UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

FEB - 8 1995

Wolf Creek Nuclear Operating Corporation
ATTN: Neil S. Carns, President and
Chief Executive Officer
P.O. Box 411
Burlington, Kansas 66839

SUBJECT: MANAGEMENT MEETING

This refers to the meeting conducted in the Region IV office on February 2, 1995. This meeting related to the accomplishments of the seventh refueling outage, a discussion of on-line maintenance planning and scheduling, and changes in the maintenance process and organization at Wolf Creek Generating Station.

The meeting was beneficial in furthering our understanding of your processes for developing work schedules and how you assess risk in the development of those schedules. We also better understand the organizational changes that have occurred in the maintenance area and acknowledge the goals you have established for yourself in this area.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the NRC's Public Document Room.

Should you have any questions concerning this matter, we will be pleased to discuss them with you.

Sincerely,

A. Bill Beach, Director
Division of Reactor Projects

Attachments:
1. Attendance List
2. Licensee Presentation

cc:
Wolf Creek Nuclear Operating Corp.
ATTN: Vice President Plant Operations
P.O. Box 411
Burlington, Kansas 66839

160007

JE45

Shaw, Pittman, Potts & Trowbridge
ATTN: Jay Silberg, Esq.
2300 N Street, NW
Washington, D.C. 20037

U.S. Nuclear Regulatory Commission
ATTN: Regional Administrator, Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Wolf Creek Nuclear Operating Corp.
ATTN: Manager Regulatory Services
P.O. Box 411
Burlington, Kansas 66839

Missouri Public Service Commission
ATTN: Assistant Manager
Energy Department
P.O. Box 360
Jefferson City, Missouri 65102

Kansas Corporation Commission
ATTN: Chief Engineer
Utilities Division
1500 SW Arrowhead Rd.
Topeka, Kansas 66604-4027

Office of the Governor
State of Kansas
Topeka, Kansas 66612

Attorney General
Judicial Center
301 S.W. 10th
2nd Floor
Topeka, Kansas 66612-1597

County Clerk
Coffey County Courthouse
Burlington, Kansas 66839-1798

Kansas Department of Health
and Environment
Bureau of Air & Radiation
ATTN: Public Health Physicist
Division of Environment
Forbes Field Building 283
Topeka, Kansas 66620

bcc to DMB (IE45)

bcc distrib. by RIV:

L. J. Callan
Branch Chief (DRP/B)
Section Chief (RIII, DRP/3C)
SRI (Callaway, RIII)
Project Engineer (DRP/B)
Branch Chief (DRP/TSS)
Director, WCFO
Resident Inspector
DRSS-FIPB
RIV File
MIS System
Leah Tremper (OC.LHT@, MS: TWFN 9E10)
PAO
SLO

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02/ /95		02/ /95		02/ /95							

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bcc to DMB (IE45)

bcc distrib. by RIV:

L. J. Callan
Branch Chief (DRP/B)
Section Chief (RIII, DRP/3C)
SRI (Callaway, RIII)
Project Engineer (DRP/B)
Branch Chief (DRP/TSS)
Director, WCFO
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DNGraves		DDChamberlain		ABBeach							
02/ /95		02/8/95		02/8/95							

OFFICIAL RECORD COPY

MEETING: WOLF CREEK NUCLEAR OPERATING CORPORATION

SUBJECT: REFUELING OUTAGE VII ACCOMPLISHMENTS AND MAINTENANCE RELATED TOPICS

DATE: FEBRUARY 2, 1995

ATTENDANCE LIST

(PLEASE PRINT CLEARLY)

NAME	ORGANIZATION	POSITION TITLE
D N Graves	NRC	Project Engineer
Otto L. Maynard	WCNOC	Vice President Plant Ops
Ronald W. Miller	WCNOC	Supt. Mechanical Maint.
Chester W Fowler	WCNOC	Manager Maintenance
JACK PIPPIN	WCNOC	MGR. IPS
KAMRAN DERKHSHANDEGAN	WCNOC	DAILY SCHEDULING
Donna Ward (L)	WCNOC	Outage Supt
DONNA JACOBS	WCNOC	SUPT. MAINT PLANNING
STEVE WIDEMAN	WCNOC	Supervisor Licensing
Richard Flannigan	WCNOC	Manager Reg. Svcs.
James Stone	NRC / IEB	Senior Project Manager
Thomas F. Westerman	NRC	Chief Engineering Branch
DALE POWERS	NRC	CHIEF, MAINTENANCE BRANCH
J. F. Ringwald	NRC	SRI
D. D. CHAMBERLAIN	NRC	BRANCH CHIEF
J.E. DYER	NRC	DEPUTY DIR DRP

