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

DEC 23 1992

Docket Nos. 50-313
50-368
License Nos. DPR-51
NPF-6

Entergy Operations, Inc.
ATTN: J. W. Yelverton, Vice President
Operations, Arkansas Nuclear One
Route 3, Box 137G
Russellville, Arkansas 72801

Gentlemen:

This refers to the meeting, open to public observation, conducted at Entergy Operations, Inc.'s request in the Region IV office on December 17, 1992. This meeting related to the radiation protection program at Arkansas Nuclear One and was attended by those on the enclosed Attendance List.

The subjects discussed at this meeting are described in the enclosed Meeting Summary.

It is our opinion that this meeting was beneficial and has provided a better understanding of the actions taken or planned to improve performance in the area of radiation protection.

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 will be placed in the NRC's Public Document Room.

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

Sincerely,

for A. Bill Beach, Director
Division of Reactor Projects

Enclosure:
Meeting Summary w/attachments

IE04

cc w/enclosure:
Entergy Operations, Inc.
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Entergy Operations, Inc.
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Entergy Operations, Inc.
ATTN: James J. Fisicaro
Director, Licensing
Route 3, Box 137G
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Honorable Joe W. Phillips
County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

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bcc to DMB (IE06)

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FIPS File
DRS
DRS
L. J. Callan, DRSS
B. Murray, FIPS

Resident Inspector
Section Chief (DRP/A)
MIS System
RIV File
Section Chief (DRP\TSS)
Project Engineer (DRP/A)
J. P. Jaudon, DRSS
L. T. Ricketson, FIPS

290060

RIV:FIPS ~~DDS~~ for	C:FIPS ~~DRS~~ for	D:DRSS	D:DRP	
LTRicketson:nh	BMurray	LJCallan for	ABBeach	
12/21/92	12/21/92	12/22/92	12/22/92	

bcc to DMB (IE06)

bcc distrib. by RIV:

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RIV:FIPS ~~DRS~~ for	C:FIPS ~~DRS~~ for	D:DRSS	D:DRP	
LTRicketson:nh	BMurray	LJCallan for	ABBeach	
12/21/92	12/21/92	12/22/92	12/22/92	

MEETING SUMMARY

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One

License No.: DPR-51; NPF-6

Docket No.: 50-313; 50-368

Subject: Radiation Protection

The licensee summarized for NRC management the initiatives taken since the meeting on May 31, 1992, to improve performance of the radiation protection program and results obtained in the areas of personnel radiation exposure, personnel contamination, and control of radioactive materials. Other topics discussed were: management's assessments and conclusion regarding the program and future plans to further enhance the radiation protection program.

Attachments:
1. Attendance List
2. Licensee Presentation (NRC distribution only)

ATTACHMENT 1

ATTENDANCE LIST

Attendance at the technical meeting between Entergy Operations, Inc., and NRC on December 17, 1992, in the Region IV office:

LICENSEE

S. R. Cotton, Manager, Radiation Protection/Radioactive Waste
R. J. King, Supervisor, Licensing
J. D. Vandergrift, Plant Manager, Unit 1

NRC

T. P. Gwynn, Deputy Director, Division of Reactor Projects
J. P. Jaudon, Deputy Director, Division of Radiation Safety and Safeguards
W. D. Johnson, Chief, Section A, Division of Reactor Projects
K. M. Kennedy, Project Engineer, Division of Reactor Projects
B. Murray, Chief, Facilities Inspection Program, Division of Radiation Safety and Safeguards
L. T. Ricketson, Senior Radiation Specialist, Facilities Inspection Program Section, Division of Radiation Safety and Safeguards
L. J. Smith, Senior Resident Inspector, Arkansas Nuclear One*

*By telephone

ATTACHMENT 2

ANO RADIOLOGICAL PROTECTION MEETING

AGENDA

I.	INTRODUCTION	JIM FISICARO JIM VANDERGRIFT
II.	RADIOLOGICAL PROTECTION INITIATIVES	SHERRIE COTTON

- Organization
- Projects and programs
- Facility upgrades
- Equipment upgrades
- Entergy standardization and consolidation

III.	PERFORMANCE OVERVIEW	SHERRIE COTTON

- Personnel exposure history
- Personnel contamination
- Control of radioactive material

IV.	MANAGEMENT ASSESSMENT	JIM VANDERGRIFT

- Scope
- Management conclusions
- Areas of emphasis
- Radiation worker improvement plan

