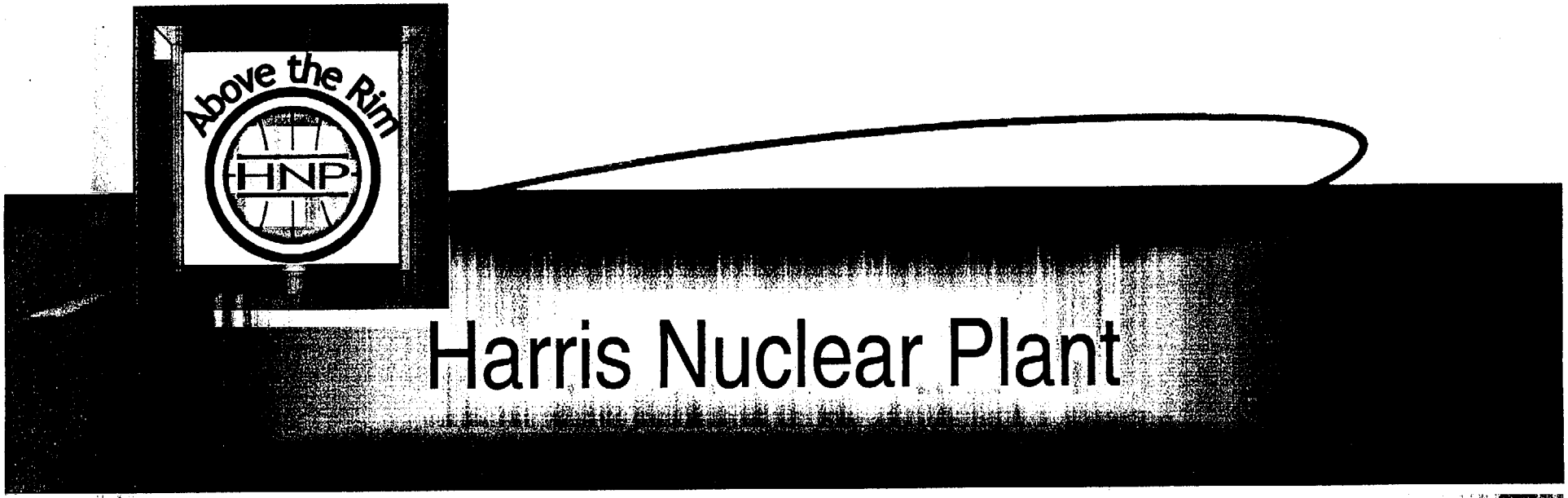


Harris Nuclear Plant

NRC Region II Visit

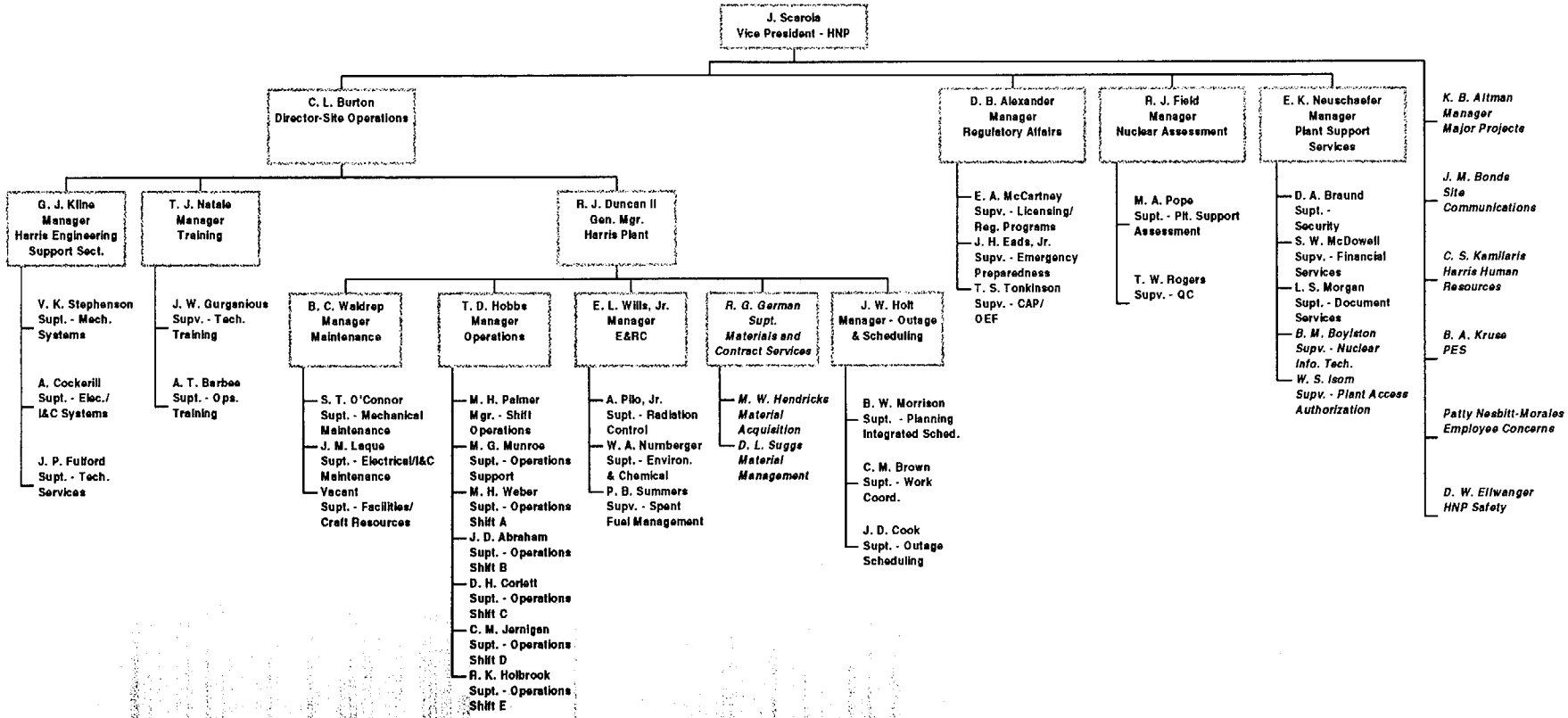
August 8, 2000

Enclosure 2

Agenda

- Jim Scarola
  - Management Changes
  - Focus Areas
  - Key Performance Indicators
- Bob Duncan
  - Plant Status
  - Refueling Outage Performance
  - Intolerance to Equipment Failure
- Terry Hobbs
  - Operational Focus
- Bruce Altman
  - RFO10 – SGR/PUR

Harris Nuclear Plant



Organizations located at HNP but reporting to another department are in italicized print.

