



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

April 13, 2005

Paul D. Hinnenkamp
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
5485 US Highway 61N
St. Francisville, LA 70775

SUBJECT: SUMMARY OF MEETING TO DISCUSS RIVER BEND STATION
PERFORMANCE AND IMPROVEMENT INITIATIVES

Dear Mr. Hinnenkamp:

This refers to our meeting conducted at the NRC Region IV office in Arlington, Texas, on April 12, 2005. At this meeting, NRC and Entergy management discussed various topics, including human performance, equipment reliability, refueling outage performance, and performance improvement initiatives.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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

Sincerely,

A handwritten signature in black ink, appearing to read "David N. Graves", is positioned above the typed name.

David N. Graves, Chief
Project Branch B
Division of Reactor Projects

Docket: 50-458
License: NPF-47

Enclosures:
1. Attendance List
2. Handout

Entergy Operations, Inc.

-2-

cc w/enclosures:
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Electronic distribution by RIV:

Regional Administrator **(BSM1)**

DRP Director **(ATH)**

DRS Director **(DDC)**

DRS Deputy Director **(KSW)**

Senior Resident Inspector **(PJA)**

Branch Chief, DRP/B **(DNG)**

Senior Project Engineer, DRP/B **(RAK1)**

Team Leader, DRP/TSS **(RLN1)**

RITS Coordinator **(KEG)**

SISP Review Completed: AS

ADAMS: ☒ Yes

☐ No

Initials: JS

☒ Publicly Available

☐ Non-Publicly Available

☐ Sensitive

☒ Non-Sensitive

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RIV.C.DRP/B				
DNGraves:df				
4/13/05				

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

F=Fax

END-OF-CYCLE MEETING ATTENDANCE

LICENSEE/FACILITY	Entergy Operations/ River Bend Station
DATE/TIME	April 12, 2005 - 1:00 pm
LOCATION	Nuclear Regulatory Commission Region IV 611 Ryan Plaza Dr. , Suite 400 Arlington, Texas 76011
NAME (PLEASE PRINT)	ORGANIZATION
George Replogle	NRC / RIV / DRS / PEB
DWIGHT CHAMBERLAIN	NRC / RIV
Arthur T. Howell	NRC / RIV
Tony Vogel	NRC / RIV
David Graves	NRC / RIV
Peter Alter	NRC / RIV
Ron Kopriva	NRC / RIV
P HINNENKAMP	ENTERGY OPERATIONS, V.P. RBS
DON VINCI	ENTERGY OPERATIONS, RBS
Rick King	Entergy Operations, RBS
Tim Gates	ENTERGY OPERATIONS, RBS