V.	FUTURE PLANS	SHERRIE COTTON
VI.	CONCLUSION	JIM VANDERGRIFT

I. INTRODUCTION

Jim Fisicaro
Jim Vandergrift

II. RP INITIATIVES

Sherrie Cotton

RP INITIATIVES

ORGANIZATION

PROJECTS AND PROGRAMS

FACILITY UPGRADES

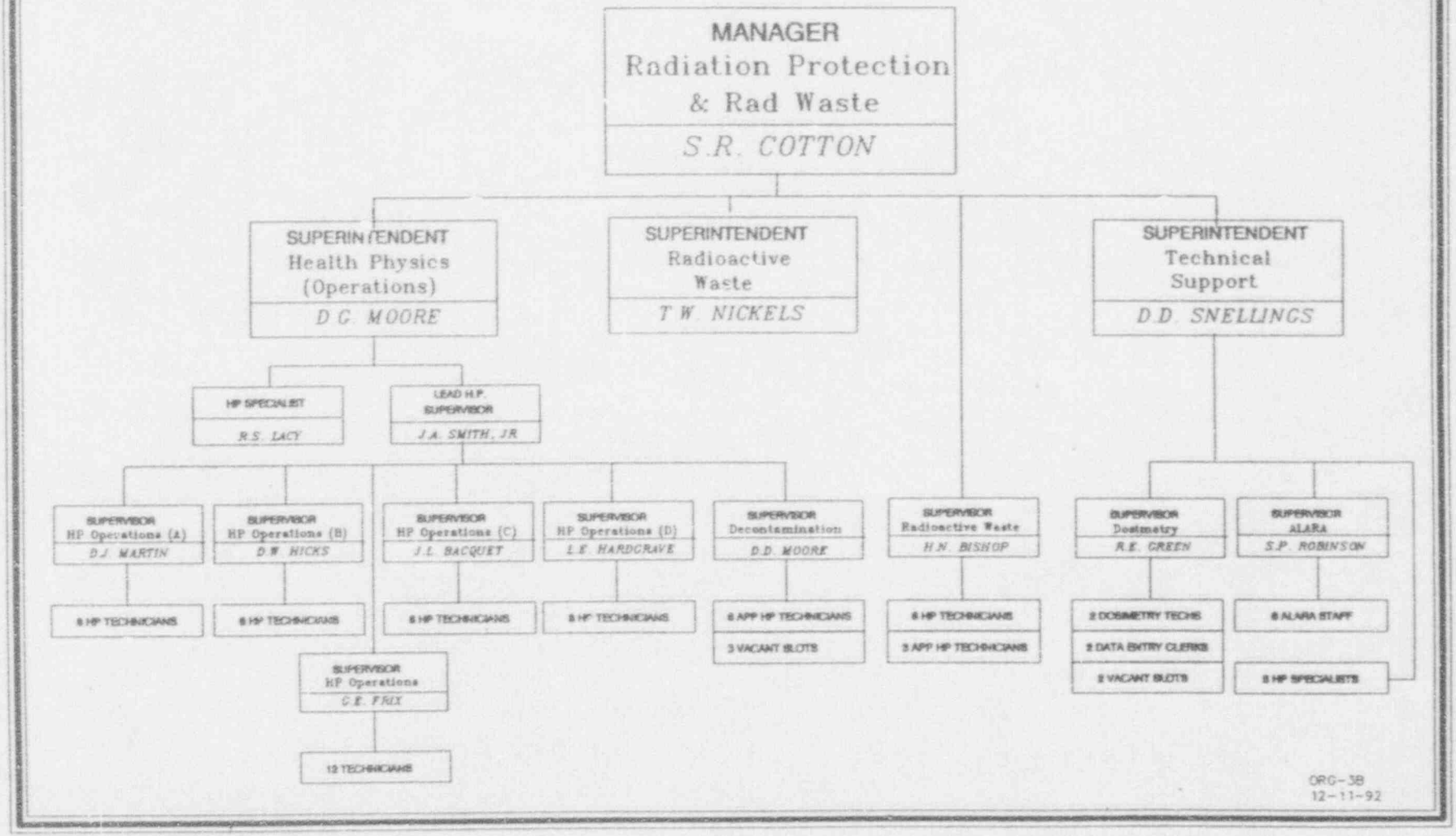
EQUIPMENT UPGRADES

ENTERGY STANDARDIZATION AND CONSOLIDATION

ORGANIZATION

- Restructured
  - 4 new HP supervisors
  - 1 new HP Operations superintendent
  - 1 new HP specialist to supplement training
  - Decon staff reports to HP operations
  - Removed poor performers
- Expectations
- Accountability
- Decreased contractor dependence

RADIATION PROTECTION & RAD WASTE ORGANIZATION (1992)



PROJECTS AND PROGRAMS

- ALARA
- Auxiliary Building Free Release
- Procedure Upgrades
- Training

ALARA

- Proactive management involvement
- Increased worker awareness
- Design engineering Source Reduction Study
- "Hot Spot " flushing
- Shutdown chemistry controls
- Temporary lead shielding installation
- Chemical decontamination
- Reactor & steam generator manway shields

AUXILIARY BUILDING FREE RELEASE

- Contaminated areas reduced to < 3% of the total square foot area

  - Contaminated areas systematically reduced during 1990, 1991, and 1992

  - Repaired contaminated system leaks

PROCEDURE UPGRADES

- Developed procedure writer's guide
- Efforts to identify RP commitments and references in procedures
- Consolidated procedures
- User-friendly approach
- Dedicated effort to incorporate changes to 10 CFR 20 (effort coordinated with other Entergy sites)

TRAINING

- 10 CFR 20 revisions
- National Registry of Radiation Protection Technologists (NRRPT) certification test
- Upgraded HP technician training
- HP specialist training
- Radiological awareness training for Operations Department
- Radiation worker practices training
- Mock-up (e.g., scaffold erection and disassembly)

FACILITY UPGRADES

- Constructed CA-3
- CA-2 and Count Room redesigned to optimize use of space
- Upgraded technician work areas
- Planned improvements
  - CA-1
  - Central Support Building

EQUIPMENT UPGRADES

- Teledose system
- Video/Communications system
- Alarming dosimetry
- HEPA system for outages
- Quick-erecting, stack-type scaffolding
- Standup whole body counter
- High efficiency alpha counter
- New REM system

ENTERGY STANDARDIZATION AND CONSOLIDATION

- Implemented common administrative procedures
- Consolidated contracts utilization
- Standardized system-wide radiological posting and exposure guidelines
- Resource sharing
  - personnel
  - instrumentation
- Best practices

