November 22, 1996

Duke Power Company
ATTN: Mr. T. C. McMeekin
Vice President
McGuire Site
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

Gentlemen:

SUBJECT: MEETING SUMMARY - MCGUIRE NUCLEAR STATION

Dear Mr. McMeekin:

This refers to the open Management meeting that was conducted at the NRC Region II Office in Atlanta, Georgia on November 8, 1996, to discuss the status and results of performance initiatives at McGuire. A list of attendees and a copy of your presentation handout are enclosed.

It is our opinion that this meeting was beneficial as it provided the NRC staff with a good overview of your self assessment of performance at McGuire identifying those areas where progress has been made, strengths are discerned, and challenges remain.

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

Should you have any questions concerning this letter, please contact us.

Sincerely,

Original signed by:
L. D. Wert, Acting Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos. 50-369, 50-370
License Nos. NPF-9, NPF-17

Enclosures: 1. List of Attendees
2. Licensee Presentation Handout

cc w/encls: (See page 2)

IE45

cc w/encl 1:
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L. Wert, RII
N. Economos, RII
R. Baldwin, RII
NRC Resident Inspector

Distribution w/encls 1 & 2:
PUBLIC

OFFICE	RII:DRP											
SIGNATURE												
NAME	SRudisail											
DATE	11 / 20 / 96		11 / / 96		11 / / 96		11 / / 96		11 / / 96		11 / / 96	
COPY?	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\MTGSUM.MCG

LIST OF ATTENDEES

NUCLEAR REGULATORY COMMISSION

S. Ebneter, Regional Administrator, Region II (RII)
J. Johnson, Deputy Director, Division of Reactor Projects (DRP), RII
A. Gibson, Director, Division of Reactor Safety (DRS), RII
L. Wert, Acting Chief, Branch 1, DRP, RII
H. Christensen, Chief, Maintenance Branch, DRS, RII
K. Barr, Chief, Plant Support Branch, DRS, RII
S. Shaeffer, Senior Resident Inspector, McGuire, DRP, RII
D. Forbes, Reactor Inspector, Plant Support Branch, DRS, RII
S. Rudisail, Project Engineer, DRP, RII
H. Berkow, Director, Project Directorate II-2, Nuclear Reactor Regulation (NRR)
V. Nerses, Project Manager, Project Directorate II-2, NRR

DUKE POWER COMPANY

E. Geddie, Plant Manager, McGuire Nuclear Station (MNS)
B. Dolan, Safety Assurance Manager, MNS
R. Jones, Operation Superintendent, MNS
M. Nazar, Maintenance Superintendent, MNS
P. Herran, Engineering Manager, MNS
J. Thrasher, Modifications Engineering Manager, MNS
J. Boyle, Engineering Manager, Civil, Electrical and Nuclear, MNS
J. Snyder, Regulatory Compliance Manager, MNS
M. Kitlan, Regulatory Compliance Manager, Catawba Nuclear Station

Enclosure 1

McGUIRE NUCLEAR STATION

SELF ASSESSMENT PRESENTATION

November 8, 1996

\\MNSF1\SRG\Bonnie\Presents\SALP1196\CVR1196.PPT

AGENDA

- INTPODUCTION — EMG
- 2EOC10 REFUELING OUTAGE REPORT — EMG
- SELF ASSESSMENT:
  - ENGINEERING — PRH
  - OPERATIONS — RAJ
  - MAINTENANCE — MKN
  - PLANT SUPPORT — BJD
  - SELF ASSESSMENT AND CORRECTIVE ACTION PROGRAMS — BJD
- WRAP-UP — EMG

NRC / INDUSTRY ISSUES

- UFSAR ACCURACY
- LICENSING BASIS COMPLIANCE
- 10CFR 50.59 PROCESS
- STANDARDIZED TECH SPEC

McGuire Performance Measures - September, 1996

Vision - "To Be World Class"

- Production Cost in Top 10 in 1996 (pg. 1)
- Capacity Factor in Top Quartile in 1996 (pg. 2)
- INPO Rating in Top Quartile in 1996 (pg. 23)
- NRC SALP Score in Top Quartile by 1997 (pg. 24)
- Zero Recordable Injuries by 1998 (pg. 3)
- Zero Reportable Environmental Incidents by 1998 (pg. 34)

Team Effectiveness

EMPLOYEE INJURIES $ (Birmingham) 3	PERSONNEL EXPOSURE (Geddie) 4	EMPLOYEE EFFECTIVE. (Birmingham) 5	BUSINESS EXCELLENCE ASSESSMENT (Weidler) 6

Operating Excellence - Nuclear System

GENERATION (EFFECT. FULL POWER DAYS) $ (Geddie) 7	OUTAGE TARGETS (Geddie) 8	NUCLEAR SYSTEM EVENTS $ (Dolan) 9	PERFORMANCE INDICATOR INDEX $ (Herran) 11	INPO RATING (McMeekin) 23	SALP SCORE (McMeekin) 24

Operating Excellence - Cost Control

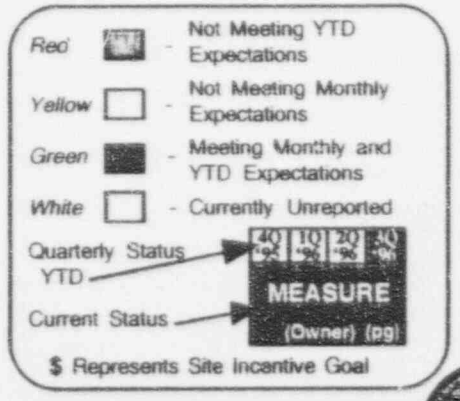
SYSTEM NON-FUEL O&M BUDGET $ (Utterback) 25	MARKET BASED NON-FUEL O&M BUDGET (Utterback) 26	SYSTEM FUEL COST (Utterback) 27	NON-MAJOR CAPITAL SPENDING (Utterback) 28	201's COMPL WITHIN ESTIMATE (Utterback) 29	STEAM GEN. REPLACEMENT COST (Geddie) 33

Stewardship

REPORTABLE ENVIRON. INCIDENTS (Dolan) 34	SOLID RADWASTE (Geddie) 36	RADIATION RELEASE INDEX (Geddie) 37	PAR / CIS SURVEY (McSwain) 38

Site Focus - The Biggest Barriers to Achieving Our Vision

OPERATIONAL FOCUS (Geddie) 39	SYSTEM RELIABILITY (Herran) 40	WORK MANAGEMENT (Geddie) 48	TRAINING EFFECTIVE. (White) 52	SELF IMPROVEMENT CULTURE (McMeekin) 54
MODIFICATIONS (Herran) 56	INVENTORY MANAGEMENT (Foster) 58	FINANCIAL MANAGEMENT (Utterback) 59		



INPO SELF-ASSESSMENT

- **Highest level of Self-Assessment**
- **Previous Findings turned to Strengths**
- **Strengths Recognized**
  - Operational Focus
  - Performance Indicator Improvement
  - Self-Assessment
  - Use of Operating Experience
  - Personnel Safety and Reduced Errors
  - Low Solid and Liquid Radwaste
  - Training
- **Needed Improvement**
  - EDG and Motor Failures
  - Abnormal and Emergency Procedure Implementation

McGuire Nuclear Station
Recent Outage Performance

OUTAGE MEASURE	Unit 1 EOC8	Unit 2 EOC8	Unit 1 EOC9	Unit 2 EOC9	Unit 1 EOC10	Unit 2 EOC10
Recordable Injuries	7	9	11	7	4	2
LER's (Personnel Error)	2	2	0	0	0	0
Personnel Dose (rem)	209	161	171	174	128	126
Duration (Days)	94	75	69	49	41	39
Cost ($ millions)	$ 28.4	$25.1	$ 25.6	$ 23.3	$ 14.9	$18.4
Solid Radwaste (cu. ft.)	7,820	10,200	5,500	4,340	1,840	1,800

2EOC10
REFUELING OUTAGE REPORT

- MAJOR WORK ACTIVITIES
  - TURBINE/GENERATOR
    - The scope of this work was to perform limited inspections on the "A" and "B" low pressure turbines, and perform normal preventative maintenance and inspection of the main generator. Upon completion of the main generator inspection, a leak test was performed per procedures. The results of the test indicated leakage from the radial leads in the generator. A plan was developed and worked around the clock to make necessary repairs. The plan prevented any schedule impact due to this additional scope of work.
  - STEAM GENERATOR MAINTENANCE
    - All four steam generators were found in better than expected condition. Inspection of the cold leg tubes for circumferential cracking revealed no cracks and further inspections were not required. A total of 180 additional tubes were plugged. This work was completed on schedule and resulted in removal of nozzle dams during the "no mode" activity period, preventing a second drain of the reactor coolant system, improving the shutdown risks, and saving a significant amount of dose and money.
  - REACTOR COOLANT PUMPS
    - This work included a motor replacement for the "A" pump. McGuire is in a program to refurbish all reactor coolant pump motors for both units.

2EOC10
REFUELING OUTAGE REPORT

- **MAJOR WORK ACTIVITIES(Continued)**
  - VALVE MAINTENANCE
    - Maintenance was scheduled for 487 valves in the outage and work was performed on 551; the additional scope (64 valves) was primarily corrective work found during the outage. The breakdown of the 551 worked includes:
      - 266 general valves
      - 177 motor operated valves
      - 108 air operated valves.

      The valve work went extremely well with very little rework associated with the valves. Leakage has been found to be extremely low, especially in regard to reactor coolant unidentified leakage and leakage through the reactor coolant loop isolation check valves.
  - DEFUELING/ REFUELING
    - The entire core was offloaded to the spent fuel pool to support defueled maintenance and control rod shuffle. Radiochemical analysis demonstrated no leaking fuel pins for the cycle and no UT inspection was required. Prior to core reload, a substance was detected on the surface of the control rods. This substance was sampled and determined to be an oxidation agent (hydrated ferric oxide) from a surface coating placed on the control rods in the fabrication process that interacted with the spent fuel pool environment. A detailed review of this residue was made including a thorough review of OE data. It was determined to not affect control rod operability. This substance was removed by vacuuming in and around the control rods. The core was subsequently reloaded without impact to the schedule.

2EOC10
REFUELING OUTAGE REPORT

- **MAJOR WORK ACTIVITIES(Continued)**
  - ICE CONDENSER
    - The ice condenser work was performed on schedule. The scope was to unload and replenish 181 baskets.
  - MAJOR MODIFICATIONS
    - Ten Nuclear Station Modifications (NSMs) were implemented this outage. Two NSMs dealt with resolution of "thermo-lag" issues. These modifications replaced controls and added check valves to provide separation in lieu of use of the thermo-lag.
    - The venturi flow sections were replaced with ASME nozzles employing low pressure taps in the sidewall to permit more accurate indication of power in order to get more output from the unit without exceeding allowable reactor power limits. This modification prevents feedwater flow venturi fouling and therefore, allows a steady power output versus decreasing primary power as flow venturis fouled indicating a higher feedwater flow.

2EOC10
REFUELING OUTAGE REPORT

- **MAJOR WORK ACTIVITIES(Continued)**
  - MINOR MODIFICATIONS
    - Forty eight elective minor modifications were implemented during this outage to improve plant equipment and replace components that were obsolete or unreliable. The most significant of these improvements involved the replacement of all the main condenser expansion joint seals. This replacement was to improve unit reliability by eliminating the potential for failure of these joints due to fatigue as has occurred at other stations in the industry, including both Catawba and Oconee.
    - Several of the minor modifications involved improvements to valves and/or valve leakoffs to reduce the amount of unidentified reactor coolant leakage that the unit has been experiencing during the recent past. Leakage calculations performed have shown that the unidentified leakage is much improved.

2EOC10
REFUELING OUTAGE REPORT

- **OUTAGE AREAS FOR IMPROVEMENT**
  - In-processing and retention of contractor resources
  - Adherence to preoutage milestones and planning processes
  - Need for Site Focus on long range planning

2EOC10
REFUELING OUTAGE REPORT

- **OUTAGE SUCCESS STORIES**
  - Personnel Safety
  - No LERs
  - Low Dose
    - The overall low radiation dose of 127.1 rem was well below McGuire's previous best. Planning for an initial crud burst and clean up as well as adding shielding and good ALARA planning helped to achieve a record low dose.
  - Operations Support
    - Operations use of four rotating shifts for unit coverage and deployment of the fifth shift for outage coverage improved the ability to have work available at the appropriate times.
  - Paperless Work Control Process
    - Use of electronic work packages in lieu of paper packages allowed work authorizations to be made in a more timely manner and improved the accuracy of crew schedules.
  - Quality Maintenance
    - The quality of all maintenance continues to improve. There was minimal rework during the outage.

2EOC10
REFUELING OUTAGE REPORT

- **OUTAGE SUCCESS STORIES (Continued)**
  - PM Execution
    - For this outage, all work scheduled was performed indicating much improved performance in planning for electrical work and in execution.
  - Third outage in a row completed on schedule.
  - Outage Duration was best ever at MNS: 39 days 12 hours.
    - A second drain of the refueling cavity was avoided due to good execution of the steam generator work. A second drain has normally been scheduled to allow removal nozzle dams and closure of the S/G manways and permit refueling to begin early. This work was completed prior to the refueling phase. This reduced the nuclear risk due to draining with fuel in the core and saved dose and cost.

SELF IMPROVEMENT CULTURE

- SELF ASSESSMENTS
- BENCHMARKING
- OPERATING EXPERIENCE

DEFINITIONS

- **STRENGTHS**
  - Results are meeting expectations / high standards. Continuous improvement is pursued.
- **AREAS OF PROGRESS**
  - Meeting minimum standards. Improvement plans being implemented / have been implemented with recognizable results.
- **CHALLENGES**
  - Not meeting expectations. Improvement plans under development / being implemented. Trending / monitoring to assess results. Also includes emerging issues or other significant concerns.

ENGINEERING

ENGINEERING TABLE OF CONTENTS

- STRENGTHS
  - MANAGEMENT FOCUS ON NUCLEAR SAFETY
  - OPERATIONAL FOCUS ON PLANT PROBLEMS
  - REACTOR ENGINEERING INTERFACE WITH OPERATIONS
  - SAFETY SYSTEM AVAILABILITY
  - INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS
  - LINE MANAGEMENT INVOLVEMENT IN TRAINING
  - INFORMATION TECHNOLOGY INTEGRATED BUSINESS SOLUTIONS
  - BENCHMARKING EFFORTS
  - USE OF OPERATING EXPERIENCE
  - SELF ASSESSMENTS
- CHALLENGES
  - SPECIFIC MAJOR EQUIPMENT RELIABILITY
    - Diesel Generators
    - Large Motors
    - Vital Batteries
  - COLD WEATHER PROTECTION
  - CURRENT REGULATORY ISSUES
    - UFSAR Accuracy
    - ISTS
    - 10CFR50.59 Process
    - 10CFR50.54(f) Request for Information
    - Configuration Management
  - MAJOR REPLACEMENT PROJECTS
  - SUPPORT FOR MAINTENANCE RULE
- AREAS OF PROGRESS
  - SUPPORT OF REACTIVITY MANAGEMENT
  - SYSTEM AND COMPONENT PERFORMANCE MONITORING (IMPLEMENTATION OF ENGINEERING SUPPORT PROGRAM)
  - PLANT ENGINEERING KNOWLEDGE (SRO/TNC)
  - CLOSURE OF GENERIC LETTER 89-10 (MOV'S)
  - TOP EQUIPMENT PROBLEM RESOLUTION PROCESS (TEPR)
  - WORK MANAGEMENT
  - TEMPORARY MODIFICATION PROCESS
  - MODIFICATION PLANNING AND TRACKING
  - ROOT CAUSE ANALYSIS - HUMAN PERFORMANCE

ENGINEERING STRENGTHS

- **MANAGEMENT FOCUS ON NUCLEAR SAFETY**
  - Following the site reorganization, the engineering team identified that a fundamental responsibility of the engineering organization was to support nuclear safety of the site through conservative decision making to protect the design basis. This was reinforced by the site Vice President charging the team to make conservative decisions involving plant operations. The engineering management team has made several conservative decisions. Some recent examples of those conservative decisions are:
    - Cut out and repair of 2RN-276. UT and visual examination showed weld OK. RT performed as additional inspection for 'MIC' showed poor quality weld.
    - Infrequently performed evolution review conducted to repair valve 1NC-45, pressurizer liquid sample valve.
    - Detection and correction of a Main Generator hydrogen leak around the radial lead cable seal. This corrected a potentially significant safety hazard prior to startup from 2EOC10.
    - NSM 22455 - add check valve downstream of 2CA161C & 162C
  - Improved communication of Engineering operability evaluation inputs to Operations. Additional communication standards have been developed for interfacing with Operations on other issues such as recommended procedure changes and detailed instructions or guidance to the Control Room.

ENGINEERING STRENGTHS

OPERATIONAL FOCUS ON PLANT PROBLEMS

- Each morning at the 0700 Plant Status meeting, plant concerns that were identified in the previous 24 hours are discussed and assigned an owner. The owners are almost exclusively Maintenance and Engineering. The progress and followup on plant concerns is discussed each day at the 0730 group meetings and the 0830 management focus meeting. The assigned owner for longer term or more complex issues is carried on the unit "action register". The owner for action register items must give the Operations Shift Manager a status update prior to going home on the day of assignment and a written update each week until resolved. (Action Register Problem Resolution items - ARPR)
- Assigning ownership in the daily plant status meetings, along with implementation of the Top Equipment Problem Resolution Process (TEPR) which provides focus for long term problems, has significantly improved the timeliness of corrective actions to plant system and equipment problems.
- In the process, management expectations are communicated for conservative decision making, operational focus and team support of the problem owner.
- To facilitate effective communication between Engineering and Operations, the contents of the plant status meetings (including Action Register Report) have been added to the McGuire computer desktop.

ENGINEERING STRENGTHS

◆ OPERATIONAL FOCUS ON PLANT PROBLEMS (Continued)

- Engineering support of Operator Workaround program continues to be enhanced. TEPR Management Team reviews progress on correcting operator workarounds monthly with emphasis on those work arounds that require essential actions within our emergency procedures.
- Engineering has been a key player in supporting planning and execution of our outages:
  - Selected Engineering Managers own pre-designated "outage windows" where they provide leadership in both planning and executing the window.
  - During outages, Engineering Supervisors combine to fill the outage function called "ESPOC". This "engineering single point of contact" is a point contact for resolving technical issues immediately on around-the-clock basis.
- A Critical Interfaces Matrix for Operations, Maintenance, Engineering and Work Control. This matrix clarifies the roles and responsibilities of each of these groups in support of such functions as equipment troubleshooting, procedure preparation, plant testing, etc.
- Management/Employee Development focused on increasing Operational focus
  - TNC (Technical Nuclear Certification) Training - 8 Engineering Managers/Supervisors completed, remainder scheduled through 1998.
  - SRO rotations OPS/ENG - 15 candidates involved since 1994.
  - Other rotations - INPO, Training, etc.

ENGINEERING STRENGTHS

- **OPERATIONAL FOCUS ON PLANT PROBLEMS (Continued)**
  - Engineering is a full participant in the Materiel Condition and Foreign Material Exclusion Programs.
  - Engineering/Maintenance management meet twice weekly to review plant and programmatic issues.
  - Engineering/Operations management meet once weekly to review plant and programmatic issues.
  - Engineering/Work Control management meet once weekly to review planning, scheduling, and programmatic issues.
  - Station/Engineering quarterly advances focus on planning, emerging issues, areas for assessment, and integration of activities for both divisions.
  - A Mechanical Council and an Electrical Council meet periodically to discuss station and engineering issues associated with these disciplines.

ENGINEERING STRENGTHS

- **REACTOR ENGINEERING INTERFACE WITH OPERATIONS**
  - McGuire's Reactor Engineering (Nuclear Engineering) continues to provide excellent technical support and operations interface. Examples include:
    - Participation with Operations in simulator training for reactor startups and zero power physics testing.
    - Participation in classroom training provided to Operations (requal) for selected topics.
    - Direct involvement/technical direction to Operations regarding management of primary flow phenomena effects upon the reactor.
    - Achievement of zero fuel defects through a specific program of monitoring, outage testing and replacement/reconstitution of leaking fuel pins.
    - Issuance of instructions to Operations regarding changes to core design/operating characteristics for each new core.
    - Development of Operations Management Procedures for detailed instructions or guidance from Engineering to Control Room
    - Daily interaction with Control Room Personnel.

ENGINEERING STRENGTHS

- **SAFETY SYSTEM AVAILABILITY**
  - McGuire has sustained achievement of <1.0% unavailability of key safety systems:

SAFETY SYSTEM	ROLLING 2 YEAR AVERAGE (Thru 9/96)
• High Pressure Injection	0.5%
• Auxiliary Feedwater	0.3%
• Emergency AC Power	0.8%

ENGINEERING STRENGTHS

- **INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS**
  - A maturing set of measures reflects management expectations in key areas such as:
    - System Reliability
    - Self Improvement
    - Work Management
    - Modifications
    - Configuration Management
  - Measures are updated and communicated monthly through the McGuire Site Operational Plan and the Engineering Division Operational Plan.
  - Engineering Team Notes
    - The Engineering Manager generates a frequent communication to all Engineering employees. This communication focuses on nuclear safety, plant operations, current items of interest and a brief look ahead.

ENGINEERING STRENGTHS

- **INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS (Continued)**
  - Engineering Managers and Supervisors Meetings
    - All Engineering Managers and Supervisors meet for one hour every other week to focus on the Engineering Operational Plan and management expectations.
  - Site Town Hall Meetings held by Site Vice President, Station Manager and Engineering Manager involve all managers and supervisors
  - The Site Vice President has annual one on one sessions with all Superintendents and Engineering Managers to clarify his expectations. Specific emphasis has been placed on conservative decision making.
  - **Engineering management leadership was recognized as an INPO Strength.**

McGuire Engineering
1996 Divisional Success Measures Status

Objective	Measure	Sponsor	%	S4	S3	S2	S1	U0	YTD Results	Points
TEAM EFFECTIVENESS										
Employee Injuries 4	# of Safety Improvements Implemented	Bruce	10	> 60	50 - 60	40 - 50	30 - 40	< 30	5.2 (x 12)	.40
Personnel Exposure 6	Person Rem	John	NA	NA	NA	NA	NA	NA	NA	NA
Document Management 7	Doc. Mgmt Submeasures	John	5	> 9.7	8.0 - 9.7	5.0 - 7.9	3.0 - 4.9	< 3.0	6.9 pts	.10
Location Information Technology 8	Location IT Submeasures	Carl	8	> 9.7	8.0 - 9.7	5.0 - 7.9	3.0 - 4.9	< 3.0	8.4 pts	.24
Training Effectiveness (Site Focus) 10	Engr. Training	Pete/Bill	10	> 7.7	7.0 - 7.6	4.0 - 6.9	3.0 - 3.9	< 3.0	5.8 pts	.20
Self Improvement Culture (Site Focus) 13	# of Self Assessments	John	7	> 54	48 - 54	36 - 47	24 - 35	< 24	34	.14
Business Excellence Assessment 17	N/A - See Initiatives	John	NA	NA	NA	NA	NA	NA	NA	NA
OPERATING EXCELLENCE - NUCLEAR SYSTEM										
System Reliability (Site Focus) 19	System Reliability Submeasures	Bruce	15	> 7.7	7.0 - 7.6	4.0 - 6.9	3.0 - 3.9	< 3.0	4.8 pts	.30
Engineering Work Management (Site Focus) 27	Work Management Submeasures	Jack	15	> 5.7	5.0 - 5.6	3.0 - 4.9	2.0 - 2.9	< 2.0	4.4 pts	.30
Modifications (Site Focus) 29	Modification Submeasures	John	15	> 5.7	5.0 - 5.6	3.0 - 4.9	2.0 - 2.9	< 2.0	3.9 pts	.30
Configuration Management 31	Configuration Management Submeasures	John	5	INPO Strength	Exceed expect/no event	Meets expect/no event	Not meeting expect or event	Not meeting expect & event	1st 6 mos. evaluated as Low S2	.10
Engr. SALP 33	See Site Success Measure	Jack	NA	Score not	reported in	1996		1995 Eng. SALP	Score = 1.0	
INPO Rating 38	See Site Success Measure	Jack	NA	NA	NA	NA	NA	NA	NA	NA
Performance Indicator Index 29	See Site Success Measure	Pete	NA	NA	NA	NA	NA	NA	NA	NA
Operational Focus (Site Focus) 31	See Site Success Measure	Bruce	NA	NA	NA	NA	NA	NA	NA	NA
OPERATING EXCELLENCE - COST CONTROL										
O&M Budget	Div. O&M Act. to Budget	Pete	10	< 20,725	$21,606-$20,725	$22,048-$21,607	$22,049-$22,489	> $22,489	(11%)	.30
201's Completed 52	See Site Success Measure	John/Bruce	NA	NA	NA	NA	NA	NA	NA	NA
STEWARDSHIP										
CPC Reduction 54	N/A	Bruce	NA	NA	NA	NA	NA	NA	NA	NA
YTD Results			100							2.30

Overall Score (Points/Sum of Weights)

SITE FOCUS See "Team Effectiveness" and "Operating Excellence - Nuclear System"

Employee Injuries (Total = N/A)
* Safe. Improve. Implemented = 38 YTD

Configuration Management (Total = N/A)
* Initiative Results & Significant Configuration Events = Y (1)

Document Management (Total = 10)
* Transmittal Timeliness = G (2)
* Transmittal Errors = G (2)
* Report Timeliness = G (2)
* Repro Errors = G (2)
* Filing/Updating Timeliness = G (2)

System Reliability (Total = 4)
* Equipment Events = R (0)
* Top Equipment Problem Resolution = Y (1)
* System/Equipment Condition = Y (1)
* Maintenance Rule = G (2)

Engineering Work Management (Total = 5)
* Engr. P.L.A.N. Site Projects = G (2)
* Work Order Support = G (2)
* PIPs = Y (1)

Location IT (Total = 9)
* File/Print Server Avail = G (2)
* Decr. Cust. Prob. Calls = Y (1)
* IT - Projects = G (2)
* Cust. Satisfaction = G (2)
* RM&C Access Sta. Avail. = G (2)

Modifications (Total = 3)
* Mod Success = G (2) (NSM's & MM's)
* NSM's = Y (1)
* Elect. MMs = R (0)

Training Effectiveness (Total = 7)
* Attendance Efficiency = G (2)
* Management Observation of Classroom Trng = G (2)
* Completed PSG Section B by 12/31/96 = N/R Y (1)
* Completed PSG Section C in Accordance with with ESP Document Development = G (2)

Self-Improvement Culture (Total = N/A)
* Self Assessments = 34 YTD

GREEN = 2 points **YELLOW = 1 point** **RED = 0 points** **N/R = Unreported (assume Yellow)**

(RESULTS THROUGH SEPTEMBER, 1996)

ENGINEERING STRENGTHS

- **LINE MANAGEMENT INVOLVEMENT IN TRAINING**
  - McGuire Training Review Board (MTRB) provides oversite and direction for all training at McGuire. This board is chaired by the Site Vice President and includes key site managers as members.
  - Within Engineering, the Engineering Manager chairs the Engineering Training Program Review Committee (TPRC). Other members include supervisors and staff from both the Engineering and Training organizations.
  - TPRC reviews training program content and feedback, selects continuing training topics, and reviews training performance measures with a focus on continuous improvement.
  - Engineering Continuing Training is held on a quarterly basis. Managers and supervisors are involved in presenting selected topics, attending, observing, and critiquing the training.
  - **Line management involvement in training was recognized as an INPO Strength.**

ENGINEERING STRENGTHS

- **INFORMATION TECHNOLOGY INTEGRATED BUSINESS SOLUTIONS**
  - OPERATIONS: Implemented a Solid Operations Monitor Application
  - MAINTENANCE: Implemented On Line Work Management Report Application
    Implemented a Valve Outage Database Application
    Implemented Material Condition Reporting Program
  - ENGINEERING: Implemented a System/Equipment Work Management Schedule Application
    Performed Engineering I/T Desktop Assessment
  - TRAINING Implemented Simulator Training and Tracking Application
  - SITE: Implemented the Systems Plant Interface Database
    Implemented Safeguards Inventory Database
    Implemented the Operating Experience Database
    Desktop and PIP Application Enhancements
    Implemented Daily Status/Plant Actions Register Report
- **Recognized "Site Desktop" as an INPO strength.**

ENGINEERING STRENGTHS

- **BENCHMARKING EFFORTS**
  - Engineering participated with other Duke locations in benchmarking at four (4) other utilities in late 1995, focusing on how major Engineering type functions and processes are staffed and managed. Further benchmarking efforts to look at the following functions at a lower level have been completed:
    - System Engineering
    - Equipment/Component Engineering
    - Maintenance Engineering
    - Engineering Support of Operations
    - Procurement Engineering

    Both Operations and Maintenance personnel were involved with these benchmarking efforts.

    Changes initiated as a result of benchmarking:
    - Clarified and formalized "Roles and Responsibilities Matrix".
    - Clarified Maintenance Technical Support roles to address routine equipment problems.
    - Increased the responsibility of the System engineers to cover some of the assignments of the former Operations Unit Managers Group.
    - Streamlined Plant Engineering organization.
    - Established a Configuration Management/Special Projects Team under the Modification Engineering Manager to handle some long term issues or special assignments from Plant Engineering.
  - Engineering personnel have participated on INPO plant evaluations and other plant visits. Lessons and ideas learned have been shared with station management.

