

JAN 21 1994

Docket No. 70-1151  
License No. SNM-1107

Westinghouse Electric Corporation  
ATTN: Mr. J. A. Fici, Manager  
Columbia Plant  
Commercial Nuclear Fuel Division  
Drawer R  
Columbia, SC 29250

Gentlemen:

SUBJECT: MANAGEMENT MEETING SUMMARY

This letter refers to the Management Meeting held at our request on November 5, 1993. The meeting concerned activities at your Columbia facility. The issues discussed at the meeting included the operation of the facility and the various programs that you have implemented to maintain the safety of your workers and the public. Your Criticality Safety Margin Improvement Program was also discussed in some detail as well as items of mutual interest. The meeting was beneficial in that everyone gained a better understanding of plant operations, your safety programs and your current actions to improve criticality safety at your facility.

A list of attendees and a copy of your handout are enclosed.

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

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

Sincerely,

ORIGINAL SIGNED BY  
J. PHILLIP STOHR

J. Philip Stohr, Director  
Division of Radiation Safety  
and Safeguards

Enclosures:

1. List of Attendees
2. Handout

cc w/encls: (See page 2)

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PDR ADOCK 07001151  
C PDR

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JAN 21 1994

cc w/encls:  
Max Batavia, Chief  
Bureau of Radiological Health  
S. C. Department of Health  
and Environmental Control  
2600 Bull Street  
Columbia, SC 29201

bcc w/encls:  
D. M. Collins  
C. Bassett  
R. Bellamy, RI  
J. Grobe, RIII  
C. Cain, RIV  
J. Reese, RV  
J. Reese, RV  
Document Control Desk

bcc w/o encls:  
License Fee Management Branch

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RII:DRSS  
*CB*  
CHBassett  
01/20/94

RII:DRSS  
*DM*  
EJMcAlpine  
01/20 94

RII:DRSS  
*DM*  
DMCollins  
01/20 /94

RII:DRSS  
*BS*  
BSMallett  
01/ /94

ENCLOSURE 1

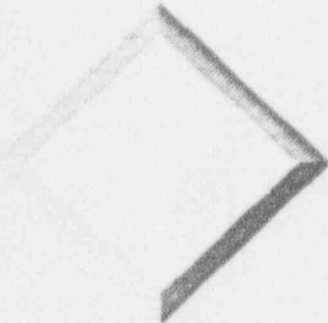
Management Meeting Attendees

Westinghouse Electric Corporation

J. A. Fici, Plant Manager  
W. L. Goodwin, Manager, Regulatory Affairs  
E. E. Keelen, Manager, Manufacturing  
S. G. McDonald, Manager, Technical Services  
D. C. Goldbach, Manager, Chemical Process Engineering  
C. F. Sanders, Manager, Nuclear Materials Management and Product Records  
E. K. Reitler, Manager, Regulatory Engineering  
J. W. Heath, Manager, Radiation Control  
C. K. Wu, Advisory Engineer, Technical Services  
R. R. Fuller, Fellow Engineer, Technical Services  
S. L. Roebuck, Process Engineer, Technical Services  
N. B. Parr, Project Engineer, Technical Services  
R. A. Williams, Technical Coordinator, Regulatory Affairs

Nuclear Regulatory Commission

L. A. Reyes, Deputy Regional Administrator  
J. P. Stohr, Director Division of Radiation Safety and Safeguards  
(DRSS)  
E. J. McAlpine, Section Chief, Radiation Safety Projects Section  
(RSPS), Nuclear Material Safety and Safeguards Branch (NMSS), DRSS  
L. Lessler, Lead Inspector, Inspection Section 1, Operations Branch,  
Division of Fuel Cycle Safety and Safeguards (FCSS), Office of Nuclear  
Material Safety and Safeguards (ONMSS)  
T. E. Wenck, Project Manager, Licensing Section 1, Licensing Branch,  
FCSS, ONMSS  
C. H. Bassett, Fuel Facility Inspector, RSPS, NMSS, DRSS