III. PERFORMANCE OVERVIEW

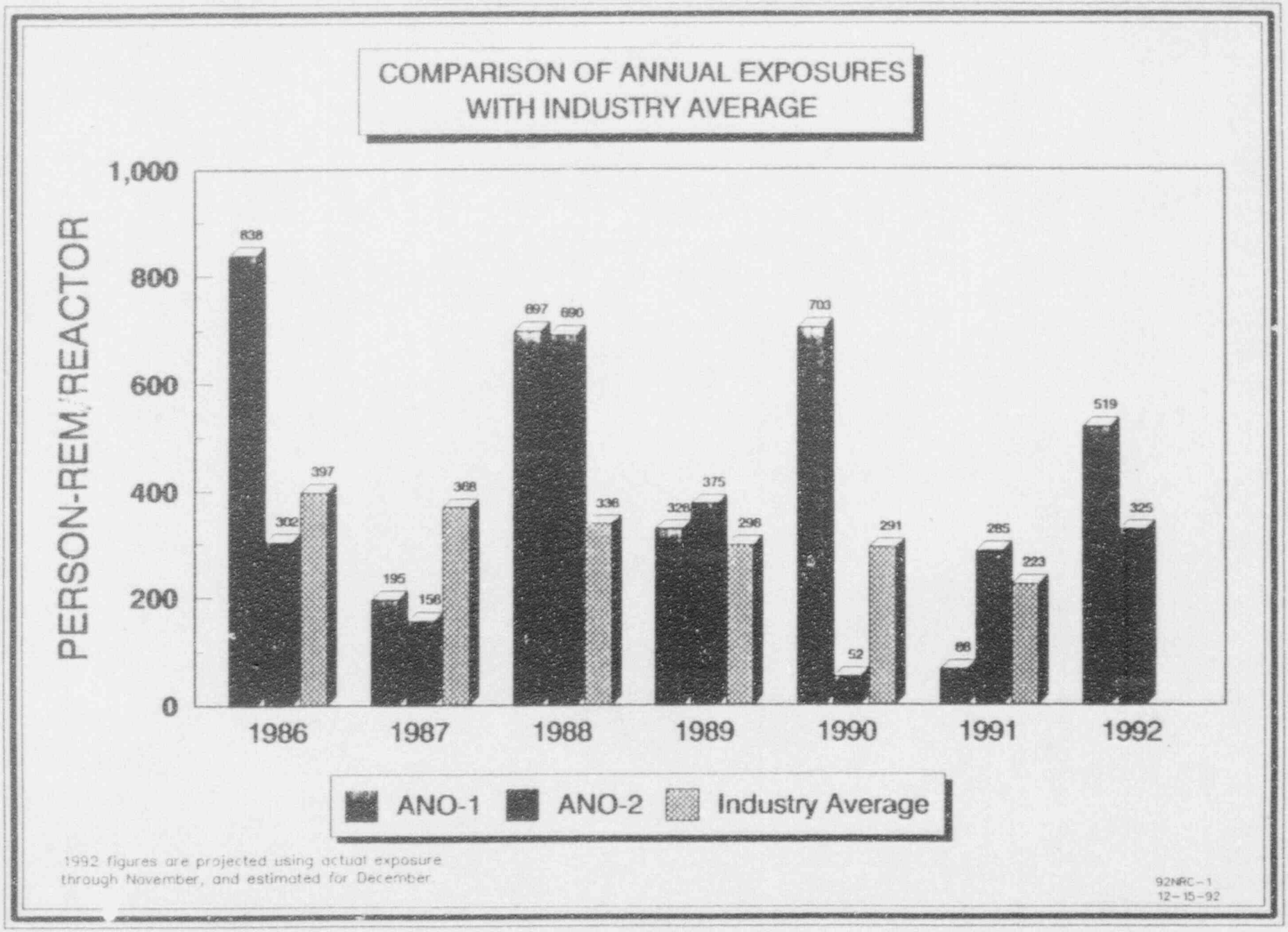
Sherrie Cotton

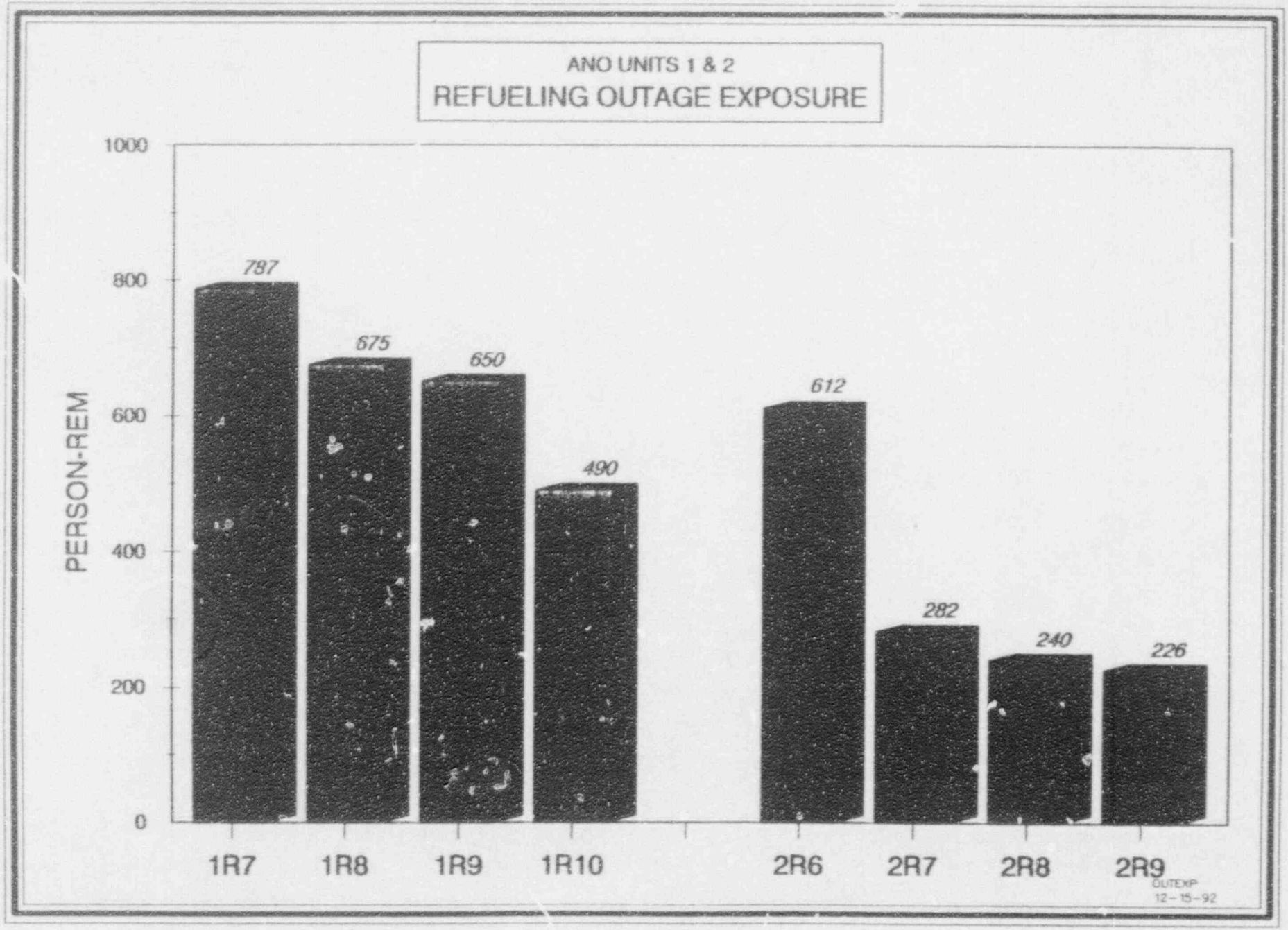