Hnporg7-2000.ppt

Focus Areas

- Refueling Outage 10
- Zero Tolerance to Equipment Failures
- Self Evaluation
- Human Performance
- Backlogs

July 2000

Safety

Human Performance Events —	Site Exposure —	Personnel Injury Rate —	Safety Excellence —	Environ. Index —	INPO Performance Index ↓
EAC Unavail. —	HPI Unavail. —	AFW Unavail. —	Fuel Reliability Index —	Scrams/7000 Hrs Critical —	

Cost

Production Cost Mills/kWh ↑	Capital Costs ↑	Non-Fuel O&M —	Non-Fuel O&M Plus Capital ↑	Material Inventory Value —

Performance

MWhrs Produced —	Capacity Factor ↑	UCLF ↓	Capability Factor —	Thermal Performance —	Forced Outage Rate —

Human Resources

Station Overtime ↑	Vacancy Rate ↓	Workforce Turnover ↓

- On Target
- In Jeopardy
- Off Target
- Not Statused

↑ Improving
↓ Degrading
— Stable

NRC Performance Indicato

Initiating Events

≤ 3.0	1.7
Unplanned Scrams	

≤ 2.0	0
Scrams With Loss of Heat Removal	

≤ 6.0	0
Unplanned Power Changes	

Mitigating Systems

≤ 2.5	0.7
Emergency AC Power	

≤ 1.5	0.4
High Pressure SI Pumps	

≤ 2.0	0.3
AFW Pumps	

≤ 1.5	0.3
RHR Pumps	

≤ 5.0	1
Functional Failures	

Barrier Integrity

≤ 500	0.1
RCS Specific Activity	

≤ 500	2
RCS Identified Leakrate	

Continued...

