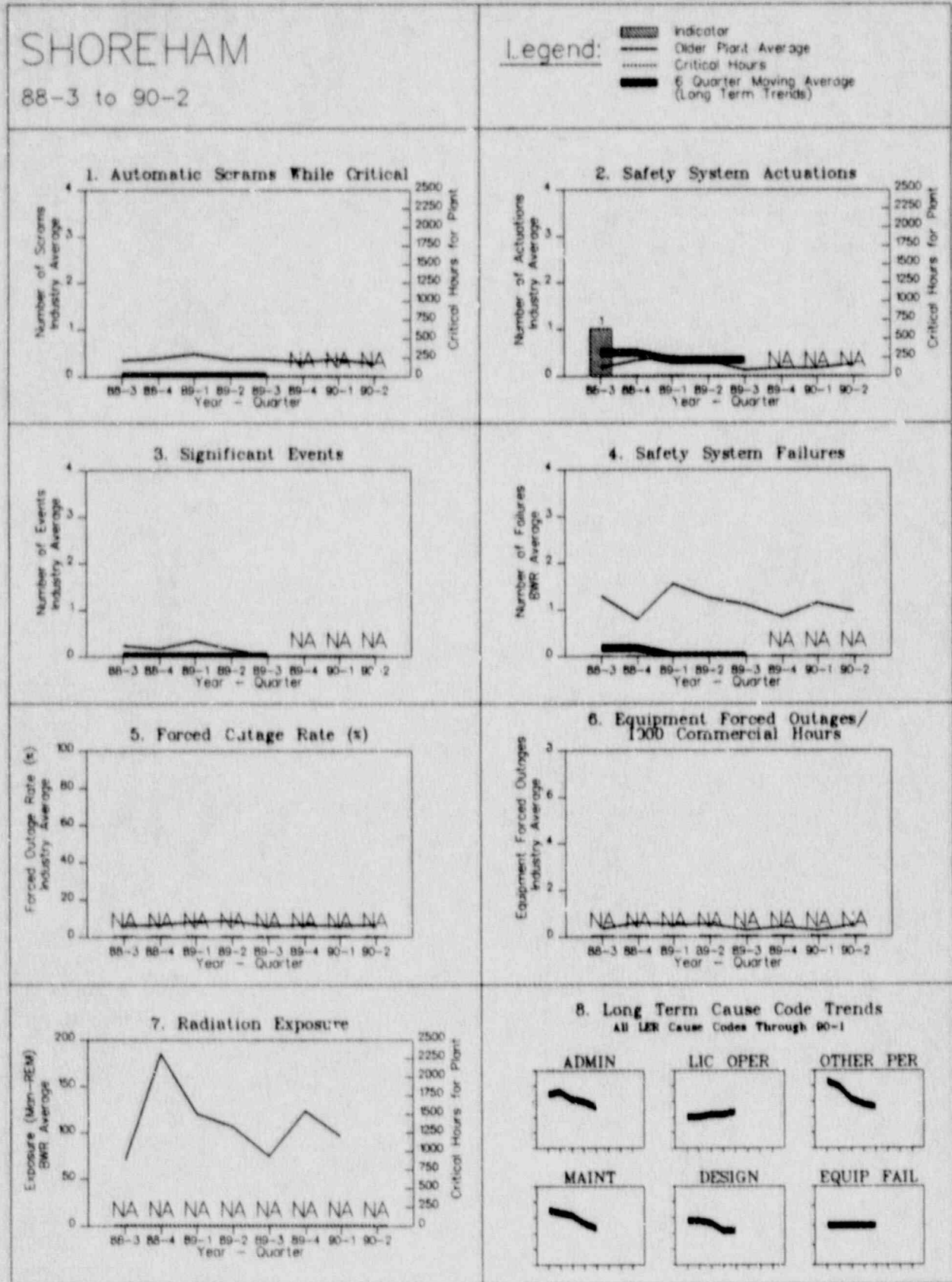


FIGURE 4.92

SHOREHAM

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

FIGURE 4.93

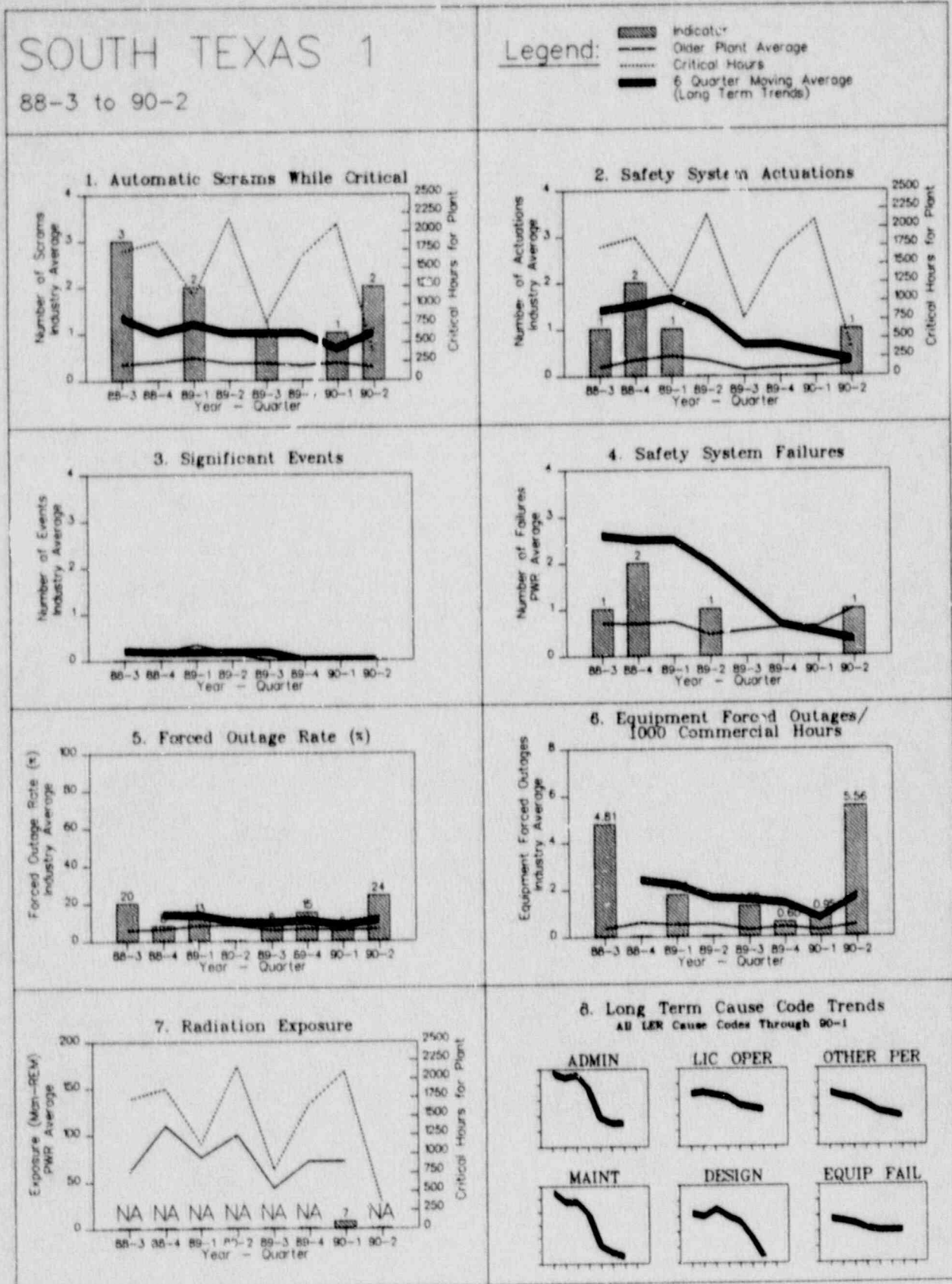


FIGURE 4.93

SOUTH TEXAS 1

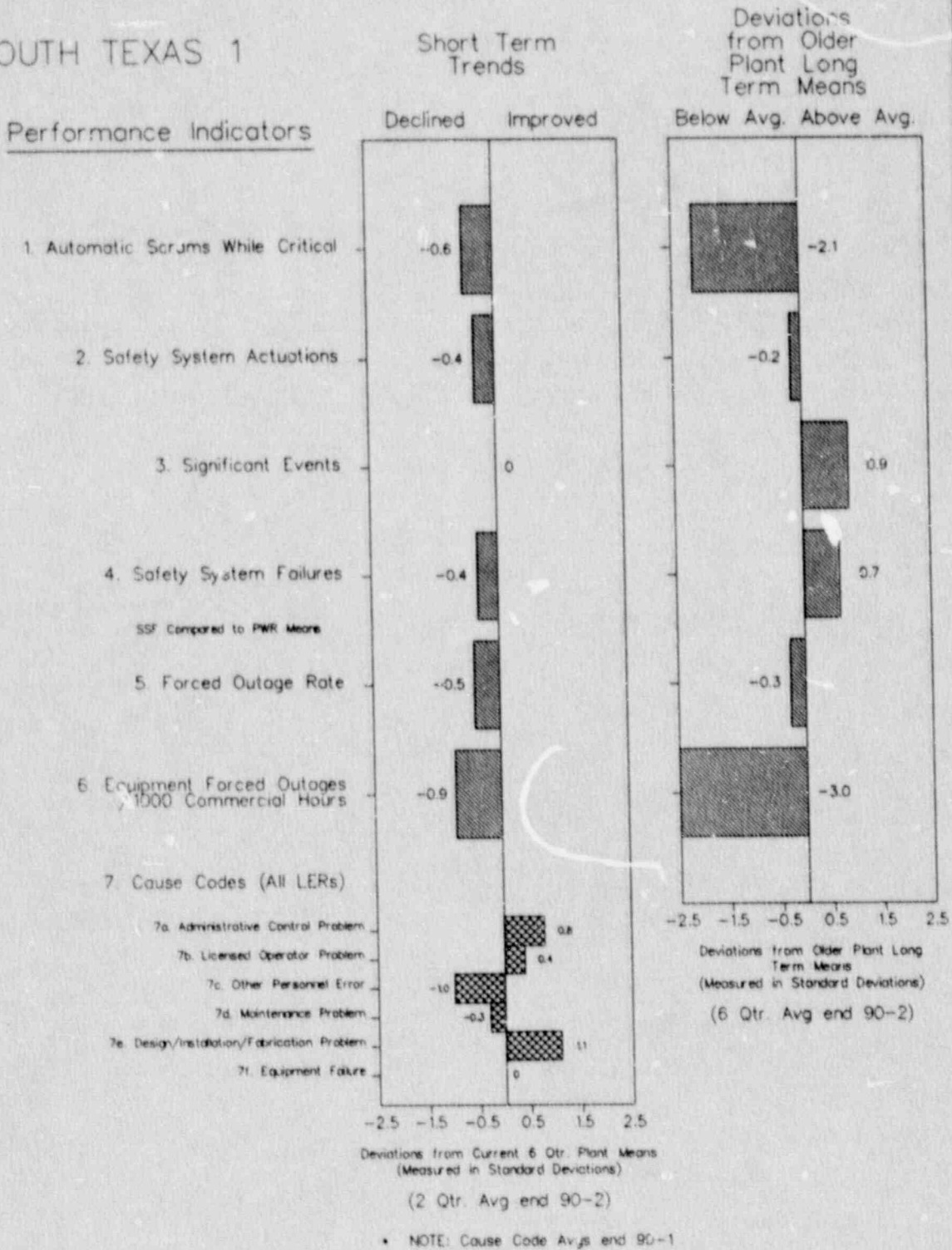


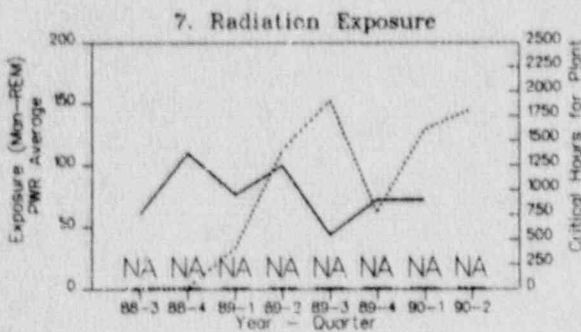
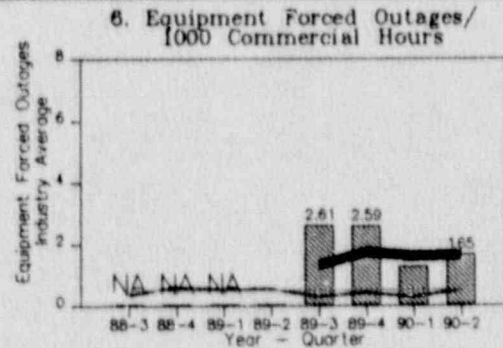
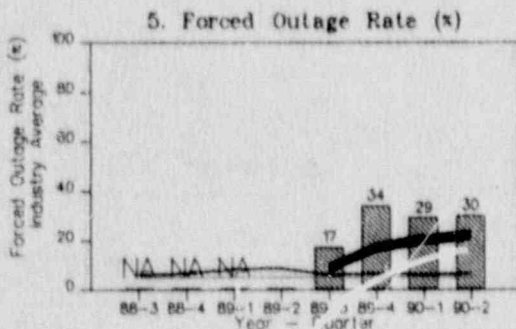
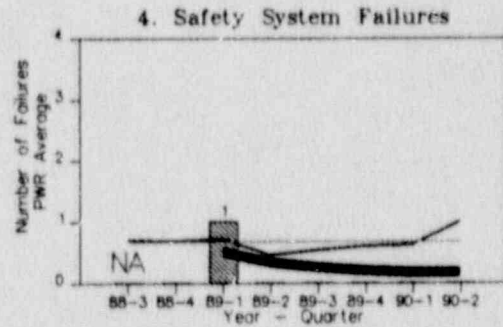
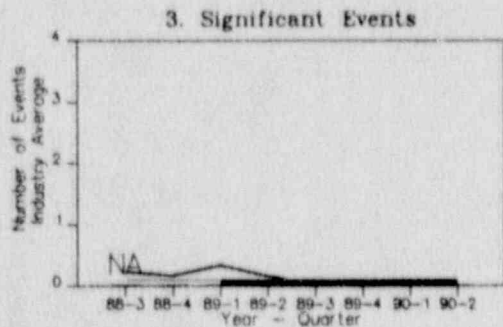
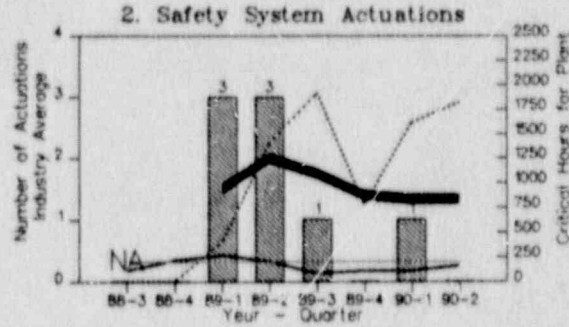
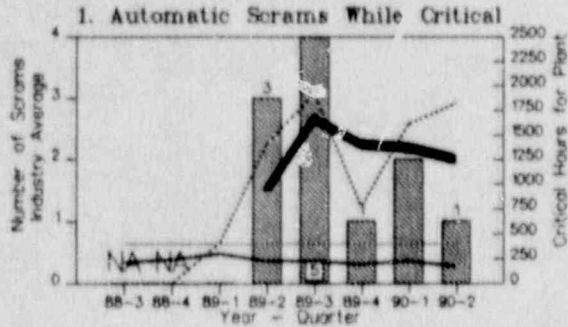
FIGURE 4.94

SOUTH TEXAS 2

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

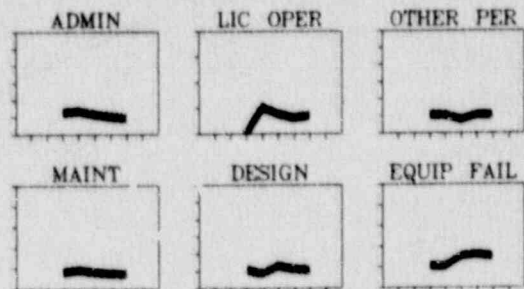
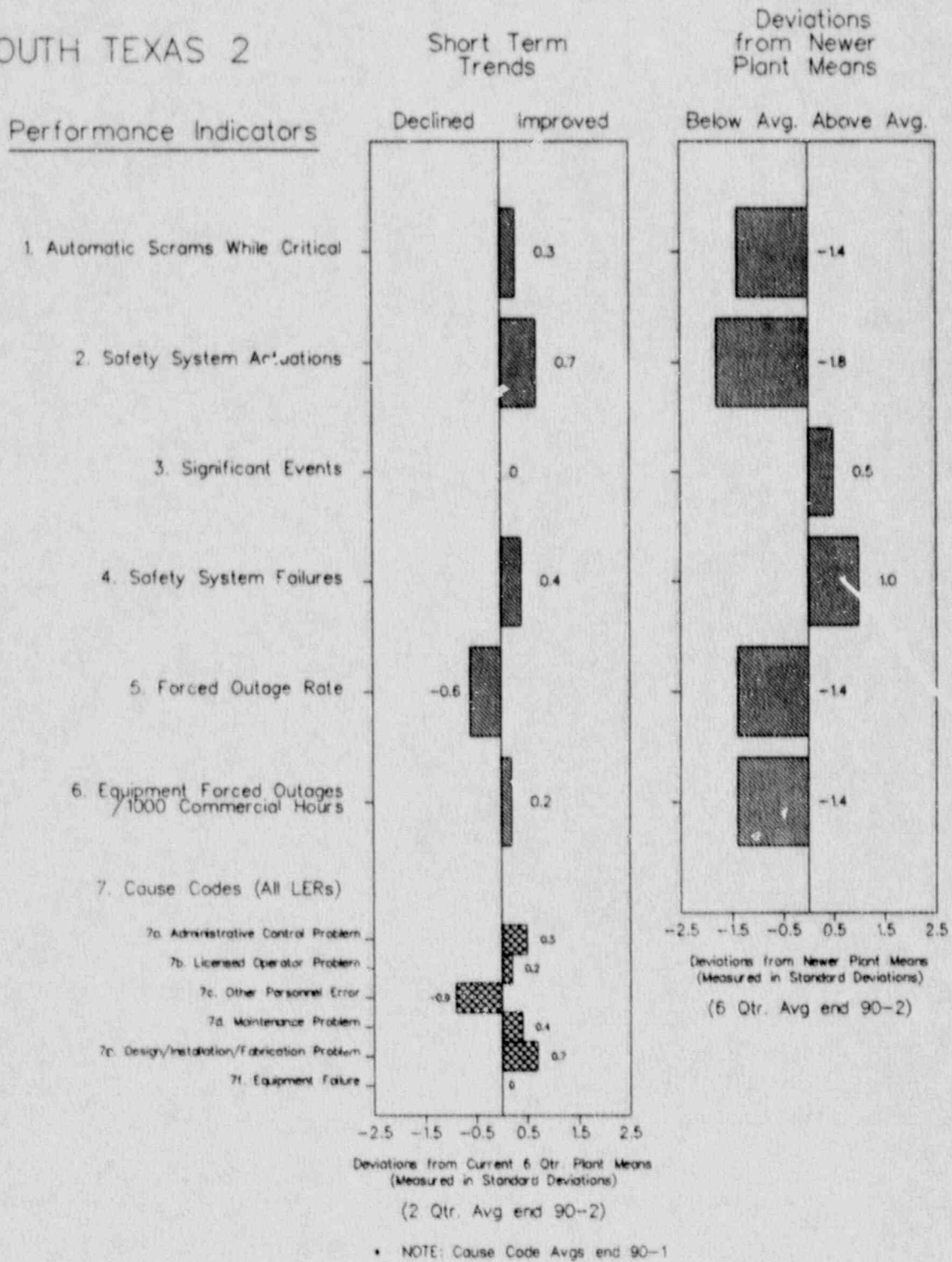


FIGURE 4.94

SOUTH TEXAS 2



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FIGURE 4.94

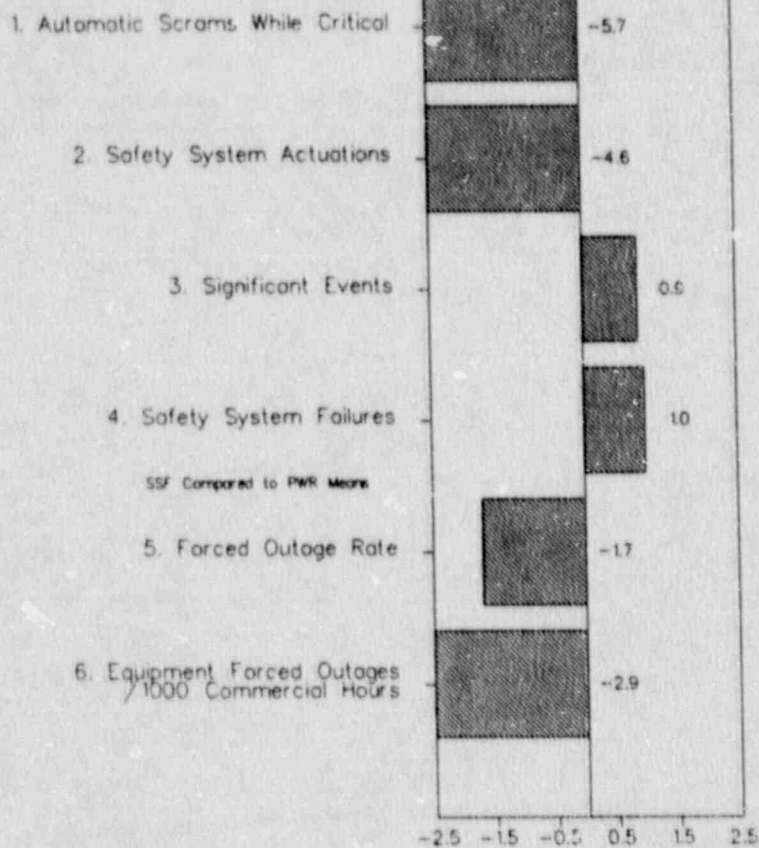
Note: This is a comparison of SOUTH TEXAS 2
(a newer plant) against older plant means.

SOUTH TEXAS 2

Performance Indicators

Deviations
from Older
Plant Long
Term Means

Below Avg. Above Avg.



Deviations from Older Plant Long
Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg end 90-2)

FIGURE 4.95

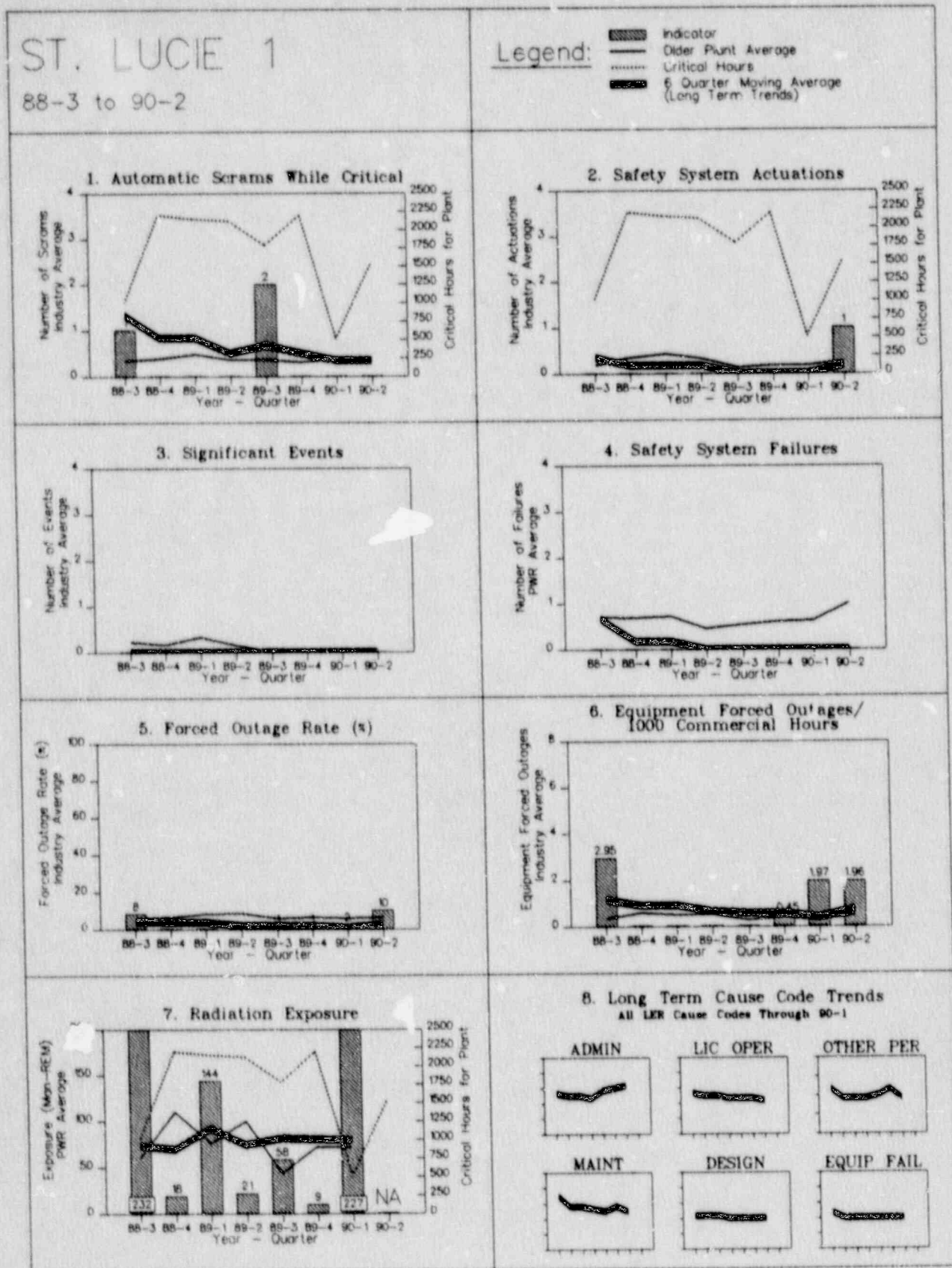


FIGURE 4.95

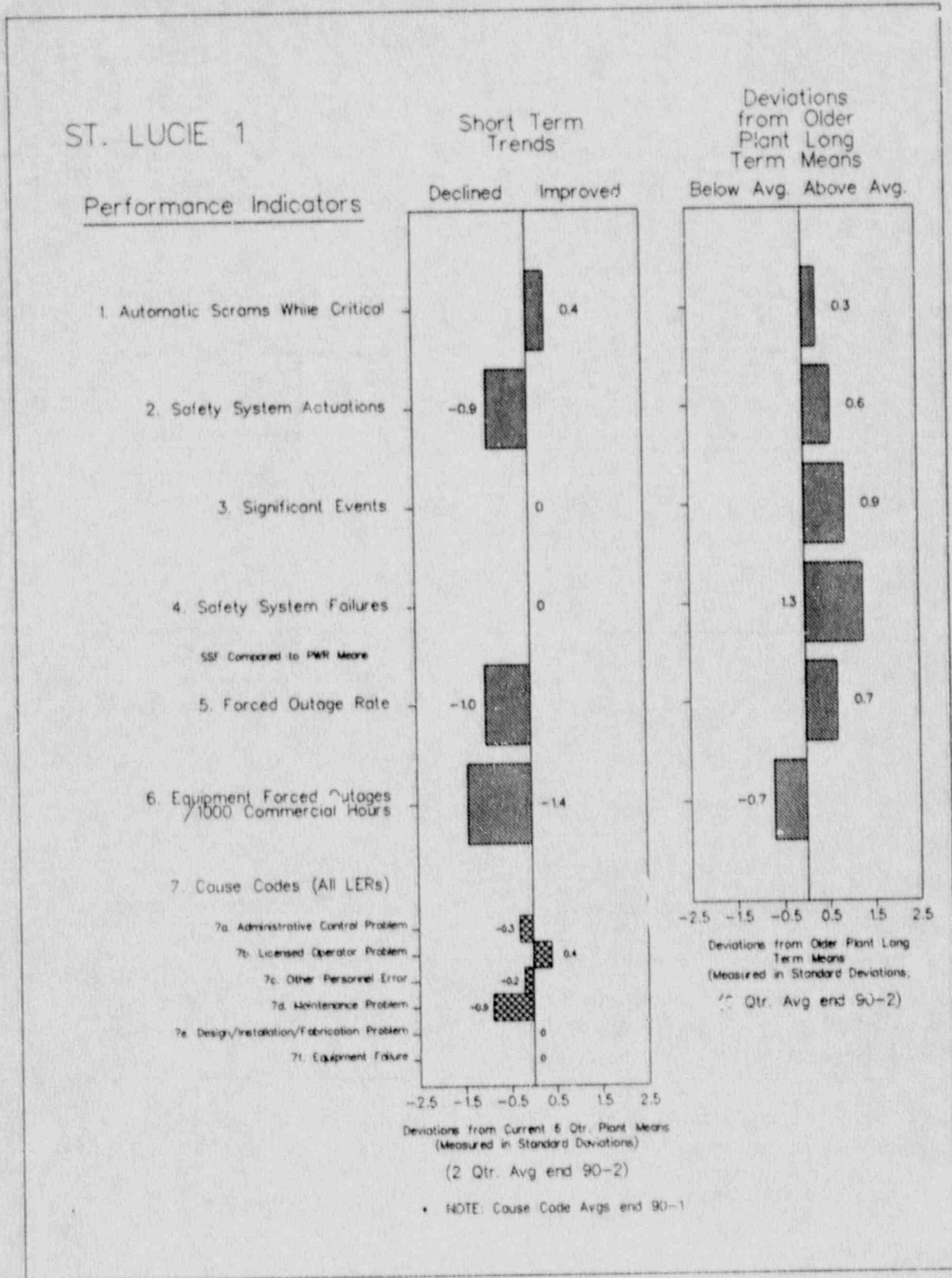


FIGURE 4.93

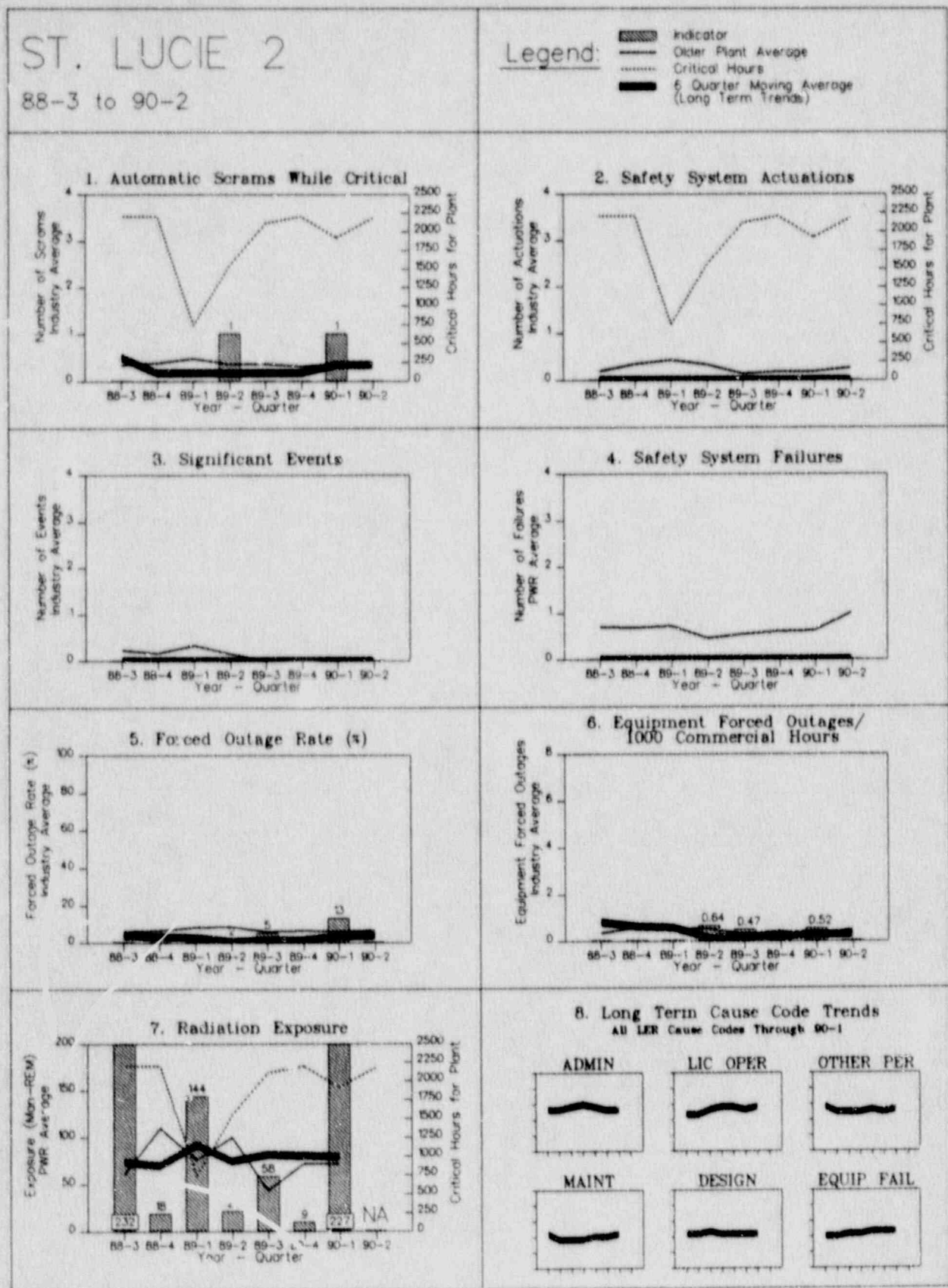


FIGURE 4.96

ST. LUCIE 2

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

0.3

2. Safety System Actuations

0

1.3

3. Significant Events

0

0.9

4. Safety System Failures

0

1.3

SSF Compared to PWR Means

5. Forced Outage Rate

-0.7

0.6

6. Equipment Forced Outages / 1000 Commercial Hours

0

0.4

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.9

7b. Licensed Operator Problem

0.5

7c. Other Personnel Error

0.4

7d. Maintenance Problem

0.2

7e. Design/Installation/Fabrication Problem

0.4

7f. Equipment Failure

0.7

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations) (6 Qtr. Avg end 90-2)

(2 Qtr. Avg end 90-2)

* NOTE: Cause Code Aves end 90-1

FIGURE 4.97

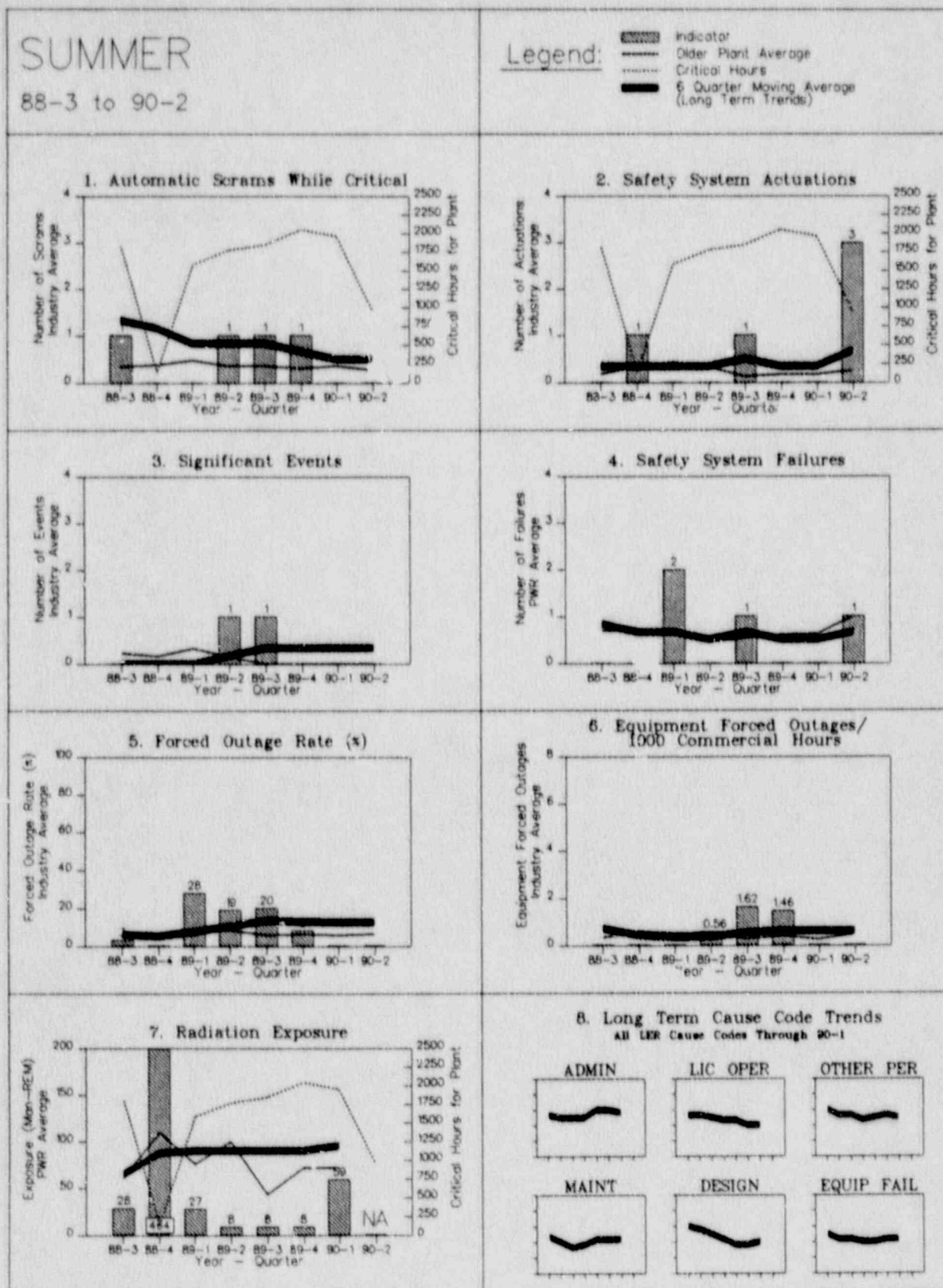


FIGURE 4.97

SUMMER

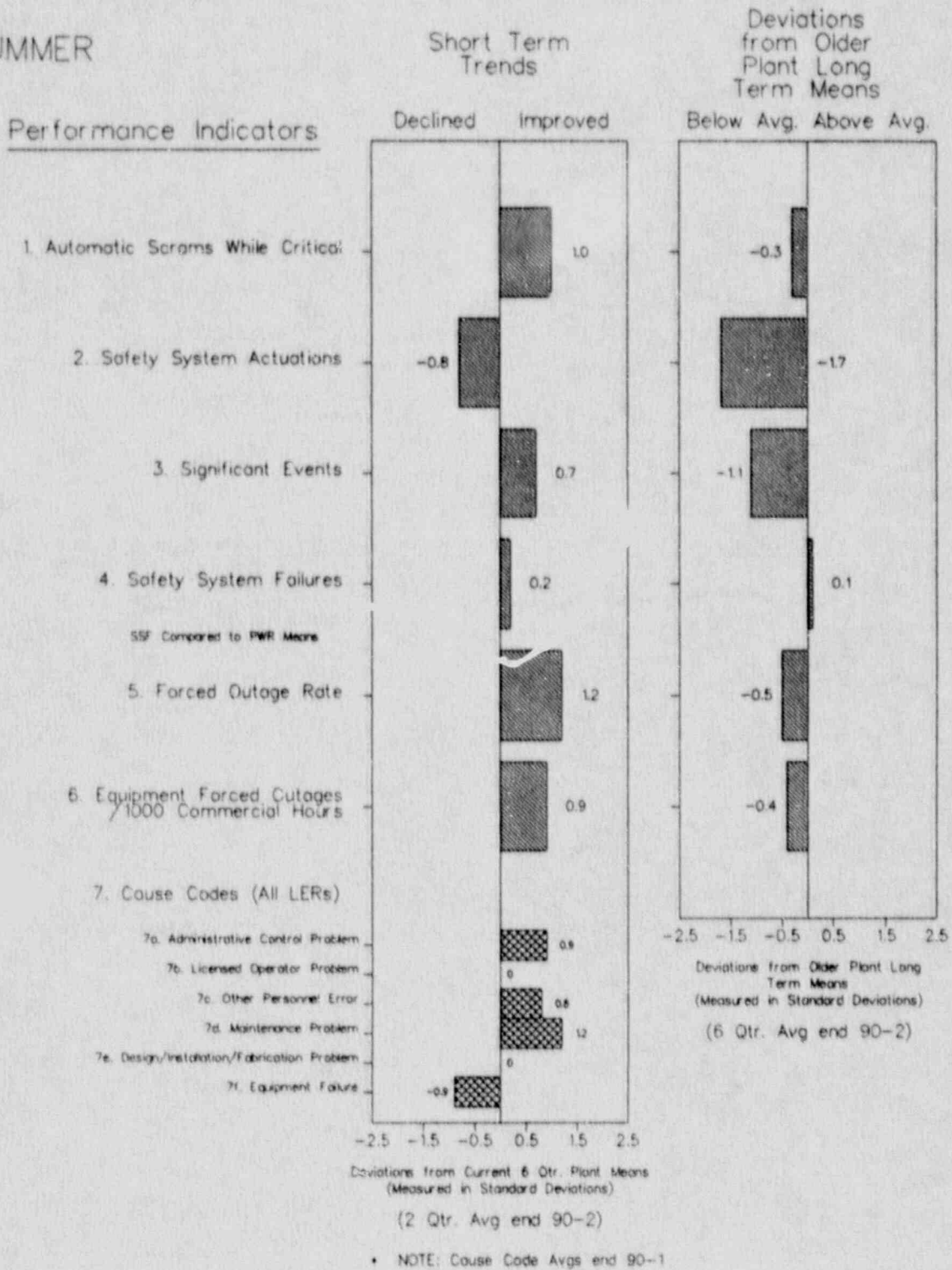


FIGURE 4.98

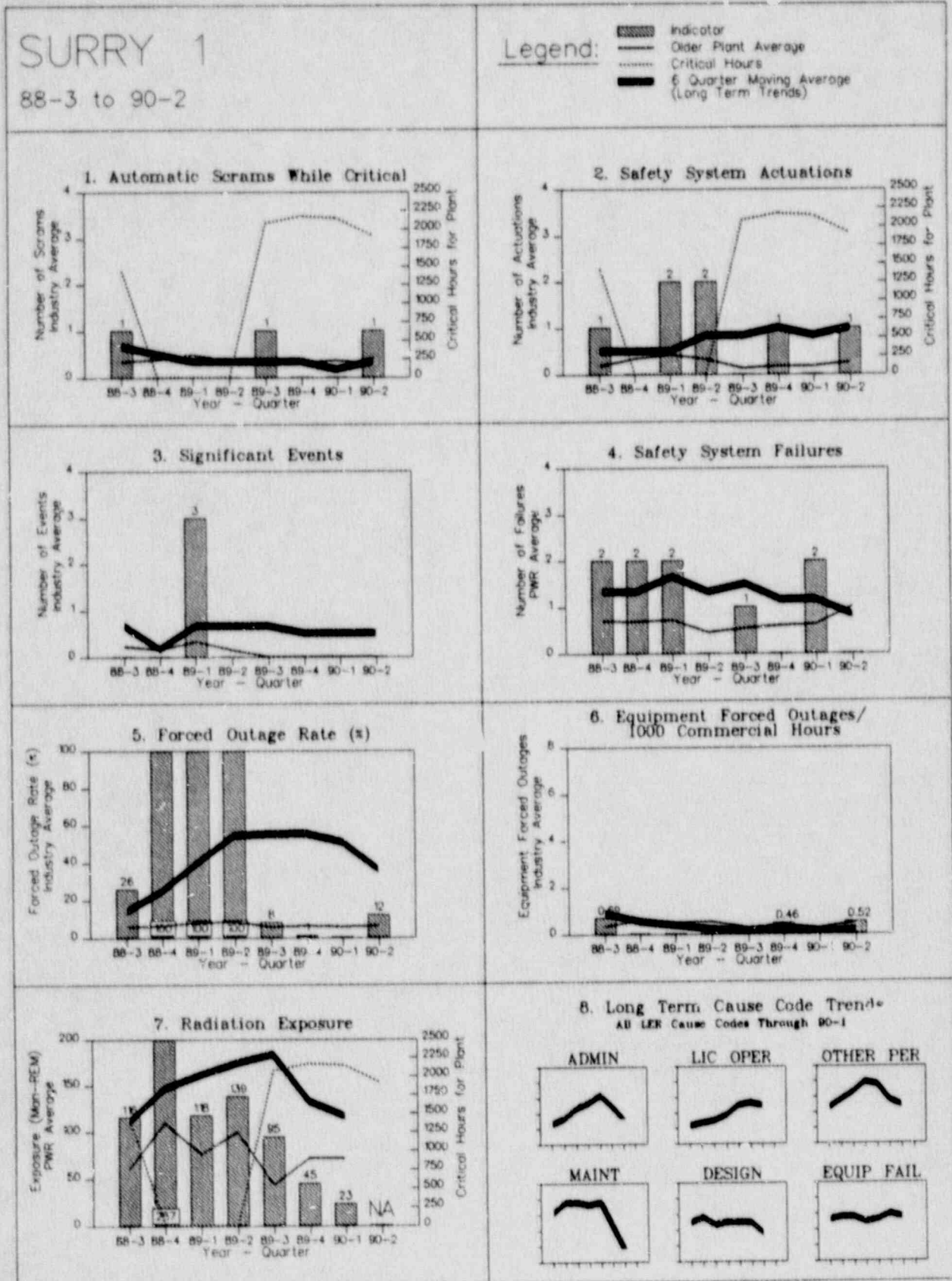


FIGURE 4.98

SURRY 1

Performance Indicators

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scrams While Critical

-0.4

0.3

2. Safety System Actuations

0.6

-3.1

3. Significant Events

0.4

-2.1

4. Safety System Failures

-0.2

-0.2

SSF Compared to PWR Means

5. Forced Outage Rate

0.7

-3.4

6. Equipment Forced Outages / 1000 Commercial Hours

-0.4

0.7

7. Cause Codes (All LERs)

7a. Administrative Control Problem

1.2

7b. Licensed Operator Problem

0.8

7c. Other Personnel Error

1.3

7d. Maintenance Problem

1.3

7e. Design/Installation/Fabrication Problem

0.8

7f. Equipment Failure

-0.2

-2.5 -1.5 -0.5 0.5 1.5 2.5

-2.5 -1.5 -0.5 0.5 1.5 2.5

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

(6 Qtr. Avg end 90-2)

• NOTE: Cause Code Avgs end 90-1

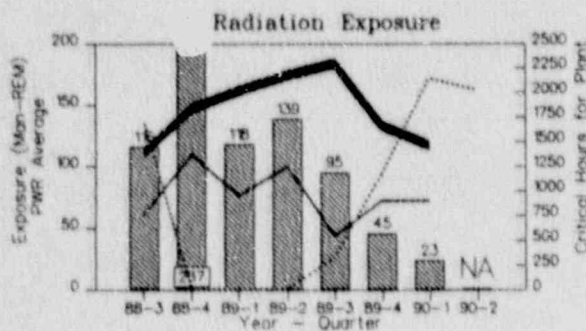
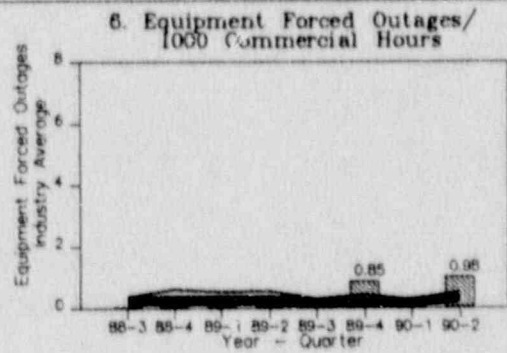
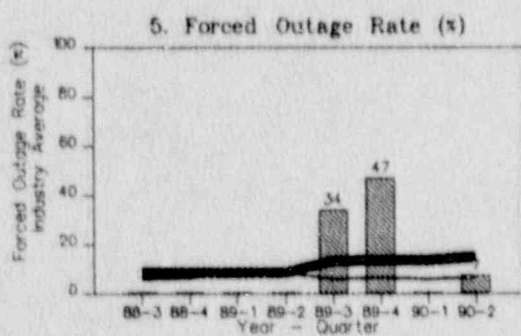
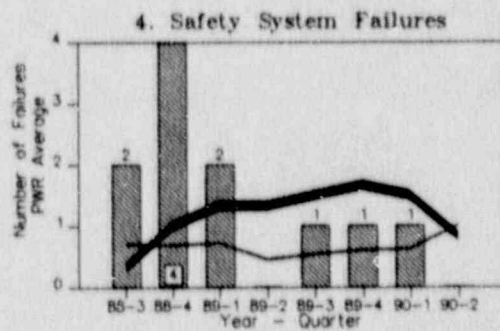
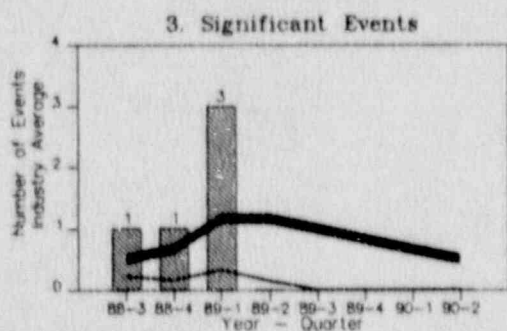
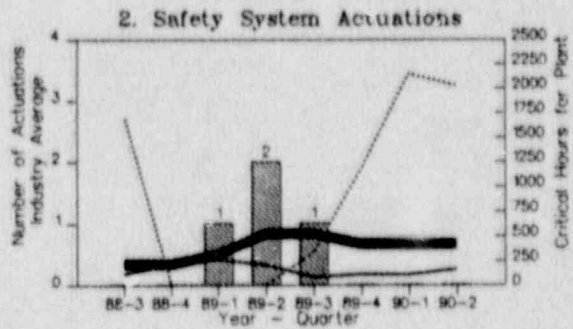
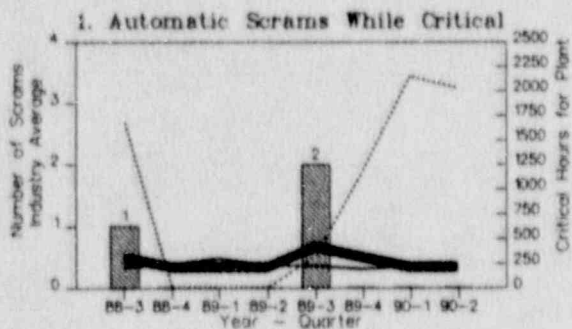
FIGURE 4.99

SURRY 2

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)



B. Long Term Cause Code Trends All LER Cause Codes Through 90-1

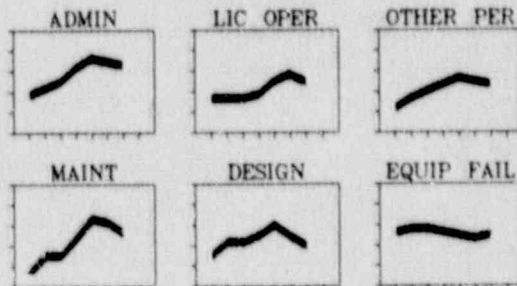


FIGURE 4.99

SURRY 2

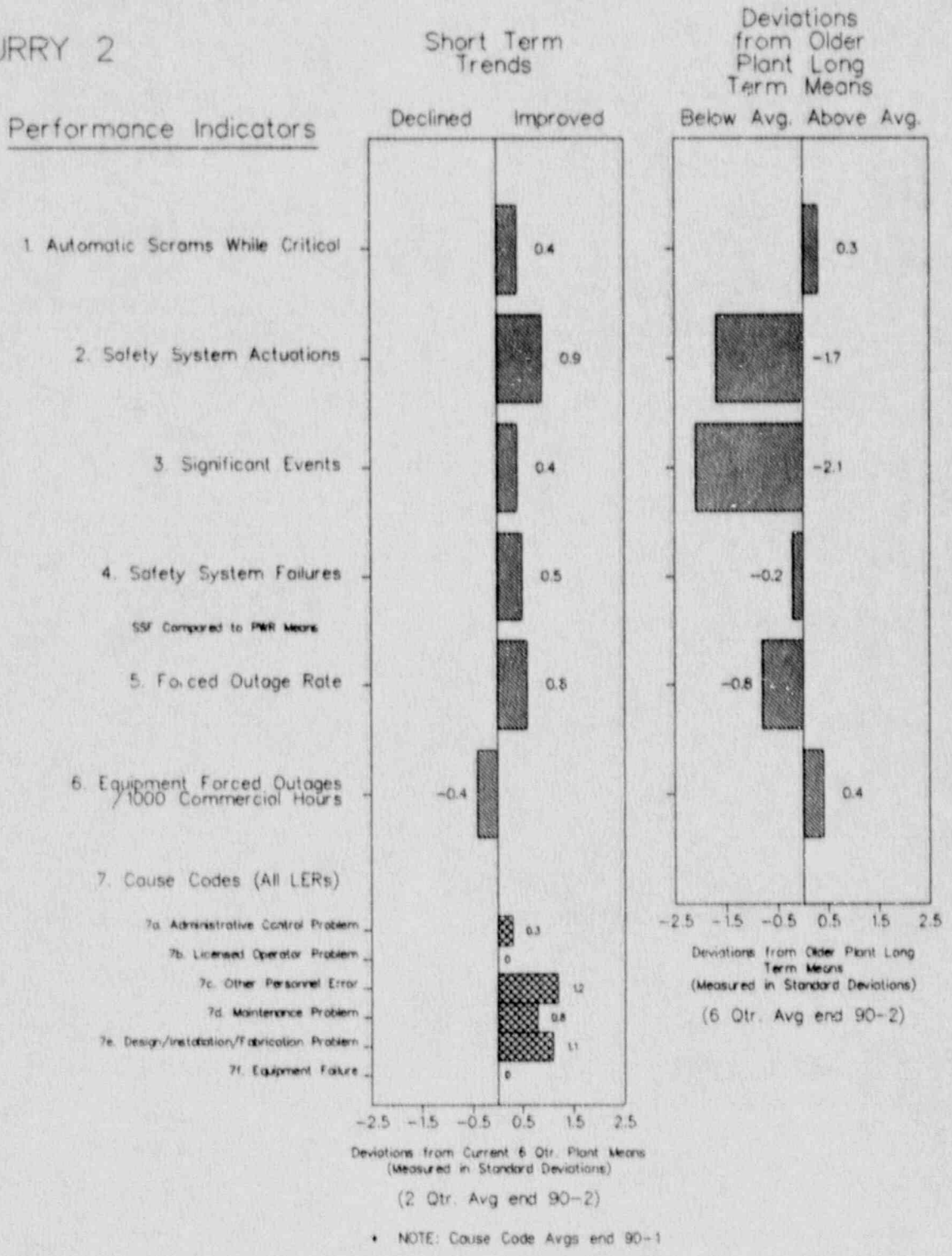


FIGURE 4.100

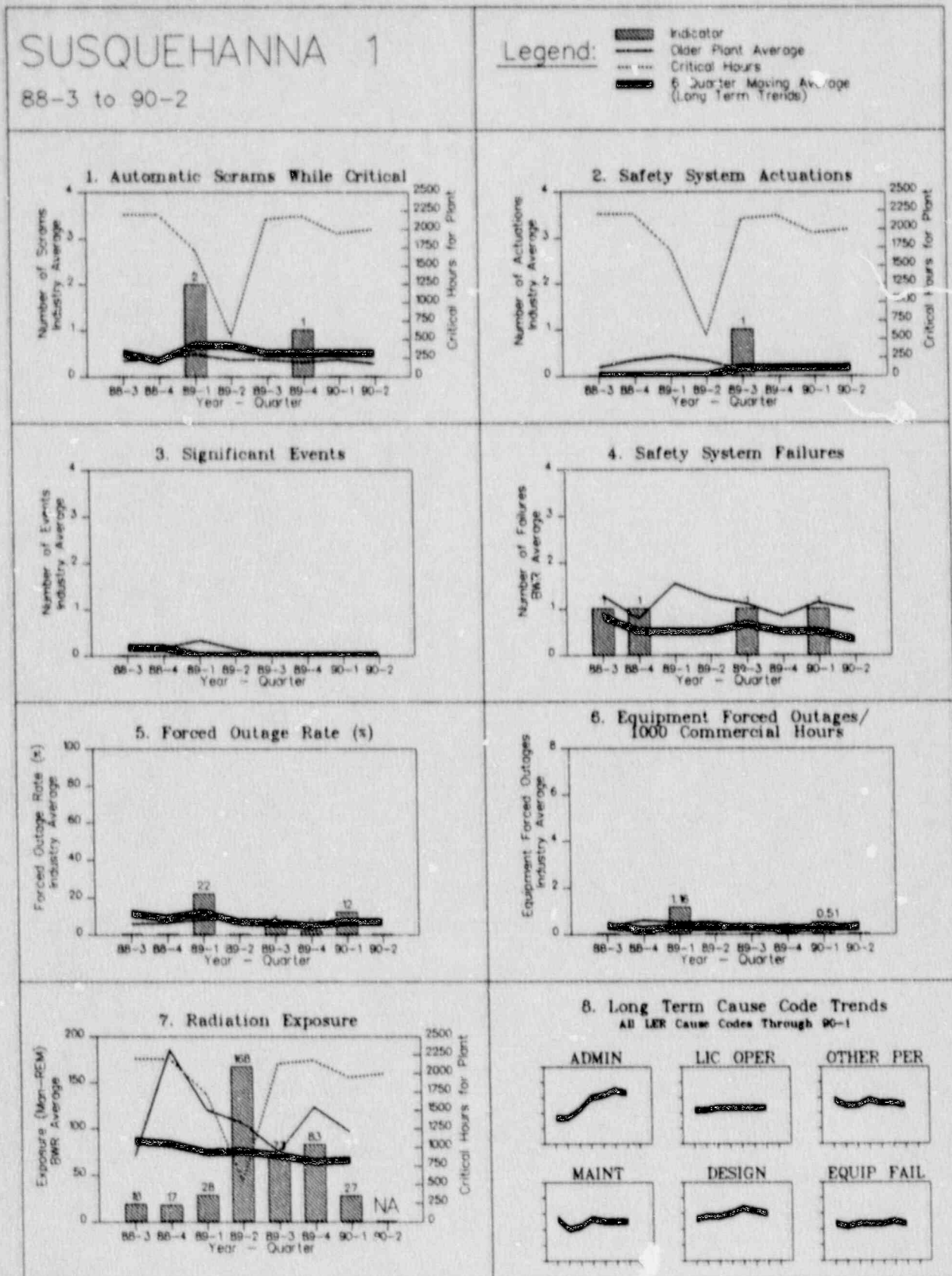


FIGURE 4.100

SUSQUEHANNA 1

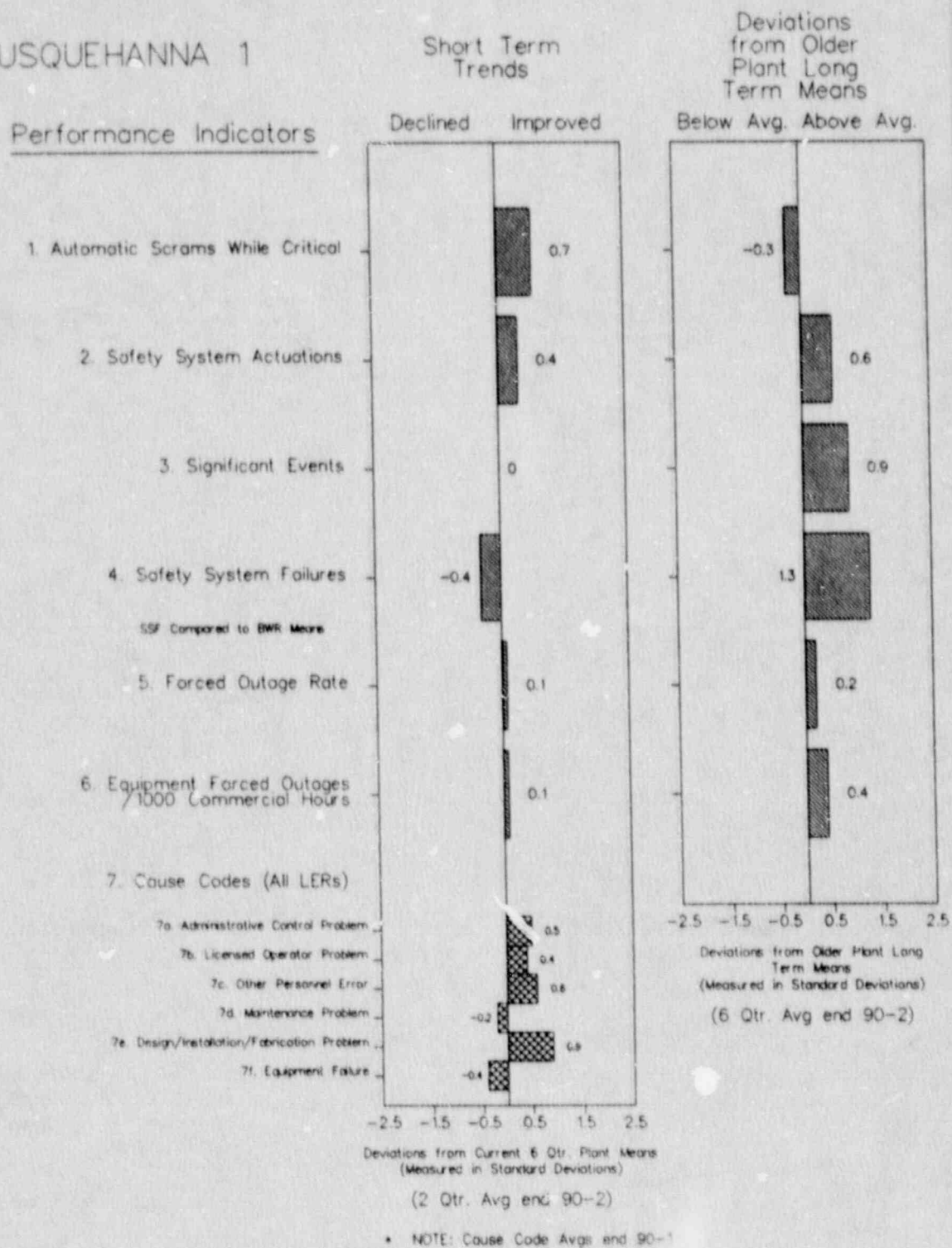


FIGURE 4.101

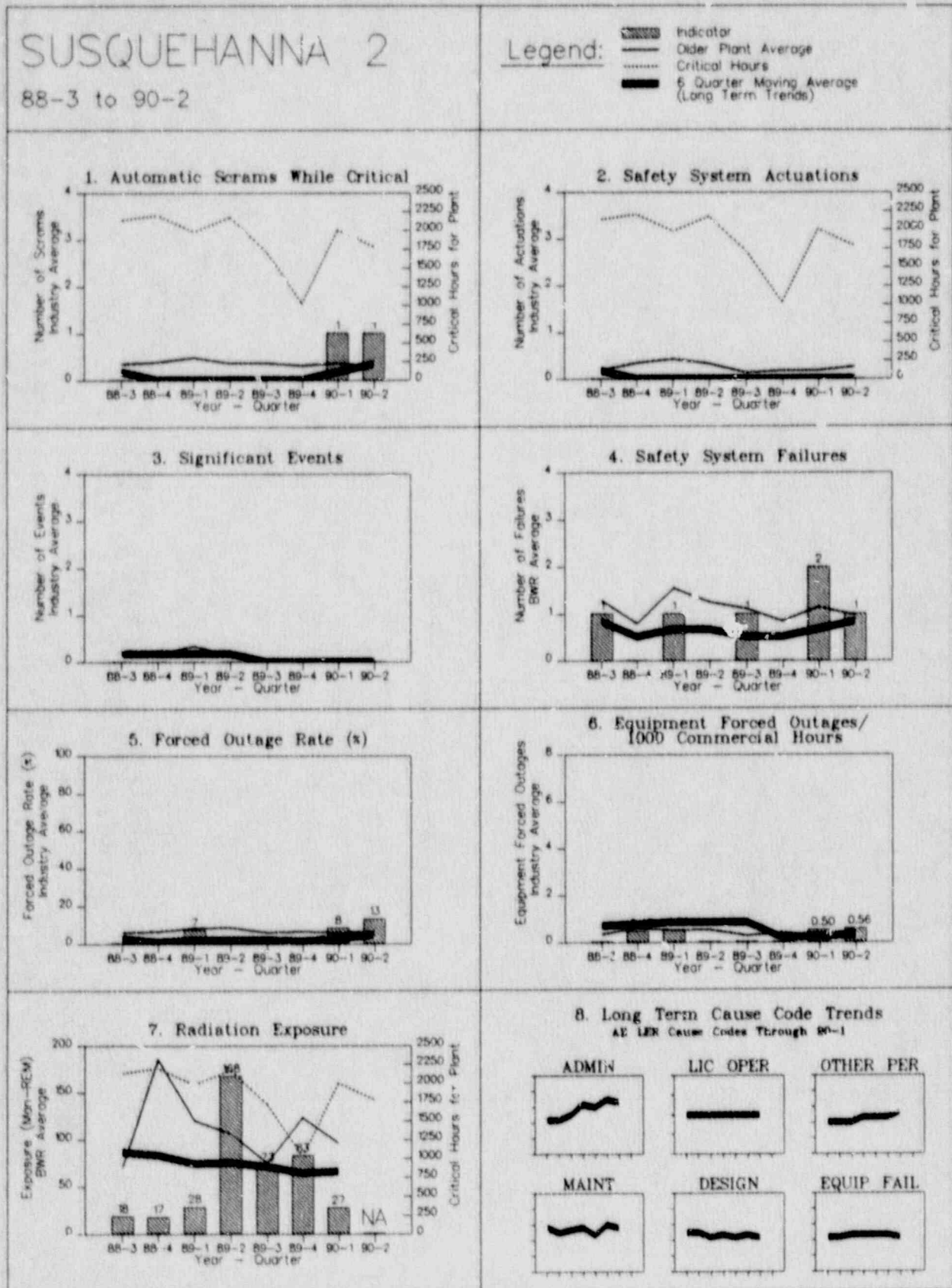


FIGURE 4.101

SUSQUEHANNA 2

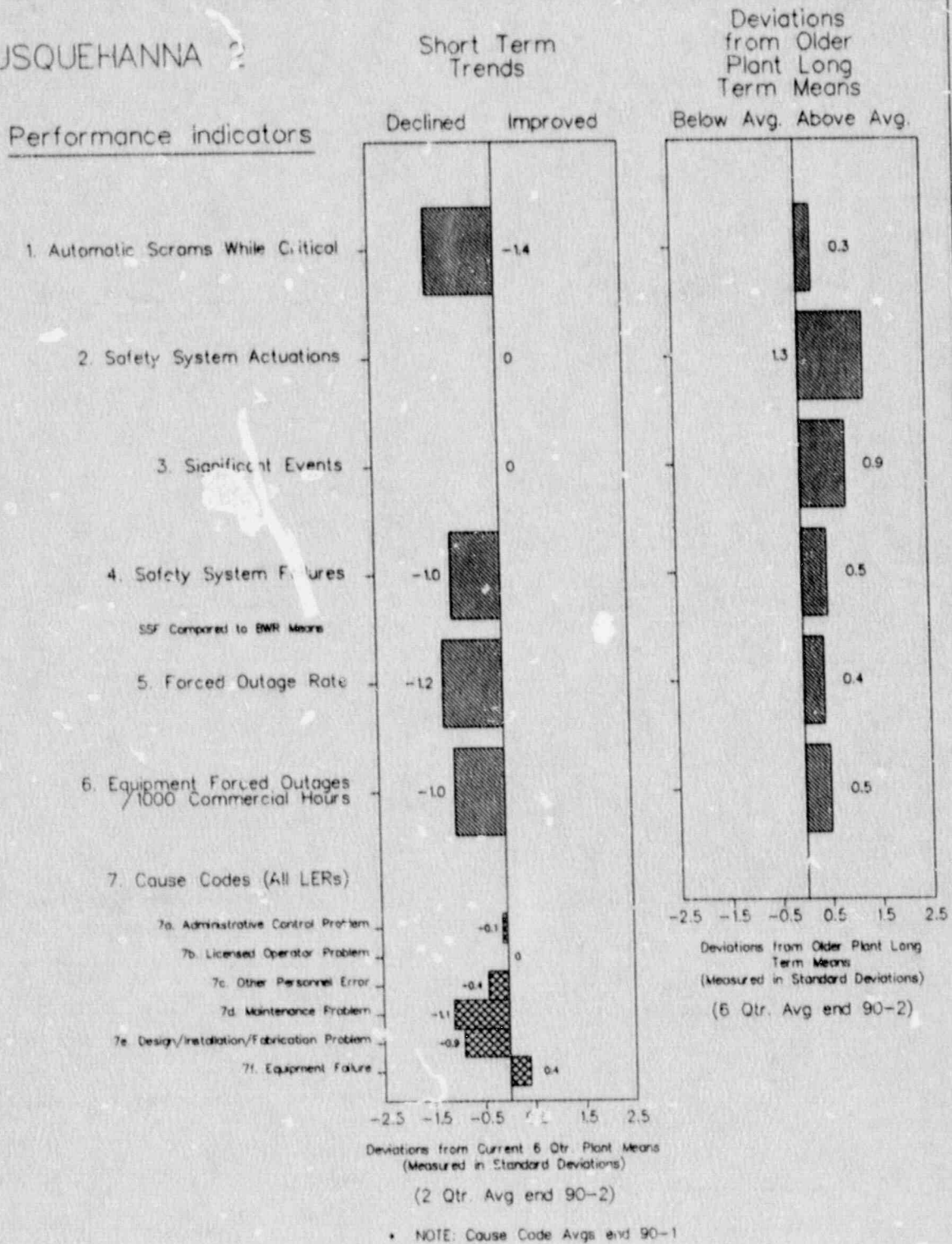


FIGURE 4.102

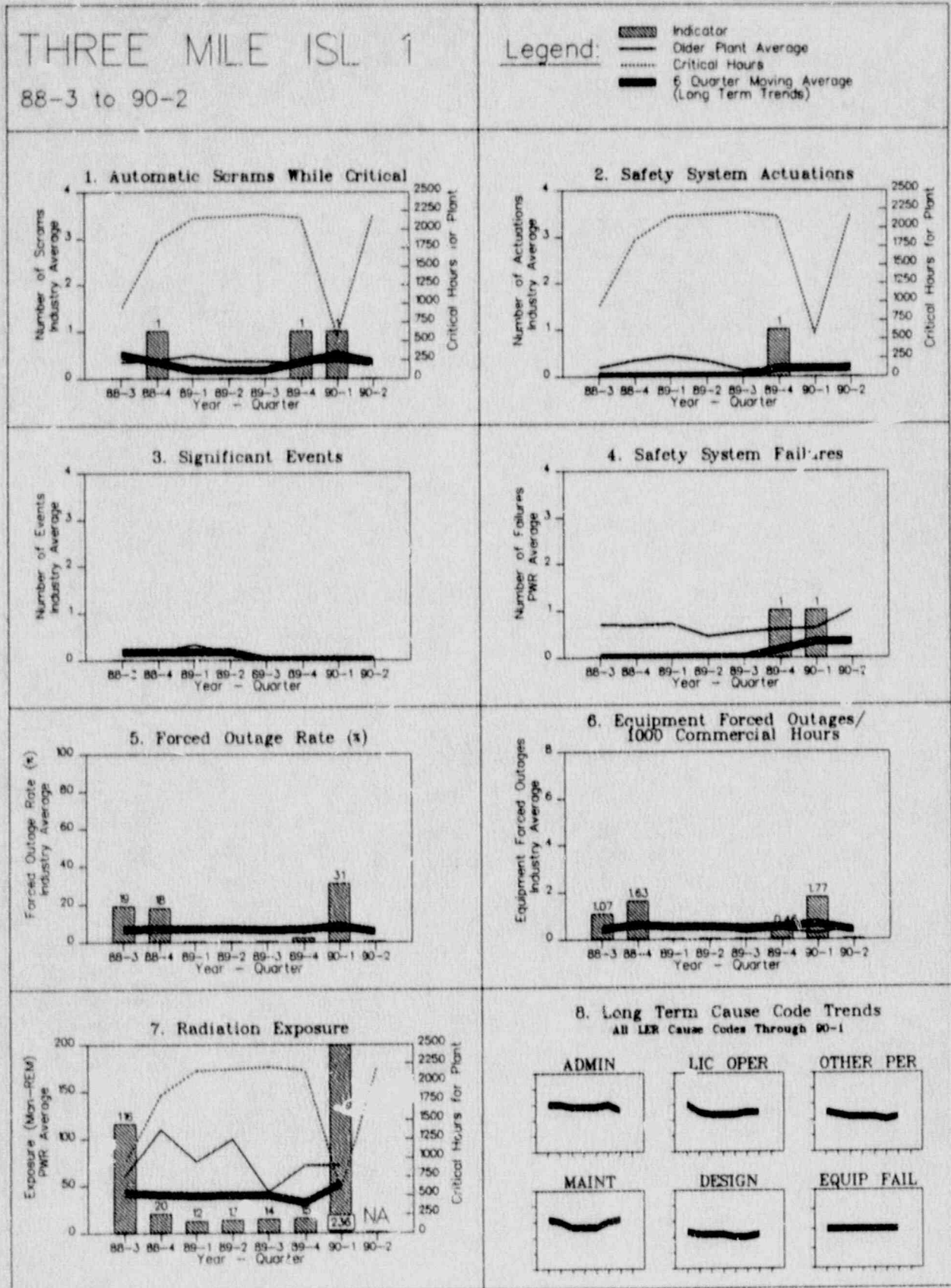


FIGURE 4.102

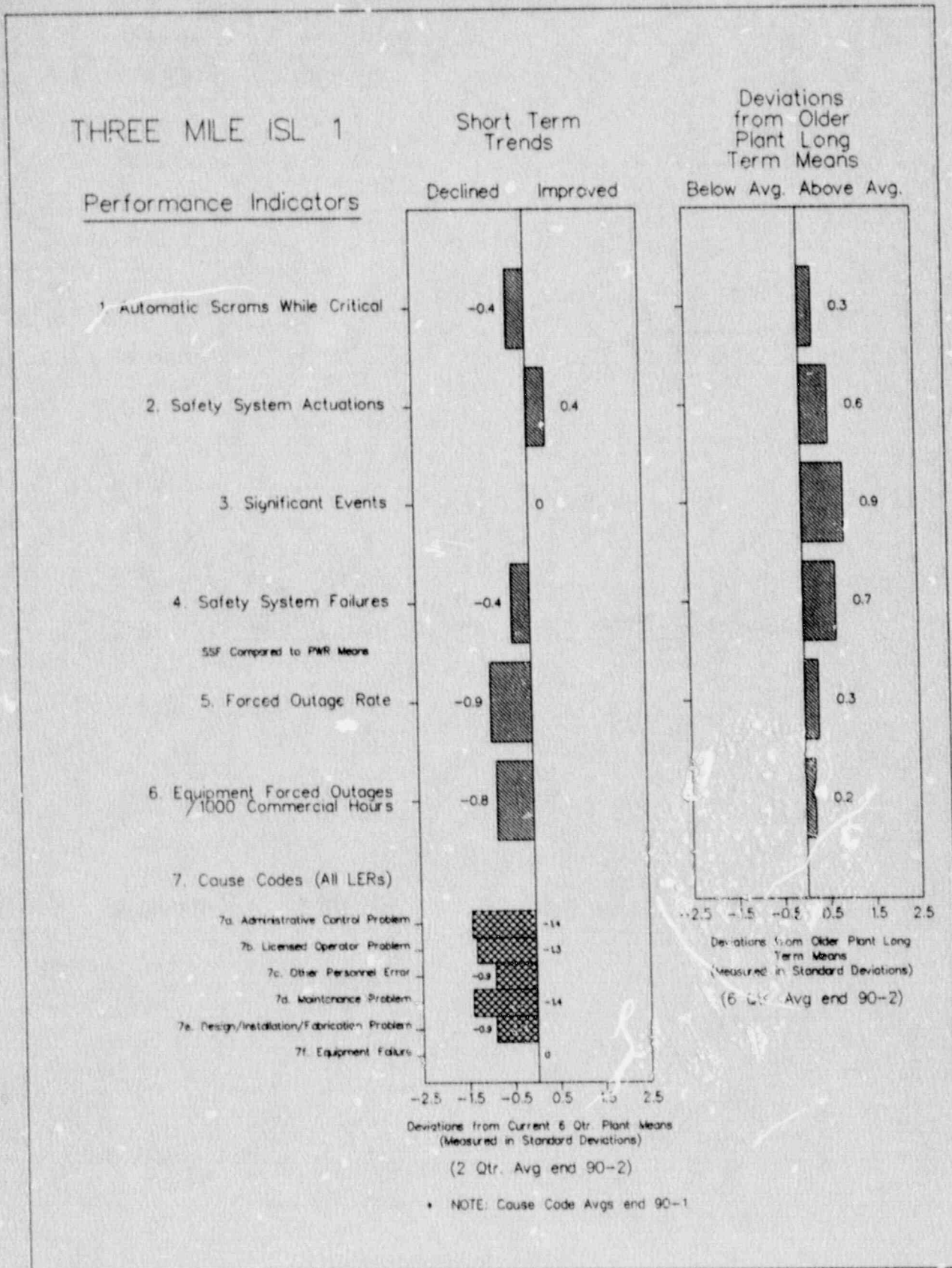


FIGURE 4.103

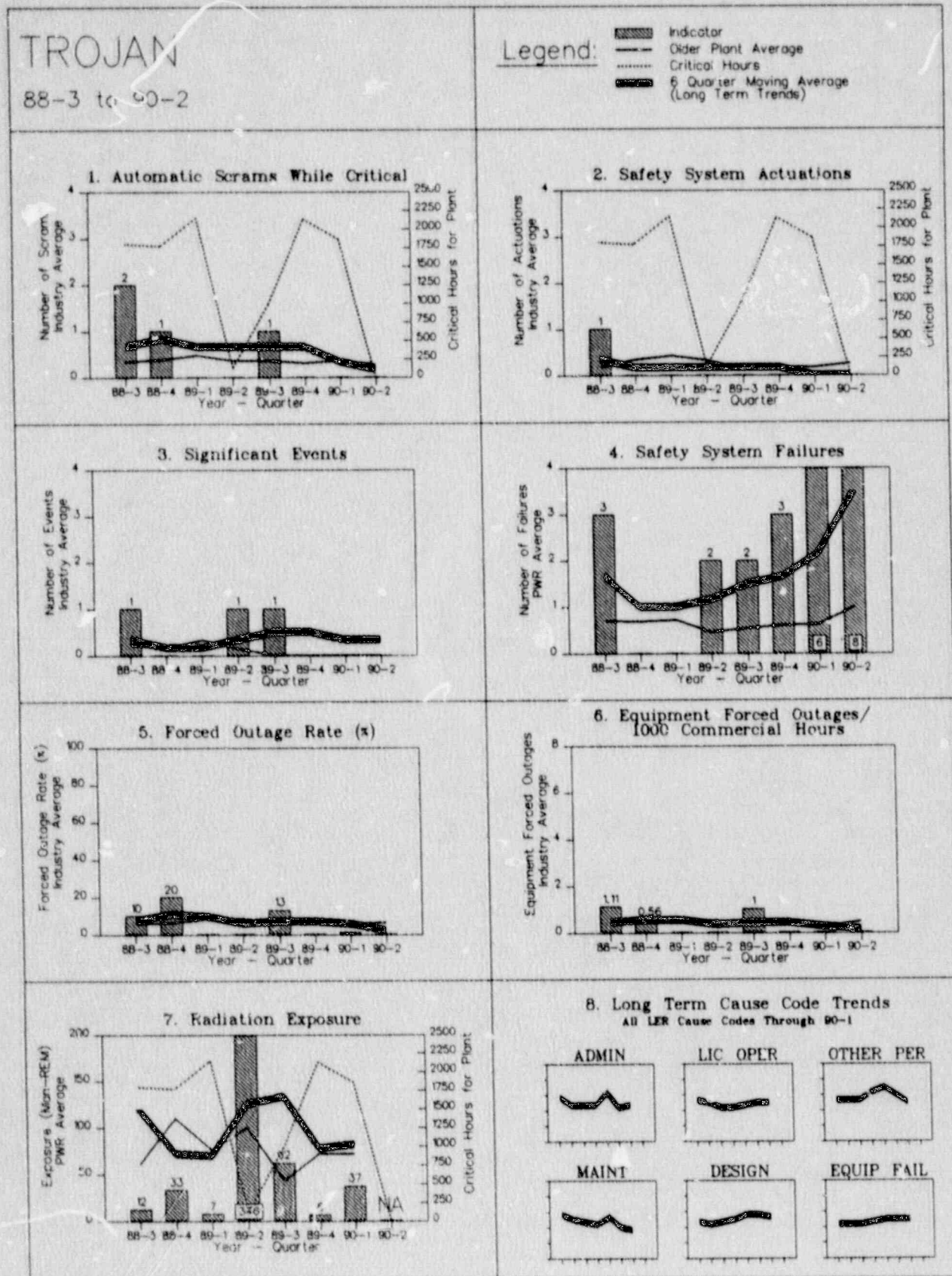


FIGURE 4.103

TROJAN

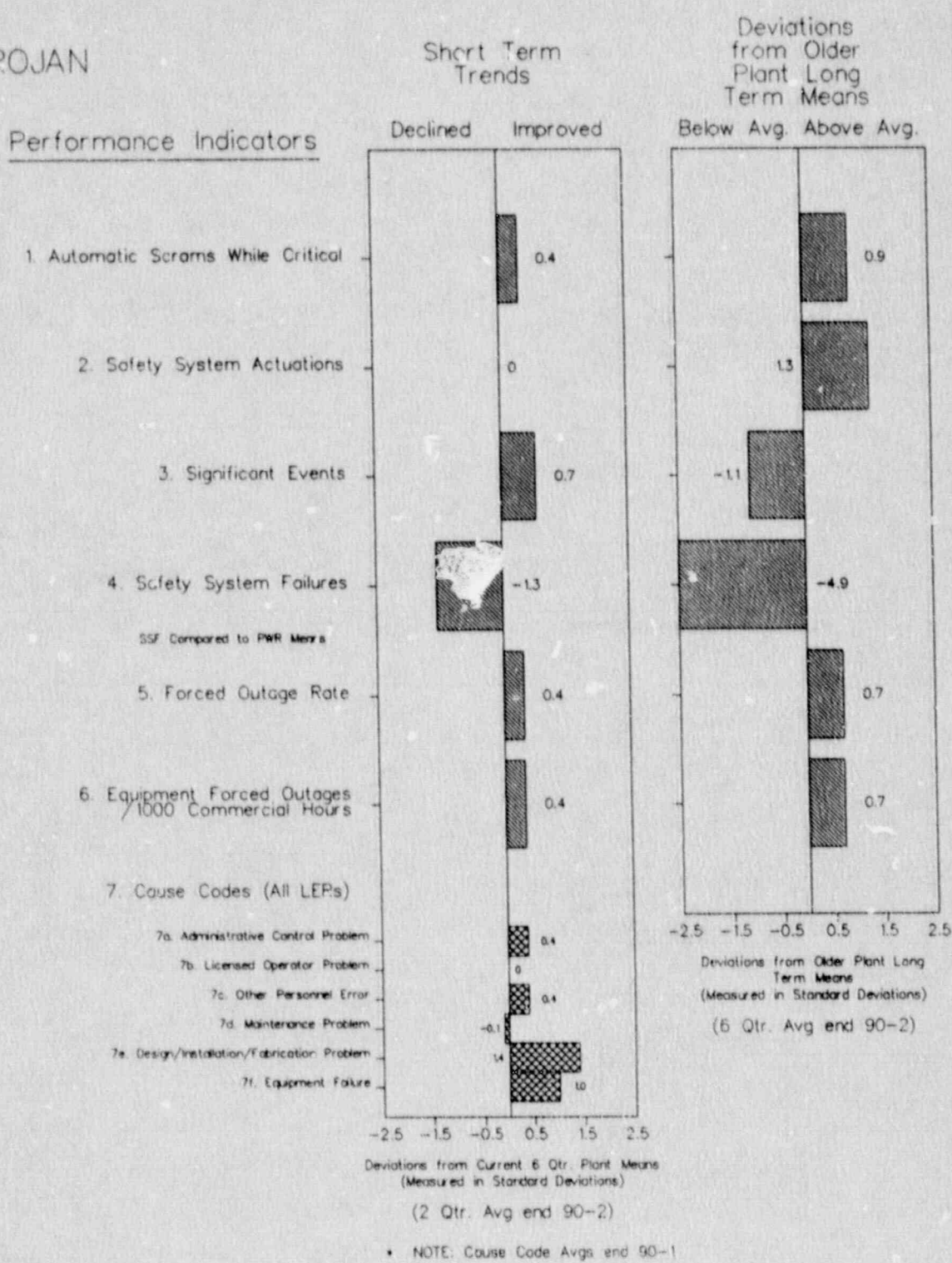


FIGURE 4.104

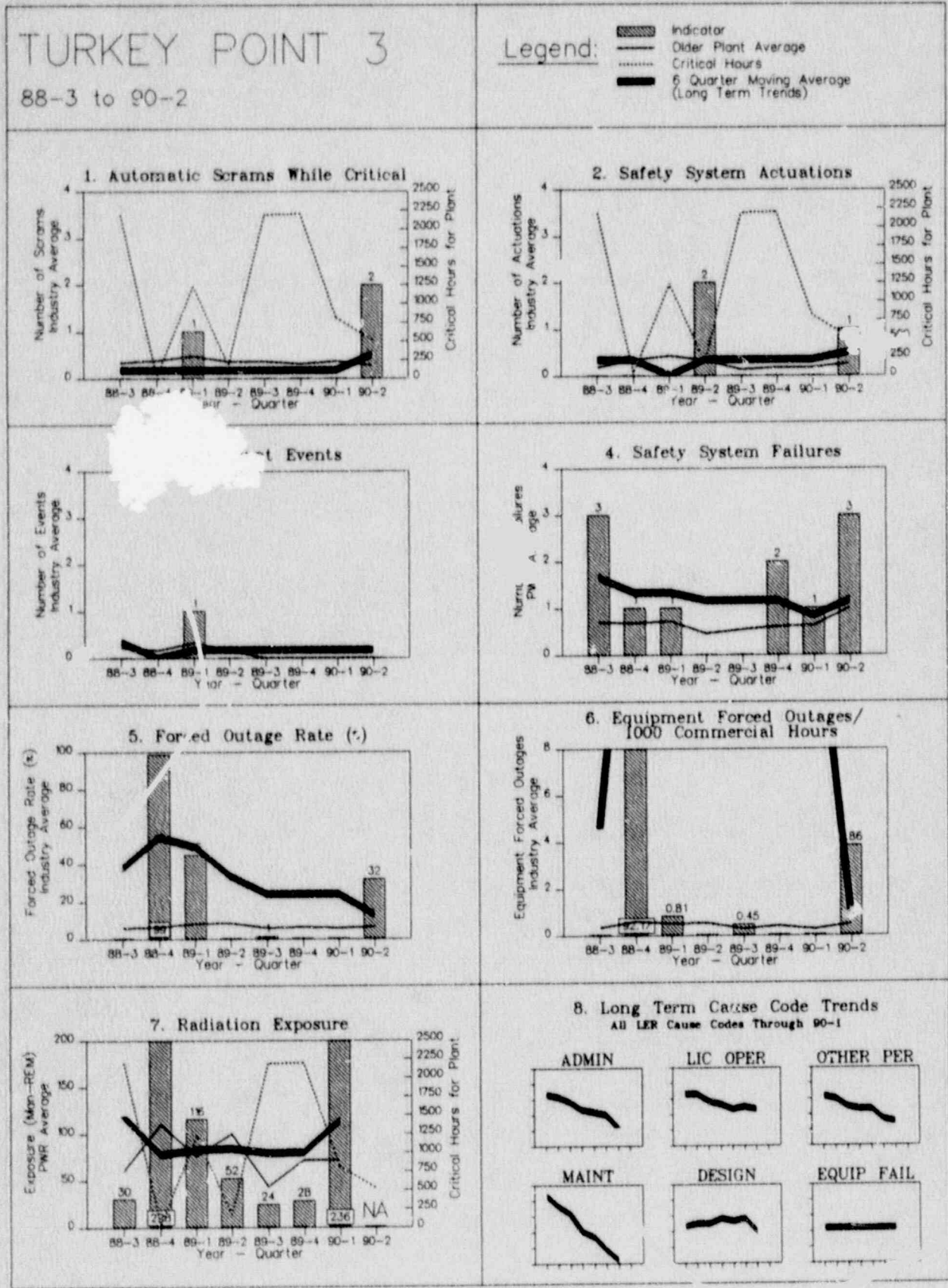


FIGURE 4.104

TURKEY POINT 3

Performance Indicators:

Short Term Trends

Deviations from Older Plant Long Term Means

Declined Improved

Below Avg. Above Avg.