PERFORMANCE OVERVIEW

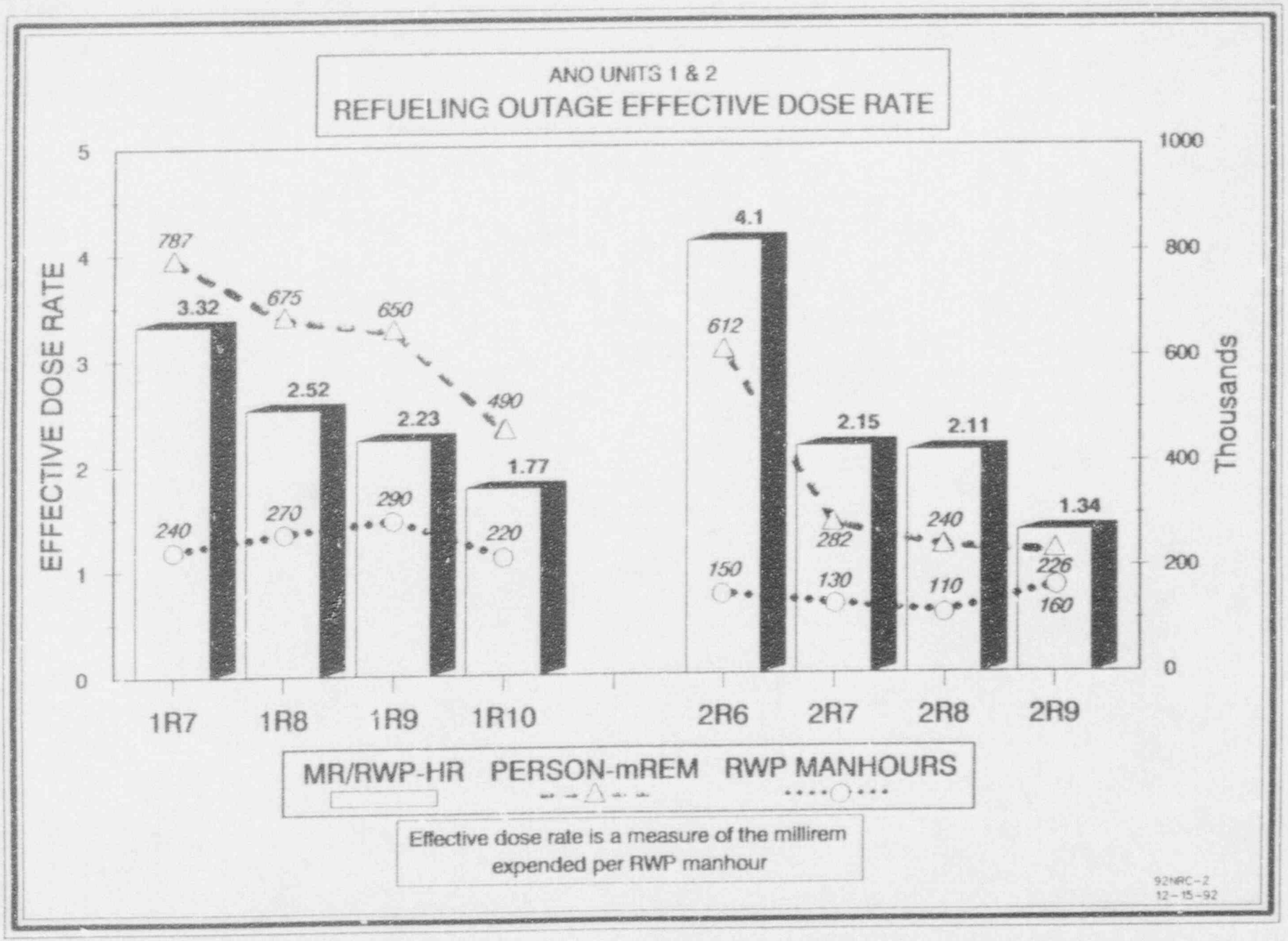
- Personnel Exposure
- Personnel Contamination
- Control of Radoactive Material