Baseload Total -207.5

MCGUIRE ENGINEERING ORGANIZATION (Future State 12/1/96)

ENGINEERING CONSULTANTS
QD - Ray Weidler
Business - David Patton
Training - Leonard Wright/Mike Murdock
Org Effectiveness - Cindy Hardin
Communications - Rita Sipe
Safety Assurance - Eddie Merritt

SITE ENGINEERING MANAGER
P.R. HERRAN (7392)

(54.5)

PLANT ENG MGR A
B. TRAVIS (7653)

Staff
D. Bumgardner

ADMIN SPECIALISTS
C. Aderhold
M. Marsh
G. Pride

Primary Sys Engr
M. Rains (98) (7686)
C. Cuthbertson
D. Horace
E. Hyland
B. Kirk
L. Kunka
B. Meyer
J. Nolin
R. Ouellette
P. Schuerger
A. Smith
10- TOTAL

Secondary Sys Engr
M. Hailey (98) (7687)
E. Blough
D. Gabriel
P. Goodwin
J. Hawkins
B. Johansen
N. Kunkel
T. Pederson
R. Roberts
R. Weathers
9 - TOTAL

Bal of Plant Engr
D.Gardner (97) (7688)
J. Bryant
E. Evans
R. Fisher
S. Goradia
J. Knost
J. Mead
R. Norcutt
J. Pring
8 - TOTAL

Valve Eng
L.Davison (97) (7656)
M. Cloninger
B. Dixon
G. Cutri
S. Karriker
M. Lamb
J. Miller
M. Pocetti
D. Painter
F. Setzer
9 - TOTAL

Mech Equip Engr
T. Welch (99) (7654)
A. Chheda
C. Davis
L. Davis- P/T
B. Fulbright
A. McClenny
D. Roinick
S. Rosenau
R. Spada
D. Whipp
9.5 - TOTAL

(49.5)

PLANT ENG MGR B
J. BOYLE (7661)

iNPO Loaned
A. Hinson

ADMIN SPECIALISTS
S. Hulett
V. McGinnis P/T
G. Yount

Nuclear Engr
S. Ballard (Acting) (7689)
S. Ballard
J. Day
J. Glenn
P. Guill
T. Hamilton-Sealy
T. Moore
T. Ray
B. Roesler
H. Vanpelt
9 - TOTAL

Power Engr
B. Pierce (98) (7664)
K. Caldwell
C. Geerken
D. Hepler
D. Houser
J. Kelman
M. Kennedy
J. Policke
R. Staskel
8 TOTAL

I & C Engr
E. Efird (7663)
A. Batts
M. Broome
B. Marrow
L. Parish
N. Sayles
M. Schell
R. Turpin
M. Vanhoy
8 - TOTAL

Electronic Engr
B. Matthews (97) (7662)
T. Belk
T. Burgess
B. Gragg
F. Karimi
R. Pacetti
B. Propst
J. Weber
7 - TOTAL

Civil Engr
P. Stiles (98) (7657)
H. Dinh
T. Foster
M. Hunt
M. Langel
F.W. Martin
S. Miller
J. Oldham
D. Ritchie
W. Shaban
9 - TOTAL

(74.5)

MODIFICATIONS MANAGER
J. S. Thrasher (97) (7672)

ADMIN SPECIALISTS
C. Kirby
S. McCorkle - P/T
P. Tucker
C. Turner

Elect and Instr Engr
(7676)
T. Cromer
M. Dicks
M. Malone
D. Nestvogel
K. Norris
T. Propst
W. Revels
B. Thomas
C. Whitlock
9 - TOTAL

Mechanical/ Civil Engr
H. Wallace (N96) (7674)
J. Byrd
E. Estep
T. Feaster
B. Howell
D. Liu
B. Nesbitt
C. Riddle
J. Robbins
A. Shah
H. Smith
M. Tartaglia
R. Tucker
D. White
L. Wilkinson
14 - TOTAL

Mech/Civil Design/Impl
R. Madden (7675)
B. Anderson
G. Battle
J. Broome
T. Collins
D. Douglas
R. Lyerly
B. Marshall
D. Mauldin
M. Philemon
D. Russell
H. Sherrill
11 - TOTAL

Elect and Instr Design/Impl
J. Boiln (7677)
G. Broome
J. Buys
P. Cadenhead
G. Carter
T. Daniels
K. Frazier
R. Holgler
D. McKenzie
G. McManus
B. Richardson
T. Roberts
P.J. Rowe
G. Woodward
12 - TOTAL

Config Mgmt/Special Projects
R. Harris (N96) (7673)
T. Deese
S. Kunka
C. Morgan
J. Moser
N. Osburn
D. Smith
D. Williams
7 - TOTAL

Document Management
F. Pope (7679)
C. Buchanan
B. Caldwell
J. Christenbury
C. Crump
V. Gallmon
A. Knox
V. Lindsay
D. Miller
F. Parson
M. Patrick
M. Stultz
11 - TOTAL

(29)

LIT MANAGER
C. ROBINSON (7665)

ADMIN SPECIALIST
P. Neal

Support Services Manager
B. Rabalais (7666)
B. Brabham
K. Butler
R. Dimond
M. Glover
W. Harrington
J. Kegley
K. Pitman
N. Rome
8 - TOTAL

Technical Support
G. Frix (7668)
R. Banner
M. Denton
G. Galbreath
R. Gibbs
D. Greene
R. Keller
R. Smith
R. Turner
8 - TOTAL

Consultants Solutions Delivery Mgr
T. Tinsley (7667)
J. Cole
R. Davenport
D. Drum
T. Duke #
J. Herrick
C. Roberson
C. Rowland
A. Sipe
8 - TOTAL

LIT Consultant
(97) Projected TNC Class 1997
(98) Projected TNC Class 1998
(99) Projected TNC Class 1999

As of 10/24/96

ENGINEERING STRENGTHS

- **USE OF OPERATING EXPERIENCE**
  - Nuclear General Office Support Group is the core team that supports the OE program for all 3 nuclear sites. They are a central clearing-house for all Duke Nuclear OE information.
  - An extensive, user friendly OE database (OEDB) enables employees to access real-time OE information from within DPC as well as external.
  - OEDB is directly linked to our Problem Investigation Process (PIP), allowing effective use of industry experience in problem resolution.
  - Usage of OEDB is monitored. In October, McGuire had 400 users access the database 2100 times.
  - New problem reports generated from within McGuire as well as selected problem reports from CNS, ONS, and the industry are discussed in the daily Management Focus Meeting. Prompt actions to address these problems are initiated when appropriate.
  - **Recent examples of where use of Operating Experience has provided success stories are:**
    - Identification of replacement surge capacitors for reactor coolant pumps.
    - Replacement of the main generator fuse/diode assembly based on industry experience.
  - A standing item in Engineering Quarterly Training focuses on Operating Experience.
  - **Use of Operating Experience was recognized as an INPO Strength.**

ENGINEERING STRENGTHS

SIGNIFICANT SELF ASSESSMENTS

ASSESSMENT	STATUS	ASSESSMENT	STATUS
◆ Engineering Benchmarking	Complete 10/95	◆ Modification As-Built Process	Complete 8/96
◆ Resource Loading Tool (Work Planning - Mod Eng)	Complete 10/95	◆ OEDB Effectiveness	Complete 9/96
◆ Cost Estimating for Modifications	Complete 10/95	◆ Configuration Management Initiatives	Complete 9/96
◆ System Engineer Vision / Mission Implementation (Mechanical Nuclear Systems)	Complete 11/95	◆ Special Nuclear Materials Program	Complete 9/96
◆ Spent Fuel Pool and Fuel Handling Equipment	Complete 2/96	◆ Diesel Reliability	Complete 10/96
◆ Current Effectiveness in Use of Desktop Tools	Complete 4/96	◆ Motor Reliability	Complete 10/96
◆ Safe Shutdown Facility	Complete 5/96	◆ 89-10 Program	On Going 11/96
◆ Maintenance Rule and Failure Analysis Trending	Complete 6/96		

NOTE: 34 self-assessments have been completed YTD. Above you will find a sample of significant self assessments.

ENGINEERING
AREAS OF PROGRESS

- **SUPPORT OF REACTIVITY MANAGEMENT**
  - Nuclear Engineers provide programmatic support to aid Operations and other station groups.
  - Engineering is providing technical focus for the many improvement actions initiated through assessments in this area including NSD upgrades, procedure cross-disciplinary review improvements, and training.
  - Implementation of recommendations from a Zero Power Physics Testing Quality Improvement Project is in progress for all three sites, with a focus on consistency of nuclear engineer / operator interface in reactor control during testing.
  - Implementation of a rewritten Nuclear System Directive on Reactivity Management is in progress with completion by the end of 1996. Completed actions include:
    - Formation of a Reactivity Management Team
    - Periodic categorization and trending of reactivity management related events
    - Reduced occurrence of reactivity management events
  - Other improvements (1EOC10 and 2EOC10 outages) include:
    - Moved Zero Power Physics Testing test coordinator into the Control Room
    - Conducted pre-test Operations/Reactor Engineering simulator runs of Zero Power Physics Testing
    - Implemented licensed operator control of fuel movement procedure.

ENGINEERING AREAS OF PROGRESS

- **SYSTEM AND COMPONENT PERFORMANCE MONITORING (IMPLEMENTATION OF THE ENGINEERING SUPPORT PROGRAM)**
  - Duke Power has developed a comprehensive program defining plant engineer's support responsibilities for specific systems, structures and components (SSCs). This program is defined under EDM-201, Engineering Support Program (ESP). For selected high priority SSCs (approximately 1 per plant engineer), the program provides:
    - A description of the SSC and its functions
    - Detailed references to plant and engineering documents
    - Support/team agreements with associated personnel
    - Monitoring and trending program definition
    - Reporting program definition
  - Fifty seven (57) ESP documents were completed in 1995 and thirty (30) have completed in 1996 YTD. These documents will satisfy the intended scope of this program.
  - Program enhancements currently in progress include:
    - Development/loading of a LAN based filing and reporting system for ESP documents.
    - Linkage to the EPRI System Monitoring and Trending Working Group.
  - Integrating ESP with long range planning process for major maintenance, modifications, and other significant projects.
  - Multi-site self assessment on ESP program will be conducted in 1997.

ENGINEERING AREAS OF PROGRESS

- **PLANT ENGINEERING KNOWLEDGE (SRO/TNC)**
  - The plant knowledge level of system and equipment engineers is being programmatically improved.
  - Periodic rotation has been established, moving engineers into the station organization for Operations experience and SRO licensing. Engineers with SROs began rotating to Engineering in 1994 with the most recent changes in mid 1996 (two SRO/Engineers with extensive Operations experience).
  - Development of plant knowledge levels of plant engineers continues through two linked programs:
    - Engineering Support Program (ESP) implementation continues for each applicable system, structure and component (SSC), by the assigned engineer. Along with documenting the support programs themselves, development of the ESP documents is a major step in individual knowledge development for plant engineers.
    - Position Specific Training Guides (PSGs) for each plant engineer continue to be implemented.
  - A full time position has been staffed in Engineering to mentor plant engineers' development. The "mentor" is a highly experienced McGuire past SRO.
  - Moving forward with Technical Nuclear Certification (TNC) training with 3 more Engineering employees (1 manager and 2 supervisors) attending current TNC class and the remaining managers/supervisors scheduled through 1998.

ENGINEERING
AREAS OF PROGRESS

- **CLOSURE OF GENERIC LETTER 89-10 (MOV'S)**
  - The schedule for completion of required actions for Generic Letter 89-10 (Motor Operate Valves, MOVs) was accelerated from 1998 to December, 1995. This was a significant challenge due to the large number of valves (425) included in the McGuire GL 89-10 Program scope. The original schedule called for a portion of the population to be completed in 1995, with the remainder stretched to 1998. The accelerated schedule of December, 1995 was met.
  - With closure activities complete, periodic verification testing of approximately 80 MOVs was conducted during 1996 outages (1,2 EOC10). This testing was conducted as a part of the ongoing MOV Program established in response to GL 89-10, and results in continuing verification of MOV capability as well as improving margins of safety for these MOVs.
  - An independent assessment of the GL 89-10 MOV Program is currently in progress and scheduled to be complete by November, 1996. This assessment is being performed by knowledgeable experts on MOVs and is applying the NRC guidance for GL 89-10 closure inspections.

ENGINEERING
AREAS OF PROGRESS

- **TOP EQUIPMENT PROBLEM RESOLUTION PROCESS (TEPR)**
  - This process is governed by McGuire Site Directive MSD-340. The focus is long standing equipment problems and high priority, short term equipment problems not resolved within one day of discovery. TEPR is an extension of the PIP process, not a new problem identification process. TEPR places added attention on problems with a primary goal of prompt and effective closure.
  - The TEPR review team consists of the Station Superintendents (Operations, Maintenance, and Work Control), the Chemistry Manager and Plant Engineering Managers. The team meets monthly to review progress and evaluate equipment problem lists. Measures are established for TEPR and reported as part of the system reliability indicator.
  - The TEPR process consists of three separate lists for long standing equipment problems:
    - Major Equipment Problem Resolution (MEPR) List
    - Operator Workarounds
    - Customer Priority List
  - The TEPR process also provides guidance on high priority, short term equipment problems (Action Register Problem Resolution) involving any of the following which are not resolved promptly:
    - Operability of TS/SLC item where outcome is in doubt
    - Threats to plant reliability or generation capacity
    - Unacceptable effects on personnel safety, dose or the environment
  - The TEPR process has been enhanced as a result of information obtained from benchmarking visits with other utilities.

ENGINEERING
AREAS OF PROGRESS

TOP EQUIPMENT PROBLEM RESOLUTION PROCESS (TEPR) (Continued)

- MEPR (Major Equipment Problem Resolution) - Several long term equipment problems that have high impact or potential for high impact on plant nuclear safety, availability, or reliability have been corrected or are being corrected:

- **COMPLETE**
  - Steam Generator Reliability
  - Feedwater Reg Valve Reliability
  - Preventing Safety Injection Following LOOP (as committed after LOOP event)
  - ECCS Check Valve Problems (short term)
  - Control Board E-30 Switches
  - Pressurizer PORV Stroke Time
  - Radiation Monitor Availability
  - RHR Suction Pressurization
  - 7300 System Reliability
  - Unit 2 DP Battery Reliability
  - ECCS Check Valve Problems (long term)
  - Component Cooling System Stress Corrosion Cracking Problems
  - Source Range Detector Reliability
  - Centrifugal Charging Pump Reliability

- **IN PROGRESS**
  - Cold Leg Accumulator Outleakage
  - Containment Penetration Bellows
  - Instrument Air System Reliability
  - Fuse Reliability
  - Condenser Circulating Water System Isolation Valve Integrity
  - Emergency Diesel Generator Adverse Performance Trend
  - Component Cooling System Adverse Performance Trend
  - Thermal Performance
  - Main Feedwater Isolation Reliability
  - Large Motor Reliability
  - Vital Batteries

ENGINEERING
AREAS OF PROGRESS

- **TOP EQUIPMENT PROBLEM RESOLUTION PROCESS (TEPR) (Continued)**

  - Operator Workarounds

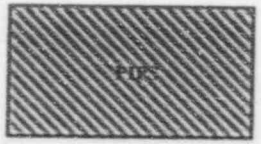
    Equipment problems or administrative requirements that can impair an operator's ability to understand or control plant parameters are identified as Operator Workarounds. These equipment deficiencies or administrative requirements can affect normal, abnormal, or emergency plant operations and/or cause the operator to take compensatory actions beyond normal design which increase the likelihood of inappropriate operator actions.

Complete (20 Total - Sample Below)	**In Progress (~ 20 Continuously In Progress)**
• Nuisance Alarms From Fire Zones	• Emergency Feedwater Suction Source Monitoring
• Charging Flow Control Valve	• Main Turbine Turning Gear
• RCS Heat Up/Cool Down Limits	• Auxiliary Building Ventilation Response During Emergencies

ENGINEERING
AREAS OF PROGRESS

- **WORK MANAGEMENT**
  - Engineering has focused on work inventory reduction during the past year in three major areas to improve site performance and safety. The areas are as-built drawing updates, Problem Identification Program (PIP) actions, and maintenance work orders on Engineering hold. Significant progress has been accomplished as noted by the following results:
    - As Built drawing updates are scheduled using the site work management tool PLAN (Project Leadership Action Network). Inventory of drawings requiring updates was maintained at low levels throughout 1995 and 1996 YTD.
    - PIP actions assigned to Engineering are completed per schedule commitments in the PIP database. Engineering has established new measures for 1996 to focus on significantly reducing number of PIPs greater than 6 months old.
    - Work orders on Engineering hold have been maintained at low levels throughout 1996. Engineering is now focusing on maintaining work orders on Engineering hold greater than 30 days to less than 2.
  - Engineering also manages projects using the site work management tool PLAN. These projects are referred to as Site Projects. Measures focus Engineering personnel on completing projects on schedule and minimizing reschedules.
  - Engineering has consolidated to a single PIP Coordinator and the site PIP screening process has been enhanced by including our PIP Coordinator, along with Maintenance, Operations, and SRG Coordinators. Engineering is using a new work selection process to prioritize less significant PIPs. The criteria aid in differentiating between lesser significant PIPs that should be worked by Engineering and those that should only be trended for future information.
  - Engineering remains a key player in the Work Control scheduling process. Engineering personnel are involved in all phases including work scope selection, prioritization, slotting, and support of execution. System engineers are directly involved as their system's work week is planned and performed. Many of these engineers will serve in project manager roles for more significant or critical work projects.

Operating Excellence - Nuclear System
WORK MANAGEMENT



PIPs

CRITERIA	GREEN (2 pts)	YELLOW (1 pt)	RED (0 pts)	ACTUAL
Measures on Tgt	2	1	0	1

MEASURE	CRITERIA	ACTUAL	ON/OFF
Overdue PIPs	0	0	ON
Open PIPs > 6 Mo	* Projects to <10 on curve	15	OFF

*< 10 of "Other Engineering"

SITE PROJECTS

CRITERIA	GREEN (2 pts)	YELLOW (1 pt)	RED (0 pts)	ACTUAL
Measures on Tgt	2	1	0	2

MEASURE	CRITERIA	ACTUAL	ON/OFF
Overdue Site Project Completions	0	0	ON
Rescheduled Engineering Site Projects within 30-Days of Completion	7	2	ON

WORK ORDERS SUPPORT

CRITERIA	GREEN (2 pts)	YELLOW (1 pt)	RED (0 pts)	ACTUAL
MEASURE:				
WO on Engr. Hold > 30 Days Old	< 2	2	> 2	0

MEETING EXPECTATIONS (GREEN)

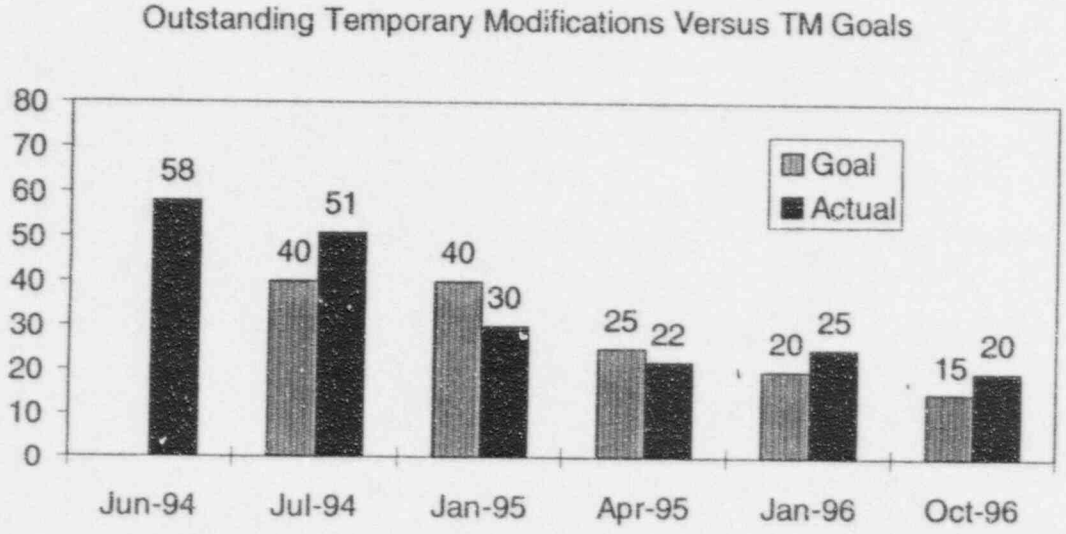
IMPROVEMENT NEEDED (YELLOW)

NOT MEETING EXPECTATIONS (RED)

UNREPORTED (WHITE)

ENGINEERING
AREAS OF PROGRESS

- **TEMPORARY MODIFICATION PROCESS**
  - There are currently 20 outstanding Temporary Modifications at McGuire. A focus on Temporary Mod reduction over the last few years has resulted in the trend shown below:



ENGINEERING AREAS OF PROGRESS

- **TEMPORARY MODIFICATION PROCESS (Continued)**
  - The following contributed to achieving this improvement:
    - Setting and enforcing stretch goals since 1994:
      - 1994 < 40 TMs,
      - 1995 < 25 TMs,
      - 1996 < 15 TMs
    - NRC engineering inspection that recommended we track QA-1, temporary mods as a separate subset to give proper emphasis to TMs on safety systems.
  - Training was provided to all of McGuire Engineering (Equipment, Systems, Modification) on the installation of Temporary Modifications.

ENGINEERING
AREAS OF PROGRESS

- **MODIFICATION PLANNING AND TRACKING**
  - Modification planning has been significantly enhanced by implementation of the recommendations of the Modification Planning Quality Improvement Project. The key concepts to modification planning are: strategic/operational plan linkage, milestone planning, peer review for modification selection/activation, engineering and craft resource fit review, and no modification backlogs. Significant reductions in the number of outstanding NSMs reflect these improvements:

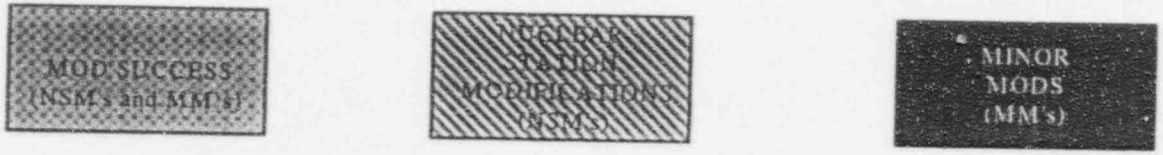
Year	Number of Outstanding NSMs
1992	263
1993	142
1994	73
1995	93
1996	65
Current	56

  - Modification tracking has been enhanced by implementing a work management tool Project Leadership Action Network (PLAN). The scheduling of modification implementation has been improved by use of system work windows concept implemented by Work Control for scheduling all maintenance and modification work.

ENGINEERING
AREAS OF PROGRESS

- **MODIFICATION PLANNING AND TRACKING (Continued)**
  - Several continuous improvement teams continue to focus on improving overall modification planning and tracking. These teams are focusing in the following areas:
    - Modification process
    - Modification scoping and cost estimating
    - Modification planning and scheduling
    - Operations/Modification interface

Operating Excellence - Nuclear System
MODIFICATIONS



CRITERIA	GREEN (2 Points)	YELLOW (1 Point)	RED (0 Points)	ACTUAL
MOD SUCCESS	**2 points**	**1 point**	**0 points**	**2**
- Mods (NSM's & EMM's) Implemented in targeted innage/ outage window.	> 90%	80%-90%	< 80%	94%
NUCLEAR STATION MODS (NSM's)	**≥ 15 points**	**12-9 points**	**≤ 8 points**	**9**
- Mod Activities (% on Schedule)	> 85%	85%-75%	< 75%	89
- Mod Packages (% on Schedule)	> 90%	90%-80%	< 80%	100
- Mod Closure (% Closed on Schedule)	> 95%	95%-90%	< 90%	100
- As-Built Drawings (% Issued on Schedule)	> 95%	95%-90%	< 90%	100
- Partner Satisfaction *	> 2.25	2.25-2.00	< 2.00	2.23
- Cost Efficiency (Est Costs -25%/ +10%)*	> 90%	90%-80%	< 80%	56 **
- Dwg Rework (% Requiring No Rework)*	INCR TREND	FLAT TREND	DECR TREND	DECR TREND (43%)
* Reported Quarterly				
MINOR MODS	**≥ 3 point**	**2 - 1 points**	**≤ 0 points**	**2**
- Mod Packages-EMM's only (% on Schedule)	> 90%	90%-80%	< 80%	96
- Mod Closure (% Closed on Schedule)	> 95%	95%-90%	< 90%	85
- As-Built Drawings (% Issued on Schedule)	> 95%	95%-90%	< 90%	84

** Based on 1EOC10 , 18-96, 2EOC10, and 19-96 NSM's completed to date.

MEETING EXPECTATIONS (GREEN)

IMPROVEMENT NEEDED (YELLOW)

NOT MEETING EXPECTATIONS (RED)

UNREPORTED (WHITE)

ENGINEERING
AREAS OF PROGRESS

- **ROOT CAUSE ANALYSIS - HUMAN PERFORMANCE**
  - Duke nuclear stations have implemented a disciplined and comprehensive approach to root cause analysis.
  - The three nuclear sites worked together through the Business Excellence Steering Team (BEST) process to develop a more structured program that has been incorporated into the Problem Investigation Program (PIP) directive and root cause directive. Failure Prevention and Investigation, Inc. (FPI) was retained to ensure the process is appropriate and aligned with site human error reduction effort.
  - The D/G turbocharger event of June, 1995 added emphasis to this project.
  - The more structured root cause analysis program, Failure Investigation Process (FIP), has been applied on the following recent problems:
    - 1SM-7 failed close, reactor trip
    - Reverse power trip of 1A and 1B generator breakers
    - 1D NCP trip (surge capacitor), reactor trip
    - 2B EDG fuel line failure

ENGINEERING
AREAS OF PROGRESS

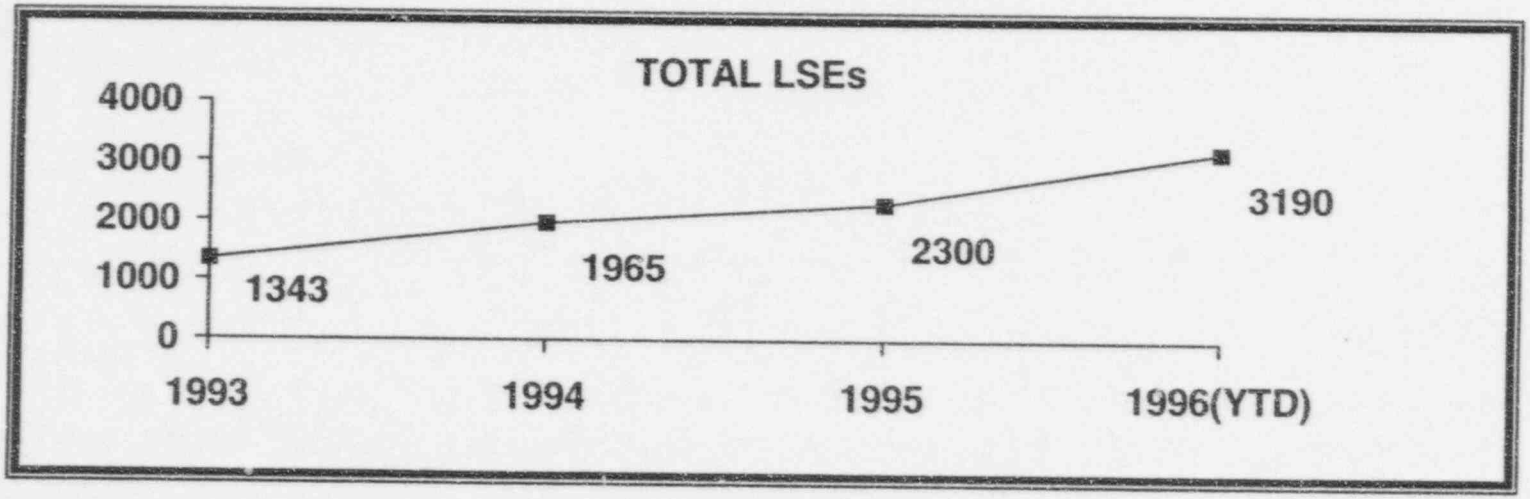
- **ROOT CAUSE ANALYSIS - HUMAN PERFORMANCE (Continued)**
  - Implemented the Operating Experience Data Base - integrates operating experience with the Problem Investigation (PIP)/Root Cause process.
  - Planned improvements include adding human performance to Root Cause Analysis (RCA)
    - Elevate questioning attitude during RCA
    - Use of Risk Assessment in determining when to perform RCA
  - Training in Root Cause Analysis:
    - 2nd quarter Engineering continuing training
    - Discipline specific (mechanical and electrical) training in 1996 and 1997
    - Planned 4th quarter Engineering continuing training

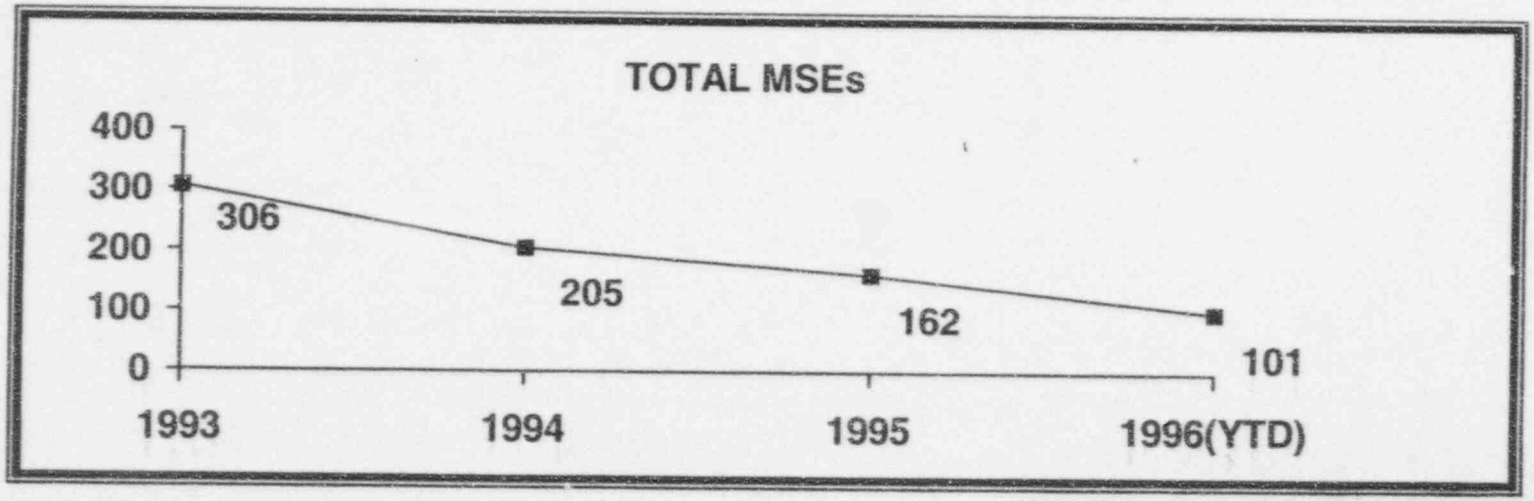
ENGINEERING CHALLENGES

- **SPECIFIC MAJOR EQUIPMENT RELIABILITY**
  - Recognized as a weakness by INPO.
  - **PIP Overview - More Significant Events (MSE) vs. Less Significant Events (LSE)**
  - **DIESEL GENERATORS**
    - Major maintenance on Diesel Generators is planned in 1997 refueling outages.
    - Self Initiated Assessment of EDG Reliability Scope
      - Performed by industry experts (MPR Associates).
      - Charter to review EDG performance and problems, compare EDG reliability program with industry, and focus corrective actions to areas of greatest need.
    - EDG Reliability Assessment preliminary results:
      - No significant reliability problem currently exists at McGuire.
      - Reliability is equal to industry average.
      - Many reliability enhancement recommendations will be proposed.
      - Final report expected by November, 1996.

PIP OVERVIEW

MSEs vs LSEs





ENGINEERING CHALLENGES

- **SPECIFIC MAJOR EQUIPMENT RELIABILITY (Continued)**
  - **LARGE MOTOR RELIABILITY**
    - The Root Cause of our high motor failure rate is a motor program deficiency. Several secondary causes were identified using the fault tree analysis. Four secondary causes that have a major impact on motor reliability are as follows:
      - Inadequate Maintenance Scope
      - Lack of Vendor Quality Control
      - Improper Motor Application
      - Apparent Causes for Motor Failure Not Developed
    - Three different improvement teams have been chartered to improve motor reliability and to improve our motor maintenance program:
      - The Corporate Motor QIT (Investigate problems common to all Duke generating facilities)
      - The Nuclear Motor Reliability Improvement Initiative (Investigate problems common to Duke's nuclear sites)
      - The McGuire Motor QIT (Investigate methods to correct McGuire specific motor problems)
        - Develop a list of problem motors
        - Assign a Champion for each motor

ENGINEERING CHALLENGES

- **SPECIFIC MAJOR EQUIPMENT RELIABILITY (Continued)**
  - **VITAL BATTERIES**
    - In 1991 - 1992, McGuire installed new Vital Batteries. The battery type is AT&T high specific gravity round cells. Since installation, numerous industry concerns have developed with this type of battery.
    - Industry concerns include a phenomena called "Premature Capacity Loss". Some batteries lose capacity pre-maturely following 5-7 discharges. Capacity loss ranges from 5% to 10% with each significant discharge.
    - McGuire has collectively performed 21 successful discharge tests on the four Vital Batteries prior to 10/28/96. EVCC failed its recent discharge test, resulting in a forced shutdown of both McGuire units.
    - Longer term solution is to replace all four McGuire Vital Batteries with conventional batteries by the end of 2EOC11 outage (12/97).
    - Short term actions taken include:
      - Total replacement of EVCC battery with new high specific gravity cells.
      - Conducted sample cell performance testing of EVCA, B, and D and correlated results to battery bank capacity.
      - Replaced weak cells in EVCA with new cells to increase capacity.
    - Vital Batteries are now fully operable and will be monitored closely until permanent replacement in 1997 is complete.

ENGINEERING CHALLENGES

- **COLD WEATHER PROTECTION**
  - February 1996 freeze event on McGuire Unit 2 revealed weaknesses in our freeze protection program. The following corrective actions have been completed:
    - A 3-site Duke team has developed a draft freeze protection Nuclear Station Directive to outline our program. This document is currently being finalized.
    - Completed a 3-site assessment of our cold weather programs. Recommendations are currently being implemented.
    - Upgraded the annual maintenance procedure that's performed prior to the cold weather season. This procedure was performed on both units and completed in September 1996.
    - New procedures are being finalized to periodically check critical equipment throughout the cold weather season. This will be performed routinely on a monthly basis and more frequently during extremely cold weather.
    - Low temperature computer alarms were added to the safety related FWST transmitter enclosures on Units 1 and 2.
    - Heat tracing has been added to Units 1 and 2 FWST level instrumentation on a single channel where a section was found missing.
    - Weekly cold weather protection update is provided at the 08:30 Management Focus Meeting.

ENGINEERING CHALLENGES

- **CURRENT REGULATORY ISSUES**
  - UFSAR Accuracy
    - Currently performing a pilot review of selected systems per NEI 96-05 guidelines. Review being performed on Two Safety Systems:
      - KC - Component Cooling
      - NS - Containment Spray

      And, Two Non-Safety Systems:
      - EHM - Hydrogen Mitigation
      - RC - Condenser Cooling - Turbine Flood

      Pilot results and recommendations for further UFSAR reviews expected first quarter of 1997.
  - Improved Standardized Technical Specifications:
    - Submittal development ~50% complete
    - Joint MNS/CNS submittal in March, 1997 timeframe
    - Implement at MNS in the first quarter of 1998 (after SGRP complete)
  - 10CFR 50.59 Process
  - 10CFR 50.54(f) Request for Information

ENGINEERING CHALLENGES

- **CURRENT REGULATORY ISSUES (Continued)**
  - Configuration Management - In addition to the above regulatory issues, self identified challenges exist in the following areas:
    - Handling of Vendor Information:
      - A self-assessment is in progress to review the handling of vendor information. This self-assessment will identify findings and recommendations to improve configuration management of vendor information.
    - Drawing Accuracy:
      - Engineering is performing quarterly trending of drawing errors. The areas of modification scoping and checking quality have shown more occurrence of errors. Training was recently provided to Engineering on methods to use to improve results in both of these areas.
    - To provide additional focus and drive out further improvements in the Configuration Management area, the following major changes are being implemented in 1997:
      - A major Site Focus area in the McGuire Operational Plan will be Configuration Management. This will result in a broad site wide focus for initiatives in this area and monthly updates to the site management team on improvement results.
      - A Configuration Management/Special Projects team is being formed in Engineering to provide ownership and focus to both McGuire Site and Engineering.