1. Automatic Scraps While Critical

-0.7

-0.3

2. Safety System Actuations

0

-0.9

3. Significant Events

0.4

-0.1

4. Safety System Failures

-0.8

-0.8

SSF Compared to PWR Means

5. Forced Outage Rate

-0.2

-0.6

6. Equipment Forced Outages /1000 Commercial Hours

-0.8

-1.0

7. Cause Codes (All LERs)

7a. Administrative Control Problem

0.6

7b. Licensed Operator Problem

-1.4

7c. Other Personnel Error

0.7

7d. Maintenance Problem

-0.2

7e. Design/Installation/Fabrication Problem

0.7

7f. Equipment Failure

-0.3

Deviations from Current 6 Qtr. Plant Means (Measured in Standard Deviations)

(2 Qtr. Avg end 90-2)

Deviations from Older Plant Long Term Means (Measured in Standard Deviations)

(6 Qtr. Avg end 90-2)

* NOTE: Cause Code Avgs end 90-1

FIGURE 4.105

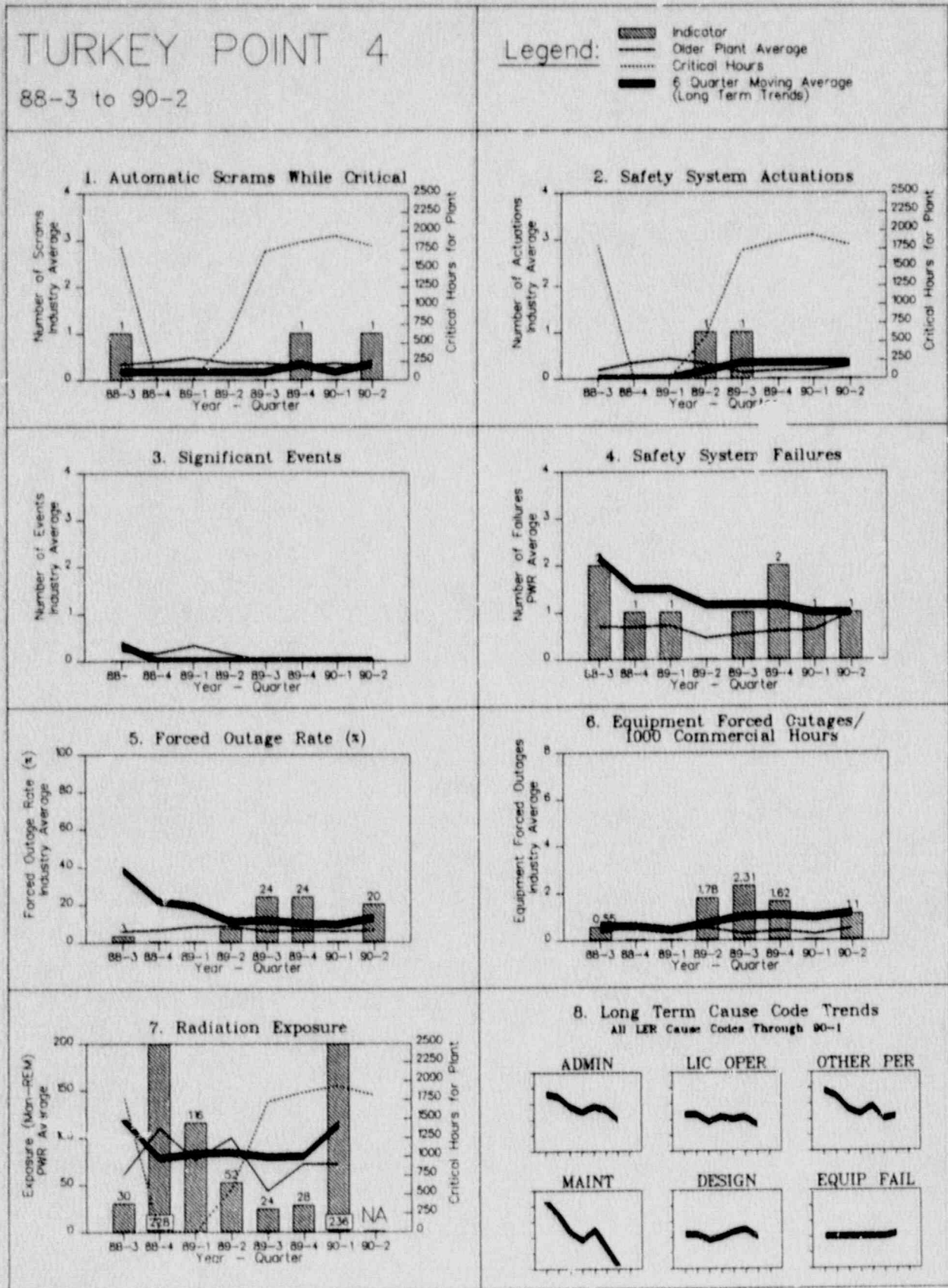


FIGURE 4.105

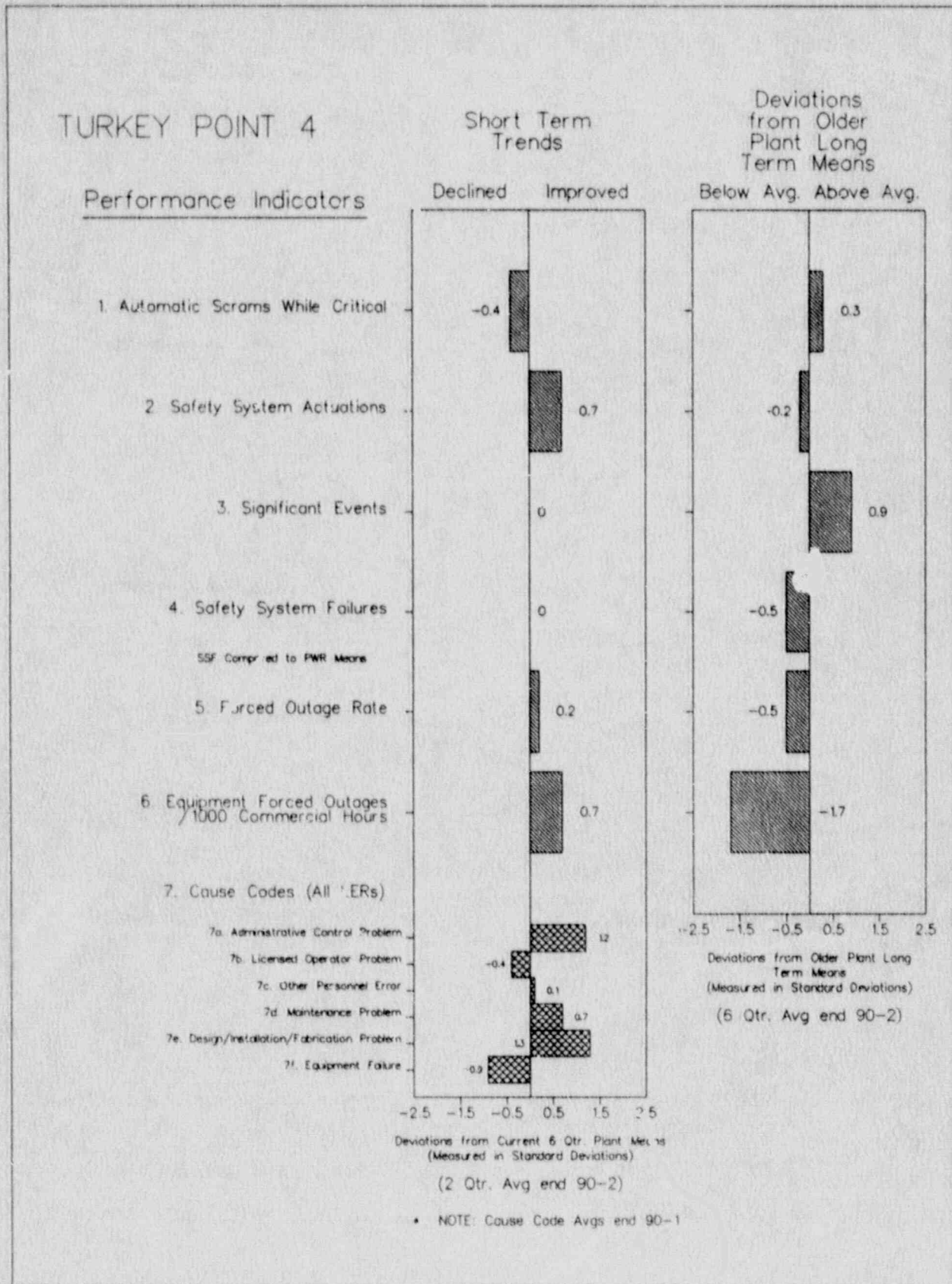


FIGURE 4.106

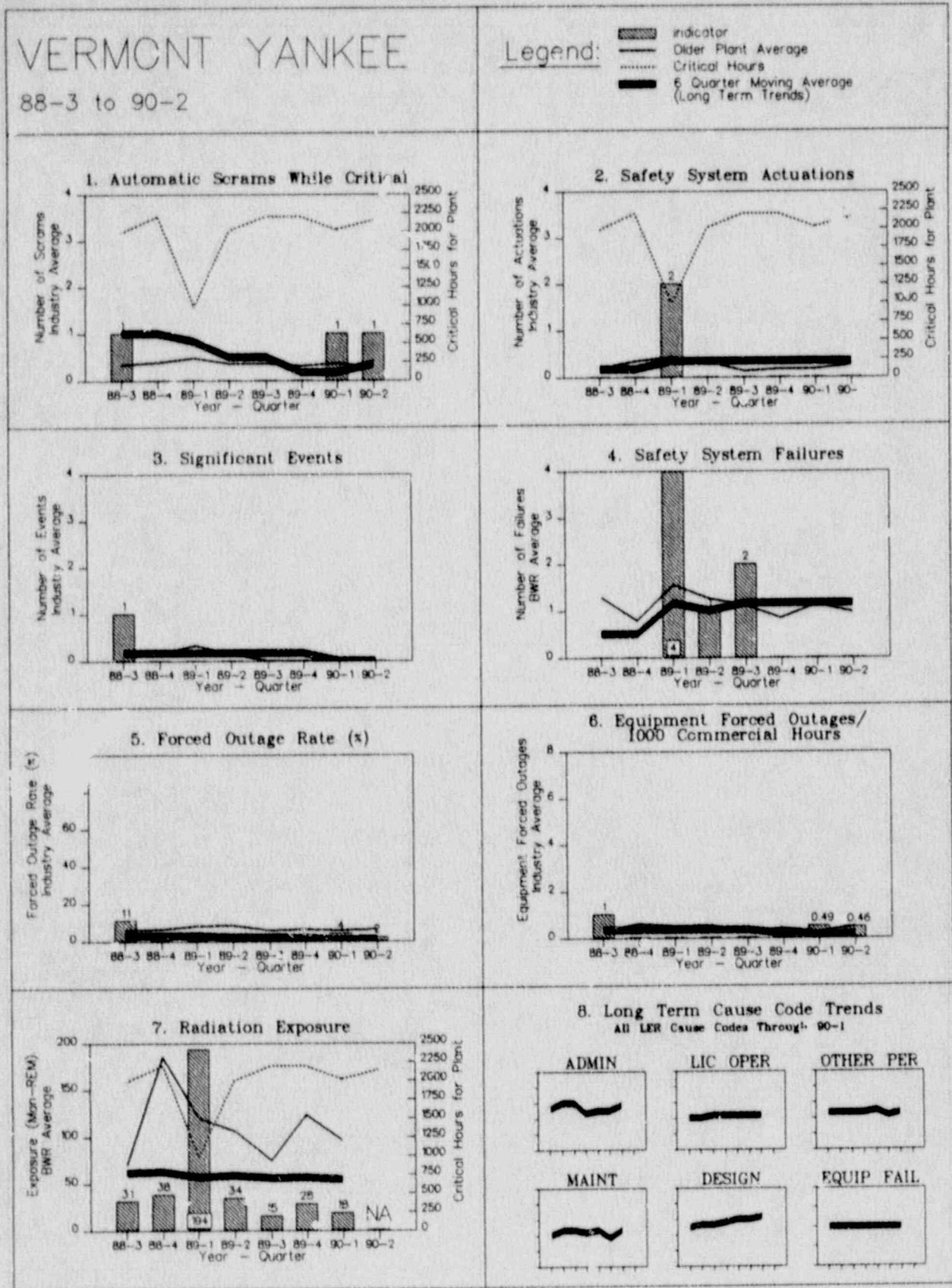


FIGURE 4.106

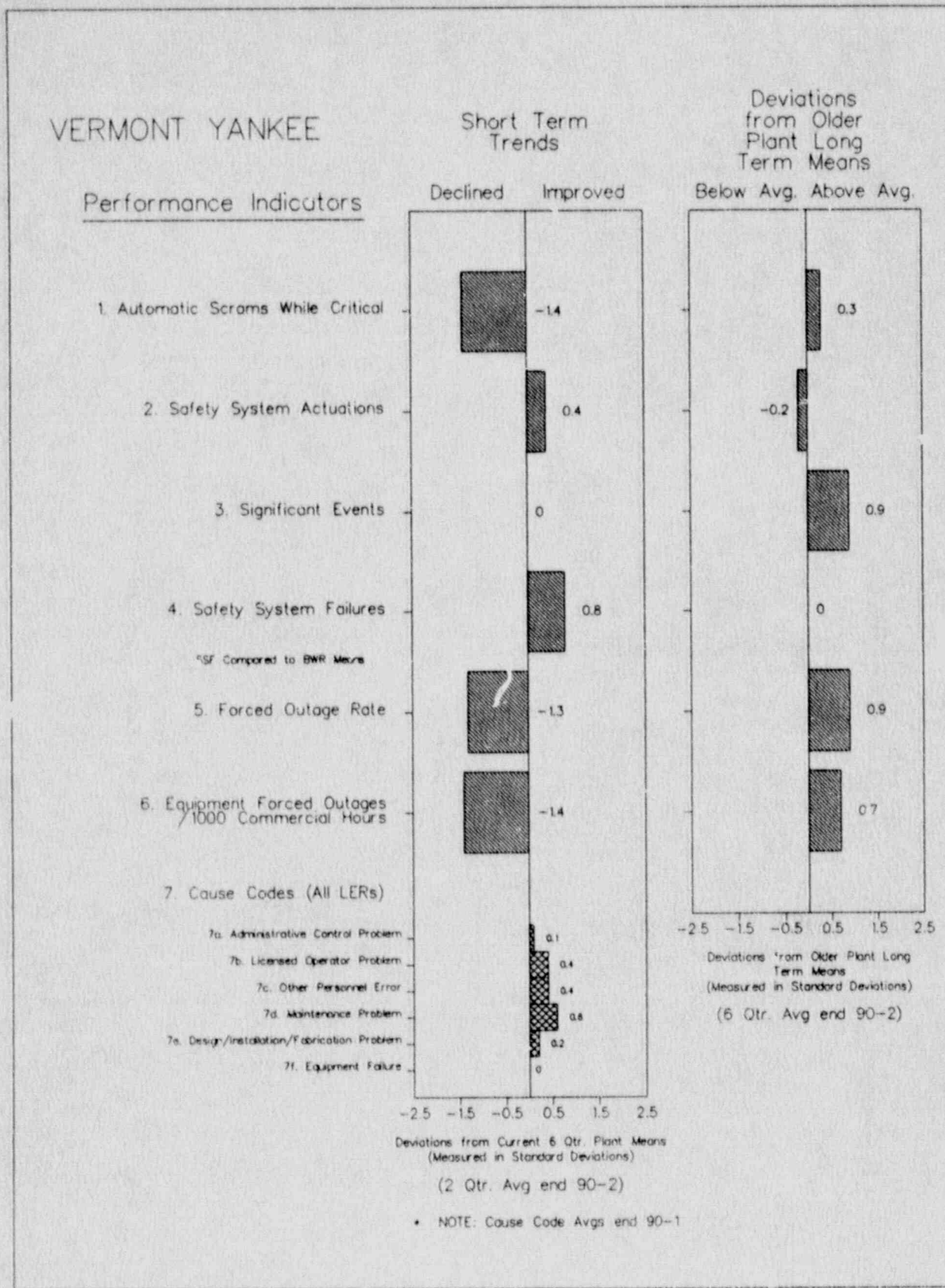


FIGURE 4.107

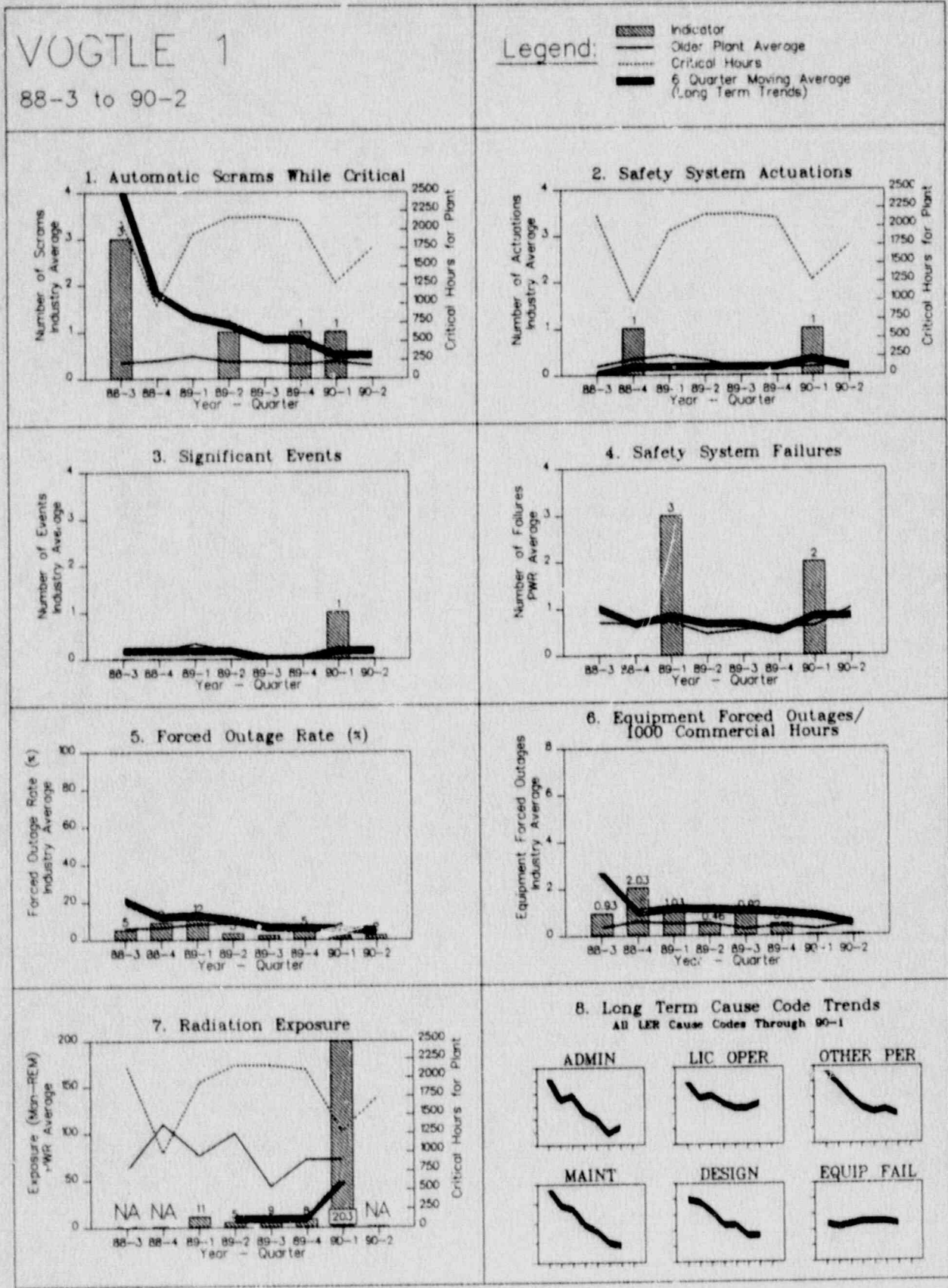


FIGURE 4.107

VOGTLE 1

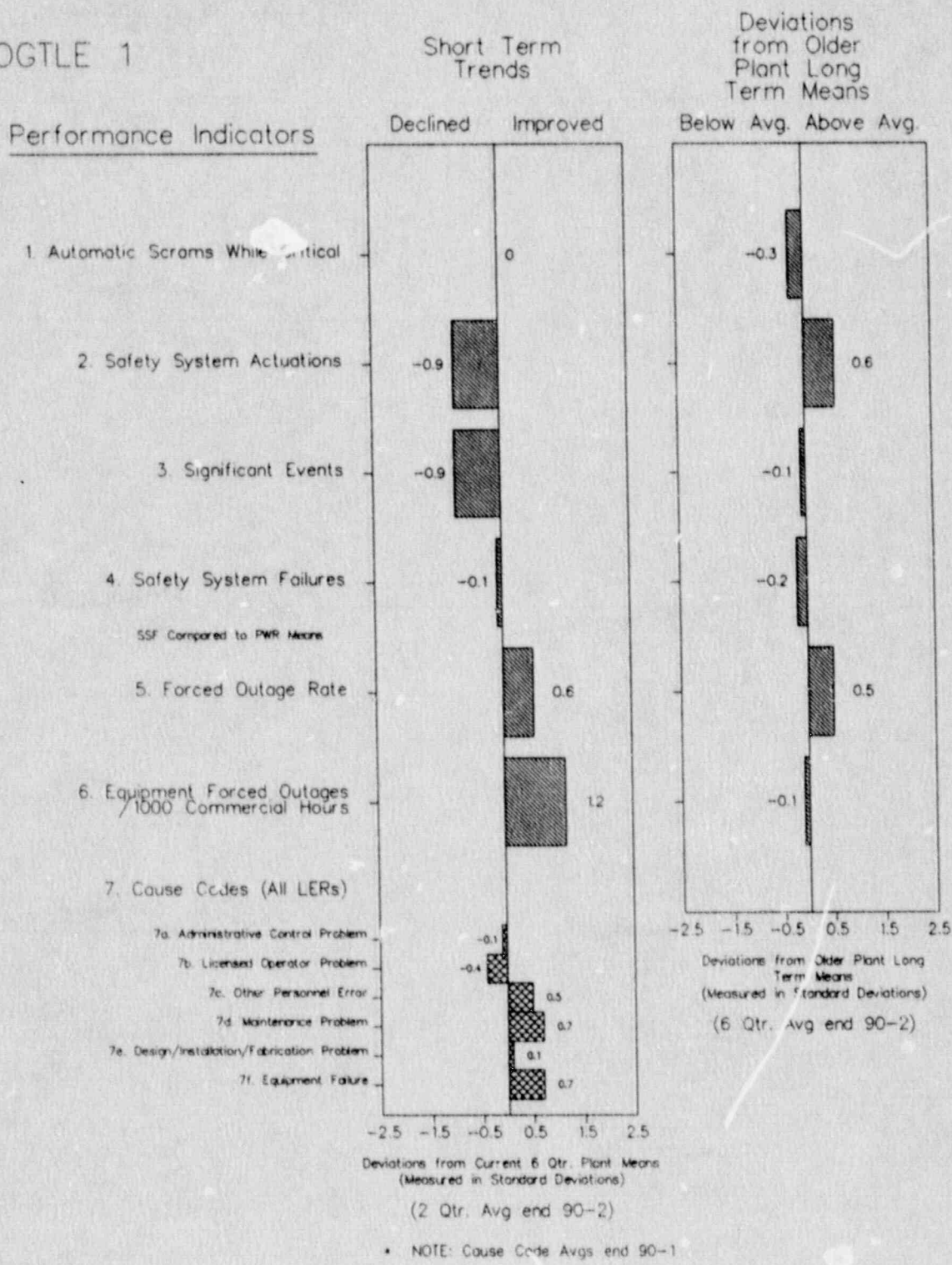


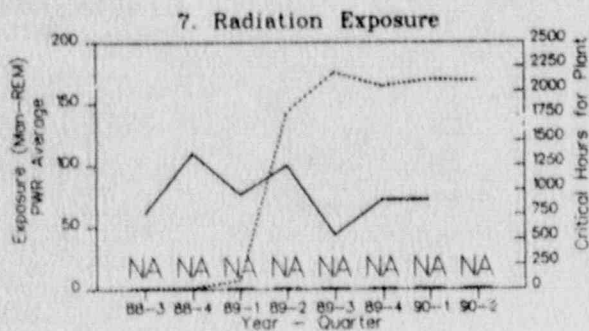
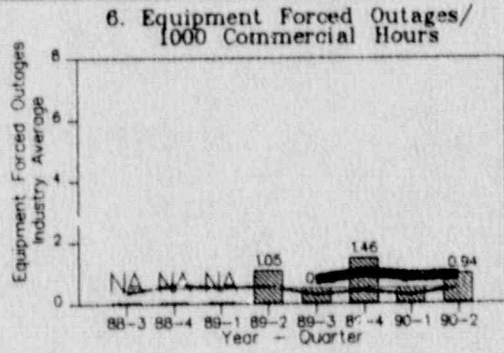
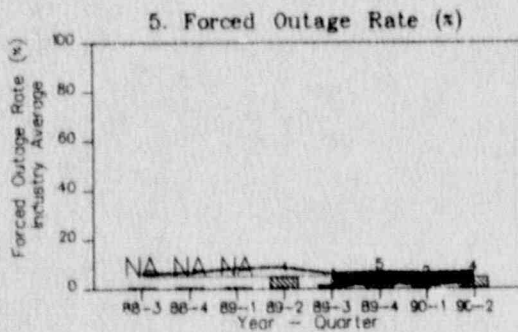
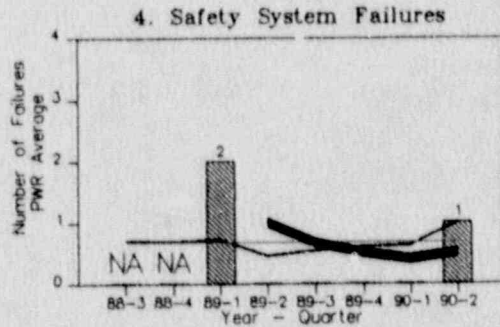
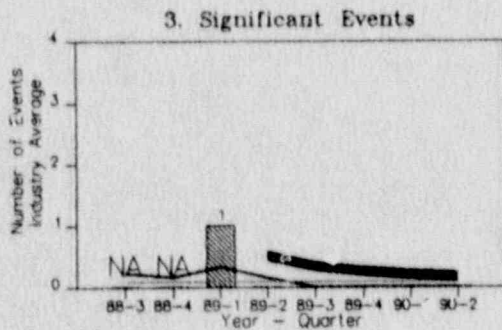
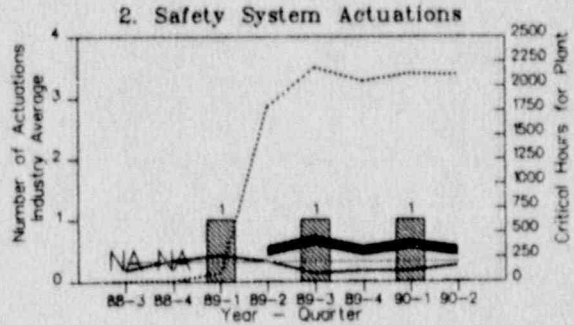
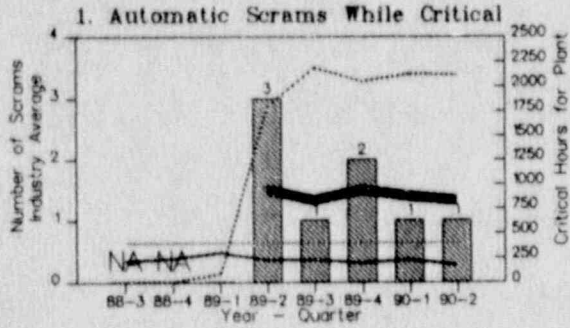
FIGURE 4.108

VOGTLE 2

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

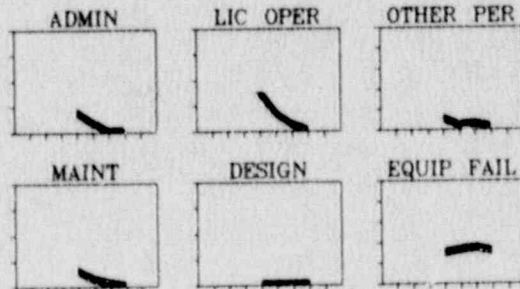
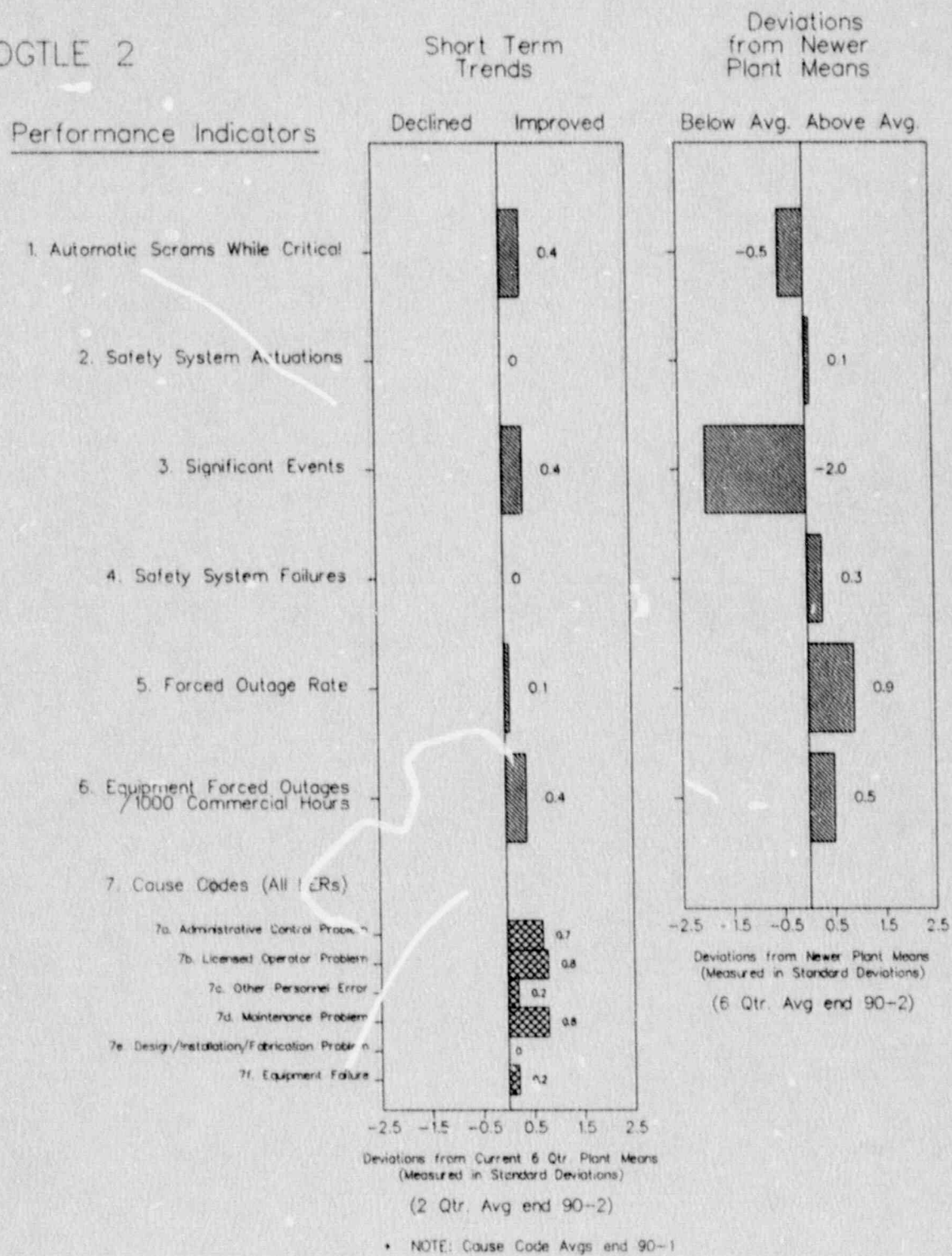


FIGURE 4.108

VOGTLE 2



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LEFT
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FIGURE 4.108

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

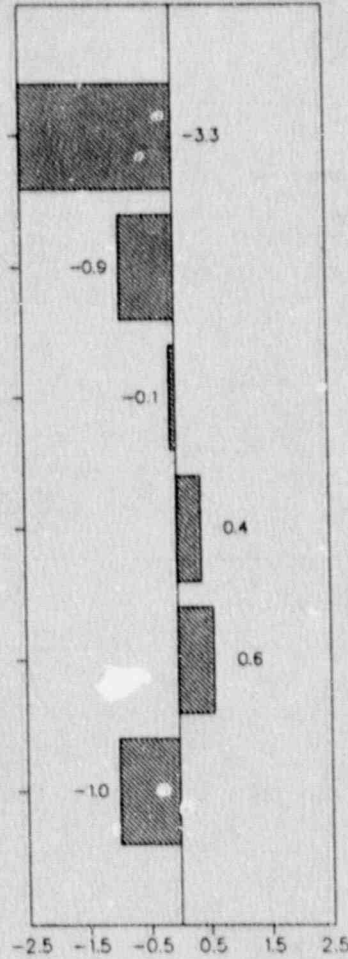
VOGTLE 2

Performance Indicators

Deviations
from Older
Plant Long
Term Means

Below Avg. Above Avg.

- 1. Automatic Scrams While Critical
- 2. Safety System Actuations
- 3. Significant Events
- 4. Safety System Failures
- SSF Compared to PWR Means
- 5. Forced Outage Rate
- 6. Equipment Forced Outages
/1000 Commercial Hours



Deviations from Older Plant Long
Term Means
(Measured in Standard Deviations)
(6 Qtr. Avg end 90-2)

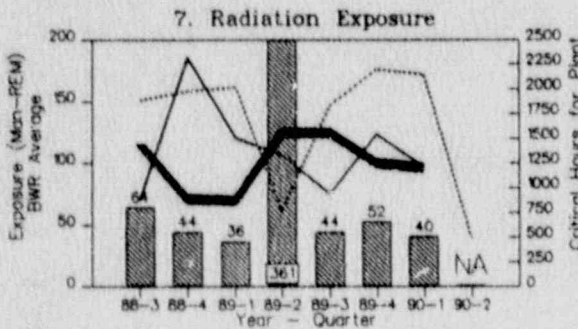
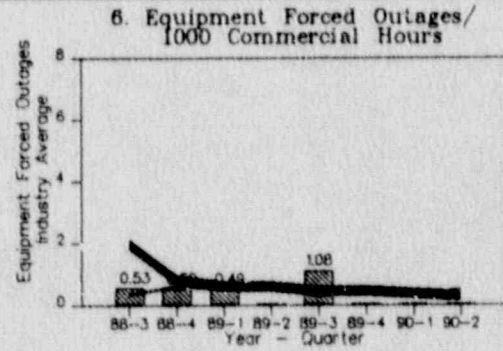
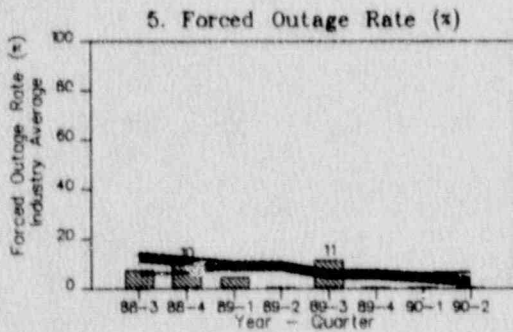
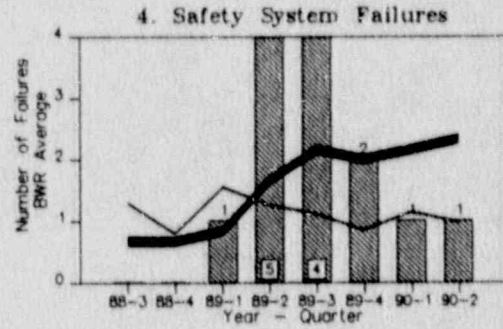
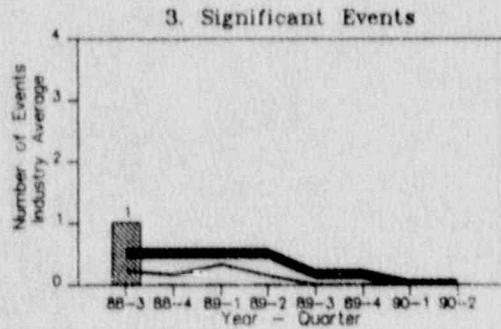
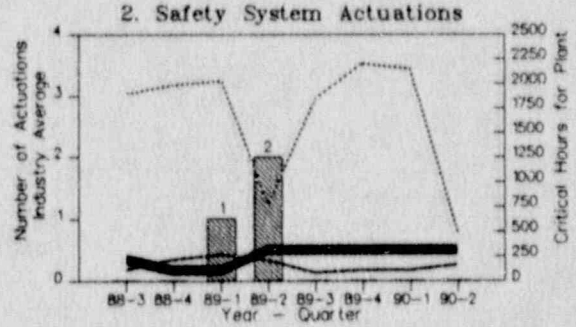
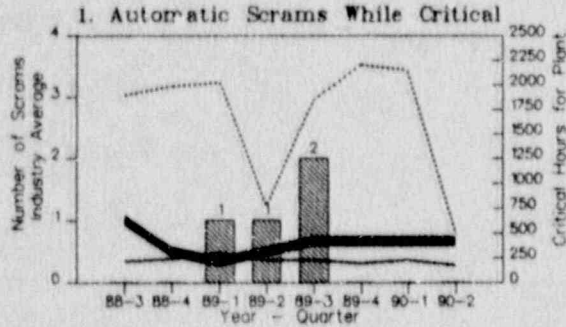
FIGURE 4.109

WASH. NUCLEAR 2

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)



8. Long Term Cause Code Trends

All LER Cause Codes Through 90-1

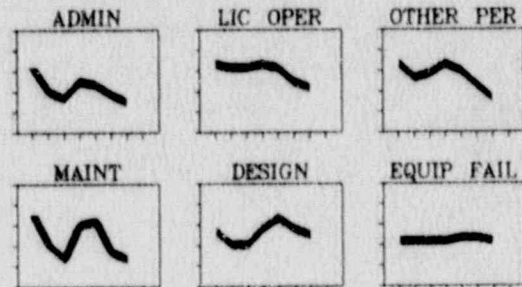


FIGURE 4.109

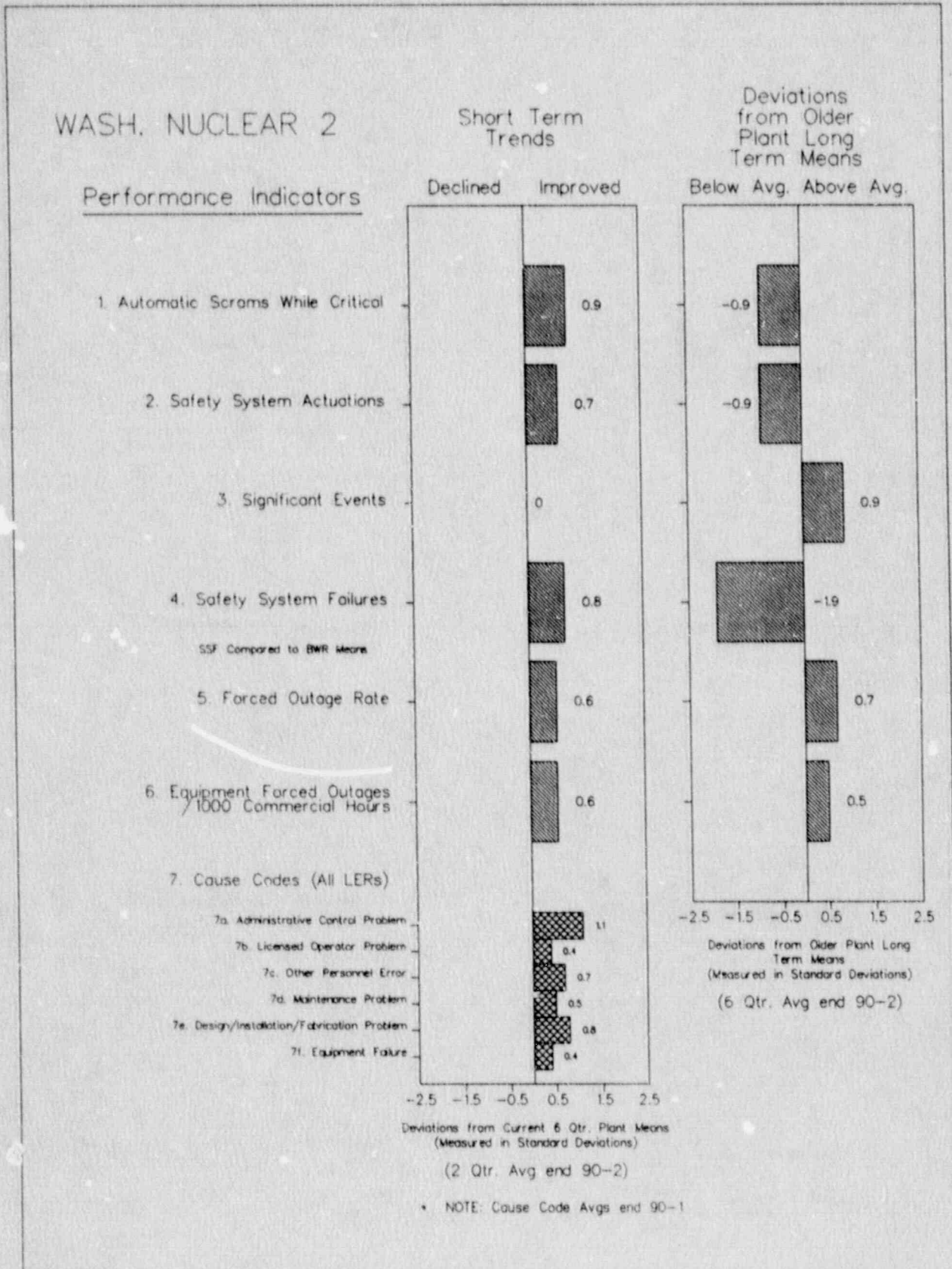


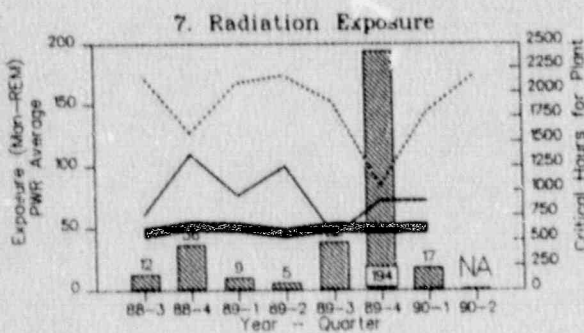
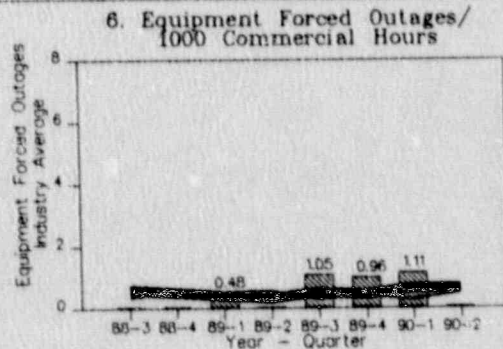
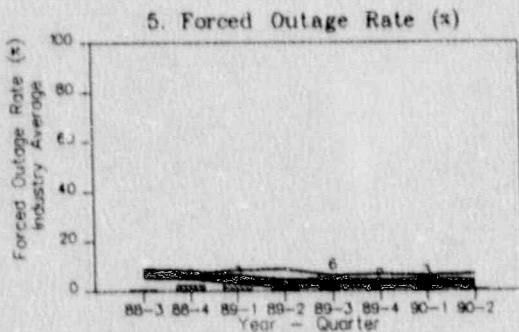
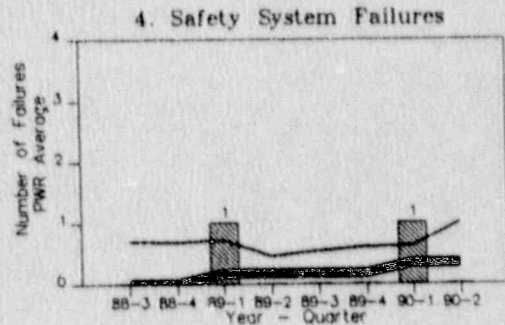
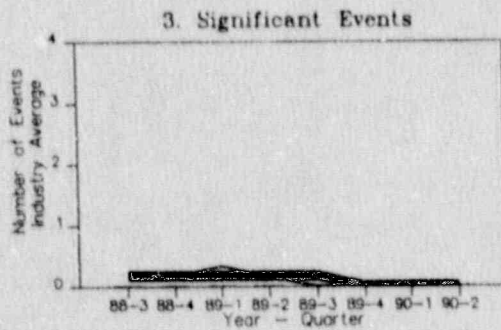
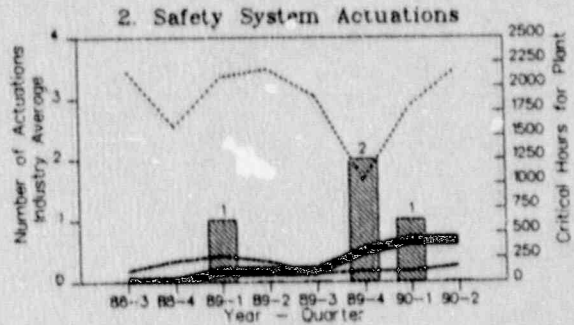
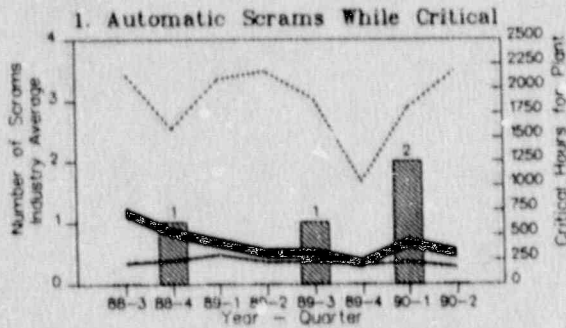
FIGURE 4.110

WATERFORD 3

88-3 to 90-2

Legend:

 Indicator
 Older Plant Average
 Critical Hours
 6 Quarter Moving Average (Long Term Trends)



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

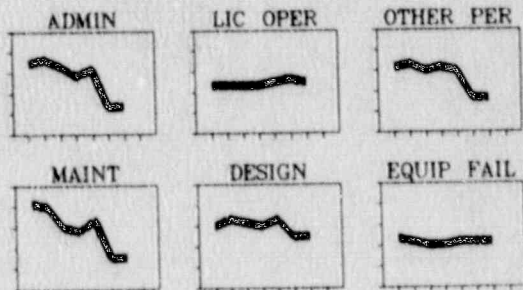


FIGURE 4.110

WATERFORD 3

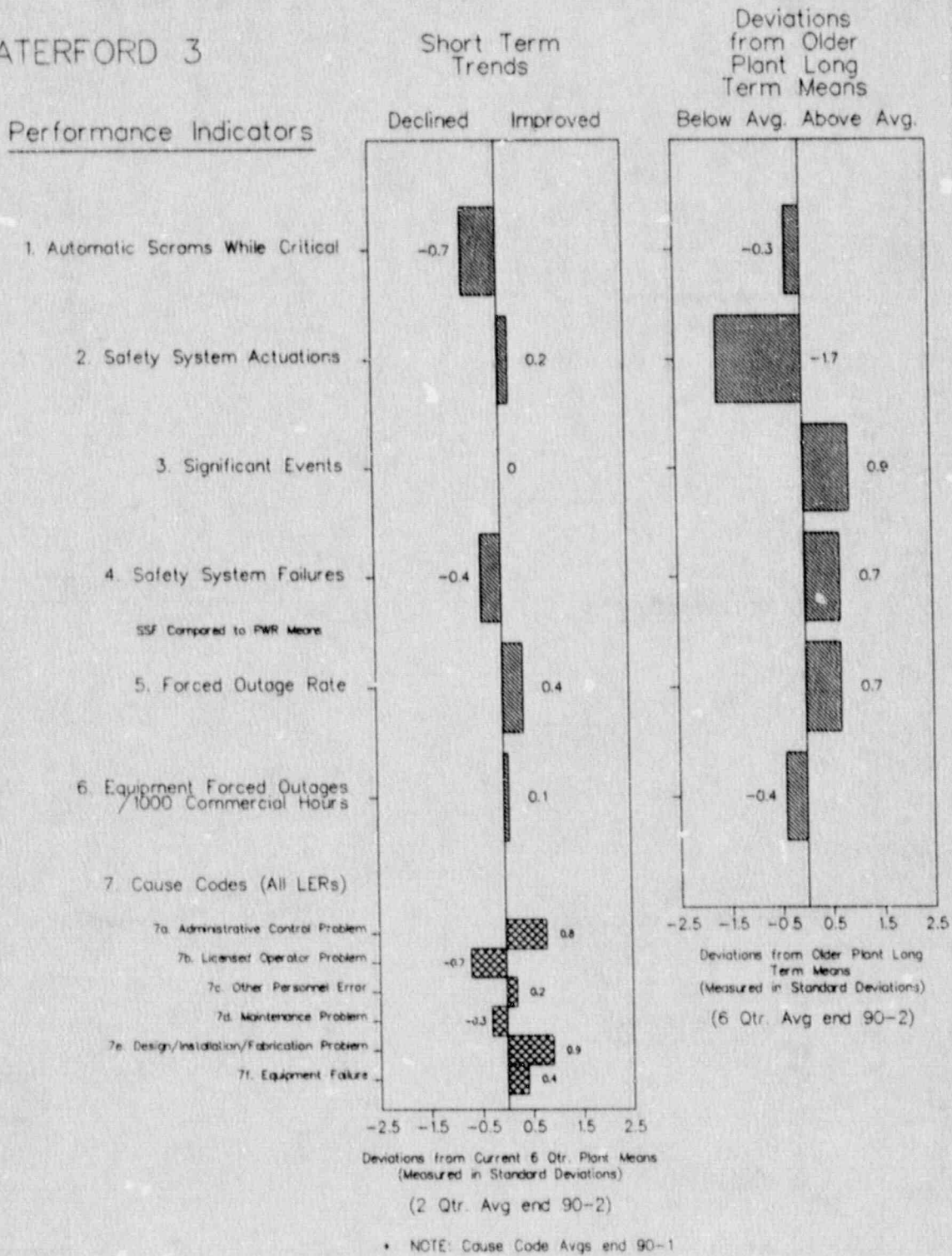


FIGURE 4.111

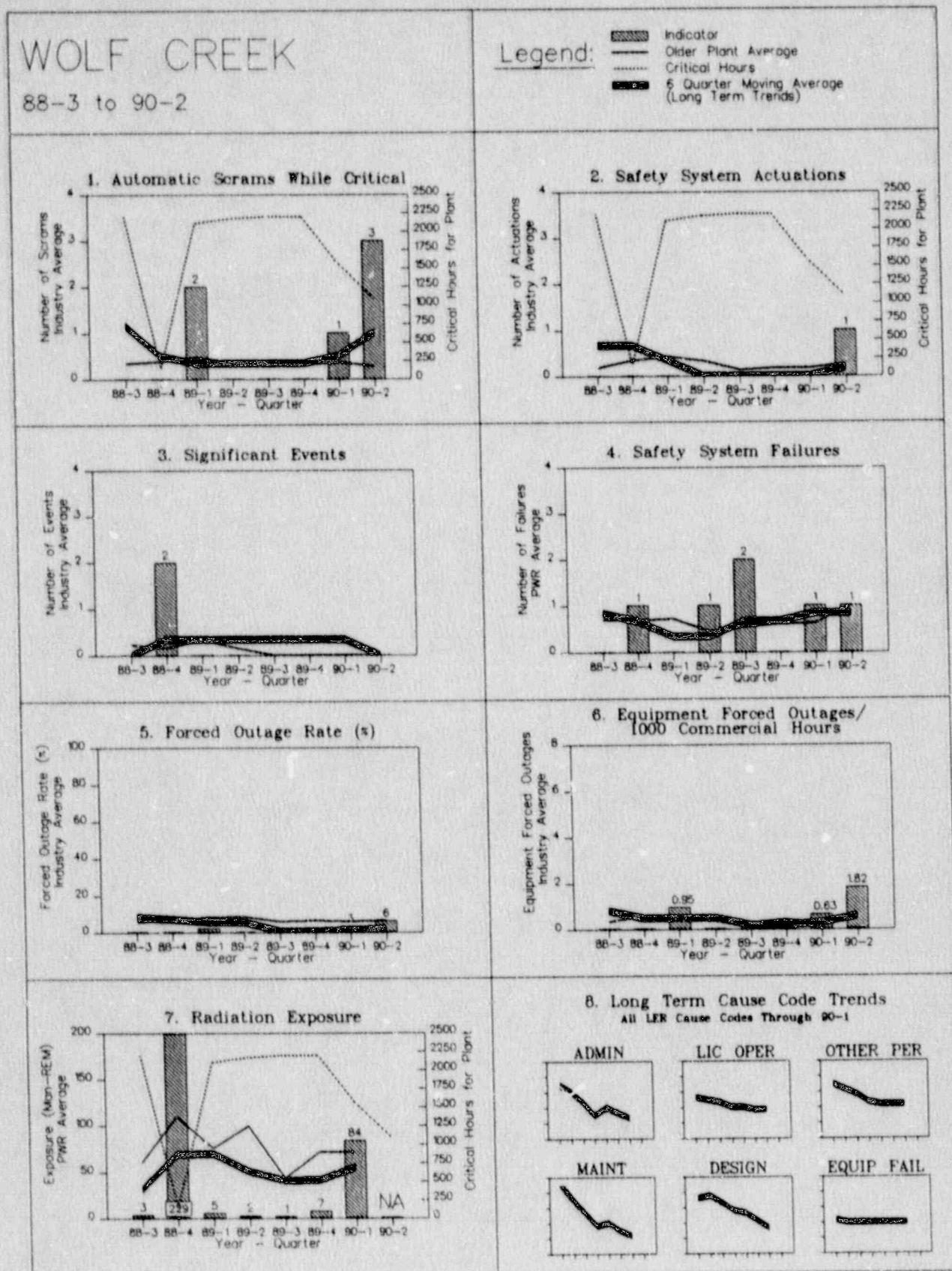


FIGURE 4.111

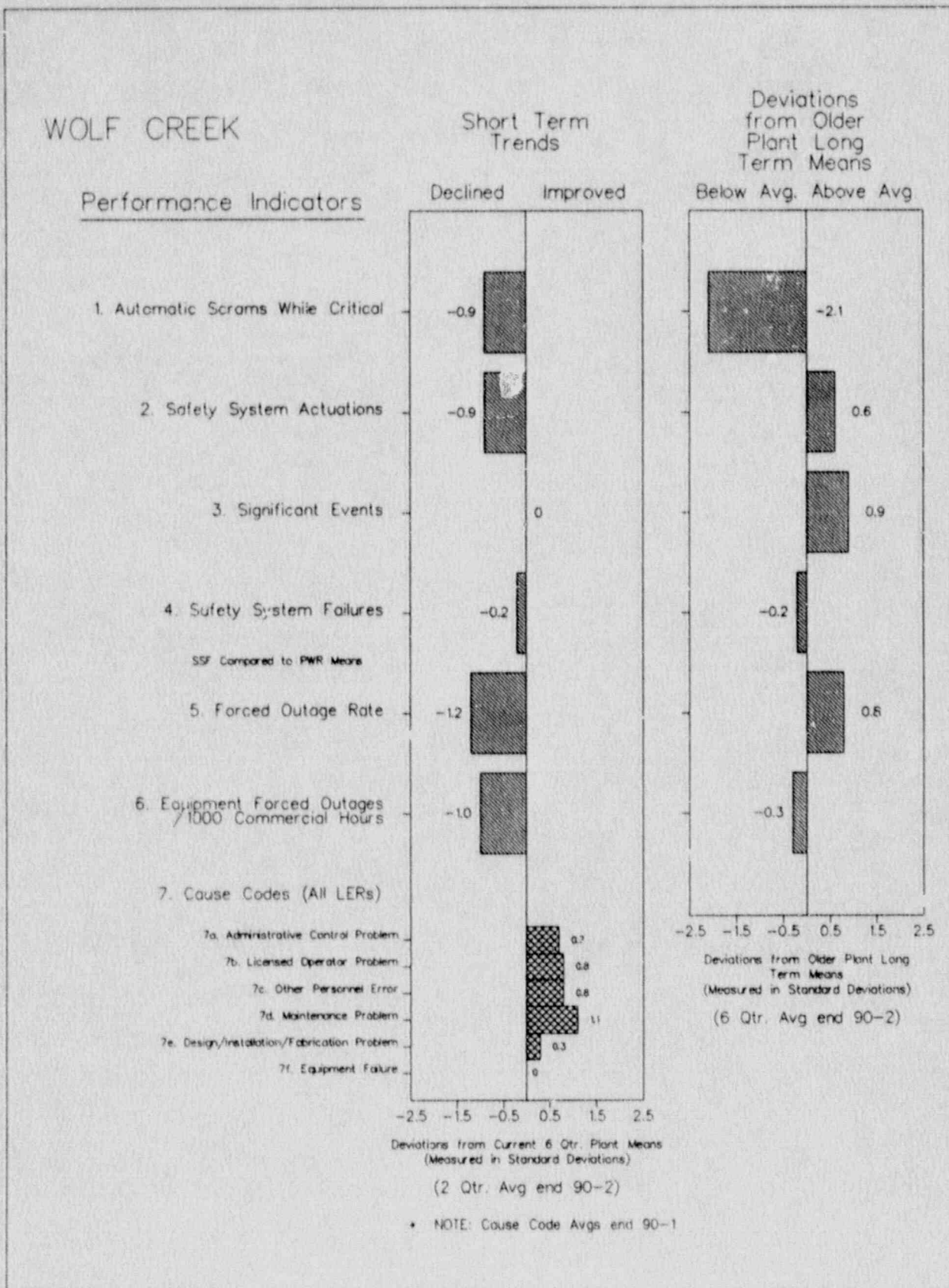


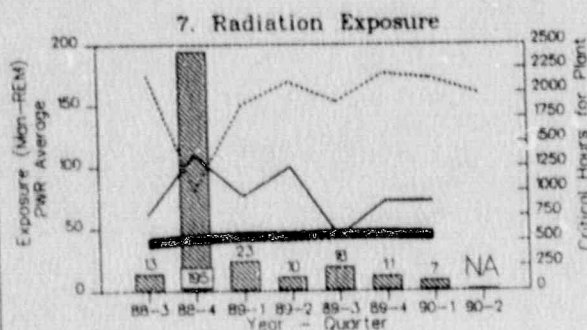
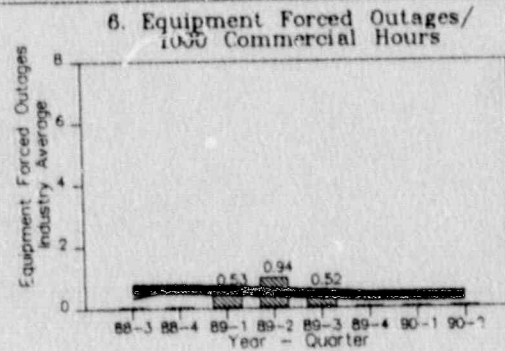
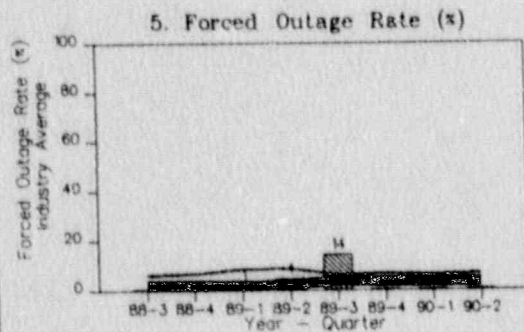
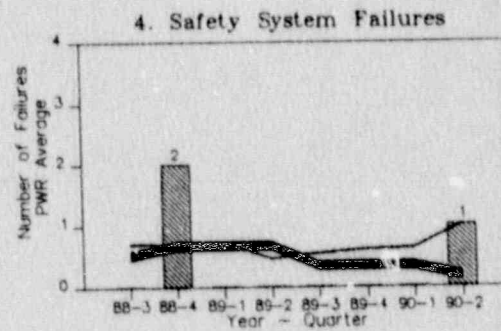
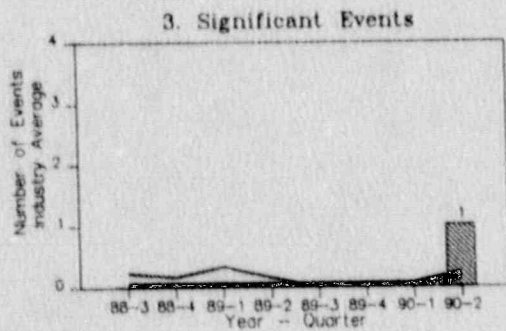
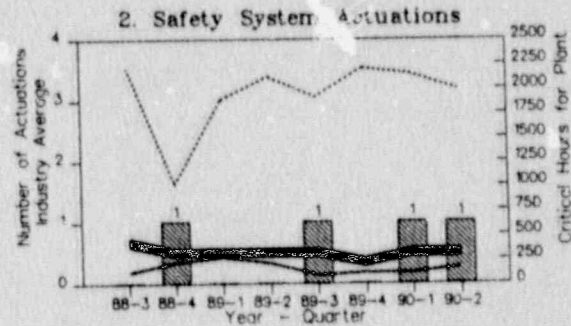
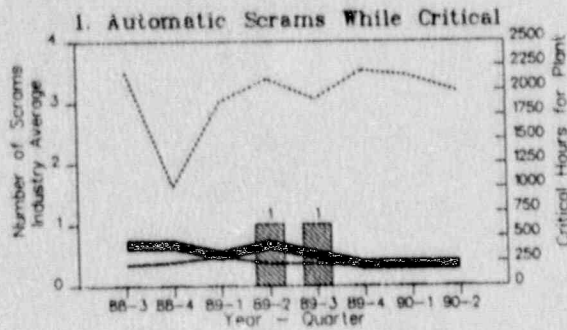
FIGURE 4.112

YANKEE-ROWE

88-3 to 90-2

Legend:

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



8. Long Term Cause Code Trends All LER Cause Codes Through 90-1

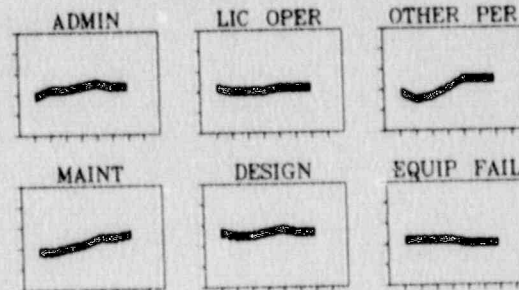


FIGURE 4.112

YANKEE-ROWE

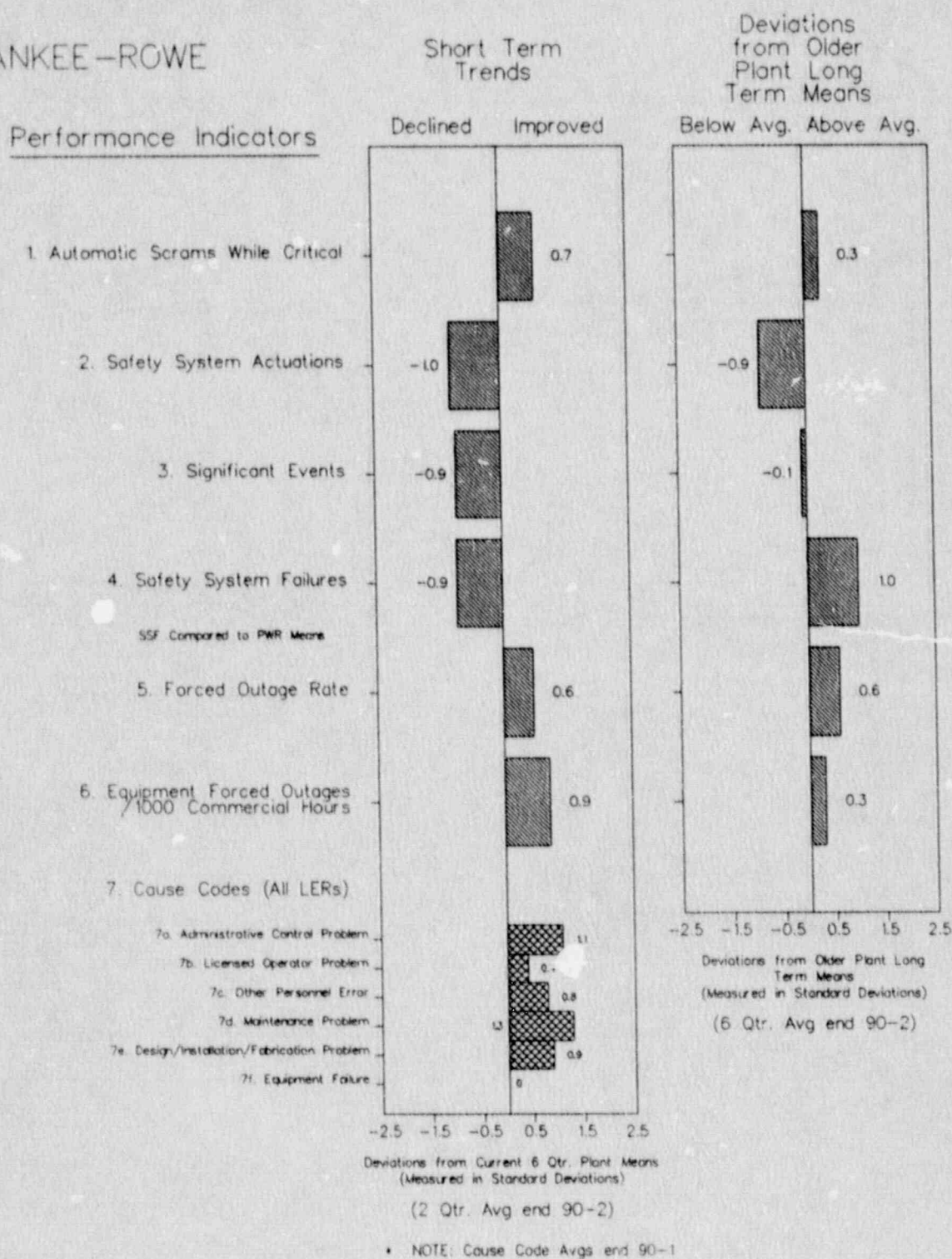


FIGURE 4.113

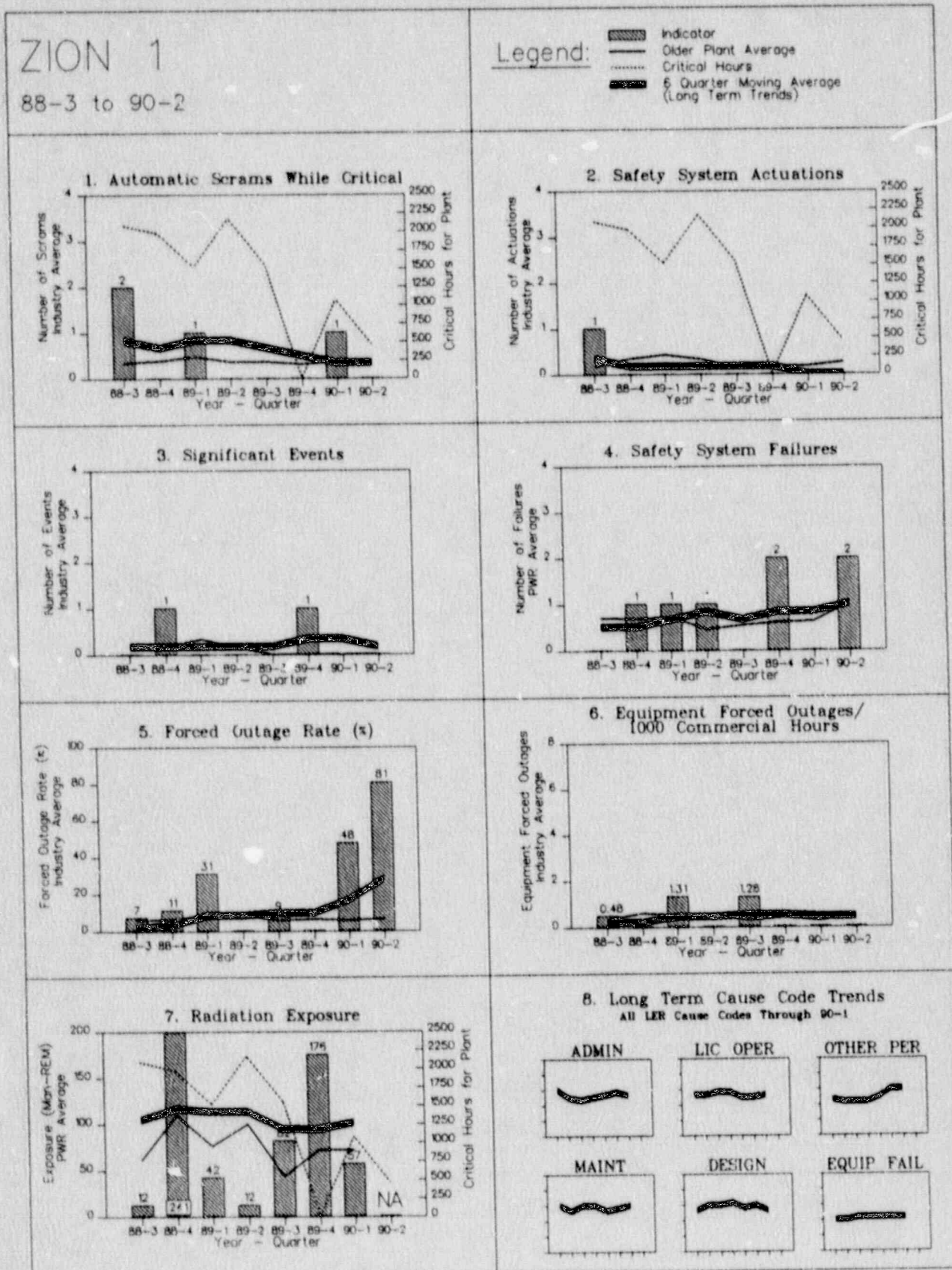


FIGURE 4.113

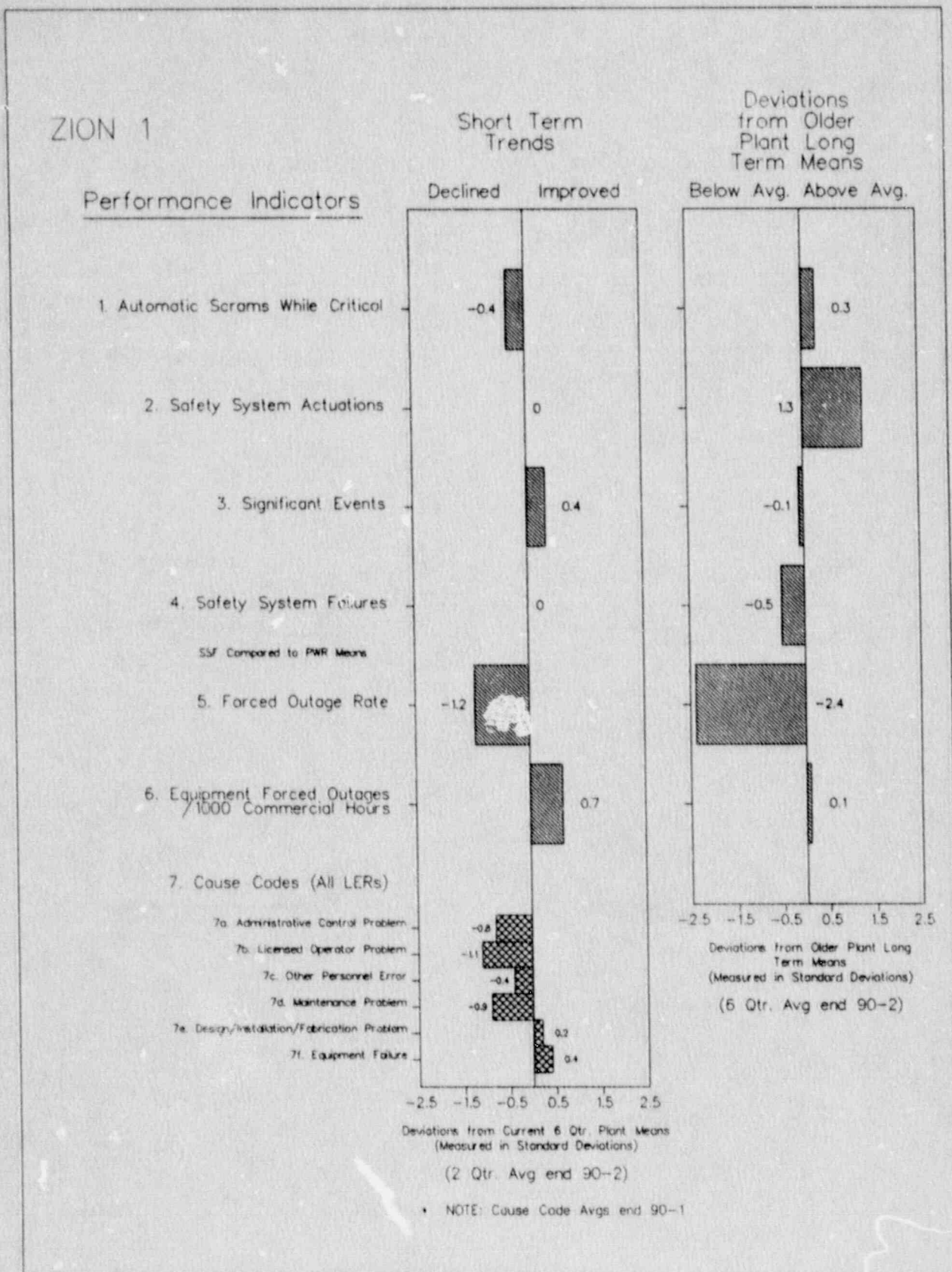


FIGURE 4.114

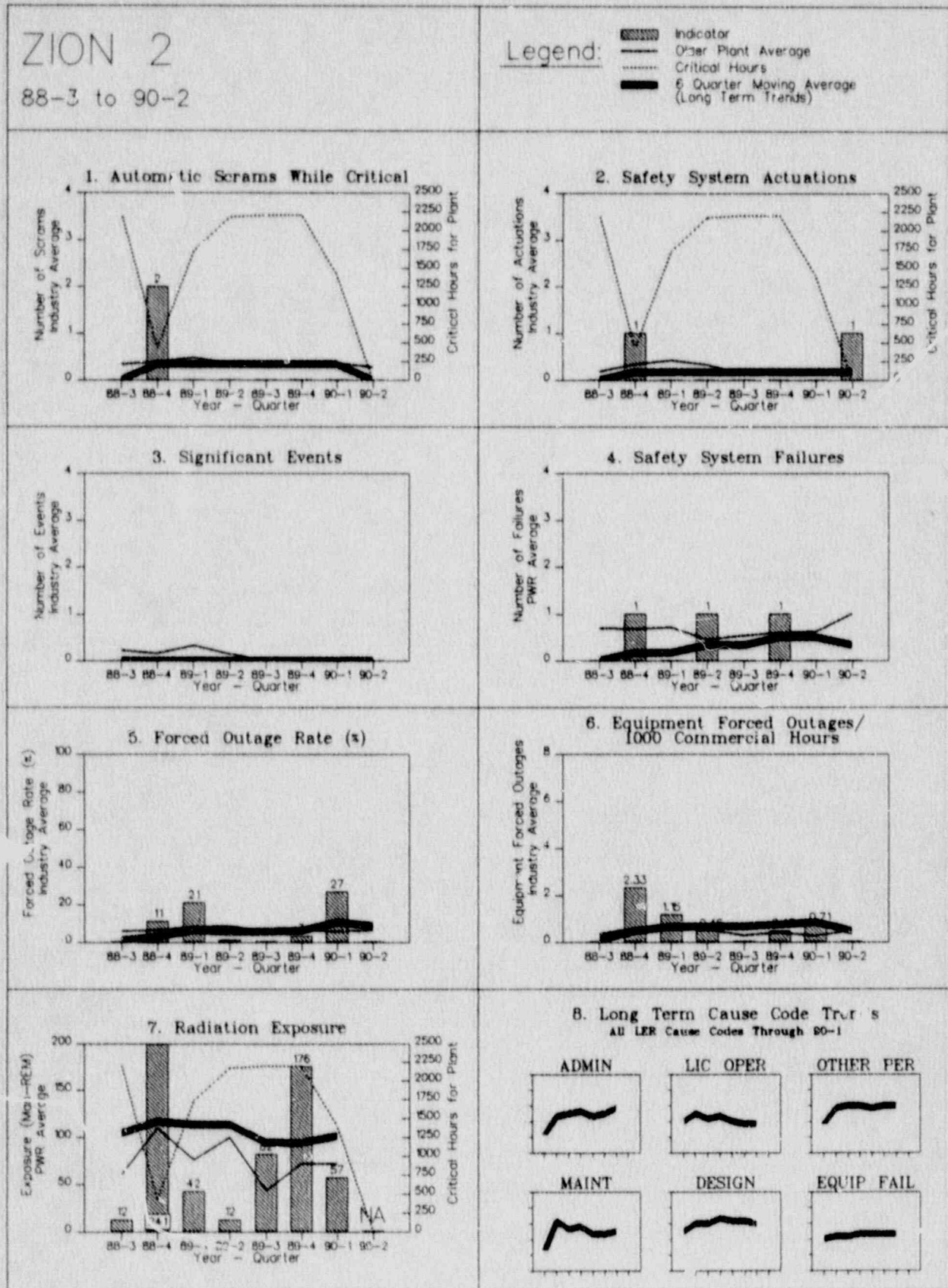
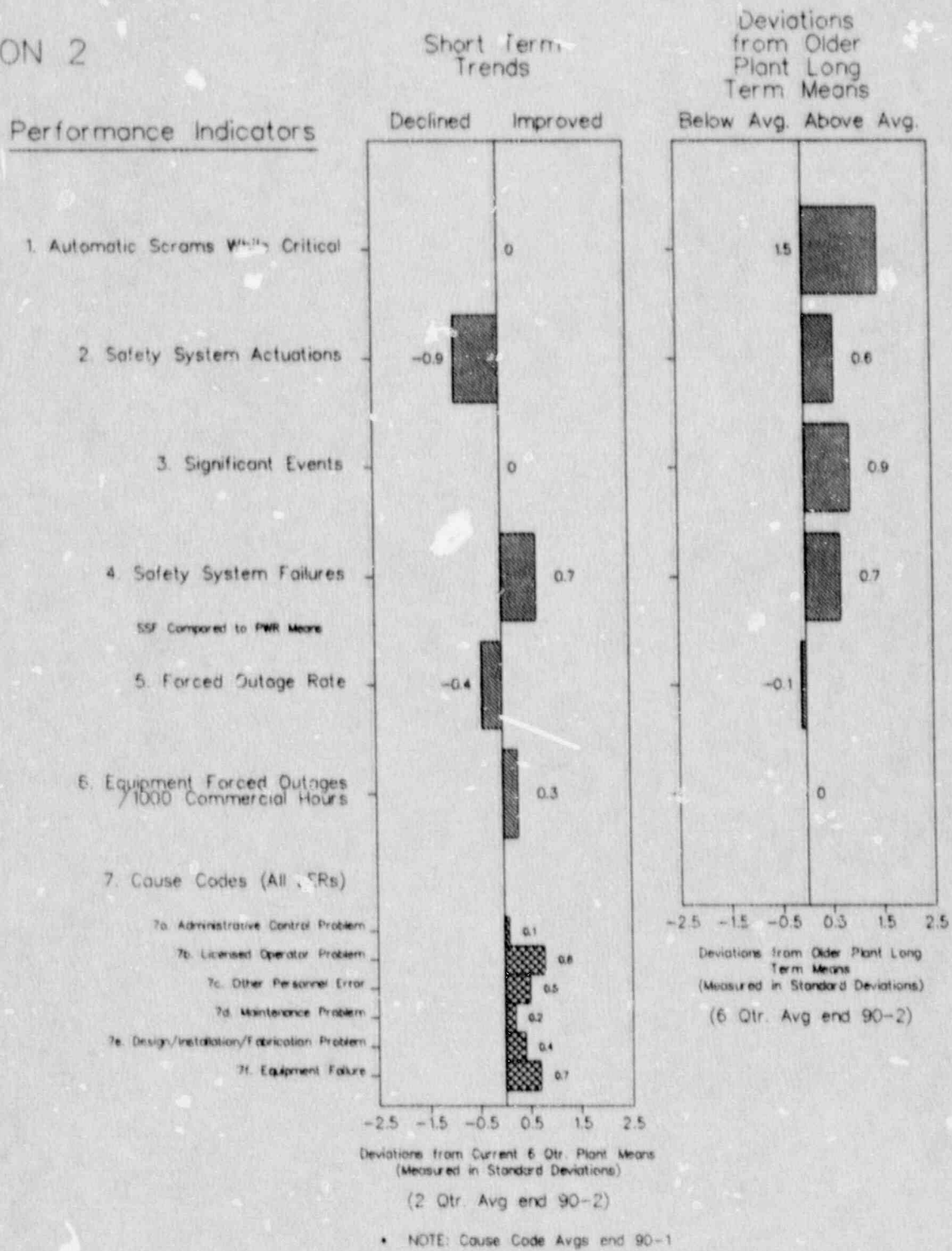


FIGURE 4.114

ZION 2



**PERFORMANCE INDICATORS FOR OPERATING
COMMERCIAL NUCLEAR POWER REACTORS**
Report for Second Quarter 1990
Data through June 1990

OFFICE FOR ANALYSIS AND EVALUATION OF OPERATIONAL DATA

PART II

U.S. NUCLEAR REGULATORY COMMISSION



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

- INPO does not count manual turbine trips which directly cause reactor scrams that were affected to protect important equipment or to minimize the effects of transients. The NRC Indicator does count such events.
- INPO considers short-term transient conditions in its determination of whether a unit was critical or not. The NRC determines the actual plant condition at the time of the event.
- INPO industry averages exclude data prior to January 1 of the second full calendar year following commercial operation, and those years where the capacity factor is less than 25 percent or where data elements were not provided for the full period. NRC industry averages exclude only plants in long term shutdown and outliers more than 2.5 standard deviations from the mean.

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

5.2 Safety System Actuations (SSA)

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

- Only actuations of the high pressure injection system, low pressure injection system or safety injection tanks are counted for pressurized water reactors (PWRs). For boiling water reactors (BWRs), only actuations of the high pressure coolant injection system, the low pressure coolant injection system, the high pressure core spray system, or the low pressure core spray system are counted. Actuations of the reactor core isolation cooling system are not counted.
- Actuations of emergency AC power systems that result from loss of power to a safeguards bus are captured primarily on the basis of indications of low voltage signals in the emergency power system.
- Actuations of any of the equipment associated with the specific ECCS or emergency AC power system are considered necessary and sufficient to constitute a data count. For example, if only a valve in a system is commanded to move to its emergency operational position, this is counted as an actuation. A pump does not have to be commanded to go to its emergency mode of operation and fluid does not need to be injected for an occurrence to be counted.
- Only one ECCS actuation is counted in any one occurrence, even if multiple ECCS systems actuate during the occurrence. For example, actuation of both the high pressure injection and the low pressure injection systems at a PWR during the same occurrence counts as only a single ECCS actuation for that occurrence.
- Only one emergency diesel generator (EDG) actuation is counted in any occurrence, even if multiple EDGs actuate during the occurrence. For example, actuation of all four EDGs at a unit counts as only a single actuation for that occurrence.
- Occurrences involving actuations of both an EDG on a dead bus and an ECCS are given a count of two, one for the EDG actuation and one for the ECCS actuation.
- At multi-unit sites that share equipment (e.g., swing EDG or shared buses), actuations are counted and assigned to the unit at which the actuation signal or loss of power originated. If the signal source cannot be associated with one unit, the actuation is assigned to both units.

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

- The INPO indicator requires the actuation of a "major" system component, whereas the NRC indicator requires only the generation of an initiation signal, whether any equipment starts or not.
- INPO industry averages exclude plant data prior to January 1 of the second full year following commercial operation. NRC industry averages exclude only plants in long term shutdown and outliers more than 2.5 standard deviations from the mean.

5.3 Significant Events (SE)

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

1. Degradation of important safety equipment. Events considered under this classification include situations where there either existed the potential for or was an actual reduction in the operational capability of equipment. One example is the identification of a common cause failure mechanism which could cause redundant components or multiple independent components to fail in response to a test or actual demand signal. This category does not include such items as a missed surveillance test, during which the equipment was subsequently tested and determined to be operable.
2. Unexpected plant response to a transient. Events considered under this classification include situations in which changes in reactor parameters represent unanticipated reductions in margins of safety. For example, a rapid plant cooldown following a reactor trip exacerbated by a balance-of-plant malfunction or an undesirable systems interaction. This category does not include minor differences in predicted and observed conditions that can be reasonably explained by instrument errors or modeling techniques and simplifying assumptions.
3. Degradation of fuel integrity, primary coolant pressure boundary, important associated structures. Events considered under this category include those of similar character to those identified in item 1, above related to the fuel, reactor coolant system (RCS) containment, or important plant structures.
4. Scram with complication. This event is an RPS actuation when critical, followed by an equipment failure, malfunction, or personnel error. The failure, malfunction, or error is generally not to include those that cause the transient that leads to the RPS actuation, or those that directly cause the scram. Failures that both cause the scram and reduce the capability of the mitigating system (e.g., electric power, instrument air, other auxiliary support functions, or deficient procedures) are counted.

Examples of equipment failure/malfunctions include:

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

- b. Failure adding to complexity of event - Erroneous control system responses, electrical switching difficulties, mitigating system and key plant parameter instrumentation malfunctions/failures.
- c. Additional event initiators - Stuck-open primary or secondary relief/safety valves, pipe breaks, and operating wrong equipment/trains.

Examples of personnel errors include:

- a. Improper control or termination of mitigating system.
- b. Misdiagnosis of the event or failure to follow procedures.

