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

DEC 18 1997

Mr. C. L. Terry
TU Electric
Group Vice President, Nuclear
ATTN: Regulatory Affairs Department
P.O. Box 1002
Glen Rose, Texas 76043

SUBJECT: SUMMARY OF DECEMBER 15, 1997, MEETING

Dear Mr. Terry:

This refers to the meeting conducted in the Region IV office on December 15, 1997. This meeting was requested by you to inform the Region IV staff of the results of your most recent refueling/outage. Your presentation included discussions of activities occurring in operations, maintenance, engineering, and plant support. The meeting was beneficial in providing TU Electric the opportunity to describe the scope of the planned activities, the successes, and identify areas where improvement is needed including corrective action issues.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be placed in the NRC Public Document Room.

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

Sincerely,

for Thomas P. Gwynn, Director
Division of Reactor Projects

Docket Nos.: 50-445; 50-446
License Nos.: NPF-87; NPF-89

Enclosures:
1. Attendance List
2. Licensee Presentation

cc w/enclosures:
Mr. Roger D. Walker
TU Electric
Regulatory Affairs Manager
P.O. Box 1002
Glen Rose, Texas 76043

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President - CASE
1426 South Polk Street
Dallas, Texas 75224

TU Electric
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G. R. Bynog, Program Manager/
Chief Inspector
Texas Department of Licensing & Regulation
Boiler Division
P.O. Box 12157, Capitol Station
Austin, Texas 78711

Honorable Dale McPherson
County Judge
P.O. Box 851
Glen Rose, Texas 76043

Texas Radiation Control Program Director
1100 West 49th Street
Austin, Texas 78756

John Howard, Director
Environmental and Natural Resources Policy
Office of the Governor
P.O. Box 12428
Austin, Texas 78711

bcc to DCD (IE45)

bcc distrib. by RIV:

Regional Administrator	Resident Inspector
DRP Director	DRS-PSB
Branch Chief (DRP/A)	MIS System
Project Engineer (DRP/A)	RIV File
Branch Chief (DRP/TSS)	

DOCUMENT NAME: R:_CPSES\CP1215ms.rak

To receive copy of document, indicate in box: "C" = Copy without enclosures "E" = Copy with enclosures "N" = No copy

RIV:PE:DRP/A		C:DRP/A		D:DRP							
RAKopriva;jes		JITapia		TPGwynn							
12/17/97		12/17/97		12/17/97							

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bcc to DCD (IE45)

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RAKopriva;jes	JITapia	TPGwynn				
12/17/97	12/ /97	12/ /97				

OFFICIAL RECORD COPY

330016

ENCLOSURE 1

ATTENDANCE AT THE TU ELECTRIC OUTAGE MEETING
ON DECEMBER 15, 1997

TU Electric

C. L. Terry, Group Vice President, Nuclear Production
J. J. Kelley, Jr., Vice President of Nuclear Engineering and Support
D. L. Davis, Nuclear Overview Manager
D. Moore, Operations Manager
M. Lucas, Maintenance Manager
B. Bird, Nuclear Planning Manager
R. Walker, Regulatory Affairs Manager
T. Hope, Regulatory Compliance Manager
J. Seawright, Senior Engineer, Regulatory Affairs
S. Sewell, Unit Supervisor
D. Woodlan, Docket Licensing Manager
S. Sawa, Outage Manager
E. Schmidt, Public Relations Coordinator

NRC

E. W. Merschoff, Regional Administrator
K. E. Brockman, Deputy Director, Division of Reactor Projects (DRP)
J. I. Tapia, Chief, Project Branch A, DRP
R. A. Kopriva, Senior Project Engineer, Project Branch A, DRP
H. A. Freeman, Acting Senior Resident, CPSES, DRP
C. E. Johnson, Senior Reactor Inspector
J. L. Shackelford, Senior Reactor Analyst

ENCLOSURE 2

TU ELECTRIC®

A Texas Utilities Company℠

Comanche Peak
Steam Electric Station

Lance Terry
Group Vice President

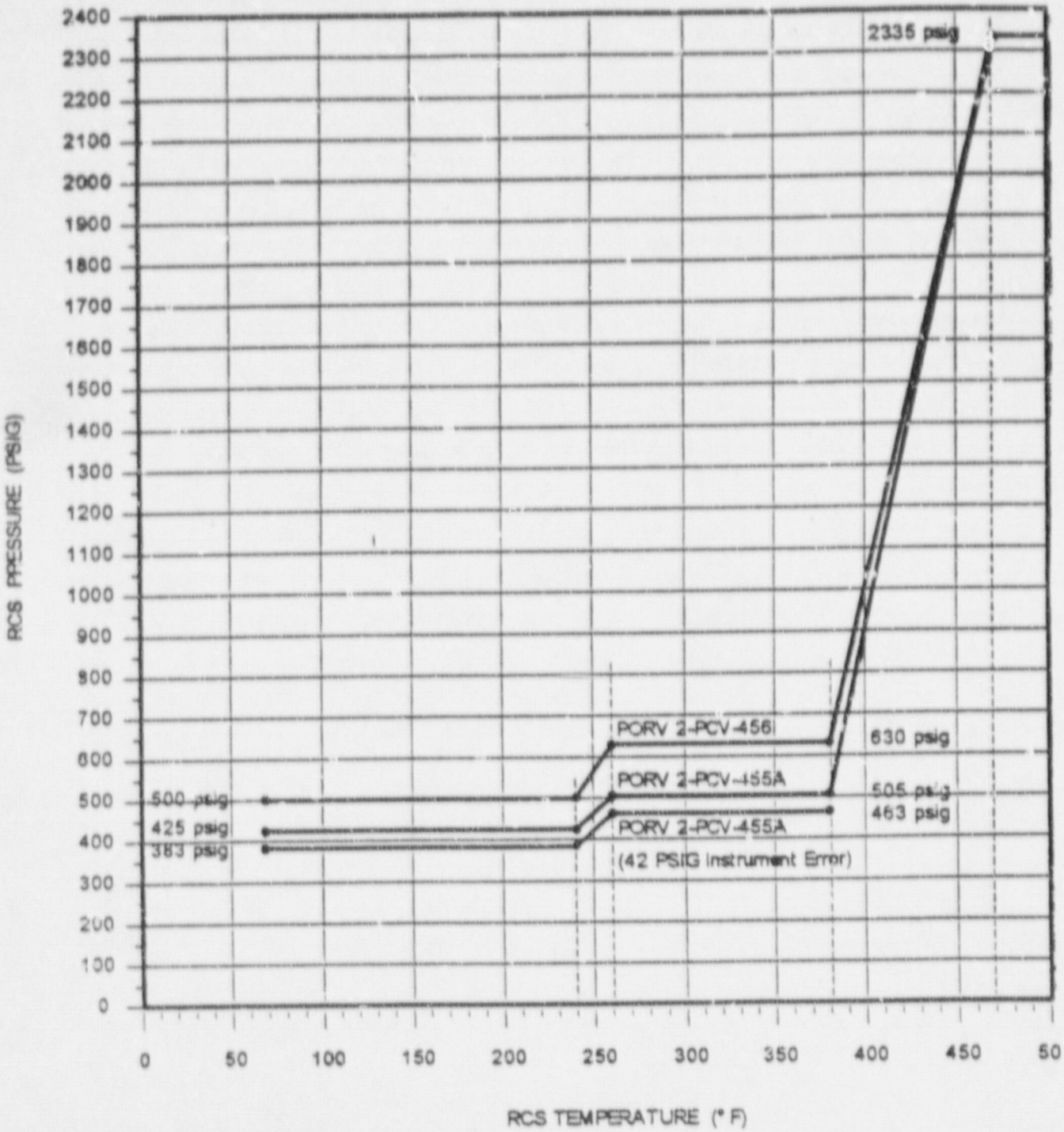
TU ELECTRIC®

A Texas Utilities Company℠

Comanche Peak Steam Electric Station

David Moore
Operations Manager

PRESSURIZER PORV LTOP SETPOINTS



TITLE: COLD OVERPRESSURE PROTECTION RCS PORV SETTINGS

SOURCE: E1-2700

MATERIAL PROPERTY BASIS

CONTROLLING MATERIAL: LOWER SHELL PLATE R1108-1 (UNIT 1)
INTERMEDIATE SHELL PLATE R3807-2 (UNIT 2)

INITIAL RT_{NDT}: 0°F (UNIT 1), 10°F (UNIT 2)

ART AT 16 EFPY: 1/4T : 84°F (UNIT 1), 81°F (UNIT 2)
3/4T : 69°F (UNIT 1), 62°F (UNIT 2)

CURVES BOUNDING COMANCHE PEAK UNITS 1 AND 2. APPLICABLE FOR COOLDOWN RATES UP TO 100°F/HR FOR THE SERVICE PERIOD UP TO 16 EFPY. CONTAINS MARGIN OF 10°F AND 110 PSIG FOR POSSIBLE INSTRUMENTATION ERRORS.