ENGINEERING CHALLENGES

- **MAJOR REPLACEMENT PROJECTS**
  - Project teams have been established to handle the engineering (design and implementation planning) and actual implementation of the following major projects in 1997 and 1998:
    - Steam Generator and Operator Aid Computer Replacement, 1EOC11 outage, Unit 1, February 1997.
    - Steam Generator and Operator Aid Computer Replacement, 2EOC11 outage, Unit 2, August 1997.
    - Security Computer and Access Control System Replacement (replace in early 1998).
  - With CNS-1 outage completion, McGuire is focusing on "lessons learned" from Catawba for both the SGRP and OACR.

ENGINEERING CHALLENGES

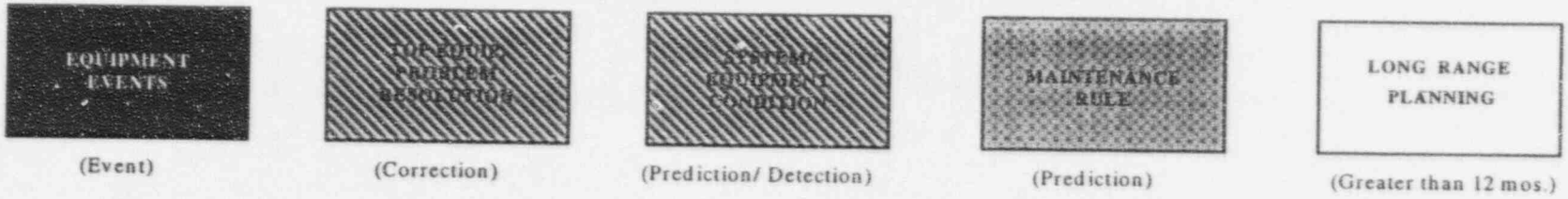
- **SUPPORT FOR MAINTENANCE RULE**
  - In March 1994, the Maintenance Rule Implementation Project was made into a team project. This project was tasked with setting up the Maintenance Rule for Duke Power in accordance with 10CFR50.65 requirements. The major steps in this project were to develop the process for scoping systems, structures and components (SSCs) into the rule, establishing risk assessment and performance criteria, establishing a removal from service evaluation, and determining data to review for historical evaluation.
  - In June 1995, the Maintenance Rule Working Group (MRWG) was established and the implementation project was closed out. Since then the working group has made revisions to the implementation process, developed computer tools to aid in monitoring availability data, and is making changes to existing programs to capture and document MPFFs. The site SSCs have been evaluated for inclusion in the rule and have been evaluated for risk significance along with establishing their performance criteria for monitoring. Work Process Manual directive 607 was established to evaluate the risk of removing equipment from service based on a risk matrix that was developed from maintenance rule data. This process has been used to schedule work and evaluate the risk impact on plant status since November, 1995. Nuclear Station Directives and Engineering Directives were issued for approval at the end of the first quarter of 1996. At the end of the first quarter of 1996, the availability tracking tool was in production and the Problem Investigation Process has been revised for the maintenance rule screen.

ENGINEERING CHALLENGES

- **SUPPORT FOR MAINTENANCE RULE (Continued)**
  - Modify and execute transition plan from the Maintenance Rule coordinator to the Engineering staff to actively involve the Engineering staff on their systems with respect to the Maintenance Rule.
  - Re-train groups involved with the Maintenance Rule on their roles and responsibilities in the rule.
  - Verify all Maintenance Rule documentation is adequate.
  - Initial determination of A(1)/A(2) system status was completed on May 1, 1996. Sixteen (16) McGuire systems were initially designated A(1). As of September 30, 1996, five (5) systems remain in A(1) status.
  - A three-site assessment of Maintenance Rule implementation was conducted during May and June, 1996. One preliminary assessment finding indicates a need to improve general knowledge levels in Engineering and Management regarding how the Maintenance Rule is implemented. The assessment also noted that some Maintenance Rule related revisions to departmental program documents are still outstanding. All of the Maintenance Rule related documents have been revised and have been approved.

Operating Excellence - Nuclear System

SYSTEM RELIABILITY



(Event) (Correction) (Prediction/ Detection) (Prediction) (Greater than 12 mos.)

CRITERIA	GREEN (2 points)	YELLOW (1 point)	RED (0 points)	ACTUAL	
EQUIPMENT EVENTS					
- Nuclear Events	0 - 3 by year end	4 - 5 by year end	> 5 by year end	6 by year end	
- Lost Generation Events - EFPD	3 by year end	4 - 6 by year end	> 6 by year end	52 by year end	
TOP EQUIPMENT PROBLEM RESOLUTION (TEPR)					
- Major Equipment Problem Resolution (See Initiatives)	N/A	N/A	N/A	N/A	
- Workarounds (WAPR) (No. Completed in Last 3 Months)	To be revised	To be revised	To be revised	NR	(Jul-NRAug-NR, Sep-NR)
- Action Register Problem Resolution (ARPR Avg. Rating for Last 3 mos.)	> 2.5	1.5 to 2.5	< 1.5	2.15	(Jul-2,Aug-2.14, Sep-2.33)
SYSTEM / EQUIPMENT CONDITION	≥ 11	9 - 10	≤ 8	9*	
MAINTENANCE RULE (% of A(1) Systems)	decreasing trend	flat	increasing trend	5 systems (decr. trend)	

*One item not reported for September; criteria reduced accordingly

MEETING EXPECTATIONS (GREEN) IMPROVEMENT NEEDED (YELLOW) NOT MEETING EXPECTATIONS (RED) UNREPORTED (WHITE)

Operating Excellence - Nuclear System

SYSTEM RELIABILITY

MCGUIRE NUCLEAR STATION

MAINTENANCE RULE MONTHLY STATUS REPORT

A (1) Status Systems as of 09/30/96

MAINTENANCE RULE PERFORMANCE CRITERIA NOT MET

			~~ System Level ~~~~~~			~~~~~~~~~~~~~~ Plant Level ~~~~~~~~~~~~~~							
			Risk Significant		Non-RIS					Repetitive			
		Parameter:	Unavailability	MPFFs	MPFFs	Rx Trips	ESF Act.	Loss DHR	F.O.R.	MPFFs*			
		Criterion:	WPM 601	< 2/cycle	< 5/cycle	< 2/cycle	< 2/cycle	0/cycle	< 8 %	0/cycle			
R/S?	UNIT	SYSTEM	Act./Criteria						Act./Criteria		PIP #	System Engineer	Comments
yes	1	SYD	Yes								1M96-1586	Pedersen/Kennedy	monitoring availability with new SLC
yes	2	FW	89.6/23 hrs	1							2M96-0332	Pedersen/Murdock	monitor temp of instr this winter
yes	2	NC		1		1			974/826 hrs		2M96-1479	Pedersen/Nolin	monitor NCP motors
yes	2	SSF	618/570 hrs								2M96-1439	Pedersen/Roberts	monitoring availability
yes	2	SYD	Yes								2M96-1590	Pedersen/Kennedy	monitoring availability with new SLC

Number of A(1) Systems: 5

* Components with R-MPFFs

Component	PIP #	Equipment Engineer	Comments
none	n/a	n/a	n/a

Changes Since Last Month

	System	PIP #	Basis for Adding / Clearing
Systems Added to A(1) Status	none		n/a
Systems Cleared from A(1) Status	none		n/a

	Comp.	PIP #	Basis for Adding / Clearing
Components Added to R-MPFF List	none		n/a
Components Cleared from R-MPFF	none		n/a

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  - MISPOSITIONINGS
  - CONTROL BOARD MONITORING
  - RISK ASSESSMENT OF ON-LINE MAINTENANCE
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  - CHALLENGES FOR 1997

OPERATIONS STRENGTHS

- **PLANT OPERATIONAL RECORD AND OPERATOR RESPONSE TO EVENTS DURING 1995 AND 1996**
  - Capacity factor
    - McGuire has operated well during 1995 and 1996 with the exception of the recent forced outage on Unit 2 due to the failure of the 2B reactor coolant pump motor and the forced outages that began on October 31st affecting both units due to problems with EVCC battery bank. A summary of capacity fact[illegible]actor trips, and refueling outage duration is shown below.

Un..	Capacity Factor		Automatic Reactor Trips		Outage Duration	
	1995	1996 (Sept)	1995	1996 (Sept)	1995	1996 (Sept)
Unit 1	89.59%	87.8%	1	0	42 days	
Unit 2	91.91%	68.5 %	0	1	48 days	39 days
Site Total	90.75%	78.2%				

(12th in the U.S. in 1995)

  - Unit 1 accomplished a record run of 262 days (ended October 30th).
  - Operator Performance in Response to Events (examples)
    - Unit 1 experienced 1 automatic reactor trip in 1995 and zero in 1996 through October. The trip was due to a failed surge capacitor on a reactor coolant pump motor which resulted in an automatic trip due to the loss of one reactor coolant pump. Unit 2 experienced 0 automatic trips in 1995 and 1 year to date through October. The trip was due to the failure of the 2B reactor coolant pump motor in May of 1996.

OPERATIONS STRENGTHS

- **PLANT OPERATIONAL RECORD AND OPERATOR RESPONSE TO EVENTS DURING 1995 AND 1996 (Continued)**
  - Operator Performance in Response to Events (examples)(Continued)
    - The Operations Group has demonstrated the ability to make prompt, conservative decisions in response to transients, including manually tripping the reactor to minimize the effects of an automatic trip and prevent challenging safety systems.
    - An example of this occurred in September of 1995 on Unit 1 when the reactor was manually tripped from 100% power. A failure occurred which caused a main steam isolation valve to close. The operators quickly recognized the problem and took prompt, conservative action and manually tripped the reactor prior to any automatic actions.
    - A second example also occurred in February of 1996 on Unit 1 when the reactor was manually tripped from about 60% power. The unit had been operating at 100% power performing testing on the component cooling system. A cooling water valve that provided flow to the 1A reactor coolant pump motor failed closed and caused the motor bearing to begin heating up. The operators quickly diagnosed the problem and began a rapid downpower per procedure to attempt to get the unit below P-8 setpoint at 48% power level. This would allow tripping of the reactor coolant pump without a reactor trip. The motor bearing rate of heatup was such that at about 60% power the operators recognized that they would not be able to get below P-8 prior to reaching a bearing temperature that would require immediately manually tripping the reactor coolant pump. The operators took prompt action to manually trip the reactor followed by tripping of the affected reactor coolant pump.

OPERATIONS STRENGTHS

- **PLANT OPERATIONAL RECORD AND OPERATOR RESPONSE TO EVENTS DURING 1995 AND 1996 (Continued)**
  - Operator Performance in Response to Events (examples)(Continued)
    - In addition to taking prompt, conservative actions to trip a unit when required, the Operations group has also demonstrated conservative decision making in other instances.
    - An example of taking prompt, conservative action occurred during the most recent Unit 1 refueling outage. Core alterations were in progress and during the lifting of one fuel assembly the refueling crane made an abnormal noise. The Senior Reactor Operator on the refueling bridge made a conservative call to put the assembly down and suspend fuel movement until the noise could be investigated. During subsequent troubleshooting the crane was operated several times which resulted in the binding of the lift device. Had the SRO not made the conservative call to suspend fuel movement and investigate the problem, the crane could have malfunctioned with a fuel assembly in the mast which would have made subsequent repair much more difficult.
    - Another example of taking prompt conservative action occurred during December of 1995. Unit 1 had begun its refueling outage when a problem was encountered on Unit 2. The Unit 2 reactor vessel head vent valves began leaking at a rate that required an immediate plant shutdown. The operating shift quickly recognized the problem and began a rapid downpower to bring the unit off-line. The shift took prompt conservative action and safety brought Unit 2 off line so that the head vent valves could be repaired.

OPERATIONS STRENGTHS

- **PLANT OPERATIONAL RECORD AND OPERATOR RESPONSE TO EVENTS DURING 1995 AND 1996 (Continued)**
  - Another example of good operator performance in response to events occurred in October of this year when both units were shutdown and cooled down simultaneously due to inoperability of the EVCC battery bank. The units were staggered off-line by first bringing Unit 1 down from 100% power to mode 3 immediately followed by Unit 2. Both units were then simultaneously cooled down and depressurized to reach mode 5 well within tech spec requirements. No significant incidents or events occurred during this evolution.
  - Although overall operator response to events continues to be a strength, we are aware that we have opportunities to continue to improve in this area. Two early 1996 events (inadvertent manual feedwater isolation and inadvertent operation of a component cooling water valve during slave relay testing) demonstrate the need for continuing attention. We learned from both of these events and incorporated corrective actions to prevent recurrence. Corrective actions included reinforcing the use of self checking (STAR) to all operators, communicating details of both events, making actual changes to the plant (protective collars around feedwater isolation switches), etc.
  - Refueling Outage Performance
    - McGuire's last three refueling outages have been very successful. The Unit 2 outage completed in 1995 finished in 49 days, the Unit 1 outage which completed in January of this year finished in 41 days, and the most recent Unit 2 outage which completed in May of this year finished in 39 days. These last two outages stand as records for both units. More importantly both of these outages were completed with lower numbers of personnel injuries and no significant events which resulted in LERs.

OPERATIONS STRENGTHS

- **SENSITIVITY TO SHUTDOWN RISK AND EMPHASIS ON NUCLEAR SAFETY**
  - Conservative Decision Making
    - An example of the station's continuing emphasis on conservative decision making was seen in the station's preparations for hurricane Fran this fall. The station management team met to discuss steps to be taken well in advance of the approaching storm. These steps included:
      - Just in time training for the OPS shifts covering postulated scenarios that could be caused by the high winds and rain
      - Installation of a temporary instrument air compressor in the event a station blackout occurred due to loss of offsite power.
      - Running the emergency diesel generators prior to the storm's arrival to add an extra level of assurance of their continued operability.
      - Supplementing OPS shift to ensure adequate manpower to handle all postulated scenarios.
      - Ensuring full maintenance shift staffing availability.
      - Walkdown of all areas of the plant exterior to secure loose objects.
      - Checkout of transformer yard sump pump system to ensure flooding would not occur.
  - No Shutdown Events During Last Four Outages
    - McGuire has not experienced any shutdown related events (LERs) in the last four refueling outages. Management reinforced the expectation that work quality and personnel safety were to be the two things that drove each outage job instead of concentrating solely on the schedule. McGuire teammates took the time to do the jobs safely and with quality and the lack of shutdown events shows that we were successful in this effort.

OPERATIONS STRENGTHS

- **SENSITIVITY TO SHUTDOWN RISK AND EMPHASIS ON NUCLEAR SAFETY (Continued)**
  - Solid Operations Monitor
    - During the last two refueling outages a special monitor was installed in the control room to aid the reactor operators during reactor coolant system solid operations. During a refueling outage in 1995 a pressurizer power operated relief valve(PORV) lifted during solid operations. Letdown flow from the reactor coolant system had been adjusted by the reactor operator (RO) and caused reactor coolant pressure to increase to the point of lifting the PORV. Although the RO had been monitoring pressure via the control board gauges, the type of indications being monitored did not give him feedback that indicated the actual rate of rise of pressure. The operator was momentarily distracted by another task and within a short period of time pressure increased to the PORV lift setpoint.
    - A team of personnel from Operations, Engineering and Information Technology developed a laptop PC based monitor that was installed in the control room during the most recent Unit 1 and 2 refueling outages. This monitor took inputs from existing reactor coolant system pressure and temperature instrumentation and provided a graphical trend output for the operator to monitor. The program also provided alarm setpoints for pressure and temperature rate and absolute values. The alarm was annunciated through a speaker driven by the PC. The monitor was mounted behind the control board section that had the reactor coolant system controls on it so that it was in the operator's direct line of sight.
    - No inadvertent PORV actuations occurred during these outages and feedback from the reactor operators was that this was an effective tool that assisted in avoiding these actuations.
    - **This innovative application of technology was recognized as an Operations strength in the 1996 INPO E&A in August of this year.**

OPERATIONS STRENGTHS

- **OPERATIONS GROUP PERSONNEL SAFETY RECORD**
  - 548 Days Since Last Recordable Injury In Operations
    - The Operations group has achieved a record run of 548 days since the last recordable injury in the group (as of 10/24/96). This can be attributed to increased site and group emphasis on personnel safety, the Operations Group Safe Team, improvements in safety equipment (for example, fall protection harnesses), shift/day team safety improvement ideas implementation, use of Level 1 Safety Assessments prior to each job, etc.

OPERATIONS STRENGTHS

- **INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS**
  - Operations Group Team Notes
    - The Superintendent of Operations continues to generate a weekly communication called Operations Team Notes. This communication is distributed to each Operations teammate via electronic mail and hard copy. The first section of each week's team notes is written by the Operations Superintendent and the second section consists of articles and notes extracted from other team notes, electronic mail notes, etc. The first section is used by the Operations Superintendent to communicate expectations, lessons learned, recognition items, etc. to the group on a weekly basis. This helps ensure that the group is aware of important information in a timely manner and also helps ensure consistent communication on important issues. Feedback from OPS personnel indicate that this is a valuable communication tool.
    - **This innovative communication tool was recognized as an Operations strength in the 1996 INPO E&A in August of this year.**
  - Weekly Management Communications During OPS Requal Training
    - Operations Management (usually the Operations Superintendent) meets regularly with shift teams during requalification training. During the past months Operations Management has discussed important information such as the Zack Pate "The Control Room" speech and the recent Oconee fuel assembly event with all shifts. This regular meeting with each requal shift to communicate expectations and important information continues in a formal manner by having time set up to meet with each shift during each week of each requal segment (eight times per year for each shift).

OPERATIONS STRENGTHS

- **INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS (Continued)**
  - Operations Quality Steering Team (QST)
    - The Operations Group formed an Operations Quality Steering Team (QST) in October of 1994. This team meets on a regular basis and membership is composed of Operations staff and shift representatives. Operations Management has brought issues to the group for implementation and the group had been able to develop and implement these expectations in a timely manner. Recent initiatives begun or implemented by the QST consist of a shift rotation and manning program in support of the recently completed Unit 1 refueling outage which was designed to support the station business needs as defined by management, forming a Quality Improvement Team (QIT) to focus on reducing the innage radiation dose received by operators, forming a QIT to develop a RO/NLO Performance Management program, etc.
  - Monthly Operations Shift Manager (OSM) Meeting
    - The Shift Operations Manager (SOM) is the manager over our five operating shifts. The five Operations Shift Mangers (OSMs) report to this manager. This management team meets monthly to discuss issues related to the operating shifts. This team develops consistent management expectations and then communicates back to their respective shifts. This helps ensure alignment and quality between the five shifts. The Site Vice President, Station Manager, Operations Superintendent, and Chemistry Manager make frequent appearances at these meetings to reinforce expectations and gain feedback from the OSMs.

OPERATIONS STRENGTHS

- **INCREASED COMMUNICATION OF MANAGEMENT EXPECTATIONS (Continued)**
  - Increased management observations in training and in the plant as discussed earlier also have helped effectively communicate management expectations. During 1995 and 1996 the increase in management expectations and involvement have had a positive effect on the Operations Group. Improved morale is evident throughout the group and can be partly attributed to management's dedication to continuous improvement and high expectations and standards.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING**
  - New Simulator Critique Process (Post Scenario Review (PSR) Process)
    - A new simulator post scenario critiquing process was developed in the fall of 1995 using one simulator crew as a pilot. We call this our Post Scenario Review (PSR) Process. We began using this process with all simulator teams early in 1996. The new critiquing process was developed to aid in the learning process which occurs after the simulator scenario ends. The new process is instructor facilitated at this time, but should move to being more SRO facilitated as the crews become more comfortable with the process. An INPO Assist Visit was performed in the fall of 1995 to provide us with a critical view prior to full scale implementation of this process. The results from that visit were favorable in that the team felt that the new process should be more effective than our old process. A process has been developed to formally capture areas for improvement for each individual so that these items can be reviewed prior to the start of the next simulator session. This process involves loading this information into a database immediately after each PSR. Prior to the next simulator session the instructor prints out these areas for improvement for each individual. The shift supervisor on each simulator team then ensures that these areas are discussed prior to starting the simulator session so that individuals can concentrate on improving in these identified areas.
    - **This process was recognized as an Operations strength in the 1996 INPO E&A in August of this year.**

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Operations Management involvement in Training
    - Operations Management involvement in training continues to be strengthened by the McGuire Training Review Board (MTRB) and the Training Program Review Committees (TPRC). The MTRB consists of senior site management including the Superintendent of Operations and the Operations Training Manager. The MTRB provides management oversight on all site training programs. Emerging issues and training program maintenance are monitored by this group. The Operations TPRC consists of Operations Management and Operations Training Management. The TPRC provides management oversight and focus specifically on Operations Training. The TPRC meets every two weeks and provides a formal interface between OPS and OPS Training.
    - **Operations management involvement in training was recognized in the recent INPO E&A in August of this year as a part of the strength in the O&A area relating to management oversight and management observations of training.**

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Increased standards for Requal
    - Operations Shift Managers (OSMs) monitor their shift's performance in requal. The OSMs meet with the Supervising Instructors each week for each segment to discuss their shift's strengths, weaknesses and areas that need increased emphasis or attention. In addition, early this year a facilitated critiquing session for training effectiveness has been added to each week of requal. On Thursday afternoons the entire requal shift meets with a non-OPS Training instructor (we use a non-OPS person to facilitate these sessions in order to encourage the most open and honest feedback) to generate a list of items that went well during the requal week along with areas for improvement. These areas for improvement are then addressed by OPS and OPS Training. This has shown to be a more effective method of gaining this type of valuable feedback than methods used in the past. **These meetings were recognized as an Operations strength in the INPO E&A in August of this year.**
    - Operations and Operations Training also continue to support the Operations Training Committee (OTC). The OTC is sponsored by the Operations Support Manager and the Operations Training Manger. The OTC is comprised of Operations licensed and non-licensed operators and Operations Training instructors. The OTC is a working group which focuses on potential Operations training program enhancements.
    - These groups and the OSM/Instructor team in conjunction with management observations have strengthened Operations training.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Increased standards for Requal (Continued)
    - Operations Management has continued to increase the standards for requal. All operators are required to attend all requal training as scheduled or makeup any missed training. Operations Training has established an attendance monitoring system to enhance monitoring capability to notify Operations Management of any individuals that miss training. Operations Management has also instructed Operations Training to increase exam difficulty to test to a higher level of knowledge in both requal and hot license class. In addition, topics which were dropped from the non-licensed operator program in past years (topics such as reactor theory) have been added back in to requal. The purpose of this is to better prepare our non-licensed operators for license class.
    - Starting with segment 3 requal in 1996 a closed reference portion was added to requal segment exams. Prior to this all segment exams were open reference. Operations and Operations Training management felt that adding in a closed reference portion will challenge the operators' knowledge in a different way than the open reference portion of the exam. We expect to be able to learn from this new test method so that we can more accurately measure the effectiveness of requal training.
    - Operations Training continues to upgrade the Operations Training lesson plans and objectives to improve these and incorporate the new Job Task Analysis (JTAs) which were performed for non-licensed and licensed operators. As Operations Training completes development of a new lesson plan, the lesson plan is given to Operations shift to be reviewed by a subject matter expert through the Operations Training Committee (OTC). As Operations Training develops new objectives for the new lesson plan they are reviewed and approved by Operations Management.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Increased standards for Requal (Continued)
    - Operations Training has developed more simulator scenarios focusing on abnormal operations (AOP usage) to go along with the emergency operating scenarios (EOP usage). The abnormal operating scenarios focus on events which are more likely to happen and are in some ways more challenging to the operators than emergency operating scenarios because of the need to continuously prioritize which abnormal situation to address first. This effort coincides with the industry direction to develop and train on more abnormal operating scenarios.
    - An annual NLO JPM exam was added this year as a part of the annual operator requal exam process. Each NLO had to successfully perform three JPMs during the newly added NLO annual requal exam week. This innovative addition to the operator requal program provides additional assurance of the continued ability of non-licensed operators to properly respond to plant events.
  - "Cold" Crew Simulator Evaluations Observed By Operations Management
    - Another change made this year was to move all evaluated simulator scenarios to the first day of the week of requal as opposed to the last day. This gives an opportunity to view the crew's performance in a "cold" condition and also provides the crew with an opportunity to work on any areas for improvement over the remainder of the requal week. In addition, all evaluated scenarios are now observed by a member of OPS management (OPS Superintendent, Shift Operations Manager, OPS Work Process Manager, or OPS Human Performance Manager) in addition to being observed by OPS Training personnel.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Self Checking (STAR) Simulator
    - A self checking simulator panel has been developed by site personnel to assist in further development of self checking practices by site personnel. The simulator consists of a panel with several switches and gauges with similar alphanumeric names assigned to each switch. A two person team is assigned to operate the simulator per a procedure. The task is made more difficult by having one person read the procedure to the other via headsets and a time limit of 15 minutes is put on completing the task. Only through the use of good three way communication, use of phonetics, and good self checking will a team be able to succeed in the task. Many non-licensed operators have already been through this training simulator and all members of the Operations group will go though this by the end of Segment 4 requal in 1996. Experience so far has shown that this simulator helps reinforce good work practices that carry over to the "real world".
  - Use of Simulator In "Lab" Sessions to Complement Classroom Requal Training
    - Classroom training for operators in requal has also been modified for 1996 to make further use of the simulator. Many classroom sessions now are immediately followed by a practical demonstration using the simulator to reinforce the knowledge gained from the classroom session.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Flow Loop
    - A flow loop has been built in the Maintenance Training Facility and is ready for use by Operations and other site groups. The flow loop consists of piping, valves, pumps, instrumentation and controls, etc. that simulate equipment found out in the plant. The loop can be used to reinforce Operations group type activities such as self checking, independent verification, tagging, equipment operation, proper radiation protection practices, etc. Operations Training is currently developing a detailed plan to make full use of this facility. In addition, components on the flow loop have been labeled according to a new labeling standard which is planned for implementation for the entire McGuire station in 1998.
  - Training Effectiveness Measures
    - A Training Effectiveness Measures program has been implemented that determines effectiveness on a monthly basis. The process is set up to assess numerous areas that are indicators of training effectiveness during the month such as whether or not line and training met in a formal manner, whether or not management observed training, whether or not MNS/industry operating experience was utilized in the conduct of training, where changes made to training based on student/management observation feedback, was there an example where training had a positive impact on group/plant performance, etc. The use of a monthly measure to measure effectiveness helps drive those activities that add value to our training program.
    - **This training effectiveness measure was recognized as a Training strength in the 1996 INPO E&A in August of this year.**

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Utilization of Operating Experience
    - A comprehensive program is in place to ensure that operating experience is fully incorporated into Operations training. OE items are screened by the General Office organization and sent to a single point contact in OPS training. Many items are directly incorporated into training, while others are brought to the Operations Training Program Review Committee (TPRC) for a decision on where and how to incorporate into training. In addition, OE items are periodically communicated to the Operations group through OPS Team Notes, required reading, and face to face communications from OPS Management.
    - **Effective use of operating experience was recognized as an O&A strength in the 1996 INPO E&A in August of this year.**

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Use of Simulator to Support Plant Evolutions
    - Operations has increased use of the simulator to support plant evolutions by providing just in time training for the operators and by providing validation of plant response to planned evolutions. Some examples include:
      - Provided just in time training to Operations and Reactor group personnel to support Unit 2 Zero Power Physics Testing during the most recent refueling outage.
      - Provided just in time train[illegible] to Operations personnel to support a planned maintenance evolution on valve 1KC-1A .
      - Used simulator to validate PRA assumptions relating to recent FWST frozen level instrument problem. Simulator crews were used to verify that operators would notice frozen instruments in the event of an actual loss of coolant accident and take appropriate manual actions to swap to the containment sump for the recirculation phase.
      - Used simulator to verify plant response to loss of one out of two condensate booster pumps with the third pump out of service for maintenance. Guidance was then developed and given to the operators in the form of a special order to immediately trip the reactor in the event of pump loss as opposed to trying to run back the unit manually or automatically since the simulator demonstrated that the chance of success with this approach was minimal.
      - Used simulator to verify plant response to loss of a reactor coolant pump when <48% power during recent Unit 1 downpower evolution to change transformer taps. Guidance was then developed and given to the operators in the form of a special order to immediately trip the reactor if between 15 and 48% power and to manually shutdown the reactor if <15% power.
      - Used simulator to validate ESF Test Procedure after major rewrite prior to the Unit 2 outage.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - Other "Just In Time Training"
    - In addition to using the simulator to provide just in time training, other forms of just in time training have been provided to the Operations shifts. For example, earlier in this assessment presentation you will find a discussion on the just in time training that was provided to the operators prior to the predicted arrival of hurricane Fran.
  - Shift Technical Advisor Program Improvements
    - Improvements have been and continue to be made to the STA program. The STA is now required to independently classify emergencies per the EAL and compare his determination with that of the Operations Shift Manager. In addition, a second set of emergency and abnormal procedures have been provided in a desktop binder for the STA's use during events. The STA uses these procedures to follow the direction the crew is taking. By having a separate set of procedures the STA does not have to move close to the SRO procedure reader and is able to stay back from the control boards to maintain effective oversight. Other improvements being made to the STA program include completion of a STA specific Job Task Analysis, increasing formal training for new STAs (above and beyond the training provided to all SROs), and strengthening the criteria for initial and continuing STA qualification.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - License Class NRC Exam Performance -100% Pass Rate for HLP-17
    - Results from our 1994 Hot License Class NRC Exam did not meet our expectations. Our expectation is 100% pass rate on initial license exams. This class achieved a 82% pass rate (9 out of 11 candidates). Our previous success rate (for classes prior to the 1994 class) was satisfactory. The previous four classes had 100% pass rate on the NRC written license examinations.
    - Corrective actions were put in place to correct these deficiencies. Our most recent license class took their NRC exam in January of this year and achieved a 100% pass rate. A formal self assessment has been performed on this class to ensure that we identify areas for improvement that will continue to ensure this same level of performance in the future.
  - NRC Pilot Exam Preparation
    - In addition, this NRC exam was prepared under the NRC Pilot Examination Program. Comments from the NRC on our preparation for the exam were very positive which reinforced the value of the hard work that numerous OPS and OPS Training personnel put into this exam.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS TRAINING (Continued)**
  - INPO OPS Training Reaccrediation SER Development
    - Beginning in mid 1995 the Operations and Operations Training groups begin development of the Self Evaluation Report to support INPO reaccrediation of the OPS Training program in early 1997. A team of approximately 35 personnel equally divided between OPS and OPS Training worked to evaluate the training program per the eight INPO objectives. This team developed the initial draft of the SER which has subsequently been reviewed by the Operations Training Program Review Committee (TPRC) and McGuire Training Review Board (MTRB). A self assessment team sponsored by the General Office reviewed the SER and performed onsite interviews and observations in the fall of 1995 and early summer of 1996 to help validate the SER. The teamwork between OPS and OPS Training in performing this assessment allowed for a greater interface between these two groups that will continue to drive improvements in operator training. The SER will be maintained as a "living" document and updated yearly after reaccrediation occurs.

OPERATIONS STRENGTHS

- **CONTROL ROOM COMMAND AND CONTROL**
  - Command and Control Model
    - Operations has continued to use a distinct command and control model to enhance control room crew performance and Operations Shift Manager oversight. The command and control model more clearly delineates control room crew responsibilities. The model is reinforced through licensed operator requalification simulator training and evaluation. Management involvement through simulator training observation also reinforces the command and control model.

OPERATIONS STRENGTHS

- **CONTROL ROOM COMMAND AND CONTROL**
  - Increased Management Observation
    - McGuire has increased the amount of management observations for all areas of Operations training and plant operations. The Site Vice President, Station Manager, Site Training Manager, and Manager of Operator Training all observe and evaluate simulator training and crew performance routinely. Operations Management also implemented in 1995 a comprehensive program for OPS management observations that resulted in the following documented observations (Goals for 1996 are in parenthesis):

	1995 (actual) Observations	1996 Actual thru Sept (EOY Goal)
1. Simulator Observations	183	129 (210)
2. Control Room Observations	109	103 (330)
3. NLO Rounds Observations	96	109 (215)
4. HLP Simulator Observations	16	(n/a for 1996)
5. Plant Activity Observations	90	70 (137)
6. Plant Activity Observations of groups outside of OPS (new goal for 1996)		28 (65)
7. NLC JPM Observations	25	19 (20)
8. Test Tech OJT/OJE Observations	22%	12%(25%)
9. NLO and HLP OJT/OJE Observations	42	139 (175)
10. Classroom Observations	221	23 (115)

    - **The management observation program was recognized as an O&A strength in the 1996 INPO E&A in August of this year.**

OPERATIONS STRENGTHS

- **CONTROL ROOM COMMAND AND CONTROL (Continued)**
  - Communication Standards (Repeatbacks)
    - Operations continues to require the use of three way communications. During 1995, this policy of using three way communications when communicating plant operational information was formalized as a site wide policy which is now applicable to all groups. Previously this was only an Operations Group standard. In addition, in mid 1996 a "one pager" was developed to further prescribe the use of phonetics by plant personnel. This change in policy was developed to add consistency in the use of phonetics. Observations by OPS management and outside observers showed that an increase in the consistency in the use of phonetics would be an improvement in the program. The change in policy was developed by the OPS Superintendent after soliciting input from operators and the other two Duke nuclear sites Operations Superintendents. Communication standards are reinforced daily through shift supervision, through training, and are also reinforced by management observation both on the simulator and in the plant.
  - Control Room Briefings
    - Operations continues to effectively use control room shift briefings at the start of each shift. The shift briefings are conducted immediately after shift turnover. The entire operating shift meets in the control room for this briefing. These shift briefings ensure that all members of the shift are cognizant of plant conditions and major activities planned for the shift. The Operations Shift Manager also emphasizes management expectations such as safety (both personnel and nuclear), self checking, conservative decision making, etc. during these briefings.