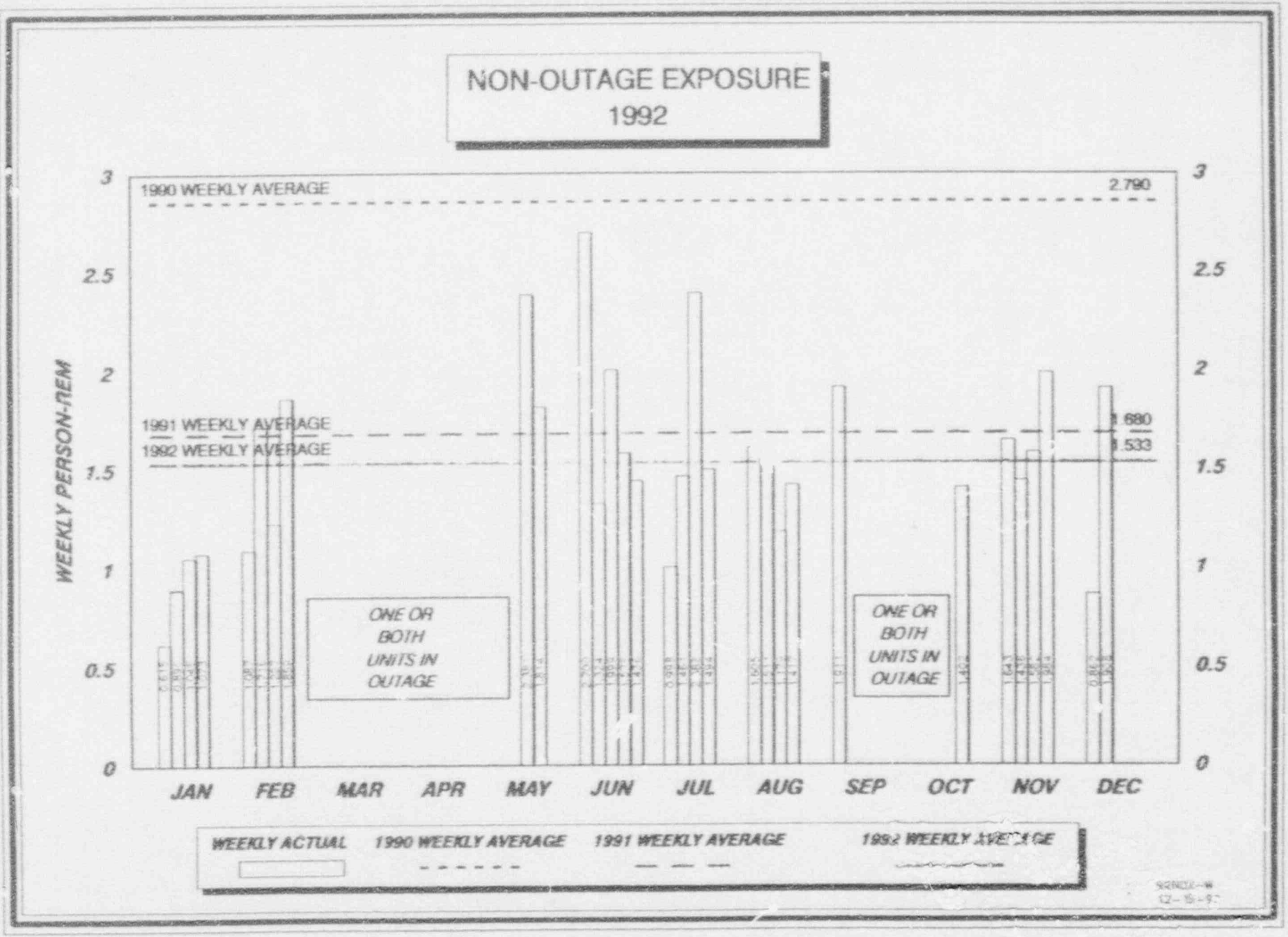
PERSONNEL EXPOSURE

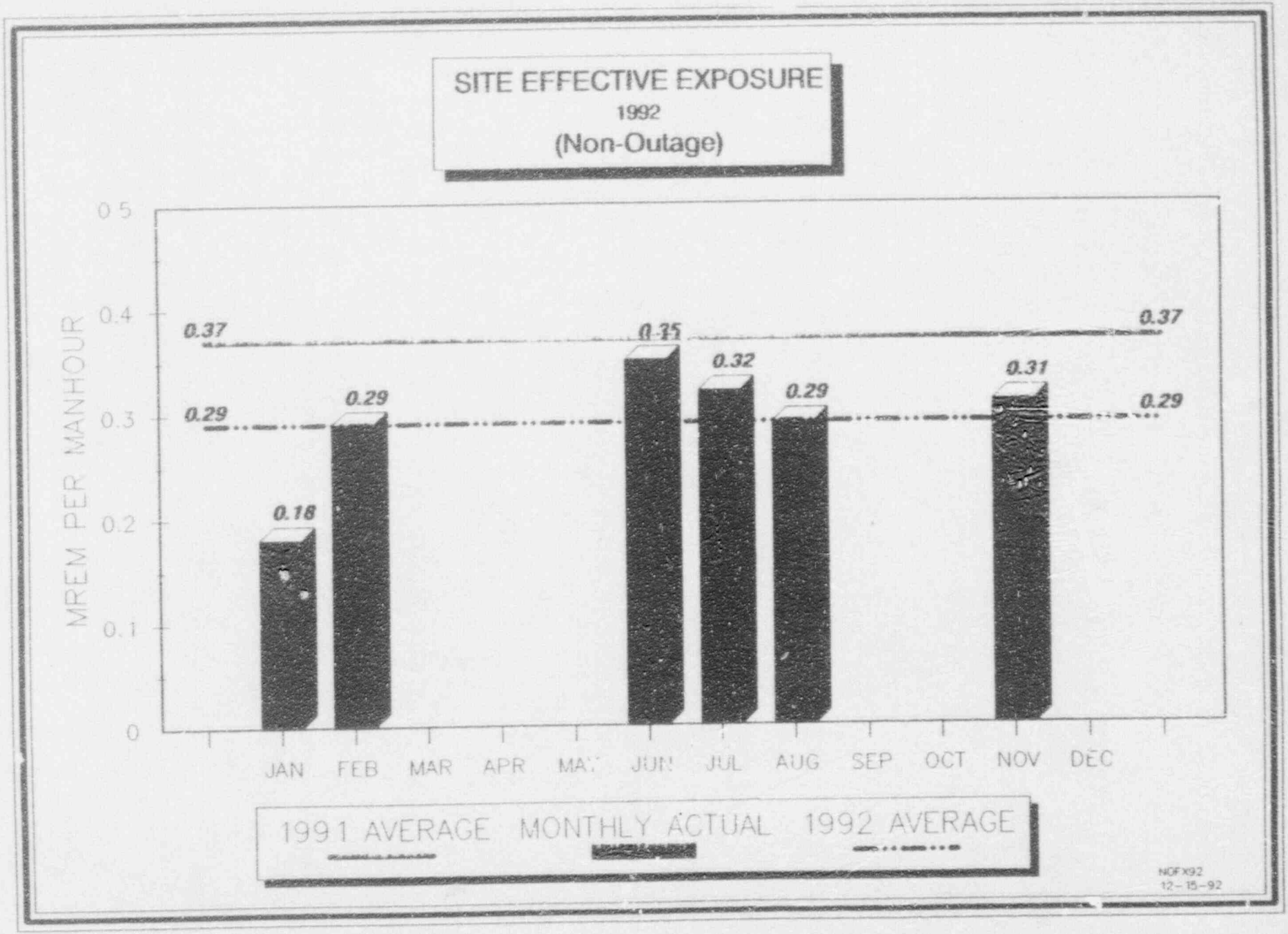
- Compared to industry average
- Refuel outage effective exposure
- Non-outage Exposure
- Exposure Reduction


COMPARISON OF ANNUAL EXPOSURES
WITH INDUSTRY AVERAGE
PERSON-REM/REACTOR
1,000
800
600
400
200
0
838
302
397
195
158
368
697
690
336
328
375
296
703
52
291
66
285
223
519
325
1986
1987
1988
1989
1990
1991
1992
ANO-1
ANO-2
Industry Average
1992 figures are projected using actual exposure through November, and estimated for December.
92NRC-1
12-15-92


ANO UNITS 1 & 2
REFUELING OUTAGE EXPOSURE
PERSON-REM
1000
800
600
400
200
0
787
675
650
490
612
282
240
226
1R7
1R8
1R9
1R10
2R6
2R7
2R8
2R9
OUTEXP
12-15-92