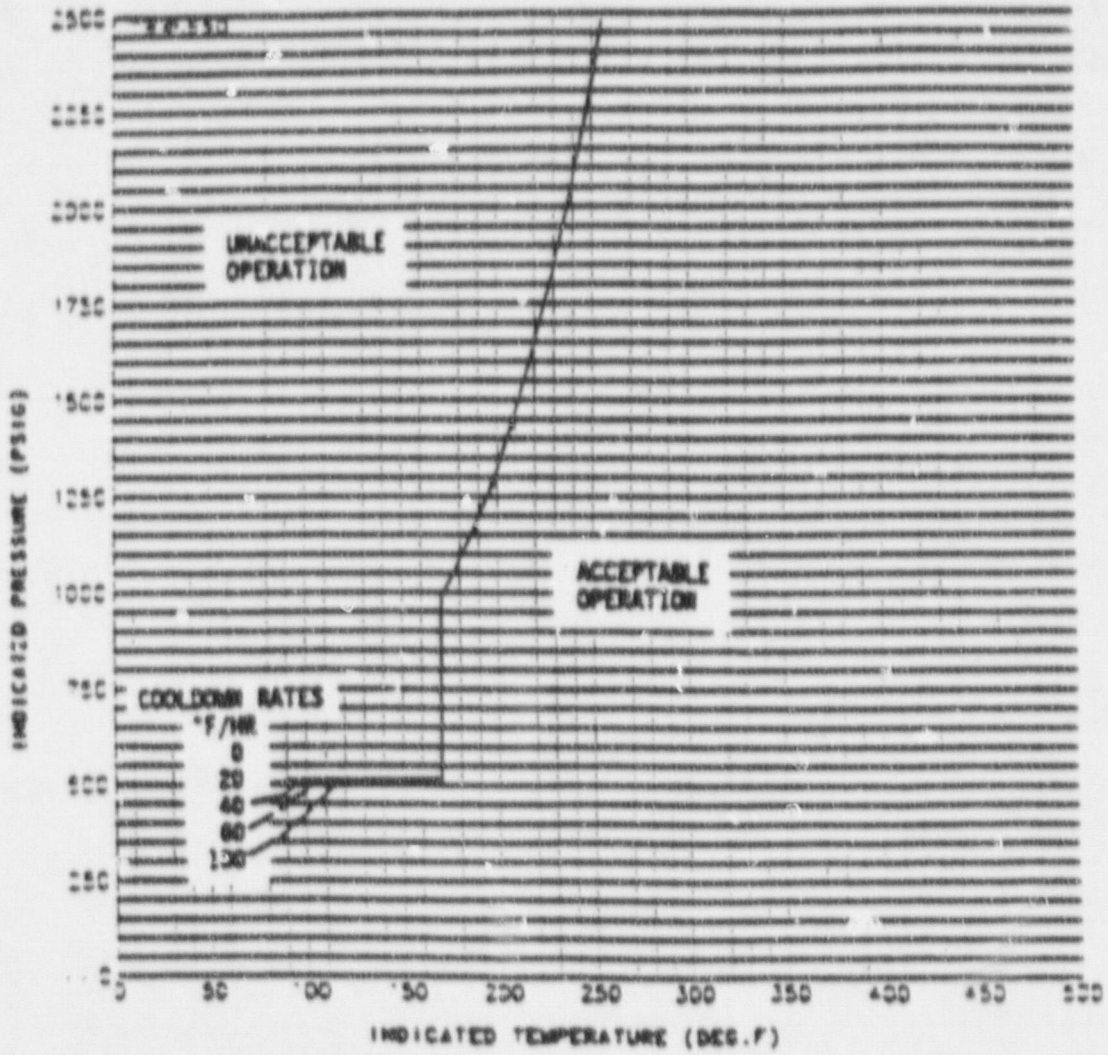
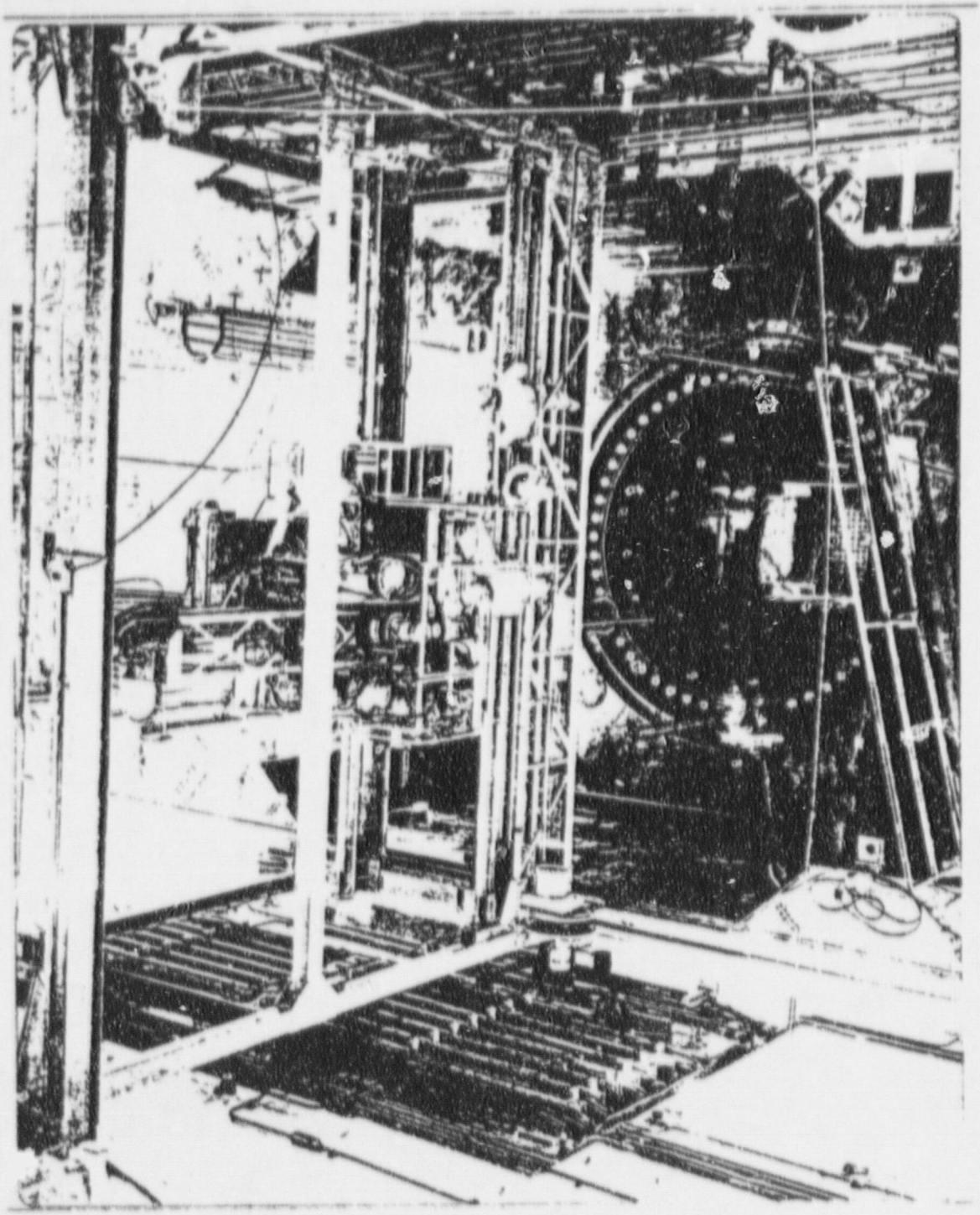
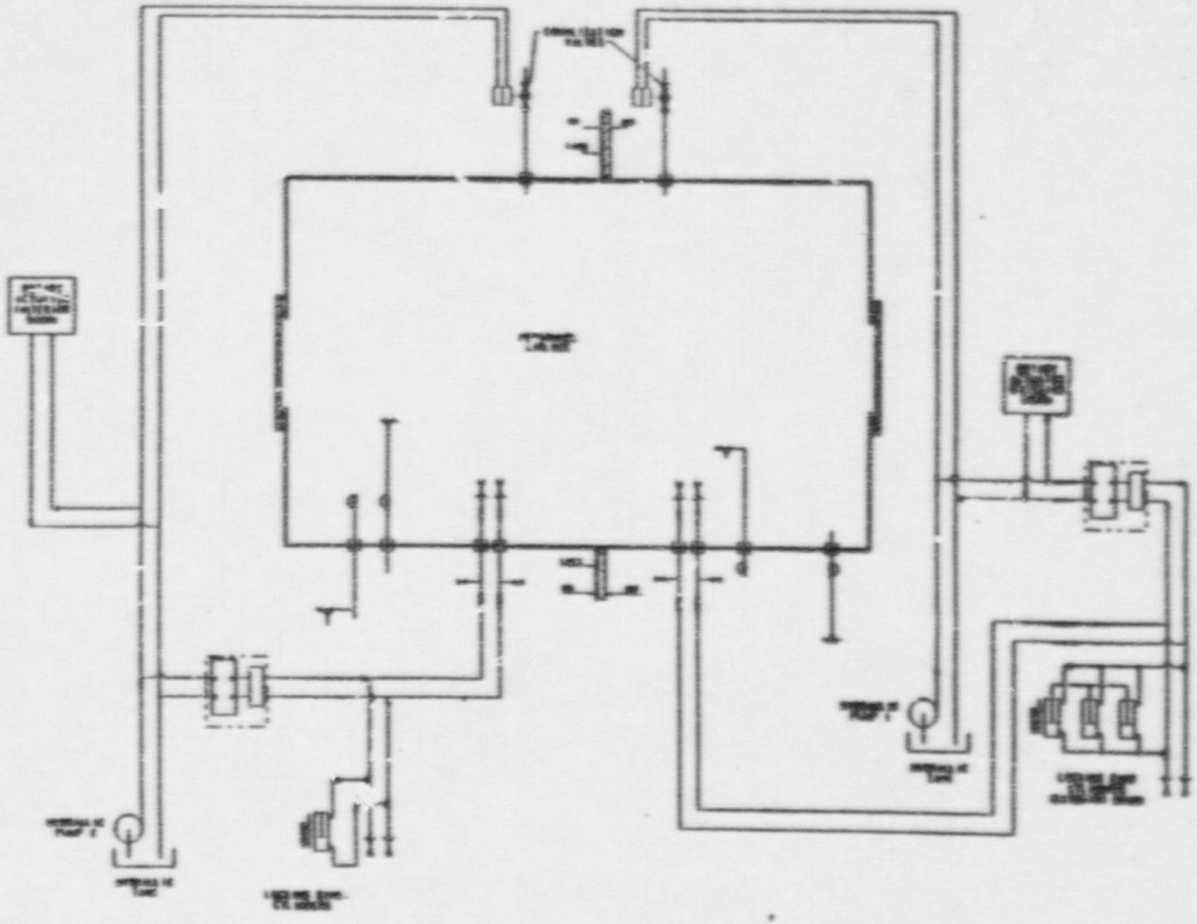
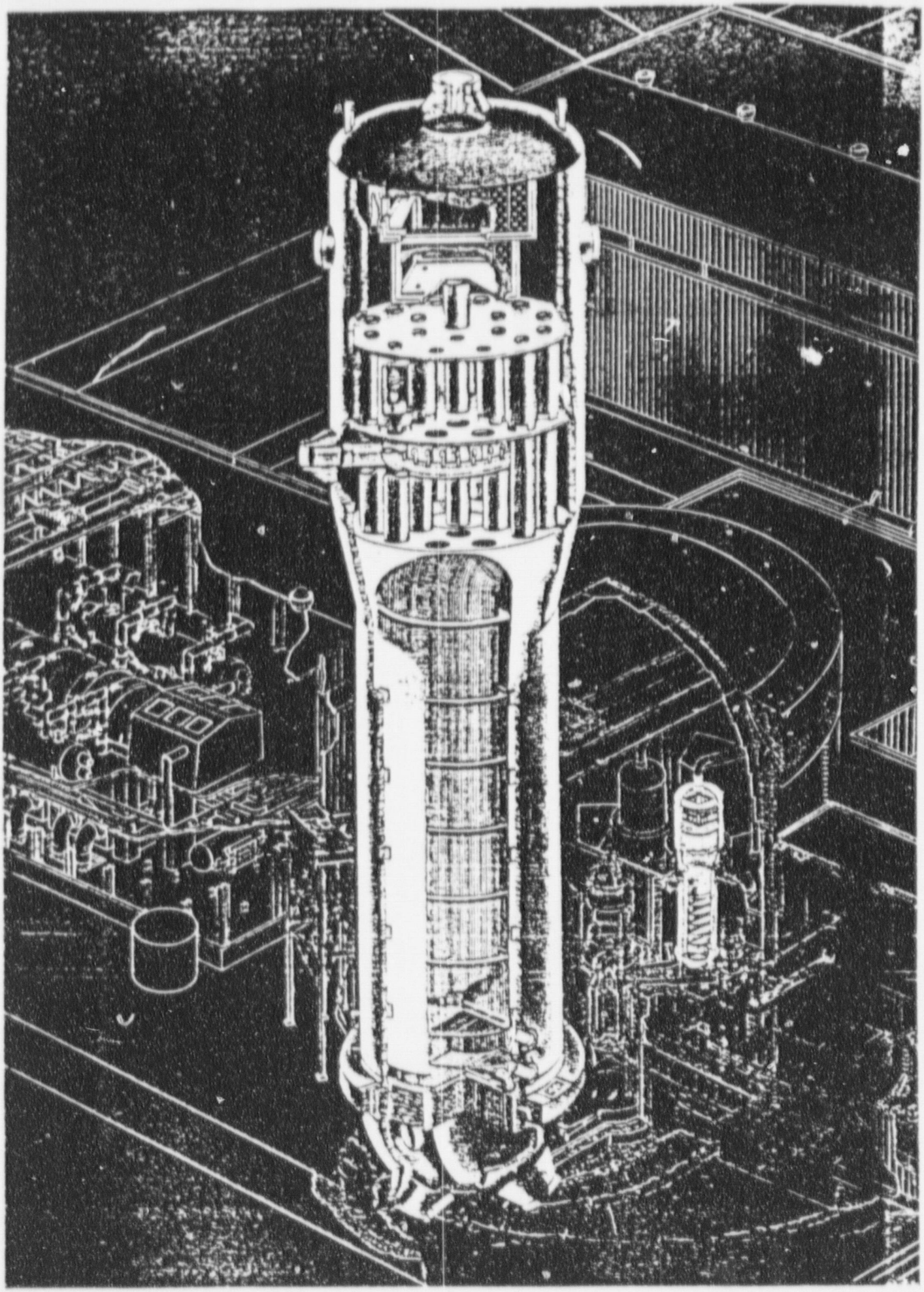