Wolf Creek Nuclear Operating Corporation

Refuel VII and Maintenance

February 2, 1995

Wolf Creek Nuclear Operating Corporation

Refuel VII and Maintenance

February 2, 1995

Refuel VII and Maintenance

- **Introduction**
  - O. L. Maynard
- **Refuel VII**
  - D. J. Neufeld
- **On-Line Maintenance**
  - K. Derakhshandegan
- **Maintenance Mission and Remarks**
  - C. W. Fowler
- **Maintenance Changes and Activities**
  - D. Jacobs
- **Closing**
  - O. L. Maynard

Refuel VII

- **Outage Program Improvements**
  - Integrated Plant Scheduling Group
  - Outage Implementation Organization
  - Outage Awareness
  - Site Wide Outage Involvement
  - Scheduling Software
  - Process Improvements
  - Risk Awareness And Management

Refuel VII

- **Integrated Plant Scheduling Group**
- **Outage Implementation Organization**
  - Outage Control Center
  - Communications
  - Emergent Work Management
  - Window Managers

Refuel VII

Outage Program Improvements

Integrated Plant Scheduling Group	Personnel dedicated full-time to outage planning were able to enact significant improvements. Callaway and contract schedulers were brought in to assist in process.
Outage Implementation Organization	
Outage Control Center	Provided superb coordination and problem resolution.
Communications	Video monitors, wireless headsets, outage pagers, and corporate communications updates were very successful.
Emergent Work Management	Significant improvement We Went from 1841 to 2301 work requests and from 81 to 122 design changes.
Window Managers	In general, very successful planning, schedule creation, performance oversight.

Refuel VII

- **Outage Awareness**
  - Planning
  - Preparation
- **Site Wide Outage Support**
- **Scheduling Software**
  - Fragnets
  - Schedule retests, surveillances

Refuel VII

Outage Program Improvements

Outage Awareness	
Planning	Excellent awareness and buy in
Preparation	Management trending
Publicity	Group presentations
Site Wide Outage Involvement	We placed 125 Wolf Creek employees in temporary outage support positions.
Scheduling Software	
Fragnets	Comprehensive, resulted directly in better planning, coordination, and performance.
Schedule retests, surveillances	Significant improvements from previous outages.

Refuel VII

- **Process Improvements**
  - Main Feedwater Check Valve Test
  - Rod Drop Testing
  - RCS Boration
  - Underwater Vessel Flange Cleaning
  - RTD Time Response Testing And Cross Calibration
  - Vacuum Refill Of RCS
  - Contract Coordination

Refuel VII

Outage Program Improvements

Process Improvements	
Main Feedwater Check Valve Test	Saved 8 critical path hours.
Rod Drop Testing	Bank drops.
RCS Boration	Used 6000 gallons less acid, generated much less water to Radwaste
Underwater Vessel Flange Cleaning	
RTD Time Response Test And Cross Calibration	Saved 12 critical path hours.
Vacuum Refill of RCS	
Contract Coordinator	Contract scopes were beneficial.
Risk Awareness and Management	Planning, outage emphasis and awareness maintained at high level.

Refuel VII

- **Risk Awareness And Management**
  - Operating Procedures
  - Procedural Enhancements
  - Plant Enhancements
  - Containment Barrier
  - Schedule Enhancements
  - Administrative

Refuel VII

Risk Awareness and Management

Operating Procedures	Loss of Decay Heat Removal
	Loss of Electrical Power
	Fuel Handling Accident
	Shutdown LOCA
Procedural Enhancements	Backup nitrogen for Residual Heat Removal Flow Control Valves at midloop with fuel loaded
	Staged vent hoses on Residual Heat Removal Vent Valves
Plant Enhancements	Cavity Seal Ring
	Midloop level instrumentation
Containment Barrier	Equipment Hatch
	Penetration status
	Penetration pressure devices