**NRC - Westinghouse  
Management Review Meeting  
Criticality Safety Margin  
Improvement Program  
Presentation**

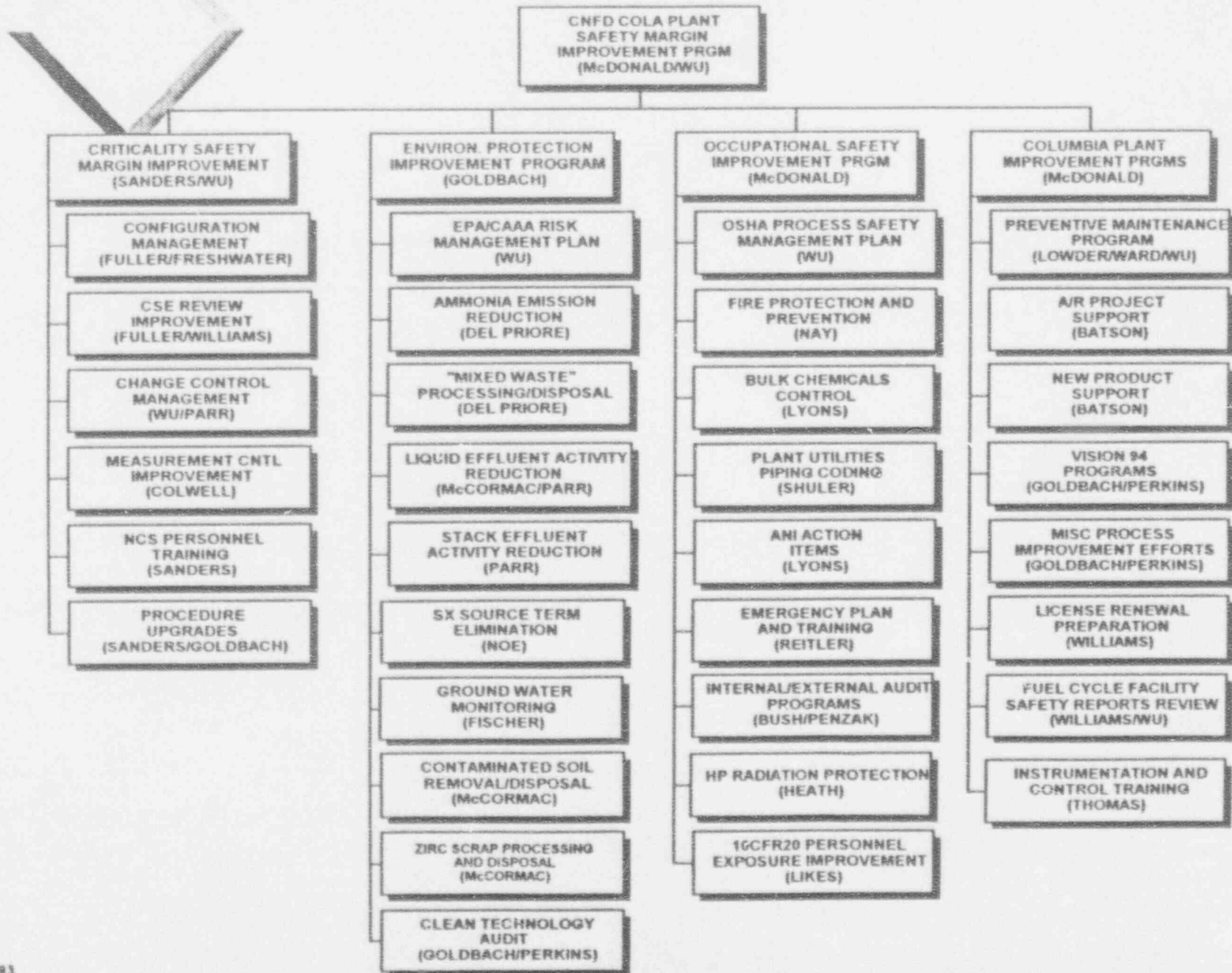
**November 5, 1993**



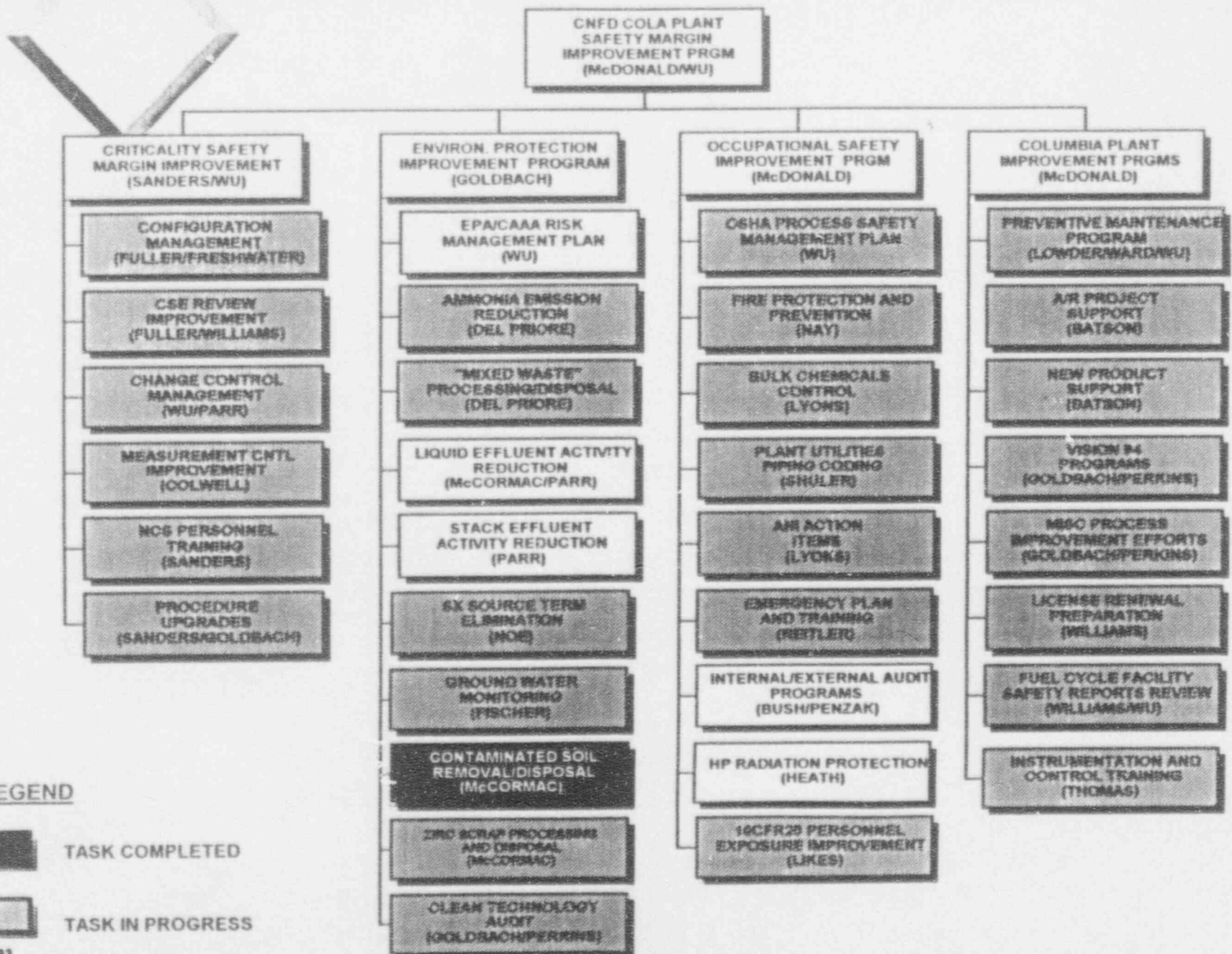
# ***Presentation Outline***

- ❖ **Safety Margin Improvement Program Overview**
- ❖ **Criticality Safety Margin Improvement Program Update**
  - ◆ **Tasks Completed**
  - ◆ **Configuration Control**
  - ◆ **Criticality Safety Evaluation**
  - ◆ **Change Control System**
  - ◆ **Measurement Control System**
  - ◆ **Nuclear Criticality Safety Personnel Training**
  - ◆ **Procedure Upgrades**
- ❖ **CSMIP Project Schedule**