OPERATIONS STRENGTHS

- **CONTROL ROOM COMMAND AND CONTROL (Continued)**
  - Pre-Job Briefings
    - Operations Management Procedure (OMP) 3-2 was revised in early 1996 to distinguish between two different types of pre-job briefings: Level 1 and Level 2. Level 1 briefings are used for major troubleshooting, testing, maintenance, etc. and a formal pre-job briefing form is used to document the pre-job and post-job briefings. Level 2 briefings are used for less complicated activities and a pre-job briefing memory aid card is used to guide the conduct of this briefing.
  - Control Room Access
    - Operations continues to maintain strict access controls over personnel entering the control room area. Entrance to the operating "horseshoe" area is controlled by the Control Room SRO. Access is permitted for those individuals demonstrating business need to be inside the horseshoe area.
  - Control Room Formality
    - Operations Management continues to reinforce expectations relating to control room formality. The expectation for a businesslike and professional atmosphere in the control room has been reemphasized. Distractions are minimized, control boards are closely monitored, and a professional environment is being maintained. These expectations are reinforced daily by shift supervision and also by Operations Management during control room observations.

OPERATIONS STRENGTHS

- **CONTROL ROOM COMMAND AND CONTROL (Continued)**
  - Control Room Staffing
    - Normal shift control room staffing is maintained above minimum tech spec requirements. Minimum shift staffing consists of 5 SROs (including OSM and STA), 4 ROs, and 9 NLOs. Minimum fire brigade staffing is ten individuals (5 from Operations, 5 from Maintenance shift team).
  - Control Room Cellular Phone System
    - During 1996 a cellular phone system was installed in the control room. This cellular system is used by the SROs and ROs in the control room. The system eliminates the problem of phone cords stretched across the RO desk area and also allows the CRSRO to remain within the horseshoe area and still answer the SRO phone. Our installation was carefully evaluated by Engineering and Operations personnel to ensure that there would be no adverse impact on control room controls and instrumentation. We believe that this is one of the first such installations in the country. Feedback from the control room operators has been very positive on this new system.
  - Control Room Public Address System
    - During the summer of 1996, a permanently installed PA system was added to the McGuire control room. This system consists of wireless microphones and installed ceiling speakers throughout the Control Room area. The system is used to facilitate beginning of shift briefings that are conducted with the entire operating crew in the control room. By having the PA system we have been able to spread out the members of the operating crew such that personnel are able to move back from the front of the control room, thereby providing less of a distraction to the ROs monitoring the control boards. The PA system also ensures that every member of the crew is clearly able to hear all the information on during the briefing.

OPERATIONS STRENGTHS

- **OPERATIONS FOCUS ON WORK PROCESS**
  - A major improvement area for the site in 1995 and 1996 has been Operational Focus. In addition to encompassing the focus that the Operations group provides, this also includes how the other groups on site are focused towards plant operation. Meetings with INPO and benchmarking to other plants recommended by INPO and NRC as having good Operational Focus were conducted.
  - Work Control Group Innage Manager Staffed By Former Operations Shift Manager (OSM)
    - One major change that was made in late 1995 was the staffing of the Innage Work Manager position within the Work Control Group by a former Operations Shift Manager (OSM). All three Duke sites agreed to staff this important position in this manner to provide the proper operational focus on the daily operating schedule.
  - Operations Work Process Manager Group Formed
    - In addition, another major change occurred in 1996 within the Operations group at all three sites. An Operations Work Process Manager section was established within the Operations group to provide a single point focus for Operations into the daily operating and outage schedules. This small section within Operations is led by a current OSM (who will rotate back to shift every two years) and reporting to him are several licensed and non-licensed operators. This team is the link to the daily schedule for the Operations group. Within this team is a centralized tagout team that will take the planning and execution of many tagouts off of the operating shifts. We believe that this single point focus for scheduling and tagging has improved the Operations group involvement in and support of the daily schedule. This group was fully implemented at McGuire by June of 1996.

OPERATIONS STRENGTHS

- **OPERATIONS FOCUS ON WORK PROCESS (Continued)**
  - Redirecting Unit Managers Group Responsibilities in Mid 1996
    - Beginning this year we decided to redirect some resources within the Operations group. The Operations Work Process Manager section (previously discussed) was put in place and the work process responsibilities previously performed by the Unit Mangers Group (UMG) within OPS were transferred to that new group.
  - Will Provide Direct Interface Between OPS Shifts and Engineering
    - In addition, once the Unit 2 outage completed in May of this year we began transitioning the engineering/technical support responsibilities from the UMG to the Engineering organization. Some existing UMG resources were moved to shift SRO positions and some were moved to the Engineering organization as a part of our engineering rotation plan. We have found that a more direct interface between OPS shift and Engineering adds value and enhances prompt plant problem resolution.

OPERATIONS STRENGTHS

- **OPERATIONS FOCUS ON WORK PROCESS (Continued)**
  - Challenge Is To Ensure a Smooth Transition
    - As we have made these changes, the number one priority was to make sure that all tasks that were being performed by the UMG were transitioned or a decision made to eliminate the performance of certain tasks. We took steps to ensure that nothing "dropped through the crack" as we made this transition. Engineering and Operations from all 3 sites met in May to developed a detailed roles and responsibilities matrix to define responsibilities for each group. This matrix was reviewed and approved by the Station Mangers. McGuire has implemented this matrix and fully transitioned away from the previous Unit Managers Group organization as of June 1st. Management will continue to monitor the success of this transition and take prompt action to resolve any unanticipated problems. Results so far have been very positive and the effectiveness of the new OPS Work Process Manager group has been a strength in OPS support and commitment to the operating schedule and also in reducing work process related challenges experienced by the operating shifts.

OPERATIONS STRENGTHS

- **OPERATIONS CONTROL AND INTERFACE WITH STATION WORK ACTIVITIES**
  - Daily 0700/1900 Plant Status Meetings Lead By Operations Shift Manager (OSM)
    - Operations leads a meeting at 0700 and 1900 daily. This meeting is led by the off-going Operations Shift Manager and is attended by the oncoming OSM, Work Control, Maintenance, Chemistry, Radiation Protection, etc. The purpose of this meeting is to ensure that all resources (shift and daystaff) are aligned to support the plant operational priorities through the shift. Clear ownership and accountability for resolving problems is assigned in this meeting. This meeting has been in place at McGuire since early 1994, and in 1995 the format and conduct of this meeting was adopted by the other two Duke plants. This has shown to be an effective tool in providing the proper operational focus on the daily plant activities and problems. An important part of this meeting is to identify "action register" items (daily plant concerns that cannot be fixed immediately) that are assigned to the responsible individual for resolution. A formal update is given daily to the Operations shift by the individuals assigned until the item is completed. This has proved to be an effective method to ensure that longer term issues are appropriately assigned and resolved.
  - Weekly Schedule Commitment Meetings
    - Operations participates in weekly meetings to develop and approve the Work Control Operating Schedule. The participation by Operations in this process ensures that a comprehensive review of the daily operating schedule is performed prior to the work being scheduled. Operations pays particular attention to Technical Specification implications, risk assessment interactions, and overall aggregate effect on the plant caused by equipment removed from service. This aggressive involvement in schedule development helps ensure that the plant is operated with safety as a first consideration. This responsibility is being performed by the previously mentioned OPS Work Process Manager section.

OPERATIONS STRENGTHS

- **OPERATIONS CONTROL AND INTERFACE WITH STATION WORK ACTIVITIES (Continued)**
  - System Work Window Implementation
    - In 1996 the work control process was changed to utilize what are called System Work Windows to schedule and execute on-line maintenance. This means that important plant systems are logically grouped and assigned to an execution week within a twelve week rotation. The OPS Work Process Manager section is the primary OPS interface with this new process.
  - Unit 2 Refueling Outage 4 Shift Rotation
    - The Operations shift was changed from a 5 shift to a 4 shift rotation to provide better support for the most recent Unit 2 refueling outage. By going to 4 shifts and cancelling all requal training during the outage we were able to maintain a normal shift staff of 7 SROs, 7 ROs, and 12 NLOs for the outage duration. Maintenance work was levelized across the week to make full use of this increased shift support. In addition, 2 SROs were provided to day staff to provide additional support to that group during the outage. Also three dedicated operators were provided to the OPS test team to support penetration leak rate testing. The overall results of this approach were excellent. Maintenance and Work Control recognized the increased support provided by the shifts in the Work Control Center and in support of field and control room evolutions. Operations group overtime also decreased during this outage (supplemental hours incurred by exempt personnel decreased by 33% and non-exempt overtime was also reduced compared to the prior outage). In addition, although requal training was cancelled for 6 weeks in support of the outage, we expect to still achieve the required hours of classroom and simulator instruction for each operator for the year.

OPERATIONS STRENGTHS

- **OPERATIONS CONTROL AND INTERFACE WITH STATION WORK ACTIVITIES (Continued)**
  - Protection of Plant Equipment During Work Activities
    - The OPS Work Process Manager (OWPM) section has the responsibility for determining plant equipment protection requirements to be utilized during planned maintenance activities. These protection requirements are applied when it is necessary to protect redundant, backup or critical pieces of plant equipment from work that is in progress nearby or when work has a redundant or backup train out of service. Some examples of how this has been used include:
      - During maintenance on a condensate booster pump with the plant at 100% power, the two operating pumps were roped off to control access and common instrumentation between the three pumps was protected such that maintenance on the third pump would not inadvertently impact operation of the two pumps .
      - During a recent downpower on Unit 1 to change main stepup transformer tap settings, protection was put in place to restrict access to the other train switchyard PCBs, stepup transformer, 6900 volt switchgear rooms and both trains of diesel generator rooms in order to protect the single source of offsite power.
      - On Unit 2 the "A" busline was taken down for work on the 2A stepup transformer and equipment protection measures similar to the last example were put in place.
      - During our recent EVCC battery bank inoperability that caused shutdown of both units, protection measures were put in place for the other trains of vital DC power along with protection for the offsite power supply systems.

OPERATIONS STRENGTHS

- **OPERATIONS FOCUS ON LONGER TERM PLANT PRIORITIES**
  - Top Operations Issue List (TOIL)
    - In late 1994, Operations management implemented the Top Operations Issues List (TOIL). This periodic management assessment is performed every six months to pick out the most areas for continuous improvement facing the OPS group. The issues that are put on the list are typically those that require the entire OPS group involvement. The list has been an effective tool to ensure that these most important issues are communicated to the entire Operations group. Current TOIL items include Operational Focus, Management Involvement, Configuration Control/Mispositionings, Operations Training, OSM and STA Role on the Simulator and Simulator Critiquing, Self Assessment Program in OPS, Communication Standard, and OPS Organization Transition (forming of the new OPS Work Process Manager Group). Good progress has been made in each of these areas. The next meeting of OPS management to discuss this list is scheduled for November of this year at which time several items will likely be dropped and new items added.
  - Site Focus On Reducing Control Room Annunciators, Instrument Problems, and Operator Aid Computer Points Out of Service
    - In addition there has been a strong site focus on reducing the number of control room annunciators, instruments and Operator Aid Computer points that are out of service. These are all closely tracked and goals established to minimize these distractions to the operators. Good success has been achieved in each of these areas over the past year. For example, our goal for control room instruments out of service that can be worked on-line is to be 7 to 9 total for both units. So far in 1996 we have run below that goal at about 5 out of service.

OPERATIONS STRENGTHS

- **ROTATION AND DEVELOPMENT OF OPERATIONS STAFFING**
  - Twenty-Six Staff Rotational Positions Within Operations Group
    - In 1994 the Operations Group implemented a program that provided rotational position opportunities within the Operations Group and established long term rotational positions outside the group. Currently there are 26 rotational staff positions within Operations (up from 16 in 1995).
  - Seven Staff Rotational Positions Outside Operations Group
    - There are also 7 rotational staff positions established with other work groups outside of Operations (Operations Training; Work Control; and MSRG). These rotational positions provide career developmental opportunities for individuals and also help to broaden overall Operations knowledge and skills. Duration of each assignment is normally 2 years.
  - Instant SRO Development Plan
    - Operations began an aggressive program with the site Engineering organization in 1995 to move engineers into Operations and train and license those engineers as SROs. Once licensed, the individuals will fill a licensed position within the Operations or Work Control Groups. At the same time Operations will rotate other experienced SRO engineers back to the Engineering organization. The purpose of this rotational program is to bring Operations perspective and expertise into the Engineering organization. This will help Engineering provide improved, plant operation oriented technical support. Two experienced engineers that moved into OPS last year entered license class in June of this year. In addition on July 1st two highly experienced degreed SROs will move from the Operations group to Engineering to help increase operational expertise within that organization. Also in October of this year three additional experienced engineers (one a current maintenance manager) moved into the Operations group to prepare for entering license class in the fall of 1997.

OPERATIONS STRENGTHS

- **ROTATION AND DEVELOPMENT OF OPERATIONS STAFFING (Continued)**
  - Rotation of Operations Management
    - In addition to the staff rotational positions, the Operations group management team has been rotated during 1996. The previous Shift Operations Manager (SOM) is now on loan to the Emergency Planning Group, the previous Procedure Section manager is now the SOM, and the previous Unit Staff manager is now the Procedure Section manager. By rotating these management positions we are helping to develop each of these managers and each manager is able to bring new strengths and viewpoints to these positions.
  - Leadership Planning Process in Operations
    - Early in 1996 the Operations group developed and implemented a Leadership Planning process. This process was designed to complement the current performance management process and focus specifically on developing the group's future leaders. A simple matrix tool was developed to identify performance in the areas of leadership and performance. Meetings of the management staff were held to evaluate every SRO, RO, and NLO in the Operations group using this new matrix. Feedback was provided by the manager to each employee consisting of strengths and areas for improvement. This process will help ensure continued development of strong leaders for the Operations group.

OPERATIONS STRENGTHS

- **BENCHMARKING EFFORTS**
  - Participated In Nine Benchmarking Peer Trips in 1995
    - The Operations group aggressively supported benchmarking efforts during 1995. A total of nine INPO peer trips were conducted by nine different SROs and Mangers in the OPS group. In addition to these trips, the OPS Superintendent and OPS Work Process Manager visited several plants to learn about their operational focus efforts.
    - After each plant visit was conducted OPS management met with and debriefed the participant. A formal tracking process was used to capture lessons and ideas learned from these visits so that the appropriate person could evaluate use of that idea at McGuire. Many of these were either fully or partially implemented at McGuire.
  - Examples of Changes Made As A Result Of These Benchmarking Efforts
    - OPS management providing continuous coverage through parts of the refueling outage (North Anna)
    - Tagging improvements (North Anna)
    - Formalized pre job briefing process (North Anna)
    - Simulator kept in same status as the plant with respect to annunciators/instruments out of service (Turkey Point)
    - OPS management observation program improvements (Seabrook)
    - Using STA to independently classify emergency event (Wolf Creek)

OPERATIONS STRENGTHS

- **BENCHMARKING EFFORTS (Continued**
  - Eight INPO Peer Trips Scheduled for 1996
    - This peer visit program has been an extremely worthwhile investment for us. For 1996 we are scheduled to participate in eight INPO peer trips and in addition the OPS Superintendent and OPS Training Manager have already made an independent trip to North Anna earlier this year.
  - **Aggressive benchmarking by the Operations group was recognized as a strength in the 1996 INPO E&A during August of this year.**

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS PROCEDURES**
  - A number of important Operations procedures have received extensive rewrites and improvements during 1995 and 1996.
  - New Controlling Procedures For Shutdown And Startup using Flowchart Methodology
    - The first of these were the shutdown and startup procedures that are utilized to support outages. They are now designed around a flowchart methodology that provides clearer direction to the operator. These procedures had previously been very difficult to use due to the size and complexity of these evolutions. A Quality Improvement Team was formed to develop another approach to these procedures that would provide the operator with a more effective tool to use to shutdown and startup the plant. The new procedures were implemented in time for the most recent Unit 1 refueling outage. Feedback from the operators that used these during the outage was excellent.
  - New Block Tagout Procedures
    - We had experienced some problems in the past with our block tagout process (used during outages to tag out large parts of systems to support numerous simultaneous maintenance activities). A Quality Improvement Team was formed and they came up with a more proceduralized process than had previously been used at McGuire. The appropriate system procedures were completely rewritten and put in place to support the outage. Again, feedback from folks that used these procedures indicated that they were greatly improved over the previous program. In addition, no significant tagging errors occurred as a result of these procedures.

OPERATIONS STRENGTHS

- **IMPROVEMENTS IN OPERATIONS PROCEDURES (Continued)**
  - Improved Containment Closure Procedure
    - One additional procedure which received a revision prior to the last outage was the Containment Closure Procedure which is used to ensure containment integrity when shut down. This procedure was extensively streamlined and again, feedback from the users was positive. A Continuous Improvement Team (CIT) has been chartered at this time to gather lessons learned from the recent outages. This team will continue to improve this process in support of the next outage.
  - Rapid Downpower Abnormal Procedure
    - Another procedure worth mentioning was our new Rapid Downpower procedure which was put in place in 1995. This procedure is used to rapidly reduce power in certain transients. We had an opportunity to utilize this procedure during a recent failure of a cooling water flow control valve going to a reactor coolant pump motor on Unit 1 in December of 1995. Although the operators ended up having to manually trip the reactor prior to getting to the point where we could have taken one reactor coolant pump off-line without causing an automatic trip, the procedure was successfully used to rapidly bring power down prior to the trip. This procedure had received extensive validation in the simulator during its development and it worked well in this actual plant event.
  - Westinghouse Owners Group (WOG) Involvement
    - McGuire Operations continues to play an active role in WOG activities. One indicator of this active involvement is the number of direct work requests (DWs) which were submitted and approved. For 1995 a total of 54 DWs were approved from all WOG utilities. McGuire submitted 15 of these (28%). Of the 54 total 27 resulted in ERG changes. Of these 27, 13 (48%) were from the total 15 submitted by McGuire. Our involvement with the WOG ERGs has centered on identifying and submitting high quality change requests as demonstrated by these numbers.

OPERATIONS STRENGTHS

- **FOLLOW THROUGH AND IMPLEMENTATION OF CORRECTIVE ACTIONS**
  - Operations Self-Assessment Program
    - Operations has implemented an effective self assessment program within the group. Self assessments take the form of OPS teams assessing a particular area, assessments of simulator team performance, assessments requested by Operations but performed with the help of outside groups, etc. In 1995 and 1996 through October numerous formal assessments were performed as shown by the examples on the following table. **Operations contributed to the INPO E&A strength in August which recognized the site's strong self assessment efforts.**

SIGNIFICANT SELF ASSESSMENTS

ASSESSMENT	STATUS	ASSESSMENT	STATUS
Tagging Assessment	Complete 6/95	Containment Closure	Complete 1/96
Block Tagout	Complete 6/95	Operational Focus	Complete 6/96
Outage Controlling Procedure	Complete 6/95	Reactivity Management	Complete 7/96
Control Room Briefing	Complete 6/95	Daily Status Meeting	Complete 8/96
Daily Status Meeting	Complete 8/95	(Reassessment)	
Solid Operations	Complete 8/95	Shift and Pre Job Briefs	Complete 8/96
Mispositioning	Complete 9/95	H2 Ignitor Inoperability	Complete 8/96
Plant Labeling	Complete 11/95	D/G TS Surv Near Miss	Complete 9/96
Fuel Handling	Complete 12/95	TS Surveillances	In Progress

OPERATIONS STRENGTHS

- **FOLLOW THROUGH AND IMPLEMENTATION OF CORRECTIVE ACTIONS (Continued)**
  - Operations Human Performance Enhancement System (HPES) Program
    - Operations implemented the Human Performance Enhancement System (HPES) within the group in mid 1994. Currently one RO assigned to day staff provides full-time HPES support to the group. This program has been very successful so far and many accomplishments by this function have been noted by management and by the overall group. This function has been very proactive in the detection and prevention of human errors.
  - Full Time PIP Coordinator in OPS
    - In mid 1994 Operations established a full time PIP Coordinator position within the group. This position has been staffed by a RO whose full time job is coordination and resolution of PIPs within the Operations Group.
  - Weekly OPS Management PIP Review Meeting
    - In addition to the full time PIP Coordinator, Operations Management conducts a weekly PIP review meeting. The PIP Coordinator along with the Operations Superintendent and the three section managers weekly discuss PIPs generated by OPS, PIPs cleared by OPS, Overdue PIPs, PIPs needing special management attention to resolve, and PIP trends. This has resulted in more effective and timely corrective action implementation.
  - FPI Apparent Cause Training
    - During the last half of 1996, all managers, SROs and ROs in Operations will attend FPI Apparent Cause Training. This should allow those personnel responsible for PIP investigation and resolution to perform a better job by using skills acquired in this training.

OPERATIONS AREAS OF PROGRESS

- **REACTIVITY MANAGEMENT**
  - 288 Day Run Between Reactivity Management Events
    - McGuire had a run of 288 days up to March 23, 1996 since the last reactivity management event occurred. This event was due to a cooling of the letdown from the reactor coolant system. Power and Tavg changes were minor and noticed by the operator well before any automatic alarms or actuations occurred. Since March 23rd we have gone 219 days without any additional events (as of October 28th). This good performance can be attributed to a number of improvements that have been put in place over the past year.
  - Formation of Department and Site Reactivity Management Teams
    - Early in 1995 a comprehensive analysis of past reactivity management events was performed. This analysis included a detailed review of reactivity management events and INPO SOER 94-02. The assessment recommended a broad range of corrective actions which were prioritized for timely impact on results. Several immediate actions were taken to address unintended boron dilutions (which had been a problem): (1) list, review, and improve critical procedures involving reactivity management, and (2) require Operations Shift Managers/CR SROs to be directly involved in boron demineralizer operations.
    - In mid-1995 a Corporate Reactivity Management Team was formed to look at the reactivity management problems which had recently been experienced at all three Duke plants. This team consisted of a broad cross-section of teammates from the General Office and sites that play a part in reactivity management. The team benchmarked against some of the best plants in this area and in the fall of 1995 finished their work. A final report was written that assigned various action items that needed to be accomplished at the sites to conform with the rewritten Nuclear System Directive on Reactivity Management.

OPERATIONS
AREAS OF PROGRESS

- **REACTIVITY MANAGEMENT (Continued)**
  - Formation of Department and Site Reactivity Management Teams (Continued)
    - A Nuclear Generation Department (NGD) Reactivity Management Team has been formed to provide a continuing broad oversight of reactivity management issues for all three sites. The McGuire Operations Superintendent is a member of this team. Each site has also formed a Site Reactivity Management Team to provide site specific oversight in this area. The Operations Superintendent is the sponsor of this team and the Nuclear Engineering Supervisor is the team leader.
    - Some of the things that have been done at McGuire as a result of this overall effort include categorization and trending of all reactivity related PIPs, implementing SOER 91-01 (Infrequent Tests) requirements for Zero Power Physics Testing, reactor startups and fuel reload evolutions, review of all site procedures to determine which have potential reactivity management implications, requiring that reactor operators notify the control room SRO of any planned reactivity manipulations (adding boric acid, water, rod movements, etc.), complete review and rewrite of Operations and Chemistry group procedure used for primary demineralizer control, etc.
    - Although reactivity management has been a challenge in the past, the Operations group showed good operator response to the boron dilutions/lack of boric acid flow events that the station experienced early in late 1994/early 1995. This attention to reactor parameters showed the operators to be conservative in their operation of the units. In each event, the reactor operators promptly noticed the boron dilution/lack of flow and took manual action to add boric acid/insert control rods before any automatic actions occurred.

OPERATIONS
AREAS OF PROGRESS

- **REACTIVITY MANAGEMENT (Continued)**
  - Fuel Handling Focus
    - Special attention has been placed on fuel handling evolutions at McGuire as a result of industry lessons learned. For example, prior to the recent Unit 1 refueling outage, a special assessment was requested by the OPS Superintendent to look at a recent event that occurred at at another nuclear plant to determine if McGuire was susceptible to the same type event. Review of another recent event also resulted in McGuire assessing our procedures and management expectations regarding fuel handling. This assessment showed that while our procedures were generally in good shape, some improvements were needed to provide additional controls.
    - During the most recent Unit 2 refueling the Operations group increased the level of involvement of control room personnel in the fuel movement evolutions. A communication link was set up between the reactor group and control room Operator at the Controls (OATC). The OATC's permission was required prior to the movement of any assembly. The OATC monitored reactor parameters during the movement of each assembly to confirm no unusual responses and also kept up with assemblies in the core through the use of a core map. In addition, another RO was provided to the reactor group to be used as the second person controlling the refueling board and refueling communications between the fuel pool and containment.
    - We continue to focus strong assessments in the fuel handling area. A recent decision by NGD management directed formation of a team to review fuel handling practices at all three Duke nuclear sites. This team is being led by the McGuire Shift Operations Manager. The team is scheduled to begin work late this year. The scope of the team's review includes fuel handling organization, adequacy of current fuel handling equipment, use of industry operating experience and benchmarking, and training for fuel handling personnel. Results and recommendations from this team are expected during the first quarter of 1997.

OPERATIONS
AREAS OF PROGRESS

- **MISPOSITIONINGS**
  - Station management has been aggressively addressing this issue since the fall of 1994. Mispositionings have been analyzed in detail. Some of them have been dealt with by direct corrective actions, such as the use of the Configuration Control Card (CCC) in Operations and the inclusion of placekeeping aids in Chemistry procedures.
  - Eleven Mispositioning Events in 1994, Four in 1995, Zero So Far in 1996
    - In 1994 the site experienced eleven mispositioning events. This number was reduced to four in 1995 and so far there have been zero in 1996. It has been 318 days since the last mispositioning event (through October 29th). Although not yet where we want to be in this area, we do feel that considerable progress has been made.
  - 5M Team (McGuire Monthly Manager Meeting on Mispositionings) To Manage Improvements
    - Station Management has taken a strong role in the oversight of this problem. Under the leadership of the Station Manager a team was formed in early 1995 consisting of the Operations Superintendent, Maintenance Superintendent, Chemistry Manager, HPES Coordinator, and McGuire Safety Review Group Manager. This team regularly meets to provide additional oversight to complement the individual group initiatives that are ongoing in Operations, Chemistry, and Maintenance. At each meeting the team reviews recently implemented corrective actions and any new mispositionings. This team provides oversight in the continuing analysis of mispositioned components and reviews the effectiveness of the actions taken.

OPERATIONS
AREAS OF PROGRESS

- **MISPOSITIONINGS (Continued)**
  - Detailed Methodology for Classifying Mispositionings
    - All mispositionings are reported and captured at McGuire. This includes items typically not regarded as mispositionings at other plants in the industry. For example, McGuire classifies valves found out of position coming out of a refueling outage as mispositionings, even though the equipment was out of service at the time. Three categories are used to classify mispositionings: Mispositioning Event, Mispositioning, and Mispositioning Near Miss. By using a conservative threshold to capture all mispositioning related events we have been able to implement effective corrective actions to prevent occurrence of the most significant category-Mispositioning Events. Work continues to reduce and eliminate mispositionings that fall into the two less significant categories.
  - Configuration Control Card (CCC) Program
    - In 1995 Operations developed the Configuration Control Card Program. The CCC is an innovative tool to assist in maintaining configuration control of valves, switches, etc. in the plant. Configuration control is maintained by one of three methods: procedure, removal and restoration (R&R) program and CCC program. The CCC is used to document simple evolutions that position components that do not require use of a procedure or R&R.

OPERATIONS
AREAS OF PROGRESS

- **MISPOSITIONINGS (Continued)**
  - STAR (Self Checking) Improvement Plan
    - In addition the Operations group has begun a project at this time to increase our effectiveness in the area of self checking. The OPS Superintendent saw on a recent trip to North Anna evidence that STAR can be more effective. Operations has developed a more "animated" self checking standard similar to what was seen at North Anna. This has been rolled out to each shift and the recently formed Control Room Improvement Team (CRIT) will own and continue to develop the standards associated with this program.
  - Human Error Reduction Training For All Operations Teammates By Failure Prevention Incorporated
    - In addition, in 1995 Human Error Reduction training developed by FPI (Failure Prevention International) was given to many McGuire employees. Within Operations all operators attended. The training emphasizes and teaches error reduction techniques. One that the site is focusing on in Qualification, Validation and Verification (QV&V), or "questioning attitude". This in conjunction with self checking (STAR) can help provide an effective barrier against many of the mispositionings that we have experienced.

OPERATIONS
AREAS OF PROGRESS

- **CONTROL BOARD MONITORING**
  - Improved Control Board Monitoring
    - Control board monitoring by the reactor operators continues to improve. Recent observations by internal and external observers indicates a greater level of attention being given to control room indications during normal and outage periods. Each shift has taken on monitoring as a challenge and positive results are being achieved.
    - Recent examples of good board monitoring include:
      - RO noticed valve 2NV-1A (Letdown Isolation) closing prior to receiving any control room alarms.
      - RO noticed residual heat removal valve out of proper position following completion of an engineering leak rate test procedure. Had the plant changed modes with these valves out of position a tech spec violation would have resulted.
      - During the recent shutdown of Units 1 and 2 due to the EVCC battery problem, the Unit 1 RO identified a control rod bank overlap problem within 2 steps of it occurring.
    - A Control Room Improvement Team (CRIT) has been formed to continue the advances that have been made in monitoring and professionalism in the control room. This team has already benchmarked at Catawba and North Anna plants and is currently finalizing their first set of recommendations.

OPERATIONS
AREAS OF PROGRESS

- **RISK ASSESSMENT OF ON-LINE MAINTENANCE**
  - Implemented PRA Based Risk Assessment Matrix
    - In 1995 a working group of station and general office support personnel developed a process to assess the risk involved with removal from service of multiple systems within a safety-related train. This assessment process was proceduralized in the Work Process Manual and employs the principle of defense in depth. This PRA based risk assessment matrix was fully implemented at McGuire in October 1995. The matrix is used primarily by Work Control and Operations personnel in controlling daily scheduled work.
  - Developing Computer Based Risk Assessment Tool
    - A computer based tool for on-line risk assessment is also being pursued for all three Duke sites and implementation is expected by the end of 1996.
  - Computer Based Risk Assessment (ORAM) Used for Outages
    - A computer based outage risk assessment tool (ORAM) has been used for recent outages with great success.
  - System Work Window Implementation
    - This is discussed in a previous section of this presentation. The System Work Window concept will enhance our On Line Risk Assessment Program.

OPERATIONS
AREAS OF PROGRESS

- **OPERATIONS HUMAN PERFORMANCE SECTION**
  - Beginning in June of 1996, a new human performance section was formed within the Operations group. The OPS Human Performance Section manager is an Operations Shift Manager (OSM) who was most recently the "A" Shift OSM. This manager position is set up as a two year rotational position for OSMs. Reporting to this manager is the OPS Quality Director, OPS PIP Coordinator and OPS HPES Evaluator. This new group is the single point focus area within OPS concentrating on continued improvement of human performance.
  - As part of the manager's development plan in support of this new position, this manager participated in a recent INPO E&A at another nuclear plant. This manager was a site peer on the recent INPO Startup, Simulator and 2 week E&A assessments of McGuire. This manager fully assumed this new position on September 1, 1996.

OPERATIONS AREAS OF PROGRESS

- **OPERATOR WORKAROUND PROGRAM**
  - In January of 1994 the site developed the Top Equipment Problem Resolution (TEPR) process. The TEPR process included two areas: the Major Equipment Problem Resolution (MEPR) process and the Workaround Problem Resolution (WAPR) process. These two processes were owned by the Operations Superintendent and Electrical Systems and Components Engineering Manager. Management from all major station and engineering groups were named as part of the TEPR team. Listings of plant problems were developed for both the MEPR and WAPR processes. Over the course of two years many of the original problems on both lists have been resolved.
  - Earlier in 1996 a decision was made between the Operations groups at all three Duke sites to adopt a common operator workaround program. The OPS Work Process Managers from all three sites developed this program by taking the existing TEPR program and adding in elements of successful operator workaround programs that had been seen at other utilities. South Texas Project operator workaround program was used primarily in this revision to our program. The new operator workaround program will do a better job of 1) performing aggregate assessment of operator workarounds and 2) communicating workaround information to all operators and other plant personnel. This program was implemented earlier this summer.