Refuel VII

Risk Awareness and Management

Schedule Enhancements

Maintain 2 Containment Coolers available
Maintain 1 Recirculation Sump available
No early midloop with fuel loaded
Manage switchyard work relative to other work

Administrative

Preoutage Schedule review
Safety Schedule included time to boiling
Risk Awareness Determination / Contingency Plan
- Daily
- For cause

Outage Control Center awareness
- Outage Shift Manager
- Turnover Meetings

Performance based diesel generator maintenance

On-Line Maintenance

- **WORK GROUP'S STRENGTHS**
  - Work groups were responsive to immediate plant's needs.
  - Work groups were successful in implementing Priority 1 and 2 work requests

On-Line Maintenance

- **DAILY SCHEDULING GOALS**
  - Enhance coordination among work groups
  - Improve scheduling of priority 3 and 4 work requests to improve long term systems health
  - Improve scheduling of equipment/system outages for maintenance to minimize equipment OOS time

On-Line Maintenance

. ROLLING SCHEDULE

The criteria used to select these windows of opportunities include:

- Minimize Out-Of-Service time of equipment important to plant safety
- Provide sufficient opportunities to maximize system health
- Minimize impact on plant operations
- Align systems and components to minimize risks resulting from activities to cross train components
- Align activities to allow seasonal risks to be addressed
- Provide a frequency in scheduling activities to allow surveillances and preventive maintenance requirements to be met
- Align surveillances, preventive and corrective maintenance activities to minimize unnecessary equipment out-of-service time and minimize unnecessary equipment operation for retest requirements
- Provide maintenance opportunities commensurate with the maintenance history of the plant systems

On-Line Maintenance

- **ROLLING SCHEDULE**
  - Developed for operational risk management
  - Supported by PRA analysis
  - Identifies alignment of systems for maintenance and testing
  - Provides frequency of activities
    - Based on maintenance history of equipment
    - Ensures high system reliability
    - Minimizes system unavailability
  - Identifies train separation
  - Allows for seasonal risks
  - Minimizes repeated system/equipment outages
  - Minimizes system/equipment OOS time

On-Line Maintenance

- **OPERATIONAL RISK ASSESSMENT**
  - Decay heat removal systems
  - Reactivity and Inventory control systems
  - Electrical power systems
  - Support systems
  - Containment systems
  - Availability of Commercially significant systems

On-Line Maintenance

. COMPENSATORY MEASURES

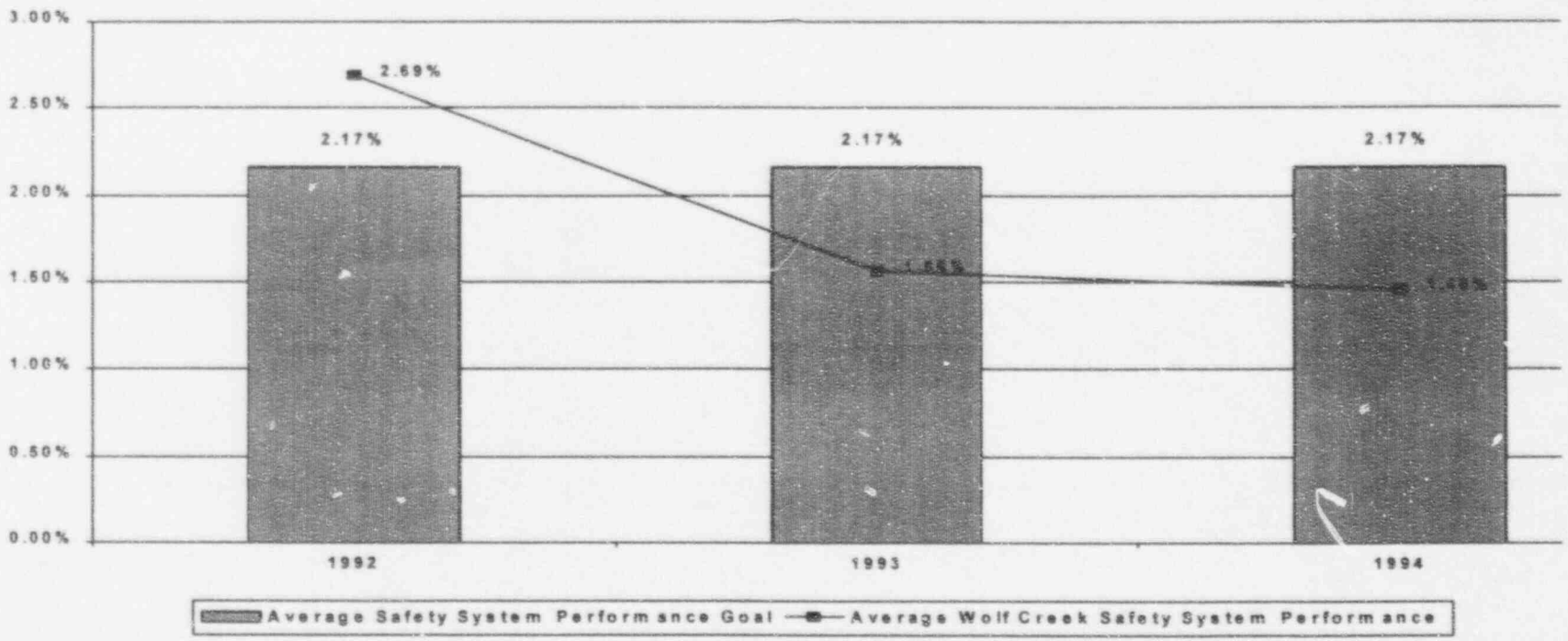
- Strict procedural controls
- Fragnet development
- Temporary modifications
- Assigning a team and a team leader
- Portable equipment
- Pre-job briefing
- Mock ups / dry runs
- Review of the health of the redundant train
- Round the clock coverage
- Plant shutdown or mode reduction