NRC Performance Indicators

...Continued

Emergency Preparedness

≥90.0	93.3
Drill/Exercise Performance	

≥80.0	94.7
ERO Drill Participation	

≥94.0	98.6
Notification System Reliability	

Occupational Radiation Safety

≤2	0
Occupational Exposure Control	

Public Radiation Safety

≤3	0
RETS/ODCM Effluent Occurrences	

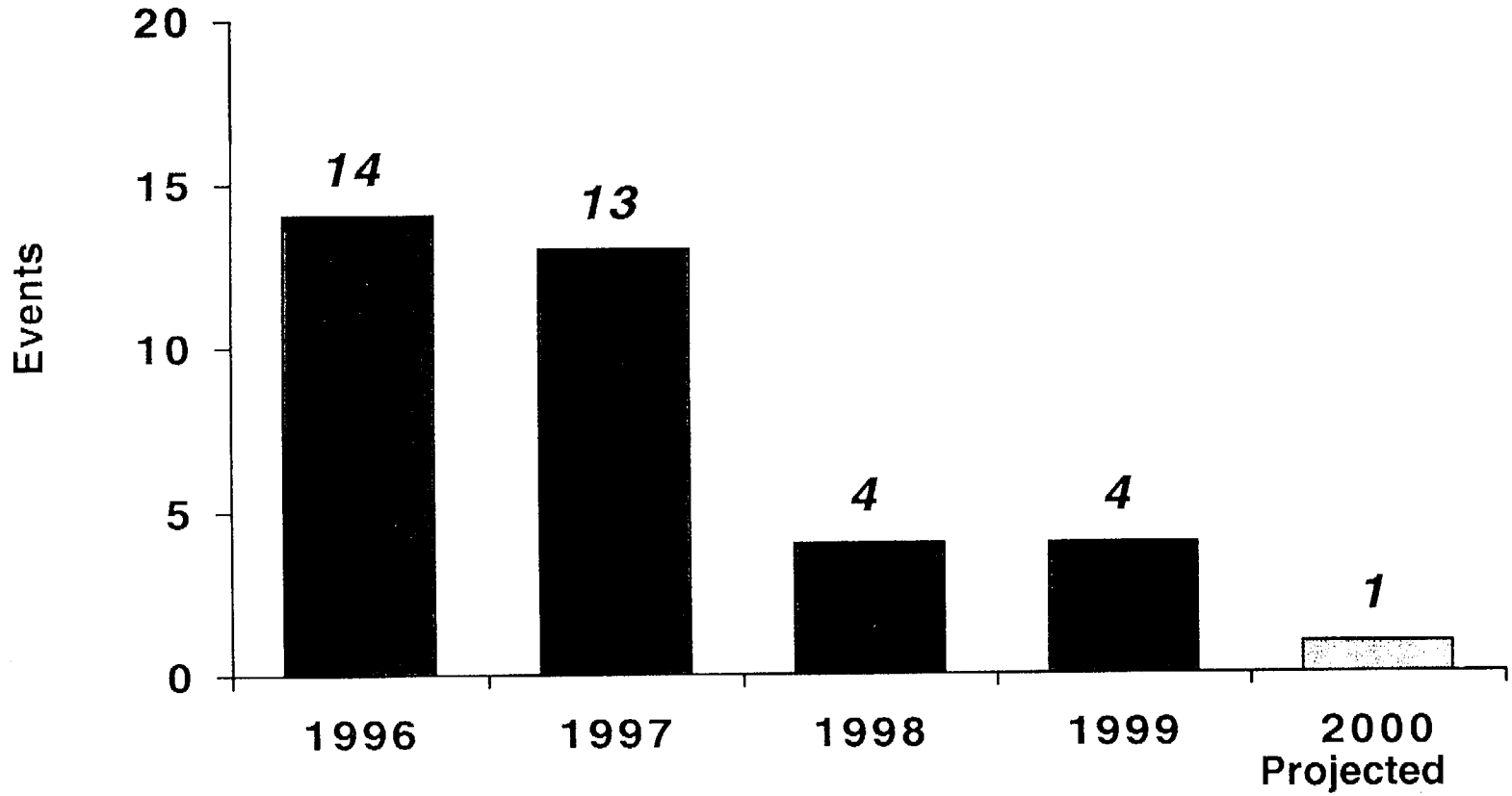
Physical Protection

≥0.80	0.021
Security Equipment Performance	

≤2	0
Personnel Screening Program	

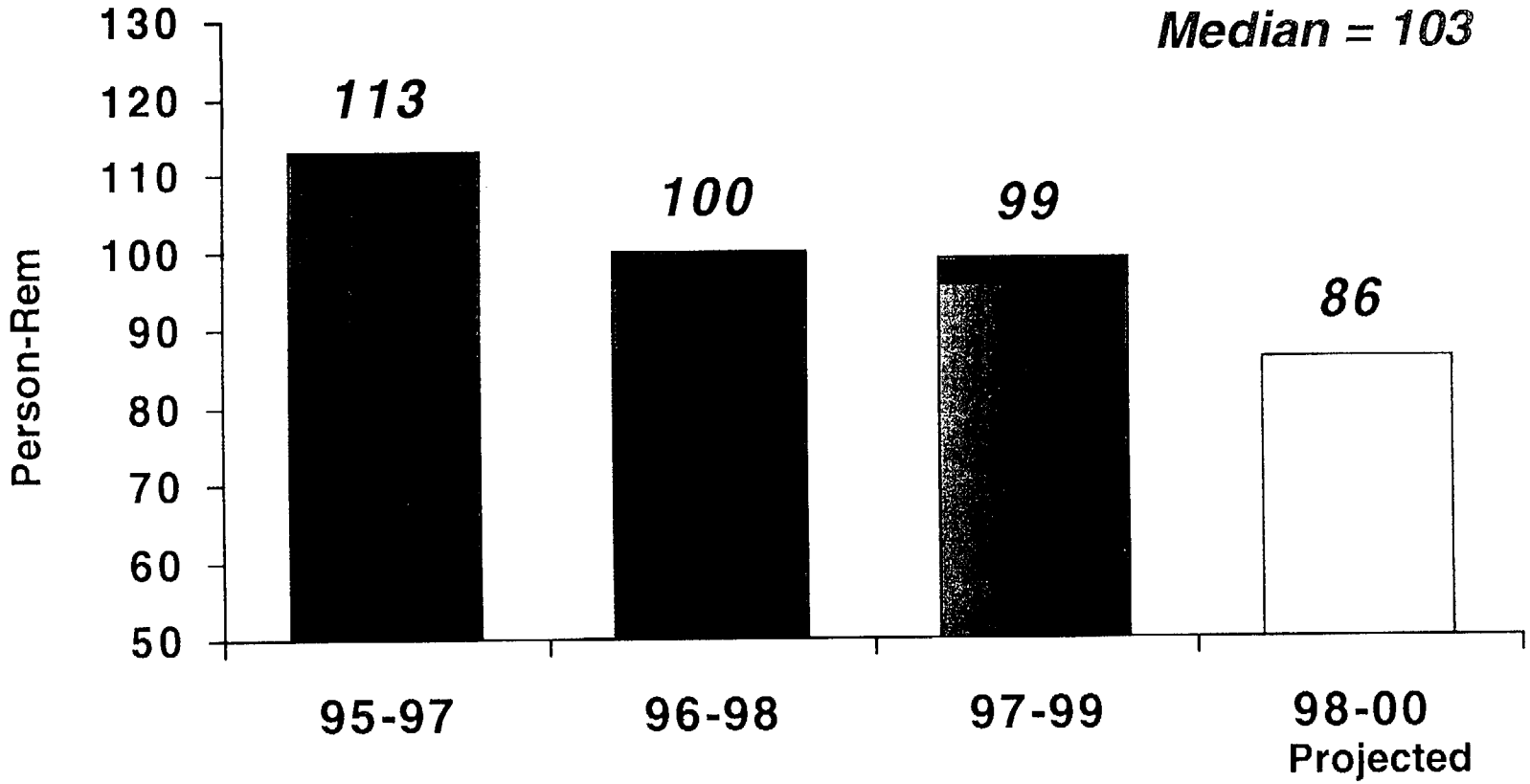
≤2	0
FFD/Personnel Reliability Program	

Human Performance Events

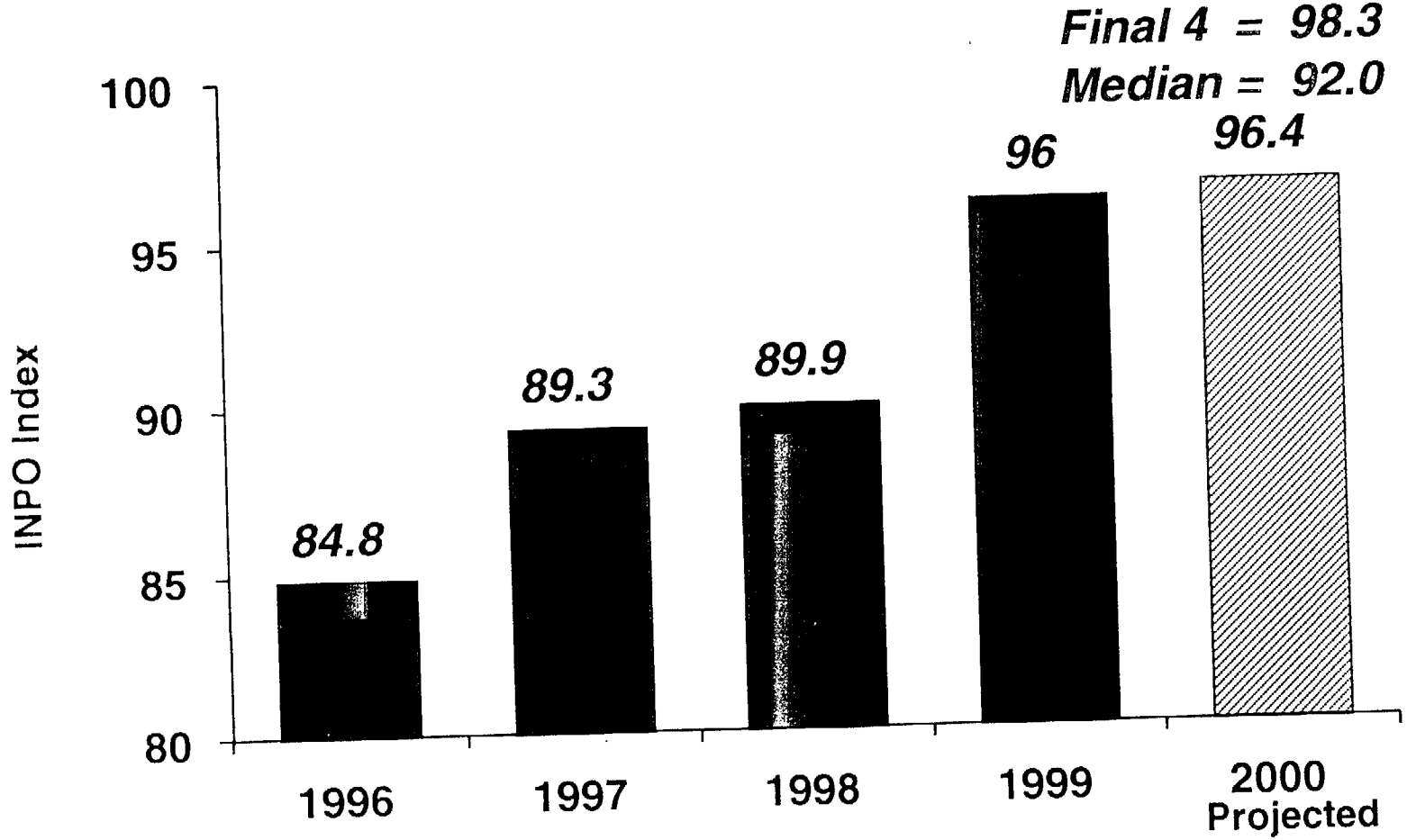


Radiation Exposure

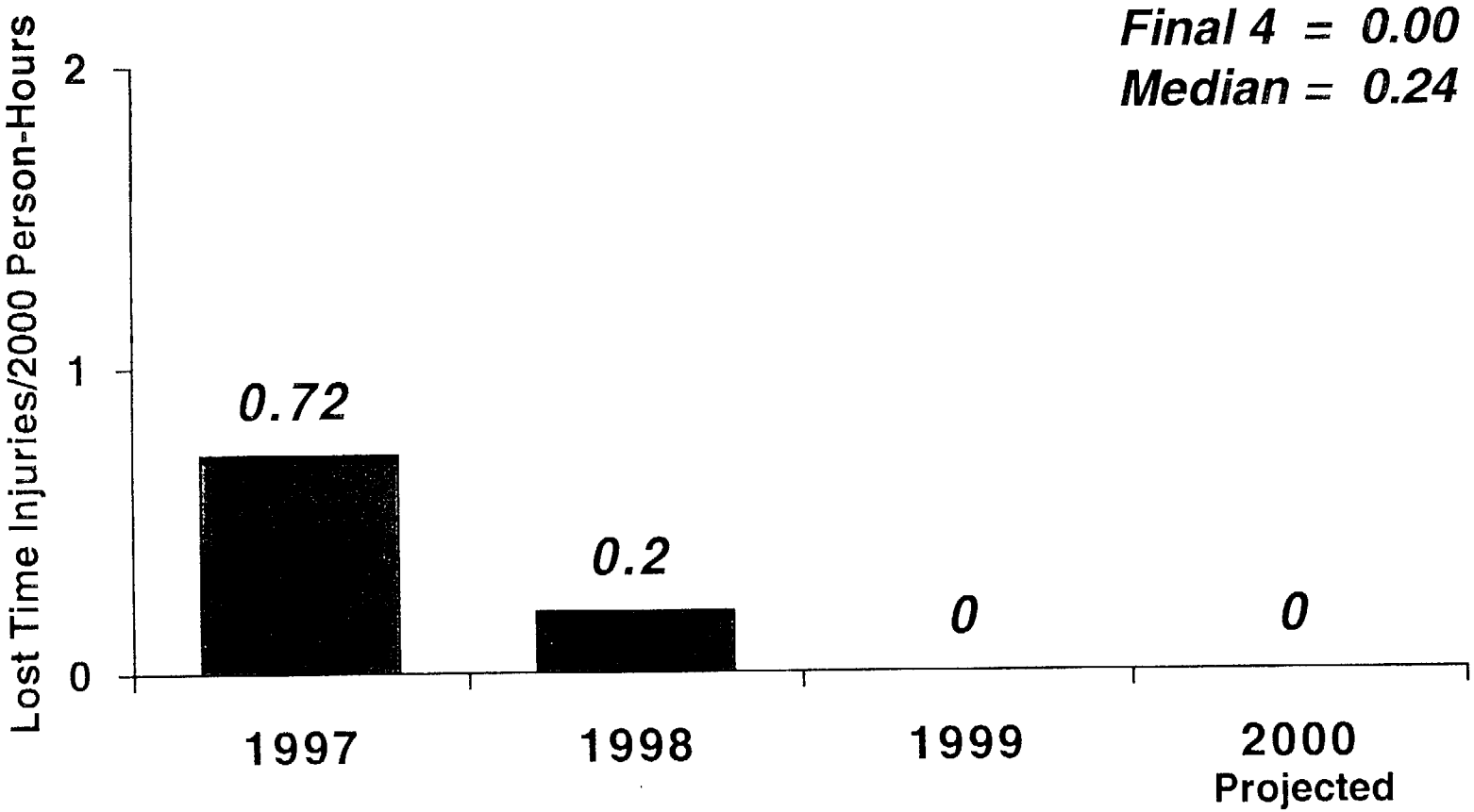
Final 4 = 44