Introductions & Opening Remarks

Paul Hinzenkamp
Vice President, Operations

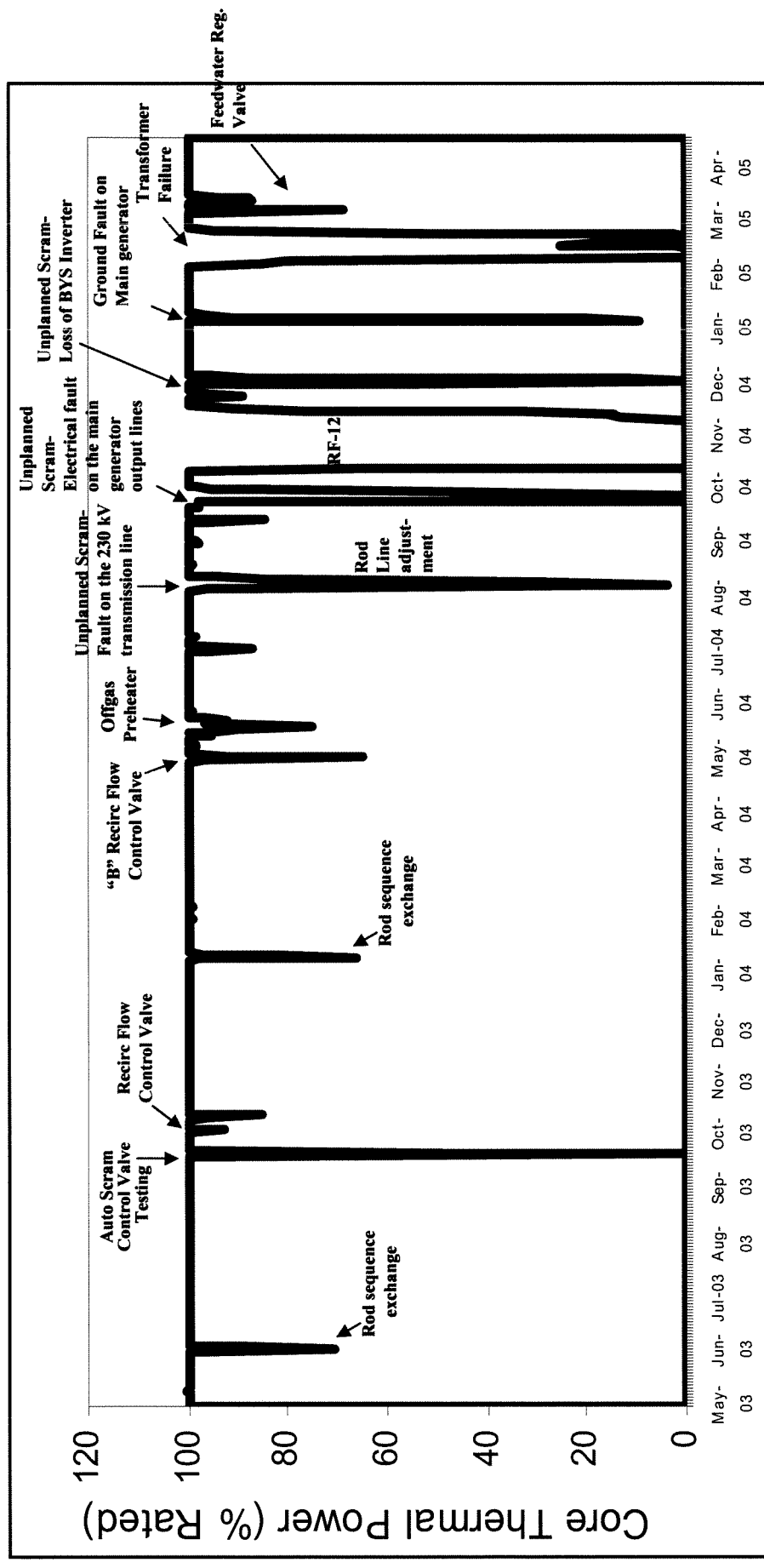
Agenda

• Introduction	NRC
• Introductions & Opening Remarks	Paul Hinnenkamp
• Performance Review	Paul Hinnenkamp
• Operational Excellence	Don Vinci
• Equipment Reliability	Tim Gates
• RF-12 Human Performance	Rick King
• Closing Remarks	Paul Hinnenkamp
• Discussion/Follow-up Actions	All

Performance Review

Paul Hinzenkamp
Vice President, Operations

Power History



Recent power history does not meet expectations of operational excellence.

Operational Excellence

Don Vinci
General Manager - Plant Operations

Operational Excellence Results in:

- Safe operations
- Event-free operations
- High levels of plant performance and reliability

Operational Excellence Improvement

- Operations Leadership
- Equipment Reliability
- Human Performance
- Performance Focused Training
- Corrective Action & Self-Assessment
- Leadership Effectiveness & Organizational Alignment

Operations Leadership

- Operational Decision-making
 - Significant issue for RBS and Entergy Nuclear
 - Case study established and shared with fleet
 - RBS corrective actions substantive
 - ODMI learnings
- Operator Performance
 - New Operations Manager (Clark Stafford)
 - 3 new Shift Managers
 - Added Assistant Operations Manager – Training
 - High Impact Training for all crews – Behavior Focused