On-Line Maintenance

- **SUCCESSES IN DAILY PLANT SCHEDULING**
  - Improved coordination of activities among work groups
  - Improved pre-planning
  - Reduced work request backlog
  - Improved equipment/systems health
  - Improved Safety System Availability
  - Improved risk management

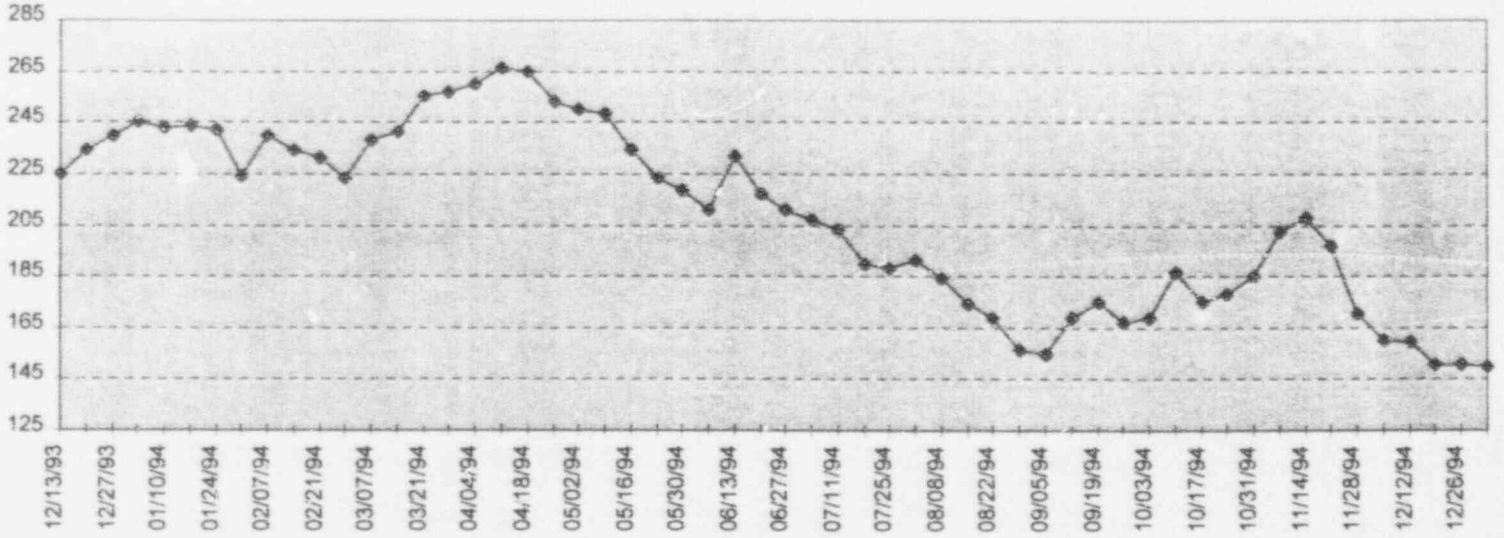
On-Line Maintenance

Average INPO Safety System Performance



On-Line Maintenance

SAFETY RELATED POWER BLOCK
CWRs



On-Line Maintenance

. WCNOC RISK MANAGEMENT PROGRAM

- Wolf Creek Risk Management program consists of:
  - Rolling schedule (first line of defense)
  - Weekly Schedule meeting (P2 meeting)
  - Daily schedule meeting (Plan of the day meeting)
  - Operational Risk Management procedure
  - Shift Supervisor

Maintenance
Mission Statement

Maintain and improve Systems, Structures and Components to assure safe, reliable and cost effective plant operations

Maintenance Changes and Activities

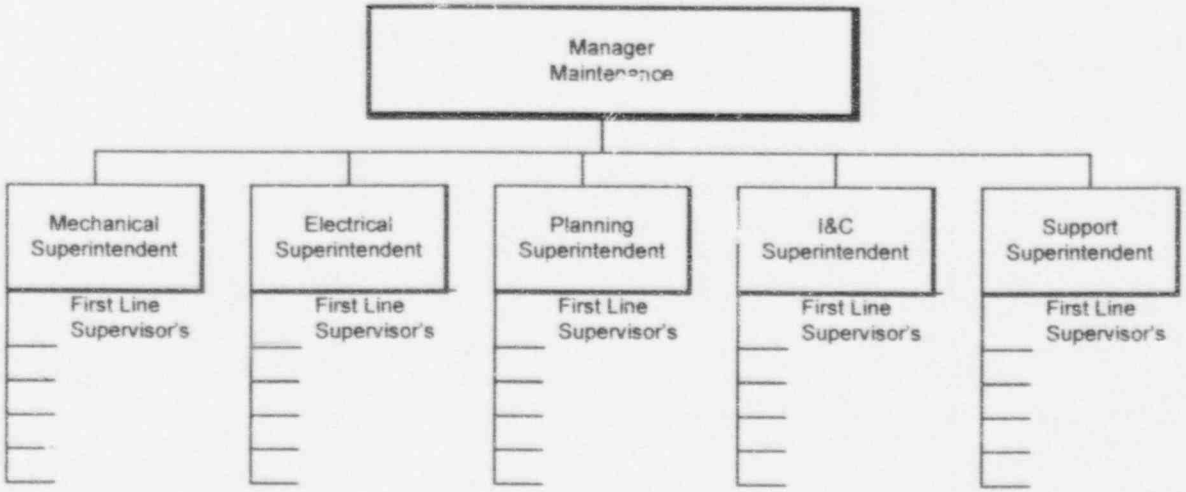
Changes In 1994

Addition Of 1st Line Craft Supervisors

- Replaced Working Leads
- Deliberate And Careful Selection Process
  - List of functions and accountabilities
  - Independent supervisory assessment testing
  - Past demonstrated performance
- Closer Oversight Of Field Work Activities
- More Responsive To Worker Concerns
- Organizational Consistency

Maintenance Changes and Activities

Maintenance Organization



Maintenance Changes and Activities

Changes In 1994 / 1995

Modifications Group Moved To Engineering

- Closer coordination of modification development
- Large capital contract jobs remain in engineering

Maintenance Changes and Activities

Changes In 1995

Central Maintenance Planning

- Replaces Department Planning
- Single Accountability And Ownership
- Work Package Development Consistency
- Multi-Discipline Work Package Coordination

Maintenance Changes and Activities

Changes In 1995

Implementation Of Electronic Work Controls

- Progress To Date
  - Corporate hardware conversion
  - Data model developed
- Major Changes
  - Two step process
    - Action requests
    - Work packages
  - Scheduling: Resource loaded at task level
  - Standard work package format
- Implementation Time Line
  - February - Data input: model design
  - March - Training
  - April - Functional