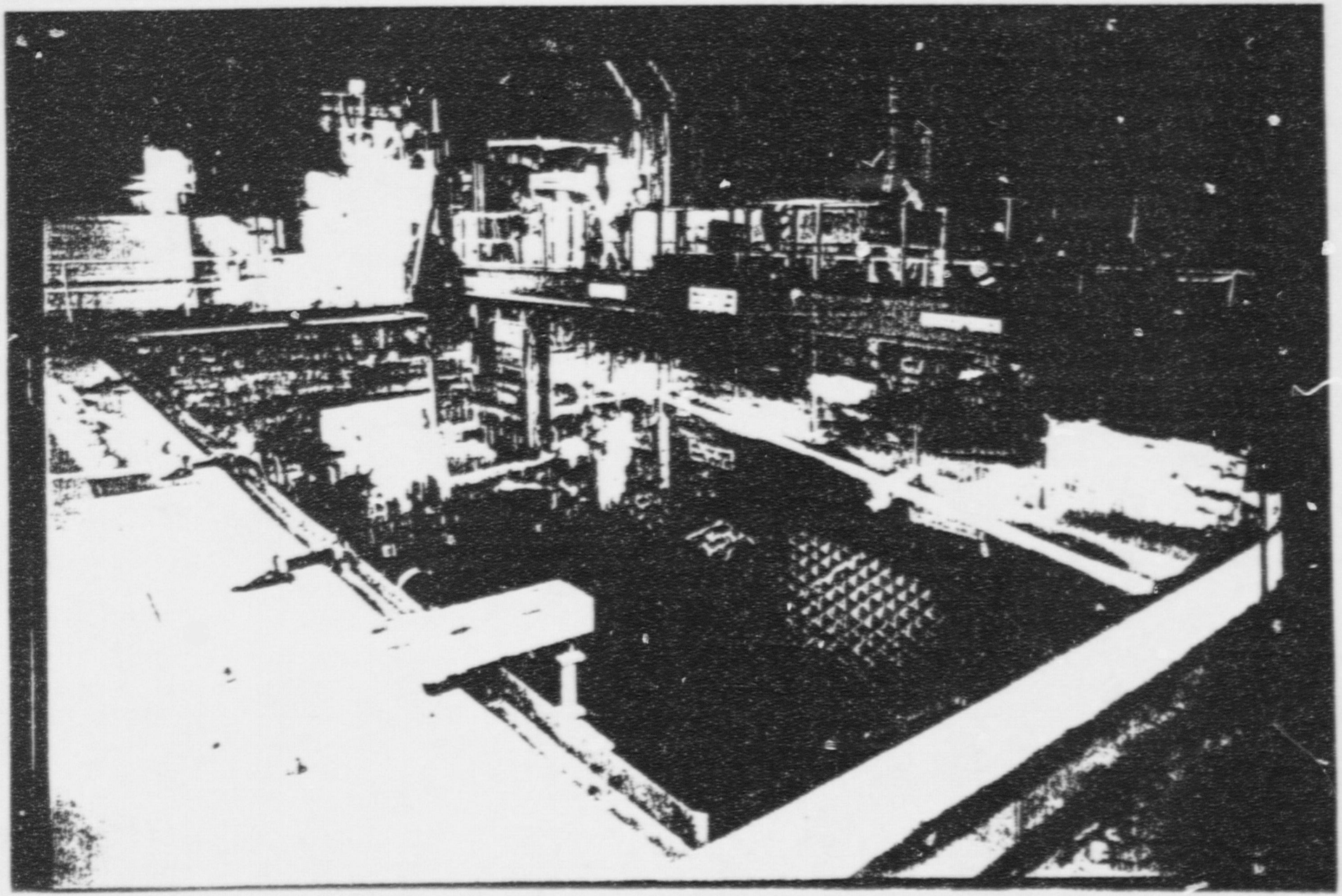
FIGURE 3.4-3

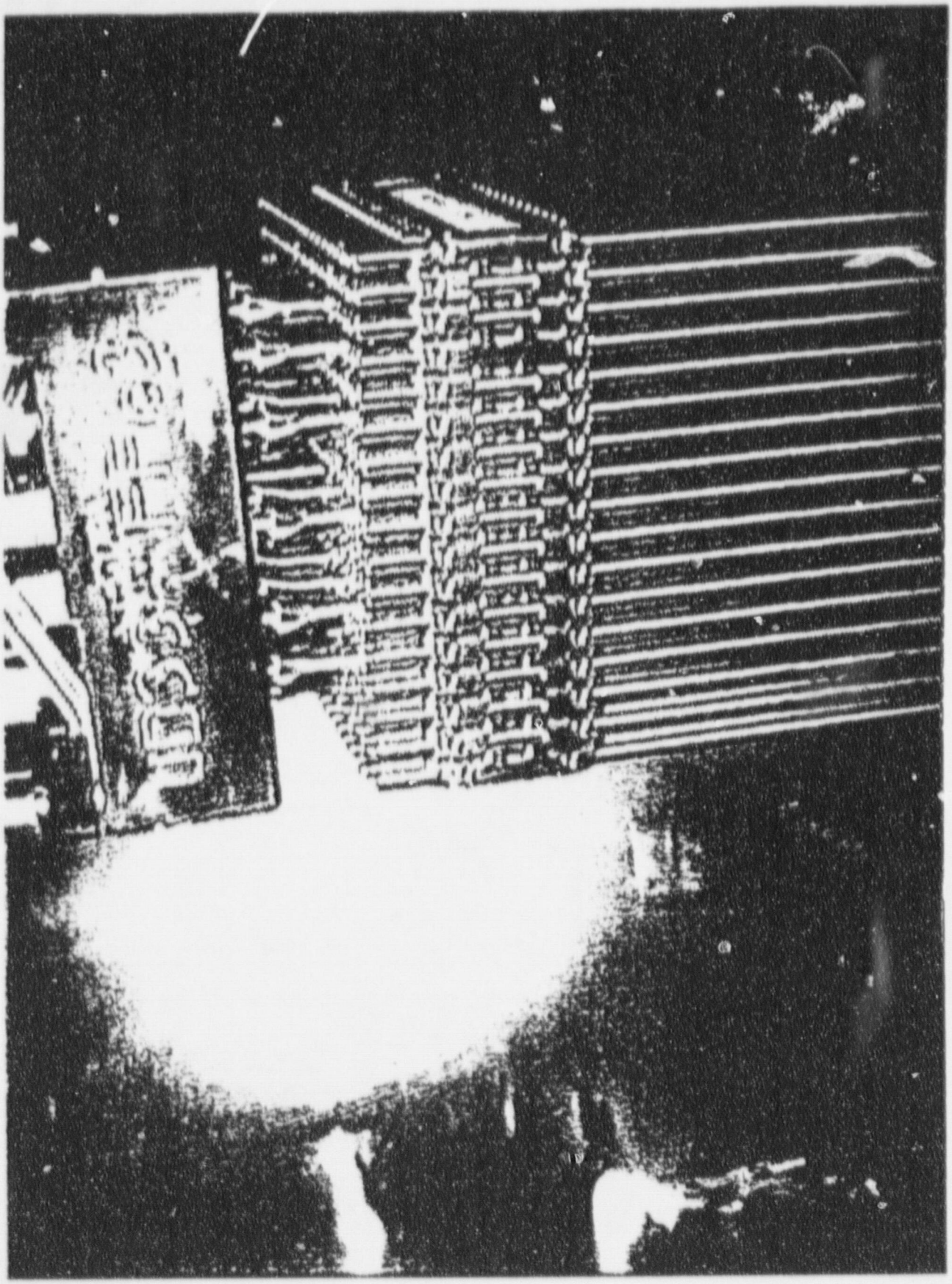
REACTOR COOLANT SYSTEM COOLDOWN LIMITATIONS - APPLICABLE UP TO 16 EFPY

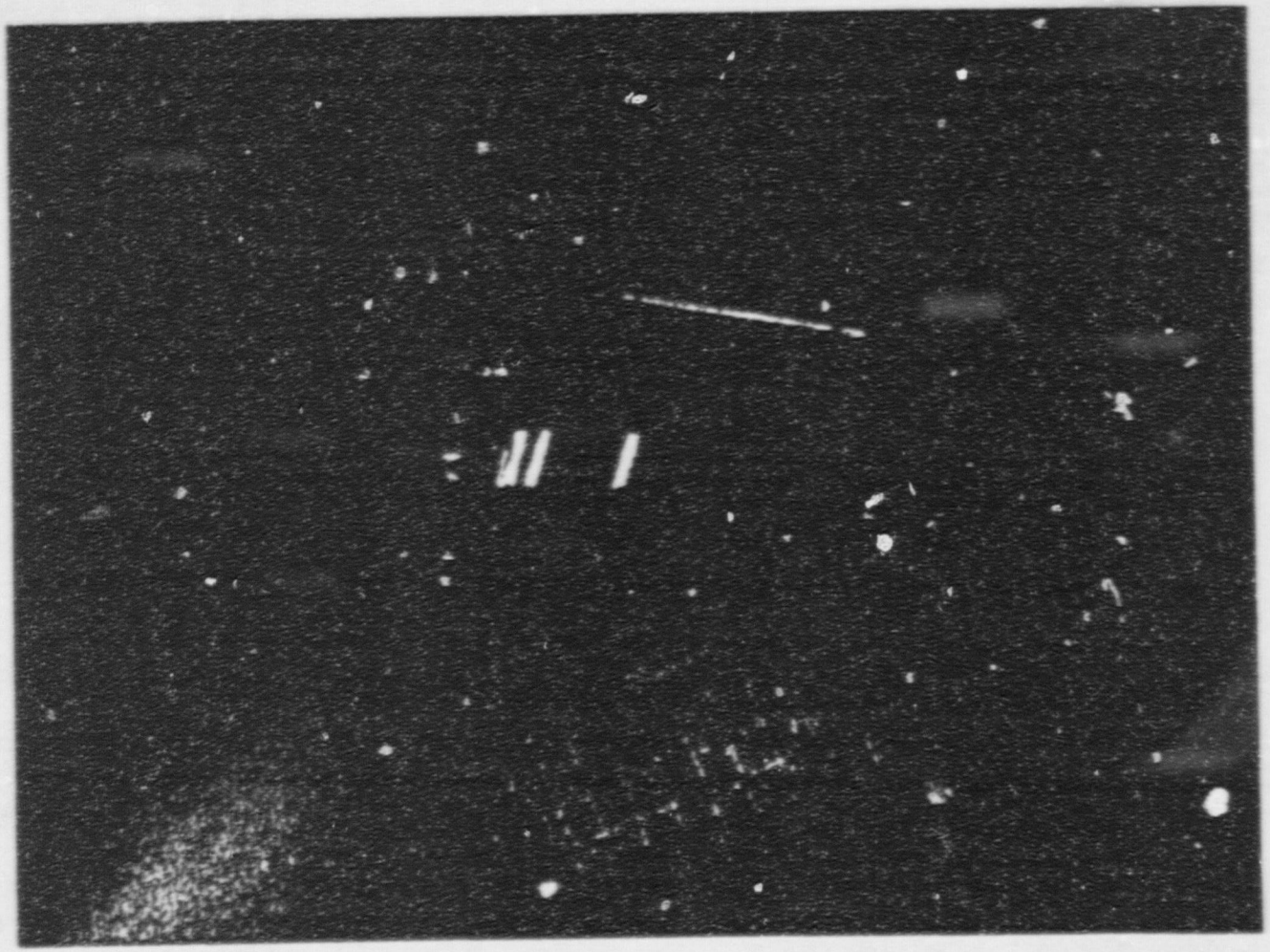