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

- 5. Unplanned release of radioactivity. Events considered under this category include an unplanned release of radioactivity that had the potential for exceeding or actually exceeded the limits of the Technical Specifications or the Regulations.
- 6. Operation outside the limits of the Technical Specifications. Events considered under this classification include situations for which plant operation was conducted inconsistent with the license requirements.

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

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

5.4 Safety System Failures (SSF)

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

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

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

5.5 Forced Outage Rate (FOR)

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

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

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

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

5.6 Equipment Forced Outages per 1000 Commercial Hours (EFO)

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

5.7 Collective Radiation Exposure

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

5.8 Cause Codes

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

5.8.1 Administrative Control Problem

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

Specific examples are:

1. No corrective action after a design problem is discovered.
2. QA/QC problems.
3. Radioactive shipments without labeling.

4. Unauthorized work activity.
5. Unqualified personnel performing plant tasks.
6. 10 CFR 50.59 review not performed.
7. Personnel contamination due to lack of warning signs.
8. Tech. Spec. surveillance not scheduled.
9. Inadequate procedure resulted in inadvertent safety injection.

5.8.2 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 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. 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 not necessary to code personnel error for the design error itself.

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

1. Testable check valve being installed backwards resulted in RHR overpressurization when isolation valve opened.
2. Transmitter sensing lines reversed.
3. Loss of control power due to underrated fuse.
4. Use of wrong seal material resulted in solenoid malfunction.
5. Equipment not qualified for the environment.
6. Defect discovered in pump casing attributed to a manufacturing defect.

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

Examples of design modification problems include:

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

2. Incorrect modification package caused the installation of a component in an unfavorable configuration (e.g., incorrect wiring, incorrect location of instrumentation tubing, valve installed in wrong line, etc.).
3. Post modification test procedure is incorrect due to incorrect information in the design modification package.

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

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

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

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

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

1. Flashovers occur in switchyard due to high wind and rain from sudden thunderstorm.
2. Capacitor failure in instrument power supply causes loss of signal from containment leakage detection radiation monitor.
3. Surges from lightning strike close to plant propagate through plant electrical system and causes main generator to trip.

6. PRECAUTIONS

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

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

the industry average. The NRC includes such plants. Therefore, the industry average values of the common indicator are likely to be different.

Tables 8.1 to 8.114 provide brief descriptions of each performance indicator event for the third and fourth quarters of 1989 and first and second quarter of 1990.

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

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

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

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

7. COMPUTATIONAL NOTES

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

- 7.1. The report addresses plants licensed for operation in the second quarter 1990 or earlier.
- 7.2. NAs are used under the following conditions for newer plants:
 1. For safety System Actuations, Significant Events, Safety System Failures, and cause codes, until a low power license is first received, (cause code data for Fort St. Vrain is not collected),
 2. For scrams, until critical hours are first reported,
 3. For forced outages and equipment forced outages, until commercial operation is declared,
 4. For collective radiation exposure, until a full power license has been held for one calendar year, and
 5. For cause codes, collection radiation exposure for the most recent quarter

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

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

7.4. For plant summaries (Figures 4.1 - 4.114 of Part I)

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

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

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

- a. The plant's average for the most recent six-quarter period (if there are not at least two quarters of data, no value is displayed on the chart),
- b. The average of the most recent six-quarter period for older plants or newer plants (outliers more than 2.5 standard deviations from the mean on the first calculation and plants in extended shutdown were discarded and the mean and standard deviation were recomputed), and
- c. The standard deviation based on the most recent six-quarter period for older or newer plants (outliers and plants in extended shutdown were discarded as discussed above);

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

- a. Older plant averages are the averages of older plants and exclude plants in long term shutdown and outliers more than 2.5 standard deviations from the mean. The averages for safety system failures and collective radiation exposure are computed separately for BWRs and PWRs.
- b. Newer plant averages are single numbers representing the most recent eight-quarter averages of all new plants meeting the definition of a new plant (see 7.6) during the eight-quarter period.
- c. The plant's average for the most recent six-quarter period (if there are not at least two quarters for this, no value is displayed on the chart).

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

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

- 7.6. New plants are defined as those plants that have not completed one full calendar year of commercial operation.
- 7.7. Beginning with this report, the following changes have been made:
1. The four-quarter moving average displayed on the detailed plant analysis charts and use in the trend and deviation calculations have been changed to a six-quarter moving average. For the trend calculation, the six-quarter average includes the current two quarters. The industry average curve for newer plants are single numbers representing the averages of all plants that were new in any of the most recent eight quarters.
 2. Previously, the following three methods were used to calculate industry averages: (1) For the curves on the detailed plant analysis charts they were calculated on a quarter-by-quarter basis using all plants in the appropriate category (old or new, BWR or PWR), (2) For plant deviations they were calculated using the most recent four-quarter average of all older (or newer, as appropriate) plants with outliers removed, and (3) For the industry averages displayed on page i of Part 1, they were calculated with plants in extended shutdown excluded. Industry average calculations now consist of a average of all appropriate plants with both outlier plants and plants in extended shutdown excluded. The only exception will be Collective Radiation Exposure which will use all appropriate plants with no exclusions.
 3. The Performance Indicator Cause Code trend windows and the plant deviation charts represent changes and comparisons over a six quarter period, which approximates the length of an operating cycle for most plants. These charts and windows will be labelled "Long-Term." The plant trend charts reflect short-term (the most recent two quarters) trends and will be labelled "Short-Term."

8. DESCRIPTIONS OF PLANT EVENTS

**THIRD AND FOURTH QUARTERS OF 1989
AND FIRST AND SECOND QUARTERS OF 1990**

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TABLE 8.1

ARKANSAS 1

PI EVENTS FOR 89-3

SSF 07/24/89 LER# 31388029 50.72#: POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : IF A DESIGN SEISMIC EVENT OCCURRED, THE PRIMARY CONTAINMENT COULD BE BREACHED DUE TO SEVEN IMPROPERLY INSTALLED PIPING SUPPORTS ON THE REACTOR COOLANT LETDOWN PIPING. THIS CONDITION EXISTED SINCE INITIAL PLANT CONSTRUCTION, BUT WAS REPORTED 07/24/89.

SSF 08/24/89 LER# 31389030 50.72#: POWER: 74
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : THE FIRE BARRIER BETWEEN THE EDG ROOMS DID NOT MEET NATIONAL CODE REQUIREMENTS AND WAS DETERMINED TO BE NONFUNCTIONAL. THIS HAD EXISTED SINCE INITIAL PLANT CONSTRUCTION.

SSF 08/25/89 LER# 31389029 50.72#: POWER: 74
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 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 EMERGENCY OPERATING CONDITIONS.

SSF 09/12/89 LER# 31389028 50.72#: 16583 POWER: 74
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : AN EXTRA CONTACT WAS FOUND IN THE CONTROL CIRCUITS FOR TWO OF THE THREE ESW PUMPS. UNDER CERTAIN CONDITIONS, THESE EXTRA CONTACTS COULD HAVE PREVENTED THESE PUMPS FROM STARTING. A POTENTIAL EXISTS FOR THE LOSS OF THE ESW SYSTEM.

SE 09/12/89 LER# 31389028 50.72#: 16583 POWER: 74
 DESC : A DISCREPANCY WAS FOUND BETWEEN PLANT ELECTRICAL DRAWINGS AND AS-BUILT ELECTRICAL COMPONENTS/EQUIPMENT. (MORNING REPORT ON 09/13/89)

PI EVENTS FOR 89-4

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

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

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

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

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

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

TABLE 8.1 (CONT.)

ARKANSAS 1

PI EVENTS FOR 89-4 (CONT.)

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

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

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

SCRAM 12/28/89 LER# 31389044 50.72#: 17358 POWER: 40
 DESC : OPERATOR SCOURED 'B' VE 'A' MFP CAUSING REACTOR TOTAL LOSS OF MFW WHEN TROUBLESHOOTING PROBLEM WITH 'A' MFP CAUSING REACTOR

PI EVENTS FOR 90-1

SSF 02/28/90 LER# 31390002 50.72#: 17358 POWER: 80
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : A DESIGN ERROR WAS DISCOVERED THAT COULD HAVE RESULTED IN FAILURE OF THE CASING DRAIN VALVES OF THE P-36A AND B HIGH PRESSURE INJECTION PUMPS AND SUBSEQUENT RADIOACTIVE RELEASES. THE VALVES WERE NOT DESIGNED TO WITHSTAND MAXIMUM SYSTEM PRESSURE.

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.92	0.57	0.00	1.96	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	0	3	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	2	0	0
SIGNIFICANT EVENTS	0	2	1	0	1	1	0	0
SAFETY SYSTEM FAILURES	2	2	2	0	4	4	2	0
FORCED OUTAGE RATE (%)	0	38	77	21	1	7	5	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	2.38	1.92	0.57	0.91	0.00	1.44	0.00
CRITICAL HOURS	1402	419	520	1744	2208	1527	2085	2174
COLLECTIVE RADIATION EXPOSURE	134	242	64	33	30	228	16	NA
CAUSE CODES:								
ADMINISTRATIVE	2	8	3	4	2	7	0	NA
LICENSED OPERATOR	0	4	1	1	1	2	0	NA
OTHER PERSONNEL	3	5	1	3	0	6	0	NA
MAINTENANCE	4	7	3	8	2	15	1	NA
A) MAINT PERSONNEL	2	5	1	3	0	4	0	NA
B) SURV AND TEST	1	4	1	3	2	6	0	NA
C) EQUIPMENT	1	1	1	1	0	3	1	NA
D) POTENTIAL MAINT	0	1	0	1	0	2	0	NA
DESIGN/INSTALLATION/FABRICATION	8	6	9	2	3	2	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

TABLE 8.2
ARKANSAS 2

PI EVENTS FOR 89-3

SSF 08/24/89 LER# 31389030 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE FIRE BARRIER BETWEEN THE EDG ROOMS DID NOT MEET NATIONAL CODE REQUIREMENTS AND WAS DETERMINED TO BE NONFUNCTIONAL. THIS HAD EXISTED SINCE INITIAL PLANT CONSTRUCTION.

SE 09/12/89 LER# 31389028 50.72#: 16583 POWER: 0
DESC : A DISCREPANCY WAS FOUND BETWEEN PLANT ELECTRICAL DRAWINGS AND AS-BUILT ELECTRICAL COMPONENTS/EQUIPMENT. (MORNING REPORT ON 09/13/89)

PI EVENTS FOR 89-4

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

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

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

SSF 04/25/90 LER# 50.72#: 18349 POWER: 100
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : POST-ACCIDENT MONITORING SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, THE POST ACCIDENT HYDROGEN ANALYZERS DO NOT MEET SINGLE FAILURE CRITERIA. BOTH ANALYZERS SHARE A COMMON NITROGEN SUPPLY SYSTEM, WHICH IS REQUIRED TO BE AVAILABLE FOR ANALYZER OPERABILITY.

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

TABLE 8.2 (CONT.)
ARKANSAS 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.64	0.00	0.75	0.00	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	1	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	4	0	1	0	0
SIGNIFICANT EVENTS	1	0	0	2	1	0	0	0
SAFETY SYSTEM FAILURES	0	2	1	0	1	1	1	1
FORCED OUTAGE RATE (%)	21	1	8	29	3	0	10	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.13	0.00	0.50	1.29	0.00	0.95	0.51	0.93
CRITICAL HOURS	1767	2181	2000	1553	2001	1057	1944	2158
COLLECTIVE RADIATION EXPOSURE	134	242	64	33	30	226	16	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	3	4	1	5	7	NA
LICENSED OPERATOR	0	1	0	1	0	2	0	NA
OTHER PERSONNEL	1	1	1	2	1	6	2	NA
MAINTENANCE	5	5	3	8	0	13	9	NA
A) MAINT PERSONNEL	1	0	1	3	0	7	1	NA
B) SURV AND TEST	2	3	2	2	0	3	7	NA
C) EQUIPMENT	2	3	0	3	0	1	0	NA
D) POTENTIAL MAINT	0	0	0	0	0	2	1	NA
DESIGN/INSTALLATION/FABRICATION	3	0	2	3	3	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

**TABLE 8.3
BEAVER VALLEY 1**

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

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

SCRAM 12/27/89 LER# 33489018 50.72#: 17645 POWER: 29
DESC : THE 480V POWER FEEDER BREAKER TO THE ROD CONTROL POWER TRIPPED DUE TO A FAULTY POWER SENSOR, CAUSING A NEGATIVE RATE SCRAM.

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.94	0.47	0.00	6.72	0.48	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	2	1	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	2	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 (%)	1	9	2	4	0	82	2	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.50	0.47	0.00	0.00	6.72	0.96	0.00
CRITICAL HOURS	2191	2014	2119	2109	1510	149	2086	2095
COLLECTIVE RADIATION EXPOSURE	10	13	59	133	198	299	8	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	1	0	1	0	NA
LICENSED OPERATOR	2	2	1	0	1	0	2	NA
OTHER PERSONNEL	1	0	0	2	0	3	1	NA
MAINTENANCE	2	2	3	4	2	8	4	NA
A) MAINT PERSONNEL	0	0	0	1	0	0	1	NA
B) SERV AND TEST	1	2	1	2	0	4	1	NA
C) EQUIPMENT	0	0	1	1	0	1	1	NA
D) POTENTIAL MAINT	1	0	1	0	2	3	1	NA
DESIGN/INCORPORATION/FABRICATION	0	1	0	1	2	0	3	NA
COMPONENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 3.4
BEAVER VALLEY 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.94	0.00	0.55	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	1	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 (%)	5	0	8	41	14	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.47	0.00	0.57	1.99	0.00	0.00	0.00	0.00
CRITICAL HOURS	2128	2209	1695	502	1902	2209	2160	2183
COLLECTIVE RADIATION EXPOSURE	NA	NA	59	133	198	299	8	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	3	5	1	2	2	NA
LICENSED OPERATOR	1	3	1	2	0	0	0	NA
OTHER PERSONNEL	1	0	1	5	0	1	2	NA
MAINTENANCE	1	3	7	12	3	2	3	NA
A) MAINT PERSONNEL	0	0	0	2	0	1	1	NA
B) SURV AND TEST	1	3	3	4	1	1	2	NA
C) EQUIPMENT	0	0	1	3	0	0	0	NA
D) POTENTIAL MAINT	0	0	3	3	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	2	1	0	1	0	2	NA
EQUIPMENT FAILURE	2	0	0	0	0	0	0	NA

**TABLE 8.5
BIG ROCK POINT**

PI EVENTS FOR 89-3

SSF 07/19/89 LER# 15589006 50.72# POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : DEFICIENCIES WERE FOUND IN TWO PENETRATION FIRE BARRIERS. ONE DEFICIENCY HAD BEEN OVERLOOKED DURING THE INITIAL FIRE PROTECTION UPGRADES, AND THE OTHER WAS THE RESULT OF REMOVING A CABLE WITHOUT PROPERLY SEALING THE BARRIER.

SSF 08/14/89 LER# 15589006 50.72# POWER: UNK
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : A DEFICIENCY WAS FOUND IN A FIRE BARRIER PENETRATION SEAL IN THE WALL SEPERATING THE ELECTRICAL EQUIPMENT ROOM AND THE COMPUTER ROOM. THIS RESULTED FROM AN INADEQUATE DESIGN REVIEW DURING THE ORIGINAL INSTALLATION OF THE SEAL.

SCRAM 08/22/89 LER# 15589008 50.72# 16378 POWER: 74
 DESC : GROSS LEAKAGE IN A PRESSURE REGULATOR BELLOWS ASSEMBLY IN THE TURBINE CONTROL SYSTEM. THE TURBINE STEAM ADMISSION VALVE CLOSED RAPIDLY CAUSING A REACTOR PRESSURE INCREASE AND A REACTOR TRIP ON HIGH NEUTRON FLUX.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.95	0.00	0.00	0.87	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	2	0	1	0
FORCED OUTAGE RATE (%)	8	6	0	0	3	8	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.48	0.95	0.00	0.00	0.87	0.49	0.00	0.00
CRITICAL HOURS	2076	2096	2063	1678	1143	2037	2160	2183
COLLECTIVE RADIATION EXPOSURE	14	11	16	59	60	13	9	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	1	0	2	0	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	2	0	1	3	0	0	NA
MAINTENANCE	1	2	2	1	3	0	0	NA
A) MAINT PERSONNEL	0	2	0	0	1	0	0	NA
B) SURV AND TEST	0	0	1	1	2	0	0	NA
C) EQUIPMENT	0	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	1	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	0	1	0	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

**TABLE 0.6
BRAIDWOOD 1**

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.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

SCRAM 06/08/90 LER# 50.72#: 18654 POWER: 99
DESC : A LOSS OF POWER TO THE CRD SYSTEM CAUSED A REACTOR TRIP ON HIGH NEGATIVE FLUX RATE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.50	0.47	0.61	0.00	0.67	1.00	0.7	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	0	1	0	1	1
SAFETY SYSTEM ACTUATIONS	0	1	0	1	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	11	7	4	4	2	0	2	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.95	1.21	0.51	0.00	0.00	0.00	0.00
CRITICAL HOURS	1996	2108	1648	1961	1494	484	2137	2159
COLLECTIVE RADIATION EXPOSURE	5	5	50	8	65	173	29	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	0	0	1	6	2	NA
LICENSED OPERATOR	1	0	0	1	0	0	1	NA
OTHER PERSONNEL	1	1	0	0	0	4	0	NA
MAINTENANCE	4	3	3	2	2	9	3	NA
A) MAINT PERSONNEL	1	1	0	0	1	4	1	NA
B) SURV AND TEST	3	0	0	0	0	4	0	NA
C) EQUIPMENT	0	1	0	1	0	0	0	NA
D) POTENTIAL MAINT	0	3	3	1	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	0	3	1	0	NA
EQUIPMENT FAILURE	2	0	0	0	1	0	0	NA

**TABLE 8.7
BRAIDWOOD 2**

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: 100
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 RATE REACTOR TRIP.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

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

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.02	1.11	0.00	0.46	0.94	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	1	0	0	0	0	0	1
TOTAL SCRAMS	3	3	0	1	2	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	0	1	0	1
FORCED OUTAGE RATE (%)	NA	18	0	2	4	0	0	21
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	1.98	0.00	0.46	0.00	0.00	0.00	0.00
CRITICAL HOURS	1968	1807	1127	2152	2131	2209	1777	710
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	29	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	2	0	0	4	1	NA
LICENSED OPERATOR	0	0	0	0	0	1	2	NA
OTHER PERSONNEL	4	1	1	0	0	1	0	NA
MAINTENANCE	9	4	3	1	1	2	1	NA
A) MAINT PERSONNEL	3	1	1	0	0	1	0	NA
B) SURV AND TEST	2	2	1	0	0	1	0	NA
C) EQUIPMENT	3	1	0	0	0	0	0	NA
D) POTENTIAL MAINT	2	1	1	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	0	0	1	2	0	NA
EQUIPMENT FAILURE	1	1	0	0	1	0	0	NA

TABLE 8.8
BROWNS FERRY 1

PI EVENTS FOR 89-3

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

SSF 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 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, RENDERING ALL EIGHT EDG'S INOPERABLE. THIS PROCEDURE ERROR HAD EXISTED FOR APPROXIMATELY TWO YEARS.

SSF 09/08/89 LER# 25989020 50.72#: 16538 POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 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. VALVE FAILURES COULD CAUSE PUMP DAMAGE OR PREVENT DESIGN SYSTEM FLOW.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

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

TABLE 8.8 (CONT.)
BROWN FERRY 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	3	1	0	0	0	0	2
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	1	3	3	1	1	0
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	120	87	53	35	38	82	72	NA
CAUSE CODES:								
ADMINISTRATIVE	12	11	9	5	7	3	3	NA
LICENSED OPERATOR	1	3	3	0	1	0	1	NA
OTHER PERSONNEL	3	6	2	3	3	1	1	NA
MAINTENANCE	11	20	10	6	8	5	5	NA
A) MAINT PERSONNEL	5	5	6	4	4	1	0	NA
B) SURV AND TEST	5	11	3	1	2	1	2	NA
C) EQUIPMENT	1	5	1	0	2	2	0	NA
D) POTENTIAL MAINT	1	4	0	1	0	1	3	NA
DESIGN/INSTALLATION/FABRICATION	8	6	7	4	3	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.9
BROWNS FERRY 2

PI EVENTS FOR 89-3

SSF 07/12/89 LER# 25989018 50.72#: POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 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 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 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, RENDERING ALL EIGHT EDG'S INOPERABLE. THIS PROCEDURAL ERROR HAD EXISTED FOR APPROXIMATELY TWO YEARS.

SSF 09/08/89 LER# 25989020 50.72#: 16538 POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 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. VALVE FAILURES COULD CAUSE PUMP DAMAGE OR PREVENT DESIGN SYSTEM FLOW.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

TABLE 8.9 (CONT.)
BROWNS FERRY 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	2	4	3	2	1	1
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
CUMULATIVE RADIATION EXPOSURE	120	87	53	35	38	82	72	NA
CAUSE CODES:								
ADMINISTRATIVE	12	12	10	9	8	3	4	NA
LICENSED OPERATOR	1	3	3	0	1	0	1	NA
OTHER PERSONNEL	3	10	3	4	7	1	1	NA
MAINTENANCE	11	22	12	12	12	7	6	NA
A) MAINT PERSONNEL	5	6	6	7	5	1	0	NA
B) SURV AND TEST	5	13	5	2	4	1	2	NA
C) EQUIPMENT	1	5	1	1	3	3	1	NA
D) POTENTIAL MAINT	1	3	0	2	0	2	3	NA
DESIGN/INSTALLATION/FABRICATION	8	6	8	4	3	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.10
BROWNS FERRY 3

PI EVENTS FOR 89-3

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

SSF 08/15/89 LER# 25989023 50.72#: 16395 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
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, RENDERING ALL EIGHT EDG'S INOPERABLE. THIS PROCEDURAL ERROR HAD EXISTED FOR APPROXIMATELY TWO YEARS.

SSF 09/08/89 LER# 25989020 50.72#: 16538 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
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. VALVE FAILURES COULD CAUSE PUMP DAMAGE OR PREVENT DESIGN SYSTEM FLOW.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

TABLE 8.10 (CONT.)
BROWNS FERRY 3

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	1	3	3	1	1	1
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	120	87	53	35	38	82	72	NA
CAUSE CODES:								
ADMINISTRATIVE	12	10	7	4	7	3	3	NA
LICENSED OPERATOR	1	3	3	0	1	0	1	NA
OTHER PERSONNEL	4	6	3	3	3	1	1	NA
MAINTENANCE	12	19	9	5	9	5	5	NA
A) MAINT PERSONNEL	6	5	6	3	4	1	0	NA
B) SURV AND TEST	5	11	1	1	2	1	2	NA
C) EQUIPMENT	1	5	2	0	3	2	0	NA
D) POTENTIAL MAINT	1	3	0	1	0	1	3	NA
DESIGN/INSTALLATION/FABRICATION	8	6	7	4	3	2	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.11
BRUNSWICK 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

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

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

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

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

SSF 05/29/90 LER# 50.72#: 18592 POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL BUILDING HVAC SYSTEM WAS UNABLE TO MAINTAIN THE REQUIRED POSITIVE PRESSURE DURING A ROUTINE SURVEILLANCE. THE EVENT IS UNDER INVESTIGATION.

TABLE 8.11 (CONT.)

BRUNSWICK 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	1	0	0
SIGNIFICANT EVENTS	1	1	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	4	5	2	0	0	1	2	4
FORCED OUTAGE RATE (%)	9	5	0	26	7	0	0	25
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.49	1.04	0.00	0.66	0.00	0.00	0.00	0.00
CRITICAL HOURS	2031	962	0	1519	2070	2161	2160	1672
COLLECTIVE RADIATION EXPOSURE	44	316	258	30	104	471	188	NA
CAUSE CODES:								
ADMINISTRATIVE	1	5	4	5	1	4	3	NA
LICENSEE/OPERATOR	0	4	4	1	0	0	0	NA
OTHER PERSONNEL	2	3	1	1	0	2	0	NA
MAINTENANCE	3	10	5	10	1	4	2	NA
A) MAINT PERSONNEL	2	2	3	3	0	1	0	NA
B) SURV AND TEST	0	4	1	3	1	1	0	NA
C) EQUIPMENT	0	3	1	4	0	1	1	NA
D) POTENTIAL MAINT	1	3	0	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	4	3	0	2	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

**TABLE 8.12
BRUNSWICK 2**

PI EVENTS FOR 89-3

SSF 09/09/89 LER# 32489013 50.72#: POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI AUXILIARY OIL PUMP SHAFT SEAL FAILED DURING TESTING. THE CAUSE OF THE FAILURE IS BEING INVESTIGATED. A PREVIOUS (PARTIAL) FAILURE OF THE SHAFT SEAL ON THE BRUNSWICK 1 AUX. OIL PUMP OCCURRED ON 09/03/89.

SSF 09/10/89 LER# 32489014 50.72#: 16552 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : DEGRADATION OF THE PRIMARY CONTAINMENT SAFETY BARRIER WAS FOUND DURING A LLRT. LEAKAGE FROM THE OUTER DRYWELL HEAD SEAL, TWO MSIVS, TWO MAIN FEEDWATER ISOLATION VALVES, AND MAIN STEAM DRAIN LINE ISOLATION VALVES EXCEEDED THE T.S. LIMIT.

PI EVENTS FOR 89-4

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

SSA 12/10/89 LER# 32589026 50.72#: 17308 POWER: 0
 DESC : WHILE PREPARING FOR MAINTENANCE ON THE AUXILIARY BUS "2D", THE BREAKER BETWEEN IT AND THE EMERGENCY DIESEL OPENED, DIESEL #3 ALIGNED BACK ONTO EMERGENCY BUS 'E3'.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

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

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

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

SSF 05/29/90 LER# 50.72#: 18592 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CONTROL BUILDING HVAC SYSTEM WAS UNABLE TO MAINTAIN THE REQUIRED POSITIVE PRESSURE DURING A ROUTINE SURVEILLANCE. THE EVENT IS UNDER INVESTIGATION.

SSA 05/31/90 LER# 50.72#: 18595 POWER: 0
 DESC : ALL FOUR EDG'S STARTED WITH THE #3 DG LOADING THE E3 BUS DURING A MAINTENANCE ACTIVITY.

TABLE 8.12 (CONT.)
BRUNSWICK 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	1	3	0	2	0	1
SIGNIFICANT EVENTS	1	1	0	1	0	0	0	1
SAFETY SYSTEM FAILURES	3	2	2	1	2	0	0	3
FORCED OUTAGE RATE (%)	0	4	0	12	0	0	0	25
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.46	0.00	0.52	0.00	0.00	0.00	0.00
CRITICAL HOURS	2001	2154	2160	1939	1681	0	461	1589
COLLECTIVE RADIATION EXPOSURE	44	316	258	30	104	471	188	NA
CAUSE CODES:								
ADMINISTRATIVE	1	6	0	4	3	3	5	NA
LICENSED OPERATOR	0	2	0	0	1	0	0	NA
OTHER PERSONNEL	0	5	2	1	1	1	1	NA
MAINTENANCE	3	9	4	6	7	7	6	NA
A) MAINT PERSONNEL	0	1	1	1	0	1	1	NA
B) SURV AND TEST	1	6	1	2	4	2	2	NA
C) EQUIPMENT	1	1	1	3	1	2	1	NA
D) POTENTIAL MAINT	1	1	1	0	2	2	2	NA
DESIGN/INSTALLATION/FABRICATION	4	4	3	0	2	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.13

BYRON 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

SSF 04/11/90 LER# 45490006 50.72#: 18216 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : WITH THE "B" EDG OUT OF SERVICE FOR MAINTENANCE, THE "A" EDG WAS DECLARED INOPERABLE DUE TO LARGE VOLTAGE AND FREQUENCY OSCILLATIONS EXPERIENCED DURING AN OPERABILITY SURVEILLANCE. THE PROBLEM WAS A BAD RESISTOR IN THE GOVERNOR CONTROL CIRCUITRY.

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.50
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	2	0	0	0	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	4	0	1	0	0	0	0	6
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.33	0.00	0.47	0.00	0.00	0.00	0.00	0.99
CRITICAL HOURS	1499	1309	2143	2183	2208	2209	779	2011
COLLECTIVE RADIATION EXPOSURE	156	191	66	4	7	10	136	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	2	1	0	3	NA
LICENSED OPERATOR	1	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	1	0	0	0	3	NA
MAINTENANCE	3	2	3	2	1	0	3	NA
A) MAINT PERSONNEL	0	1	1	2	0	0	0	NA
B) SURV AND TEST	1	0	1	0	1	0	3	NA
C) EQUIPMENT	1	1	1	0	0	0	0	NA
D) POTENTIAL MAINT	2	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	1	1	0	NA
EQUIPMENT FAILURE	2	0	1	0	1	0	1	NA

TABLE 8.14

BYRON 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.46	0.00	0.00	0.00	0.00	0.48	0.00
SCRAMS <= 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	2	1	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	2	1	0	8	0	8	1	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.92	0.46	0.00	0.49	0.00	0.49	0.48	0.00
CRITICAL HOURS	2171	2194	806	2021	2208	2025	2093	2183
COLLECTIVE RADIATION EXPOSURE	NA	NA	66	4	7	10	136	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	0	1	0	1	NA
LICENSED OPERATOR	1	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	1	0	0	0	0	1	NA
MAINTENANCE	5	2	2	1	1	0	2	NA
A) MAINT PERSONNEL	0	2	0	0	0	0	0	NA
B) SURV AND TEST	2	0	1	0	1	0	1	NA
C) EQUIPMENT	3	1	1	0	0	0	1	NA
D) POTENTIAL MAINT	3	0	0	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	1	1	0	NA
EQUIPMENT FAILURE	2	0	0	0	1	0	0	NA

TABLE 8.15

CALLAWAY

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

SCRAM 06/11/90 LER# 50.72#: 18680 POWER: 100
 DESC : ALL FOUR MSIVS CLOSED FOR UNKNOWN REASONS. THE REACTOR TRIPPED DUE TO OVERPRESSURE.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	1.08	0.00	0.00	0.00	0.95
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	0	0	0	2
SAFETY SYSTEM ACTUATIONS	0	1	0	2	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	1	0
FORCED OUTAGE RATE (%)	1	0	0	3	2	0	0	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	1.08	0.00	0.00	0.00	0.48
CRITICAL HOURS	2187	2055	2138	927	2208	2209	2160	2057
COLLECTIVE RADIATION EXPOSURE	6	13	6	259	9	8	7	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	0	2	1	0	1	NA
LICENSED OPERATOR	1	1	1	4	1	0	0	NA
OTHER PERSONNEL	1	1	1	1	1	1	0	NA
MAINTENANCE	3	2	2	5	2	1	2	NA
A) MAINT PERSONNEL	1	1	0	0	0	0	0	NA
B) SURV AND TEST	2	1	1	4	1	0	1	NA
C) EQUIPMENT	1	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	1	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	0	0	0	1	NA
EQUIPMENT FAILURE	1	0	0	1	0	1	0	NA

**TABLE 8.16
CALVERT CLIFFS 1**

PI EVENTS FOR 89-3

SSF 07/10/89 LER# 31889011 50.72#: POWER: 0
 GROUP : PRIMARY REACTOR SYSTEMS GROUP
 SYSTEM : STEAM GENERATING SYSTEM
 DESC : 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 AFTER BEING TORQUED TO ITS SPECIFIED VALUE.

SSF 08/22/89 LER# 31789015 50.72#: 16382 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
 DESC : THE CALCULATIONS THAT DETERMINED THE DOUSING SYSTEM FOR THE CONTAINMENT IODINE FILTERS DID NOT NEED TO BE ENVIRONMENTALLY QUALIFIED WERE IN ERROR. MIS-OPERATION OF THE APPLICABLE COMPONENTS COULD PREVENT THE FILTERS FROM PERFORMING THEIR SAFETY FUNCTION.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

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

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

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

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

PI EVENTS FOR 90-2

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

TABLE 8.16 (CONT.)
CALVERT CLIFFS 1

PI EVENTS FOR 90-2 (CONT.)

SSF 05/08/90 LER# 50.72#18412 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : REACTOR CONTAINMENT BUILDING
 DESC : THE CUMULATIVE CONTAINMENT PENETRATION LEAK RATE EXCEEDED THE T.S. LIMIT BY A FACTOR OF 1.4.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	2	1	4	2
FORCED DUTY RATE (%)	4	2	4	0	0	0	0	15
EQUIP. FORCED DUTY COMMERCIAL HRS	0.47	1.06	1.37	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2139	1881	1455	352	0	0	0	242
COLLECTIVE RADIATION EXPOSURE	9	12	20	68	47	38	34	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	3	1	3	4	6	NA
LICENSED OPERATOR	2	0	2	0	0	0	0	NA
OTHER PERSONNEL	2	0	1	1	0	1	4	NA
MAINTENANCE	1	3	4	1	3	3	8	NA
A) MAINT PERSONNEL	1	1	2	1	1	0	3	NA
B) SURV AND TEST	0	1	2	0	2	3	5	NA
C) EQUIPMENT	0	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	3	2	5	4	3	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.17
CALVERT CLIFFS 2

PI EVENTS FOR 89-3

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

SSF 08/22/89 LER# 31789015 50.72#: 16382 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
DESC : THE CALCULATIONS THAT DETERMINED THE DOUSING SYSTEM FOR THE CONTAINMENT IODINE FILTERS DID NOT NEED TO BE ENVIRONMENTALLY QUALIFIED WERE IN ERROR. MIS-OPERATION OF THE APPLICABLE COMPONENTS COULD PREVENT THE FILTERS FROM PERFORMING THEIR SAFETY FUNCTION.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

TABLE 8.17 (CONT.)
CALVERT CLIFFS 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	2	2	1	1	1
FORCED OUTAGE RATE (%)	0	0	11	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.57	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2208	2209	1766	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	9	12	20	68	47	38	34	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	6	3	1	4	3	NA
LICENSED OPERATOR	1	0	0	1	0	0	0	NA
OTHER PERSONNEL	1	0	2	1	0	0	2	NA
MAINTENANCE	1	1	6	4	1	3	4	NA
A) MAINT PERSONNEL	0	0	3	2	0	0	1	NA
B) SURV AND TEST	1	0	2	1	1	3	3	NA
C) EQUIPMENT	0	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	4	4	3	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.18

CATAWBA 1

PI EVENTS FOR 89-3

SSF 09/15/89 LER# 41309023 50.72#; 16598 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CREV SYSTEM WERE INOPERABLE. TRAIN 'A' COULD NOT MAINTAIN THE REQUIRED POSITIVE PRESSURE IN THE CONTROL ROOM AND TRAIN 'B' WAS INOPERABLE FOR CHILLER MAINTENANCE. SYSTEM OPERABILITY WAS RESTORED WHEN AN INTAKE DAMPER WAS ADJUSTED.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

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

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

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

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

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

PI EVENTS FOR 90-2

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

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

TABLE 8.18 (CONT.)

CATAWBA 1

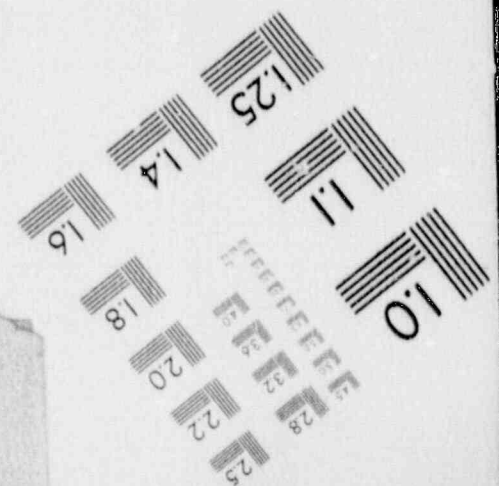
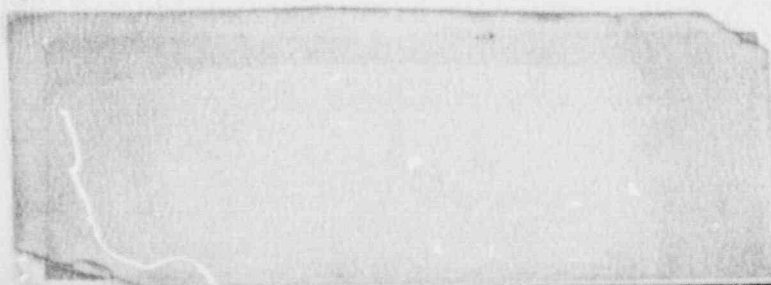
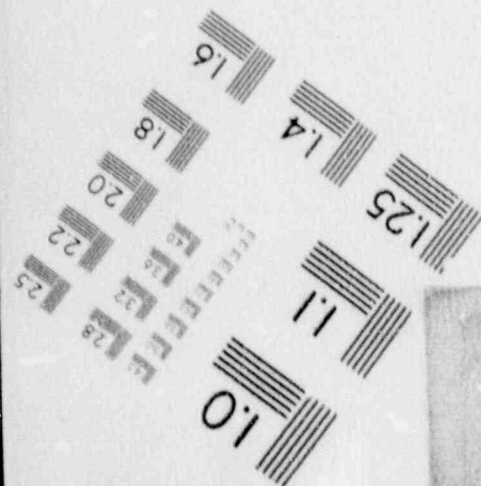
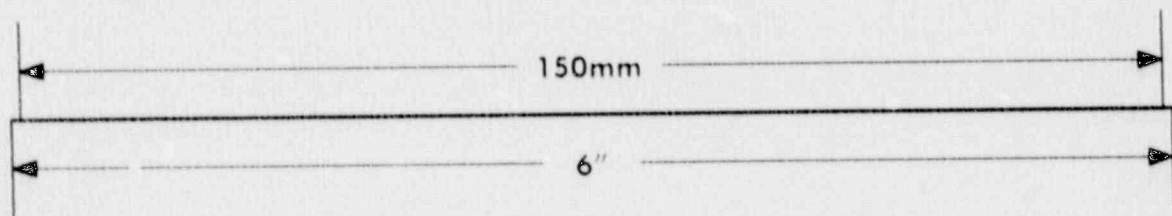
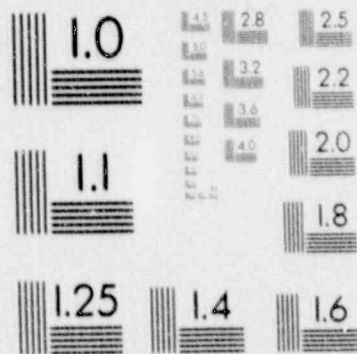
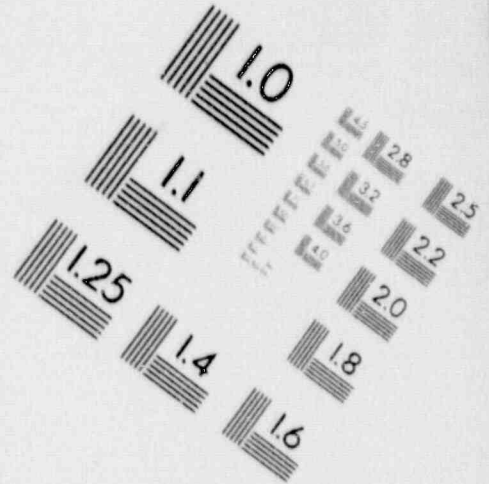
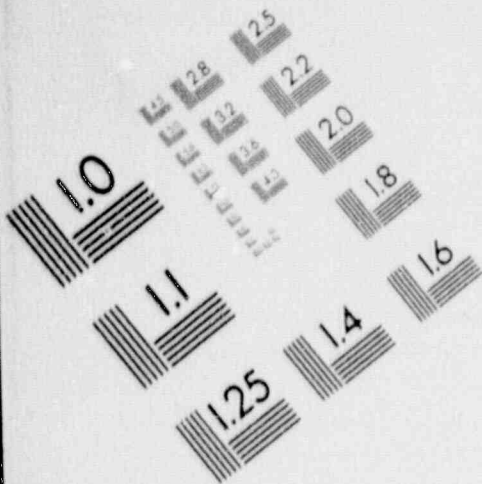
PI EVENTS FOR 90-2 (CONT.)

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	1
SAFETY SYSTEM FAILURES	0	2	1	0	1	0	5	2
FORCED OUTAGE RATE (%)	16	0	9	6	1	12	0	29
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.19	0.00	3.10	0.99	0.46	1.52	0.00	2.91
CRITICAL HOURS	1681	1308	1289	2020	2197	1979	629	1372
COLLECTIVE RADIATION EXPOSURE	30	98	79	72	6	10	268	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	4	3	3	2	13	NA
LICENSED OPERATOR	0	0	2	0	1	0	3	NA
OTHER PERSONNEL	1	1	4	1	1	0	5	NA
MAINTENANCE	1	5	9	4	4	2	12	NA
A) MAINT PERSONNEL	1	1	2	2	1	0	3	NA
B) SURV AND TEST	1	2	2	2	1	1	8	NA
C) EQUIPMENT	0	1	5	0	1	0	0	NA
D) POTENTIAL MAINT	0	1	0	0	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	3	5	2	4	2	5	NA
EQUIPMENT FAILURE	0	0	0	1	1	1	0	NA

1

IMAGE EVALUATION TEST TARGET (MT-3)



1

IMAGE EVALUATION TEST TARGET (MT-3)

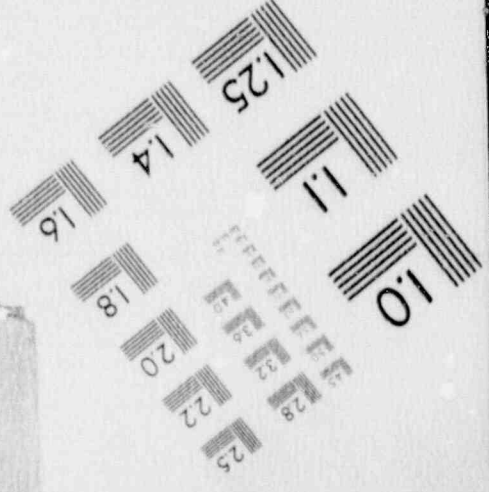
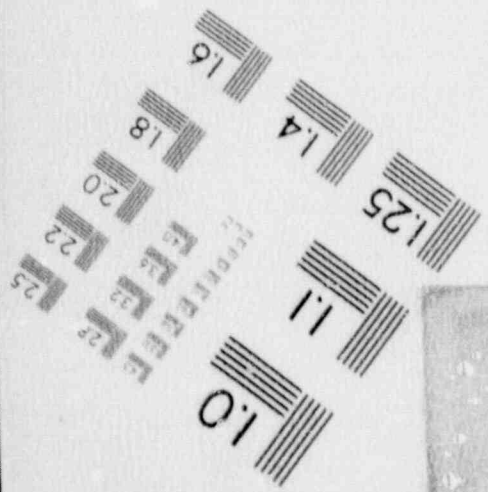
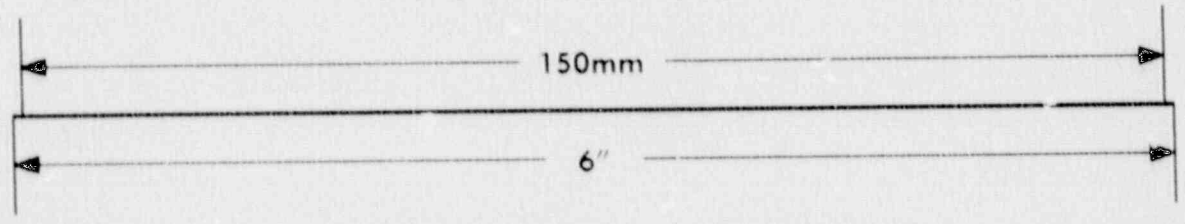
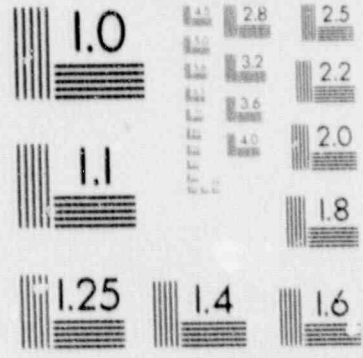
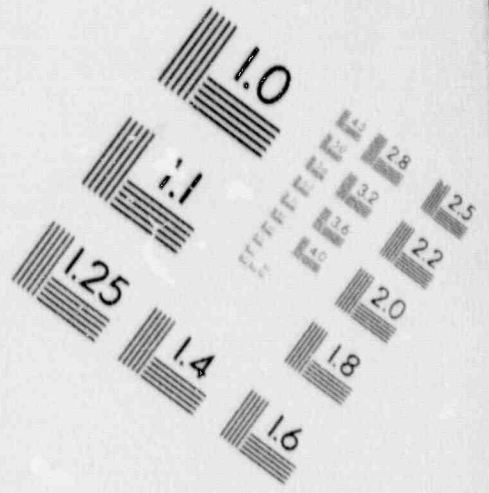
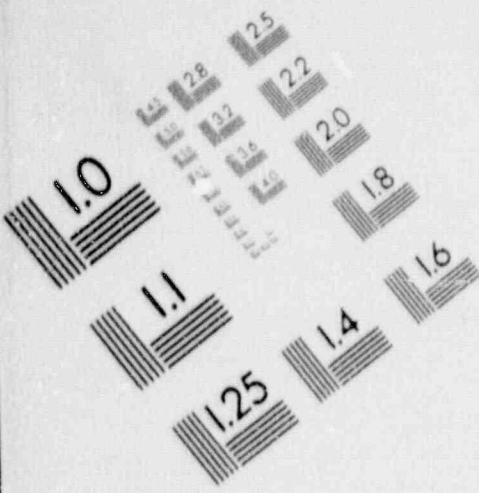


TABLE 8.19

CATAWBA 2

PI EVENTS FOR 89-3

SSF 09/12/89 LER# 41489019 50.72#: POWER: 97
 GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
 SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
 DESC : WITH THE TURBINE DRIVEN AUXILIARY FEEDWATER PUMP OUT OF SERVICE FOR MODIFICATIONS, THE TWO MOTOR DRIVEN AFW PUMPS WERE RENDERED INOPERABLE. THIS EVENT WAS CAUSED BY A COMBINATION OF PERSONNEL ERRORS AND AN UNCLEAR STEP IN A PROCEDURE.

SSF 09/15/89 LER# 41389023 50.72#: 16598 POWER: 98
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CRFV SYSTEM WERE DECLARED INOPERABLE. TRAIN 'A' COULD NOT MAINTAIN THE REQUIRED POSITIVE PRESSURE IN THE CONTROL ROOM AND TRAIN 'B' WAS DECLARED INOPERABLE DUE TO CHILLER MAINTENANCE. DAMPERS WERE ADJUSTED AND/OR LEAKS WERE REPAIRED.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

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

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

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

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

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

TABLE E.19 (CONT.)

CATAWBA 2

PI EVENTS FOR 90-2

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.31	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	2	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	2	0	6	1
FORCED OUTAGE RATE (%)	8	3	9	18	1	0	3	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.44	1.39	3.28	0.00	0.45	0.00	0.47	0.00
CRITICAL HOURS	2080	2164	1526	505	2208	2209	2119	1671
COLLECTIVE RADIATION EXPOSURE	30	96	79	72	6	10	268	NA
CAUSE CODES:								
ADMINISTRATIVE	2	4	7	5	5	2	9	NA
LICENSED OPERATOR	0	0	2	0	3	0	1	NA
OTHER PERSONNEL	2	1	3	5	3	1	3	NA
MAINTENANCE	3	7	10	9	5	2	7	NA
A) MAINT PERSONNEL	2	2	2	5	1	0	1	NA
B) SURV AND TEST	1	3	5	4	3	2	5	NA
C) EQUIPMENT	2	3	2	0	1	0	0	NA
D) POTENTIAL MAINT	0	1	1	0	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	4	5	2	3	3		NA
EQUIPMENT FAILURE	0	0	0	1	1	0	0	NA

TABLE 8.20

CLINTON 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

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

SSF 03/07/90 LER# 46190004 50.72#: 17919 POWER: 0
 GROUP : SPENT FUEL SYSTEMS GROUP
 SYSTEM : FUEL POOL COOLING AND PURIFICATION SYSTEM
 DESC : A REVIEW OF 73 SOLENOID OPERATED VALVES (SOV) IDENTIFIED 4 THAT COULD HAVE BEEN OVERPRESSURIZED BY FAILURE OF THE ASSOCIATED AIR REGULATOR. THIS COULD HAVE RENDERED THE ASSOCIATED AIR VALVES AND THE FUEL POOL COOLING AND CLEANUP SYSTEM INOPERABLE.

SSA 03/31/90 LER# 46190007 50.72#: 18110 POWER: 0
 DESC : PERSONNEL ERROR BY NONLICENSED UTILITY OPERATOR CAUSED DEENERGIZATION OF DIVISION II NUCLEAR SYSTEM PROTECTION SYSTEM BUS. EDG2 RECEIVED AN AUTO START SIGNAL, BUT DID NOT START BECAUSE IT WAS OOS

SSA 03/31/90 LER# 46190007 50.72#: 18110 POWER: 0
 DESC : PERSONNEL ERROR BY NONLICENSED UTILITY OPERATOR CAUSED DEENERGIZATION OF DIVISION II NUCLEAR SYSTEM PROTECTION SYSTEM BUS. LPCI RECEIVED AN SI SIGNAL, BUT PUMPS WERE TAGGED OUT. EDG2 RECEIVED AN AUTO START SIGNAL BUT DID NOT START BECAUSE IT WAS OOS

PI EVENTS FOR 90-2

SSF 05/08/90 LER# 46190010 50.72#: 18420 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : DIESEL COOLING WATER SYSTEM
 DESC : THE DIVISION I AND II EMERGENCY DIESEL GENERATORS WERE DECLARED INOPERABLE. EXPANSION BELLOWS IN THE SHUTDOWN SERVICE WATER PIPING TO THE DIESELS COULD OVEREXPAND AND BEND PIPING HANGERS, POSSIBLY RESULTING IN OVER-STRESSED PIPING.

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

SE 05/14/90 LER# 46190011 50.72#: 18488 POWER: 1
 DESC : AFTER MAINTENANCE ON SERVICE WATER SYSTEM, OUTLET VALVES FOR EDG SERVICE WATER COOLERS WERE NOT POSITIONED. THIS CREATED A SITUATION WHERE INSUFFICIENT COOLING WATER WAS AVAILABLE FOR DIV I AND DIV II EDGs.

TABLE 8.20 (CONT.)

CLINTON 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.52	0.00	2.35	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	2	0
SIGNIFICANT EVENTS	0	1	0	1	0	0	1	1
SAFETY SYSTEM FAILURES	0	3	2	1	0	1	2	2
FORCED OUTAGE RATE (%)	2	15	0	85	21	0	16	25
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.52	0.00	4.69	1.10	0.00	0.96	0.61
CRITICAL HOURS	2181	1936	51	426	1817	1950	1037	1636
COLLECTIVE RADIATION EXPOSURE	NA	NA	260	81	14	18	85	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	10	7	2	5	3	NA
LICENSED OPERATOR	0	1	4	2	3	1	1	NA
OTHER PERSONNEL	3	3	3	4	1	2	1	NA
MAINTENANCE	5	7	11	10	4	6	4	NA
A) MAINT PERSONNEL	3	3	1	4	2	0	2	NA
B) SURV AND TEST	1	3	8	5	0	4	1	NA
C) EQUIPMENT	2	1	2	1	2	1	0	NA
D) POTENTIAL MAINT	2	1	0	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	1	3	2	1	3	4	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

**TABLE 8.21
COMANCHE PEAK 1**

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

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

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

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

SSF 05/09/90 LER# 50.72#: 18424 POWER: 48
 GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
 SYSTEM : FEEDWATER/STEAM GENERATOR WATER LEVEL CONTROL SYSTEM
 DESC : A JUMPER INSTALLED IN THE INCORRECT LOCATION RESULTED IN A LOSS OF SPEED CONTROL OF BOTH FEEDWATER PUMPS. A SUBSEQUENT REACTOR TRIP OCCURRED DUE TO LOW STEAM GENERATOR LEVELS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	0.61
SCRAMS <= 15% POWER	NA	NA	NA	NA	NA	NA	NA	1
TOTAL SCRAMS	NA	NA	NA	NA	NA	NA	NA	2
SAFETY SYSTEM ACTUATIONS	NA	NA	NA	NA	NA	NA	1	0
SIGNIFICANT EVENTS	NA	NA	NA	NA	NA	NA	0	0
SAFETY SYSTEM FAILURES	NA	NA	NA	NA	NA	NA	1	2
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES, 1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	NA	NA	NA	NA	NA	NA	NA	1651
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	2	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	NA	0	NA
MAINTENANCE	NA	NA	NA	NA	NA	NA	4	NA
A) MAINT PERSONNEL	NA	NA	NA	NA	NA	NA	0	NA
B) SURV AND TEST	NA	NA	NA	NA	NA	NA	3	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	1	NA

TABLE 8.22

COOK 1

PI EVENTS FOR 89-3

SSF 09/13/89 LER# 31589012 50.72# POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : WITH THE "A" TRAIN OF HPSI INOPERABLE FOR LEAK REPAIRS THE "B" TRAIN WAS INADVERTENTLY RENDERED INOPERABLE. PERSONNEL RENDERED THE "B" TRAIN OF THE SOLID STATE PROTECTION SYSTEM INOPERABLE FOR TESTING, WHICH RENDERED THE "B" TRAIN OF HPSI INOPERABLE.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.95	0.55	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	2	2	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	0	1	0	1	1
FORCED OUTAGE RATE (%)	0	6	1	0	4	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2010	2109	1810	0	2151	2209	2097	2183
COLLECTIVE RADIATION EXPOSURE	184	74	95	138	10	10	25	NA
CAUSE CODES:								
ADMINISTRATIVE	4	2	2	3	3	1	1	NA
LICENSED OPERATOR	0	0	1	0	0	1	0	NA
OTHER PERSONNEL	4	1	1	2	3	0	1	NA
MAINTENANCE	5	3	4	5	4	1	1	NA
A) MAINT PERSONNEL	2	1	0	0	1	1	1	NA
B) SURV AND TEST	3	1	2	4	3	0	0	NA
C) EQUIPMENT	0	1	2	1	0	0	0	NA
D) POTENTIAL MAINT	0	2	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	0	0	0	1	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.23

COOK 2

PI EVENTS FOR 89-3

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. TWO ROD BOTTOM LIGHTS DID NOT FUNCTION. CAUSE OF VOLTAGE LOSS WAS A SILICON CONTROLLED RECTIFIER IN THE UNINTERRUPTABLE POWER SUPPLY STATIC SWITCH FAILED.

SE 08/14/89 LER# 31689014 50.72#: 16318 POWER: 100
 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. AIT TO SITE. (MORNING REPORT ON 08/15/89)

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/11/90 LER# 31690002 50.72#: 17530 POWER: 0
 GROUP : MAIN STEAM ISOLATION VALVES GROUP
 SYSTEM : MAIN STEAM ISOLATION VALVES
 DESC : ALL FOUR MAIN STEAM ISOLATION VALVES MAY HAVE BEEN INOPERABLE DURING PLANT POWER OPERATION. EXCESSIVE CONDENSATE ACCUMULATION ON THE VENT SIDE OF THE MSIV OPERATING PISTON CAUSED THE VALVE CLOSING TIMES TO EXCEED THE TECHNICAL SPECIFICATION LIMIT.

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

PI EVENTS FOR 90-2

SCRAM 06/11/90 LER# 50.72#: 18681 POWER: 85
 DESC : ROD 'NB' IS SUSPECTED TO HAVE DROPPED, CAUSING A HIGH NEGATIVE FLUX RATE REACTOR SCRAM.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	1	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	5	0	22	3
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
CRITICAL HOURS	0	0	395	1863	2114	2209	1695	2093
COLLECTIVE RADIATION EXPOSURE	184	74	95	138	10	10	25	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	2	2	2	1	1	NA
LICENSED OPERATOR	0	0	1	2	0	0	0	NA
OTHER PERSONNEL	1	1	3	2	1	0	2	NA
MAINTENANCE	3	3	8	5	2	2	2	NA
A) MAINT PERSONNEL	1	1	2	0	1	1	1	NA
B) SURV AND TEST	2	2	2	4	1	0	1	NA
C) EQUIPMENT	0	0	3	1	0	1	0	NA
D) POTENTIAL MAINT	0	1	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	0	0	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

**TABLE 8.24
COOPER STATION**

PI EVENTS FOR 89-3

SCRAM 09/28/89 LER# 29889025 50.72#: 16726 POWER: 100
 DESC : THE ELECTRO HYDRAULIC CONTROL VALVE FAST CLOSED DUE TO A SPURIOUS LOW ENG OIL RESERVOIR LEVEL SIGNAL. THIS CAUSED A REACTOR TRIP.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

SSF 03/26/90 LER# 50.72#: 18711 POWER: 0
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : THE LIMITORQUE MOTOR PINION KEYS OF THE TORUS COOLING VALVES WERE NOT OF THE PROPER MATERIAL HARDNESS. AS A RESULT, THE TORUS COOLING MODE OF RHR MAY NOT HAVE PERFORMED ITS SAFETY FUNCTION.

PI EVENTS FOR 90-2

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

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

	TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS		0.47	0.00	0.52	0.00	0.46	0.48	0.00	0.00
SCRAMS <= 15% POWER		0	0	0	0	0	0	0	0
TOTAL SCRAMS		1	0	1	0	1	1	0	0
SAFETY SYSTEM ACTUATIONS		2	0	0	0	0	1	0	2
SIGNIFICANT EVENTS		0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES		1	0	4	2	0	0	1	0
FORCED OUTAGE RATE (%)		5	0	12	0	3	6	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS		0.47	0.00	0.52	0.00	0.00	0.48	0.00	0.00
CRITICAL HOURS		2130	2209	1913	512	2164	2084	1465	1369
COLLECTIVE RADIATION EXPOSURE		20	21	28	274	19	21	157	NA
CAUSE CODES:									
ADMINISTRATIVE		0	0	4	4	0	0	1	NA
LICENSED OPERATOR		0	0	1	0	0	0	0	NA
OTHER PERSONNEL		1	0	3	0	0	0	1	NA
MAINTENANCE		6	1	4	8	2	1	2	NA
A) MAINT PERSONNEL		0	0	2	5	0	0	0	NA
B) SURV AND TEST		1	0	2	1	0	0	1	NA
C) EQUIPMENT		5	1	0	0	1	1	1	NA
D) POTENTIAL MAINT		1	0	0	2	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION		0	0	6	6	0	1	1	NA
EQUIPMENT FAILURE		1	0	0	0	0	0	0	NA

TABLE #.25
CRYSTAL RIVER 3

PI EVENTS FOR 89-3

SSF 08/28/89 LER# 30289031 50.72#: 16421 POWER: 0
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : WITH THE "B" DECAY HEAT TRAIN INOPERABLE DUE TO MAINTENANCE THE "A" TRAIN BECAME INOPERABLE WHEN THE SUPPLY TRANSFORMER TO ITS COOLING SOURCE FAILED. THE CAUSE OF THE FAILURE WAS INSULATION BREAKDOWN CAUSED BY AGING. RHR WAS UNAVAILABLE FOR 19 MIN.

SSF 09/06/89 LER# 30289035 50.72#: 16516 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : AN INVESTIGATION OF DC-POWERED COMPONENTS WAS CONDUCTED. THE AS SEEN VOLTAGE OF 270 COMPONENTS WAS HIGHER THAN THEIR MAXIMUM RATING. OF THESE, 32 WERE DETERMINED TO BE INOPERABLE. THE CAUSE WAS INADEQUATE CONTROL OF THE DESIGN PROCESS.

PI EVENTS FOR 89-4

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

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

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

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

SSF 04/23/90 LER# 30290007 50.72#: POWER: 0
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A DOOR BETWEEN THE CONTROL COMPLEX AND THE TURBINE BUILDING WAS REMOVED FOR MODIFICATION WORK ON JANUARY 12, 1990. ON APRIL 23, 1990, IT WAS DETERMINED THAT THIS RENDERED BOTH TRAINS OF THE CONTROL COMPLEX EMERGENCY VENTILATION SYSTEM INOPERABLE.

SSF 05/15/90 LER# 50.72#: 18483 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : LOW-VOLTAGE POWER SYSTEM - CLASS 1E
DESC : THE OVERCURRENT TRIP DEVICES ASSOCIATED WITH THE 480V ESF BUSES WERE INADEQUATELY SIZED. THE LARGEST CALCULATED FAULT CURRENT COULD COMPROMISE THE PROTECTION OF SAFETY RELATED EQUIPMENT.

TABLE 8.25 (CONT.)
CRYSTAL RIVER 3

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.0	0.87	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	2	0	4	0	1	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	2	2	2	1	2	2
FORCED OUTAGE RATE (%)	0	2	0	59	45	13	4	8
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	3.58	0.00	0.00	0.00	4.26
CRITICAL HOURS	220P	1153	1016	279	1216	1763	1499	235
COLLECTIVE RADIATION EXPOSURE	5	39	130	70	8	10	49	NA
CAUSE CODES:								
ADMINISTRATIVE	2	7	5	6	4	3	0	NA
LICENSED OPERATOR	1	1	1	2	1	0	0	NA
OTHER PERSONNEL	2	5	0	3	3	1	0	NA
MAINTENANCE	2	7	4	9	6	2	1	NA
A) MAINT PERSONNEL	0	3	1	5	0	0	0	NA
B) SURV AND TEST	2	4	3	1	5	0	0	NA
C) EQUIPMENT	0	0	0	1	1	0	1	NA
D) POTENTIAL MAINT	0	0	0	2	0	2	0	NA
DESIGN/INSTALLATION/FABRICATION	3	3	7	5	5	2	4	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	0	NA

**TABLE 8.26
DAVIS-BESSE**

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

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

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

SSA 06/09/90 LER# 50.72#: 18670 POWER: 0
DESC : THE LOSS OF THE 4160V ESSENTIAL BUS CAUSED THE EDG TO START AND LOAD THE BUS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	2.15	0.51	0.46	0.00	0.00	1.64	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	4
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	0	1	0	0	0	0
FORCED OUTAGE RATE (%)	0	15	0	1	0	0	18	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	2.15	0.51	0.46	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	465	1962	2168	2208	2209	609	0
COLLECTIVE RADIATION EXPOSURE	102	17	7	11	9	10	251	NA
CAUSE CODES:								
ADMINISTRATIVE	5	3	2	4	1	0	2	NA
LICENSED OPERATOR	0	4	1	0	0	0	1	NA
OTHER PERSONNEL	1	2	0	1	5	1	0	NA
MAINTENANCE	4	4	2	4	4	2	2	NA
A) MAINT PERSONNEL	2	1	0	1	2	1	0	NA
B) SURV AND TEST	3	2	1	3	2	0	1	NA
C) EQUIPMENT	0	1	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	1	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	4	1	0	2	0	0	1	NA
EQUIPMENT FAILURE	1	0	1	1	0	0	0	NA

TABLE 8.27
DIABLO CANYON 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2	
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.03	0.00	0.00	0.00	0.00	1.57	0.00	0.47	
SCRAMS <= 15% POWER	2	0	0	0	0	0	0	0	
TOTAL SCRAMS	4	0	0	0	0	1	0	1	
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	1	0	1	
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0	
SAFETY SYSTEM FAILURES	0	1	1	0	0	0	1	1	
FORCED OUTAGE RATE (%)	4	0	0	0	0	1	2	6	
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.52	0.00	0.00	0.00	0.00	0.00	0.47	0.47	
CRITICAL HOURS	1942	2209	2160	2183	2208	638	2125	2106	
COLLECTIVE RADIATION EXPOSURE	64	143	3	4	4	207	108	NA	
CAUSE CODES:									
ADMINISTRATIVE	3	3	3	0	2	6	2	NA	
LICENSED OPERATOR	2	1	0	0	0	1	1	NA	
OTHER PERSONNEL	5	3	2	0	0	2	1	NA	
MAINTENANCE	6	4	3	0	2	8	1	NA	
A) MAINT PERSONNEL	3	2	2	0	1	4	0	NA	
B) SURV AND TEST	4	2	1	0	1	3	1	NA	
C) EQUIPMENT	1	0	0	0	0	0	0	NA	
D) POTENTIAL MAINT	0	0	0	0	0	1	0	NA	
DESIGN/INSTALLATION/FABRICATION	4	3	1	0	1	2	0	NA	
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA	

TABLE 8.28
DIABLO CANYON 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/20/90 LER# 27583037 50.72#: 18296 POWER: 0

GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP

SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM

DESC : BECAUSE OF INADEQUATE SEPARATION OF REDUNDANT CIRCUITS, THE LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM MIGHT NOT HAVE BEEN CAPABLE OF SUSTAINING A SINGLE FAILURE AND MAINTAINING AT LEAST ONE TRAIN OPERATIONAL. THIS RESULTED FROM A DESIGN ERROR.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.79	0.00	0.00	0.51	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	2	1	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	2	0	0	0	0	1
FORCED OUTAGE RATE (%)	33	0	0	4	9	11	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.59	0.00	0.00	0.51	0.98	0.50	0.00	0.66
CRITICAL HOURS	1258	632	2160	1946	2035	1996	1490	1526
COLLECTIVE RADIATION EXPOSURE	64	143	3	4	4	207	108	NA
CAUSE CODES:								
ADMINISTRATIVE	1	9	4	1	2	6	1	NA
LICENSED OPERATOR	1	1	0	1	0	0	0	NA
OTHER PERSONNEL	2	6	0	0	1	0	1	NA
MAINTENANCE	4	12	4	2	3	4	0	NA
A) MAINT PERSONNEL	2	7	2	1	2	1	0	NA
B) SURV AND TEST	1	5	1	1	1	3	0	NA
C) EQUIPMENT	0	2	0	0	0	0	0	NA
D) POTENTIAL MAINT	1	1	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	6	1	0	1	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.29

DRESDEN 2

PI EVENTS FOR 89-3

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

SSF 08/27/89 LER# 23789022 50.72#: 16418 POWER: 93
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE, WHILE INVESTIGATING A HIGH HPCI ROOM AMBIENT TEMPERATURE, IT WAS DISCOVERED THAT THE HPCI ROOM COOLER DRIVE BELTS HAD BROKEN. THE LPCI SYSTEM HAD BEEN PREVIOUSLY DECLARED INOPERABLE.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

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

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

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

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

PI EVENTS FOR 90-2

NONE

TABLE 8.29 (CONT.)

DRESDEN 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.08	0.00	0.46	0.00	1.06	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	1	0	2	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	1	0
SIGNIFICANT EVENTS	0	1	1	0	0	1	2	0
SAFETY SYSTEM FAILURES	2	0	2	1	1	1	0	0
FORCED OUTAGE RATE (%)	0	0	9	0	2	4	14	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.46	0.00	0.53	0.00
CRITICAL HOURS	2208	700	929	2183	2177	1964	1888	2183
COLLECTIVE RADIATION EXPOSURE	46	343	370	46	43	105	169	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	7	2	3	1	1	NA
LICENSED OPERATOR	1	1	2	0	0	0	0	NA
OTHER PERSONNEL	1	1	2	1	0	2	1	NA
MAINTENANCE	3	7	10	3	10	3	2	NA
A) MAINT PERSONNEL	0	4	4	0	2	1	0	NA
B) SURV AND TEST	2	1	3	1	0	0	1	NA
C) EQUIPMENT	1	3	2	1	5	1	1	NA
D) POTENTIAL MAINT	1	1	1	1	3	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	2	0	2	1	0	NA
EQUIPMENT FAILURE	1	0	2	0	0	0	0	NA

TABLE 8.30

DRESDEN 3

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

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

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

PI EVENTS FOR 90-1

SSF 02/24/90 LER# 24990002 50.72#: 17830 POWER: 27
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO THE LOSS OF THE FLOW CONTROLLER. A FLOW TRANSMITTER AMPLIFIER HAD FAILED AS A RESULT OF MOISTURE INTRUSION.

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.52	0.98	0.65	0.00	0.00	1.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	2	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	0	1	1	0	2	1	0
FORCED OUTAGE RATE (%)	0	0	7	4	0	0	26	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.47	1.29	0.00	0.00	2.00	0.00
CRITICAL HOURS	2208	1939	2040	1548	2208	1516	998	2164
COLLECTIVE RADIATION EXPOSURE	46	343	370	46	43	105	169	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	5	1	3	4	NA
LICENSED OPERATOR	0	0	2	0	0	0	0	NA
OTHER PERSONNEL	1	0	0	2	0	3	0	NA
MAINTENANCE	1	1	2	4	3	5	4	NA
A) MAINT PERSONNEL	0	1	1	3	0	2	2	NA
B) SURV AND TEST	1	0	0	1	0	1	2	NA
C) EQUIPMENT	0	0	1	0	1	1	0	NA
D) POTENTIAL MAINT	0	0	0	0	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	1	1	2	2	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	1	NA

TABLE 8.31
DUANE ARNOLD

PI EVENTS FOR 89-3

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 NORMAL CIRCUIT BREAKER FAILED TO OPEN AFTER THE SCRAM. AN INADEQUATE EVALUATION OF AN EARLIER PROBLEM WAS THE CAUSE.

SSA 08/26/89 LER# 33189011 50.72#: POWER: 0
DESC : THE COIL SLUG OF THE 'B' NORMAL ESSENTIAL BUS BREAKER TRIP COIL JAMMED, CAUSING THE TRIP COIL TO BURN UP, NOT ALLOWING THE BREAKER TO TRIP RESULTING IN A DEAD ESSENTIAL BUS, RESULTING IN A DIESEL START.

SSA 08/26/89 LER# 33189011 50.72#: POWER: 0
DESC : THE HIGH PRESSURE COOLANT INJECTION SYSTEM WAS MANUALLY STARTED TO CONTROL REACTOR VESSEL WATER LEVEL WHEN THE ESSENTIAL POWER BUSES MALFUNCTIONED.

SSF 09/20/89 LER# 33189012 50.72#: 16646 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : THE ABILITY OF THE SECONDARY CONTAINMENT SYSTEM TO PERFORM ITS DESIGN FUNCTION WAS LOST DUE TO AN OPENING IN A VENTILATION SHAFT TO THE STANDBY GAS TREATMENT SYSTEM. THIS HOLE ALLOWED THE EXHAUST FANS TO EXHAUST OUTSIDE EVEN UNDER ISOLATION CONDITIONS.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

TABLE B.31 (CONT.)
DUANE ARNOLD

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.48	0.00	1.15	0.48	0.56	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	1	0	2	1	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	2	2	0	2	0	1	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	4	0	1	2	0	0
FORCED OUTAGE RATE (%)	3	100	23	5	3	45	3	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.48	5.80	1.72	0.95	0.00	0.77	0.00	0.47
CRITICAL HOURS	2091	173	1741	2103	1785	1293	2095	2110
COLLECTIVE RADIATION EXPOSURE	50	526	45	28	46	63	38	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	3	0	2	1	1	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	2	2	1	2	1	0	NA
MAINTENANCE	3	1	6	1	4	2	3	NA
A) MAINT PERSONNEL	1	0	2	1	1	1	1	NA
B) SURV AND TEST	1	1	2	0	2	0	0	NA
C) EQUIPMENT	1	0	1	0	1	1	1	NA
D) POTENTIAL MAINT	1	0	1	0	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	4	5	1	0	2	1	0	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.32

FARLEY 1

PI EVENTS FOR 89-3

SSF 09/30/89 LER# 34889005 50.72#: 16756 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : CORE ALTERATIONS WERE PERFORMED WITHOUT THE T.S. REQUIRED CONTAINMENT REFUELING INTEGRITY. A PATHWAY EXISTED FROM THE CONTAINMENT TO THE OUTSIDE ATMOSPHERE THROUGH AT LEAST ONE SG SECONDARY SIDE MANWAY AND SG ATMOSPHERIC RELIEF VALVE.

PI EVENTS FOR 89-4

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

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

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

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.00	0.00	0.80	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	1	1	0	0
FORCED OUTAGE RATE (%)	0	1	0	0	0	6	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2208	2198	2160	2183	2016	1254	2160	2183
COLLECTIVE RADIATION EXPOSURE	10	11	34	127	44	169	8	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	0	1	0	1	3	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	0	4	0	2	0	2	0	NA
MAINTENANCE	0	5	0	3	0	2	2	NA
A) MAINT PERSONNEL	0	3	0	2	0	2	0	NA
B) SURV AND TEST	0	1	0	1	0	0	2	NA
C) EQUIPMENT	0	2	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	2	0	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.33

FARLEY 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

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

SCRAM 11/18/89 LER# 36489015 50.72#: 17139 POWER: 100
 DESC : A VOLTAGE TRANSIENT IN THE INVERTER FOR THE DIGITAL ELECTRO HYDRAULIC SYSTEM CAUSED A TURBINE TRIP WHICH CAUSED A REACTOR TRIP. AN INTERNAL FAULT DUE TO MOISTURE INTRUSION CAUSED THE TRANSIENT.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

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

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

TABLE 8.34

FERMI 2

PI EVENTS FOR 89-3

SSF 08/19/89 LER# 34189019 50.72#: 16368 POWER: 06
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CREV SYSTEM WERE INOPERABLE. TRAIN I WAS DECLARED INOPERABLE AS A RESULT OF A SEIZED RECIRC FAN BEARING. TRAIN II WAS MADE INOPERABLE IN ORDER TO PERFORM REPAIRS. THE CAUSE OF THE BEARING FAILURE WAS INADEQUATE LUBRICATION.

SSF 09/06/89 LER# 34189021 50.72#: 16665 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : PRIMARY CONTAINMENT UNDETERMINED SYSTEM
 DESC : THIRTY-FIVE OF THE 237 CONTAINMENT ISOLATION VALVES EXCEEDED THE T.S.LIMIT DURING LOCAL LEAK RATE TESTING. IN ADDITION, THE MSIVS FAILED HYDROSTATIC TESTING. THE TOTAL COMBINED LEAKAGE (A,B,C) EXCEEDED THE T.S.LIMIT FOR THE CONTAINMENT BOUNDARY.

SBA 09/24/89 LER# 34189023 50.72#: 16697 POWER: 0
 DESC : A SYSTEM MAINTENANCE WORKER REMOVED A PROTECTIVE COIL TRIPPING RELAY (WITHOUT CHECKING THE PRINTS) WHILE FOLLOWING A GENERIC PROCEDURE, CAUSING A LOSS OF POWER TO TWO ESF BUSES. DIESEL GENERATOR 11 STARTED AND LOADED THE BUSES.

PI EVENTS FOR 89-4

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

SSF 11/20/89 LER# 34189031 50.72#: POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : THE EMERGENCY EQUIPMENT SERVICE WATER AND COOLING WATER SYSTEMS WERE INOPERABLE. THE ASSOCIATED PUMPS' AUTO START CAPABILITIES WERE INOPERABLE FOLLOWING A TEST THAT OCCURRED APPROXIMATELY 70 HOURS EARLIER. THE CAUSE WAS A PROCEDURAL ERROR.

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

SCRAM 04/10/90 LER# 34190003 50.72#: 18193 POWER: 100
 DESC : AN ANTICIPATORY REACTOR SCRAM OCCURRED WHEN MSIVS CLOSED DUE TO THE LOSS OF NITROGEN PRESSURE UPON ISOLATION OF THE DRYWELL PNEUMATIC SUPPLY.

TABLE 8.34 (CONT.)

FERMI 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.01	0.00	0.53	0.00	0.00	2.17	0.00	0.49
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	1	1	0	0
SIGNIFICANT EVENTS	1	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	0	3	0	2	1	1	0
FORCED OUTAGE RATE (%)	61	8	28	0	2	20	0	6
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	3.02	0.00	0.53	0.00	0.00	0.00	0.00	0.49
CRITICAL HOURS	994	1950	1870	2183	1488	461	2160	2061
COLLECTIVE RADIATION EXPOSURE	18	15	11	15	66	142	21	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	3	2	8	1	NA
LICENSED OPERATOR	0	2	1	0	1	3	0	NA
OTHER PERSONNEL	6	1	2	1	3	7	0	NA
MAINTENANCE	9	3	7	4	8	11	1	NA
A) MAINT PERSONNEL	3	0	2	1	3	2	0	NA
B) SURV AND TEST	3	2	3	3	2	5	1	NA
C) EQUIPMENT	2	1	0	0	3	2	0	NA
D) POTENTIAL MAINT	1	1	2	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	2	2	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0		NA

**TABLE 8.35
FITZPATRICK**

PI EVENTS FOR 89-3

SSF 07/14/89 LER# 33389012 50.72#: POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : IF A THREE-PHASE BOLTED BUS FAULT OCCURRED DURING PERFORMANCE OF A MONTHLY TWO-HOUR FULL LOAD EDG TEST, THE FAULT CURRENT COULD EXCEED THE MOMENTARY DUTY RATINGS OF THE 4160V EMERGENCY BUS. THIS WOULD RESULT IN A LOSS OF POWER TO THE BUS AND THE ECCS.

SSF 08/17/89 LER# 33389014 50.72#: 16337 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO AN EXCESSIVE AMOUNT OF WATER IN THE TURBINE LUBE OIL SYSTEM. THIS WAS CAUSED BY A LEAKING STEAM SUPPLY VALVE AND EXCESSIVE SEAL LEAKAGE.

PI EVENTS FOR 89-4

SSF 10/08/89 LER# 33389018 50.72#: 16799 POWER: 14
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE SYSTEM ISOLATED ON A HIGH STEAM FLOW SIGNAL. THE SIGNAL WAS ELECTRICALLY VALID BUT THE SETPOINT, LIMITS, AND ASSUMPTIONS UPON WHICH THE SETPOINT WAS BASED WERE OVERLY CONSERVATIVE.

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

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

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

SSF 11/29/89 LER# 33389024 50.72#: POWER: 100
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS INADVERTENTLY RENDERED INOPERABLE DURING A SURVEILLANCE TEST. AN OPERATOR ERROR RESULTED IN SHUTTING THE RCIC OUTBOARD STEAM ISOLATION VALVE. THE SYSTEM WAS INOPERABLE FOR 14 MIN.

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

PI EVENTS FOR 90-1

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

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

TABLE 8.35 (CONT.)

FITZPATRICK

PI EVENTS FOR 90-1 (CONT.)

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

SCRAM 03/19/90 LER# 50.72#: 18015 POWER: 100
 DESC : A MFW MALFUNCTION RESULTED IN A TURBINE TRIP REACTOR SCRAM.

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

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

PI EVENTS FOR 90-2

BSF 04/04/90 LER# 33390012 50.72#: 18211 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : OF THE 31 CHECK VALVES INSPECTED DURING AN OUTAGE, 15 VALVES SUPPLYING SAFETY RELATED LOADS, WERE FOUND TO BE POTENTIALLY INOPERABLE DUE TO SILT ACCUMULATION OR CORROSION PRODUCT BUILDUP. THE INSPECTION AND EVALUATION IS STILL UNDER WAY.

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.53	0.98	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	0	0	0	0	0	2	2	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	1	0
SIGNIFICANT EVENTS	1	1	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	1	3	4	3	2	4	3	1
FORCED OUTAGE RATE (%)	0	42	0	0	0	14	9	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	1.06	0.49	0.00
CRITICAL HOURS	1386	690	2160	2183	1854	1890	2038	174
COLLECTIVE RADIATION EXPOSURE	224	335	58	52	178	89	101	NA
CAUSE CODES:								
ADMINISTRATIVE	0	4	0	2	2	5	4	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	0	0	3	2	4	3	NA
MAINTENANCE	2	3	2	5	4	6	9	NA
A) MAINT PERSONNEL	1	2	0	0	2	3	1	NA
B) SURV AND TEST	0	2	1	3	0	3	4	NA
C) EQUIPMENT	2	0	1	2	2	0	2	NA
D) POTENTIAL MAINT	0	0	0	0	0	0	2	NA
DESIGN/INSTALLATION/FABRICATION	0	4	2	3	3	5	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	1	NA

**TABLE 8.36
FORT CALHOUN**

PI EVENTS FOR 89-3

SSF 08/05/89 LER# 28589022 50.72#: POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : AN INCORRECT CHANGE TO A SURVEILLANCE PROCEDURE WAS MADE. IF PERFORMED, BOTH EMERGENCY DIESEL GENERATORS WOULD HAVE BEEN SIMULTANEOUSLY INOPERABLE. THIS EVENT IS ATTRIBUTED TO INADEQUATE ADMINISTRATIVE CONTROLS OVER PROCEDURE CHANGE REVIEW AND APPROVAL.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

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

SSA 03/13/90 LER# 50.72#: 17970 POWER: 0
 DESC : THUNDERSTORMS CAUSED A POWER LOSS ON THE INCOMING 13.8KV POWER LINES. THE DIESEL GENERATORS STARTED AND RESTORED POWER.

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

SSA 03/27/90 LER# 28590010 50.72#: 18075 POWER: 0
 DESC : DURING POST MAINTENANCE TESTING, A DG TRIED TO AUTO START WHEN AN OPERATOR PLACED THE MODE SELECTOR SWITCH IN 'EMERGENCY' WITH THE NON-VITAL BUS DEENERGIZED. THE DG DID NOT START BECAUSE THE AIR RECEIVER DID NOT HAVE REQUIRED AIR PRESSURE.

PI EVENTS FOR 90-2

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

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

TABLE 8.36 (CONT.)
FORT CALHOUN

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	3	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	0	2	1	2	2	1
FORCED OUTAGE RATE (%)	0	0	0	9	5	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00
CRITICAL HOURS	2143	0	1479	2022	2107	2209	1142	870
COLLECTIVE RADIATION EXPOSURE	30	213	48	16	19	10	99	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	5	6	2	2	2	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OFFICER PERSONNEL	2	7	2	1	1	2	3	NA
MAINTENANCE	4	8	7	6	2	3	4	NA
A) MAINT PERSONNEL	1	3	0	4	0	1	3	NA
B) SURV AND TEST	1	3	7	2	1	2	0	NA
C) EQUIPMENT	0	1	0	0	1	0	1	NA
D) POTENTIAL MAINT	2	2	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	4	2	3	0	1	4	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

**TABLE 8.37
FORT ST. VRAIN**

PI EVENTS FOR 89-3

SSF 08/18/89 LER# 26789015 50.72#: 79 POWER: 79
 GROUP : PRIMARY REACTOR SYSTEMS GROUP
 SYSTEM : CONTROL ROD DRIVE SYSTEM
 DESC : DURING A WEEKLY SCRAM TEST A ROD PAIR WAS DISCOVERED TO BE IMMOVABLE. A CONTROL ROD CLEVIS BOLT HAD FAILED FROM A COMBINATION OF EXCESSIVE PRELOAD AND THERMAL EXPANSION STRESSES, RESULTING IN A ROD PAIR BECOMING BOUND WHILE WITHDRAWN 43 INCHES.

S&F 08/27/89 LER# 26789018 50.72#: 16420 POWER: 0
 GROUP : PRIMARY REACTOR SYSTEMS GROUP
 SYSTEM : STEAM GENERATING SYSTEM
 DESC : MAIN STEAM RINGHEADER CRACK INDICATIONS WERE DISCOVERED IN EIGHT OF 12 STEAM GENERATOR MODULES. THIS CONDITION COULD HAVE IMPAIRED TV. SAFE SHUTDOWN COOLING CAPABILITY.

SSF 09/06/89 LER# 26789019 50.72#: 16508 POWER: 0
 GROUP : ESSENTIAL COMPRESSED AIR SYSTEM GROUP
 SYSTEM : ESSENTIAL AIR SYSTEM
 DESC : AN IMPROPER VALVE LINEUP AND VALVE DEFICIENCIES ALLOWED AUX. BOILER STEAM TO ENTER THE SERVICE AIR AND INSTRUMENT AIR SYSTEMS. THE LOSS OF THE INSTRUMENT AIR SYSTEM COULD HAVE IMPAIRED THE FULFILLMENT OF A SAFETY FUNCTION.

PI EVENTS FOR 89-4

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
SCRAMS <= 15% POWER	0	0	0	0	0	NA	NA	NA
TOTAL SCRAMS	0	0	0	0	0	NA	NA	NA
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	NA	NA	NA
SIGNIFICANT EVENTS	0	0	0	0	0	NA	NA	NA
SAFETY SYSTEM FAILURES	1	0	1	0	3	NA	NA	NA
FORCED OUTAGE RATE (%)	0	0	100	29	48	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	1.52	0.86	NA	NA	NA
CRITICAL HOURS	119	0	193	1971	1168	NA	NA	NA
COLLECTIVE RADIATION EXPOSURE	0	0	1	1	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	NA	NA	NA	NA	NA	NA
LICENSED OPERATOR	NA	NA	NA	NA	NA	NA	NA	NA
OTHER PERSONNEL	NA	NA	NA	NA	NA	NA	NA	NA
MAINTENANCE	NA	NA	NA	NA	NA	NA	NA	NA
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

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

TABLE 8.38

GINNA

PI EVENTS FOR 89-3

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

PI EVENTS FOR 89-4

SSF 11/17/89 LER# 24489016 50.72#: POWER: 99
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : AN ENGINEERING DESIGN REVIEW RESULTED IN THE DISCOVERY THAT A SINGLE FAILURE OF THE SI BLOCK/UNBLOCK SWITCH COULD PREVENT THE AUTOMATIC INITIATION OF THE SI SYSTEM IN RESPONSE TO A LOW PZR PRESSURE OR LOW MAIN STEAM LINE PRESSURE SIGNAL.

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

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

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

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

SSF 05/30/90 LER# 50.72#: 18597 POWER: 98
 GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
 SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
 DESC : WESTINGHOUSE CORRESPONDENCE WITH THE LICENSEE IDENTIFIED SEVERAL SINGLE SWITCH FAILURES THAT COULD DISABLE BOTH TRAINS OF THE FOLLOWING SYSTEMS: SAFETY INJECTION, CONTAINMENT ISOLATION, CONTAINMENT SPRAY, AND CONTAINMENT VENTILATION.

SSF 06/08/90 LER# 50.72#: 18659 POWER: 97
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : CONTAINMENT ISOLATION CONTROL SYSTEM
 DESC : A CONTAINMENT ISOLATION VALVE (THE COMPONENT COOLING WATER RETURN VALVE FROM THE EXCESS LETDOWN HEAT EXCHANGER) DOES NOT RECEIVE A CONTAINMENT ISOLATION SIGNAL.

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

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

TABLE 8.38 (CONT.)

GINNA

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	1.41	0.00	0.00	0.00	1.55
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	0	2
SAFETY SYSTEM ACTUATIONS	1	0	0	2	1	0	0	3
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	2	2
FORCED OUTAGE RATE (%)	1	0	1	12	14	0	0	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.55	0.00	0.52	0.00	0.00	1.55
CRITICAL HOURS	2193	2209	1806	708	1925	2209	1962	1288
COLLECTIVE RADIATION EXPOSURE	13	21	124	440	24	20	81	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	0	4	0	2	0	NA
LICENSED OPERATOR	1	0	0	2	0	0	0	NA
OTHER PERSONNEL	1	0	0	1	0	0	2	NA
MAINTENANCE	3	0	0	5	3	4	1	NA
A) MAINT PERSONNEL	1	0	0	0	0	2	0	NA
B) SURV AND TEST	0	0	0	4	0	0	0	NA
C) EQUIPMENT	1	0	0	1	0	0	0	NA
D) POTENTIAL MAINT	1	0	0	0	3	2	1	NA
DESIGN/INSTALLATION/FABRICATION	1	0	0	2	1	1	0	NA
EQUIPMENT FAILURE	2	0	0	0	0	0	0	NA

**TABLE 8.39
GRAND GULF**

PI EVENTS FOR 89-3

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

SCRAM 08/14/89 LER# 41689012 50.72#: 16313 POWER: 100
 DESC : LOSS OF CONDENSER VACUUM DUE TO A FAILED MAIN CONDENSER EXPANSION JOINT CAUSED A TURBINE TRIP AND THEN A REACTOR TRIP. ROD 32-45 ONLY INSERTED TO THE 08 POSITION AND HAD TO BE MANUALLY INSERTED.

