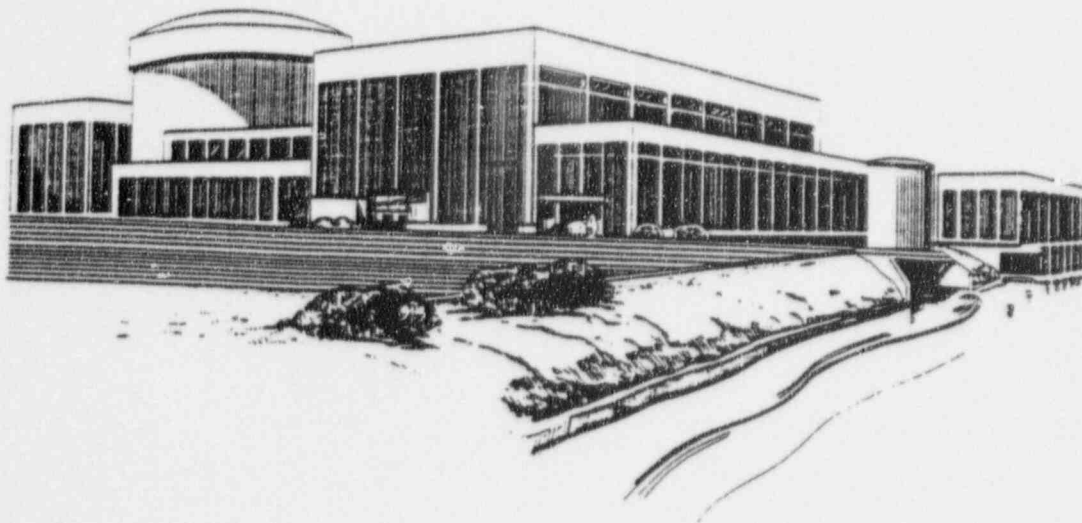


FORT CALHOUN STATION PERFORMANCE INDICATORS



SEPTEMBER 1996

**SAFE OPERATIONS
PERFORMANCE EXCELLENCE
COST EFFECTIVENESS**

9611130569 960930
PDR ADOCK 05000285
P PDR

OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION
PERFORMANCE INDICATORS REPORT

**SEPTEMBER
1996**

*Production Engineering Division
System Engineering
Test and Performance Group*

SEPTEMBER 1996

FORT CALHOUN STATION

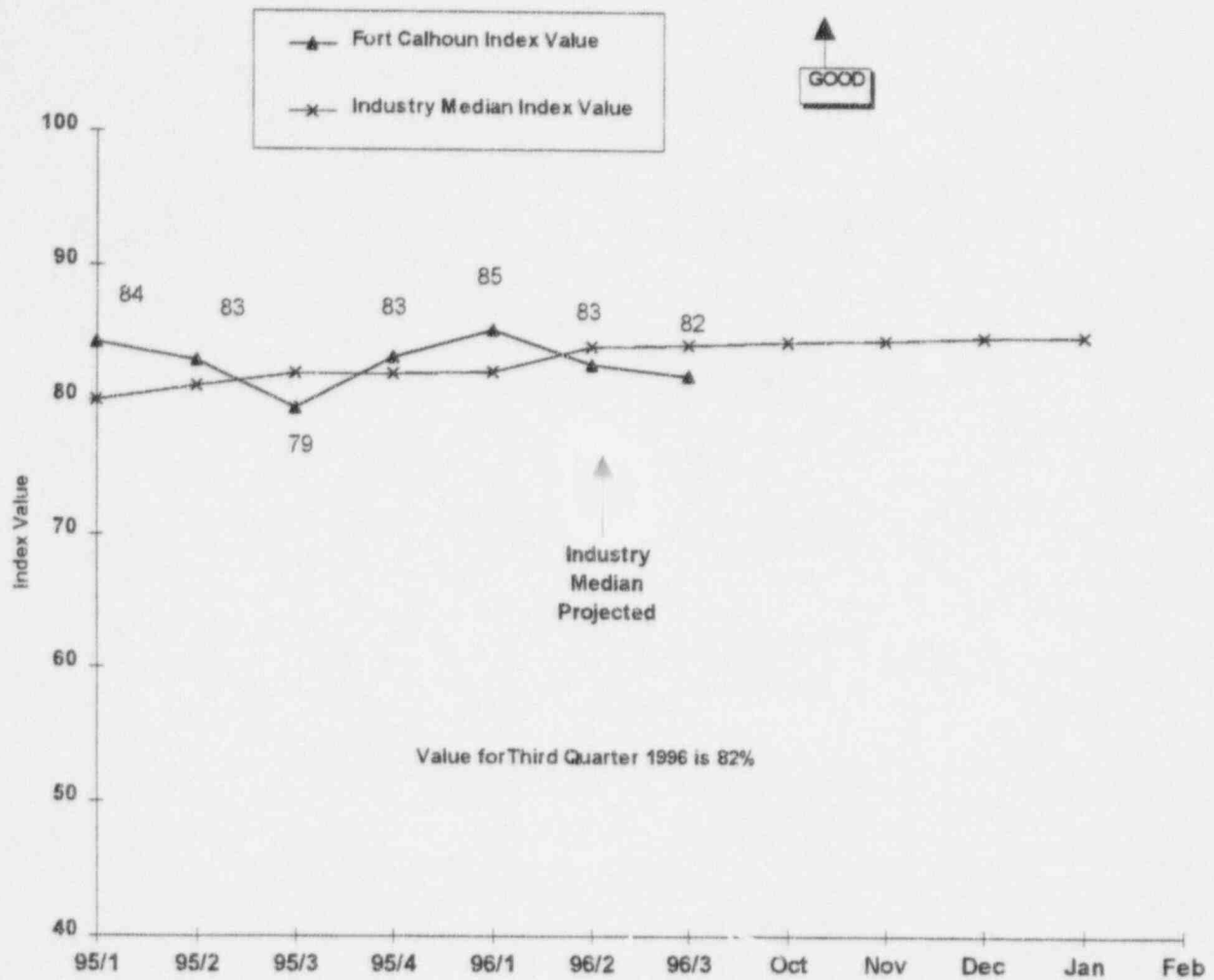
September 1996

Monthly Operating Report

OPERATIONS SUMMARY

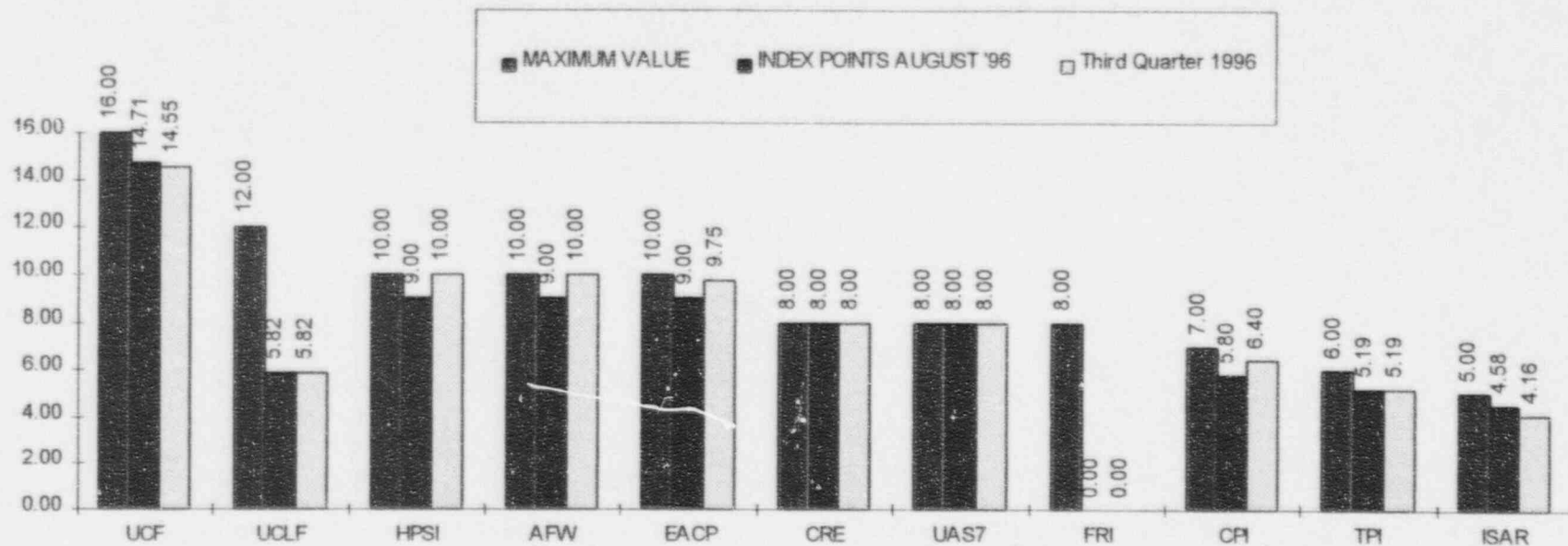
During the first half of September, Fort Calhoun Station (FCS) operated at a nominal 100% power level. On September 20 at 1524 hours, a power reduction was commenced. Power was slowly reduced over a two day period stabilizing around the 70% level where it was maintained until September 28th. A second power reduction began on September 28th at 1603 hours, with the power level reduced to approximately 45% by September 29th. These power reductions were performed to minimize fission gas releases to containment and dose to personnel from the upcoming refueling outage in October. Normal plant maintenance, surveillance, equipment rotation activities and scheduled on-line modifications were performed during the month.

There are 66 incore nuclear detectors failed, rendering 18 of the 28 detector strings inoperable. Preparation have been made to replace all 28 incore detector strings during this refueling outage.



PERFORMANCE INDEX TREND

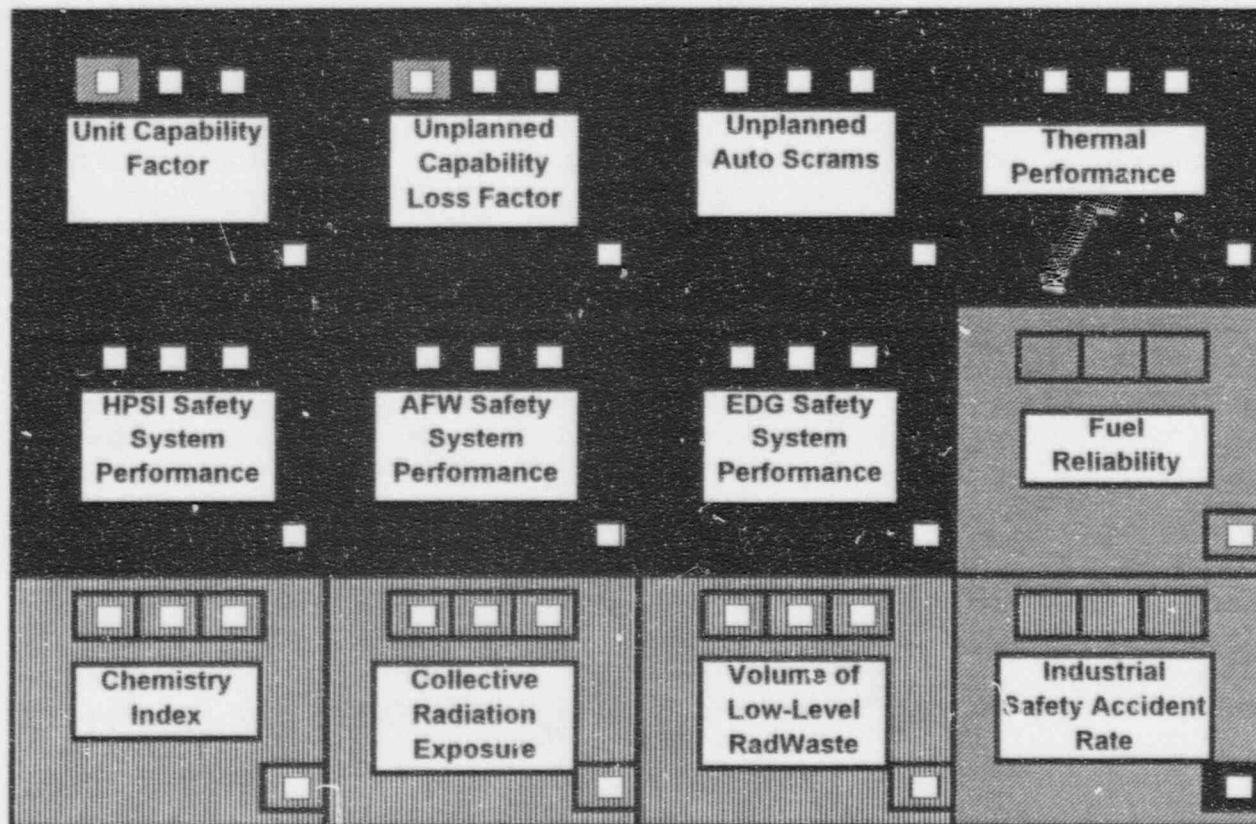
For the index calculation unit capability factor, unplanned capability loss factor, unplanned automatic scrams per 7000 hours critical, safety system performance, collective radiation exposure, and volume of low-level solid radioactive waste indicators are calculated for a two-year period instead of the normal three-year period to allow the index trend to be more responsive to changes in plant performance.



This graph shows the difference between the Maximum No. of points for each INPO indicator and the actual value achieved by Fort Calhoun for the month of July.




UCF	Unit Capability Factor	TPI	Thermal Performance Indicator
UCLF	Unplanned Capability Loss Factor	CPI	Secondary Chemistry Indicator
HPSI	High Pressure Safety Injection	ISAR	Industrial Safety Accident Rate
AFW	Auxiliary Feedwater		
EACP	Emergency AC Power		
UAS7	Unplanned Auto Scrams/ 7000 Hcurs		
CRE	Collective Radiation Exposure		
FRI	Fuel Reliability Indicator		

Per INPO, the Performance Indicator for the Volume of Low Level Radioactive Waste buried, will no longer be used in determining the Stations Performance Index. All other parameters have been adjusted to reflect this change.



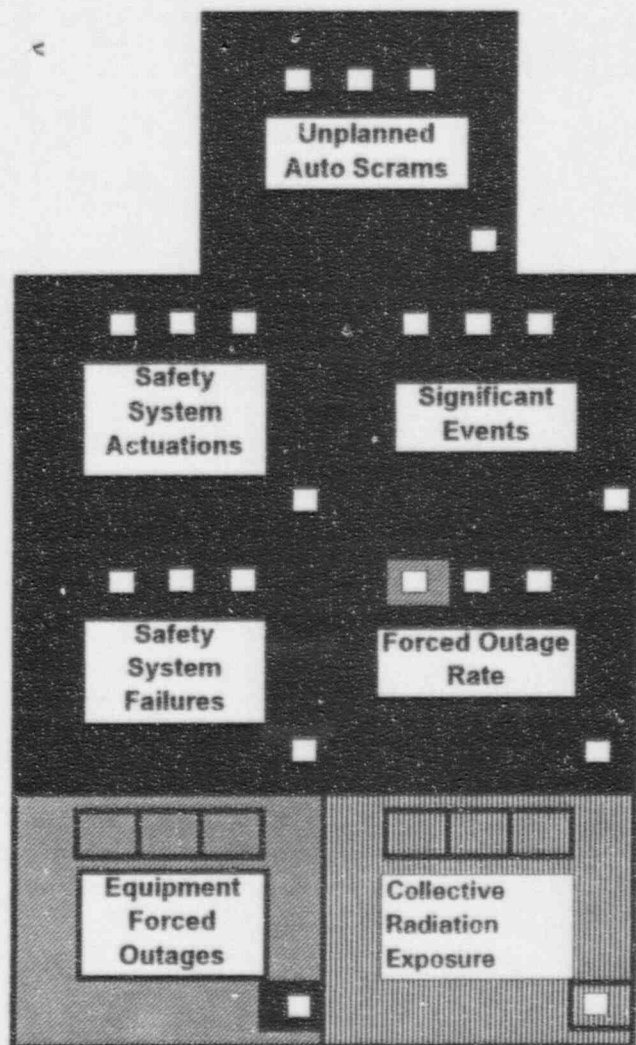
Year-to-Date Value

Performance Categories

-  Performance better than Industry Average Trend
-  Performance better than 1996 OPPD Goal
-  Performance Not Meeting 1996 OPPD Goal

June 1996	July 1996	Aug 1996
Sep.-1996 Year-to-Date Value Performance		
Best Possible 1996 Year-End Performance		

WANO Performance Indicators



Year-To-Date Value Performance Categories



Performance better than Industry Average Trend



Performance better than 1996 OPPD Goal



Performance Not Meeting 1996 OPPD Goal

June 1996	July 1996	Aug 1996
September-1996 Year-to-Date Value Performance		
Best Possible 1996 Year-End Performance		

NRC Performance Indicators

FORT CALHOUN STATION PERFORMANCE INDICATORS REPORT

September 1996-SUMMARY

POSITIVE TREND REPORT

A performance indicator with data representing three consecutive months of improving performance or three consecutive months of performance that is superior to the stated goal is exhibiting a positive trend per Nuclear Operations Division Quality Procedure 37 (NOD-QP-37).

The following performance indicators exhibited positive trends for the reporting month:

Safety System Failures
(Page 19)

High Pressure Safety Injection System Safety System Performance
(Page 5)

Auxiliary Feedwater System
(Page 6)

Emergency A.C. Power System
(Page 7)

Secondary Chemistry
(Page 10)

Emergency Diesel Generator Unit Reliability
(Page 20)

Diesel Generator Reliability (25 Demands)
(Page 21)

Emergency Diesel Generator Unreliability
(Page 22)

Missed Surveillance Tests Results in Licensee Event Reports
(Page 28)

Unplanned Safety System Actuations (INPO)
(Page 34)

Secondary System Chemistry
(Page 35)

Hazardous Waste Production
(Page 54)

POSITIVE TREND REPORT (Cont.)

Contaminated Radiation Controlled Area
(Page 55)

Temporary Modifications
(Page 59)

End of Positive Trend Report.

ADVERSE TREND REPORT

A performance indicator with data representing three consecutive months of declining performance or three consecutive months of performance that is trending toward declining as determined by the Manager - Station Engineering, constitutes an adverse trend per Nuclear Operations Division Quality Procedure 37 (NOD-QP-37). A supervisor whose performance indicator exhibits an adverse trend by this definition may specify in written form (to be published in this report) why the trend is not adverse.

The following performance indicators exhibited adverse trends for the reporting month:

Fuel Reliability Indicator
(Page 9)

Maintenance Workload Backlogs
(Page 47)

Preventative Maintenance Items Overdue
(Page 48)

End of Adverse Trend Report.

INDICATORS NEEDING INCREASED MANAGEMENT ATTENTION REPORT

A performance indicator with data for the reporting period that is inadequate when compared to the OPPD goal is defined as "Needing Increased Management Attention" per Nuclear Operations Division Quality Procedure 37 (NOD-QP-37).

Disabling Injury/Illness Frequency Rate
(Page 15)

Number of On-line and Outage Control Room
Equipment Deficiencies
(Page 24)

Equipment Forced Outage Rate
(Page 38)

Cents per Kilowatt Hour
(page 44)

Percentage of Total MWs Completed per Month
Identified as Rework
(Page 49)

PERFORMANCE INDICATOR REPORT IMPROVEMENTS/CHANGES

End of Report Improvements/Changes Report.

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OPPD NUCLEAR ORGANIZATION GOALS

1996 Priorities

MISSION

The safe, reliable and cost effective generation of electricity for OPPD customers through conservative decision making and the professional use of nuclear technology. We will conduct these operations to assure the health, safety, and protection of our personnel, the general public, and the environment.

GOALS

Goal 1: SAFE OPERATIONS

Supports: April 1995 Corporate Strategic Plan Goal 3, Obj: 3 & 4

A proactive, self-critical and safety conscious culture is exhibited throughout the nuclear organization. Individuals demonstrate professionalism through self-ownership and personal initiative and open communication.

1996 Priorities:

- Improve SALP ratings.
- Improve INPO rating.
- Reduce 1996 NRC violations with no violations more severe than level 4.
- No unplanned automatic reactor scrams or safety system actuations.

Objectives to support SAFE OPERATIONS.

OBJECTIVE 1-1:

No challenges to a nuclear safety system.

OBJECTIVE 1-2:

Comply with applicable policies, technical specs, procedures, standing orders and work instructions..

OBJECTIVE 1-3:

Identify conditions BEFORE they affect plant safety and reliability. Address every safety concern.

OBJECTIVE 1-4:

Achieve all safety-related 1996 performance indicator goals in the Performance Indicator Report.

OBJECTIVE 1-5:

Zero Lost Time Injuries and recordable injuries rate BELOW 1.5 percent.

OPPD NUCLEAR ORGANIZATION GOALS

1996 Priorities

Goal 2: PERFORMANCE

Supports: April 1994 Corporate Strategic Plan Goal 3, Obj: 2; G-4, Obj: 1, 2, & 3; G-6, Obj 3

Nuclear teamwork achieves high performance at Fort Calhoun Station as exhibited by safe, reliable and cost effective power production.

1996 PRIORITIES:

- Improve Quality, Professionalism and Teamwork.
- Maintain High Plant Reliability.
- Pursue efficient, cost-effective work processes.
- Meet or exceed INPO key parameters and outage performance goals.
- Reduce the number of Human Performance errors.
- Identify Programmatic performance problems through effective self assessment.
- Maintain a high level of readiness in the ERO.

Objectives to support PERFORMANCE:

OBJECTIVE 2-1:

Achieve an annual plant capacity factor of 81.4% and a unit capability factor of 83.56%.

OBJECTIVE 2-2:

Execute the 1996 refueling outage in 42 days or less; emphasize shutdown plant safety.

OBJECTIVE 2-3:

Training meets the needs of the plant and the National Academy accreditation objectives.

- Line managers use training to present, discuss & reinforce performance standards.
- Line managers monitor and assess personnel performance to determine how well standards are met.
- Line managers through personal involvement in training emphasize the importance of conducting activities within approved procedures/practices.
- Executive Training Committee:
 - invites line supervisors to discuss the direction training is going for their specific area.
 - invites the line and training supervisors responsible for each accredited program to provide a status of internal accreditation assessments.
 - ensures items such as training attendance, attentiveness, punctuality, etc. are uniformly emphasized.

OBJECTIVE 2-4:

Achieve all performance-related 1996 performance indicator goals in the Performance Indicator Report. Focus on performing basic skills well while pursuing efficient, cost-effective work processes. Identify the barriers to excellence and resolve them.

OPPD NUCLEAR ORGANIZATION GOALS

1996 Priorities

Goal 2: PERFORMANCE (Continued)

OBJECTIVE 2-5:

Teamwork is evident by improved plant reliability, an effective emergency response organization, reduced number of human performance errors and effective self assessment..

OBJECTIVE 2-6

Through the **Utilities Services Alliance (USA)** attain operating efficiency and lower cost through a cooperative effort among several utilities. Initial focus is on sharing of personnel for outage support, combined purchasing and contracting, common dosimetry reading, sharing of equipment, including test equipment, standardization of plant access and general employee training.

Goal 3: COSTS

Supports: April 1995 Corporate Strategic Plan Goal 2, Obj: 1, 2 and 3, and Goal 6, Obj: 1

Operate Fort Calhoun cost effectively to contribute to OPPD's "bottom line". Cost consciousness is exhibited at all levels of the organization.

1996 Priorities:

- Maintain total O&M and Capital Expenditures within budget.
- Streamline work process to improve cost effectiveness.
- Implement Opportunity Review recommendations.

Objectives to support COSTS:

OBJECTIVE 3-1:

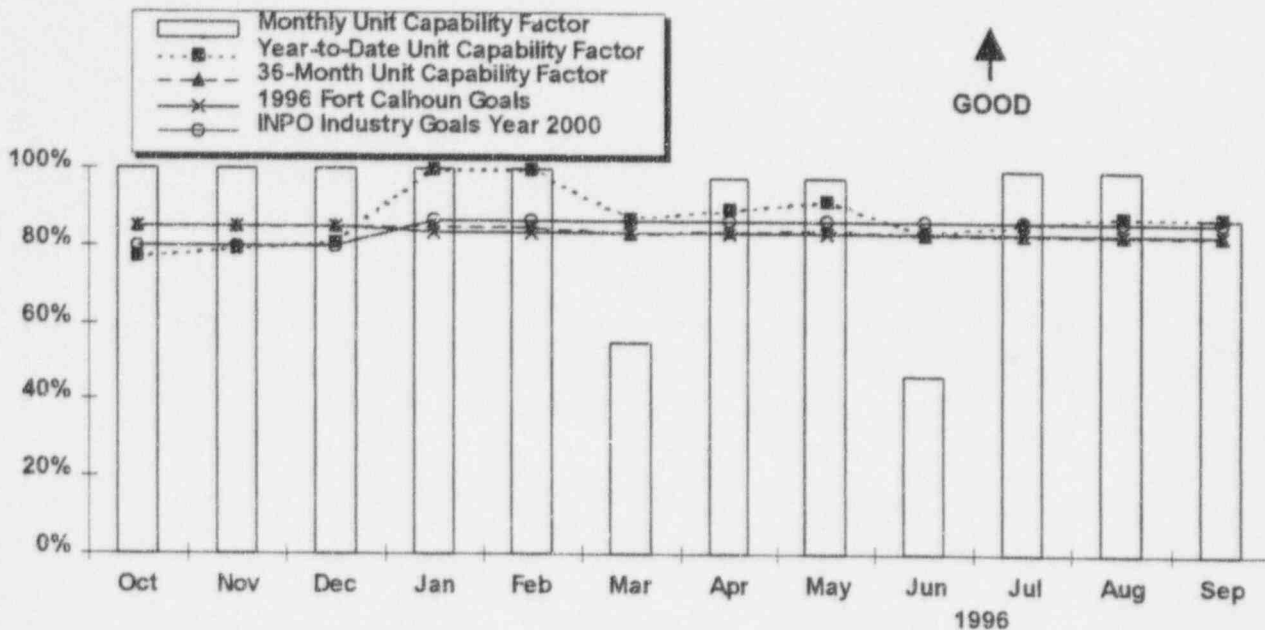
Conduct the nuclear programs, projects, and activities within the approved Capital and O&M budgets.

OBJECTIVE 3-2:

Implement nuclear related Opportunity Review recommendations according to approved schedules and attain the estimated cost savings.

Goals Source: Lounsberry (Manager)

WANO PERFORMANCE INDICATORS



UNIT CAPABILITY FACTOR

This indicator shows the plant monthly Unit Capability Factor (UCF) value, the year-to-date UCFs, the 36-month average UCFs, and the UCF goals. UCF is defined as the ratio of the available energy generation over a given period of time to the reference energy generation (the energy that could be produced if the unit were operated continuously at full power under reference ambient conditions) over the same time period, expressed as a percentage (refueling periods excluded).

The UCF for **September 1996** was reported as **87.9%**. The year-to-date UCF was **88.1%**, the UCF for the last 12 months was **90.5%**, and the 36-month average UCF was reported as **83.8%** at the end of the month.

Energy losses for May and August 1995 are explained on page 30.

Energy losses for March 1996 are due to a scheduled mini-outage and condenser tube repair.

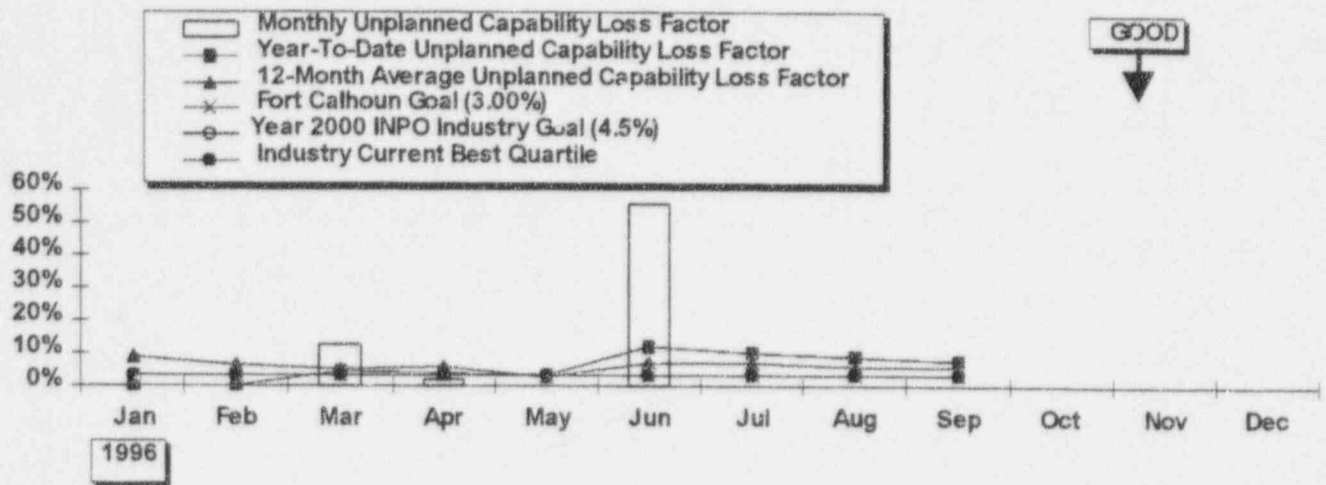
Energy losses for May 1996 are due to a reduction in power to 95% for Moderator Coefficient Testing.

Energy losses for June 1996 are due to a forced outage when the Anti-Rotation Device on Reactor Coolant Pump RC-3B-M failed.

The Year 2000 INPO industry goal is 87% and the industry current best quartile value (for the three-year period ending 12/94) is approximately 85%. The 1996 Fort Calhoun annual goal for this indicator is a minimum of 83.56%.

The maximum index point value for this indicator is **16**. For the month of **September** the FCS Value was **14.55**. This compares to the previous month's value of **14.71**.

Data Source:	Generation Totals Report & Monthly Operating Report
Accountability:	Chase
Trend:	None



UNPLANNED CAPABILITY LOSS FACTOR

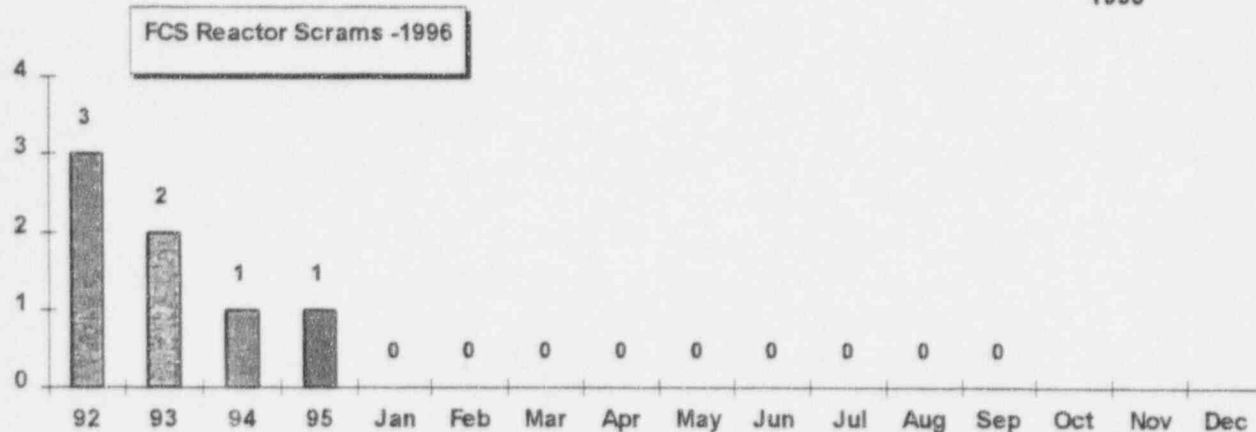
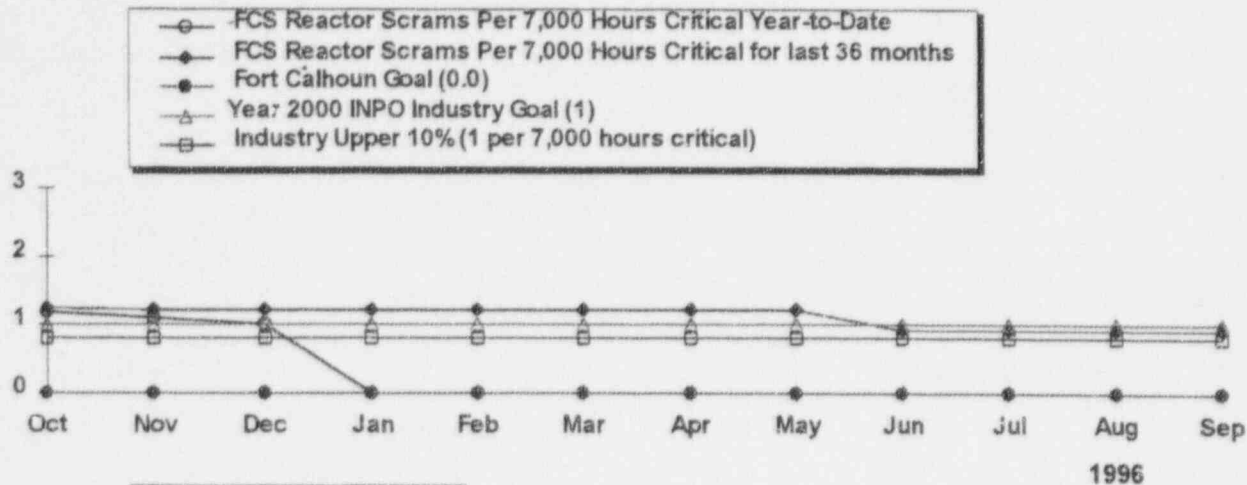
This indicator shows the plant monthly Unplanned Capability Loss Factor (UCLF), the year-to-date UCLF and the goal. UCLF is defined as the ratio of the unplanned energy losses during a given period of time, to the reference energy generation (the energy that could be produced if the unit were operated continuously at full power under reference ambient conditions), expressed as a percentage.

The UCLF for the month of **September 1996** was reported as **0.0%**. Unplanned energy loss is defined as energy not produced as a result of unscheduled shutdowns, outage extensions, or load reductions due to causes under plant management control. Energy losses are considered to be unplanned if they are not scheduled at least four weeks in advance. The year-to-date UCLF was **7.73%**, the UCLF for the last 12 months was **5.79%**, and the 36-month average UCLF was reported as **6.4%** at the end of the month.

The Year 2000 INPO industry goal is 3.0% and the industry current best quartile value is approximately 3.2% or lower. The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 3.0%.

The maximum index point value for this indicator is **12**. For the month of **September** the FCS Value was **5.82**. This compares to the previous month's value of **5.82**.

Data Source:	Generation Totals Report & Monthly Operating Report
Accountability:	Chase
Trend:	Needs Increased Management Attention.



UNPLANNED AUTOMATIC REACTOR SCRAMS PER 7000 HOURS CRITICAL

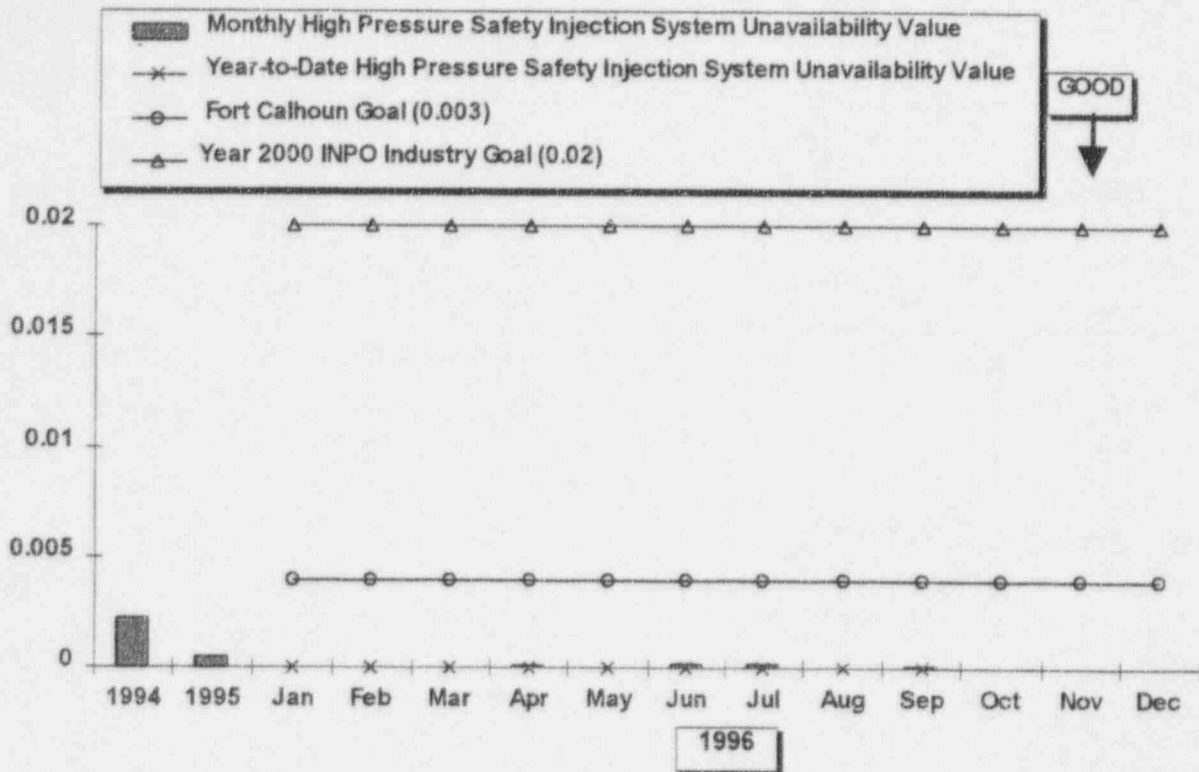
The upper graph shows the number of unplanned automatic reactor scrams per 7,000 hours critical (as defined in INPO's 12/93 publication "Detailed Descriptions of International Nuclear Power Plant Performance Indicators and Other Indicators") for Fort Calhoun Station. The lower graph shows the number of unplanned automatic reactor scrams that occurred during each month for the last twelve months.

The year-to-date station value was **0.0** at the end of **September 1996**. The value for the 12 months from **October 1, 1995**, through **September 30, 1996** was **0.0**. The value for the last 36 months was **0.917**.

The 1996 Fort Calhoun goal for this indicator is 0. The Year 2000 INPO industry goal is a maximum of one unplanned automatic reactor scram per 7,000 hours critical. The industry upper ten percentile value is approximately 0.48 scrams per 7,000 hours critical.

The maximum index point value for this indicator is 8. For the month of **September** the FCS Value was **8.0**. This compares to the previous month's value of **8.0**.

Data Source:	Monthly Operating Report & Plant Licensee Event Reports (LERs)
Accountability:	Chase
Trend:	Positive



HIGH PRESSURE SAFETY INJECTION SYSTEM SAFETY SYSTEM PERFORMANCE

This indicator shows the High Pressure Safety Injection (HPSI) System unavailability value, as defined by INPO in the Safety System Performance Indicator Definitions, for the reporting month.

The HPSI System unavailability value for the month of **September 1996** was **0.0001**. There were **0.2** hours of planned unavailability, and **0** hours of unplanned unavailability, during the month. The 1996 year-to-date HPSI unavailability value was **0.00004** at the end of the month. The unavailability value for the last 12 months was **0.000041263**.

