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SUBJECT: Forwards "Steam Generator Repair Proj Radiation Protection
 Activities Interim Rept 4 for 881121-890131."

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Indiana Michigan
Power Company
P.O. Box 16631
Columbus, OH 43216



AEP:NRC:0980T

Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License No. DPR-74
STEAM GENERATOR REPAIR PROJECT
RADIATION PROTECTION INTERIM REPORT NO. 4

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

ATTN: T. E. Murley

June 16, 1989

Dear Dr. Murley:

As required by section 7.3 of the Safety Evaluation by the Office of Nuclear Reactor Regulation related to Amendment No. 100 to Facility License No. DPR-74, enclosed is one copy of the Steam Generator Repair Project (SGRP) Radiation Protection Interim Report No. 4. This final report summarizes the activities of the Project Radiation Protection/ALARA Group (PRPAG) for the period November 21, 1988, to January 31, 1989. Attachment 1 to this letter provides details of activities for each group: ALARA, PRISM (the SGRP computerized dose tracking system), Radiation Protection Operations, Training, Radwaste, Support Services and Dosimetry.

The Project ALARA group tracked exposure on a per shift basis and reported the weekly totals in the Project ALARA Committee and the Project Management weekly meetings. Attachment 2 to this letter provides a comparison, on a weekly basis, of the actual man-rem expended versus the revised estimated man-rem expenditure during the final phases of the Project. The reported weekly estimate is derived by calculating the job percent complete based on actual RWP man-hours compared to 323,928 revised total Project RWP man-hours.

The estimated man-rem expenditure through January 31, 1989, was 1032 man-rem. Actual man-rem expenditure was 832 man-rem measured by SRD. Official dose as measured by TLD was 561.


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This will be the final Radiation Protection Interim Report submitted since the Project's work scope of activities was brought to a conclusion on January 31, 1989. Unit 2 was returned to service on March 17, 1989.

This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,



M. P. Alexich
Vice President

edg

Attachments

cc: D. H. Williams, Jr.
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. W. Bruchmann
G. Charnoff
NRC Resident Inspector - Bridgman
A. B. Davis, NRC Region III

ATTACHMENT 1 TO AEP:NRG:0980T

STEAM GENERATOR REPAIR PROJECT
RADIATION PROTECTION ACTIVITIES

NOVEMBER 21, 1988 TO JANUARY 31, 1989

COOK NUCLEAR PLANT, UNIT 2
STEAM GENERATOR REPAIR PROJECT (SGRP)
RADIATION PROTECTION INTERIM REPORT NO. 4 (FINAL REPORT)

1.0 Introduction

Indiana Michigan Power Company repaired the four steam generators at the Cook Nuclear Plant Unit 2 which suffered secondary side tube degradation due to intergranular attack/stress corrosion cracking at the tube support plate and tube sheet regions. Since this type of large-scale maintenance had the potential for individual and collective radiation exposures beyond that of routine maintenance, as part of the Amendment 100 request, we provided the NRC a description of the project's planned radiation protection program. The radiation protection program was described in the Steam Generator Repair Report submitted November 7, 1986. The status of the Radiation Protection Program from November 21, 1988 to January 31, 1989 is provided below.

2.0 Highlights for the Period

Project work for November 21 - November 30 included magnetic particle testing of girth welds, secondary side hydrostatic testing for steam generators (S/G) #2 and #3, removal of temporary shielding, installation of insulation, primary side hydrostatic testing and cool down, and turnover of upper containment to the Plant on November 30, 1988.

Project work for the month of December included containment restoration, tool and equipment decontamination, survey for free release of material, removal of the respirator cleaning trailer, and turnover of lower containment to the Plant.

Project work for the month of January included refueling, insulation final adjustment and modifications, anchor bolt installation in the liner plate, painting of the S/G doghouses and final paperwork closeout.

3.0 Dosimetry

The PRPAG dosimetry staff completed its support of the project and officially turned over all radiation exposure history files to the Plant Radiation Protection Manager.

The SGRP Dosimetry Records section was officially implemented on April 1, 1988, and terminated on January 31, 1989. A total of 1,277 unique individuals were badged on the SGRP.