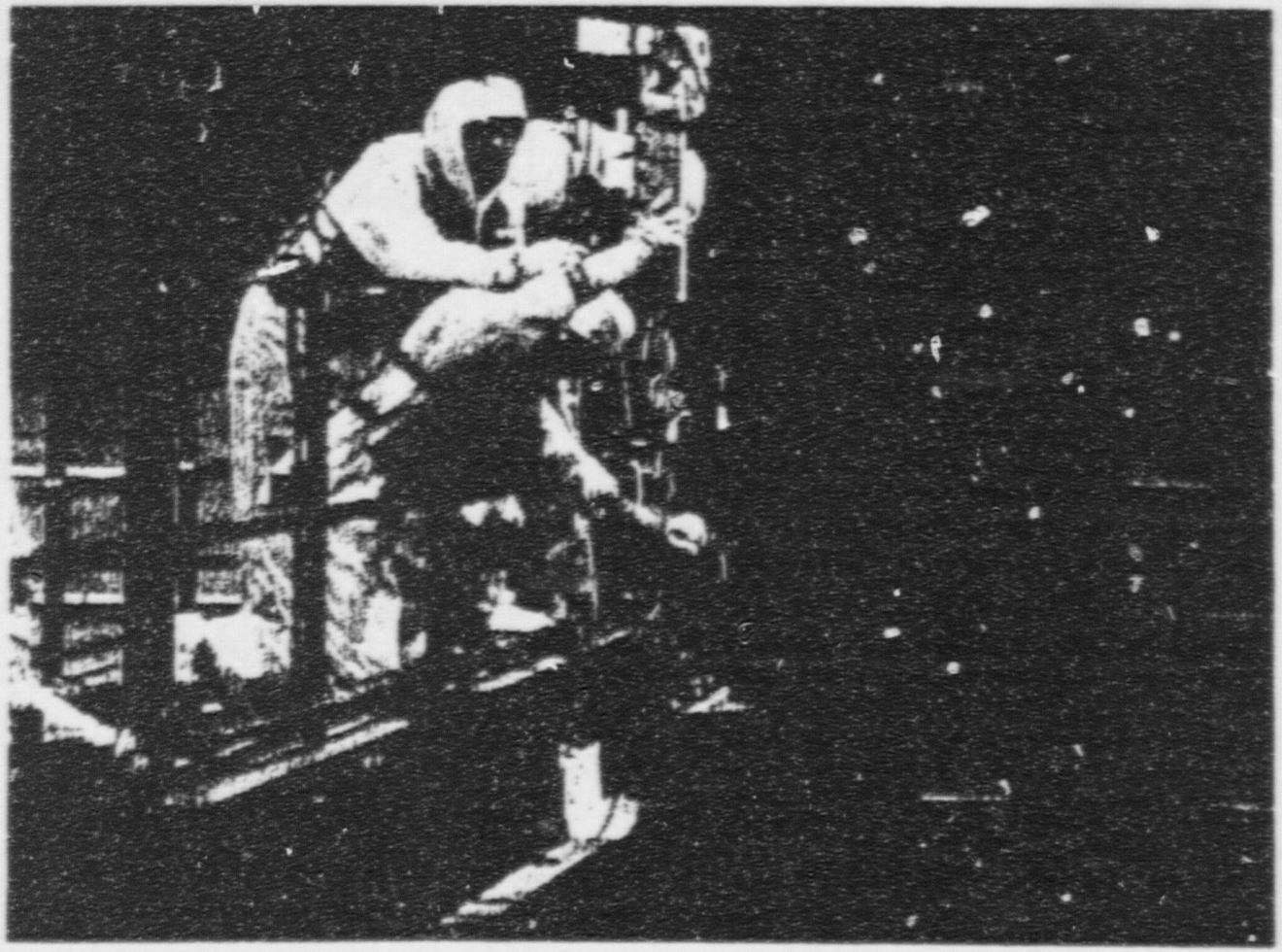












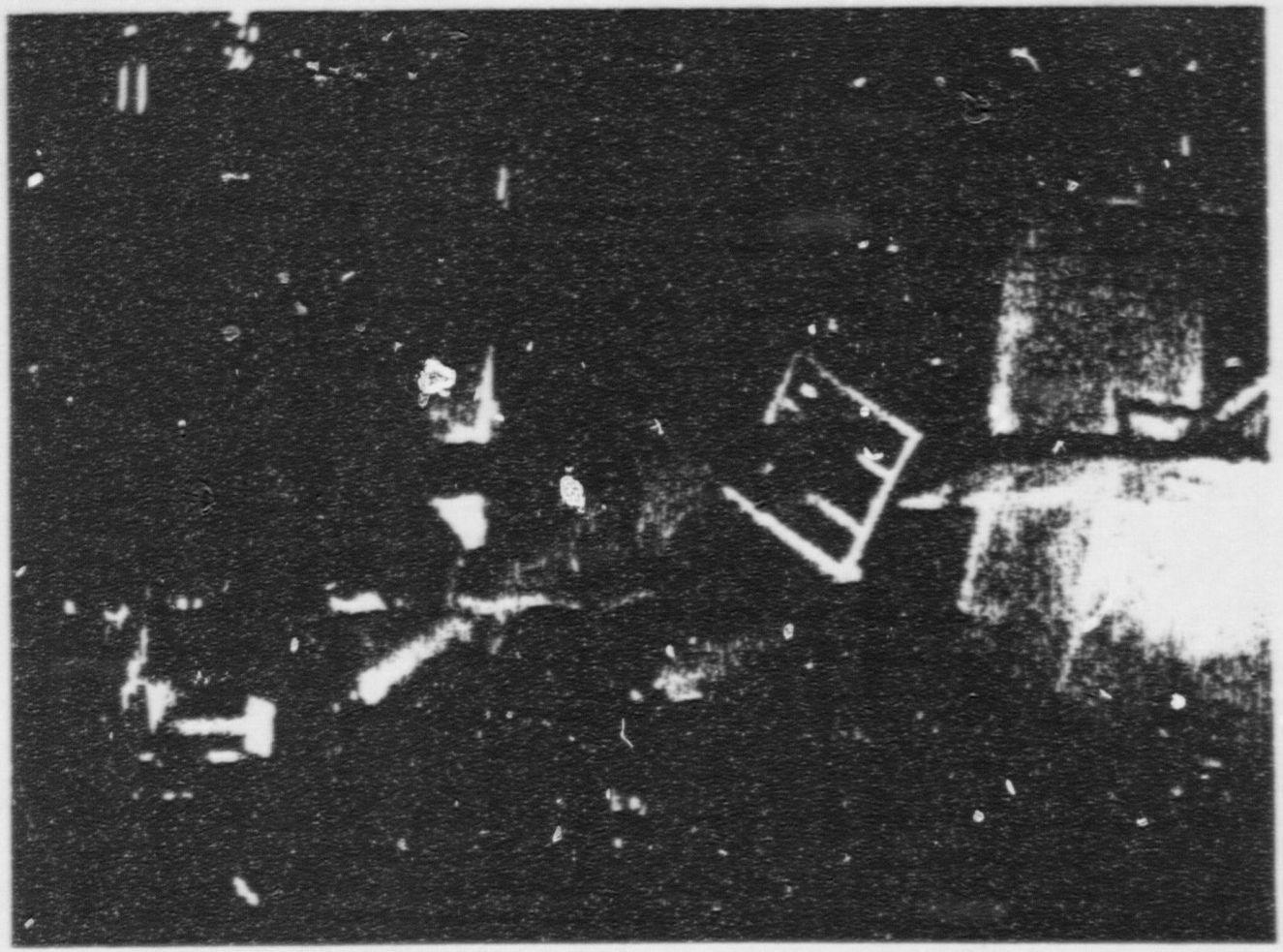
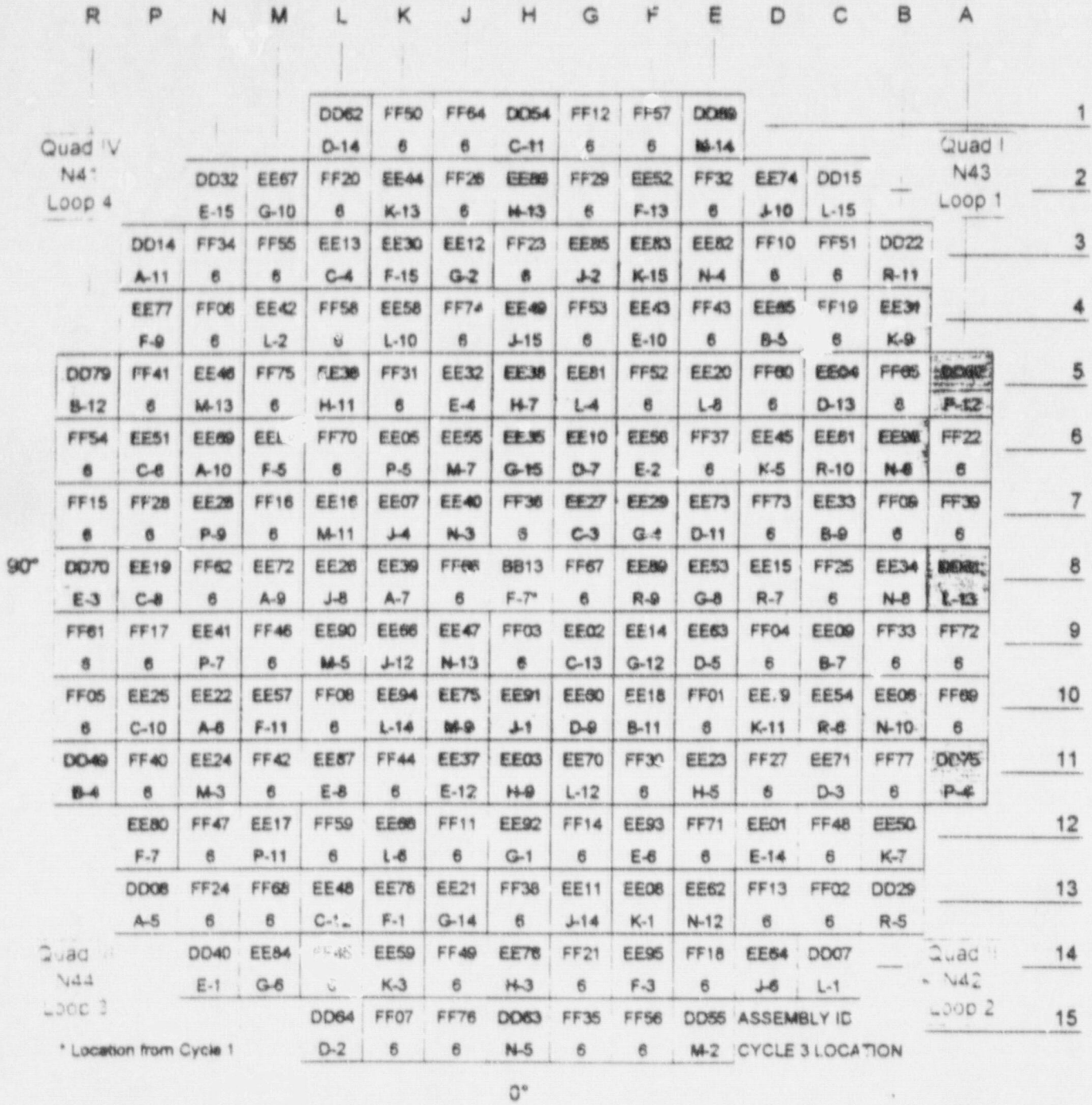
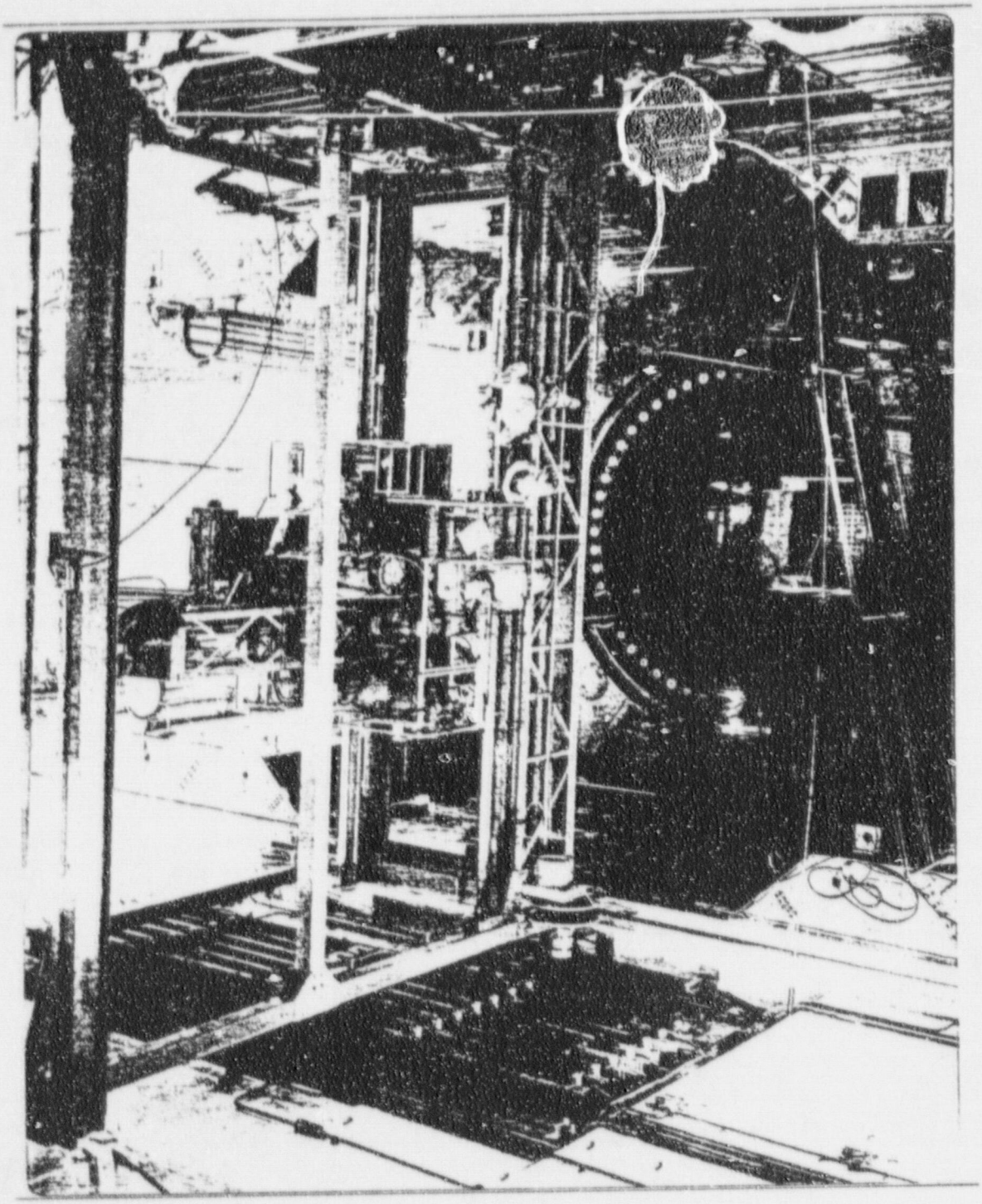
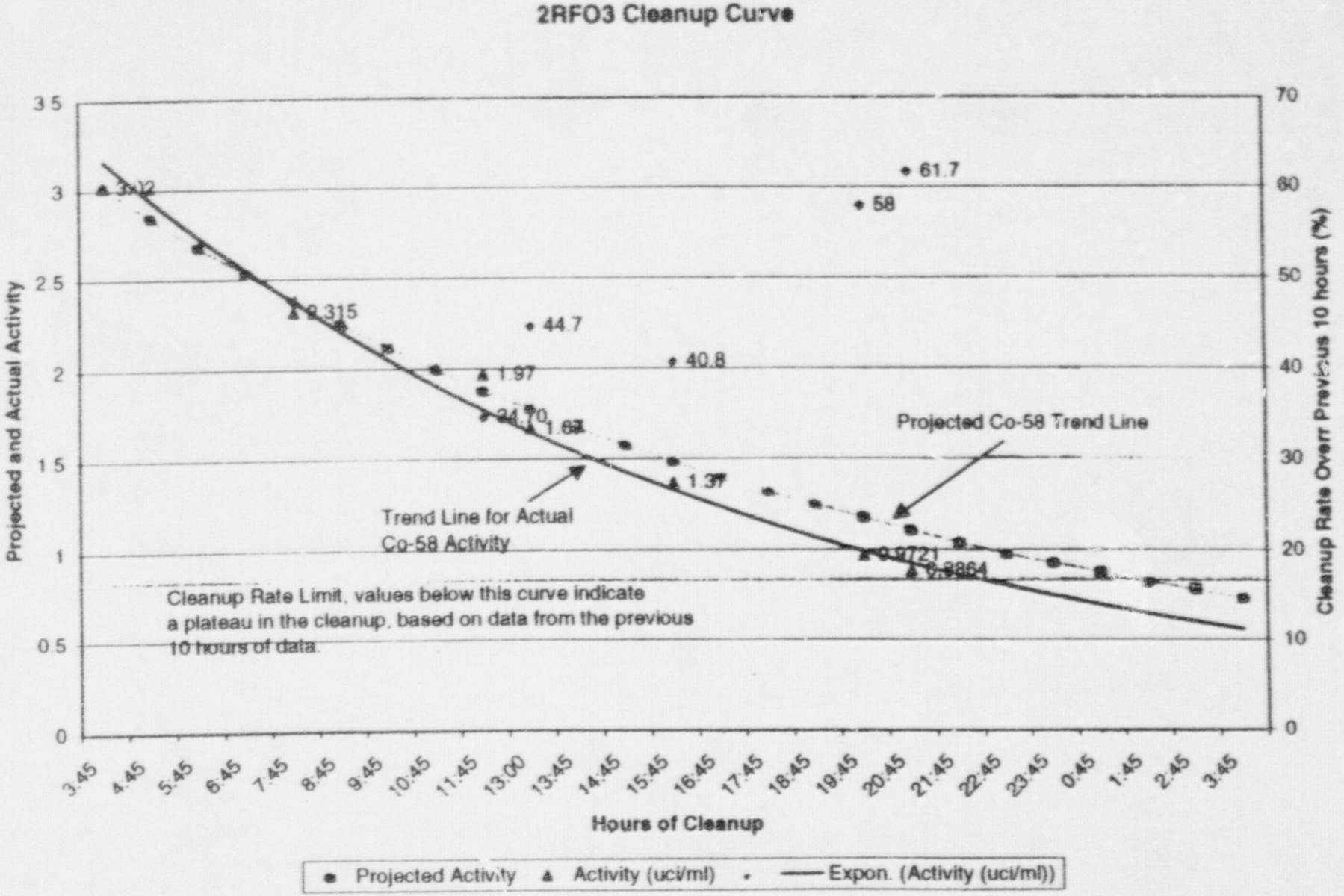