Leadership Effectiveness and Organizational Alignment

- Focus on:
 - How to enhance safety culture and conservative decision-making
 - How management and supervision interact
 - How to achieve improved organizational alignment
 - How to better engage the work force

Equipment Reliability

Tim Gates
Manager, Equipment Reliability

Equipment Reliability Perspectives

- Scram Corrective Action Plan Status
- Equipment Reliability Model
- Performance Improvement Initiatives
- Unit Reliability Team

Plant Operating Summary

Third quarter 2004 - Present

- Four reactor scrams
 - Three automatic
- One equipment-related power reduction

8/15/04 Scram

- Slow opening of switchyard circuit breakers
- Root cause
 - T&D preventive maintenance less than adequate
 - Oversight by River Bend personnel was insufficient to detect performance shortfalls

8/15/04 Scram – Actions Taken/ Results Achieved

- Verified material condition of switchyard lines
- Preventive maintenance validation
 - Scope
 - Effectiveness
- Monthly interface with T&D
- Clarified roles and responsibilities
- Switchyard upgrade project
- Fleet review of T&D/Nuclear interface

10/1/04 Scram

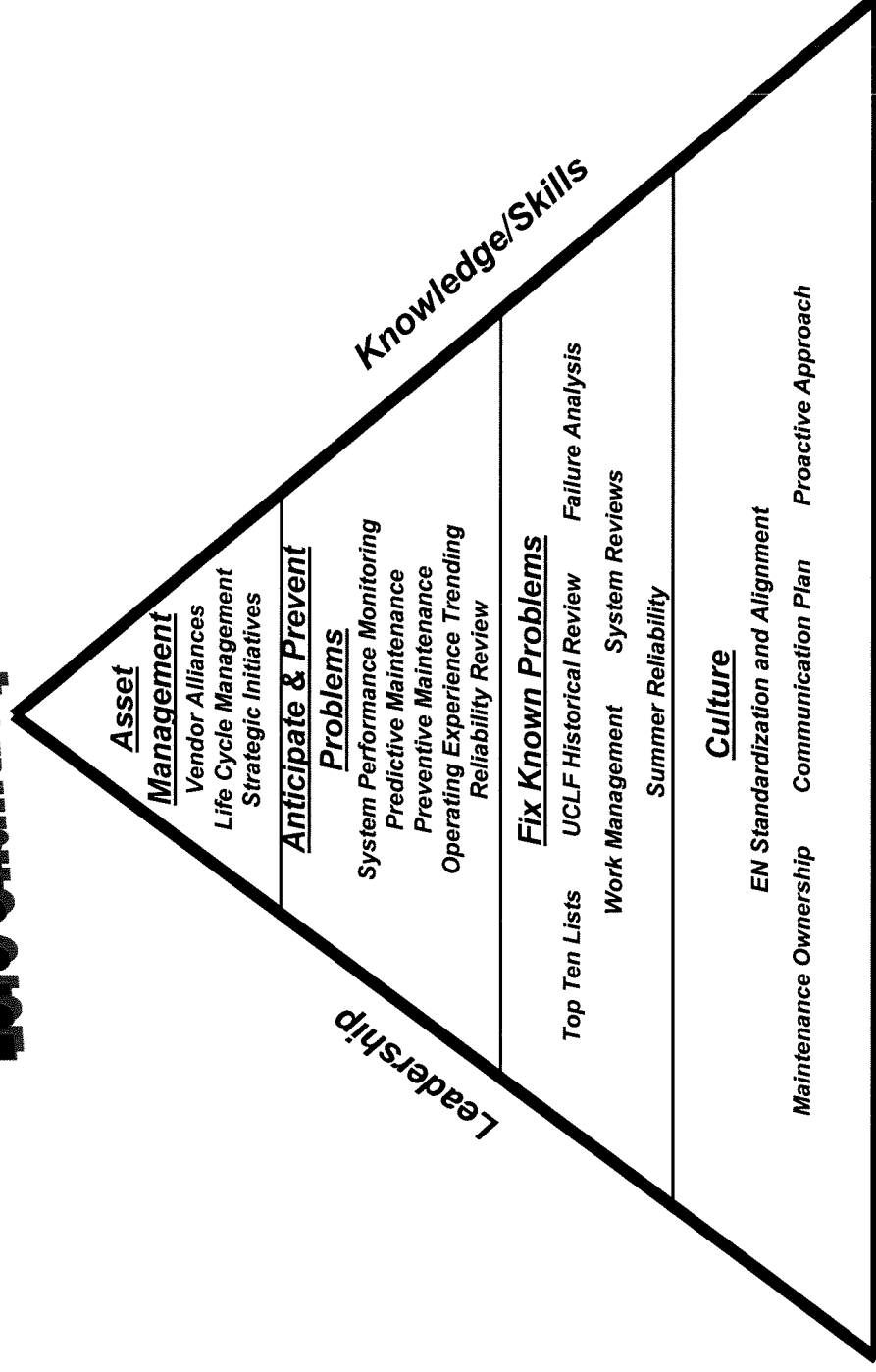
- Insulator flashover
- Root cause
 - Operational decision making resulted in untimely resolution
 - Failure to recognize the impact of cooling tower drift on plant equipment