A total of 561 man-rem as measured by TLD was expended for the SGRP.

A total of 370 administrative dose limit extensions were processed. A total of 236 Radiation Exposure Investigations were conducted, to assign worker dose when a discrepancy existed between SRD and TLD dose.

Approximately 6,500 whole body TLDs, 500 multiple TLDs, and 500 extremity TLDs were issued to personnel during all phases of the SGRP.

Dosimetry performed 3,047 whole body counts, 925 respiratory fit tests, and issued 1,366 termination letters. These numbers reflect the fact that workers left and later returned to the SGRP.

During the SGRP there were no positive whole body counts (> 1% of maximum permissible body burden).

4.0 Training

The PRPAG Training Staff began to ramp down activities as the Project began to de-staff. During November only continuing and requalification training classes were given. On December 14, 1988, Project Training taught their last class. Final total workers trained were:

- Respiratory Protection	1009
- Nuclear General Employee Training	1256
- Project Specific Training	442
- Supervisor ALARA	22
- Radiation Protection Technician	159

A total of 424 classes were conducted throughout the Project, all taught by two full time instructors and one back up instructor.

5.0 PRISM System

The SGRP computerized dose tracking system, PRISM, remained operational through the period. It was removed from service on January 31, 1989. While active, the PRISM system had maintained information on 1277 project workers including demographics, dose history, training, qualifications and access information. In addition, PRISM maintained the 263 RWPs written to support the SGRP.

6.0 Radiation Protection Operations

During the period, the RP operations group allowed technician attrition to reduce ranks as work areas decreased. The major activity this period involved radiation surveying, segregating, and free releasing or dispositioning material, tools and equipment used during the SGRP.

There were 14 Personnel Contaminations which involved contamination of worker's skin and/or clothing (Project total = 130) and four Radiological Occurrence Reports

involving deviations of radiation protection procedures (Project total = 57) during 43,212 RWP hours of work (Project total = 378,988).

7.0 Support Services

Support Services personnel assisted the repair contractor in the expeditious removal of tools and equipment from the work area to the decontamination area and then to the free release survey area. The respirator cleaning trailer was disconnected and shipped back to the vendor in December. The tool and equipment decon trailer was shipped back to the vendor in February.

8.0 Radwaste

Radwaste group personnel made six shipments in this period through January 31, 1989. Two more shipments containing Project Waste were made in the following weeks. The Radwaste shipment totals accumulated over the course of the Project are as follows:

Total Number of Shipments:	26
Total Volume Shipped:	39,602.5 Net Cubic Feet
SGRP:	32,498.3 Net Cubic Feet
Balance of Plant:	7,104.2 Net Cubic Feet

Total Weight Shipped:	727,870 Net Pounds
SGRP:	629,860 Net Pounds
Balance of Plant:	98,010 Net Pounds

Volume Buried (as of 3-31-89):	10,074 Cubic Feet
SGRP:	10,003.3 Cubic Feet
Balance of Plant:	70.7 Cubic Feet

9.0 ALARA

The PRPAG ALARA group completed post job reviews and work package closeouts for all 128 work packages. In addition, all ALARA files were reviewed and closed, including: 42 shielding packages, and 13 contamination containment packages.

The ALARA committee held 2 meetings during the period and was then disbanded at the end of the Project.

In the final stages of paperwork closeout, ALARA took the lead in getting PRPAG records transferred to the Plant vault.

10.0 Disposal of S/G Doghouse Wall Concrete

On February 29, 1988, an application was submitted to the NRC for onsite disposal of contaminated S/G doghouse wall concrete in accordance with 10 CFR 20.302(a). This application contained a detailed description of the material, analysis of the effect on the environment from the disposal of the

material and of commitments to be followed to minimize the risks of radiation exposure.

On August 30, 1988 approval was received from the Commission for onsite disposal of the S/G doghouse wall concrete.

All S/G concrete wall concrete was disposed of in accordance with the approved application.