# SAFETY MARGIN IMPROVEMENT PROGRAM OVERVIEW



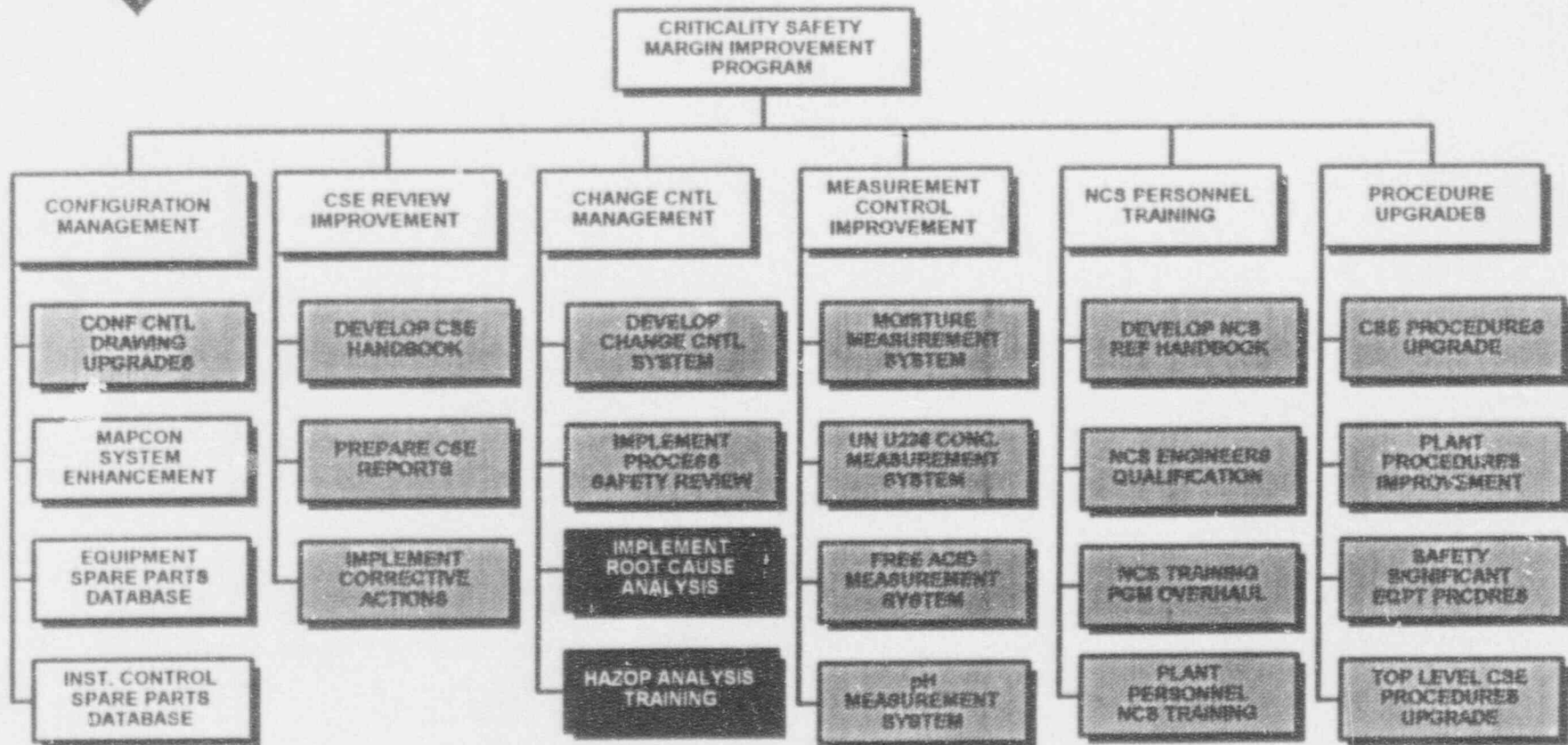
# SAFETY MARGIN IMPROVEMENT PROGRAM OVERVIEW