SSF 08/14/89 LER# 41689013 50.72#: POWER: 0
 GROUP : MAIN STEAM ISOLATION VALVES GROUP
 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 EIGHT MSIV DUAL SOLENOID VALVE SEATS INDICATED SIMILAR PATTERN OF EXTRUSION.

SE 08/14/89 LER# 41689012 50.72#: 16313 POWER: 100
 DESC : FAILURE OF THE CONDENSER BOOT SEAL RESULTED IN A SCRAM WITH COMPLICATIONS. ONE MSIV FAILED TO CLOSE ON MANUAL AND AUTO DEMAND. ONE CONTR. ROD FAILED TO INSERT BEYOND POSITION 08. SCRAM DISCHARGE VOLUME FAILED TO DRAIN. (MORNING REPORT 08/15/89)

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

SSF 02/15/90 LER# 41690003 50.72#: 17774 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : LOSS OF THE DIV 1 ESF ELECTRICAL SYSTEM DURING LOCA CONDITIONS COULD RENDER THE LPCS AND HPCS SYSTEMS INOPERABLE FOR LONG-TERM POST-LOCA CORE COOLING. ALTHOUGH THE HPCS SYSTEM WOULD STILL BE POWERED, ITS SERVICE WATER WOULD NOT BE ADEQUATELY COOLED.

PI EVENTS FOR 90-2

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.93	0.46	0.00	0.00	1.01	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	2	1	0	1	2	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	1	0	0	0	0	1
SIGNIFICANT EVENTS	1	0	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	2	1	0	1	0
FORCED OUTAGE RATE (%)	7	1	0	0	11	3	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.93	0.00	0.00	0.00	0.50	0.46	0.00	0.00
CRITICAL HOURS	2154	2191	1829	1025	1987	2166	2160	2183
COLLECTIVE RADIATION EXPOSURE	36	37	143	312	25	18	16	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	0	5	1	1	2	NA
LICENSED OPERATOR	1	0	0	1	2	1	0	NA
OTHER PERSONNEL	2	1	1	0	1	1	0	NA
MAINTENANCE	2	2	1	3	3	2	1	NA
A) MAINT PERSONNEL	0	0	1	0	0	0	0	NA
B) SURV AND TEST	1	1	0	2	1	1	1	NA
C) EQUIPMENT	0	0	0	0	2	0	0	NA
D) POTENTIAL MAINT	1	1	0	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	0	2	2	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	1	1	0	NA

**TABLE 8.4C
HADDAM NECK**

PI EVENTS FOR 89-3

SSF 09/04/89 LER# 21389014 50.72#: 16494 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : AN IN SERVICE INSPECTION TEST IDENTIFIED THAT "A" AND "B" SERVICE WATER PUMP CAPACITIES WERE LESS THAN THOSE REQUIRED BY THE DESIGN BASIS AND COULD REDUCE THE PLANTS CAPABILITY TO RESPOND TO A VARIETY OF ACCIDENT SCENARIOS.

SSF 09/22/89 LER# 21389016 50.72#: 16677 POWER: 0
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : LOW-VOLTAGE POWER SYSTEM - CLASS 1E
 DESC : AN ENGINEERING ANALYSIS IDENTIFIED 15 CKT BREAKERS WITH CURRENT INTERRUPTING CAPABILITIES LESS THAN WORST-CASE FAULT CURRENT. IF THIS FAULT WERE TO OCCUR THE ENTIRE MCC WOULD ISOLATE, RENDERING CERTAIN RHR AND SI VALVES ELECTRICALLY/REMOVEDLY INOPERABLE.

PI EVENTS FOR 89-4

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

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

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

PI EVENTS FOR 90-1

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

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

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

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

TABLE 8.40 (CONT.)

HADDAM NECK

PI EVENTS FOR 90-2

SSF 06/08/90 LER# 50.72#: 18652 POWER: 0
 GROUP : SPENT FUEL SYSTEMS GROUP
 SYSTEM : FUEL POOL COOLING AND PURIFICATION SYSTEM
 DESC : WHILE RESTORING THE ELECTRIC PLANT TO A NORMAL LINEUP FOLLOWING DC BUS MAINTENANCE, POWER WAS LOST TO BOTH SPENT FUEL COOLING PUMPS FOR APPROXIMATELY 25 MIN.

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	1	2	4	2	2	4	2
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2208	2209	2160	2183	1540	0	0	0
COLLECTIVE RADIATION EXPOSURE	13	14	19	14	313	251	119	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	2	3	1	0	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	0	1	1	3	2	0	NA
MAINTENANCE	2	2	1	3	6	3	2	NA
A) MAINT PERSONNEL	0	0	1	0	2	2	1	NA
B) SURV AND TEST	1	0	0	2	2	0	0	NA
C) EQUIPMENT	1	2	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	0	0	1	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	1	2	4	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE B.41

HATCH 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 01/04/90 LER# 32190001 50.72#: 17486 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE BECAUSE THE SYSTEM COULD NOT MAINTAIN RATED FLOW DURING A SURVEILLANCE TEST. AN INVESTIGATION REVEALED THAT A FAILED RESISTOR RESULTED IN A LOSS OF POWER TO THE HPCI TURBINE GOVERNOR SPEED CONTROL.

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

PI EVENTS FOR 90-2

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.47	1.90	0.00	0.00	0.00	0.00	0.00	2.03
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	0	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	2	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	4	1	1	0	0	2	0
FORCED OUTAGE RATE (%)	2	18	0	0	0	0	0	42
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.47	1.90	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2128	527	2160	2183	2208	2209	1162	492
COLLECTIVE RADIATION EXPOSURE	69	361	57	41	100	136	315	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	3	2	2	6	3	NA
LICENSED OPERATOR	0	0	1	0	0	2	0	NA
OTHER PERSONNEL	0	3	1	0	0	2	0	NA
MAINTENANCE	2	4	4	0	2	6	5	NA
A) MAINT PERSONNEL	1	2	0	0	0	0	0	NA
B) SURV AND TEST	1	2	4	0	1	4	3	NA
C) EQUIPMENT	1	1	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	1	0	0	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	0	1	0	2	1	NA
EQUIPMENT FAILURE	1	0	1	0	0	0	1	NA

TABLE 8.42

HATCH 2

PI EVENTS FOR 89-3

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

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

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

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

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

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

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

PI EVENTS FOR 90-2

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

TABLE 8.42 (CONT.)

HATCH 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.00	0.00	0.64	0.00	0.96	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	1	0	2	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	1	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	2	0	1	0	0	2	1
FORCED OUTAGE RATE (%)	2	1	0	0	1	5	5	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	1.48	0.00	0.00	0.64	1.68	0.48	0.00
CRITICAL HOURS	2178	2095	2160	2183	1559	594	2085	2183
COLLECTIVE RADIATION EXPOSURE	69	361	57	41	100	136	315	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	2	1	4	6	4	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	1	1	0	1	2	0	NA
MAINTENANCE	4	2	3	0	4	7	5	NA
A) MAINT PERSONNEL	2	1	0	0	0	0	0	NA
B) SURV AND TEST	1	0	3	0	2	5	4	NA
C) EQUIPMENT	1	1	0	0	2	1	0	NA
D) POTENTIAL MAINT	1	1	0	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	0	0	0	1	2	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

TABLE 8.43

HOPE CREEK

PI EVENTS FOR 89-3

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

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

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

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

PI EVENTS FOR 90-2

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	1.00	0.00	0.00	0.56	0.93	1.08	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	2	0	0	1	1	2	0
SAFETY SYSTEM ACTUATIONS	2	2	0	1	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	2	0	3	0	0	0	1
FORCED OUTAGE RATE (%)	3	11	0	0	3	3	10	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	1.50	0.57	0.00	0.56	0.93	0.00	0.00
CRITICAL HOURS	2159	1994	1758	2183	1798	1075	1845	2183
COLLECTIVE RADIATION EXPOSURE	18	29	110	21	96	238	49	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	5	4	2	5	1	NA
LICENSED OPERATOR	0	0	1	1	0	0	1	NA
OTHER PERSONNEL	3	7	0	2	1	2	1	NA
MAINTENANCE	6	9	5	7	3	5	3	NA
A) MAINT PERSONNEL	0	4	1	3	0	1	0	NA
B) SURV AND TEST	5	5	3	3	3	3	1	NA
C) EQUIPMENT	1	0	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	0	1	1	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	5	2	0	0	3	3	0	NA
EQUIPMENT FAILURE	0	2	0	0	0	0	0	NA

TABLE 8.44
INDIAN POINT 2

PI EVENTS FOR 89-3

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

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2	
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.92	0.55	0.00	0.00	0.61	0.00	0.00	
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0	
TOTAL SCRAMS	0	2	1	0	0	1	0	0	
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0	
SIGNIFICANT EVENTS	0	0	0	3	0	0	0	0	
SAFETY SYSTEM FAILURES	0	1	1	0	1	0	0	1	
FORCED OUTAGE RATE (%)	7	4	1	0	0	2	0	0	
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.92	0.55	0.00	0.00	0.61	0.00	0.00	
CRITICAL HOURS	1692	2164	1811	0	2206	1627	1299	199	
COLLECTIVE RADIATION EXPOSURE	82	32	220	1046	29	142	232	NA	
CAUSE CODES:									
ADMINISTRATIVE	3	0	0	2	1	1	0	NA	
LICENSED OPERATOR	0	0	0	0	0	0	0	NA	
OTHER PERSONNEL	1	3	3	1	0	0	0	NA	
MAINTENANCE	5	3	2	2	3	1	0	NA	
A) MAINT PERSONNEL	1	3	2	1	0	1	0	NA	
B) SURV AND TEST	2	0	0	1	0	0	0	NA	
C) EQUIPMENT	1	0	0	0	1	0	0	NA	
D) POTENTIAL MAINT	1	0	0	0	2	0	0	NA	
DESIGN/INSTALLATION/FABRICATION	1	4	3	0	0	1	0	NA	
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA	

TABLE 8.45
INDIAN POINT 3

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

SCRAM 06/29/90 LER# 50.72#: 18799 POWER: 100
DESC : A REACTOR TRIP OCCURRED FOLLOWING A TURBINE TRIP. THE MAIN GENERATOR TRIPPED OFF THE LINE FOR UNKNOWN REASONS WHEN A SUBSTATION GENERATOR PRIMARY LOCKOUT RELAY WAS ACTUATED DURING PROTECTIVE RELAY TESTS.

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

TABLE 8.46

KEWAUNEE

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	1	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 (%)	4	0	0	0	0	1	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
CRITICAL HOURS	2137	2209	1208	1825	2208	2195	1464	1820
COLLECTIVE RADIATION EXPOSURE	5	5	208	26	4	2	117	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	5	2	0	0	1	NA
LICENSED OPERATOR	2	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	0	1	1	0	0	1	NA
MAINTENANCE	2	0	6	4	1	1	1	NA
A) MAINT PERSONNEL	0	0	1	1	0	0	0	NA
B) SURV AND TEST	2	0	5	2	0	0	1	NA
C) EQUIPMENT	0	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	1	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	2	2	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.47

LASALLE 1

PI EVENTS FOR 89-3

SSF 07/15/89 LER# 37489010 50.72#: POWER: 91
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : THE UNIT 2 DIV III BATTERY CHARGER FAILED. UNIT 1 AND 2 HPCS SYSTEMS WERE DECLARED INOPERABLE WHEN THE UNIT 2 DIV III BUS WAS CROSS-TIED WITH THE UNIT 1 DIV III CHARGER. THE FAILURE CAUSE APPEARED TO BE RELATED TO THE CHGR HIGH VOLTAGE SHUTDOWN RELAY.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

PI EVENTS FOR 90-2

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

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.48	0.00	0.00	0.00	0.50	0.48
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	1	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	2	0	1	3	1	0	0	2
FORCED OUTAGE RATE (%)	7	0	4	0	0	0	7	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.48	0.00	0.00	0.00	0.50	0.48
CRITICAL HOURS	1992	2209	2086	2183	1846	0	1989	2069
COLLECTIVE RADIATION EXPOSURE	90	560	178	62	94	360	117	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	3	3	0	4	2	NA
LICENSED OPERATOR	0	0	2	0	0	1	0	NA
OTHER PERSONNEL	0	3	2	1	0	2	3	NA
MAINTENANCE	4	5	13	9	3	5	5	NA
A) MAINT PERSONNEL	1	1	0	0	0	2	1	NA
B) SURV AND TEST	0	1	4	4	0	2	2	NA
C) EQUIPMENT	1	2	6	2	1	1	0	NA
D) POTENTIAL MAINT	3	2	3	3	2	0	2	NA
DESIGN/INSTALLATION/FABRICATION	2	2	4	1	0	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.48

LABALLE 2

PI EVENTS FOR 89-3

SSF 07/15/89 LER# 37489010 50.72# : POWER: 95
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THE UNIT 2 DIV III BATTERY CHARGER FAILED. UNIT 1 AND 2 HPCS SYSTEMS WERE DECLARED INOPERABLE WHEN THE UNIT 2 DIV III BUS WAS CROSS-TIED WITH THE UNIT 1 DIV III CHARGER. THE FAILURE CAUSE APPEARED TO BE RELATED TO THE CNGR HIGH VOLTAGE SHUTDOWN RELAY.

SCRAM 08/26/89 LER# 37489011 50.72# : 16411 POWER: 10
DESC : DURING A CONTROLLED SHUTDOWN, RPS CHANNELS 'A' AND 'B' TRIPPED. THE RPS ACTUATION WAS DUE TO A SPURIOUS SIGNAL. AFTER THE AUTOMATIC SCRAM SIGNAL, THE 'A2' AND 'A3' CONTROL ROD SCRAM SOLENOIDS WERE STILL ENERGIZED NECESSITATING A MANUAL SCRAM.

PI EVENTS FOR 89-4

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

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

PI EVENTS FOR 90-1

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

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

PI EVENTS FOR 90-2

NONE

TABLE 0.48 (CONT.)

LASALLE 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	2	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	1	1	2	1	0
FORCED OUTAGE RATE (%)	3	4	0	0	34	15	3	18
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.00	0.00	0.00	0.00	0.00	4.40
CRITICAL HOURS	2159	323	1246	2183	1372	1892	1764	455
COLLECTIVE RADIATION EXPOSURE	90	560	178	62	94	360	117	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	5	4	2	2	3	NA
LICENSED OPERATOR	1	1	2	0	2	0	0	NA
OTHER PERSONNEL	0	0	4	0	0	2	2	NA
MAINTENANCE	5	7	12	8	3	6	7	NA
A) MAINT PERSONNEL	1	0	0	1	0	2	1	NA
B) SURV AND TEST	0	3	6	3	1	1	2	NA
C) EQUIPMENT	1	4	4	1	2	2	0	NA
D) POTENTIAL MAINT	5	2	2	3	0	1	4	NA
DESIGN/INSTALLATION/FABRICATION	1	2	4	1	0	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 3.49

LIMERICK 1

PI EVENTS FOR 89-3

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

SSF 07/20/89 LER# 35289047 50.72#: 16134 POWER: 90
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : CERTAIN LOCA CONDITIONS REQUIRE MANUAL INITIATION OF THE ESW SYSTEM. THE EOPs DID NOT ADVISE THE OPERATORS TO CHECK FOR ESW SYSTEM OPERATION DURING LOCA CONDITIONS. AS A RESULT, THE HPCI AND RCIC SYSTEMS MAY NOT HAVE FULFILLED THEIR SAFETY FUNCTIONS.

SSF 08/25/89 LER# 35289050 50.72#: POWER: 100
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE UPON DISCOVERY THAT THE PUMP ALIGNMENT PINS WERE MISSING. A SEISMIC OR HYDRODYNAMIC EVENT COULD HAVE RENDERED THE PUMP INOPERABLE. THE CAUSE WAS AN INADEQUATE PUMP INSTALLATION PROCEDURE.

PI EVENTS FOR 89-4

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

PI EVENTS FOR 90-1

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

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

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

PI EVENTS FOR 90-2

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

TABLE 8.49 (CONT.)

LIMERICK 1

PI EVENTS FOR 90-2 (CONT.)

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

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	8	5	3	1	3	4
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	19
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
CRITICAL HOURS	2208	2209	258	1110	2208	2209	2160	1696
COLLECTIVE RADIATION EXPOSURE	12	9	162	56	17	29	12	NA
CAUSE CODES:								
ADMINISTRATIVE	0	4	10	10	5	1	4	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	5	5	7	3	3	5	NA
MAINTENANCE	0	5	11	13	8	8	6	NA
A) MAINT PERSONNEL	0	3	4	3	0	1	4	NA
B) SURV AND TEST	0	2	4	8	6	1	1	NA
C) EQUIPMENT	0	0	1	1	0	2	0	NA
D) POTENTIAL MAINT	0	0	2	1	2	2	1	NA
DESIGN/INSTALLATION/FABRICATION	3	8	10	8	1	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.50

LIMERICK 2

PI EVENTS FOR 89-3

SSF 07/19/89 LER# 35289046 50.72#: 13125 POWER: 0
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
 DESC : A TECHNICIAN REMOVED THE SBT CHARCOAL SAMPLE INLET FILTERS RATHER THAN THE ROOM EXHAUST FILTERS. THE POTENTIAL FOR AN UNACCEPTABLE SBT BYPASS FLOW WAS CREATED AND COULD HAVE PREVENTED THE SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

SSF 08/21/89 LER# 35289050 50.72#: POWER: 0
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE UPON DISCOVERY THAT THE PUMP ALIGNMENT PINS WERE MISSING. A SEISMIC OR HYDRODYNAMIC EVENT COULD HAVE RENDERED THE PUMP INOPERABLE. THE CAUSE WAS AN INADEQUATE PUMP INSTALLATION PROCEDURE.

SSF 09/22/89 LER# 35389008 50.72#: 16676 POWER: 14
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : A NORMALLY OPEN ESW ISOLATION VALVE WAS DISCOVERED CLOSED DURING A SYSTEM FLOW BALANCE TEST. THIS PREVENTED FLOW TO THE FOLLOWING SYSTEMS: HPCI, 'B' CORE SPRAY, AND RHR LOOPS 'B' AND 'D'. THE CAUSE WAS SUSPECTED TO BE OPERATOR ERROR.

PI EVENTS FOR 89-4

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

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

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

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

PI EVENTS FOR 90-1

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

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

TABLE 8.50 (CONT.)

LIMERICK 2

PI EVENTS FOR 90-1 (CONT.)

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

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

PI EVENTS FOR 90-2

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

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

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

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

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

TABLE 8.51
MAINE YANKEE

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

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

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.48	1.97	0.51	0.46	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	1	1	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	2	0	0	0	0	0	1
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	9	34	11	1	0	12	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.96	3.94	1.02	0.00	0.00	0.54	0.00	0.00
CRITICAL HOURS	2091	508	1970	2172	2208	1861	2160	194
COLLECTIVE RADIATION EXPOSURE	18	665	21	11	19	38	27	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	1	0	0	0	0	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	0	1	0	0	0	NA
MAINTENANCE	2	1	1	1	0	2	0	NA
A) MAINT PERSONNEL	0	1	0	0	0	0	0	NA
B) SURV AND TEST	1	0	0	1	0	0	0	NA
C) EQUIPMENT	1	0	0	0	0	2	0	NA
D) POTENTIAL MAINT	1	0	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	0	0	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.52

MCGUIRE 1

PI EVENTS FOR 89-3

SSF 07/05/89 LER# 36989013 50.72#: POWER: 100
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : PLANT PROTECTION SYSTEM
 DESC : THE POWER RANGE NUCLEAR INSTRUMENTATION WAS INOPERABLE DURING POWER ESCALATION TO 95% DUE TO LOCKED-OUT STEAM GENERATOR ANALOG PARAMETERS INTO THE OPERATOR AID COMPUTER THERMAL POWER CALCULATION. THIS RESULTED IN A 5% NON-CONSERVATIVE POWER INDICATION.

SSF 07/14/89 LER# 36989017 50.72#: POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 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 07/20/89 LER# 36989026 50.72#: POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : AN ERROR IN A NUCLEAR STATION MODIFICATION (NSM) PROCEDURE RESULTED IN DELETION OF A CHECK VALVE IN THE CONTROL ROOM OUTSIDE AIR PRESSURE FILTER SYSTEM. WITHOUT THIS CHECK VALVE, THE ABILITY OF THE SYSTEM TO MAINTAIN REQUIRED PRESSURE WAS IMPAIRED.

SSF 07/22/89 LER# 36989015 50.72#: POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CREVS SYSTEM COULD NOT BE MAINTAINED AT THE REQUIRED T.S. POSITIVE PRESSURE 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 08/24/89 LER# 36989021 50.72#: 16394 POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM WERE FOUND 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 PRESSURE 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 09/15/89 LER# 36989027 50.72#: 16622 POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : THE SHIELD ANNULUS VENTILATION SYSTEM WAS INOPERABLE. A PRESSURE SWITCH IN THE OPERABLE TRAIN WAS JUMPED OUT WITH THE OTHER TRAIN INOPERABLE. THIS WAS CAUSED BY DESIGN ERROR, MANAGEMENT DEFICIENCY, AND INAPPROPRIATE ACTIONS.

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 BECAUSE THE LOADS TRANSFERRED TO BUS LINE 'B'.

PI EVENTS FOR 89-4

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

SSF 12/04/89 LER# 36989028 50.72#: 17410 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : PLANT AUDIT PERSONNEL DISCOVERED A GAP AROUND AN ACCESS DOOR OF THE CONTROL ROOM VENTILATION SYSTEM. THE SYSTEM WAS DECLARED INOPERABLE. THIS HAD EXISTED SINCE PLANT CONSTRUCTION AND WAS ATTRIBUTED TO A CONSTRUCTION/INSTALLATION DEFICIENCY.

TABLE 0.52 (CONT.)

MCGUIRE 1

PI EVENTS FOR 90-1

SCRAM 01/08/90 LER# 36990001 50.72# 17512 POWER: 100
 DESC : A CLOGGED STRAINER IN THE FEEDPUMP CONTROL OIL SYSTEM CAUSED FEEDPUMP TRIPS, A TURBINE TRIP, AND A REACTOR TRIP.

SSF 02/21/90 LER# 36990005 50.72# POWER: 100
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : THE RAD MONITOR FOR THE EQUIPMENT STAGING BUILDING AND SAMPLER MINIMUM FLOW DEVICE WERE DECLARED INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. THIS COULD HAVE RESULTED IN AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL.

PI EVENTS FOR 90-2

SSF 04/10/90 LER# 36990013 50.72# POWER: 100
 GROUP : SPENT FUEL SYSTEMS GROUP
 SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE FUEL POOL VENTILATION SYSTEM WAS DECLARED INOPERABLE. BECAUSE OF DEFICIENCIES IN THE INSTALLATION OF FLOW MEASURING DEVICES AND IN THE SELECTION OF THE MINIMALLY SIZED EXHAUST FANS, THE SYSTEM WAS NOT DEVELOPING ADEQUATE FLOW.

SSF 04/17/90 LER# 36990007 50.72# POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : CONTAINMENT ICE CONDENSER/REFRIGERATION SYSTEM
 DESC : WHILE REPAIRING ICE CONDENSER BASKET DEFICIENCIES DISCOVERED IN OCTOBER 1988 AT BOTH UNITS, SCREWS MADE OF THE WRONG MATERIAL WERE USED. AS A RESULT, DURING A POSTULATED LOCA PLUS SEISMIC EVENT, THE OPERATION OF THE SYSTEM COULD HAVE BEEN DEGRADED.

SSF 04/27/90 LER# 36990010 50.72# 18466 POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : THE ANNULUS VENTILATION SYSTEM WAS DETERMINED TO BE INOPERABLE BECAUSE OF A DESIGN ERROR. THE PREHEATERS ARE UNABLE TO DISSIPATE ENOUGH HEAT DURING A DEGRADED VOLTAGE CONDITION TO MAINTAIN THE REQUIRED RELATIVE HUMIDITY OF 70 % OR LESS.

SSF 04/30/90 LER# 36990008 50.72# POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : THE RAD MONITOR FOR THE CONTAMINATED PARTS WAREHOUSE VENTILATION AND SAMPLER MINIMUM FLOW DEVICE WERE INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL COULD HAVE RESULTED.

SSF 05/22/90 LER# 36990012 50.72# POWER: 35
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : REACTOR CONTAINMENT BUILDING
 DESC : LOOSE MATERIAL WAS DISCOVERED IN THE UPPER CONTAINMENT THAT COULD HAVE BEEN TRANSPORTED TO THE SUMP AND RESTRICTED THE ECCS PUMPS' SUCTION DURING ACCIDENT CONDITIONS. QA PERSONNEL DID NOT FOLLOW INSPECTION PROCEDURES AND IDENTIFY THIS MATERIAL.

SSF 06/04/90 LER# 36990014 50.72# 18629 POWER: 66
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. A PROCEDURAL ERROR RESULTED IN CLOSING ALL OF THE OUTSIDE AIR INTAKES FOR ABOUT 1.5 HRS.

SSF 06/26/90 LER# 50.72# 18773 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : AS A RESULT OF DUST ON THE COMMUTATOR RING AND PAINT ON THE FUEL RACK COUPLINGS, THE "A" EDG FAILED TO REACH ITS REQUIRED VOLTAGE IN THE APPROPRIATE TIME. BOTH EDGS WERE DECLARED INOPERABLE WHEN SIMILAR PROBLEMS WERE ALSO DISCOVERED WITH THE "B" EDG.

TABLE 8.52 (CONT.)

MCGUIRE 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.46	0.00	5.61	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	1	1	0	1	0	0	0
SIGNIFICANT EVENTS	0	2	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	4	2	0	6	2	1	7
FORCED OUTAGE RATE (%)	0	0	27	43	2	0	48	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.63	0.80	0.46	0.00	11.22	1.93
CRITICAL HOURS	2208	289	1584	1256	2162	2209	178	1035
COLLECTIVE RADIATION EXPOSURE	63	281	30	49	222	9	167	NA
CAUSE CODES:								
ADMINISTRATIVE	10	9	4	2	7	1	1	NA
LICENSED OPERATOR	0	3	0	1	1	0	1	NA
OTHER PERSONNEL	4	6	1	2	6	1	2	NA
MAINTENANCE	11	14	4	3	11	2	4	NA
A) MAINT PERSONNEL	3	8	0	2	2	2	1	NA
B) SURV AND TEST	5	4	3	1	7	0	2	NA
C) EQUIPMENT	4	5	1	0	1	0	1	NA
D) POTENTIAL MAINT	0	3	0	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	6	5	3	2	6	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	1	0	0	NA

TABLE 8.53

MCGUIRE 2

PI EVENTS FOR 89-3

- SSF** 07/14/89 LER# 36989017 50.72# POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM DECLARED INOPERABLE DUE TO NON-EP QUALIFIED TEFLOW JACKET WIRING IN THE ANNULUS VENTILATION FILTER UNIT PREHEATER. THE CAUSE IS MANUFACTURING DEFICIENCY BECAUSE OF IMPROPER MATERIAL SELECTION.
- SSF** 07/20/89 LER# 36989026 50.72# POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : AN ERROR IN A NUCLEAR STATION MODIFICATION (NSM) PROCEDURE RESULTED IN THE DELETION OF A CHECK VALVE IN THE CONTROL ROOM OUTSIDE AIR PRESSURE FILTER SYSTEM. WITHOUT THIS CHECK VALVE, THE ABILITY OF THE SYSTEM TO MAINTAIN REQUIRED PRESSURE WAS IMPAIRED.
- SSF** 07/22/89 LER# 36989015 50.72# POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CREVS SYSTEM COULD NOT BE MAINTAINED AT THE REQUIRED T.S. POSITIVE PRESSURE 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** 08/24/89 LER# 36989021 50.72# 16394 POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : BOTH TRAINS OF THE ANNULUS VENTILATION SYSTEM WERE FOUND 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 PRESSURE DURING LOCA.
- SE** 09/05/89 LER# 37089010 50.72# POWER: 0
 DESC : OVERPRESSURIZATION OF THE CONTAINMENT SPRAY SYSTEM RESULTED IN LEAK OF REACTOR COOLANT AND REFUELING WATER. AIT TO SITE. (MORNING REPORT ON 09/06/89)
- SSF** 09/15/89 LER# 36989027 50.72# 16622 POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : THE SHIELD ANNULUS VENTILATION SYSTEM WAS INOPERABLE. A PRESSURE SWITCH IN THE OPERABLE TRAIN WAS JUMPED OUT WITH THE OTHER TRAIN INOPERABLE. THIS WAS CAUSED BY DESIGN ERROR, MANAGEMENT DEFICIENCY, AND INAPPROPRIATE ACTION.

PI EVENTS FOR 89-4

- SSF** 10/12/89 LER# 36989031 50.72# 17001 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE OUTSIDE AIR DAMPERS CLOSED WHEN THE CHLORINE DETECTOR POWER LEADS WERE ACCIDENTLY SHORTED. THE DAMPER POWER SUPPLY WAS REMOVED AND THE DAMPERS WERE MANUALLY OPENED. THIS MADE THE SYSTEM INOPERABLE BECAUSE IT WOULD NOT RESPOND TO A RADIATION ALARM.
- SSF** 12/04/89 LER# 36989028 50.72# 17410 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : PLANT AUDIT PERSONNEL DISCOVERED A GAP AROUND AN ACCESS DOOR OF THE CONTROL ROOM VENTILATION SYSTEM. THE SYSTEM WAS DECLARED INOPERABLE. THIS HAD EXISTED SINCE PLANT CONSTRUCTION AND WAS ATTRIBUTED TO A CONSTRUCTION/INSTALLATION DEFICIENCY.

PI EVENTS FOR 90-1

- SSF** 03/22/90 LER# 36990013 50.72# POWER: 100
 GROUP : SPENT FUEL SYSTEMS GROUP
 SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE FUEL POOL VENTILATION SYSTEM WAS DECLARED INOPERABLE. BECAUSE OF DEFICIENCIES IN THE INSTALLATION OF FLOW MEASURING DEVICES AND IN THE SELECTION OF THE MINIMALLY SIZED EXHAUST FANS, THE SYSTEM WAS NOT DEVELOPING ADEQUATE FLOW.

TABLE 8.53 (CONT.)

MCGUIRE 2

PI EVENTS FOR 90-2

SSF 04/17/90 LER# 36990C07 50.72# POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : CONTAINMENT ICE CONDENSER/REFRIGERATION SYSTEM
 DESC : WHILE REPAIRING ICE CONDENSER BASKET DEFICIENCIES DISCOVERED IN OCTOBER 1988 AT BOTH UNITS, SCREWS MADE OF THE WRONG MATERIAL WERE USED. AS A RESULT, DURING A POSTULATED LOCA PLUS SEISMIC EVENT, THE OPERATION OF THE SYSTEM COULD HAVE BEEN DEGRADED.

SSF 04/30/90 LER# 36990008 50.72# POWER: 100
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : THE RAD MONITOR FOR THE CONTAMINATED PARTS WAREHOUSE VENTILATION AND SAMPLER MINIMUM FLOW DEVICE WERE INOPERABLE. PERSONNEL FAILED TO PROPERLY PERFORM THE REQUIRED RAD MONITORING. AN UNQUANTIFIABLE RELEASE OF RADIOACTIVE MATERIAL COULD HAVE RESULTED.

SSF 06/04/90 LER# 36990014 50.72# 18629 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. A PROCEDURAL ERROR RESULTED IN CLOSING ALL OF THE OUTSIDE AIR INTAKES FOR ABOUT 1.5 HRS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.93	0.46	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	2	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	1	0	0	0
SAFETY SYSTEM FAILURES	1	1	2	0	5	2	1	3
FORCED OUTAGE RATE (%)	3	0	2	1	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.52	0.45	0.93	0.46	0.00	0.00	0.00	0.00
CRITICAL HOURS	1590	2209	2149	2165	421	2209	2160	2183
COLLECTIVE RADIATION EXPOSURE	63	281	30	49	222	9	167	NA
CAUSE CODES:								
ADMINISTRATIVE	8	4	4	2	9	3	2	NA
LICENSED OPERATOR	0	0	0	1	2	0	1	NA
OTHER PERSONNEL	3	2	1	1	4	3	1	NA
MAINTENANCE	10	6	6	2	11	5	2	NA
A) MAINT PERSONNEL	4	2	0	0	1	4	0	NA
B) SURV AND TEST	4	2	3	1	9	1	2	NA
C) EQUIPMENT	4	3	2	0	1	0	0	NA
D) POTENTIAL MAINT	2	1	1	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	2	1	2	6	1	3	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	0	NA

**TABLE 8.54
MILLSTONE 1**

PI EVENTS FOR 89-3

SSF 08/31/89 LER# 24589018 50.72# 16460 POWER: 100
 GROUP : PRIMARY REACTOR SYSTEMS GROUP
 SYSTEM : CONTROL ROD DRIVE SYSTEM
 DESC : THE RESTRAINING METAL STRAPS WERE MISSING FROM FOUR CONTROL ROD DRIVE HYDRAULIC CONTROL UNITS (HCUS). THE HCUS MAY NOT REMAIN FUNCTIONAL DURING A SEISMIC EVENT. THIS WAS ATTRIBUTED TO PERSONNEL ERROR BECAUSE EXISTING PROCEDURES ADDRESS STRAP INSTALLATION

PI EVENTS FOR 89-4

SCRAM 10/19/89 LER# 24589021 50.72# 16881 POWER: 70
 DESC : WHILE PLACING THE "B" MAIN FEEDWATER REGULATING VALVE (FRV) IN SERVICE AND OPERATING ON THE "A" FRV, THE "A" VALVE OPENED AND STUCK, CAUSING A HIGH REACTOR WATER LEVEL, TURBINE TRIP, AND REACTOR TRIP.

SSF 10/19/89 LER# 24589021 50.72# : POWER: 70
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : A FEEDWATER REGULATING VALVE (FRV) STUCK OPEN FOLLOWING A SCRAM (10/19/89). INVESTIGATION REVEALED THAT A BOLT AND THE RETAINING BLOCK FROM THE FEEDWATER DISCHARGE CHECK VALVE WAS WEDGED IN THE FRV. FEEDWATER COOLANT INJECTION IS AN ECCS AT MILLSTONE 1.

SSF 11/17/89 LER# 24589022 50.72# 17134 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE FEEDWATER COOLANT INJECTION SYSTEM (WHICH FUNCTIONS AS AN ECC SYSTEM) WAS DECLARED INOPERABLE DUE TO A LACK OF DETAILED ANALYSIS CONFIRMING ITS OPERABILITY.

PI EVENTS FOR 90-1

SSF 03/05/90 LER# 24590002 50.72# 17899 POWER: 100
 GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
 SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
 DESC : THE SETPOINT ASSOCIATED WITH THE MAIN STEAM HIGH FLOW ISOLATION WAS INCORRECT AND NON-CONSERVATIVE. DUE TO A PERSONNEL ERROR, THE SETPOINT HAD BEEN INCORRECTLY CALCULATED IN 1976.

PI EVENTS FOR 90-2

SSF 04/06/90 LER# 50.72# 18113 POWER: 0
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : PLANT PROTECTION SYSTEM
 DESC : A NONCONSERVATIVE ERROR IN THE CALIBRATION PROCEDURE FOR THE HIGH PRESSURE SCRAM SETPOINT SWITCHES ALLOWED THE SETPOINTS TO EXCEED THE T.S. LIMIT. THIS PROCEDURE HAD BEEN USED SINCE JULY 1979.

SSF 05/11/90 LER# 50.72# 18456 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE FEEDWATER COOLANT INJECTION AUTO-START CAPABILITY WAS RENDERED INOPERABLE IN ORDER TO PREVENT OVERLOADING THE EMERGENCY GAS TURBINE GENERATOR IN THE EVENT OF AN ACCIDENT.

SE 05/11/90 LER# 24590009 50.72# 18440 POWER: 100
 DESC : HOUSE HEATING STEAM LINES PASSING THRU VITAL AREAS FOUND NOT TO BE ANALYZED BY HELB FOR FAILURE. SEISMIC EVENT COULD CAUSE MULTIPLE LINE FAILURES RESULTING IN LOSS OF MULTIPLE TRAINS OF SAFETY EQUIPMENT.

SSF 05/18/90 LER# 50.72# 18509 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : WITH THE FEEDWATER COOLANT INJECTION SYSTEM INOPERABLE BECAUSE OF EMERGENCY POWER SUPPLY CONCERNS, THE CORE SPRAY SYSTEM WAS DECLARED INOPERABLE. THE BACKUP INJECTION VALVE FAILED IN THE SHUT POSITION DUE TO A FAILURE OF THE TORQUE LIMITER.

TABLE 8.54 (CONT.)
MILLSTONE 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	1.12	0.00	0.47	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	1	0	0	0	0
TOTAL SCRAMS	0	0	0	2	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	1
SAFETY SYSTEM FAILURES	1	1	2	2	1	2	1	3
FORCED OUTAGE RATE (%)	0	6	0	11	0	5	0	1
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.47	0.00	1.12	0.00	0.47	0.00	0.54
CRITICAL HOURS	2208	2116	2160	890	2200	2128	2160	1868
COLLECTIVE RADIATION EXPOSURE	6	11	41	377	17	24	23	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	2	1	1	1	2	NA
LICENSED OPERATOR	0	0	0	1	0	0	0	NA
OTHER PERSONNEL	0	1	0	1	2	1	0	NA
MAINTENANCE	2	4	1	8	3	2	1	NA
A) MAINT PERSONNEL	0	1	0	2	1	1	0	NA
B) SURV AND TEST	0	1	1	2	2	1	1	NA
C) EQUIPMENT	2	2	0	4	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	3	2	0	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.55
MILLSTONE 2

PI EVENTS FOR 89-3

SSF 09/06/89 LER# 33689011 50.728: POWER: 100
 GROUP : COMPONENT COOLING WATER SYSTEM GROUP
 SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
 DESC : A CHECK VALVE IN THE AIR OPERATING SYSTEM OF A SERVICE WATER SUPPLY ISOLATION WAS INCORRECTLY INSTALLED. THIS COULD HAVE RESULTED IN IMPROPER OPERATION OF THE SUPPLY VALVE AND A SIGNIFICANT DIVERSION OF SERVICE WATER FLOW TO SAFETY RELATED COMPONENTS.

PI EVENTS FOR 89-4

SSF 10/25/89 LER# 33689009 50.728: POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
 DESC : BOTH CONTAINMENT ATMOSPHERE-PARTICLE/GASEOUS MONITORS WERE INOPERABLE DURING 19 HOURS OF A CONTAINMENT PURGE EVOLUTION. ONE MONITOR HAD NOT BEEN CORRECTLY RETURNED TO SERVICE FOLLOWING MAINTENANCE AND THE OTHER MONITOR'S EMERGENCY POWER SUPPLY WAS OOS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	1	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	1	1	0	0
FORCED OUTAGE RATE (%)	0	2	0	0	0	0	0	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
CRITICAL HOURS	2208	2183	826	1560	2208	1433	2160	1292
COLLECTIVE RADIATION EXPOSURE	28	55	470	176	27	241	6	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	1	1	1	1	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	1	1	2	2	1	1	NA
MAINTENANCE	1	1	2	3	3	2	0	NA
A) MAINT PERSONNEL	0	1	0	1	1	1	0	NA
B) SURV AND TEST	1	0	1	2	2	1	0	NA
C) EQUIPMENT	0	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	2	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.56
MILLSTONE 3

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 42389026 50.72#: POWER: 100
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : ALL THREE AUXILIARY FEEDWATER PUMPS WERE RENDERED INOPERABLE AT THE SAME TIME. THE TURBINE-DRIVEN PUMP WAS TAKEN OUT OF SERVICE FOR MAINTENANCE FOR 32 DAYS.

SSF 11/27/89 LER# 42389030 50.72#: 17202 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : MEDIUM-VOLTAGE POWER SYSTEM CLASS 1E
DESC : ENGINEERING CONCLUDED THAT THE 4160VAC FAST BUS TRANSFER, IF PERFORMED REPEATEDLY, COULD DAMAGE SAFETY RELATED MOTORS. THE VOLTAGE TRANSIENTS ACROSS THE MOTOR TERMINALS COULD CAUSE SHAFT AND/OR WINDING DAMAGE, CAUSED BY INADEQUATE DESIGN CONSIDERATIONS.

SSA 12/05/89 LER# 42389033 50.72#: 17271 POWER: 0
DESC : A SAFETY INJECTION OCCURRED ON A SG PRESSURE DECREASE WHEN A MAIN STEAM ISOLATION VALVE WAS OPENED. A PROCEDURE FAILED TO CAUTION THAT A SAFETY INJECTION COULD OCCUR.

SSA 12/11/89 LER# 42389034 50.72#: 17317 POWER: 100
DESC : DURING SURVEILLANCE TESTING OF THE "B" TRAIN ESFAS SLAVE RELAYS, A CONTAINMENT DEPRESSURIZATION ACTUATION SIGNAL WAS INITIATED DUE TO OPERATOR ERROR.

PI EVENTS FOR 90-1

SSA 01/09/90 LER# 42390002 50.72#: 17520 POWER: 100
DESC : A CONTAINMENT DEPRESSURIZATION ACTUATION SIGNAL WAS INADVERTENTLY GENERATED DURING MAINTENANCE. THE TRAIN 'A' CONTAINMENT SPRAY PUMPS AND ECCG PUMPS STARTED.

SCRAM 03/09/90 LER# 42390009 50.72#: 17936 POWER: 100
DESC : THE TEMPERATURE CONTROL VALVE TO THE MAIN GENERATOR STATOR COOLING SYSTEM FAILED, CAUSING A TURBINE TRIP ON HIGH TEMPERATURE IN THE GENERATOR STATOR COOLING SYSTEM. THE TURBINE TRIP CAUSED A REACTOR TRIP.

PI EVENTS FOR 90-2

SSF 05/18/90 LER# 42390017 50.72#: 18531 POWER: 0
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : BOTH TRAINS OF THE HIGH PRESSURE SAFETY INJECTION SYSTEM WERE RENDERED INOPERABLE (4 HRS AND 12 MIN). AN OPERATOR INCORRECTLY FOLLOWED A PROCEDURE THAT WAS TO BE USED ONLY IF THE REACTOR WAS SHUTDOWN WITH TEMPERATURE LESS THAN 350 DEGREES.

SSF 06/01/90 LER# 42390018 50.72#: POWER: 100
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : FOUR FIRE STOP AND SEAL PENETRATIONS WITHIN THE ESF BUILDING WERE DECLARED INOPERABLE. FIRE WATCHES WERE NOT ESTABLISHED IN ALL AFFECTED AREAS.

SCRAM 06/06/90 LER# 42390019 50.72#: 18637 POWER: 100
DESC : A REACTOR SCRAM OCCURRED ON HIGH NEGATIVE FLUX RATE TRIP. THE CAUSE WAS A POSSIBLE DROPPED ROD.

SSF 06/15/90 LER# 50.72#: 18836 POWER: 80
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : BOTH TRAINS OF THE CONTAINMENT RECIRC SPRAY SYSTEM WERE INOPERABLE DUE TO MECHANICAL FAILURES IN BOTH AIR CONDITIONING UNITS THAT SUPPORT THAT SYSTEM. THE A/C HEAT EXCHANGERS WERE FOULED AND HAD HOLES IN THE DIVIDER PLATES.

TABLE G.56 (CONT.)

MILLSTONE 3

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.14	0.00	1.13	0.00	0.00	0.49	0.69
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	0	1	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	2	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	0	0	2	0	3
FORCED OUTAGE RATE (%)	0	23	13	15	0	10	6	37
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.57	0.53	3.40	0.52	1.00	0.98	2.06
CRITICAL HOURS	2208	1760	1900	882	1926	2009	2046	1454
COLLECTIVE RADIATION EXPOSURE	3	6	8	146	7	7	2	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	3	5	7	8	6	NA
LICENSED OPERATOR	0	0	3	2	0	1	0	NA
OTHER PERSONNEL	2	2	0	3	1	3	4	NA
MAINTENANCE	2	5	2	6	7	8	8	NA
A) MAINT PERSONNEL	0	0	0	1	2	2	2	NA
B) SURV AND TEST	2	3	2	3	5	5	5	NA
C) EQUIPMENT	1	2	0	1	0	1	1	NA
D) POTENTIAL MAINT	0	1	0	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	1	1	0	2	4	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

**TABLE 8.57
MONTICELLO**

PI EVENTS FOR 89-3

SSA 08/30/89 LER# 26389016 50.72#: 16443 POWER: 0
 DESC : A DIESEL GENERATOR AUTO STARTED WHEN A BYPASS WAS CONNECTED (PER BYPASS FORM) TO THE WRONG CONTACTS AND A FALSE LOW-LOW REACTOR LEVEL SIGNAL WAS RECEIVED. EMERGENCY CORE COOLING SYSTEMS DID NOT ACTUATE DUE TO BEING SECURED FOR MAINTENANCE.

PI EVENTS FOR 89-4

SSF 10/14/89 LER# 26389029 50.72#: 16847 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : REACTOR BUILDING
 DESC : THE SECONDARY CONTAINMENT WAS DECLARED INOPERABLE AFTER FAILING A CAPABILITY TEST. SEVERAL DEGRADED CONDITIONS EXISTED INCLUDING BYPASS FLOW FROM THE REACTOR BUILDING TO THE REACTOR BUILDING PLENUM. THE ROOT CAUSES WERE DESIGN AND MAINTENANCE PROBLEMS.

SCRAM 11/15/89 LER# 26389038 50.72#: 17107 POWER: 100
 DESC : DURING AN AVERAGE POWER RANGE MONITOR RECIRCULATION FLOW INSTRUMENT CALIBRATION, A PRESSURE SPIKE ON THE "B" REACTOR PRESSURE INSTRUMENT CAUSED A REACTOR TRIP.

SSF 12/19/89 LER# 26389040 50.72#: 17381 POWER: 100
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : REACTOR BUILDING
 DESC : THE SECONDARY CONTAINMENT WAS DECLARED INOPERABLE WHEN THE SBT SYSTEM COULD NOT MAINTAIN THE REQUIRED CONTAINMENT VACUUM DURING A TEST. THREE DESIGN DEFICIENCIES WERE IDENTIFIED THAT AFFECT OR COULD AFFECT THE SBT SYSTEM OPERATION ADVERSELY.

PI EVENTS FOR 90-1

SSF 03/13/90 LER# 26390001 50.72#: 18106 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BECAUSE OF DESIGN DEFICIENCIES, INTERACTIONS BETWEEN THE EMERGENCY FILTER SYSTEM (EFS) AND NON-SAFETY RELATED VENTILATION SYSTEMS MAY PREVENT THE EFS FROM MAINTAINING THE PROPER POSITIVE PRESSURE IN THE CONTROL ROOM DURING A HIGH RADIATION EVENT.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.48	0.00	0.78	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	1	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	3	0	2	1	0
FORCED OUTAGE RATE (%)	0	1	0	5	0	2	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2208	2194	2160	2074	1157	1288	2160	2183
COLLECTIVE RADIATION EXPOSURE	23	16	21	27	273	186	25	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	2	3	1	6	0	NA
LICENSED OPERATOR	0	1	0	2	0	2	0	NA
OTHER PERSONNEL	0	0	1	2	1	3	0	NA
MAINTENANCE	0	0	4	7	4	8	0	NA
A) MAINT PERSONNEL	0	0	2	1	1	3	0	NA
B) SURV AND TEST	0	0	1	4	0	3	0	NA
C) EQUIPMENT	0	0	0	1	0	0	0	NA
D) POTENTIAL MAINT	0	0	1	1	3	2	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	1	3	2	5	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.58
NINE MILE PT. 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 10/04/89 LER# 22089014 50.72# POWER: 0
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE TEMPERATURE CONTROLLERS FOR THE REACTOR BUILDING EMERGENCY VENTILATION SYSTEM CHARCOAL HEATERS WERE NOT IN A SCHEDULED CALIBRATION PROGRAM. THE CONTROLLERS WERE TESTED AND FOUND TO BE SET BELOW THE DESIGN CRITERIA (HUMIDITY AFFECTS EFFICIENCY).

PI EVENTS FOR 90-1

SSF 02/06/90 LER# 22089010 50.72# POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : AS A RESULT OF AN INADEQUATE DESIGN REVIEW, THE RADWASTE DISCHARGE MONITOR COULD BE RENDERED INOPERABLE BY SWITCH MISPOSITIONING WITHOUT ENERGIZING THE "EQUIPMENT TROUBLE" ANNUNCIATOR IN THE CONTROL ROOM.

SSF 02/28/90 LER# 22090002 50.72# POWER: 0
 GROUP : COMPONENT COOLING WATER SYSTEM GROUP
 SYSTEM : CLOSED/COMPONENT COOLING WATER SYSTEM
 DESC : A DESIGN DEFICIENCY IN THE REACTOR BUILDING CLOSED LOOP COOLING WATER SYSTEM COULD CAUSE A LOSS OF COOLING TO ESSENTIAL LOADS DURING A DESIGN BASIS ACCIDENT. THIS WOULD RESULT FROM THE FAILURE OF A THREE-WAY TEMPERATURE CONTROL VALVE.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	1	0	1	2	0
FORCED OUTAGE RATE (%)	100	100	100	100	100	100	100	100
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	0	0	0	0	0	0	0	0
COLLECTIVE RADIATION EXPOSURE	152	133	56	81	92	33	60	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	4	4	3	5	2	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	0	1	0	1	2	1	0	NA
MAINTENANCE	1	2	4	1	3	2	1	NA
A) MAINT PERSONNEL	0	0	0	0	2	0	0	NA
B) SURV AND TEST	1	2	4	1	0	1	0	NA
C) EQUIPMENT	0	0	0	0	0	1	1	NA
D) POTENTIAL MAINT	0	0	0	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	0	1	1	2	2	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.59
NINE MILE PT. 2

PI EVENTS FOR 89-3

SCRAM 09/08/89 LER# 41089024 50.72#: 16543 POWER: 88
DESC : THE 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%.

PI EVENTS FOR 89-4

SCRAM 10/13/89 LER# 41089035 50.72#: 16840 POWER: 54
DESC : A LOW CONDENSER VACUUM LED TO A REACTOR TRIP AND A TURBINE TRIP WHEN THE AIR INLET VALVE OF THE OPERATING STEAM JET AIR EJECTOR CLOSED DUE TO AN INTERLOCK DURING MAINTENANCE.

SCRAM 10/18/89 LER# 41089036 50.72#: 16872 POWER: 1
DESC : DURING A PLANT SHUTDOWN, COLD WATER INTRODUCED BY THE FEEDWATER SYSTEM PRODUCED POSITIVE REACTIVITY IN EXCESS OF THE NEGATIVE REACTIVITY FROM CONTROL ROD INSERTION.

SCRAM 12/01/89 LER# 41089040 50.72#: 17240 POWER: 97
DESC : A REACTOR TRIP OCCURRED ON AN AVERAGE POWER RANGE MONITOR UPSCALE TRIP. A MALFUNCTION OF THE TURBINE ELECTROHYDRAULIC CONTROL SYSTEM PRODUCED A SUDDEN ZERO VOLTAGE INPUT TO THE CONTROL VALVE DEMAND SIGNAL.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.56	0.00	0.00	0.99	0.54	1.52	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	1	0	0	2	1	3	0	0
SAFETY SYSTEM ACTUATIONS	1	2	3	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	2	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	23	0	0	12	1	49	42	15
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.68	0.00	0.00	0.99	0.54	1.52	0.00	0.53
CRITICAL HOURS	1782	16	0	2020	1869	1317	1328	1895
COLLECTIVE RADIATION EXPOSURE	NA	NA	56	81	92	33	60	NA
CAUSE CODES:								
ADMINISTRATIVE	12	7	5	6	6	6	2	NA
LICENSED OPERATOR	3	0	1	5	0	4	1	NA
OTHER PERSONNEL	5	5	3	1	2	2	3	NA
MAINTENANCE	13	11	6	8	7	6	7	NA
A) MAINT PERSONNEL	3	2	0	1	1	2	1	NA
B) SURV AND TEST	7	7	5	6	2	2	2	NA
C) EQUIPMENT	4	1	1	1	1	2	2	NA
D) POTENTIAL MAINT	2	2	0	0	3	0	2	NA
DESIGN/INSTALLATION/FABRICATION	12	6	2	1	1	2	0	NA
EQUIPMENT FAILURE	4	0	1	1	1	2	0	NA

TABLE 8.60
NORTH ANNA 1

PI EVENTS FOR 89-3

SCRAM 07/19/89 LER# 33889014 50.72# : 16128 POWER: 90
DESC : THE MAIN TURBINE TRIPPED ON A LOSS OF EMC CONTROL OIL PRESSURE, CAUSING A REACTOR TRIP WHEN AN O-RING ON THE TURBINE TRIP SOLENOID OPERATED VALVE FAILED.

PI EVENTS FOR 89-4

SCRAM 12/05/89 LER# 23889017 50.72# : 17274 POWER: 7
DESC : A REACTOR TRIP OCCURRED ON A LOW SG LEVEL FOLLOWING A FEEDWATER ISOLATION AS A RESULT OF A LOAD REDUCTION DUE TO THE #3 GOVERNOR VALVE CLOSING DURING TESTING.

SSF 12/28/89 LER# 33889019 50.72# : 17461 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : CONTAINMENT INTEGRITY WAS VIOLATED. PERSONNEL DISCOVERED THAT THE OUTER CONTAINMENT DOOR WAS LEAKING INWARD. INVESTIGATION ALSO REVEALED THAT THE INNER DOOR WAS NOT FULLY CLOSED.

PI EVENTS FOR 90-1

SCRAM 01/23/90 LER# 33890001 50.72# : 17612 POWER: 100
DESC : A FEEDWATER REGULATING VALVE CLOSED DUE TO A FAILED DRIVER CARD. THIS CAUSED A REACTOR TRIP ON LOW SG LEVEL COINCIDENT WITH A STEAM FLOW/FEED FLOW MISMATCH.

PI EVENTS FOR 90-2

SSF 04/03/90 LER# 33890005 50.72# : 18133 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : PERSONNEL AND PROCEDURAL ERRORS RESULTED IN THE MISCALIBRATION OF THE REFUELING WATER STORAGE TANK LEVEL INSTRUMENTATION. THE LOW HEAD SAFETY INJECTION AND RECIRCULATION SPRAY PUMPS PERFORMANCE COULD HAVE BEEN AFFECTED DURING AN ESF ACTUATION.

SSF 05/23/90 LER# 33890007 50.72# : 18559 POWER: 100
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : TWO SETS OF CONCRETE ROOF BLOCKS (WHICH SERVE AS A MISSILE BARRIER) ON THE SERVICE WATER PUMP HOUSE WERE NOT IN THEIR REQUIRED SAFETY POSITIONS. ONE SET HAD BEEN MISSING SINCE OCTOBER 1989. THE BLOCKS HAD BEEN REMOVED TO PERFORM MAINTENANCE/MODIFICATION.

SSF 05/24/90 LER# 33890008 50.72# : 18568 POWER: 100
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : AS A RESULT OF A DESIGN ERROR, SERVICE WATER SYSTEM PRESSURES COULD EXCEED THE DESIGN VALUES OF THE ANCHORED PIPING SUPPORTS FOR THE RECIRC SPRAY HEAT EXCHANGERS. THIS COULD CAUSE A FAILURE OF THE SERVICE WATER SYSTEM DURING A DESIGN BASIS ACCIDENT.

TABLE 8.60 (CONT.)
NORTH ANNA 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.75	0.00	0.54	0.00	0.47	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	1	0	0
TOTAL SCRAMS	1	0	1	0	1	1	1	0
SAFETY SYSTEM ACTUATIONS	1	0	1	1	0	0	0	0
SIGNIFICANT EVENTS	0	0	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	1	0	1	0	3
FORCED OUTAGE RATE (%)	6	0	10	0	2	17	2	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.75	0.00	0.54	0.54	0.47	0.00
CRITICAL HOURS	2169	2209	1334	0	1840	1849	2148	2183
COLLECTIVE RADIATION EXPOSURE	8	10	174	511	28	24	16	NA
CAUSE CODES:								
ADMINISTRATIVE	0	8	1	2	2	0	2	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	4	2	0	0	2	NA
MAINTENANCE	1	5	5	6	2	1	3	NA
A) MAINT PERSONNEL	0	2	3	2	0	0	0	NA
B) SURV AND TEST	0	3	1	2	1	0	2	NA
C) EQUIPMENT	1	1	1	1	0	0	1	NA
D) POTENTIAL MAINT	1	0	0	1	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	3	0	1	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.61
NORTH ANNA 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/23/90 LER# 33890007 50.72# 18559 POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : TWO SETS OF CONCRETE ROOF BLOCKS (WHICH SERVE AS A MISSILE BARRIER) ON THE SERVICE WATER PUMP HOUSE WERE NOT IN THEIR REQUIRED SAFETY POSITIONS. ONE SET HAD BEEN MISSING SINCE OCTOBER 1989. THE BLOCKS HAD BEEN REMOVED TO PERFORM MAINTENANCE/MODIFICATION.

SSF 05/24/90 LER# 33890008 50.72# 18568 POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : AS A RESULT OF A DESIGN ERROR, SERVICE WATER SYSTEM PRESSURES COULD EXCEED THE DESIGN VALUES OF THE ANCHORED PIPING SUPPORTS FOR THE RECIRC SPRAY HEAT EXCHANGERS. THIS COULD CAUSE A FAILURE OF THE SERVICE WATER SYSTEM DURING A DESIGN BASIS ACCIDENT.

	TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER		0	0	0	0	0	0	0	0
TOTAL SCRAMS		0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS		1	0	0	1	0	0	0	0
SIGNIFICANT EVENTS		0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES		0	1	0	1	0	0	0	2
FORCED OUTAGE RATE (%)		0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS		2208	2209	1205	1297	2208	2209	2160	2183
COLLECTIVE RADIATION EXPOSURE		8	10	174	511	28	24	16	NA
CAUSE CODES:									
ADMINISTRATIVE		0	7	1	3	2	0	2	NA
LICENSED OPERATOR		0	0	1	0	0	0	0	NA
OTHER PERSONNEL		1	1	1	2	0	0	3	NA
MAINTENANCE		1	5	4	5	1	0	3	NA
A) MAINT PERSONNEL		0	2	1	2	0	0	0	NA
B) SURV AND TEST		1	3	0	3	1	0	3	NA
C) EQUIPMENT		0	1	2	0	0	0	0	NA
D) POTENTIAL MAINT		0	0	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION		0	3	0	1	0	1	0	NA
EQUIPMENT FAILURE		0	0	0	1	0	0	0	NA

TABLE 8.62

OCONEE 1

PI EVENTS FOR 89-3

SCRAM 08/10/89 LER# 26989013 50.72#: 16293 POWER: 40
 DESC : AN I & C TECHNICIAN PLACED A FLOW TEST CIRCUIT SELECTOR SWITCH IN THE WRONG POSITION WHILE LOWERING THE OVERPOWER TRIP SETPOINTS, CAUSING A REACTOR SCRAM.

SSF 09/21/89 LER# 26989014 50.72#: 16659 POWER: 75
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : THE OVERHEAD EMERGENCY POWER PATH COULD HAVE BEEN RENDERED INOPERABLE BY THE INABILITY OF THE KEOWEE HYDRO UNITS TO CONNECT TO THE PATH WHEN CERTAIN PCB WERE OPENED. THE CONTROL CIRCUITRY WAS NOT UNDERSTOOD BY PLANT PERSONNEL (MANAGEMENT DEFECIENCY).

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/01/90 LER# 26990004 50.72#: POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : BECAUSE OF A DESIGN DEFICIENCY DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS BOTH THE 230KV SWYD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE ENGINEERED SAFEGUARDS BUSES.

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 26990005 50.72#: 18322 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADED VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE 04/24/90 LER# 26990005 50.72#: 18344 POWER: 100
 DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

SSA 05/16/90 LER# 26990007 50.72#: 18492 POWER: 0
 DESC : INADEQUATE TEST PROCEDURES RESULTED IN LOW PRESSURE SIGNAL (2 OUT OF 3 LOGIC) FROM 'B' ANALOG CHANNEL. HPI AND LPI ACTUTATED. ONLY VALVES IN LOW PRESSURE SERVICE WATER WERE AVAILABLE TO OPERATE.

SSF 05/18/90 LER# 26990008 50.72#: POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : WITH THE UNIT VENT STACK MONITORS INOPERABLE AND THE AUXILIARY SAMPLER ALIGNED TO ANOTHER AREA, THE TEMPORARY SAMPLING EQUIPMENT WAS USED TO SAMPLE THE VENT STACK. HOWEVER, THE EQUIPMENT SAMPLING LINES WERE NOT PROPERLY CONNECTED TO THE VENT STACK.

SSF 06/04/90 LER# 26990009 50.72#: POWER: 0
 GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
 SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
 DESC : THE UPPER SURGE TANK'S ABILITY TO SUPPLY SUFFICIENT INVENTORY TO THE EMERGENCY FEEDWATER SYSTEM WAS SIGNIFICANTLY COMPROMISED BECAUSE OF OPERATOR ERROR. WHILE TRYING TO DE-OXYGENATE THE FEEDWATER, OPERATORS DRAINED THE TANK BELOW MINIMUM REQUIREMENTS.

TABLE 8.62 (CONT.)

OCONEE 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.46	0.00	0.92	0.00	0.50	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	1	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	1
SAFETY SYSTEM FAILURES	0	0	3	3	1	0	1	3
FORCED OUTAGE RATE (%)	2	0	11	0	1	6	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	1.84	0.00	0.00	0.48	0.00	0.00
CRITICAL HOURS	2143	2209	1090	2183	2016	2082	2160	1204
COLLECTIVE RADIATION EXPOSURE	100	24	62	62	14	90	14	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	7	4	5	2	0	NA
LICENSED OPERATOR	0	0	2	0	0	0	0	NA
OTHER PERSONNEL	2	0	4	0	3	0	0	NA
MAINTENANCE	3	1	7	2	3	0	0	NA
A) MAINT PERSONNEL	2	1	3	0	2	0	0	NA
B) SURV AND TEST	1	0	4	1	1	0	0	NA
C) EQUIPMENT	0	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	1	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	3	2	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.63

OCONEE 2

PI EVENTS FOR 89-3

SSF 09/21/89 LER# 26989014 50.72#: 16659 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : THE OVERHEAD EMERGENCY POWER PATH COULD HAVE BEEN RENDERED UNOPERABLE BY THE INABILITY OF THE KEOWEE HYDRO UNITS TO CONNECT TO THE PATH WHEN CERTAIN PCB WERE OPENED. THE CONTROL CIRCUITRY WAS NOT UNDERSTOOD BY PLANT PERSONNEL (MANAGEMENT DEFICIENCY).

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 03/01/90 LER# 26990004 50.72#: POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : BECAUSE OF A DESIGN DEFICIENCY DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS, BOTH THE 230KV SWYD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE ENGINEERED SAFEGUARDS BUSES.

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 26990005 50.72#: 18322 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADFD VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE 04/24/90 LER# 26990005 50.72#: 18344 POWER: 100
 DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.51	0.00	0.93	0.87	0.07	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	2	1	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	1
SAFETY SYSTEM FAILURES	0	0	2	3	1	0	1	1
FORCED OUTAGE RATE (%)	0	0	2	7	0	10	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.51	0.00	0.93	2.62	0.00	1.54	0.00	0.00
CRITICAL HOURS	1980	2209	2144	1147	2152	1943	2160	2183
COLLECTIVE RADIATION EXPOSURE	100	24	62	62	14	90	14	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	3	5	3	2	0	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	2	1	1	0	0	NA
MAINTENANCE	2	1	5	2	1	1	0	NA
A) MAINT PERSONNEL	1	1	1	1	0	0	0	NA
B) SURV AND TEST	0	0	3	1	1	0	0	NA
C) EQUIPMENT	1	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	1	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	2	2	2	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.64

OCONEE 3

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 MIN AFTER THE SCRAM.

SSF 09/21/89 LER# 26985014 50.72#: 16659 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE OVERHEAD EMERGENCY POWER PATH COULD HAVE BEEN RENDERED INOPERABLE BY THE INABILITY OF THE KEOWEE HYDRO UNITS TO CONNECT TO THE PATH WHEN CERTAIN PCB WERE OPENED. THE CONTROL CIRCUITRY WAS NOT UNDERSTOOD BY PLANT PERSONNEL (MANAGEMENT DEFICIENCY).

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/19/90 LER# 28790001 50.72#: 17592 POWER: 49
DESC : A REACTOR TRIP OCCURRED DUE TO A LOW REACTOR PRESSURE SIGNAL WHEN THE GROUP 6 RODS DROPPED INTO THE CORE DURING A GROUP 6 POWER SUPPLY CHECK.

SSF 03/01/90 LER# 26990004 50.72#: POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF A DESIGN DEFICIENCY DURING CERTAIN 230KV SWITCHYARD DEGRADED VOLTAGE CONDITIONS, BOTH THE 230KV SBYD AND THE OVERHEAD EMERGENCY POWER PATH COULD BE UNAVAILABLE TO POWER THE ENGINEERED SAFEGUARDS BUSES.

SCRAM 03/07/90 LER# 28790002 50.72#: 17916 POWER: 100
DESC : THE SG LEVEL CONTROL WAS SHIFTED TO MANUAL TO CONDUCT AN ON-LINE CALIBRATION. THE '3A' MFW BLOCK VALVE WAS SHUT, CAUSING A LOW SG LEVEL AND SUBSEQUENT SCRAM ON HIGH REACTOR PRESSURE.

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 26990005 50.72#: 18322 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : BECAUSE OF NON-CONSERVATIVE UNDERVOLTAGE RELAY SETPOINTS, THE STARTUP FEEDER BREAKERS COULD POWER THE MAIN FEEDER BUSES FROM A DEGRADED VOLTAGE SOURCE. THIS COULD HAVE RESULTED IN THE DEGRADATION OF ENGINEERED SAFEGUARDS EQUIPMENT UNDER SOME SCENARIOS.

SE 04/24/90 LER# 26990005 50.72#: 18344 POWER: 100
DESC : LICENSEE DISCOVERED DESIGN DEFICIENCIES IN ELECTRIC POWER SUPPLY SYSTEM (INADEQUATE UNDERVOLTAGE PROTECTION AND SINGLE FAILURE VULNERABILITY).

TABLE 8.64 (CONT.)

OCONEE 3

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.91	0.48	0.00	0.45	0.00	0.94	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	2	1	0	1	0	2	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	1	1	0	0	0	1
SAFETY SYSTEM FAILURES	2	0	3	3	1	0	1	1
FORCED OUTAGE RATE (%)	0	1	4	0	0	1	2	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.84	0.91	0.96	0.00	0.45	1.66	0.94	0.00
CRITICAL HOURS	1184	2195	2094	2183	2203	1204	2136	2183
COLLECTIVE RADIATION EXPOSURE	100	24	62	62	14	90	14	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	4	4	4	2	1	NA
LICENSED OPERATOR	0	0	0	0	1	1	1	NA
OTHER PERSONNEL	1	0	2	0	3	1	1	NA
MAINTENANCE	3	2	5	2	3	2	1	NA
A) MAINT PERSONNEL	1	1	1	0	2	1	0	NA
B) SURV AND TEST	2	0	3	1	1	1	0	NA
C) EQUIPMENT	1	0	1	0	0	0	1	NA
D) POTENTIAL MAINT	0	1	0	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	2	2	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

**TABLE 8.65
OYSTER CREEK**

PI EVENTS FOR 89-3

SCRAM 07/11/89 LER# 21989017 50.72#: 16059 POWER: 57
DESC : FAILURE OF THE INTERNAL WINDING ON THE MAIN OUTPUT TRANSFORMER CAUSED A MAIN TURBINE TRIP AND A REACTOR TRIP.

SCRAM 09/22/89 LER# 21989021 50.72#: 16679 POWER: 100
DESC : A VALVING ERROR BY A TECHNICIAN THAT OCCURRED BECAUSE A PROCEDURAL STEP WAS MISSED CAUSED DRAINING OF AN INSTRUMENT REFERENCE LEG, RESULTING IN TURBINE AND REACTOR TRIPS ON HIGH REACTOR LEVEL.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSF 02/15/90 LER# 21990003 50.72#: POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : CONTROL ROD DRIVE SYSTEM
DESC : PERSONNEL ERROR RESULTED IN THE WITHDRAWAL OF SEVEN CONTROL RODS DURING A REACTOR STARTUP WHILE THE ROD WORTH MINIMIZER (RWM) WAS INOPERABLE. THE OPERATORS FAILED TO OBSERVE THAT THE NORMAL/BYPASS SWITCH WAS STILL IN THE BYPASS POSITION.

PI EVENTS FOR 90-2

SCRAM 06/25/90 LER# 50.72#: 18764 POWER: 100
DESC : A BREAKER FOR ONE OF THE VALVES IN THE CONDENSER COOLING SYSTEM TRIPPED. THIS LOSS OF COOLING FLOW CAUSED A LOSS OF CONDENSER VACUUM AND A SUBSEQUENT REACTOR TRIP.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	1.87	1.09	0.00	0.00	0.59
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	2	2	0	0	1
SAFETY SYSTEM ACTUATIONS	0	1	0	1	0	0	0	0
SIGNIFICANT EVENTS	1	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	1	3	0	0	0	0	1
FORCED OUTAGE RATE (%)	37	100	85	55	24	9	15	22
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.70	0.00	15.75	0.94	1.09	0.00	0.56	1.19
CRITICAL HOURS	1422	0	64	1069	1842	2040	1781	1685
COLLECTIVE RADIATION EXPOSURE	205	1131	569	149	82	111	130	NA
CAUSE CODES:								
ADMINISTRATIVE	3	7	5	3	1	1	3	NA
LICENSED OPERATOR	2	1	0	2	0	2	1	NA
OTHER PERSONNEL	2	2	1	2	3	0	1	NA
MAINTENANCE	8	7	4	4	5	0	3	NA
A) MAINT PERSONNEL	2	4	3	0	0	0	1	NA
B) SURV AND TEST	4	2	1	2	3	0	1	NA
C) EQUIPMENT	2	2	0	0	2	0	1	NA
D) POTENTIAL MAINT	3	1	0	2	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	0	5	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	1	1	0	0	0	NA

TABLE 8.66

PALISADES

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.

PI EVENTS FOR 89-4

SSA 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : SAFETY INJECTION OCCURRED ON LOW REACTOR PRESSURE AFTER A MANUAL SCRAM.

SSA 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : SAFETY INJECTION OCCURRED ON LOW REACTOR PRESSURE. STARTING OF SAFETY INJECTION EQUIPMENT CAUSED A BUS LOW VOLTAGE THAT STARTED THE DIESEL GENERATOR.

SE 11/21/89 LER# 25589025 50.72#: 17158 POWER: 0
DESC : A PRESSURIZER PORV (TARGET ROCK BRAND) OPENED WHEN THE BLOCK VALVE WAS OPENED. THE BLOCK VALVE COULD NOT BE CLOSED TO ISOLATE THE OPEN PORV. AIT TO SITE. ALSO MORNING REPORTS 11/24/89 AND 11/27/89.

PI EVENTS FOR 90-1

SCRAM 02/28/90 LER# 25590002 50.72#: 17855 POWER: 80
DESC : THE 'B' MFP TRIPPED ON HIGH VIBRATION. THE 'A' MFP INCREASED THE FEED RATE AND A MANUAL TURBINE RUNBACK CAUSED SG SHRINK AND THEN SG OVERFEEDING, CAUSING AN INSERTION OF REACTIVITY AND A SCRAM ON VARIABLE HIGH POWER SETPOINT.

PI EVENTS FOR 90-2

SSF 04/18/90 LER# 25590007 50.72#: 18308 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : A MAIN STEAM LINE BREAK COULD RESULT IN EXCEEDING THE CONTAINMENT DESIGN PRESSURE. THE ORIGINAL ASSUMPTION THAT A 100% STEAM LINE CROSS-SECTIONAL AREA BREAK SIZE IS MOST LIMITING WAS INCORRECT. SMALLER BREAK SIZES RESULT IN HIGHER CONTAINMENT PRESSURES.

SSF 05/05/90 LER# 50.72#: 18395 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : DURING A CONTAINMENT PENETRATION LEAK RATE TEST IT WAS DISCOVERED THAT AN ISOLATION VALVE WAS LEAKING. THIS RESULTED IN EXCEEDING THE MAXIMUM ALLOWED LEAK RATE BY A FACTOR OF 2.36.

TABLE 8.66 (CONT.)

PALISADES

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.46	0.00	0.48	0.00
SCRAMS ≤ 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	2	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	1	2	1	0	0	0	0	2
FORCED OUTAGE RATE (%)	0	61	34	0	3	69	5	14
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	2.48	0.69	0.00	0.46	3.69	0.00	0.82
CRITICAL HOURS	931	403	1445	2183	2152	271	2087	1218
COLLECTIVE RADIATION EXPOSURE	338	279	57	16	18	208	24	NA
CAUSE CODES:								
ADMINISTRATIVE	3	0	3	3	3	3	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	3	NA
OTHER PERSONNEL	4	3	1	2	0	0	3	NA
MAINTENANCE	6	5	3	5	4	2	6	NA
A) MAINT PERSONNEL	4	1	1	1	1	0	2	NA
B) SURV AND TEST	2	1	2	1	1	2	1	NA
C) EQUIPMENT	0	2	0	0	1	0	1	NA
D) POTENTIAL MAINT	2	2	0	2	1	0	2	NA
DESIGN/INSTALLATION/FABRICATION	1	2	3	1	4	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

**TABLE 8.67
PALO VERDE 1**

PI EVENTS FOR 89-3

SSF 07/26/89 LER# 52889013 50.72#: POWER: 0
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : CONTAINMENT PURGE SYSTEM
 DESC : THE CONTAINMENT PURGE INTAKE AND EXHAUST CONTAINMENT ISOLATION VALVES MAY NOT HAVE BEEN ABLE TO PERFORM THEIR SAFETY FUNCTION DURING A SEISMIC EVENT. THE VALVES WERE INSTALLED IN A CONFIGURATION THAT WAS NOT SEISMICALLY QUALIFIED.

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 AND A DIESEL START. THE CAUSE WAS THE FAILURE OF AN INTEGRATED CHIP.

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52889017 50.72#: POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 0
 GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
 SYSTEM : ULTIMATE HEAT SINK SYSTEM
 DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	2.05	0.00	0.66	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	3	0	1	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	0	1	1	1	0	1
FORCED OUTAGE RATE (%)	60	0	30	100	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.05	0.00	0.66	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	976	2208	1522	0	0	0	0	138
COLLECTIVE RADIATION EXPOSURE	15	11	25	87	87	24	46	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	2	3	1	3	1	NA
LICENSED OPERATOR	2	0	1	0	0	1	0	NA
OTHER PERSONNEL	2	1	0	1	2	2	1	NA
MAINTENANCE	3	3	2	4	5	2	2	NA
A) MAINT PERSONNEL	2	0	1	1	1	1	1	NA
B) SURV AND TEST	1	2	1	2	1	1	1	NA
C) EQUIPMENT	1	0	0	1	1	0	0	NA
D) POTENTIAL MAINT	1	1	0	0	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	2	2	1	4	0	NA
EQUIPMENT FAILURE	0	0	1	0	1	1	0	NA

**TABLE 8.68
PALO VERDE 2**

PI EVENTS FOR 89-3

SCRAM 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
 DESC : THE 13.8KV BUS DEENERGIZED WHEN A FUSE FAILED, CAUSING A REACTOR TRIP ON DEPARTURE FROM NUCLEATE BOILING WHEN TWO OF FOUR RCP'S LOST POWER.

SSA 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
 DESC : THE 13.8KV BUS DEENERGIZED, CAUSING A REACTOR TRIP AND A SAFETY INJECTION ACTUATION ON LOW REACTOR PRESSURE. THE DIESEL STARTED ON SAFETY INJECTION, BUT DID NOT LOAD.

SSA 07/12/89 LER# 52989009 50.72#: 16076 POWER: 100
 DESC : THE 13.8KV BUS DEENERGIZED, CAUSING A REACTOR TRIP AND A SAFETY INJECTION ACTUATION ON LOW REACTOR PRESSURE. THE DIESEL STARTED ON SAFETY INJECTION, BUT DID NOT LOAD.

SSF 07/26/89 LER# 52889013 50.72#: POWER: 100
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : CONTAINMENT PURGE SYSTEM
 DESC : THE CONTAINMENT PURGE INTAKE AND EXHAUST CONTAINMENT ISOLATION VALVES MAY NOT HAVE BEEN ABLE TO PERFORM THEIR SAFETY FUNCTION DURING A SEISMIC EVENT. THE VALVES WERE INSTALLED IN A CONFIGURATION THAT WAS NOT SEISMICALLY QUALIFIED.

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52889017 50.72#: POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

SCRAM 10/31/89 LER# 52989010 50.72#: 16985 POWER: 67
 DESC : POWER WAS BEING INCREASED FOR NUCLEAR INSTRUMENTATION CALIBRATION WITH RPS CHANNEL "C" IN BYPASS (RCP SPEED SENSOR PROBLEMS) AND RPS CHANNEL "D" IN TRIP (LINEAR CALIBRATION SWITCH PROBLEMS). AN EXCORE DETECTOR MALFUNCTION CAUSED A DNBR REACTOR TRIP.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 05/04/90 LER# 52990004 50.72#: POWER: 0
 GROUP : SAFETY AND RELIEF VALVES GROUP
 SYSTEM : REACTOR COOLANT SYSTEM
 DESC : LAB TESTING IDENTIFIED THAT ALL FOUR PRESSURIZER CODE SAFETY VALVE SETPOINTS EXCEEDED THEIR TECHNICAL SPECIFICATION TOLERANCE. THREE OF THE FAILURES WERE ATTRIBUTED TO THE PERFORMANCE LIMITATION OF THE VALVES. THE FOURTH IS UNDER INVESTIGATION.

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 0
 GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
 SYSTEM : ULTIMATE HEAT SINK SYSTEM
 DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

TABLE 8.68 (CONT.)
PALO VERDE 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.68	0.00	0.61	0.94	0.00	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	0	1	1	0	1	1	0	0
SAFETY SYSTEM ACTUATIONS	1	0	2	0	2	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	0	1	1	1	0	2
FORCED OUTAGE RATE (%)	0	9	17	0	17	41	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.49	0.68	0.00	1.83	2.82	0.00	0.00
CRITICAL HOURS	2208	2029	1475	44	163	1064	1295	0
COLLECTIVE RADIATION EXPOSURE	15	11	25	87	87	24	46	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	1	3	1	0	2	NA
LICENSED OPERATOR	0	1	1	1	0	0	1	NA
OTHER PERSONNEL	1	1	1	1	0	1	1	NA
MAINTENANCE	1	3	2	4	2	3	2	NA
A) MAINT PERSONNEL	0	0	0	1	0	1	0	NA
B) SURV AND TEST	1	2	0	2	1	0	2	NA
C) EQUIPMENT	0	1	2	1	1	2	0	NA
D) POTENTIAL MAINT	0	1	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	2	2	3	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

**TABLE 8.69
PALO VERDE 3**

PI EVENTS FOR 89-3

SSF 07/26/89 LER# 52889013 50.72#: POWER: 0
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : CONTAINMENT PURGE SYSTEM
 DESC : THE CONTAINMENT PURGE INTAKE AND EXHAUST CONTAINMENT ISOLATION VALVES MAY NOT HAVE BEEN ABLE TO PERFORM THEIR SAFETY FUNCTION DURING A SEISMIC EVENT. THE VALVES WERE INSTALLED IN A CONFIGURATION THAT WAS NOT SEISMICALLY QUALIFIED.

SE 09/06/89 LER# 50.72#: 16513 POWER: 100
 DESC : THE LICENSEE DISCOVERED IMPROPERLY SET RING SETTINGS ON PALO VERDE UNIT 3 STEAM SAFETY VALVES. THE LICENSEE SHUTDOWN UNIT 2 AND FOUND NO PROBLEM.

PI EVENTS FOR 89-4

SSF 10/23/89 LER# 52889017 50.72#: POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : FOUR UNSEALED PENETRATIONS WERE DISCOVERED IN THE FIRE BARRIER OF THE SEISMIC GAP AREA BETWEEN THE EDG AND CONTROL BUILDINGS. A FIRE IN THIS AREA COULD HAVE RESULTED IN THE LOSS OF BOTH EDGS.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 04/14/90 LER# 53090004 50.72#: 18236 POWER: 81
 DESC : A DROPPED ROD DURING TS SURV TEST ON CEAS CAUSED CPC HIGH POWER DENSITY AND LOW DNBR REACTOR TRIP SIGNAL. FORTY-TWO SECONDS LATER, THREE CPC LOW DNBR REACTOR TRIP SIGNALS WERE GENERATED, CAUSING A REACTOR TRIP.

SSF 05/21/90 LER# 52890005 50.72#: 18540 POWER: 100
 GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
 SYSTEM : ULTIMATE HEAT SINK SYSTEM
 DESC : A MATERIAL MISAPPLICATION COULD HAVE DEGRADED THE ABILITY TO PROVIDE LONG-TERM COOLING FOLLOWING A LOCA. THE KEYS THAT CONNECT THE VALVE STEM AND TORQUE TUBE OF ESSENTIAL SPRAY POND VALVES WERE MADE OF CARBON STEEL AND EXPERIENCED CORROSION FAILURE.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.49
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	1	0	1	0	0	0
SAFETY SYSTEM FAILURES	2	0	0	2	1	1	0	1
FORCED OUTAGE RATE (%)	20	0	31	0	0	97	22	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.81	0.00	0.00	9.67	0.00	0.49
CRITICAL HOURS	1794	2208	1106	0	0	103	1752	2061
COLLECTIVE RADIATION EXPOSURE	NA	NA	25	87	87	24	46	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	0	3	1	2	1	NA
LICENSED OPERATOR	0	0	1	1	1	0	0	NA
OTHER PERSONNEL	3	0	0	1	3	1	2	NA
MAINTENANCE	3	0	3	4	4	1	2	NA
A) MAINT PERSONNEL	2	0	0	1	1	0	1	NA
B) SURV AND TEST	1	0	1	3	2	1	1	NA
C) EQUIPMENT	0	0	1	0	1	0	0	NA
D) POTENTIAL MAINT	0	0	1	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	3	4	1	2	0	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	1	NA

TABLE 8.70
PEACH BOTTOM 2

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.

SSF 08/13/89 LER# 27790012 50.72#: 18480 POWER: 73
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BOTH ESW PUMPS WERE INOPERABLE; "A" BECAUSE ITS EMERGENCY POWER SOURCE WAS INOPERABLE AND "B" BECAUSE ITS ISOLATION VALVES WERE INCORRECTLY LEFT SHUT AFTER REMOVAL OF A BLOCKING PERMIT. BOTH INOPERABILITIES WERE RELATED TO INADEQUATE PROCEDURES.

PI EVENTS FOR 89-4

SSF 10/03/89 LER# 27789022 50.72#: 16763 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE UPON THE DISCOVERY THAT ALL REMOTE STOP VALVE TRIP FUNCTIONS WERE RENDERED INOPERABLE. A TRIP SOLENOID LEAD WAS DISCOVERED UNTERMINATED; IT HAD BECOME ENTANGLED IN A PANEL DOOR.

SCRAM 10/05/89 LER# 27789023 50.72#: 16780 POWER: 100
DESC : A REACTOR TRIP OCCURRED FOLLOWING A PRESSURE INCREASE AND AN AVERAGE POWER RANGE MONITOR TRIP SIGNAL WAS CAUSED WHEN AN OUTBOARD MAIN STEAM ISOLATION VALVE SHUT DURING TESTING.

SSF 10/07/89 LER# 27789025 50.72#: 16795 POWER: 0
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
DESC : THE UTILITY DETERMINED THAT NON-SAFETY RELATED BELLOWS LEAK DETECTING PRESSURE SWITCHES INSTALLED ON THE MAIN STEAM RELIEF VALVES COULD PREVENT THE MANUAL AND AUTO OPENING OF THE MSRVs DURING DESIGN BASIS CONDITIONS. THE ADS WAS DECLARED INOPERABLE.

SSF 11/08/89 LER# 27789028 50.72#: 17043 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : THE HEATER ELEMENT TIME DELAY RELAYS (TDRS) IN THE SBTG WERE NOT ENVIRONMENTALLY QUALIFIED. AN EVALUATION DETERMINED THAT THESE TDRS COULD FAIL IN A LOCA HIGH RADIATION ENVIRONMENT; HEATERS WOULD BE DISABLED AND COULD CAUSE FAILURE OF THE SBTG.

SCRAM 12/20/89 LER# 27789033 50.72#: 17390 POWER: 100
DESC : AN I & C TECHNICIAN MISTAKENLY PLACED 'A' APRM IN BYPASS MODE, WHEN 'D' APRM WAS ALREADY IN BYPASS MODE, CAUSING AN APRM REACTOR SCRAM.

SSA 12/20/89 LER# 27789033 50.72#: 17390 POWER: 100
DESC : HPCI AND RCIC STARTED ON LOW REACTOR LEVEL AFTER A SCRAM.

PI EVENTS FOR 90-1

SSF 03/10/90 LER# 27790003 50.72#: 17943 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : BECAUSE OF EXCESSIVE SEAT LEAKAGE IN TWO MAIN STEAM LINE DRAIN ISOLATION VALVES, THE PRIMARY CONTAINMENT MAXIMUM LEAKAGE RATE WAS EXCEEDED. THE ROOT CAUSE OF THE SEAT LEAKAGE IS UNDER INVESTIGATION.

SSF 03/21/90 LER# 27790004 50.72#: 18035 POWER: 0
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : BECAUSE OF THE BUILDUP OF CORROSION PRODUCTS AND SILT, 11 ROOM COOLERS WOULD NOT RECEIVE THE REQUIRED EMERGENCY SERVICE WATER (ESW) FLOW DURING A DBA. TWO CORE SPRAY PUMPS, ONE RHR PUMP, THE HPCI SYSTEM, AND THE RCIC SYSTEM COULD BE RENDERED INOPERABLE.

TABLE 8.70 (CONT.)

PEACH BOTTOM 2

PI EVENTS FOR 90-1 (CONT.)

SE 03/21/90 LER# 27790007 50.72#: 18035 POWER: 0
 DESC : AREA COOLERS FOR ECCS EQUIPMENT WERE NOT GETTING DESIRED FLOW DUE TO SILTING.

PI EVENTS FOR 90-2

SBA 04/02/90 LER# 27790006 50.72#: 18119 POWER: 0
 DESC : POOR COMMUNICATIONS CAUSED AN OPERATOR TO GO TO ANOTHER STEP IN TEST PROCEDURE ST-13.11D, CAUSING VITAL BUS E42 TO BE DEENERGIZED. THE EDG STARTED AND LOADED THE BUS.

SST 05/15/90 LER# 50.72#: 18480 POWER: 82
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : IT WAS DISCOVERED THAT THE EMERGENCY SERVICE WATER SYSTEM WAS INOPERABLE FROM 8/13/89 TO 8/15/89. A PERSONNEL ERROR LEFT THE 'B'TRAIN INOPERABLE FOLLOWING A SURVEILLANCE. THE 'A' TRAIN WAS INOPERABLE BECAUSE ITS EMERGENCY POWER SUPPLY WAS OOS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.74	0.48	1.06	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	1	2	0	0
SAFETY SYSTEM ACTUATIONS	1	1	0	0	0	1	0	1
SIGNIFICANT EVENTS	1	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	2	0	3	3	1	3	2	1
FORCED OUTAGE RATE (%)	0	0	0	6	8	18	4	31
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	1.47	0.96	1.06	0.71	0.62
CRITICAL HOURS	0	0	0	1359	2082	1890	1417	1603
COLLECTIVE RADIATION EXPOSURE	214	151	58	65	152	67	52	NA
CAUSE CODES:								
ADMINISTRATIVE	4	7	3	7	2	4	2	NA
LICENSED OPERATOR	0	0	0	2	0	1	0	NA
OTHER PERSONNEL	2	4	1	1	4	1	0	NA
MAINTENANCE	4	8	4	9	5	6	5	NA
A) MAINT PERSONNEL	2	2	2	3	1	2	0	NA
B) SURV AND TEST	1	5	2	5	1	2	2	NA
C) EQUIPMENT	2	0	0	1	2	1	1	NA
D) POTENTIAL MAINT	1	2	0	0	1	1	2	NA
DESIGN/INSTALLATION/FABRICATION	3	3	3	2	2	4	0	NA
EQUIPMENT FAILURE	1	0	0	1	0	0	0	NA

**TABLE 8.71
PEACH BOTTOM 3**

PI EVENTS FOR 89-3

SSF 08/13/89 LER# 27790012 50.72#: 18480 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : BOTH ESW PUMPS WERE INOPERABLE; "A" BECAUSE ITS EMERGENCY POWER SOURCE WAS INOPERABLE AND "B" BECAUSE ITS ISOLATION VALVES WERE INCORRECTLY LEFT SHUT AFTER REMOVAL OF A BLOCKING PERMIT. BOTH INOPERABILITIES WERE RELATED TO INADEQUATE PROCEDURES.