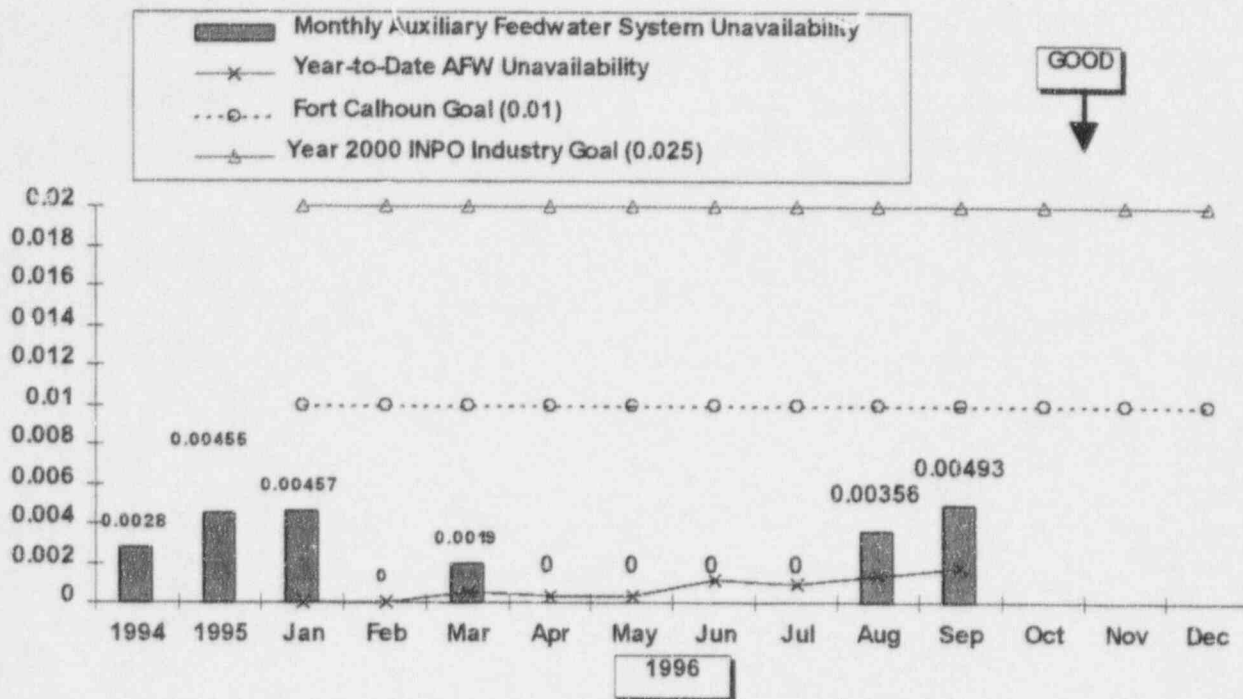
There has been a total of **0.7** hours of planned unavailability and **0.0** hours of unplanned unavailability for the HPSI system in 1996.

There was a total of **13.39** hours of planned unavailability and **0.0** hours of unplanned unavailability for the HPSI injection system in 1995.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 0.003. The Year 2000 INPO industry goal is 0.02.

The maximum index point value for this indicator is **10**. For the month of **September** the FCS Value was **10**. This compares to the previous month's value of **9**.

Data Source:	Skiles/Schaffer (Manager/Source)
Accountability:	Skiles/Schaffer
Trend:	Positive



AUXILIARY FEEDWATER SYSTEM SAFETY SYSTEM PERFORMANCE

This indicator shows the Auxiliary Feedwater (AFW) System Unavailability value, as defined by INPO in the Safety System Performance Indicator Definitions, for the reporting month.

The AFW System Unavailability Value for **September 1996** was **0.00493**. There were **7.1** hours of planned and **0.0** hours of unplanned unavailability during the month. The year-to-date unavailability value was **0.0017** and the value for the last 12 months was **0.00299** at the end of the month.

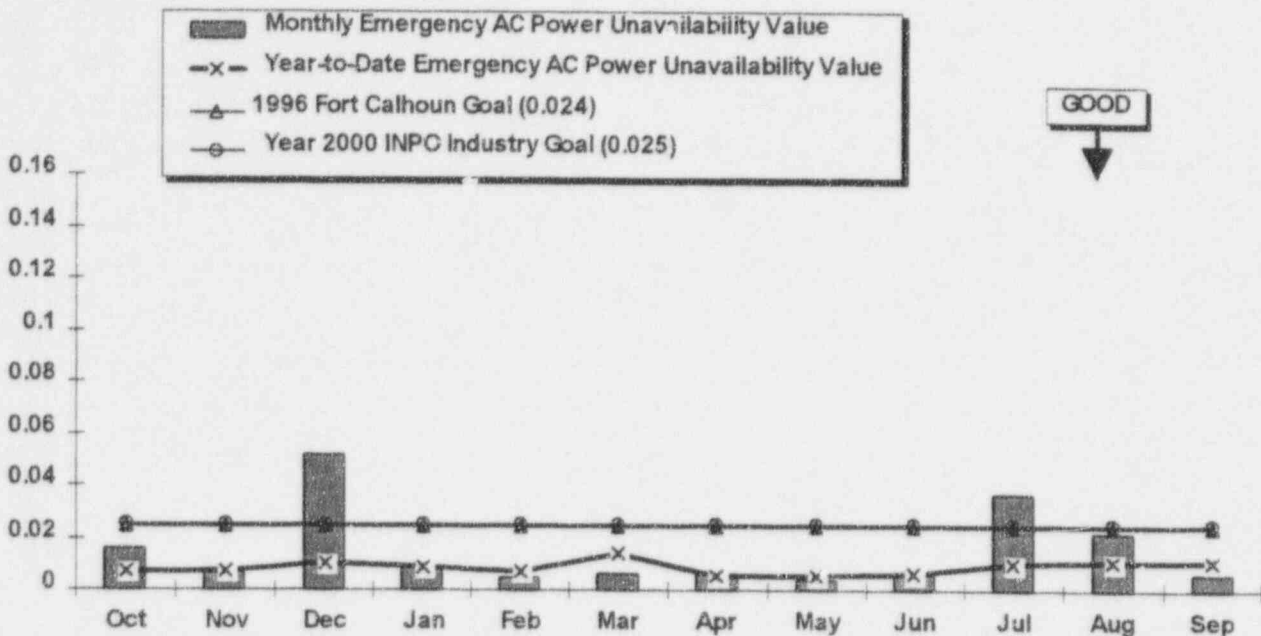
There has been a total of **14.4** hours of planned unavailability and **6.8** hours of unplanned unavailability for the AFW system in 1996. The unplanned unavailability on FW-10 was due to a failed relay on HCV-1045B.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 0.01.

The Year 2000 INPO industry goal is 0.025.

The maximum index point value for this indicator is **10**. For the month of **September** the FCS Value was **10**. This compares to the previous month's value of **9**.

Data Source:	Skiles/Fritts (Manager/Source)
Accountability:	Skiles/Fritts
Trend:	Positive



EMERGENCY AC POWER SYSTEM SAFETY SYSTEM PERFORMANCE

This indicator shows the Emergency AC Power System unavailability value, as defined by INPO in the Safety System Performance Indicator Definitions, for the reporting month.

The Emergency AC Power System unavailability value for **September 1996** was **0.0059**. During the month, there were **8.5** hours of planned unavailability, and **0.0** hours of unplanned unavailability for testing and repairs. The Emergency AC Power System unavailability value year-to-date was **0.011** and the value for the last 12 months was **0.015** at the end of the month.

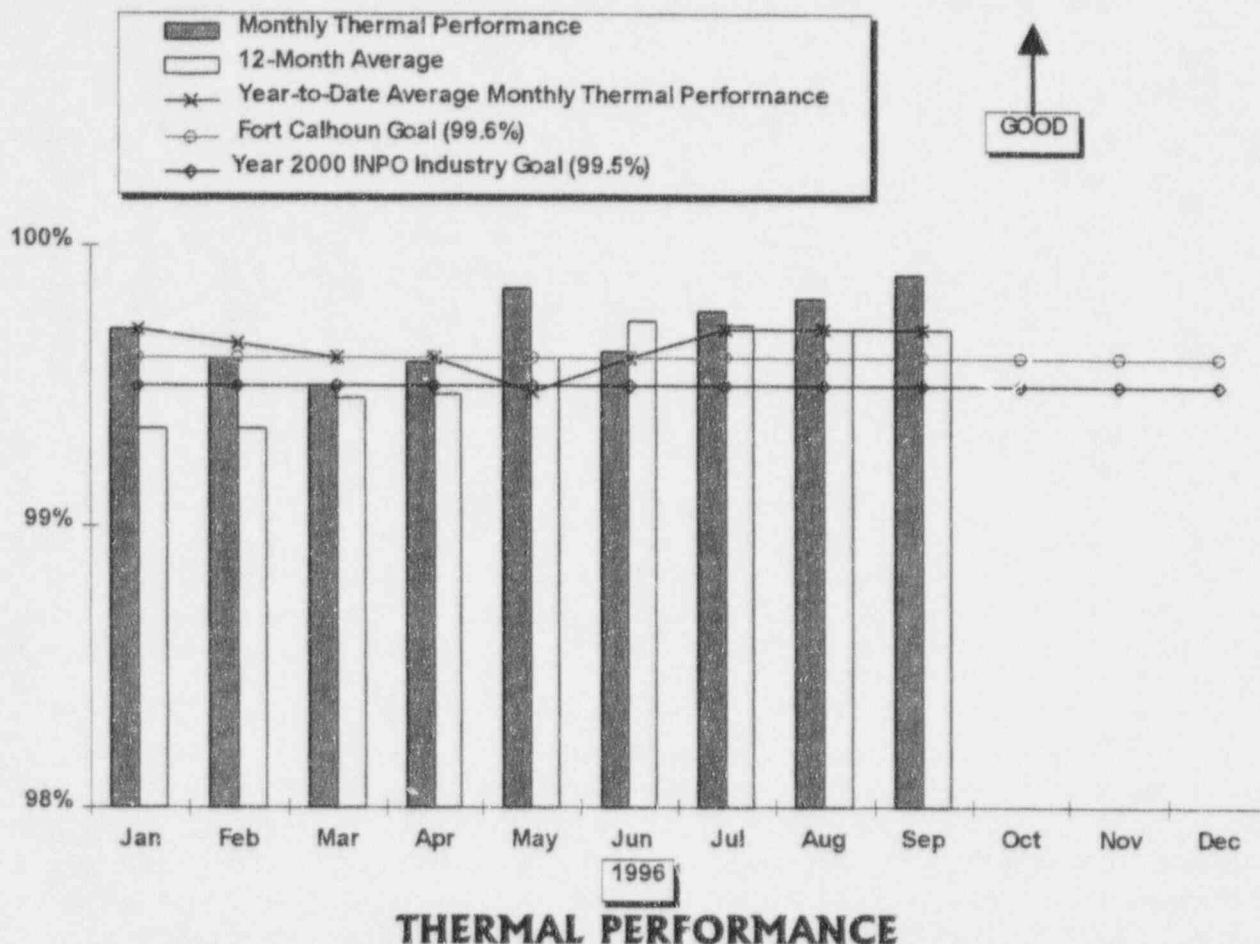
There has been a total of **151.4** hours of planned unavailability and **0.0** hours of unplanned unavailability for the emergency AC power system in 1996.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 0.024.

The Year 2000 INPO industry goal is 0.025.

The maximum index point value for this indicator is **10**. For the month of **September** the FCS Value was **9.75**. This compares to the previous month's value of **8.75**.

Data Source: Skiles/Ronning (Manager/Source)
 Accountability: Phelps/Ronning
 Trend: Positive



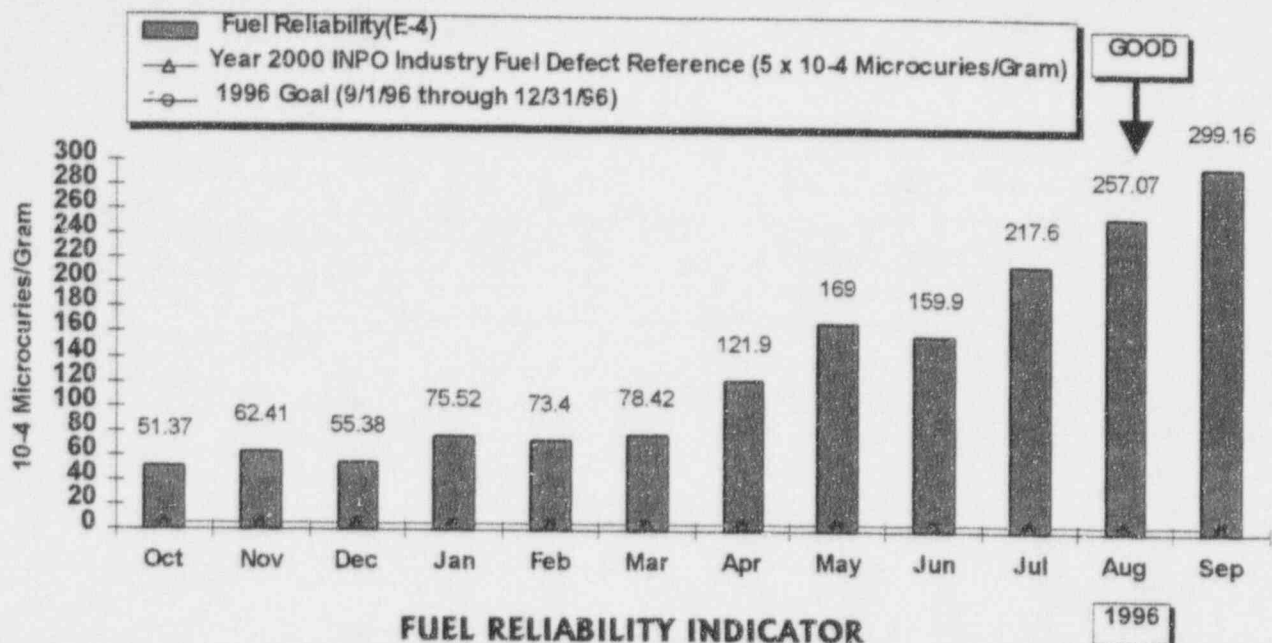
This indicator shows the Thermal Performance Value for the reporting month, the year-to-date average monthly thermal performance value, the Fort Calhoun goals, the 1996 INPO industry goal and the approximate upper ten percentile value.

The thermal performance value for **September 1996** was **99.9**. The year-to-date average monthly thermal performance value was **99.7**, at the end of the month. The average monthly value for the 12 months from **October 1, 1995**, through **September 30, 1996**, was **99.73%**.

The 1996 Fort Calhoun year-end goal for this indicator is a minimum of 99.6%. The 1995 Fort Calhoun goal was a minimum of 99.5%. The Year 2000 INPO industry goal is 99.5%.

The maximum index point value for this indicator is **6**. For the month of **September** the FCS Value was **5.19**. This compares to the previous month's value of **5.19**.

Data Source: Phelps/Naser(Manager/Source)
 Accountability: Phelps/Gorence
 Trend: None



FUEL RELIABILITY INDICATOR

The FUEL RELIABILITY INDICATOR (FRI) for **September 1996** was 299.16×10^{-4} microcuries/gram. The purpose of the FRI is to monitor industry progress in achieving and maintaining a high level of fuel integrity. An effective fuel integrity and performance monitoring program provides a means to detect fuel failures and assess the fuel failure number, physical condition, exposure, mechanism, and location.

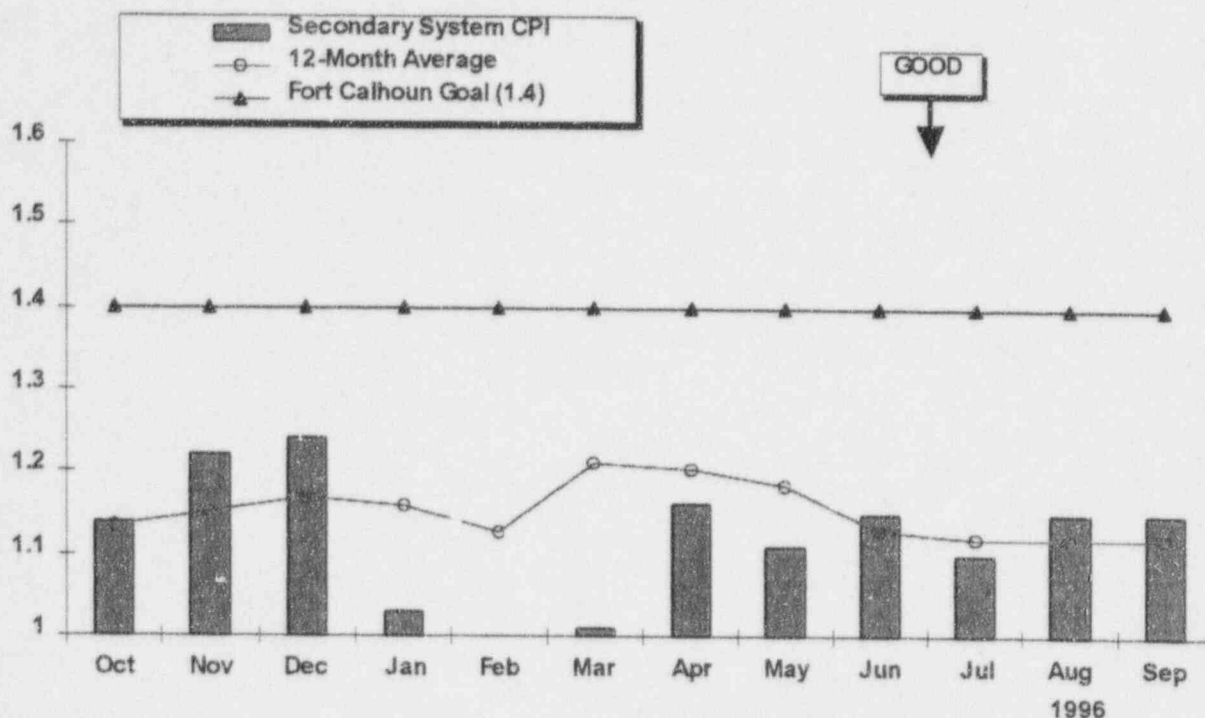
The August FRI value is based on averaged data from September 1 through 21. The days selected are when the plant chemistry values are at equilibrium for steady-state power operation (above 85% power for at least 3 days) and the letdown flow is at a constant value. The plant operated at 100% power until September 20. A planned power reduction to 70% power commenced on September 21 and then again to 45% power on September 28. Power reductions were in preparation for the 16th refueling outage scheduled to start on October 5. This is the last monthly value for cycle 16.

The September FRI value of 299.16×10^{-4} microcuries/gram indicated an increase from the August FRI value of 257.07×10^{-4} microcuries/gram. Based on the September Iodine 131 and Xenon 133 activity levels, the number of predicted leaking rods (15 at core average power, between 40 to 50 leakers at lower power levels) has not changed from the August prediction. The fuel vendor, Westinghouse, does predict however that the defects have increased in size and that open blisters on the fuel cladding may exist due to secondary hydriding. Cesium isotopic analysis from previous shutdown indicate failures in twice and thrice burned fuel assemblies. Chemistry sampling (Cesium) during the planned shutdown on October 4, 1996 will confirm the burnup values. Fuel inspection during October 1996, including in-mast sipping (all assemblies) and ultrasonic testing (indicated leaking fuel returning to the core) will help confirm the actual number of fuel failures.

The INPO "WANO Performance Indicator Program Utility Data Coordinator Reference Notebook" (INPO No. 94-009, Rev. 1) states the Industry Goal for fuel reliability is: "units should strive to operate with zero fuel defects". The 1996 Fort Calhoun Station FRI Performance Indicator goal is to maintain a monthly FRI below 5.0×10^{-4} microcuries/gram. A value larger than 5.0×10^{-4} microcuries/gram indicates a high probability of reactor core operation with one or more fuel defects. The 1996 year end goal can be met after the 1996 Refueling Outage. See page iii.

The maximum index point value for this indicator is 8. For the month of **September** the FCS Value was 0. This compares to the previous month's value of 0.0.

Data Source: Guinn/Guliani
 Accountability: Chase/Stafford
 Trend: Adverse



SECONDARY SYSTEM CHEMISTRY

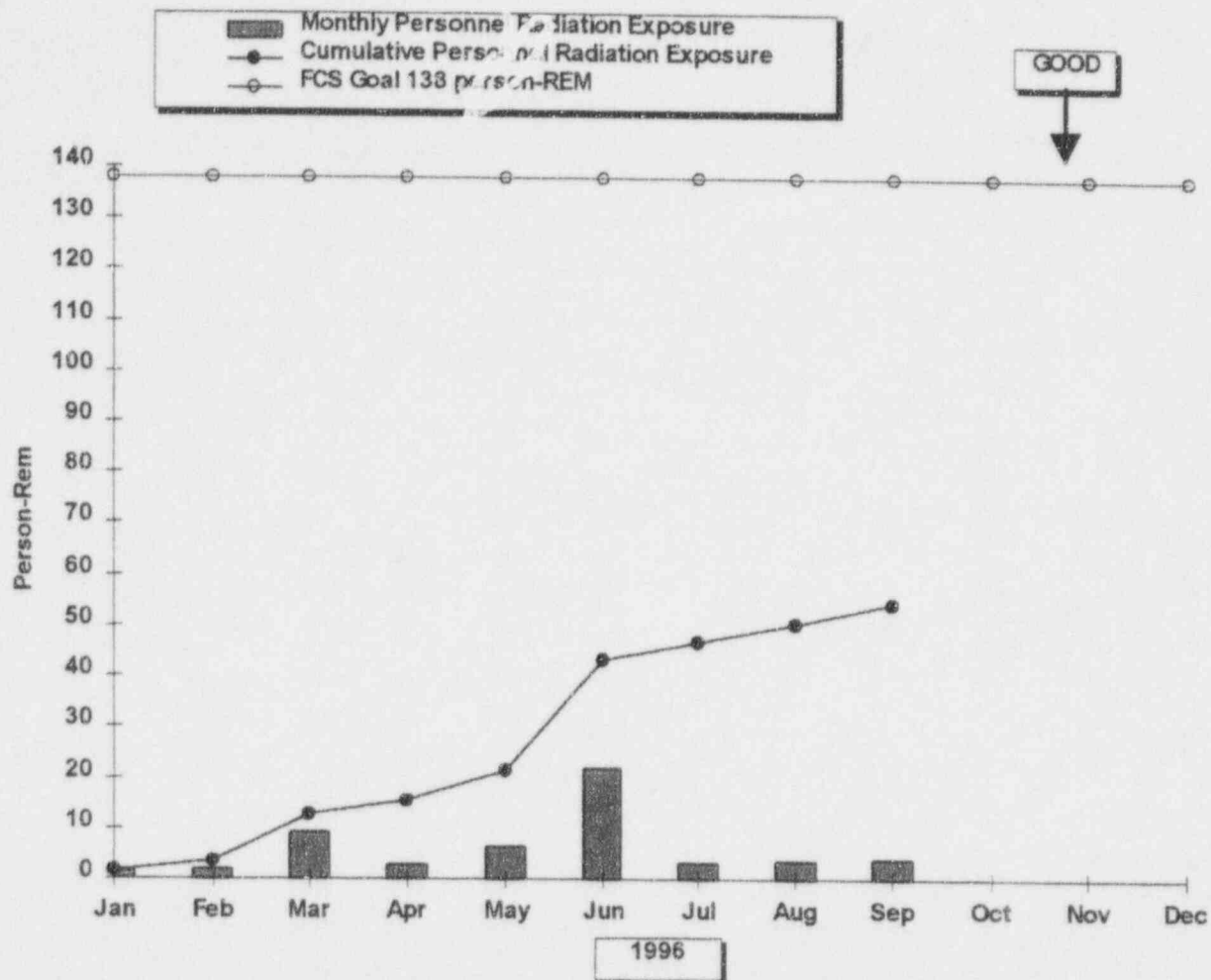
Criteria for calculating the Secondary System Chemistry Performance Index (CPI) are:
 1) the plant is at greater than 30% power; and 2) the power is changing at less than 5% per day.

The CPI for **September** was **1.15**. The 12-month average CPI value was **1.19** at the end of the month.

The Chemistry Performance Index (CPI) was above the goal in July due to slightly higher than average sodium and chloride values. The six chemistry parameters that are used in the CPI calculation have been evaluated against the best industry standards. As a result of this comparison, condensate dissolved oxygen, feedwater copper, and blowdown chloride concentrations have been targeted for reduction.

The maximum index point value for this indicator is **7**. For the month of **September** the FCS Value was **6.26**. This compares to the previous month's value of **5.8**.

Data Source:	Spires/Reneaud (Manager/Source)
Accountability:	Spires
Trend :	Positive due to performance better than goal



COLLECTIVE RADIATION EXPOSURE

The 1996 Fort Calhoun goal for collective radiation exposure for the year is set at 138.0 person-REM.

The exposure for **September 1996** was 3.840 person-Rem (ALNOR).

The year-to-date exposure through the end of **September** was 52.411 person-Rem (ALNOR).

The Year 2000 INPO industry goal for collective radiation exposure is 120 person-rem per year. The current industry best quartile is 145 person-rem per year. The yearly average for Fort Calhoun Station for the three years from 10/93 through 9/96 was 116.78 person-rem per year.

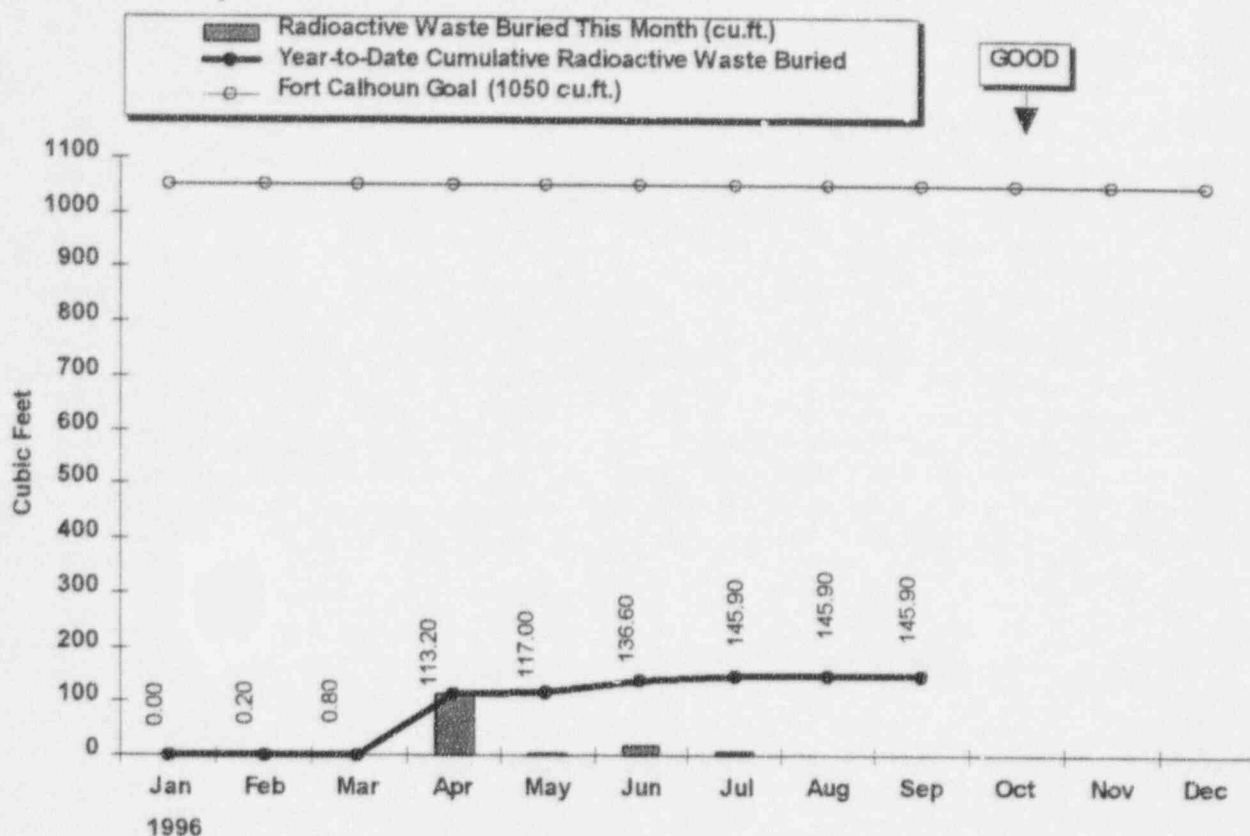
The maximum index point value for this indicator is 8. For the month of **September** the FCS Value was 8. This compares to the previous month's value of 8.

Data Source: Chase/Cartwright (Manager/Source)

Accountability: Chase/Gebers

Trend: None

SEP 54



VOLUME OF LOW-LEVEL RADIOACTIVE WASTE

This indicator shows the volume of the monthly radioactive waste buried, the cumulative year-to-date radioactive waste buried, the Fort Calhoun and INPO goals, and the approximate industry upper 10%.

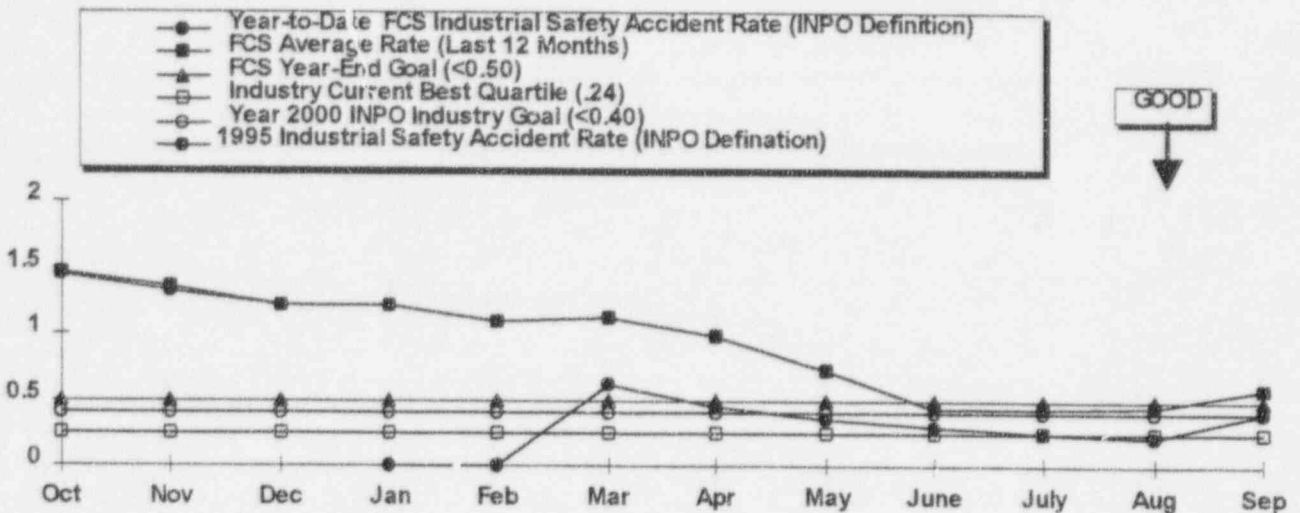
	<u>Cu.Ft.</u>
Amount of solid radwaste shipped off-site for processing during current month	2080
Volume of solid radwaste buried during current month	0
Cumulative volume of solid radioactive waste buried in 1996	145.9
Amount of solid radwaste in temporary storage	264.8

The 1996 Fort Calhoun goal for the volume of solid radioactive waste (buried) is 600 cubic feet. The Year 2000 INPO industry goal is 45 cubic meters (1,589 cubic feet) per year. The industry upper ten percentile value is approximately 27.33 cubic meters (965.3 cubic feet) per year.

This indicator is no longer used by INPO. The indicator will still be tracked, but will no longer be used in computing the Stations Index Number.

Data Source: Chase/Breuer (Manager/Source)
 Accountability: Chase/Gebbers
 Trend: None

SEP 54



INDUSTRIAL SAFETY ACCIDENT RATE

As stated in INPO's December 1993 publication 'Detailed Descriptions of World Association of Nuclear Operators (WANO) Performance Indicators and Other Indicators for Use at U.S. Nuclear Power Plants: "The purpose of this indicator is to monitor progress in improving industrial safety performance for utility personnel permanently assigned to the station."

The Fort Calhoun Station industrial safety accident rate value year-to-date was **0.40** at the end of **September 1996**. The value for the 12 months from **October 1, 1995**, through **September 31, 1996**, was **0.58**.

There were **no** restricted-time and **one** lost-time accidents in **September 1996**. A worker injured his back while removing a snow blower from the back of a truck.

The values for this indicator are determined as follows:

$$\frac{(\text{number of restricted-time accidents} + \text{lost-time accidents} + \text{fatalities}) \times 200,000}{(\text{number of station person-hours worked})}$$

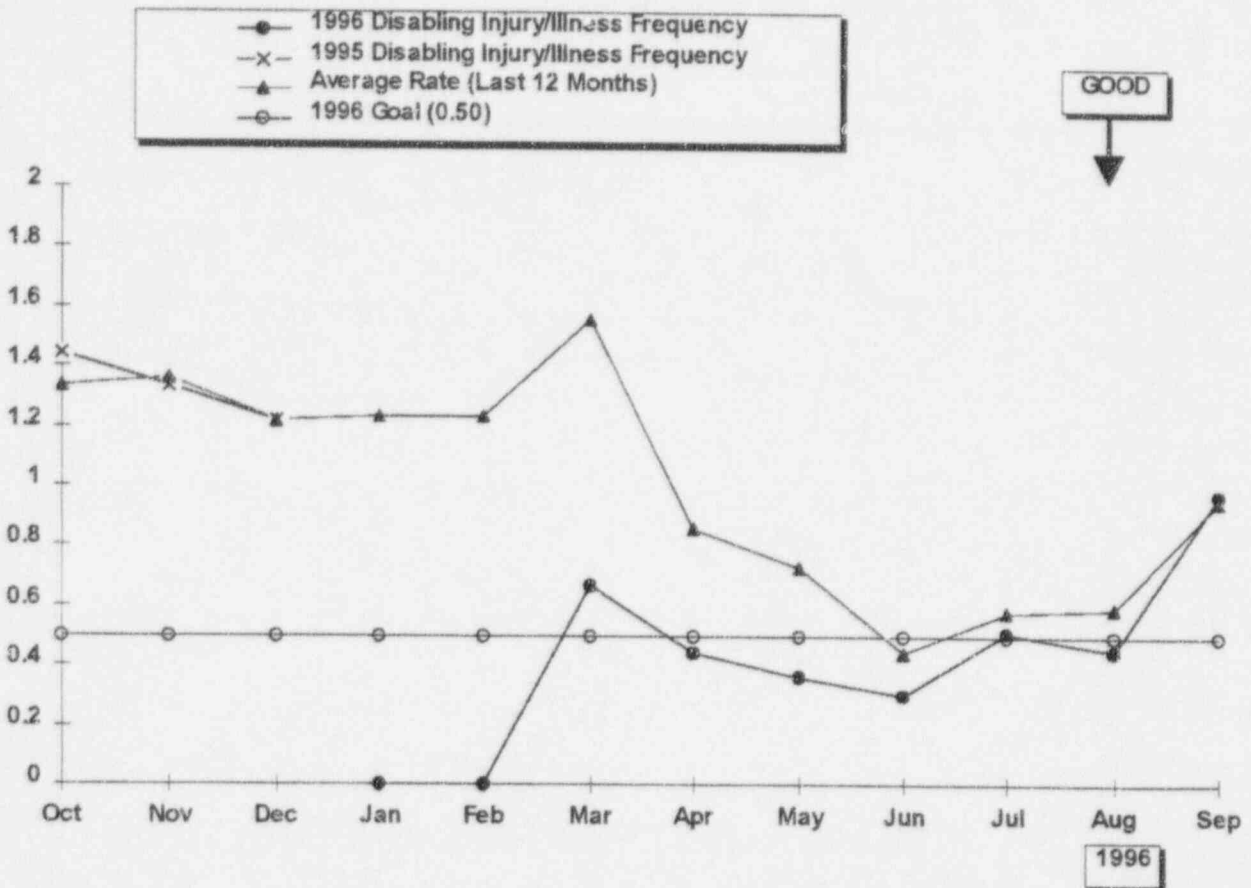
The 1996 Fort Calhoun year-end goal is ≤ 0.50 . The Year 2000 INPO industry goal is ≤ 0.40 . The approximate industry upper ten percentile value (for the period from 7/93 through 6/94) is 0.12.

The maximum index point value for this indicator is **5**. For the month of **September** the FCS Value was **1.16**. This compares to the previous month's value of **4.58**.

Data Source: Sorensen/Skaggs (Manager/Source)
Chase/Booth (Manager/Source)

SAFE OPERATIONS

Goal: A proactive, self-critical and safety conscious culture is exhibited throughout the nuclear organization. Individuals demonstrate professionalism through self-ownership and personal initiative and open communication.



DISABLING INJURY/ILLNESS FREQUENCY RATE (LOST-TIME ACCIDENT RATE)

This indicator shows the 1996 disabling injury/illness frequency rate. The 1995 disabling injury/illness frequency rate is also shown.

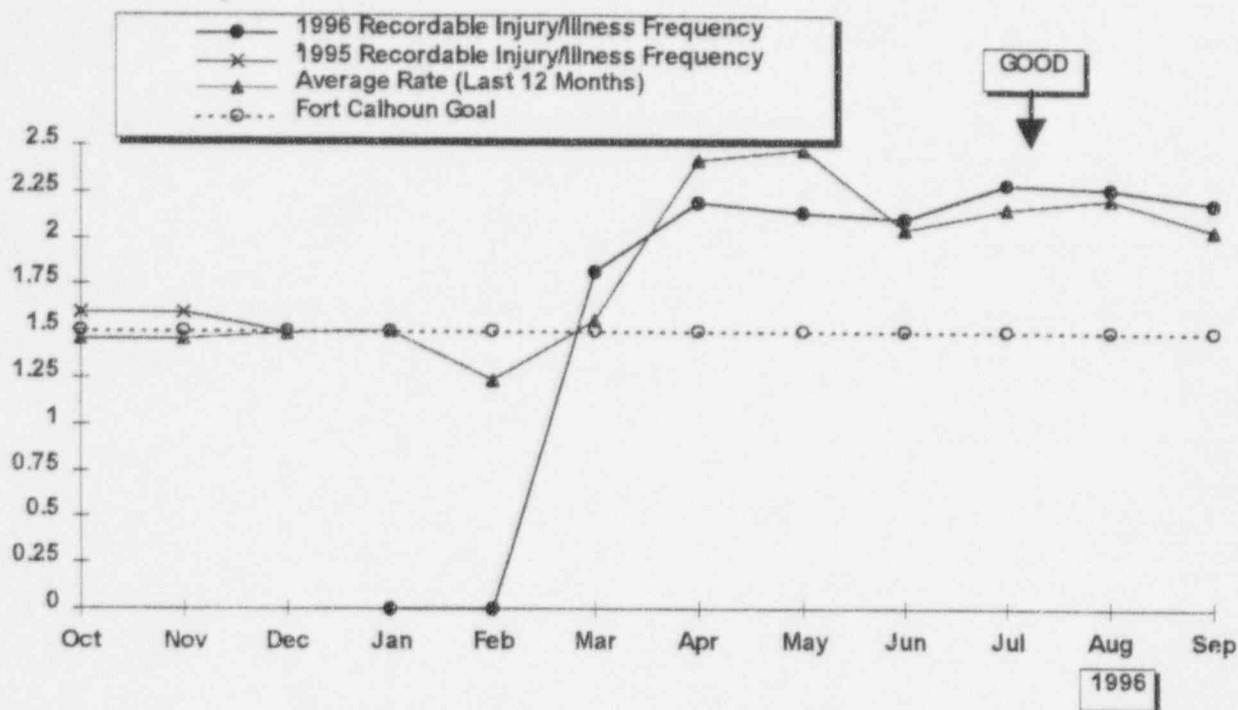
The disabling injury/illness frequency rate year-to-date was **0.97** at the end of **September 1996**. There was **one** disabling injury/illness cases reported for the month.

The disabling injury/illness frequency rate for the **12 months** from **October 1, 1995**, through **September 30, 1996**, was **0.95**.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 0.5.

Data Source: Sorensen/Skaggs (Manager/Source)
 Accountability: Chase/Bishop
 Trend: Need Increased Management Attention

SEP 25, 26 & 27



RECORDABLE INJURY/ILLNESS FREQUENCY RATE

This indicator shows the 1996 recordable injury/illness frequency rate. The 1995 recordable injury/illness cases frequency rate is also shown.

A recordable injury/illness case is reported if personnel from any of the Nuclear Divisions are injured on the job and require corrective medical treatment beyond first aid. The recordable injury/illness cases frequency rate is computed on a year-to-date basis.