10/1/04 Scram – Actions Taken/ Results Achieved

- Cleaned all insulators on generator output and offsite power supply lines
- Replaced insulators on RSS-2 with upgraded models
- Replaced insulators on generator output lines
- Drift eliminators reworked and hardened
- Enhanced monitoring
 - Equivalent salt density deposit (coupon)
 - Daycor camera
- Cooling tower performance enhancement
- Planned: Cooling tower restoration and insulator upgrades

Equipment Reliability Model

Zero Unanticipated Failures



Equipment Reliability Initiatives

- Culture
 - Equipment Reliability Process Gap Analysis
 - Maintenance Ownership
 - Communication
 - Knowledge and Skills
 - Maintenance Effectiveness
- ZERO TOLERANCE CULTURE

Equipment Reliability Initiatives

- Fix Known Problems
 - Equipment Focus Teams
 - Transformer Reliability Plan
 - Switchyard Improvement Plan
 - Work Management

Equipment Reliability Initiatives

- Anticipate and Prevent Problems
 - Equipment Reliability Process Improvements
 - System Performance Monitoring
 - Single Point Vulnerability
 - Predictive Maintenance Gap Analysis
 - Preventive Maintenance Optimization
 - Engineering Programs Gap Analysis
 - Design/Licensing Review and Scram Vulnerability

Equipment Reliability Initiatives

- Asset Management
 - Asset Management Plan
 - Bill of Materials
 - Project Management
 - Critical Spares
 - Obsolescence

Unit Reliability Team

- Chaired by the Operations Manager
- Mission – Identify, prioritize, and drive resolution of issues challenging plant reliability focusing on safety system health and full power operation.
Focus is on three primary areas:

- Long range planning
- Unit challenges during online conditions
- Outage performance

Leading the way to improve equipment reliability

Equipment Reliability - Conclusions

- Operating performance is not acceptable
- Scram corrective action plans are well defined and broad based
- Performance gaps understood
- Initiatives in place with actions, owners and due dates to close gaps