OPERATIONS
AREAS OF PROGRESS

- **OPERATIONS GROUP STAFFING**
  - Over the past few years most "new hires" into the Operations group have come from Duke internal transfers. While these recent hires bring a wealth of experience with them (familiar with general Duke policies and procedures in addition to their particular technical area expertise), we believe that the "best" Operations group consists of a balance between personnel having this type of experience, Navy nuclear experience, and technical school training.
  - Five Learners In 1995 (All Navy Nuclear Experienced)
    - In 1995 we hired five new learners from outside Duke. All five had recent Navy Nuclear experience (one with extensive nuclear training experience also).
  - Nine Learners in 1996 (Navy Nuclear Experienced)
    - For 1996 we have hired nine learners into the Operations group. Eight of these nine have Navy Nuclear experience, the remaining one has Navy experience combined with cogen plant operational experience.

OPERATIONS
AREAS OF PROGRESS

- **OPERATIONS GROUP STAFFING (Continued)**
  - We will continue to monitor the makeup of the Operations group over the coming years to maintain the optimum mix of technical backgrounds and skills.
  - Planning Rotation of Engineers With Site Engineering Division
    - In addition to new hires, we have an aggressive program with Engineering to move experienced engineers into Operations to gain a SRO and then function in a licensed position for a period of time before moving back to the engineering organization. This has been discussed under the "Rotation and Development of Operations Staffing" section listed under the Strengths portion of this presentation.

OPERATIONS CHALLENGES

- **MISSED/NEARLY MISSED SURVEILLANCES**
  - Daily plant status meetings are being held at the beginning of each shift as discussed under the "Operational Control and Interface with Station Work Activities" area. One of the items discussed at these meetings is significant tech spec items. These are discussed to ensure that responsible groups are aware of any time limitations or conditional surveillances which need to be performed.
  - We have also reviewed missed tech spec surveillance events with our operators to ensure understanding and sensitivity to the issue. In June 1995, Operations implemented a conditional surveillance tracking board that is used by the operators as an additional barrier to prevent missed surveillances.
  - Over the past year we have also increased our emphasis on better coordination and scheduling of work activities that has helped to minimize the chance of challenging tech specs. This has helped prevent us from putting ourselves in a situation where a conditional surveillance could be missed.
  - In addition, in 1995 FPI International (FPI) completed an investigation of surveillance test failures at McGuire. The results and recommendations from this report were incorporated into our surveillance test program.

OPERATIONS CHALLENGES

- **MISSED/NEARLY MISSED SURVEILLANCES (Continued)**
  - Recent Run of 446 Days Since Last Missed TS Surveillance
    - Recent history in the area of missed tech spec surveillances has been good. A run of 446 plus days without a missed surveillance ended earlier this year. In February of this year, we experienced a missed surveillance due to problems with the Operator Aid Computer (OAC). Semi-daily surveillance is required to ensure that certain valves are in their proper positions. The OAC experienced a failure that made valve position verification through the OAC invalid. The valve to be verified (2NI-178B) is normally deenergized, so use of the control board indicating lights to determine position is invalid. The operators decided to use the BOP panel (monitor light panel) to determine valve position. The next operating shift discovered that for this particular valve position indication through the BOP panel is not valid. Once this was known then the OAC (having been repaired) was then used to verify valve position. Lessons learned from this event will be incorporated into our program to prevent similar events from recurring.

OPERATIONS CHALLENGES

- **MISSED/NEARLY MISSED SURVEILLANCES (Continued)**
  - We also missed a surveillance in March of this year associated with verification of the Waste Gas Decay Tank activity level. The 24 hour sampling frequency was exceeded by 2 hours and 50 minutes due to inadequate work practices by the Radiation Protection shift team. Corrective actions included providing a more detailed procedure detailing acceptable time ranges for performing tech spec/SLC commitments and communicating the event along with the procedure change to the shift teams.
  - Since this last missed surveillance we have run 232 days (as of October 29th) without another missed surveillance.
- Developing Trend in Missed/Nearly Missed Conditional Surveillances
  - Over the past year we have noticed a developing trend of nearly missed conditional surveillances. Three examples have been seen in this area:
    - Near miss on vital power verification on Unit 2 prior to entering mode 6 during the most recent refueling outage
    - Near miss on running the opposite emergency diesel generator during a problem with the nuclear service water system that we believed rendered one emergency diesel inoperable (later was determined to not be inoperable)
    - Missed SLC commitment relating to an inoperable composite sampler
  - Corrective actions specific to each of these events have or are being performed. In addition a comprehensive assessment of these events has been performed at the request of Operations management by the McGuire Safety Review Group. Recommendations from this assessment are being reviewed and finalized at this time.

OPERATIONS CHALLENGES

- **EQUIPMENT OWNERSHIP**
  - Tagging Program
    - The Operations group owns and controls the site's tagging program. Two major efforts were recently accomplished in support of this program.
    - A Block Tagout Team developed a new program for use during outages. The team was led by Operations and included members from all involved groups (Maintenance, Work Control and Operations) to ensure that the final product would work to support the entire site. This project was completed and a new block tagout program put in place in the fall of 1995. The new process was used in the most recent Unit 1 refueling outage and overall was a great improvement over the previous process. A Continuous Improvement Team (CIT) was formed after the Unit 1 outage and this team looked at the process and made further improvements for the Unit 2 outage in April of 1996.
    - A Tagging Assessment Team also was formed in 1995 to review all tagging processes used by groups at McGuire (except for the Block Tagout Process). This team was led by Operations and included members from Operations, Maintenance, and Chemistry. With input from the 1995 INPO E&A observations and other self assessments, the tagging program was modified to achieve standards commensurate with the industry leaders. The assessment was completed June 1995 and at that time a decision was made by the three Duke sites Operations Superintendents to implement this program at all three sites. A small team facilitated by the General Office was charged in the summer of 1995 with revising our Nuclear System Directive that covered tagging to meet the new standards which had been established at McGuire This team met through the fall and developed a more prescriptive directive that were implemented at all three sites on March 31, 1996. The Operations groups will continue to own the program at all three sites and will be responsible for periodically assessing how well other site groups are adhering to the new program.

OPERATIONS CHALLENGES

- **EQUIPMENT OWNERSHIP (Continued)**
  - Some areas for improvement are still evident in this area though. Two events this year indicate that continued attention is needed in this area. One event occurred when a switchyard CT was not properly isolated resulting in loss of one offsite power source during a severe storm that occurred while maintenance was in progress on this CT. The second event occurred when assured source valves to the auxiliary feedwater system opened during a block tagout during the refueling outage due to a deficient block tagout procedure. Corrective actions for these two events have been put in place and the OPS group continues to closely trend the performance of the tagging program.
- Equipment Ownership Directive
  - Earlier this year the Operations group developed a comprehensive equipment ownership directive for the site. The Operations group owns all site equipment and delegates operational ownership to certain site groups (for example, Chemistry operates radwaste equipment). The development of the directive has clarified many long standing operational agreements made over the years and has provided a single source document that can be used to determine operational ownership responsibilities. A Continuous Improvement Team (CIT) led by Operations has been formed to continue to review the adequacy of this new directive and resolve any discrepancies that are discovered.

OPERATIONS CHALLENGES

- **50.72/50.73 REPORTING**
  - Over the past year several examples have been noted relating to improper 50.72/50.73 reporting. Three events have occurred:
    - In February of this year an inadvertent manual feedwater isolation signal was generated. The control room SRO incorrectly determined that this event was not reportable. Later in the shift a review by the Operations Shift Manager (OSM) determined this was reportable.
    - In February of this year a failure of a component cooling pump bearing caused tech spec 3.0.3 to be entered due to the other train of component cooling already being out of service due to planned maintenance. The control room failed to properly report this entry into TS 3.0.3.
    - In June of this year a problem occurred in that a reactor trip breaker would not trip electrically during testing. Confusion existed over reportability of this event. Initially the event was reported and then later retracted based on the specific conditions outlined in the operating license.
  - Each of these events was reviewed and corrective actions put in place to prevent recurrence. Corrective actions included:
    - Requiring the Operations Shift Manager (OSM) to be involved anytime there is a reportability determination to be made.
    - Modifying reportability procedure to clarify when reporting is required.
    - Communicating these events to involved personnel as lessons learned.

OPERATIONS CHALLENGES

- **50.72/50.73 REPORTING (Continued)**
  - We are closely monitoring this area to ensure that corrective actions put in place are effective.
  - Some recent examples of proper reporting include:
    - In June of this year the site entered and properly reported an unusual event due to inoperability of both diesel generators on Unit 1.
    - In October this year both units were shut down in accordance with tech specs due to EVCC battery inoperability. This tech spec required shutdown was properly reported for both units.

OPERATIONS CHALLENGES

- **HUMAN PERFORMANCE ERRORS IN IMPLEMENTING APs/EPs**
  - In our most recent INPO E&A in August of this year, a finding in the OPS area was identified associated with errors in implementing APs and EPs in the simulator. The finding centered around the human performance aspect of implementation errors. INPO noted that our overall procedure quality was good and our expectations for procedure usage and adherence were clear and understood by all operators. Even with good quality procedures and clear usage/adherence expectations, our operators were noted as occasionally making mistakes in using APs and EPs in the simulator. These mistakes were ultimately caught and corrected by each crew, but in many instances the mistakes could have been prevented or caught earlier once they were made.

OPERATIONS CHALLENGES

- **HUMAN PERFORMANCE ERRORS IN IMPLEMENTING APs/EPs (Continued)**
  - We have developed an action plan to address this concern. This plan centers around the following:
    - Develop and reinforce peer-checking techniques for operators that will focus on detecting errors in implementing APs and EPs.
    - Develop and implement an effective aggregate performance review process. This aggregate review will consider the following documents and data:
      - simulator observations forms from operations management
      - instructor notes from simulator observations
      - individual performance assessment forms
      - unresolved issue forms
      - procedure change requests

      The results of these reviews will be used to identify common crew performance problems that need to be addressed through additional training or other follow-on actions.
    - Effectively resolve unclear and confusing procedure issues by the following actions:
      - Lower the threshold for problem identification
      - Track and monitor change requests for timely resolution
      - Evaluate procedure change effectiveness through observations and feedback

    These actions will be completed by July 1997.

MAINTENANCE

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MAINTENANCE STRENGTHS

- **OUTAGE PERFORMANCE**
  - Significant improvements in outage performance were achieved in the following areas:
    - Zero LER events during Unit 1 and Unit 2 EOC09 and Unit 1 and Unit 2 EOC10 outages
    - 2EOC09 set a record for McGuire with a duration of 48 days
    - 1EOC10 set a record for McGuire with a duration of 42.7 days
    - 2EOC10 set a record for McGuire with a duration of 39.5 days
    - Significant reduction in the number of Maintenance personnel injuries
      - Unit 1 EOC09 outage - 4 injures
      - Unit 2 EOC09 outage - 3 injuries
      - Unit 1 EOC10 outage - 0 injuries
      - Unit 2 EOC10 outage - 0 injuries
    - Unit 1 EOC10 set a dose record of 128 REM
    - Unit 2 EOC10 set a dose record of 127 REM
    - Completed 18 of 18 pre-outage milestones on time
  - We have made major improvements in outage performance during this SALP period. We reduced events to zero, had zero personnel injuries and at the same time shortened outage durations. We will challenge ourselves to continue to make major improvements in these areas for upcoming outages. Our sights are clearly focused on World Class outage performance.

MAINTENANCE STRENGTHS

- **OUTAGE PERFORMANCE (Continued)**
  - Pre-Outage Planning
    - The Maintenance Activity Planning Packages (MAPP's) are a communication tool between the outage job sponsor and the non-site Maintenance Execution teams (as well as some site teams). It is the expectation of the job sponsor's management that non-site teams execute the outage activities to the same standards as site teams. Therefore the MAPP's are an integral and significant part of communicating detailed expectations to the non-site teams.
    - MAPP's are developed for outage activities such as Turbine, Ice Condenser, Heat Exchanger, Erosion/Corrosion, Steam Generator and Lead Shielding.
    - There is no "standard" MAPP. In general MAPP's provide detailed: job overview, safety concerns, success measures, site maintenance procedures, ALARA, work force organization, spare parts / consumables expected, and schedule. As each outage job has different areas of significance, so does each MAPP.
    - The copy of the MAPP is provided to each non-site team. The team members are expected to use the MAPP as a resource in performing their work activities. This allows the team to quickly resolve detailed questions about their work throughout the outage. By resolving questions with the MAPP, the job sponsor is allowed to devote more time to outage work management oversight, risk assessment, safety, work quality, and emergent issues.
    - In addition, during development of the MAPP, the job sponsor thinks through the work scope and associated processes. Therefore, the MAPP development lends itself to better detailed planning and scheduling of the outage activities.

MAINTENANCE STRENGTHS

- **OUTAGE PERFORMANCE (Continued)**
  - Highly skilled / experienced / motivated work force
    - The McGuire Maintenance team is fortunate to have a highly skilled work force with many years of experience. Motivation and teamwork are a strength. Recent organizational changes have been made to better utilize the expertise of the maintenance team. Some examples are:
      - Valve support team - provide outage preparation and planning, coordinate activities, and supplement innage tech support
      - Consolidation of teams that support major electrical work
      - Staffing SPOC crews with the proper balance of Mechanical and I&C techs to support routine and minor maintenance activities
  - Training / Qualification
    - Management is committed to providing the resources for quality training. We have recently made significant improvements to training facilities.
      - Permanently installed presentation projection systems in Classrooms 3 and 5 in Bldg. 7419 to provide means for presenting training developed in MS Powerpoint and other applications.
      - Built the MNS Training Flow Loop. This "plant-like" mock up utilizes instrumentation, piping and supports, electrical components, pumps, valves like that in the plant and provides a training environment that models the plant. Trainees are able to work in a simulated "on-line" situation which is extremely valuable for OJT.
      - Developed and built the Star Simulator. This device is used to improve self-checking performance techniques in the plant.
      - Added multiple training aids to enhance laboratory areas. These included: Limitorque actuators, pneumatic actuators, butterfly valve with adjustable seats, specialty tools, (e.g.., EFCO In-Line Re-Seating Tool, GITTS Vacuum Tester for relief valves), relief valve test bench, wire-fed welding machine, and portable instrument loop trainers.

MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT**
  - Conservative Risk Assessment
    - The Maintenance Risk Assessment program is designed to reduce human error and is in addition to our PRA daily processes.
    - Management reviews the upcoming schedule to identify items that fall in the medium to high risk category either from a nuclear safety viewpoint or from a personnel safety viewpoint. A list of typical jobs that are considered high to medium risk has been developed. Management expectations for medium to high risk jobs have been developed and communicated. These include the following:
      - Perform a pre-job briefing
      - Ensure nuclear safety
      - Develop contingency plans
      - Increased field involvement by manager/supervisor
      - Ensure adequate technical oversight
      - Ensure personnel safety
      - Ensure good communication including interface with Operations
      - Ensure qualified personnel are assigned to execute the job
      - Ensure adequate and thorough job turnover when turnover is necessary
      - Continuously evaluate Fitness For Duty
      - Conduct post-job briefing / critique

MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT (Continued)**
  - Conservative Risk Assessment (Continued)
    - A formal Maintenance Daily Risk Assessment / Management Focus Report is distributed to all Maintenance supervisors each morning. Risk codes identify each medium/high risk task as follows:

AV - Availability	FM - Foreign Mat. Exclusion	TS - Tech Spec
CE - Complex Evolutions	MG - Multiple Group	UT - Unit Trip Potential
CH - Chemical Hazard	NR - Non-Routine Activity	UW - Unqual Workers
CI - Cont. Integrity	PC - Procedure Concern	VE - Annulus Entry
CM - Comp. Mispositioning	RH - Radiological Hazard	WT - Wrong Train
CW - Contract Work	RM - Reactivity Management	WU - Wrong Unit
ES - Eng. Safeguards	SA - Safety	

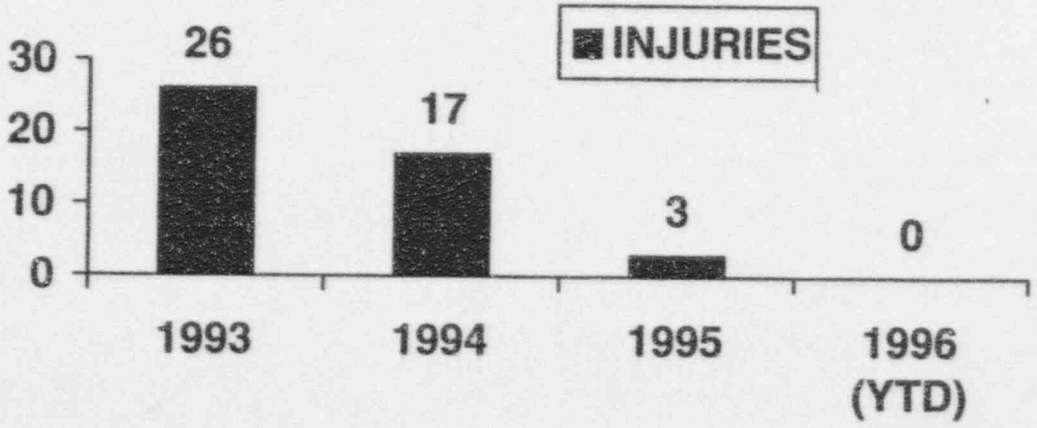
    - Standard Contingency Plans have been developed to assist the supervisor in hazard communication, prevention, and emergency response/preparedness. Examples of standard contingency plans include fire/explosion, chemical spill, chemical exposure, FME events, steam release and reactivity management events.

MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT (Continued)**
  - Morning Management Meetings
    - Line managers meet briefly at the beginning of each work day to ensure the following:
      - Each day begins with discussion of a relevant personnel safety topic
      - Status of priority work from the previous day's schedule is reviewed
      - Emergent plant issues and concerns are discussed
      - Priority work on the current day's schedule is reviewed
      - Medium to high risk jobs are identified and discussed
      - Items in Tech Specs with time restraints are discussed
      - During outages, outage status is discussed
      - Any procedures or procedure changes needing approval are discussed and approved
      - PIP items are assigned for follow-up
      - Discuss emergent OE items and assign follow-up

MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT (Continued)**
  - Strong Emphasis On Personnel Safety
    - Major improvements in employee personal safety have been achieved over the past year. Every day begins with a focus on personal safety. Our Safety Improvement Plan includes:
      - A vision of zero injuries by 1998
      - Safety Guiding Principles that will allow us to achieve our vision.
      - A detailed Safe Work Practices Manual
      - Employee involvement through Safe Teams
      - A safety assessment process that involves every employee
      - Ongoing recognition for good safety performance
      - Duty Safety Manager (weekly) who observes all daily maintenance activities.
    - Maintenance has completed approximately 600 consecutive days without recordable injury. Approximately 1.25M work-hours.



MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT (Continued)**
  - Enhanced Work Process Measures
    - Improvements made to weekly work process measures has enabled better management awareness and tracking of key measures. The following reductions have been realized over the past year:
      - Control Room Indicators (CRIPS) have been reduced to an average of 2 innage CRIPS and 20 outage CRIPS.
      - Corrective Work Order Inventory has been reduced from 1250 to 420 Work Orders.
      - Work Orders on HOLD-Maintenance has been reduced from 60 to 0.
      - Tech Spec surveillance completed without use of grace period increased from 70% to 91%.
      - Reduced the number of overdue PM's from 30 to 0.
      - Only 3 Work Orders older than 1 year and only 19 older than 180 days.
  - Quality Improvement Process
    - The Quality Improvement Process continues to be a strength that is encouraging ongoing improvements. All employees are involved in identifying and in implementing quality improvement ideas. Quality Improvement Projects receive strong support from management. Management is highly involved through Steering Committees that function to sponsor specific projects.

MAINTENANCE STRENGTHS

- **MANAGEMENT OVERSIGHT (Continued)**
  - Management Monitoring of On-The-Job Training / Evaluation
    - Maintenance has made a strong commitment to monitor OJT and OJE training / evaluation. The ETQS group now works with management to schedule upcoming training and evaluation sessions. This increased partnership between management and training is having a marked impact on the Maintenance Training Program. There is no longer any question about the ownership and commitment to training from line management.
    - Management Involvement in Training - Maintenance management has made a significant commitment to involvement with training. This includes providing leadership for the Training Program Review Committee. Also, Maintenance management is very involved with monitoring training to ensure overall effectiveness. **This area was recognized as a Maintenance Strength in the 1996 INPO E&A**
      - Revised T&Q Guides to include FME precautions.
      - Revised numerous procedures to correct deficiencies observed during performance of OJT/TPE.
      - Revised T&Q Guides to include Operational Experience.
      - Provided OJT/TPE refresher training based on management feedback.
    - 1996 YTD Monitoring for OJT is 86% and Task Performance Evaluation (TPE) is 92%.
  - Control Of Contractors
    - Significant improvements have been made in the control of contractors by establishment of a Site Sponsor program. Detailed administrative guidance on controlling vendor activities is included in Nuclear System Directive (NSD) 105, Control of Non-Assigned Individuals and Organizations. All Site Sponsors are required to attend specialized training on this directive.
  - **This area was recognized as a Maintenance Strength in the 1996 INPO E&A**

MAINTENANCE STRENGTHS

- **MAINTENANCE EXECUTION**
  - SPOC Work Process
    - The SPOC work process continues to result in significant improvement in work efficiency and responsiveness. To further improve efficiency, all Maintenance teams are now working under the minor maintenance program. They are able to quickly resolve many work requests soon after they are initiated.

      Expectations were exceeded in 1995 by resolving 68% of new work requests, surpassing the goal of 60%. The goal for 1996 is 60-69%. If the work request cannot be quickly resolved by SPOC, it is converted into a work order. The SPOC team then does the upfront planning which adds significant quality to work orders by ensuring accurate information is provided.

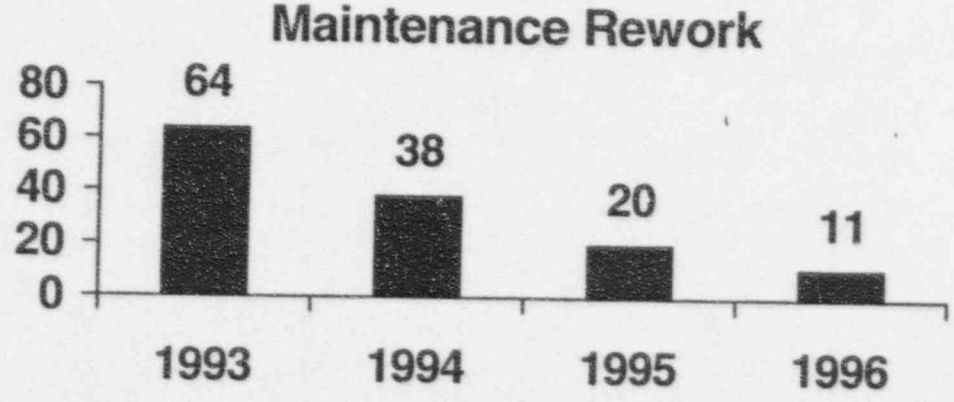
      The SPOC teams also work from a daily schedule of routine maintenance activities. They are maintaining a completion rate of >97% of this schedule. **This area was recognized as a Maintenance Strength in the 1996 INPO E&A..**
  - Multi-Discipline Work Teams
    - Six functional areas have been modified to include both Mechanical and Electrical/I&C skilled employees: HVAC, Motor Operated Valves, Rotating Equipment, Cranes, Predictive Maintenance, and SPOC. This approach has resulted in reducing hand-offs, improving communications, increasing single point accountability and increasing schedule efficiency. Cross training has been taking place during this SALP period to move the teams toward becoming multi-skilled.

MAINTENANCE STRENGTHS

- **MAINTENANCE EXECUTION (Continued)**
  - Inter-Site Resource Sharing
    - This practice is normally used during outages to provide extra support in critical areas such as plant protection and control (SSPS, 7300), where outside vendor support is very limited. Some realized benefits are:
      - Outage schedule achieved with a smaller permanently assigned workforce
      - Increased knowledge and experience of technicians
      - Work quality enhanced by improved consistency of procedures and work practices between sites
      - Exposure to other stations resulting in sharing of information and lessons learned

MAINTENANCE STRENGTHS

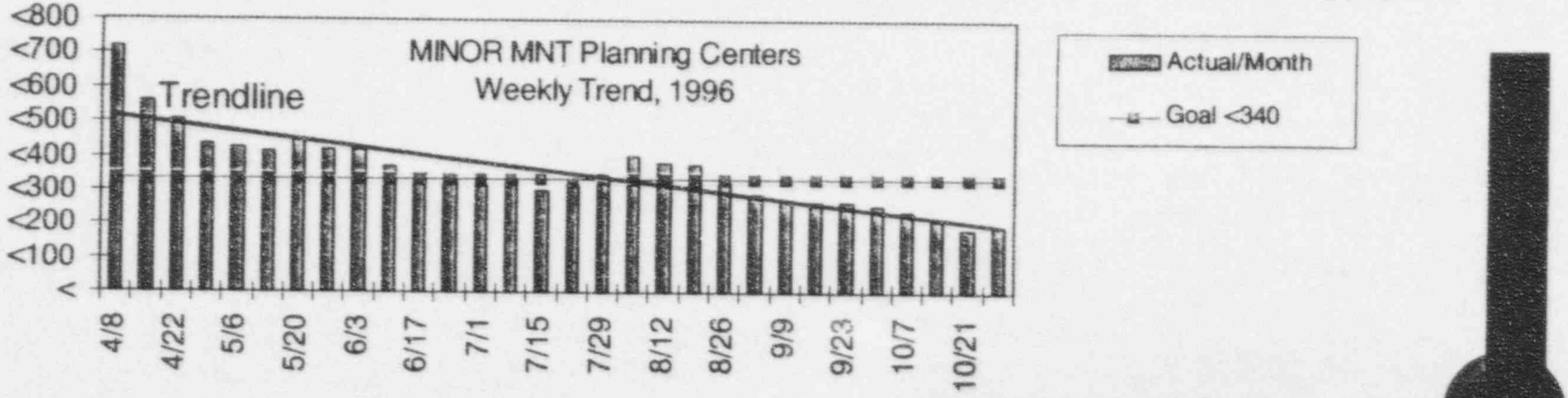
- **MAINTENANCE EXECUTION (Continued)**
  - Rework Assessment Program:
    - Maintenance Rework is defined as repeat work created as a result of inadequate or inappropriate maintenance performed more than once in a 90 day period.
    - This program provides guidance to the Maintenance organization in identifying, determining, tracking and resolving maintenance, planning, and procedure related rework. It defines the roles and responsibilities of maintenance management, supervision, planning supervisor, procedure supervisor, rework coordinator and PIP coordinator concerning the timely review and resolution of all rework items.
    - **This program was recognized as a Maintenance strength in the 1996 INPO E&A.**



MAINTENANCE STRENGTHS

◆ MAINTENANCE EXECUTION (Continued)

- Minor Maintenance
  - This program allows maintenance personnel to perform a variety of tasks utilizing the Work Request rather than a Work Order. These are tasks which:
    - Do not require Operations or Chemistry "clearance to begin work"
    - Will be performed by the Maintenance organization
    - Conform to the guidelines of Work Process Manual Section 400
  - The criteria for determining which tasks are considered Minor Maintenance includes:
    - Minor Maintenance shall **NOT** affect the ability of safety related components to operate as designed.
    - Disassembly of a safety related component is **NOT** a minor maintenance activity.
    - The task does not affect any Control Room indications.
    - The consequences of personnel error are minimal and pose no nuclear safety impacts and little potential for operational transients, high radiation exposure, personnel injury, equipment damage.
    - The task is not complex and does not involve a large number number of actions where step by step instructions, post Maintenance testing, and detailed planning and scheduling would be required.
    - The task can be performed utilizing skills normally possessed by technicians obtained from a formal training program.



MAINTENANCE STRENGTHS

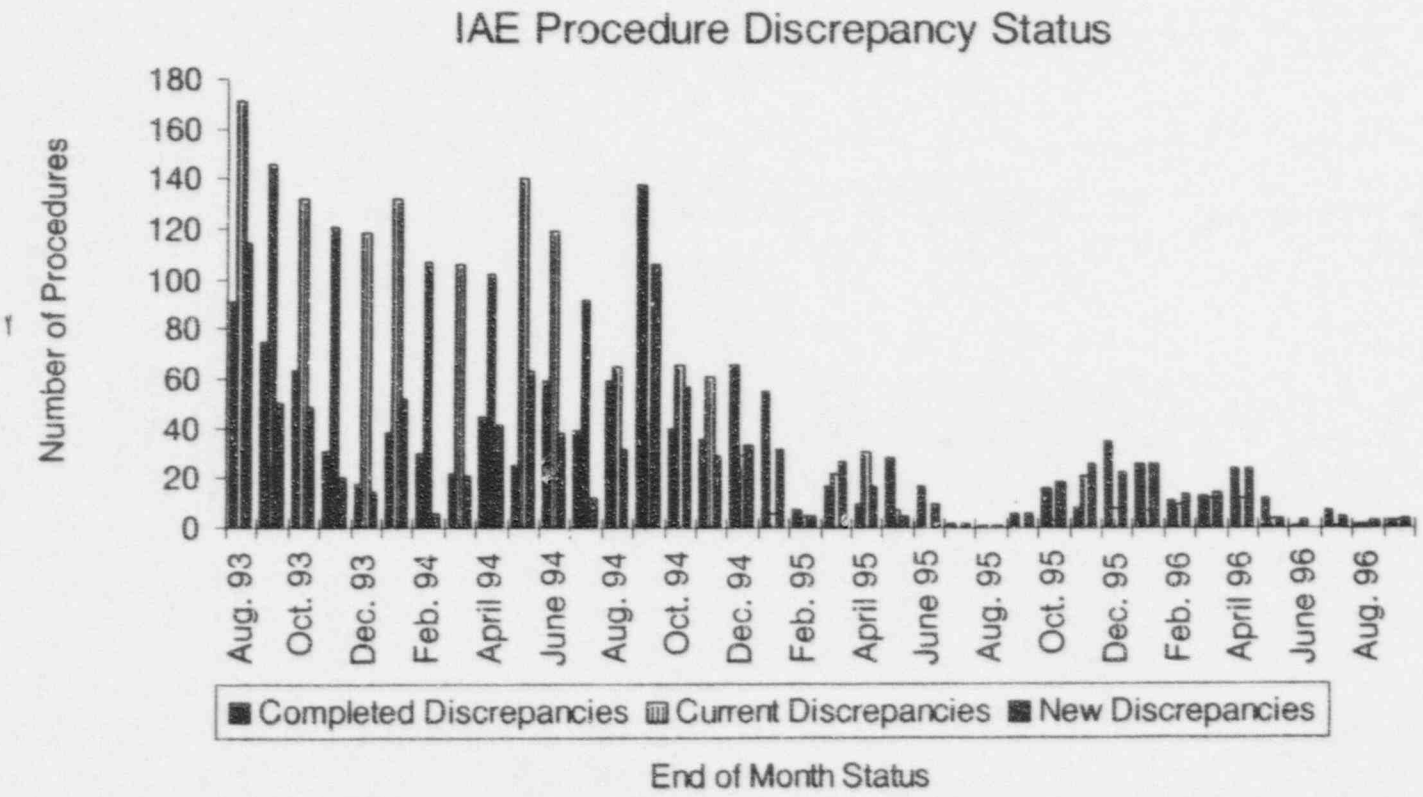
- **PROCEDURE QUALITY**
  - Procedure Validation
    - One of the McGuire human performance projects initiated in 1994 was the development and implementation of Procedure Validation Guide. Prior to this time, McGuire did not have consistent site guidance on procedure validation. The new Validation Guide defines validation policy, defines responsibilities and establishes a consistent validation process. Part of this policy was to provide appropriate training to those involved in the validation process. All training for initial implementation has been completed. The Procedure Validation Guide became effective for all site groups on 6/1/95. Unless exempted by management, all new or extensively revised procedures are to be validated.
    - Since implementation, validation is making a positive contribution to improving procedure quality and usability. Validation is being scheduled to ensure adequate resources are available. Procedure users are actively involved in validating procedures. Methods of validation include in-plant walk through, mock-up, actual use, and table top. A checklist is used as a memory aid to ensure consistency. Validation activity is tracked via the procedure database.

MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - Procedure Single Point of Contact (SPOC)
    - Maintenance implemented the concept of Single Point of Contact (SPOC) for procedure changes. This has helped Maintenance maintain the number of outstanding procedure discrepancies below our goal. Very positive feedback has also been received from our technicians regarding the timeliness of procedure changes. In addition, the Maintenance Superintendent and line managers worked together to form a Procedure Review Committee (PRC). Each morning at the conclusion of the morning status meeting, the PRC reviews/approves new procedures and procedure changes. This prevents a backlog of procedures or changes awaiting approval. This also keeps the management team aware of changes that affect the Maintenance group.
    - Significant improvement in procedure adherence has been achieved by implementation of NGD Directive NSD 704, Technical Procedure Use and Adherence, and through strong management focus on this area. A significant improvement in procedure quality has been achieved by encouraging employees to identify procedure problems and by establishing a process to quickly resolve these problems. This process includes a procedure SPOC (Single-Point-Of-Contact) who quickly resolves the problem.
    - Maintenance is also improving its process for procedure validation and making a stronger commitment to fix problems prior to procedures being approved for use.