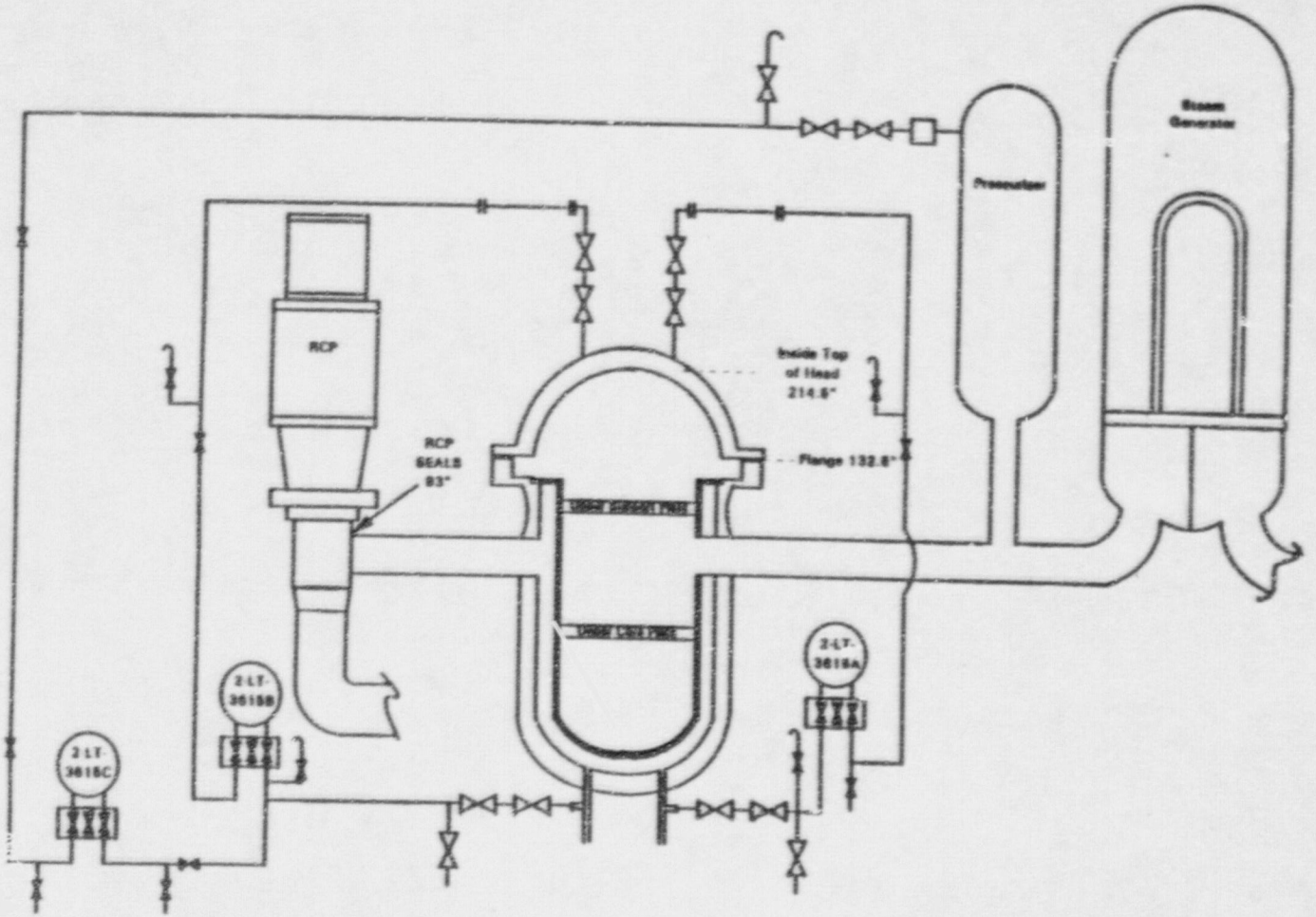
Figure 2.1 Comanche Peak Unit 2, Cycle 4 Core Loading Pattern