RF-12

Human Performance

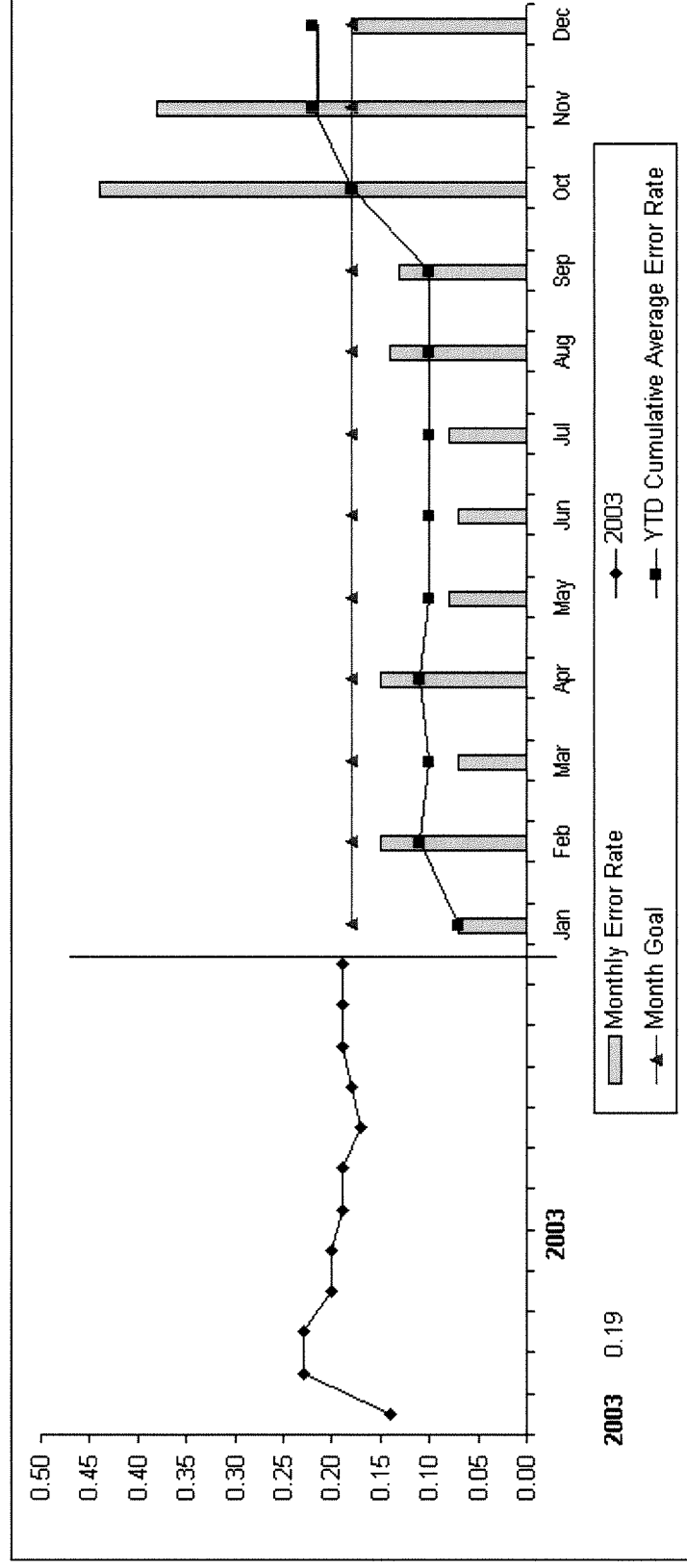
Rick King
Director, Nuclear Safety Assurance

RF-12 Human Performance Topics

- Operational Excellence
- 2004 Human Performance and Rework Overview and Insights
- Human Performance RF-12 Reviews
- Human Performance Common Causes
- Human Performance Actions
- Conclusions

Human Performance

(Error Rate per 10,000 manhours)