SSF 09/15/89 LER# 27789020 50.72#: 16590 POWER: 0
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : DISCOVERY OF EQ NON-CONFORMANCE WITH SOME OF THE AS FOUND RHR AND CORE SPRAY PUMP MOTOR CABLE SPLICE INSULATION. POTENTIAL FOR LOSS OF PUMPS IN POST LOCA RADIATION FIELDS RESULTING FROM DETERIORATION OF NYLON CABLE TIES OR ELECTRICAL TAPE.

SSF 09/15/89 LER# 27789020 50.72#: 16590 POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : LOW PRESSURE CORE SPRAY SYSTEM
 DESC : SOME OF THE RHR AND CORE SPRAY PUMPS' MOTOR CABLE SPLICE INSULATION CONFIGURATIONS DID NOT CONFORM TO EQ REQUIREMENTS. IN A POST LOCA RADIATION FIELD, THE RHR PUMPS COULD HAVE BECOME INOPERABLE FROM THE DETERIORATION OF NYLON CABLE TIES OR ELECTRIC TAPE.

PI EVENTS FOR 89-4

SSF 10/07/89 LER# 27789025 50.72#: 16795 POWER: 0
 GROUP : SAFETY AND RELIEF VALVES GROUP
 SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
 DESC : THE UTILITY DETERMINED THAT NON-SAFETY RELATED BELLOWS LEAK DETECTING PRESSURE SWITCHES INSTALLED ON THE MAIN STEAM RELIEF VALVES COULD PREVENT THE MANUAL AND AUTO OPENING OF THE MSRVs DURING DESIGN BASIS CONDITIONS. THE ADS WAS DECLARED INOPERABLE.

SSF 11/08/89 LER# 27789028 50.72#: 17043 POWER: 0
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
 DESC : THE HEATER ELEMENT TIME DELAY RELAYS (TDRS) IN THE SBTG WERE NOT ENVIRONMENTALLY QUALIFIED. AN EVALUATION DETERMINED THAT THESE TDRS COULD FAIL IN A LOCA HIGH RADIATION ENVIRONMENT; HEATERS WOULD BE DISABLED AND COULD CAUSE FAILURE OF THE SBTG.

SSF 12/07/89 LER# 27889009 50.72#: 17292 POWER: 3
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI TURBINE FAILED TO START DURING TESTING DUE TO LOW AUXILIARY LUBE OIL PRESSURE. THE HPCI SYSTEM WAS DECLARED INOPERABLE. A SETPOINT SCREW ON A OIL RELIEF VALVE HAD WORKED LOOSE AND WAS RELIEVING TOO SOON AND PREVENTING THE TURBINE FROM STARTING.

SSF 12/22/89 LER# 27889012 50.72#: 17405 POWER: 66
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : A FIRE IN FIRE AREA 13 COULD CAUSE A LOSS OF REACTOR COOLANT INVENTORY THROUGH THE RWCU SYSTEM REJECT LINE BEYOND THE MAKEUP CAPABILITY OF THE RCIC SYSTEM. THIS DESIGN ERROR WAS DISCOVERED DURING A REVIEW OF THE FIRE PROTECTION PLAN.

PI EVENTS FOR 90-1

SSF 01/08/90 LER# 27890001 50.72#: 17509 POWER: 99
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN IT FAILED TO MEET THE REQUIRED STARTUP TIME DURING A SYSTEM OPERABILITY TEST. THE CAUSE OF THE EVENT WAS AN INADEQUATE CALIBRATION PROCEDURE, WHICH CAUSED THE HPCI CONTROL VALVE TO OPEN TOO SLOWLY.

SSA 01/28/90 LER# 27890002 50.72#: 17649 POWER: 50
 DESC : HPCI AND RCIC WERE MANUALLY STARTED TO CONTROL REACTOR PRESSURE AND LEVEL FOLLOWING A MANUAL SCRAM.

TABLE 8.71 (CONT.)
PEACH BOTTOM 3

PI EVENTS FOR 90-1 (CONT.)

SCRAM 03/06/90 LER# 27890003 50.72#: 17903 POWER: 100
DESC : THE MAIN GENERATOR STATOR WATER COOLANT PUMP TRIPPED, CAUSING A TURBINE RUNBACK AND SUBSEQUENT TURBINE TRIP REACTOR SCRAM.

PI EVENTS FOR 90-2

SSF 05/04/90 LER# 27890003 50.72#: 18391 POWER: 80
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : AFTER DISCOVERING THAT THE COVER OF A DRYWELL HIGH PRESSURE TRANSMITTER WAS NOT ENVIRONMENTALLY QUALIFIED BECAUSE OF INSUFFICIENT TORQUE, THE LICENSEE DECLARED THE FOLLOWING SYSTEMS INOPERABLE: "A" CORE SPRAY, "A" LPCI, ADS, HPCI, AND ALL FOUR EDGS.

SSF 05/11/90 LER# 27890006 50.72#: 18439 POWER: 85
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : A BLOWN FUSE FROM THE "3B" BATTERY CHARGER RESULTED IN DECLARING THE HPCI SYSTEM, CORE SPRAY "B" LOGIC, RHR "B" LOGIC, "B" CS SUBSYSTEM, "B" RHR SUBSYSTEM, AND E2 AND E4 EDGS INOPERABLE. THE CAUSE WAS POOR WORK PLANNING AND PRACTICES.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	2	0	0	0	0	0	1	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	0	3	4	1	2
FORCED OUTAGE RATE (%)	0	0	0	0	0	2	11	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	1.25	1.00	0.00
CRITICAL HOURS	0	0	0	0	0	801	1992	2183
COLLECTIVE RADIATION EXPOSURE	214	151	58	65	152	67	52	NA
CAUSE CODES:								
ADMINISTRATIVE	2	4	1	3	3	6	3	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	3	2	1	0	3	1	1	NA
MAINTENANCE	6	4	2	3	5	7	5	NA
A) MAINT PERSONNEL	3	2	0	1	2	1	1	NA
B) SURV AND TEST	1	2	2	2	2	4	2	NA
C) EQUIPMENT	2	0	0	0	0	1	1	NA
D) POTENTIAL MAINT	1	0	0	0	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	1	2	3	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.72

PERRY

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 12/22/89 LER# 44089032 50.72#: 17407 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE. THE TEMPERATURE OF THE ELECTROLYTE ON THE ONLY OPERABLE BATTERY (UNIT 2 DIV III) WAS BELOW THE MINIMUM REQUIRED BY T.S. THE CAUSE WAS A BLOWN FUSE IN THE VENTILATION DUCT HEATER CIRCUIT.

PI EVENTS FOR 90-1

SSF 01/05/90 LER# 44089032 50.72#: 17492 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE. THE TEMPERATURE OF THE ELECTROLYTE IN THE ONLY OPERABLE HPCS BATTERY (UNIT 2 DIV III) WAS BELOW THE MINIMUM REQUIRED BY T.S. THE CAUSE WAS A MALFUNCTION IN THE CONTROL COMPLEX CHILLED WATER SYSTEM.

SCRAM 01/07/90 LER# 44090001 50.72#: 17504 POWER: 100
 DESC : A PERSONNEL ERROR CAUSED A LOSS OF THE NONVITAL 480V BUS #F1C AND A LOSS OF FEEDWATER. THE REACTOR TRIPPED ON LOW REACTOR WATER LEVEL.

SSA 01/07/90 LER# 44090001 50.72#: 17504 POWER: 100
 DESC : A PERSONNEL ERROR CAUSED A LOSS OF THE NONVITAL 480V BUS #F1C AND A LOSS OF MAIN FEEDWATER. HPCS AND RCIC INJECTED DUE TO LOW REACTOR WATER LEVEL.

SSF 01/07/90 LER# 44090002 50.72#: 17506 POWER: 0
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE. INVESTIGATION SHOWED IT HAD BEEN INOPERABLE SINCE 11/01/89 BECAUSE OF A SIGN DEFICIENCY INVOLVING THE DELTA-T ISOLATION INSTRUMENT. DURING THIS PERIOD THE HPCS SYSTEM HAD BEEN INOPERABLE ON THREE OCCASIONS.

PI EVENTS FOR 90-2

SSF 04/03/90 LER# 50.72#: 18126 POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : WITH THE "A" TRAIN OF EMERGENCY SERVICE WATER INOPERABLE BECAUSE OF A LEAK FROM ITS DISCHARGE STRAINER, THE "B" TRAIN WAS DECLARED INOPERABLE BECAUSE ITS SCREEN WASH PUMP FAILED.

SSF 04/05/90 LER# 44090005 50.72#: 18152 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
 DESC : THE HPCS SYSTEM WAS DECLARED INOPERABLE BECAUSE ITS EMERGENCY POWER SOURCE (DIV III EDG) WAS INOPERABLE FOR GREATER THAN 72 HOURS. THE EDG FUEL OIL EXCEEDED T.S. SEDIMENT LIMITS.

SSF 04/11/90 LER# 44090006 50.72#: 18210 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CONTROL ROOM VENTILATION SYSTEM WERE INOPERABLE. WITH THE "A" TRAIN INOPERABLE DUE TO AN UNAVAILABLE EMERGENCY COOLING SUPPLY, AN OPERATOR INCORRECTLY RENDERED THE "B" TRAIN INOPERABLE TO PERFORM MAINTENANCE.

SSF 04/11/90 LER# 44090006 50.72#: 18217 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : WITH ONE TRAIN OF THE CREV SYSTEM INOPERABLE FOR MAINTENANCE THE OTHER BECAME INOPERABLE BECAUSE OF A FAILED RELAY IN A SUPPLY FAN. THE ROOT CAUSE OF THE FAILURE (FAULTY RELAY TRIP UNIT) WAS NOT DISCOVERED UNTIL ANOTHER FAILURE OCCURRED ON 4/16/90.

TABLE 8.72 (CONT.)

PERRY

PI EVENTS FOR 90-2 (CONT.)

SSF 04/18/90 LER# 44090007 50.72#: 18270 POWER: 100
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : REACTOR BUILDING
 DESC : A TEMPORARY (TWO MIN) LOSS OF CONTAINMENT INTEGRITY OCCURRED WHEN THE OUTER DOOR AIR LOCK SEAL RUPTURED WHILE THE INNER DOOR WAS OPEN. PERSONNEL ERRORS RESULTED IN OPENING THE INNER DOOR TWICE WHILE IN THIS CONDITION.

SSF 05/17/90 LER# 44090009 50.72#: 18506 POWER: 100
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : WITH THE "A" TRAIN OF RHR INOPERABLE FOR TESTING, THE "B" TRAIN WAS DECLARED INOPERABLE FOR THE CONTAINMENT SPRAY AND SUPPRESSION COOLING MODES AFTER THE SYSTEM HEAT EXCHANGER BYPASS VALVE FAILED TO REPOSITION ON DEMAND. THE VALVE'S STEM NUT WAS WORN.

SSF 06/07/90 LER# 44090012 50.72#: 18693 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH TRAINS OF THE CONTROL ROOM HVAC SYSTEM WERE INOPERABLE FOR THE EMERGENCY RECIRCULATION MODE. PERSONNEL ERROR AND INEFFECTIVE CORRECTIVE ACTIONS RESULTED IN A CHILLER GUIDE VANE LINKAGE MECHANICAL FAILURE. THE OTHER TRAIN WAS UNDERGOING MAINTENANCE.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00
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	1	0	0	0	0	1	0
SIGNIFICANT EVENTS	1	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	4	4	3	1	0	1	2	7
FORCED OUTAGE RATE (%)	14	0	2	0	1	0	4	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.02	0.00	0.80	0.00	0.65	0.00	0.00	0.00
CRITICAL HOURS	1953	1931	1255	0	1534	2209	1952	2183
COLLECTIVE RADIATION EXPOSURE	25	30	258	425	64	33	34	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	7	7	2	3	3	NA
LICENSED OPERATOR	1	0	1	3	0	0	0	NA
OTHER PERSONNEL	3	2	3	3	4	3	1	NA
MAINTENANCE	8	5	9	9	3	3	3	NA
A) MAINT PERSONNEL	2	2	4	2	1	1	1	NA
B) SURV AND TEST	3	1	3	6	2	1	2	NA
C) EQUIPMENT	3	2	1	1	0	0	0	NA
D) POTENTIAL MAINT	2	2	1	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	3	1	3	1	1	2	NA
EQUIPMENT FAILURE	0	1	0	0	0	0	0	NA

TABLE 8.73

PILGRIM

PI EVENTS FOR 89-3

SSF 08/05/89 LER# 29389025 50.72#: 16244 POWER: 50
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS 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 : THE PLANT HAD A TURBINE RUNBACK WHICH CAUSED A SCRAM ON HIGH REACTOR PRESSURE SIGNAL DUE TO A COMBINATION OF INCORRECT ELECTRICAL WIRING AND FAILURE OF THE PRIMARY COIL IN A 24KV POTENTIAL TRANSFORMER.

SSA 09/05/89 LER# 29389027 50.72#: 16501 POWER: 0
DESC : THE RESIDUAL HEAT REMOVAL SYSTEM ALIGNED TO THE LOW PRESSURE COOLANT INJECTION MODE. THE ACTUATION OCCURRED WHILE TECHNICIANS WERE CHECKING RELAYS.

SSF 09/07/89 LER# 29389028 50.72#: 16525 POWER: 25
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN A HPCI TURBINE TRIP WAS UNEXPECTEDLY GENERATED DURING TESTING. THIS WAS CAUSED BY A FAILED RAMP GENERATOR SIGNAL CONVERTER MODULE IN THE SYSTEM'S TURBINE SPEED CONTROL SYSTEM.

SSF 09/26/89 LER# 29389030 50.72#: POWER: 75
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM HIGH EFFICIENCY AIR FILTRATION SYSTEM FLOWRATE WAS LESS THAN THE MINIMUM SPECIFIED VALUE. A PROCEDURAL ERROR WAS INVOLVED THAT USED THE WRONG FLOW AREA WHEN CALCULATING THE SYSTEM FLOWRATE.

PI EVENTS FOR 89-4

SSF 11/22/89 LER# 29389036 50.72#: 17177 POWER: 94
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE GLAND SEAL EXHAUST BLOWER FAILED BECAUSE OF WORN BRUSHES. THESE BRUSHES HAD BEEN REPLACED IN AUGUST 1989 (LER 29389025). THE REASON FOR THE WEAR EXHIBITED BY THE WORN BRUSHES IS BEING INVESTIGATED.

SCRAM 12/08/89 LER# 29389038 50.72#: 17296 POWER: 95
DESC : WHILE RESTORING LOCAL REACTOR LEVEL INSTRUMENTATION FOLLOWING CALIBRATION, A REACTOR TRIP OCCURRED ON A FALSE LOW REACTOR LEVEL DUE TO A MINOR HYDRAULIC TRANSIENT PRODUCED DURING TESTING.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 05/13/90 LER# 29390008 50.72#: 18461 POWER: 100
DESC : GRID FLUCTUATIONS OCCURRED DOWNSTREAM OF THE SWITCHYARD. THIS CAUSED A LOAD REJECT SIGNAL AND A SCRAM DUE TO THE TURBINE TRIPPING.

TABLE 8.73 (CONT.)

PILGRIM

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.79	0.54	0.65	0.00	0.63
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	1	1	0	1
SAFETY SYSTEM ACTUATIONS	1	0	1	2	1	0	0	0
SIGNIFICANT EVENTS	0	0	1	1	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	2	0	3	1	0	0
FORCED OUTAGE RATE (%)	0	0	29	42	17	7	0	6
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.29	0.70	0.54	0.00	0.00	0.63
CRITICAL HOURS	0	0	29	259	1855	1531	1666	1594
COLLECTIVE RADIATION EXPOSURE	96	75	29	54	45	61	65	NA
CAUSE CODES:								
ADMINISTRATIVE	3	0	6	5	3	3	4	NA
LICENSED OPERATOR	0	3	1	3	0	0	0	NA
OTHER PERSONNEL	0	0	4	3	3	3	1	NA
MAINTENANCE	3	4	9	5	7	8	6	NA
A) MAINT PERSONNEL	2	0	2	1	1	2	1	NA
B) SURV AND TEST	1	1	3	4	2	2	3	NA
C) EQUIPMENT	0	1	1	0	1	2	0	NA
D) POTENTIAL MAINT	0	2	1	0	3	2	2	NA
DESIGN/INSTALLATION/FABRICATION	1	1	4	0	1	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.74
POINT BEACH 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 11/07/89 LER# 26689009 50.72#: 17036 POWER: 100
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : DC POWER SYSTEM - CLASS 1E
 DESC : THE STATION BATTERIES WERE DECLARED INOPERABLE UPON THE DISCOVERY OF AN ORIGINAL DESIGN DEFICIENCY. THE POINT BEACH DC SYSTEM UTILIZES BREAKERS ONLY. SOME OF THESE BREAKERS HAVE THERMAL, BUT NOT MAGNETIC TRIP ELEMENTS; FAULT CURRENT COULD BE SUSTAINED.

SE 11/07/89 LER# 26689009 50.72#: 17036 POWER: 100
 DESC : CIRCUIT BREAKERS DO NOT HAVE INSTANTANEOUS TRIP DEVICES TO PROVIDE CIRCUIT PROTECTION AGAINST HIGH AMPERAGE SHORT DURATION FAULTS. SEISMIC EVENT COULD CREATE FAULT CONDITIONS THAT COULD POTENTIALLY DAMAGE REDUNDANT BATTERIES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/04/90 LER# 26690004 50.72#: POWER: 0
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : A POTENTIAL SINGLE FAILURE OF THE B03/B04 SAFEGUARDS BUS TIE BREAKER COULD RESULT IN PARALLELING BOTH EDGS OUT-OF-PHASE. THIS COULD RESULT IN THE FAILURE OF BOTH EDGS AND A LOSS OF ON-SITE AC POWER.

SSF 04/09/90 LER# 26690003 50.72#: 18187 POWER: 0
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : IT WAS DETERMINED THAT THE EDGS MAY NOT OPERATE FOR LONGER THAN TWO HOURS FOLLOWING A SEISMIC EVENT. THIS WAS BECAUSE THE FUEL OIL PIPING BETWEEN THE EDGS AND THE EMERGENCY FUEL OIL TANK WAS NOT SEISMICALLY QUALIFIED AND MAY NOT REPLENISH THE DAY TANKS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	2	1	1	3	0	1	0	2
FORCED OUTAGE RATE (%)	0	0	0	0	0	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CRITICAL HOURS	2208	2209	2160	1151	2208	2209	2139	1066
COLLECTIVE RADIATION EXPOSURE	11	98	9	83	11	134	8	NA
CAUSE CODES:								
ADMINISTRATIVE	1	2	1	3	0	1	0	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	0	1	1	1	1	0	NA
MAINTENANCE	1	1	1	4	1	1	0	NA
A) MAINT PERSONNEL	1	1	1	0	1	0	0	NA
B) SURV AND TEST	0	0	0	2	0	1	0	NA
C) EQUIPMENT	0	0	0	1	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	0	1	3	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

**TABLE 8.75
POINT BEACH 2**

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 TURBINE TRIP WHEN THE MAIN STEPUP TRANSFORMER SUDDEN PRESSURE SWITCH ACTUATED. THE SOURCE RANGE WI FAILED TO ENERGIZE AND A CROSSOVER STEAM DUMP VALVE FAILED TO CLOSE.

PI EVENTS FOR 89-4

SSA 10/27/89 LER# 30189007 50.72#; 16962 POWER: 0
DESC : AN INADEQUATE INSTALLATION TEST PROCEDURE FOR THE CONTAINMENT HIGH PRESSURE LOGIC STATEMENT LEAD TO SEVERAL ESF ACTUATIONS. THE SAFETY INJECTION PUMPS WERE IN PULL TO LOCK SO THEY DID NOT START.

SSF 11/07/89 LER# 26689009 50.72#; 17036 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : DC POWER SYSTEM - CLASS 1E
DESC : THE STATION BATTERIES WERE DECLARED INOPERABLE UPON THE DISCOVERY OF AN ORIGINAL DESIGN DEFICIENCY. THE POINT BEACH DC SYSTEM UTILIZES BREAKERS ONLY. SOME OF THESE BREAKERS HAVE THERMAL BUT NOT MAGNETIC TRIP ELEMENTS; FAULT CURRENT COULD BE MAINTAINED.

SE 11/07/89 LER# 26689009 50.72#; 17036 POWER: 0
DESC : CIRCUIT BREAKERS DO NOT HAVE INSTANTANEOUS TRIP DEVICES TO PROVIDE CIRCUIT PROTECTION AGAINST HIGH AMPERAGE SHORT DURATION FAULTS. SEISMIC EVENT COULD CREATE FAULT CONDITIONS THAT COULD POTENTIALLY DAMAGE REDUNDANT BATTERIES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/09/90 LER# 26690003 50.72#; 18187 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : IT WAS DETERMINED THAT THE EDGS MAY NOT OPERATE FOR LONGER THAN TWO HOURS FOLLOWING A SEISMIC EVENT. THIS WAS BECAUSE THE FUEL OIL PIPING BETWEEN THE EDGS AND THE EMERGENCY FUEL OIL TANK WAS NOT SEISMICALLY QUALIFIED AND MAY NOT REPLENISH THE DAY TANKS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.47	0.00	0.50	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	1	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	2	1	0	1	0	1	0	1
FORCED OUTAGE RATE (%)	0	0	3	2	1	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.47	0.00	0.50	0.00	0.00	0.00
CRITICAL HOURS	2208	1152	2144	2183	2004	912	2160	2183
COLLECTIVE RADIATION EXPOSURE	11	98	9	83	11	134	8	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	0	3	0	3	0	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	0	1	1	1	2	0	NA
MAINTENANCE	0	0	2	2	2	5	0	NA
A) MAINT PERSONNEL	0	0	1	0	1	1	0	NA
B) SURV AND TEST	0	0	0	2	0	2	0	NA
C) EQUIPMENT	0	0	0	0	0	1	0	NA
D) POTENTIAL MAINT	0	0	1	0	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	2	1	2	1	2	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.76
PRAIRIE ISLAND 1

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 SCP, CAUSING A REACTOR SCRAM ON LOSS OF FLOW. GALVANIC REACTION CAUSED A HIGH RESISTANCE CONNECTION ON THE BUS, RESULTING IN ELEVATED TEMPERATURE WHEN AN OPERATOR OPENED THE FUSE DRAWER.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 05/18/90 LER# 28290007 50.72#: 18510 POWER: 100
DESC : A BLOWN FUSE CAUSED THE LOSS OF 4KV SAFEGUARDS BUS #15. THE EDG STARTED AND LOADED THE BUS.

SSF 06/27/90 LER# 50.72#: 18779 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : BOTH SHIELD BUILDING VENTILATION SYSTEMS WERE RENDERED INOPERABLE, WHILE ATTEMPTING TO OPEN THE POWER SUPPLY BREAKER FOR THE SYSTEM THAT WAS INOPERABLE FOR MAINTENANCE, THE OTHER SYSTEM'S BREAKER WAS OPENED (THE PROCEDURE SPECIFIED THE WRONG BREAKER).

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	0	0
SAFETY SYSTEM ACTIVATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	1
FORCED OUTAGE RATE (%)	3	0	0	0	1	0	3	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.75	0.45	0.00	0.00	0.00	0.00	0.79	0.00
CRITICAL HOURS	1341	2209	2160	2183	2189	2209	1260	2183
COLLECTIVE RADIATION EXPOSURE	46	3	6	34	3	4	53	NA
CAUSE CODES:								
ADMINISTRATIVE	1	3	1	3	1	2	2	NA
LICENSED OPERATOR	0	1	0	0	1	1	0	NA
OTHER PERSONNEL	1	2	0	1	2	1	2	NA
MAINTENANCE	2	6	0	3	6	6	2	NA
A) MAINT PERSONNEL	1	0	0	0	1	3	1	NA
B) SURV AND TEST	1	3	0	1	1	0	1	NA
C) EQUIPMENT	0	3	0	1	0	2	0	NA
D) POTENTIAL MAINT	0	0	0	1	4	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	2	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.77
PRAIRIE ISLAND 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SCRAM 12/21/89 LER# 30689004 50.72# 17394 POWER: 100
DESC : THE REACTOR TRIPPED ON NEGATIVE FLUX RATE DUE TO A FAULTY URGENT FAILURE ALARM CIRCUIT BOARD. THE ROD CONTROL MOTOR GENERATOR SET BREAKER OPENED.

SSA 12/21/89 LER# 30689004 50.72# 17394 POWER: 100
DESC : AFTER A REACTOR SCRAM, THE SUBSTATION CIRCUIT BREAKER FOR THE NORMAL POWER TO THE NON-SAFEGUARDS 4KV BUSES WAS SLOW TO OPEN. THE DIESEL GENERATOR STARTED BUT DID NOT LOAD THE BUS.

SCRAM 12/26/89 LER# 30689004 50.72# 17440 POWER: 100
DESC : THE REACTOR TRIPPED ON NEGATIVE FLUX RATE DUE TO A FAULTY URGENT FAILURE ALARM CIRCUIT BOARD. THE ROD CONTROL MOTOR GENERATOR SET BREAKER OPENED.

SSA 12/26/89 LER# 30689004 50.72# 17440 POWER: 100
DESC : AFTER A REACTOR SCRAM, THE SUBSTATION CIRCUIT BREAKER FOR THE NORMAL POWER TO THE SAFEGUARDS 4KV BUSES WAS SLOW TO OPEN DUE TO COLD WEATHER. THE DIESEL GENERATOR STARTED BUT DID NOT LOAD THE BUS.

PI EVENTS FOR 90-1

SCRAM 03/08/90 LER# 30690001 50.72# 17926 POWER: 100
DESC : A REACTOR TRIP FROM A TURBINE TRIP WAS CAUSED BY A GENERATOR LOCKOUT. A TEST RELAY FAILED TO OPERATE PROPERLY, CAUSING THE GENERATOR LOCKOUT.

SCRAM 03/09/90 LER# 30690002 50.72# 17930 POWER: 6
DESC : A FOLLOWER RELAY IN THE RPS SYSTEM, SHOWING TURBINE STOP VALVE POSITIONS, FAILED DURING A SURVEILLANCE TEST. THIS FAILURE CAUSED A FUSE IN TRAIN 'B' TO OPEN RESULTING IN LOSS OF POWER TO TRAIN 'B' RPS LOGIC, CAUSING ALL TRAIN 'B' REACTOR TRIPS TO OCCUR.

SCRAM 03/16/90 LER# 50.72# 17993 POWER: 100
DESC : AN IMPROPER HOOKUP OF TEST EQUIPMENT TO THE ROD CONTROL SYSTEM CAUSED A NEGATIVE HIGH FLUX RATE SCRAM WHEN RODS DROPPED INTO THE CORE.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.66	0.00	0.98	1.06	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	0
TOTAL SCRAMS	0	0	0	1	0	2	3	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	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	4	0	1	0	8	14	5
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.47	0.00	0.66	0.00	0.98	0.53	0.00
CRITICAL HOURS	2208	2137	2088	1521	2208	2036	1894	2139
COLLECTIVE RADIATION EXPOSURE	46	3	6	34	3	4	53	NA
CAUSE CODES:								
ADMINISTRATIVE	0	1	1	3	1	2	2	NA
LICENSED OPERATOR	1	0	0	0	1	1	1	NA
OTHER PERSONNEL	1	2	0	1	1	1	4	NA
MAINTENANCE	2	5	0	2	6	6	5	NA
A) MAINT PERSONNEL	1	0	0	0	1	3	2	NA
B) SURV AND TEST	1	2	0	1	1	0	2	NA
C) EQUIPMENT	0	2	0	1	0	2	1	NA
D) POTENTIAL MAINT	0	1	0	0	4	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	2	0	0	0	NA
EQUIPMENT FAILURE	0	0	1	1	0	1	0	NA

TABLE 8.78
QUAD CITIES 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 11/28/89 LER# 25489022 50.72#: 17205 POWER: 10
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
 DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER ITS OIL RESERVE DELUGE SYSTEM INADVERTENTLY SPRAYED THE HPCI TURBINE AND SOME HPCI SYSTEM 250 VDC COMPONENTS, CAUSING GROUNDS. THE CAUSE OF THE INADVERTENT DELUGE ACTUATION IS BEING INVESTIGATED.

PI EVENTS FOR 90-1

SCRAM 03/10/90 LER# 25490004 50.72#: 17940 POWER: 9B
 DESC : A LIGHTNING STRIKE CAUSED A DISTURBANCE ON POWER LINE 0402, CAUSING A GENERATOR LOAD MISMATCH TURBINE TRIP, REACTOR TRIP.

SSF 03/13/90 LER# 25490005 50.72#: 17958 POWER: 12
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE AFTER THE STEAM INLET VALVE FAILED TO OPEN USING THE LOCAL AND REMOTE CONTROL SWITCHES DURING A TEST. THE FEED BREAKER OPEN CONTACTOR WAS BINDING BECAUSE OF A DIRTY ROLLER BEARING.

PI EVENTS FOR 90-2

SSF 06/12/90 LER# 25490012 50.72#: 18689 POWER: 9B
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CONTROL ROOM EMERGENCY AIR FILTRATION UNIT WAS DECLARED INOPERABLE AFTER FAILING TO ACHIEVE A MINIMUM 15 DEGREE DELTA T ACROSS THE HEATER DURING A SURVEILLANCE. IT IS NOT KNOWN WHY THE HEATER COULD NOT PRODUCE THE REQUIRED DIFFERENTIAL TEMPERATURE.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.46	0.00	0.51	0.00	0.00	0.49	0.00
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	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	2	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	1	0	1	1	1
FORCED OUTAGE RATE (%)	0	4	0	13	6	3	4	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.46	0.00	2.03	1.22	1.17	0.00	0.00
CRITICAL HOURS	2208	2152	2160	1967	1640	854	2046	2183
COLLECTIVE RADIATION EXPOSURE	38	36	39	33	100	278	280	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	1	0	4	6	4	NA
LICENSED OPERATOR	1	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	0	0	2	3	2	1	NA
MAINTENANCE	3	1	2	5	5	5	5	NA
A) MAINT PERSONNEL	2	0	0	2	1	1	1	NA
B) SURV AND TEST	1	1	1	0	2	2	0	NA
C) EQUIPMENT	0	0	1	1	1	0	3	NA
D) POTENTIAL MAINT	0	0	0	2	1	2	1	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	2	1	2	1	NA
EQUIPMENT FAILURE	0	0	0	1	0	0	2	NA

TABLE 6.79
QUAD CITIES 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SCRAM 10/12/89 LER# 26589005 50.72#: 16826 POWER: 55
DESC : A LOW MAIN CONDENSER VACUUM CAUSED THE MAIN TURBINE STOP VALVES TO CLOSE, LEADING TO A REACTOR TRIP.

SSF 12/25/89 LER# 26590001 50.72#: POWER: 86
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : THE HPCI FIRE PROTECTION DELUGE SYSTEM WAS RENDERED INOPERABLE BECAUSE OF A CONCERN THAT AN ACTUATION WOULD AFFECT THE OPERATION OF THE STEAM LEAK DETECTION SYSTEM AND POSSIBLY DELAY HPCI HIGH TEMPERATURE TURBINE ISOLATION.

PI EVENTS FOR 90-1

SSA 02/13/90 LER# 26590004 50.72#: 17755 POWER: 0
DESC : WHILE ELECTRICIANS WERE INSPECTING A PLANT CONTROL DISTRIBUTION PANEL, A WIRE WAS PINCHED WHICH SHORTED AND CAUSED THE LOSS OF "A" RPS MOTOR GENERATOR SET AND SEVERAL ESF ACTUATIONS. THE DIESEL GENERATOR WAS OOS FOR MAINTENANCE.

PI EVENTS FOR 90-2

SSF 05/08/90 LER# 26590006 50.72#: 18421 POWER: 23
GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE DUE TO UNSTABLE FLOW OSCILLATIONS DURING TESTING. THE PROPORTIONAL BAND OF THE RECENTLY INSTALLED FLOW CONTROLLER HAD BEEN INCORRECTLY ADJUSTED DURING INITIAL CALIBRATION.

SSF 06/02/90 LER# 26590008 50.72#: 18619 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE DUE TO FAILURE OF THE AUTOMATIC MODE OF THE FLOW CONTROLLER. THE CAUSE OF THE FAILURE COULD NOT BE DETERMINED. AFTER THE POWER SUPPLY FUSE WAS REMOVED AND REINSTALLED, THE CONTROLLER RETURNED TO NORMAL.

SSF 06/12/90 LER# 25490012 50.72#: 18689 POWER: 98
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : THE CONTROL ROOM EMERGENCY AIR FILTRATION UNIT WAS DECLARED INOPERABLE AFTER FAILING TO ACHIEVE A MINIMUM 15 DEGREE DELTA T ACROSS THE HEATER DURING A SURVEILLANCE. IT IS NOT KNOWN WHY THE HEATER COULD NOT PRODUCE THE REQUIRED DIFFERENTIAL TEMPERATURE.

TABLE 8.79 (CONT.)
QUAD CITIES 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.47	0.00	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	1	0	1	0	3
FORCED OUTAGE RATE (%)	24	1	3	4	5	3	44	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.59	0.00	0.48	1.41	0.49	0.00	0.00	0.00
CRITICAL HOURS	1708	2144	2103	2124	2045	2163	795	1268
COLLECTIVE RADIATION EXPOSURE	38	36	39	33	100	278	280	NA
CAUSE CODES:								
ADMINISTRATIVE	3	6	0	1	0	3	3	NA
LICENSED OPERATOR	1	0	0	0	0	0	0	NA
OTHER PERSONNEL	2	4	0	0	0	1	2	NA
MAINTENANCE	3	6	0	3	0	1	5	NA
A) MAINT PERSONNEL	2	2	0	1	0	1	1	NA
B) SURV AND TEST	1	5	0	0	0	0	1	NA
C) EQUIPMENT	0	0	0	2	0	0	1	NA
D) POTENTIAL MAINT	1	1	0	0	0	0	2	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	2	1	1	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	2	NA

TABLE 8.80

RANCHO SECO

PI EVENTS FOR 89-3

RANCHO SECO CEASED COMMERCIAL OPERATIONS IN JUNE 1989. THEREFORE, ANY PERFORMANCE INDICATOR EVENTS OCCURRING AFTER THE SECOND QUARTER 1989 WILL NOT BE INCLUDED IN THIS REPORT.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	1.30	1.11	0.00	NA	NA	NA	NA
SCRAMS <= 15% POWER	0	0	0	0	NA	NA	NA	NA
TOTAL SCRAMS	0	2	1	0	NA	NA	NA	NA
SAFETY SYSTEM ACTUATIONS	0	1	1	0	NA	NA	NA	NA
SIGNIFICANT EVENTS	0	0	2	0	NA	NA	NA	NA
SAFETY SYSTEM FAILURES	0	0	4	0	NA	NA	NA	NA
FORCED OUTAGE RATE (%)	0	32	64	9	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	2.59	3.32	0.00	NA	NA	NA	NA
CRITICAL HOURS	2029	1542	903	1452	NA	NA	NA	NA
COLLECTIVE RADIATION EXPOSURE	22	19	34	12	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	2	3	3	0	NA	NA	NA	NA
LICENSED OPERATOR	1	1	0	0	NA	NA	NA	NA
OTHER PERSONNEL	4	2	1	1	NA	NA	NA	NA
MAINTENANCE	2	6	4	1	NA	NA	NA	NA
A) MAINT PERSONNEL	1	2	1	0	NA	NA	NA	NA
B) SURV AND TEST	1	2	2	1	NA	NA	NA	NA
C) EQUIPMENT	0	1	1	0	NA	NA	NA	NA
D) POTENTIAL MAINT	0	1	0	0	NA	NA	NA	NA
DESIGN/INSTALLATION/FABRICATION	1	1	4	0	NA	NA	NA	NA
EQUIPMENT FAILURE	0	0	0	0	NA	NA	NA	NA

THE UNIT CEASED COMMERCIAL OPERATION IN JUNE 1989 AND ALL PERFORMANCE INDICATOR DATA AFTER THE THE SECOND QUARTER 1989 WILL BE NA.

TABLE 8.81**RIVER BEND****PI EVENTS FOR 89-3**

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.

PI EVENTS FOR 89-4

SCRAM 12/01/89 LER# 45889042 50.72#: 17236 POWER: 97
 DESC : THE MAIN GENERATOR AND THE REACTOR TRIPPED DUE TO FAILED PROTECTION RELAY ON THE OFFSITE POWER SWITCH.

SSA 12/01/89 LER# 45889042 50.72#: 17236 POWER: 97
 DESC : AFTER A REACTOR TRIP, A 4160V BUS FAILED TO TRANSFER TO ITS ALTERNATE OFFSITE POWER SOURCE. THE DIESEL STARTED AND LOADED.

SE 12/01/89 LER# 45889042 50.72#: 17245 POWER: 97
 DESC : SECOND INSTANCE OF MULTIPLE MAIN STEAM ISOLATION VALVE (MSIV) FAILURES AT RIVER BEND OCCURRED AFTER TAKING CORRECTIVE ACTION. MSIV SOLENOID VALVES FAILED TO RELEASE.

PI EVENTS FOR 90-1

SSF 02/02/90 LER# 45890002 50.72#: 17683 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CONTROL BUILDING VENTILATION SYSTEM WAS DECLARED INOPERABLE. BECAUSE OF AN INADEQUATE PROCEDURE, OPERATORS WERE NOT ABLE TO RESTART THE DIV. II CHILLER AFTER THE DIV. I CHILLER FAILED TO START (BECAUSE OF INADEQUATE CHILLED WATER FLOW).

SSF 02/06/90 LER# 45890003 50.72#: POWER: 100
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : SEVERAL MINOR DEFICIENCIES (HOLES, CRACKS, AND UNFILLED SEAMS) WERE DISCOVERED IN THE FIRE BARRIER ENVELOPES SURROUNDING SAFE SHUTDOWN CIRCUITS. THESE DEFICIENCIES, SOME OF WHICH EXISTED SINCE ORIGINAL CONSTRUCTION, RENDERED THE FIRE BARRIERS INOPERABLE.

SE 02/11/90 LER# 45890004 50.72#: 17743 POWER: 100
 DESC : PARTIAL ESF ACTUATION OCCURRED WHEN A TOPAZ INVERTER RESET AND REENERGIZED THE ROSEMOUNT TRANSMITTER/TRIP UNITS. TRIP UNITS REENERGIZED BEFORE THE TRANSMITTER, AND RESULTED IN OPENING OF THE TWO LPCI INJECTION VALVES.

SCRAM 03/15/90 LER# 45890008 50.72#: 17989 POWER: 42
 DESC : A MALFUNCTION IN THE MAIN TURBINE GENERATOR ZONE 1 LOSS OF FIELD RELAY (40G KLF) CAUSED A TURBINE TRIP. THIS RESULTED IN A REACTOR TRIP FROM 42% POWER.

SSF 03/19/90 LER# 45890009 50.72#: POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : PRIMARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : THE DIVISION I SERVICE WATER CONTAINMENT PENETRATION FAILED A LOCAL LEAK RATE TEST. SILT AND CORROSION PRODUCT BUILDUP WAS PREVENTING THE INBOARD AND OUTBOARD ISOLATION VALVES FROM FULLY CLOSING.

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 45890013 50.72#: POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BECAUSE OF AN INADEQUATE CALIBRATION PROCEDURE, ONE TRAIN OF THE CONTROL ROOM CHILLER SYSTEM WAS INOPERABLE (THE MOTOR CURRENT LIMITER WAS SET TO LOW). THE OPERATORS DID NOT REALIZE THIS AND RENDERED THE OTHER TRAIN INOPERABLE FOR MAINTENANCE.

SCRAM 04/07/90 LER# 45890014 50.72#: 18169 POWER: 79
 DESC : A LOW EHC OIL PRESSURE SIGNAL OCCURRED WHILE TESTING THE #4 CIV, CAUSING A TURBINE AND A REACTOR TRIP.

TABLE 8.81 (CONT.)

RIVER BEND

PI EVENTS FOR 90-2 (CONT.)

SSF 04/19/90 LER# 45890017 50.72# POWER: 100
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : TWO VOIDS IN A FIRE BARRIER WERE DISCOVERED IN A SHAKE SPACE BETWEEN THE AUX BUILDING AND THE CONTAINMENT SHIELD WALL. THESE VOIDS RESULTED FROM A PERSONNEL ERROR DURING CONSTRUCTION AND VIOLATED A 3-HOUR FIRE BARRIER REQUIREMENT.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.95	0.00	0.60	0.00	0.48	0.48	0.54	0.46
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	2	0	2	0	1	1	1	1
SAFETY SYSTEM ACTUATIONS	2	0	0	2	1	1	0	0
SIGNIFICANT EVENTS	1	0	0	1	0	1	1	0
SAFETY SYSTEM FAILURES	0	1	1	1	0	0	3	2
FORCED OUTAGE RATE (%)	6	2	9	77	6	2	0	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.48	0.51	1.81	14.42	0.95	0.48	0.54	0.46
CRITICAL HOURS	2104	1976	1656	208	2104	2084	1861	2153
COLLECTIVE RADIATION EXPOSURE	20	42	106	376	21	25	41	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	3	8	1	7	3	NA
LICENSED OPERATOR	1	1	1	0	0	0	0	NA
OTHER PERSONNEL	3	1	5	7	2	4	3	NA
MAINTENANCE	7	5	13	14	3	8	6	NA
A) MAINT PERSONNEL	3	0	3	5	1	3	2	NA
B) SURV AND TEST	1	2	5	6	2	4	1	NA
C) EQUIPMENT	1	3	3	2	0	0	1	NA
D) POTENTIAL MAINT	2	1	2	1	0	1	2	NA
DESIGN/INSTALLATION/FABRICATION	0	2	2	4	0	0	4	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.82

ROBINSON 2

PI EVENTS FOR 89-3

SSF 08/16/89 LER# 26189010 50.72#: 16331 POWER: 100
 GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
 SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
 DESC : DUE TO A DESIGN DEFICIENCY IN THE AFW SUCTION PIPING ARRANGEMENT, TWO OF THE THREE AFW PUMPS WERE DECLARED INOPERABLE. ADEQUATE NPSH COULD NOT BE ENSURED FOR ALL COMBINATIONS OF RUNNING AFW PUMPS AND CST LEVELS. THIS HAS EXISTED SINCE INITIAL STARTUP.

SE 08/16/89 LER# 26189010 50.72#: 16331 POWER: 100
 DESC : INADEQUATE NPSH FOR AUX FEEDWATER PUMPS CAUSED THIS EVENT. AIT TO SITE.

PI EVENTS FOR 89-4

SSF 11/03/89 LER# 26189013 50.72#: 17021 POWER: 0
 GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
 SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
 DESC : POTENTIAL MOISTURE INTRUSION PATHS WERE FOUND IN THE CABLE ENTRANCE CONDUIT SEALS OF ELECTRICAL COMPONENTS ASSOCIATED WITH THE FOLLOWING SYSTEMS: CVCS, MAIN STEAM, HVAC, PZR, S/G, SI-ACCUMULATORS, POST ACCIDENT SAMPLING, RCS, AND CONTAINMENT PRESSURE.

SSF 11/28/89 LER# 26189015 50.72#: 17213 POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : LEAKAGE WAS DISCOVERED THROUGH A BALL VALVE USED TO RELIEVE PRESSURE FROM AN AIRLOCK. THIS LEAKAGE, COMBINED WITH OTHER SMALL LEAKAGE PATHS IN THE AIRLOCK, CONSTITUTED A BREACH OF CONTAINMENT INTEGRITY AS DEFINED BY THE TECHNICAL SPECIFICATIONS.

PI EVENTS FOR 90-1

SCRAM 01/17/90 LER# 26190002 50.72#: 17576 POWER: 100
 DESC : A TECHNICIAN TRIPPED TWO BISTABLES DURING A NUCLEAR INSTRUMENT SYSTEM SURVEILLANCE TEST, CAUSING A REACTOR TRIP ON OVERTEMPERATURE DIFFERENTIAL TEMPERATURE (OTDT).

PI EVENTS FOR 90-2

SSF 04/30/90 LER# 26190008 50.72#: POWER: 100
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : A DEFICIENT FIRE BARRIER PENETRATION WAS DISCOVERED BETWEEN FIRE ZONES 10 AND 11. THE PREVIOUS INSPECTION ACTIVITY WAS NOT OF SUFFICIENT SCOPE AND DETAIL TO IDENTIFY THE DEGRADATION, WHICH HAD EXISTED PRIOR TO AUGUST 1984.

SCRAM 05/17/90 LER# 26190007 50.72#: 18496 POWER: 100
 DESC : A REACTOR TRIP OCCURRED ON STEAM FLOW/FEED MISMATCH SIGNAL. FCV DISK APPARENTLY SEPARATED FROM THE STEM, CAUSING LOSS OF FEED FLOW.

TABLE 8.02 (CONT.)

ROBINSON 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2	
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	3.38	0.00	0.00	0.00	0.46	0.54	
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0	
TOTAL SCRAMS	0	0	3	0	0	0	1	1	
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0	
SIGNIFICANT EVENTS	0	0	1	0	1	0	0	0	
SAFETY SYSTEM FAILURES	2	2	0	1	1	2	0	1	
FORCED OUTAGE RATE (%)	23	14	7	14	43	91	0	5	
EQUIP. FORCED OUTAGE/1000 COMMERCIAL HRS	1.17	2.29	1.13	0.53	0.00	0.00	0.00	0.54	
CRITICAL HOURS	1714	873	888	1886	1250	238	2152	1865	
COLLECTIVE RADIATION EXPOSURE	34	441	116	31	31	36	16	NA	
CAUSE CODES:									
ADMINISTRATIVE	4	2	2	1	0	1	1	NA	
LICENSED OPERATOR	0	0	1	0	0	0	0	NA	
OTHER PERSONNEL	1	0	3	0	0	0	2	NA	
MAINTENANCE	3	2	5	2	0	1	5	NA	
A) MAINT PERSONNEL	3	1	2	0	0	1	1	NA	
B) SURV AND TEST	0	0	2	1	0	0	2	NA	
C) EQUIPMENT	0	1	1	0	0	0	1	NA	
D) POTENTIAL MAINT	0	0	0	1	0	0	1	NA	
DESIGN/INSTALLATION/FABRICATION	2	4	2	1	1	4	1	NP	
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA	

TABLE 8.83

SALEM 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSA 03/27/90 LER# 27290008 50.72#: 18071 POWER: 100
 DESC : A FAULTY ELECTRICAL CARD CAUSED THE NON-VITAL LOADS TO BE SHED FROM THE VITAL BUS, WHICH CAUSED ACTUATION OF THE RHR PUMP AND SAFETY INJECTION PUMP.

SSA 03/27/90 LER# 27290008 50.72#: 18073 POWER: 75
 DESC : THE 'A' VITAL BUS SEQUENCER ACTUATED WHILE PLACING IT BACK IN SERVICE FOLLOWING MAINTENANCE. THE NON-VITAL LOADS SHED AND THE SI PUMP STARTED BUT DID NOT INJECT.

PI EVENTS FOR 90-2

SCRAM 04/09/90 LER# 27290012 50.72#: 18184 POWER: 90
 DESC : A REACTOR TRIP WAS CAUSED BY A LOW SG LEVEL. THE '12' MFP CONTROLLER FAILED RESULTING IN THE LOW LEVEL.

SSF 04/19/90 LER# 27290016 50.72#: 18284 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : SIX FAST CLOSURE TURBINE BUILDING SERVICE WATER VALVES MAY NOT PERFORM THEIR SAFETY FUNCTION OF ISOLATING NONESSENTIAL LOADS. BECAUSE OF INADEQUATE DESIGN, THE MOTOR PINION KEYS WERE MADE OF A MATERIAL THAT WAS TOO SOFT.

SSF 05/07/90 LER# 27290017 50.72#: 18403 POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : THE HIGH HEAD SAFETY INJECTION PUMPS DID NOT MEET THE REQUIRED NOZZLE LOAD AND SEISMIC CRITERIA. THE ORIGINAL EQUIPMENT MANUFACTURER DID NOT COMPLETE THE WELDING REQUIRED BY THE PUMP BASE FABRICATION DRAWING.

SSF 06/01/90 LER# 50.72#: 18613 POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : BOTH OF THE FIRE SUPPRESSION SYSTEMS WERE INOPERABLE. WITH ONE FIRE PUMP OUT OF SERVICE FOR MAINTENANCE, THE OPERATORS DISCOVERED THE OTHER PUMP IN THE TRIPPED CONDITION; THE DIESEL THAT OPERATES THE PUMP HAD AN OVERSPEED TRIP ON IT.

SSF 06/08/90 LER# 27290020 50.72#: POWER: 77
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
 DESC : BECAUSE OF A PROCEDURAL ERROR, A PERMISSIVE RELAY HAS BEEN SET NON-CONSERVATIVELY SINCE INITIAL STARTUP. THIS BLOCKED THE SOURCE RANGE REACTOR TRIP WHEN POWER WAS DECREASING THROUGH THE UPPER END OF THE SOURCE RANGE DURING SHUTDOWN.

TABLE 8.83 (CONT.)

SALEM 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.49	0.00	0.54	4.49	0.00	0.00	0.00	1.38
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	0
TOTAL SCRAMS	1	0	2	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	1	0	0	2	0
SIGNIFICANT EVENTS	0	0	0	1	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	2	2	0	0	0	4
FORCED OUTAGE RATE (%)	8	0	12	71	0	12	5	72
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.49	0.00	1.07	8.97	0.00	0.00	0.49	2.77
CRITICAL HOURS	2040	2209	1862	223	2208	1983	2054	723
COLLECTIVE RADIATION EXPOSURE	109	92	7	144	4	15	6	NA
CAUSE CODES:								
ADMINISTRATIVE	6	1	4	11	1	2	3	NA
LICENSED OPERATOR	0	0	2	1	0	1	0	NA
OTHER PERSONNEL	1	1	2	4	0	4	2	NA
MAINTENANCE	4	1	9	12	1	7	6	NA
A) MAINT PERSONNEL	0	0	3	3	1	4	2	NA
B) SURV AND TEST	3	0	5	7	0	1	3	NA
C) EQUIPMENT	1	1	1	0	0	1	1	NA
D) POTENTIAL MAINT	0	0	0	2	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	0	3	6	0	3	5	NA
EQUIPMENT FAILURE	0	1	1	1	0	0	0	NA

TABLE 8.84

SALEM 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 10/24/89 LER# 31189017 50.72#: 16930 POWER: 0
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : VARIOUS DISCREPANCIES WERE DISCOVERED IN MOV LIMIT SWITCH COMPARTMENT SPACE HEATERS. THESE HEATERS WERE SUPPOSED TO HAVE BEEN REMOVED IN 1986. DAMAGED WIRE INSULATION WAS FOUND IN THE HEATERS FOR TWO RHR VALVE MOVES; POTENTIAL INOPERABILITY OF RHR.

SSA 12/01/89 LER# 31189024 50.72#: 17353 POWER: 100
 DESC : WHILE INSTALLING SCAFFOLDING AROUND THE '2C' VITAL BUS, A PIECE FELL AND HIT THE PHASE "C" DIFFERENTIAL PROTECTION RELAY CABINET. THE SHOCK ACTUATED THE RELAY, WHICH DEENERGIZED THE BUS AND STARTED THE '2C' DIESEL GENERATOR.

PI EVENTS FOR 90-1

SSF 01/17/90 LER# 31190005 50.72#: 17567 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : BOTH TRAINS OF THE HPSI SYSTEM WERE RENDERED INOPERABLE IN ORDER TO ISOLATE A LEAK. THE CAUSE OF THE LEAK WAS A DEFECT IN THE ROOT OF A WELD.

PI EVENTS FOR 90-2

SSF 04/16/90 LER# 31190013 50.72#: 18262 POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : AN ENGINEERING REVIEW DISCOVERED THAT THE CONTAINMENT PARTICULATE AND NOBLE GAS RAD MONITORS WERE IMPROPERLY CALIBRATED. THE CALIBRATION PROCEDURE DID NOT INCLUDE THE REVISED T.S. ISOLATION AND ALARM SETPOINTS FOR REFUELING OUTAGES.

SSF 04/19/90 LER# 27290016 50.72#: 18284 POWER: 0
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : SIX FAST CLOSURE TURBINE BUILDING SERVICE WATER VALVES MAY NOT PERFORM THEIR SAFETY FUNCTION OF ISOLATING NONESSENTIAL LOADS. BECAUSE OF INADEQUATE DESIGN THE MOTOR PINION KEYS WERE MADE OF A MATERIAL THAT WAS TOO SOFT.

SSF 04/20/90 LER# 31190016 50.72#: POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : A CONTAINMENT PRESSURE RELIEF WAS PERFORMED WITH THE ASSOCIATED RADIATION MONITORING CHANNELS INOPERABLE; ONE CHANNEL WAS INOPERABLE BECAUSE OF DETECTOR RESPONSE CONCERNS AND THE OTHER CHANNEL BECAUSE ITS POWER SUPPLY WAS REMOVED FROM SERVICE.

SSA 05/01/90 LER# 31190017 50.72#: 18367 POWER: 0
 DESC : A SAFETY INJECTION SIGNAL WAS RECEIVED WHEN THE SAFEGUARDS EQUIPMENT CABINET WAS DEENERGIZED WITH THE SI SIGNAL STILL PRESENT. 3 EDG'S, 2 AFW PUMPS AND VARIOUS AUXILIARY H VAC FANS STARTED.

SSF 05/07/90 LER# 27290017 50.72#: 18403 POWER: 0
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : THE HIGH HEAD SAFETY INJECTION PUMPS DID NOT MEET THE REQUIRED NOZZLE LOAD AND SEISMIC CRITERIA. THE ORIGINAL EQUIPMENT MANUFACTURER DID NOT COMPLETE THE WELDING REQUIRED BY THE PUMP BASE FABRICATION DRAWING.

SSA 05/16/90 LER# 31190023 50.72#: 18500 POWER: 0
 DESC : A START SIGNAL FOR THE EDG WAS RECEIVED WHEN THE FEEDER BREAKERS TO THE '2A' 4KV VITAL BUS OPENED. AN ELECTRICIAN LOADED HIS VISICORDER LEADS ON THE WRONG POINTS, RESULTING IN THE EDG START SIGNAL.

TABLE 8.84 (CONT.)

SALEM 2

PI EVENTS FOR 90-2 (CONT.)

SSF 05/25/90 LER# 31190025 50.72#: 18571 POWER: 0
 GROUP : MAIN STEAM ISOLATION VALVES GROUP
 SYSTEM : MAIN STEAM ISOLATION VALVES
 DESC : THE MSIV VENT VALVE CONTROL PANELS DO NOT HAVE VENT PATH OPENINGS. DURING A MAIN STEAM LINE BREAK IN THE VICINITY, THESE PANELS COULD COLLAPSE AND PREVENT TWO OF THE FOUR MSIVS FROM CLOSING.

SSF 06/01/90 LER# 50.72#: 18613 POWER: 0
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : BOTH OF THE FIRE SUPPRESSION SYSTEMS WERE INOPERABLE. WITH ONE FIRE PUMP OUT OF SERVICE FOR MAINTENANCE THE OPERATORS DISCOVERED THE OTHER PUMP IN THE TRIPPED CONDITION; THE DIESEL THAT OPERATES THE PUMP HAD AN OVERSPEED TRIP ON IT.

SSF 06/08/90 LER# 27290020 50.72#: POWER: 0
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
 DESC : BECAUSE OF A PROCEDURAL ERROR, A PERMISSIVE RELAY HAS BEEN SET NON-CONSERVATIVELY SINCE INITIAL STARTUP. THIS BLOCKED THE SOURCE RANGE REACTOR TRIP WHEN POWER WAS DECREASING THROUGH THE UPPER END OF THE SOURCE RANGE DURING SHUTDOWN.

SCRAM 06/28/90 LER# 50.72#: 18785 POWER: 75
 DESC : A REACTOR TRIP OCCURRED DUE TO A LOW SG LEVEL IN #24 SG. THE "2F" 460V TRANSFORMER FAILED, CAUSING A TRIP OF TWO SG FEED PUMPS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.39	3.29	1.12	0.52	0.00	0.00	0.00	6.88
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	0
TOTAL SCRAMS	2	1	2	1	0	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	1	0	2
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	0	1	1	7
FORCED OUTAGE RATE (%)	7	72	23	14	0	0	8	45
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.08	6.57	1.68	1.55	0.00	0.58	0.50	13.76
CRITICAL HOURS	1444	304	1783	1939	2208	1720	1994	145
COLLECTIVE RADIATION EXPOSURE	109	92	7	144	4	15	6	NA
CAUSE CODES:								
ADMINISTRATIVE	6	3	4	4	0	1	2	NA
LICENSED OPERATOR	0	1	0	0	0	0	0	NA
OTHER PERSONNEL	0	3	1	0	0	3	1	NA
MAINTENANCE	5	5	6	6	0	4	4	NA
A) MAINT PERSONNEL	0	1	1	1	0	1	1	NA
B) SURV AND TEST	4	3	2	3	0	1	2	NA
C) EQUIPMENT	1	2	3	1	0	1	1	NA
D) POTENTIAL MAINT	1	1	0	1	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	1	3	8	1	8	11	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	0	NA

TABLE 8.85
SAN ONOFRE 1

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.

SSF 09/14/89 LER# 20689022 50.72#: 16587 POWER: 91
GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP
SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC : BECAUSE OF NON-CONSERVATIVE IMPLEMENTATION OF THE USE OF THE OVERPRESSURE MITIGATION SYSTEM, UNIT 1 HAS OPERATED WITHOUT THE SYSTEM WHEN IT WAS ACTUALLY REQUIRED. FURTHER INVESTIGATION REVEALED THAT THE OMS DOES NOT MEET ITS DESIGN BASIS REQUIREMENTS.

SSF 09/29/89 LER# 20689024 50.72#: 16373 POWER: 90
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : THE POTENTIAL FOR REDUCED CONTAINMENT SPRAY SYSTEM FLOW WAS DISCOVERED. TWO FLOW RESTRICTING VALVES MAY NOT OPEN ON LOSS OF INST. AIR, NO BACKUP MOTIVE FORCE IS PRESENT TO OPEN THESE VALVES IF NEEDED. VALVES WILL BE LEFT OPEN IN MODES 1,2,3 OR 4.

PI EVENTS FOR 89-1

SSF 12/22/89 LER# 20689029 50.72#: 17415 POWER: 91
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : FAILURE OF A NON-SAFETY-RELATED FILTER DURING A DESIGN BASIS ACCIDENT MAY RESULT IN INSUFFICIENT CONTAINMENT SUMP INVENTORY TO SATISFY THE MIN. WPSH REQUIREMENTS OF THE SI RECIRC PUMPS. OPERATING PROCEDURES DIDN'T DIRECT OPERATORS TO ISOLATE THIS FILTER.

SSF 12/28/89 LER# 20689030 50.72#: POWER: 92
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : LOW PRESSURE SAFETY INJECTION SYSTEM
DESC : PREVIOUS EVALUATIONS OF POST-LOCA RECIRCULATION FLOW FROM THE CONTAINMENT SUMP TO THE REACTOR CORE WERE INCORRECT. LOSS OF A NON-SEISMICALLY QUALIFIED VOLUME CONTROL TANK COULD RESULT IN UNCOVERING THE CORE AND/OR INCREASING OFFSITE DOSES.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/24/90 LER# 20690010 50.72#: 18321 POWER: 92
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL POOL COOLING AND PURIFICATION SYSTEM
DESC : DUE TO A CALCULATIONAL ERROR, THE ACTUAL HEAT LOADS ON THE SPENT FUEL COOLING SYSTEM COULD BE MUCH GREATER THAN THOSE REPORTED IN THE UFSAR. UPON FAILURE OF THE INSTALLED PUMP, THE SPARE PUMP MAY NOT HAVE BEEN INSTALLED IN TIME TO PREVENT BOILING.

SCRAM 04/30/90 LER# 20690007 50.72#: 18365 POWER: 91
DESC : A REACTOR TRIP OCCURRED DUE TO SPURIOUS SINGLE LOOP LOSS OF FLOW SIGNAL.

TABLE 8.05 (CONT.)
SAN ONOFRE 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.50
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	1	0	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	2	2	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	4	0	2	2	0	1
FORCED OUTAGE RATE (%)	0	0	0	87	25	3	0	9
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	4.81	1.78	0.59	0.00	0.50
CRITICAL HOURS	1354	1395	0	208	1687	1688	2160	2003
COLLECTIVE RADIATION EXPOSURE	47	62	77	33	45	50	4	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	4	5	7	4	1	NA
LICENSED OPERATOR	0	0	1	1	0	0	1	NA
OTHER PERSONNEL	1	2	1	0	1	0	0	NA
MAINTENANCE	2	3	4	5	6	2	3	NA
A) MAINT PERSONNEL	0	2	1	1	1	0	0	NA
B) SURV AND TEST	1	1	1	3	3	2	1	NA
C) EQUIPMENT	1	1	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	2	1	2	0	2	NA
DESIGN/INSTALLATION/FABRICATION	2	3	5	2	3	5	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

**TABLE 8.86
SAN ONOFRE 2**

**PI EVENTS FOR 89-3
NONE**

PI EVENTS FOR 89-4

SSA 11/06/89 LER# 36189014 50.72#: 17026 POWER: 0
 DESC : THE OPERATOR CLOSED THE WRONG BREAKER, CAUSING A LOSS OF VOLTAGE ON THE 1E 4160V BUS. THE DIESEL GENERATOR STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-1

SSF 02/20/90 LER# 36190001 50.72#: POWER: 100
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : A FIRE DOOR LOCATED IN THE EDG BUILDING WAS INOPERABLE BECAUSE OF A STICKY LATCH. A FIRE WATCH WAS THEN POSTED IN THE WRONG AREA. THE FIRE PROTECTION IMPAIRMENT EVALUATION PROCEDURES DID NOT PROVIDE SUFFICIENT GUIDANCE ABOUT THIS DOOR.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	1	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	0	0	1	0
FORCED OUTAGE RATE (%)	3	0	34	28	0	23	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.46	0.00	0.69	0.63	0.00	1.48	0.00	0.00
CRITICAL HOURS	2160	2209	1449	1584	1518	676	2125	2183
COLLECTIVE RADIATION EXPOSURE	47	62	77	33	45	50	4	NA
CAUSE CODES:								
ADMINISTRATIVE	4	2	4	3	9	3	2	NA
LICENSED OPERATOR	0	0	1	1	3	1	0	NA
OTHER PERSONNEL	3	3	1	1	4	0	0	NA
MAINTENANCE	6	4	5	3	8	2	1	NA
A) MAINT PERSONNEL	1	1	2	1	4	0	0	NA
B) SURV AND TEST	4	0	3	1	4	2	0	NA
C) EQUIPMENT	1	1	0	0	0	0	1	NA
D) POTENTIAL MAINT	1	2	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	4	1	3	1	0	0	NA
EQUIPMENT FAILURE	0	1	1	1	0	0	0	NA

TABLE 8.07
SAN ONOFRE 3

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/23/90 LER# 36290002 50.720: 17828 POWER: 100
DESC : THE REACTOR TRIPPED ON A MSIV ISOLATION DUE TO A 2 OF 2 LOGIC SIGNAL WHICH OCCURRED DURING MATRIX TESTING OF THE PLANT PROTECTION SYSTEM.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.47	0.52	0.00	0.00	0.51	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	6	0	3	12	9	0	9	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.47	1.04	0.00	0.00	0.51	0.00
CRITICAL HOURS	1090	2209	2110	1924	2009	2209	1979	315
COLLECTIVE RADIATION EXPOSURE	47	62	77	33	45	50	4	NA
CAUSE CODES:								
ADMINISTRATIVE	5	1	4	4	3	2	3	NA
LICENSED OPERATOR	1	0	0	1	1	0	0	NA
OTHER PERSONNEL	5	0	2	2	1	0	0	NA
MAINTENANCE	8	2	5	3	3	1	2	NA
A) MAINT PERSONNEL	2	0	4	1	1	0	0	NA
B) SURV AND TEST	7	1	1	2	1	1	1	NA
C) EQUIPMENT	0	0	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	1	0	0	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	3	0	4	3	1	1	NA
EQUIPMENT FAILURE	0	1	1	1	0	0	0	NA

TABLE 8.88

SEABROOK

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 10/11/89 LER# 44389012 50.72#: 16818 POWER: 0
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : RHR SHUTDOWN COOLING CAPABILITY WAS LOST FOR APPROXIMATELY AN HOUR. THIS WAS CAUSED BY A CONFLICT BETWEEN TWO PROCEDURES; THE BUS RESORATION PROCEDURE CONFLICTED WITH A MAINTENANCE PROCEDURE THAT WAS ALREADY IN PROGRESS. THE BUS PROCEDURE WAS INADEQUATE.

PI EVENTS FOR 90-1

SSF 02/09/90 LER# 44390008 50.72#: POWER: 0
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : CONTAINMENT PURGE SYSTEM
 DESC : A FAILED LATCHING MECHANISM FOR A DOOR ENTERING THE CONTAINMENT ENCLOSURE BUILDING RENDERED THE CONTAINMENT ENCLOSURE EMERGENCY AIR CLEANUP SYSTEM INOPERABLE. THE SYSTEM WAS NOT CAPABLE OF PRODUCING THE REQUIRED VACUUM WITHIN THE ANNULUS.

PI EVENTS FOR 90-2

SCRAM 06/20/90 LER# 50.72#: 18743 POWER: 30
 DESC : A REACTOR TRIP OCCURRED DUE TO A TURBINE TRIP. A TURBINE STATOR GROUND FAULT CAUSED THE TURBINE TRIP.

TYPE	89-3	89-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	NA	0.00	0.00	0.00	0.00	0.73
SCRAMS <= 15% POWER	NA	NA	NA	0	0	0	0	0
TOTAL SCRAMS	NA	NA	NA	0	0	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	1	0	0	1	1	0
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	NA	NA	NA	194	0	0	228	1367
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	1	1	1	2	1	2	2	NA
LICENSED OPERATOR	0	0	0	0	0	0	1	NA
OTHER PERSONNEL	1	1	1	2	3	1	2	NA
MAINTENANCE	1	2	5	4	4	2	11	NA
A) MAINT PERSONNEL	0	1	0	0	1	1	2	NA
B) SURV AND TEST	1	0	2	3	3	1	2	NA
C) EQUIPMENT	0	0	2	0	0	0	2	NA
D) POTENTIAL MAINT	0	1	1	1	0	0	5	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.89

SEQUOYAH 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 11/15/89 LER# 32789028 50.72#: 17124 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
DESC : A MISSING ACCESS COVER ON AN AUX. BUILDING GAS TREATMENT SYSTEM DUCT RESULTED IN A BREACH OF THE AUX. BUILDING SECONDARY CONTAINMENT ENCLOSURE. THE ACCESS COVER LATCHING MECHANISM LOOSENEED AND ALLOWED THE COVER TO FALL OFF.

SCRAM 12/10/89 LER# 32789035 50.72#: 17311 POWER: 100
DESC : THE REACTOR TRIPPED DUE TO A HIGH S/G LEVEL WHICH FOLLOWED A TURBINE RUNBACK. THIS WAS DUE TO THE NUMBER THREE HEATER DRAIN TANK BYPASSING TO THE CONDENSER.

PI EVENTS FOR 90-1

SSF 02/11/90 LER# 32890003 50.72#: 17744 POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : AN OPERATOR INCORRECTLY RENDERED THE ISOLATION FUNCTION OF THE CONTAINMENT PURGE EXHAUST RADIATION MONITORS INOPERABLE. THIS COULD HAVE RESULTED IN A RADIOLOGICAL RELEASE IF UNIT 1 HAD BEEN PURGING THE CONTAINMENT.

PI EVENTS FOR 90-2

SSA 04/09/90 LER# 32790005 50.72#: 18179 POWER: 0
DESC : ALL DIESEL GENERATORS AUTOMATICALLY STARTED WHEN POWER WAS INTERRUPTED WHILE TRANSFERRING POWER ON THE SHUTDOWN BOARD. THE NORMAL FEEDER BREAKER FAILED TO CLOSE BECAUSE THE SUPPLY BREAKER FROM THE UNIT BOARD WAS OPEN.

SSF 04/11/90 LER# 50.72#: 18213 POWER: 0
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : TWO EXISTING PLANT FIRE BARRIERS DID NOT MEET THE FIRE PROTECTION PLAN REQUIREMENTS.

SCRAM 06/02/90 LER# 32790012 50.72#: 18618 POWER: 11
DESC : A REACTOR TRIP OCCURRED DUE TO LOW SG LEVEL IN #4 SG, DUE TO INADEQUATE COMMUNICATIONS BETWEEN THE REACTOR OPERATORS AND THE AUXILIARY OPERATORS WHO ISOLATED STEAM TO THE MFPS.

SSF 06/08/90 LER# 32790011 50.72#: POWER: 24
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : AS A RESULT OF MISINTERPRETED VENDOR INFORMATION, THE PR AND IR DETECTOR CURRENTS WERE NONCONSERVATIVELY CALIBRATED FOLLOWING REFUELING. ALTHOUGH THE PR AND IR SETPOINTS WERE OUTSIDE OF THE T.S. ALLOWED VALUES, THEY WERE WITHIN UFSAR ANALYSIS LIMITS.

SSA 06/25/90 LER# 50.72#: 18766 POWER: 98
DESC : AN EDG STARTED AND LOADED THE SHUTDOWN BOARD, WHEN A FUSE BLEW ON THE BOARD, SIMULATING A LOSS OF VOLTAGE. THE FUSE BLEW WHEN TEST EQUIPMENT WAS IMPROPERLY CONNECTED TO THE BOARD.

TABLE 8.89 (CONT.)

SEQUOYAH 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	2.64	0.47	0.00	0.00	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	1	0	0	0	0	0	1
TOTAL SCRAMS	0	2	1	0	0	1	0	1
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	2
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	1	0	1	1	2
FORCED OUTAGE RATE (%)	100	87	3	0	0	3	0	10
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	5.27	0.00	0.00	0.00	0.46	0.00	2.78
CRITICAL HOURS	0	380	2111	2183	2208	2169	1803	721
COLLECTIVE RADIATION EXPOSURE	131	19	280	16	12	22	117	NA
CAUSE CODES:								
ADMINISTRATIVE	6	6	6	4	6	6	2	NA
LICENSED OPERATOR	0	1	1	0	0	0	3	NA
OTHER PERSONNEL	6	6	5	2	3	3	1	NA
MAINTENANCE	9	12	6	7	7	8	3	NA
A) MAINT PERSONNEL	2	5	3	2	0	3	1	NA
B) SURV AND TEST	5	4	2	3	6	2	1	NA
C) EQUIPMENT	3	5	1	0	0	1	0	NA
D) POTENTIAL MAINT	1	2	0	2	1	2	1	NA
DESIGN/INSTALLATION/FABRICATION	3	1	0	0	0	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.90

SEQUOYAH 2

PI EVENTS FOR 89-3

SCRAM 07/10/89 LER# 3289008 50.72#: 16051 POWER: 100
 DESC : A DROPPED ROD RESULTED IN A REACTOR TRIP DUE TO HIGH NEGATIVE FLUX RATE.

PI EVENTS FOR 89-4

SSF 11/15/89 LER# 32789028 50.72#: 17124 POWER: 12
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : SECONDARY CONTAINMENT/UNDETERMINED SYSTEM
 DESC : A MISSING ACCESS COVER ON AN AUX. BUILDING GAS TREATMENT SYSTEM DUCT RESULTED IN A BREACH OF THE
 AUX. BUILDING SECONDARY CONTAINMENT ENCLOSURE. THE ACCESS COVER LATCHING MECHANISM LOOSEMED AND
 ALLOWED THE COVER TO FALL OFF.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SCRAM 04/10/90 LER# 3289008 50.72#: 18192 POWER: 100
 DESC : A REACTOR TRIP WAS CAUSED BY 2 GENERAL WARNING ALARMS, WHICH OCCURRED WHILE TESTING A REACTOR TRIP
 BREAKER. WHEN SEVERAL STEPS IN THE TESTING PROCEDURE WERE PERFORMED OUT OF SEQUENCE, THE WARNING
 ALARMS WERE RECEIVED AND THE REACTOR TRIPPED.

SSF 04/11/90 LER# 50.72#: 18213 POWER: 10
 GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
 SYSTEM : FIRE PROTECTION SYSTEM
 DESC : TWO EXISTING PLANT FIRE BARRIERS DID NOT MEET THE FIRE PROTECTION PLAN REQUIREMENTS.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	1.78	0.47	0.00	0.00	0.46
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	3	1	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	0	1	1	0	1	0	1
FORCED OUTAGE RATE (%)	0	0	0	16	5	0	0	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.59	0.47	0.00	0.00	0.00
CRITICAL HOURS	2208	2209	429	1687	2142	2086	2160	2156
COLLECTIVE RADIATION EXPOSURE	131	19	280	16	12	22	117	NA
CAUSE CODES:								
ADMINISTRATIVE	7	1	5	5	5	7	3	NA
LICENSED OPERATOR	0	0	1	2	0	0	2	NA
OTHER PERSONNEL	7	2	1	4	4	2	2	NA
MAINTENANCE	12	2	4	12	6	8	6	NA
A) MAINT PERSONNEL	2	1	1	5	1	3	2	NA
B) SURV AND TEST	7	1	2	5	5	3	3	NA
C) EQUIPMENT	4	0	1	0	0	0	0	NA
D) POTENTIAL MAINT	2	0	0	2	0	2	1	NA
DESIGN/INSTALLATION/FABRICATION	3	1	1	0	1	1	1	NA
EQUIPMENT FAILURE	2	0	0	0	0	0	1	NA

TABLE 8.91
SHEARON HARRIS

PI EVENTS FOR 89-3

SSF 08/27/89 LER# 40089015 50.72#: POWER: 95
GROUP : SPENT FUEL SYSTEMS GROUP
SYSTEM : FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
DESC : THE FUEL HANDLING BUILDING EQUIPMENT HATCH WAS NOT INSTALLED AS REQUIRED DURING FUEL MOVEMENT DUE TO PROCEDURAL DEFICIENCIES. REMOVAL OF THIS HATCH COVER WOULD PREVENT THE BUILDING'S EMERGENCY EXHAUST SYSTEM FROM PERFORMING ITS SAFETY FUNCTION.

PI EVENTS FOR 89-4

SCRAM 10/09/89 LER# 40089017 50.72#: 16805 POWER: 100
DESC : FIRE AND RUPTURE IN THE 'B' MAIN GENERATOR AND MAIN TRANSFORMER LED TO A TURBINE TRIP AND A SUBSEQUENT REACTOR TRIP.

SSF 10/31/89 LER# 40089020 50.72#: POWER: 0
GROUP : PRIMARY REACTOR SYSTEMS GROUP
SYSTEM : PRESSURIZER SYSTEM
DESC : PLANT PERSONNEL DISCOVERED THAT THE LIMITORQUE OPERATOR FOR A PRESSURIZER PORV BLOCK VALVE WAS NOT ENVIRONMENTALLY QUALIFIED. THEREFORE, IT COULD NOT BE ENSURED THAT THE OPERATOR WOULD PERFORM ITS SAFETY FUNCTION DURING A DESIGN BASIS EVENT.

SSF 10/31/89 LER# 40089020 50.72#: POWER: 0
GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
DESC : PLANT PERSONNEL DISCOVERED THAT THE LIMITORQUE OPERATORS FOR TWO AFW ISOLATION VALVES WERE NOT ENVIRONMENTALLY QUALIFIED. THEREFORE, IT COULD NOT BE ENSURED THAT THE OPERATORS WOULD PERFORM THEIR SAFETY FUNCTION DURING A DESIGN BASIS EVENT.

SSF 12/23/89 LER# 40089023 50.72#: POWER: 42
GROUP : REACTOR TRIP INSTRUMENTATION
SYSTEM : INCORE/EXCORE NEUTRON MONITORING SYSTEM
DESC : A LOW LEAKAGE CORE LOADING PATTERN WAS INSTALLED WITH NO COMPENSATING ADJUSTMENTS MADE TO THE POWER RANGE NUCLEAR INSTRUMENTS. THIS RESULTED IN A 48% NONCONSERVATIVE MISMATCH BETWEEN ACTUAL AND INDICATED POWER. NO FORMAL POWER ASCENSION PROGRAM EXISTED.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/05/90 LER# 40090010 50.72#: 18151 POWER: 100
GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
DESC : APPROPRIATE ADMINISTRATIVE CONTROLS WERE NOT IN PLACE TO ENSURE THE DESIGN CONFIGURATION OF THE REACTOR AUXILIARY BUILDING EMERGENCY EXHAUST SYSTEM PRESSURE BOUNDARY WAS MAINTAINED. THE SYSTEM MAY HAVE BEEN INOPERABLE NUMEROUS TIMES DUE TO OPEN DOORS.

SSA 04/15/90 LER# 50.72#: 18243 POWER: 100
DESC : DURING UNDERVOLTAGE SURVEILLANCE TESTING, A SUPPLY CIRCUIT BREAKER #105 TO BUS #1A-5A OPENED UNEXPECTEDLY DUE TO AN UNDERVOLTAGE SIGNAL. THE LOSS OF POWER CAUSED THE 1 AND 2 EDGS TO START AND EVENTUALLY THE RADIATION MONITOR TO ALARM HIGH.

SSF 05/24/90 LER# 40090015 50.72#: 18565 POWER: 0
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE EMERGENCY LOAD SEQUENCERS WERE DECLARED INOPERABLE. UNDER CERTAIN SCENARIOS, MICROSWITCHES IN THE SEQUENCERS MAY FAIL AND CAUSE THE SEQUENCER TO OVERLOAD THE DIESEL GENERATORS OR PREVENT THE AUTOMATIC SEQUENCING OF REQUIRED LOADS.

TABLE 8.91 (CONT.)
SHEPARD HARRIS

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	2.41	0.00	0.00	2.03	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	5	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	1
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	0	0	0	1	3	0	2
FORCED OUTAGE RATE (%)	0	5	6	0	0	2	0	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.59	1.44	0.00	0.00	4.05	0.00	0.52
CRITICAL HOURS	700	1708	2078	2183	2208	493	2160	1916
COLLECTIVE RADIATION EXPOSURE	NA	NA	6	4	5	140	8	NA
CAUSE CODES:								
ADMINISTRATIVE	5	2	3	3	2	3	6	NA
LICENSED OPERATOR	1	2	0	0	0	2	0	NA
OTHER PERSONNEL	4	6	6	3	1	4	1	NA
MAINTENANCE	10	6	6	5	2	7	4	NA
A) MAINT PERSONNEL	1	5	3	0	1	3	0	NA
B) SURV AND TEST	7	3	3	4	1	2	4	NA
C) EQUIPMENT	5	1	0	1	0	1	0	NA
D) POTENTIAL MAINT	3	0	0	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	0	2	0	1	1	1	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.92

SHOREHAM

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

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

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
SCRAMS <= 15% POWER	0	0	0	0	0	NA	NA	NA
TOTAL SCRAMS	0	0	0	0	0	NA	NA	NA
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	NA	NA	NA
SIGNIFICANT EVENTS	0	0	0	0	0	NA	NA	NA
SAFETY SYSTEM FAILURES	0	0	0	0	0	NA	NA	NA
FORCED OUTAGE RATE (%)	NA	NA	NA	NA	NA	NA	NA	NA
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	NA	NA	NA	NA	NA
CRITICAL HOURS	0	0	3	0	0	NA	NA	NA
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	3	3	2	0	0	NA	NA	NA
LICENSED OPERATOR	0	0	1	0	1	NA	NA	NA
OTHER PERSONNEL	2	2	0	0	1	NA	NA	NA
MAINTENANCE	5	3	5	0	1	NA	NA	NA
A) MAINT PERSONNEL	0	0	1	0	0	NA	NA	NA
B) SURV AND TEST	3	2	2	0	1	NA	NA	NA
C) EQUIPMENT	2	0	1	0	0	NA	NA	NA
D) POTENTIAL MAINT	0	1	1	0	0	NA	NA	NA
DESIGN/INSTALLATION/FABRICATION	0	1	0	0	0	NA	NA	NA
EQUIPMENT FAILURE	0	0	0	0	0	NA	NA	NA

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

TABLE 8.93
SOUTH TEXAS 1

PI EVENTS FOR 89-3

SCRAM 07/04/89 LER# 49889015 50.72#: 16021 POWER: 100
DESC : THE MAIN GENERATOR OUTPUT BREAKER TRIPPED, CAUSING AN OVERTEMPERATURE-DELTA TEMPERATURE REACTOR TRIP. A RELAY UNDERSIZED FOR THE OPERATION SHORTED, CAUSING THE EVENT.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 03/29/90 LER# 49890005 50.72#: 18099 POWER: 100
DESC : A GROUND FAULT ON AN MFW BOOSTER PUMP OCCURRED. WHEN THE STANDBY BOOSTER PUMP STARTED, THE RECIRCULATION VALVE FAILED OPEN, CAUSING A LOSS OF THE MFW AND SUBSEQUENT SCRAM ON LOW SG LEVEL.

PI EVENTS FOR 90-2

SSF 04/30/90 LER# 49890007 50.72#: 18369 POWER: 0
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
DESC : BECAUSE OF A PROCEDURAL INADEQUACY, THE LICENSEE INADVERTENTLY DISABLED THE CONTAINMENT VENTILATION ISOLATION FUNCTION DURING CORE ALTERATIONS. AN I&C TECH PLACED ALL THREE ESF ACTUATION SYSTEM TRAINS IN TEST.

SCRAM 06/20/90 LER# 50.72#: 18736 POWER: 10
DESC : WHILE ATTEMPTING TO SYNCHRONIZE THE MAIN GENERATOR TO THE GRID, SEVERAL SWITCHYARD BREAKERS OPENED. THIS CAUSED ALL FOUR RCP'S TO TRIP ON UNDERVOLTAGE, CAUSING A REACTOR TRIP.

SSA 06/20/90 LER# 50.72#: 18736 POWER: 10
DESC : WHILE ATTEMPTING TO SYNCH THE MAIN GENERATOR TO THE GRID, SEVERAL SWITCHYARD BREAKERS OPENED. THIS CAUSED AN EDG START AND REACTOR TRIP. EMERGENCY BORATION WAS STARTED BECAUSE THERE WAS NO ROD POSITION INDICATION FOR ABOUT 15 MINUTES.

SCRAM 06/28/90 LER# 50.72#: 18787 POWER: 76
DESC : THE EHC SUPPLY LINE TO THE 3" THROTTLE VALVE RUPTURED RESULTING IN A MAIN TURBINE TRIP. THIS RESULTED IN A REACTOR TRIP.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.73	0.00	1.77	0.00	1.28	0.00	0.48	2.78
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	3	0	2	0	1	0	0	2
SAFETY SYSTEM ACTUATIONS	1	2	1	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	2	0	1	0	0	0	1
FORCED OUTAGE RATE (%)	20	8	13	0	8	15	6	24
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	4.81	0.00	1.77	0.00	1.28	0.60	0.95	5.56
CRITICAL HOURS	1735	1873	1129	2183	783	1656	2103	360
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	7	NA
CAUSE CODES:								
ADMINISTRATIVE	3	5	5	2	4	2	3	NA
LICENSED OPERATOR	1	2	0	0	0	0	0	NA
OTHER PERSONNEL	3	2	2	1	1	3	2	NA
MAINTENANCE	7	5	7	3	2	5	5	NA
A) MAINT PERSONNEL	2	3	2	1	0	1	1	NA
B) SURV AND TEST	5	2	4	2	2	2	3	NA
C) EQUIPMENT	3	0	0	0	0	1	1	NA
D) POTENTIAL MAINT	1	1	1	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	8	4	5	1	4	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.94
SOUTH TEXAS 2

PI EVENTS FOR 89-3

SCRAM 07/13/89 LER# 49989017 50.72#: 16085 POWER: 99
DESC : ONE MAIN TRANSFORMER LOCKED OUT DUE TO AN INTERNAL FAULT IN THE STEPUP TRANSFORMER, RESULTING IN A TURBINE TRIP AND SUBSEQUENT REACTOR TRIP.

SSA 07/13/89 LER# 49989017 50.72#: 16085 POWER: 99
DESC : ONE MAIN TRANSFORMER LOCKED OUT DUE TO AN INTERNAL FAULT IN THE STEPUP TRANSFORMER. THE DIESEL GENERATOR STARTED AND LOADED.

SCRAM 08/23/89 LER# 49989019 50.72#: 16383 POWER: 100
DESC : A LOW SG LEVEL LED 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.

PI EVENTS FOR 89-4

SCRAM 10/13/89 LER# 49989026 50.72#: 16846 POWER: 100
DESC : A ROD DROPPED DUE TO A HIGH RESISTANCE CONNECTION IN THE STATIONARY GRIPPER CIRCUIT DIODE. THE DROPPED ROD CAUSED A HIGH NEGATIVE FLUX RATE REACTOR TRIP.

PI EVENTS FOR 90-1

SSA 01/08/90 LER# 49990001 50.72#: 17508 POWER: 0
DESC : DURING A SURVEILLANCE PROCEDURE, A SPRING-TO-CENTER HAND SWITCH TRAVELED PAST CENTER, CAUSING A SAFETY INJECTION ON LOW STEAMLINE PRESSURE. THE SI PUMPS WERE IN PULL-TO-LOCK.

SCRAM 02/02/90 LER# 49990002 50.72#: 17682 POWER: 100
DESC : THE REACTOR TRIPPED FOLLOWING THE OPENING OF THE TRAIN "S" REACTOR TRIP BREAKER DUE TO UNKNOWN CAUSE.

SCRAM 03/26/90 LER# 49990004 50.72#: 18063 POWER: 100
DESC : THE REACTOR TRIPPED ON LOW SG LEVEL DUE TO A FAULTY FEED REGULATOR VALVE.

PI EVENTS FOR 90-2

SCRAM 04/14/90 LER# 49990005 50.72#: 18241 POWER: 100
DESC : THE MAIN TURBINE TRIPPED DUE TO A RUPTURED ENC SUPPLY LINE TO THE GOVERNOR VALVE. A REACTOR TRIP OCCURRED SIMULTANEOUSLY.