ATTACHMENT 2 TO AEP:NRC:0980T

COMPARISON OF ACTUAL MAN-REM EXPENDED VERSUS
REVISED ESTIMATED MAN-REM EXPENDITURE

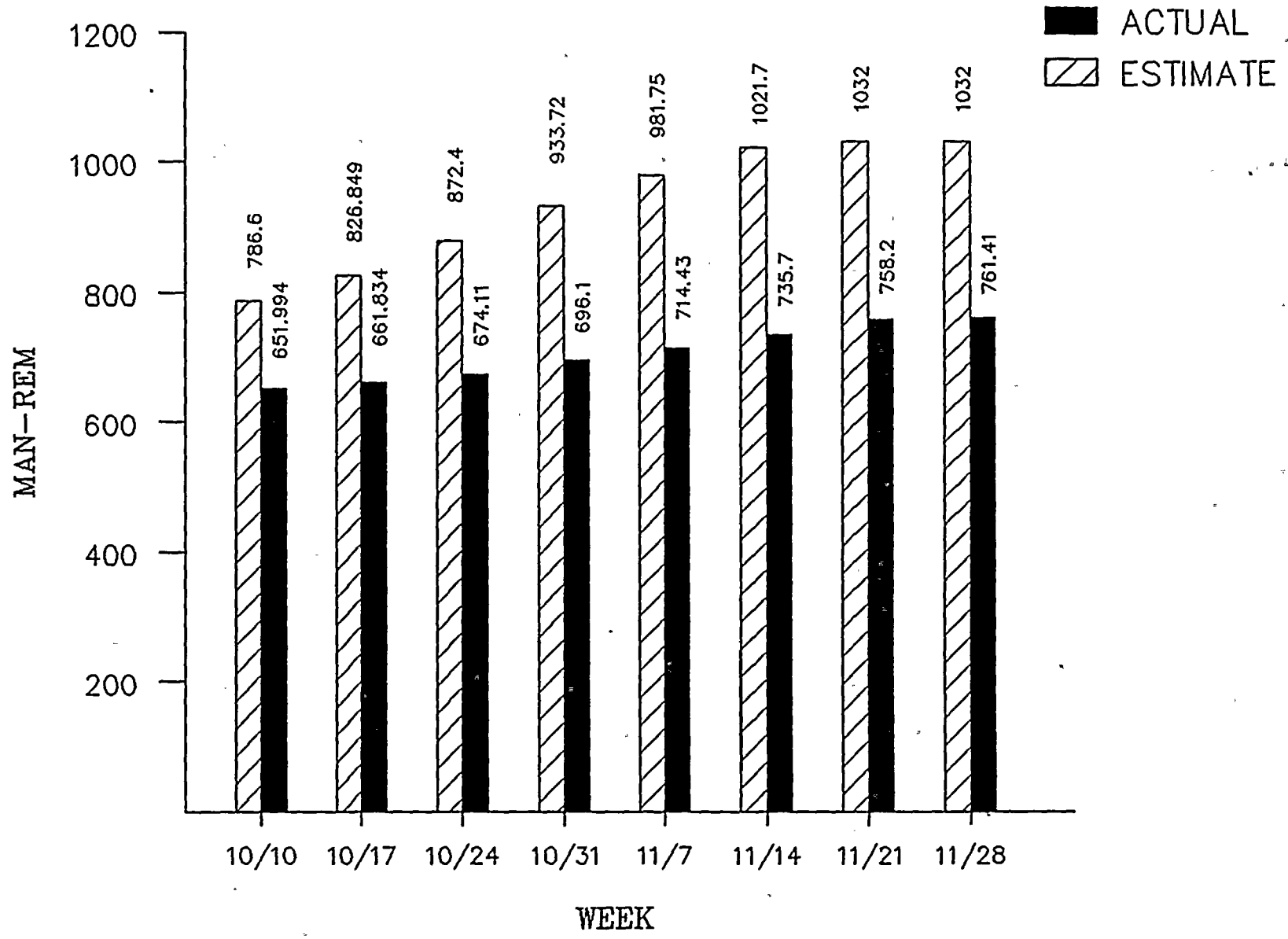


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SGRP CLOSE OUT PHASE *

PERSONNEL EXPOSURES (SRD)