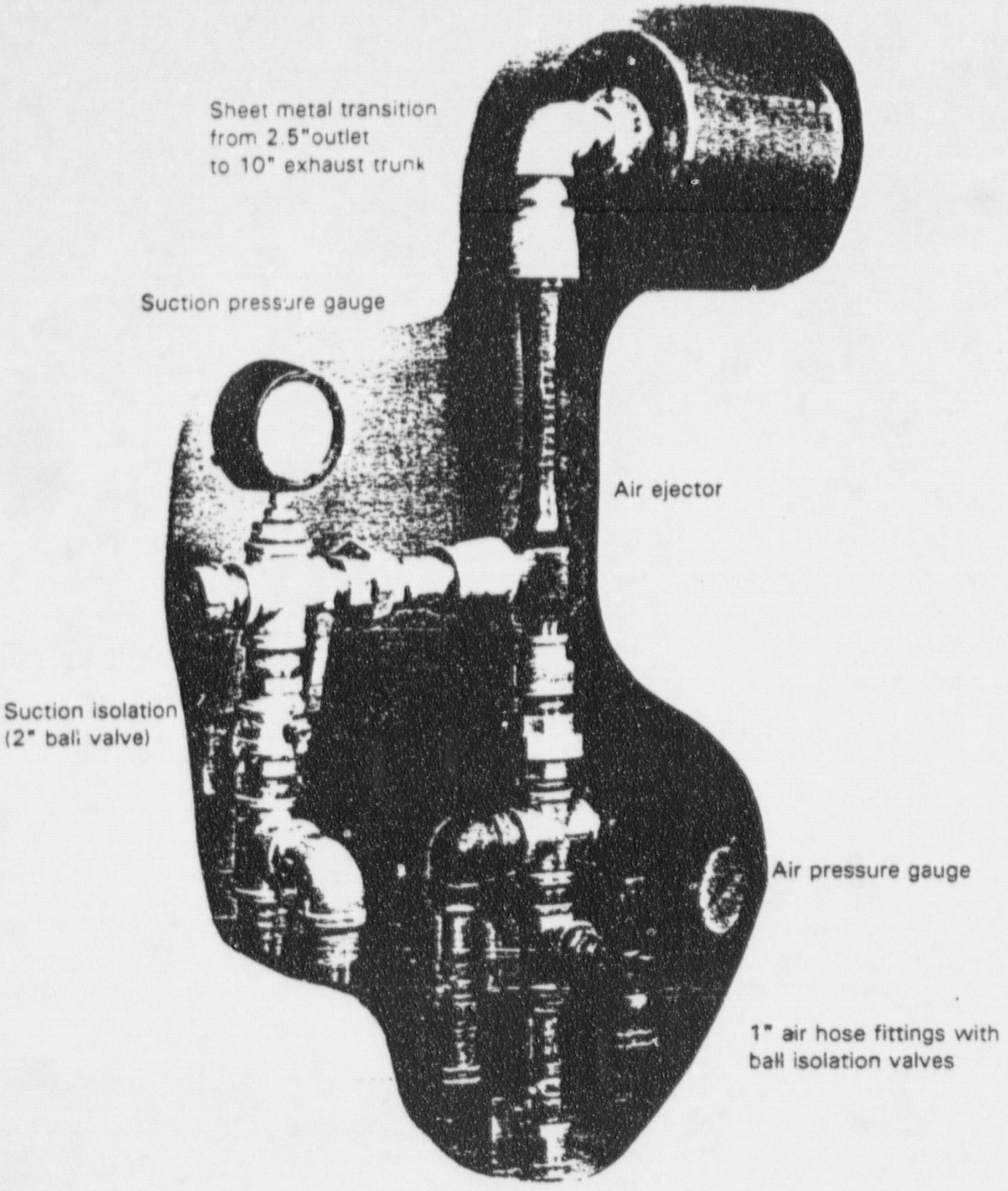


BB	REGION 2 (West., 2.4 w/o)	EE	REGION 5 (SPC, 4.95 w/o, Central Zone)
CD	REGION 4A (West., 3.6 w/o, Central Zone)	FF 6	REGION 6 (SPC, 4.4 w/o Central Zone)
DD	REGION 4B (West., 4.0 w/o, Central Zone)		




2RFO3 Cleanup Curve
Projected and Actual Activity
Cleanup Rate Over Previous 10 hours (%)
Hours of Cleanup
61.7
58
44.7
40.8
1.97
1.37
Projected Co-58 Trend Line
Trend Line for Actual
Co-58 Activity
Cleanup Rate Limit, values below this curve indicate
a plateau in the cleanup, based on data from the previous
10 hours of data.
Projected Activity
Activity (uci/ml)
Expon. (Activity (uci/ml))

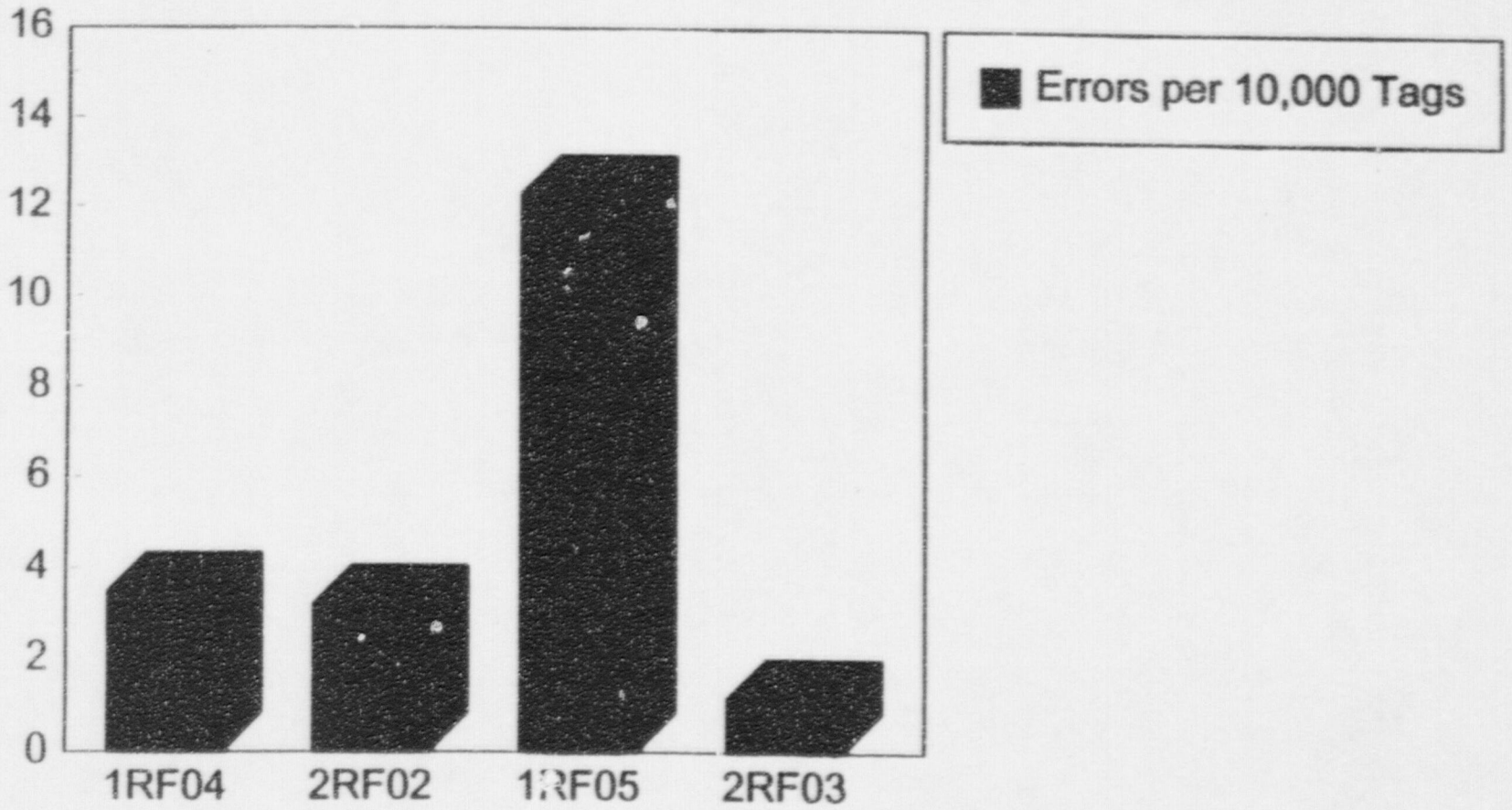

RCP
RCP SEALS 93"
Inside Top of Head 214.6"
Flange 132.8"
2-LT-3615C
2-LT-3615B
2-LT-3615A

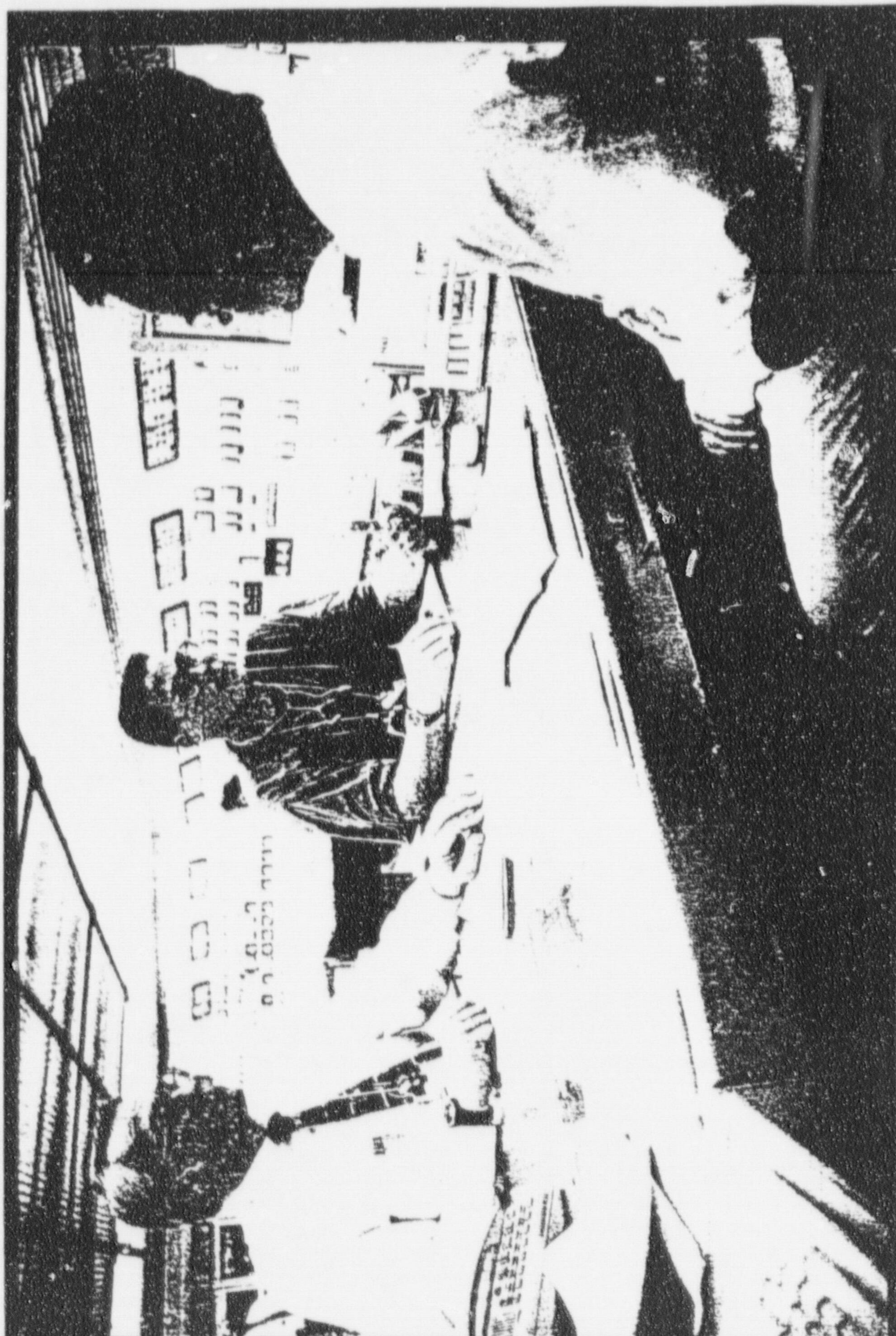


Vacuum till air ejector assembly with threaded unions to allow assembly to be broken into 3 sections