Maintenance Changes and Activities

Focus Of Efforts - 1994

Reduction Of Non Outage Power Block Corrective Work Requests

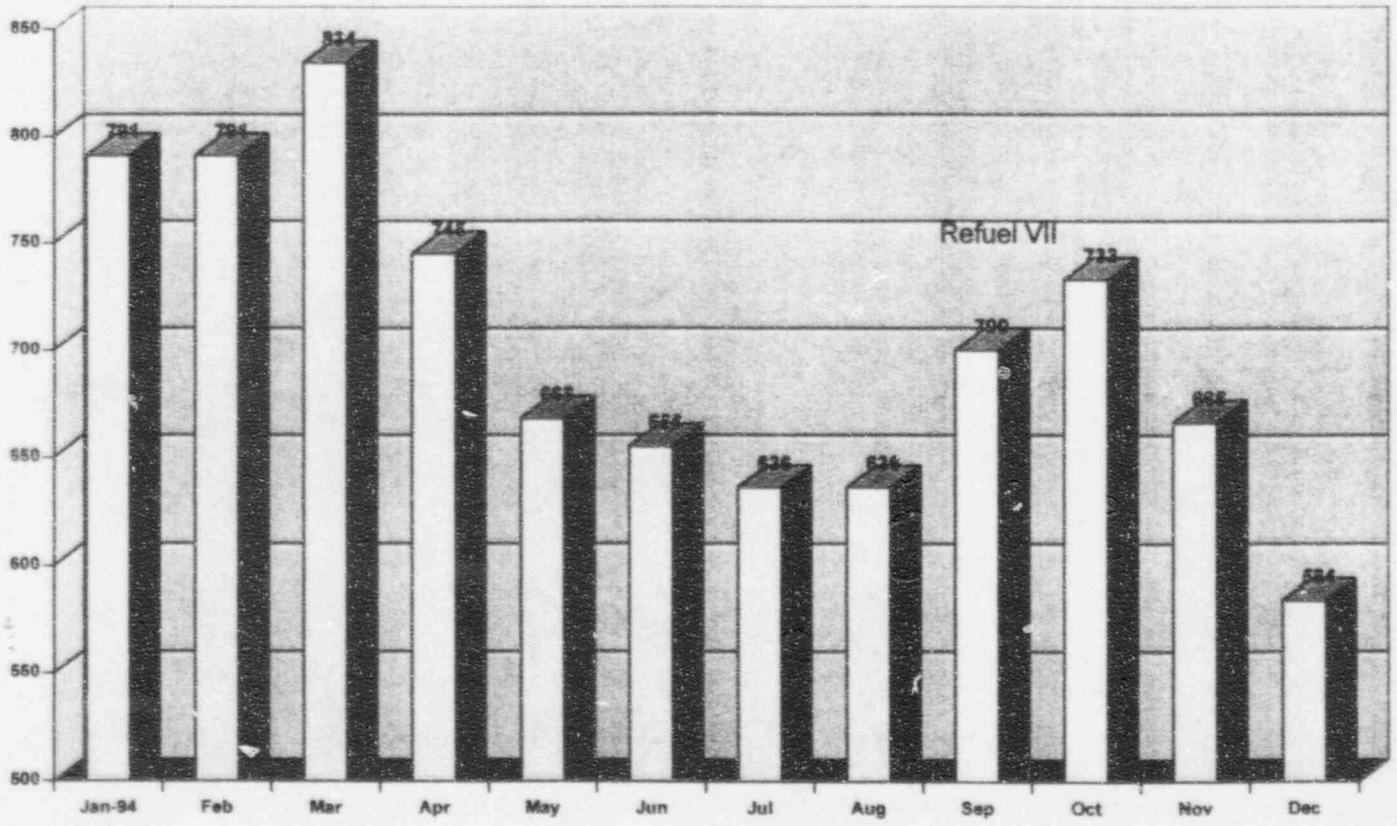
- Goal:
  - Reduce to less than 600 by the end of 1994
- Result:
  - 584 work packages open at the end of 1994

Preparation Of Refuel Seven Work Packages

- Goal:
  - Prepare Refuel VII work packages by August 15, 1994
- Result:
  - 1627 work packages ready to work by August 15, 1994