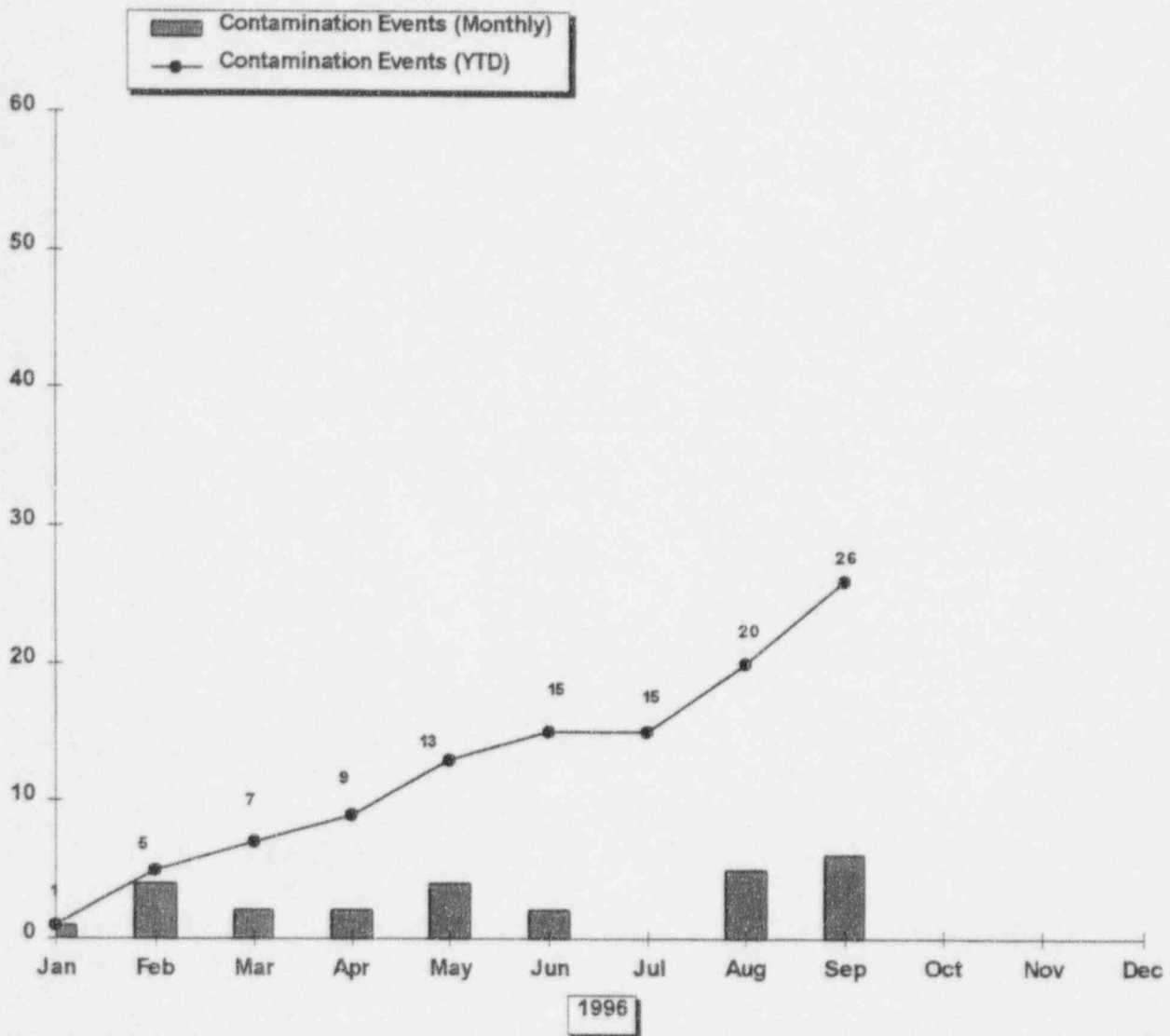
There have been **11** recordable injury/illness cases in 1996. The recordable injury/illness cases frequency rate year-to-date were **2.19** at the end of **September 1996**. There was **1** recordable injury/illness case reported for the month of **September**. This injury occurred when a worker injured his/her back while removing a snow blower from the back of a truck.

The recordable injury/illness cases frequency rate for the 12 months from **October 1, 1995**, through **September 30, 1996**, was **2.05**.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 1.5.

Data Source: Sorensen/Skaggs (Manager/Source)
 Accountability: Bishop
 Trend: Needs Management Attention

SEP 15, 25, 26 & 27



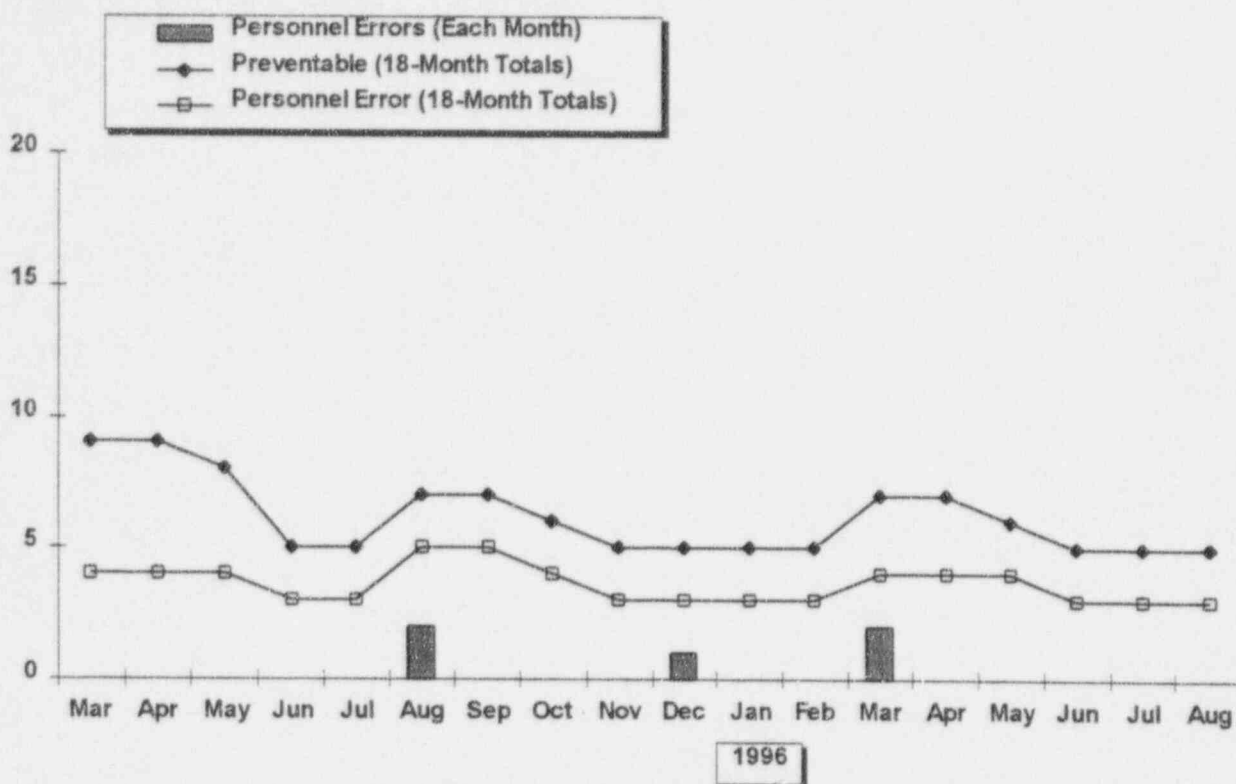
CLEAN CONTROLLED AREA CONTAMINATIONS **≥1,000 DISINTEGRATIONS/MINUTE PER PROBE AREA**

This indicator shows the Personnel Contamination Events in the Clean Controlled Area for contaminations $\geq 1,000$ disintegrations/minute per probe area for the reporting month.

There were **6** contamination events in **September 1996**. There has been a total of **26** contamination events in 1996 through the end of **September**.

Data Source: Chase/Cartwright (Manager/Source)
 Accountability: Chase/Gebbers
 Trend: None

SEP 15 & 54



PREVENTABLE/PERSONNEL ERROR LERs

This indicator depicts 18-month totals for numbers of "Preventable" and "Personnel Error" LERs.

The graph shows the 18-month totals for preventable LERs, the 18-month totals for Personnel Error LERs and the Personnel Error totals for each month. The LERs are trended based on the LER event date as opposed to the LER report date.

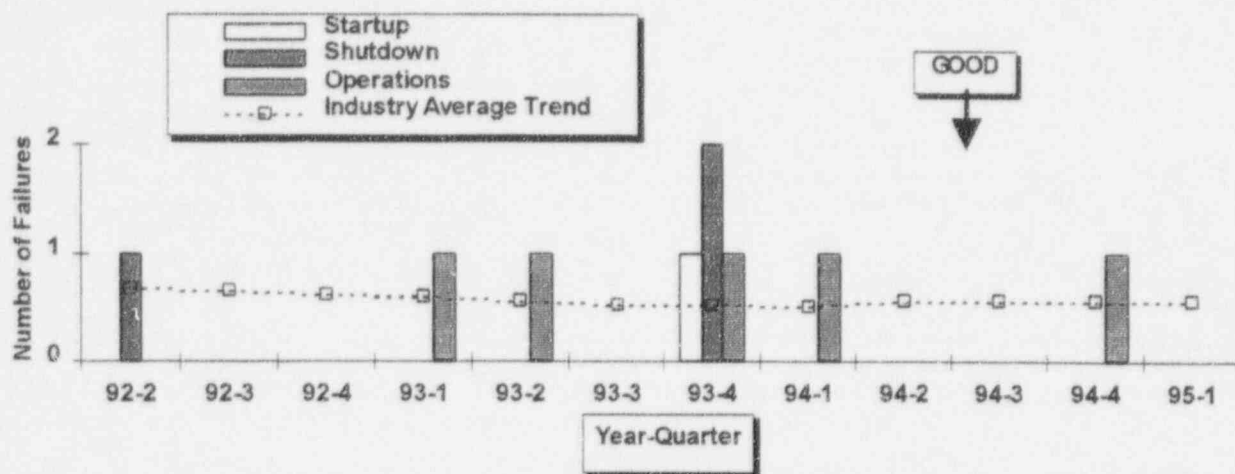
In **August 1996**, there were **no** events which were subsequently reported as an LER. **No** LERs were categorized as Preventable or Personnel Error for the month of **August**. The total LERs for the year 1996 (through **August 31, 1996**) is **four**. The total Personnel Error LERs for the **year 1996** is **one**. The total Preventable LERs for the year is **two**.

Due to the manner in which documentation is closed out, data for this Performance Indicator is always one month behind.

The 1996 goal for this indicator is that the year-end values for the 18-month totals be no more than 12 Preventable and 5 Personnel Error LERs.

Data Source: Tills/Cavanaugh (Manager/Source)
 Accountability: Chase
 Trend: None
 18

SEP 15



SAFETY SYSTEM FAILURES

This indicator illustrates the number of NRC Safety System Failures as reported by the Nuclear Regulatory Commission's Office for Analysis and Evaluation of Operational Data in the biannual "Performance Indicators for Operating Commercial Nuclear Power Reactors" report.

The following safety system failures occurred between the 2nd quarter of 1992 and the 1st quarter of 1995:

1st Quarter 1993: The SG low pressure scram signal block reset values, for all 4 channels of both SGs, were greater than the allowed limits, rendering this scram input inoperable during certain operating conditions.

2nd Quarter 1993: A section of the piping configuration for the borated water source of the safety injection system was not seismically qualified. This could have resulted in a failure of the system to meet design requirements during a seismic event.

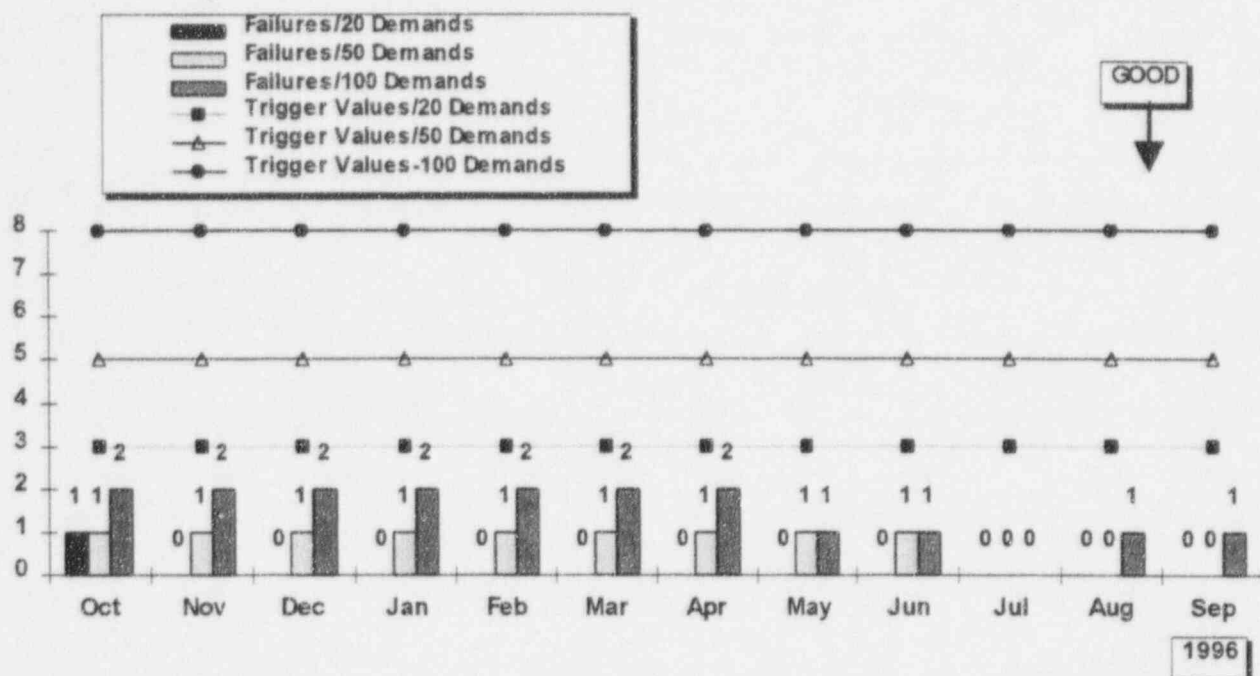
4th Quarter 1993: 1) During surveillance testing, both PORVs for the LTOP system failed to open during multiple attempts. The failures were a result of differential expansion caused by a loop seal, excessive venting line back pressure, and cracked valve disks; 2) Calibration errors of the offsite power low signal relays could have prevented offsite power from tripping and the EDGs from starting in the required amount of time during a degraded voltage condition; 3) Both AFW pumps were inoperable when one was removed from service for testing and the control switch for the other pump's steam supply valve was out of the auto position; 4) Only one train of control room ventilation was placed in recirc when both toxic gas monitors became inoperable. Later during surveillance, the other train auto-started and brought outside air into the control room for a six-minute period.

1st Quarter 1994: A design basis review determined that an ESF relay could result in loss of safety injection and spray flow, due to premature actuation of recirculation flow.

4th Quarter 1994: An accident scenario was identified that could result in the inoperability of both control room air conditioning units. Following certain accident conditions, CCW temperature could rise causing compressor rupture disc failure and a release of freon.

There were no safety system failures in the 1st quarter of 1995.

Data Source: Nuclear Regulatory Commission
 Accountability: Chase
 Trend: Positive

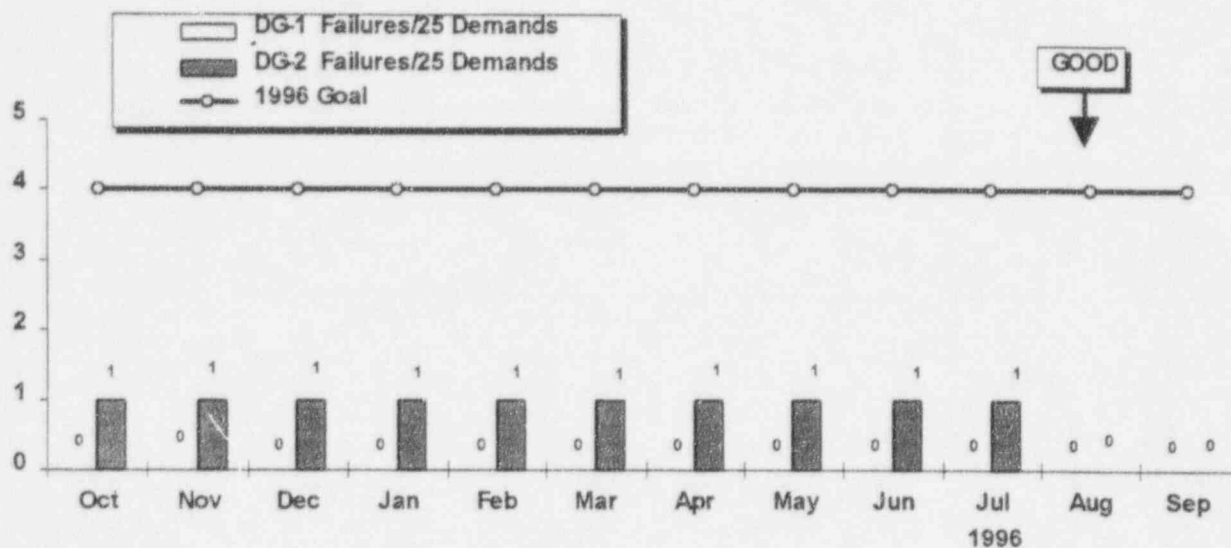


EMERGENCY DIESEL GENERATOR UNIT RELIABILITY

This bar graph shows three monthly indicators pertaining to the number of failures that were reported during the last 20, 50, and 100 emergency diesel generator demands at the Fort Calhoun Station. Also shown are trigger values which correspond to a high level of confidence that a unit's diesel generators have obtained a reliability of greater than or equal to 95% when the failure values are below the corresponding trigger values. The Fort Calhoun 1996 goal is to have fewer failures than these trigger values.

The demands counted for this indicator include the respective number of starts and the respective number of load-runs for both Diesel Generators combined. The number of start demands includes all valid and inadvertent starts, including all start-only demands and all start demands that are followed by load-run demands, whether by automatic or manual initiation. Load-run demands must follow successful starts and meet at least one of the following criteria: a load-run that is a result of a real load signal, a load-run test expected to carry the plant's load and duration as stated in the test specifications, and a special test in which a diesel generator was expected to be operated for a minimum of one hour and to be loaded with at least 50% of design load (see exceptions and other demand criteria in the Definitions Section of this report).

Data Source: Skiles/Ronning (Manager/Source)
 Accountability: Skiles/Ronning
 Trend: Positive due to performance better than goal.



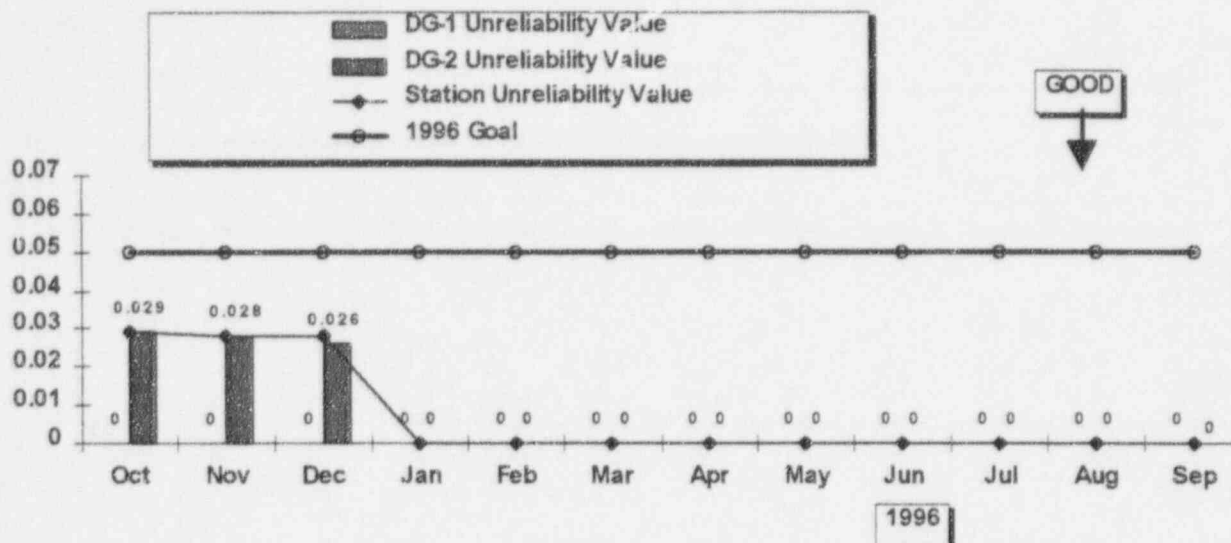
DIESEL GENERATOR RELIABILITY (25 DEMANDS)

This indicator shows the number of failures experienced by each emergency diesel generator during the last 25 start demands and the last 25 load-run demands. A trigger value of 4 failures within the last 25 demands is also shown. This trigger value of 4 failures within 25 demands is the Fort Calhoun goal for 1996.

It must be emphasized that, in accordance with NUMARC criteria, certain actions will take place in the event that any one emergency diesel generator experiences 4 or more failures within the last 25 demands on the unit. These actions are described in the Definitions Section of this report. A System Engineering Instruction has been approved for the Fort Calhoun Station to institutionalize and formally approve/adopt the required NUMARC actions.

Diesel Generator DG-1 has experienced **zero** failures during the last year, and **zero** failures during the last 25 demands on the unit. Diesel Generator DG-2 has experienced **zero** failures during the last 25 demands on the unit.

Data Source:	Skiles/Ronning (Manager/Source)
Accountability:	Skiles/Ronning
Trend:	Positive due to performance better than goal.



EMERGENCY DIESEL GENERATOR UNRELIABILITY

The purpose of this indicator is to monitor the likelihood that emergency AC power generators will respond to off-normal events or accidents. It also provides an indication of the effectiveness of maintenance, operation and test practices in controlling generator unreliability. The last event occurred on September 1, 1995 when the Field Flash Relay on DG-2 failed.

The year-to-date station EDG unreliability at the end of **September 1996** was **0.0**. The 1996 goal for this indicator is a maximum value of 0.05.

For DG-1: There was 1 start demand for the reporting month with 0 failures.
In addition, there was 1 load-run demands without a failure.

For DG-2: There was 1 start demands for the reporting month with 0 failures.
In addition, there was 1 load-run demand without a failure.

Emergency diesel generator unreliability is calculated as follows:

$$\text{value per DG} = \text{SU} + \text{LU} - (\text{SU} \times \text{LU})$$

where $\text{SU} = \text{Start Unreliability} = \frac{\text{number of unsuccessful starts}}{\text{number of valid start demands}}$

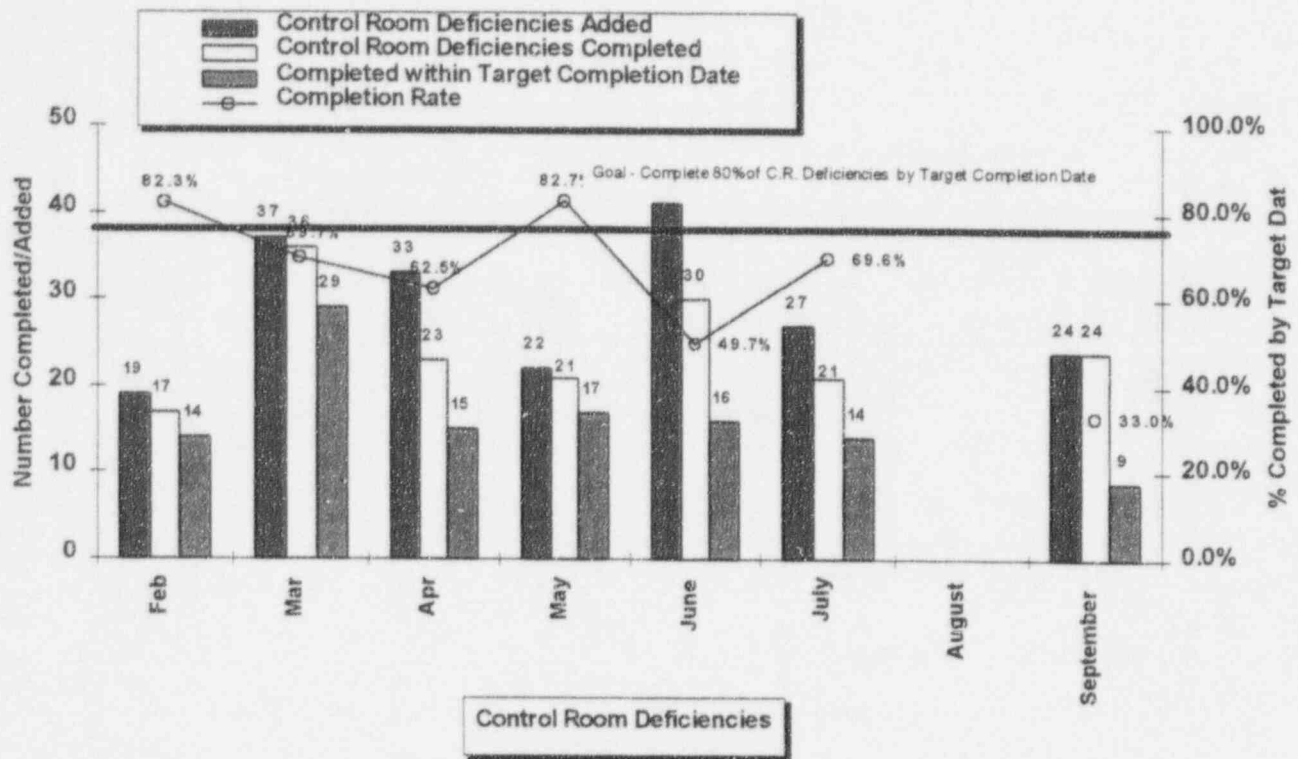
$\text{LU} = \text{Load-run Unreliability} = \frac{\text{number of unsuccessful load-runs}}{\text{number of valid load-run demands}}$

Station Value = average of DG-1 and DG-2 value

Data Source: Skiles/Ronning (Manager/Source)

Accountability: Skiles/Ronning

Trend: Positive due to performance better than goal.



NUMBER OF CONTROL ROOM EQUIPMENT DEFICIENCIES

This indicator measures the timeliness of closing Control Room Deficiencies.

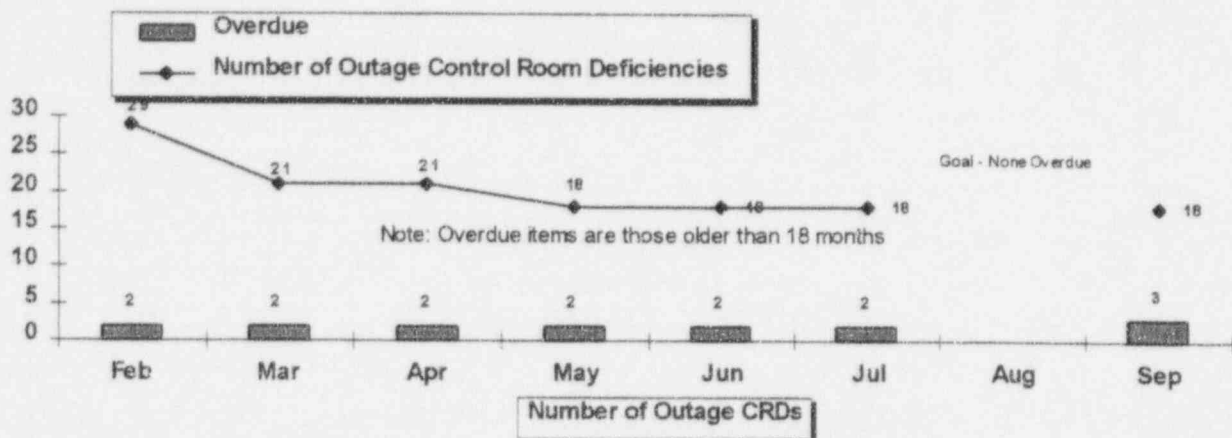
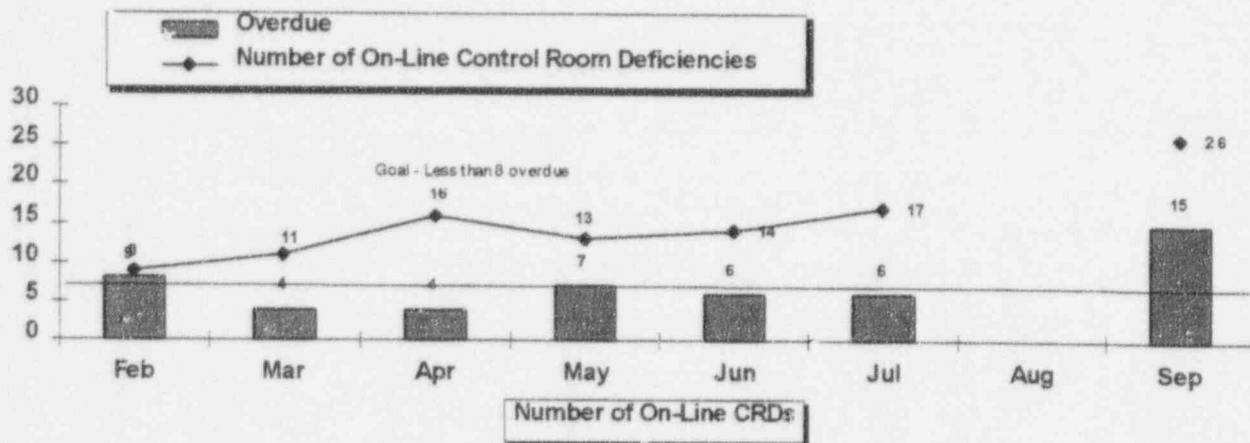
Target Completion Dates are established by the Emergent Work Committee. The goal is to close at least 80% of all CRDs within the Target Due Date.

There were **24** Control Room Deficiencies completed during **September 1996**, and **9** were completed within the target completion date.

A Scheduling Coordinator has been assigned to track performance on a weekly basis and identify problem areas. Revisions have been made to the scheduling process to allow for more timely completion of CRDs.

Due to a new tracking system initiated in July/August, data for August 1996 was not available.

Data Source: Chase/Kermode (Manager/Source)
 Accountability: Short/Faulhaber
 Trend: None



NUMBER OF ON-LINE AND OUTAGE CONTROL ROOM DEFICIENCIES

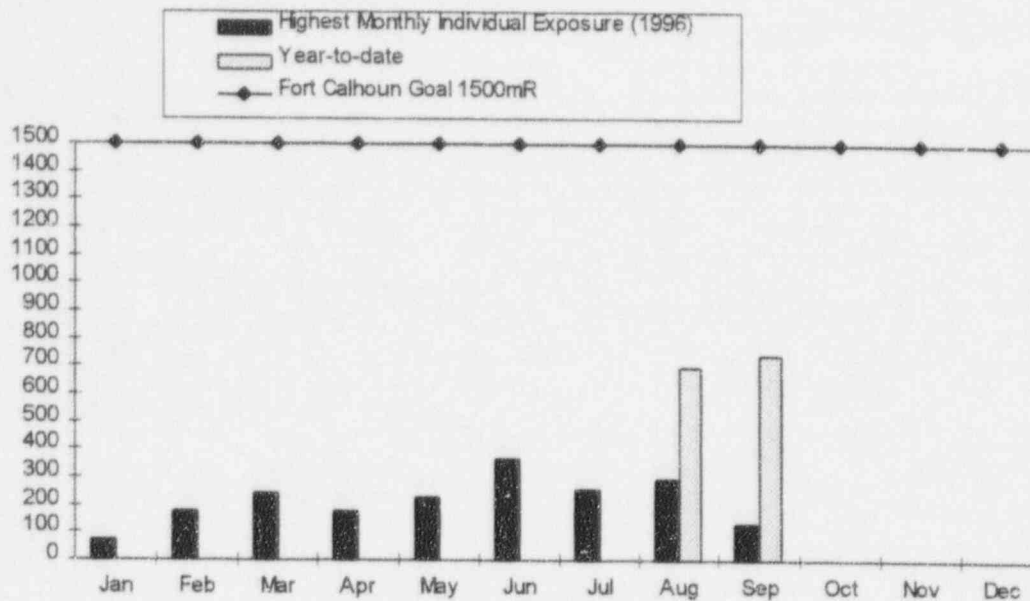
This indicator shows the total number of On-Line and Outage Control Room Deficiencies, and the number of overdue Control Room Deficiencies.

There were **26** on-line (**15** were overdue) and **18** outage (**3** were overdue) Control Room Deficiencies at the end of **September 1996**.

The 1996 Fort Calhoun goal for these indicators are less than 8 overdue on-line and no overdue outage Control Room Deficiencies.

Data for August was not available.

Data Source: Chase/Kermode (Manager/Source)
 Accountability: Short/Faulhaber/Herman
 Trend: Needs Increased Management Attention - Number of On-Line CRDs <8 Overdue exceeds goal



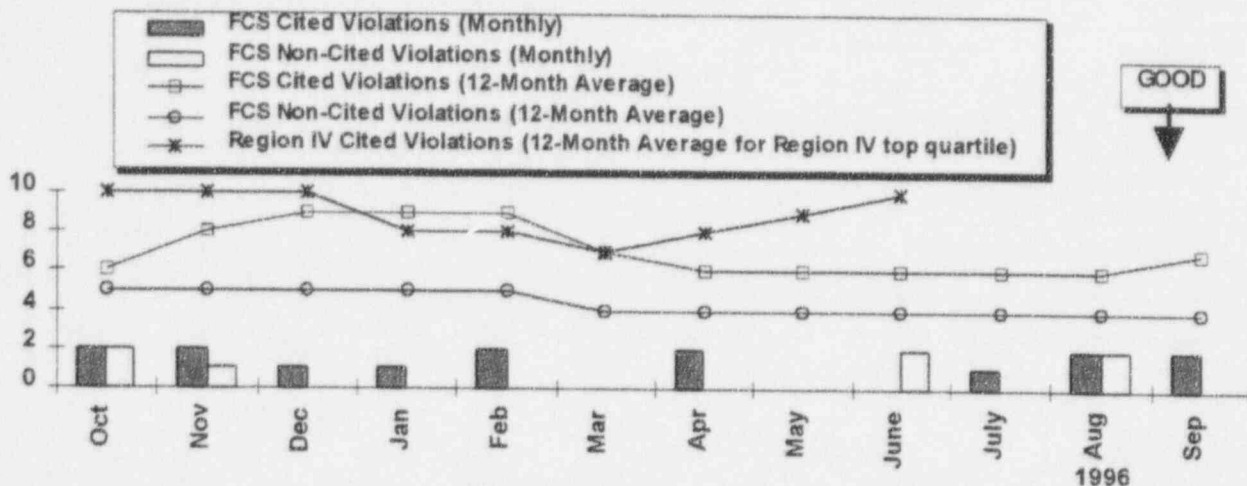
MAXIMUM INDIVIDUAL RADIATION EXPOSURE

For the month of **September 1996**, an individual accumulated **134 mRem**, which was the highest individual exposure for the month.

From **January 1996**, through **September 1996**, an individual has accumulated a total of **739 mRem**.

The OPPD limit for the maximum yearly individual radiation exposure is 4,000 mRem/year. The 1996 Fort Calhoun year-end goal is a maximum of 1,500 mRem.

Data Source:	Chase/Cartwright (Manager/Source)
Accountability:	Chase/Gebbers
Trend:	None



VIOLATION TREND

This indicator illustrates a 12-month trend for Fort Calhoun Station Cited Violations, Non-Cited Violations and Cited Violations for the Top Quartile plants in Region IV. Additionally, the Fort Calhoun Station cited and non-cited violations for the past 12 months will be illustrated monthly. The 12-month trend for the Region IV top quartile lags 2-3 months behind the Fort Calhoun Station trend. This lag is necessary to compile information on other Region IV plants.

The following inspections were completed during **September 1996**:

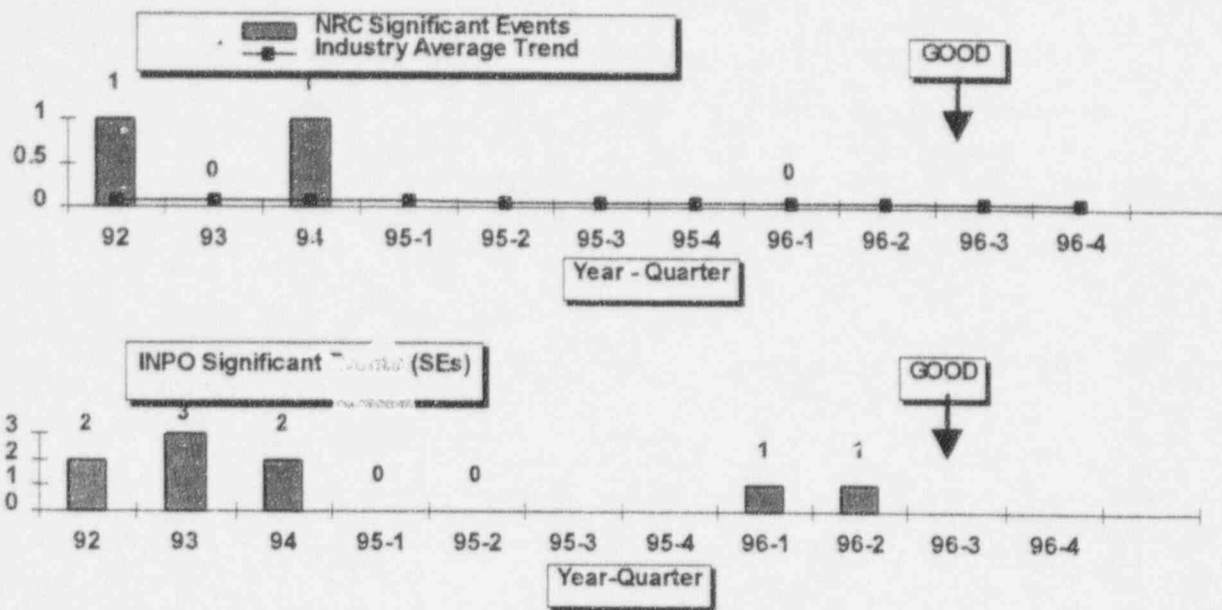
<u>IER No.</u>	<u>Title</u>
96-07	Resident Monthly

To date, OPPD has received **eleven** violations for inspections conducted in 1996.

Level III Violations	1
Level IV Violations	6
Non-Cited Violations	<u>4</u>
Total	11

The 1996 Fort Calhoun Station Goal for this performance indicator is to be at or below the cited violation trend for the top quartile plant in Region IV.

Data Source: Tills/Cavanaugh (Manager/Source)
 Accountability: Tills
 Trend: None



SIGNIFICANT EVENTS

NRC SIGNIFICANT EVENTS

The following SEs were identified between the 2nd Quarter of 1992 and the 1st quarter of 1995 (as reported in the NRC's 'Performance Indicators for Operating Nuclear Power Reactors' report dated June 30, 1995):

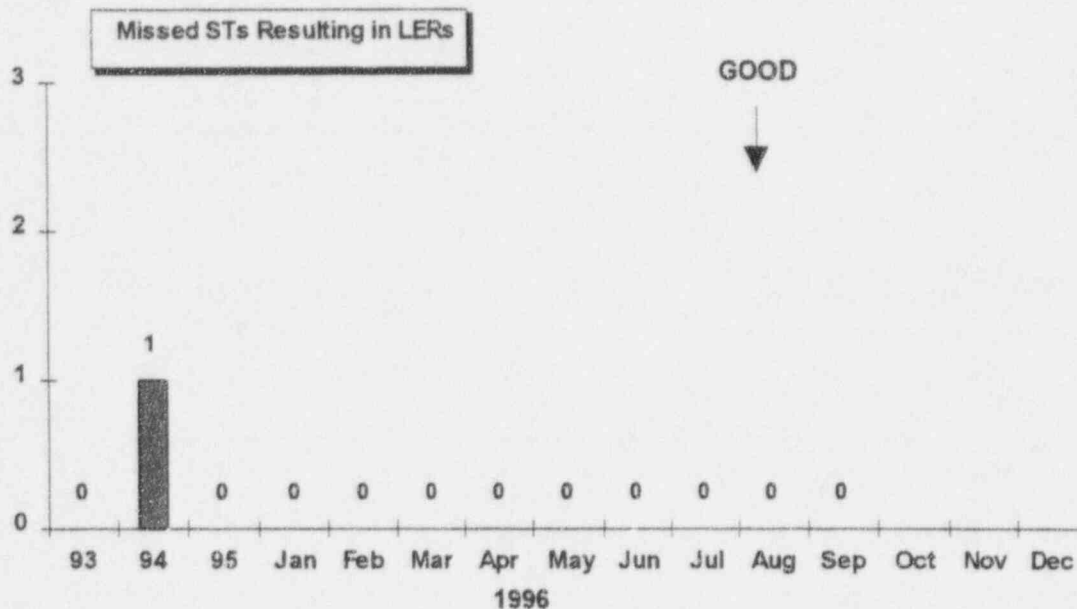
- 3rd Quarter 1992:** The failure of a Pressurizer Code Safety Valve to reseal initiated a LOCA with the potential to degrade the reactor coolant pressure boundary.
- 4th Quarter 1994:** A potential accident scenario involving a large break LOCA or a main steam line break inside containment could result in the inoperability of both control room A.C. units.