**LEGEND**

- TASK COMPLETED
- TASK IN PROGRESS

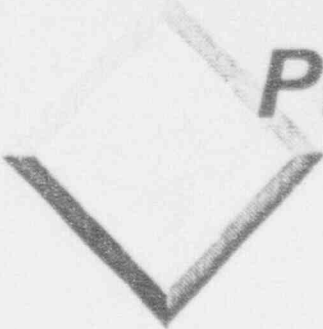
# CSMIP Progress Overview



## LEGEND

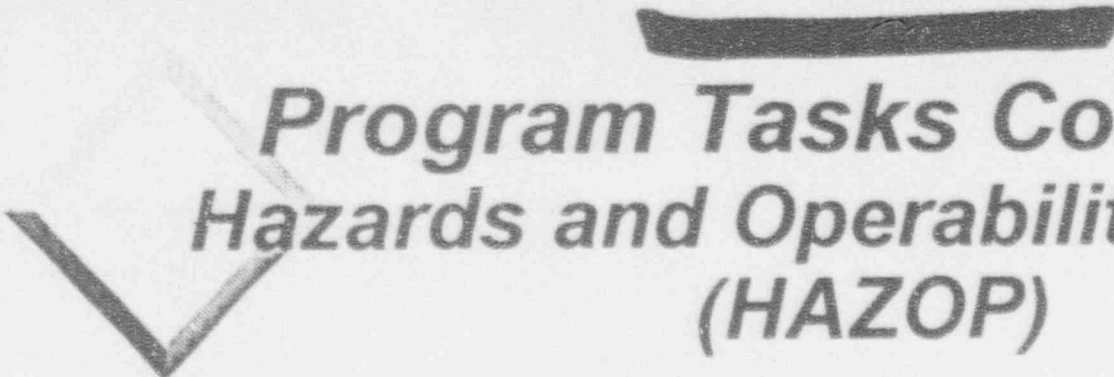
- TASK COMPLETED
- TASK IN PROGRESS





**Program Tasks Completed**  
**Root Cause Analysis (RCA)**

- ❖ **Completed RCA Team Training**
  - ◆ System Improvements (General Training)
  - ◆ Savannah River Site Program (Leader Training)
- ❖ **Implemented RCA Investigations on Process Upsets**
  - ◆ IDR Check Hopper Powder Sampler Pluggage
  - ◆ ADU Pellet Line Bulk Container Powder Spill
  - ◆ ADU Line #5 Fitzmill Incident
  - ◆ Backlog Datapacks
- ❖ **Reports/Corrective Actions**
  - ◆ RCA Team Identifies Root Causes/Items of Note
  - ◆ QAG Identifies/Implements Corrective Actions



# ***Program Tasks Completed Hazards and Operability Analysis (HAZOP)***

- ❖ **PSI Program Modified to Incorporate Criticality Safety**
- ❖ **Completed HAZOP Leader Training**
- ❖ **Implemented HAZOP Process**
  - ◆ **Favorable Geometry Dissolver Design Review**
  - ◆ **Uranyl Nitrate Bulk Storage System**
  - ◆ **Anhydrous Ammonia Storage System**
  - ◆ **ADU System Acid Wash (In-Progress)**



# ***Criticality Safety Evaluation***

- ❖ **Completed ADU & IDR Process Reports**
- ❖ **Developing CSE Handbook**
  - ◆ Prepared Criticality Safety Evaluation (CSE) Report Guidelines
  - ◆ CSE Appendices (As Developed)
- ❖ **Preparing CSE Reports**
  - ◆ Completed Pilot Criticality Safety Evaluation
    - Uranyl Nitrate Storage System
  - ◆ Priority Established For Remaining Systems





# ***Implement Corrective Actions***

- ❖ **Quality Action Groups Identify Corrective Actions**
  - ◆ Red Book Items
  - ◆ Data Pack Items
  - ◆ CSA Recommendations
  - ◆ CSE Recommendations
- ❖ **Formation of Multi-disciplinary Teams Supporting QAG's**
  - ◆ Mechanical Design
  - ◆ Drafting
  - ◆ Instrumentation Control
- ❖ **Regular Management Review Meetings**
  - ◆ QAG Meetings/Sponsor Reviews
  - ◆ Project Team Reviews



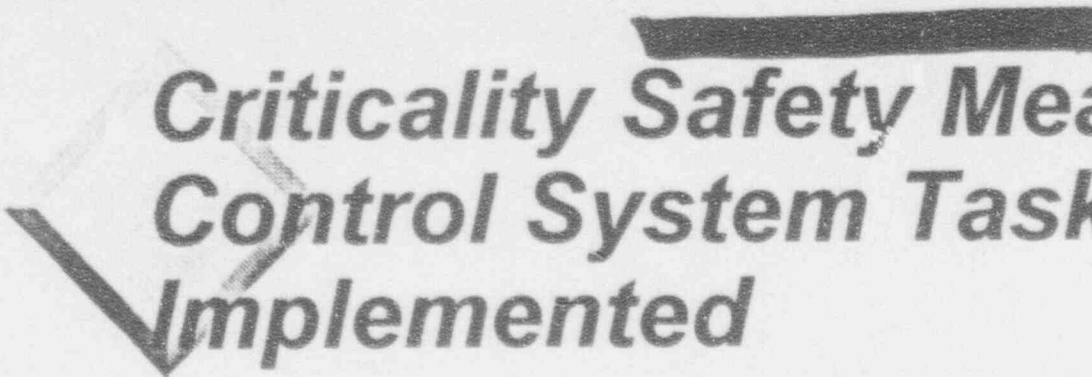
# ***Change Control Process Enhancements***

- ❖ **Coordination and Prioritization of Projects**
  - ◆ Configuration Control (TA-500)
  - ◆ Change Authorization (RA-104)
- ❖ **Early Review of RA-104 Submittal Requirements**
- ❖ **Streamlined Change Control Process/Procedures**
- ❖ **Discussions of Change Control Issues (Weekly Management Review Meeting)**
- ❖ **Expansion of Change Control to Key Mechanical Processes (In Progress)**



# ***Implement Process Safety Review***

- ❖ **Conducted Process Safety Management (PSM) Audit Per *OSHA 1910.119***
- ❖ **Implementing PSM Program (14 Elements)**
- ❖ **Completed Process Hazard Analysis (PHA) for Anhydrous Ammonia System**
- ❖ **Incorporated EPA-CAAA Risk Management Plan (RMP) Regulations into SMIP**



# ***Criticality Safety Measurement Control System Tasks Implemented***

- ❖ **Identified Parameters for Measurement Control**
- ❖ **Evaluated Composite Sampling Methodology**
- ❖ **Evaluated Measurement Methods**
- ❖ **Qualified Measurement Standards**
- ❖ **Calculated Control Limits and Ranges**



# ***Criticality Safety Measurement Control Systems Progress***

- ❖ **Uranium Powder Moisture Measurement (80%)**
  - ◆ ADU Conversion Process  $\text{UO}_2$  Powder
  - ◆ IDR Conversion Process  $\text{UO}_2$  Powder
  - ◆ Recycle  $\text{U}_3\text{O}_8$
- ❖ **Uranyl Nitrate  $\text{U}^{235}$  Measurement (80%)**
  - ◆ Bulk Storage System
  - ◆ Solvent Extraction Product
  - ◆ Clean Scrap Dissolver Product
- ❖ **Uranyl Nitrate Free Acid Concentration(10%)**
- ❖ **Aqueous Solution pH Measurement (10%)**