TABLE 8.94 (CONT.)
SOUTH TEXAS 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	0.00	1.41	2.61	1.30	1.24	0.55
SCRAMS <= 15% POWER	NA	NA	0	1	0	0	0	0
TOTAL SCRAMS	NA	NA	0	3	5	1	2	1
SAFETY SYSTEM ACTUATIONS	NA	0	3	3	1	0	1	0
SIGNIFICANT EVENTS	NA	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	NA	0	1	0	0	0	0	0
FORCED OUTAGE RATE (%)	NA	NA	NA	0	17	34	29	30
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	0.00	2.61	2.59	1.24	1.65
CRITICAL HOURS	NA	NA	411	1414	1918	771	1614	1822
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	0	5	3	1	1	1	NA
LICENSED OPERATOR	NA	0	0	3	0	0	1	NA
OTHER PERSONNEL	NA	1	1	1	0	2	1	NA
MAINTENANCE	NA	0	8	5	3	2	3	NA
A) MAINT PERSONNEL	NA	0	3	1	0	0	1	NA
B) SURV AND TEST	NA	0	3	1	0	1	1	NA
C) EQUIPMENT	NA	0	1	1	0	0	0	NA
D) POTENTIAL MAINT	NA	0	1	2	3	1	1	NA
DESIGN/INSTALLATION/FABRICATION	NA	2	2	1	5	1	1	NA
EQUIPMENT FAILURE	NA	0	0	0	2	1	0	NA

TABLE 8.95

ST. LUCIE 1

PI EVENTS FOR 89-3

SCRAM 07/17/89 LER# 33589003 50.72#: 16103 POWER: 4
 DESC : THE MAIN FEED BLOCK VALVES WERE NOT OPENED BEFORE TRANSFERRING SG FEEDWATER FLOW FROM AFW TO MFW.
 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
 PREVENTIVE MAINTENANCE ON REACTOR TRIP CIRCUIT BREAKERS.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/18/90 LER# 33590005 50.72#: 18276 POWER: 0
 DESC : OFFSITE POWER WAS LOST TO THE 'B' EMERGENCY ELECTRICAL BUS. AN AUXILIARY TRANSFORMER BREAKER TO
 THE '1132' 4160V BUS INADVERTENTLY CLOSED WHILE CONTROL FUSES WERE BEING INSTALLED INTO IT.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.98	0.00	0.00	0.00	0.56	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	1	0	0	0	2	0	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	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	8	0	0	0	1	1	2	10
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	2.95	0.00	0.00	0.00	0.00	0.45	1.97	1.96
CRITICAL HOURS	1017	2209	2160	2132	1789	2209	507	1530
COLLECTIVE RADIATION EXPOSURE	232	18	144	21	58	9	227	NA
CAUSE CODES:								
ADMINISTRATIVE	1	0	0	1	3	1	2	NA
LICENSED OPERATOR	1	0	0	0	1	0	0	NA
OTHER PERSONNEL	3	0	0	2	1	2	0	NA
MAINTENANCE	4	0	0	2	2	3	2	NA
A) MAINT PERSONNEL	2	0	0	2	2	2	1	NA
B) SURV AND TEST	2	0	0	0	0	1	1	NA
C) EQUIPMENT	1	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	2	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.96

ST. LUCIE 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 01/14/90 LER# 38990001 50.72#: 17553 POWER: 50
 DESC : WHILE THE PLANT WAS INCREASING POWER AFTER AN EARLIER STARTUP, THE MAIN FEEDWATER PUMP TRIPPED ON
 LOW SUCTION PRESSURE. THE REACTOR TRIPPED ON LOW SG LEVEL BECAUSE AN OPERATOR DID NOT FOLLOW THE
 APPROVED TURBINE STARTUP PROCEDURE.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.64	0.00	0.00	0.52	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	0	1	0	0	1	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	0	0	0
FORCED OUTAGE RATE (%)	0	0	0	2	5	0	13	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.64	0.47	0.00	0.52	0.00
CRITICAL HOURS	2208	2209	742	1560	2116	2209	1921	2183
COLLECTIVE RADIATION EXPOSURE	232	18	164	21	58	9	227	NA
CAUSE CODES:								
ADMINISTRATIVE	0	0	1	2	1	0	0	NA
LICENSED OPERATOR	0	0	2	1	1	0	1	NA
OTHER PERSONNEL	0	0	1	1	1	0	1	NA
MAINTENANCE	0	0	1	1	3	1	1	NA
A) MAINT PERSONNEL	0	0	1	1	1	0	1	NA
B) SURV AND TEST	0	0	0	0	1	0	0	NA
C) EQUIPMENT	0	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	0	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	1	0	0	0	0	NA
EQUIPMENT FAILURE	0	0	1	0	1	0	0	NA

TABLE 8.97

SUMMER

PI EVENTS FOR 89-3

SCRAM 07/11/89 LER# 39589012 50.72#: 16061 POWER: 100
DESC : A LOSS OF MAIN GENERATOR STATOR COOLING WATER SIGNAL CAUSED A TURBINE TRIP AT GREATER THAN 50% POWER THAT RESULTED IN A REACTOR TRIP.

SSA 07/11/89 LER# 39589012 50.72#: 16061 POWER: 100
DESC : THE MAIN TURBINE TRIPPED DUE TO A LOSS OF GENERATOR STATOR COOLING SIGNAL. THE GRID VOLTAGE DEGRADED AND THE DIESEL GENERATOR STARTED ON LOW VOLTS.

SSF 08/08/89 LER# 39589013 50.72#: 16272 POWER: 100
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
DESC : FAILURE OF A NON-SAFETY RELATED, NON-SEISMIC, COOLING WATER SYSTEM COULD RENDER THE ESSENTIAL SERVICE WATER SYSTEM INOPERABLE. THE ESW SYSTEM POWER SUPPLIES ARE LOCATED IN A ROOM THAT COULD BE FLOODED IN THE EVENT OF A COOLING WATER PIPING FAILURE.

SE 08/25/89 LER# 39589015 50.72#: 16404 POWER: 0
DESC : PRESSURIZER CODE SAFETY VALVE LIFTED SPURIOUSLY, RELIEVING REACTOR COOLANT.

PI EVENTS FOR 89-4

SCRAM 12/02/89 LER# 39589020 50.72#: 17256 POWER: 100
DESC : THE REACTOR TRIPPED ON LOW SG LEVEL JUST AFTER POWER HAD BEEN REDUCED FROM 100 TO 98% FOR TURBINE CONTROL VALVE TESTING. THE TURBINE UNLOADED TO 10% AND CAUSED A LOW SG LEVEL DUE TO SHRINK.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSF 04/06/90 LER# 39590003 50.72#: POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE REACTOR BUILDING PURGE EXHAUST RADIATION MONITOR HAS BEEN USED FOR PURGE EXHAUST OPERATIONS SINCE INITIAL PLANT STARTUP IN OCTOBER 1982. AN ERROR IN THE COMPUTER SOFTWARE WHICH PERFORMS THE SETPOINT CALCULATION CAUSED A NONCONSERVATIVE

SSA 04/12/90 LER# 39590006 50.72#: 18220 POWER: 0
DESC : DUE TO PERSONNEL ERRORS, A DC SYSTEM TRANSIENT, CREATED BY REVERSED LEADS TO THE 'B' BATTERY, CAUSED THE AC NORMAL FEEDER BREAKER TO THE ESF 10B BUS TO OPEN. THE 'B' EDG STARTED ON THE LOSS OF BUS 10B.

SSA 04/23/90 LER# 39590007 50.72#: 18309 POWER: 0
DESC : A PROCEDURAL ERROR CAUSED A LOSS OF OFFSITE POWER TO ESF TRAIN 'B' BUS. THIS RESULTED IN AN EDG STARTING AND LOADING THE BUS.

SSA 05/05/90 LER# 39590008 50.72#: 18396 POWER: 0
DESC : AN UNDERVOLTAGE RELAY WAS WIRED WRONG, CAUSING THE BUS TO SHED WHEN THE LOAD SEQUENCER WAS REENERGIZED. THE EDG AUTO STARTED AND LOADED THE BUS.

TABLE 8.97 (CONT.)

SUMMER

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.55	0.00	0.00	0.56	0.54	0.49	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	1	1	1	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	0	3
SIGNIFICANT EVENTS	0	0	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	0	0	2	0	1	0	0	1
FORCED OUTAGE RATE (%)	3	0	28	19	20	8	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.56	1.62	1.46	0.00	0.00
CRITICAL HOURS	1832	131	1588	1779	1854	2055	1970	959
COLLECTIVE RADIATION EXPOSURE	28	464	27	8	8	8	59	NA
CAUSE CODES:								
ADMINISTRATIVE	2	1	2	3	3	1	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	2	3	0	3	1	0	NA
MAINTENANCE	1	3	4	5	4	2	1	NA
A) MAINT PERSONNEL	1	1	2	1	1	0	0	NA
B) SURV AND TEST	1	2	2	1	2	2	1	NA
C) EQUIPMENT	0	0	0	2	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	1	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	0	2	1	0	1	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	1	0	NA

TABLE 8.98

SURRY 1

PI EVENTS FOR 89-3

SCRAM 07/09/89 LER# 28089026 50.72#: 16047 POWER: 63
 DESC : A BLOWN FUSE WHILE CALIBRATING A NI RESULTED IN A SPURIOUS DROPPED ROD SIGNAL AND A 30% TURBINE RUNBACK. INAPPROPRIATE OPERATOR ACTION OF CLOSING THE STEAM DUMP VALVES ATTRIBUTED TO A HIGH-HIGH SG LEVEL AND SUBSEQUENT REACTOR TRIP.

SSF 07/18/89 LER# 28089030 50.72#: POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 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.

PI EVENTS FOR 89-4

SSA 12/21/89 LER# 28089044 50.72#: 17402 POWER: 100
 DESC : HIGH WINDS CAUSED A PIECE OF INSULATION TO BE BLOWN FROM TURBINE BUILDING ONTO THE 'A' RESERVE STATION TRANSFORMER, CAUSING A GROUND FAULT. '1J' SAFEGUARDS BUS WAS SUPPLIED BY THE SITE SWING DIESEL.

PI EVENTS FOR 90-1

SSF 03/14/90 LER# 28090001 50.72#: 17979 POWER: 100
 GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
 SYSTEM : ULTIMATE HEAT SINK SYSTEM
 DESC : ALL THREE EMERGENCY SEAWATER PUMPS WERE INOPERABLE. THE EMERGENCY ENGINE SHUTDOWN DEVICES WERE TRIPPED, PREVENTING THE PUMPS' DIESEL ENGINES FROM STARTING. THE CAUSE IS UNDER INVESTIGATION.

SSF 03/15/90 LER# 28090002 50.72#: 17988 POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
 DESC : BOTH CONTAINMENT VACUUM PUMPS WERE INOPERABLE. THE PUMPS' INTERNALS WERE BINDING AS A RESULT OF CORROSION BUILDUP IN THE CASINGS. MOISTURE HAD ACCUMULATED IN THE CASINGS BECAUSE OF A RECENT CHANGE IN PUMP OPERATING FREQUENCY.

PI EVENTS FOR 90-2

SCRAM 05/22/90 LER# 50.72#: 18550 POWER: 100
 DESC : REACTOR TRIPPED DUE TO GENERATOR TRIP/TURBINE TRIP.

SSA 05/22/90 LER# 50.72#: 18550 POWER: 100
 DESC : EDG STARTED FROM A LOSS OF THE '1J' EMERGENCY BUS.

TABLE 2.98 (CONT.)

SURREY 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.69	0.00	0.00	0.00	0.48	0.00	0.00	0.52
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	1	0	0	1
SAFETY SYSTEM ACTUATIONS	1	0	2	2	0	1	0	1
SIGNIFICANT EVENTS	0	0	3	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	2	2	0	1	0	2	0
FORCED OUTAGE RATE (%)	26	100	100	100	8	1	0	12
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.69	0.00	0.00	0.00	0.00	0.46	0.00	0.52
CRITICAL HOURS	1443	0	0	0	2088	2184	2160	1924
COLLECTIVE RADIATION EXPOSURE	116	287	118	139	95	45	23	NA
CAUSE CODES:								
ADMINISTRATIVE	6	2	5	4	4	0	1	NA
LICENSED OPERATOR	1	1	1	2	4	1	0	NA
OTHER PERSONNEL	2	4	4	5	2	0	0	NA
MAINTENANCE	11	7	6	10	8	2	2	NA
A) MAINT PERSONNEL	1	4	4	1	1	0	0	NA
B) SURV AND TEST	2	2	2	7	4	0	0	NA
C) EQUIPMENT	5	3	0	2	1	0	2	NA
D) POTENTIAL MAINT	7	1	0	0	2	2	0	NA
DESIGN/INSTALLATION/FABRICATION	4	3	1	3	2	2	0	NA
EQUIPMENT FAILURE	1	1	1	0	1	2	0	NA

TABLE 8.99

SURRY 2

PI EVENTS FOR 89-3

SSF 07/18/89 LER# 28089030 50.72#: POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 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 THE FEEDWATER SYSTEM 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.

PI EVENTS FOR 89-4

SSF 10/17/89 LER# 28189013 50.72#: POWER: 0
 GROUP : SAFETY AND RELIEF VALVES GROUP
 SYSTEM : REACTOR COOLANT SYSTEM
 DESC : THE PLANT WAS NOTIFIED BY THE VENDOR THAT THE METHOD USED TO TEST AND SET THE P2R SAFETY VALVES WAS IN ERROR; PAST TESTS WERE CONDUCTED WITHOUT A WATER LOOP SEAL. THE AS FOUND LIFT SETPOINTS (TEST PERFORMED CORRECTLY) EXCEEDED T.S. REQUIREMENTS.

PI EVENTS FOR 90-1

SSF 03/14/90 LER# 28090001 50.72#: 17979 POWER: 100
 GROUP : ULTIMATE HEAT SINK SYSTEM GROUP
 SYSTEM : ULTIMATE HEAT SINK SYSTEM
 DESC : ALL THREE EMERGENCY SEAWATER PUMPS WERE INOPERABLE. THE EMERGENCY ENGINE SHUTDOWN DEVICES WERE TRIPPED, PREVENTING THE PUMP'S DIESEL ENGINES FROM STARTING. THE CAUSE IS UNDER INVESTIGATION.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	3.06	0.00	0.00	0.00
SCRAMS <= 15% POWER	1	0	0	0	1	0	0	0
TOTAL SCRAMS	1	0	0	0	2	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	2	1	0	0	0
SIGNIFICANT EVENTS	1	1	3	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	4	2	0	1	1	1	0
FORCED OUTAGE RATE (%)	0	0	0	0	34	47	0	7
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.98
CRITICAL HOURS	1706	0	0	0	327	1177	2160	2037
COLLECTIVE RADIATION EXPOSURE	116	287	118	139	95	45	23	NA
CAUSE CODES:								
ADMINISTRATIVE	3	2	3	4	5	4	2	NA
LICENSED OPERATOR	2	1	0	1	4	3	0	NA
OTHER PERSONNEL	1	3	2	4	4	1	0	NA
MAINTENANCE	5	6	4	9	13	6	2	NA
A) MAINT PERSONNEL	0	4	4	0	3	1	0	NA
B) SURV AND TEST	1	1	0	7	4	3	1	NA
C) EQUIPMENT	3	2	0	2	2	1	1	NA
D) POTENTIAL MAINT	1	1	0	0	4	1	0	NA
DESIGN/INSTALLATION/FABRICATION	3	4	1	3	3	1	0	NA
EQUIPMENT FAILURE	0	1	1	0	0	0	1	NA

TABLE 8.100
SUSQUEHANNA 1

PI EVENTS FOR 89-3

SSA 08/09/89 LER# 38789022 50.72#: 16289 POWER: 100
DESC : THE HPCI SYSTEM'S SUCTION SWAPPED FROM CONDENSATE STORAGE TANK TO SUPPRESSION POOL WHEN A TECHNICIAN SKIPPED A STEP IN THE PROCEDURE.

BSF 09/08/89 LER# 38789023 50.72#: 16539 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : CONTAINMENT VACUUM RELIEF SYSTEM
DESC : THE SUPPRESSION CHAMBER/DRYWELL VACUUM BREAKER VALVES WERE DECLARED INOPERABLE DUE TO MISSING ORIFICES IN THE AIR TUBING TO THE DRYWELL VACUUM BREAKER. THE ORIFICES WERE REMOVED DURING A MODIFICATION AND NOT REINSTALLED.

PI EVENTS FOR 89-4

SCRAM 12/24/89 LER# 38789027 50.72#: 17427 POWER: 100
DESC : A REACTOR SCRAM OCCURRED DUE TO FAST CLOSURE OF THE TURBINE CONTROL VALVES ON A MAIN GENERATOR LOAD REJECT SIGNAL. THIS OCCURRED WHEN THE UNIT BREAKER TO THE 230KV SWITCHYARD OPENED AFTER A VEHICLE KNOCKED DOWN A POWER POLE.

PI EVENTS FOR 90-1

SSF 02/15/90 LER# 38790007 50.72#: 17777 POWER: 97
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE WHEN THE HPCI STOP VALVE WOULD NOT OPEN DURING A SURVEILLANCE. THE CAUSE WAS BELIEVED TO BE HIGH STOP VALVE BALANCE CHAMBER PRESSURE IN CONJUNCTION WITH THE MAGNITUDE OF THE HYDRAULIC AND STEAM FORCES.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	1.16	0.00	0.00	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	2	0	0	1	0	0
SAFETY SYSTEM ACTUATIONS	0	0	0	0	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	1	0	0	1	0	1	0
FORCED OUTAGE RATE (%)	0	0	22	0	4	2	12	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	1.16	0.00	0.00	0.00	0.51	0.00
CRITICAL HOURS	2208	2209	1721	539	2145	2187	1954	2007
COLLECTIVE RADIATION EXPOSURE	18	17	28	168	73	83	27	NA
CAUSE CODES:								
ADMINISTRATIVE	3	1	6	8	1	2	2	NA
LICENSED OPERATOR	0	0	2	0	0	0	0	NA
OTHER PERSONNEL	2	3	2	6	1	2	1	NA
MAINTENANCE	6	2	3	10	2	4	6	NA
A) MAINT PERSONNEL	1	0	2	1	0	2	0	NA
B) SURV AND TEST	2	2	0	6	1	1	2	NA
C) EQUIPMENT	3	0	0	1	1	1	3	NA
D) POTENTIAL MAINT	1	0	1	2	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	1	1	1	2	0	1	NA
EQUIPMENT FAILURE	1	0	1	0	0	1	0	NA

TABLE 8.101
SUSQUEHANNA 2

PI EVENTS FOR 89-3

SSF 09/20/89 LER# 38889010 50.72#: 16643 POWER: 0
GROUP : MAIN STEAM ISOLATION VALVES GROUP
SYSTEM : MAIN STEAM ISOLATION VALVES
DESC : LEAKAGE THROUGH THE "A" AND "B" MAIN STEAM LINE PENETRATIONS WAS IN EXCESS OF THE T.S. LIMIT AND CONTRIBUTED TO THE FAILURE TO MEET THE LEAKAGE LIMITS OF THE IRLT. SEVERAL MAIN STEAM ISOLATION VALVES WERE REWORKED AND THEN TESTED SATISFACTORILY.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/06/90 LER# 38890002 50.72#: 17704 POWER: 100
DESC : THE MAIN TURBINE TRIPPED DUE TO A MAIN GENERATOR POWER LOAD UNBALANCE ALARM. THE ALARM OCCURRED WHEN A LOOSE 'STATES' LINK CAUSED A 500KV BREAKER TO OPEN. THIS CAUSED A REACTOR TRIP.

SSF 02/16/90 LER# 38890001 50.72#: 17784 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE COOLANT INJECTION SYSTEM
DESC : THE HPCI SYSTEM WAS DECLARED INOPERABLE AFTER FAILING A SURVEILLANCE TEST. THE FLOW CONTROLLER WOULD NOT MAINTAIN A STABLE FLOW CONTROL WHILE IN THE AUTOMATIC MODE. THE PROBLEM WAS AN IMPROPERLY ADJUSTED GOVERNOR NEEDLE VALVE.

SSF 02/28/90 LER# 38890003 50.72#: 17851 POWER: 100
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : AUTOMATIC DEPRESSURIZATION SYSTEM
DESC : THE AUTOMATIC DEPRESSURIZATION SYSTEM WAS DECLARED INOPERABLE DUE TO LOW PRESSURE IN THE CONTAINMENT INSTRUMENT GAS HEADER. THE PRESSURE DROPPED WHEN A RELIEF VALVE LIFTED UNEXPECTEDLY AND DID NOT RESEAT. THE RELIEF VALVE MAY HAVE BEEN BUMPED.

PI EVENTS FOR 90-2

SCRAM 05/28/90 LER# 38890005 50.72#: 18582 POWER: 100
DESC : THE 'B' FEEDWATER LEVEL CONTROLLER FAILED DOWNSCALE, CAUSING A TURBINE TRIP ON A HIGH REACTOR WATER LEVEL. THE REACTOR SCRAMMED ON A TURBINE TRIP.

SSF 06/21/90 LER# 50.72#: 18748 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : SECONDARY CONTAINMENT INTEGRITY REQUIREMENTS WERE VIOLATED WHEN A BOUNDARY DOOR WAS PROPPED OPEN FOR WORK ACTIVITIES.

TABLE 8.101 (CONT.)
SUSQUEHANNA 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.56
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	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	1	0	1	0	1	0	2	1
FORCED OUTAGE RATE (%)	0	0	7	0	0	0	8	13
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.45	0.50	0.00	0.00	0.00	0.50	0.56
CRITICAL HOURS	2143	2209	1987	2183	1720	1027	2011	1792
COLLECTIVE RADIATION EXPOSURE	18	17	28	168	73	83	27	NA
CAUSE CODES:								
ADMINISTRATIVE	2	0	3	4	2	4	1	NA
LICENSED OPERATOR	0	0	0	0	0	0	0	NA
OTHER PERSONNEL	1	4	1	3	2	3	3	NA
MAINTENANCE	5	3	2	3	4	7	4	NA
A) MAINT PERSONNEL	0	1	1	0	1	1	1	NA
B) SURV AND TEST	2	2	0	3	1	3	2	NA
C) EQUIPMENT	3	0	0	0	0	1	1	NA
D) POTENTIAL MAINT	2	0	1	0	2	1	0	NA
DESIGN/INSTALLATION/FABRICATION	2	1	1	1	1	2	1	NA
EQUIPMENT FAILURE	1	0	1	0	0	0	0	NA

TABLE 8.102
THREE MILE ISL 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

B8A 10/30/89 LER# 28989001 50.72#: 16969 POWER: 100
DESC : WHILE TESTING REACTOR BUILDING COOLING AND ISOLATION SYSTEM LOGIC, THE "1C" HIGH PRESSURE SAFETY INJECTION PUMP STARTED AND INJECTED BORON INTO THE REACTOR COOLANT SYSTEM.

B8F 11/14/89 LER# 28989002 50.72#: 17096 POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
DESC : THE "B" EDG RADIATOR FAN DRIVE BEARING LUBRICATION LINES WERE DISCOVERED CLOGGED. THIS SAME CONDITION CAUSED THE FAILURE OF THE "A" EDG RADIATOR FAN DRIVE BEARING ON NOV 2, 1989. THE CAUSE WAS INADEQUATE INSPECTION AND MAINTENANCE PROCEDURES.

SCRAM 11/29/89 LER# 28989003 50.72#: 17215 POWER: 100
DESC : THE REACTOR TRIPPED ON HIGH PRESSURE WHEN A LOOSE SHIELD WIRE FOR THE TURBINE SPEED ERROR CIRCUIT CAUSED A RAPID LOAD REDUCTION ON THE MAIN TURBINE.

PI EVENTS FOR 90-1

B8F 01/31/90 LER# 28990002 50.72#: 17667 POWER: 0
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR CONTAINMENT BUILDING
DESC : BECAUSE OF PROCEDURAL INADEQUACIES, GAPS EXISTED IN THE CONTAINMENT SUMP SCREEN. THIS COULD HAVE RESULTED IN THE INOPERABILITY OF THE LPSI/RHR AND CONTAINMENT SPRAY SYSTEMS.

SCRAM 03/04/90 LER# 28990004 50.72#: 17887 POWER: 0
DESC : DURING PHYSICS TESTING, A LICENSED OPERATOR INADVERTENTLY WITHDREW GROUP 5 RODS WHILE GROUP 6 RODS WERE BEING WITHDRAWN. THIS CAUSED A HIGH POWER SCRAM AT 0.3% POWER.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.54	0.00	0.00	0.00	0.46	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	1	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	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	0	0	0	1	1	0
FORCED OUTAGE RATE (%)	19	18	0	0	0	2	31	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.07	1.63	0.00	0.00	0.00	0.46	1.77	0.00
CRITICAL HOURS	932	1837	2160	2183	2208	2166	566	2183
COLLECTIVE RADIATION EXPOSURE	116	20	12	13	14	15	236	NA
CAUSE CODES:								
ADMINISTRATIVE	4	0	0	0	0	2	2	NA
LICENSED OPERATOR	2	0	0	0	0	1	2	NA
OTHER PERSONNEL	0	0	0	0	0	0	1	NA
MAINTENANCE	2	1	0	0	0	3	3	NA
A) MAINT PERSONNEL	0	0	0	0	0	1	0	NA
B) SURV AND TEST	2	0	0	0	0	1	2	NA
C) EQUIPMENT	0	1	0	0	0	0	1	NA
D) POTENTIAL MAINT	0	1	0	0	0	1	0	NA
DESIGN/INSTALLATION/FABRICATION	0	0	0	0	0	0	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.103

TROJAN

PI EVENTS FOR 89-3

BE 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# 34489018 50.72#: 16544 POWER: 99
GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
DESC : BOTH TRAINS OF RHR SYSTEM WERE INOPERABLE FOR 3 HOURS. THE 'A' TRAIN WAS INOPERABLE BECAUSE THE 'A' CCW SYSTEM TRAIN WAS OOS FOR CLEANING. THE 'B' TRAIN WAS INOPERABLE FOR DETERMINATION OF THE PROPER RHR PUMP RECIRC VALVE FLOW INDICATING SWITCH SETPOINT.

SSF 09/25/89 LER# 34489024 50.72#: 16706 POWER: 0
GROUP : ENGINEERED SAFETY FEATURES INSTRUMENTATION
SYSTEM : CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
DESC : A PERSONNEL ERROR IN THE INSTALLATION OF A PROCESS EFFLUENT RADIATION MONITOR FOR THE HYDROGEN VENT SYSTEM (USED FOR CONTAINMENT PRESSURE CONTROL) COULD HAVE PREVENTED THE TERMINATION OF A RADIOACTIVE RELEASE THAT EXCEEDED THE RELEASE LIMITS.

PI EVENTS FOR 89-4

SSF 10/30/89 LER# 34489021 50.72#: 16984 POWER: 97
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : BOTH CHARGING PUMPS COULD BE RENDERED INOPERABLE IF A SAFETY INJECTION SIGNAL OCCURRED DURING THE PERFORMANCE OF A PERIODIC OPERATING TEST. THESE PUMPS PERFORM THE HIGH HEAD SAFETY INJECTION FUNCTION. PROCEDURE ERROR: VCT ISOLATION VALVES WERE BYPASSED.

SSF 12/12/89 LER# 34489030 50.72#: POWER: 97
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : BOTH TRAINS OF CREV CHLORINE DETECTORS WERE DECLARED INOPERABLE. A DESIGN REVIEW DISCOVERED THAT BECAUSE OF AN INADEQUATE DESIGN SPECIFICATION THE DETECTOR RESPONSE TIME WAS INADEQUATE.

SSF 12/19/89 LER# 34489030 50.72#: POWER: UNK
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : WITH BOTH TRAINS OF CREV CHLORINE DETECTORS INOPERABLE, A PERSONNEL ERROR RESULTED IN A PROHIBITED CREV LINEUP. THE RESPONSIBLE OPERATOR WAS NOT USING A PROCEDURE TO PERFORM THE LINEUP.

PI EVENTS FOR 90-1

SSF 01/09/90 LER# 34490002 50.72#: POWER: 97
GROUP : LOW TEMPERATURE/OVERPRESSURE PROTECTION GROUP
SYSTEM : LOW TEMPERATURE/OVERPRESSURE SYSTEM
DESC : THE LOW TEMPERATURE OVERPRESSURE PROTECTION SYSTEM LIMITS MAY NOT HAVE BEEN MET DURING PLANT HEATUPS AND COOLDOWNS. THE CAUSE WAS A FAILURE TO IMPLEMENT THE LTOPS ANALYSIS INTO THE APPLICABLE OPERATING PROCEDURES AND PRECAUTIONS. THIS EXISTED SINCE 1978.

SSF 01/19/90 LER# 34490003 50.72#: 17625 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : A DESIGN BASIS DOCUMENT REVIEW FOUND THAT BECAUSE OF PROCEDURAL INADEQUACIES, BOTH CENTRIFUGAL CHARGING PUMPS COULD BE MADE INOPERABLE. THERE WAS NO ASSURANCE THAT THE BORON INJECTION TANK INLET VALVES WOULD OPEN ON A VALID SAFETY INJECTION SIGNAL.

SSF 01/24/90 LER# 34490004 50.72#: 17617 POWER: 100
GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
DESC : A PERSONNEL ERROR RESULTED IN RENDERING THE EMERGENCY CONTROL ROOM VENTILATION SYSTEM INOPERABLE FOR ONE MIN. WITH THE "B" TRAIN INOPERABLE FOR TESTING, AN OPERATOR INADVERTENTLY RENDERED "A" TRAIN'S EMERGENCY POWER SOURCE INOPERABLE.

TABLE 8.103 (CONT.)

TROJAN

PI EVENTS FOR 90-1 (CONT.)

SSF 02/16/90 LER# 34490005 50.72#: POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : WITH DESIGN BASIS HEAT LOADS AND SUMMER DESIGN TEMPERATURE CONDITIONS, ESF ELECTRICAL EQUIPMENT ROOM TEMPERATURES MAY NOT HAVE REMAINED BELOW THE FSAR DESIGN BASIS OF 104F IF SOME ROOM COOLERS WERE OUT OF SERVICE. THIS WAS DUE TO ORIGINAL DESIGN ERRORS.

SSF 02/21/90 LER# 34490006 50.72#: 17812 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : INTERMEDIATE HEAD INJECTION
 DESC : AN INADEQUATE REVISION TO A PERIODIC OPERATING TEST CAUSED BOTH TRAINS OF THE INTERMEDIATE SAFETY INJECTION SYSTEM TO BE RENDERED INOPERABLE IN HOT STANDBY. THIS CONDITION VIOLATED TECHNICAL SPECIFICATION 3.5.2.

SSF 03/12/90 LER# 34490007 50.72#: 17954 POWER: 100
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : INADEQUATE CONTROL OF WORK PRACTICES RESULTED IN THE INOPERABILITY OF BOTH TRAINS OF THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM. WHILE ONE TRAIN WAS INOPERABLE BECAUSE OF AN AIR CLEANUP OPERATION, THE OTHER TRAIN WAS RENDERED INOPERABLE FOR TESTING.

PI EVENTS FOR 90-2

SSF 04/09/90 LER# 34490012 50.72#: 18214 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE ESF SWITCHGEAR ROOM COOLER FANS DO NOT AUTO RESTART IN SOME ACCIDENT SCENARIOS. FURTHERMORE, PLANT PROCEDURES DID NOT SPECIFY TIMELY RESTORATION OF THE FANS. THE SWITCHGEAR ROOMS COULD EXCEED THEIR DESIGN TEMPERATURE LIMIT IN A MATTER OF MINUTES.

SSF 04/22/90 LER# 34490013 50.72#: 18307 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CREV SYSTEM WAS INOPERABLE DURING FUEL HANDLING OPERATIONS. A DOOR WHICH WAS REQUIRED TO BE OPEN TO ENSURE THE CREV SYSTEM WAS ABLE TO PRODUCE THE REQUIRED POSITIVE CONTROL ROOM PRESSURE, WAS FOUND CLOSED.

SSF 05/09/90 LER# 34490014 50.72#: 18423 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE CONTROL ROOM EMERGENCY VENTILATION SYSTEM WAS RENDERED INOPERABLE BECAUSE THE CONTROL ROOM PARTITION WALL DID NOT MEET SEISMIC 1 CRITERIA. THIS CONDITION EXISTED SINCE INITIAL CONSTRUCTION.

SSF 05/14/90 LER# 34490016 50.72#: 18469 POWER: 0
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : PLANT PROTECTION SYSTEM
 DESC : THE CALIBRATION PROCEDURE FOR THE MAIN STEAM FLOW INSTRUMENTS DID NOT INCLUDE BENCHMARKING THE OUTPUTS TO ENSURE THEY CORRESPONDED WITH THE FEED FLOW OUTPUTS. THE RESULT WAS AN INCREASE IN THE UNCERTAINTY LEVEL ASSOCIATED WITH THE REACTOR TRIP SYSTEM.

SSF 05/18/90 LER# 34490015 50.72#: 18520 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BECAUSE OF A DESIGN ERROR, THE CREV SYSTEM COOLING CAPACITY WAS INADEQUATE. PRIOR TO 1988 (WHEN A SUPPLEMENTAL COOLING SYSTEM WAS INSTALLED) THE CONTROL ROOM MIGHT NOT HAVE BEEN ADEQUATELY COOLED IF OFFSITE POWER REMAINED AVAILABLE DURING AN ACCIDENT.

SSF 05/25/90 LER# 34490017 50.72#: 18572 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : THE "A" TRAIN ESF SWITCHGEAR ROOM COOLERS HAD INSUFFICIENT COOLING CAPACITY BECAUSE THE TUBES (WATER SIDE) WERE CLOGGED WITH SILT AND DEBRIS. THE ROOM DESIGN TEMPERATURE LIMIT COULD HAVE BEEN EXCEEDED UNDER CERTAIN CONDITIONS.

TABLE 8.103 (CONT.)

TROJAN

PI EVENTS FOR 90-2 (CONT.)

SBF 05/31/90 LER# 34490017 50.72#: 18603 POWER: 0
 GROUP : REACTOR TRIP INSTRUMENTATION
 SYSTEM : PLANT PROTECTION SYSTEM
 DESC : AS A RESULT OF A DESIGN ERROR (SEPARATION REQUIREMENTS NOT MET), A COMMON MODE FAILURE OF NON-CLASS 1E 12 KV SWITCHGEAR COULD CAUSE: LOSS OF POWER TO ALL RCPS, FAILURE OF THE ESFAS, AND FAILURE OF THE UNDERVOLTAGE OR UNDERFREQUENCY REACTOR TRIP CIRCUITS

SBF 06/28/90 LER# 50.72#: 18794 POWER: 0
 GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
 SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
 DESC : BOTH AFW PUMP CONTROLLERS SEISMIC CATEGORY 1 SUPPORTS WERE MISSING.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.11	0.56	0.00	0.00	1.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	2	1	0	0	1	0	0	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	1	1	0	0	0
SAFETY SYSTEM FAILURES	3	0	0	2	2	3	6	8
FORCED OUTAGE RATE (%)	10	20	0	0	13	0	1	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.11	0.56	0.00	0.00	1.00	0.00	0.00	0.00
CRITICAL HOURS	1803	1778	2160	120	1001	2142	1870	0
COLLECTIVE RADIATION EXPOSURE	12	33	7	346	62	6	37	NA
CAUSE CODES:								
ADMINISTRATIVE	4	4	3	3	9	2	5	NA
LICENSED OPERATOR	0	1	0	0	1	1	0	NA
OTHER PERSONNEL	7	4	2	5	4	2	4	NA
MAINTENANCE	10	10	4	5	8	5	9	NA
A) MAINT PERSONNEL	5	1	1	2	2	0	3	NA
B) SURV AND TEST	4	7	3	3	5	4	6	NA
C) EQUIPMENT	4	1	0	0	1	1	0	NA
D) POTENTIAL MAINT	1	2	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	2	2	2	2	1	1	NA
EQUIPMENT FAILURE	0	1	0	1	1	0	0	NA

TABLE 8.104
TURKEY POINT 3

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 12/12/89 LER# 25089018 50.72#: 17327 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : AN ENGINEERING EVALUATION REVEALED THAT A SINGLE FAILURE OF THE HPSI BLOCK CIRCUITRY SWITCH COULD RENDER BOTH TRAINS OF THE HPSI SYSTEM INOPERABLE. THE ROOT CAUSE IS A DESIGN ERROR WHICH OCCURRED DURING PLANT CONSTRUCTION.

SSF 12/22/89 LER# 25090001 50.72#: POWER: UNK
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "A" WASTE MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 45 MIN.

PI EVENTS FOR 90-1

SSF 01/12/90 LER# 25090001 50.72#: 17540 POWER: 100
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "B" MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 46 MIN.

PI EVENTS FOR 90-2

SSA 04/15/90 LER# 25090008 50.72#: 18246 POWER: 0
DESC : DURING A TECH SPEC SURVEILLANCE, PRESSURE SWITCH #3-2007 FAILED. A HIGH CONTAINMENT PRESSURE SIGNAL RESULTED.

SSF 05/18/90 LER# 25090010 50.72#: POWER: 0
GROUP : ACCIDENT MONITORING INSTRUMENTATION
SYSTEM : POST-ACCIDENT MONITORING SYSTEM
DESC : THE PLANT ENTERED MODE 3 WITH BOTH CHANNELS OF THE REACTOR VESSEL LEVEL MONITORING SYSTEM INOPERABLE. AN INCOMPLETE REVIEW OF THE CLEARANCE ORDER BOOK FAILED TO IDENTIFY THAT BOTH CHANNELS WERE OUT OF SERVICE FOR MAINTENANCE.

SCRAM 06/09/90 LER# 50.72#: 18667 POWER: 30
DESC : A REACTOR TRIP OCCURRED WHEN THE 'C' SG FEED REGULATING VALVE FAILED OPEN. THIS CAUSED A HIGH SG LEVEL WHICH RESULTED IN THE TRIP.

SSF 06/13/90 LER# 25090012 50.72#: 18702 POWER: 50
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, A SINGLE FAILURE OF THE RESET PUSH BUTTON COULD PREVENT BOTH REDUNDANT TRAINS OF THE CONTAINMENT SPRAY SYSTEM FROM ACTUATING AUTOMATICALLY.

SCRAM 06/15/90 LER# 50.72#: 18714 POWER: 10
DESC : A REACTOR TRIP OCCURRED DUE TO HIGH POWER. OPERATORS REDUCED POWER BELOW 10% RTP AND BLOCKED THE "AT POWER" TRIPS. THE OPERATORS THEN PULLED RODS, CAUSING POWER TO RISE ABOVE 10% RTP ENABLING THESE TRIPS.

SSF 06/27/90 LER# 50.72#: 18784 POWER: 100
GROUP : SAFETY AND RELIEF VALVES GROUP
SYSTEM : REACTOR COOLANT SYSTEM
DESC : A PRELIMINARY EVALUATION DETERMINED THE PORV BLOCK VALVES MAY NOT FULLY CLOSE AGAINST THE MAXIMUM REACTOR COOLANT DIFFERENTIAL PRESSURE. THE LIMITORQUE VALVE OPERATORS ARE ABLE TO PROVIDE THE REQUIRED THRUST, BUT THE TORQUE SWITCH SETTINGS WERE TOO LOW.

TABLE 8.104 (CONT.)
TURKEY POINT 3

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93
SCRAMS <= 15% POWER	0	0	1	0	0	0	0	1
TOTAL SCRAMS	0	0	1	0	0	0	0	2
SAFETY SYSTEM ACTUATIONS	0	0	0	2	0	0	0	1
SIGNIFICANT EVENTS	0	0	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	3	1	1	0	0	2	1	3
FORCED OUTAGE RATE (%)	0	99	45	0	1	0	0	32
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	92.17	0.81	0.00	0.45	0.00	0.00	3.86
CRITICAL HOURS	2208	22	1231	167	2199	2209	815	518
COLLECTIVE RADIATION EXPOSURE	30	228	116	52	24	28	236	NA
CAUSE CODES:								
ADMINISTRATIVE	7	3	4	1	2	1	2	NA
LICENSED OPERATOR	2	0	0	0	0	1	1	NA
OTHER PERSONNEL	3	2	2	1	2	0	2	NA
MAINTENANCE	9	3	5	1	3	2	5	NA
A) MAINT PERSONNEL	3	1	0	1	2	0	1	NA
B) SURV AND TEST	5	2	4	0	1	0	4	NA
C) EQUIPMENT	1	0	1	0	0	2	0	NA
D) POTENTIAL MAINT	1	0	0	0	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	5	4	3	3	0	2	0	NA
EQUIPMENT FAILURE	1	0	0	0	0	0	1	NA

TABLE 8.105
TURKEY POINT 4

PI EVENTS FOR 89-3

SSF 07/13/89 LER# 25189006 50.72#: 16093 POWER: 25
GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
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 : A MANUAL SAFETY INJECTION, TO MAINTAIN PRESSURIZER LEVEL AFTER A MANUAL SCRAM.

PI EVENTS FOR 89-4

SSF 12/12/89 LER# 25089018 50.72#: 17327 POWER: 40
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
DESC : AN ENGINEERING EVALUATION REVEALED THAT A SINGLE FAILURE OF THE HPSI BLOCK CIRCUITRY SWITCH COULD RENDER BOTH TRAINS OF THE HPSI SYSTEM INOPERABLE. THE ROOT CAUSE WAS A DESIGN ERROR WHICH OCCURRED DURING PLANT CONSTRUCTION.

SSF 12/22/89 LER# 25090001 50.72#: POWER: UNK
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "A" WASTE MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 45 MIN.

SCRAM 12/23/89 LER# 25089020 50.72#: 17424 POWER: 94
DESC : A REACTOR SCRAM OCCURRED ON LOW SG LEVEL DUE TO THE CLOSURE OF 'A' MSIV. THIS WAS DUE TO CORROSION BUILDUP ON THE MSIV TERMINAL BOX CONTACTS.

PI EVENTS FOR 90-1

SSF 01/12/90 LER# 25090001 50.72#: 17540 POWER: 0
GROUP : RADIATION MONITORING INSTRUMENTATION
SYSTEM : RADIATION MONITORING SYSTEM
DESC : THE "B" MONITOR TANK CONTENTS WERE RELEASED TO THE ENVIRONMENT WITHOUT PROPERLY MONITORING THE EFFLUENT ACTIVITY. THE EFFLUENT PROCESS RADIATION MONITOR FAILED AND THE OPERATORS WERE NOT PERFORMING THE REQUIRED MONITORING. THIS LASTED FOR 46 MIN.

PI EVENTS FOR 90-2

SCRAM 04/09/90 LER# 25190003 50.72#: 18188 POWER: 100
DESC : A REACTOR TRIP WAS CAUSED BY THE RCP'S TRIPPING ON UNDERFREQUENCY. A RELAY FAILURE CAUSED THE UNDERFREQUENCY.

SSF 06/13/90 LER# 25090012 50.72#: 18702 POWER: 100
GROUP : CONTAINMENT COOLING SYSTEMS GROUP
SYSTEM : CONTAINMENT SPRAY SYSTEM
DESC : BECAUSE OF A DESIGN ERROR, A SINGLE FAILURE OF THE RESET PUSH BUTTON COULD PREVENT BOTH REDUNDANT TRAINS OF THE CONTAINMENT SPRAY SYSTEM FROM AUTOMATICALLY ACTUATING.

TABLE 8.105 (CONT.)
TURKEY POINT 4

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.55	0.00	0.00	0.00	0.00	0.54	0.00	0.55
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	1	1	0	0	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	2	1	1	0	1	2	1	1
FORCED OUTAGE RATE (%)	3	0	0	7	24	24	0	20
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.55	0.00	0.00	1.78	2.31	1.62	0.00	1.10
CRITICAL HOURS	1804	0	0	562	1730	1855	1942	1814
COLLECTIVE RADIATION EXPOSURE	30	228	116	52	24	28	236	NA
CAUSE CODES:								
ADMINISTRATIVE	4	3	2	2	4	1	0	NA
LICENSED OPERATOR	4	0	0	2	0	1	1	NA
OTHER PERSONNEL	1	1	0	0	4	0	2	NA
MAINTENANCE	9	2	3	3	7	2	2	NA
A) MAINT PERSONNEL	1	1	0	1	3	0	1	NA
B) SURV AND TEST	5	1	2	0	2	1	1	NA
C) EQUIPMENT	3	0	1	0	0	1	0	NA
D) POTENTIAL MAINT	2	0	0	1	2	0	0	NA
DESIGN/INSTALLATION/FABRICATION	3	3	2	3	3	1	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	1	NA

TABLE 8.106
VERMONT YANKEE

PI EVENTS FOR 89-3

SSF 07/18/89 LER# 27189014 50.72#: 15796 POWER: 92
 GROUP : REACTOR CORE ISOLATION COOLING SYSTEMS GROUP
 SYSTEM : REACTOR CORE ISOLATION COOLING SYSTEM
 DESC : THE RCIC SYSTEM WAS DECLARED INOPERABLE DURING A MONTHLY SURVEILLANCE TEST WHEN THE RCIC PUMP DISCHARGE VALVE BREAKER TRIPPED TWICE WHILE STROKING THE VALVE CLOSED. THE VALVE DC MOTOR OPERATOR ARMATURE WINDINGS OVERHEATED AND SHORTED.

SSF 08/31/89 LER# 27189022 50.72#: 16453 POWER: 100
 GROUP : ESSENTIAL SERVICE WATER SYSTEM GROUP
 SYSTEM : ESSENTIAL SERVICE WATER SYSTEM
 DESC : THE REACTOR BUILDING CLOSED COOLING WATER (ESSENTIAL SERVICE WATER) RETURN MOTOR OPERATED VALVE WAS NOT POWERED FROM AN EMERGENCY BUS AS REQUIRED BY THE FSAR. DURING A LOSS OF ON-SITE POWER, THIS VALVE COULD NOT BE REMOTELY CLOSED, DESIGN ERROR.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 03/21/90 LER# 50.72#: 18038 POWER: 22
 DESC : A PRESSURE SPIKE TO 1060-1070 PSIG, DUE TO A BYPASS VALVE NOT ACTING PROPERLY, CAUSED A REACTOR SCRAM ON HIGH PRESSURE.

PI EVENTS FOR 90-2

SCRAM 06/01/90 LER# 50.72#: 18609 POWER: 98
 DESC : THE REACTOR SCRAMMED DUE TO AN MSIV CLOSING.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.46
SCRAMS <= 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	1	0	0	0	0	0	1	1
SAFETY SYSTEM ACTUATIONS	0	0	2	0	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	4	1	2	0	0	0
FORCED OUTAGE RATE (%)	11	0	0	0	0	0	4	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	1.00	0.00	0.00	0.00	0.00	0.00	0.49	0.46
CRITICAL HOURS	1994	2209	985	2014	2208	2209	2031	2154
COLLECTIVE RADIATION EXPOSURE	31	38	194	34	15	28	18	NA
CAUSE CODES:								
ADMINISTRATIVE	2	2	7	0	3	1	4	NA
LICENSED OPERATOR	0	0	1	0	0	0	0	NA
OTHER PERSONNEL	1	1	2	2	1	0	2	NA
MAINTENANCE	1	3	11	3	4	1	4	NA
A) MAINT PERSONNEL	0	0	3	1	2	0	0	NA
B) SURV AND TEST	0	3	4	1	1	0	3	NA
C) EQUIPMENT	1	1	2	0	0	0	1	NA
D) POTENTIAL MAINT	0	0	2	1	1	1	0	NA
DESIGN/INSTALLATION/FABRICATION	1	1	2	1	1	0	2	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.107

VOGTLE 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SCRAM 10/02/89 LER# 42489018 50.72#: 16749 POWER: 87
 DESC : A MAIN STEAM ISOLATION VALVE CLOSED, CAUSING A LOW SG LEVEL REACTOR TRIP. THE VALVE CLOSED WHEN AN ELECTRICAL GROUND ON A 125VDC 1E DISTRIBUTION PANEL CAUSED ITS CONTROL POWER FUSE TO BLOW.

PI EVENTS FOR 90-1

SCRAM 01/24/90 LER# 42490001 50.72#: 17615 POWER: 90
 DESC : THE REACTOR TRIPPED DUE TO A LOW SG LEVEL AFTER THE LOOP 4 INBOARD MSIV CLOSED AFTER A CONTROL POWER FUSE BLEW DURING TESTING.

SSF 02/23/90 LER# 42490003 50.72#: 17825 POWER: 88
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : LOW-VOLTAGE POWER SYSTEM - CLASS 1E
 DESC : A SYSTEM ENGINEER DISCOVERED THAT THE BOTTOM CORE CLAMP BOLTS WERE MISSING FROM TWO CLASS 1E 480V TRANSFORMERS. THESE BOLTS WERE NECESSARY FOR THE SEISMIC INTEGRITY AND OPERABILITY OF THE TRANSFORMERS.

SSA 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
 DESC : A TRUCK RAN INTO A TOWER IN THE SWITCHYARD, CAUSING A LOSS OF OFFSITE POWER DUE TO THE ELECTRICAL LINEUP FROM OFFSITE. THE EDG STARTED AND TRIPPED, RESTARTED THEN TRIPPED ON LOW-WATER JACKET PRESSURE. THE EDG WAS STARTED LOCALLY AND LOADED THE BUS.

SSF 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY SYSTEM
 DESC : THE PLANT LOST AC POWER TO BOTH CLASS 1E BUSES. WITH THE "B" EDG APART FOR MAINTENANCE, OFFSITE POWER WAS LOST. THE "A" EDG AUTO-STARTED AND TRIPPED. THIRTY-SIX MIN LATER, IT WAS STARTED LOCALLY. WITHOUT RHR, RCS TEMP INCREASED 46F.

SE 03/20/90 LER# 42490006 50.72#: 18024 POWER: 0
 DESC : LOSS OF ALL AC 1E (VITAL) POWER AND FAILURE OF SINGLE AVAILABLE EDG TO START AND LOAD, SUBSEQUENT RCS HEATUP DUE TO LOSS OF RHR.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	1.40	0.00	0.00	0.46	0.00	0.47	0.78	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	3	0	0	1	0	1	1	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	1	0
SAFETY SYSTEM FAILURES	0	0	3	0	0	0	2	0
FORCED OUTAGE RATE (%)	5	9	12	3	2	5	2	2
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.93	2.03	1.03	0.46	0.92	0.47	0.00	0.00
CRITICAL HOURS	2148	985	1944	2172	2175	2122	1278	1747
COLLECTIVE RADIATION EXPOSURE	NA	NA	11	5	9	8	203	NA

CAUSE CODES:

ADMINISTRATIVE	3	5	4	3	1	1	6	NA
LICENSED OPERATOR	0	1	1	0	0	0	2	NA
OTHER PERSONNEL	4	7	6	0	1	1	2	NA
MAINTENANCE	7	11	9	3	4	2	5	NA
A) MAINT PERSONNEL	2	3	2	1	0	1	1	NA
B) SURV AND TEST	3	6	4	1	2	1	4	NA
C) EQUIPMENT	0	2	3	0	1	0	0	NA
D) POTENTIAL MAINT	2	3	0	1	1	0	0	NA
DESIGN/INSTALLATION/FABRICATION	2	6	1	0	0	1	2	NA
EQUIPMENT FAILURE	1	0	1	1	0	0	0	NA

TABLE 8.108

VOGTLE 2

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 A DIESEL START AND LOADING OF THE SAFETY 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 CAUSING AN OTDT SCRAM.

PI EVENTS FOR 89-4

SCRAM 10/11/89 LER# 42589027 50.72#: 16825 POWER: 58
 DESC : A FAULTY DIODE IN THE STATIONARY GRIPPER COIL CIRCUITRY FOR A CONTROL ROD CAUSED THE ROD TO FALL INTO THE CORE, RESULTING IN A REACTOR TRIP.

SCRAM 12/02/89 LER# 42589031 50.72#: 17247 POWER: 100
 DESC : THE TURBINE TRIPPED ON HIGH MOISTURE SEPARATOR REHEATER LEVEL. THE TURBINE TRIP CAUSED A REACTOR TRIP. THE EVENT WAS CAUSED, IN PART, BY AN IMPROPER REASSEMBLY OF THE MOISTURE SEPARATOR REHEATER HIGH LEVEL DUMP VALVE.

PI EVENTS FOR 90-1

SCRAM 03/20/90 LER# 42590002 50.72#: 18027 POWER: 100
 DESC : DUE TO THE LOSS OF SWITCHYARD AT UNIT 1 A MAIN GENERATOR/TURBINE TRIP OCCURRED WITH A REACTOR SCRAM.

SSA 03/20/90 LER# 42590002 50.72#: 18027 POWER: 100
 DESC : LOSS OF THE 2B RESERVE AUXILIARY TRANSFORMER, DUE TO AN INCIDENT AT UNIT 1, CAUSED EDG 2B TO START AND LOAD BUS 1E.

PI EVENTS FOR 90-2

SSF 05/01/90 LER# 42590006 50.72#: POWER: 100
 GROUP : ACCIDENT MONITORING INSTRUMENTATION
 SYSTEM : LEAK MONITORING SYSTEM
 DESC : WITH ONE REACTOR COOLANT LEAKAGE DETECTION SYSTEM INOPERABLE FOR REPAIR A PERSONNEL ERROR RESULTED IN RENDERING TWO MORE REDUNDANT LEAKAGE DETECTION SYSTEMS INOPERABLE, WHICH VIOLATED TECHNICAL SPECIFICATIONS.

SCRAM 05/06/90 LER# 42590007 50.72#: 18401 POWER: 100
 DESC : A REACTOR TRIP OCCURRED ON LOW S/G LEVEL. THE CAUSE WAS DUE TO CLOSURE OF MSIV '2HV3026A' DUE TO A FAILED RELAY.

TABLE 8.108 (CONT.)

VOGTLE 2

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	NA	NA	0.00	1.12	0.45	0.97	0.47	0.47
SCRAMS <= 15% POWER	NA	NA	0	1	0	0	0	0
TOTAL SCRAMS	NA	NA	0	3	1	2	1	1
SAFETY SYSTEM ACTUATIONS	NA	NA	1	0	1	0	1	0
SIGNIFICANT EVENTS	NA	NA	1	0	0	0	0	0
SAFETY SYSTEM FAILURES	NA	NA	2	0	0	0	0	1
FORCED OUTAGE RATE (%)	NA	NA	NA	4	1	5	2	4
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	NA	NA	NA	1.05	0.45	1.46	0.47	0.94
CRITICAL HOURS	NA	NA	83	1793	2199	2059	2127	2124
COLLECTIVE RADIATION EXPOSURE	NA	NA	NA	NA	NA	NA	NA	NA
CAUSE CODES:								
ADMINISTRATIVE	NA	NA	3	4	1	0	2	NA
LICENSED OPERATOR	NA	NA	3	2	0	0	0	NA
OTHER PERSONNEL	NA	NA	4	2	1	3	1	NA
MAINTENANCE	NA	NA	8	8	3	3	3	NA
A) MAINT PERSONNEL	NA	NA	3	2	0	2	1	NA
B) SURV AND TEST	NA	NA	2	3	1	1	2	NA
C) EQUIPMENT	NA	NA	2	2	2	0	0	NA
D) POTENTIAL MAINT	NA	NA	1	1	0	0	0	NA
DESIGN/INSTALLATION/FABRICATION	NA	NA	1	1	1	1	1	NA
EQUIPMENT FAILURE	NA	NA	1	0	1	1	0	NA

TABLE 8.109
WASH. NUCLEAR 2

PI EVENTS FOR 89-3

SSF 07/28/89 LER# 39789030 50.72#: POWER: 78
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
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# 39789034 50.72#: POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
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.

SSF 08/11/89 LER# 39789032 50.72#: POWER: 100
GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
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.

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.

SSF 09/19/89 LER# 39789040 50.72#: 16632 POWER: 100
GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
SYSTEM : REACTOR BUILDING
DESC : BECAUSE OF A DESIGN DEFICIENCY THE SECONDARY CONTAINMENT MAY NOT ALWAYS MEET THE FSAR COMMITMENTS (ESTABLISHMENT OF THE REQUIRED NEGATIVE PRESSURE IN THE REQUIRED TIME) DURING POST-LOCA OR ADVERSE WEATHER CONDITIONS.

PI EVENTS FOR 89-4

SSF 11/21/89 LER# 39789043 50.72#: 17162 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : THE HIGH PRESSURE CORE SPRAY SYSTEM WAS DECLARED INOPERABLE AFTER THE MINIMUM FLOW VALVE APPEARED TO HAVE FAILED DURING A TEST. TROUBLESHOOTING REVEALED THAT THE TEST RETURN VALVE TO THE SUPPRESSION POOL HAD FAILED 10% OPEN DIVERTING SYSTEM FLOW.

SSF 11/28/89 LER# 39789044 50.72#: 17211 POWER: 100
GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
SYSTEM : HIGH PRESSURE CORE SPRAY SYSTEM
DESC : HPCS WAS DECLARED INOPERABLE DUE TO ASSOCIATED ELECTRICAL CIRCUITS WHICH WERE DETERMINED TO HAVE UNDERSIZED THERMAL OVERLOAD DEVICES. CONDITION COULD RESULT IN A LOSS OF THESE CIRCUITS DURING UV CONDITIONS COINCIDENT WITH HIGH AMBIENT TEMPERATURES.

PI EVENTS FOR 90-1

SSF 03/08/90 LER# 39790006 50.72#: 17929 POWER: 99
GROUP : FIRE DETECTION/SUPPRESSION SYSTEMS GROUP
SYSTEM : FIRE PROTECTION SYSTEM
DESC : AN EXPANDED 10CFR50 APPENDIX R ANALYSIS IDENTIFIED 12 CABLES THAT COULD PREVENT AN ORDERLY PLANT SHUTDOWN IN THE EVENT OF A DESIGN BASIS FIRE. THE ARCHITECT-ENGINEER FAILED TO THOROUGHLY IMPLEMENT APPENDIX R REQUIREMENTS INTO THE EQUIPMENT DESIGN.

TABLE 8.109 (CONT.)
 WASH. NUCLEAR 2

PI EVENTS FOR 90-2

88F 06/10/90 LER# 50.720: 18676 POWER: 0
 GROUP : RESIDUAL HEAT REMOVAL SYSTEMS GROUP
 SYSTEM : RESIDUAL HEAT REMOVAL SYSTEM
 DESC : A CRITICAL MOTOR CONTROL CENTER TRIPPED AND RESULTED IN THE ISOLATION OF THE SHUTDOWN COOLING SYSTEM FOR 43 MIN. TEMPERATURE INCREASED TWO DEGREES.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.49	1.30	1.08	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	0	1	1	2	0	0	0
SAFETY SYSTEM ACTUATIONS	0	0	1	2	0	0	0	0
SIGNIFICANT EVENTS	1	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	5	4	2	1	1
FORCED OUTAGE RATE (%)	7	10	4	0	11	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.53	0.50	0.49	0.00	1.08	0.00	0.00	0.00
CRITICAL HOURS	1895	1992	2028	770	1850	2209	2160	494
COLLECTIVE RADIATION EXPOSURE	64	44	36	361	44	52	40	NA
CAUSE CODES:								
ADMINISTRATIVE	5	4	5	7	5	3	3	NA
LICENSED OPERATOR	2	0	0	1	0	0	0	NA
OTHER PERSONNEL	5	1	2	5	1	0	1	NA
MAINTENANCE	7	4	3	13	5	2	5	NA
A) MAINT PERSONNEL	4	0	3	5	0	0	2	NA
B) SURV AND TEST	4	4	0	5	4	1	2	NA
C) EQUIPMENT	1	1	0	1	0	0	0	NA
D) POTENTIAL MAINT	1	1	0	2	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	4	1	4	6	6	2	2	NA
EQUIPMENT FAILURE	1	0	0	0	1	0	0	NA

TABLE 8.110

WATERFORD 3

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.

PI EVENTS FOR 89-4

SSA 10/12/89 LER# 38289019 50.72#: 16834 POWER: 0
 DESC : AN ELECTRICIAN PULLED THE WRONG FUSES ON THE UNIT AUXILIARY TRANSFORMER. THE NORMAL SUPPLY BREAKER OPENED, BUT THE EMERGENCY DIESEL GENERATOR WAS BLOCKED FROM STARTING.

SSA 12/23/89 LER# 38289024 50.72#: 17419 POWER: 0
 DESC : FRV VALVE OPENED AFTER A MANUAL SCRAM WHEN ICE MELTED IN THE AIR LINE TO THE FRV, CAUSING SG OVERFEEDING AND SUBSEQUENT SAFETY INJECTION ACTUATION SIGNAL ON LOW RCS PRESSURE.

PI EVENTS FOR 90-1

BSF 02/23/90 LER# 38290001 50.72#: 17865 POWER: 100
 GROUP : COMBUSTIBLE GAS CONTROL SYSTEMS GROUP
 SYSTEM : EMERGENCY/STANDBY GAS TREATMENT SYSTEM
 DESC : BECAUSE OF INADEQUATE ADMIN CONTROLS, TWO CONTROLLED VENTILATION AREA SYSTEM (CVAS) AIR LOCK DOORS WERE PROPPED OPEN. THIS WOULD HAVE PREVENTED THE CVAS FROM ESTABLISHING THE REQUIRED NEGATIVE PRESSURE FOLLOWING A SAFETY INJECTION SIGNAL.

SCRAM 03/22/90 LER# 38290002 50.72#: 18047 POWER: 100
 DESC : WHILE TROUBLESHOOTING THE CONTROL ELEMENT DRIVE SYSTEM AND TRANSFERRING CEA BACK TO THE HOLD BUS, TWO CEA'S DROPPED INTO THE CORE, CAUSING A SCRAM ON DNBR.

SCRAM 03/29/90 LER# 38290003 50.72#: 18094 POWER: 100
 DESC : A MAJOR GRID FAULT CAUSED A GENERATOR TRIP, TURBINE TRIP, AND REACTOR SCRAM.

SSA 03/29/90 LER# 38290003 50.72#: 18094 POWER: 100
 DESC : A MAJOR GRID FAULT CAUSED A LOSS OF THE 'B' 4160V SAFETY BUS, WHICH WAS RESTORED WHEN THE 'B' DIESEL GENERATOR STARTED AND LOADED THE BUS.

PI EVENTS FOR 90-2

NONE

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.63	0.00	0.00	0.52	0.00	1.11	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	0
TOTAL SCRAMS	0	1	0	0	1	0	2	0
SAFETY SYSTEM ACTUATIONS	0	0	1	0	0	2	1	0
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	0	1	0	0	0	1	0
FORCED OUTAGE RATE (%)	0	2	3	0	6	2	3	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.48	0.00	1.05	0.96	1.11	0.00
CRITICAL HOURS	2173	1590	2101	2183	1907	1042	1797	2183
COLLECTIVE RADIATION EXPOSURE	12	36	9	5	38	194	17	NA
CAUSE CODES:								
ADMINISTRATIVE	1	4	2	1	5	1	1	NA
LICENSED OPERATOR	1	0	0	0	1	2	0	NA
OTHER PERSONNEL	1	3	1	2	1	2	1	NA
MAINTENANCE	3	3	1	3	6	5	3	NA
A) MAINT PERSONNEL	0	1	0	0	2	2	2	NA
B) SURV AND TEST	3	2	1	3	3	2	0	NA
C) EQUIPMENT	0	0	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	0	0	0	1	1	1	NA
DESIGN/INSTALLATION/FABRICATION	0	4	2	0	3	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	1	0	0	NA

TABLE 8.111

WOLF CREEK

PI EVENTS FOR 89-3

SSF 08/28/89 LER# 48289018 50.72#: 16426 POWER: 100
 GROUP : CONTAINMENT COOLING SYSTEMS GROUP
 SYSTEM : REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
 DESC : BOTH EMERGENCY EXHAUST SYSTEMS WERE INOPERABLE DUE TO PERSONNEL ERROR. THE MOTOR OPERATED SUPPLY AIR AND ISOLATION DAMPERS TO THE NON-RADIOACTIVE TUNNEL IN THE AUX. BUILDING HVAC HAD BEEN REMOVED FROM SERVICE IN THE OPEN POSITION.

SSF 09/19/89 LER# 48289019 50.72#: 16634 POWER: 100
 GROUP : EMERGENCY CORE COOLING SYSTEMS GROUP
 SYSTEM : HIGH PRESSURE SAFETY INJECTION SYSTEM
 DESC : BOTH TRAINS OF THE HPSI SYSTEM WERE INOPERABLE. TRAIN "A" MINIMUM FLOW VALVE FAILED A STROKE TEST ON SEPT. 15, BUT PERSONNEL DID NOT REALIZE THIS MADE TRAIN "A" INOPERABLE UNTIL SEPT. 19, AT WHICH TIME THE "B" TRAIN WAS OUT OF SERVICE FOR MAINTENANCE.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SCRAM 02/06/90 LER# 48290001 50.72#: 17705 POWER: 100
 DESC : A DIFFERENTIAL OVERCURRENT RELAY TRIPPED A REACTOR COOLANT PUMP. THE REACTOR SUBSEQUENTLY TRIPPED ON LOW REACTOR COOLANT FLOW. THE CAUSE IS UNKNOWN.

SSF 03/14/90 LER# 48290002 50.72#: 17978 POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : BECAUSE OF A DESIGN PROBLEM, THE HALON FIRE PROTECTION SYSTEM FOR EITHER OF THE ESF SWITCHGEAR ROOMS COULD HAVE DISABLED BOTH TRAINS OF CLASS 1E AIR CONDITIONER UNITS. THE LONG TERM OPERATION OF THE AFFECTED SAFETY SYSTEMS COULD HAVE BEEN DEGRADED.

PI EVENTS FOR 90-2

SSF 04/11/90 LER# 48290005 50.72#: POWER: 0
 GROUP : CONTROL ROOM EMERGENCY VENTILATION SYSTEM GROUP
 SYSTEM : CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
 DESC : INADEQUATE ADMINISTRATIVE CONTROL OF CONTROL BUILDING PRESSURE BOUNDARY DOORS RESULTED IN RENDERING THE CONTROL ROOM VENTILATION SYSTEM INCAPABLE OF PERFORMING ITS FUNCTION. ADDITIONAL EVENTS OF THIS NATURE MAY HAVE OCCURRED PREVIOUSLY.

SCRAM 05/14/90 LER# 48290011 50.72#: 18475 POWER: 18
 DESC : THE STEAM DUMPS BEGAN TO OSCILLATE, CAUSING A HIGH SG LEVEL MFP TRIP. SUBSEQUENT LOW SG LEVEL CAUSED A REACTOR SCRAM.

SCRAM 05/17/90 LER# 48290012 50.72#: 18507 POWER: 1
 DESC : A REACTOR SCRAM OCCURRED BECAUSE OF A LOW SG LEVEL IN 'C' SG. THE 'C' SG ATMOSPHERIC DUMP VALVE FAILED OPEN, CAUSING THE SG LOW LEVEL CONDITION.

SCRAM 05/19/90 LER# 48290013 50.72#: 18526 POWER: 97
 DESC : ONE OUT OF 3 HIGH LEVEL SIGNALS IN THE MOISTURE SEPARATOR REHEATERS CAUSED A TURBINE TRIP/REACTOR TRIP. THE REASON WHY THE DUMP VALVE DID NOT CONTROL THE HIGH LEVEL IS UNKNOWN.

SSA 06/13/90 LER# 50.72#: 18701 POWER: 100
 DESC : THE EDG STARTED ON LOW VOLTAGE TO ONE OF TWO 4.16KV BUSES. A TRANSFORMER IN THE SWITCHYARD BLEW UP, CAUSING THIS EVENT.

TABLE 8.111 (CONT.)

WOLF CREEK

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.95	0.00	0.00	0.00	0.63	1.82
SCRAMS <= 15% POWER	0	0	0	0	0	0	0	1
TOTAL SCRAMS	0	0	2	0	0	0	1	3
SAFETY SYSTEM ACTUATIONS	0	0	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	2	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	1	2	0	1	1
FORCED OUTAGE RATE (%)	0	0	2	0	0	0	3	6
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.95	0.00	0.00	0.00	0.63	1.82
CRITICAL HOURS	2208	146	2115	2183	2208	2209	1577	1102
COLLECTIVE RADIATION EXPOSURE	3	229	5	2	1	7	84	NA
CAUSE CODES:								
ADMINISTRATIVE	3	0	3	1	3	0	1	NA
LICENSED OPERATOR	0	1	3	0	1	0	0	NA
OTHER PERSONNEL	0	4	2	0	1	0	0	NA
MAINTENANCE	3	3	7	3	5	0	1	NA
A) MAINT PERSONNEL	1	2	1	0	0	0	0	NA
B) SURV AND TEST	2	1	5	1	1	0	0	NA
C) EQUIPMENT	1	1	0	0	1	0	1	NA
D) POTENTIAL MAINT	0	0	1	2	3	0	0	NA
DESIGN/INSTALLATION/FABRICATION	4	6	1	1	0	1	1	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 8.112

~~YANKEE~~-ROWE

PI EVENTS FOR 89-3

SSA 07/25/89 LER# 02989011 50.72#: 16166 POWER: 100
 DESC : POTENTIAL TRANSFORMER FUSES WERE REMOVED FOR MAINTENANCE, CAUSING THE EMERGENCY DIESEL GENERATOR TO RECEIVE A START SIGNAL WHEN THE BUS WAS DEENERGIZED BY OPENING OF THE BUS TIE BREAKER.

SCRAM 06/09/89 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.

PI EVENTS FOR 89-4

NONE

PI EVENTS FOR 90-1

SSA 03/08/90 LER# 02990001 50.72#: 17927 POWER: 100
 DESC : POWER WAS LOST TO THE EMERGENCY BUS WHILE CONDUCTING THE HPSI PUMP OPERABILITY TEST. THE DIESEL GENERATOR STARTED, BUT THE OUTPUT BREAKER WOULD NOT CLOSE. THE NORMAL BREAKER WAS RECLOSED TO REENERGIZE THE BUS.

PI EVENTS FOR 90-2

SSA 06/23/90 LER# 50.72#: 18755 POWER: 18
 DESC : THE 480V BUS '4-1' INADVERTENTLY DEENERGIZED, CAUSING THE EDG TO START AND LOAD THE BUS.

SSV 06/23/90 LER# 50.72#: 18756 POWER: 0
 GROUP : PRIMARY REACTOR SYSTEMS GROUP
 SYSTEM : CONTROL ROD DRIVE SYSTEM
 DESC : TWO CONTROL RODS DID NOT FULLY INSERT INTO THE CORE DURING A ROD DROP TEST. THERE MAY HAVE BEEN TIMES DURING THE PAST CYCLE WHEN ADEQUATE SHUTDOWN MARGIN WAS NOT AVAILABLE WITH TWO RODS PARTIALLY WITHDRAWN.

SE 06/23/90 LER# 50.72#: 18756 POWER: 0
 DESC : STUCK CONTROL ROD DURING ROD DROP TEST.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	1	0	0	0
TOTAL SCRAMS	0	0	0	1	1	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	1	0	1	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	1
SAFETY SYSTEM FAILURES	0	2	0	0	0	0	0	1
FORCED OUTAGES/1000 COMMERCIAL HRS	0	0	1	4	14	0	0	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	0.00	0.53	0.94	0.52	0.00	0.00	0.00
CRITICAL HOURS	2208	1014	1891	2122	1915	2209	2160	2000
COLLECTIVE RADIATION EXPOSURE	13	195	23	10	18	11	7	NA
CAUSE CODES:								
ADMINISTRATIVE	0	3	1	1	3	0	0	NA
LICENSED OPERATOR	0	0	0	0	1	0	0	NA
OTHER PERSONNEL	0	0	3	2	3	1	0	NA
MAINTENANCE	0	4	3	3	4	1	1	NA
A) MAINT PERSONNEL	0	0	2	0	2	0	0	NA
B) SURV AND TEST	0	2	1	2	1	1	0	NA
C) EQUIPMENT	0	1	0	0	0	0	0	NA
D) POTENTIAL MAINT	0	1	0	1	1	0	1	NA
DESIGN/INSTALLATION/FABRICATION	0	2	0	1	1	0	0	NA
EQUIPMENT FAILURE	0	0	0	0	0	0	0	NA

TABLE 0.113

ZION 1

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SE 10/22/89 LER# 50.72#: POWER: 0
 DESC : SURFACE AND SUBSURFACE CRACK INDICATIONS WERE FOUND BY ULTRASONIC TESTING (UT) OF THE TRANSITION CONE UPPER GIRTH WELD (GIRTH WELD) OF THE STEAM GENERATOR.

SSF 11/17/89 LER# 29589024 50.72#: 17181 POWER: 0
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ON-SITE POWER SUPPLY BLDG. ENVIRONMENTAL CONTROL SYS
 DESC : THE EDG ROOM VENTILATION SYSTEM DAMPERS HAVE EXPERIENCED FREQUENT FAILURES. UPON FAILURE, THE T.S. DIRECTS OPERATORS TO CLOSE THE DAMPERS, WHICH CONTRADICTS THE FSAR. THE EDG LONG TERM OPERABILITY IS IN QUESTION.

SSF 12/18/89 LER# 29589025 50.72#: POWER: 0
 GROUP : AUXILIARY/EMERGENCY FEEDWATER SYSTEMS GROUP
 SYSTEM : AUXILIARY/EMERGENCY FEEDWATER SYSTEM
 DESC : TWO AUX FEED MOVES FAILED TO FULLY SHUT WITH THE 1B PUMP RUNNING. AN ENGINEERING REVIEW DISCOVERED THAT EIGHT AUX FEED MOVES HAD BEEN REPLACED BY VALVES WITH UNDERSIZED ACTUATORS. THE CAUSE OF THE EVENT WAS AN INADEQUATE REVIEW OF A PLANT MODIFICATION.

PI EVENTS FOR 90-1

SCRAM 01/27/90 LER# 29590004 50.72#: 17642 POWER: 39
 DESC : THE 1D S/G FEEDWATER REGULATING VALVE WAS PLACED IN MANUAL FOR MAINTENANCE. THE S/G WATER LEVEL WENT HIGH DUE TO INATTENTION OF THE OPERATOR, CAUSING THE TURBINE TO TRIP. THIS RESULTED IN A REACTOR TRIP.

PI EVENTS FOR 90-2

SSF 04/11/90 LER# 50.72#: 18215 POWER: 0
 GROUP : RADIATION MONITORING INSTRUMENTATION
 SYSTEM : RADIATION MONITORING SYSTEM
 DESC : TWO RAD RELEASES OCCURRED (4/10/90 AND 4/11/90) WITHOUT PROPER MONITORING. THE PROCESS RAD MONITOR WAS INOPERABLE EXCEPT FOR THE IODINE CHANNEL. THE ONLY OPERABLE MONITOR WAS LOCATED TOO FAR AWAY FROM THE DISCHARGE TO BE EFFECTIVE.

SSF 06/12/90 LER# 29590013 50.72#: POWER: 0
 GROUP : CONTAINMENT AND CONTAINMENT ISOLATION GROUP
 SYSTEM : CONTAINMENT LEAKAGE CONTROL SYSTEM
 DESC : THE ISOLATION VALVE SEAL WATER SYSTEM WAS INOPERABLE BECAUSE BOTH MAKEUP VALVES WERE SHUT. THE ROOT CAUSE WAS A PROCEDURAL DEFICIENCY, IN THAT A TECHNICAL STAFF SURVEILLANCE VALVE LINEUP CONFLICTED WITH THE STANDARD OPERATING INSTRUCTION LINEUP.

TABLE 8.113 (CONT.)

ZION 1

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.48	0.00	0.66	0.00	0.00	0.00	0.93	0.00
SCRAMS ≤ 15% POWER	1	0	0	0	0	0	0	0
TOTAL SCRAMS	2	0	1	0	0	0	1	0
SAFETY SYSTEM ACTUATIONS	1	0	0	0	0	0	0	0
SIGNIFICANT EVENTS	0	1	0	0	0	1	0	0
SAFETY SYSTEM FAILURES	0	1	1	1	0	2	0	2
FORCED OUTAGE RATE (%)	7	11	31	0	9	0	48	81
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.48	0.00	1.31	0.00	1.28	0.00	0.00	0.00
CRITICAL HOURS	2099	1981	1527	2183	1559	0	1078	459
COLLECTIVE RADIATION EXPOSURE	12	241	42	12	82	176	57	NA
CAUSE CODES:								
ADMINISTRATIVE	4	2	1	2	4	4	3	NA
LICENSED OPERATOR	1	0	1	0	0	1	2	NA
OTHER PERSONNEL	2	1	1	1	4	3	2	NA
MAINTENANCE	5	3	4	1	5	5	6	NA
A) MAINT PERSONNEL	1	1	1	0	1	3	2	NA
B) SURV AND TEST	3	1	1	1	4	1	2	NA
C) EQUIPMENT	1	1	1	0	0	0	1	NA
D) POTENTIAL MAINT	1	1	1	0	0	1	1	NA
DESIGN/INSTALLATION/FABRICATION	2	2	0	1	0	1	0	NA
EQUIPMENT FAILURE	0	0	1	0	0	0	0	NA

TABLE 8.114

ZION 2

PI EVENTS FOR 89-3

NONE

PI EVENTS FOR 89-4

SSF 11/17/89 LER# 29589024 50.72#: 17181 POWER: 40
 GROUP : EMERGENCY AC/DC POWER SYSTEMS GROUP
 SYSTEM : EMERGENCY ONSITE POWER SUPPLY BLDG. ENVIRONMENTAL CONTROL SYS
 DESC : THE EDG ROOM VENTILATION SYSTEM DAMPERS HAVE EXPERIENCED FREQUENT FAILURES. UPON FAILURE, THE T.S. DIRECTS OPERATORS TO CLOSE THE DAMPERS, WHICH CONTRADICTS THE FSAR. T&2 EDG LONG TERM OPERABILITY IS IN QUESTION.

PI EVENTS FOR 90-1

NONE

PI EVENTS FOR 90-2

SSA 04/06/90 LER# 30490005 50.72#: 18155 POWER: 0
 DESC : THE '2B' EDG AUTO STARTED ON UNDERVOLTAGE WHEN BUS '249' WAS TAKEN OUT OF SERVICE FOR MODIFICATION. INADEQUATE PREPARATION AND REVIEW CAUSED BUS '249' TO BE DEENERGIZED PRIOR TO ENSURING '2B' EDG WOULD START.