INPO SIGNIFICANT EVENTS

The following SEs have been identified since 2nd Quarter of 1992 by INPO:

- 2nd Quarter 1992:** Intake of transuranics during letdown filter change-out.
- 3rd Quarter 1992:** Safety Valve malfunction (RC-142).
- 1st Quarter 1993:** Inoperability of Power Range Nuclear Instrumentation Safety Channel D.
- 2nd Quarter 1993:** Inadequate control of Switchyard activities.
- 3rd Quarter 1993:** Loss of reactor coolant due to malfunction of Pressurizer Safety Valve.
- 1st Quarter 1994:**
- 1) Unexpected CEA withdrawal. (Event occurred November 13, 1993 but was not identified as an SE until 1st Quarter 1994).
 - 2) Unplanned dilution of Boron concentration in the Reactor Coolant System.
- 1st Quarter 1996:** During pressurizer solid plant operation, the Low Temperature Overpressurization (LTOP) protection for the RCS was inadvertently disabled.
- 2nd Quarter 1996:** RC Pump Anti-Reverse Rotation Device (ARD) failure
- No SE reports have been received from INPO on the 1996 SEs as of August 1, 1996.

Data Source: Nuclear Regulatory Commission & INPO
 Accountability: Chase
 Trend: Positive



NUMBER OF MISSED SURVEILLANCE TESTS RESULTING IN LICENSEE EVENT REPORTS

This indicator shows the number of missed Surveillance Tests (STs) that result in Licensee Event Reports (LERs) during the reporting month. The graph on the left shows the yearly totals for the indicated years.

There were **no** missed surveillance tests resulting in LERs during **September 1996**.

On December 28, 1994, during the performance of OP-ST-SHIFT-0001, data was not entered for Steam Generator level per Surveillance Requirements.

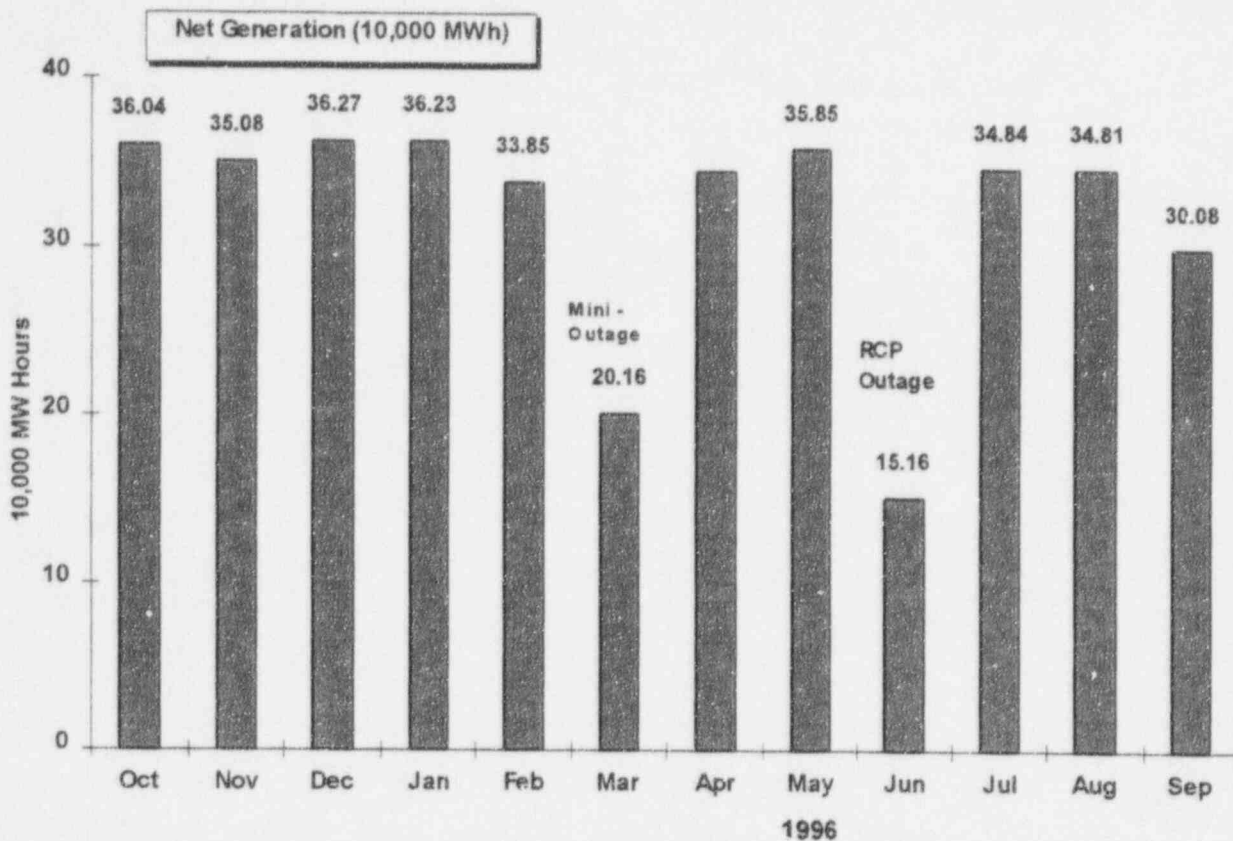
The 1996 Fort Calhoun monthly goal for this indicator is 0.

Data Source:	Monthly Operating Report & Plant Licensee Event Reports (LERs)
Accountability:	Chase/Skiles
Trend :	Positive

SEP 60 & 61

PERFORMANCE

Goal: To strive for Excellence in Operations utilizing the highest standards of performance at Fort Calhoun Station that result in safe, reliable plant operation in power production.



STATION NET GENERATION

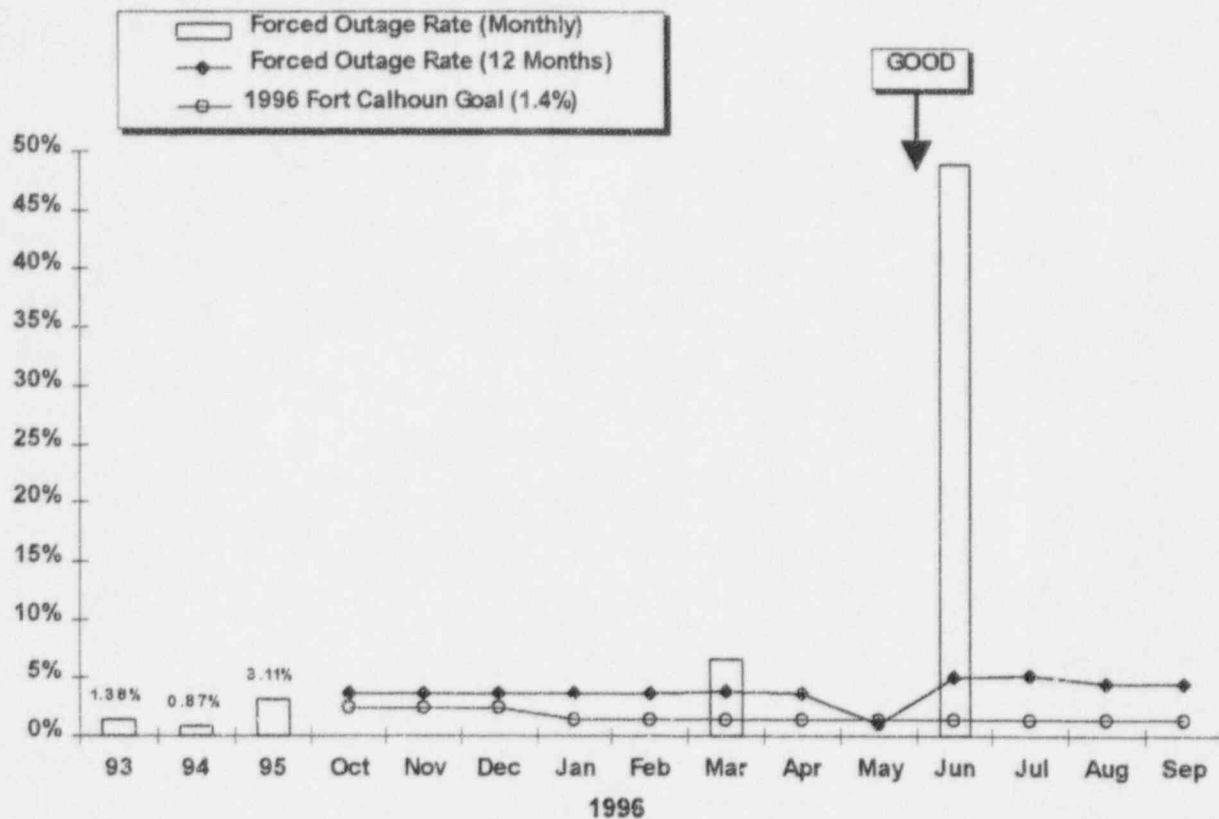
During the month of **September 1996**, a net total of **300,824.8 MWh** was generated by the Fort Calhoun Station. Cumulative net generation for Cycle 16 was **5,401,388.6 MWh** at the end of the month.

Energy losses for June 1996 were attributed to a failure of the Anti-Rotation Device (ARD) associated with Reactor Coolant Pump Motor RC-3B.

Energy losses for March 1996 were attributed to (1) a planned mini-outage, and (2) condenser tube leakage repair.

Energy losses for August 1995 were attributed to a plant trip during testing of a backup automatic shutdown system, which began on August 24th. The generator was brought back on-line at 3:43 p.m. on Saturday, August 26th, after a two-day outage.

Data Source:	Station Generation Report
Accountability:	Chase
Trend:	None



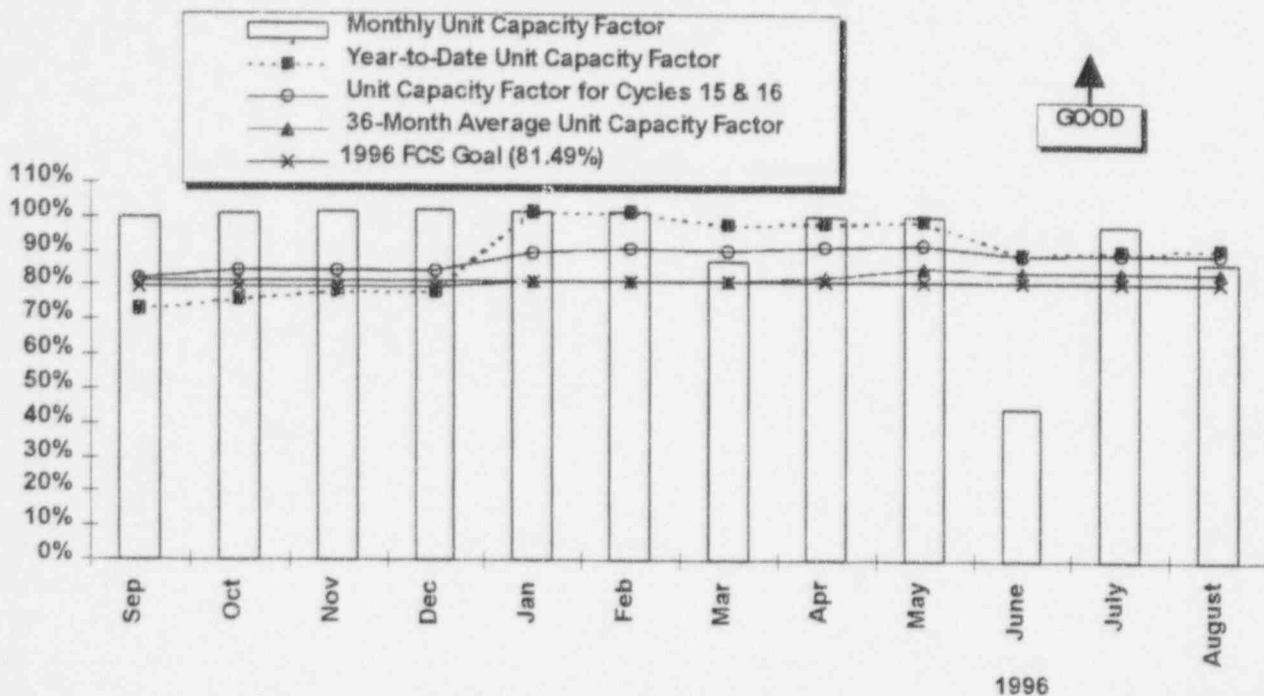
FORCED OUTAGE RATE

The forced outage rate (*FOR*) was reported as **4.52%** for the twelve months from **October 1, 1995**, through **September 30, 1996**. The 1996 year-to-date *FOR* was **6.1%** at the end of the month.

Energy Losses are explained on Page 30.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 1.4%.

Date Source:	Monthly Operating Report
Accountability:	Chase
Trend:	None



UNIT CAPACITY FACTOR

This indicator shows the plant monthly Unit Capacity Factor, the Unit Capacity Factor for the current fuel cycle, year-to-date and the 36-month average Unit Capacity Factor.

At the end of the month, the Cycle 16 Unit Capacity factor was **87.41%**, and the Unit Capacity Factor for the last 36 months was **85.08%**. The 1996 Fort Calhoun annual goal for this indicator is 82.00%.

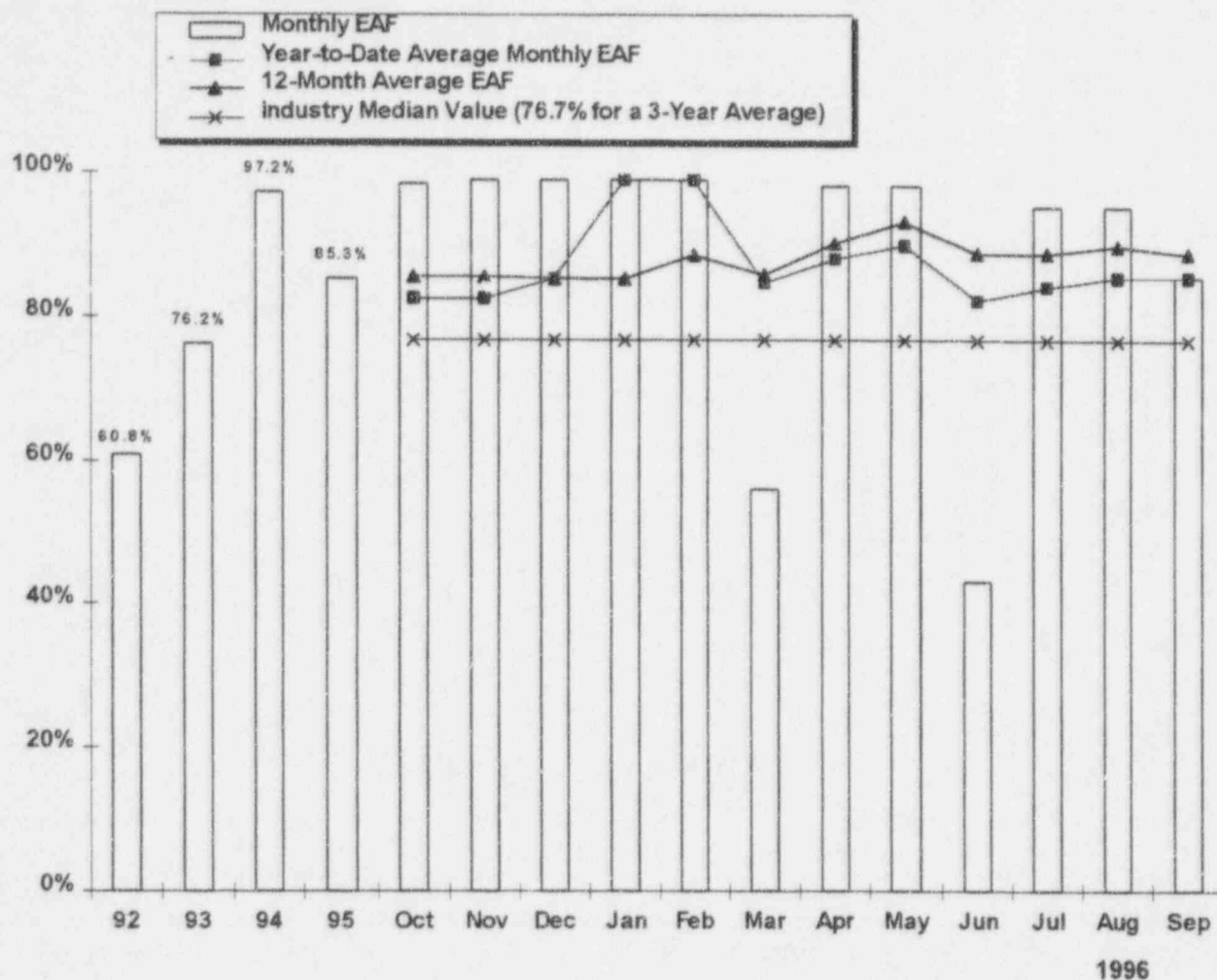
The year-to-date value is **91.30%**.

Energy losses are explained on Page 2.

The Unit Capacity Factor is computed as follows:

$$\frac{\text{Net Electrical Energy Generated (MWH)}}{\text{Maximum Dependable Capacity (MWe) X Gross Hours in the Reporting Period}}$$

Data Source: Monthly Operating Report
 Accountability: Chase
 Trend: None



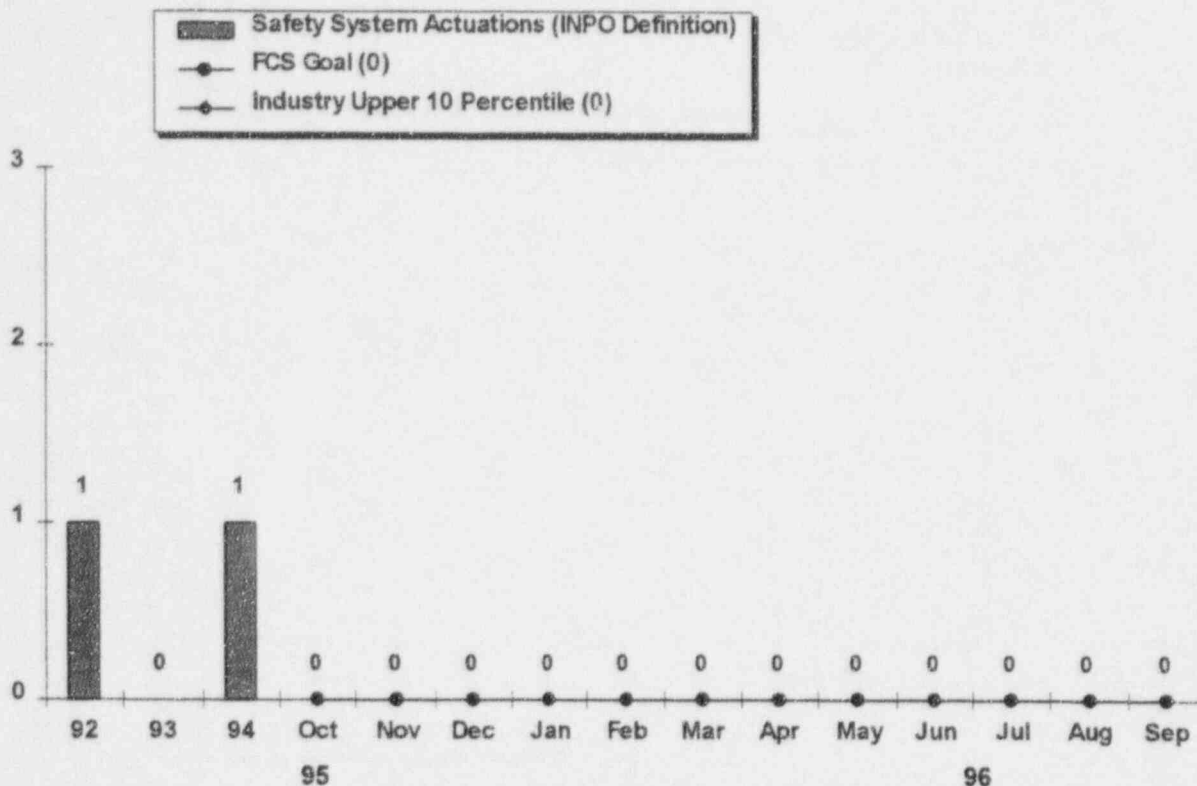
EQUIVALENT AVAILABILITY FACTOR

This indicator shows the plant monthly Equivalent Availability Factor (EAF), the year-to-date average monthly EAF, and the year-end average monthly EAF for the previous three years.

The EAF for **September 1996** was reported as **85.5%**. The year-to-date monthly average EAF was **85.40%** at the end of the month.

The Fort Calhoun average monthly EAF for the past three years is **87.12%**. The industry median EAF value for the three-year period from **7/90** through **6/93** was **76.7%**.

Data Source:	Dietz/Vandervort (Manager/Source)
Accountability:	Chase
Trend:	None



UNPLANNED SAFETY SYSTEM ACTUATIONS - (INPO DEFINITION)

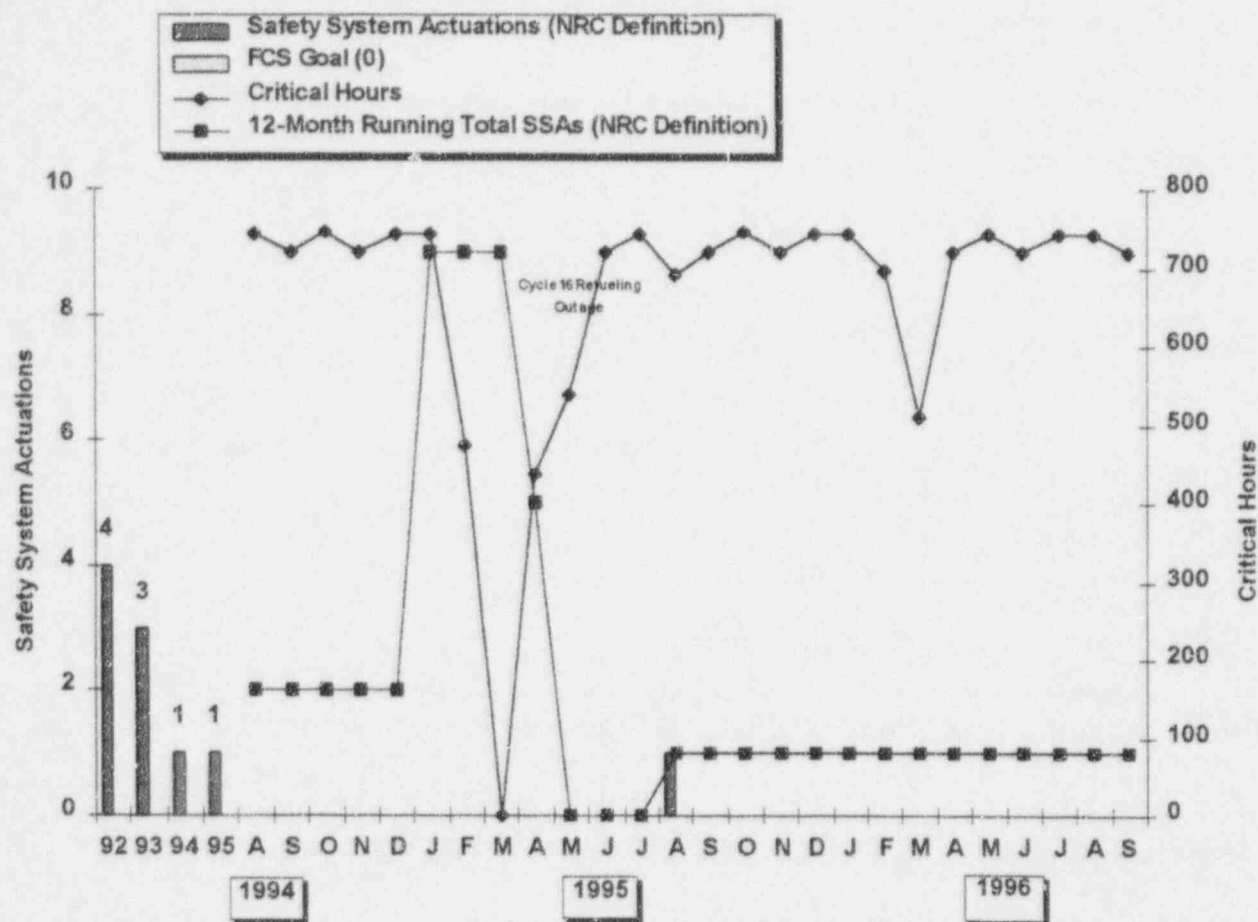
There were no INPO unplanned safety system actuations during the month of July 1996.

There was one unplanned safety system actuation during the month of August 1995. It occurred on August 24, 1995, when the plant was tripped during a test of a backup automatic shutdown system. The generator was brought back on-line at 3:43 p.m. on August 26th, after a two-day outage.

In February 1994, a reactor trip occurred as a result of an inadvertent ESF actuation. A short in the 86B/CHPS associated supervisory relay energized the 86B/CPHS lockout which initiated a SGIS Safeguards signal. As a result, the MSIVs closed which caused a simultaneous turbine and reactor trip.

The 1996 Fort Calhoun goal for this indicator is 0.

Data Source:	Monthly Operating Report & Plant Licensee Event Reports
Accountability:	Skiles/Foley/Ronning
Trend:	Positive



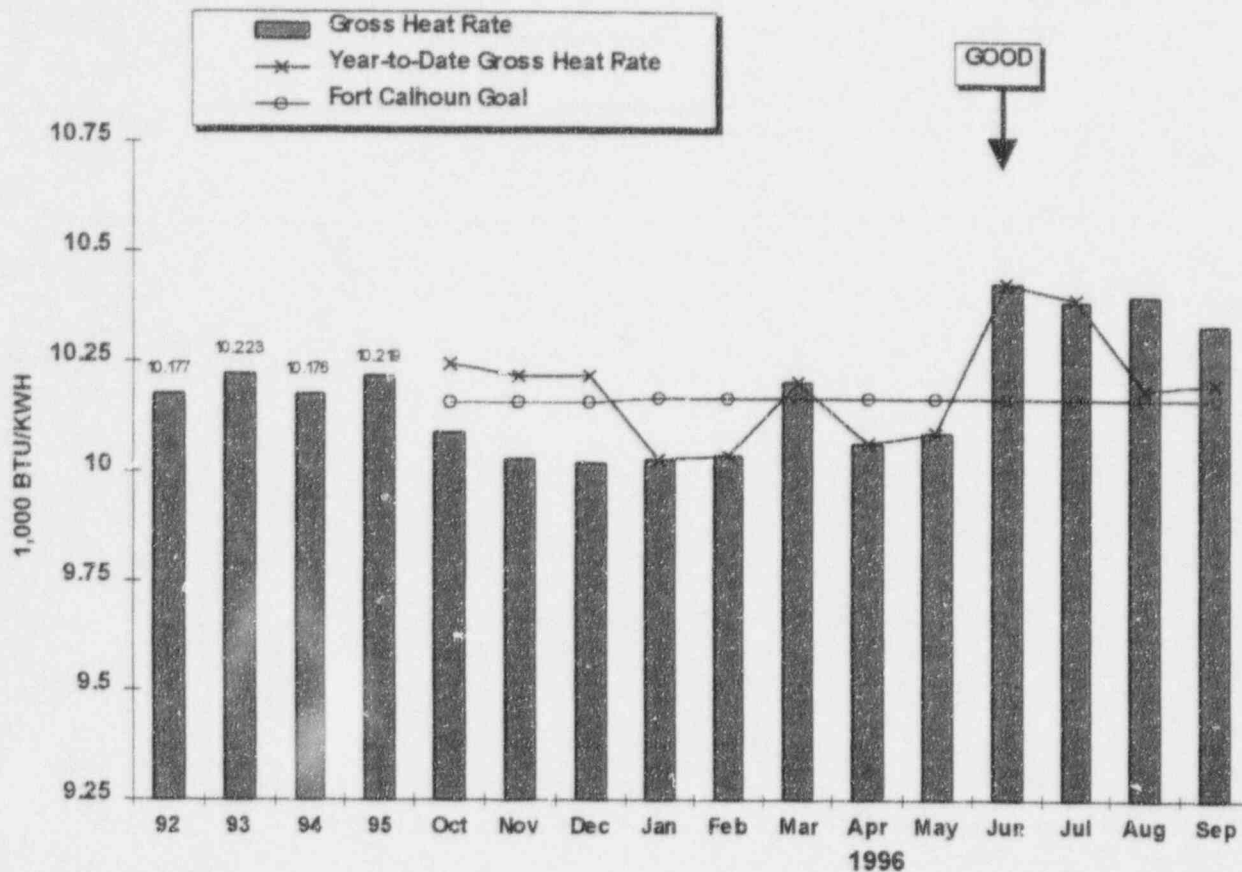
UNPLANNED SAFETY SYSTEM ACTUATIONS - (NRC DEFINITION)

This indicator shows the number of unplanned safety system actuations (SSAs), which includes the High and Low Pressure Safety Injection Systems, the Safety Injection Tanks, and the Emergency Diesel Generators. The NRC classification of SSAs includes actuations when major equipment is operated and when the logic systems for these safety systems are challenged.

An unplanned safety system actuation occurred in December 1993 when the main turbine and reactor tripped during Electro-Hydraulic Control pump start testing. Also, there was an unplanned SSA during the month of February 1994 when supervisory relay 86B/CPHSS failed, which resulted in a concurrent turbine and reactor trip.

There have been no unplanned safety system actuations in the last 12 months. The 1996 Fort Calhoun goal for this indicator is 0.

Data Source:	Monthly Operating Report & Plant Licensee Event Reports (LERs)
Accountability:	Skiles/Foley/Ronning
Trend:	None



GROSS HEAT RATE

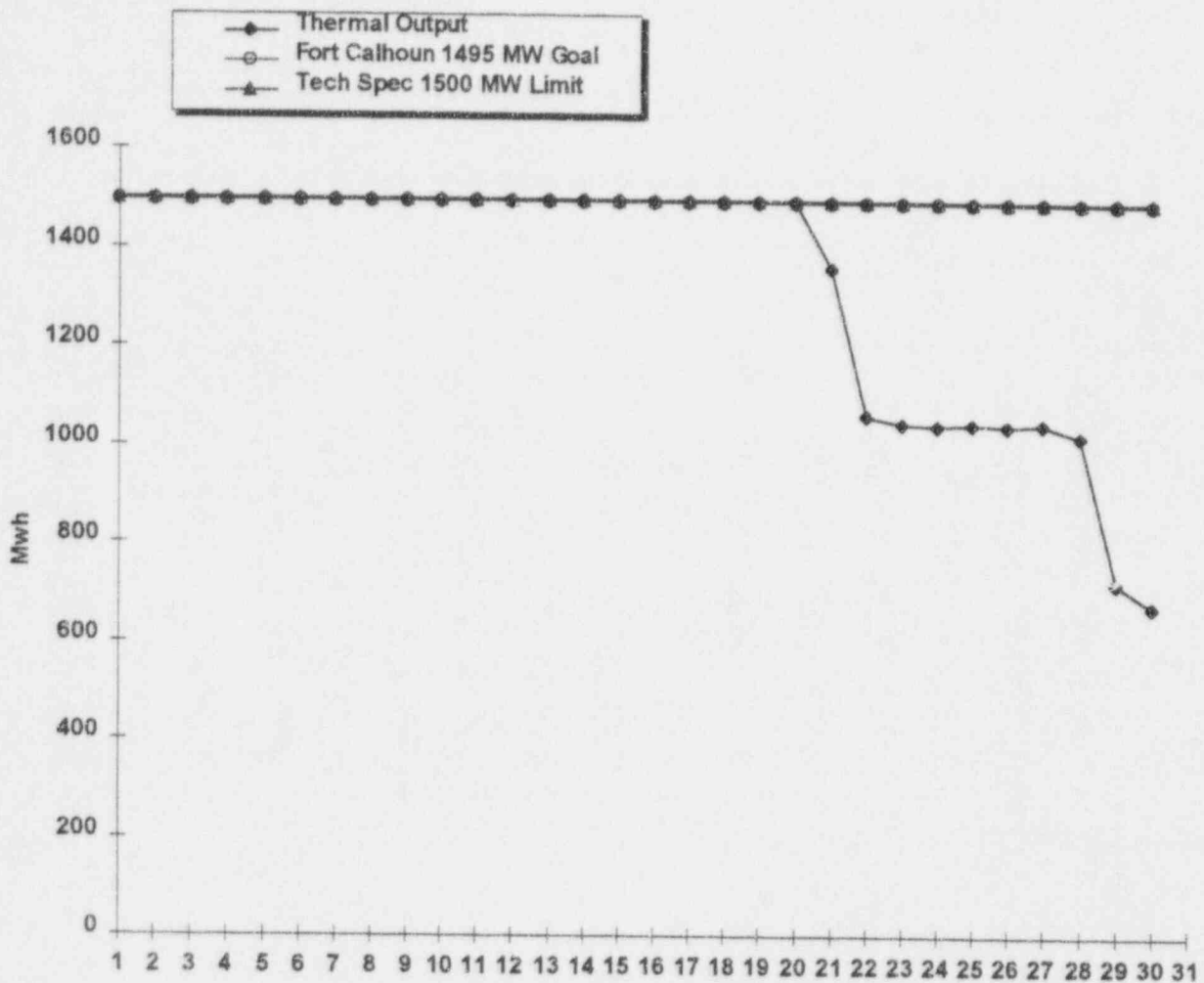
This indicator shows the Gross Heat Rate (GHR) for the reporting month, the year-to-date GHR, the goals and the year-end GHR for the previous three years.

The gross heat rate for Fort Calhoun Station was **10,895** for the month of **September 1996**. The 1996 year-to-date GHR was **10,204** at the end of the month.

The GHR varies with fluctuations in river water temperature. In general, the GHR improves during the winter months and degrades during the summer. This is because the gross heat rate is not normalized to the design river water temperature of 60 degrees Fahrenheit.

The 1996 Fort Calhoun year-end goal for this indicator is 10,166.

Data Source:	Guinn/Willett (Manager/Source)
Accountability:	Chase/Skiles
Trend:	None

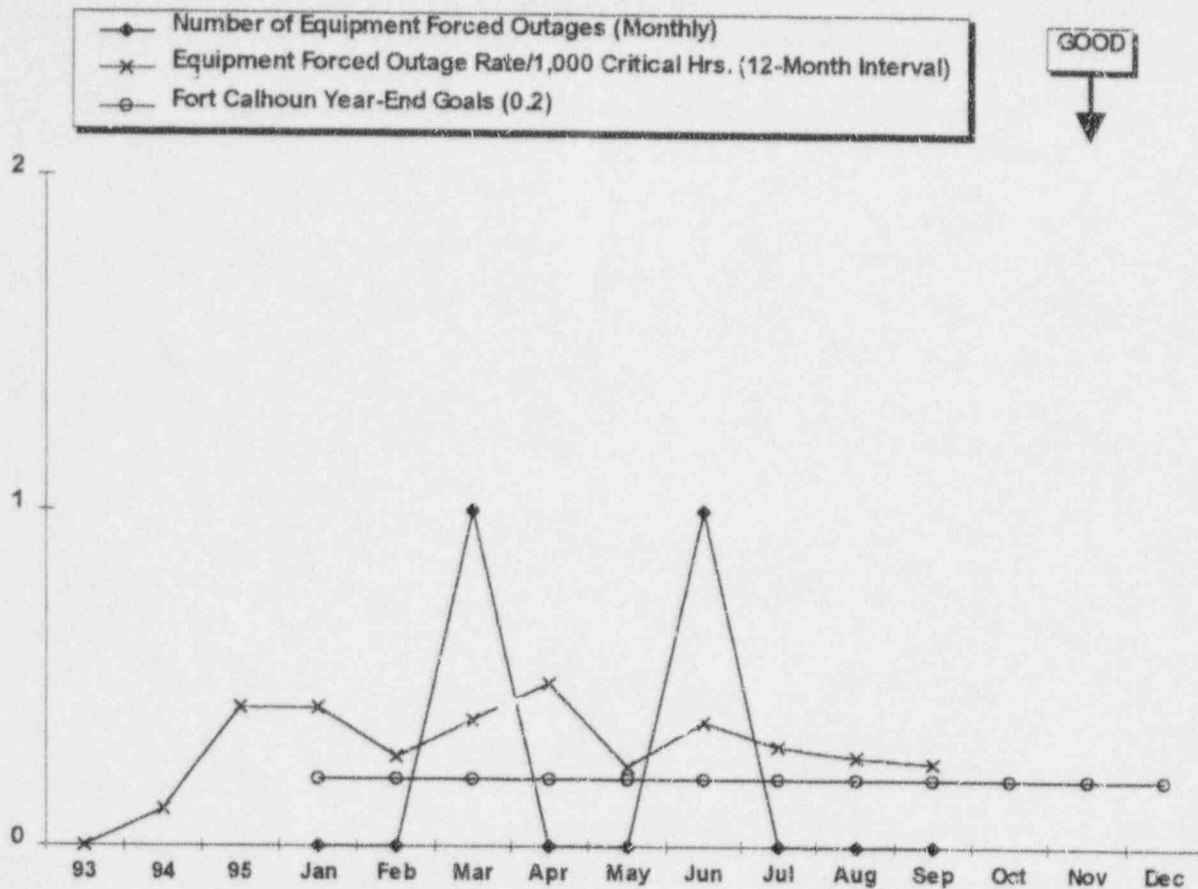


DAILY THERMAL OUTPUT

The thermal output graph displays the daily operating power level during **September 1996**, the 1500 thermal megawatt average technical specification limit, and the 1495 thermal megawatt Fort Calhoun goal.

The graph shows a down ward trend, attributed to RFO coastdown.

Data Source:	Guinn/Willett (Manager/Source)
Accountability:	Chase/Short
Trend:	None



EQUIPMENT FORCED OUTAGES PER 1,000 CRITICAL HOURS

The equipment forced outage rate per 1,000 critical hours for the 12 months from **October 1, 1995**, through **September 30, 1996**, was **0.365**. The year-to-date rate per 1,000 critical hours for the months from **January 1996** through **September 1996** was **0.333**.

An equipment forced outage occurred during the month of June due to the failure of the Anti-Rotation Device associated with RC-3B-M.

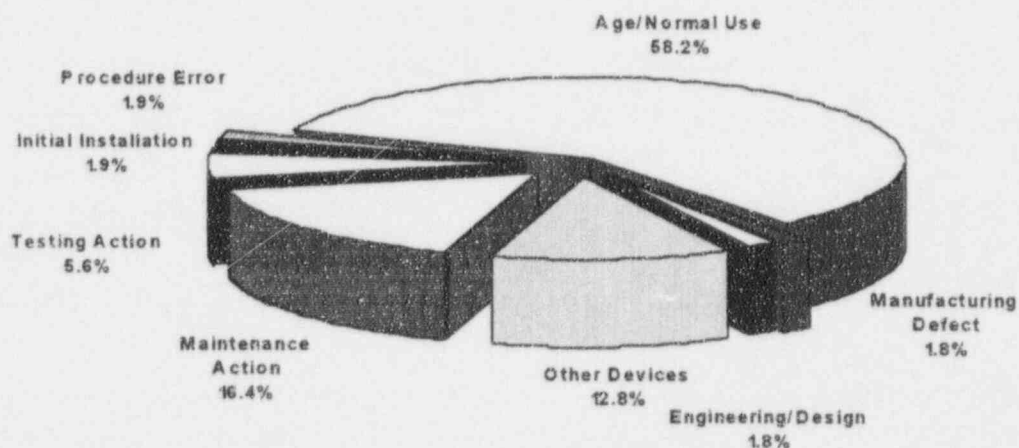
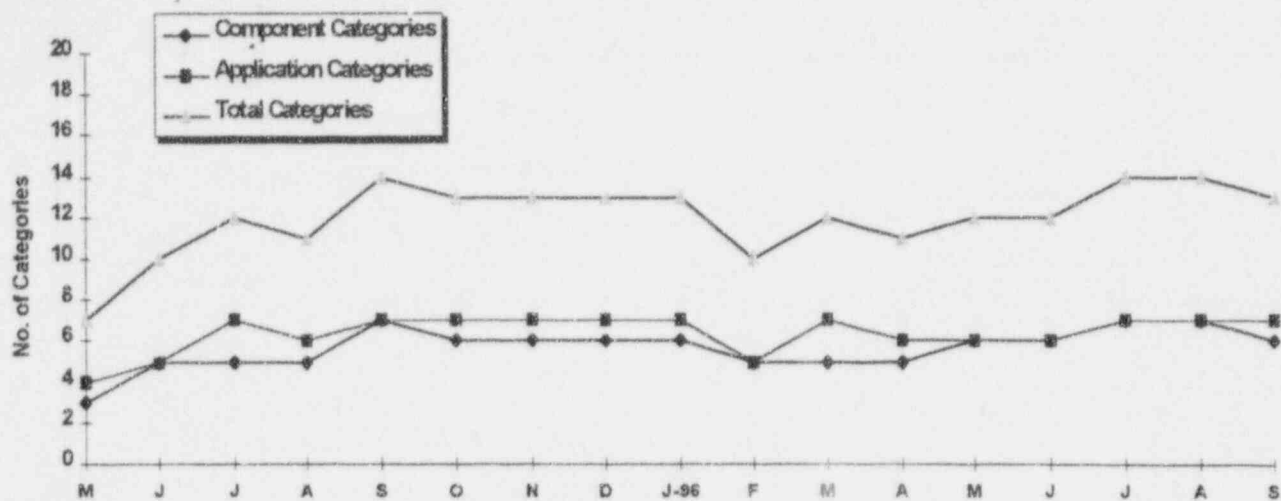
An equipment forced outage occurred at the end of the March due to condenser tube leakage.