Median = 103



INPO Performance Index

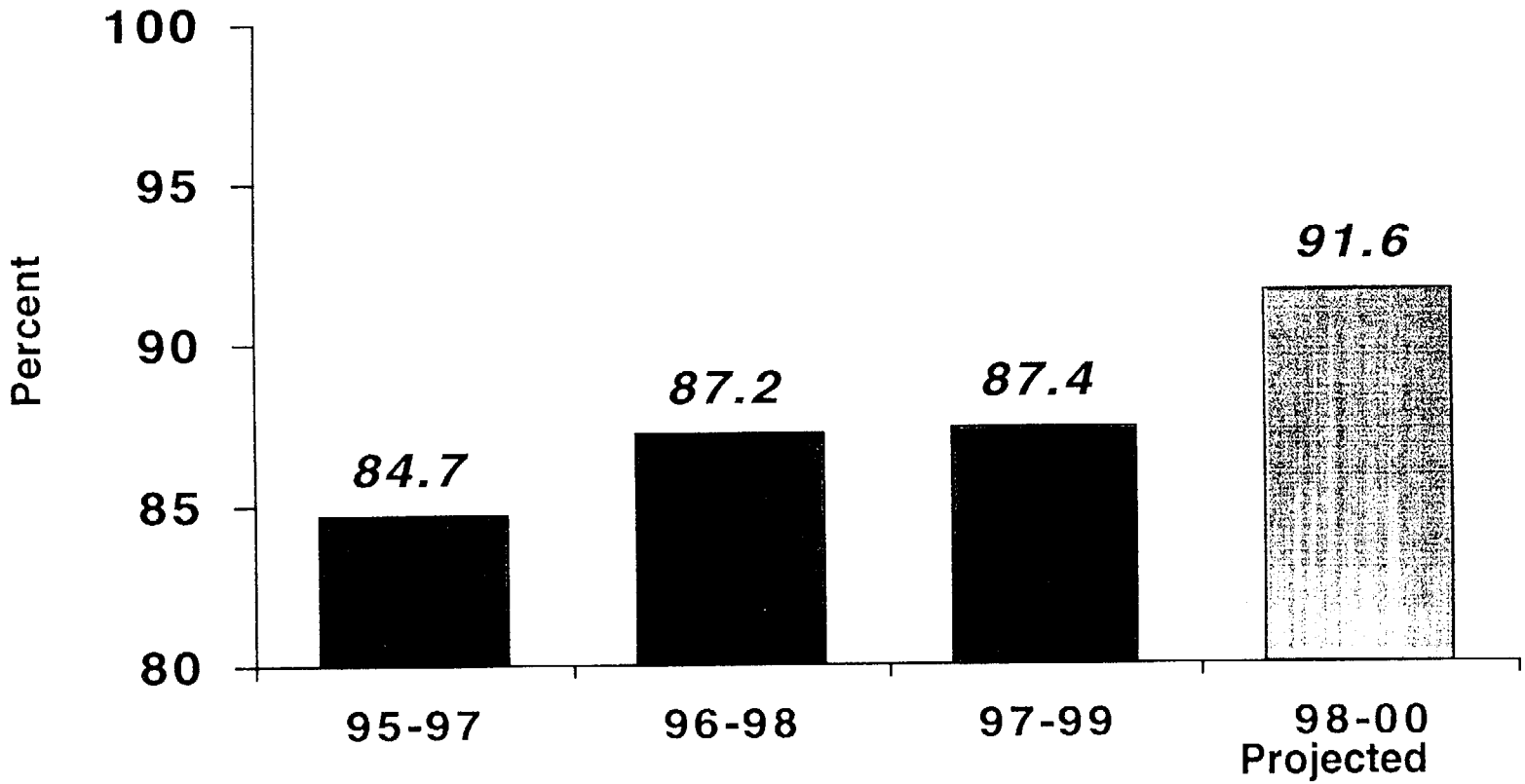


Lost Time Injuries



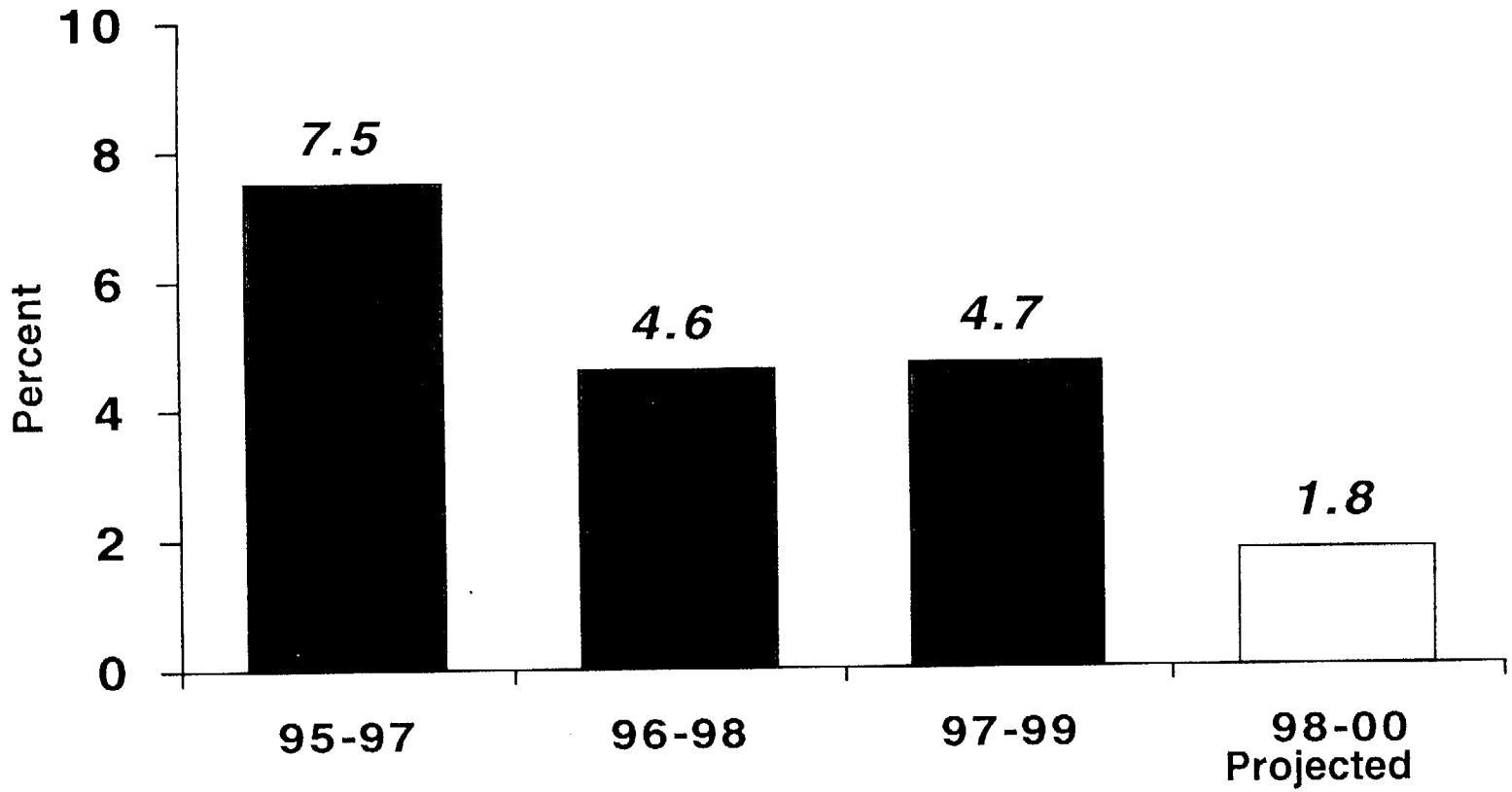
Capability Factor

Final 4 = 93.5
Median = 87.1



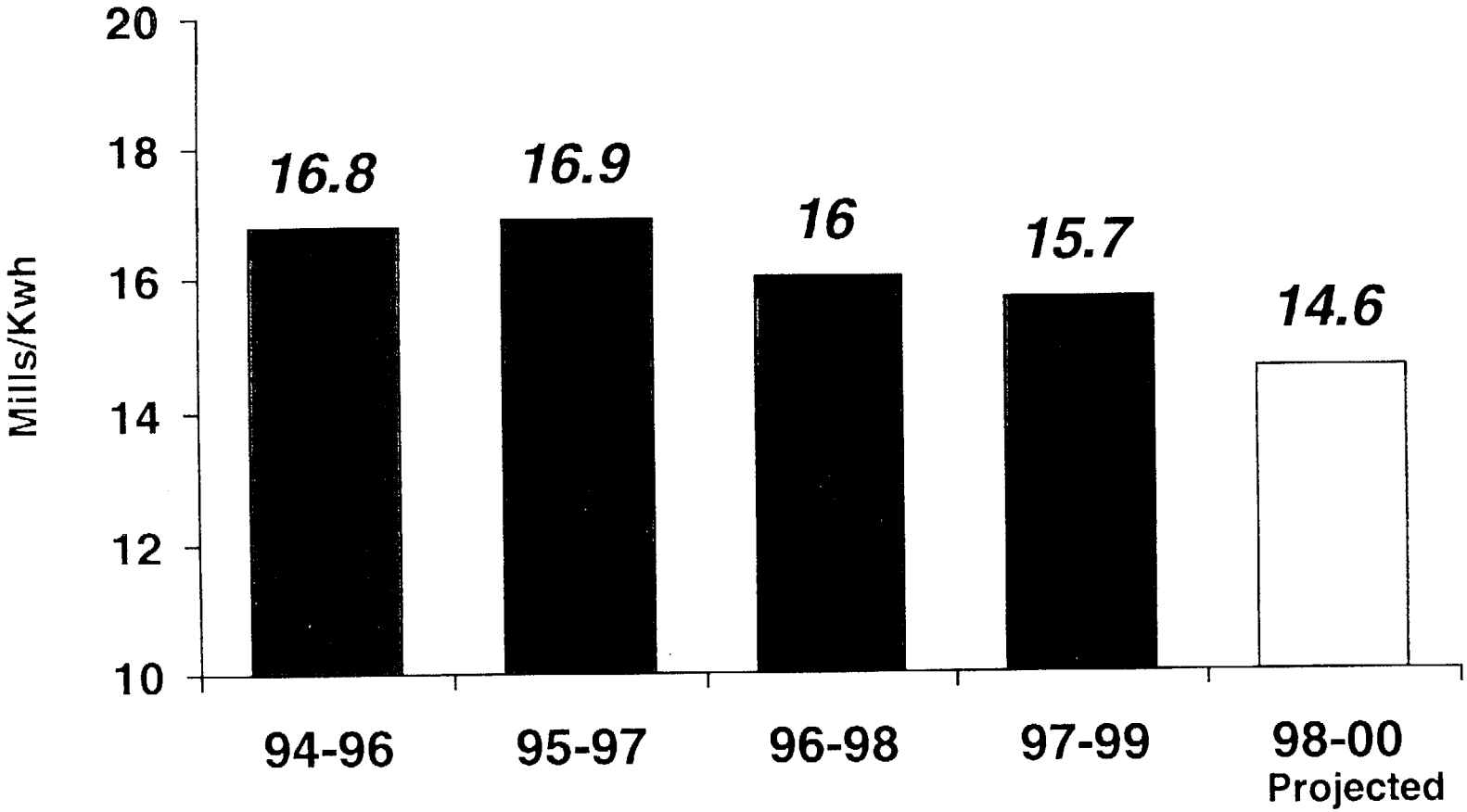
UCLF

Final 4 = 0.8
Median = 4.1



Cost

Final 4 = 13.4
Median = 18.0



Plant Status

- Full Power
- Continuous Run - 47 Days (On-Line 6/21/00)
- 81.7% June YTD Cap. Factor (Target 76.7%)
- 95 Days Without a Station Level HPE
- 2.3 Million Hours Worked Without a Lost Time Injury

June Manual Trip

- June 20
- Diode Failure inside solenoid valve caused blown fuse
- Root cause: Random manufacturing defect in coil diode
- Excellent Operator Response