TYPE	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SCRAMS > 15% POWER/1000 CRITICAL HOURS	0.00	4.66	0.00	0.00	0.00	0.00	0.00	0.00
SCRAMS <= 15% POWER	0	0	0	0	0	0	C	0
TOTAL SCRAMS	0	2	0	0	0	0	0	0
SAFETY SYSTEM ACTUATIONS	0	1	0	0	0	0	0	1
SIGNIFICANT EVENTS	0	0	0	0	0	0	0	0
SAFETY SYSTEM FAILURES	0	1	0	1	0	1	0	0
FORCED OUTAGE RATE (%)	0	11	21	1	0	3	27	0
EQUIP. FORCED OUTAGES/1000 COMMERCIAL HRS	0.00	2.33	1.15	0.46	0.00	0.45	0.71	0.00
CRITICAL HOURS	2208	430	1734	2183	2208	2209	1411	0
COLLECTIVE RADIATION EXPOSURE	12	241	42	12	82	176	57	NA
CAUSE CODES:								
ADMINISTRATIVE	2	10	4	2	0	3	4	NA
LICENSED OPERATOR	0	3	1	1	0	0	0	NA
OTHER PERSONNEL	1	6	3	0	1	1	1	NA
MAINTENANCE	4	13	4	2	1	2	5	NA
A) MAINT PERSONNEL	1	4	4	0	0	1	1	NA
B) SURV AND TEST	2	7	0	1	1	1	3	NA
C) EQUIPMENT	1	5	0	0	0	0	0	NA
D) POTENTIAL MAINT	1	2	0	1	0	0	1	NA
DESIGN/INSTALLATION/FABRICATION	2	3	0	2	0	0	1	NA
EQUIPMENT FAILURE	0	1	0	1	0	0	0	NA

9. DATA TABLES
OVERALL INDUSTRY SUMMARY
PERFORMANCE INDICATORS
CRITICAL HOURS

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TABLE J.1

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS WHILE CRITICAL		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 COMM HRS	
	6 QTR	2 QTR	6 QTR	2 QTR	6 QTR	2 QTR	6 QTR	2 QTR	6 QTR	2 QTR	6 QTR	2 QTR
	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END
	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2
ARKANSAS 1	0.83	0.00	0.50	0.00	0.50	0.00	2.00	1.00	18.50	2.50	0.83	0.72
ARKANSAS 2	0.50	0.50	0.83	0.00	0.50	0.00	0.83	1.00	8.67	6.00	0.70	0.72
BEAVER VALLEY 1	0.83	0.50	0.50	0.00	0.20	0.00	0.00	0.00	15.83	3.50	1.36	0.48
BEAVER VALLEY 2	0.17	0.00	0.33	0.00	0.00	0.00	0.00	0.00	10.50	0.00	0.43	0.00
BIG ROCK POINT	0.17	0.00	0.00	0.00	1.00	0.00	0.67	0.50	1.83	0.00	0.23	0.00
BRAIDWOOD 1	0.67	1.00	0.33	0.00	0.33	0.00	0.17	0.50	2.17	1.50	0.29	0.00
BRAIDWOOD 2	0.67	0.50	0.17	0.00	0.17	0.00	0.50	0.50	4.50	10.50	0.08	0.00
BROWNS FERRY 1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BROWNS FERRY 2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BROWNS FERRY 3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BRUNSWICK 1	0.00	0.00	0.17	0.50	0.17	0.50	1.50	3.00	9.67	12.50	0.11	0.00
BRUNSWICK 2	0.00	0.00	1.17	0.50	0.33	0.50	1.33	1.50	6.17	12.50	0.09	0.00
BYRON 1	0.17	1.00	0.00	0.00	0.00	0.00	0.17	0.50	1.17	3.00	0.24	0.49
BYRON 2	0.17	0.50	0.33	0.50	0.17	0.00	0.00	0.00	2.83	0.50	0.24	0.24
CALLAWAY	0.50	1.00	0.33	0.00	0.00	0.00	0.17	0.50	1.67	2.50	0.26	0.24
CALVERT CLIFFS 1	0.00	0.00	0.50	0.50	0.00	0.00	1.83	3.00	3.17	7.50	0.23	0.00
CALVERT CLIFFS 2	0.00	0.00	0.00	0.00	0.33	0.00	1.17	1.00	1.83	0.00	0.10	0.00
CATAWBA 1	0.17	0.00	0.33	0.00	0.33	1.00	1.50	3.50	9.50	14.50	1.50	1.46
CATAWBA 2	0.33	0.00	0.33	0.00	0.00	0.00	1.67	3.50	5.17	1.50	0.70	0.73

TABLE 9-1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 COMM HRS	
	6 QTR AVG END	2 QTR 90-2	6 QTR AVG END	2 QTR 90-2	5 QTR AVG END	2 QTR 90-2	6 QTR AVG END	2 QTR 90-2	6 QTR AVG END	2 QTR 90-2	6 QTR AVG END	2 QTR 90-2
CLINTON 1	0.17	0.00	0.33	1.00	0.50	1.00	1.33	2.00	24.50	20.50	1.23	0.79
COMANCHE PEAK 1												
COOK 1	0.33	0.00	0.00	0.00	0.00	0.00	0.50	1.00	0.83	0.00	0.00	0.00
COOK 2	0.33	0.50	0.17	0.50	0.17	0.00	0.17	0.50	5.00	12.50	0.16	0.24
COOPER STATION	0.50	0.00	0.83	1.00	0.00	0.00	1.17	0.50	3.50	0.00	0.17	0.00
CRYSTAL RIVER 3	0.17	0.00	0.83	0.00	0.50	0.00	1.83	2.00	21.50	6.00	1.31	2.13
DAVIS-BESSE	0.50	0.50	0.57	2.00	0.00	0.00	0.17	0.00	20.83	59.00	0.16	0.00
DIABLO CANYON 1	0.33	0.50	0.33	0.50	0.17	0.00	0.50	1.00	1.50	4.00	0.16	0.47
DIABLO CANYON 2	0.17	0.00	0.00	0.00	0.17	0.00	0.50	0.50	4.17	0.50	0.44	0.33
DRESDEN 2	0.67	1.00	0.33	0.50	0.67	1.00	0.83	0.00	4.83	7.00	0.17	0.27
DRESDEN 3	0.67	0.50	0.33	0.00	0.17	0.00	0.83	0.50	6.17	13.00	0.79	1.00
DUANE ARNOLD	0.83	0.50	0.83	0.50	0.00	0.00	1.17	5.00	13.33	2.00	0.65	0.23
FARLEY 1	0.17	0.00	0.17	0.00	0.00	0.00	0.50	0.00	1.00	0.00	0.00	0.00
FARLEY 2	1.00	0.50	0.17	0.00	0.00	0.00	0.33	0.00	4.67	2.50	0.24	0.27
FERMI 2	0.50	0.50	0.50	0.00	0.17	0.00	1.17	0.50	9.33	3.00	0.17	0.24
FITZPATRICK	0.67	1.00	0.17	0.50	0.17	0.50	2.83	2.00	3.83	4.50	0.26	0.24
FORT CALHOUN	0.00	0.00	0.67	2.00	0.00	0.00	1.33	1.50	2.33	0.00	0.08	0.00

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS WHILE CRITICAL 5 QTR 2 QTR AVG END AVG END 90-2 90-2		SAFETY SYSTEM ACTUATIONS 6 QTR 2 QTR AVG END AVG END 90-2 90-2		SIGNIFICANT EVENTS 5 QTR 2 QTR AVG END AVG END 90-2 90-2		SAFETY SYSTEM FAILURES 6 QTR 2 QTR AVG END AVG END 90-2 90-2		FORCED OUTAGE RATE (%) 6 QTR 2 QTR AVG END AVG END 90-2 90-2		EQUIPMENT OUTAGES PER 1000 COMB HRS 6 QTR 2 QTR AVG END AVG END 90-2 90-2	
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0.50	1.00	1.00	1.50	0.00	0.00	0.83	2.00	5.17	2.00	0.44	0.78
GRAND SULF	0.67	0.00	0.33	0.50	0.17	0.00	0.67	0.50	2.33	0.00	0.16	0.00
HADDAM NECK	0.00	0.00	0.17	0.00	0.17	0.00	2.67	3.00	0.00	0.00	0.00	0.00
HATCH 1	0.17	0.50	0.17	0.50	0.00	0.00	0.67	1.00	7.00	21.00	0.00	0.00
HATCH 2	0.50	1.00	0.33	0.50	0.00	0.00	0.67	1.50	1.83	2.50	0.47	0.24
HOPE CREEK	0.67	1.00	0.33	0.50	0.00	0.00	0.67	0.50	2.67	5.00	0.34	0.00
INDIAN POINT 2	0.33	0.00	0.00	0.00	0.50	0.00	0.50	0.50	0.50	0.00	0.19	0.00
INDIAN POINT 3	0.17	0.50	0.17	0.00	0.17	0.50	0.17	0.00	2.50	1.00	0.77	0.00
KEWAUNEE	0.17	0.00	0.17	0.50	0.00	0.00	0.17	0.00	0.17	0.00	0.08	0.00
LASALLE 1	0.50	1.00	0.17	0.00	0.17	0.00	1.17	1.00	1.83	3.50	0.24	0.49
LASALLE 2	0.33	0.50	0.50	0.00	0.17	0.00	1.00	0.50	11.67	10.50	0.73	2.20
LIMERICK 1	0.00	0.00	0.00	0.00	0.17	0.00	4.00	3.50	3.17	9.50	0.20	0.59
LIMERICK 2												
MAINE YANKEE	0.33	0.00	0.17	0.50	0.17	0.50	6.00	0.00	4.00	0.00	0.26	0.00
MCGUIRE 1	0.33	0.50	0.33	0.00	0.17	0.00	3.00	4.00	20.17	24.50	2.51	6.58
MCGUIRE 2	0.50	0.00	0.00	0.00	0.17	0.00	2.17	2.00	0.50	0.00	0.23	0.00

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS																	
	AUTOMATIC SCRAMS			SAFETY SYSTEM ACTUATIONS			SIGNIFICANT EVENTS			SAFETY SYSTEM FAILURES			FORCED OUTAGE RATE (%)			EQUIPMENT OUTAGES PER 1000 COMM HRS		
	6 QTR	2 QTR	90-2	6 QTR	2 QTR	90-2	6 QTR	2 QTR	90-2	6 QTR	2 QTR	90-2	6 QTR	2 QTR	90-2	6 QTR	2 QTR	90-2
	WHILE CRITICAL	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END	AVG END
	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2
MILLSTONE 1	0.50	0.00	0.17	0.00	0.50	0.00	1.83	2.00	2.83	0.50	0.35	0.27						
MILLSTONE 2	0.00	0.00	0.17	0.00	0.00	0.33	0.00	0.83	2.50	0.13	0.39							
MILLSTONE 3	0.50	1.00	0.67	0.50	0.00	0.00	0.83	1.50	13.50	21.50	1.42	1.52						
MONTICELLO	0.33	0.00	0.17	0.00	0.00	0.00	1.17	0.50	1.17	0.00	0.00	0.00						
NINE MILE PT. 1	0.00	0.00	0.17	0.00	0.00	0.00	0.67	1.00	100.0	100.0	0.00	0.00						
NINE MILE PT. 2	1.00	0.00	0.67	0.00	0.33	0.00	0.00	0.00	19.83	28.50	0.60	0.27						
NORTH ANNA 1	0.67	0.50	0.33	0.00	0.33	0.00	1.00	1.50	5.17	1.00	0.38	0.23						
NORTH ANNA 2	0.00	0.00	0.17	0.00	0.17	0.00	0.50	1.00	0.00	0.00	0.00	0.00						
OCONEE 1	0.33	0.00	0.17	0.50	0.50	0.50	1.83	2.00	3.00	0.00	0.39	0.00						
OCONEE 2	0.50	0.00	0.00	0.00	0.33	0.50	1.33	1.00	3.17	0.00	0.85	0.00						
OCONEE 3	0.67	1.00	0.00	0.00	0.50	0.50	1.50	1.00	1.17	1.00	0.67	0.47						
OYSTER CREEK	0.83	0.50	0.17	0.00	0.00	0.00	0.67	0.50	35.00	18.50	3.25	0.88						
PALISADES	0.33	0.50	0.33	0.00	0.17	0.00	0.50	1.00	20.83	9.50	0.94	0.41						
PALO VERDE 1	0.17	0.00	0.17	0.00	0.00	0.00	0.67	0.50	21.67	0.00	0.11	0.00						
PALO VERDE 2	0.50	0.00	0.67	0.00	0.00	0.00	0.83	1.00	12.50	0.00	0.89	0.00						
PALO VERDE 3	0.33	0.50	0.17	0.00	0.33	0.00	0.83	0.50	26.17	14.50	2.00	0.24						
PEACH BOTTOM 2	0.80	0.00	0.40	0.50	0.20	0.50	2.00	1.50	15.25	17.50	0.96	0.67						
PEACH BOTTOM 3	0.33	0.50	0.33	0.50	0.00	0.00	2.33	1.50	5.50	5.50	0.75	0.50						
PERRY	0.17	0.50	0.17	0.50	0.17	0.00	2.33	4.50	1.17	2.00	0.24	0.00						

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 COMB HRS	
	6 QTR AVG END	2 QTR AVG END	6 QTR AVG END	2 QTR AVG END	6 QTR AVG END	2 QTR AVG END	6 QTR AVG END	2 QTR AVG END	6 QTR AVG END	2 QTR AVG END	6 QTR AVG END	2 QTR AVG END
	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2	90-2
PILGRIM	0.83	0.50	0.67	0.00	0.33	0.00	1.00	0.00	16.83	3.00	0.20	0.32
POINT BEACH 1	0.00	0.00	0.00	0.00	0.17	0.00	1.17	1.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.33	0.00	0.33	0.00	0.17	0.00	0.50	0.50	1.00	0.00	0.16	0.00
PRAIRIE ISLAND 1	0.17	0.00	0.17	0.50	0.00	0.00	0.17	0.50	0.67	1.50	0.12	0.40
PRAIRIE ISLAND 2	1.00	1.50	0.33	0.00	0.00	0.00	0.00	0.00	4.67	9.50	0.36	0.27
QUAD CITIES 1	0.33	0.50	0.00	0.00	0.33	0.00	0.83	1.00	4.33	2.00	0.74	0.00
QUAD CITIES 2	0.33	0.00	0.17	0.50	0.17	0.00	0.83	1.50	9.83	22.00	0.40	0.00
RANCHO SECO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
RIVER BEND	1.00	1.00	0.50	0.00	0.50	0.50	1.17	2.50	16.00	1.00	3.11	0.50
ROBINSON 2	0.83	1.00	0.17	0.00	0.33	0.00	0.83	0.50	26.67	2.50	0.37	0.27
SALEM 1	0.67	0.50	0.67	1.00	0.17	0.00	1.33	2.00	28.67	38.50	2.22	1.63
SALEM 2	0.67	0.50	0.67	1.00	0.00	0.00	1.50	4.00	15.00	26.50	3.01	7.13
SAN ONOFRE 1	0.33	0.50	0.00	0.00	0.33	0.00	1.50	0.50	20.67	4.50	1.28	0.25
SAN ONOFRE 2	0.00	0.00	0.17	0.00	0.00	0.00	0.17	0.50	14.17	0.00	0.47	0.00
SAN ONOFRE 3	0.50	0.50	0.17	0.00	0.00	0.00	0.00	0.00	5.50	4.50	0.34	0.26
SEABROOK												
SEQUOYAH 1	0.50	0.50	0.33	1.00	0.00	0.00	1.00	1.50	2.67	5.00	0.54	1.39
SEQUOYAH 2	0.83	0.50	0.33	0.00	0.00	0.00	0.67	0.50	3.83	1.00	0.18	0.00

TABLE 9.1 (CONT'D)

OVERALL INDUSTRY SUMMARY

PLANT	PERFORMANCE INDICATORS											
	AUTOMATIC SCRAMS		SAFETY SYSTEM ACTUATIONS		SIGNIFICANT EVENTS		SAFETY SYSTEM FAILURES		FORCED OUTAGE RATE (%)		EQUIPMENT OUTAGES PER 1000 COMM HRS	
	6 QTR 90-2	2 QTR 90-2	6 QTR 90-2	2 QTR 90-2	6 QTR 90-2	2 QTR 90-2	6 QTR 90-2	2 QTR 90-2	6 QTR 90-2	2 QTR 90-2	6 QTR 90-2	2 QTR 90-2
SHEARON HARRIS	1.00	0.00	0.17	0.50	0.00	0.00	1.00	1.00	2.50	3.50	1.00	0.26
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	1.00	1.50	0.33	0.50	0.00	0.00	0.33	0.50	11.00	15.00	1.67	3.25
SOUTH TEXAS 2												
ST. LUCIE 1	0.33	0.00	0.17	0.50	0.00	0.00	0.00	0.00	2.33	6.00	0.73	1.97
ST. LUCIE 2	0.33	0.50	0.00	0.00	0.00	0.00	0.00	0.00	3.33	6.50	0.27	0.26
SUMMER	0.50	0.00	0.67	1.50	0.33	0.00	0.67	0.50	12.50	0.00	0.61	0.60
SURRY 1	0.33	0.50	1.00	0.50	0.50	0.00	0.83	1.00	36.83	6.00	0.16	0.26
SURRY 2	0.33	0.00	0.67	0.00	0.50	0.00	0.83	0.50	14.67	3.50	0.30	0.49
SUSQUEHANNA 1	0.50	0.00	0.17	0.00	0.00	0.00	0.33	0.50	6.67	6.00	0.28	0.26
SUSQUEHANNA 2	0.33	1.00	0.00	0.00	0.00	0.00	0.83	1.50	4.67	10.50	0.26	0.53
THREE MILE ISL 1	0.33	0.50	0.17	0.00	0.00	0.00	0.33	0.50	5.50	15.50	0.37	0.89
TROJAN	0.17	0.00	0.00	0.00	0.33	0.00	3.50	7.00	2.33	0.50	0.17	0.00
TURKEY POINT 3	0.50	1.00	0.50	0.50	0.17	0.00	1.17	2.00	13.00	16.00	0.85	1.93
TURKEY POINT 4	0.33	0.50	0.33	0.00	0.00	0.00	1.00	1.00	12.50	10.00	1.14	0.55
VERMONT YANKEE	0.33	1.00	0.33	0.00	0.00	0.00	1.17	0.00	1.00	3.00	0.16	0.47
VOGTLE 1	0.50	0.50	0.17	0.50	0.17	0.50	0.83	1.00	4.33	2.00	0.48	0.00

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	0	1	1	0	3	0	0
ARKANSAS 2	0	1	0	1	0	1	0	1
BEAVER VALLEY 1	0	0	2	1	0	1	1	0
BEAVER VALLEY 2	2	0	1	0	0	0	0	0
BIG ROCK POINT	0	2	0	0	1	0	0	0
BRAIDWOOD 1	1	1	1	0	1	0	1	1
BRAIDWOOD 2	3	3	0	1	2	0	0	1
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	2	0	0	0	0	0	0
BRUNSWICK 2	0	1	0	0	0	0	0	0
BYRON 1	2	0	0	0	0	0	1	1
BYRON 2	2	1	0	0	0	0	1	0
CALLAWAY	1	0	0	1	0	0	0	2
CALVERT CLIFFS 1	2	0	0	0	0	0	0	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	0	1	0	0	0	0	0
CATAWBA 2	0	0	2	0	0	0	0	0
CLINTON 1	0	1	0	1	0	0	0	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	2
COOK 1	0	2	2	0	0	0	0	0
COOK 2	0	0	0	0	1	0	0	1
COOPER STATION	1	0	1	0	1	1	0	0
CRYSTAL RIVER 3	0	1	0	1	0	0	0	0
DAVIS-BESSE	0	1	1	1	0	0	1	0
DIABLO CANYON 1	4	0	0	0	0	1	0	1
DIABLO CANYON 2	1	0	0	1	0	0	0	0
DRESDEN 2	0	0	1	0	1	0	2	0
DRESDEN 3	0	1	2	1	0	0	1	0
DUANE ARNOLD	1	0	2	1	1	0	0	1
FARLEY 1	0	1	0	0	0	1	0	0
FARLEY 2	0	0	0	2	0	3	0	1
FERMI 2	1	0	1	0	0	1	0	1
FITZPATRICK	0	0	0	0	0	2	2	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	0	NA	NA	NA
GINNA	0	0	0	1	0	0	0	2
GRAND GULF	2	1	0	1	2	1	0	0
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	1	1	0	0	0	0	0	1
HATCH 2	1	0	0	0	1	0	2	0
HOPE CREEK	1	2	0	0	1	1	2	0
INDIAN POINT 2	0	2	1	0	0	1	0	0
INDIAN POINT 3	0	1	0	0	0	0	0	1
KEWAUNEE	0	0	0	0	0	1	0	0
LASALLE 1	0	0	1	0	0	0	1	1
LASALLE 2	0	0	0	0	1	0	1	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	0	1	0	0

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	1	1	1	0	0	0	0
MCGUIRE 1	0	0	0	0	1	0	1	0
MCGUIRE 2	0	0	2	1	0	0	0	0
MILLSTONE 1	0	0	0	2	0	1	0	0
MILLSTONE 2	0	1	0	0	0	0	0	0
MILLSTONE 3	0	2	0	1	0	0	1	1
MONTICELLO	0	1	0	1	0	1	0	0
NINE MILE PT. 1	0	0	0	0	0	0	0	0
NINE MILE PT. 2	1	0	0	2	1	3	0	0
NORTH ANNA 1	1	0	1	0	1	1	1	0
NORTH ANNA 2	0	0	0	0	0	0	0	0
OCONEE 1	1	0	1	0	1	0	0	0
OCONEE 2	1	0	2	1	0	0	0	0
OCONEE 3	0	2	1	0	1	0	2	0
OYSTER CREEK	0	0	0	2	2	0	0	1
PALISADES	0	0	0	0	1	0	1	0
PALO VERDE 1	3	0	1	0	0	0	0	0
PALO VERDE 2	0	1	1	0	1	1	0	0
PALO VERDE 3	0	0	1	0	0	0	0	1
PEACH BOTTOM 2	0	0	0	1	1	2	0	0
PEACH BOTTOM 3	0	0	0	0	0	0	1	0
PERRY	0	0	0	0	0	0	1	0
PILGRIM	0	0	1	1	1	1	0	1
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	0	1	0	1	0	0	0
PRAIRIE ISLAND 1	0	0	0	0	1	0	0	0
PRAIRIE ISLAND 2	0	0	0	1	0	2	3	0
QUAD CITIES 1	0	1	0	1	0	0	1	0
QUAD CITIES 2	0	0	0	1	0	1	0	0
RANCHO SECO	0	2	1	0	NA	NA	NA	NA
RIVER BEND	2	0	2	0	1	1	1	1
ROBINSON 2	0	0	3	0	0	0	1	1
SALEM 1	1	0	2	1	0	0	0	1
SALEM 2	2	1	2	1	0	0	0	1
SAN ONOFRE 1	0	0	0	0	1	0	0	1
SAN ONOFRE 2	0	0	0	0	0	0	0	0
SAN ONOFRE 3	0	0	1	1	0	0	1	0
SEABROOK	NA	NA	NA	0	0	0	0	1
SEQUOYAH 1	0	2	1	0	0	1	0	1
SEQUOYAH 2	0	0	0	3	1	0	0	1
SHEARON HARRIS	0	0	5	0	0	1	0	0
SHOREHAM	0	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	3	0	2	0	1	0	1	2
SOUTH TEXAS 2	NA	NA	0	3	5	1	2	1
ST. LUCIE 1	1	0	0	0	2	0	0	0
ST. LUCIE 2	0	0	0	1	0	0	1	0
SUMMER	1	0	0	1	1	1	0	0
SURRY 1	1	0	0	0	1	0	0	1
SURRY 2	1	0	0	0	2	0	0	0
SUSQUEHANNA 1	0	0	2	0	0	1	0	0

TABLE 9.2 AUTOMATIC SCRAMS WHILE CRITICAL (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	0	0	0	0	1	1
THREE MILE ISL 1	0	1	0	0	0	1	1	0
TROJAN	2	1	0	0	1	0	0	0
TURKEY POINT 3	0	0	1	0	0	0	0	2
TURKEY POINT 4	1	0	0	0	0	1	0	1
VERMONT YANKEE	1	0	0	0	0	0	1	1
VOGTLE 1	3	0	0	1	0	1	1	0
VOGTLE 2	NA	NA	0	3	1	2	1	1
WASH. NUCLEAR 2	0	0	1	1	2	0	0	0
WATERFORD 3	0	1	0	0	1	0	2	0
WOLF CREEK	0	0	2	0	0	0	1	3
YANKEE-ROWE	0	0	0	1	1	0	0	0
ZION 1	2	0	1	0	0	0	1	0
ZION 2	0	2	0	0	0	0	0	0
TOTAL	55	44	59	48	47	43	44	43

NA - The plant is not yet critical.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.3 AUTOMATIC SCRAMS >15% POWER/1000 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0.00	0.00	1.92	0.57	0.00	1.96	0.00	0.00
ARKANSAS 2	0.00	0.46	0.00	0.64	0.00	0.95	0.00	0.46
BEAVER VALLEY 1	0.00	0.00	0.94	0.47	0.00	6.72	0.48	0.00
BEAVER VALLEY 2	0.94	0.00	0.59	0.00	0.00	0.00	0.00	0.00
BIG ROCK POINT	0.00	0.95	0.00	0.00	0.87	0.00	0.00	0.00
BRAIDWOOD 1	0.50	0.47	0.61	0.00	0.67	0.00	0.47	0.46
BRAIDWOOD 2	1.02	1.11	0.00	0.46	0.94	0.00	0.00	0.00
BROWNS FERRY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 1	0.00	2.08	0.00	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 2	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
BYRON 1	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.50
BYRON 2	0.46	0.46	0.00	0.00	0.00	0.00	0.48	0.00
CALLAWAY	0.46	0.00	0.00	1.08	0.00	0.00	0.00	0.95
CALVERT CLIFFS 1	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CALVERT CLIFFS 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CATAWBA 1	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.00
CATAWBA 2	0.00	0.00	1.31	0.00	0.00	0.00	0.00	0.00
CLINTON 1	0.00	0.52	0.00	2.35	0.00	0.00	0.00	0.00
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	0.61
COOK 1	0.00	0.95	0.55	0.00	0.00	0.00	0.00	0.00
COOK 2	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
COOPER STATION	0.47	0.00	0.52	0.00	0.46	0.48	0.00	0.00
CRYSTAL RIVER 3	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.00
DAVIS-BESSE	0.00	2.15	0.51	0.46	0.00	0.00	1.64	0.00
DIABLO CANYON 1	1.03	0.00	0.00	0.00	0.00	1.57	0.00	0.47
DIABLO CANYON 2	0.79	0.00	0.00	0.51	0.00	0.00	0.00	0.00
DRESDEN 2	0.00	0.00	1.08	0.00	0.46	0.00	1.06	0.00
DRESDEN 3	0.00	0.52	0.98	0.65	0.00	0.00	1.00	0.00
DUANE ARNOLD	0.48	0.00	1.15	0.48	0.56	0.00	0.00	0.00
FARLEY 1	0.00	0.46	0.00	0.00	0.00	0.80	0.00	0.00
FARLEY 2	0.00	0.00	0.00	2.09	0.00	0.92	0.00	0.00
FERMI 2	1.01	0.00	0.53	0.00	0.00	2.17	0.00	0.49
FITZPATRICK	0.00	0.00	0.00	0.00	0.00	0.53	0.98	0.00
FORT CALHOUN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FORT ST. VRAIN	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
GINNA	0.00	0.00	0.00	1.41	0.00	0.00	0.00	1.55
GRAND GULF	0.93	0.46	0.00	0.00	1.01	0.46	0.00	0.00
HADDAM NECK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 1	0.47	1.90	0.00	0.00	0.00	0.00	0.00	2.03
HATCH 2	0.46	0.00	0.00	0.00	0.64	0.00	0.96	0.00
HOPE CREEK	0.46	1.00	0.00	0.00	0.56	0.93	1.08	0.00
INDIAN POINT 2	0.00	0.92	0.55	0.00	0.00	0.61	0.00	0.00
INDIAN POINT 3	0.00	0.78	0.00	0.00	0.00	0.00	0.00	0.50
KEWAUNEE	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
LASALLE 1	0.00	0.00	0.48	0.00	0.00	0.00	0.50	0.00
LASALLE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.57	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	0.00	0.70	0.00	0.00

TABLE 9.3 AUTOMATIC SCRAMS >15% /1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-2	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0.48	1.97	0.51	0.46	0.00	0.00	0.00	0.00
MCGUIRE 1	0.00	0.00	0.00	0.00	0.46	0.00	5.61	0.00
MCGUIRE 2	0.00	0.00	0.93	0.46	0.00	0.00	0.00	0.00
MILLSTONE 1	0.00	0.00	0.00	1.12	0.00	0.47	0.00	0.00
MILLSTONE 2	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
MILLSTONE 3	0.00	1.14	0.00	1.13	0.00	0.00	0.49	0.69
MONTICELLO	0.00	0.46	0.00	0.48	0.00	0.78	0.00	0.00
NINE MILE PT. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 2	0.56	0.00	0.00	0.99	0.54	1.52	0.00	0.00
NORTH ANNA 1	0.46	0.00	0.75	0.00	0.54	0.00	0.47	0.00
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.46	0.00	0.92	0.00	0.50	0.00	0.00	0.00
OCONEE 2	0.51	0.00	0.93	0.87	0.00	0.00	0.00	0.00
OCONEE 3	0.00	0.91	0.48	0.00	0.45	0.00	0.94	0.00
OYSTER CREEK	0.00	0.00	0.00	1.87	1.09	0.00	0.00	0.59
PALISADES	0.00	0.00	0.00	0.00	0.46	0.00	0.48	0.00
PALO VERDE 1	2.05	0.00	0.66	0.00	0.00	0.00	0.00	0.00
PALO VERDE 2	0.00	0.00	0.68	0.00	0.61	0.94	0.00	0.00
PALO VERDE 3	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.49
PEACH BOTTOM 2	0.00	0.00	0.00	0.74	0.48	1.06	0.00	0.00
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
PERRY	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.00
PILGRIM	0.00	0.00	0.00	0.79	0.54	0.65	0.00	0.63
POINT BEACH 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.00	0.47	0.00	0.50	0.00	0.00	0.00
PRAIRIE ISLAND 1	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
PRAIRIE ISLAND 2	0.00	0.00	0.00	0.66	0.00	0.98	1.06	0.00
QUAD CITIES 1	0.00	0.46	0.00	0.51	0.00	0.00	0.49	0.00
QUAD CITIES 2	0.00	0.00	0.00	0.47	0.00	0.46	0.00	0.00
RANCHO SECO	0.00	1.30	1.11	0.00	NA	NA	NA	NA
RIVER BEND	0.95	0.00	0.60	0.00	0.48	0.48	0.54	0.46
ROBINSON 2	0.00	0.00	3.38	0.00	0.00	0.00	0.46	0.54
SALEM 1	0.49	0.00	0.54	4.49	0.00	0.00	0.00	1.38
SALEM 2	1.39	3.29	1.12	0.52	0.00	0.00	0.00	6.88
SAN ONOFRE 1	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.50
SAN ONOFRE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN ONOFRE 3	0.00	0.00	0.47	0.52	0.00	0.00	0.51	0.00
SEABROOK	NA	NA	NA	0.00	0.00	0.00	0.00	0.73
SEQUOYAH 1	0.00	2.64	0.47	0.00	0.00	0.46	0.00	0.00
SEQUOYAH 2	0.00	0.00	0.00	1.78	0.47	0.00	0.00	0.46
SHEARON HARRIS	0.00	0.00	2.41	0.00	0.00	2.03	0.00	0.00
SHOREHAM	0.00	0.00	0.00	0.00	0.00	NA	NA	NA
SOUTH TEXAS 1	1.73	0.00	1.77	0.00	1.28	0.00	0.48	2.78
SOUTH TEXAS 2	NA	NA	0.00	1.41	2.61	1.30	1.24	0.55
ST. LUCIE 1	0.98	0.00	0.00	0.00	0.56	0.00	0.00	0.00
ST. LUCIE 2	0.00	0.00	0.00	0.64	0.00	0.00	0.52	0.00
SUMMER	0.55	0.00	0.00	0.56	0.54	0.49	0.00	0.00
SURRY 1	0.69	0.00	0.00	0.00	0.68	0.00	0.00	0.52
SURRY 2	0.00	0.00	0.00	0.00	3.06	0.00	0.00	0.00
SUSQUEHANNA 1	0.00	0.00	1.16	0.00	0.00	0.46	0.00	0.00

TABLE 9.3 AUTOMATIC SCRAMS >15% /1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.56
THREE MILE ISL 1	0.00	0.54	0.00	0.00	0.00	0.46	0.00	0.00
DIROJAN	1.11	0.56	0.00	0.00	1.00	0.00	0.00	0.00
TURKEY POINT 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93
TURKEY POINT 4	0.55	0.00	0.00	0.00	0.00	0.54	0.00	0.55
VERMONT YANKEE	0.00	0.00	0.00	0.00	0.00	0.00	0.49	0.46
VOGTLE 1	1.40	0.00	0.00	0.46	0.00	0.47	0.78	0.00
VOGTLE 2	NA	NA	0.00	1.12	0.45	0.97	0.47	0.47
WASH. NUCLEAR 2	0.00	0.00	0.49	1.30	1.08	0.00	0.00	0.00
WATERFORD 3	0.00	0.63	0.00	0.00	0.52	0.00	1.11	0.00
WOLF CREEK	0.00	0.00	0.95	0.00	0.00	0.00	0.63	1.82
YANKEE-ROSE	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00
ZION 1	0.48	0.00	0.66	0.00	0.00	0.00	0.93	0.00
ZION 2	0.00	4.66	0.00	0.00	0.00	0.00	0.00	0.00
AVERAGE	0.24	0.33	0.31	0.31	0.24	0.31	0.26	0.29

NA - The plant is not yet critical.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.4 AUTOMATIC SCRAMS $\leq 15\%$ POWER

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	0	0	0	0	0	0	0
ARKANSAS 2	0	0	0	0	0	0	0	0
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	0	0	0	0	0	0	0	0
BIG ROCK POINT	0	0	0	0	0	0	0	0
BRAIDWOOD 1	0	0	0	0	0	0	0	0
BRAIDWOOD 2	1	1	0	0	0	0	0	1
BROWNS FERRY 1	0	0	0	0	0	0	0	0
BROWNS FERRY 2	0	0	0	0	0	0	0	0
BROWNS FERRY 3	0	0	0	0	0	0	0	0
BRUNSWICK 1	0	0	0	0	0	0	0	0
BRUNSWICK 2	0	0	0	0	0	0	0	0
BYRON 1	0	0	0	0	0	0	1	0
BYRON 2	1	0	0	0	0	0	0	0
CALLAWAY	0	0	0	0	0	0	0	0
CALVERT CLIFFS 1	0	0	0	0	0	0	0	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	0	0	0	0	0	0	0
CATAWBA 2	0	0	0	0	0	0	0	0
CLINTON 1	0	0	0	0	0	0	0	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	1
COOK 1	0	0	1	0	0	0	0	0
COOK 2	0	0	0	0	0	0	0	0
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	0	0	0	1	0	0	0	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	2	0	0	0	0	0	0	0
DIABLO CANYON 2	0	0	0	0	0	0	0	0
DRESDEN 2	0	0	0	0	0	0	0	0
DRESDEN 3	0	0	0	0	0	0	0	0
DUANE ARNOLD	0	0	0	0	0	0	0	1
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	0	0	0	0	0	1	0	1
FERMI 2	0	0	0	0	0	0	0	0
FITZPATRICK	0	0	0	0	0	1	0	0
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	0	NA	NA	NA
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	0	0	0	1	0	0	0	0
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	0	0	0	0	0	0	0	0
HATCH 2	0	0	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0	0	0
INDIAN POINT 2	0	0	0	0	0	0	0	0
INDIAN POINT 3	0	0	0	0	0	0	0	0
KEWAUNEE	0	0	0	0	0	0	0	0
LASALLE 1	0	0	0	0	0	0	0	0
LASALLE 2	0	0	0	0	1	0	0	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	NA	0	0	0	0

TABLE 9.4 AUTOMATIC SCRAMS $\leq 15\%$ POWER (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0	0	0	0	0	0	0	0
MCGUIRE 1	0	0	0	0	0	0	0	0
MCGUIRE 2	0	0	0	0	0	0	0	0
MILLSTONE 1	0	0	0	1	0	0	0	0
MILLSTONE 2	0	0	0	0	0	0	0	0
MILLSTONE 3	0	0	0	0	0	0	0	0
MONTICELLO	0	0	0	0	0	0	0	0
NINE MILE PT. 1	0	0	0	0	0	0	0	0
NINE MILE PT. 2	0	0	0	0	0	1	0	0
NORTH ANNA 1	0	0	0	0	0	1	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	1	0	0	0	0	0	0	0
PALO VERDE 2	0	1	0	0	0	0	0	0
PALO VERDE 3	0	0	0	0	0	0	0	0
PEACH BOTTOM 2	0	0	0	0	0	0	0	0
PEACH BOTTOM 3	0	0	0	0	0	0	0	0
PERRY	0	0	0	0	0	0	0	0
PILGRIM	0	0	1	0	0	0	0	0
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	0	0	0	0	0	0	0
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	0
PRAIRIE ISLAND 2	0	0	0	0	0	0	1	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	NA	NA	NA	NA
RIVER BEND	0	0	1	0	0	0	0	0
ROBINSON 2	0	0	0	0	0	0	0	0
SALEM 1	0	0	1	0	0	0	0	0
SALEM 2	0	0	0	0	0	0	0	0
SAN ONOFRE 1	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	0	0	0	0	0
SEQUOYAH 1	0	1	0	0	0	0	0	1
SEQUOYAH 2	0	0	0	0	0	0	0	0
SHEARON HARRIS	0	0	0	0	0	0	0	0
SHOREHAM	0	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	0	0	0	0	0	0	0	1
SOUTH TEXAS 2	NA	NA	0	1	0	0	0	0
ST. LUCIE 1	0	0	0	0	1	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMNER	0	0	0	0	0	0	0	0
SURRY 1	0	0	0	0	0	0	0	0
SURRY 2	1	0	0	0	1	0	0	0
SUSQUEHANNA 1	0	0	0	0	0	0	0	0

TABLE 9.4 AUTOMATIC SCRAMS $\leq 15\%$ POWER (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	0	0	0	0	0	0
THREE MILE ISL 1	0	0	0	0	0	0	1	0
TROJAN	0	0	0	0	0	0	0	0
TURKEY POINT 3	0	0	1	0	0	0	0	1
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	1	0	0	0	0	0	0	0
VOGTLE 1	0	0	0	0	0	0	0	0
VOGTLE 2	NA	NA	0	1	0	0	0	0
WASH. NUCLEAR 2	0	0	0	0	0	0	0	0
WATERFORD 3	0	0	0	0	0	0	0	0
WOLF CREEK	0	0	0	0	0	0	0	1
YANKEE-ROWE	0	0	0	0	1	0	0	0
ZION 1	1	0	0	0	0	0	0	0
ZION 2	0	0	0	0	0	0	0	0
TOTAL	8	3	5	5	4	4	3	8

NA - The plant is not yet critical.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.5 SAFETY SYSTEM ACTUATIONS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	0	1	0	0	2	0	0
ARKANSAS 2	1	0	0	4	0	1	0	0
BEAVER VALLEY 1	0	0	0	1	0	2	0	0
BEAVER VALLEY 2	0	0	1	1	0	0	0	0
BIG ROCK POINT	0	1	0	0	0	0	0	0
BRAIDWOOD 1	0	1	0	1	0	1	0	0
BRAIDWOOD 2	0	0	0	0	0	0	0	1
BROWNS FERRY 1	0	3	1	0	0	0	0	2
BROWNS FERRY 2	0	2	1	0	0	0	0	0
BROWNS FERRY 3	0	1	0	0	0	0	0	0
BRUNSWICK 1	0	1	0	0	0	1	0	0
BRUNSWICK 2	0	1	1	3	0	2	0	1
BYRON 1	0	0	0	0	0	0	0	0
BYRON 2	0	0	1	0	0	0	1	0
CALLAWAY	0	1	0	2	0	0	0	0
CALVERT CLIFFS 1	0	0	2	0	0	0	1	0
CALVERT CLIFFS 2	0	0	0	0	0	0	0	0
CATAWBA 1	0	0	2	0	0	0	0	0
CATAWBA 2	0	0	2	0	0	0	0	0
CLINTON 1	1	0	0	0	0	0	2	0
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	0
COOK 1	0	0	0	0	0	0	0	0
COOK 2	0	0	0	0	0	0	1	0
COOPER STATION	2	0	0	2	0	1	0	2
CRYSTAL RIVER 3	0	2	0	4	0	1	0	0
DAVIS-BESSE	0	0	0	0	0	0	0	4
DIABLO CANYON 1	1	0	0	0	0	1	0	1
DIABLO CANYON 2	2	1	0	0	0	0	0	0
DRESDEN 2	0	0	1	0	0	0	1	0
DRESDEN 3	0	0	2	0	0	0	0	0
DUANE ARNOLD	0	2	2	0	2	0	1	0
FARLEY 1	0	0	0	0	0	1	0	0
FARLEY 2	0	0	0	1	0	0	0	0
FERMI 2	0	0	1	0	1	1	0	0
FITZPATRICK	0	1	0	0	0	0	1	0
FORT CALHOUN	0	1	0	0	0	0	3	1
FORT ST. VRAIN	0	0	0	0	0	NA	NA	NA
GINNA	1	0	0	2	1	0	0	3
GRAND GULF	0	1	1	0	0	0	0	1
HADDAM NECK	0	0	0	1	0	0	0	0
HATCH 1	1	2	0	0	0	0	0	1
HATCH 2	1	0	0	0	1	0	1	0
HOPE CREEK	2	2	0	1	0	0	1	0
INDIAN POINT 2	0	0	0	0	0	0	0	0
INDIAN POINT 3	0	1	1	0	0	0	0	0
KEWAUNEE	0	0	0	0	0	0	1	0
LASALLE 1	0	0	0	0	0	1	0	0
LASALLE 2	0	0	2	1	0	0	0	0
LIMERICK 1	0	0	0	0	0	0	0	0
LIMERICK 2	NA	NA	NA	0	0	1	1	0

TABLE 9.5 SAFETY SYSTEM ACTUATIONS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	2	0	0	0	0	0	1
MCGUIRE 1	0	1	1	0	1	0	0	0
MCGUIRE 2	0	0	0	0	0	0	0	0
MILLSTONE 1	0	0	0	1	0	0	0	0
MILLSTONE 2	0	1	0	1	0	0	0	0
MILLSTONE 3	0	0	1	0	0	2	1	0
MONTICELLO	0	0	0	0	1	0	0	0
NINE MILE PT. 1	0	0	1	0	0	0	0	0
NINE MILE PT. 2	1	2	3	1	0	0	0	0
NORTH ANNA 1	1	0	1	1	0	0	0	0
NORTH ANNA 2	1	0	0	1	0	0	0	0
OCONEE 1	0	0	0	0	0	0	0	1
OCONEE 2	0	0	0	0	0	0	0	0
OCONEE 3	0	0	0	0	0	0	0	0
OYSTER CREEK	0	1	0	1	0	0	0	0
PALISADES	0	0	0	0	0	2	0	0
PALO VERDE 1	1	0	0	0	1	0	0	0
PALO VERDE 2	1	0	2	0	2	0	0	0
PALO VERDE 3	0	0	1	0	0	0	0	0
PEACH BOTTOM 2	1	1	0	0	0	1	0	1
PEACH BOTTOM 3	2	0	0	0	0	0	1	0
PERRY	0	1	0	0	0	0	1	0
PILGRIM	1	0	1	2	1	0	0	0
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	0	1	0	0	1	0	0
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	1
PRAIRIE ISLAND 2	0	0	0	0	0	2	0	0
QUAD CITIES 1	0	0	0	0	0	0	0	0
QUAD CITIES 2	0	1	0	0	0	0	1	0
RANCHO SECO	0	1	1	0	NA	NA	NA	NA
RIVER BEND	2	0	0	2	0	1	0	0
ROBINSON 2	0	0	1	0	0	0	0	0
SALEM 1	0	0	1	1	0	0	2	0
SALEM 2	0	0	1	0	0	1	0	2
SAN ONOFRE 1	0	0	0	0	0	0	0	0
SAN ONOFRE 2	0	0	0	0	0	1	0	0
SAN ONOFRE 3	0	0	1	0	0	0	0	0
SEABROOK	1	0	0	0	0	0	0	0
SEQUOYAH 1	0	0	0	0	0	0	0	2
SEQUOYAH 2	1	0	2	0	0	0	0	0
SHEARON HARRIS	0	1	0	0	0	0	0	1
SHOREHAM	1	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	1	2	1	0	0	0	0	1
SOUTH TEXAS 2	NA	0	3	3	1	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	1	0	0	1	0	0	3
SURRY 1	1	0	2	2	0	1	0	1
SURRY 2	0	0	1	2	1	0	0	0
SUSQUEHANNA 1	0	0	0	0	1	0	0	0

TABLE 9.5 SAFETY SYSTEM ACTUATIONS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	0	0	0	0	0	0
THREE MILE ISL 1	0	0	0	0	0	1	0	0
TROJAN	1	0	0	0	0	0	0	0
TURKEY POINT 3	0	0	0	2	0	0	0	1
TURKEY POINT 4	0	0	0	1	1	0	0	0
VERMONT YANKEE	0	0	2	0	0	0	0	0
VOGTLE 1	0	1	0	0	0	0	1	0
VOGTLE 2	NA	NA	1	0	1	0	1	0
WASH. NUCLEAR 2	0	0	1	2	0	0	0	0
WATERFORD 3	0	0	1	0	0	2	1	0
WOLF CREEK	0	0	0	0	0	0	0	1
YANKEE-ROME	0	1	0	0	1	0	1	1
ZION 1	1	0	0	0	0	0	0	0
ZION 2	0	1	0	0	0	0	0	1
TOTAL	31	42	53	47	18	31	27	36

NA - The plant is not yet licensed.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.6 SIGNIFICANT EVENTS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	2	1	0	1	1	0	0
ARKANSAS 2	1	0	0	2	1	0	0	0
BEAVER VALLEY 1	0	0	0	0	0	0	0	0
BEAVER VALLEY 2	0	0	0	0	0	0	0	0
BIG ROCK POINT	0	0	0	0	0	0	0	0
BRAIDWOOD 1	0	0	0	1	0	1	0	0
BRAIDWOOD 2	0	0	0	1	0	0	0	0
BROWNS FERRY 1	0	0	2	0	0	0	0	0
BROWNS FERRY 2	0	0	2	0	0	0	0	0
BROWNS FERRY 3	0	0	2	0	0	0	0	0
BRUNSWICK 1	1	1	0	0	0	0	0	1
BRUNSWICK 2	1	1	0	1	0	0	0	1
BYRON 1	1	0	0	0	0	0	0	0
BYRON 2	0	0	1	0	0	0	0	0
CALLAWAY	0	0	0	0	0	0	0	0
CALVERT CLIFFS 1	0	0	0	0	0	0	0	0
CALVERT CLIFFS 2	0	0	1	1	0	0	0	0
CATAWBA 1	0	0	0	0	0	0	1	1
CATAWBA 2	0	0	0	0	0	0	0	0
CLINTON 1	0	1	0	1	0	0	1	1
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	0	0
COOK 1	1	0	0	0	0	0	0	0
COOK 2	1	0	0	0	1	0	0	0
COOPER STATION	0	0	0	0	0	0	0	0
CRYSTAL RIVER 3	0	0	1	1	0	1	0	0
DAVIS-BESSE	0	0	0	0	0	0	0	0
DIABLO CANYON 1	0	0	1	0	0	0	0	0
DIABLO CANYON 2	0	1	1	0	0	0	0	0
DRESDEN 2	0	1	1	0	0	1	2	0
DRESDEN 3	0	0	0	0	0	1	0	0
DUANE ARNOLD	0	1	0	0	0	0	0	0
FARLEY 1	0	0	0	0	0	0	0	0
FARLEY 2	0	0	0	0	0	0	0	0
FERMI 2	1	0	1	0	0	0	0	0
FITZPATRICK	1	1	0	0	0	0	0	1
FORT CALHOUN	0	0	0	0	0	0	0	0
FORT ST. VRAIN	0	0	0	0	0	NA	NA	NA
GINNA	0	0	0	0	0	0	0	0
GRAND GULF	1	0	0	0	1	0	0	0
HADDAM NECK	0	0	0	0	0	1	0	0
HATCH 1	0	0	0	0	0	0	0	0
HATCH 2	0	0	0	0	0	0	0	0
HOPE CREEK	0	0	0	0	0	0	0	0
INDIAN POINT 2	0	0	0	3	0	0	0	0
INDIAN POINT 3	0	0	0	0	0	0	1	0
KEWAUNEE	U	0	0	0	0	0	0	0
LASALLE 1	0	0	1	0	0	0	0	0
LASALLE 2	0	0	1	0	0	0	0	0
LIMERICK 1	0	2	1	0	0	0	0	0
LIMERICK 2	NA	NA	NA	0	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS

(CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	0	0	0	0	0	0	1
MCGUIRE 1	0	2	1	0	0	0	0	0
MCGUIRE 2	0	1	0	0	1	0	0	0
MILLSTONE 1	0	0	1	1	0	0	0	1
MILLSTONE 2	0	1	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	1	0	0	0	0	0	0
NINE MILE PT. 2	0	0	2	0	0	0	0	0
NORTH ANNA 1	0	0	2	0	0	0	0	0
NORTH ANNA 2	0	0	1	0	0	0	0	0
OCONEE 1	0	0	1	1	0	0	0	1
OCONEE 2	0	0	0	1	0	0	0	1
OCONEE 3	1	0	1	1	0	0	0	1
OYSTER CREEK	1	1	0	0	0	0	0	0
PALISADES	1	0	0	0	0	1	0	0
PALO VERDE 1	1	0	0	0	0	0	0	0
PALO VERDE 2	0	0	0	0	0	0	0	0
PALO VERDE 3	0	0	1	0	1	0	0	0
PEACH BOTTOM 2	1	0	0	0	0	0	1	0
PEACH BOTTOM 3	1	0	0	0	0	0	0	0
PERRY	1	0	1	0	0	0	0	0
PILGRIM	0	0	1	1	0	0	0	0
POINT BEACH 1	0	0	0	0	0	1	0	0
POINT BEACH 2	0	0	0	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	2	0	0	0	0
QUAD CITIES 2	0	0	0	1	0	0	0	0
RANCHO SECO	0	0	2	0	NA	NA	NA	NA
RIVER BEND	1	0	0	1	0	1	1	0
ROBINSON 2	0	0	1	0	1	0	0	0
SALEM 1	0	0	0	1	0	0	0	0
SALEM 2	0	0	0	0	0	0	0	0
SAN ONOFRE 1	0	2	2	0	0	0	0	0
SAN ONOFRE 2	0	1	0	0	0	0	0	0
SAN ONOFRE 3	0	1	0	0	0	0	0	0
SEABROOK	0	0	0	0	0	0	0	0
SEQUOYAH 1	0	0	0	0	0	0	0	0
SEQUOYAH 2	0	0	0	0	0	0	0	0
SHEARON HARRIS	1	0	0	0	0	0	0	0
SHOREHAM	0	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	0	0	0	0	0	0	0	0
SOUTH TEXAS 2	NA	0	0	0	0	0	0	0
ST. LUCIE 1	0	0	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMMER	0	0	0	1	1	0	0	0
SURRY 1	0	0	3	0	0	0	0	0
SURRY 2	1	1	3	0	0	0	0	0
SUSQUEHANNA 1	0	0	0	0	0	0	0	0

TABLE 9.6 SIGNIFICANT EVENTS

(CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	0	0	0	0	0	0
THREE MILE ISL 1	0	0	0	0	0	0	0	0
TROJAN	1	0	0	1	1	0	0	0
TURKEY POINT 3	0	0	1	0	0	0	0	0
TURKEY POINT 4	0	0	0	0	0	0	0	0
VERMONT YANKEE	1	0	0	0	0	0	0	0
VOGTLE 1	0	0	0	0	0	0	1	0
VOGTLE 2	NA	NA	1	0	0	0	0	0
WASH. NUCLEAR 2	1	0	0	0	0	0	0	0
WATERFORD 3	0	0	0	0	0	0	0	0
WOLF CREEK	0	2	0	0	0	0	0	0
YANKEE-ROWE	0	0	0	0	0	0	0	1
ZION 1	0	1	0	0	0	1	0	0
ZION 2	0	0	0	0	0	0	0	0
TOTAL	23	25	42	23	9	11	8	11

NA - The plant is not yet licensed.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.7 SAFETY SYSTEM FAILURES

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	2	2	2	0	4	4	2	0
ARKANSAS 2	0	2	1	0	1	1	1	1
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	1	0	2	0	1	0
BRAIDWOOD 1	0	0	0	0	0	0	0	1
BRAIDWOOD 2	1	0	1	0	0	1	0	1
BROWNS FERRY 1	2	1	1	3	3	1	1	0
BROWNS FERRY 2	2	1	2	4	3	2	1	1
BROWNS FERRY 3	2	1	1	3	3	1	1	1
BRUNSWICK 1	4	5	2	0	0	1	2	4
BRUNSWICK 2	3	2	2	1	2	0	0	3
BYRON 1	0	0	0	0	0	0	0	1
BYRON 2	0	0	0	0	0	0	0	0
CALLAWAY	0	1	0	0	0	0	1	0
CALVERT CLIFFS 1	0	0	1	1	2	1	4	2
CALVERT CLIFFS 2	0	0	0	2	2	1	1	1
CATAWBA 1	0	2	1	0	1	0	5	2
CATAWBA 2	0	1	1	0	2	0	6	1
CLINTON 1	0	3	2	1	0	1	2	2
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	2
COOK 1	1	1	0	0	1	0	1	1
COOK 2	0	1	0	0	0	0	1	0
COOPER STATION	1	0	4	2	0	0	1	0
CRYSTAL RIVER 3	0	0	2	2	2	1	2	2
DAVIS-BESSE	2	0	0	1	0	0	0	0
DIABLO CANYON 1	0	1	1	0	0	0	1	1
DIABLO CANYON 2	0	1	2	0	0	0	0	1
DRESDEN 2	2	0	2	1	1	1	0	0
DRESDEN 3	0	0	1	1	0	2	1	0
DUANE ARNOLD	0	0	4	0	1	2	0	0
FARLEY 1	0	0	0	1	1	1	0	0
FARLEY 2	0	0	0	2	0	0	0	0
FERMI 2	3	0	3	0	2	1	1	0
FITZPATRICK	1	3	4	3	2	4	3	1
FORT CALHOUN	1	2	0	2	1	2	2	1
FORT ST. VRAIN	1	0	1	0	3	NA	NA	NA
GINNA	0	0	0	0	0	1	2	2
GRAND GULF	1	1	0	2	1	0	1	0
HADDAM NECK	0	1	2	4	2	2	4	2
HATCH 1	1	4	1	1	0	0	2	0
HATCH 2	0	2	0	1	0	0	2	1
HOPE CREEK	3	2	0	3	0	0	0	1
INDIAN POINT 2	0	1	1	0	1	0	0	1
INDIAN POINT 3	0	0	0	1	0	0	0	0
KEWAUNEE	0	0	1	0	0	0	0	0
LASALLE 1	2	0	1	3	1	0	0	2
LASALLE 2	2	0	1	1	1	2	1	0
LIMERICK 1	0	1	8	5	3	1	3	4
LIMERICK 2	NA	NA	NA	0	3	2	3	4

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0	1	0	0	0	0	0	0
MCGUIRE 1	3	4	2	0	0	2	1	7
MCGUIRE 2	1	1	2	0	0	2	1	3
MILLSTONE 1	1	1	2	2	1	2	1	3
MILLSTONE 2	0	0	0	0	1	1	0	0
MILLSTONE 3	0	1	0	0	0	2	0	3
MONTICELLO	0	0	1	3	0	2	1	0
NINE MILE PT. 1	0	1	0	1	0	1	2	0
NINE MILE PT. 2	4	2	0	0	0	0	0	0
NORTH ANNA 1	0	1	1	1	0	1	0	3
NORTH ANNA 2	0	1	0	1	0	0	0	2
OCONEE 1	0	0	3	3	1	0	1	3
OCONEE 2	0	0	2	3	1	0	1	1
OCONEE 3	2	0	3	3	1	0	1	1
OYSTER CREEK	3	1	3	0	0	0	1	0
PALISADES	1	2	1	0	0	0	0	2
PALO VERDE 1	2	0	0	1	1	1	0	1
PALO VERDE 2	2	0	0	1	1	1	0	2
PALO VERDE 3	2	0	0	2	1	1	0	1
PEACH BOTTOM 2	2	0	3	3	1	3	2	1
PEACH BOTTOM 3	2	0	1	0	3	4	1	2
PERRY	4	4	3	1	0	1	2	7
PILGRIM	1	0	2	0	3	1	0	0
POINT BEACH 1	2	1	1	3	0	1	0	2
POINT BEACH 2	2	1	0	1	0	1	0	1
PRAIRIE ISLAND 1	0	0	0	0	0	0	0	1
PRAIRIE ISLAND 2	0	1	0	0	0	0	0	0
QUAD CITIES 1	1	0	1	1	0	1	1	1
QUAD CITIES 2	0	0	0	1	0	1	0	3
RANCHO SECO	0	0	4	0	NA	NA	NA	NA
RIVER BEND	0	1	1	1	0	0	3	2
ROBINSON 2	2	2	0	1	1	2	0	1
SALEM 1	0	1	2	2	0	0	0	4
SALEM 2	2	1	0	0	0	1	1	7
SAN ONOFRE 1	0	1	4	0	2	2	0	1
SAN ONOFRE 2	2	1	0	0	0	0	1	0
SAN ONOFRE 3	2	1	0	0	0	0	0	0
SEABROOK	0	1	1	0	0	1	1	0
SEQUOYAH 1	1	0	1	1	0	1	1	2
SEQUOYAH 2	2	0	1	1	0	1	0	1
SHEARON HARRIS	3	0	0	0	1	3	0	2
SHOREHAM	0	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	1	2	0	1	0	0	0	1
SOUTH TEXAS 2	NA	0	1	0	0	0	0	0
ST. LUCIE 1	0	0	0	0	0	0	0	0
ST. LUCIE 2	0	0	0	0	0	0	0	0
SUMNER	0	0	2	0	1	0	0	1
SURRY 1	2	2	2	0	1	0	2	0
SURRY 2	2	4	2	0	1	1	1	0
SUSQUEHANNA 1	1	1	0	0	1	0	1	0

TABLE 9.7 SAFETY SYSTEM FAILURES (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	1	0	1	0	1	0	2	1
THREE MILE ISL 1	0	0	0	0	0	1	1	0
TROJAN	3	0	0	2	2	3	6	8
TURKEY POINT 3	3	1	1	0	0	2	1	3
TURKEY POINT 4	2	1	1	0	1	2	1	1
VERMONT YANKEE	0	0	4	1	2	0	0	0
VOGTLE 1	0	0	3	0	0	0	2	0
VOGTLE 2	NA	NA	2	0	0	0	0	1
WASH. NUCLEAR 2	0	0	1	5	4	2	1	1
WATERFORD 3	0	0	1	0	0	0	1	0
WOLF CREEK	0	1	0	1	2	0	1	1
YANKEE-ROWE	0	2	0	0	0	0	0	1
ZION 1	0	1	1	1	0	2	0	2
ZION 2	0	1	0	1	0	1	0	0
TOTAL	101	90	124	100	97	90	103	138

NA - The plant is not yet licensed.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.8 FORCED OUTAGE RATE (%)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	38	77	21	1	7	5	0
ARKANSAS 2	21	1	8	29	3	0	10	2
BEAVER VALLEY 1	1	9	2	4	0	82	2	5
BEAVER VALLEY 2	5	0	8	41	14	0	0	0
BIG ROCK POINT	8	6	0	0	3	8	0	0
BRAIDWOOD 1	11	7	4	4	2	0	2	1
BRAIDWOOD 2	NA	18	0	2	4	0	0	21
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
BRINSWICK 1	9	5	0	26	7	0	0	25
BRINSWICK 2	0	4	0	12	0	0	0	25
BYRON 1	4	0	1	0	0	0	0	6
BYRON 2	2	1	0	8	0	8	1	0
CALLAWAY	1	0	0	3	2	0	0	5
CALVERT CLIFFS 1	4	2	4	0	0	0	0	0
CALVERT CLIFFS 2	0	0	11	0	0	0	0	0
CATAWBA 1	16	0	9	6	1	12	0	29
CATAWBA 2	8	3	9	18	1	0	3	0
CLINTON 1	2	15	0	85	21	0	16	25
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	NA
COOK 1	0	6	1	0	4	0	0	0
COOK 2	0	0	0	0	5	0	22	3
COOPER STATION	5	0	12	0	3	6	0	0
CRYSTAL RIVER 3	0	2	0	59	45	13	4	8
DAVIS-BESSE	0	15	6	1	0	0	18	100
DIABLO CANYON 1	4	0	0	0	0	1	2	6
DIABLO CANYON 2	33	0	0	4	9	11	0	1
DRESDEN 2	0	0	9	0	2	4	14	0
DRESDEN 3	0	0	7	4	0	0	26	0
DUANE ARNOLD	3	100	23	5	3	45	3	1
FARLEY 1	0	1	0	0	0	6	0	0
FARLEY 2	0	0	0	13	7	3	0	5
FERMI 2	61	8	28	0	2	20	0	6
FITZPATRICK	0	42	0	0	0	14	9	0
FORT CALHOUN	0	0	0	9	5	0	0	0
FORT ST. VRAIN	0	0	100	29	48	NA	NA	NA
GINNA	1	0	1	12	14	0	0	4
GRAND GULF	7	1	0	0	11	3	0	0
HADDAM NECK	0	0	0	0	0	0	0	0
HATCH 1	2	18	0	0	0	0	0	42
HATCH 2	2	1	0	0	1	5	5	0
HOPE CREEK	3	11	0	0	3	3	10	0
INDIAN POINT 2	7	4	1	0	0	2	0	0
INDIAN POINT 3	0	43	0	8	0	5	0	2
KEWAUNEE	4	0	0	0	0	1	0	0
LASALLE 1	7	0	4	0	0	0	7	0
LASALLE 2	3	4	0	0	34	15	3	18
LIMERICK 1	0	0	0	0	0	0	0	19
LIMERICK 2	NA	NA	NA	NA	NA	NA	8	5

TABLE 9.8 FORCED OUTAGE RATE (%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	9	34	11	1	0	12	0	0
MCGUIRE 1	0	0	27	43	2	0	48	1
MCGUIRE 2	3	0	2	1	0	0	0	0
MILLSTONE 1	0	6	0	11	0	5	0	1
MILLSTONE 2	0	2	0	0	0	0	0	5
MILLSTONE 3	0	23	13	15	0	10	6	37
MONTICELLO	0	1	0	5	0	2	0	0
NINE MILE PT. 1	100	100	100	100	100	100	100	100
NINE MILE PT. 2	23	0	0	12	1	49	42	15
NORTH ANNA 1	6	0	10	0	2	17	2	0
NORTH ANNA 2	0	0	0	0	0		0	0
OCONEE 1	2	0	11	0	1		0	0
OCONEE 2	0	0	2	7	0	10	0	0
OCONEE 3	0	1	4	0	0	1	2	0
OYSTER CREEK	37	100	85	55	24	9	5	22
PALISADES	0	61	34	0	3	69	5	14
PALO VERDE 1	60	0	30	100	0	0	0	0
PALO VERDE 2	0	9	17	0	17	41	0	0
PALO VERDE 3	20	0	31	0	0	97	22	7
PEACH BOTTOM 2	0	0	0	6	8	18	4	31
PEACH BOTTOM 3	0	0	0	0	0	2	11	0
PERRY	14	0	2	0	1	0	4	0
PILGRIM	0	0	29	42	17	7	0	6
POINT BEACH 1	0	0	0	0	0	0	0	0
POINT BEACH 2	0	0	3	2	1	0	0	0
PRAIRIE ISLAND 1	3	0	0	0	1	0	3	0
PRAIRIE ISLAND 2	0	4	0	1	0	8	14	5
QUAD CITIES 1	0	4	0	13	6	3	4	0
QUAD CITIES 2	24	1	3	4	5	3	44	0
RANCHO SECO	0	32	64	9	NA	NA	NA	NA
RIVER BEND	6	2	9	77	6	2	0	2
ROBINSON 2	23	14	7	14	43	91	0	5
SALEM 1	8	0	12	71	0	12	5	72
SALEM 2	7	72	23	14	0	0	8	45
SAN ONOFRE 1	0	0	0	87	25	3	0	9
SAN ONOFRE 2	3	0	34	28	0	23	0	0
SAN ONOFRE 3	6	0	3	12	9	0	9	0
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	100	87	3	0	0	3	0	10
SEQUOYAH 2	0	0	0	16	5	0	0	2
SHEARON HARRIS	0	5	6	0	0	2	0	7
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	20	8	13	0	8	15	6	24
SOUTH TEXAS 2	NA	NA	NA	0	17	34	29	30
ST. LUCIE 1	8	0	0	0	1	1	2	10
ST. LUCIE 2	0	0	0	2	5	0	13	0
SUMMER	3	0	28	19	20	8	0	0
SURRY 1	26	100	100	100	8	1	0	12
SURRY 2	0	0	0	0	34	47	0	7
SUSQUEHANNA 1	0	0	22	0	4	2	12	0

TABLE 9.8 FORCED OUTAGE RATE (%) (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	7	0	0	0	8	13
THREE MILE ISL 1	19	18	0	0	0	2	31	0
TROJAN	10	20	0	0	13	0	1	0
TURKEY POINT 3	0	99	45	0	1	0	0	32
TURKEY POINT 4	3	0	0	7	24	24	0	20
VERMONT YANKEE	11	0	0	0	0	0	4	2
VOGTLE 1	5	9	12	3	2	5	2	2
VOGTLE 2	NA	NA	NA	4	1	5	2	4
WASH. NUCLEAR 2	7	10	4	0	11	0	0	0
WATERFORD 3	0	2	3	0	6	2	3	0
WOLF CREEK	0	0	2	0	0	0	3	6
YANKEE-ROWE	0	0	1	4	14	0	0	0
ZION 1	7	11	31	0	9	0	48	81
ZION 2	0	11	21	1	0	3	27	0
TOTAL	1107	1511	1489	1589	1010	1328	1009	1318

NA - The plant is not yet commercial.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.9 EQUIPMENT FORCED OUTAGES/1000 COMMERCIAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0.00	2.38	1.92	0.57	0.91	0.00	1.44	0.00
ARKANSAS 2	1.13	0.00	0.50	1.29	0.00	0.95	0.51	0.93
BEAVER VALLEY 1	0.00	0.50	0.47	0.00	0.00	6.72	0.96	0.00
BEAVER VALLEY 2	0.47	0.00	0.59	1.99	0.00	0.00	0.00	0.00
BIG ROCK POINT	0.48	0.95	0.00	0.00	0.87	0.59	0.00	0.00
BRAIDWOOD 1	0.00	0.95	1.21	0.51	0.00	0.00	0.00	0.00
BRAIDWOOD 2	NA	1.98	0.00	0.46	0.00	0.00	0.00	0.00
BROWNS FERRY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BROWNS FERRY 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BRUNSWICK 1	0.49	1.04	0.00	0.66	0.00	0.00	0.00	0.00
BRUNSWICK 2	0.00	0.46	0.00	0.52	0.00	0.00	0.00	0.00
BYRON 1	1.33	0.00	0.47	0.00	0.00	0.00	0.00	0.99
BYRON 2	0.92	0.46	0.00	0.49	0.00	0.49	0.48	0.00
CALLAWAY	0.00	0.00	0.00	1.08	0.00	0.00	0.00	0.48
CALVERT CLIFFS 1	0.47	1.06	1.37	0.00	0.00	0.00	0.00	0.00
CALVERT CLIFFS 2	0.00	0.00	0.57	0.89	0.00	0.00	0.00	0.00
CATAWBA 1	1.19	0.00	3.10	0.99	0.46	1.52	0.00	2.91
CATAWBA 2	1.44	1.39	3.28	0.00	0.45	0.00	0.47	0.00
CLINTON 1	0.46	0.52	0.00	4.69	1.10	0.00	0.96	0.61
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	NA
COOK 1	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00
COOK 2	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.48
COOPER STATION	0.47	0.00	0.52	0.00	0.00	0.48	0.00	0.00
CRYSTAL RIVER 3	0.00	0.00	0.00	3.58	0.00	0.00	0.00	4.26
DAVIS-BESSE	0.00	2.15	0.51	0.46	0.00	0.00	0.00	0.00
DIABLO CANYON 1	0.52	0.00	0.00	0.00	0.00	0.00	0.47	0.47
DIABLO CANYON 2	1.59	0.00	0.00	0.51	0.98	0.50	0.00	0.66
DRESDEN 2	0.00	0.00	0.00	0.00	0.46	0.00	0.53	0.00
DRESDEN 3	0.00	0.00	1.47	1.29	0.00	0.00	2.00	0.00
DUANE ARNOLD	0.48	5.80	1.72	0.95	0.00	0.77	0.00	0.47
FARLEY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FARLEY 2	0.00	0.00	0.00	0.00	0.00	0.92	0.00	0.54
FERMI 2	3.02	0.00	0.53	0.00	0.00	0.00	0.00	0.49
FITZPATRICK	0.00	0.00	0.00	0.00	0.00	1.06	0.49	0.00
FORT CALHOUN	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00
FORT ST. VRAIN	0.00	0.00	0.00	1.52	0.86	NA	NA	NA
GINNA	0.46	0.00	0.55	0.00	0.52	0.00	0.00	1.55
GRAND GULF	0.93	0.00	0.00	0.00	0.50	0.46	0.00	0.00
HADDAM NECK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 1	0.47	1.90	0.00	0.00	0.00	0.00	0.00	0.00
HATCH 2	0.00	0.48	0.00	0.00	0.64	1.68	0.48	0.00
HOPE CREEK	0.46	1.50	0.57	0.00	0.56	0.93	0.00	0.00
INDIAN POINT 2	0.00	0.92	0.55	0.00	0.00	0.61	0.00	0.00
INDIAN POINT 3	0.00	1.57	0.00	4.64	0.00	0.00	0.00	0.00
KEWAUNEE	0.00	0.00	0.00	0.00	0.00	0.46	0.00	0.00
LASALLE 1	0.00	0.00	0.48	0.00	0.00	0.00	0.50	0.48
LASALLE 2	0.46	0.00	0.00	0.00	0.00	0.00	0.00	4.40
LIMERICK 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
LIMERICK 2	NA	NA	NA	NA	NA	NA	0.97	0.52

TABLE 9.9 EQUIPMENT FORCED OUTAGE/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0.96	3.94	1.02	0.00	0.00	0.54	0.00	0.00
MCGUIRE 1	0.00	0.00	0.63	0.80	0.46	0.00	11.22	1.93
MCGUIRE 2	2.52	0.45	0.93	0.46	0.00	0.00	0.00	0.00
MILLSTONE 1	0.00	0.47	0.00	1.12	0.00	0.47	0.00	0.54
MILLSTONE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
MILLSTONE 3	0.00	0.57	0.53	3.40	0.52	1.00	0.98	2.06
MONTICELLO	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NINE MILE PT. 2	1.68	0.00	0.00	0.99	0.54	1.52	0.00	0.53
NORTH ANNA 1	0.46	0.00	0.75	0.00	0.54	0.54	0.47	0.00
NORTH ANNA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OCONEE 1	0.46	0.00	1.84	0.00	0.00	0.48	0.00	0.00
OCONEE 2	0.51	0.00	0.93	2.62	0.00	1.54	0.00	0.00
OCONEE 3	0.84	0.91	0.96	0.00	0.45	1.66	0.94	0.00
OYSTER CREEK	0.70	0.00	15.75	0.94	1.09	0.00	0.56	1.19
PALISADES	0.00	2.48	0.69	0.00	0.46	3.69	0.00	0.82
PALO VERDE 1	2.05	0.00	0.66	0.00	0.00	0.00	0.00	0.00
PALO VERDE 2	0.00	0.49	0.68	0.00	1.83	2.82	0.00	0.00
PALO VERDE 3	0.00	0.00	1.81	0.00	0.00	9.67	0.00	0.49
PEACH BOTTOM 2	0.00	0.00	0.00	1.47	0.96	1.06	0.71	0.62
PEACH BOTTOM 3	0.00	0.00	0.00	0.00	0.00	1.25	1.00	0.00
PERRY	1.02	0.00	0.80	0.00	0.65	0.00	0.00	0.00
PILGRIM	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.63
POINT BEACH 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POINT BEACH 2	0.00	0.00	0.47	0.00	0.50	0.00	0.00	0.00
PRAIRIE ISLAND 1	0.75	0.45	0.00	0.00	0.00	0.00	0.79	0.00
PRAIRIE ISLAND 2	0.00	0.47	0.00	0.66	0.00	0.98	0.53	0.00
QUAD CITIES 1	0.00	0.46	0.00	2.03	1.22	1.17	0.00	0.00
QUAD CITIES 2	0.59	0.00	0.48	1.41	0.49	0.00	0.00	0.00
RAMCHO SECO	0.00	2.59	3.32	0.00	NA	NA	NA	
RIVER BEND	0.48	0.51	1.81	14.42	0.95	0.68	0.54	0.46
ROBINSON 2	1.17	2.29	1.13	0.53	0.00	0.00	0.00	0.54
SALEM 1	0.49	0.00	1.07	8.97	0.00	0.00	0.49	2.77
SALEM 2	2.08	6.57	1.68	1.55	0.00	0.58	0.50	13.76
SAN ONOFRE 1	0.00	0.00	0.00	4.81	1.78	0.59	0.00	0.50
SAN ONOFRE 2	0.46	0.00	0.69	0.63	0.00	1.48	0.00	0.00
SAN ONOFRE 3	0.00	0.00	0.47	1.04	0.00	0.00	0.51	0.00
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	0.00	5.27	0.00	0.00	0.00	0.46	0.00	2.78
SEQUOYAH 2	0.00	0.00	0.00	0.59	0.47	0.00	0.00	0.00
SHEARON HARRIS	0.00	0.59	1.44	0.00	0.00	4.05	0.00	0.52
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	4.81	0.00	1.77	0.00	1.28	0.60	0.95	5.56
SOUTH TEXAS 2	NA	NA	NA	0.00	2.61	2.59	1.24	1.65
ST. LUCIE 1	2.95	0.00	0.00	0.00	0.00	0.45	1.97	1.96
ST. LUCIE 2	0.00	0.00	0.00	0.64	0.47	0.00	0.52	0.00
SUMMER	0.00	0.00	0.00	0.56	1.62	1.46	0.00	0.00
SURRY 1	0.69	0.00	0.00	0.00	0.00	0.46	0.00	0.52
SURRY 2	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.98
SUSQUEHANNA 1	0.00	0.00	1.16	0.00	0.00	0.00	0.51	0.00

TABLE 9.9 EQUIPMENT FORCED OUTAGE/1000 HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0.00	0.45	0.50	0.00	0.00	0.00	0.50	0.56
THREE MILE ISL 1	1.07	1.63	0.00	0.00	0.00	0.46	1.77	0.00
TROJAN	1.11	0.56	0.00	0.00	1.00	0.00	0.00	0.00
TURKEY POINT 3	0.00	92.17	0.81	0.00	0.45	0.00	0.00	3.86
TURKEY POINT 4	0.55	0.00	0.00	1.78	2.31	1.62	0.00	1.10
VERMONT YANKEE	1.00	0.00	0.00	0.00	0.00	0.00	0.49	0.46
VOGTLE 1	0.93	2.03	1.03	0.46	0.92	0.47	0.00	0.00
VOGTLE 2	NA	NA	NA	1.05	0.45	1.46	0.47	0.94
WASH. NUCLEAR 2	0.53	0.50	0.49	0.00	1.08	0.00	0.00	0.00
WATERFORD 3	0.00	0.00	0.48	0.00	1.05	0.96	1.11	0.00
WOLF CREEK	0.00	0.00	0.95	0.00	0.00	0.00	0.63	1.82
YANKEE-ROWE	0.00	0.00	0.53	0.94	0.52	0.00	0.00	0.00
ZION 1	0.48	0.00	1.31	0.00	1.28	0.00	0.00	0.00
ZION 2	0.00	2.33	1.15	0.46	0.00	0.45	0.71	0.00
TOTAL	49	156	71	81	38	66	40	72

NA - The plant is not yet commercial.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.10 CRITICAL HOURS

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	1402	419	520	1744	2208	1527	2085	2174
ARKANSAS 2	1767	2181	2000	1553	2001	1057	1944	2158
BEAVER VALLEY 1	2191	2014	2119	2109	1510	149	2086	2095
BEAVER VALLEY 2	2128	2209	1695	502	1902	2209	2160	2183
BIG ROCK POINT	2076	2096	2063	1678	1143	2037	2160	2183
BRAIDWOOD 1	1996	2108	1648	1961	1494	484	2137	2159
BRAIDWOOD 2	1968	1807	1127	2152	2131	2209	1777	710
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	2031	962	0	1519	2070	2161	2160	1672
BRUNSWICK 2	2001	2154	2160	1939	1681	0	461	1589
BYRON 1	1499	1309	2143	2183	2208	2209	779	2011
BYRON 2	2171	2194	806	2021	2208	2025	2093	2183
CALLAWAY	2187	2055	2138	927	2208	2209	2160	2097
CALVERT CLIFFS 1	2139	1881	1455	352	0	0	0	242
CALVERT CLIFFS 2	2208	2209	1766	0	0	0	0	0
CATAWBA 1	1681	1308	1289	2020	2197	1979	629	1372
CATAWBA 2	2080	2164	1526	505	2208	2209	2119	1671
CLINTON 1	2181	1936	51	426	1817	1950	1037	1636
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	1651
COOK 1	2010	2109	1810	0	2151	2209	2097	2183
COOK 2	0	0	395	1863	2114	2209	1695	2093
COOPER STATION	2130	2209	1913	512	2164	2084	1465	1369
CRYSTAL RIVER 3	2208	1153	1016	279	1216	1763	1499	235
DAVIS-BESSE	0	465	1962	2168	2208	2209	609	0
DIABLO CANYON 1	1942	2209	2160	2183	2208	630	2125	2106
DIABLO CANYON 2	1258	632	2160	1946	2035	1996	1490	1526
DRESDEN 2	2208	700	929	2183	2177	1964	1888	2183
DRESDEN 3	2208	1939	2040	1548	2208	1516	998	2164
DUANE ARNOLD	2091	173	1741	2103	1785	1293	2095	2110
FARLEY 1	2208	2198	2160	2183	2016	1254	2160	2183
FARLEY 2	2208	2209	1995	959	2082	2169	2160	1839
FLORISSANT 2	994	1950	1870	2183	1488	461	2160	2061
FITZPATRICK	1386	690	2160	2183	1854	1890	2038	174
FORT CALHOUN	2143	0	1479	2022	2107	2209	1142	870
FORT ST. VRAIN	119	0	193	1971	1168	NA	NA	NA
GINNA	2193	2209	1806	708	1925	2209	1962	1288
GRAND GULF	2154	2191	1829	1025	1987	2166	2160	2183
HADDAM NECK	2208	2209	2160	2183	1540	0	0	0
HATCH 1	2128	527	2160	2183	2208	2209	1162	492
HATCH 2	2178	2095	2160	2183	1559	594	2085	2183
HOPE CREEK	2159	1994	1758	2183	1798	1075	1845	2183
INDIAN POINT 2	1692	2164	1811	0	2206	1627	1299	199
INDIAN POINT 3	2208	1277	817	215	2208	2112	1466	1983
KEWAUNEE	2137	2209	1208	1825	2208	2195	1464	1820
LASALLE 1	1992	2209	2086	2183	1846	0	1989	2069
LASALLE 2	2159	323	1246	2183	1372	1892	1764	455
LIMERICK 1	2208	2209	258	1110	2208	2209	2160	1696
LIMERICK 2	NA	NA	NA	NA	541	1421	2058	1910

TABLE 9.10 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
HAINES YANKEE	2091	508	1970	2172	2208	1861	2160	194
MCGUIRE 1	2208	289	1584	1256	2162	2209	178	1035
MCGUIRE 2	1590	2209	2149	2165	421	2209	2160	2183
MILLSTONE 1	2208	2116	2160	890	2200	2128	2160	1868
MILLSTONE 2	2208	2183	826	1560	2208	1433	2160	1292
MILLSTONE 3	2208	1760	1900	882	1926	2009	2046	1454
MONTICELLO	2208	2194	2160	2074	1157	1288	2160	2183
NINE MILE PT. 1	0	0	0	0	0	0	0	0
NINE MILE PT. 2	1782	16	0	2020	1869	1317	1328	1895
NORTH ANNA 1	2169	2209	1334	0	1840	1849	2148	2183
NORTH ANNA 2	2208	2209	1205	1297	2208	2209	2160	2183
OCONEE 1	2193	2209	1090	2183	2016	2082	2160	1204
OCONEE 2	1980	2209	2144	1147	2152	1943	2160	2183
OCONEE 3	1184	2195	2094	2183	2203	1204	2136	2183
OYSTER CREEK	1422	0	64	1069	1842	2040	1781	1685
PALISADES	931	403	1445	2183	2152	271	2087	1218
PALO VERDE 1	976	2208	1522	0	0	0	0	138
PALO VERDE 2	2208	2029	1475	44	1643	1064	1295	0
PALO VERDE 3	1794	2208	1106	0	0	103	1752	2061
PEACH BOTTOM 2	0	0	0	1359	2082	1890	1417	1603
PEACH BOTTOM 3	0	0	0	0	0	801	1992	2183
PERRY	1953	1931	1255	0	1534	2209	1952	2183
PILGRIM	0	0	969	1259	1855	1531	1666	1594
POINT BEACH 1	2208	2209	2160	1151	2208	2209	2139	1066
POINT BEACH 2	2208	1152	2144	2183	2004	912	2160	2183
PRAIRIE ISLAND 1	1341	2209	2160	2183	2189	2209	1260	2183
PRAIRIE ISLAND 2	2208	2137	2088	1521	2208	2036	1894	2139
QUAD CITIES 1	2208	2152	2160	1967	1640	854	2046	2183
QUAD CITIES 2	708	2144	2103	2124	2045	2163	795	1268
RANCHO SECO	2029	1542	903	1452	NA	NA	NA	NA
RIVER BEND	2104	1976	1656	208	2104	2084	1861	2153
ROBINSON 2	1714	873	888	1886	1250	238	2152	1865
SALEM 1	2040	2209	1862	223	2208	1983	2054	723
SALEM 2	1444	304	1783	1939	2208	1720	1994	145
SAN ONOFRE 1	1354	1395	0	208	1687	1688	2160	2003
SAN ONOFRE 2	2160	2209	1449	1584	1518	676	2125	2183
SAN ONOFRE 3	1090	2209	2110	1924	2009	2209	1979	315
SEABROOK	NA	NA	NA	194	0	0	228	1367
SEQUOYAH 1	0	380	2111	2183	2208	2169	1803	721
SEQUOYAH 2	2208	2209	429	1687	2142	2086	2160	2156
SHEARON HARRIS	700	1708	2078	2183	2208	493	2160	1916
SHOREHAM	0	0	3	0	0	NA	NA	NA
SOUTH TEXAS 1	1735	1873	1129	2183	783	1656	2103	360
SOUTH TEXAS 2	NA	NA	411	1414	1918	771	1614	1822
ST. LUCIE 1	1017	2209	2160	2132	1789	2209	507	1530
ST. LUCIE 2	2208	2209	742	1560	2116	2209	1921	2183
SUMMER	1832	131	1588	1779	1854	2055	1970	959
SURRY 1	1443	0	0	0	2088	2184	2160	1924
SURRY 2	1706	0	0	0	327	1177	2160	2037
SUSQUEHANNA 1	2208	2209	1721	539	2145	2187	1954	2007

TABLE 9.10 CRITICAL HOURS (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	2143	2209	1987	2183	1720	1027	2011	1792
THREE MILE ISL 1	932	1837	2160	2183	2208	2166	566	2183
TROJAN	1803	1778	2160	120	1001	2142	1870	0
TURKEY POINT 3	2208	22	1231	167	2199	2209	815	518
TURKEY POINT 4	1804	0	0	562	1730	1855	1942	1814
VERMONT YANKEE	1994	229	985	2014	2208	2209	2031	2154
VOGTLE 1	2148	985	1944	2172	2175	2122	1278	1747
VOGTLE 2	NA	NA	83	1793	2199	2059	2127	2124
WASH. NUCLEAR 2	1895	1992	2028	770	1850	2209	2160	494
WATERFORD 3	2173	1590	2101	2183	1907	1042	1797	2183
WOLF CREEK	2208	146	2115	2183	2208	2209	1577	1102
YANKEE-ROWE	2208	1014	1891	2122	1915	2209	2160	2000
ZION 1	2099	1981	1527	2183	1559	0	1078	459
ZION 2	2208	430	1734	2183	2208	2209	1411	0
TOTAL	186452	156184	156024	152826	191194	169481	180062	164009

NA - The plant is not yet critical.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-3 will be NA.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	134	242	64	33	30	228	16	NA
ARKANSAS 2	134	242	64	33	30	228	16	NA
BEAVER VALLEY 1	10	13	59	133	198	299	8	NA
BEAVER VALLEY 2	NA	NA	59	133	198	299	8	NA
BIG ROCK POINT	14	11	16	59	60	13	9	NA
BRAIDWOOD 1	5	5	50	8	65	173	29	NA
BRAIDWOOD 2	NA	NA	NA	NA	NA	NA	29	NA
BROWNS FERRY 1	120	87	53	35	38	82	72	NA
BROWNS FERRY 2	120	87	53	35	38	82	72	NA
BROWNS FERRY 3	120	87	53	35	38	82	72	NA
BRUNSWICK 1	44	316	258	30	104	471	188	NA
BRUNSWICK 2	44	316	258	30	104	471	188	NA
BYRON 1	156	191	66	4	7	10	136	NA
BYRON 2	NA	NA	66	4	7	10	136	NA
CALLAWAY	6	13	6	259	9	8	7	NA
CALVERT CLIFFS 1	9	12	20	68	47	38	34	NA
CALVERT CLIFFS 2	9	12	20	68	47	38	34	NA
CATAWBA 1	30	98	79	72	6	10	268	NA
CATAWBA 2	30	98	79	72	6	10	268	NA
CLINTON 1	NA	NA	260	81	14	18	85	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	NA	NA
COOK 1	184	74	95	138	10	10	25	NA
COOK 2	184	74	95	138	10	10	25	NA
COOPER STATION	20	21	28	274	19	21	157	NA
CRYSTAL RIVER 3	5	39	130	70	8	10	49	NA
DAVIS-BESSE	102	17	7	11	9	10	251	NA
DIABLO CANYON 1	64	143	3	4	4	207	108	NA
DIABLO CANYON 2	64	143	3	4	4	207	108	NA
DRESDEN 2	46	343	370	46	43	105	169	NA
DRESDEN 3	46	343	370	46	43	105	169	NA
DUANE ARNOLD	50	526	45	28	46	63	38	NA
FARLEY 1	10	11	34	127	44	169	8	NA
FARLEY 2	10	11	34	127	44	169	8	NA
FERMI 2	18	15	11	15	66	142	21	NA
FITZPATRICK	224	335	58	52	178	89	101	NA
FORT CALHOUN	30	213	48	16	19	10	99	NA
FORT ST. VRAIN	0	0	1	1	NA	NA	NA	NA
GINNA	13	21	124	440	24	20	81	NA
GRAND GULF	36	37	143	312	25	18	16	NA
HADDAM NECK	13	14	19	14	313	251	119	NA
HATCH 1	69	361	57	41	100	136	315	NA
HATCH 2	69	361	57	41	100	136	315	NA
HOPE CREEK	18	29	110	21	96	238	49	NA
INDIAN POINT 2	82	32	220	1046	29	142	232	NA
INDIAN POINT 3	4	45	454	403	10	9	64	NA
KEWAUNEE	5	5	208	26	4	2	117	NA
LASALLE 1	90	560	178	62	94	360	117	NA
LASALLE 2	90	560	178	62	94	360	117	NA
LIMERICK 1	12	9	162	56	17	29	12	NA
LIMERICK 2	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	18	665	21	11	19	38	27	NA
MCGUIRE 1	63	281	30	49	222	9	167	NA
MCGUIRE 2	63	281	30	49	222	9	167	NA
MILLSTONE 1	6	11	41	377	17	24	23	NA
MILLSTONE 2	28	55	470	176	27	241	6	NA
MILLSTONE 3	3	6	8	146	7	7	2	NA
MONTICELLO	23	5	21	27	273	186	25	NA
NINE MILE PT. 1	152	132	56	81	92	33	60	NA
NINE MILE PT. 2	NA	NA	56	81	92	33	60	NA
NORTH ANNA 1	8	10	174	511	28	24	16	NA
NORTH ANNA 2	8	10	174	511	28	24	16	NA
OCONEE 1	100	24	62	62	14	90	14	NA
OCONEE 2	100	24	62	62	14	90	14	NA
OCONEE 3	100	24	62	62	14	90	14	NA
OYSTER CREEK	205	1131	569	149	82	111	130	NA
PALISADES	338	279	57	16	18	208	24	NA
PALO VERDE 1	15	11	25	87	87	24	46	NA
PALO VERDE 2	15	11	25	87	87	24	46	NA
PALO VERDE 3	NA	NA	25	87	87	24	46	NA
PEACH BOTTOM 2	214	151	58	65	152	67	52	NA
PEACH BOTTOM 3	214	151	58	65	152	67	52	NA
PERRY	25	30	258	425	64	33	34	NA
PILGRIM	96	75	49	54	45	61	65	NA
POINT BEACH 1	11	98	9	83	11	134	8	NA
POINT BEACH 2	11	98	9	83	11	134	8	NA
PRAIRIE ISLAND 1	46	3	6	34	3	4	53	NA
PRAIRIE ISLAND 2	46	3	6	34	3	4	53	NA
QUAD CITIES 1	38	36	39	33	100	278	280	NA
QUAD CITIES 2	38	36	39	33	100	278	280	NA
RANCHO SECO	22	19	34	12	NA	NA	NA	NA
RIVER BEND	20	42	106	31	21	25	41	NA
ROBINSON 2	34	441	116	31	31	36	16	NA
SALEM 1	109	92	7	144	4	15	6	NA
SALEM 2	109	92	7	144	4	15	6	NA
SAN ONOFRE 1	47	62	77	33	45	50	4	NA
SAN ONOFRE 2	47	62	77	33	45	50	4	NA
SAN ONOFRE 3	47	62	77	33	45	50	4	NA
SEABROOK	NA	NA	NA	NA	NA	NA	NA	NA
SEQUOYAH 1	131	19	280	16	12	22	117	NA
SEQUOYAH 2	131	19	280	16	12	22	117	NA
SHEARON HARRIS	NA	NA	6	4	5	140	8	NA
SHOREHAM	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH TEXAS 1	NA	NA	NA	NA	NA	NA	7	NA
SOUTH TEXAS 2	NA	NA	NA	NA	NA	NA	NA	NA
ST. LUCIE 1	232	18	144	21	58	9	227	NA
ST. LUCIE 2	232	18	144	21	58	9	227	NA
SUMMER	28	464	27	8	8	8	59	NA
SURRY 1	116	287	118	139	95	45	23	NA
SURRY 2	116	287	118	139	95	45	23	NA
SUSQUEHANNA 1	18	17	28	168	73	83	27	NA

TABLE 9.11 COLLECTIVE RADIATION EXPOSURE (CONTINUED)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	18	17	28	168	73	83	27	NA
THREE MILE ISL 1	116	20	12	13	14	15	236	NA
TROJAN	12	33	7	46	62	6	37	NA
TURKEY POINT 3	30	228	116	52	24	28	236	NA
TURKEY POINT 4	30	228	116	52	24	28	236	NA
VERMONT YANKEE	31	38	194	34	15	28	18	NA
VOGTLE 1	NA	NA	11	5	9	8	203	NA
VOGTLE 2	NA	NA	NA	NA	NA	NA	NA	NA
WASH. NUCLEAR 2	64	44	36	361	44	52	40	NA
WATERFORD 3	12	36	9	5	38	194	17	NA
WOLF CREEK	3	229	5	2	1	7	84	NA
YANKEE-ROWE	13	195	23	10	18	11	7	NA
ZION 1	12	241	42	12	82	176	57	NA
ZION 2	12	241	42	12	82	176	57	NA
TOTAL	6319	13376	9611	10763	5667	9383	8524	NA

- NA - Plant has not yet been commercial for one calendar year
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, the unit ceased all operation in August 1989 and all performance indicator data after 89-2 will be NA.