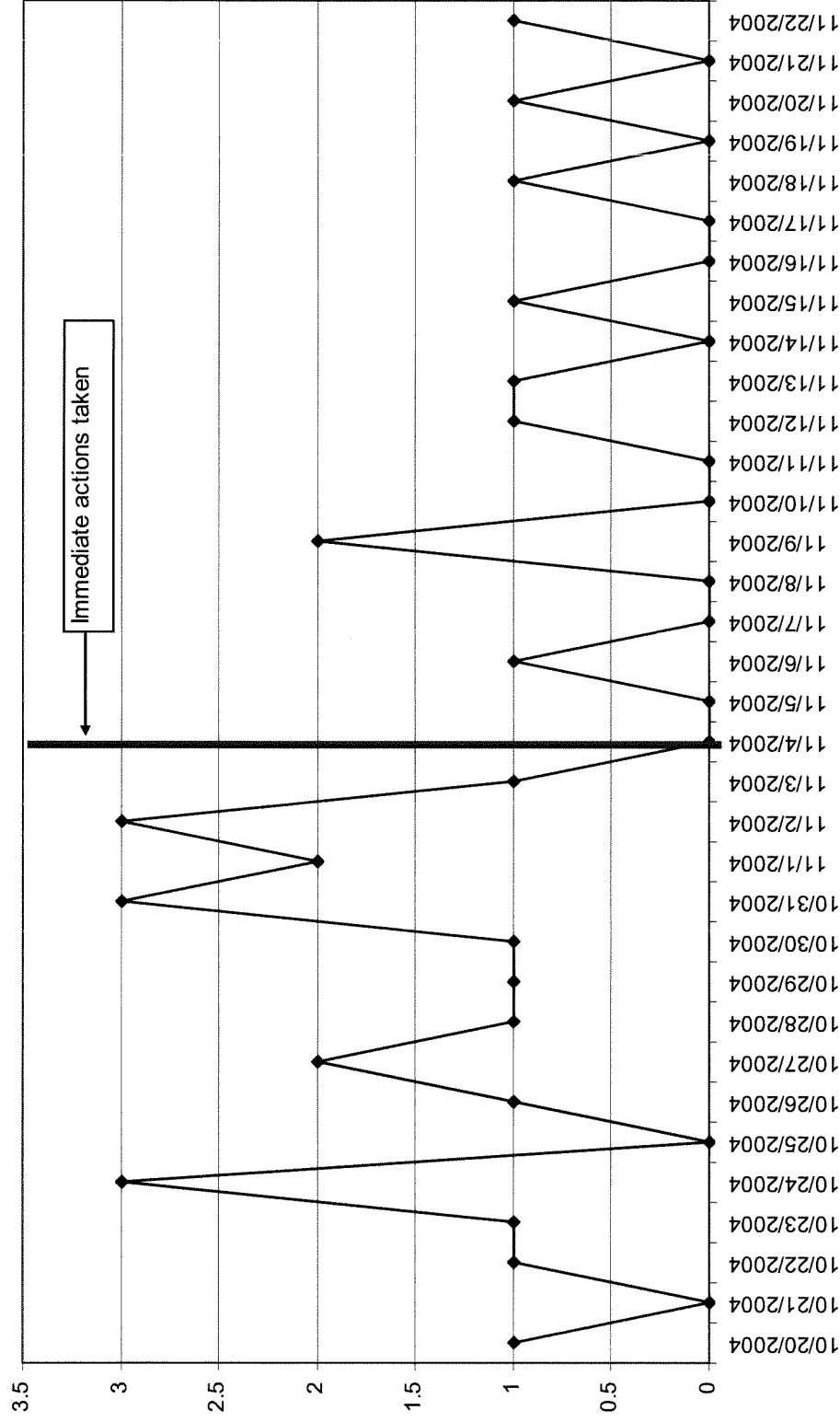
Significant increase in human performance errors during the last quarter of 2004.