- Excellent Plant Response
  - Equipment
  - Personnel Performance

Refueling Outage 9

	Goal	Actual
Safety		
Station Level HPEs	0	1
OSHA Recordable Accidents	≤ 2	3
Radiation Exposure (Pers. Rem)	≤100	89
Production		
Outage Duration (Days)	≤ 28	27
Cost		
O&M Cost ($ Millions)	≤ $17.2M	$16.9M
Other		
Completion of Original Scope (%)	>98	99.1
Radwaste Generation (m^3)	<40	35

Zero Tolerance to Equipment Failures

- Culture
- Equipment Challenges (Transients/Forced Outages)
- Trending and Monitoring
- Preventative Maintenance Optimization
- Predictive Maintenance
- Life Cycle Management (Equipment Obsolescence)

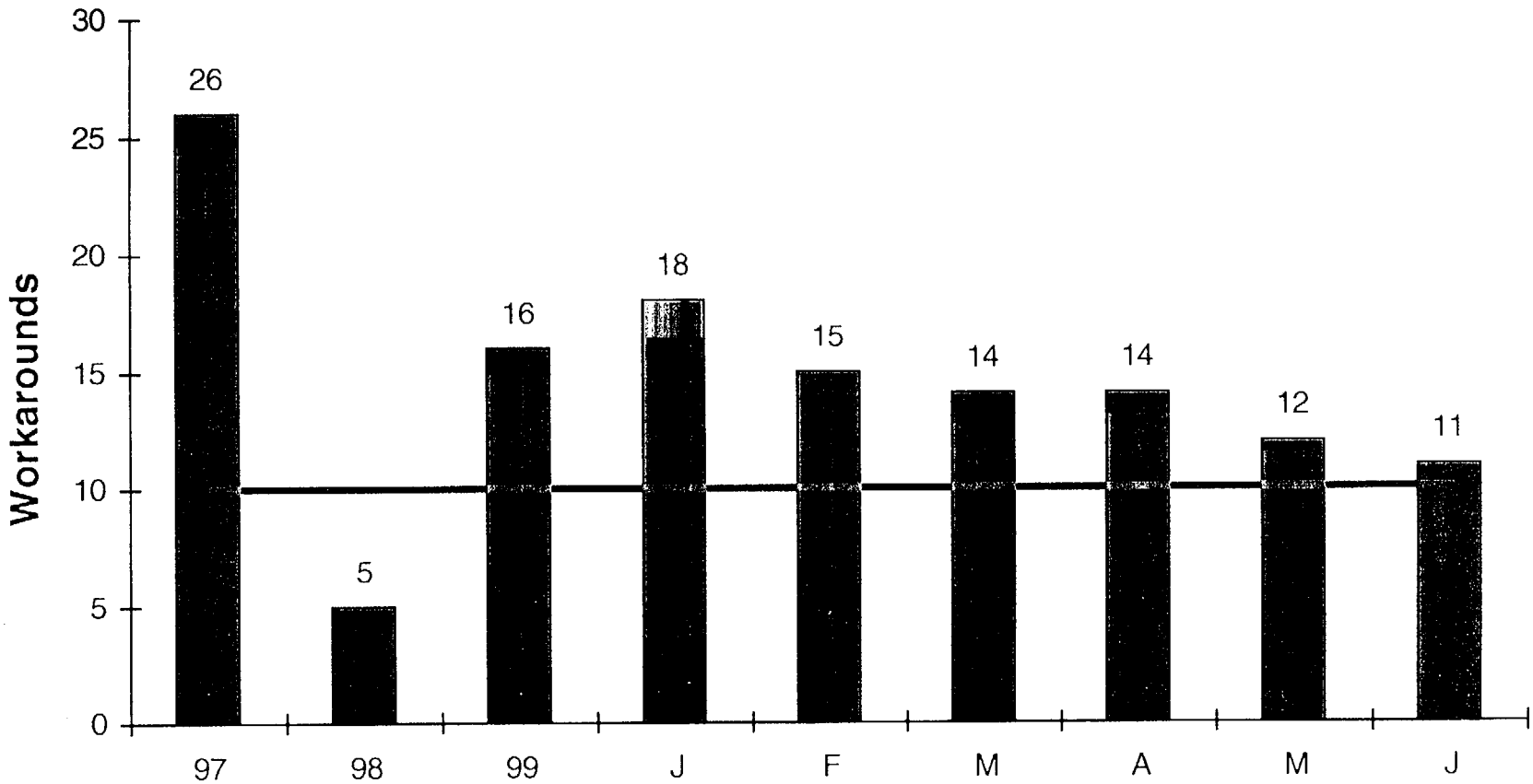
RFO9 Equipment Improveme

- MS Condenser Dump Valves Improvement
- Elimination of Condenser Vacuum Pump High Discharge Temperature
- MFIV Replacement
- Main Steam PORV Seat Leakage Resolution
- MFRV Trim/Actuator Replacement
- Replacement of Containment Air Handler ESW Drains and Vents
- S/G Blowdown AOV Improvement
- Heater Drain AOV Improvements
- Permanent Cooling of Turbine E/H Fluid Reservoir
- Several MOV Modifications to Improve Margin
- BOP Piping Replacement/Upgrades due to FAC
- Reactor Vessel Stuck Stud Removal
- Cooling Tower Heat Removal Improvements
- 'A' Condensate Pump Hi Vibration
- Main Transformer Degraded Wiring Replacement
- Sudden Pressure Relay Problem Resolution