NSSS
BOP

OUTAGE CLEARANCE ERROR RATE





Successes

- Chemistry and CRUD Management
- Mid Loop Operations
- Reactor Coolant System Vacuum Fill
- Work Window Managers
- Clearances and Safety Tagging
- MODE Changes and Power Ascension
- Operator (PEO and RO) Performance
- Just-In-Time (JIT) Training

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A Texas Utilities Company℠

Comanche Peak
Steam Electric Station

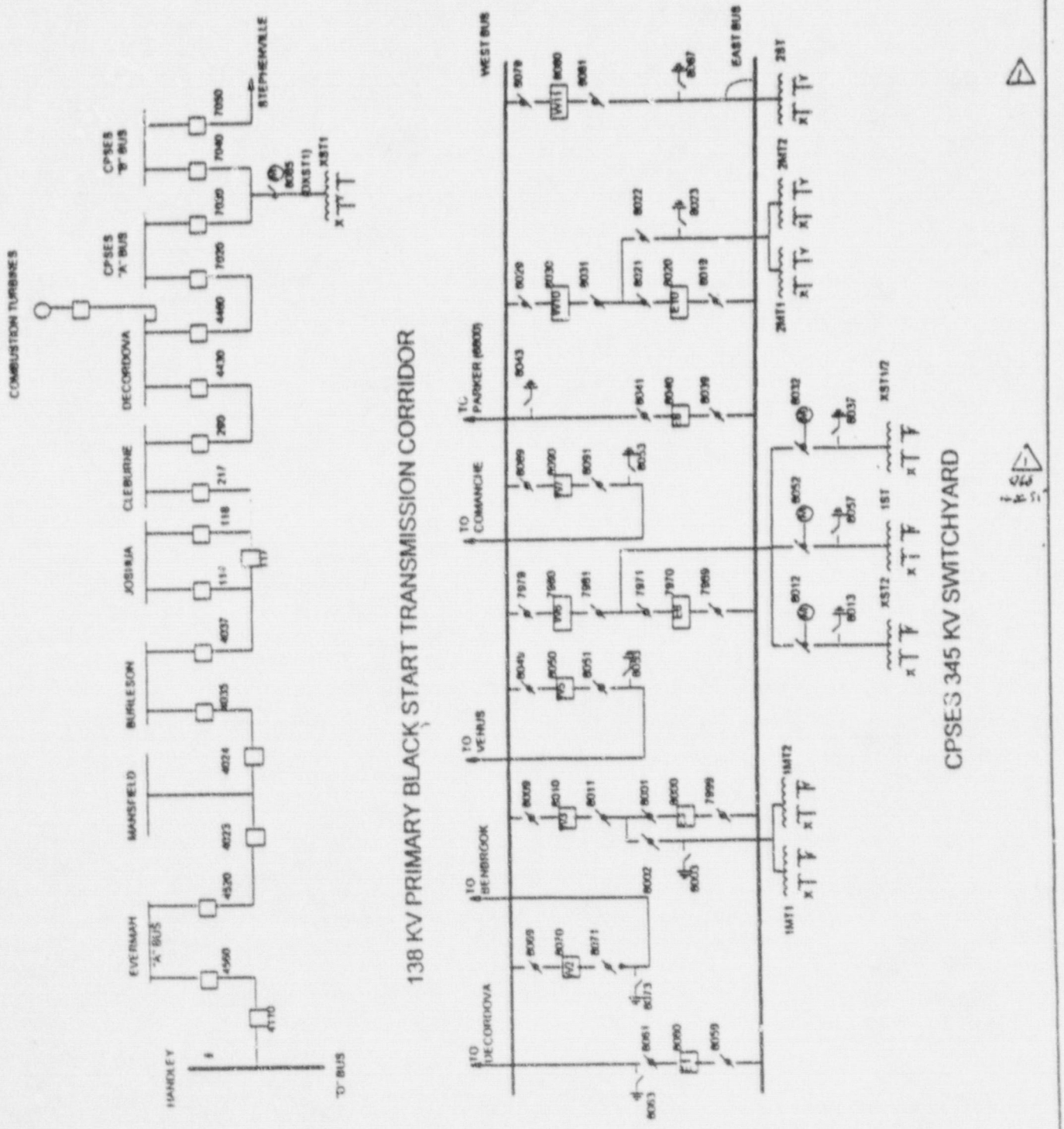
Mitchell Lucas
Maintenance Manager

Maintenance

- Challenges
  - Switchyard Work - Unit 1 Trip
  - Rod Control - Unit 2 Trip
- Successes
  - Smart Team Concept
  - Ownership of Equipment
- Lessons Learned
  - Integrated Leak Rate Test Preparations
  - Staging of Special Tools
  - Emergency Diesel Generators
  - Exposure Control (ALARA) Planning

ATTACHMENT 1B
PAGE 1 OF 1

138KV Black Start Corridor
(For Illustration Purposes Only)



Switchyard Work - Unit 1 Trip

- Trip Testing of the East Bus Lockout Relays
- Past Incident
- Interim Actions
- Lessons Learned
- Previous Switchyard Corrective Actions

Rod Control - Unit 2 Trip

- Unit 2 ramping down for Refueling Outage #3
- Rod Control Alarm at 10% Reactor Power
- Rods Dropped When Stepped Out
- Manually Tripped Reactor
- Failed Equipment Identified

SMART Team Concept

- Multi-Disciplined Craft Teams
- System Oriented
- Team Ownership of Equipment

Equipment Ownership

- Personnel Air Lock
- 7300 Power Supply Rework
- Feedpump Rework
- Turbine Controls

Equipment Ownership (cont.)

- Emergency Diesel Generators
- Electrical Breaker Refurbishment
- Pre-Job Briefings and Walkdowns

Design Modifications

- Design Modification Engineering Team
- Multi-discipline Walkdowns
- Advanced Planning

Outage Management

- Outage Control Center Relocated
- Centralized Outage Functions (One Stop Shopping Concept)
- Operations Shift Managers Perform Outage Duty Manager Function
- Licensed SROs Perform Work Week Manager Function

Lessons Learned

- Integrated Leak Rate Test Preparations
- Staging of Special Tools
- Emergency Diesel Generator
- Exposure Control (ALARA) Planning

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Comanche Peak Steam Electric Station

Jim Kelley

Vice President of Nuclear Engineering and Support

Containment Sumps

November, 1989	IN 89-77 issued on containment sumps
December, 1993	IN 89-77 Supplement 1 issued on holes in containment screens
January, 1994	HL&P identifies gaps in containment sump structure
October, 1994	CPSES Unit 2 containment sump structure gaps are found
November, 1994	Repairs performed in CPSES Unit 2
April, 1995	Repairs performed in CPSES Unit 1
November, 1997	Gaps are found in containment sump structure in CPSES Unit 2

Weld Summary

Unit	Train	Time Frame	Welds
2	A	2RF01 (1994)	71
2	B	2RF01 (1994)	81
1	A	1RF04 (1995)	104
1	B	1RF04 (1995)	113
2	A	2RF03 (1997)	19
2	B	2RF03 (1997)	20

Safety Synopsis

- Debris sources identified
- Transport velocities characterized
- Debris behavior characterized
- Surveillance/inspections evaluated
- Existing plant configuration provides adequate protection of plant equipment

Causes (preliminary)

Utilization of normal engineering and work control processes were not appropriate for this situation due to:

- Gaps were difficult to identify because gaps had indirect paths through the structure.
- Work instructions may not have provided the appropriate level of detail within the work documents.
- Ineffective coordination of a work activity identified near the end of the refueling outage.

Conclusion

- Engineering review has concluded Unit 1 and Unit 2 sumps were never in a condition which would have caused inoperable equipment.
- Unit 2 sump screens have been enhanced to meet the licensing basis.
- Unit 1 sumps will be inspected in 1RF06 to ensure that the current licensing basis is met.

CCW Motor Termination Failures

December 7, 1989	CCW Motor 1-02 phase B failed while starting
July 27, 1997	CCW Motor 1-02 phase A failed while starting
November 30, 1997	CCW Motor 2-01 phase B failed while starting

December 7, 1989 - CCW Motor 1-02 phase B failed while starting.

- Specific problem repaired. Phase B relugged
- Plant Incident Report
- 19 Motor terminations were surveyed using thermography

July 27, 1997 - CCW Motor 1-02 phase A failed while starting.

- Specific problem repaired. Phases A & C relugged
- Industry experience reviewed.
- CPSES work history reviewed.
- Conclusion - isolated condition on the 1-02 motor.
- Generic actions were identified to look at similar pumps motors.

November 30, 1997 - CCW Motor 2-01 phase B failed while starting.

- Specific problem repaired. Phases A,B, & C relugged
- Determined corrective action document closed from July event with generic actions outstanding.
- Performed thermography on Unit 2 Life Line D motors (except RHR).
- Generic actions on other 1-01 CCW motor complete.

Conclusions

- Unit 1 & 2 Life Line D motors operable.
- Vendor is doing a document search for the manufacturing records.
- Management expectations were not met on the closure of the ONE Form with generic actions outstanding.
- A Significant Personnel Error was assigned to Engineering.
- Final actions to be determined from options such as: continued periodic thermography; inspections and/or replacement of connectors.
- The final corrective actions to be determined in January, 1998.

Major Plant Improvements

- Battery Charger Replacement
- Inverter Replacement
- Diesel Generator Digital Governor
- Terry Turbine Drain Modification
- Safety Injection Check Valve Replacement
- Heater Drain Modification
- Lightning Protection
- Tavg Modification

Lessons Learned

- Review use of Spent Fuel Pool 2
- Evaluate Refueling Equipment
- Joint Engineering Team (JET) provides excellent support for outage
- Build on the success of the Mod Team
- Steam Generator Inspection

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Comanche Peak Steam Electric Station

Robert Bird

Plant Support Manager

Industrial Safety

- 2RF03 Goals
  - ≤ 2 TU OSHA recordable injuries
  - ≤ 2 Contractor OSHA recordable injuries
  - 0 TU & Contractor Lost time injuries

- 2RF03 Actual
  - 1 TU OSHA recordable injuries
  - 5 Contractor OSHA recordable injuries
  - 0 TU & Contractor Lost time injuries
  - 1 Contractor fatality (electrocution)

Fuel Handling Equipment Problems

- Hold down latch on Fuel Building Upender delayed operation
- Take up reel brush broke halting Refueling Machine
- Fuel Building Bridge Crane guide bearings failed

Radiation Dose Control

- Challenges
  - Nuclear Instrumentation well cover leaks
  - Refueling Cavity water dose rates
  - Containment dose rates slightly elevated
  - Steam Generator secondary side work scope expanded
  - Steam Generator primary side work scope expanded
- Improvements
  - Nozzle Dam installation and removal
  - Containment toolroom relocation
  - Temporary Shielding
  - New cameras for refueling cavity monitoring
  - Radiation Worker practices

Outage Program Enhancements

- Industry Lessons Learned
- Outage Control Center relocation
- Control Room Work Reduction
- SRO Work Window Managers
- Team Training
- Scope Control
- Pre-Outage Plan Milestone Adherence
- Schedule Adherence
- Discipline Team Schedule Reviews
- Outage Optimization Workshop