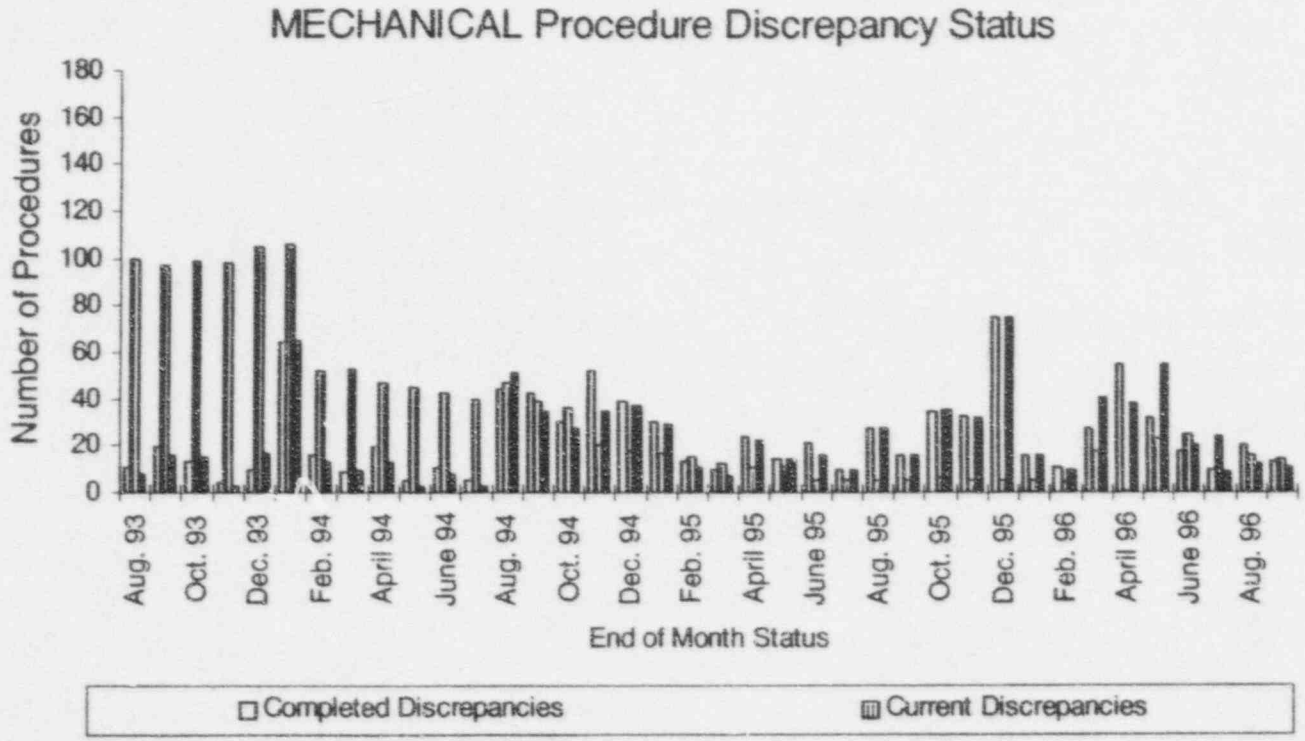
MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - Procedure Single Point of Contact (SPOC) (Continued)



MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - Procedure Single Point of Contact (SPOC) (Continued)



MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - Commitment Control
    - NRC and INPO commitments and Operating Experiences are incorporated into station maintenance procedures as footnotes and references to ensure that this important information is available to maintenance craft and work planners. NRC and INPO commitments, industry, utility, and station operating experiences are reviewed and appropriately incorporated into maintenance procedure steps. These procedure steps are annotated by footnotes directed to references in the front of the procedure that specify the originating documents. Administrative controls prevent this reference information from being removed from the procedures without appropriate reviews. When work planners or procedure users require further information to help them make more-informed decisions, they are able to identify and obtain the originating documents.
  - McGuire Procedure Scheduling Process
    - The Maintenance Procedure group has recently adopted PLAN for scheduling the flow process of all MNS Maintenance procedures, both I&E and Mechanical. This process allows each person in the review and approval process to be informed of scheduled procedures needing their attention and the timetable for completing the work.
    - The Site Specific Maintenance Procedures are currently undergoing a major conversion from WordPerfect to Word 6.0. This is improving the procedure quality for use in the field.

MAINTENANCE STRENGTHS

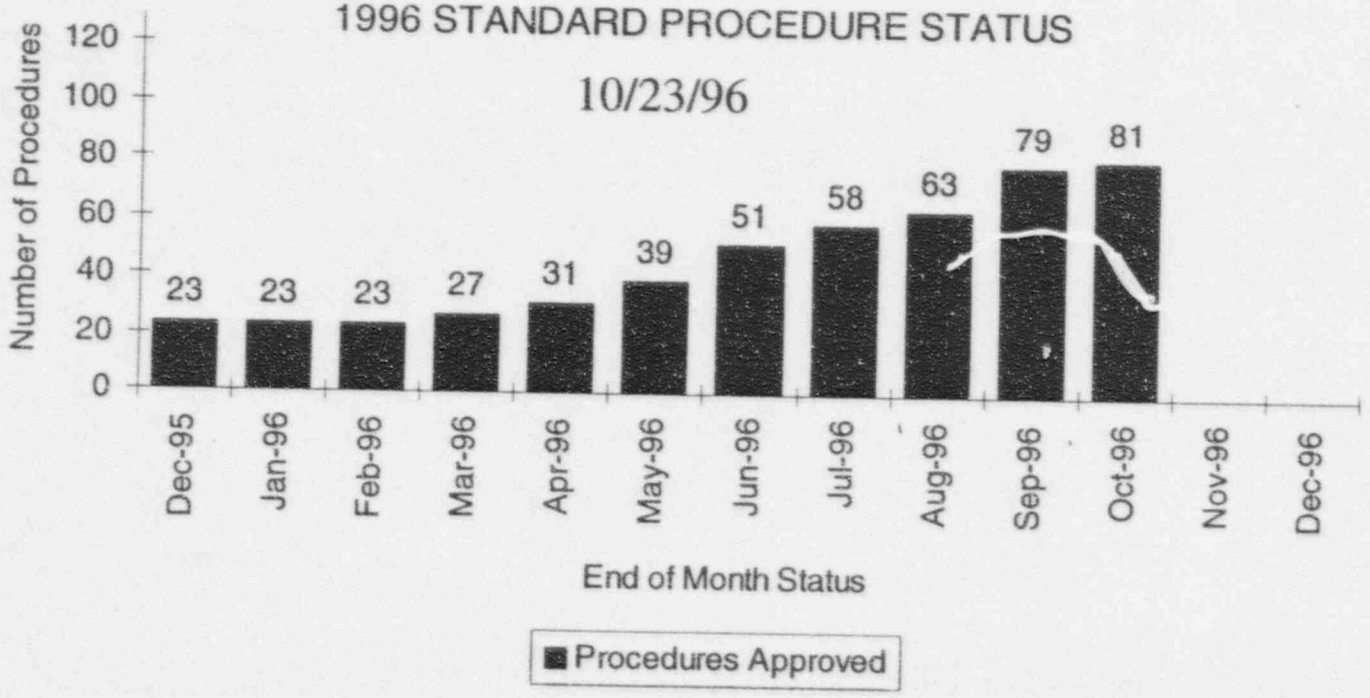
- **PROCEDURE QUALITY (Continued)**
  - NGD Standard Procedure Project
    - The purpose of the Standard Procedure Project is to develop technically accurate, consistent, user-friendly procedures related to operation and maintenance of power generation facilities and associated equipment. Currently Maintenance at McGuire has assisted in developing a total of 70 Standard Procedures. The project goal is to develop 130 Standard Procedures by the end of 1996. As of 10/22/96, 81 Standard Procedures have been approved, 17 are in final review and approval process, and 36 are being reviewed by the sites. Another advantage of Standard Procedures is that it enables ESS and contract employees who work during outages at all Duke Power Co. Nuclear sites to be familiar with one procedure rather than three. This will improve their understanding of our expectations and enhance the quality and consistency of their work at all three nuclear sites.
    - McGuire has received positive feedback on Standard Procedures being used in the Steam Generator and Reactor Coolant Pump Maintenance areas. Workers performing tasks in these areas had identified different methods of task completion which were confusing and required additional training and technical oversight to ensure consistent quality. In addition, the physical size of the RCP procedures were reduced by deletion of repetitive steps. These Standard Procedures have reduced human performance problems resulting from station-to-station inconsistencies.

MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - NGD Standard Procedure Project (Continued)
    - Standard Procedures will be developed as an aid for meeting expectations of quality job performance. Standard Procedures will promote our competitive advantage in a changing workplace by enabling us to:
      - Focus attention on work process standardization.
      - Support a consistent approach to job quality.
      - Reduce duplicate work that is performed at multiple sites related to procedure development, maintenance and periodic reviews.
      - Reduce number of procedure changes that are submitted due to personal preferences.
      - Review procedure changes for value added considerations.
      - Promote greater use of experienced resources both internally and externally.
      - Enhance ability to swap resources internally.
      - Implement a high level procedure standard which combines newly defined text and graphic standards.
      - Eliminate human factor errors resulting from inconsistent guidance between sites for support personnel traveling station-to-station.
  - This area will be assessed at the end of 1996 to evaluate the effectiveness of the standard procedures.
  - **Procedure Quality was recognized as a Maintenance Strength in the 1995 INPO E&A**

MAINTENANCE STRENGTHS

- **PROCEDURE QUALITY (Continued)**
  - NGD Standard Procedure Project (Continued)



MAINTENANCE STRENGTHS

- **CORRECTIVE ACTIONS - Follow Through and Implementation**
  - For the past three years (1994, 1995, 1996), Maintenance has succeeded in preventing any assigned PIP from going past the due date. The number of PIP's generated has significantly increased as the PIP program has matured over the last four years. In 1992, the Maintenance group generated 53 PIP's, compared to 1995 where Maintenance generated a total of 600 PIP's.
  - As of 10/22/96, Maintenance has generated 600 PIP's in 1996. By increasing the number of problems that have been identified, we increase the number of problems being corrected and/or resolved.
  - The significance of corrective actions has decreased over the past three years. In 1994 Maintenance had 8 MSE (more significant) work practice related PIP's, in 1995 Maintenance had 7 MSE's and YTD 1996 Maintenance has had 1 MSE.

MAINTENANCE STRENGTHS

- **BENCHMARKING**
  - Benchmarking is an important tool we have been utilizing to compare our standards and practices with other nuclear stations that have excellent performance records. We are aggressively obtaining as much information as possible to enable us to improve our performance in the most effective way. By utilizing other's successes as a starting point, we can move our improvement process along more quickly. The following are some examples of how we conduct benchmarking:
    - Visiting other plants/utilities
    - Attending outside seminars and identifying good practices. Ownership is assigned for implementing good practices at MNS
    - Involvement with INPO peer evaluation program
    - Established partnership with North Anna and Byron stations for exchange of knowledge and experience
    - Roles matrix for Engineering and Maintenance Technical Support
      - Evaluated Byron, Limerick, and San Onofre on their processes to provide technical support to craft. This benchmarking resulted in elimination of overlaps between Maintenance and Engineering.
  - Specific improvements that have been made as a result of benchmarking include:
    - Re-engineering of work control processes
    - Formation of a minor maintenance program
    - Improvements in outage management
    - Outage in-processing improvements

MAINTENANCE STRENGTHS

- **USE OF OPERATING EXPERIENCE PROGRAM**
  - Maintenance makes extensive use of operating experience information both internal and external:
    - Appropriate OE information is incorporated and footnoted within procedures. **This was recognized as an INPO strength in 1995.**
    - OE information is routinely covered in Maintenance training.
    - Each supervisors/manager in Maintenance has an OE three-ring binder with applicable OE information.
    - OE information is routinely covered during pre-job briefings. The pre-job briefing checklist has a sign-off for coverage of OE information.
    - Emerging OE information is discussed with line managers each morning at the morning status meeting.
  - **This area was recognized as a strength in the 1996 INPO E&A.**

MAINTENANCE STRENGTHS

- **SELF-ASSESSMENTS**
  - The Maintenance Self Assessment Program continues to identify specific areas within Maintenance that need attention and improvement. Maintenance Management is committed to making needed improvements and has given strong support to this program.
  - In 1994, there were 36 assessments performed within Maintenance. In 1995, 51 assessments were performed. As of 10/22/96, 45 assessments have been performed YTD.
  - The Maintenance Self-Assessment process has enabled us to focus on continuously looking at ourselves objectively, identifying problems and correcting them ourselves. Since we began this program two years ago, we have lowered the threshold regarding the types of problems we deal with. The relative significance of problems we currently identify are now considered minor compared to two years ago.

MAINTENANCE STRENGTHS

- SIGNIFICANT SELF-ASSESSMENTS
  - There are currently 10 Maintenance personnel who perform the assessments and have been trained on Observation and Assessment skills. The following information is a summary of self assessments that have been performed to date:
    - Self Assessments Performed in 1994 = 36
    - Self Assessments Performed in 1995 = 51
    - Self Assessments Performed in 1996 = 45 to date (10/22/96)

EXAMPLES OF SIGNIFICANT SELF ASSESSMENTS

ASSESSMENT	STATUS
Repair High Conductivity Reading on 2KGCE5020	Complete 8/95
Perform PM on Tech Spec Fire Doors	Complete 8/95
Maintenance to isolate/tag and rod out RL Coil	Complete 10/95
Perform Channel Test on 2FWLP5000	Complete 12/95
Maintenance Pre-Job Briefing Assessment	Complete 10/95
Support for Refuel 1EOC10	Complete 1/96
Main Condenser Extraction Expansion Joint Replacement Unit 1	Complete 2/96
Monthly PT on 2EQBLP27B Blackout Relaying	Complete 2/96
Replace 2B Hydrazine Pump 2YAPU002	Complete 7/96
Control of Non-Assigned Individuals and Organizations	Complete 4/96
PT on CRA-OAPFT-2 Humidity Control	Complete 3/96
Repair Body to Bonnet Leak	Complete 7/96

MAINTENANCE STRENGTHS

- **SELF ASSESSMENTS (Continued)**
  - Some of the Self-Assessment accomplishments are as follows:
    - Revised the Limitorque procedure (IP/0/A/3066/01A) to optimize actuator changeout process.
    - Deleting PM work orders (95057964-01 & 95057965-01) general doors and non-committed fire doors.
    - Maintenance identified a concern with who has operational control and ownership for Ventilation systems - Operations is currently generating a document describing ownership of equipment and guidelines for station personnel when operating equipment belonging to other groups.
    - Identified the WG Analyzer rack as being labeled incorrectly (0WG191) and installed the correct ID tag (0WGMT5730) on the Manual Loader.
    - Maintenance identified a concern with placing Non-Serviceable/Hold for repair tags on items/components removed from service which resulted in Commodities and Facilities Directive 4-40 being revised.
    - Deviations from using required Personal Protective Equipment as defined on Chemical Control labels was identified as a concern within Maintenance. As a result, Environmental Management is in the process of communicating a revised Personal Protective Equipment process for chemicals.
    - During Fuel Handling activities in Unit 1 Upper Containment there were inconsistencies identified in the use of hard hats, safety glasses, and personal flotation devices. As a result, Maintenance and the Reactor Group has developed a clear set of expectations and communicated these to the Refueling Team.

MAINTENANCE STRENGTHS

- **SELF-ASSESSMENTS (Continued)**
  - Some of the Self-Assessment accomplishments are as follows: (Continued)
    - NSD 105 is currently being revised to better identify the roles and responsibilities of the Job Sponsor, Training Group, and review of resumes for non-assigned individuals. In addition, some benchmarking of how non-assigned individuals are processed at other utilities has also been performed.
    - Identified a work order that did not list the required parts/materials necessary for replacing the sensor per the PM/PT that resulted in the work order having to be rescheduled pending parts. As a result, the planner reworded the statement in the model work order for both trains to read "Replace Sensor" at the beginning of the statement so this would quickly flag the planners reviewing PM/PTs for scheduling that parts are needed.
    - It was noted during an assessment that no formal/documented Post-Job Critique was performed for the high risk job task of repairing the steam leak on valve 2SP-15 by USSI personnel. This resulted in all USSI personnel being advised to perform the Post Job Briefings as required per Maintenance Directive 3.2.
  - The Maintenance Self-Assessment Program continues to evolve and improve as we continuously adjust our sights on world class performance.

MAINTENANCE STRENGTHS

- **SELF-ASSESSMENTS (Continued)**
  - Planning Self-Assessments
    - Due to identified concerns through the Maintenance Self Process and the PIP Program, there were adverse trends noted in the Work Organization / Planning stages of various Maintenance work orders. As a results of these discrepancies, the Maintenance Planning group started performing weekly assessments / reviews of work orders prior to being sent to the various crews for work to begin. After performing these work order assessments, the number of work organization / planning concerns has been significantly reduced in the Maintenance area. The planning Self-Assessment team developed the following guidelines for performing work order assessment / reviews:
      - The Planning Self Assessment Team is set up to review planned work orders that have been authorized and are ready for craft to begin work.
      - The Planning Self Assessment Team is made up of four central planners who review the T-6 schedule (six weeks prior to execution).
      - The Planning Self Assessment Team meets every week for the purpose of reviewing and refining work orders.
      - The lead planner of the work order being reviewed is responsible for making the correction to the original work order in WMS.

MAINTENANCE STRENGTHS

- **SELF-ASSESSMENTS (Continued)**
  - Maintenance Planning Benchmarking
    - Due to benchmarking activities by the Planning team, the following quality improvement initiatives have been put in place:
      - Contingency plans are now being incorporated into the work plan for certain Tech Spec maintenance with time restraints and other hard to schedule items that might need them.
      - Peer reviews - review of the final plan by another qualified planner looking for planning errors before the work order is authorized.
      - Red tagging - a more extensive review of red tagging requirements with collaboration from the OPS and Chemistry tagging group whenever the planner is uncertain about tags.
  - **This area was recognized as a strength in the 1995 and 1996 INPO E&A.**

MAINTENANCE
AREAS OF PROGRESS

- **HOUSEKEEPING / MATERIAL CONDITION PROGRAM**
  - MNS initiated our housekeeping and material condition program and is focused on resolution of all identified deficiencies and maintaining our significant initial gains. We continue to allocate funds and resources to carry out the program, focus on long range planning for improvement of housekeeping / material condition, improve ownership of the program throughout the site, monitor and assess our standards and practices.
    - Goal: Upgrade and maintain McGuire Nuclear Station facility and components to the standards set forth by NSD-104.
    - The upgrade project duration will be 4 years in length and is currently being pursued with three (3) active programs.

MAINTENANCE
AREAS OF PROGRESS

- **HOUSEKEEPING MATERIAL CONDITION PROGRAM (Continued)**
  - 1996 Housekeeping Materiel Condition 201 Project
    - Phase 2 completion in 1996 is 80% complete and is as follows:
      - 716' Elevation Auxiliary Building, painted walls, ceilings, floors, hangers, and upgraded insulation; 750' Elevation Auxiliary Building, painted walls, ceiling, floors, hangers, and upgraded insulation; Unit 1 Interior Doghouse, painted hangers, piping, valves, embedded steel and upgraded insulation; Unit 2 Fuel Building, painted walls, ceiling, floors, and cranes
    - Work in progress expected to complete in 1996:
      - 767' Elevation Auxiliary Building, painted walls, ceiling, floors, hangers, and upgraded insulation; Unit 2 Interior Doghouse, painted hangers, piping, valves, embedded steel, and upgraded insulation; Unit 1 Fuel Building, painted walls, ceiling, floors, and cranes
    - Work in progress that will carry into 1997:
      - Unit 1 Turbine Building (760' Elevation), painted walls, ceiling, piping, hangers, and upgrading insulation.
    - Projected 201 Project For 1997:
      - Unit 1 Turbine Building High Pressure Turbine, Units 1 and 2 NF System (Inside Containment and Annulus), Units 1 and 2 Auxiliary Pipe chase (695', 716', 733', and 750' Elevations)

MAINTENANCE
AREAS OF PROGRESS

- **HOUSEKEEPING MATERIAL CONDITION PROGRAM (Continued)**
  - 1996 Materiel Condition Project
    - 1996 Dedicated Materiel Condition - Phase 2 Completion Year-To-Date is as follows:
      - Doors throughout plant to include Control Room doors, stairwells and handrails, hallways and corridors, various chiller units, Unit 2 Turbine Building Basement floors, Units 1 and 2 Fuel Building Truck Bay floors, 2A and 2B Main Feedwater Turbine and Pumps, NI, NV, NS, PD, and CA Pump Rooms, freight elevator, WZ Sump Room, KF Pumps and Heat Exchanger Room and Components, 695' Elevation, Cold Machine Shop Floor, Outside Hydrant and Hose Houses, RP and Chemistry Office Areas, Decon, Laundry, and Change Rooms, and completion of approximately 250 minor maintenance work requests.
    - Dedicated Materiel Condition Program Work in Progress
      - Upgrade Coating of Unit 1 Turbine Basement Floor, Units 1 and 2 Vent Stack (Auxiliary Building Roof). White Space upgrade of Auxiliary Building Staircases.
    - Dedicated Materiel Condition Work To Be Worked in 1996
      - Complete White Space of Battery Room, Electrical Equipment Room, and Diesel Generator Room (Safe Shutdown Facility)
    - Dedicated Materiel Condition Projects For 1997
      - Continue with Unit 1 Turbine Building Upgrade 760' Elevation, Units 1 and 2 Reactor Building Upgrade, Fan Rooms, Accumulator Rooms, and Pipe Chase.

MAINTENANCE
AREAS OF PROGRESS

- **HOUSEKEEPING MATERIAL CONDITION PROGRAM (Continued)**
  - Housekeeping Materiel Condition Ownership Program
    - This is an ongoing program, designed to involve all station personnel in identifying, correcting, and if required, initiating corrective action for deficiencies that cannot be corrected by the owners. This program also contains a continuous graded evaluation of ownership areas where owners are scored and notified of Materiel Condition of their respective areas. There are 20 Materiel Condition Evaluation categories and Expectations for each. The categories are summarized as follows: Fluid Leaks, scaffolding, labeling, housekeeping, lighting, gas cylinders, supports, temporary equipment, ladders, deficiency tags, etc.
    - Each category is rated on a (5) point system, (5) being excellent, with no discrepancies found, to (1) unsatisfactory and immediate action needing to be taken to correct the deficiencies. The categories are rated 1 - 5 by the area owners and station evaluators. Categories that are not applicable for a specific area are noted as N/R (not rated) and the score is calculated on the rated categories as a percentage achieved of the total available points. The area must receive a rating of (80) to meet minimum acceptable standards. Owners write work orders as necessary to correct the identified problems. These inspections are performed periodically by owners. The Station Materiel Condition Coordinator conducts an evaluation each month to determine the average overall Station materiel condition in the same manner as the area owners. These evaluations are covered with the area owners to ensure that the plant expectations are being met and or exceeded.
    - 1996 Dedicated Materiel Condition - Phase 2 completion is as follows:
      - Unit 1 & 2 Fuel building floors, Auxiliary building corridor, Auxiliary building 760 Elev., stairways and handrails, various rooms and Auxiliary building, coatings in Warehouses 1, 1A, and 1B, materiel condition work requests

MAINTENANCE
AREAS OF PROGRESS

- **HOUSEKEEPING MATERIAL CONDITION PROGRAM (Continued)**
  - Fluid Leak Management Program
    - McGuire has implemented a Fluid Leak Management Program as one effort to improve the level of station housekeeping and materiel condition. The focus of this program is to provide an organized and timely maintenance response to equipment steam and water leaks. The program's key element is the Fluid Leak Management (FLM) Coordinator role within the Maintenance organization. The FLM coordinator is responsible for day-to-day implementation of the process.
    - Various measures gauge the success of the Fluid Leak Management Program. One formal measure is the number of outstanding "innage-related" leaks, or leaks that the station repairs with the unit on-line. This is a performance-based goal that factors into the overall Success Measures for Maintenance, Operations, and Work Control. Our goal for 1996 is to maintain less than fifteen "innage-related" leaks for both units combined, For 1995, our number at year end was nine. Our YTD for 1996 is 13.5 innage related leaks. Other measures include management observation of plant condition, and Materiel Condition Program area monitoring. "Outage-related" leaks, or leaks that cannot be repaired with the unit on-line, are included in the FLM program for tracking, though a specific number goal is not applicable.

MAINTENANCE
AREAS OF PROGRESS

- **CONTROL ROOM "BLACK BOARD" QUALITY IMPROVEMENT PROJECT**
  - Maintaining CRIPS (Control Room Indication Problems) as low as possible continues to be a major focus area. On-line CRIPS for 1996 is averaging 5 at a given time, for the plant (not per unit). CRIPS are treated as priority "E". CRIPS are planned and scheduled immediately. CRIPS are either on schedule or are being worked.
- **FOREIGN MATERIAL EXCLUSION**
  - Maintenance is seeing a significant improvement in Foreign Material Exclusion (FME) events. Procedural guidance has been upgraded to be more specific and conservative. Nuclear System Directive (NSD) 104 was revised to incorporate lessons learned and recommendations identified in SOER 95-1 "Reducing Events Resulting from Foreign Material Intrusion". All Maintenance Technicians have received continuing training on FME, based on SOER 95-1. In addition, update training was given to all vendors and Electric System Support personnel coming on site for 1EOC10.
  - Maintenance has also developed Housekeeping/FME Zone mock-ups to ensure standards were clear to all teams and vendors prior to 1EOC10. During the last refueling outage, we designated an FME Manager, who routinely toured the plant and inspected job sites for effective FME practices. All deficiencies were identified and corrected on the spot.

MAINTENANCE
AREAS OF PROGRESS

- **FOREIGN MATERIAL EXCLUSION (Continued)**
  - Other Initiatives
    - Communication (ESS, Vendor)
    - Maintenance Self-Assessments (Innage & Outage)
    - Risk Assessment Review
    - Pre-Job Briefings
    - FME Checklist
  - Root Cause Analysis
    - Based on increased number of PIP's, Maintenance performed root cause analysis of this issue. After analysis of the data, there is no adverse trend. Maintenance identified that the increased number of PIP's related to FME is the result of a lower threshold and heightened awareness of the potential for FME. It was determined that we need to continue our efforts in all facets pertaining to FME.
    - We are presently conducting year-end assessment on FME.
  - Units 1 and 2 cycles 10 and 11 have had no fuel pin failures due to foreign material.

MAINTENANCE
AREAS OF PROGRESS

- **HUMAN PERFORMANCE**
  - Maintenance continues to improve in the area of human performance, while still striving for overall continuous improvement. Many improvement initiatives have been implemented, such as making effective use of the Maintenance Self Assessment Program, the PIP program, and HPES evaluations to identify and resolve human performance problems.
    - Analysis of HPES and PIP trends is performed on a quarterly basis. Recommendations to address trends are presented to Maintenance management.
    - In the personnel safety area, Maintenance has challenged ourselves to achieve the vision of zero injuries. We have made significant improvements and we will continue aggressive efforts to achieve our vision.
    - Failure Prevention Incorporated (FPI) - A common cause analysis has been completed and a cultural index (CI) calculated by FPI. The results are being evaluated and will be utilized to identify additional improvement initiatives. Presently, McGuire is incorporating both HPES and FPI methodology into our investigations.
    - Work Habits Training - Supervisory Work Habits training has been conducted for all Maintenance supervisors, temporary supervisors, and line managers. This training has increased awareness and understanding of supervisory responsibilities for providing oversight and control.
    - Maintenance Managers/Supervisors Leadership training was recently presented at a Maintenance Advance Workshop. Part of this training included managers/supervisors role playing and critiquing the Maintenance Risk Assessment process.
    - The Maintenance Risk Assessment Process including the pre-job briefing process continues to evolve as we learn ways to make it more successful. Maintenance has received industry recognition for these processes.

MAINTENANCE
AREAS OF PROGRESS

- **HUMAN PERFORMANCE (Continued)**
  - Maintenance 1996 Human Error Prevention Plan
    - Site Project MG-95-0815 was created to track implementation of the Maintenance 1996 Human Error Prevention Plan. This project identifies specific activities that are being implemented by Maintenance for human error prevention. Particular emphasis is being placed on implementing the recommendations from our human error prevention consultant, FPI. This consultant took an extensive look at our human error prevention processes and programs and made specific recommendations for enhancement.
      - This project requires self-assessments to be performed for processes and programs that are currently in place. For example, a Pre-Job Briefing checklist of medium/high risk jobs was implemented in 1995. The use of this checklist is being evaluated to determine its effectiveness and to identify potential enhancements. Also a Post-Job Critique section has been added to this checklist to help ensure we capture lessons learned for the future. Other project activities include improving the Maintenance self assessment program, improving the planning of work orders, improving manager/supervisor field observation, updating supervisory training and ensuring we have a process to evaluate human error prevention efforts on an on-going basis.
    - QVV (Qualification, Validation, Verification), STAR (Stop, Think, Act, Review) Simulator training is currently being scheduled for all Maintenance personnel to attend for 1996. This training will help to resolve inconsistencies by turning raw information into facts which can be reliably used in a decision making process.
    - Flow Loop - A fully operational flow loop is under construction at the Maintenance Training Facility. It can be utilized by Operations, Chemistry, Radiation Protection, and Maintenance personnel to reinforce effective work habits. Additional emphasis will be put on STAR, QVV, correct component verification, verification of safe working conditions, etc.

MAINTENANCE
AREAS OF PROGRESS

- **HUMAN PERFORMANCE (Continued)**
  - McGuire Communications Standard MSD 589
    - This procedure provides guidance to all site personnel conveying or receiving operational information, defined as any communications that direct personnel actions that could affect equipment or decisions important to the operation of the plant.
  - Maintenance HPES Program
    - Maintenance recognizes the benefits of an effective HPES program in improving human performance. The PIP program and self-reporting provide input on human performance problems that need to be evaluated. Once identified, dedicated support staff perform an investigation and provide results to management for follow up.
  - Self-Checking Simulator
    - The purpose of the Self-checking simulator is to improve communication techniques, improve the trainee's ability to self-check, and stress the importance of procedural adherence (all integral parts of the STAR concept).
    - Each simulator includes switches, an indicator, an alarm, a blower, lights, and procedures. Each trainee will go through a defective procedure and see the results on the control panel. A red light will energize if the sequence timer expires (expiration time is programmable through a computer program; suggested time is 15 minutes) to notify trainee of the expiration of time. A green light will energize upon successful completion of the task in the given time frame.

MAINTENANCE
AREAS OF PROGRESS

- **HUMAN PERFORMANCE (Continued)**
  - Root Valve Labeling
    - This project started in October 1994 and was completed in 1996 during 2EOC10 refueling outage. A total of 6,663 root valves in both units were labeled. Our ability to correctly identify correct components has been greatly enhanced, and has also reduced the time that was previously required in research and tracing of components.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT**
  - System Work Window
    - Implementation of system work window has been a key element in effective management of non-outage work.
    - McGuire uses the concept of System Work Windows to schedule and execute on-line maintenance. In this process important plant systems are logically grouped and assigned to an execution week within a twelve week rotation. The groupings are designed to:
      - Eliminate PRA risk due to critical combinations of systems and components being out of service
      - Maximize system availability
      - Optimize tag-out and maintenance efforts by consolidating maintenance on components.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - System Work Window (Continued)
    - There is a seven week work preparation sequence leading up to each execution week which insures that work scoping, risk assessment, work planning, work scheduling, assignment of resources, identification of support requirements, and organizational commitment to the work plan occur in an orderly manner. These weeks proceed as follows:
      - Week T-7 - A list of work, both planned and unplanned is developed by the Innage manager. It is forwarded to Engineering, Operations, Radiation Protection, Chemistry, and Commodities and Facilities for review.
      - Week T-6 - Work scope is reviewed and approved by Operations, Engineering, Work Control, and support organizations for work prioritization and risk assessment. The need for job sponsors on critical maintenance is identified.
      - Week T-5 - A detailed schedule is developed based on the approved work scope, insuring that all work is scheduled prior to its due date. The schedule is reviewed with Maintenance, Operations, Schedulers, and WWM for task sequence issues.
      - Week T-4 - The schedule is issued to Maintenance to conduct an integrated review of resource requirements. Resources are allocated among the crews as needed to meet the work requirements. If necessary, due to resource shortfall, lower priority work is identified for deferral. A proposed schedule is issued to all affected site groups for review prior to the Commitment Meeting in Week T-2.
      - Week T-3 - The schedule is adjusted to reflect the resource review and to insure day-to-day work levelization for each crew to the degree possible. The schedule is now frozen with respect to work additions or deletions except as coordinated with Maintenance. An updated proposed schedule is issued.
      - Week T-2 - The Commitment Meeting is held based on the site review of the proposed schedule. All support requirements are confirmed in this meeting. Work orders on hold status for any reason (parts, engineering issues, etc.) are pulled from the schedule unless the responsible organization can give assurance that the issue will be resolved prior to the start of execution. Following the meeting, the final schedule for the execution week is issued to the site reflecting any changes made in the Commitment Meeting.
      - Week T-1 - The schedule is stable and this week provides the opportunity for final crew familiarization and preparation for the work.
      - Week T-0 - The schedule is executed. Work that cannot be completed due to unforeseen problems or emerging plant conditions is rescheduled by this same process.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - System Work Window (Continued)
    - Goals:
      - The major 1996 work performance goals related to the process are to have:
        - A total corrective work order inventory no higher than the range of 450-550,
        - A corrective work order backlog (older than 180 days) no higher than 50.