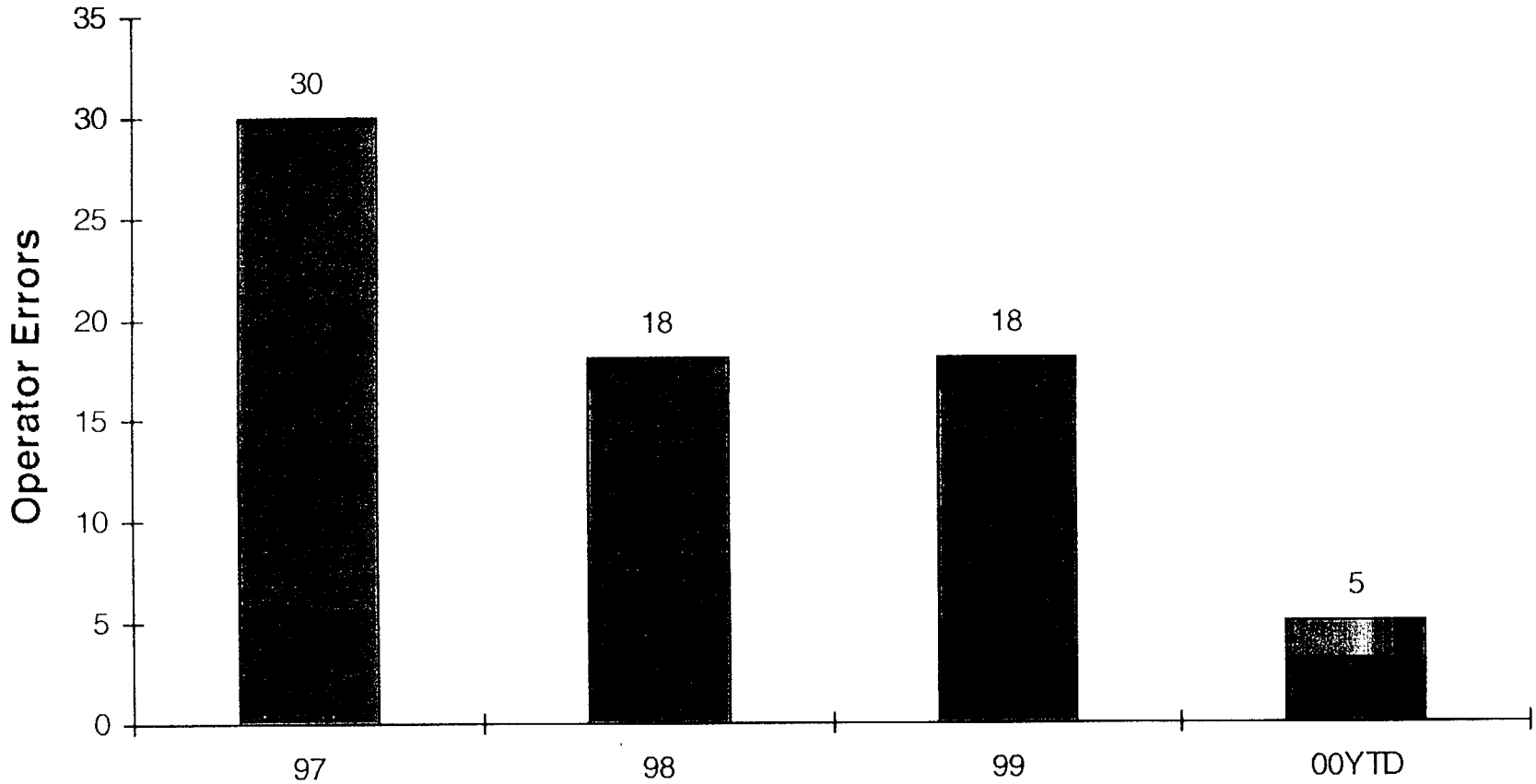
Operator Performance

- Performance Indicators
  - Operator Workaround Arounds
  - Operator Human Performance Errors
  - Clearance Errors
  - Procedure Backlog
- Performance Improvements
  - March 1999 – Automatic Reactor Trip
  - December 1999 – Manual Reactor Trip
  - June 2000 – Manual Reactor Trip
- Operator Training