Maintenance Changes and Activities

Non-Outage Power Block Corrective Work Requests



Maintenance Changes and Activities

Focus Of Efforts - 1995

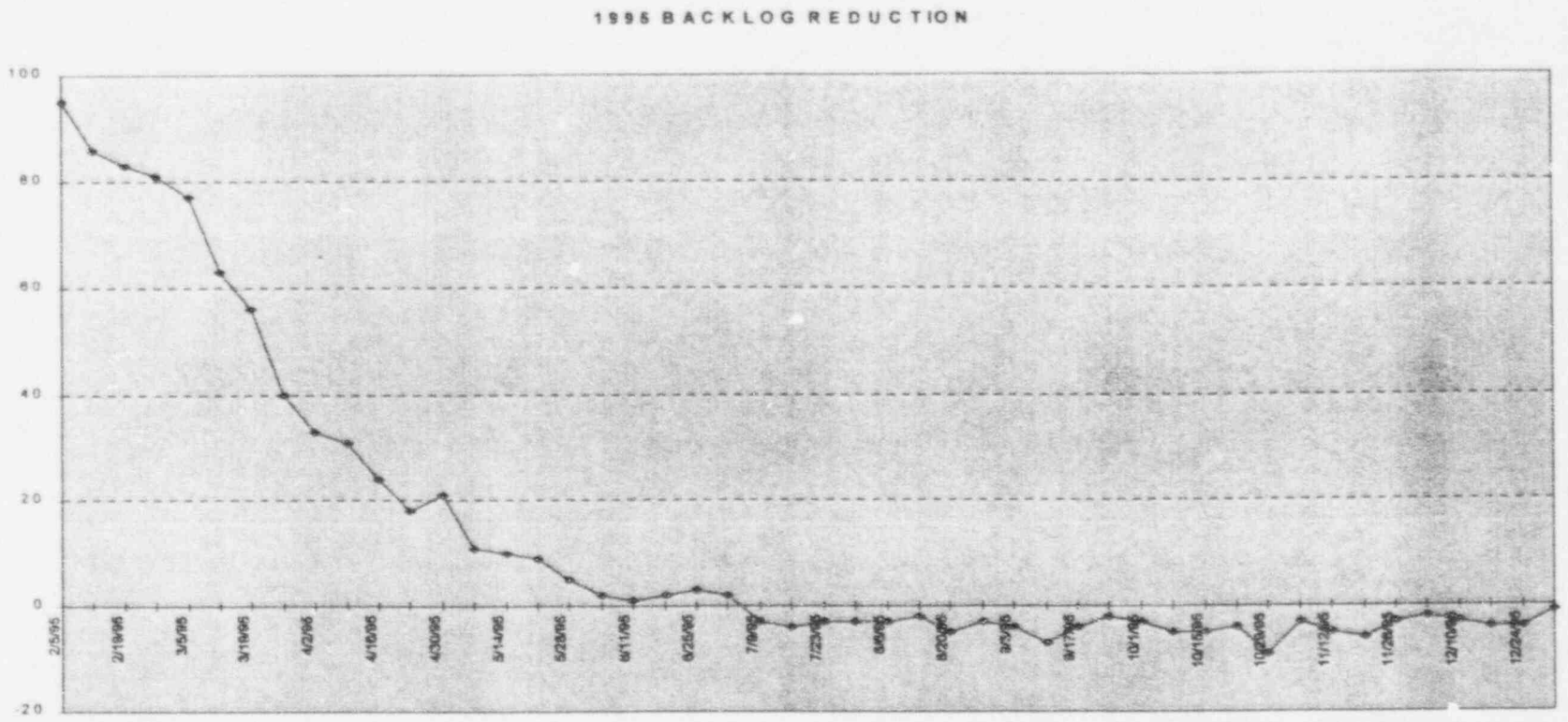
Backlog Reduction Of Non Outage Corrective Work Requests

- Goal:
  - Reduce backlog to zero (0) by August 11, 1995.

Preparation Of Refuel VIII Work Packages

- Goal:
  - Prepare Refuel VIII packages by December 15, 1995 - if received by December 1, 1995.

Maintenance Changes and Activities



Maintenance Changes and Activities

Focus Of Efforts - 1995

Improve Preventative Maintenance Through Strong Commitment To Reliability Centered Maintenance (RCM)

- Goal:
  - Complete RCM analysis for all systems scoped to Maintenance Rule by the end of 1995.

Personnel Error Reduction

- Goal:
  - Reduce personnel errors by 50%.

Maintenance Changes and Activities

Maintain and improve Systems, Structures and Components to assure safe, reliable and cost effective plant operations