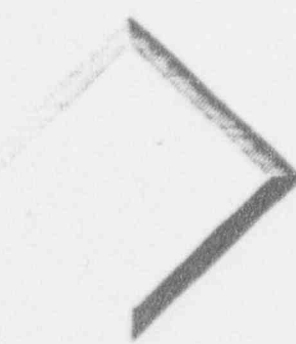





# ***Plant Procedure Improvements***



- ❖ **Eliminated Use of SOI's for Temporary OP Revisions**
- ❖ **Implemented Electronic Approvals of OP's**
- ❖ **Installed Electronic SOI-to-OP Cross Reference**
- ❖ **Testing Electronic Approval of SOI's**
- ❖ **Designing Streamlined Procedure System**





**NRC - Westinghouse  
Management Review Meeting  
Presentation**

**November 5, 1993**

**[REDACTED]**

# ***NRC/W Management Meeting Agenda*** ***November 5, 1993***

- |       |  |               |
|-------|--|---------------|
| I.    | Opening Comments                       | NRC/ <u>W</u> |
| II.   | Licensee Self-Assessment Presentation  | <u>W</u>      |
|       | A. Operations/Maintenance              |               |
|       | B. Emergency Preparedness              |               |
|       | C. Fire Protection                     |               |
|       | D. Environmental Protection            |               |
|       | E. Chemical Safety                     |               |
|       | F. Radiation Protection                |               |
|       | G. MC&A/Physical Security              |               |
|       | H. Nuclear Criticality Safety          |               |
| III.  | NRC Assessment                         | NRC           |
|       | Working Lunch                          |               |
| IV.   | Licensee SMIP Program Presentation     | <u>W</u>      |
| V.    | Discussion Of SMIP                     | NRC/ <u>W</u> |
| VI.   | Discussion Of Items Of Mutual Interest | NRC/ <u>W</u> |
| VII.  | Closing Remarks                        | NRC/ <u>W</u> |
| VIII. | Tour Of The Chemical Area              | NRC/ <u>W</u> |
| IX.   | Adjourn                                |               |



# ***Operations And Maintenance Assessment***

## **❖ Strengths**

- **Commitment To Safe Operations**
  - **Red Book Process**
  - **Commitment To Configuration Control**
  - **Participation In Root Cause Analysis**
  - **Participation In *HAZOPs***
  - **100% Dedicated Teams**
  - **Commitment to Training**
  - **Electronic Procedure System**
  - **R.O.P.E.**
  - **MAPCON**




# *Improvement Opportunities*

## ❖ **SMIP**

- ◆ Reduce The Number Of Data Packs And Notifiabes
- ◆ Reduce Dependence On Administrative Controls
- ◆ Make EPS More User Friendly

## ❖ **Maintenance Council**

- ◆ More In Depth/Broader Application of P.M.'s



# ***Emergency Preparedness Compliance History***

## **❖ October 1992 (Annual Exercise)**

- ◆ No Violations
- ◆ Exercise "Fully Successful"
- ◆ Detailed And Effective Critique
- ◆ Good Command And Control By E.C.
- ◆ Emergency Brigade Gear Utilization
- ◆ Good Interface Among Responders
- ◆ Strong Commitment To Training

## **❖ October 1993**

- ◆ Two Potential NCV's
- ◆ Exercise Successful
- ◆ Detailed And Effective Critique
- ◆ Good Response By Emergency Teams
- ◆ Comprehensive Training
- ◆ Good Drillsmanship



# ***Self Assessment***

## **❖ Strengths**

- Comprehensive Plan And Procedures
- Training/Practice Drills
- Good Rapport With Offsite Response Agencies

## **❖ Areas For Improvement**

- Audibility Of Fire Alarm System
- Voice Announcement System



# Improvement Programs

- ❖ Initiative On Voice Announcement Audibility





# ***Fire Protection***

## **❖ Compliance History**

- ♦ September 1993
- ♦ No Violations
- ♦ Comment -- Need Umbrella Procedure

## **❖ Notifiable Event -- Minor Fire (10CFR70.50)**

## **❖ Fire History**



# ***Self Assessment***

## **❖ Strengths**

- ♦ Positive Working Relationship With CFD
- ♦ Well-Trained Emergency Brigade
- ♦ Trained Safety Observers
- ♦ Program Elements Well-Defined
- ♦ PM Program For Fire Protection Equipment
- ♦ Management Commitment
- ♦ ANI Audits

## **❖ Areas For Improvement**

- ♦ Review ANI Issues
- ♦ Need Umbrella Procedure
- ♦ Need To Isolate Incinerator
- ♦ Incorporate Applicable BTP Issues