RF-12 Human Performance Reviews

- Mid RF-12 Review
- Performed SERT for RF-12 Human Performance and Rework Common Causes
- Effectiveness Review Performed on Prior Rework Self-Assessment Actions

Mid RF-12 Human Performance Review

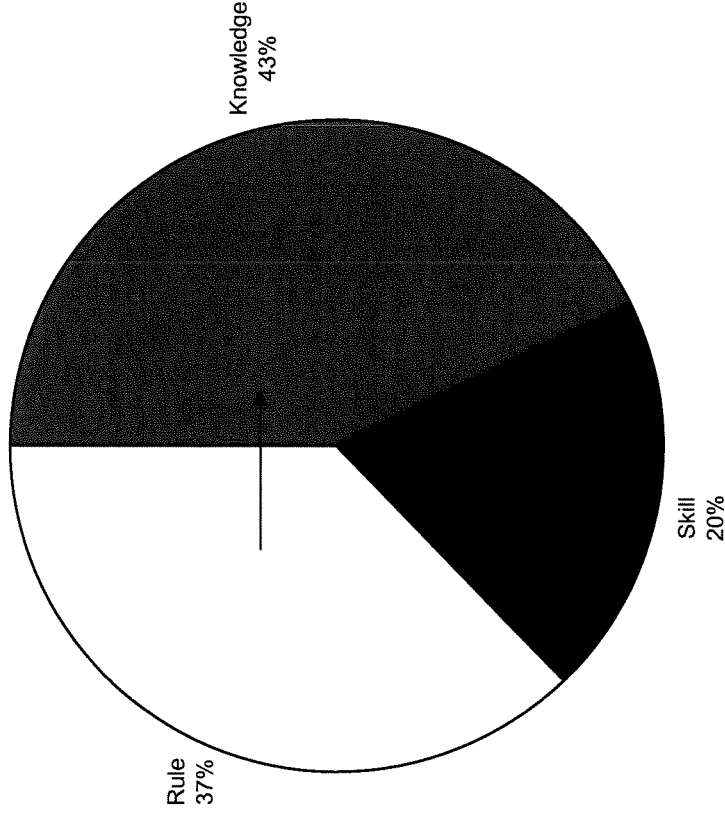
RF-12 Errors



Mid RF-12 review of Human Performance and actions taken reduced errors.

Human Performance Data

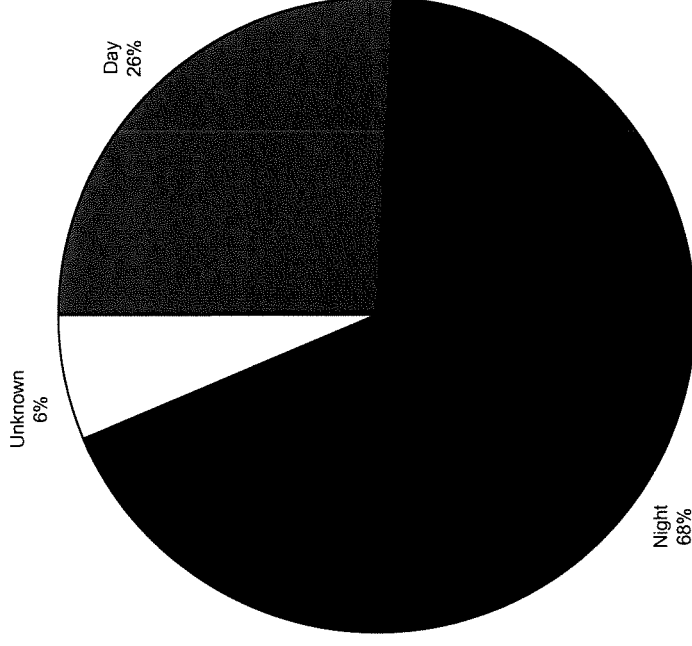
Error Type by Performance Mode



- Knowledge Based
 - Unfamiliar with key component information (placed in judgment space)
- Rule Based
 - Misinterpretation of information in packages
- Skill Based
 - Tasks performed based on past experience and habit

Human Performance Data (cont)