An equipment forced outage also occurred on February 20, 1995, when the plant experienced a problem with a control element assembly motor drive and a related small leak of reactor coolant.

Two equipment forced outages also occurred during May 1995, which were attributed to the component cooling water, which was leaking into the lube oil system of RC-3D reactor coolant pump motor.

The 1996 Fort Calhoun year-end goal for this indicator is a maximum value of 0.20.

Data Source:	Monthly Operating Report & Plant Licensee Event Reports (LERs)
Accountability:	Chase/Skiles
Trend:	Needs Increased Management Attention

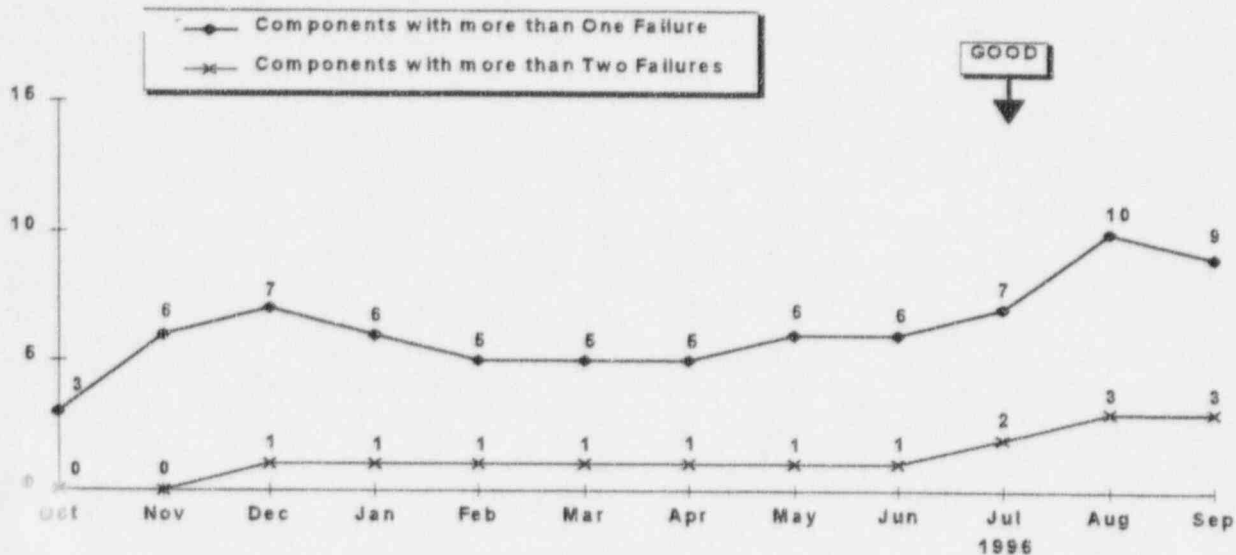


COMPONENT FAILURE ANALYSIS REPORT (CFAR) SUMMARY

The top chart illustrates the number of component categories, application categories and total categories in which the Fort Calhoun Station has significantly higher (1.645 standard deviations) failure rates than the industry failure rates during the past 18-month Component Failure Analysis Report (CFAR) reporting period (from December 1994 through May 1996). Fort Calhoun Station reported a higher failure rate in 6 of the 83 component categories (valves, pumps, motors, etc.) during the past 18-month CFAR period. The station reported a higher failure rate in 7 of the 174 application categories (main steam stop valves, auxiliary/emergency feedwater pumps, control element drive motors, etc.) during the past 18-month CFAR period.

The pie chart depicts the breakdown by INPO cause categories (see the "Definitions" section of this report for descriptions of these categories) for the 58 failure reports (failure discovery dates within the 18-month CFAR period) with known failure causes that were submitted to INPO by Fort Calhoun Station. A total of 86 failure reports were submitted to INPO with discovery dates within the 18-month CFAR period.

Data Source:	Phelps/Frank (Manager/Source)
Accountability:	Phelps/Dowdy
Trend:	None



REPEAT FAILURES

The Repeat Failures Indicator (formerly called the "Maintenance Effectiveness Performance Indicator") was developed in response to guidelines set forth by the Nuclear Regulatory Commission's Office for Analysis and Evaluation of Operational Data (NRC/AEOD). The NRC requirement for a Maintenance Effectiveness Performance Indicator has been discontinued, but station management considers it useful to continue to track repetitive component failures using the Nuclear Plant Reliability Data System (NPRDS).

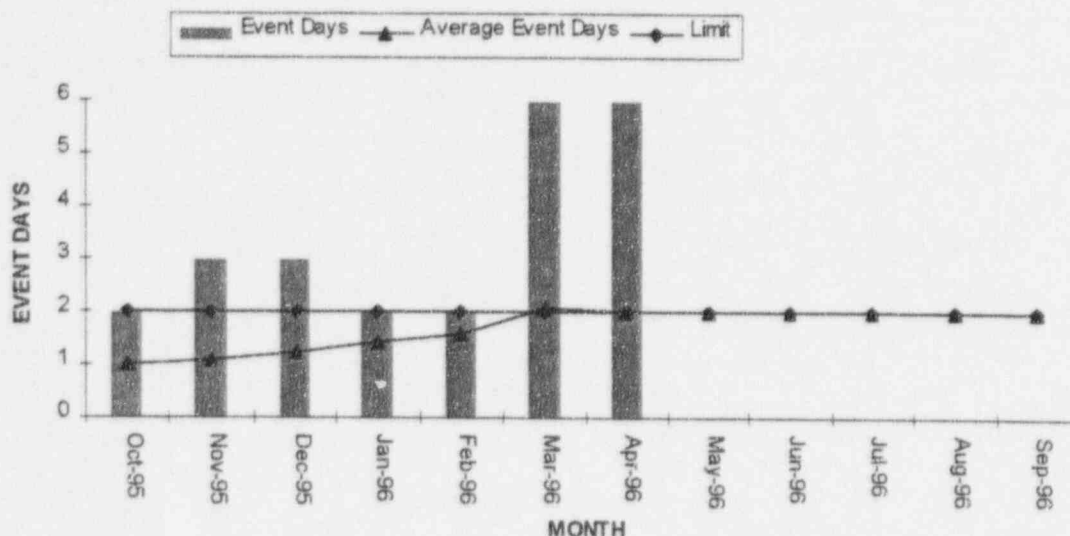
This indicator shows the number of NPRDS reportable components with more than one failure during the 18-month Component Failure Analysis Report (CFAR) period (failure discovery dates from November 1994 through April 1996) and the number of NPRDS reportable components with more than two failures during the 18-month CFAR period.

During the last 18-month CFAR period, there were **10** NPRDS components with more than one failure. **Three** out of these **10** NPRDS reportable components had more than two failures. Recommendations and actions to correct these repeat failures are listed in the Biannual CFAR. The description and tag numbers of the NPRDS reportable components with more than one failure are listed below:

- IA-HCV-2987-BP Air Intensifier for HPSI Pump SI-2C Discharge Isolation Valve (> 2 Failures)
- IA-HCV-2918-BP Air Intensifier for HPSI Alternate Header Isolation Valve.
- RC-10-08 Control Element Drive Mechanism
- RC-3D-M Reactor Coolant Pump Motor
- V/P-402C Valve Positioner for Cont. Cooling Coil VA-8A CCW Outlet Valve
- V/P-403C (> Two Failures) Valve Positioner for Cont. Cooling Coil VA-8B CCW Outlet Valve
- FW-56 (> Two Failures) Auxiliary Feedwater Pump FW-56 Diesel Engine
- HCV-1106-O Valve Operator for SG RC-2B Feed Regulation Bypass Valve
- YE-116A QSPDS Heated Junction Thermocouple Probe for Reactor Vessel RC-1

Data Source: Skiles/Frank (Manager/Source)
 Accountability: Chase
 Trend: None

CHEMISTRY ACTION LEVELS EXCEEDED



CHEMISTRY ACTION LEVELS EXCEEDED - EVENT DAYS

The Chemistry Action Levels Exceeded indicator tracks the number of days in which chemistry parameters exceeded a corresponding action level for the reporting month, as well as a 12-month average of days an action level is exceeded. The parameter action levels are delineated in Chemistry procedure CH-AD-0003, Plant System Chemical Limits and Corrective Actions.

An action level is considered to have been exceeded for the purpose of this indicator, whenever the parameter exceeds the CH-AD-0003 action level for the current system mode, with the exception of the Steam Generators during Mode 1.

The Steam Generators are considered to have exceeded an action level in Mode 1 when the plant power is greater than 30% and the power is changing less than 5% per day.

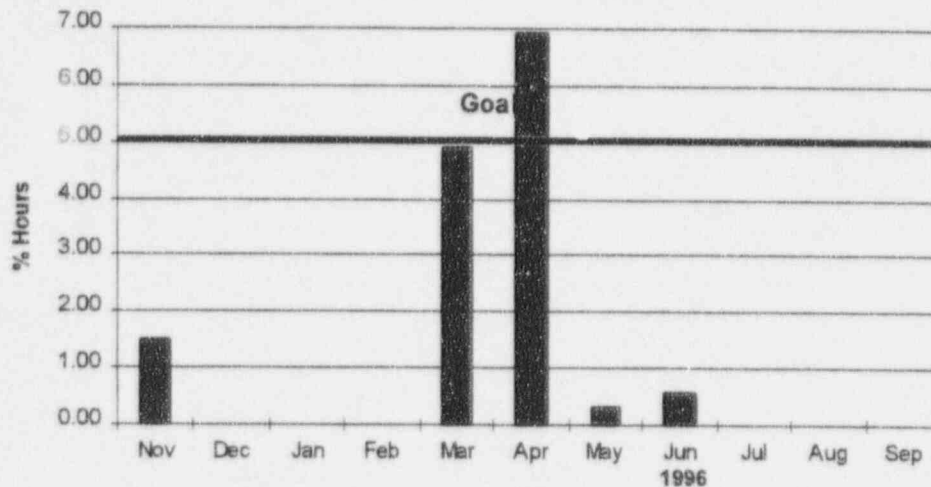
The number of event days can exceed the number of days in a month since each event is counted separately and there can be multiple events per day.

The 1996 Fort Calhoun goal for this indicator is the 12-month average of two event days per month. There is no goal established for the number of event days per individual month.

Historical data is used to calculate the monthly average event days. The 12-month average was calculated by dividing the number of event days by the number of preceding months, until twelve months were reached.

The ECN to the chemical feed system has been completed. There have been no action levels exceeded due to the chemical feed system since the ECN has been completed.

Data Source: Chase/Spires
 Accountability: Spires
 Trend: None



PRIMARY SYSTEM LITHIUM % HOURS OUT OF LIMIT

The Primary System Lithium Percent Hours Out of Limit indicator tracks the hours per month that the primary system lithium is out of specification.

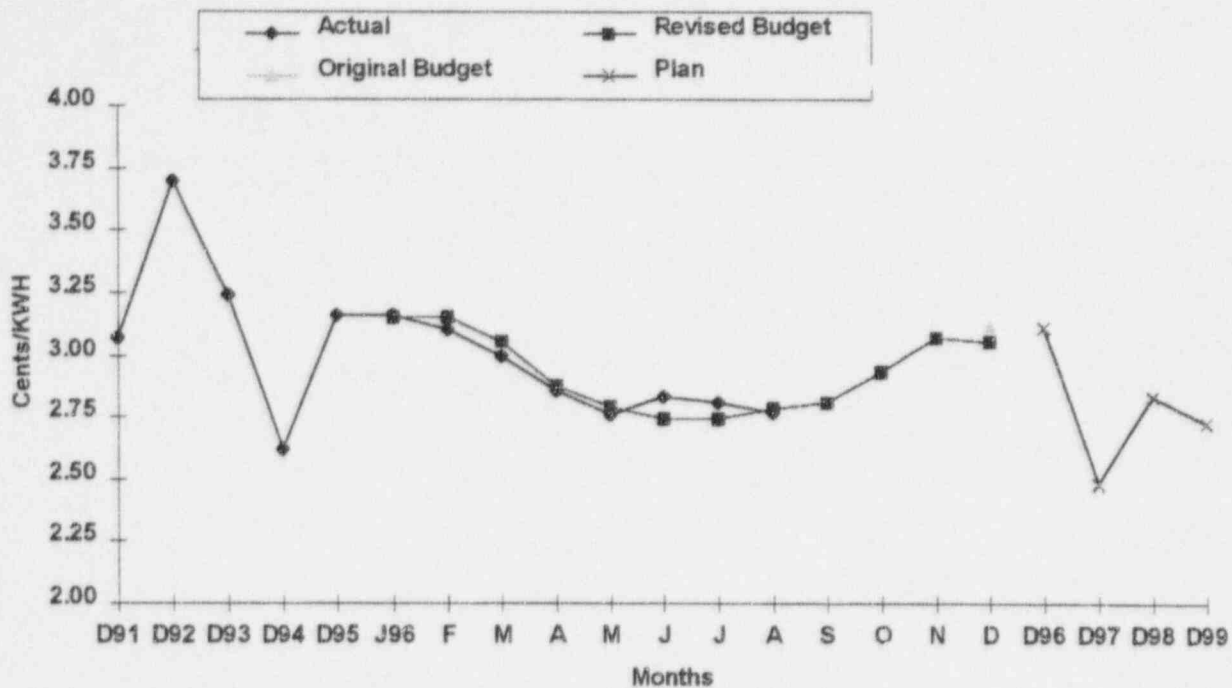
The Primary System Lithium Percent Hours Out of Limit was **0.00%** for the month of **September 1996**. Lithium exceeded its limits for 0.0 hours during the month.

The 1996 Fort Calhoun monthly goal for this indicator is a maximum of 5% hours out of limit

Data Source:	Chase/Spires (Manager/Source)
Accountability:	Spires
Trend:	None

COST

Goal: Operate Fort Calhoun Station in a manner that cost effectively maintains nuclear generation as an economically viable contribution to OPPD's bottom line. Cost consciousness is exhibited at all levels of the organization.



CENTS PER KILOWATT HOUR

The purpose of this indicator is to quantify the economical operation of Fort Calhoun Station.

The cents per kilowatt hour indicator represents the budget and actual cents per kilowatt hour on a 12-month rolling average for the current year. The basis for the budget curve is the approved 1995 and 1996 revised budgets. The basis for the actual curve is the Financial and Operating Report.

The December 31 amounts are also shown for the prior years 1991 through 1995. In addition, the report shows the plan amounts for the years 1997 through 2000 for reference. The basis for the dollars are the Nuclear Long Range Financial Plan and the 1996 Corporate Planning and Budget Review. The basis for the generation is provided by Nuclear Fuels.

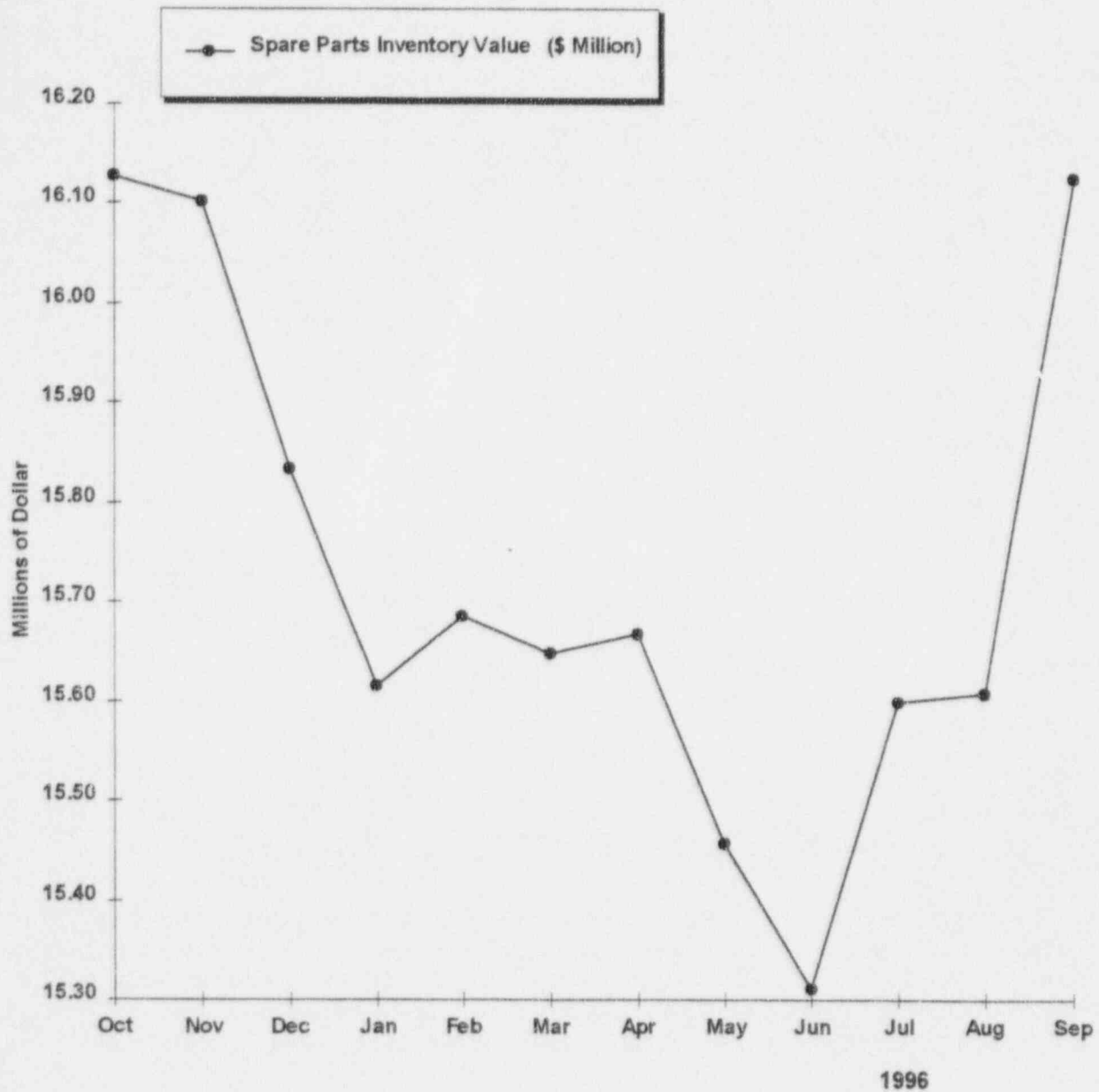
The 12-month rolling average unit price (period of **July, 1995** through **August, 1996**) averaged below the budget due to 12-month rolling expenses surpassing the budget expectations, while 12-month rolling generation did not meet the budget expectations. The 12-month rolling average (07/95 through 08/96) is 2.77 cents per kilowatt hour. The year-to-date average is trending negatively.

Cents per KWH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Budget Y-T-D	2.79	2.84	2.85	2.81	2.82	2.76	2.73	2.75	2.81	2.98	3.12	3.05
Actual Y-T-D	2.91	2.77	2.96	2.94	2.83	2.98	2.91	2.25				

Data Source: Lounsberry/Jamieson (Manager/Source)
 Accountability: Lounsberry
 Trend: Needs Management Attention

DIVISION AND DEPARTMENT PERFORMANCE INDICATORS

Goal: Achieve high standards at Fort Calhoun Station resulting in safe, reliable and cost effective power production.



SPARE PARTS INVENTORY

The spare parts inventory value at the Fort Calhoun Station at the end of **September 1996** was reported as **\$16,128,210**.

Data Source: Steele/Huliska (Manager/Source)
Accountability: Willrett/McCormick
Trend: None

No data provided

RATIO OF PREVENTIVE TO TOTAL MAINTENANCE PREVENTIVE MAINTENANCE ITEMS OVERDUE

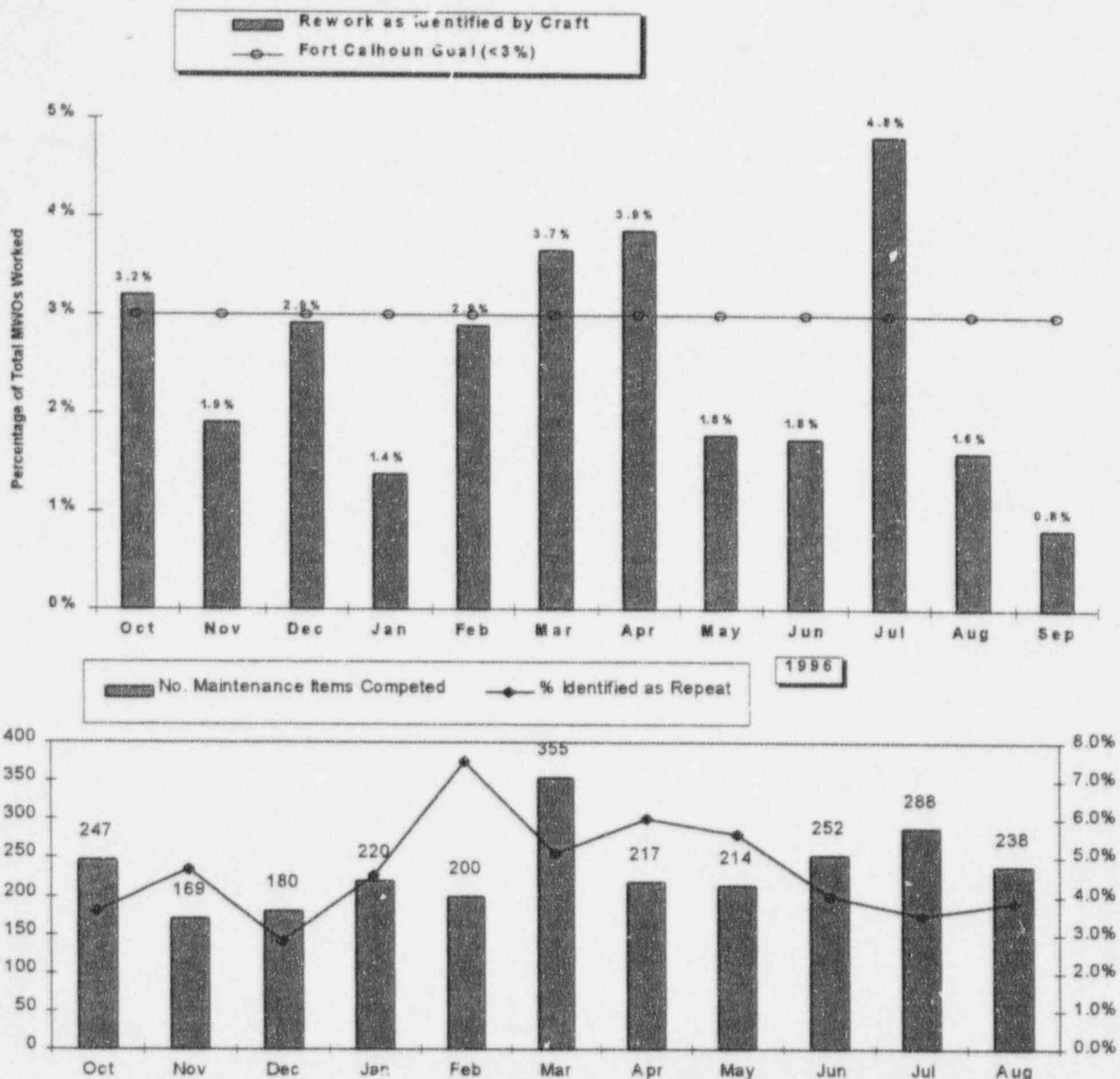
The top graph shows the ratio of completed non-outage preventive maintenance to total completed non-outage maintenance. The ratio was **80.8%** for the month of **July 1996**.

The lower graph shows the percentage of scheduled preventive maintenance items that are overdue. During **July 1996**, **503 PM** items were completed.

The 1996 Fort Calhoun monthly goal for the percentage of preventive maintenance items overdue is a maximum of **0.5%**.

Data Source: Chase/Schmitz/Melstad (Manager/Sources)
Accountability: Chase/Faulhaber
Trend: Adverse

SEP 41 & 44



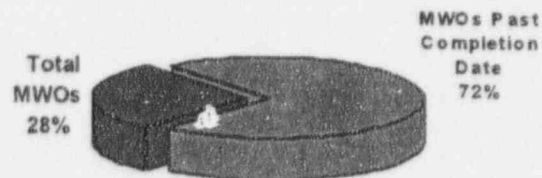
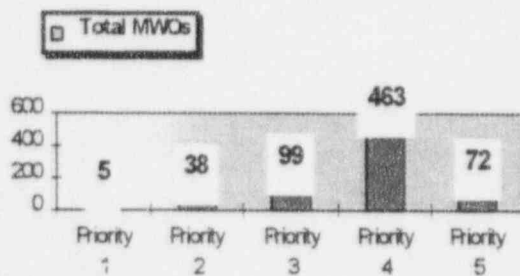
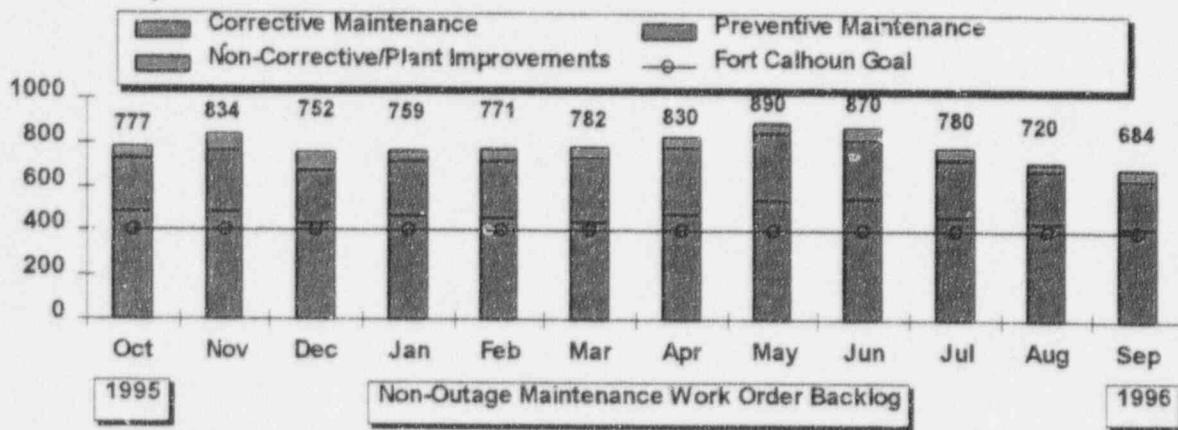
PERCENTAGE OF TOTAL MWOs COMPLETED PER MONTH IDENTIFIED AS REWORK/REPEAT

This graph indicates the percentage of total MWOs completed per month identified as rework. Rework activities are identified by maintenance planning and craft.

This indicator is calculated from the 15th of July to the 15th of August, due to the delay in closing open MWOs at the end of each month.

The Fort Calhoun monthly goal for this indicator is <3%. A detailed review is conducted of rework items each month to identify generic concerns.

Data Source: Faulhaber/Schmitz (Manager/Source)
 Accountability: Chase/Faulhaber
 Trend: None



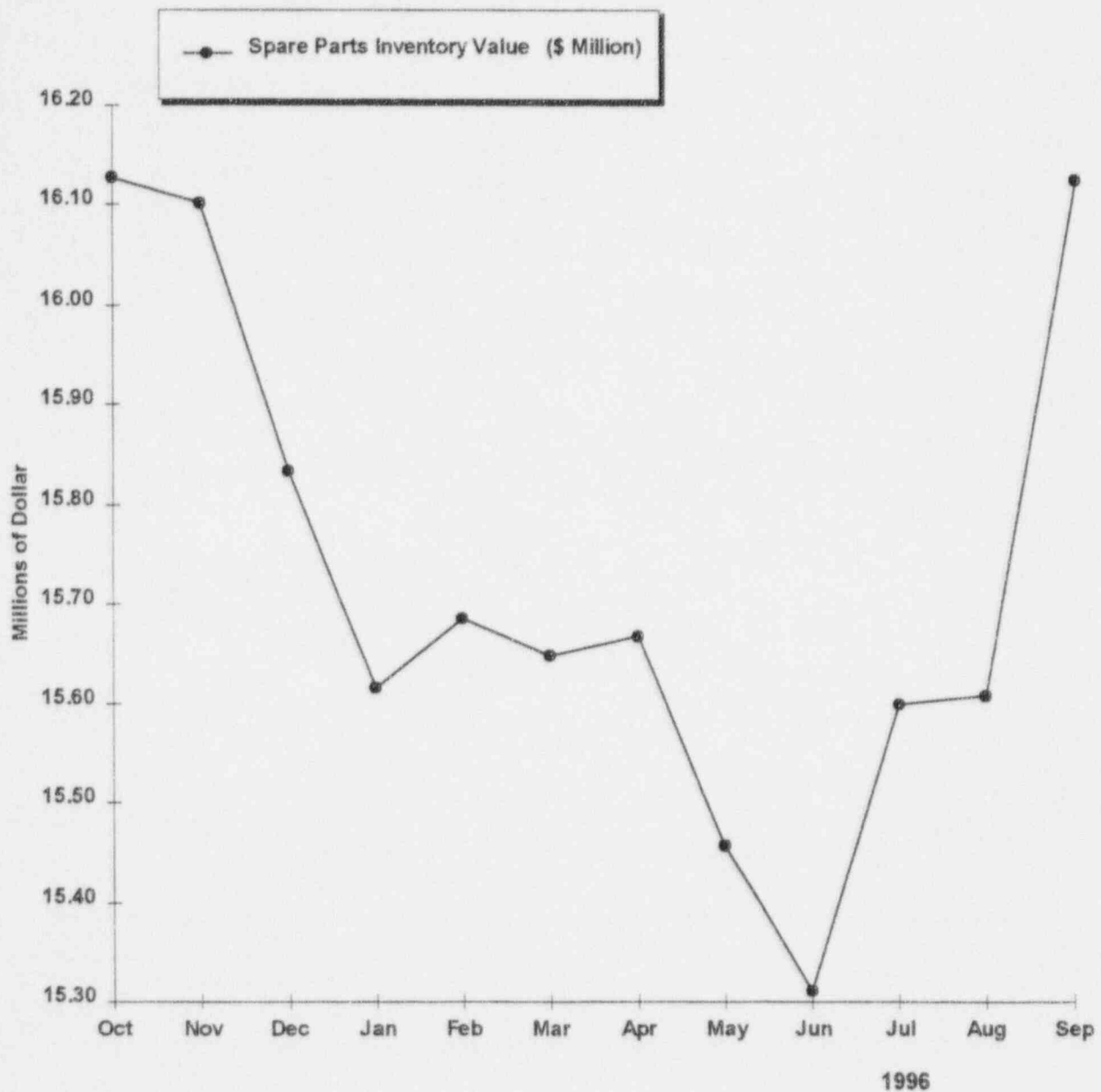
MAINTENANCE WORKLOAD BACKLOG

This indicator shows the backlog of non-outage Maintenance Work Orders remaining open at the end of the reporting month. It also includes a breakdown by maintenance classification and priority. The 1996 goal for this indicator is 400 non-outage corrective maintenance MWOs. The current backlog of corrective MWOs is 490. To ensure that the MWO backlog is worked in a timely manner, non-outage maintenance completion goals have been established as follows:

		Goal
Priority 1	Immediate Action	2 days
Priority 2	Urgent	5 days
Priority 3	Operational Concerns	21 days
Priority 4	Routine Corrective	90 days
Priority 5	Non-Essential	180 days

Data Source: Chase/Schmitz (Manager/Source)
 Accountability: Chase/Faulhaber
 Trend: Adverse

SEP 36



SPARE PARTS INVENTORY

The spare parts inventory value at the Fort Calhoun Station at the end of **September 1996** was reported as **\$16,128,210**.

Data Source:	Steele/Huliska (Manager/Source)
Accountability:	Willrett/McCormick
Trend:	None

No data provided

RATIO OF PREVENTIVE TO TOTAL MAINTENANCE PREVENTIVE MAINTENANCE ITEMS OVERDUE

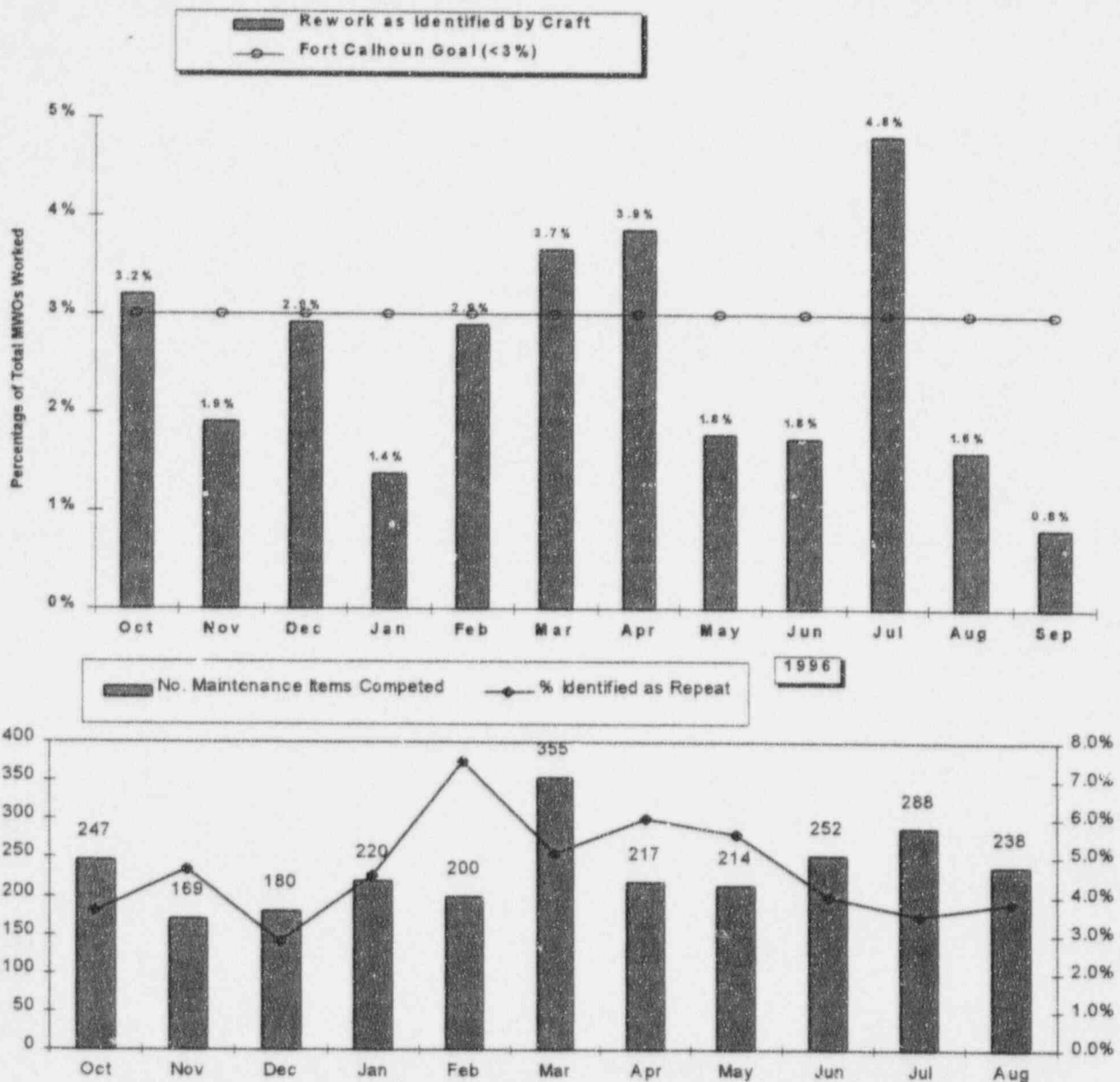
The top graph shows the ratio of completed non-outage preventive maintenance to total completed non-outage maintenance. The ratio was **80.8%** for the month of **July 1996**.

The lower graph shows the percentage of scheduled preventive maintenance items that are overdue. During **July 1996**, **503** PM items were completed.

The 1996 Fort Calhoun monthly goal for the percentage of preventive maintenance items overdue is a maximum of **0.5%**.

Data Source: Chase/Schmitz/Melstad (Manager/Sources)
Accountability: Chase/Faulhaber
Trend: Adverse

SEP 41 & 44



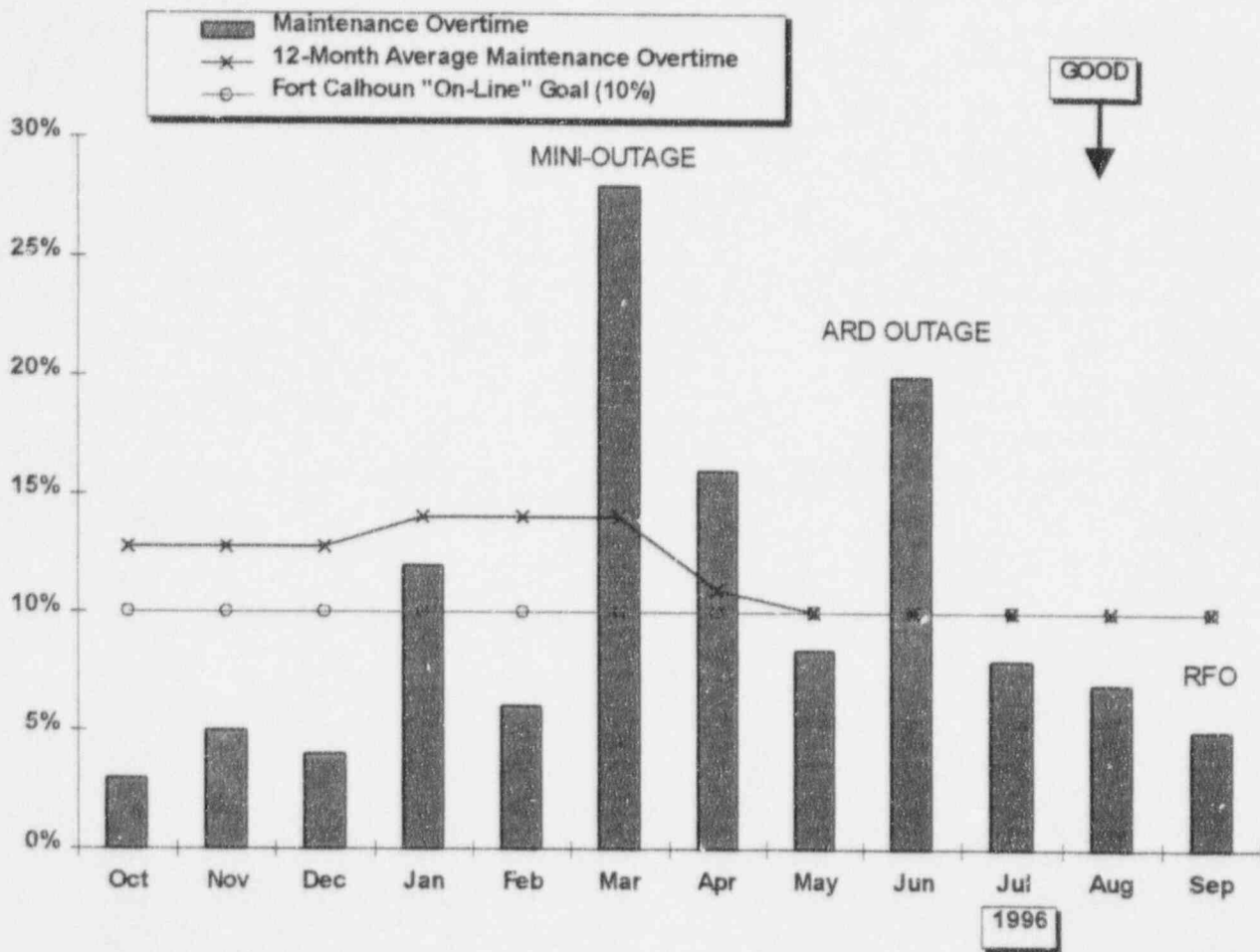
PERCENTAGE OF TOTAL MWOs COMPLETED PER MONTH IDENTIFIED AS REWORK/REPEAT

This graph indicates the percentage of total MWOs completed per month identified as rework. Rework activities are identified by maintenance planning and craft.