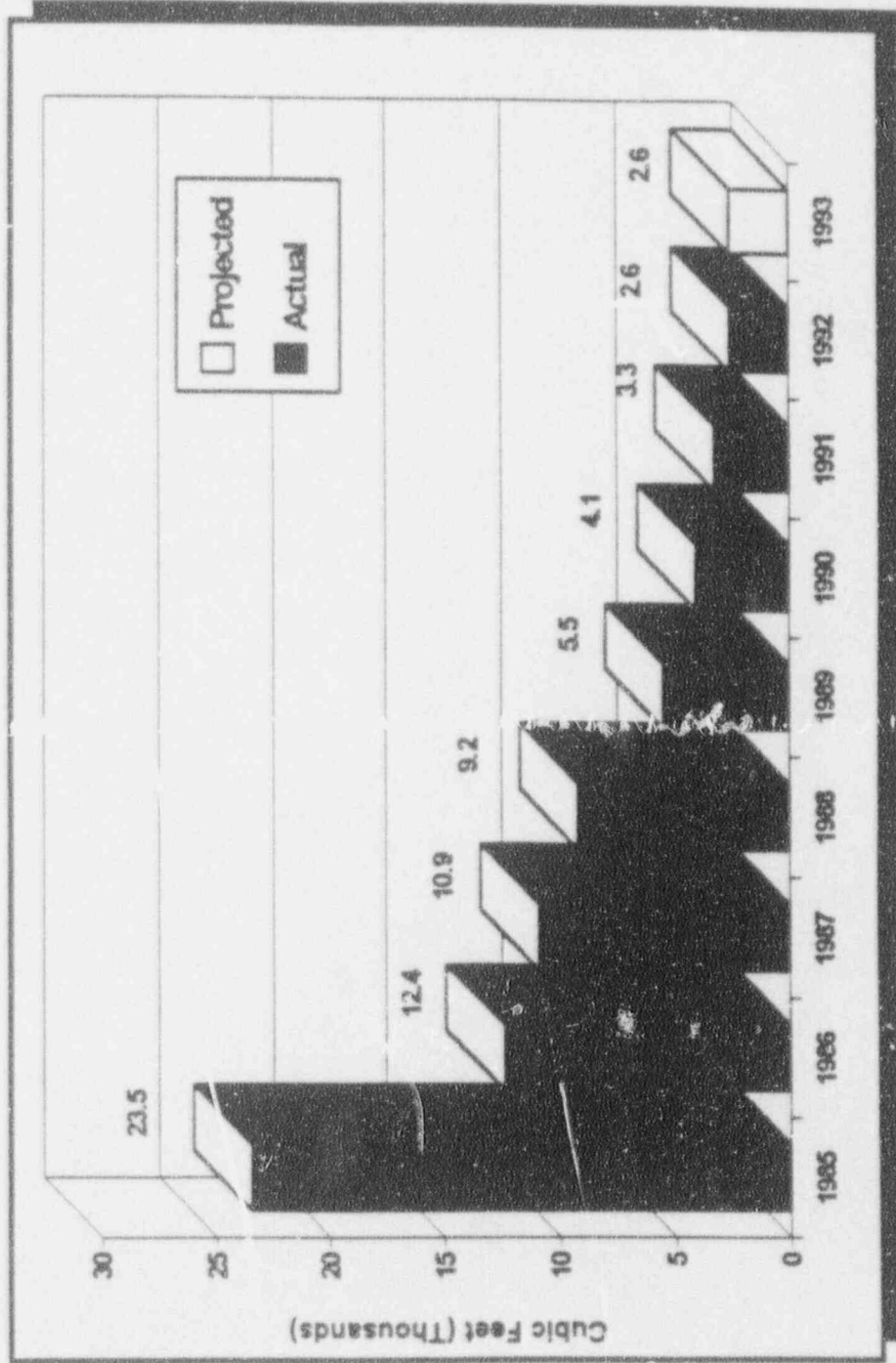
# *Improvement Programs*


- ❖ **Develop Umbrella Procedure**
- ❖ **Isolate Incinerator**
- ❖ **Incorporate Applicable BTP Issues**
- ❖ **Review ANI Issues**

# Environmental Protection Performance History

	Radioactivity/Limit (uCi/ml)	NH3/Limit (Lbs/Day)	F-/Limit (Lbs/Day)
<b>Liquid Effluent</b>			
1992	0.34% MPC/3E-05	17/60	9/40
1993	0.55% MPC/3E-05	22/60	11/40
<b>Air Effluent</b>			
1992	11% MPC/4E-12		
1993	10% MPC/4E-12		

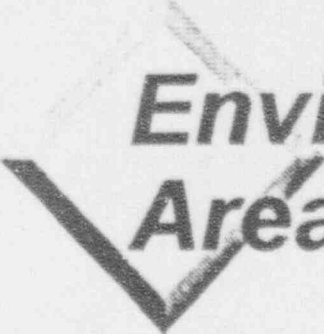

# Low Level Radioactive Waste Disposal Volume







# ***Environmental Protection Program Strengths***

- ❖ **Routinely Discharge Effluents Containing Only Small Fractions of NRC and NPDES Permit Quantity and Concentration Limits**
- ❖ **Statistically Decreasing Trends For Radioactive Effluent Samples**
- ❖ **Procedural Changes For Air Effluent Sample Analysis Will Substantially Decrease Recorded Gaseous Effluents Results (Revised 10 CFR 20 Preparation)**
- ❖ **Groundwater Remedial Response Actions (1980-82) Have Effectively Lowered NH<sub>3</sub> And Fluoride Chemical Contamination**
- ❖ **Other Environmental Samples Demonstrate Minimal Environmental Impact**
- ❖ **Proven Capability To Promptly Respond To Upset Situations**



# ***Environmental Protection Areas For Improvement***

- ❖ **Develop Enhanced Effluent Alara Program For Control Of Revised 10CFR20 Requirements Effective In 1994**
- ❖ **Reduce Gaseous Ammonia Effluents To Assure Continuing Compliance With EPA CERCLA Act Regarding Continuous Discharges. Assure Compliance With Clean Air Act.**
- ❖ **Reduce Hazardous Chemical Discharges To Assure Continuing Compliance With EPA Pollution Prevention Act Requirements**
- ❖ **Assure Groundwater Contamination Responses Continue To Track Problems And Reduce Impact**



# ***Chemical Safety Program Strengths***

- ❖ **Employee Involvement in Chemical Process Safety Activities**
- ❖ **Interdisciplinary Review and Approval of Chemical Process Changes**
  - ♦ **TA-500          Configuration Control**
  - ♦ **RA-104          Change Authorization**
- ❖ **Comprehensive, Well-Documented Chemical and Criticality Safety Analysis Technique (HAZOP)**
- ❖ **Highly Structured Management Tracking System (SMIP)**
- ❖ **Independent IS&H Audit from Corporate Environmental Affairs**