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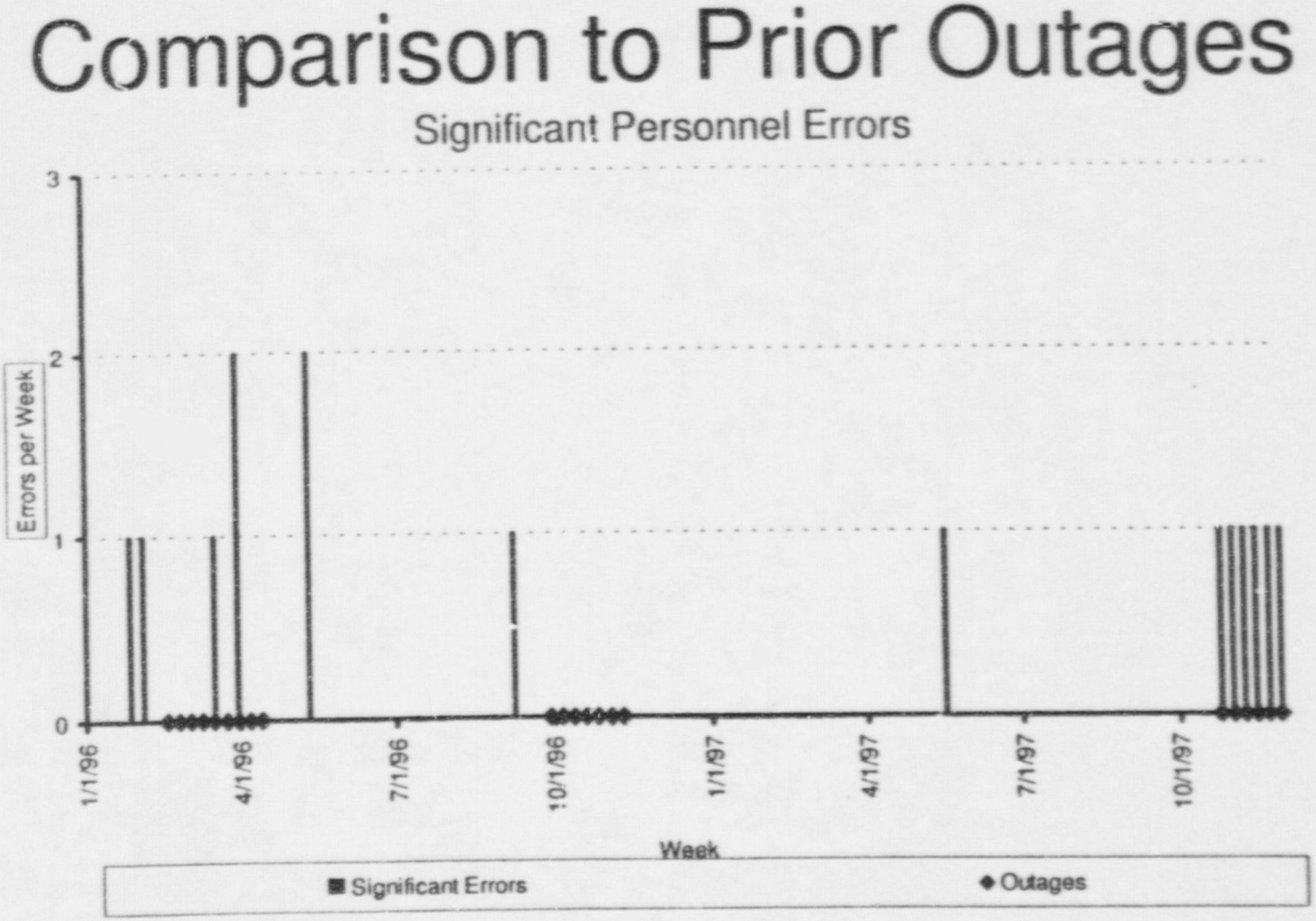
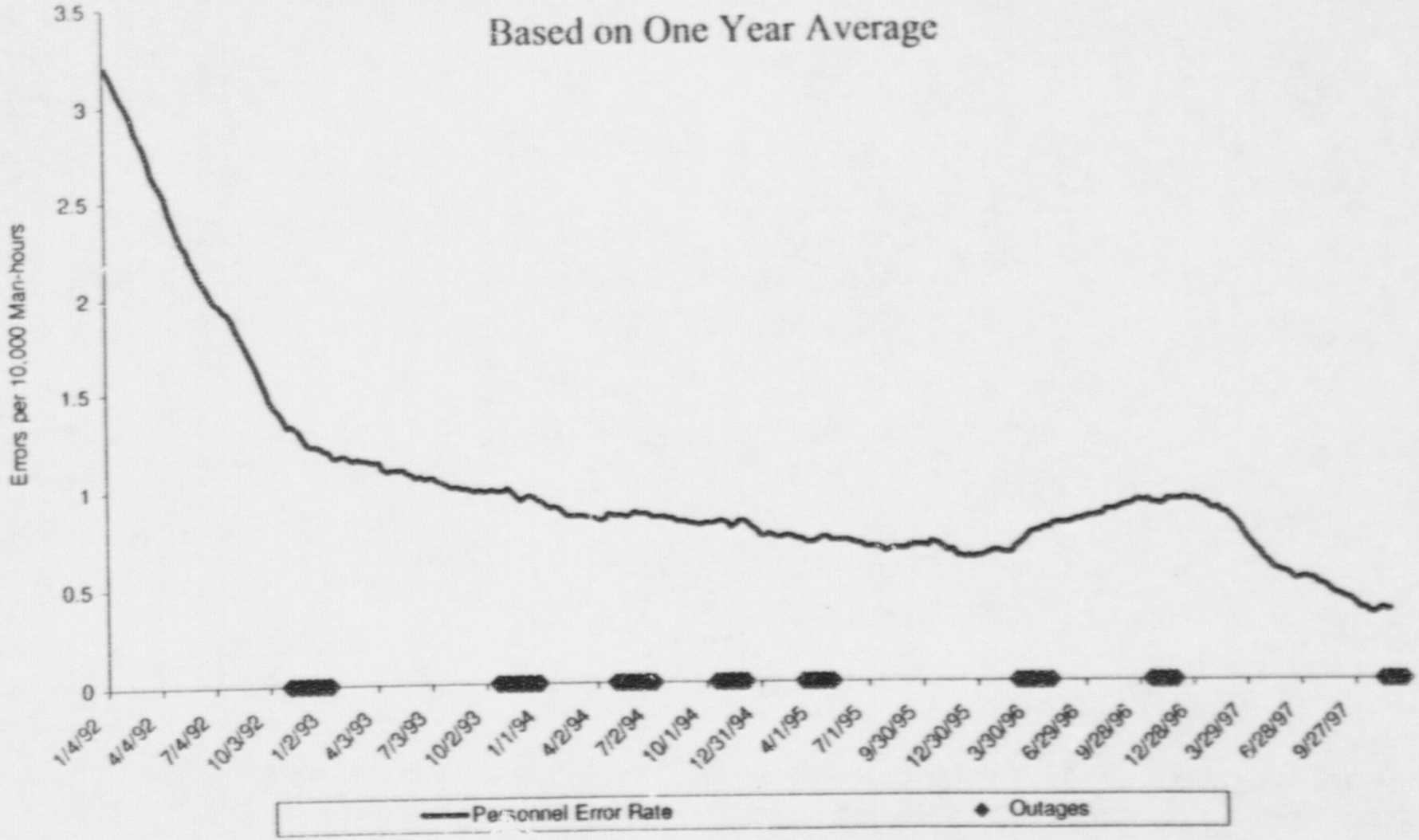
Comanche Peak
Steam Electric Station

Douglas Davis
Nuclear Overview Manager

Comparison to Prior Outages

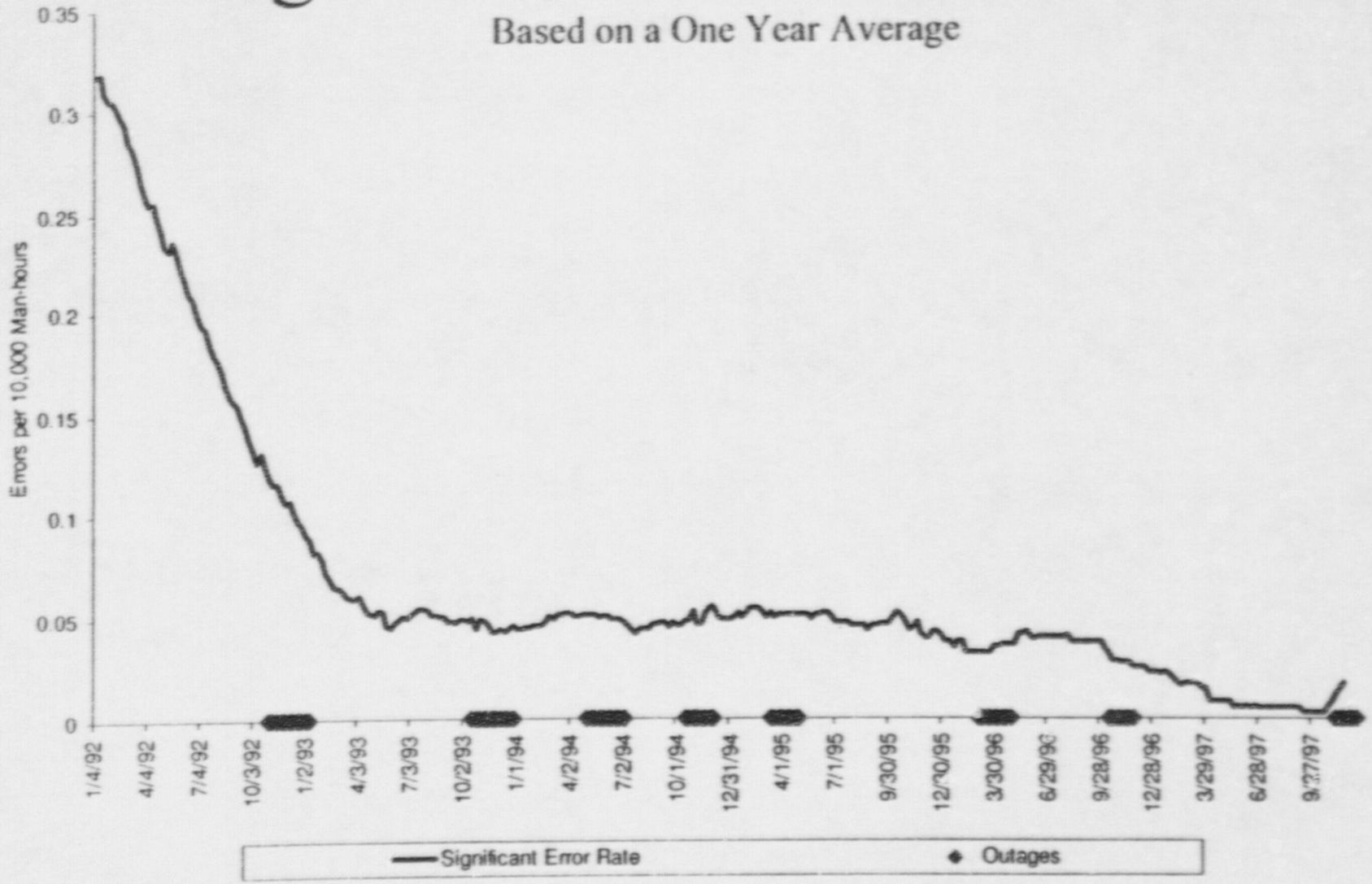


Total Personnel Error Rate



Significant Personnel Errors

Based on a One Year Average



Planned Actions

- Formal Root Cause Analysis of each event
- Collective review of all significant issues
- Self-critique of the major tasks
- Summary Self-critique of the overall outage control

Leadership in Industry Initiatives

- EPRI Leading Human Performance Indicator
- EPRI Database Analysis
- INPO Human Performance Fundamentals Course
- INPO Excellence in Human Performance document