ESTIMATE VS. ACTUAL

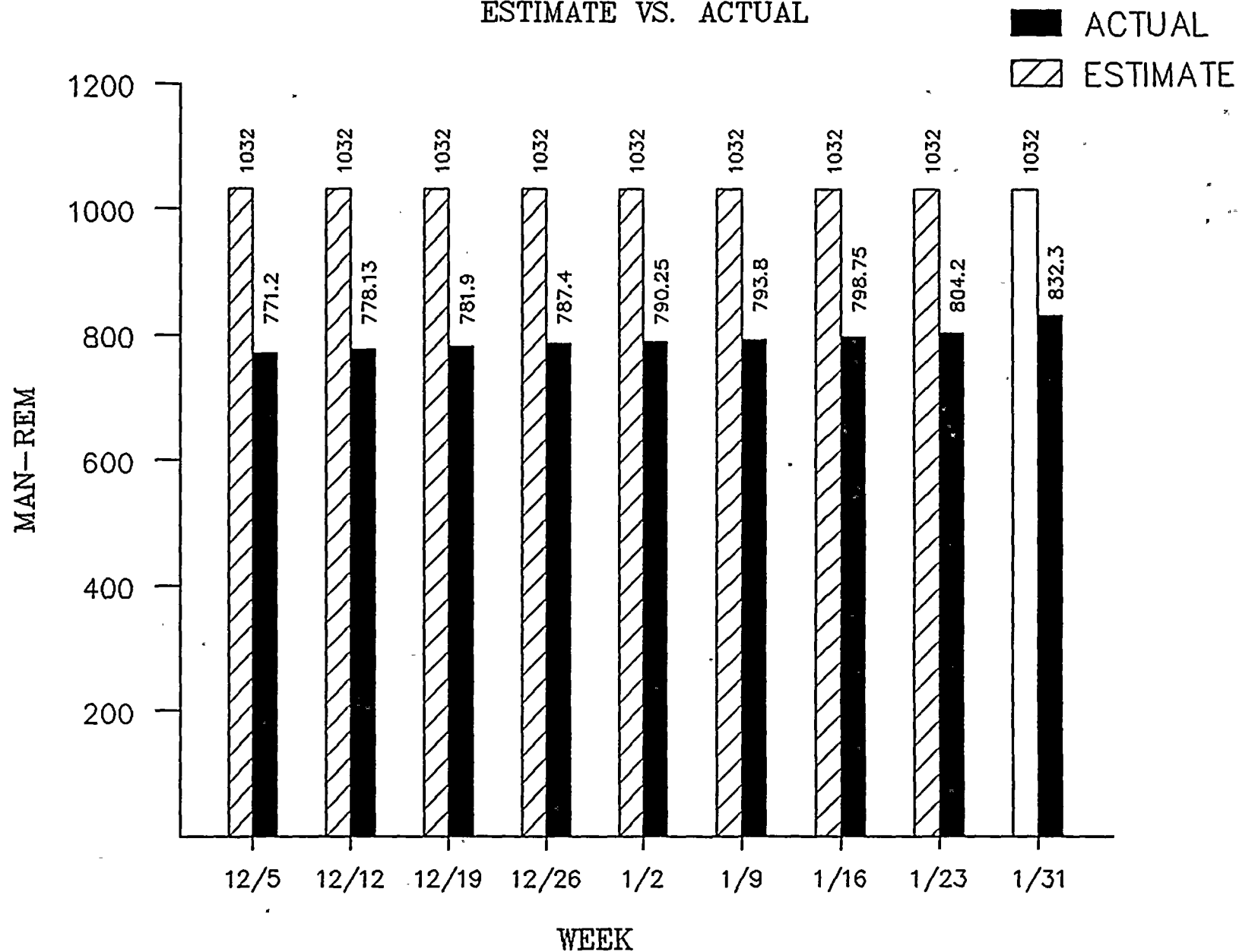


Estimate derived from 1032 total man-rem and hours complete
*Dose for this phase includes integrated dose from previous phases

SGRP CLOSE OUT PHASE *

PERSONNEL EXPOSURES (SRD)

ESTIMATE VS. ACTUAL



Estimate derived from 1032 total man-rem and hours complete
*Dose for this phase includes integrated dose from previous phases