# ***Chemical Safety Improvement Opportunities***

- ❖ **Continue Progress Toward Full Incorporation of Chemical Safety into a Totally Integrated Facility Safety Program**
- ❖ **Develop Process Safety Management Program**
  - ◆ **OSHA 1910.119 Process Safety Management**
  - ◆ **EPA Risk Management Program**
- ❖ **Add Engineering Controls to Increase Safety Margin, Where Applicable**
- ❖ **Complete Written Chemical Safety Umbrella Procedure**



# ***Radiation Protection***

## ***Performance History***

### **❖ Three Violations**

- ♦ Improper Storage of Radioactive Material
- ♦ Failure to Control Contamination
- ♦ Failure to Follow Operating Procedures

### **❖ Two Noncited Violations**

- ♦ Improperly Posted RWP
- ♦ Failure to Post NRC Form 3



# ***Radiation Protection***

## ***Improvement Opportunities Contamination Control***

- ❖ **Employee Training**
- ❖ **Employee Participation**
- ❖ **Increased Area Surveillance**
  - ◆ **More Comprehensive Surveys**
  - ◆ **Increased Radiation Protection Surveillance**
- ❖ **Engineering Oversight**



# **Radiation Protection**

## **Radiation Work Permit Program**

- ❖ **Team Approach in Development of RWP's**
- ❖ **Engineering Oversight of RWP Operations**
- ❖ **Final Reviews and Formal Closeouts of RWP's**
- ❖ **Lessons Learned**



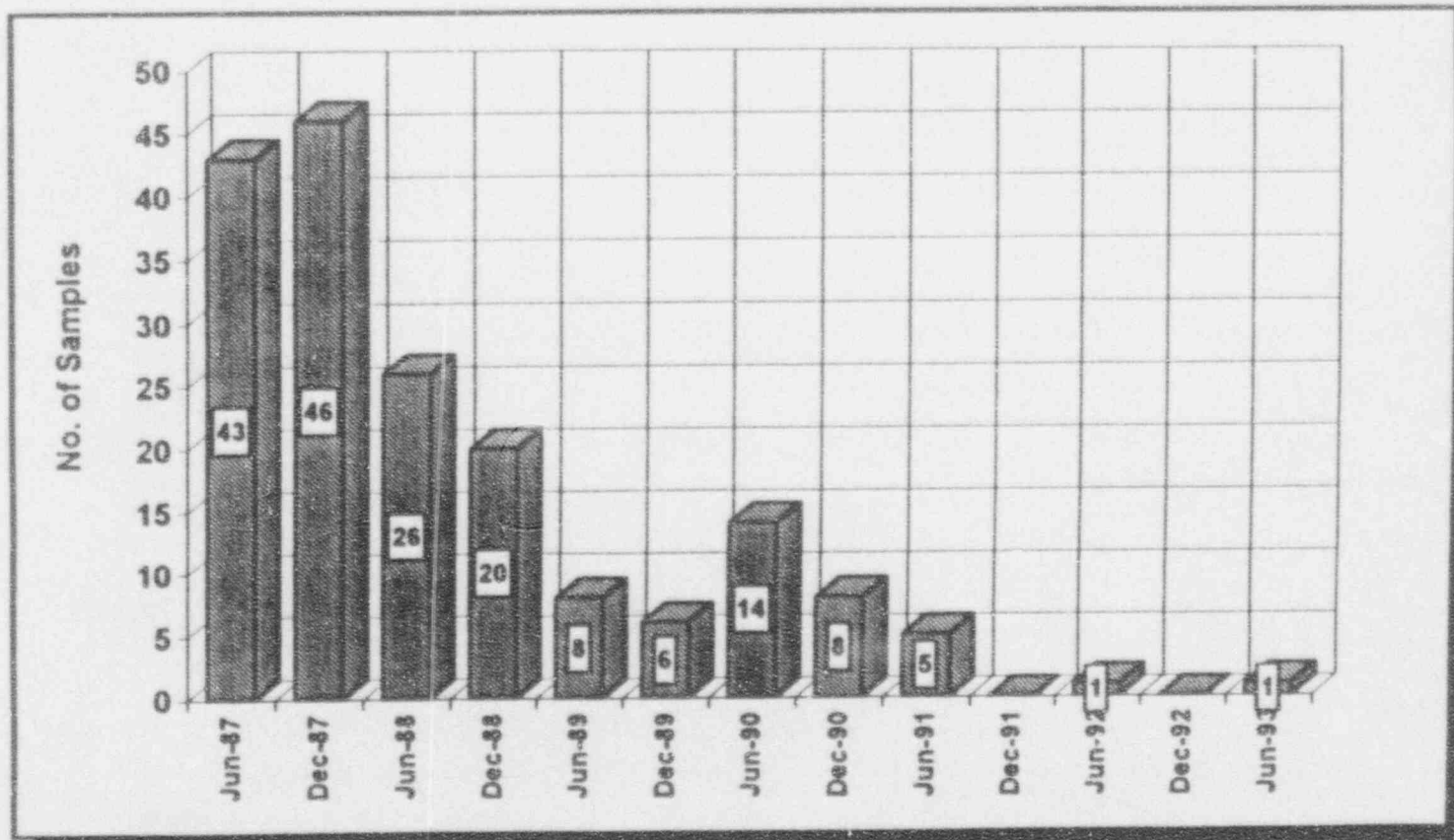
# ***Radiation Protection***

## ***Program Strengths***

- ❖ **Organization - Goal Oriented**
- ❖ **Control of Internal Exposures**
  - ◆ **Invivo**
  - ◆ **Airborne Activity**
  - ◆ **Bioassay Program**
- ❖ **Control of External Exposures**
- ❖ **Alara**
  - ◆ **Mini Alara**
  - ◆ **Airborne Reduction Team**
  - ◆ **10CFR20 Compliance Plan**