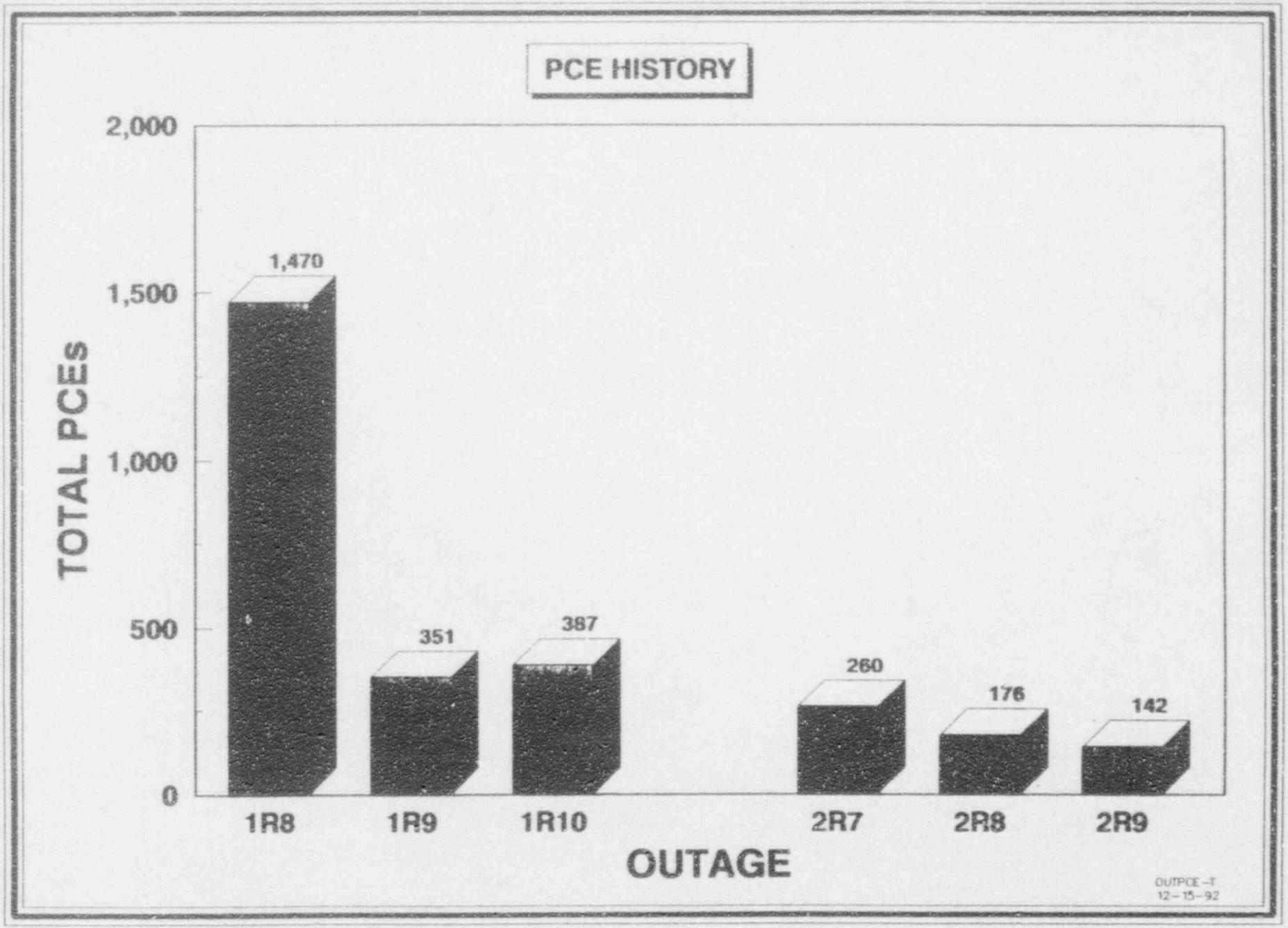

ANO UNITS 1 & 2
REFUELING OUTAGE EFFECTIVE DOSE RATE
EFFECTIVE DOSE RATE
Thousands
0
1
2
3
4
5
0
200
400
600
800
1000
3.32
2.52
2.23
1.77
4.1
2.15
2.11
1.34
787
675
650
490
612
282
240
226
240
270
290
220
150
130
110
160
1R7
1R8
1R9
1R10
2R6
2R7
2R8
2R9
MR/RWP-HR
PERSON-mREM
RWP MANHOURS
Effective dose rate is a measure of the millirem expended per RWP manhour
92NRC-2
12-15-92