Times of Errors

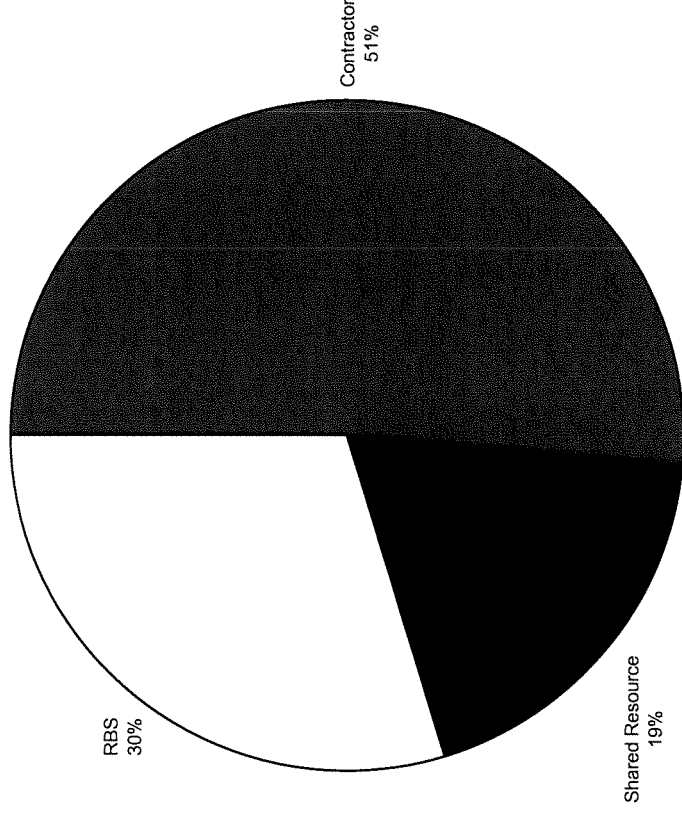


- 68% of errors occurred on night shift.
 - 77% of the night shift oversight were step-up supervisors, less experienced supervisors (<2 years) or supplemental personnel

➤ *Night shift was heavily staffed with step-up and supplemental supervisory personnel.*

Human Performance Data (cont)

Errors by Employer



- 70% of the human performance errors made by supplemental personnel.
- Several errors involved step-up supervisors.

Human Performance Interviews

- Supervisors typically not in pre-job briefs for supplemental personnel
- Instances of supplemental personnel and inexperienced supervisory staff not consistently adhering to administrative procedures (did not know rules)
- Supervisors/job leads high work load
- Instruction deficiencies created low consequential events resulting in inefficiencies in work execution or delays

Human Performance Root Causes

Management Methods

- Ineffective oversight by less experienced in-house and supplemental supervisory personnel
- Supplemental personnel did not consistently implement human performance tools during RF-12

Human Performance Actions

- Increased supervisory oversight of supplemental personnel
- Reinforcement of Expectations Through First Line Supervisory Board
- Clarified roles/responsibilities and time in field by Supervisory TAC Formal Training
- Revised planning procedure and checklist to ensure the level of detail in the work package is adequate to be effectively performed by supplemental personnel
- Updated rework trend codes for human performance
- Implement INPO document AP-930, “Supplemental Personnel Process Description,”

Human Performance Actions

(cont)

- Completed maintenance supervisor and craft 3-day training
- No short term step-up supervisors
- Opened up more time in morning for supervisors
- Model first line supervisors day
- Additional oversight on critical tasks
- Training and refocus on process requirements
- Established multi-disciplined rework review team
- Added additional level of oversight, Unit Reliability Team quarterly reviews

Conclusions

- RBS did not perform at a level of operational excellence in RF-12
- RF-12 human performance issues were reviewed in detail and common causes are understood
- Human Performance was the primary contributor to RF-12 rework issues.
- Comprehensive corrective actions focus on multiple levels of human performance, from craft to management.

Closing Remarks

Paul Hinnenkamp
Vice President - Operations