        There are additional work performance goals related to PM work orders and the total number of control room indication problems.
      - In addition to the work performance goals, there are nuclear safety goals related to the System Work Window process:
        - No unacceptable PRA risk invoked by the work schedule,
        - Safety System availability goals not adversely impacted by the work schedule.
    - Accomplishments:
      - As of October 20, 1996, the corrective work order inventory was 434 which is better than the target range. The non-outage corrective work order backlog (>180 days) is 19 which is our lowest ever.
      - In regard to nuclear safety goals, no unacceptable PRA risks have been incurred in 1996 and the safety system availability measures are on target.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - Equipment Database Project
    - The goal of this project is to establish an accurate, certified database that provides needed technical data to support the work control process. This information being available on the computer will be easily accessible from many locations. A team is presently in training to prepare to perform the major portion of this work. The duration of the project is expected to be 18 to 24 months. The database will then be constantly maintained as changes/mods occur.
    - Key results/recommendations/related projects:
      - Electronic Signature QIT
      - Retest QIT
      - WCQIP
      - EQIP
      - Tool Module
      - Parts Catalog
      - Procedure Index
      - Personnel Qualification System
      - WMS Administrative Guidelines for Personnel Movement
      - Action Tracking
      - Out of Service

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - Equipment Database Project (Continued)
    - This core team resolved approximately 60 action items, involved in testing the proposed New Baseline Product by INDUS, interfaced with other CITs and groups (i.e. MAPPS CIT, ARTEMIS CIT, and ESS for Supplemental Work Orders and Labor Entries), created document to reflect Material & Equipment process, identified how Material/Equipment is reserved, and developed a document to set guidelines for "HOLD" status.
    - 1996 Objectives:
      - Assist in Implementation & Testing of MAPPS
      - Interface with the Equipment Data Base Group and with the cleanup
      - Action Tracking interface
      - ZEUS interface
      - Passport Interface Group interface
      - EQSS for Craft codes
      - Steam Generator Project interface
      - Portal/G interface

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - Field Planner Training
    - Field planning is a two sided process. Prerequisites must be met in order to be considered for field planner training. There is formal classroom training (40 hours) that must be completed or a bypass test successfully completed that takes the place of the classroom training. There is an OJT package that must be completed or an assessment made of the candidate's qualifications to ensure they are qualified. After all this has been accomplished, planner security is then given to the candidate and their qualifications transferred to training to be included in his/her training file. Some field planners were conditionally qualified before this training program was in place and these individuals are being backfitted at this time to qualify as outlined in the program.
  - Asbestos Coordinator
    - Maintenance implemented the concept of a single point of contact (SPOC) for asbestos related work activities. Primary responsibilities include: oversight of the Duke Power Asbestos Management Program, supervision of sampling program, implementation and improvement of the Asbestos Tracking Data Base.
    - ETQS provides Asbestos Class III and IV worker training for Maintenance personnel.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - Management of Work Order Backlog
    - Processes are now in place to ensure the ongoing management of the work order backlog. Ownership is a key part of these processes. Work orders in the backlog are appropriately classified, assigned to specific supervisors and schedulers. Status reports keep management informed of current performance.
    - Maintenance in conjunction with Work Control and Operations, continues to focus significant effort toward maintaining a low inventory of corrective innage work orders. System outage window guidelines are used to schedule long range work orders, and to identify resource availability well in advance. This process has aided in improving this focus area.

MAINTENANCE
AREAS OF PROGRESS

- **WORK CONTROL PROCESSES / WORK MANAGEMENT (Continued)**
  - Critical On-Line Maintenance Process
    - McGuire has recently developed a more formal approach of performing significant schedule activities. A "Critical On-line Maintenance" process has been implemented which will improve McGuire's control of critical maintenance activities.
    - The Critical Maintenance Process is a structured approach that is used to ensure on-site groups are appropriately involved in the planning and execution of work that is critical to plant operations. Examples of Critical Maintenance activities include:
      - planned work activities that may add a significant risk of unit shutdown or plant transient
      - planned work activities that may result in exceeding 50% of the LCO action time
      - planned work activities, that in the judgment of station management, deserve an increased level of planning and management oversight
    - Critical Maintenance Team identification, project scope, written execution plan development, detailed logic planning, contingency planning, clear ownership of tasks, management presentations and approvals, pre-job briefings, and communication of the plan are all key elements of a successful Critical On-Line Maintenance Plan. The results of good plans will be reduced risk to the safe operation of the station during work execution.

MAINTENANCE CHALLENGES

- **WORK CONTROL CONTINUOUS IMPROVEMENT**
  - Work Control Process improvement efforts have yielded positive results. In 1996, the Work Control Process has supported successful outages and has demonstrated effective management of non-outage work.
  - The Work Control continuous improvement identified as a Maintenance challenge because:
    - We realize that further gains in efficiency and productivity can be realized by improved work coordination (INPO E&A Finding).
    - We wish to maintain emphasis on continuous improvement in order to meet the challenge of two steam generator replacement outages in 1997.
  - A continuous improvement team will be formed to analyze job delays and recommend actions that will overcome planning, scheduling, and coordination problems. The team will be multi-discipline (Work Control, Operations, Maintenance, and Chemistry) and will use data from weekly work window manager critiques and maintenance supervisor logs of work delays. The team will make specific process change recommendations and may appoint special teams to pursue complex issues before making recommendations.

MAINTENANCE CHALLENGES

- **WORK CONTROL CONTINUOUS IMPROVEMENT (Continued)**
  - Increased focus will be placed on identification of work that warrants development of coordination plans.
  - Process will be developed for hourly scheduling of work involving high control room activity. This process will be used as a basis for determining the use of hourly scheduling elsewhere in the work control process.

MAINTENANCE CHALLENGES

- **MAINTENANCE RULE**
  - In March 1994, the Maintenance Rule Implementation Project was made into a team project. This project was tasked with setting up the Maintenance Rule for Duke Power in accordance with 10CFR50.65 requirements. The major steps in this project were to develop the process for scoping systems, structures and components (SSCs) into the rule, establishing risk assessment and performance criteria, establishing a removal from service evaluation, and determining data to review for historical evaluation.
  - In June 1995, the Maintenance Rule Working Group (MRWG) was established and the implementation project was closed out. Since then the working group has made revisions to the implementation process, developed computer tools to aid in monitoring availability data, and is making changes to existing programs to capture and document MPFFs. The site SSCs have been evaluated for inclusion in the rule and have been evaluated for risk significance along with establishing their performance criteria for monitoring. Work Process Manual directive 607 was established to evaluate the risk of removing equipment from service based on a risk matrix that was developed from maintenance rule data. This process has been used to schedule work and evaluate the risk impact on plant status since November, 1995. Nuclear Station Directives and Engineering Directives were issued for approval at the end of the first quarter of 1996. At the end of the first quarter of 1996, the availability tracking tool was in production and the Problem Investigation Process has been revised for the maintenance rule screen.

MAINTENANCE CHALLENGES

- **MAINTENANCE RULE (Continued)**
  - Support For Maintenance Rule
    - Modify and execute transition plan from the Maintenance Rule coordinator to the Engineering staff to actively involve the Engineering staff on their systems with respect to the Maintenance Rule.
    - Re-train groups involved with the Maintenance Rule on their roles and responsibilities in the rule.
    - Verify all Maintenance Rule documentation is adequate.
    - Initial determination of A(1)/A(2) system status was completed on May 1, 1996. Sixteen (16) McGuire systems were initially designated A(1). As of September 30, 1996, five (5) systems remain in A(1) status.
    - A three-site assessment of Maintenance Rule implementation was conducted during May and June, 1996. One preliminary assessment finding indicates a need to improve general knowledge levels in Engineering and Management regarding how the Maintenance Rule is implemented. The assessment also noted that some Maintenance Rule related revisions to departmental program documents are still outstanding. All of the Maintenance Rule related documents have been revised and have been approved.

Operating Excellence - Nuclear System

SYSTEM RELIABILITY

(Event) (Correction) (Prediction/ Detection) (Prediction) (Greater than 12 mos.)

CRITERIA	GREEN (2 points)	YELLOW (1 point)	RED (0 points)	ACTUAL	
EQUIPMENT EVENTS					
- Nuclear Events	0 - 3 by year end	4 - 5 by year end	> 5 by year end	6 by year end	
- Lost Generation Events - EFPD	3 by year end	4 - 6 by year end	> 6 by year end	52 by year end	
TOP EQUIPMENT PROBLEM RESOLUTION (TEPR)					
- Major Equipment Problem Resolution (See Initiatives)	N/A	N/A	N/A	N/A	
- Workarounds (WAPR) (No. Completed in Last 3 Months)	To be revised	To be revised	To be revised	NR	(Jul-NRAug-NR, Sep-NR)
- Action Register Problem Resolution (ARPR Avg. Rating for Last 3 mos.)	> 2.5	1.5 to 2.5	< 1.5	2.15	(Jul-2,Aug-2.14, Sep-2.33)
SYSTEM / EQUIPMENT CONDITION	≥ 11	9 - 10	≤ 8	9*	
MAINTENANCE RULE (% of A(1) Systems)	decreasing trend	flat	increasing trend	5 systems (decr. trend)	

*One item not reported for September; criteria reduced accordingly

MEETING EXPECTATIONS (GREEN)

IMPROVEMENT NEEDED (YELLOW)

NOT MEETING EXPECTATIONS (RED)

UNREPORTED (WHITE)

Operating Excellence - Nuclear System

SYSTEM RELIABILITY

MCGUIRE NUCLEAR STATION

MAINTENANCE RULE MONTHLY STATUS REPORT

A (1) Status Systems as of 09/30/96

MAINTENANCE RULE PERFORMANCE CRITERIA NOT MET

			~~ System Level ~~~~~~			~~~~~~~~~~~~~~~ Plant Level ~~~~~~~~~~~~~~~							
			Risk Significant		Non-R/S					Repetitive			
		Parameter:	Unavailability	MPFFs	MPFFs	Rx Trips	ESF Act.	Loss DHR	F.O.R.	MPFFs*			
		Criterion:	1WPM 601	< 2/cycle	< 5/cycle	< 2/cycle	< 2/cycle	0/cycle	< 8 %	0/cycle		System	
R/S?	UNIT	SYSTEM	Act./Criteria						Act./Criteria		PIP #	Engineer	Comments
yes	1	SYD	Yes								1M96-1586	Pedersen/Kennedy	monitoring availability with new SLC
yes	2	FW	89.8/23 hrs	1							2M96-0332	Pedersen/Murdock	monitor temp of instr this winter
yes	2	NC		1		1			974/826 hrs		2M96-1479	Pedersen/Nolin	monitor NCP motors
yes	2	SSF	618/570 hrs								2M96-1439	Pedersen/Roberts	monitoring availability
yes	2	† SYD	Yes								2M96-1590	Pedersen/Kennedy	monitoring availability with new SLC

	Number of A(1) Systems		5					*	Components with R-MPFFs			Equipment	
									Component		PIP #	Engineer	Comments
									none		n/a	n/a	n/a

Changes Since Last Month

	System	PIP #	Basis for Adding / Clearing
Systems Added to A(1) Status	none		n/a
Systems Cleared from A(1) Status	none		n/a

	Comp.	PIP #	Basis for Adding / Clearing
Components Added to R-MPFF List	none		n/a
Components Cleared from R-MPFF	none		n/a

MAINTENANCE CHALLENGES

- **WELDING PROGRAM**
  - Why this is a challenge?
    - Lack of overall station ownership.
    - Inconsistent processes between McGuire, Catawba, and Oconee Nuclear Stations.
    - Unclear roles and responsibilities between craft, supervisors, QA staff, and technical support of various groups.
    - Poor lateral integration of involved organizations (Maintenance, Modifications, Steam Generator Replacement, and Metallurgical Support).
    - Inadequate utilization of knowledgeable technical support, supervision, QC and welding personnel.
    - Lack of realization that shop qualification (to ASME Code Section IX) does not accurately reflect welder skill in field applications.
    - Quality of welding process questioned at Catawba Nuclear Station.

MAINTENANCE CHALLENGES

- **WELDING PROGRAM (Continued)**
  - What we are doing at McGuire prior to 1EOC11 (2/97)
    - Site PLAN 96-1427 has been generated. It is based on management input and Nuclear Generation Department quality improvement teams addressing a) the Corporate Welding Program and b) Lessons Learned from Catawba Nuclear Station Steam Generator Replacement. The areas of focus are:
      - Establishing site wide ownership and a welding technical support matrix organization to link Maintenance, Modifications, and Steam Generator Replacement.
      - Establish/implement training and test requirements in addition to ASME Code qualifications for welders, fitters, and QC inspectors.
      - Update the Station Welding Manual to properly reflect roles, training, and processes.
      - Detailed review of the planning and process control of welding activities by the welding technical support matrix.
      - Assessment by management and industry peers prior to implementation of outage welding activities.
      - Detailed involvement by the welding technical support matrix in daily welding activities during 1EOC11.

PLANT SUPPORT

PLANT SUPPORT TABLE OF CONTENTS

- **PLANT SUPPORT**
  - EMERGENCY PLANNING
  - FIRE PROTECTION
  - RADIATION PROTECTION
  - SECURITY
  - CHEMISTRY

EMERGENCY PLANNING STRENGTHS

- **AGGRESSIVE DRILL SCHEDULE**
  - Simulator drills are conducted with each training shift (five) including various elements of emergency response, medical response, hazardous material and local fire department response. Quarterly fire drills are conducted with each shift. In addition, an exercise and an unannounced after-hours callback drill is conducted annually. McGuire recently successfully conducted a staff augmentation drill targeted at the peak traffic hour for the new downtown stadium.
- **OFFSITE TRAINING**
  - Developed videos using Duke employees and offsite emergency responders from state and local government. Videos are used by offsite agencies for annual training and include elements of school bus driver/teacher training, Emergency Operations Center overview, radiological monitoring, lake warning, traffic control, etc. We continue to receive requests for copies of these videos by other utilities.
- **FACILITY ENHANCEMENTS**
  - New modular tables have been installed in the Manager's area of the Emergency Operations Facility (EOF). The new tables allow for computer storage and display below table top level providing additional table space and enhanced face to face communications.

EMERGENCY PLANNING STRENGTHS

- **EQUIPMENT UPGRADES**
  - Computers in the EOF have been upgraded.
  - FAX machines were upgraded in the emergency facilities.
  - Video conferencing has been installed in the emergency facilities providing face to face communications between the facilities.
  - Bridge lines have been installed in the emergency facilities to provide enhanced communications. Dedicated loops have been established for Operations, Public Information and Controllers.

EMERGENCY PLANNING AREAS OF PROGRESS

- **EXERCISE CONTROL**
  - An SRO has been added to the Emergency Planning staff. This individual has 25 years of expertise and is primarily responsible for scenario development and exercise control. The scenarios developed have been very realistic and challenging to the Operators and have included Duke and Industry events.

EMERGENCY PLANNING CHALLENGES

- **EMERGENCY PLAN CHANGES**
  - 10CFR50.54(q) provides no guidance on what constitutes a decrease in the effectiveness of the emergency plan. We are working through NEI to develop industry guidance and in interim have developed internal guidance for performing and documenting these reviews.
- **EMERGENCY PLAN TRAINING**
  - Emergency Planning and the Training Division are working in close partnership to accomplish a more efficient and effective training program.
  - The Training Organization has accepted responsibility for lesson plan development and instruction of Emergency Plan training.
    - The Emergency Plan training program consists of initial and continuing training for Emergency Response Organization, fire brigade and hazmat members, lesson plan development, presentation, documentation and record retention. Some of the required training is being factored into the INPO accredited program.

FIRE PROTECTION STRENGTHS

- **FIRE BRIGADE**
  - Fire brigade includes 5 members over the minimum requirements. We have continued to drill frequently with good performance.
- **MATERIAL CONDITION**
  - Improvements in housekeeping have overlapped efforts to control combustibles within the station. This results in less fuel to support a fire.

FIRE PROTECTION
AREAS OF PROGRESS

- **THERMO LAG**
  - All thermo lag material was removed during EOC10 outages.

FIRE PROTECTION CHALLENGES

- **PERFORMANCE BASED SURVEILLANCE PROCEDURES**
  - The Fire Protection BEST team has determined that current frequencies for procedures involving inspection of fire protection equipment can be reduced without reducing the reliability of systems and equipment operability. This concept is being pursued through the Nuclear Mutual Limited (NML) insurance officials, and eventually to the NRC. Both groups have indicated that this concept is feasible.
- **CONTINUOUS IMPROVEMENT**
  - McGuire, Oconee, and Catawba Fire Protection program leaders are working together to utilize best station and industry practices to continuously improve.
  - Some "System" directives have been written to drive out consistency in our programs. Additional system directives are in progress.
  - Upcoming Steam Generator replacement - Minimizing risk of fires

RADIATION PROTECTION PROGRAM STRENGTHS

- **ALARA**
  - Since 1990, McGuire's 3-year average collective radiation exposure per unit has decreased from 409 Rem/Unit to 134 Rem/Unit. McGuire's 3-year average thru the end of 1996 is projected to be 128 Rem/Unit. McGuire just completed 1EOC10 for 128 Rem and 2EOC10 for 126 Rem which were the lowest refueling outage dose totals for an ice condenser plant to date. With new Steam Generators and increased fuel cycle lengths, McGuire's year 2000 goal is 97 Rem/Unit. The following has contributed to improved dose performance at McGuire:
    - Management commitment to ALARA Program
      - Support for integration of hold points in NC cooldown procedure to maximize benefits of controlled crud bursts
      - Involvement in dose goal setting - encourages development of challenging goals and goals that encourage improved performance relative to rest of industry
      - Provides resources to support temporary shielding program
    - Aggressive temporary shielding program
    - Letdown filtration downsizing (down from 25 to 0.45 micron w/ plans to reduce down to 0.1 micron - plan to evaluate downsizing other process filters)

RADIATION PROTECTION PROGRAM STRENGTHS

- **ALARA (Continued)**
  - Use of new technology to reduce exposure
    - Teledosimetry
    - Audio/video
    - Underwater vacuum of refueling cavity
    - Rx vessel flange cleaning machine
    - Containment floor & equipment sump clean-out vacuum system
    - Acoustic testing of check valves
    - Dose rate monitoring system
  - RP/ALARA involvement in work planning & scheduling
  - OPS & Chemistry support for system flushes (i.e., ND system flush, Letdown piping backflushes, etc.)
  - RFO crud bursts (see Chemistry Strengths)

RADIATION PROTECTION PROGRAM STRENGTHS

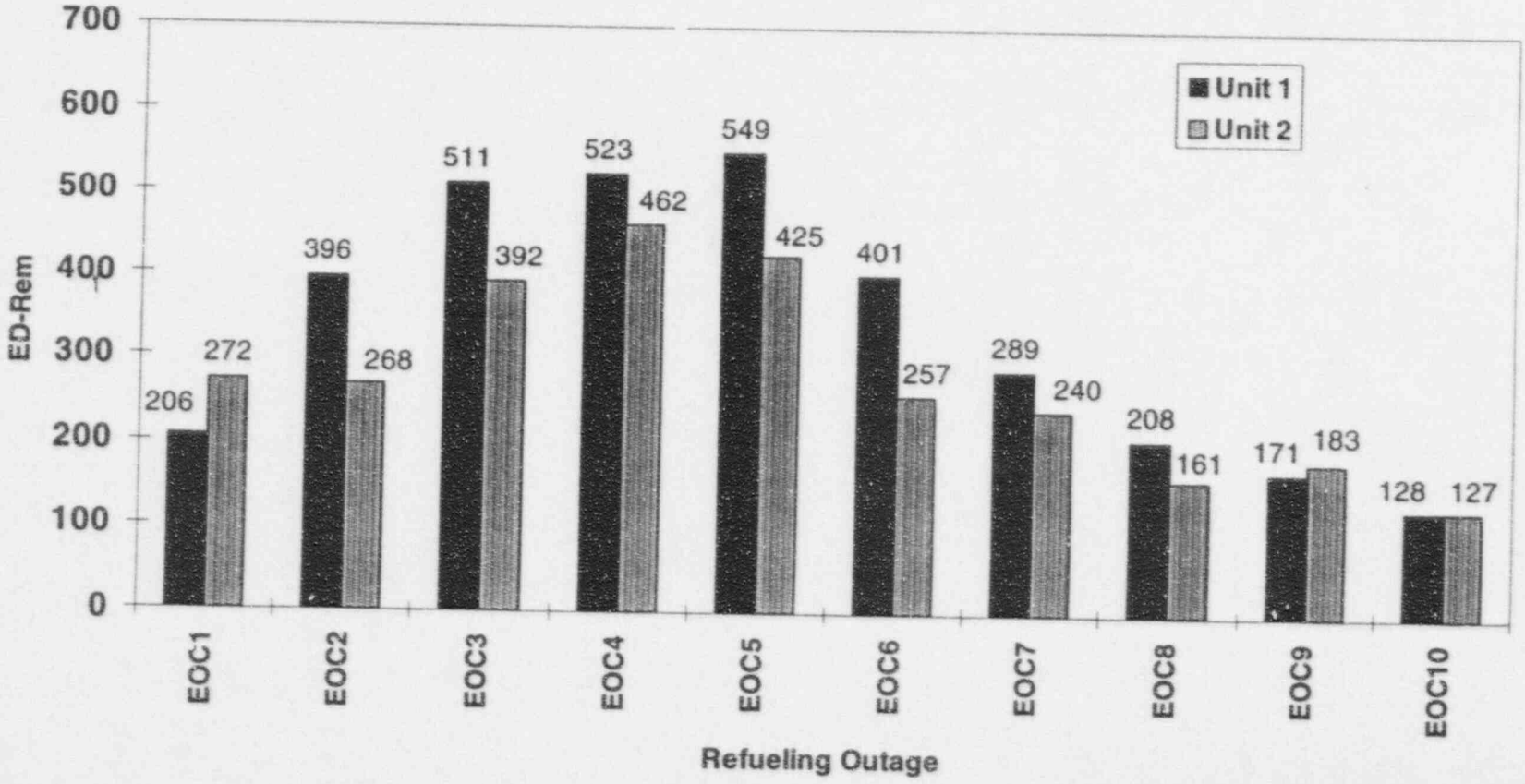
- **SOLID RADWASTE REDUCTION**
  - In 1995, McGuire generated 8,925 cubic feet of solid radwaste. This was our lowest generation volume ever. The disposal/onsite storage volume for 1995 was 1,888 cubic feet. These results were accomplished by a culmination of many waste reduction programs implemented over the past several years. We continue to be an industry leader in radwaste reduction. These successful programs include:
    - Employee communications stressing the importance of waste minimization
    - The use of a management sponsored continuous improvement team with representatives from all station groups
    - Aggressively pursuing launderable tool bags, trash bags, mop heads, and rags
    - When disposable items are needed, ensuring that they are incinerable
    - Making many disposable items harder to access (tape, bags, and wipes)
    - Sorting and segregating low dose rate contaminated trash
    - Reduction in bubble hood and respirator use
    - Establishing aggressive outage Dry Active Waste (DAW) generation goals and annual site generation goals
    - Including solid waste reduction in the performance appraisal of site employees
    - **1996 INPO identified program strength**

RADIATION PROTECTION PROGRAM STRENGTHS

- **HOT SPOT REDUCTION PROGRAM**
  - The Hot Spot Program has been in place since 1992. Hot Spots are identified as specific areas greater than 100 mRem/hr and greater than five times the background radiation level. Since 1992, 82 Hot Spots have been identified. 62 Hot Spots have been removed. The success of the Hot Spot Program can be attributed to the tremendous support the program has received from station groups and management.
- **FLUID LEAK MANAGEMENT / CONTAMINATED FLOOR SPACE REDUCTION PROGRAMS**
  - The Fluid Leak Management Program continues to reduce the number of components requiring catch containments and continuous to decrease the contaminated floor space for the plant. Maintenance has assumed responsibility for administering the program and has focused their attention on the repair of leaking components. We have continued to maintain an aggressive approach to minimizing contaminated floor space, with primary focus on ready access by Operations to plant equipment.

RADIATION PROTECTION

Refueling Outage Dose History



RADIATION PROTECTION

McGuire 3-Year Average Dose Per Unit vs. Industry

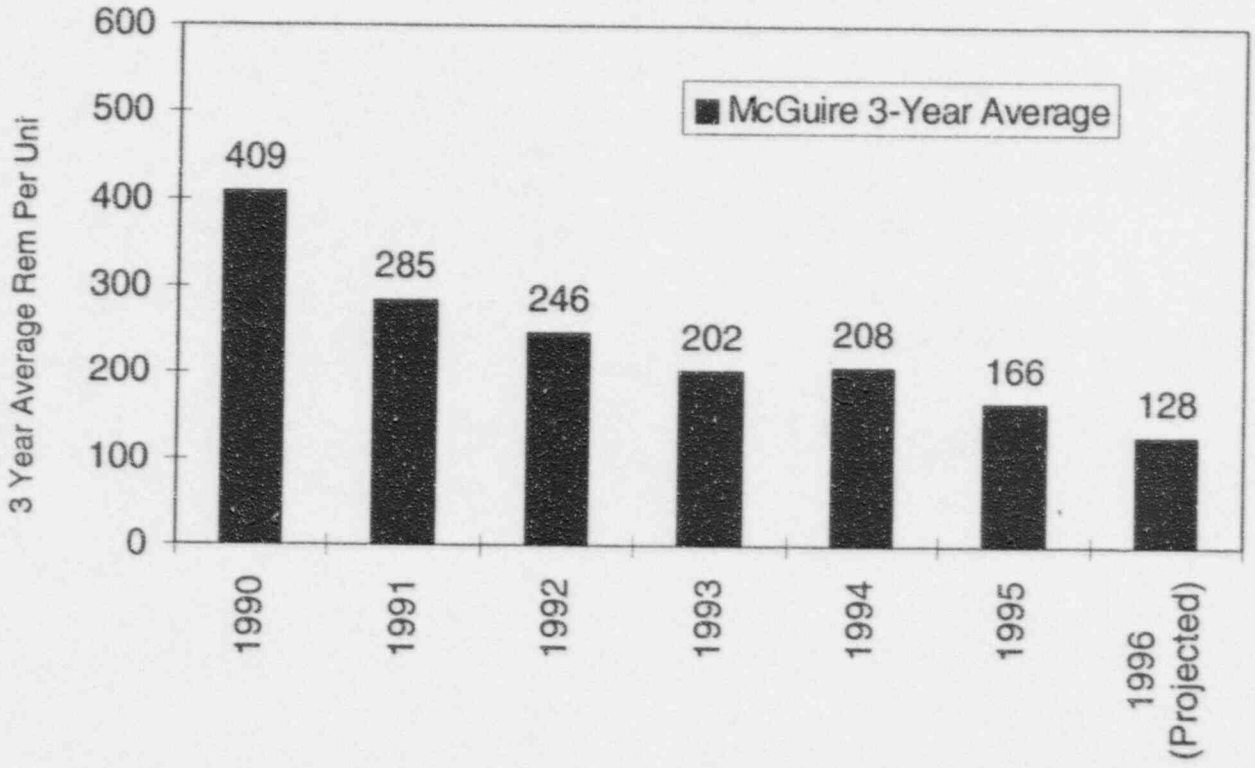
	1990	1991	1992	1993	1994	1995	1996
INDUSTRY 1st QUARTILE	219	179	175	155	145	123	116 *
INDUSTRY MEDIAN	284	216	213	193	178	158	153 *
McGUIRE 3 YEAR AVERAGE	409	285	246	202	208	166	130 **

*** 2nd Quarter Results from INPO**
**** 3rd Quarter Result (McGuire)**

NOTE: McGuire 1996 year end projected dose = 128 Rem/Unit.

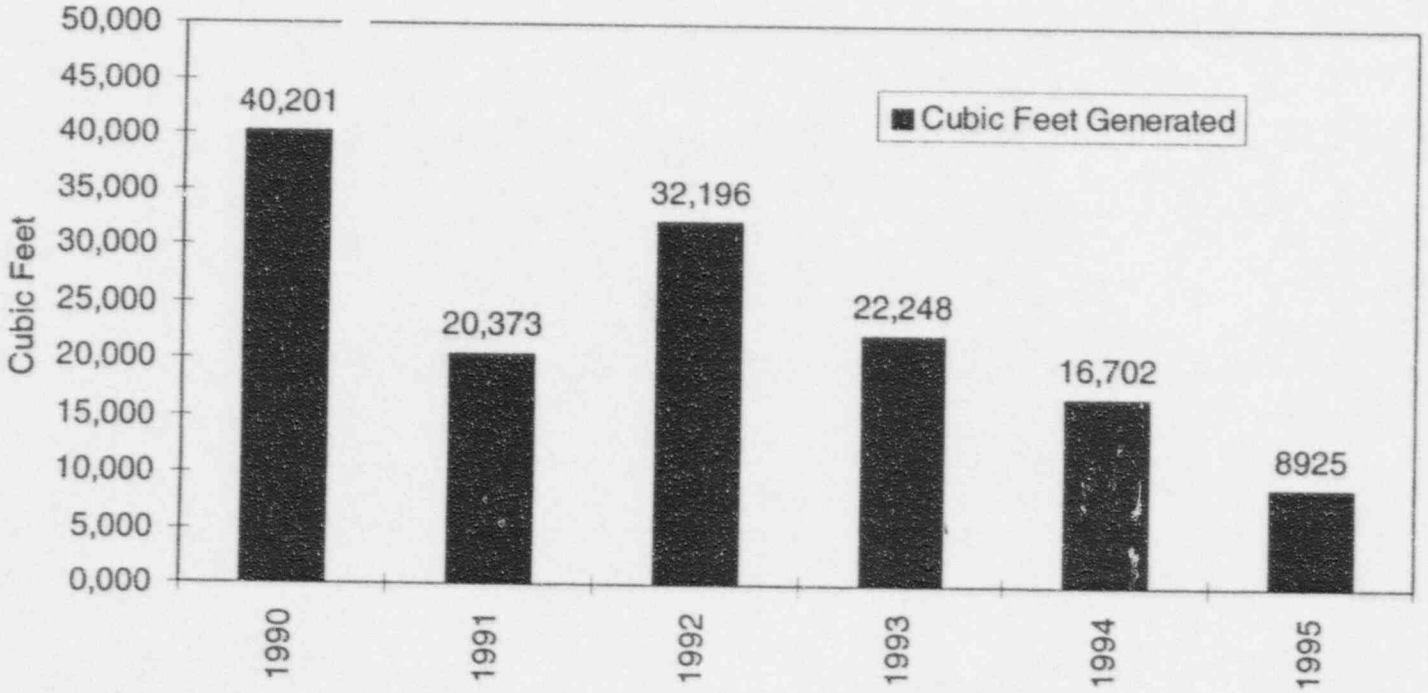
RADIATION PROTECTION

McGuire Collective Radiation Dose History

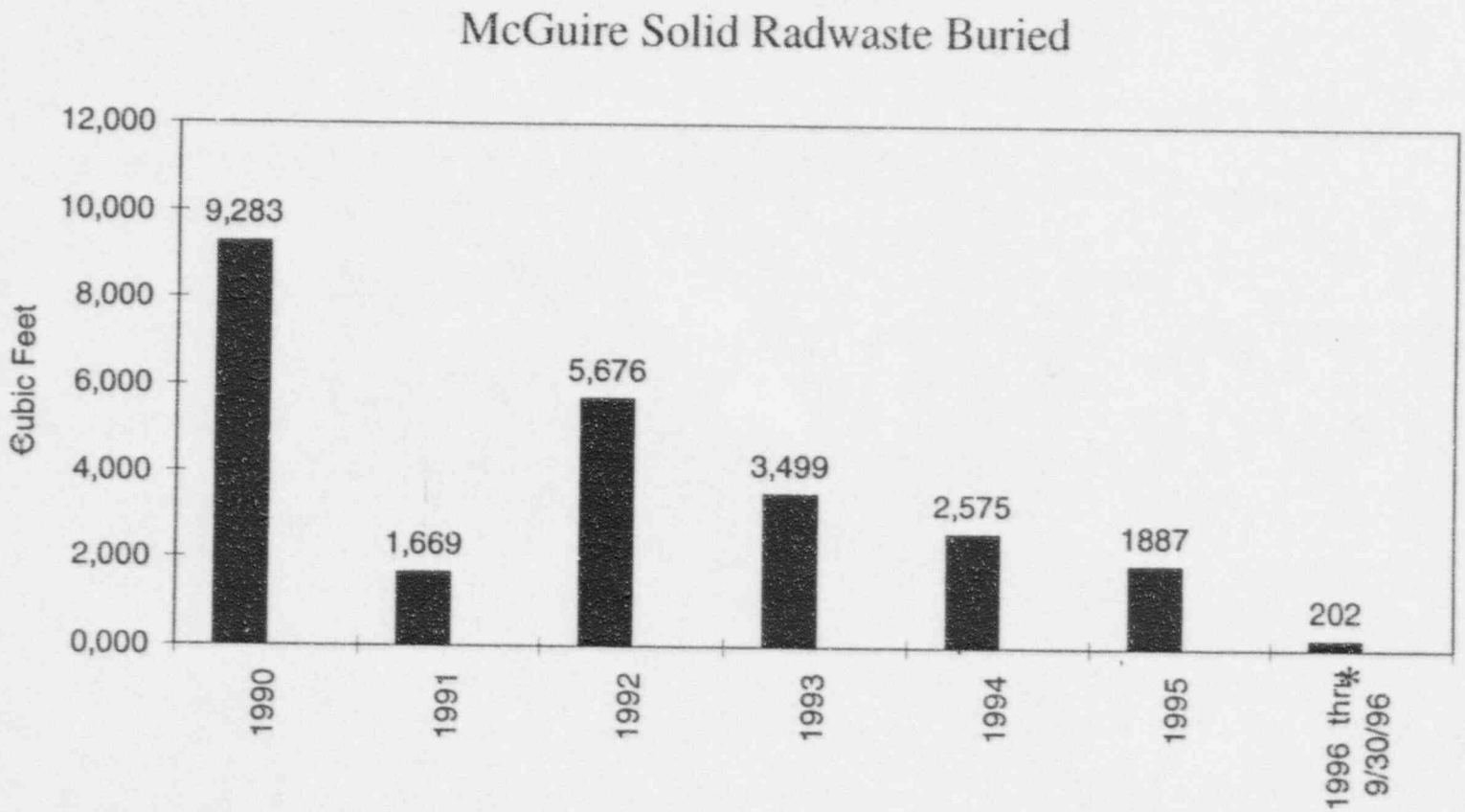


RADIATION PROTECTION

McGuire Solid Radwaste Generated



RADIATION PROTECTION



* Final form volume onsite

RADIATION PROTECTION AREAS OF PROGRESS

- **SUPPORT FOR THE WORK CONTROL CENTER**
  - During the previous three refueling outages, Radiation Protection has provided a full time position to the Work Control Center. This has enabled Radiation Protection to stay well informed of any changes in work planning. It has also provided a resource the rest of the station can use for planning near term execution of work.
  - RP continued to support the WCC during 2EOC10 on a 24 hour basis and will continue this practice in future refueling outages.
  - The RP ALARA Staff reviews all new Work Orders for Radiological concerns and scheduling impact. RP also attends the daily and weekly schedule review meetings to help ensure the smooth execution of the work process.
- **SYSTEM PROCEDURE AND TASK STANDARDIZATION**
  - Oconee, McGuire and Catawba have standardized a number of Radiation Protection practices and procedures. The three stations are currently defining the remaining scope available given station differences such as Technical Specifications.