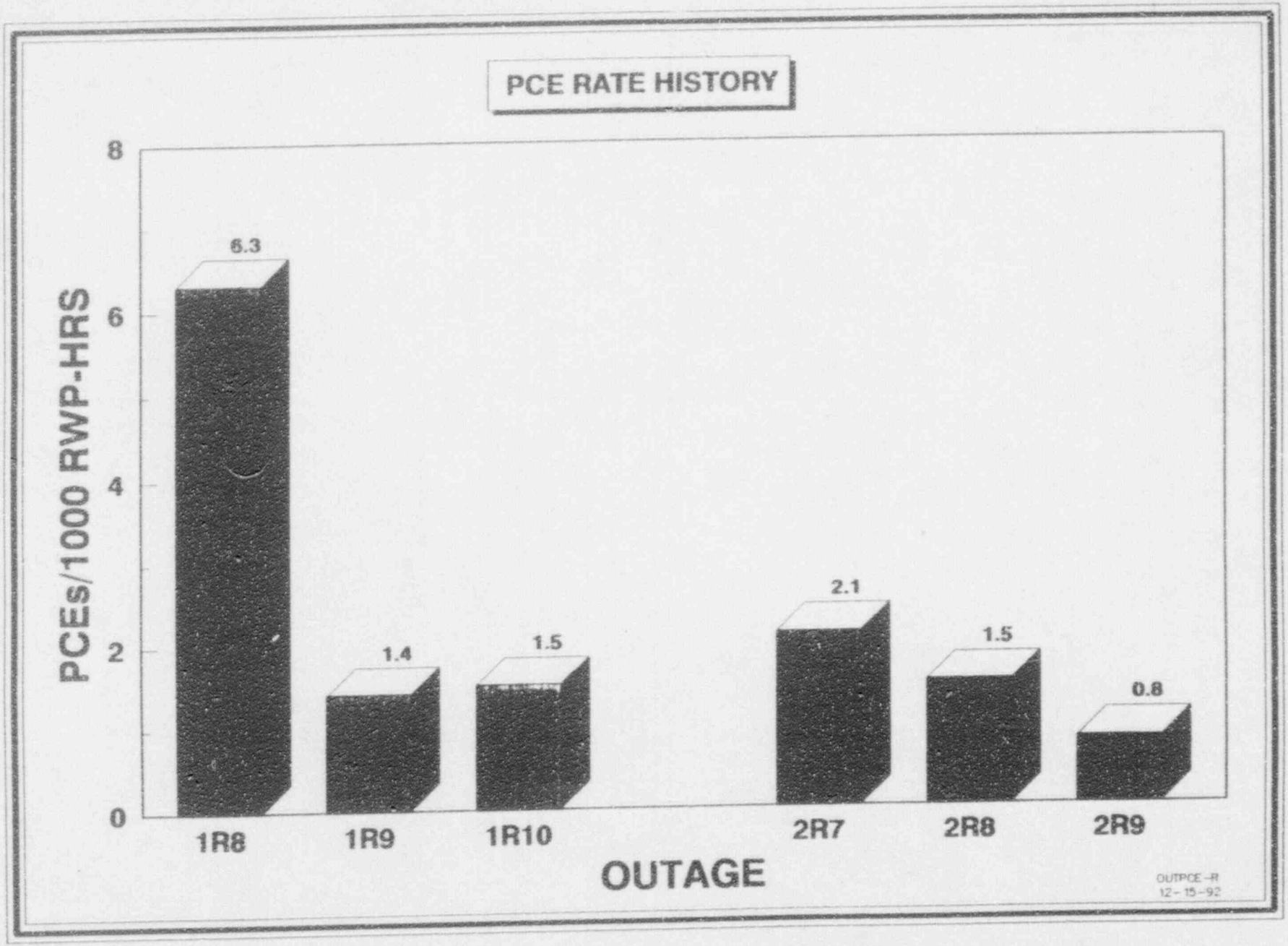

NON-OUTAGE EXPOSURE
1992
WEEKLY PERSON-REM
3
2.5
2
1.5
1
0.5
0
1990 WEEKLY AVERAGE
2.790
1991 WEEKLY AVERAGE
1.680
1992 WEEKLY AVERAGE
1.533
ONE OR BOTH UNITS IN OUTAGE
ONE OR BOTH UNITS IN OUTAGE
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
WEEKLY ACTUAL
1990 WEEKLY AVERAGE
1991 WEEKLY AVERAGE
1992 WEEKLY AVERAGE


SITE EFFECTIVE EXPOSURE
1992
(Non-Outage)
MREM PER MANHOUR
0.5
0.4
0.3
0.2
0.1
0
0.37
0.29
0.18
0.29
0.35
0.32
0.29
0.31
0.37
0.29
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
1991 AVERAGE
MONTHLY ACTUAL
1992 AVERAGE
NOFX92
12-15-92

PERSONNEL CONTAMINATION

- PCE history
- PCE rate history


PCE HISTORY
2,000
1,500
1,000
500
0
TOTAL PCEs
1,470
351
387
260
176
142
1R8
1R9
1R10
2R7
2R8
2R9
OUTAGE
OUTPCE-T
12-15-92


PCE RATE HISTORY
PCEs/1000 RWP-HRS
8
6
4
2
0
6.3
1.4
1.5
2.1
1.5
0.8
1R8
1R9
1R10
2R7
2R8
2R9
OUTAGE
OUTPCE-R
12-15-92

CONTROL OF RADIOACTIVE MATERIAL

Condition Reports involving radioactive material outside controlled access areas

- Previous SALP Period 12
  12/1/90 - 2/29/92

- Current SALP Period 2
  3/1/92 - Present

CONCLUSIONS

- Increased management involvement and worker accountability support improved performance
  - Personnel exposure continues to trend downward
  - ANO-2 exposure is consistent with industry average
  - ANO-1 continues to require additional attention
  - PCE rate is decreasing but continue to pursue reductions
  - Increased awareness of contaminated systems outside controlled access resulted in improved radiation material control
- Trends indicate improved performance but some specific areas of emphasis needed to continue pursuing upper quartile performance

IV. MANAGEMENT ASSESSMENT

Jim Vandergrift

MANAGEMENT ASSESSMENT SCOPE

- Identify strengths and improvement areas

  - Radiological Protection Program
  - Radiation Worker Practices

- Apply INPO standard objectives for radiation protection

- Perform in-plant observations and interviews

- Review previous performance trends and audit reports

  - Radiation exposure controls
  - Control of solid radwaste
  - Contamination controls

MANAGEMENT ASSESSMENT SCOPE

(Continued)

- Ensure individual accountability to station RP policies and procedures
- Inter-departmental review
- Personnel responsibilities and accountability well defined and understood