This indicator is calculated from the 15th of July to the 15th of August, due to the delay in closing open MWOs at the end of each month.

The Fort Calhoun monthly goal for this indicator is <3%. A detailed review is conducted of rework items each month to identify generic concerns.

Data Source: Faulhaber/Schmitz (Manager/Source)
 Accountability: Chase/Faulhaber
 Trend: None



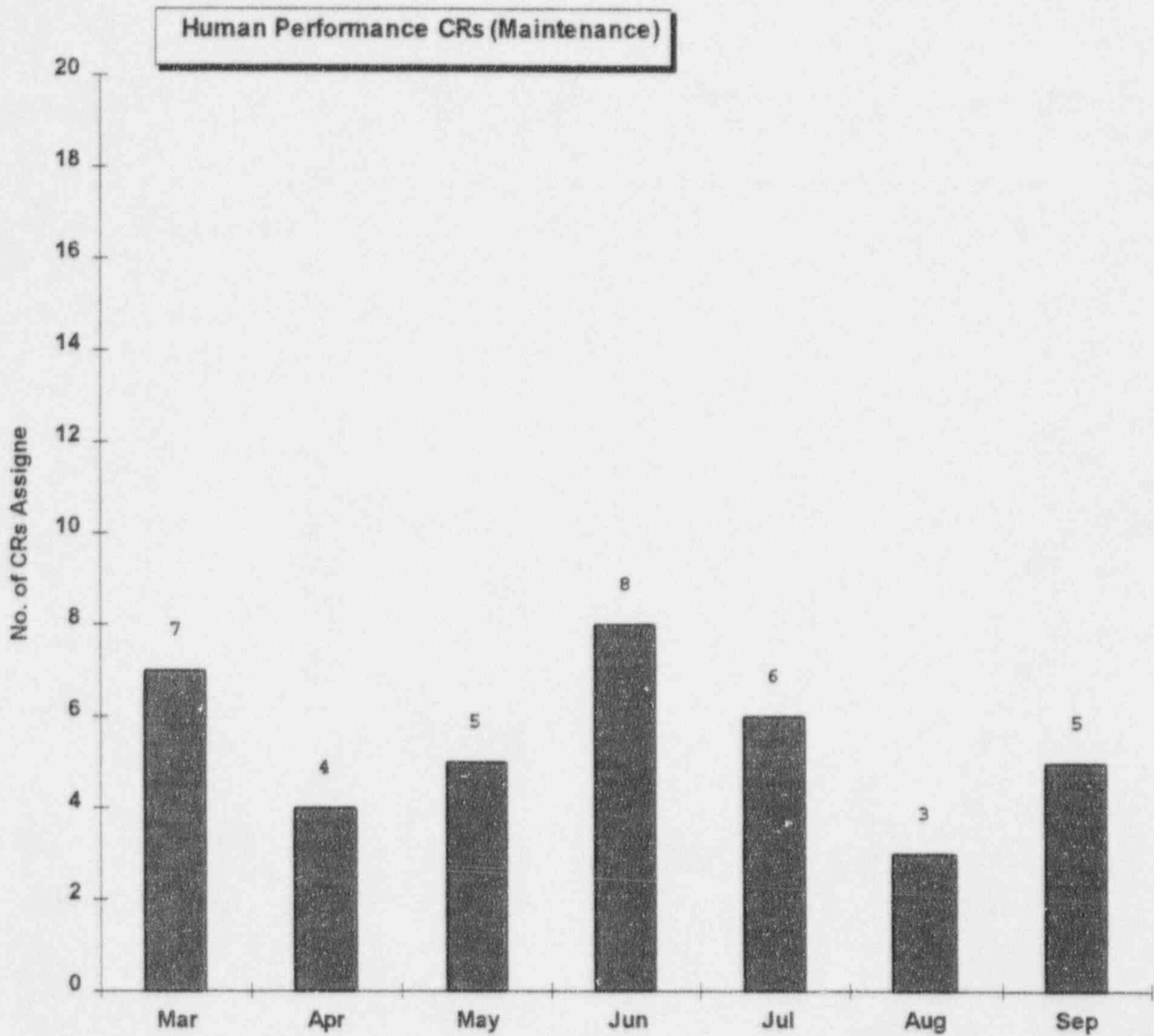
MAINTENANCE OVERTIME

The Maintenance Overtime Indicator monitors the ability to perform the desired maintenance activities with the allotted resources.

The percent of overtime hours with respect to normal hours was reported as **5.0%** for the month of **September 1996**. The 12-month average percentage of overtime hours with respect to normal hours was reported as **10.0 %** at the end of the month.

The 1996 Fort Calhoun monthly "on-line" goal for this indicator is a maximum value of 10%.

Data Source:	Chase/Schmitz (Manager/Source)
Accountability:	Chase/Faulhaber
Trend:	None

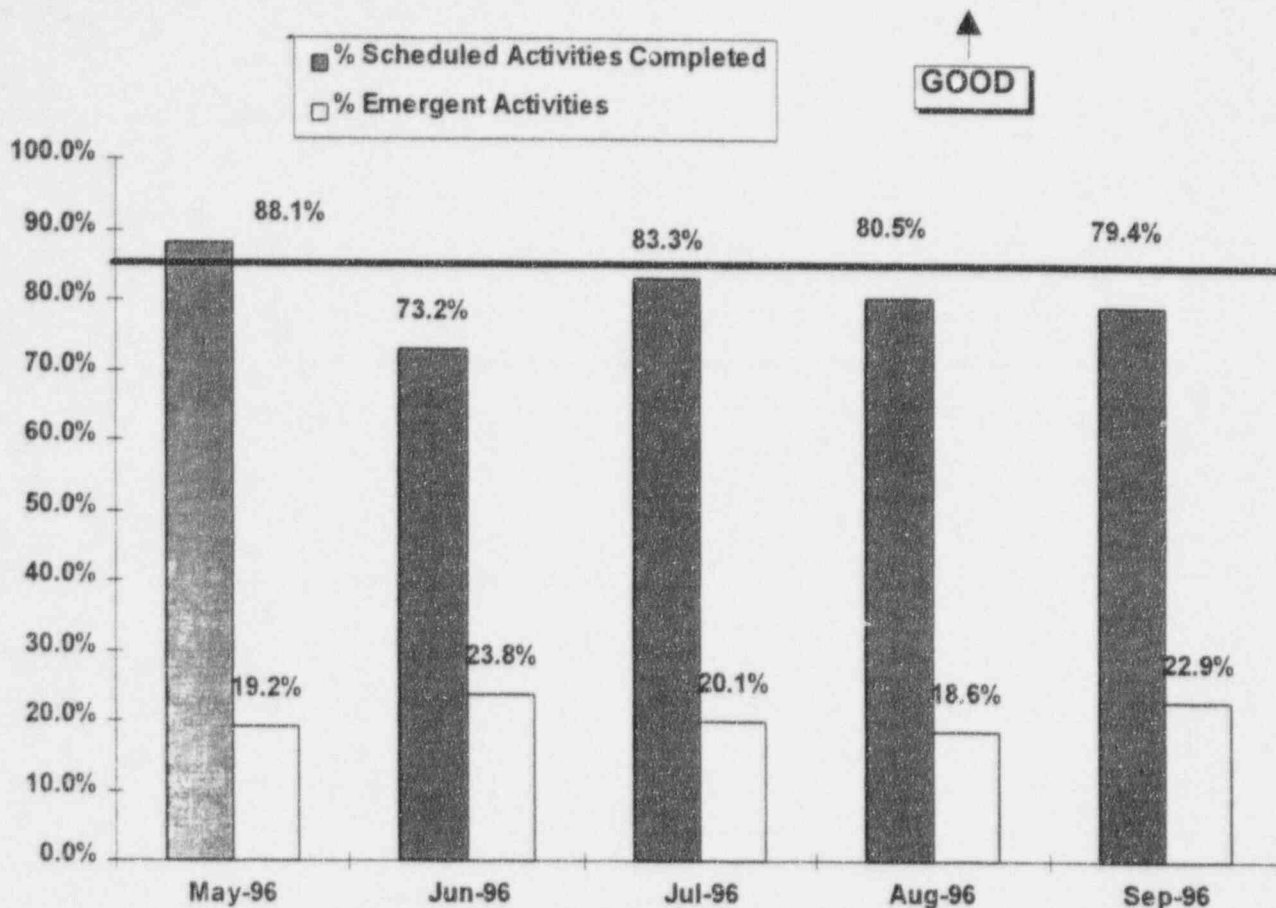


PROCEDURAL NONCOMPLIANCE INCIDENTS (MAINTENANCE)

This indicator shows the number of Condition Reports related to procedural noncompliance incidents assigned to the Maintenance Department.

Data Source: Faulhaber
Accountability: Chase/Faulhaber
Trend: None

SEP 15, 41 & 44



DAILY SCHEDULE PERFORMANCE

PERCENT OF SCHEDULED ACTIVITIES COMPLETED

This indicator shows the percent of Integrated Plant Schedule activities completed on schedule. All work groups and activities are included.

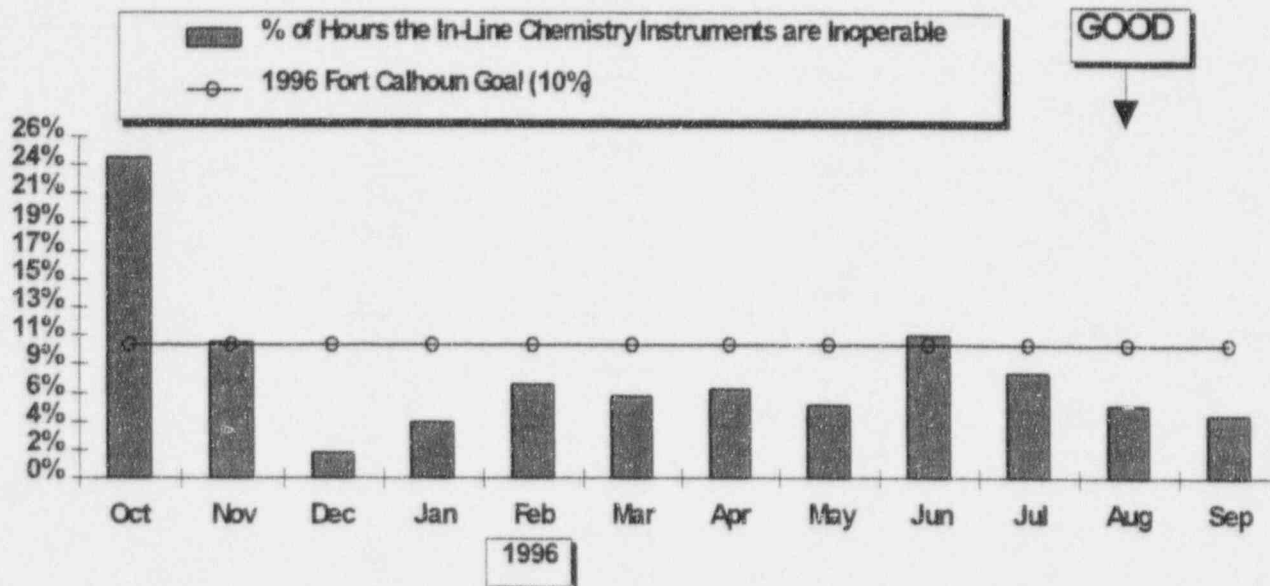
The percent of emergent work is calculated as a percentage of the total number of scheduled and emergent activities.

The 1996 Fort Calhoun monthly goal for completed scheduled maintenance activities is 85%.

NOTE: Statistics from the June RC-3B Outage were not included in these numbers. Statistics from the weeks of June 10 and June 17 were not kept.

Data Source: Chase/Schmitz (Manager/Source)
 Accountability: Chase/Faulhaber
 Trend: None

SEP 33



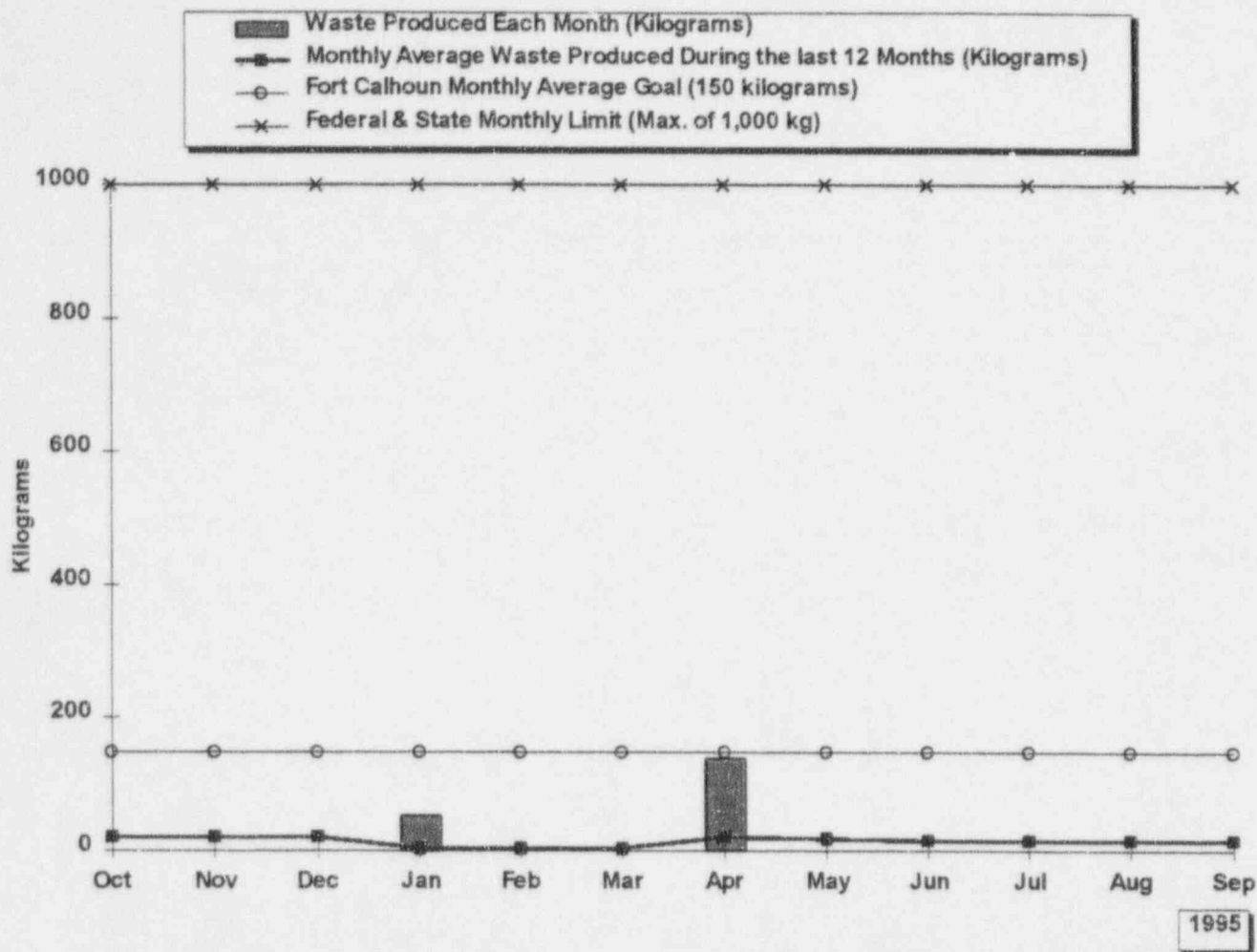
IN-LINE CHEMISTRY INSTRUMENTS OUT-OF-SERVICE

This indicator shows the percentage of hours the in-line chemistry system instruments are inoperable for the reporting month. The chemistry systems involved in this indicator include the Secondary System and the Post Accident Sampling System (PASS).

At the end of **September 1996**, the percentage of hours the in-line chemistry system instruments were inoperable was **4.80%**. There were no instruments that were out of service for the entire month.

The entire instrument channel is considered inoperative if: 1) the instrument is inoperative, 2) the chart recorder associated with the instrument is inoperative, or 3) the alarm function associated with the instrument is inoperative. If any of the functions listed above are not operational, then the instrument is not performing its intended function.

Data Source: Chase/Reneaud (Manager/Source)
 Accountability: Chase/Skiles
 Trend: Positive - Better than OPPD Goal



HAZARDOUS WASTE PRODUCED

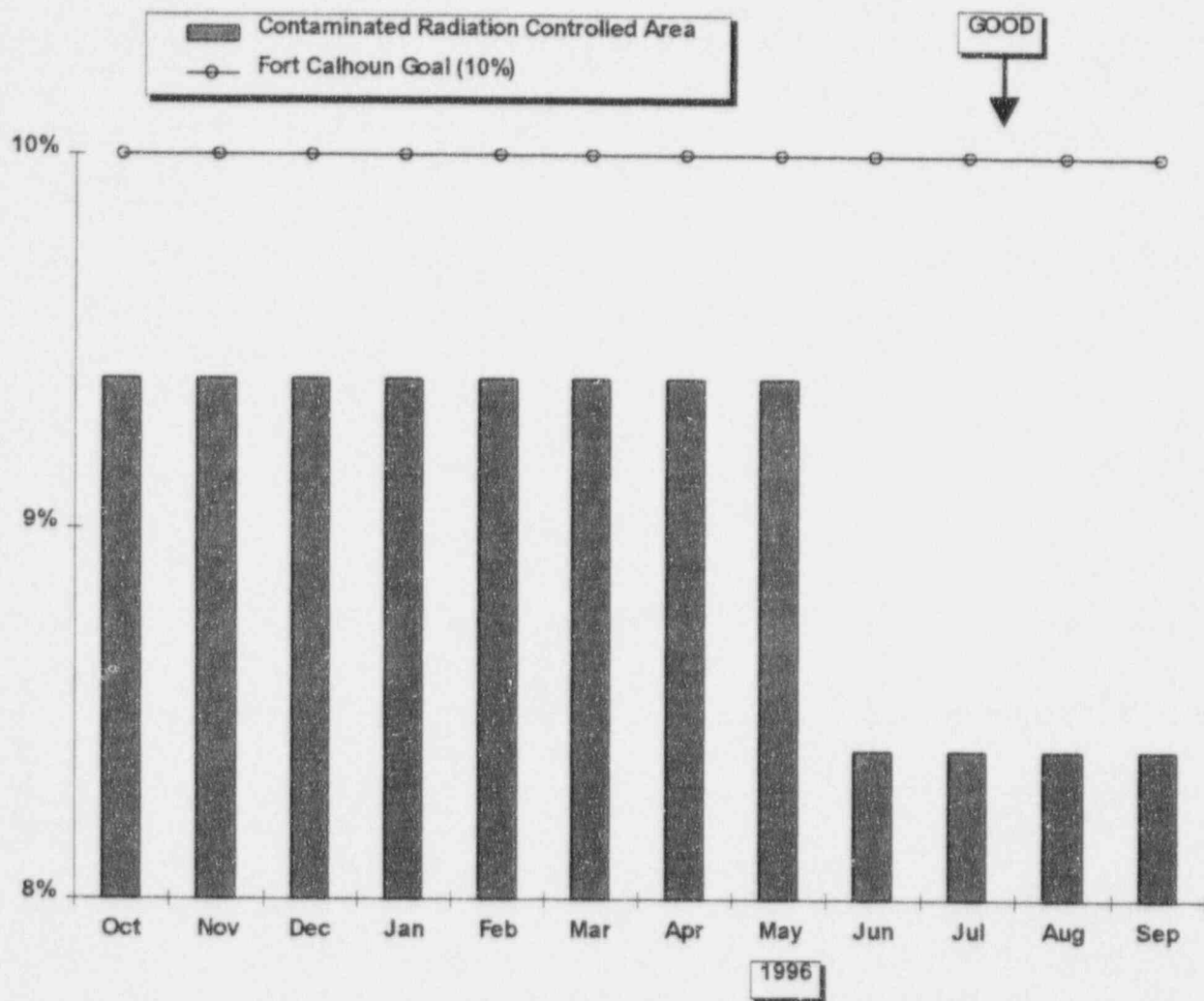
This indicator shows the total amount of hazardous waste produced by the Fort Calhoun Station each month, the monthly average goal and the monthly average total for hazardous waste produced during the last 12 months. This hazardous waste consists of non-halogenated hazardous waste, halogenated hazardous waste, and other hazardous waste produced.

During the month of **September 1996**, **0.0** kilograms of non-halogenated, **0.0** kilograms of halogenated and **0.0** kilograms of other hazardous waste was produced. The total hazardous waste produced during the last 12 months is **191.1** kilograms.

Hazardous waste is counted based upon a full drum of waste.

The 1996 Fort Calhoun monthly average goal for hazardous waste produced is a maximum of 150 kilograms.

Data Source: Chase/Shubert (Manager/Source)
 Accountability: Chase/Spire
 Trend: Positive



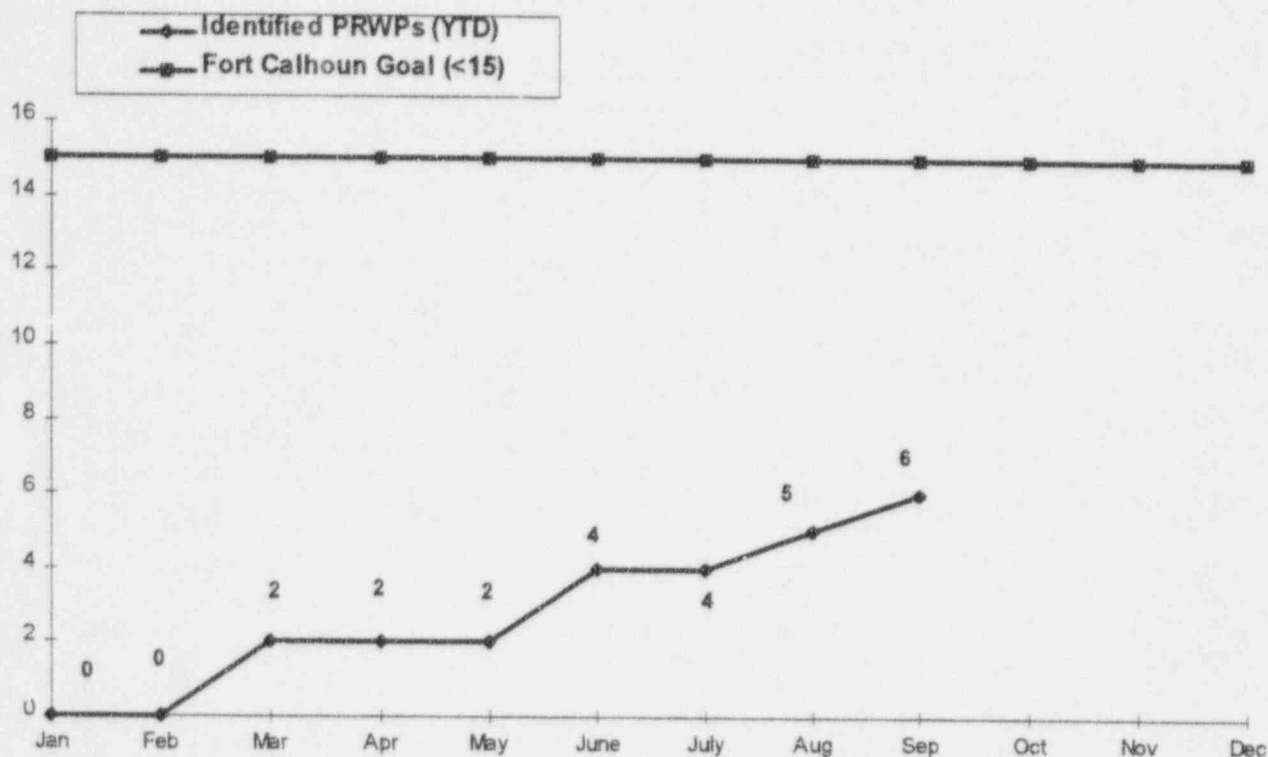
CONTAMINATED RADIATION CONTROLLED AREA

This indicator shows the percentage of the Radiologically Controlled Area that is contaminated based on the total square footage. The 1996 monthly non-outage goal is a maximum of 10.0% contaminated RCA.

At the end of **September 96**, the percentage of the total square footage of the RCA that was contaminated was **8.4%**.

Data Source:	Chase/Gundal (Manager/Source)
Accountability:	Chase/Gebers
Trend:	None

SEP 54



RADIOLOGICAL WORK PRACTICES PROGRAM

The Radiological Work Practices Program Indicator shows the number of Poor Radiological Work Practices (PRWPs) which were identified during the reporting month.

The number of PRWPs which are identified each month should indirectly provide a means to qualitatively assess supervisor accountability for their workers' radiological performance.

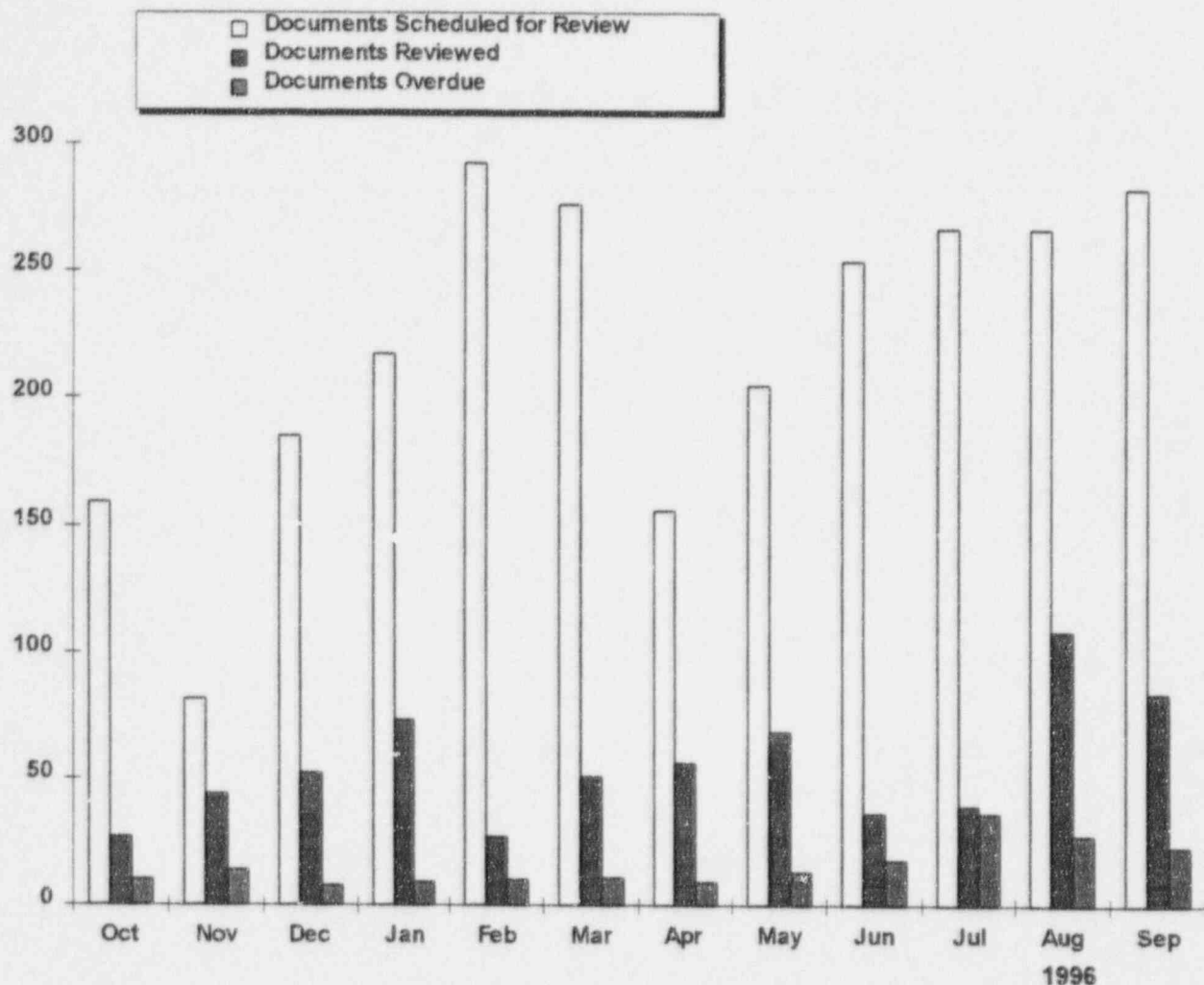
During the month of **September 1996**, there was **1** PRWP identified.

There have been **6** PRWPs in 1996.

The 1996 year-end goal for PRWPs is a maximum of 15.

Data Source: Chase/Cartwright (Manager/Source)
 Accountability: Chase/Gebbers
 Trend: None

SEP 52



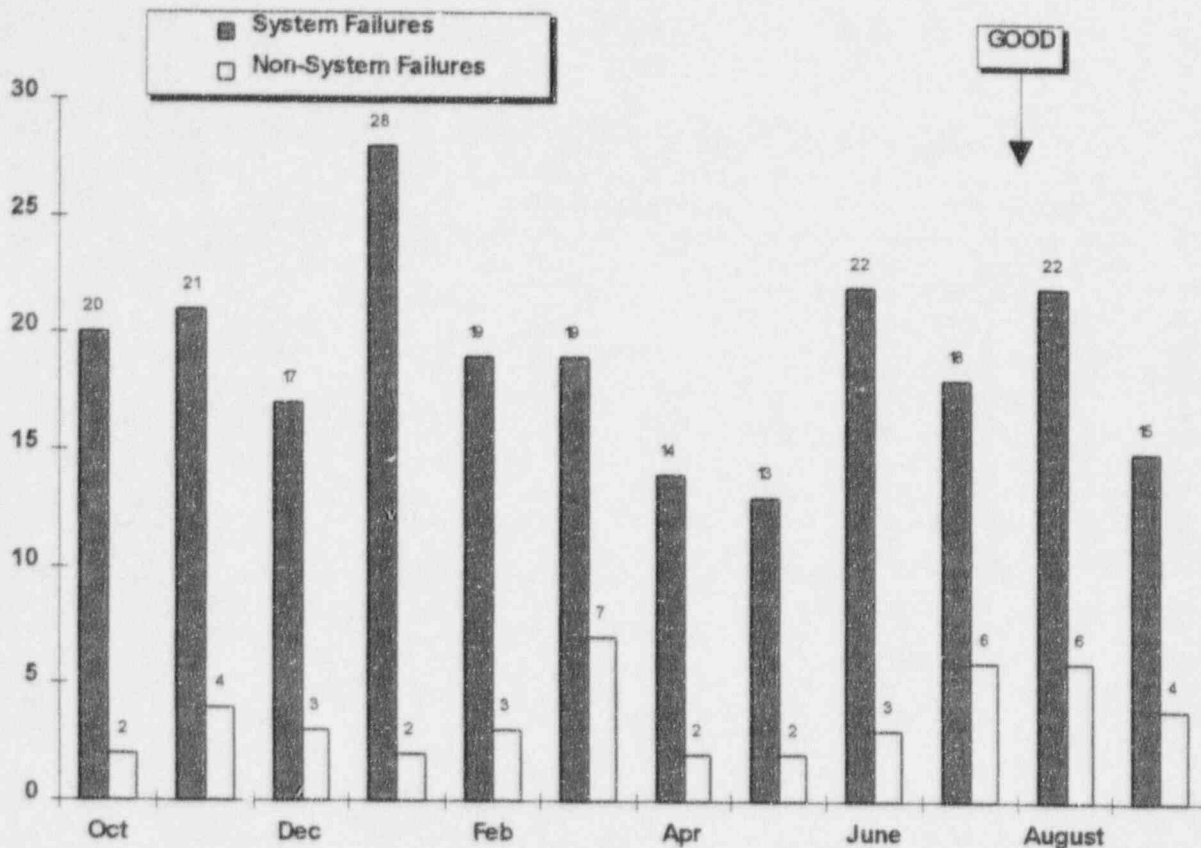
DOCUMENT REVIEW

This indicator shows the number of completed, scheduled, and overdue (greater than 6 months past the scheduled due date) biennial reviews for the reporting month. These document reviews are performed in-house and include Special Procedures, the Site Security Plan, Maintenance Procedures, Preventive Maintenance Procedures, and the Operating Manual.

During **September 1996**, there were **283** document reviews scheduled, while **84** reviews were completed. At the end of the month, there were **23** document reviews more than 6 months overdue. There were **12** new documents initiated during **September 1996**. Beginning in September 1995, these figures include PED and NOD procedures.

Data Source: Chase/Plath
 Accountability: Chase/Skiles
 Trend: None

SEP 46



LOGGABLE/REPORTABLE INCIDENTS (SECURITY)

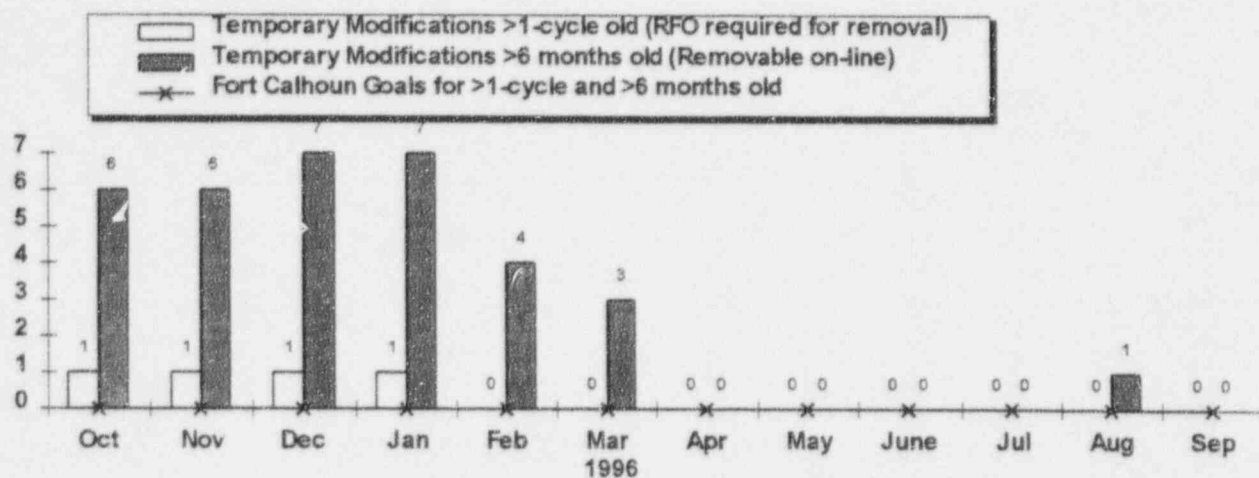
This graph shows the Loggable/Reportable Incidents (Security) Indicator and depicts (1) the total number of loggable/reportable incidents concerning system failures which occurred during the reporting month, and (2) the total number of loggable/reportable incidents non-system failures concerning Security Badges, Access Control and Authorization, Security Force Error, and Unsecured Doors.

During the month of **September 1996**, there were **15** loggable/reportable incidents identified. This resulted in a 32% decrease of the overall incidents reported during the previous period. System failures accounted for 73% of the loggable/reportable incidents. Environmental failures accounted for 54% of the system failures. The 4 non-system failures accounted for 54% of the system failures. The 4 non-system failures included 1 security badge removed from site, 1 security force error, and 2 vital area doors found unsecure.

This indicator provides information on security performance for Safety Enhancement Program (SEP) Item No. 58.

Data Source: Sefick/Woerner (Manager/Source)
 Accountability: Sefick
 Trend: None

SEP 58



TEMPORARY MODIFICATIONS

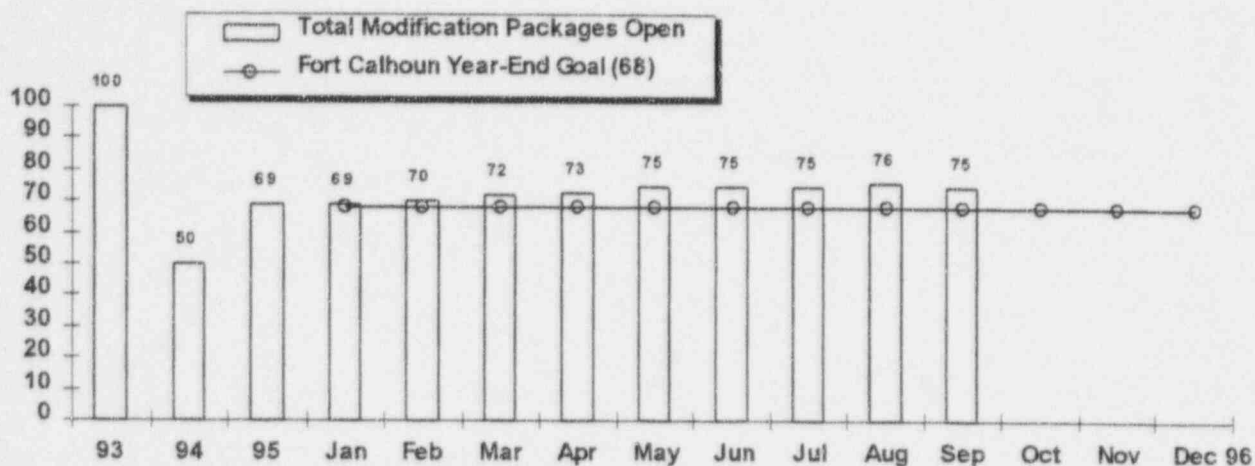
This indicator provides information on the number of temporary modifications (TMs) greater than one fuel cycle old requiring a refueling outage (RFO) for removal and the number of temporary modifications removable on-line that are greater than six months old. The 1996 Fort Calhoun monthly goals for this indicator are zero.

There are currently **no** temporary modifications that are greater than one-fuel cycle old requiring a refueling outage to remove. At the end of **September 1996**, there were **0** temporary modifications installed that were greater than six months old that could have been removed on-line.

At the end of **September 1996**, there was a total of **13** TMs installed in the Fort Calhoun Station. **seven** of the **13** installed TMs require an outage for removal and **6** are removable on-line. In 1996, a total of **16** temporary modifications have been installed.

Data Source: Skiles/Frank (Manager/Source)
 Accountability: Skiles/Gorence
 Trend: Positive

SEP 62 & 71



OUTSTANDING MODIFICATIONS

This indicator shows the total number of outstanding modifications (excluding outstanding modifications which are proposed to be cancelled).

Category	'93	'94	'95	'96	'97	'98	Reporting Month
Form FC-1133 Backlog/In Progress	0	0	0	0	0	2	2
Mod. Requests Being Reviewed	0	0	0	0	0	0	0
Design Engr. Backlog/In Progress	0	0	0	0	5	17	29
Construction Backlog/In Progress	2	0	8	29	0	0	34
Design Engr. Update Backlog/In Progress	3	2	8	1	0	0	11
Totals	5	2	16	30	5	17	75
(Outage + OnLine)	(3+2)	(0+2)	(7+9)	(29+1)	(0+5)	(16+1)	(45+30)

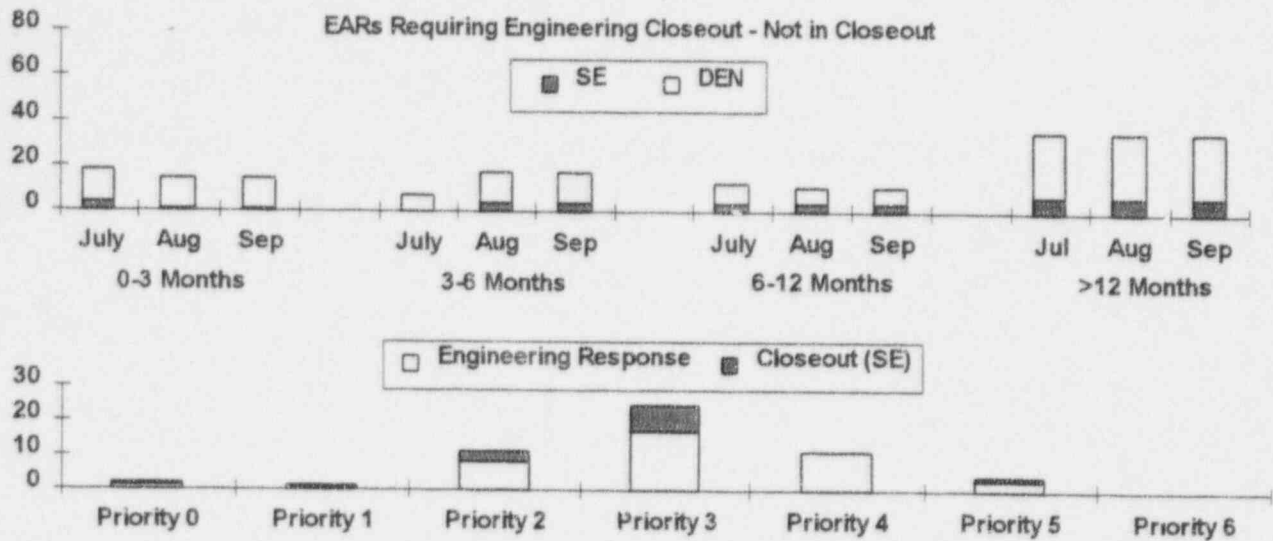
At the end of **September 1996**, **12** modification requests have been issued this year and **3** modification requests have been cancelled. The Nuclear Projects Review Committee (NPRC) has conducted **44** backlog modification request reviews this year. The Nuclear Projects Committee (NPC) has completed **7** backlog modification request reviews this year.