TABLE 9.12 CAUSE CODES

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	2	8	3	4	2	7	0	NA
ARKANSAS 2	2	3	3	4	1	5	7	NA
BEAVER VALLEY 1	0	1	1	1	0	1	0	NA
BEAVER VALLEY 2	1	1	3	5	1	2	2	NA
BIG ROCK POINT	0	0	1	0	2	0	1	NA
BRAIDWOOD 1	3	1	0	0	1	6	2	NA
BRAIDWOOD 2	3	3	2	0	0	4	1	NA
BROWNS FERRY 1	12	11	9	5	7	3	3	NA
BROWNS FERRY 2	12	12	10	9	8	3	4	NA
BROWNS FERRY 3	12	10	7	4	7	3	3	NA
BRUNSWICK 1	1	5	4	5	1	4	3	NA
BRUNSWICK 2	1	6	0	4	3	3	5	NA
BYRON 1	1	1	2	2	1	0	3	NA
BYRON 2	1	1	2	0	1	0	1	NA
CALLAWAY	1	2	0	2	1	0	1	NA
CALVERT CLIFFS 1	2	2	3	1	3	4	6	NA
CALVERT CLIFFS 2	1	0	6	3	1	4	3	NA
CATAWBA 1	1	3	4	3	3	2	13	NA
CATAWBA 2	2	4	7	5	5	2	9	NA
CLINTON 1	1	4	10	7	2	5	3	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	3	NA
COOK 1	4	2	2	3	3	1	1	NA
COOK 2	3	3	2	2	2	1	1	NA
COOPER STATION	0	0	4	4	0	0	1	NA
CRYSTAL RIVER 3	2	7	5	6	4	3	0	NA
DAVIS-BESSE	5	3	2	4	1	0	2	NA
DIABLO CANYON 1	3	3	3	0	2	6	2	NA
DIABLO CANYON 2	1	9	4	1	2	6	1	NA
DRESDEN 2	0	3	7	2	3	1	1	NA
DRESDEN 3	0	1	1	5	1	3	4	NA
DUANE ARNOLD	3	2	3	0	2	1	1	NA
FARLEY 1	0	1	0	1	0	1	3	NA
FARLEY 2	0	0	1	5	1	2	2	NA
FERMI 2	1	1	2	3	2	8	1	NA
FITZPATRICK	0	4	0	2	2	5	4	NA
FORT CALHOUN	3	5	5	6	2	2	2	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	1	0	4	0	2	0	NA
GRAND GULF	2	1	0	5	1	1	2	NA
HADDAM NECK	1	0	2	3	1	0	1	NA
HATCH 1	2	3	3	2	2	6	3	NA
HATCH 2	1	1	2	1	4	6	4	NA
HOPE CREEK	3	2	5	4	2	5	1	NA
INDIAN POINT 2	3	0	0	2	1	1	0	NA
INDIAN POINT 3	0	0	5	0	0	1	1	NA
KEWAUNEE	2	0	5	2	0	0	1	NA
LASALLE 1	1	1	3	3	0	4	2	NA
LASALLE 2	1	2	5	4	2	2	3	NA
LIMERICK 1	0	4	10	10	5	1	4	NA
LIMERICK 2	NA	NA	NA	3	4	2	4	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	0	1	0	0	0	0	NA
MCGUIRE 1	10	9	4	2	7	1	1	NA
MCGUIRE 2	8	4	4	2	9	3	2	NA
MILLSTONE 1	0	3	2	1	1	1	2	NA
MILLSTONE 2	0	0	1	1	1	1	1	NA
MILLSTONE 3	1	4	3	5	7	8	6	NA
MONTICELLO	0	0	2	3	1	6	0	NA
NINE MILE PT. 1	2	2	4	4	3	5	2	NA
NINE MILE PT. 2	12	7	5	6	6	6	2	NA
NORTH ANNA 1	0	8	1	2	2	0	2	NA
NORTH ANNA 2	0	7	1	3	2	0	2	NA
OCONEE 1	2	1	7	4	5	2	0	NA
OCONEE 2	1	1	3	5	3	2	0	NA
OCONEE 3	3	1	4	4	4	2	1	NA
OYSTER CREEK	3	7	5	3	1	1	3	NA
PALISADES	3	0	3	3	3	3	2	NA
PALO VERDE 1	2	3	2	3	1	3	1	NA
PALO VERDE 2	2	2	1	3	1	0	2	NA
PALO VERDE 3	0	0	0	3	1	2	1	NA
PEACH BOTTOM 2	4	7	3	7	2	4	2	NA
PEACH BOTTOM 3	2	4	1	3	3	6	3	NA
PERRY	4	3	7	7	2	3	3	NA
PILGRIM	3	3	6	5	3	3	4	NA
POINT BEACH 1	1	2	1	3	0	1	0	NA
POINT BEACH 2	0	1	0	3	0	3	0	NA
PRAIRIE ISLAND 1	1	3	1	3	1	2	2	NA
PRAIRIE ISLAND 2	0	1	1	3	1	2	2	NA
QUAD CITIES 1	2	1	1	0	4	6	4	NA
QUAD CITIES 2	3	6	0	1	0	3	3	NA
RANCHO SECO	2	3	3	0	NA	NA	NA	NA
RIVER BEND	3	3	3	8	1	7	3	NA
ROBINSON 2	4	2	2	1	0	1	1	NA
SALEM 1	6	1	4	11	1	2	3	NA
SALEM 2	6	3	4	4	0	1	2	NA
SAN ONOFRE 1	1	1	4	5	7	4	1	NA
SAN ONOFRE 2	4	2	4	3	9	3	2	NA
SAN ONOFRE 3	5	1	4	4	3	2	3	NA
SEABROOK	1	1	1	2	1	2	2	NA
SEQUOYAH 1	6	6	6	4	6	6	2	NA
SEQUOYAH 2	7	1	5	5	5	7	3	NA
SHEARON HARRIS	5	2	3	3	2	3	6	NA
SHOREHAM	3	3	2	0	0	NA	NA	NA
SOUTH TEXAS 1	3	5	5	2	4	2	3	NA
SOUTH TEXAS 2	NA	0	5	3	1	1	1	NA
ST. LUCIE 1	1	0	0	1	3	1	2	NA
ST. LUCIE 2	0	0	1	2	1	0	0	NA
SUMMER	2	1	2	3	3	1	1	NA
SURRY 1	6	2	5	4	4	0	1	NA
SURRY 2	3	2	3	4	5	4	2	NA
SUSQUEHANNA 1	3	1	6	8	1	2	2	NA

TABLE 9.12 CAUSE CODES (CONTINUED)

ADMINISTRATIVE CONTROL PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	2	0	3	4	2	4	1	NA
THREE MILE ISL 1	4	0	0	0	0	2	2	NA
TROJAN	4	4	3	3	9	2	5	NA
TURKEY POINT 3	7	3	4	1	2	1	1	NA
TURKEY POINT 4	4	3	2	2	4	1	0	NA
VERMONT YANKEE	2	2	7	0	3	1	4	NA
VOGTLE 1	3	5	4	3	1	1	6	NA
VOGTLE 2	NA	NA	3	4	1	0	2	NA
WASH. NUCLEAR 2	5	4	5	7	5	3	3	NA
WATERFORD 3	1	4	2	1	5	1	1	NA
WOLF CREEK	3	0	3	1	3	0	1	NA
YANKEE-ROWE	0	3	1	1	3	0	0	NA
ZION 1	4	2	1	2	4	4	3	NA
ZION 2	2	10	4	2	0	3	4	NA
TOTAL	283	307	346	351	272	280	252	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
 - In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
 - In the case of Fort St. Vrain, Cause Code data is not collected.
 - In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.13 CAUSE CODES

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	4	1	1	1	2	0	NA
ARKANSAS 2	0	1	0	1	0	2	0	NA
BEAVER VALLEY 1	2	2	1	0	1	0	2	NA
BEAVER VALLEY 2	1	3	1	2	0	0	0	NA
BIG ROCK POINT	0	0	0	0	0	0	0	NA
BRAIDWOOD 1	1	0	0	1	0	0	1	NA
BRAIDWOOD 2	0	0	0	0	0	1	2	NA
BROWNS FERRY 1	1	3	3	0	1	0	1	NA
BROWNS FERRY 2	1	3	3	0	1	0	1	NA
BROWNS FERRY 3	1	3	3	0	1	0	1	NA
BRUNSWICK 1	0	4	4	1	0	0	0	NA
BRUNSWICK 2	0	2	0	0	1	0	0	NA
BYRON 1	1	0	0	0	0	0	0	NA
BYRON 2	1	0	1	0	0	0	0	NA
CALLAWAY	1	1	1	4	1	0	0	NA
CALVERT CLIFFS 1	2	0	2	0	0	0	0	NA
CALVERT CLIFFS 2	1	0	0	1	0	0	0	NA
CATAWBA 1	0	0	2	0	1	0	3	NA
CATAWBA 2	0	0	2	0	3	0	1	NA
CLINTON 1	0	1	4	2	3	1	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	2	NA
COOK 1	0	0	1	0	0	1	0	NA
COOK 2	0	0	1	2	0	0	0	NA
COOPER STATION	0	0	1	0	0	0	0	NA
CRYSTAL RIVER 3	1	1	1	2	1	0	0	NA
DAVIS-BESSE	0	4	1	0	0	0	1	NA
DIABLO CANYON 1	2	1	0	0	0	1	1	NA
DIABLO CANYON 2	1	1	0	1	0	0	0	NA
DRESDEN 2	1	1	2	0	0	0	0	NA
DRESDEN 3	0	0	2	0	0	0	0	NA
DUANE ARNOLD	0	1	0	0	0	0	0	NA
FARLEY 1	0	0	0	0	1	0	0	NA
FARLEY 2	0	0	0	0	0	1	0	NA
FERMI 2	0	2	1	0	1	3	0	NA
FITZPATRICK	0	0	1	0	0	0	0	NA
FORT CALHOUN	0	0	0	1	0	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	2	0	0	0	NA
GRAND GULF	1	0	0	1	2	1	0	NA
HADDAM NECK	0	0	0	0	0	0	0	NA
HATCH 1	0	0	1	0	0	2	0	NA
HATCH 2	0	0	0	0	0	0	0	NA
HOPE CREEK	0	0	1	1	0	0	1	NA
INDIAN POINT 2	0	0	0	0	0	0	0	NA
INDIAN POINT 3	0	0	0	0	0	0	0	NA
KEWAUNEE	2	0	0	0	0	0	0	NA
LASALLE 1	0	0	2	0	0	1	0	NA
LASALLE 2	1	1	2	0	2	0	0	NA
LIMERICK 1	0	1	0	0	0	0	0	NA
LIMERICK 2	NA	NA	NA	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							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0	1	0	0	0	0	0	NA
MCGUIRF 1	0	3	0	1	1	0	1	NA
MCGUIRK	0	0	0	1	2	0	1	NA
MILLSTONE 1	0	-	0	1	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	0	0	3	2	0	1	0	NA
MONTICELLO	0	1	0	2	0	2	0	NA
NINE MILE PT. 1	0	0	1	0	0	0	0	NA
NINE MILE PT. 2	3	0	1	5	0	4	1	NA
NORTH ANNA 1	0	0	0	0	0	0	0	NA
NORTH ANNA 2	0	0	1	0	0	0	0	NA
OCONEE 1	0	0	2	0	0	0	0	NA
OCONEE 2	0	0	0	0	0	0	0	NA
OCONEE 3	0	0	0	0	1	1	1	NA
OYSTER CREEK	2	1	0	2	0	2	1	NA
PALISADES	0	1	0	0	0	0	3	NA
PALO VERDE 1	2	0	1	0	0	1	0	NA
PALO VERDE 2	0	1	1	1	0	0	1	NA
PALO VERDE 3	0	0	1	1	1	0	0	NA
PEACH BOTTOM 2	0	0	0	2	0	1	0	NA
PEACH BOTTOM 3	0	0	0	0	0	0	0	NA
PERRY	1	0	1	3	0	0	0	NA
PILGRIM	0	3	1	3	0	0	0	NA
POINT BEACH 1	0	0	1	0	0	0	0	NA
POINT BEACH 2	0	1	0	0	0	0	0	NA
PRAIRIE ISLAND 1	0	1	0	0	1	1	0	NA
PRAIRIE ISLAND 2	1	0	0	0	1	1	1	NA
QUAD CITIES 1	1	0	0	0	0	0	0	NA
QUAD CITIES 2	1	0	0	0	0	0	0	NA
RANCHO SECO	1	1	0	0	NA	NA	NA	NA
RIVER BEND	1	1	1	0	0	0	0	NA
ROBINSON 2	0	0	1	0	0	0	0	NA
SALEM 1	0	0	2	1	0	1	0	NA
SALEM 2	0	1	0	0	0	0	0	NA
SAN ONOFRE 1	0	0	1	1	0	0	1	NA
SAN ONOFRE 2	0	0	1	1	3	1	0	NA
SAN ONOFRE 3	1	0	0	1	1	0	0	NA
SEABROOK	0	0	0	0	0	0	1	NA
SEQUOYAH 1	0	1	1	0	0	0	3	NA
SEQUOYAH 2	0	0	1	2	0	0	2	NA
SHEARON HARRIS	1	2	0	0	0	2	0	NA
SHOREHAM	0	0	1	0	1	NA	NA	NA
SOUTH TEXAS 1	1	2	0	0	0	0	0	NA
SOUTH TEXAS 2	NA	0	0	3	0	0	1	NA
ST. LUCIE 1	1	0	0	0	1	0	0	NA
ST. LUCIE 2	0	0	2	1	1	0	1	NA
SUMMER	0	0	0	0	0	0	0	NA
SURRY 1	1	1	1	2	4	1	0	NA
SURRY 2	2	1	0	1	4	3	0	NA
SUSQUEHANNA 1	0	0	2	0	0	0	0	NA

TABLE 9.13 CAUSE CODES (CONTINUED)

LICENSED OPERATOR ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	0	0	0	0	0	0	NA
THREE MILE ISL 1	2	0	0	0	0	1	2	NA
TROJAN	0	1	0	0	1	1	0	NA
TURKEY POINT 3	2	0	0	0	0	1	1	NA
TURKEY POINT 4	4	0	0	2	0	1	1	NA
VERMONT YANKEE	0	0	1	0	0	0	0	NA
VOGTLE 1	0	1	1	0	0	0	2	NA
VOGTLE 2	NA	NA	3	2	0	0	0	NA
WASH. NUCLEAR 2	2	0	0	1	0	0	0	NA
WATERFORD 3	1	0	0	0	1	2	0	NA
WOLF CREEK	0	1	3	0	1	0	0	NA
YANKEE-ROME	0	0	0	0	1	0	0	NA
ZION 1	1	0	1	0	0	1	2	NA
ZION 2	0	3	1	1	0	0	0	NA
TOTAL	55	69	83	66	48	45	45	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.14 CAUSE CODES

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	3	5	1	3	0	6	0	NA
ARKANSAS 2	1	1	1	2	1	6	2	NA
BEAVER VALLEY 1	1	0	0	2	0	3	1	NA
BEAVER VALLEY 2	1	0	1	5	0	1	2	NA
BIG ROCK POINT	0	2	0	1	3	0	0	NA
BRAIDWOOD 1	1	1	0	0	0	4	0	NA
BRAIDWOOD 2	4	1	1	0	0	1	0	NA
BROWNS FERRY 1	3	6	2	3	3	1	1	NA
BROWNS FERRY 2	3	10	3	4	7	1	1	NA
BROWNS FERRY 3	4	6	3	3	3	1	1	NA
BRUNSWICK 1	2	3	1	1	0	2	0	NA
BRUNSWICK 2	0	5	2	1	1	1	1	NA
BYRON 1	0	0	1	0	0	0	3	NA
BYRON 2	1	1	0	0	0	0	1	NA
CALLAWAY	1	1	1	1	1	1	0	NA
CALVERT CLIFFS 1	2	0	1	1	0	1	4	NA
CALVERT CLIFFS 2	1	0	2	1	0	0	2	NA
CATAWBA 1	1	1	4	1	1	0	5	NA
CATAWBA 2	2	1	3	5	3	1	3	NA
CLINTON 1	3	3	3	4	1	2	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	0	NA
COOK 1	4	1	1	2	3	0	1	NA
COOK 2	1	1	3	2	1	0	2	NA
COOPER STATION	1	0	3	0	0	0	1	NA
CRYSTAL RIVER 3	2	5	0	3	3	1	0	NA
DAVIS-BESSE	1	2	0	1	5	1	0	NA
DIABLO CANYON 1	5	3	2	0	0	2	1	NA
DIABLO CANYON 2	2	6	0	0	1	0	1	NA
DRESDEN 2	1	1	2	1	0	2	1	NA
DRESDEN 3	1	0	0	2	0	3	0	NA
DUANE ARNOLD	0	2	2	1	2	1	0	NA
FARLEY 1	0	4	0	2	0	2	0	NA
FARLEY 2	0	2	0	3	1	2	0	NA
FERMI 2	6	1	2	1	3	7	0	NA
FITZPATRICK	1	0	0	3	2	4	3	NA
FORT CALHOUN	2	7	2	1	1	2	3	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	1	0	0	2	NA
GRAND GULF	2	1	1	0	1	1	0	NA
HADDAM NECK	2	0	1	1	3	2	0	NA
HATCH 1	0	3	1	0	0	2	0	NA
HATCH 2	2	1	1	0	1	2	0	NA
HOPE CREEK	3	7	0	2	1	2	1	NA
INDIAN POINT 2	1	3	3	1	0	0	0	NA
INDIAN POINT 3	1	1	4	1	0	1	0	NA
KEWAUNEE	2	0	1	1	0	0	1	NA
LASALLE 1	0	3	2	1	0	2	3	NA
LASALLE 2	0	0	4	0	0	2	2	NA
LIMERICK 1	1	5	5	7	3	3	5	NA
LIMERICK 2	NA	NA	NA	1	5	5	4	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	1	0	1	0	0	0	NA
MCGUIRE 1	4	6	1	2	6	1	2	NA
MCGUIRE 2	3	2	1	1	4	3	1	NA
MILLSTONE 1	1	1	0	1	2	1	0	NA
MILLSTONE 2	1	1	1	2	2	1	1	NA
MILLSTONE 3	2	2	0	3	1	3	4	NA
MONTICELLO	0	0	1	2	1	3	0	NA
NINE MILE PT. 1	0	1	0	1	2	1	0	NA
NINE MILE PT. 2	5	5	3	1	2	2	3	NA
NORTH ANNA 1	0	0	4	2	0	0	2	NA
NORTH ANNA 2	1	1	1	2	0	0	3	NA
OCOHEE 1	2	0	4	0	3	0	0	NA
OCOHEE 2	0	0	2	1	1	0	0	NA
OCOHEE 3	1	0	2	0	3	1	1	NA
OYSTER CREEK	2	2	1	2	3	0	1	NA
PALISADES	4	3	1	2	0	0	3	NA
PALO VERDE 1	2	1	0	1	2	2	1	NA
PALO VERDE 2	1	1	1	1	0	1	1	NA
PALO VERDE 3	3	0	0	1	3	1	2	NA
PEACH BOTTOM 2	2	4	1	1	4	1	0	NA
PEACH BOTTOM 3	3	2	1	0	3	1	1	NA
PERRY	3	2	3	3	4	3	1	NA
PILGRIM	0	0	4	3	3	3	1	NA
POINT BEACH 1	1	0	1	1	1	1	0	NA
POINT BEACH 2	0	0	1	1	1	2	0	NA
PRAIRIE ISLAND 1	1	2	0	1	2	1	2	NA
PRAIRIE ISLAND 2	1	2	0	1	1	1	4	NA
QUAD CITIES 1	2	0	0	2	3	2	1	NA
QUAD CITIES 2	2	4	0	0	0	1	2	NA
RANCHO SECO	4	2	1	1	NA	NA	NA	NA
RIVER BEND	3	1	5	7	2	4	3	NA
ROBINSON 2	1	0	3	0	0	0	2	NA
SALEM 1	1	1	2	4	0	4	2	NA
SALEM 2	0	3	1	0	0	3	1	NA
SAN ONOFRE 1	1	2	1	0	1	0	0	NA
SAN ONOFRE 2	3	3	1	1	4	0	0	NA
SAN ONOFRE 3	5	0	2	2	1	0	0	NA
SEABROOK	1	1	1	2	3	1	2	NA
SEQUOYAH 1	6	6	5	2	3	3	1	NA
SEQUOYAH 2	7	2	1	4	4	2	2	NA
SHEARON HARRIS	4	6	6	3	1	4	1	NA
SHOREHAM	2	2	0	0	1	NA	NA	NA
SOUTH TEXAS 1	3	2	2	1	1	3	2	NA
SOUTH TEXAS 2	NA	1	1	1	0	2	1	NA
ST. LUCIE 1	3	0	0	2	1	2	0	NA
ST. LUCIE 2	0	0	1	1	1	0	1	NA
SUMMER	1	2	3	0	3	1	0	NA
SURRY 1	2	4	4	5	2	0	0	NA
SURRY 2	1	3	2	4	4	1	0	NA
SUSQUEHANNA 1	2	3	2	6	1	2	1	NA

TABLE 9.14 CAUSE CODES (CONTINUED)

OTHER PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	1	4	1	3	2	3	3	NA
THREE MILE ISL 1	0	0	0	0	0	0	1	NA
TROJAN	7	4	2	5	4	2	4	NA
TURKEY POINT 3	3	2	2	1	2	0	2	NA
TURKEY POINT 4	1	1	0	0	4	0	2	NA
VERMONT YANKEE	1	1	2	2	1	0	2	NA
VOGTLE 1	4	7	6	0	1	1	2	NA
VOGTLE 2	NA	NA	4	2	1	3	1	NA
WASH. NUCLEAR 2	5	1	2	5	1	0	1	NA
WATERFORD 3	1	3	1	2	1	2	1	NA
WOLF CREEK	0	4	2	0	1	0	0	NA
YANKEE-ROWE	0	0	3	2	3	1	0	NA
ZION 1	2	1	1	1	4	3	2	NA
ZION 2	1	6	3	0	1	1	1	NA
TOTAL	199	227	177	184	176	165	137	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
 - In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
 - In the case of Fort St. Vrain, Cause Code data is not collected.
 - In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.15 CAUSE CODES

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	4	7	3	8	2	15	1	NA
ARKANSAS 2	5	5	3	8	0	13	9	NA
BEAVER VALLEY 1	2	2	3	4	2	8	4	NA
BEAVER VALLEY 2	1	3	7	12	3	2	3	NA
BIG ROCK POINT	1	2	2	1	3	0	0	NA
BRAIDWOOD 1	4	3	3	2	2	9	3	NA
BRAIDWOOD 2	9	4	3	1	1	2	1	NA
BROWNS FERRY 1	11	20	10	6	8	5	5	NA
BROWNS FERRY 2	11	22	12	12	12	7	6	NA
BROWNS FERRY 3	12	19	9	5	9	5	5	NA
BRUNSWICK 1	3	10	5	10	1	4	2	NA
BRUNSWICK 2	3	9	4	6	7	7	6	NA
BYRON 1	3	2	3	2	1	0	3	NA
BYRON 2	5	2	2	1	1	0	2	NA
CALLAWAY	3	2	2	5	2	1	2	NA
CALVERT CLIFFS 1	1	3	4	1	3	3	8	NA
CALVERT CLIFFS 2	1	1	6	4	1	3	4	NA
CATAWBA 1	1	5	9	4	4	2	12	NA
CATAWBA 2	3	7	10	9	5	2	7	NA
CLINTON 1	5	7	11	10	4	6	4	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	4	NA
COOK 1	5	3	4	5	4	1	1	NA
COOK 2	3	3	8	5	2	2	2	NA
COOPER STATION	6	1	4	8	2	1	2	NA
CRYSTAL RIVER 3	2		4	9	6	2	1	NA
DAVIS-BESSE	4	4	2	4	4	2	2	NA
DIABLO CANYON 1	6	4	3	0	2	8	1	NA
DIABLO CANYON 2	4	12	4	2	3	4	0	NA
DRESDEN 2	3	7	10	3	10	3	2	NA
DRESDEN 3	1	1	2	4	3	5	4	NA
DUANE ARNOLD	3	1	6	1	4	2	3	NA
FARLEY 1	0	5	0	3	0	2	2	NA
FARLEY 2	0	3	1	7	2	2	2	NA
FERMI 2	9	3	7	4	8	11	1	NA
FITZPATRICK	2	3	2	5	4	6	9	NA
FORT CALHOUN	4	8	7	6	2	3	4	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	3	6	0	5	3	4	1	NA
GRAND GULF	2	2	1	3	3	2	1	NA
HADDAM NECK	2	2	1	3	6	3	2	NA
HATCH 1	2	4	4	0	2	6	5	NA
HATCH 2	4	2	3	0	4	7	5	NA
HOPE CREEK	6	9	5	7	3	5	3	NA
INDIAN POINT 2	5	3	2	2	3	1	0	NA
INDIAN POINT 3	1	1	6	1	0	2	1	NA
KEWAUNEE	2	0	6	4	1	1	1	NA
LASALLE 1	4	5	13	9	3	5	5	NA
LASALLE 2	5	7	12	8	3	6	7	NA
LIMERICK 1	0	5	11	13	8	8	6	NA
LIMERICK 2	NA	NA	NA	2	6	9	6	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	2	1	1	1	0	2	0	NA
MCGUIRE 1	11	14	4	3	11	2	4	NA
MCGUIRE 2	10	6	6	2	11	5	2	NA
MILLSTONE 1	2	4	1	8	3	2	1	NA
MILLSTONE 2	1	1	2	3	3	2	0	NA
MILLSTONE 3	2	5	2	6	7	8	8	NA
MONTICELLO	0	0	4	7	4	8	0	NA
NINE MILE PT. 1	1	2	4	1	3	2	1	NA
NINE MILE PT. 2	13	11	6	8	7	6	7	NA
NORTH ANNA 1	1	5	5	6	2	1	3	NA
NORTH ANNA 2	1	5	4	5	1	0	3	NA
OCONEE 1	3	1	7	2	3	0	0	NA
OCONEE 2	2	1	5	2	1	1	0	NA
OCONEE 3	3	2	5	2	3	2	1	NA
OYSTER CREEK	8	7	4	4	5	0	3	NA
PALISADES	6	5	3	5	4	2	6	NA
PALO VERDE 1	3	3	2	4	5	2	2	NA
PALO VERDE 2	1	3	2	4	2	.	2	NA
PALO VERDE 3	3	0	3	4	4	1	2	NA
PEACH BOTTOM 2	4	8	4	9	5	6	5	NA
PEACH BOTTOM 3	6	4	2	3	5	7	5	NA
PERRY	8	5	9	9	3	3	3	NA
PILGRIM	3	4	9	5	7	8	6	NA
POINT BEACH 1	1	1	1	4	1	1	0	NA
POINT BEACH 2	0	0	2	2	2	5	0	NA
PRAIRIE ISLAND 1	2	6	0	3	6	6	2	NA
PRAIRIE ISLAND 2	2	5	0	2	6	6	5	NA
QUAD CITIES 1	3	1	2	5	5	5	5	NA
QUAD CITIES 2	3	6	0	3	0	1	5	NA
RANCHO SECO	2	6	4	1	NA	NA	NA	NA
RIVER BEND	7	5	13	14	3	8	6	NA
ROBINSON 2	3	2	5	2	0	1	5	NA
SALEM 1	4	1	9	12	1	7	6	NA
SALEM 2	5	5	6	6	0	4	4	NA
SAN ONOFRE 1	2	3	4	5	6	2	3	NA
SAN ONOFRE 2	6	4	5	3	8	2	1	NA
SAN ONOFRE 3	8	2	5	3	3	1	2	NA
SEABROOK	1	2	5	4	4	2	11	NA
SEQUOYAH 1	9	12	6	7	7	8	3	NA
SEQUOYAH 2	12	2	4	12	6	8	6	NA
SHEARON HARRIS	10	6	6	5	2	7	4	NA
SHOREHAM	5	3	5	0	1	NA	NA	NA
SOUTH TEXAS 1	7	5	7	3	2	5	5	NA
SOUTH TEXAS 2	NA	0	8	5	3	2	3	NA
ST. LUCIE 1	4	0	0	2	2	3	2	NA
ST. LUCIE 2	0	0	1	1	3	1	1	NA
SUMMER	1	3	4	5	4	2	1	NA
SURRY 1	11	7	6	10	8	2	2	NA
SURRY 2	5	6	4	9	13	6	2	NA
SUSQUEHANNA 1	6	2	3	10	2	4	6	NA

TABLE 9.15 CAUSE CODES (CONTINUED)

MAINTENANCE RELATED

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	5	3	2	3	4	7	4	NA
THREE MILE ISL 1	2	1	0	0	0	3	3	NA
TROJAN	10	10	4	5	8	5	9	NA
TURKEY POINT 3	9	3	5	1	3	2	5	NA
TURKEY POINT 4	9	2	3	3	7	2	2	NA
VERMONT YANKEE	1	3	11	3	4	1	4	NA
VOGTLE 1	7	11	9	3	4	2	5	NA
VOGTLE 2	NA	NA	8	8	3	3	3	NA
WASH. NUCLEAR 2	7	4	3	13	5	2	5	NA
WATERFORD 3	3	3	1	3	6	5	3	NA
WOLF CREEK	3	3	7	3	5	0	1	NA
YANKEE-ROWE	0	4	3	3	4	1	1	NA
ZION 1	5	3	4	1	5	5	6	NA
ZION 2	4	13	4	2	1	2	5	NA
TOTAL	454	495	512	526	428	419	380	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 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							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	2	5	1	3	0	4	0	NA
ARKANSAS 2	1	0	1	3	0	7	1	NA
BEAVER VALLEY 1	0	0	0	1	0	0	1	NA
BEAVER VALLEY 2	0	0	0	2	0	1	1	NA
BIG ROCK POINT	0	2	0	0	1	0	0	NA
BRAIDWOOD 1	1	1	0	0	1	4	1	NA
BRAIDWOOD 2	3	1	1	0	0	1	0	NA
BROWNS FERRY 1	5	5	6	4	4	1	0	NA
BROWNS FERRY 2	5	6	6	7	5	1	0	NA
BROWNS FERRY 3	6	5	6	3	4	1	0	NA
BRUNSWICK 1	2	2	3	3	0	1	0	NA
BRUNSWICK 2	0	1	1	1	0	1	1	NA
BYRON 1	0	1	1	2	0	0	0	NA
BYRON 2	0	2	0	0	0	0	0	NA
CALLAWAY	1	1	0	0	0	0	0	NA
CALVERT CLIFFS 1	1	1	2	1	1	0	3	NA
CALVERT CLIFFS 2	0	0	3	2	0	0	1	NA
CATAWBA 1	1	1	2	2	1	0	3	NA
CATAWBA 2	2	2	2	5	1	0	1	NA
CLINTON 1	3	3	1	4	2	0	2	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	0	NA
COOK 1	2	1	0	0	1	1	1	NA
COOK 2	1	1	2	0	1	1	1	NA
COOPER STATION	0	0	2	5	0	0	0	NA
CRYSTAL RIVER 3	0	3	1	5	0	0	0	NA
DAVIS-BESSE	2	1	0	1	2	1	0	NA
DIABLO CANYON 1	3	2	2	0	1	4	0	NA
DIABLO CANYON 2	2	7	2	1	2	1	0	NA
DRESDEN 2	0	4	4	0	2	1	0	NA
DRESDEN 3	0	1	1	3	0	2	2	NA
DUANE ARNOLD	1	0	2	1	1	1	1	NA
FARLEY 1	0	3	0	2	0	2	0	NA
FARLEY 2	0	1	0	4	1	2	0	NA
FERMI 2	3	0	2	1	3	2	0	NA
FITZPATRICK	1	2	0	0	2	3	1	NA
FORT CALHOUN	1	3	0	4	0	1	3	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	0	0	2	0	NA
GRAND GULF	0	0	1	0	0	0	0	NA
HADDAM NECK	0	0	1	0	2	2	1	NA
HATCH 1	1	2	0	0	0	0	0	NA
HATCH 2	2	1	0	0	0	0	0	NA
HOPE CREEK	0	4	1	3	0	1	0	NA
INDIAN POINT 2	1	3	2	1	0	1	0	NA
INDIAN POINT 3	1	1	3	0	0	0	1	NA
KEWAUNEE	0	0	1	1	0	0	0	NA
LASALLE 1	1	1	0	0	0	2	1	NA
LASALLE 2	1	0	0	1	0	2	1	NA
LIMERICK 1	0	3	4	3	0	1	4	NA
LIMERICK 2	NA	NA	NA	0	2	1	3	NA

TABLE 9.16 CASE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE PERSONNEL ERROR

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0	1	0	0	2	0	0	NA
MCQUIRE 1	3	8	0	2	7	2	1	NA
MCQUIRE 2	~	2	0	0	1	4	0	NA
MILLSTONE 1	0	1	0	2	1	1	0	NA
MILLSTONE 2	0	1	0	1	1	1	0	NA
MILLSTONE 3	0	0	0	1	2	2	2	NA
MONTICELLO	0	0	2	1	1	3	0	NA
NINE MILE PT. 1	0	0	0	0	2	0	0	NA
NINE MILE PT. 2	3	2	0	1	1	2	1	NA
NORTH ANNA 1	0	2	3	2	0	0	0	NA
NORTH ANNA 2	0	2	1	2	0	0	0	NA
OCONEE 1	2	1	2	0	2	0	0	NA
OCONEE 2	1	1	1	1	0	0	0	NA
OCONEE 3	1	1	1	0	2	1	0	NA
OYSTER CREEK	2	4	3	0	0	0	1	NA
PALISADES	1	~	1	1	1	0	2	NA
PALO VERDE 1	2	0	1	1	1	1	1	NA
PALO VERDE 2	0	0	0	1	0	1	0	NA
PALO VERDE 3	2	0	0	1	1	0	1	NA
PEACH BOTTOM 2	2	2	2	3	1	2	0	NA
PEACH BOTTOM 3	3	2	0	1	2	1	1	NA
PERRY	2	2	4	2	1	1	1	NA
PILGRIM	2	0	2	1	1	2	1	NA
POINT BEACH 1	1	1	1	0	1	0	0	NA
POINT BEACH 2	0	0	1	0	1	1	0	NA
PRAIRIE ISLAND 1	1	0	0	0	1	3	1	NA
PRAIRIE ISLAND 2	1	0	0	0	1	3	2	NA
QUAD CITIES 1	2	0	0	2	1	1	1	NA
QUAD CITIES 2	2	2	0	1	0	1	1	NA
RANCHO SECO	1	2	1	0	NA	NA	NA	NA
RIVER BEND	3	0	3	5	1	3	2	NA
ROBINSON 2	3	1	2	0	0	1	1	NA
SALEM 1	0	0	3	3	1	4	2	NA
SALEM 2	0	1	1	1	0	1	1	NA
SAN ONOFRE 1	0	2	1	1	1	0	0	NA
SAN ONOFRE 2	1	1	2	1	4	0	0	NA
SAN ONOFRE 3	2	0	4	1	1	0	0	NA
SEABROOK	0	1	0	0	1	1	2	NA
SEQUOYAH 1	2	5	3	2	0	3	1	NA
SEQUOYAH 2	2	1	1	5	1	3	2	NA
SHEARON HARRIS	1	5	3	0	1	3	0	NA
SHREHAM	0	0	1	0	0	NA	NA	NA
SOUTH TEXAS 1	2	3	2	1	0	1	1	NA
SOUTH TEXAS 2	NA	0	2	1	0	0	1	NA
ST. LUCIE 1	2	0	0	2	2	2	1	NA
ST. LUCIE 2	0	0	1	1	1	0	1	NA
SUMMER	1	1	2	1	1	0	0	NA
SURRY 1	1	4	4	1	1	0	0	NA
SURRY 2	0	4	4	0	3	1	0	NA
SUSQUEHANNA 1	1	0	2	1	0	2	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							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	0	1	1	0	1	1	1	NA
THREE MILE ISL. 1	0	0	0	0	0	1	0	NA
TROJAN	5	1	1	2	2	0	3	NA
TURKEY POINT 3	3	1	0	1	2	0	1	NA
TURKEY POINT 4	1	1	0	1	3	0	1	NA
VERMONT YANKEE	0	0	3	1	2	0	0	NA
VOGTLE 1	2	3	2	1	0	1	1	NA
VOGTLE 2	NA	NA	3	2	0	2	1	NA
WASH. NUCLEAR 2	4	0	3	5	0	0	2	NA
WATERFORD 3	0	1	0	0	2	2	2	NA
WOLF CREEK	1	2	1	0	0	0	0	NA
YANKEE-ROWE	2	0	2	0	2	0	0	NA
ZION 1	3	1	1	0	1	3	2	NA
ZION 2	1	4	4	0	0	1	1	NA
TOTAL	137	165	155	146	102	125	82	NA

NA - The plant is not yet licensed.

- The latest quarter data are not available.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, Cause Code data is not collected.

- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES

PERSONNEL ERROR DURING SURV./TESTING (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	1	4	1	3	2	6	0	NA
ARKANSAS 2	2	3	2	2	0	3	7	NA
BEAVER VALLEY 1	1	2	1	2	0	4	1	NA
BEAVER VALLEY 2	1	3	3	4	1	1	2	NA
BIG ROCK POINT	0	0	1	1	2	0	0	NA
BRAIDWOOD 1	3	0	0	0	0	4	0	NA
BRAIDWOOD 2	2	2	1	0	0	1	0	NA
BROWNS FERRY 1	5	11	3	1	2	1	2	NA
BROWNS FERRY 2	5	13	5	2	4	1	2	NA
BROWNS FERRY 3	5	11	1	1	2	1	2	NA
BRUNSWICK 1	0	4	1	3	1	1	0	NA
BRUNSWICK 2	1	6	1	2	4	2	2	NA
BYRON 1	1	0	1	0	1	0	3	NA
BYRON 2	2	0	1	0	1	0	1	NA
CALLAWAY	2	1	1	4	1	0	1	NA
CALVERT CLIFFS 1	0	1	2	0	2	3	5	NA
CALVERT CLIFFS 2	1	0	2	1	1	3	3	NA
CATAWBA 1	1	2	2	2	1	1	8	NA
CATAWBA 2	1	3	5	4	3	2	5	NA
CLINTON 1	1	3	8	5	0	4	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	3	NA
COOK 1	3	1	2	4	3	0	0	NA
COOK 2	2	2	2	4	1	0	1	NA
COOPER STATION	1	0	2	1	0	0	1	NA
CRYSTAL RIVER 3	2	4	3	1	5	0	0	NA
DAVIS-BESSE	3	2	1	3	2	0	1	NA
DIABLO CANYON 1	4	2	1	0	1	3	1	NA
DIABLO CANYON 2	1	5	1	1	1	3	0	NA
DRESDEN 2	2	1	3	1	0	0	1	NA
DRESDEN 3	1	0	0	1	0	1	2	NA
DUANE ARNOLD	1	1	2	0	2	0	0	NA
FARLEY 1	0	1	0	1	0	0	2	NA
FARLEY 2	0	0	1	1	1	0	2	NA
FERMI 2	3	2	3	3	2	5	1	NA
FITZPATRICK	0	2	1	3	0	3	4	NA
FORT CALHOUN	1	3	7	2	1	2	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	0	0	0	4	0	0	0	NA
GRAND GULF	1	1	0	2	1	1	1	NA
HADDAM NECK	1	0	0	2	2	0	0	NA
HATCH 1	1	2	4	0	1	4	3	NA
HATCH 2	1	0	3	0	2	5	4	NA
HOPE CREEK	5	5	3	3	3	3	1	NA
INDIAN POINT 2	2	0	0	1	0	0	0	NA
INDIAN POINT 3	0	0	3	1	0	2	0	NA
KEWAUNEE	2	0	5	2	0	0	1	NA
LASALLE 1	0	1	4	4	0	2	2	NA
LASALLE 2	0	3	6	3	1	1	2	NA
LIMERICK 1	0	2	4	8	6	1	1	NA
LIMERICK 2	NA	NA	NA	1	4	2	1	NA

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

PERSONNEL ERROR DURING SURV./TESTING(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	0	0	1	0	0	0	NA
MCGUIRE 1	5	4	3	1	7	0	2	NA
MCGUIRE 2	4	2	3	1	9	1	2	NA
MILLSTONE 1	0	1	1	2	2	1	1	NA
MILLSTONE 2	1	0	1	2	2	1	0	NA
MILLSTONE 3	2	3	2	3	5	5	5	NA
MONTICELLO	0	0	1	4	0	3	0	NA
NINE MILE PT. 1	1	2	4	1	0	1	0	NA
NINE MILE PT. 2	7	7	5	6	2	2	2	NA
NORTH ANNA 1	0	3	1	2	1	0	2	NA
NORTH ANNA 2	1	3	0	3	1	0	3	NA
OCONEE 1	1	0	4	1	1	0	0	NA
OCONEE 2	0	0	3	1	1	0	0	NA
OCONEE 3	2	0	3	1	1	1	0	NA
OYSTER CREEK	4	2	1	2	3	0	1	NA
PALISADES	2	1	2	1	1	2	1	NA
PALO VERDE 1	1	2	1	2	1	1	1	NA
PALO VERDE 2	1	2	0	2	1	0	2	NA
PALO VERDE 3	1	0	1	3	2	1	1	NA
PEACH BOTTOM 2	1	5	2	5	1	2	2	NA
PEACH BOTTOM 3	1	2	2	2	2	4	2	NA
PERRY	3	1	3	6	2	1	2	NA
PILGRIM	1	1	5	4	2	2	3	NA
POINT BEACH 1	0	0	0	2	0	1	0	NA
POINT BEACH 2	0	0	0	2	0	2	0	NA
PRAIRIE ISLAND 1	1	3	0	1	1	0	1	NA
PRAIRIE ISLAND 2	1	2	0	1	1	0	2	NA
QUAD CITIES 1	1	1	1	0	2	2	0	NA
QUAD CITIES 2	1	5	0	0	0	0	1	NA
RANCHO SECO	1	2	2	1	NA	NA	NA	NA
RIVER BEND	1	2	5	6	2	4	1	NA
ROBINSON 2	0	0	2	1	0	0	2	NA
SALEM 1	3	0	5	7	0	1	3	NA
SALEM 2	4	3	2	3	0	1	2	NA
SAN ONOFRE 1	1	1	1	3	3	2	1	NA
SAN ONOFRE 2	4	0	3	1	4	2	0	NA
SAN ONOFRE 3	7	1	1	2	1	1	1	NA
SEABROOK	1	0	2	3	3	1	2	NA
SEQUOYAH 1	5	4	2	3	6	2	1	NA
SEQUOYAH 2	7	1	2	5	5	3	3	NA
SHEARON HARRIS	7	3	3	4	1	2	4	NA
SHOREHAM	3	2	2	0	1	NA	NA	NA
SOUTH TEXAS 1	5	2	4	2	2	2	3	NA
SOUTH TEXAS 2	NA	0	4	1	0	1	1	NA
ST. LUCIE 1	2	0	0	0	0	1	1	NA
ST. LUCIE 2	0	0	0	0	1	0	0	NA
SUMMER	1	2	2	1	2	2	1	NA
SURRY 1	2	2	2	7	4	0	0	NA
SURRY 2	1	1	0	7	4	1	1	NA
SUSQUEHANNA 1	2	2	0	6	1	1	2	NA

TABLE 9.17 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)
PERSONNEL ERROR DURING SURV./TESTING (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	87-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	2	2	0	3	1	3	2	NA
THREE MILE ISL 1	2	0	0	0	0	1	2	NA
TROJAN	4	7	3	3	5	4	6	NA
TURKEY POINT 3	5	2	4	0	1	0	4	NA
TURKEY POINT 4	5	1	2	0	2	1	1	NA
VERMONT YANKEE	0	3	4	1	1	0	3	NA
VOGTLE 1	3	6	4	1	2	1	4	NA
VOGTLE 2	NA	NA	2	3	1	1	2	NA
WASH. NUCLEAR 2	4	4	0	5	4	1	2	NA
WATERFORD 3	3	2	1	3	3	2	0	NA
WOLF CREEK	2	1	5	1	1	0	0	NA
YANKEE-ROWE	0	2	1	2	1	1	0	NA
ZION 1	3	1	1	1	4	1	2	NA
ZION 2	2	7	0	1	1	1	3	NA
TOTAL	208	227	223	243	185	155	176	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
 - In the case of Rancho Sec., the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
 - In the case of Fort St. Vrain, Cause Code data is not collected.
 - In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 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							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	1	1	1	1	0	3	1	NA
ARKANSAS 2	2	3	0	3	0	1	0	NA
BEAVER VALLEY 1	0	0	1	1	0	1	1	NA
BEAVER VALLEY 2	0	0	1	3	0	0	0	NA
BIG ROCK POINT	0	0	1	0	0	0	0	NA
BRAIDWOOD 1	0	1	0	1	0	0	0	NA
BRAIDWOOD 2	3	1	0	0	0	0	0	NA
BROWNS FERRY 1	1	5	1	0	2	2	0	NA
BROWNS FERRY 2	1	5	1	1	3	3	1	NA
BROWNS FERRY 3	1	5	2	0	3	2	0	NA
BRUNSWICK 1	0	3	1	4	0	1	1	NA
BRUNSWICK 2	1	1	1	3	1	2	1	NA
BYRON 1	1	1	1	0	0	0	0	NA
BYRON 2	3	1	1	0	0	0	1	NA
CALLAWAY	1	0	1	0	0	0	0	NA
CALVERT CLIFFS 1	0	0	0	0	0	0	0	NA
CALVERT CLIFFS 2	0	0	1	0	0	0	0	NA
CATAWBA 1	0	1	5	0	1	0	0	NA
CATAWBA 2	2	3	2	0	1	0	0	NA
CLINTON 1	2	1	2	1	2	1	0	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	0	NA
COOK 1	0	1	2	1	0	0	0	NA
COOK 2	0	0	3	1	0	1	0	NA
COOPER STATION	5	1	0	0	1	1	1	NA
CRYSTAL RIVER 3	0	0	0	1	1	0	1	NA
DAVIS-BESSE	0	1	0	0	0	0	0	NA
DIABLO CANYON 1	1	0	0	0	0	0	0	NA
DIABLO CANYON 2	0	2	0	0	0	0	0	NA
DRESDEN 2	1	3	2	1	5	1	1	NA
DRESDEN 3	0	0	1	0	1	1	0	NA
DUANE ARNOLD	1	0	1	0	1	1	1	NA
FARLEY 1	0	2	0	0	0	0	0	NA
FARLEY 2	0	1	0	1	0	0	0	NA
FERMI 2	2	1	0	0	3	2	0	NA
FITZPATRICK	2	0	1	2	2	0	2	NA
FORT CALHOUN	0	1	0	0	1	0	1	NA
FORT SY. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	1	0	0	0	NA
GRAND GULF	0	0	0	0	2	0	0	NA
HADDAM NECK	1	2	0	0	0	0	1	NA
HATCH 1	1	1	0	0	0	0	1	NA
HATCH 2	1	1	0	0	2	1	0	NA
HOPE CREEK	1	0	0	0	0	0	1	NA
INDIAN POINT 2	1	0	0	0	1	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	1	2	6	2	1	1	0	NA
LASALLE 2	1	4	4	1	2	2	0	NA
LIMERICK 1	0	0	1	1	0	2	0	NA
LIMERICK 2	NA	NA	NA	0	0	0	1	NA

TABLE 9.18 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE EQUIPMENT FAILURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	0	0	0	0	2	0	NA
MCGUIRE 1	4	5	1	0	1	0	1	NA
MCGUIRE 2	4	3	2	0	1	0	0	NA
MILLSTONE 1	2	2	0	4	0	0	0	NA
MILLSTONE 2	0	0	1	0	0	0	0	NA
MILLSTONE 3	1	2	0	1	0	1	1	NA
MONTICELLO	0	0	0	1	0	0	0	NA
NINE MILE PT. 1	0	0	0	0	0	1	1	NA
NINE MILE PT. 2	4	1	1	1	1	2	2	NA
NORTH ANNA 1	1	1	1	1	0	0	1	NA
NORTH ANNA 2	0	1	2	0	0	0	0	NA
OCONEE 1	0	0	0	0	0	0	0	NA
OCONEE 2	1	0	0	0	0	0	0	NA
OCONEE 3	1	0	1	0	0	0	1	NA
OYSTER CREEK	2	2	0	0	2	0	1	NA
PALISADES	0	2	0	0	1	0	1	NA
PALO VERDE 1	1	0	0	1	1	0	0	NA
PALO VERDE 2	0	1	2	1	1	2	0	NA
PALO VERDE 3	0	0	1	0	1	0	0	NA
PEACH BOTTOM 2	2	0	0	1	2	1	1	NA
PEACH BOTTOM 3	2	0	0	0	0	1	1	NA
PERRY	3	2	1	1	0	0	0	NA
PULASKI	0	1	1	0	1	2	0	NA
POINT BEACH 1	0	0	0	1	0	0	0	NA
POINT BEACH 2	0	0	0	0	0	1	0	NA
PRAIRIE ISLAND 1	0	1	0	1	0	2	0	NA
PRAIRIE ISLAND 2	0	2	0	1	0	2	1	NA
QUAD CITIES 1	0	0	1	1	1	0	3	NA
QUAD CITIES 2	0	0	0	2	0	0	1	NA
RANCHO SECO	0	1	1	0	NA	NA	NA	NA
RIVER BEND	1	3	3	2	1	0	1	NA
ROBINSON 2	0	1	1	0	0	0	1	NA
SALEM 1	1	1	1	0	0	1	1	NA
SALEM 2	1	2	3	1	0	1	1	NA
SAN ONOFRE 1	1	1	0	0	0	0	0	NA
SAN ONOFRE 2	1	1	0	0	0	0	1	NA
SAN ONOFRE 3	0	0	0	0	0	0	1	NA
SEABROOK	0	0	2	0	0	0	2	NA
SEQUOYAH 1	3	5	1	0	0	1	0	NA
SEQUOYAH 2	4	0	1	0	0	0	0	NA
SHEARON HARRIS	5	1	0	1	0	1	0	NA
SHOREHAM	2	0	1	0	0	NA	NA	NA
SOUTH TEXAS 1	3	0	0	0	0	1	1	NA
SOUTH TEXAS 2	NA	0	1	1	0	0	0	NA
ST. LUCIE 1	1	0	0	0	0	0	0	NA
ST. LUCIE 2	0	0	0	0	0	0	0	NA
SUMMER	0	0	0	2	0	0	0	NA
SURRY 1	5	3	0	2	1	0	2	NA
SURRY 2	3	2	0	2	2	1	1	NA
SUSQUEHANNA 1	3	0	0	1	1	1	3	NA

TABLE 9.18 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

MAINTENANCE EQUIPMENT FAILURE

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	3	0	0	0	0	1	1	NA
THREE MILLS ISL 1	0	1	0	0	0	0	1	NA
TROJAN	4	1	0	0	1	1	0	NA
TURKEY POINT 3	1	0	1	0	0	2	0	NA
TURKEY POINT 4	3	0	1	0	0	1	0	NA
VERMONT YANKEE	1	1	2	0	0	0	1	NA
VOGTLE 1	0	2	3	0	1	0	0	NA
VOGTLE 2	NA	NA	2	2	2	0	0	NA
WASH. NUCLEAR 2	1	1	0	1	0	0	0	NA
WATERFORD 3	0	0	0	0	0	0	0	NA
WOLF CREEK	1	1	0	0	1	0	1	NA
YANKEE-ROWE	0	1	0	0	0	0	0	NA
ZION 1	1	1	1	0	0	0	1	NA
ZION 2	1	5	0	0	0	0	0	NA
TOTAL	118	118	84	63	58	58	57	NA

NA - The plant is not yet licensed.

- The latest quarter data are not available.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, Cause Code data is not collected.

- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 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							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	0	1	0	1	0	2	0	NA
ARKANSAS 2	0	0	0	0	0	2	1	NA
BEAVER VALLEY 1	1	0	1	0	2	3	1	NA
BEAVER VALLEY 2	0	0	3	3	2	0	0	NA
BIG ROCK POINT	1	0	0	0	0	0	0	NA
BRAIDWOOD 1	0	3	3	1	1	1	1	NA
BRAIDWOOD 2	2	1	1	1	1	0	1	NA
BROWNS FERRY 1	1	4	0	1	0	1	3	NA
BROWNS FERRY 2	1	3	0	2	0	2	3	NA
BROWNS FERRY 3	1	3	0	1	0	1	3	NA
BRUNSWICK 1	1	3	0	0	0	1	1	NA
BRUNSWICK 2	1	1	1	0	2	2	2	NA
BYRON 1	2	0	0	0	0	0	0	NA
BYRON 2	3	0	0	1	0	0	0	NA
CALLAWAY	0	0	0	1	1	1	1	NA
CALVERT CLIFFS 1	0	1	0	0	0	0	0	NA
CALVERT CLIFFS 2	0	1	0	1	0	0	0	NA
CATAWBA 1	0	1	0	0	1	1	1	NA
CATAWBA 2	0	1	1	0	0	0	1	NA
CLINTON 1	2	1	0	0	0	1	1	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	NA
COOK 1	0	2	0	0	0	0	0	NA
COOK 2	0	1	1	0	0	0	0	NA
COOPER STATION	1	0	0	2	1	0	0	NA
CRYSTAL RIVER 3	0	0	0	2	0	2	0	NA
DAVIS-BESSE	0	0	1	0	0	1	1	NA
DIABLO CANYON 1	0	0	0	0	0	1	0	NA
DIABLO CANYON 2	1	1	1	0	0	0	0	NA
DRESDEN 2	1	1	1	1	3	1	0	NA
DRESDEN 3	0	0	0	0	2	1	0	NA
DUANE ARNOLD	1	0	1	0	0	0	1	NA
FARLEY 1	0	1	0	0	0	0	0	NA
FARLEY 2	0	1	0	1	0	0	0	NA
FERMI 2	1	1	2	0	0	1	0	NA
FITZPATRICK	0	0	0	0	0	0	2	NA
FORT CALHOUN	2	2	0	0	0	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	0	3	2	1	NA
GRAND GULF	1	1	0	1	0	1	0	NA
HADDAM NECK	0	0	0	1	2	1	0	NA
HATCH 1	0	1	0	0	1	1	1	NA
HATCH 2	1	1	0	0	0	1	1	NA
HOPE CREEK	0	0	1	1	0	1	1	NA
INDIAN POINT 2	1	0	0	0	2	0	0	NA
INDIAN POINT 3	0	0	0	0	0	0	0	NA
KEWAUNEE	0	0	0	1	1	1	0	NA
LASALLE 1	3	2	3	3	2	0	2	NA
LASALLE 2	5	2	2	3	0	1	4	NA
LIMERICK 1	0	0	2	1	2	2	1	NA
LIMERICK 2	NA	NA	NA	1	0	4	1	NA

TABLE 9.19 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

POTENTIAL MAINTENANCE PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	1	0	1	0	0	0	0	NA
MCGUIRE 1	0	3	0	0	1	0	0	NA
MCGUIRE 2	2	1	1	1	0	0	0	NA
MILLSTONE 1	0	0	0	0	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	0	1	0	1	0	0	0	NA
MONTICELLO	0	0	1	1	3	2	0	NA
NINE MILE PT. 1	0	0	0	0	1	0	0	NA
NINE MILE PT. 2	2	2	0	0	3	0	2	NA
NORTH ANNA 1	1	0	0	1	1	1	0	NA
NORTH ANNA 2	0	0	1	0	0	0	0	NA
OCONEE 1	0	0	1	1	0	0	0	NA
OCONEE 2	0	0	1	0	0	1	0	NA
OCONEE 3	0	1	0	1	0	0	0	NA
OYSTER CREEK	3	1	0	2	0	0	0	NA
PALISADES	2	2	0	2	1	0	2	NA
PALO VERDE 1	1	1	0	0	2	0	0	NA
PALO VERDE 2	0	1	0	0	0	0	0	NA
PALO VERDE 3	0	0	1	0	0	0	0	NA
PEACH BOTTOM 2	1	2	0	0	1	1	2	NA
PEACH BOTTOM 3	1	0	0	0	1	1	1	NA
PERRY	2	2	1	0	0	1	0	NA
PILGRIM	0	2	1	0	3	2	2	NA
POINT BEACH 1	0	0	0	1	0	0	0	NA
POINT BEACH 2	0	0	1	0	1	1	0	NA
PRAIRIE ISLAND 1	0	0	0	1	4	1	0	NA
PRAIRIE ISLAND 2	0	1	0	0	4	1	0	NA
QUAD CITIES 1	0	0	0	2	1	2	1	NA
QUAD CITIES 2	1	1	0	0	0	0	2	NA
RANCHO SECO	0	1	0	0	NA	NA	NA	NA
RIVER BEND	2	1	2	1	0	1	2	NA
ROBINSON 2	0	0	0	1	0	0	1	NA
SALEM 1	0	0	0	2	0	1	0	NA
SALEM 2	1	1	0	1	0	1	0	NA
SAN ONOFRE 1	0	0	2	1	2	0	2	NA
SAN ONOFRE 2	1	2	0	0	0	0	0	NA
SAN ONOFRE 3	0	1	0	0	1	0	0	NA
SEABROOK	0	1	1	1	0	0	5	NA
SEQUOYAH 1	1	2	0	2	1	2	1	NA
SEQUOYAH 2	2	0	0	2	0	2	1	NA
SHEARON HARRIS	3	0	0	0	0	1	0	NA
SHOREHAM	0	1	1	0	0	NA	NA	NA
SOUTH TEXAS 1	1	1	1	0	0	1	0	NA
SOUTH TEXAS 2	NA	0	1	2	3	1	1	NA
ST. LUCIE 1	2	0	0	0	0	0	0	NA
ST. LUCIE 2	0	0	0	0	1	1	0	NA
SUMMER	0	0	0	1	1	0	0	NA
SURRY 1	7	1	0	0	2	2	0	NA
SURRY 2	1	1	0	0	4	1	0	NA
SUSQUEHANNA 1	1	0	1	2	0	0	1	NA

TABLE 9.19 CAUSE CODES - MAINTENANCE SUB-CATEGORIES (CONTINUED)

POTENTIAL MAINTENANCE PROBLEM

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	2	0	1	0	2	1	0	NA
THREE MILE ISL 1	0	1	0	0	0	1	0	NA
TROJAN	1	2	0	0	0	0	0	NA
TURKEY POINT 3	1	0	0	0	0	0	0	NA
TURKEY POINT 4	2	0	0	1	2	0	0	NA
VERMONT YANKEE	0	0	2	1	1	1	0	NA
VOGTLE 1	2	3	0	1	1	0	0	NA
VOGTLE 2	NA	NA	1	1	0	0	0	NA
WASH. NUCLEAR 2	1	1	0	2	1	1	1	NA
WATERFORD 3	0	0	0	0	1	1	1	NA
WOLF CREEK	0	0	1	2	3	0	0	NA
YANKEE-ROWE	0	1	0	1	1	0	1	NA
ZION 1	1	1	1	0	0	1	1	NA
ZION 2	1	2	0	1	0	0	1	NA
TOTAL	85	86	50	71	83	74	68	NA

NA - The plant is not yet licensed.

- The latest quarter data are not available.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, Cause Code data is not collected.

- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.20 CAUSE CODES

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	86-3	86-4	89-1	89-2	89-3	89-4	90-1	90-2
ARKANSAS 1	8	6	9	2	3	2	1	NA
ARKANSAS 2	3	0	2	3	3	1	1	NA
BEAVER VALLEY 1	0	1	0	1	2	0	3	NA
BEAVER VALLEY 2	1	2	1	0	1	0	2	NA
BIG ROCK POINT	0	0	1	0	0	1	0	NA
BRAIDWOOD 1	0	2	0	0	3	1	0	NA
BRAIDWOOD 2	2	2	0	0	1	2	0	NA
BROWNS FERRY 1	8	6	7	4	3	2	2	NA
BROWNS FERRY 2	8	6	8	4	3	2	2	NA
BROWNS FERRY 3	8	6	7	4	3	2	2	NA
BRUNSWICK 1	2	4	3	0	2	1	1	NA
BRUNSWICK 2	4	4	3	0	2	1	1	NA
BYRON 1	0	0	0	0	1	1	0	NA
BYRON 2	0	0	0	0	1	1	0	NA
CALLAWAY	1	1	1	0	0	0	1	NA
CALVERT CLIFFS 1	2	3	2	5	4	3	2	NA
CALVERT CLIFFS 2	0	1	0	4	4	3	2	NA
CATAWBA 1	0	3	5	2	4	2	5	NA
CATAWBA 2	0	4	5	2	3	3	3	NA
CLINTON 1	2	1	3	2	1	3	4	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	NA
COOK 1	2	1	2	0	0	0	1	NA
COOK 2	2	1	2	0	0	1	1	NA
COOPER STATION	0	0	6	6	0	1	1	NA
CRYSTAL RIVER 3	3	3	7	5	5	2	4	NA
DAVIS-BESSE	4	1	0	2	0	0	1	NA
DIABLO CANYON 1	4	3	1	0	1	2	0	NA
DIABLO CANYON 2	3	6	1	0	1	1	1	NA
DRESDEN 2	0	1	2	0	2	1	0	NA
DRESDEN 3	0	0	2	1	1	2	2	NA
DUANE ARNOLD	4	5	1	0	2	1	0	NA
FARLEY 1	1	0	0	2	0	2	0	NA
FARLEY 2	1	1	0	2	0	1	0	NA
FERMI 2	2	0	2	2	1	2	0	NA
FITZPATRICK	0	4	2	3	3	5	1	NA
FORT CALHOUN	3	4	2	3	0	1	4	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	1	0	0	2	1	1	0	NA
GRAND GULF	2	0	0	2	2	1	1	NA
HADDAM NECK	1	1	3	1	2	4	1	NA
HATCH 1	2	2	0	1	0	2	1	NA
HATCH 2	2	2	0	0	0	1	2	NA
HOPE CREEK	5	2	0	0	3	3	0	NA
INDIAN POINT 2	1	4	3	0	0	1	0	NA
INDIAN POINT 3	0	2	0	4	0	1	1	NA
KEWAUNEE	0	0	2	2	2	0	2	NA
LASALLE 1	2	2	4	1	0	1	2	NA
LASALLE 2	1	2	4	1	0	1	1	NA
LIMERICK 1	3	8	10	8	1	0	1	NA
LIMERICK 2	NA	NA	NA	1	1	1	2	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
HAINES YANKEE	1	1	1	0	0	1	1	NA
MCGUIRE 1	6	5	3	2	6	1	1	NA
MCGUIRE 2	4	2	1	2	6	1	3	NA
MILLSTONE 1	0	1	3	2	0	2	1	NA
MILLSTONE 2	0	0	2	0	0	1	0	NA
MILLSTONE 3	0	1	1	1	0	2	4	NA
MONTICELLO	1	1	1	3	2	5	1	NA
NINE MILE PT. 1	1	1	0	1	1	2	2	NA
NINE MILE PT. 2	12	6	2	1	1	2	0	NA
NORTH ANNA 1	0	3	0	1	0	1	0	NA
NORTH ANNA 2	0	3	0	1	0	1	0	NA
OCONEE 1	1	1	3	3	2	1	1	NA
OCONEE 2	1	1	3	2	2	2	1	NA
OCONEE 3	1	1	3	2	2	1	2	NA
OYSTER CREEK	4	0	5	0	0	1	0	NA
PALISADES	1	2	3	1	4	1	2	NA
PALO VERDE 1	2	1	2	2	1	4	0	NA
PALO VERDE 2	4	2	2	3	1	2	0	NA
PALO VERDE 3	1	1	3	4	1	2	0	NA
PEACH BOTTOM 2	3	3	3	2	2	4	0	NA
PEACH BOTTOM 3	2	2	2	1	2	3	0	NA
PERRY	3	3	1	3	1	1	2	NA
PILGRIM	1	1	4	0	1	0	2	NA
POINT BEACH 1	2	0	1	3	0	1	0	NA
POINT BEACH 2	2	2	1	2	1	2	0	NA
PRAIRIE ISLAND 1	0	2	0	2	1	0	0	NA
PRAIRIE ISLAND 2	0	1	0	2	0	0	0	NA
QUAD CITIES 1	0	0	0	2	1	2	1	NA
QUAD CITIES 2	0	0	0	2	1	1	2	NA
RANCHO SECO	1	1	4	0	NA	NA	NA	NA
RIVER BEND	0	2	2	4	0	0	4	NA
ROBINSON 2	2	4	2	1	1	4	1	NA
SALEM 1	3	0	3	6	0	3	5	NA
SALEM 2	3	1	3	8	1	8	11	NA
SAN ONOFRE 1	2	3	3	2	3	5	1	NA
SAN ONOFRE 2	4	4	1	3	1	0	0	NA
SAN ONOFRE 3	4	3	0	4	3	1	1	NA
SEABROOK	0	1	0	0	1	0	0	NA
SEQUOYAH 1	3	1	0	0	0	1	0	NA
SEQUOYAH 2	3	1	1	0	1	1	1	NA
SHEARON HARRIS	3	0	2	0	1	1	1	NA
SHOREHAM	0	1	0	0	0	NA	NA	NA
SOUTH TEXAS 1	8	4	5	1	4	0	0	NA
SOUTH TEXAS 2	NA	2	2	1	5	1	1	NA
ST. LUCIE 1	0	0	0	0	0	0	0	NA
ST. LUCIE 2	0	0	1	0	0	0	0	NA
SUMMER	0	2	1	0	1	1	1	NA
SURRY 1	4	3	1	3	2	2	0	NA
SURRY 2	3	4	1	3	3	1	0	NA
SUSQUEHANNA 1	2	1	1	1	2	0	1	NA

TABLE 9.20 CAUSE CODES (CONTINUED)

DESIGN/INSTALLATION/FABRICATION

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	2	1	1	1	1	2	1	NA
THREE MILE ISL 1	0	0	0	0	0	0	1	NA
TROJAN	2	2	2	2	2	1	1	NA
TURKEY POINT 3	5	4	3	3	0	2	0	NA
TURKEY POINT 4	3	3	2	3	3	1	0	NA
VERMONT YANKEE	1	1	2	1	1	0	2	NA
VOGTLE 1	2	6	1	0	0	1	2	NA
VOGTLE 2	NA	NA	1	1	1	1	1	NA
WASH. NUCLEAR 2	4	1	4	6	6	2	2	NA
WATERFORD 3	0	4	2	0	3	0	0	NA
WOLF CREEK	4	6	1	1	0	1	1	NA
YANKEE-ROWE	0	2	0	1	1	0	0	NA
ZION 1	2	2	0	1	0	1	0	NA
ZION 2	2	3	0	2	0	0	1	NA
TOTAL	223	227	217	191	158	158	129	NA

NA - The plant is not yet licensed.

- The latest quarter data are not available.

- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.

- In the case of Fort St. Vrain, Cause Code data is not collected.

- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

TABLE 9.21 CAUSE CODES

EQUIPMENT FAILURE (ELEC./ENVIRON.)

(The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
ANSAS 1	0	0	0	1	0	0	0	NA
ANSAS 2	0	0	0	0	0	0	0	NA
BEAVER VALLEY 1	0	0	0	0	0	0	0	NA
BEAVER VALLEY 2	2	0	0	0	0	0	0	NA
BIG ROCK POINT	0	1	0	0	0	0	0	NA
BRAIDWOOD 1	2	0	0	0	1	0	0	NA
BRAIDWOOD 2	1	1	0	0	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	2	0	1	0	1	0	1	NA
BYRON 2	2	0	0	0	1	0	0	NA
CALLAWAY	1	0	0	1	0	1	0	NA
CALVERT CLIFFS 1	0	0	0	0	0	0	0	NA
CALVERT CLIFFS 2	0	0	0	0	0	0	0	NA
CATAWBA 1	0	0	0	1	1	1	0	NA
CATAWBA 2	0	0	0	1	1	0	0	NA
CLINTON 1	0	1	0	0	0	0	0	NA
COMANCHE PEAK 1	NA	NA	NA	NA	NA	NA	1	NA
COOK 1	0	1	0	0	0	0	0	NA
COOK 2	0	0	0	0	1	0	0	NA
COOPER STATION	1	0	0	0	0	0	0	NA
CRYSTAL RIVER 3	0	0	0	1	0	0	0	NA
DAVIS-RESSE	1	0	1	1	0	0	0	NA
DIABLO CANYON 1	0	0	0	0	0	0	1	NA
DIABLO CANYON 2	0	0	1	0	0	0	0	NA
DRESDEN 2	1	0	2	0	0	0	0	NA
DRESDEN 3	0	0	1	0	0	0	1	NA
DUANE ARNOLD	0	0	1	0	0	0	0	NA
FARLEY 1	0	0	0	0	0	0	0	NA
FARLEY 2	0	0	0	0	0	0	0	NA
FERMI 2	0	0	0	0	0	0	1	NA
FITZPATRICK	0	0	0	0	0	1	1	NA
FORT CALHOUN	1	0	0	0	0	0	0	NA
FORT ST. VRAIN	NA	NA	NA	NA	NA	NA	NA	NA
GINNA	2	0	0	0	0	0	0	NA
GRAND GULF	0	0	1	0	1	1	0	NA
HADDAM NECK	0	0	0	0	0	0	0	NA
HATCH 1	1	0	1	0	0	0	1	NA
HATCH 2	1	0	0	0	0	0	0	NA
HOPE CREEK	0	2	0	0	0	0	0	NA
INDIAN POINT 2	0	0	0	0	0	0	0	NA
INDIAN POINT 3	0	0	0	0	0	0	0	NA
KEWAUNEE	0	0	0	0	0	0	0	NA
LASALLE 1	0	0	0	0	0	0	0	NA
LASALLE 2	0	0	0	0	0	0	0	NA
LIMERICK 1	0	0	0	0	0	0	1	NA
LIMERICK 2	NA	NA	NA	0	1	0	1	NA

TABLE 9.21 CAUSE CODES (CONTINUED)

EQUIPMENT FAILURE (ELEC./ENVIRON.) (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
MAINE YANKEE	0	0	0	0	0	0	0	NA
MCGUIRE 1	0	0	1	0	1	0	0	NA
MCGUIRE 2	1	0	0	0	0	0	0	NA
MILLSTONE 1	0	0	0	0	0	0	0	NA
MILLSTONE 2	0	0	0	0	0	0	0	NA
MILLSTONE 3	0	1	0	0	0	0	0	NA
MONTECELLO	0	0	0	0	0	0	0	NA
NINE MILE PT. 1	0	0	1	0	0	0	0	NA
NINE MILE PT. 2	4	0	1	1	1	2	0	NA
NORTH ANNA 1	0	0	0	0	0	0	0	NA
NORTH ANNA 2	0	0	0	1	0	0	0	NA
OCONEE 1	0	0	0	0	0	0	0	NA
OCONEE 2	0	0	0	0	0	0	0	NA
OCONEE 3	0	0	0	0	0	0	0	NA
OYSTER CREEK	0	0	1	1	0	0	0	NA
PALISADES	0	0	0	0	0	0	1	NA
PALO VERDE 1	0	0	1	0	1	1	0	NA
PALO VERDE 2	0	0	0	0	1	0	0	NA
PALO VERDE 3	0	0	1	0	0	0	1	NA
PEACH BOTTOM 2	1	0	0	1	0	0	0	NA
PEACH BOTTOM 3	0	0	0	0	0	0	0	NA
PERRY	0	1	0	0	0	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	1	0	NA
PRAIRIE ISLAND 2	0	0	1	1	0	1	0	NA
QUAD CITIES 1	0	0	0	1	0	0	2	NA
QUAD CITIES 2	0	0	0	0	0	0	2	NA
RANCHO SECO	0	0	0	0	NA	NA	NA	NA
RIVER BEND	0	0	0	0	1	0	0	NA
ROBINSON 2	0	0	0	0	0	0	0	NA
SALEM 1	0	1	1	1	0	0	0	NA
SALEM 2	0	1	1	0	0	0	0	NA
SAN ONOFRE 1	0	0	0	0	0	0	0	NA
SAN ONOFRE 2	0	1	1	1	0	0	0	NA
SAN ONOFRE 3	0	1	1	1	0	0	0	NA
SEABROOK	0	0	0	0	0	0	0	NA
SEQUOYAH 1	0	0	0	0	0	0	0	NA
SEQUOYAH 2	2	0	0	0	0	0	1	NA
SHEARON HARRIS	0	0	1	0	0	0	0	NA
SHOREHAM	0	0	0	0	0	NA	NA	NA
SOUTH TEXAS 1	0	0	0	0	0	0	0	NA
SOUTH TEXAS 2	NA	0	0	0	2	1	0	NA
ST. LUCIE 1	0	0	0	0	0	0	0	NA
ST. LUCIE 2	0	0	1	0	1	0	0	NA
SUMMER	0	0	0	0	0	1	0	NA
SURRY 1	1	1	1	0	1	2	0	NA
SURRY 2	0	1	1	0	0	0	1	NA
SUSQUEHANNA 1	1	0	1	0	0	1	0	NA

TABLE 9.21 CAUSE CODES (CONTINUED)

EQUIPMENT FAILURE (ELEC./ENVIRON.) (The latest quarter data are preliminary)

Plant Name	Year - Calendar Quarter							
	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2
SUSQUEHANNA 2	1	0	1	0	0	0	0	NA
THREE MILE ISL 1	0	0	0	0	0	0	0	NA
TROJAN	0	1	0	1	1	0	0	NA
TURKEY POINT 3	1	0	0	0	0	0	1	NA
TURKEY POINT 4	0	0	0	0	0	0	1	NA
VERMONT YANKEE	0	0	0	0	0	0	0	NA
VOGTLE 1	1	0	1	1	0	0	0	NA
VOGTLE 2	NA	NA	1	0	1	1	0	NA
WASH. NUCLEAR 2	1	0	0	0	1	0	0	NA
WATERFORD 3	0	0	0	0	1	0	0	NA
WOLF CREEK	0	0	0	0	0	0	0	NA
YANKEE-ROWE	0	0	0	0	0	0	0	NA
ZION 1	0	0	1	0	0	0	0	NA
ZION 2	0	1	0	1	0	0	0	NA
TOTAL	32	16	29	18	22	15	19	NA

- NA - The plant is not yet licensed.
- The latest quarter data are not available.
- In the case of Rancho Seco, the unit ceased commercial operation in June 1989 and all performance indicator data after 89-2 will be NA.
- In the case of Fort St. Vrain, Cause Code data is not collected.
- In the case of Shoreham, the unit ceased operation in August 1989 and all performance indicator data after 89-3 will be NA.

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10. REVISION OF DATA
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FIRST QUARTER 1990 REPORT

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10. REVISION OF DATA CONTAINED IN THE FIRST QUARTER 1990 REPORT

An intensive review of data sources and application of detailed screening criteria have resulted in some changes to the data previously reported in the first quarter 1990 report. These changes are summarized in Tables 10.1 through 10.19. In aggregate, they do not significantly alter the overall picture presented in the first quarter 1990 report.

TABLE 10.1 REVISIONS TO SCRAMS ABOVE 15% POWER/1000
CRITICAL HOURS
(TABLE 9.3 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
NORTH ANNA 1	4-89	0.54	0.00

TABLE 10.2 REVISIONS TO SCRAMS LESS THAN OR EQUAL TO 15% POWER
(TABLE 9.4 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
NORTH ANNA 1	4-89	0	1

**TABLE 10.3 REVISIONS TO SAFETY SYSTEM ACTUATIONS
(TABLE 9.5 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 2	4-89	0	1
BEAVER VALLEY 1	4-89	1	2
VOGTLE 2	1-90	0	1

**TABLE 10.4 REVISIONS TO SIGNIFICANT EVENTS
(TABLE 9.6 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
CLINTON 1	1-90	0	1
DRESDEN 2	1-90	1	2

**TABLE 10.5 REVISIONS TO SAFETY SYSTEM FAILURES
(TABLE 9.7 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 1	1-89	1	2
ARKANSAS 1	1-90	1	2
ARKANSAS 2	1-90	0	1
BIG ROCK POINT	3-89	0	2
BIG ROCK POINT	1-90	0	1
BROWNS FERRY 1	2-89	2	3
BROWNS FERRY 2	2-89	3	4
BROWNS FERRY 3	2-89	2	3
CALVERT CLIFFS 1	3-89	1	2
CALVERT CLIFFS 1	1-90	6	4
CALVERT CLIFFS 2	2-89	1	2
CALVERT CLIFFS 2	3-89	1	2
CALVERT CLIFFS 2	1-90	2	1
CATAWBA 1	1-90	2	5
CATAWBA 2	1-90	1	6
COOK 1	3-89	0	1
COOK 1	1-90	0	1
COOPER STATION	1-90	0	1
CRYSTAL RIVER 3	2-89	0	2
CRYSTAL RIVER 3	3-89	1	2
CRYSTAL RIVER 3	1-90	1	2
DIABLO CANYON 1	1-90	0	1
DRESDEN 3	4-89	1	2
DUANE ARNOLD	1-90	1	0
FARLEY 1	2-89	0	1
FARLEY 1	1-90	1	0
FARLEY 2	2-89	0	2
FARLEY 2	1-90	1	0
FORT CALHOUN	2-89	1	2
FORT CALHOUN	1-90	1	2
FORT ST. VRAIN	3-89	2	3
GINNA	1-90	0	2
GRAND GULF	1-90	0	1
HADDAM NECK	3-89	1	2
HADDAM NECK	1-90	3	4
INDIAN POINT 3	2-89	0	1
LASALLE 1	2-89	1	3
LASALLE 1	1-90	1	0
LIMERICK 1	2-89	4	5
LIMERICK 1	1-90	2	3
MAINE YANKEE	1-90	1	0
MCGUIRE 1	1-90	0	1

TABLE 10.5 REVISIONS TO SAFETY SYSTEM FAILURES (CONTINUED)
(TABLE 9.7 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
MILLSTONE 1	3-89	0	1
MILLSTONE 1	1-90	0	1
MILLSTONE 2	3-89	0	1
MONTICELLO	4-89	1	2
MONTICELLO	1-90	0	1
NINE MILE PT. 1	1-90	0	2
OCONEE 1	1-90	0	1
OCONEE 2	1-90	0	1
OCONEE 3	1-90	0	1
OYSTER CREEK	1-90	2	1
PALO VERDE 1	3-89	0	1
PALO VERDE 2	3-89	0	1
PALO VERDE 3	3-89	0	1
PEACH BOTTOM 2	3-89	0	1
PEACH BOTTOM 2	1-90	1	2
PEACH BOTTOM 3	3-89	2	3
QUAD CITIES 1	1-90	3	1
QUAD CITIES 2	4-89	0	1
QUAD CITIES 2	1-90	1	0
RIVER BEND	1-90	2	3
SAN ONOFRE 2	1-90	0	1
SOUTH TEXAS 1	2-89	0	1
TROJAN	4-89	1	3
TROJAN	1-90	5	6
VERMONT YANKEE	1-89	3	4
WASH. NUCLEAR 2	3-89	3	4
WATERFORD 3	1-90	0	1
WOLF CREEK	4-89	1	0

**TABLE 10.6 REVISIONS TO FORCED OUTAGE RATE
(TABLE 9.8 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
HOPE CREEK	1-90	16	10
LASALLE 1	1-90	6	7
QUAD CITIES 2	1-90	45	44

**TABLE 10.7 REVISIONS TO EQUIPMENT FORCED OUTAGES/1000
COMMERCIAL HOURS
(TABLE 9.9 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ZION 1	1-90	0.93	0.00

**TABLE 10.8 REVISIONS TO COLLECTIVE RADIATION EXPOSURE
(TABLE 9.10 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
BEAVER VALLEY 1	4-89	276	299
BEAVER VALLEY 2	4-89	276	299
BROWNS FERRY 1	4-89	69	82
BROWNS FERRY 2	4-89	69	82
BROWNS FERRY 3	4-89	69	82
COOK 1	4-89	17	10
COOK 2	4-89	17	10
CRYSTAL RIVER 3	4-89	11	10
DIABLO CANYON 1	4-89	202	207
DIABLO CANYON 2	4-89	202	207
DRESDEN 2	4-89	104	105
DRESDEN 3	4-89	104	105
DUANE ARNOLD	4-89	67	63
FORT CALHOUN	4-89	13	10
HOPE CREEK	4-89	233	238
INDIAN POINT 2	4-89	140	142
MAINE YANKEE	4-89	37	38
NORTH ANNA 1	4-89	28	24
NORTH ANNA 2	4-89	28	24
OYSTER CREEK	4-89	118	111
PALISADES	4-89	211	208
PEACH BOTTOM 2	4-89	24	67
PEACH BOTTOM 3	4-89	24	67
PERRY	4-89	35	33
PILGRIM	4-89	57	61
POINT BEACH 1	4-89	137	134
POINT BEACH 2	4-89	137	134
SAN ONOFRE 1	4-89	53	50
SAN ONOFRE 2	4-89	53	50
SAN ONOFRE 3	4-89	53	50
SEQUOYAH 1	4-89	21	22
SEQUOYAH 2	4-89	21	22
SURRY 1	4-89	49	45
SURRY 2	4-89	49	45
SUSQUEHANNA 1	4-89	82	83
SUSQUEHANNA 2	4-89	82	83
TURKEY POINT 3	4-89	32	28
TURKEY POINT 4	4-89	32	28
VOGTLE 1	4-89	7	8

TABLE 10.9 REVISIONS TO CRITICAL HOURS
(TABLE 9.11 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
DUANE ARNOLD	1-90	2092	2095
QUAD CITIES 2	1-90	771	795

**TABLE 10.10 REVISIONS TO CAUSE CODES
ADMINISTRATIVE CONTROL PROBLEM
(TABLE 9.12 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 2	4-89	4	5
BRAIDWOOD 1	4-89	5	6
CALVERT CLIFFS 1	4-89	3	4
CALVERT CLIFFS 2	4-89	3	4
CATAWBA 1	4-89	1	2
CATAWBA 2	4-89	1	2
CLINTON 1	3-89	1	2
DUANE ARNOLD	4-89	0	1
MILLSTONE 2	1-89	0	1
MILLSTONE 3	2-89	4	5
OYSTER CREEK	4-89	0	1
PRAIRIE ISLAND 2	4-89	1	2
QUAD CITIES 1	3-89	2	4
QUAD CITIES 1	4-89	5	6
RAMCHO SECO	1-89	2	3
RIVER BEND	4-89	6	7
SALEM 1	4-89	1	2
SALEM 2	4-89	2	1
SAN ONOFRE 1	2-89	4	5
SAN ONOFRE 1	4-89	3	4
SAN ONOFRE 2	2-89	2	3
SAN ONOFRE 2	4-89	2	3
SAN ONOFRE 3	2-89	3	4
SAN ONOFRE 3	4-89	1	2
SEQUOYAH 2	4-89	5	7
SHEARON HARRIS	4-89	2	3
SUMMER	4-88	0	1
SUSQUEHANNA 1	1-89	5	6
SUSQUEHANNA 1	4-89	0	2
SUSQUEHANNA 2	4-89	3	4
TROJAN	3-89	8	9

**TABLE 10.11 REVISIONS TO CAUSE CODES
 LICENSED OPERATOR ERROR
 (TABLE 9.13 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
DIABLO CANYON 1	3-88	1	2
DIABLO CANYON 2	3-88	0	1
OYSTER CREEK	4-89	1	2
SAN ONOFRE 3	3-89	0	1
SHEARON HARRIS	4-89	1	2
TROJAN	3-89	2	1
WATERFORD 3	4-89	1	2

**TABLE 10.12 REVISIONS TO CAUSE CODES
OTHER PERSONNEL ERROR
(TABLE 9.14 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 2	4-89	5	6
BIG ROCK POINT	3-89	4	3
FRAIDWOOD 1	4-89	3	4
CALVERT CLIFFS 2	4-89	1	0
DIABLO CANYON 1	3-88	4	5
DIABLO CANYON 2	3-88	1	2
DRESDEN 2	4-89	1	2
DRESDEN 3	4-89	2	3
DUANE ARNOLD	4-89	0	1
INDIAN POINT 2	2-89	0	1
NINE MILE PT. 2	4-89	3	2
OCONEE 1	1-89	3	4
OCONEE 2	1-89	1	2
OCONEE 3	1-89	1	2
PALO VERDE 2	4-89	2	1
PALO VERDE 3	4-89	2	1
PERRY	4-89	2	3
QUAD CITIES 1	3-89	2	3
SEABROOK	2-89	1	2
SUSQUEHANNA 1	4-89	1	2
TROJAN	3-89	3	4
WASH. NUCLEAR 2	4-88	2	1

TABLE 10.13 REVISIONS TO CAUSE CODES
 MAINTENANCE RELATED
 (TABLE 9.15 OF THE SECOND QUARTER 1990 REPORT)

Plant Name	Quarter-Year	Old Value	Revised Value
ARKANSAS 2	4-89	11	13
BIG ROCK POINT	3-89	4	3
BRAIDWOOD 1	3-89	4	2
BRAIDWOOD 1	4-89	8	9
BRAIDWOOD 2	3-89	3	1
BRUNSWICK 1	4-89	5	4
CALVERT CLIFFS 2	4-89	4	3
CATAWBA 1	4-89	1	2
CATAWBA 2	4-89	1	2
COOK 1	1-89	5	4
COOK 2	1-89	9	8
CRYSTAL RIVER 3	3-89	7	6
CRYSTAL RIVER 3	4-89	1	2
DIABLO CANYON 2	3-88	3	4
DRESDEN 2	4-89	4	3
DRESDEN 3	4-89	6	5
DUANE ARNOLD	4-89	1	2
GINNA	4-89	3	4
GRAND GULF	3-89	4	3
GRAND GULF	4-89	3	2
INDIAN POINT 2	2-89	1	2
LIMERICK 1	3-89	7	8
LIMERICK 1	4-89	7	8
MILLSTONE 3	2-89	5	6
NINE MILE PT. 2	3-89	8	7
NINE MILE PT. 2	4-89	7	6
NORTH ANNA 2	1-89	3	4
OCONEE 1	1-89	6	7
OCONEE 2	1-89	4	5
OCONEE 3	1-89	4	5
PALO VERDE 2	4-89	4	3
PALO VERDE 3	4-89	2	1
PEACH BOTTOM 2	4-89	7	6
QUAD CITIES 1	3-89	3	5
QUAD CITIES 1	4-89	4	5
RANCHO SECO	1-89	3	4
RIVER BEND	4-89	7	8
SAN ONOFRE 1	2-89	4	5
SAN ONOFRE 1	4-89	1	2
SAN ONOFRE 2	2-89	2	3
SAN ONOFRE 3	2-89	2	3

TABLE 10.13 REVISIONS TO CAUSE CODES (CONTINUED)
MAINTENANCE RELATED
(TABLE 9.15 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
SAN ONOFRE 3	3-89	2	3
SEABROOK	2-89	3	4
SEQUOYAH 1	4-89	9	8
SEQUOYAH 2	4-89	7	8
SHEARON HARRIS	4-89	6	7
SUMMER	4-88	2	3
SUSQUEHANNA 1	4-89	3	4
WASH. NUCLEAR 2	4-88	5	4
WATERFORD 3	4-89	4	5

TABLE 10.14 REVISIONS TO CAUSE CODES
 MAINTENANCE SUB-CATEGORIES
 MAINTENANCE PERSONNEL ERROR
 (TABLE 9.16 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 2	4-89	5	7
BIG ROCK POINT	3-89	2	1
BRAIDWOOD 1	4-89	3	4
BRUNSWICK 1	4-89	2	1
CALVERT CLIFFS 2	4-89	1	0
CRYSTAL RIVER 3	3-89	1	0
DIABLO CANYON 1	3-88	2	3
DIABLO CANYON 2	3-88	1	2
DUANE ARNOLD	4-89	0	1
INDIAN POINT 2	2-89	0	1
LIMERICK 1	4-89	2	1
LIMERICK 2	4-89	2	1
OYSTER CREEK	3-89	1	0
PALO VERDE 2	4-89	2	1
PALO VERDE 3	4-89	1	0
QUAD CITIES 1	4-89	0	1
SUMMER	4-88	0	1
WASH. NUCLEAR 2	4-88	1	0

**TABLE 10.15 REVISIONS TO CAUSE CODES
 MAINTENANCE SUB-CATEGORIES
 PERSONNEL ERROR DURING SURV./TESTING
 (TABLE 9.17 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
CALVERT CLIFFS 1	4-89	2	3
CALVERT CLIFFS 2	4-89	2	3
CATAWBA 1	4-89	0	1
CATAWBA 2	4-89	1	2
LIMERICK 1	3-89	5	6
MILLSTONE 3	2-89	2	3
OCONEE 1	1-89	3	4
OCONEE 2	1-89	2	3
OCONEE 3	1-89	2	3
QUAD CITIES 1	3-89	0	2
RANCHO SECO	1-89	1	2
RIVER BEND	4-89	3	4
SAN ONOFRE 1	2-89	2	3
SAN ONOFRE 1	4-89	1	2
SAN ONOFRE 2	2-89	0	1
SAN ONOFRE 3	2-89	1	2
SEABROOK	2-89	2	3
SEQUOYAH 1	4-89	3	2
SEQUOYAH 2	4-89	2	3
SHEARON HARRIS	4-89	1	2
SUSQUEHANNA 1	4-89	0	1
WATERFORD 3	4-89	1	2

TABLE 10.16 REVISIONS TO CAUSE CODES
 MAINTENANCE SUB-CATEGORIES
 MAINTENANCE EQUIPMENT FAILURE
 (TABLE 9.18 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
CATAWBA 1	1-89	4	5
CATAWBA 2	1-89	1	2
COOK 1	1-89	3	2
COOK 2	1-89	4	3
DIABLO CANYON 1	3-88	2	1
NORTH ANNA 2	1-89	1	2
OYSTER CREEK	3-89	1	2
SURRY 2	4-89	2	1
WASH. NUCLEAR 2	4-88	2	1

**TABLE 10.17 REVISIONS TO CAUSE CODES
 MAINTENANCE SUB-CATEGORIES
 POTENTIAL MAINTENANCE PROBLEM
 (TABLE 9.19 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
BRAIDWOOD 1	3-89	3	1
BRAIDWOOD 2	3-89	3	1
CALVERT CLIFFS 1	4-89	1	0
CALVERT CLIFFS 2	4-89	1	0
CATAWBA 1	1-89	1	0
CATAWBA 2	1-89	2	1
CRYSTAL RIVER 3	4-89	1	2
DRESDEN 2	4-89	2	1
DRESDEN 3	4-89	2	1
GINNA	4-89	1	2
GRAND GULF	3-89	1	0
GRAND GULF	4-89	2	1
LIMERICK 1	4-89	1	2
NINE MILE PT. 2	3-89	4	3
NINE MILE PT. 2	4-89	1	0
PEACH BOTTOM 2	4-89	2	1
SAN ONOFRE 3	3-89	0	1
SUNRY 2	4-89	0	1

**TABLE 10.18 REVISIONS TO CAUSE CODES
DESIGN/INSTALLATION/FABRICATION
(TABLE 9.20 OF THE SECOND QUARTER 1990 REPORT)**

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
ARKANSAS 2	4-89	0	1
CALVERT CLIFFS 1	4-89	2	3
CALVERT CLIFFS 2	3-89	3	4
CALVERT CLIFFS 2	4-89	1	3
COOK 1	1-89	1	2
DIABLO CANYON 1	3-88	3	4
DIABLO CANYON 2	3-88	2	3
DUANE ARNOLD	4-89	0	1
LIMERICK 1	3-89	0	1
OYSTER CREEK	4-89	0	1
PALO VERDE 2	4-89	3	2
PALO VERDE 3	4-89	3	2
PEACH BOTTOM 2	4-89	2	4
QUAD CITIES 1	3-89	0	1
QUAD CITIES 1	4-89	1	2
RANCHO SECO	1-89	3	4
SAN ONOFRE 3	3-89	2	3
TROJAN	2-89	3	2
WASH. NUCLEAR 2	4-88	0	1

TABLE 10.19 REVISIONS TO CAUSE CODES
 EQUIPMENT FAILURE (ELEC./ENVIRON.)
 (TABLE 9.21 OF THE SECOND QUARTER 1990 REPORT)

<u>Plant Name</u>	<u>Quarter-Year</u>	<u>Old Value</u>	<u>Revised Value</u>
BRAIDWOOD 1	3-89	0	1
BRAIDWOOD 2	3-89	0	1
GRAND GULF	3-89	0	1
GRAND GULF	4-89	0	1
MCGUIRE 2	1-89	1	0
NINE MILE PT. 2	3-89	0	1
NINE MILE PT. 2	4-89	1	2



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

SEP 14 1990

MEMORANDUM FOR: John A. Skoczlas, Chief
Document Control Branch
Division of Administration and
Resources Management

Don Lanham
OWFN PI-37

FROM: Donald E. Hickman, Chief
Performance Indicator Section
Office for Analysis and Evaluation
of Operational Data

SUBJECT: SUBMITTAL OF PERFORMANCE INDICATOR REPORT TO NUDOCS

Enclosed is a copy of the Second Quarter 1990 issue of the quarterly Performance Indicator Report containing data through June 1990. Copies of the report have been sent to the Commission, management, and the PDR. Please submit this report to NUDOCS.

Donald E. Hickman, Chief
Performance Indicator Section
Office for Analysis and Evaluation
of Operational Data

cc: R. Newlin, GPA

Enclosure:
As stated

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