- Management support of RP program requirements
- RP problems identified, documented and evaluated
- Management routine observation in the field to monitor adherence to station policies and procedures

MANAGEMENT CONCLUSIONS

- RP program satisfies program objectives with several areas of strength noted

  - Operators are "self monitoring"
  - Solid waste goal improvements
  - Plant radiation status board at RCA access effectively utilized
  - Pre-shielding of filters on Unit Two
  - Radwaste Building and Equipment
  - Use of "Low Dose" and "No Loitering" blinking signs

- Additional emphasis required in radiation worker practices to continue improving trend

AREAS OF EMPHASIS

- Continue to improve line management and radiation worker awareness, ownership, and accountability regarding good RP work practices
  - Training to radiation workers on radiological work practices
  - More management communication of expections
- Enhance trending and analysis
- Improve self-assessments of the Radiation Protection area
- Improve RWP process
- Benchmark best industry radiation worker practices

RADIATION WORKER IMPROVEMENT PLAN

OBJECTIVE: To effect cultural changes to enhance continuing improvement in radiation worker practices

- Led by plant manager(s)
- Steering team of department managers
- Action implementation primarily at superintendent level and below
- Use of an integrated action plan addressing assessment results
    - Action plan finalized
    - Improve radiation worker practice guidelines
    - Increase training and awareness
    - More management interface with radiation workers

V. FUTURE PLANS

Sherrie Cotton

FUTURE PLANS

- Communicate management expectations to all levels

- Continue downward trends in exposure and personnel contaminations

  - Achieve upper quartile exposure performance
  - Implement ANO-1 containment decon plan

- Training improvements

  - Radiation worker practices
  - HP technicians

- Continued emphasis on identification of contaminated systems outside controlled access

FUTURE PLANS

(Continued)

- Complete 10CFR20 implementation
- Improve the radiological incident reporting system
- Review RWP system to identify improvements
- Implement organizational and technological changes to improve productivity and accountability of RP personnel

VI. CONCLUSION

Jim Vandergrift