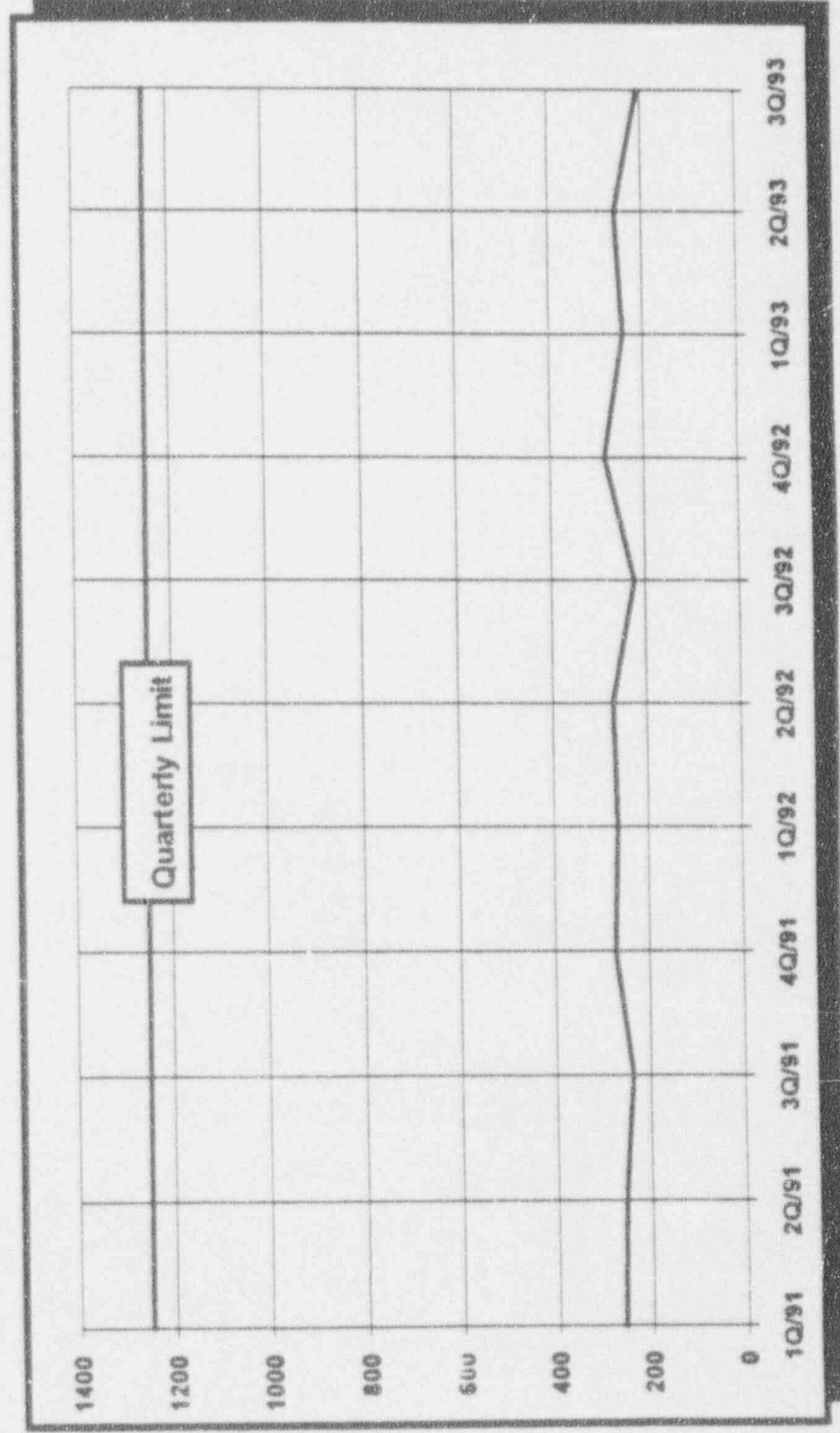
# Radiation Protection

Airborne Activity - Samples > 20% MPC



# Radiation Protection

Exposure - Total Effective Dose Equivalent





# **Safeguard/Physical Security**

- ❖ **Good Industrial Security**
- ❖ **No Violations**
- ❖ **No Security related Incidents**





## **Safeguards (MCA)**

- ❖ **No Missing Items in The History of Plant**
- ❖ **No Reportable (Loss of Current Knowledge Since 1988)**
- ❖ **SNM Physical Inventory**




## ***Nuclear Criticality Safety Strengths***

- ❖ **Management Awareness Of, Involvement In, And Proactive Approach To Nuclear Criticality Safety Issues.**
- ❖ **Total Quality Management (Employee Empowerment, Teams, etc.) Extended To NCS Problem Solving, Investigation, etc.**
- ❖ **Continuing Progress (Since 1988) To Realize Rigorous Configuration Control And Safety Design Basis**
- ❖ **Willingness To Openly Work With NRC To Clarify Understanding And Realize Mutual Goals**



# **Nuclear Criticality Safety Improvement Opportunities**

- ❖ **Qualification/Re-Qualification Of NCS Engineers**
- ❖ **Performance-Based NCS Training**
- ❖ **Improvement Of Policies And Procedures (Guidance Documents)**
- ❖ **Replacement Of Administrative Controls With Engineered Controls, Where Practicable**
- ❖ **Performance-Based Self-Assessments**



# **Nuclear Criticality Safety Improvement Programs**



- ❖ **Nuclear Criticality Safety Margin Improvement Program**
- ❖ **Consultant Criticality Safety Personnel To Assist In NCS Engineer Qualification/Re-  
Qualification**
- ❖ **Consultant Criticality Safety Personnel To Assist In Re-Establishing NCS Design Bases**
- ❖ **Assignment Of Special Teams To Develop  
And Implement Engineering Controls**