The 1996 year-end Fort Calhoun goal for this indicator is a maximum of 68 outstanding modifications.

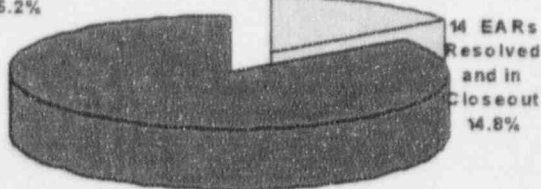
Data Source: Jaworski/Walling (Manager/Source)
Scofield/Lounsberry (Manager/Source)

Accountability: Scofield/Jaworski

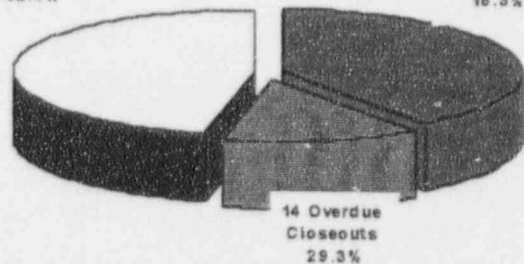
Trend: None



74 EARs
Requiring
Response
85.2%



48 EARs on
Schedule
52.4%



ENGINEERING ASSISTANCE REQUEST BREAKDOWN

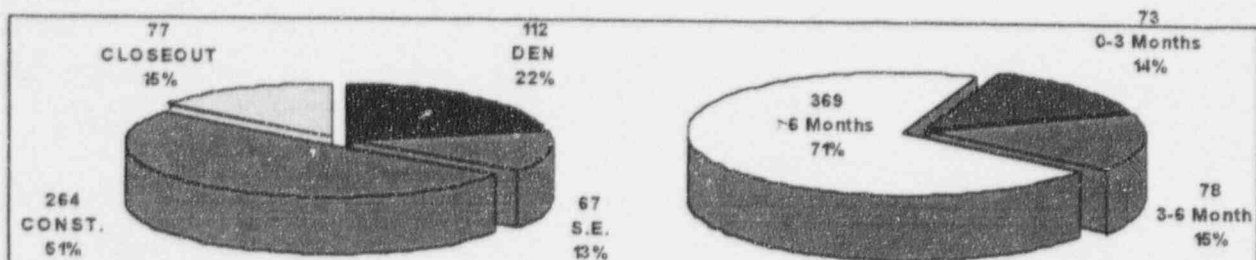
This indicator shows a breakdown of the number of EARs assigned to Design Engineering and System Engineering. The 1996 year-end goal for this indicator is a maximum of 140 outstanding EARs.

Total EAR breakdown is as follows:

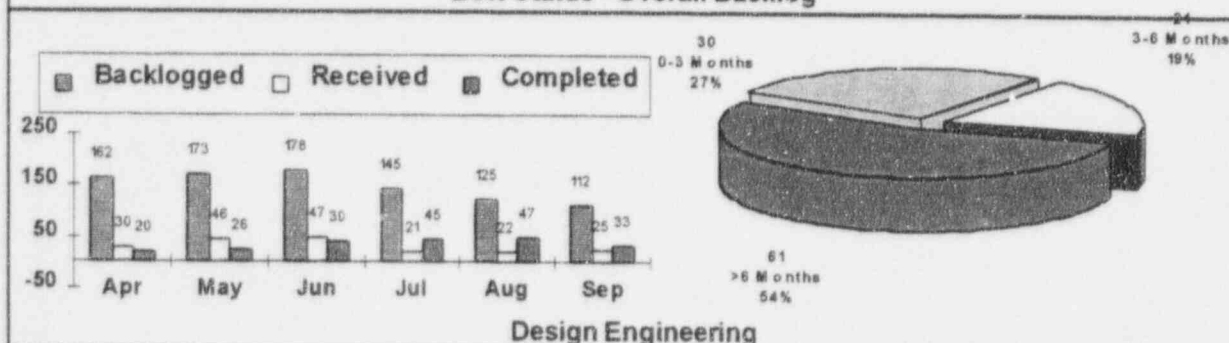
EARs opened during the month	10
EARs closed during the month	5
Total EARs open at the end of the month	101

Data Source: Jaworski/Livingston (Manager/Source)
 Accountability: Skiles/Jaworski
 Trend: None

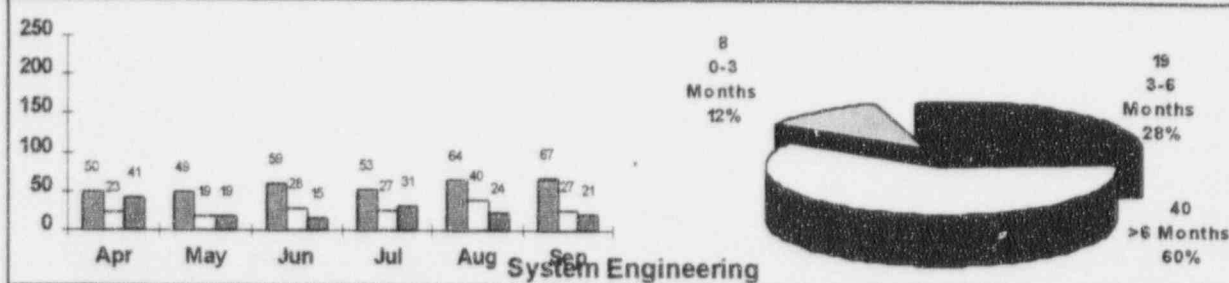
SEP 62



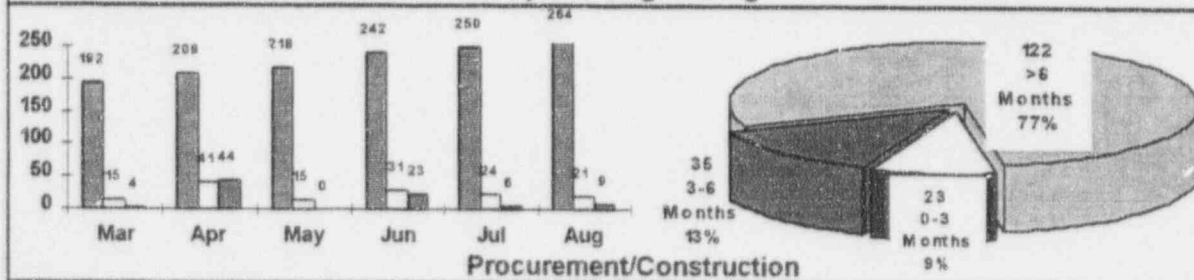
ECN Status - Overall Backlog



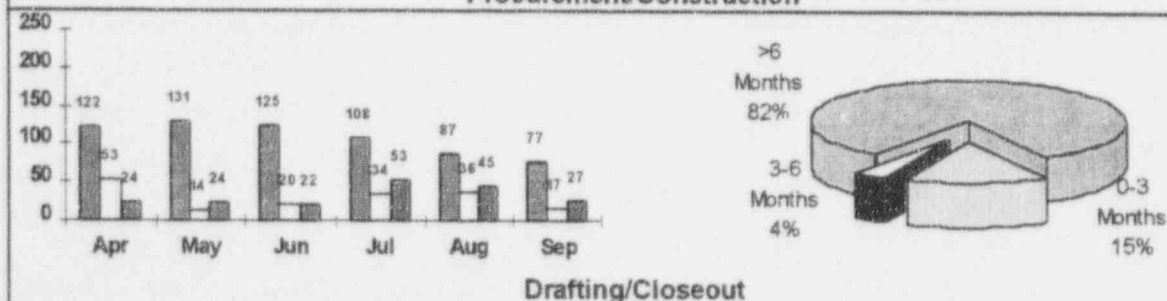
Design Engineering



System Engineering



Procurement/Construction

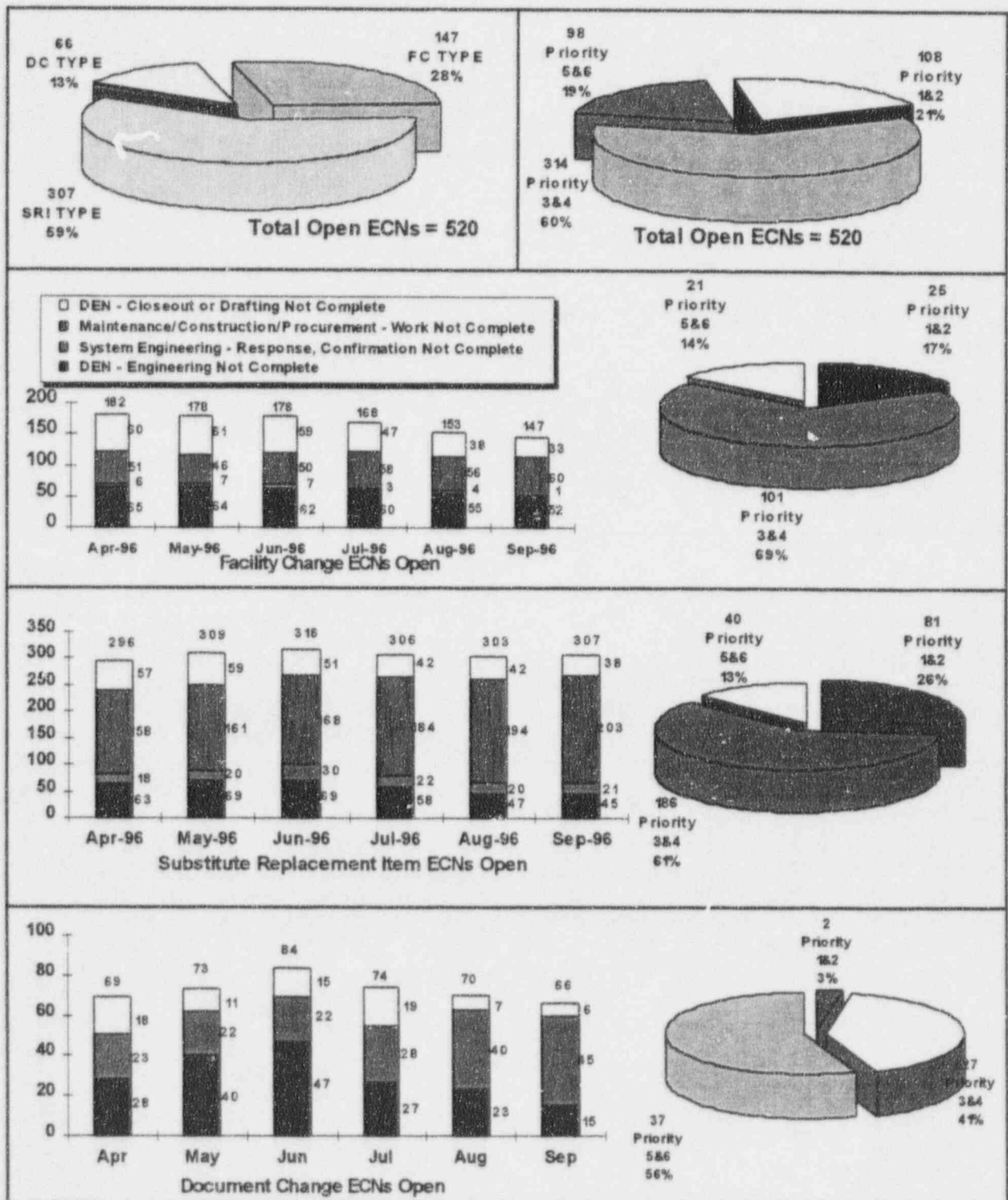


Drafting/Closeout

ENGINEERING CHANGE NOTICE STATUS

Data Source: Jaworski/Livingston (Manager/Source)
 Accountability: Jaworski/Skiles
 Trend: None

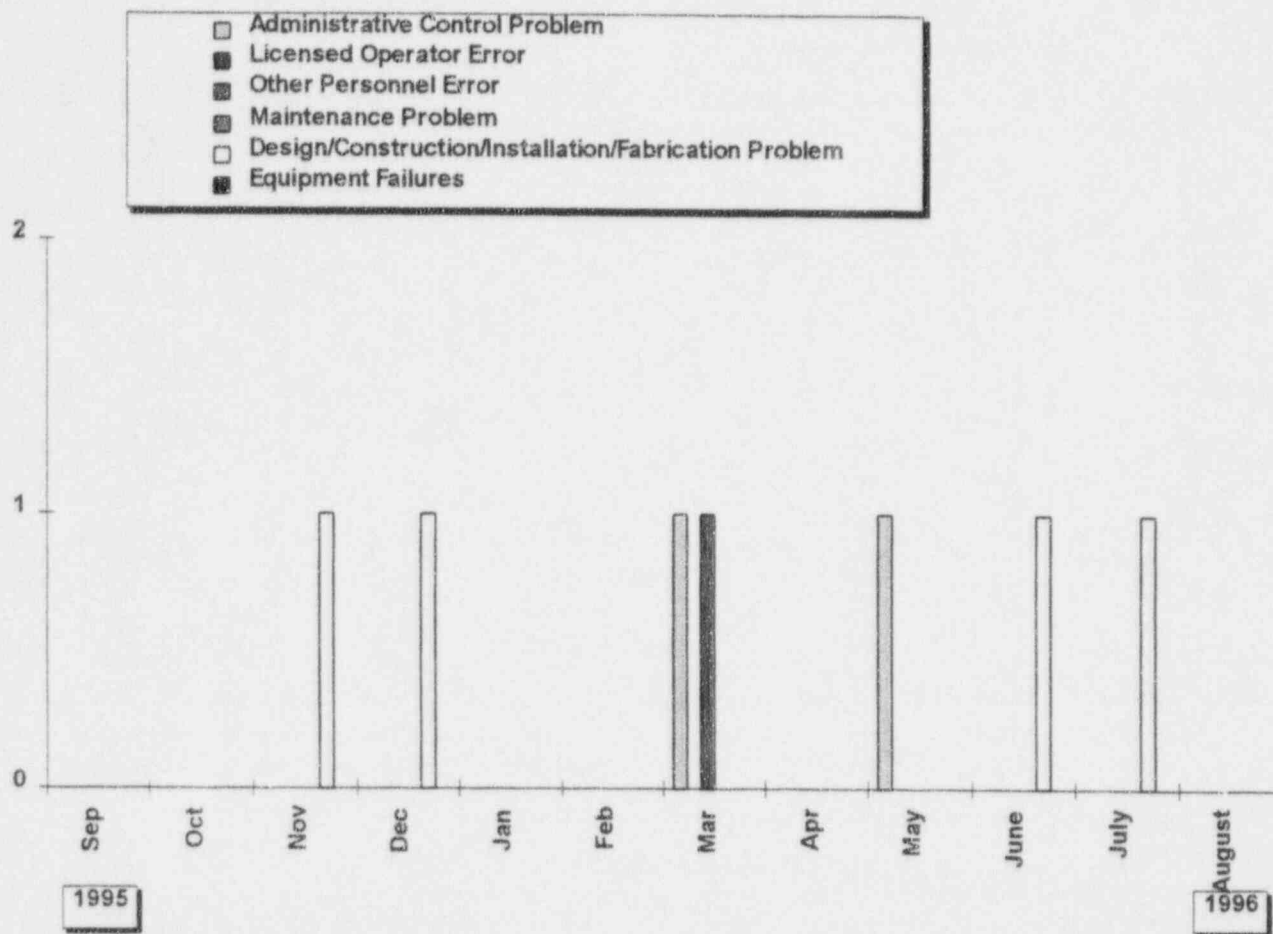
SEP 62



ENGINEERING CHANGE NOTICES OPEN

Data Source: Jaworski/Livingston (Manager Source)
 Accountability: Skiles/Jaworski
 Trend: None

SEP 62



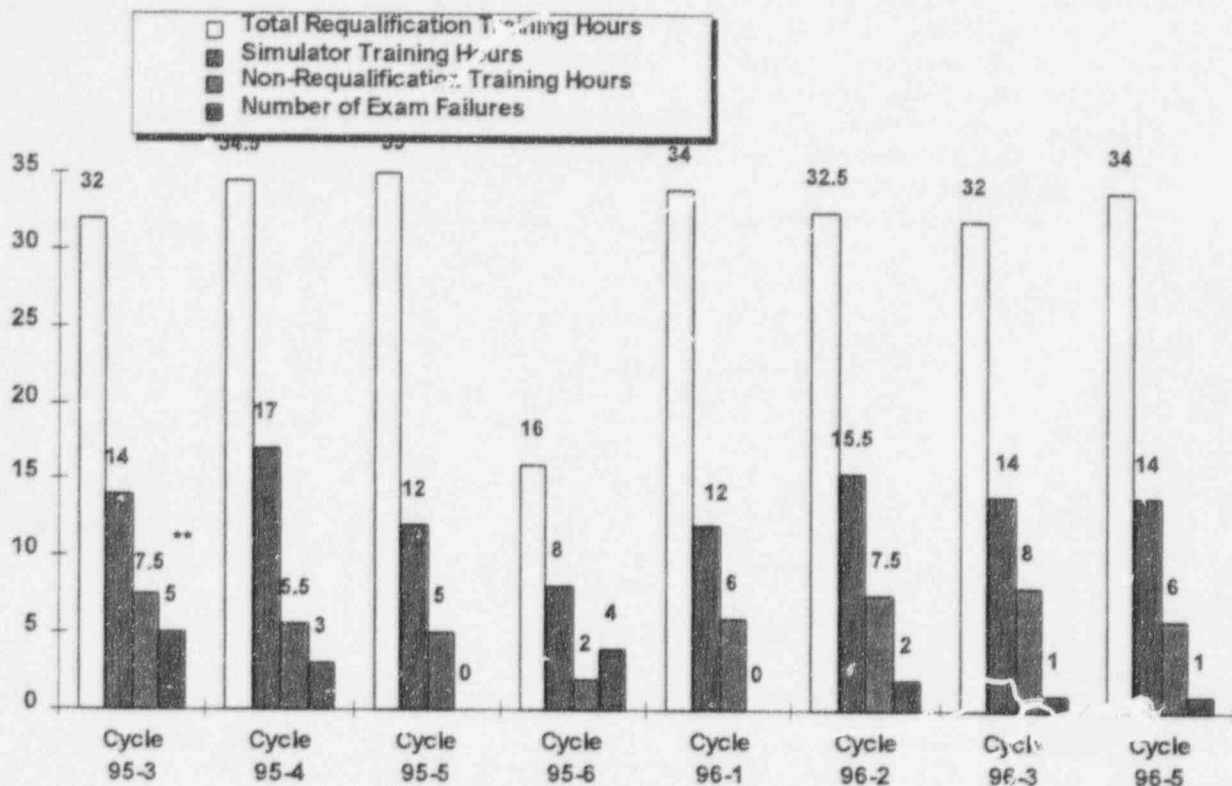
LICENSEE EVENT REPORT (LER) ROOT CAUSE BREAKDOWN

This indicator shows the LERs by event date broken down by Root Cause Code for each of the past twelve months from **September 1, 1995**, through **August 31, 1996**. To be consistent with the Preventable/Personnel Error LERs indicator, this indicator is reported by the LER event date, as opposed to the LER report date.

The cause codes are intended to identify possible programmatic deficiencies. For detailed descriptions of these codes, see the "Performance Indicator Definitions" section of this report.

There were **no** events in **August 1996** that resulted in an LER.

Data Source: Tills/Cavanaugh (Manager/Source)
 Accountability: Chase
 Trend: None



*Note 1: The Simulator was out-of-service during Cycle 94-4.

**Note 2: Includes 8 hours of General Employee Training.

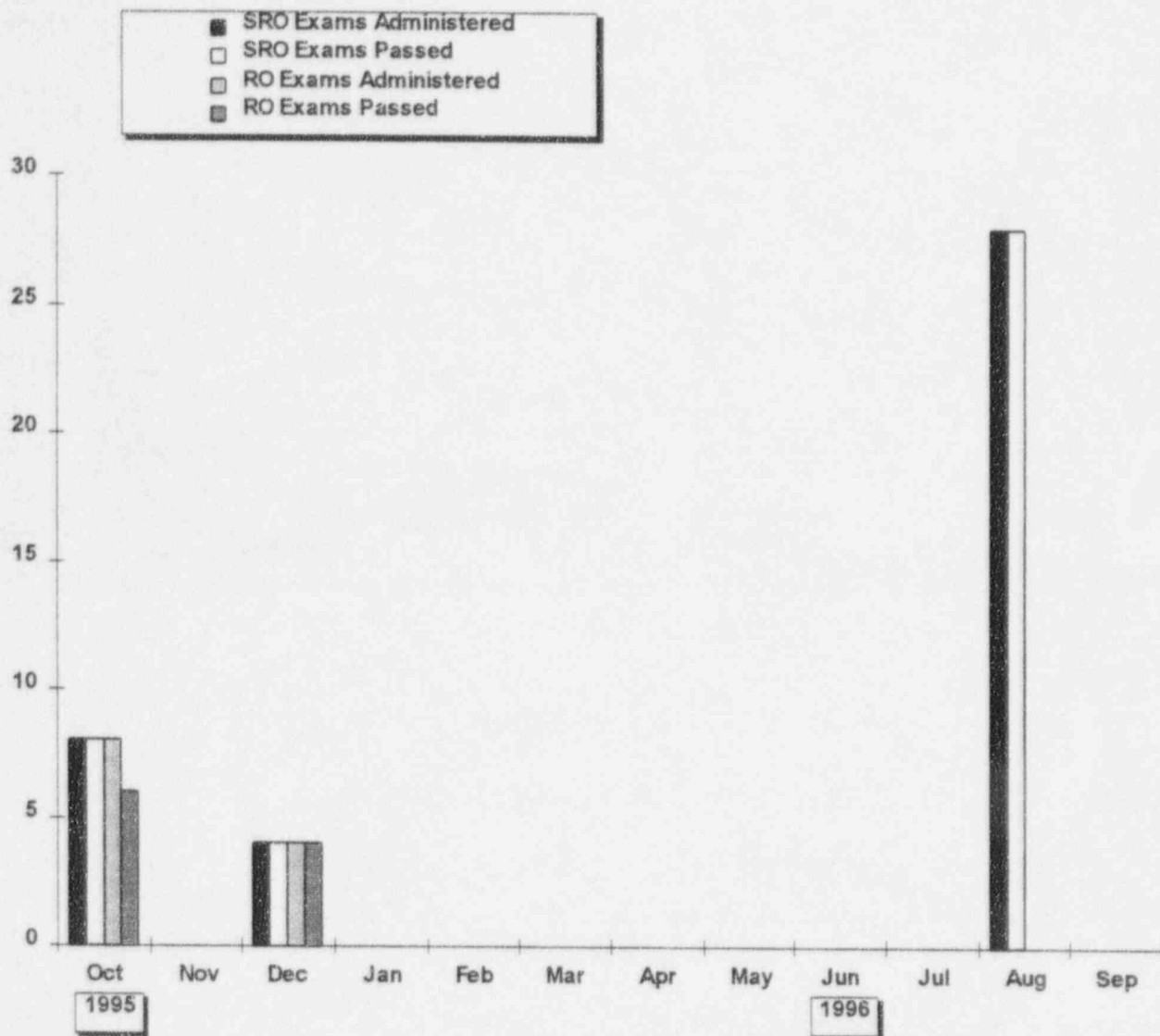
LICENSED OPERATOR REQUALIFICATION TRAINING

This indicator provides information on the total number of hours of training given to each crew during each cycle. The simulator training hours shown on the graph are a subset of the total training hours. Non-Requalification Training Hours are used for AOP/EOP verification & validation, INPO commitments, GET, Fire Brigade, Safety Meetings, and Division Manager lunches.

Exam failures are defined as failures in the written, simulator, and Job Performance Measures (JPMs) segments of the Licensed Operator Requalification Training.

Data Source: Conner/Guliani (Manager/Source)
 Accountability: Conner/Guliani
 Trend: None

SEP 68



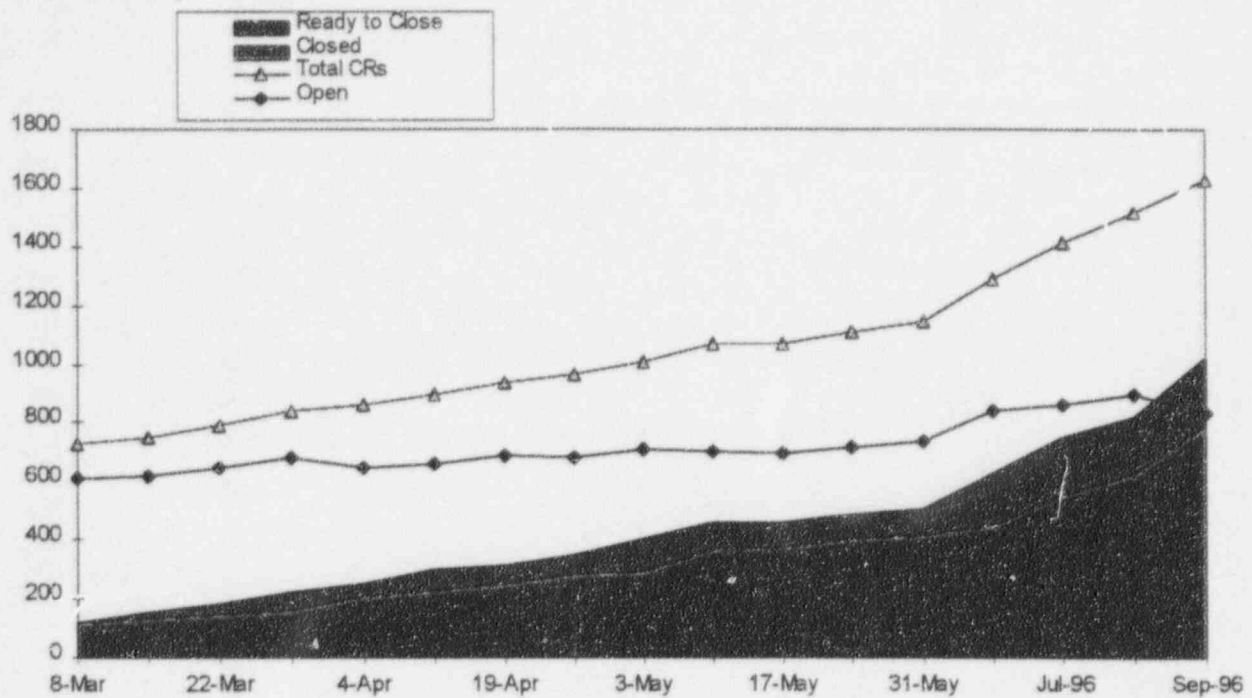
LICENSE CANDIDATE EXAMS

This indicator shows the number of Senior Reactor Operator (SRO) and Reactor Operator (RO) quizzes and exams taken and passed each month. These internally administered quizzes and exams are used to plot the SRO and RO candidates' monthly progress.

During the month of **September 1996**, there were **0** RO and **0** SRO exams given.

Data Source: Conner/Guliani (Manager/Source)
 Accountability: Conner/Guliani
 Trend: None

SEP 68



CONDITION REPORTS BY LEVEL

This indicator shows the total number of Condition Reports which are Closed, Ready to Close, Open and the Total Number of Condition Reports to date.

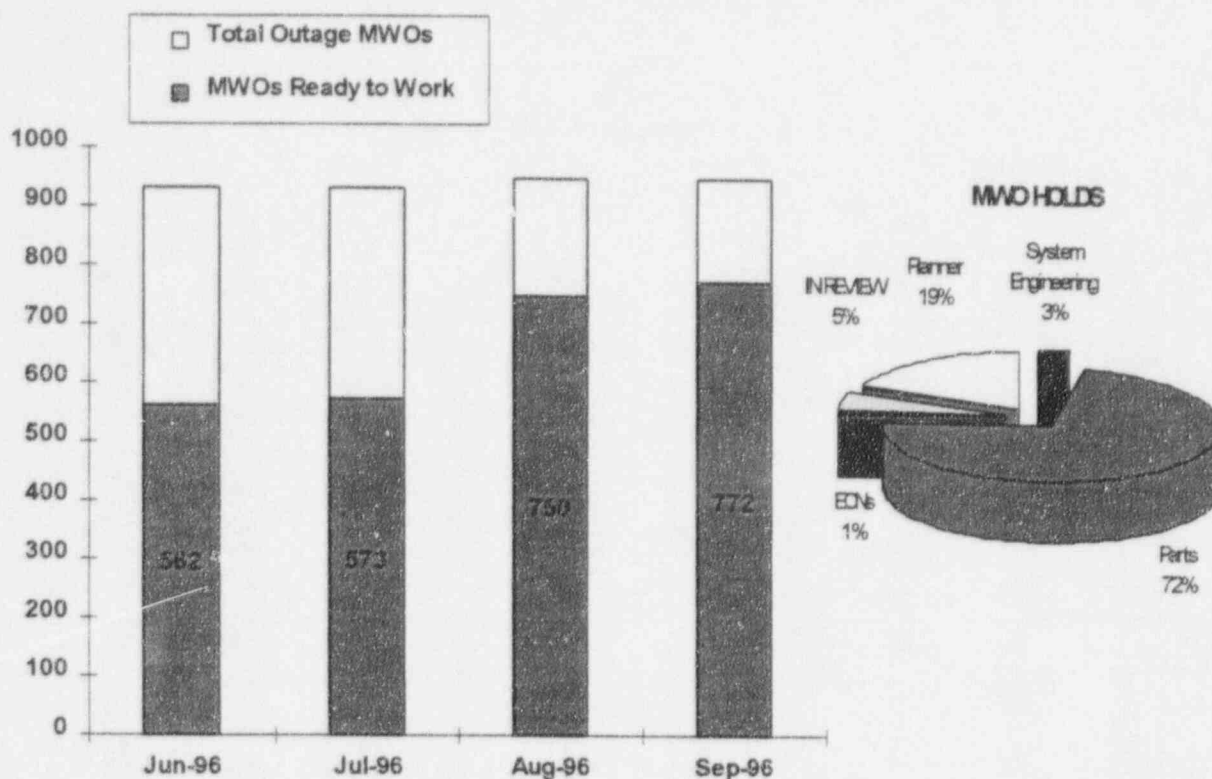
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Total
Open	18	6	78	637	55	38	834
Closed	5	2	48	452	224	59	790

226 Condition Reports are "READY" to "CLOSE".

At the end of September, 1996 there were **141 "OPEN"** Incident Reports, of which, **32** were **Significant**.

As of September 21, 1995, Incident Reports were no longer issued.

Data Source: Tesar/Burggraf (Manager/Source)
 Accountability: Andrews/Gambhir/Patterson
 Trend : None



MWO PLANNING STATUS (CYCLE 17 REFUELING OUTAGE)

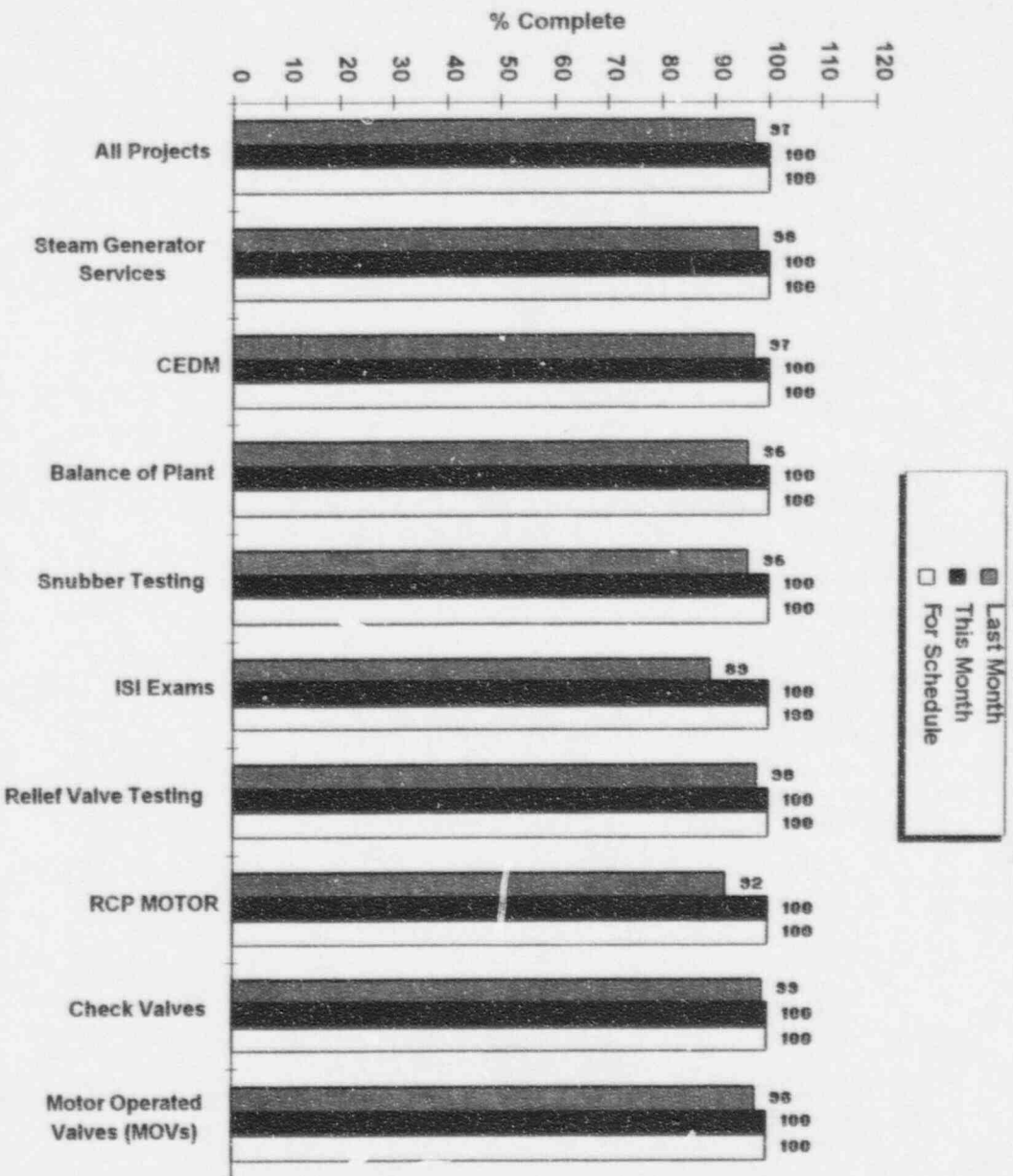
This indicator shows the total number of Maintenance Work Requests (MWRs) and Maintenance Work Orders (MWOs) that have been approved for inclusion in the Cycle 17 Refueling Outage. This graph indicates:

- Parts Holds - Planning Complete, Awaiting Parts
- System Engineering Holds - Awaiting System Engineering Input to Planning
- Planner Holds - Maintenance Planner has not completed planning the work package.
- ECN Hold - Awaiting Substitute Replacement Items ECN from DEN.

Data Source: Chase/Schmitz (Manager/Source)
 Accountability: Chase/Faulhaber
 Trend: None

SEP 31

1996 Outage Projects Status Report



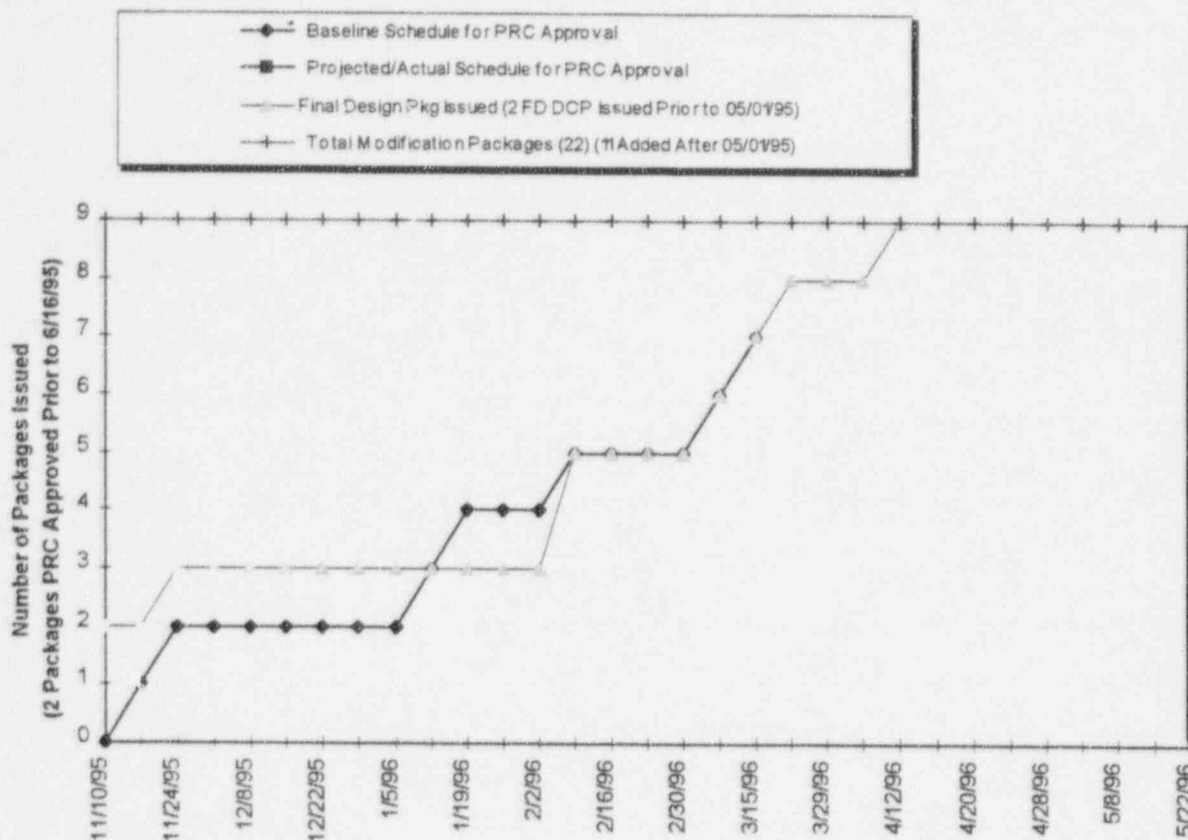
SPECIAL SERVICES ENGINEERING DEPARTMENT OVERALL PROJECT STATUS (Cycle 17 Refueling Outage)

This performance indicator shows the status of projects which are in the scope of the Cycle 17 Refueling Outage. SSED's goal is to have all projects completed by August 23, 1996, 30 days prior to the Refueling Outage start date.

Data Source:
Accountability:
Trend:

Skiles/Swearngin (Manager/Source)
Skiles/Boughter
None

SEP 31



PROGRESS OF CYCLE 17 OUTAGE (1996 MODIFICATION PLANNING) (FROZEN SCOPE OF 9 OUTAGE MODIFICATIONS)

This indicator shows the status of Modifications approved for installation during the Cycle 17 Refueling Outage. Modifications added to the outage list after May 1, 1995, are not part of this indicator. The data is represented with respect to the baseline schedule (established June 16, 1995) and the current schedule.