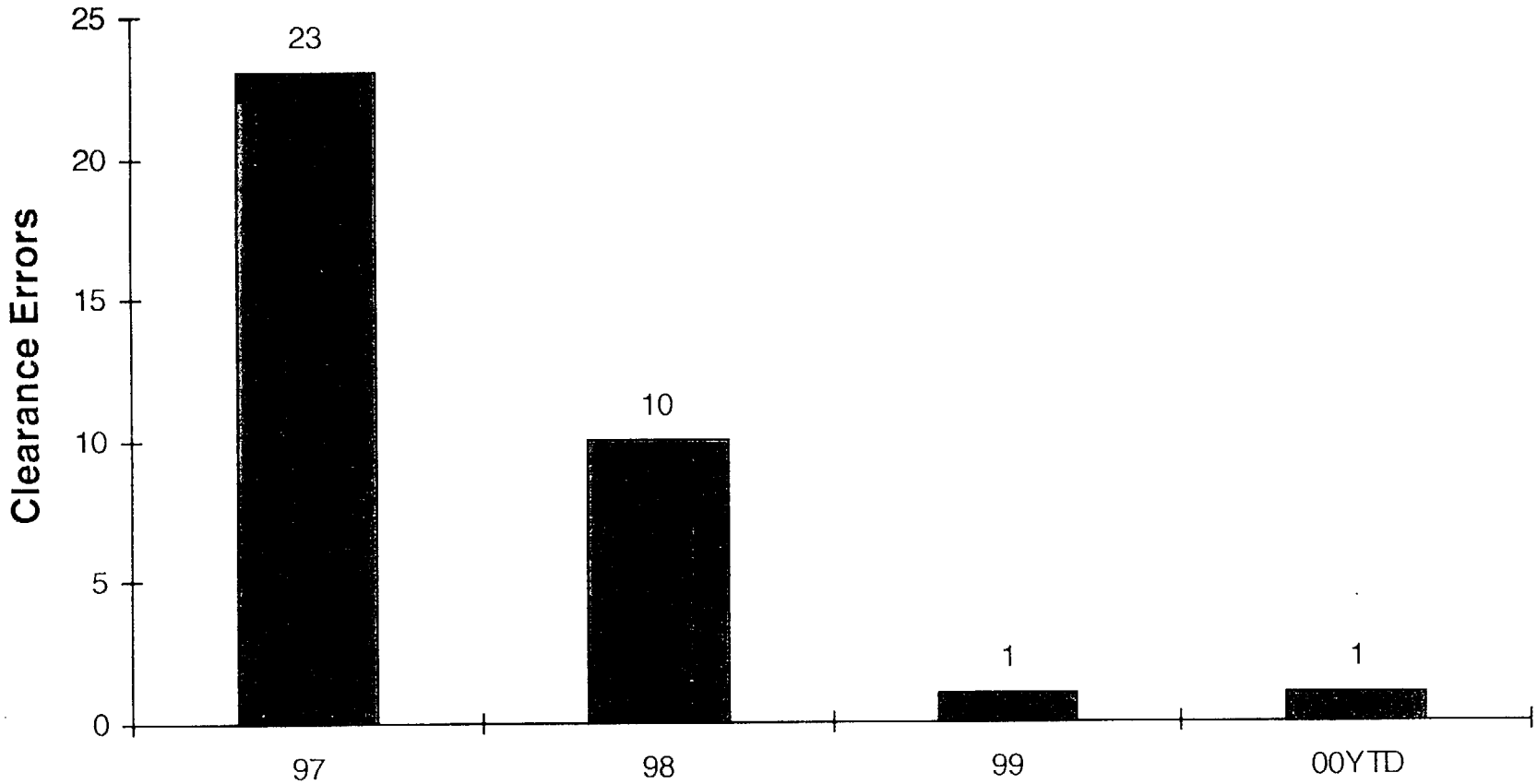
Operator Workarounds



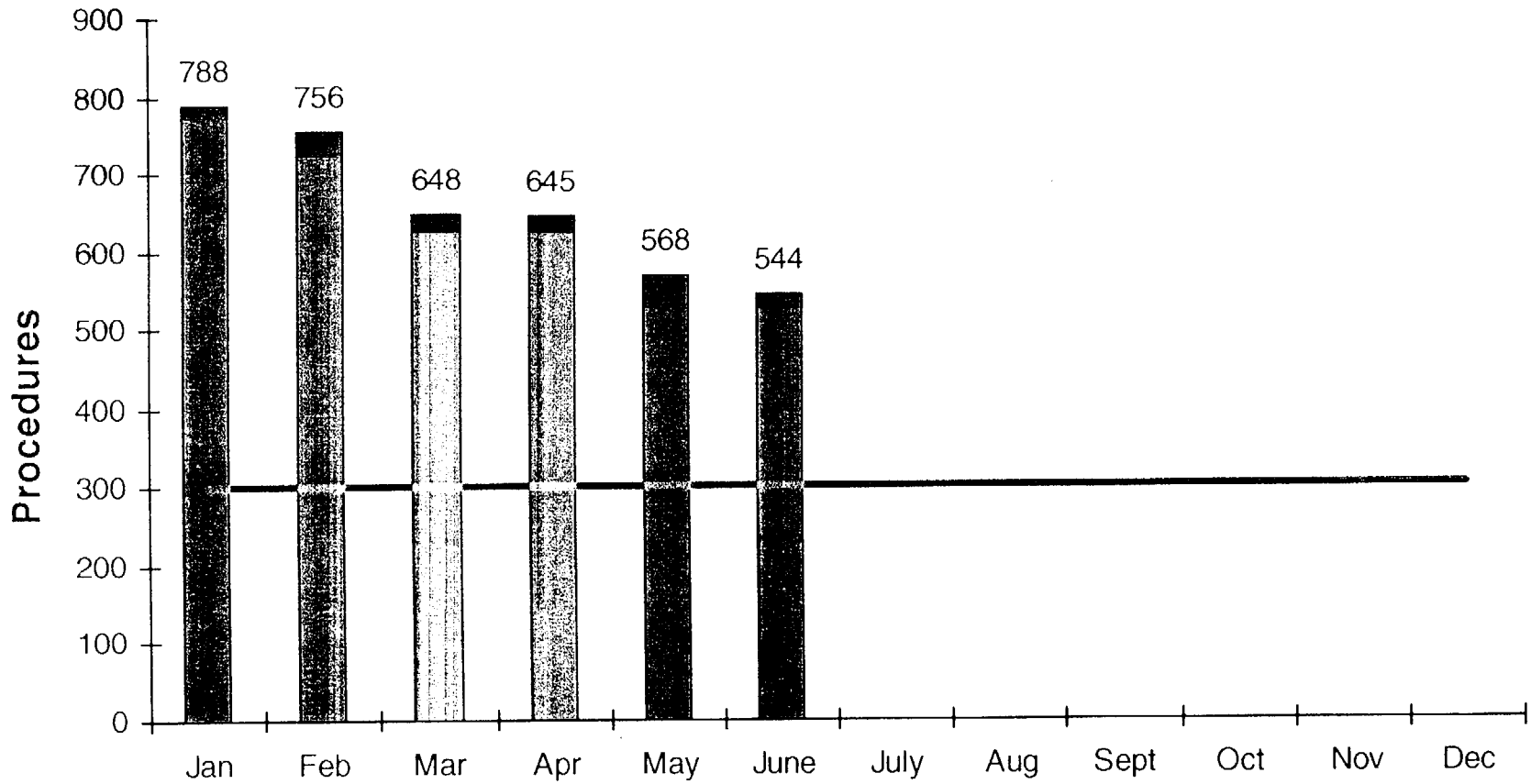
Operator HP Errors



Clearance Errors



Operations Procedure Backlog



Improvement Initiatives

- Operator Performance
- Operations Procedures
  - Standards
  - Content
  - Format
  - Results in Crew Consistency
- Oversight of the Transient Combustible Program

Operational Focus

- Maintain Daily Focus
  - Sensitive Activities
  - LCO Management
  - Emergent Work
  - Condition Report Review
- Personnel Development
  - Operator Retention and Hiring
  - Rotational Positions
  - Succession Planning

Refueling Outage 10

- Steam Generator Replacement
- Power Uprate
- Condenser Retubing

Steam Generator Replacement

- Overview
  - Westinghouse Delta 75
  - Bechtel Project AE
  - Condenser Retubing
  - Implementation Fall 2001 (RFO 10)
- Benchmarking
  - Salem
  - Almaraz
  - Byron
  - Braidwood
  - D. C. Cook
  - Farley

SGR – Current Activities

- New Generators on Site
- Engineering Design in Progress
- Implementation Planning in Progress

Power Uprate Project

- Overview
  - Increase Power by 4.5%
  - NSSS Power to Increase from 2785 to 2912.4 MWth
  - Station Electrical Output to Increase by 40.3 Mwe
- Benchmarking
  - Farley

Power Uprate Project
Current Activities

- Analysis Work Nearing Completion
- Modifications Identified
  - Main Feedwater Pump Impeller
  - CCW Pump Impeller
  - Main Transformer Cooling
  - Turbine DEH Software Changes
  - Isophase Bus Duct Cooling
  - Set Point Changes
- Engineering Phase In-Progress

Common Activities Licensing

- Separate Submittals for SGR and PUR
- Farley Uprate Used as Model
- PNSC Subcommittee Review
- Submit September 2000
- Approval by September 2001

Common Activities 2001 Schedule

- Complete Design Work - March
- Mobilize and Begin Temporary Facility Construction - March
- Complete Implementation Planning - July
- Complete Pre-outage Preparations, Prefabrication, and Training - August
- RFO 10 - September Through November
- Closeout - December

Closing Remarks

- Strengthened Self Evaluation Culture
- Invest for Long Term Success
- Improvement Evident in Performance Measures