RADIATION PROTECTION CHALLENGES

- **CONTAMINATION CONTROL**
  - Through aggressive self-assessment and root cause analysis, we have been successful in the reduction of skin and clothing contaminations. Initiatives employed during 2EOC10 as a result of a QIT formed in February of 1996 reduced our clothing contaminations by 25% from 1EOC10. 1996 year to date personnel contaminations are as follows: 64 skin and 77 clothing contaminations. As of the end of 2EOC10, contaminated floor space is .06%, or approximately 65 square feet. We will also continue to emphasize improvement in the contamination control.
  - Contamination control in the Contaminated (Hot) Tool Crib has presented itself as a recent challenge due to the implementation of tighter contamination limits for the area. (The fixed contamination limit was recently reduced to 10,000 ccpm in support of meeting industry standards.) To resolve the issue, existing administrative processes are undergoing rigorous review, a 100% survey of the Hot Tool Crib is progress, and routine survey methods are being improved to ensure compliance with current contamination control requirements.

RADIATION PROTECTION CHALLENGES

- **DOSIMETRY LAB IMPROVEMENTS**
  - The corporate dosimetry lab (TLD lab) is currently evaluating the implementation of revised TLD processing algorithms to ensure that the most accurate exposure measurement methods are utilized. The lab is in good standing and maintains full NVLAP accreditation and any changes to the program are focused on improving the overall accuracy and precision of the analytical measurement process. Recently tightened INPO Guidelines have prompted this process review.
- **ON-SITE STORAGE LOW LEVEL WASTE**
  - With no access to the Barnwell Facility, McGuire is challenged to efficiently process and store radioactive waste on-site.
- **STEAM GENERATOR REPLACEMENTS**
  - 180 days of outage are scheduled for McGuire in 1997. Radiation Dose and Radioactive Material control will be major challenges for the RP Department.

SECURITY STRENGTHS

- **CONTINGENCY RESPONSE READINESS**
  - Ongoing continuous improvement efforts to increase the tactical skill level of the security armed response force
    - Joint Security / Charlotte Mecklenburg SWAT Training Exercise - 06/20/96
    - Implementation of Handgun Survival Skills Evaluations Course (04/08/96 - 05/29/96)
    - Familiarization Firing with "Def-Tec Model 68" Gas Mask (04/08/96 - 05/29/96)
    - Introduction and Familiarization firing with "Quick Mask" Emergency Respirator (04/08/96 - 05/29/96)
    - Supervisors and OJT officers completed training on hostage negotiations for first responders
    - Program for pre drill physical fitness exercises implemented into all contingency response training
    - Introduction, familiarization and certification of all armed Security Officers to OC (pepper) spray, First Defense MKII

SECURITY STRENGTHS

- **EQUIPMENT UPGRADES**
  - Alarm Station Upgrade - Independent computer monitor for immediate alarm indications.
  - Vehicle Barrier System installed to ensure plant protection from land based vehicle threats.
  - CCTV coverage at Administrative Building.
  - Company Police Vehicle: Highlights police presence on site/Deterrent for workplace violence.
  - Local Door Alarms - Audible/Visual indication of door status installed on 18 security doors (Tech Spec security doors).
  - Double Door Closers - completed on 15 doors (high ventilation areas).
  - Purchase of computer controlled moving target system for security firing range. (Installation date 12/96)
  - Replacing Remington 870 shotguns with Benelli 12 gage semi automatic shotguns
  - Implementation of Security Seal Program to enhance material access/search process for items entering the Protected Area
  - Computer equipment installed in Security office area to allow computer based training for Security Officers on shift.
  - Lowered alarm monitor in CAS/SAS - ergonomics improvement for alarm station operator.
  - Exercise equipment purchased to enhance physical fitness and endurance of Security personnel. (Relieve boredom/stress of shift personnel)

SECURITY STRENGTHS

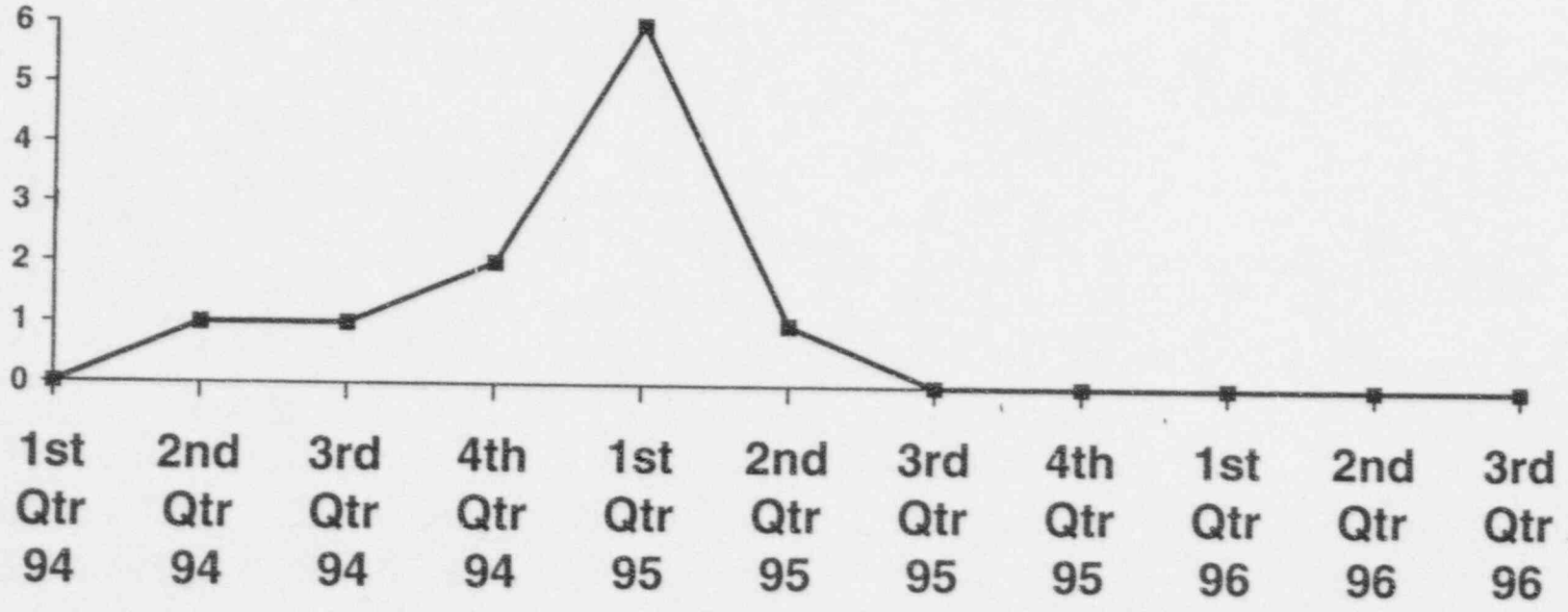
- SYSTEM AVAILABILITY (Last 3 SALP Periods):

	PREVIOUS PERIOD 1	PREVIOUS PERIOD 2	CURRENT PERIOD 3
Security Computer	99.6%	99.8%	98.8%
Security Doors	99.8%	99.9%	99.9%
Closed Circuit TV System	99.8%	99.9%	99.8%
PA Intrusion Detection System	93.8%	99.0%	99.8%
Personnel Search Equipment	87.0%	94.9%	98.7%

SECURITY
AREAS OF PROGRESS

- **CONTROL OF SAFEGUARDS INFORMATION (SGI)**
  - No Events this period. (5 events last period)
  - Reduced volume
    - 34,800 to 17,200 documents
    - 340 diskettes to 5 removable cartridge drives
    - 438 aperture cards to 0
  - Safeguard Information relocated to two dedicated SGI work areas located within Protected Area.
  - Reduced number of personnel with unrestricted access to storage containers from 82 to 11.
  - Only one controller per SGI container.
  - Audible / Visual alarms for unlocked SGI containers and access doors to work areas.
  - Beginning implementation stage of SGI Inventory System (PC Based)

SAFEGUARD INFORMATION CONTROL EVENTS



SECURITY
AREAS OF PROGRESS

- **UNSECURED DOORS**
  - 1994 - 128 Events
  - 1995 - 81 Events
  - 1996 - 20 Events (to date)

SECURITY CHALLENGES

- **RESOLUTION OF SELF-IDENTIFIED DEFICIENCIES**
  - Completed transition of security events into site PIP Program (06-01-96).
  - Apparent Cause Training - Security Supervisors and Security Support (05-28-96).

- **MICROWAVE INTRUSION DETECTION SYSTEM**
  - Problem zones were identified in NRC Inspection Reports 50-360/95-16 and 50-370/95-16 (excessive Nuisance Alarms).
  - Alarms have been reduced by approximately 20%. We are currently working on an engineering solution to raise the level of performance in one specific area.

CHEMISTRY STRENGTHS

- **REFUELING CRUD BURST**
  - Crud burst methodology has now been proven during two outages with excellent dose results. Continued excellent boron and lithium ratio control support the low dose rates.
- **LIQUID RADWASTE CONTROLS**
  - Continuing strong performance in controlling quantities of liquid radwaste and minimizing the curies released while minimizing the volume of solid waste as a byproduct of processing. Expect to finish 1996 below goal of 0.15 curies for two units while producing less than 100 cubic feet of solid waste. September 1996 set another new record with less than 1400 gallons of liquid waste per day average. **INPO recognized McGuire's performance in this area in the most recent E&A..**
- **SECONDARY CHEMISTRY**
  - Control of steam generator and secondary systems chemistry remains excellent. Currently using an alternate amine for erosion-corrosion control, molar ratio control and boric acid to control secondary side steam generator tube chemical environment. The adoption of molar ratio control had a positive impact on both outages as fewer tubes were plugged than expected. Note: Boric acid will be discontinued in January 1997 and neither unit will start up with molar ratio control following replacement project. Molar ratio will be reinstituted if shutdown data indicates need following first cycle of operation.

CHEMISTRY STRENGTHS

- **WATER TREATMENT**
  - Quality of makeup water remains high supporting excellent secondary chemistry control.
- **TRAINING**
  - ETQS and classroom training are producing good results and having a positive impact on plant performance. **This was recognized as an INPO strength.**

CHEMISTRY
AREAS OF PROGRESS

- **PRIMARY SYSTEM DEMINERALIZER OPERATION**
  - There have been no reactivity management concerns as a result of demineralizer manipulations since February of 1995. Currently, the Chemistry Best is working with the Operations Best to establish consistent demineralizer operating criteria for the three Duke locations. This effort will result in some additional changes in the MNS procedure.
- **OPERATIONS / CHEMISTRY / ENGINEERING LATERAL INTEGRATION**
  - Progress in this area has been significant since the start of the shift planning meetings. In addition, Operations, Chemistry, and Engineering continue to meet weekly to discuss group interface issues.
- **CLOSED COOLING SYSTEM CHEMISTRY**
  - Data obtained between May of 1995 and May of 1996 indicated that some additional adjustment of closed cooling system chemistry was needed. Those changes are in progress now (reduce pH of system to an upper limit of 9.5 instead of a lower limit of 9.5). We will continue to monitor copper levels and will make additional changes if needed.

CHEMISTRY
AREAS OF PROGRESS

- **CHEMISTRY STAFFING**
  - Training is progressing well with our 7 new hires. Development of these personnel to meet tomorrow's needs is a challenge.
- **PROCEDURE BACKLOG**
  - With the exception of the Radwaste Team, the procedure backlog has essentially been eliminated. The Radwaste Team should be meeting expectations by the end of 1996. As of September 30, 1996, the Radwaste Team had only 1 procedure change greater than 90 days old.
- **LABORATORY QUALITY CONTROL**
  - Much progress has been made in this area. We are continuing to try to balance cost and risk, knowing that we must maintain very high integrity data. We have been benchmarking with other plants to optimize practices.
- **HUMAN PERFORMANCE**
  - As measured by error rate, there has been significant improvement, with no significant events this year. Current efforts are focused on communication, continuing lateral integration efforts, management involvement in the field, and self assessment efforts.

CHEMISTRY CHALLENGES

- **WORK CONTROL**
  - The interface between Chemistry, Work Control, and occasionally Operations has resulted in several work start delays this year. We are actively investigating each occurrence and working to develop processes to prevent future occurrences.
- **UNIT 1 (MONITORING LEAKAGE)**
  - We were operating with about 14 gpd primary to secondary leakage just prior to the Unit 1 shutdown.

CHEMISTRY CHALLENGES

- **PROBLEM IDENTIFICATION**
  - A self assessment of PIP generation indicates that the Chemistry Group is not generating as many PIP's for the size of the group as is expected. Currently, our efforts are focused on lowering the threshold for PIP generation through management involvement.
- **LONGER FUEL CYCLES**
  - Longer fuel cycles will initially require increased boron concentrations in systems and tanks. While the greatest challenge will be for the Operations Group, the Chemistry Group is making plans for preparation of the boric acid solution needed to support the change.

PLANT SUPPORT

SIGNIFICANT SELF ASSESSMENTS

ASSESSMENT	STATUS
1A NC filter changeout	Complete 9/95
Outage contamination control	Complete 9/95
Safeguards Event Trending	Complete 10/95
Control of Containment Airlock Door	Complete 11/95
Chemistry Program	Complete 11/95
Missed Surveillance	Complete 12/95
Green tag consistency	Complete 12/95
Control of radioactive material	Complete 12/95
Posting	Complete 12/95
RCA entrance/exit monitoring	Complete 12/95
Respiratory Program Eval	Complete 12/95
Fuel Handling Assessment	Complete 12/95
Use of vacuum in RCA	Complete 12/95
Radiation Worker Practices	Complete 3/96
Control of Non-Assigned Individuals	Complete 4/96
Fitness for Duty	Complete 5/96
Rad Protection/Chem Audit	Complete 5/96

ASSESSMENT	STATUS
Hatch Watch Duties	Complete 6/96
Station Security Audit	Complete 8/96
1996 Site Environmental Assessment	Complete 8/96
Consolidated Performance Audit	Complete 9/96
UFSAR Change Assessment	Complete 10/96
Topical Report Assessment	Complete 10/96
Posting	On Going
Action Trending/PIP Trends	On Going
Effluents Interfaces	Target 12/96
VUCDT Releases	Target 12/96
Radwaste Team IV Practice	Target 12/96
BB Resin Sluice	Target 12/96
Closed Cooling Chemical Additions	Target 12/96
Boron Demineralizer Control Procedure	Target 12/96
Primary Team Non-Routine Work Tracking Process	Target 12/96
NPD Sampling Process	Target 12/96
YM Regeneration Process	Target 12/96

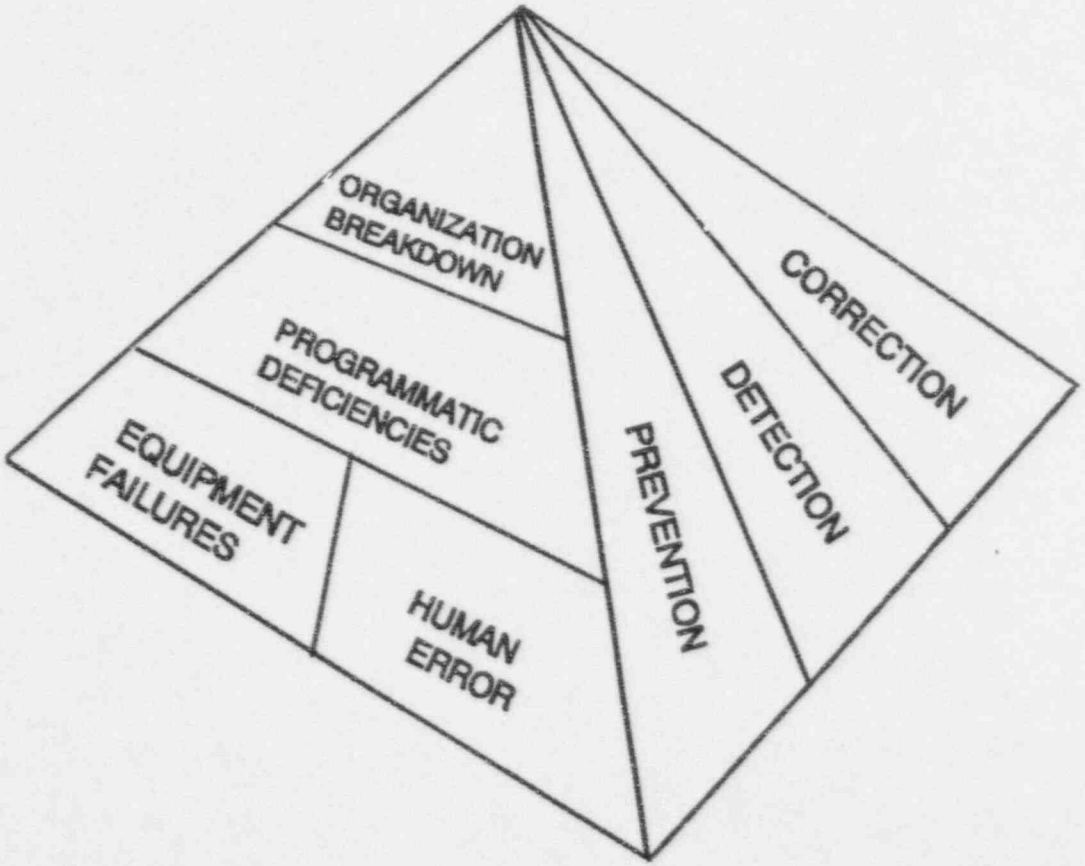
SELF IMPROVEMENT CULTURE

SELF IMPROVEMENT CULTURE TABLE OF CONTENTS

- **SELF IMPROVEMENT CULTURE**
  - PERFORMANCE PYRAMID
  - PREVENTION
  - DETECTION
  - CORRECTION

SELF IMPROVEMENT CULTURE

PERFORMANCE PYRAMID



SELF IMPROVEMENT CULTURE

- **PREVENTION**
  - Worker prevention techniques such as:
    - STAR--Stop, Think, Act, and Review.
    - QV&V--Qualify, Validate, and Verify.
    - Questioning Attitude--When there is uncertainty, contact your supervisor.
    - Conservative Decision making--Protecting the core is our top priority.
    - Level 1 Safety Assessments.
  - Supervisor involvement including:
    - Pre-job Briefings and Post job Critiques--All maintenance jobs receive a risk assessment and all medium to high risk jobs receive a Pre-job Brief and a Post-job Critique. Included in the pre-job brief is Lessons learned from previous problems.
    - Field Activities--Supervisors are expected to be in the field daily to observe, council, and coach workers during in progress work.
  - Other Prevention Initiatives
    - Management Observations--Formal reviews by 2nd level managers in areas outside their direct area of responsibilities.
    - SRG Quick Hitter--Daily reviews of plant activities such as Shift Turnover, Pre-job Briefings, 91-01 Briefings, Field Work, Surveillance Testing, Management Meetings, etc.
    - Operating Experience Database--This computerized database is LAN connected and available to all site personnel.

SELF IMPROVEMENT CULTURE

◆ DETECTION

- Problem Identification Process (PIP) Database is available to all employees through a LAN connected computer system. This system has received wide spread acceptance due to it's usefulness and expanded capabilities.
- PIPs are screened by a team composed of ENG, OPS, MNT and SRG within 24 hours for Significance, given an Event Code, and assigned to the appropriate group for Cause Analysis and Resolution. Significant PIPs are also sent to RGC for Reportability, and ENG/OPS for operability.
- Additional coding for Organization, Work Process, Key Activity, Human Error Inappropriate Action Failure Mode, Organization and Programmatic Failure Mode, and Human Error Type is performed to allow common cause analysis.
- The problem reporting threshold has been significantly lowered, such that there were 2299 PIPs generated in 1995. The 1996 generation rate is on track to be ~3500 (see graph on page 227).
- Issues are identified through numerous methods and loaded into PIP for tracking.
  - Self Identification--Any employee may generate a PIP on any unexpected occurrence or area for improvement.
  - Trends--All issues/trends identified by individual groups or through site wide trending are documented in PIP.
  - Assessments--All Findings and Recommendations identified by internal assessments are documented in PIP.
  - Audits-- All Findings and Recommendations identified by external assessments (Corporate Assessments, Audits, NSRB, etc.) are documented in PIP and tracked to completion.
  - Inspections-- All Findings and Recommendations identified by regulatory agencies (INPO, NRC, etc.) are documented in PIP and tracked to completion.

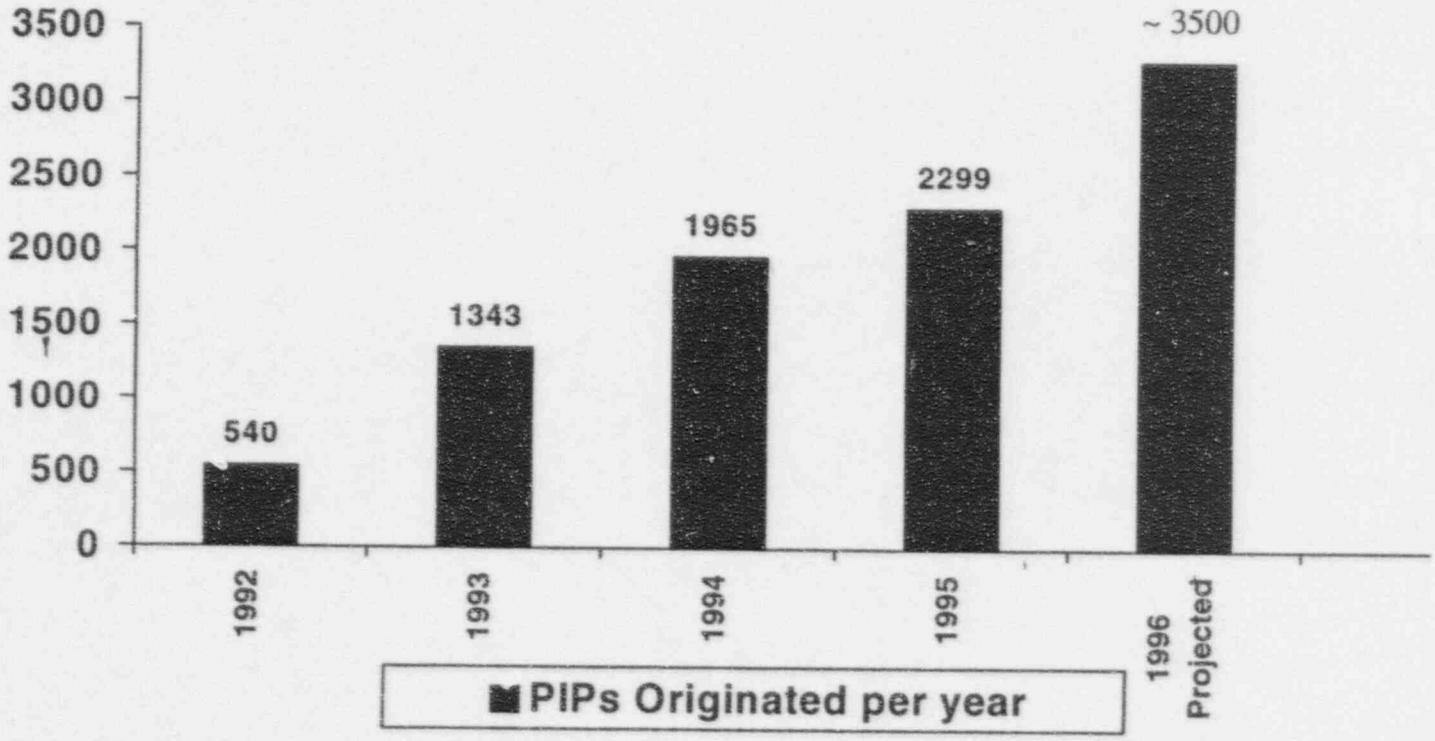
SELF IMPROVEMENT CULTURE

- **DETECTION (Continued)**
  - Operating Experience Database is linked to the PIP database for search capabilities of in-house and external problem reports.
  - Issues identified through NRC generic letters, Bulletins, Information Notices, etc. are documented and tracked in PIP database.
  - All significant problems are shared with other sites for generic applicability as well as transportability to other systems at the site.
  - Improved Trending Capabilities
    - Event Trending--Ability to tie Event Code to INPO Cause Code and sorted by group causing the event.
    - Quarterly Event Trending--SRG for the site. Trending of problems within their groups.
    - Bi-annual Common Cause Analysis--Detailed review of Human Error/Inappropriate Actions (HEIA) to determine significant problem areas. This review is being done on a six month basis.
    - Annual INPO Symptom, Classification Method

SELF IMPROVEMENT CULTURE

- **DETECTION (Continued)**
  - Assessments are being performed at all levels of the Organization to assure compliance with Management Expectations and identify areas for improvement.
    - Group self assessments--Significant improvements have been made with a minimum number of self assessments required for each group. YTD complete - 121
    - In-Plant Reviews--Formal Assessments of work processes by SRG. YTD complete - 35
    - Corporate Assessments--Formal Assessments/Audits by offsite personnel. YTD complete - 12
    - Nuclear Safety Review Board--Significant changes have been made to strengthen NSRB effectiveness. Increased frequency of site review from semi annual to quarterly. YTD complete - 3

SELF IMPROVEMENT CULTURE
Corrective Action Program
PIP Generation Rate



SELF IMPROVEMENT CULTURE

- **CORRECTION**
  - Implemented a new Equipment Root Cause process which involves a systematic approach to troubleshooting, thus preserving as found conditions and preventing loss of evidence.
  - Identified Root Cause Coordinator to concur with all Root Causes and measure quality.
  - Root Cause Experts attended a six day course taught by FPI International on Advanced Prevention and Reduction of Organizational and Programmatic (O&P) Failures.
  - Established goals for the number of Root Causes Performed.
  - Implemented a measure for the quality of Root Cause Analysis.
  - Key Engineering Personnel have attended a 3 day class in either Electrical or Mechanical Equipment Failure Modes taught by FPI International.

SELF IMPROVEMENT CULTURE

- **COMMENTS FROM 1996 INPO E & A**

"...We were favorably impressed with ... comprehensive use of Self-Assessment, and strengthened use of Operating Experience to identify and achieve improvements."

WRAP - UP

McGuire Performance Measures

January, 1997

Vision - "To Be World Class"

- Production Cost in Top Ten
- Capacity Factor in Top Quartile
- INPO 1 Rating
- NRC SALP 1 Rating
- Zero Reportable Environmental Incidents
- Zero Recordable Injuries

Team Effectiveness

SAFETY PERFORMANCE INDEX (Birmingham)	PERSONNEL EXPOSURE (Geddie)	HUMAN PERFORMANCE (Dolan)	BUSINESS EXCELLENCE ASSESSMENT (Weidler)

TRAINING EFFECTIVENESS (White)	SELF IMPROVEMENT CULTURE (Dolan)	WORK MANAGEMENT (Geddie)

Operating Excellence - Nuclear System

GENERATION FULL-POWER DAYS (Geddie)	OUTAGE TARGETS (Geddie)	NUCLEAR SYSTEM EVENTS (Dolan)	PERFORMANCE INDICATOR INDEX (Herran)	INPO RATING (McMeekin)	SALP SCORE (McMeekin)

SYSTEM RELIABILITY (Herran)	MODIFICATIONS (Herran)

Operating Excellence - Cost Control

NON-FUEL O&M BUDGET (Utterback)	SYSTEM FUEL COST (Utterback)	NON-MAJOR CAPITAL SPENDING (Utterback)	201'S COMPLETE WITHIN ESTIMATE (Utterback)	STEAM GENER. REPLACEMENT COST (Geddie)

Stewardship

PREVENTABLE ENVIRONMENT. INCIDENTS (Dolan)	ENVIRONMENT. ASSESSMENT SCORE (Dolan)	SOLID RADWASTE (Geddie)	RADIATION RELEASE INDEX (Geddie)

COMMUNITY INDEX (Sipe)

Site Focus - The Biggest Barriers to Achieving Our Vision

WORK ENVIRONMENT (McMeekin)	CONFIGURATION MANAGEMENT (Herran)	LONG-RANGE PLANNING (Utterback)	FORCED OUTAGE REDUCTION (Herran)	1 & 2EOC11 OUTAGE MANAGEMENT (Geddie)

DRAFT
10/24/96

Red - Not Meeting YTD Expectations

Yellow - Not Meeting Monthly Expectations

Green - Meeting Monthly and YTD Expectations

White - Currently Unreported

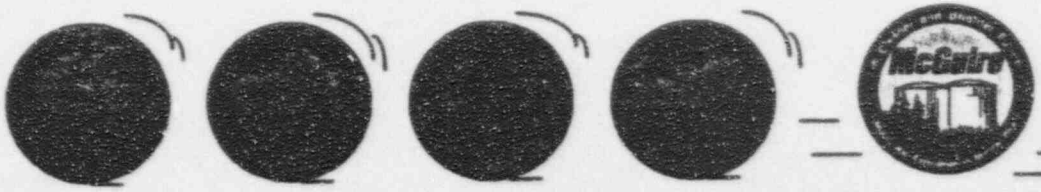
Quarterly Status YTD

Current Status

$ Represents Site Incentive Goal

SUMMARY

- **THE McGUIRE TEAM INTENDS TO GET TO THE NEXT PERFORMANCE LEVEL BY:**
  - DOING WHAT WE SAY!
  - CONTINUING TO RAISE OUR STANDARDS
  - RALLY THE TEAM ON A FEW MAJOR FOCUS / IMPROVEMENT AREAS
  - PRODUCING CONSISTENT GOOD PERFORMANCE IN ALL AREAS
  - "ANALYZING , LISTENING, FIXING" WITH BIAS FOR ACTION, NOT EXCUSES
  - TALKING TO EACH OTHER



MNS - ON THE ROAD TO BECOMING WORLD CLASS