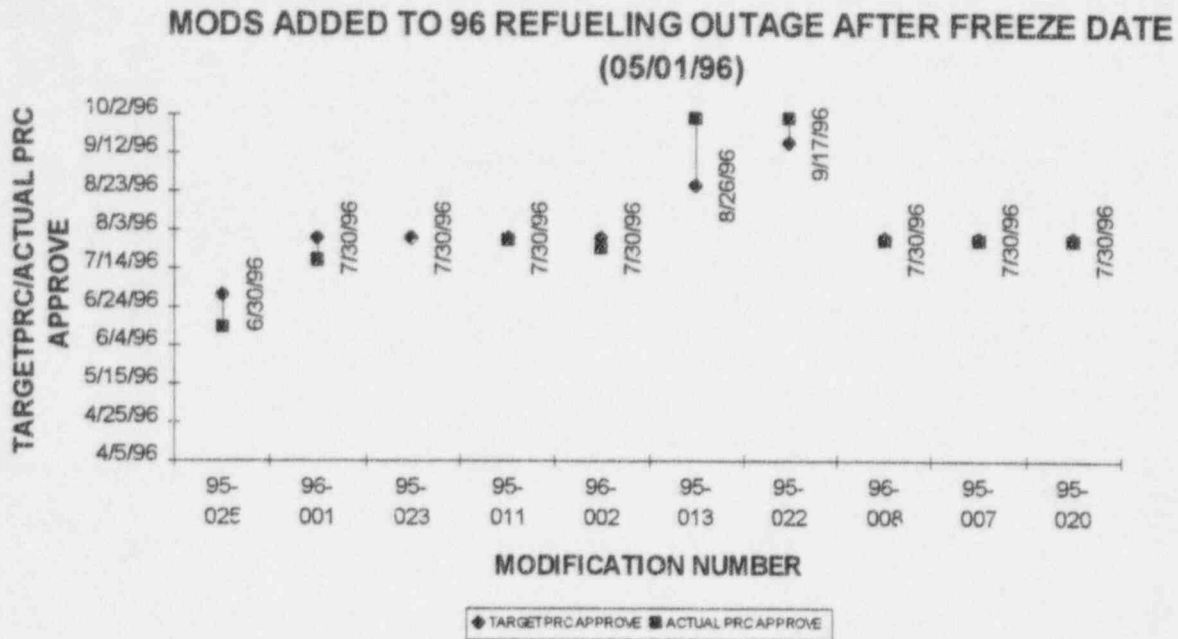
The goal for this indicator is to have all modification packages which were identified prior to May 1, 1995, PRC approved by March 22, 1996. 11 Modifications added after May 1, 1995, not included.

September 1996 Modifications added: 0 Deleted = 0

Graph corrected to represent the baseline schedule.

Data Source: Jaworski/Walling (Manager/Source)
 Accountability: Gambhir/Jaworski
 Trend: None

SEP 31



PROGRESS OF CYCLE 17 OUTAGE (1996 MODIFICATION PLANNING) (1996 MODIFICATION PLANNING)

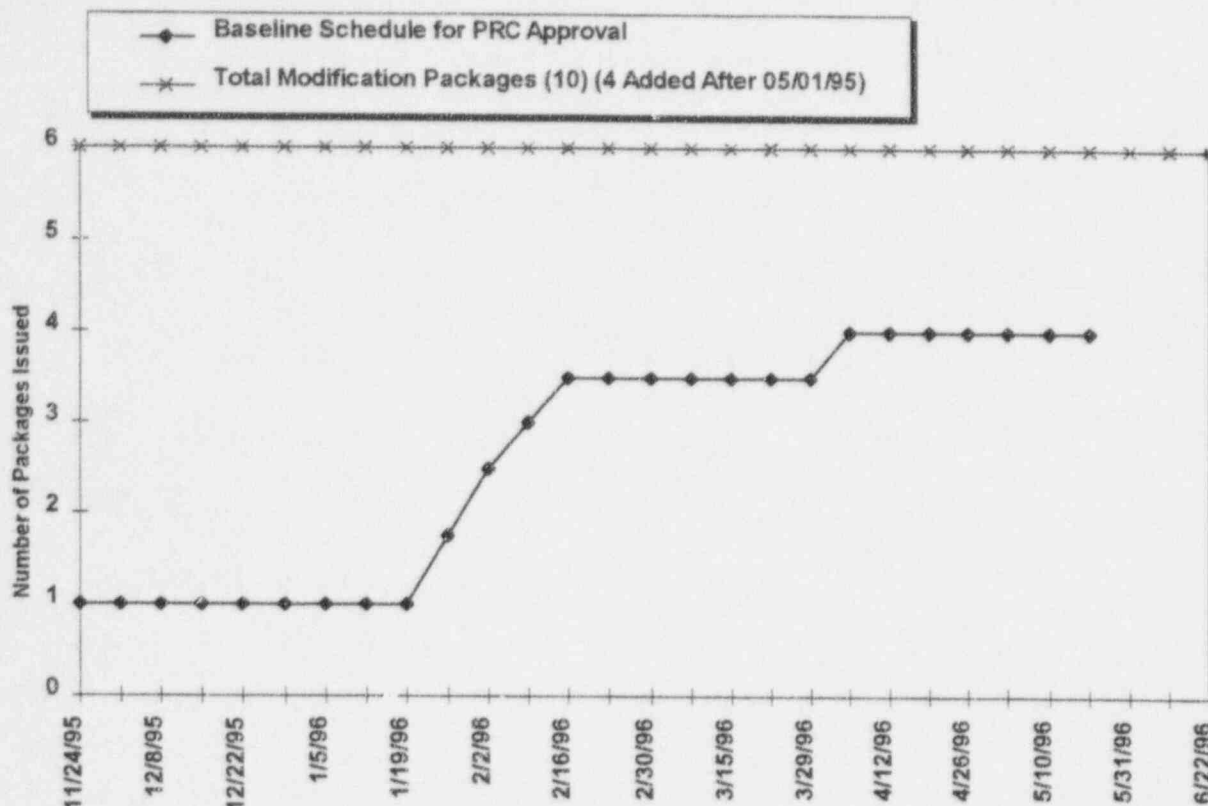
This indicator shows the status of modifications approved for installation during the Cycle 17 Refueling Outage. These modifications were added to the outage list after May 1, 1995. The data is represented with respect to the baseline schedule (established May 1, 1996).

The goal for this indicator is to have all modification packages PRC approved by their target date.

September 1996 Modifications Added: 0 Deleted = 0
Modifications Pre-Approved: 6

Data Source: Jaworski/Walling (Manager/Source)
Accountability: Gambhir/Jaworski
Trend: None

SEP 31



PROGRESS OF 1996 ON-LINE MODIFICATION PLANNING (FROZEN SCOPE OF 6 MODIFICATIONS)

This indicator shows the status of modifications approved for on-line installation during 1996. Modifications added to the on-line list after May 1, 1995, are not part of this indicator. The data is represented with respect to the baseline schedule (established June 16, 1995) and the current schedule. This information is taken from the Modification Variation Report produced by Design Engineering Nuclear.

The goal for this indicator is to have all modification packages which were identified prior to May 1, 1995, PRC approved by March 25, 1996. 1 Modification added after May 1, 1995, not included.

September 1996 Modifications Added: 0 Deleted = 0

Graph corrected to represent the baseline schedule.

Data Source: Jaworski/Walling (Manager/Source)
 Accountability: Gambhir/Jaworski
 Trend: None

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ACTION PLANS

ACTION PLANS

This section lists action plans that have been developed for the performance indicators cited as Adverse Trends during the month preceding this report. Also included are Action Plans for indicators that have been cited in the preceding month's report as Needing Increased Management Attention for three (3) consecutive months.

In accordance with Revision 3 of NOD-QP-37, the following performance indicators would require action plans based on three (3) consecutive months of performance cited as "Needing Increased Management Attention":

- **Fuel Reliability Indicator** (page 9)
- **Maintenance Workload Backlogs** (page 47)

FAILED FUEL ACTION PLAN

Problem Statement:

Fuel failures in Cycle 16 have caused elevated reactor coolant system activities subsequently resulting in higher radiological dose rates (and exposures with access problems) as well as a fuel reliability indicator (FRI) which does not meet the performance indicator goal. The elevated FRI has resulted in lowering the plant performance indicator index to an undesirable value.

Goal:

Reduce the reactor coolant activity levels for Cycle 16 operations and take measure to achieve zero defect fuel performance for Cycle 17 and beyond.

Plan:

The plan below is comprised of both short term corrective actions to address the Cycle 16 operations goals identified above and long term corrective actions for Cycle 17 and beyond.

Fuel Reliability

SHORT TERM (CYCLE 16 OPERATIONS)

<u>ITEM</u>	<u>ACTION</u>	<u>RESP.</u>	<u>DATE DUE</u>	<u>STATUS</u>
1.	Evaluate replacement of two-micron filter in CVCS with one-micron filter.	Holthaus	Completed 01/04/96	Complete. 1/4/96. Filter replacement will result in improved particulate removal and consequently lower dose rates.
1a.	Install one-micron filters in CVCS		01/31/96	Completed 03/13/96
2.	Evaluate benefits of increasing letdown flow.	Holthaus/Spilker	Completed 01/19/96	Previously evaluated in Radiological Analysis 95-005, which supports increased letdown flow.
3.	Evaluate need for and effectiveness of more frequent of purification and cation ion beds.	Holthaus	Completed 01/04/96	Complete. 01/04/96. Resin bed effective in minimizing RCS activity. Resin beds replaced in November 1995.
<u>ITEM</u>	<u>ACTION</u>	<u>RESP.</u>	<u>Date Due</u>	<u>STATUS</u>
3a.	Replace resin beds during Spring 1996 outage.	Spires	03/22/96	Canceled
4.	Prepare and issue Nuclear Network request for industry experience in reducing FRI.		Completed 01/12/96	Complete. 01/12/96. Transmitted proposed inquiry to Licensing for Nuclear Network entry.
5.	Evaluate installation of silver mordenite filtration system for increased iodine removal.	Holthaus/Spires	Completed 01/26/96	Received general (unclassified) information on system used at Savannah River Project.
6.	Identify number of old design assemblies to be placed in peripheral locations for second cycle and consider replacement with new design assembly.	Holthaus/Guinn	Completed 01/12/96	Previously identified eight assemblies to be placed on core periphery for second cycle.

Fuel Reliability

7.	Evaluate whether these assemblies could be used for more than one cycle to reduce cost.	Holthaus/Guinn	Completed 01/19/96	
8.	Determine if Westinghouse can supply the above fuel assemblies for Cycle 17. Also, can Fuels Division provide necessary uranium.	Holthaus/Hanger	Completed 01/12/96	Complete. 01/12/96. Westinghouse has indicated that they can fabricate the assemblies. Cost estimates by Fuels Division is approx. 12M. Discount from Westinghouse also requested.
9.	Evaluate Cycle 18 preliminary pattern same as 5 & 6	Holthaus/Guinn	Completed 01/17/96	Cycle 18 preliminary pattern indicates four additional assemblies would be required. Cost \$1.0M
10.	Evaluate Cycle 19 preliminary pattern same as 5 & 6	Holthaus/Guinn	Completed 01/17/96	Cycle 19 preliminary pattern indicates eight additional assemblies would be required. Cost \$2.0M
11.	Analyze additional assemblies to be procured	Holthaus/Hanger	Completed 01/17/96	Total cost is \$5.0M for 20 additional assemblies.
12.	Evaluated cost/benefit with assumption of \$10,000/person exposure.	Holthaus/Hanger	Completed 01/25/96	

The action plan for **Maintenance Workload Backlog** (page 47) is as follows:

A detailed review is being conducted to determine which stage of the maintenance process has a higher than expected backlog. Areas being reviewed are:

- Planning
- Scheduled Maintenance
- Bulk Work

PERFORMANCE INDICATOR DEFINITIONS

AUXILIARY FEEDWATER SYSTEM SAFETY SYSTEM PERFORMANCE

The sum of the known (planned and unplanned) unavailable hours and the estimated unavailable hours for the auxiliary feedwater system for the reporting period divided by the critical hours for the reporting period multiplied by the number of trains in the auxiliary feedwater system.

COLLECTIVE RADIATION EXPOSURE

Collective radiation exposure is the total external whole-body dose received by all on-site personnel (including contractors and visitors) during a time period, as measured by the thermoluminescent dosimeter (TLD). Collective radiation exposure is reported in units of person-rem. This indicator tracks radiological work performance for SEP #54.

COMPONENT FAILURE ANALYSIS REPORT (CFAR) SUMMARY

The summary of INPO categories for Fort Calhoun Station with significantly higher (1.645 standard deviations) failure rates than the rest of the industry for an eighteen-month time period. Failures are reported as component (i.e., pumps, motors, main steam stop valves, control element motors, etc.) categories.

Failure Cause Categories are:

Age/Normal Use - thought to be the consequence of expected wear, aging, end-of-life, or normal use.

Manufacturing Defect - a failure attributable to inadequate assembly or initial quality of the responsible component or system.

Engineering/Design - a failure attributable to the inadequate design of the responsible component or system.

Other Devices - a failure attributable to a failure or misoperation of another component or system, including associated devices.

Maintenance/Action - resulting from improper maintenance, lack of maintenance, or personnel errors that occur during maintenance activities on the component.

Testing Action - resulting from improper testing or personnel errors that occur during testing activities.

Initial Installation Error - caused by improper initial installation of equipment

CENTS PER KILOWATT HOUR

The purpose of this indicator is to quantify the economical operation of Fort Calhoun Station. The cents per kilowatt hour indicator represents the budget and actual cents per kilowatt hour on a twelve-month average for the current year. The basis for the budget curve is the approved yearly budget. The basis for the actual curve is the Financial and Operating Report.

CLEAN CONTROLLED AREA CONTAMINATIONS $\geq 1,000$ DISINTEGRATIONS/MINUTE PER PROBE AREA

The personnel contamination events in the clean controlled area. This indicator tracks personnel performance for SEP #15 & 54.

CONTAMINATED RADIATION CONTROLLED AREA

The percentage of the Radiation Controlled Area, which includes the auxiliary building, the radwaste building, and areas of the C/RP building, that is contaminated based on the total square footage. This indicator tracks performance for SEP #54.

DAILY THERMAL OUTPUT

This indicator shows the daily core thermal output as measured from computer point XC105 (in thermal megawatts). The 1500 MW Tech Spec limit, and the unmet portion of the 1495 MW FCS daily goal for the reporting month are also shown.

DIESEL GENERATOR RELIABILITY (25 Demands)

This indicator shows the number of failures occurring for each emergency diesel generator during the last 25 start demands and the last 25 load-run demands.

DISABLING INJURY/ILLNESS FREQUENCY RATE (LOSS TIME ACCIDENT RATE)

This indicator is defined as the number of accidents for all utility personnel permanently assigned to the station, involving days away from work per 200,000 man-hours worked (100 man-years). This does not include contractor personnel. This indicator tracks personnel performance for SEP #25, 26 & 27.

DOCUMENT REVIEW (BIENNIAL)

The Document Review Indicator shows the number of documents reviewed, the number of documents scheduled for review, and the number of document reviews that are overdue for the reporting month. A document review is considered overdue if the review is not complete within six months of the assigned due date. This indicator tracks performance for SEP #46.

EMERGENCY AC POWER SYSTEM SAFETY SYSTEM PERFORMANCE

The sum of the known (planned and unplanned) unavailable and the estimated unavailable hours for the emergency AC power system for the reporting period divided by the number of hours in the reporting period multiplied by the number of trains in the emergency AC power system.

EMERGENCY DIESEL GENERATOR UNIT RELIABILITY

This indicator shows the number of failures that were reported during the last 20, 50, and 100 emergency diesel generator demands at the Fort Calhoun Station. Also shown are trigger values which correlate to a high level of confidence that a unit's diesel generators have obtained a reliability of greater than or equal to 95% when the demand failures are less than the trigger values.

PERFORMANCE INDICATOR DEFINITIONS

- 1) **Number of Start Demands:** All valid and inadvertent start demands, including all start-only demands and all start demands that are followed by load-run demands, whether by automatic or manual initiation. A start-only demand is a demand in which the emergency generator is started, but no attempt is made to load the generator.
- 2) **Number of Start Failures:** Any failure within the emergency generator system that prevents the generator from achieving specified frequency and voltage is classified as a valid start failure. This includes any condition identified in the course of maintenance inspections (with the emergency generator in standby mode) that definitely would have resulted in a start failure if a demand had occurred.
- 3) **Number of Load-Run Demands:** For a valid load-run demand to be counted, the load-run attempt must meet one or more of the following criteria:
 - A) A load-run of any duration that results from a real automatic or manual initiation.
 - B) A load-run test to satisfy the plant's load and duration as stated in each test's specifications.
 - C) Other special tests in which the emergency generator is expected to be operated for at least one hour while loaded with at least 50% of its design load.
- 4) **Number of Load-Run Failures:** A load-run failure should be counted for any reason in which the emergency generator does not pick up load and run as predicted. Failures are counted during any valid load-run demands.
- 5) **Exceptions:** Unsuccessful attempts to start or load-run should not be counted as valid demands or failures when they can be attributed to any of the following:
 - A) Spurious trips that would be bypassed in the event of an emergency.
 - B) Malfunction of equipment that is not required during an emergency.
 - C) Intentional termination of a test because of abnormal conditions that would not have resulted in major diesel generator damage or repair.
 - D) Malfunctions or operating errors which would not have prevented the emergency generator from being restarted and brought to load within a few minutes.
 - E) A failure to start because a portion of the starting system was disabled for test purpose, if followed by a successful start with the starting system in its normal alignment.

Each emergency generator failure that results in the generator being declared inoperable should be counted as one demand and one failure. Exploratory tests during corrective maintenance

and the successful test that follows repair to verify operability should not be counted as demands or failures when the EDG has not been declared operable again.

EMERGENCY DIESEL GENERATOR UNRELIABILITY

This indicator measures the total unreliability of emergency diesel generators. In general, unreliability is the ratio of unsuccessful operations (starts or load-runs) to the number of valid demands. Total unreliability is a combination of start unreliability and load-run unreliability.

ENGINEERING ASSISTANCE REQUEST (EAR) BREAKDOWN

This indicator shows a breakdown, by age and priority of the EAR, of the number of EARs assigned to Design Engineering Nuclear and System Engineering. This indicator tracks performance for SEP #62.

ENGINEERING CHANGE NOTICE (ECN) STATUS

The number of ECNs that were opened, ECNs that were completed, and open backlog ECNs awaiting completion by DEN for the reporting month. This indicator tracks performance for SEP #62.

ENGINEERING CHANGE NOTICES OPEN

This indicator breaks down the number of Engineering Change Notices (ECNs) that are assigned to Design Engineering Nuclear (DEN), System Engineering, and Maintenance. The graphs provide data on ECN Facility Changes open, ECN Substitute Replacement Items open, and ECN Document Changes open. This indicator tracks performance for SEP #62.

EQUIPMENT FORCED OUTAGES PER 1,000 CRITICAL HOURS

Equipment forced outages per 1,000 critical hours is the inverse of the mean time between forced outages caused by equipment failures. The mean time is equal to the number of hours the reactor is critical in a period (1,000 hours) divided by the number of forced outages caused by equipment failures in that period.

EQUIVALENT AVAILABILITY FACTOR

This indicator is defined as the ratio of gross available generation to gross maximum generation, expressed as a percentage. Available generation is the energy that can be produced if the unit is operated at the maximum power level permitted by equipment and regulatory limitations. Maximum generation is the energy that can be produced by a unit in a given period if operated continuously at maximum capacity.

FORCED OUTAGE RATE

This indicator is defined as the percentage of time that the unit was unavailable due to forced events compared to the time planned for electrical generation. Forced events are failures or other unplanned conditions that require removing the unit from service before the end of the next weekend. Forced events

PERFORMANCE INDICATOR DEFINITIONS

include start-up failures and events initiated while the unit is in reserve shutdown (i.e., the unit is available but not in service).

FUEL RELIABILITY INDICATOR

This indicator is defined as the steady-state primary coolant I-131 activity, corrected for the tramp uranium contribution and normalized to a common purification rate. Tramp uranium is fuel which has been deposited on reactor core internals from previous defective fuel or is present on the surface of fuel elements from the manufacturing process. Steady state is defined as continuous operation for at least three days at a power level that does not vary more than + or -5%. Plants should collect data for this indicator at a power level above 35%, when possible. Plants that did not operate at steady-state power above 85% should collect data for this indicator at the highest steady-state power level attained during the month.

The density correction factor is the ratio of the specific volume of coolant at the RCS operating temperature (540 degrees F., $V_f = 0.02146$) divided by the specific volume of coolant at normal letdown temperature (120° F at outlet of the letdown cooling heat exchanger, $V_f = 0.016204$), which results in a density correction factor for FCS equal to 1.32.

GROSS HEAT RATE

Gross heat rate is defined as the ratio of total thermal energy in British Thermal Units (BTU) produced by the reactor to the total gross electrical energy produced by the generator in kilowatt-hours (KWH).

HAZARDOUS WASTE PRODUCED

The total amount (in Kilograms) of non-halogenated hazardous waste, halogenated hazardous waste, and other hazardous waste produced by FCS each month.

HIGH PRESSURE SAFETY INJECTION SYSTEM SAFETY SYSTEM PERFORMANCE

The sum of the known (planned and unplanned) unavailable hours and the estimated unavailable hours for the high pressure safety injection system for the reporting period divided by the critical hours for the reporting period multiplied by the number of trains in the high pressure safety injection system.

INDUSTRIAL SAFETY ACCIDENT RATE - INPO

This indicator is defined as the number of accidents per 200,000 man-hours worked for all utility personnel permanently assigned to the station that result in any of the following:

- 1) One or more days of restricted work (excluding the day of the accident);
- 2) One or more days away from work (excluding the day of the accident); and
- 3) Fatalities.

Contractor personnel are not included for this indicator.

IN-LINE CHEMISTRY INSTRUMENTS OUT OF SERVICE

Total number of in-line chemistry instruments that are out-of-service in the Secondary System and the Post Accident Sampling System (PASS).

LICENSE CANDIDATE EXAMS

This indicator shows the number of SRO and/or RO quizzes and exams that are administered and passed each month. This indicator tracks training performance for SEP #68.

LICENSED OPERATOR REQUALIFICATION TRAINING

The total number of hours of training given to each crew during each cycle. Also provided are the simulator training hours (which are a subset of the total training hours), the number of non-REQUALIFICATION training hours and the number of exam failures. This indicator tracks training performance for SEP # 68.

LICENSEE EVENT REPORT (LER) ROOT CAUSE BREAKDOWN

This indicator shows the number and root cause code for Licensee Event Reports. The root cause codes are as follows:

- 1) **Administrative Control Problem** - Management and supervisory deficiencies that affect plant programs or activities (i.e., poor planning, breakdown or lack of adequate management or supervisory control, incorrect procedures, etc).
- 2) **Licensed Operator Error** - This cause code captures errors of omission/commission by licensed reactor operators during plant activities.
- 3) **Other Personnel Error** - Errors of omission/commission committed by non-licensed personnel involved in plant activities.
- 4) **Maintenance Problem** - The intent of this 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.
- 5) **Design/Construction/Installation/Fabrication Problem** - This cause code covers a full range of programmatic deficiencies in the areas of design, construction, installation, and fabrication (i.e., loss of control power due to underrated fuse, equipment not qualified for the environment, etc.).
- 6) **Equipment Failures (Electronic Piece-Parts or Environmental-Related Failures)** - This code is used for spurious failures of electronic piece-parts and failures due to meteorological conditions such as lightning, ice, high

PERFORMANCE INDICATOR DEFINITIONS

winds, etc. Generally, it includes spurious or one-time failures. Electric components included in this category are circuit cards, rectifiers, bistables, fuses, capacitors, diodes, resistors, etc.

LOGGABLE/REPORTABLE INCIDENTS (SECURITY)

The total number of security incidents for the reporting month depicted in two graphs. This indicator tracks security performance for SEP #58.

MAINTENANCE OVERTIME

The percent of overtime hours compared to normal hours for maintenance. This includes OPPD personnel as well as contract personnel.

MAINTENANCE WORKLOAD BACKLOGS

This indicator shows the backlog of non-outage Maintenance Work Orders remaining open at the end of the reporting month. Maintenance classifications are defined as follows:

Corrective - Repair and restoration of equipment or components that have failed or are malfunctioning and are not performing their intended function.

Preventive - Actions taken to maintain a piece of equipment within design operating conditions, prevent equipment failure, and extend its life and are performed prior to equipment failure.

Non-Corrective/Plant Improvements - Maintenance activities performed to implement station improvements or to repair non-plant equipment.

Maintenance Work Priorities are defined as:

Emergency - Conditions which significantly degrade station safety or availability.

Immediate Action - Equipment deficiencies which significantly degrade station reliability. Potential for unit shutdown or power reduction.

Operations Concern - Equipment deficiencies which hinder station operation.

Essential - Routine corrective maintenance on essential station systems and equipment.

Non-Essential - Routine corrective maintenance on non-essential station systems and equipment.

Plant Improvement - Non-corrective maintenance and plant improvements.

This indicator tracks maintenance performance for SEP #36.

MAXIMUM INDIVIDUAL RADIATION EXPOSURE

The total maximum amount of radiation received by an individual person working at FCS on a monthly, quarterly, and annual basis.

MWO PLANNING STATUS (CYCLE 17 REFUELING OUTAGE)

The total number of Maintenance Work Orders that have been approved for inclusion in the Cycle 17 Refueling Outage and the number that are ready to work (parts staged, planning complete, and all other paperwork ready for field use). Also included is the number of MWOs that have been engineering holds (ECNs, procedures and other miscellaneous engineering holds), parts hold, (parts staged, not yet inspected, parts not yet arrived) and planning hold (job scope not yet completed). Maintenance Work Requests (MWRs) are also shown that have been identified for the Cycle 17 Refueling Outage and have not yet been converted to MWOs.

NUMBER OF CONTROL ROOM EQUIPMENT DEFICIENCIES

A control room equipment deficiency (CRD) is defined as any component which is operated or controlled from the Control Room, provides indication or alarm to the Control Room, provides testing capabilities from the Control Room, provides automatic actions from or to the Control Room, or provides a passive function for the Control Room and has been identified as deficient, i.e., does not perform under all conditions as designed. This definition also applies to the Alternate Shutdown Panels AI-179, AI-185, and AI-212.

A plant component which is deficient or inoperable is considered an "Operator Work Around (OWA) Item" if some other action is required by an operator to compensate for the condition of the component. Some examples of OWAs are:

- 1) The control room level indicator does not work but a local sight glass can be read by an Operator out in the plant;
- 2) A deficient pump cannot be repaired because replacement parts require a long lead time for purchase/delivery, thus requiring the redundant pump to be operated continuously;
- 3) Special actions are required by an Operator because of equipment design problems. These actions may be described in Operations Memorandums, Operator Notes, or may require changes to Operating Procedures;
- 4) Deficient plant equipment that is required to be used during Emergency Operating Procedures or Abnormal Operating Procedures;
- 5) System indication that provides critical information during normal or abnormal operations.

PERFORMANCE INDICATOR DEFINITIONS

NUMBER OF MISSED SURVEILLANCE TESTS RESULTING IN LICENSEE EVENT REPORTS

The number of Surveillance Tests (STs) that result in Licensee Event Reports (LERs) during the reporting month. This indicator tracks missed STs for SEP #60 & 61.

OPEN INCIDENT REPORTS

This indicator displays the total number of open Incident Reports (IRs), the number of IRs that are greater than six months old and the number of open significant IRs.

OUTSTANDING MODIFICATIONS

The number of Modification Requests (MRs) in any state between the issuance of a Modification Number and the completion of the drawing update.

- 1) **Form FC-1133 Backlog/In Progress.** This number represents modification requests that have not been plant approved during the reporting month.
- 2) **Modification Requests Being Reviewed.** This category includes:
 - A) Modification Requests that are not yet reviewed.
 - B) Modification Requests being reviewed by the Nuclear Projects Review Committee (NPRC).
 - C) Modification Requests being reviewed by the Nuclear Projects Committee (NPC).

These Modification Requests may be reviewed several times before they are approved for accomplishment or canceled. Some of these Modification Requests are returned to Engineering for more information, some approved for evaluation, some approved for study, and some approved for planning. Once planning is completed and the scope of the work is clearly defined, these Modification Requests may be approved for accomplishment with a year assigned for construction or they may be canceled. All of these different phases require review.

- 3) **Design Engineering Backlog/In Progress.** Nuclear Planning has assigned a year in which construction will be completed and design work may be in progress.
- 4) **Construction Backlog/In Progress.** The Construction Package has been issued or construction has begun but the modification has not been accepted by the System Acceptance Committee (SAC).
- 5) **Design Engineering Update Backlog/In Progress.** PED has received the Modification Completion Report but the drawings have not been updated.

The above mentioned outstanding modifications do not include modifications which are proposed for cancellation.

OVERALL PROJECT STATUS (REFUELING OUTAGE)

This indicator shows the status of the projects which are in the scope of the Refueling Outage.

PERCENTAGE OF TOTAL MWOs COMPLETED PER MONTH IDENTIFIED AS REWORK

The percentage of total MWOs completed per month identified as rework. Rework activities are identified by maintenance planning and craft. Rework is: Any additional work required to correct deficiencies discovered during a failed Post Maintenance Test to ensure the component/system passes subsequent Post Maintenance Test.

PERCENT OF COMPLETED SCHEDULED MAINTENANCE ACTIVITIES

The percent of the number of completed maintenance activities as compared to the number of scheduled maintenance activities each month. This percentage is shown for all maintenance crafts. Also shown are the number of emergent MWOs. Maintenance activities include MWRs, MWOs, STs, PMOs, calibrations, and other miscellaneous activities. This indicator tracks Maintenance performance for SEP #33.

PERFORMANCE INDICATOR INDEX

This indicator index is calculated from a weighted combination of twelve performance indicator values, which include the following: Unit Capability Factor, Unit Capability Loss Factor, HPSI, AFW, Emergency AC Power System, Unplanned Automatic Scrams, Collective Radiation Exposure, Fuel Reliability, Thermal Performance, Secondary System Chemistry, Radiation Waste, and Industrial Safety Accident Rate.

PREVENTABLE/PERSONNEL ERROR LERs

This indicator is a breakdown of LERs. For purposes of LER event classification, a "Preventable LER" is defined as:

An event for which the root cause is personnel error (i.e., inappropriate action by one or more individuals), inadequate administrative controls, a design construction, installation, installation, fabrication problem (involving work completed by or supervised by OPPD personnel) or a maintenance problem (attributed to inadequate or improper upkeep/repair of plant equipment). Also, the cause of the event must have occurred within approximately two years of the "Event Date" specified in the LER (e.g., an event for which the cause is attributed to a problem with the original design of the plant would not be considered preventable).

For purposes of LER event classification, a "Personnel Error" LER is defined as follows:

An event for which the root cause is inappropriate action on the part of one or more individuals (as opposed to being attributed to a department or a general group). Also, the inappropriate action must have occurred within approximately two years of the "Event Date" specified in the LER.

PERFORMANCE INDICATOR DEFINITIONS

Additionally, each event classified as a "Personnel Error" should also be classified as "Preventable." This indicator trends personnel performance for SEP Item #15.

PRIMARY SYSTEM LITHIUM % OF HOURS OUT OF LIMIT

The percent of hours out of limit are for lithium divided by the total number of hours possible for the month.

PROCEDURAL NONCOMPLIANCE INCIDENTS (MAINTENANCE)

The number of identified incidents concerning maintenance procedural problems, the number of closed IRs related to the use of procedures (includes the number of closed IRs caused by procedural noncompliance), and the number of closed procedural noncompliance IRs. This indicator trends personnel performance for SEP #15, 41 and 44.

PROGRESS OF CYCLE 17 OUTAGE MODIFICATION PLANNING

This indicator shows the status of modifications approved for completion during the Refueling Outage.

PROGRESS OF 1995 ON-LINE MODIFICATION PLANNING

This indicator shows the status of modifications approved for completion during 1995.

RADIOLOGICAL WORK PRACTICES PROGRAM

The number of identified poor radiological work practices (PRWPs) for the reporting month. This indicator tracks radiological work performance for SEP #52.

RATIO OF PREVENTIVE TO TOTAL MAINTENANCE & PREVENTIVE MAINTENANCE ITEMS OVERDUE

The ratio of preventive maintenance (including surveillance testing and calibration procedures) to the sum of non-outage corrective maintenance and preventive maintenance completed over the reporting period. The ratio, expressed as a percentage, is calculated based on man-hours. Also displayed are the percent of preventive maintenance items in the month that were not completed or administratively closed by the scheduled date plus a grace period equal to 25% of the scheduled interval. This indicator tracks preventive maintenance activities for SEP #41.

RECORDABLE INJURY/ILLNESS CASES FREQUENCY RATE

The number of injuries requiring more than normal first aid per 200,000 man-hours worked. This indicator trends personnel performance for SEP #15, 25 and 26.

REPEAT FAILURES

The number of Nuclear Plant Reliability Data System (NPRDS) components with more than one failure and the number of NPRDS components with more than two failures for the eighteen-month CFAR period.

SAFETY SYSTEM FAILURES

Safety system failures are any events or conditions that could prevent the fulfillment of the safety functions of 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 is a list of the major safety systems, sub-systems, and components monitored for this indicator:

Accident Monitoring Instrumentation, Auxiliary (and Emergency) Feedwater System, Combustible Gas Control, Component Cooling Water System, Containment and Containment Isolation, Containment Coolant Systems, Control Room Emergency Ventilation System, Emergency Core Cooling Systems, Engineered Safety Features Instrumentation, Essential Compressed Air Systems, Essential or Emergency Service Water, Fire Detection or Suppression Systems, Isolation Condenser, Low Temperature Overpressure Protection, Main Steam Line Isolation Valves, Onsite Emergency AC & DC Power w/Distribution, Radiation Monitoring Instrumentation, Reactor Coolant System, Reactor Core Isolation Cooling System, Reactor Trip System and Instrumentation, Recirculation Pump Trip Actuation Instrumentation, Residual Heat Removal Systems, Safety Valves, Spent Fuel Systems, Standby Liquid Control System and Ultimate Heat Sink.

SECONDARY SYSTEM CHEMISTRY PERFORMANCE INDEX

The Chemistry Performance Index (CPI) is a calculation based on the concentration of key impurities in the secondary side of the plant. These key impurities are the most likely cause of deterioration of the steam generators. Criteria for calculating the CPI are:

- 1) The plant is at greater than 30 percent power; and
- 2) the power is changing less than 5% per day.

The CPI is calculated using the following equation:

$$CPI = ((\text{sodium}/0.79) + (\text{Chloride}/1.52) + (\text{Sulfate}/1.44) + (\text{Iron}/3.30) + (\text{Copper}/0.30) + (\text{Condensate O}_2/2.90))/6$$

Where: Sodium, sulfate, chloride and condensate dissolved oxygen are the monthly average blowdown concentrations in ppb, iron and copper are monthly time weighted average feedwater concentrations in ppb. The denominator for each of the five factors is the INPO median value. If the monthly average for a specific parameter is less than the INPO median value, the median value is used in the calculation.

SIGNIFICANT EVENTS

Significant events are the events identified by NRC staff through detailed screening and evaluation of operating experience. The screening process includes the daily review and discussion of

PERFORMANCE INDICATOR DEFINITIONS

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 significant event candidate is further evaluated to determine if any actual or potential threat to the health and safety of the public was involved. Specific examples of the type of criteria are summarized as follows:

- 1) Degradation of important safety equipment;
- 2) Unexpected plant response to a transient;
- 3) Degradation of fuel integrity, primary coolant pressure boundary, important associated features;
- 4) Scram with complication;
- 5) Unplanned release of radioactivity;
- 6) Operation outside the limits of the Technical Specifications;
- 7) Other.

INPO significant events reported in this indicator are SERs (Significant Event Reports) which inform utilities of significant events and lessons learned identified through the SEE-IN screening process.

SPARE PARTS INVENTORY VALUE

The dollar value of the spare parts inventory for FCS during the reporting period.

STAFFING LEVEL

The actual staffing level and the authorized staffing level for the Nuclear Operations Division, The Production Engineering Division, and the Nuclear Services Division. This indicator tracks performance for SEP #24.

STATION NET GENERATION

The net generation (sum) produced by the FCS during the reporting month.

TEMPORARY MODIFICATIONS

The number of temporary mechanical and electrical configurations to the plant's systems.

- 1) Temporary configurations are defined as electrical jumpers, electrical blocks, mechanical jumpers, or mechanical blocks which are installed in the plant operating systems and are not shown on the latest revision of the P&ID, schematic, connection, wiring, or flow diagrams.
- 2) Jumpers and blocks which are installed for Surveillance Tests, Maintenance Procedures, Calibration Procedures, Special Procedures or Operating Procedures are not considered as temporary modifications unless the jumper or block remains in place after the test or procedure is complete. Jumpers and blocks installed in test or lab

instruments are not considered as temporary modifications.

- 3) Scaffold is not considered a temporary modification. Jumpers and blocks which are installed and for which MRs have been submitted will be considered as temporary modifications until final resolution of the MR and the jumper or block is removed or is permanently recorded on the drawings. This indicator tracks temporary modifications for SEP #62 and 71.

THERMAL PERFORMANCE

The ratio of the design gross heat rate (corrected) to the adjusted actual gross heat rate, expressed as a percentage.

UNIT CAPABILITY FACTOR

The ratio of the available energy generation over a given time period to the reference energy generation (the energy that could be produced if the unit were operated continuously at full power under reference ambient conditions) over the same time period, expressed as a percentage.

UNIT CAPACITY FACTOR

The net electrical energy generated (MWH) divided by the product of maximum dependable capacity (net MWe) times the gross hours in the reporting period expressed as a percent. Net electrical energy generated is the gross electrical output of the unit measured at the output terminals of the turbine generator minus the normal station service loads during the gross hours of the reporting period, expressed in megawatt hours.

UNPLANNED AUTOMATIC REACTOR SCRAMS PER 7,000 CRITICAL HOURS

This indicator is defined as the number of unplanned automatic scrams (reactor protection system logic actuations) that occur per 7,000 hours of critical operation.

The value for this indicator is calculated by multiplying the total number of unplanned automatic reactor scrams in a specific time period by 7,000 hours, then dividing that number by the total number of hours critical in the same time period. The indicator is further defined as follows:

- 1) Unplanned means that the scram was not an anticipated part of a planned test.
- 2) Scram means the automatic shutdown of the reactor by a rapid insertion of negative reactivity (e.g., by control rods, liquid injection system, etc.) that is caused by actuation of the reactor protection system. The scram signal may have resulted from exceeding a set point or may have been spurious.
- 3) Automatic means that the initial signal that caused actuation of the reactor protection system logic was provided from one of the sensor's monitoring plant parameters and conditions, rather than the manual scram switches or, manual turbine trip switches (or push-buttons) provided in the main control

PERFORMANCE INDICATOR DEFINITIONS

room.

- 4) Critical means that during the steady-state condition of the reactor prior to the scram, the effective multiplication (k_{eff}) was essentially equal to one.

UNPLANNED CAPABILITY LOSS FACTOR

The ratio of the unplanned energy losses during a given period of time, to the reference energy generation (the energy that could be produced if the unit were operated continuously at full power under reference ambient conditions) over the same time period, expressed as a percentage.

UNPLANNED SAFETY SYSTEM ACTUATIONS - (INPO + DEFINITION)

This indicator is defined as the sum of the following safety system actuations:

- 1) The number of unplanned Emergency Core Cooling System (ECCS) actuations that result from reaching an ECCS actuation set point or from a spurious/inadvertent ECCS signal.
- 2) The number of unplanned emergency AC power system actuations that result from a loss of power to a safeguards bus. An unplanned safety system actuation occurs when an actuation set point for a safety system is reached or when a spurious or inadvertent signal is generated (ECCS only), and major equipment in the system is actuated. Unplanned means that the system actuation was not part of a planned test or evolution. The ECCS actuations to be counted are actuations of the high pressure injection system, the low pressure injection system, or the safety injection tanks.

UNPLANNED SAFETY SYSTEM ACTIONS - (NRC DEFINITION)

The number of safety system actuations which include (only) the High Pressure Safety Injection System, the Low Pressure Safety Injection System, the Safety Injection Tanks, and the Emergency Diesel Generators. The NRC classification of safety system actuations includes actuations when major equipment is operated and when the logic systems for the above safety systems are challenged.

VIOLATION TREND

This indicator is defined as Fort Calhoun Station Cited Violations and Non-Cited Violations trended over 12 months. Additionally, Cited Violations for the top quartile Region IV plant is trended over 12 months (lagging the Fort Calhoun Station trend by 2-3 months). It is the Fort Calhoun Station goal to be at or below the cited violation trend for the top quartile Region IV plant.

VOLUME OF LOW-LEVEL SOLID RADIOACTIVE WASTE

This indicator is defined as the volume of low-level solid radioactive waste actually shipped for burial. This indicator also shows the volume of low-level radioactive waste which is in temporary storage, the amount of radioactive oil that has been

shipped off-site for processing, and the volume of solid dry radioactive waste which has been shipped off-site for processing. Low-level solid radioactive waste consists of dry active waste, sludges, resins, and evaporator bottoms generated as a result of nuclear power plant operation and maintenance. Dry radioactive waste includes contaminated rags, cleaning materials, disposable protective clothing, plastic containers, and any other material to be disposed of at a low-level radioactive waste disposal site, except resin, sludge, or evaporator bottoms. Low-level refers to all radioactive waste that is not spent fuel or a by-product of spent fuel processing. This indicator tracks radiological work performance for SEP #54.

SAFETY ENHANCEMENT PROGRAM INDEX

The purpose of the Safety Enhancement Program (SEP) Performance Indicators Index is to list performance indicators related to SEP items with parameters that can be trended.

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