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AUTH.NAME AUTHOR AFFILIATION
ALEXICH,M.P. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
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Indiana Michigan
Power Company
P.O. Box 16631
Columbus, OH 43216

INDIANA MICHIGAN POWER

AEP:NRC:0980P

Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License No. DPR-74
STEAM GENERATOR REPAIR PROJECT
RADIATION PROTECTION 90-DAY INTERIM REPORT NO. 2

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

ATTN: T. E. Murley

September 16, 1988

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 Radiation Protection 90-Day Interim Report No. 2. This report summarizes the activities of the Project Radiation Protection/ALARA Group (PRPAG) for the period May 17, 1988, to August 18, 1988. Attachment 1 to this letter provides details of activities for each group; ALARA, PRISM, Radiation Protection Operations, Training, Radwaste, Support Services and Dosimetry.

Based on actual operational experience, the collective occupational exposure estimate for the Steam Generator Repair Project has been decreased from the original 1733 down to 1032 man-rem. The revised estimates have incorporated actual numbers where appropriate. Details of the revised estimate are contained in Attachment 2 to this letter.

The Project ALARA group continues to track exposure on a per shift basis and to report the weekly totals in the Project ALARA Committee and the Project Management weekly meetings. Attachment 3 to this letter provides a comparison, on a weekly basis, of the actual man-rem expended versus the estimated man-rem expenditure. The reported weekly estimate is derived by calculating the job percent complete based on actual Radiation Work Permit (RWP) man-hours compared to 323,928 revised total Project RWP man-hours.

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The estimated man-rem expenditure through August 15, 1988, was 432.92 man-rem. Actual man-rem expenditure for this same period was 395.46 man-rem. The difference between the actual and estimated accumulative exposure can still be traced to the fact that most of the preparatory work took place in extremely low dose areas. The Project has completed the removal phase and tasks are now accruing exposure at a rate closer to the estimated average effective dose rate (task exposure/task RWP hours).

The Radiation Protection 90-Day Interim Report No. 3, which will cover the period August 19, 1988, to November 19, 1988, will be provided to you by December 19, 1988.

This document has been prepared following corporate procedures which 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:NRC:0980P

COOK NUCLEAR PLANT, UNIT 2
STEAM GENERATOR REPAIR PROJECT
RADIATION PROTECTION 90-DAY INTERIM REPORT NO. 2

1.0 Introduction

Indiana Michigan Power Company is repairing 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 has the potential for individual and collective radiation exposures beyond that of routine maintenance, the NRC received a description of the project's planned radiation protection program as part of the Steam Generator Repair Report submitted November 7, 1986, and revised on March 30, July 24, October 30, December 4, 1987, and February 18, 1988. The implementation of the Radiation Protection Program as of August 18, 1988, is provided below.

2.0 Highlights for the Period

Project work for the month of May included pre-setup of outside facilities, miscellaneous engineering, containment preparations, and the removal of insulation from all four steam generators.

Project work for the month of June included ongoing insulation removal, installation of lead shielding, containment decon, doghouse liner plate removal, concrete chipping, the cutting of main steam and feedwater piping, and entries into the steam generators.

Project work for the month of July included steam generator doghouse enclosure concrete cutting and removal, plasma cutting of the reactor coolant pipes, removal of the upper assemblies and transporting of the upper assemblies to the turbine building for refurbishment.

Project work for August 1 through August 18, 1988, included removal and transport of lower assemblies to the storage facility, machining/welding of the Reactor Coolant lines, installation and fit up of new lower assemblies.

3.0 Programs and Procedures

The Project Radiation Protection/ALARA Group (PRPAG) completed and issued 94 project-specific procedures and three (3) program documents to control the radiation protection and radwaste aspects of the Repair Project. The procedures cover seven functional areas: radiation protection operations, ALARA, dosimetry, training, support services, PRISM and radwaste. The status of each functional area is identified below.

4.0 Dosimetry

PRPAG dosimetry staff continues to support the project and has badged 1090 personnel to date, granted 216 administrative dose limit extensions, completed 103 Radiation Exposure Investigations, issued 297 multipacks, performed 1513 whole body counts, performed 656 respirator fit tests, and issued 341 termination letters.

During the period there were six positive whole body counts (>1% of maximum permissible body burden), however, none were greater than 5% MPBB.

The TLD laboratory has processed 40,989 TLDs. As part of our interlaboratory comparison program we have successfully passed three mock NVLAP tests conducted by the University of Michigan.

5.0 Training

The PRPAG Training Staff continues to provide General Employee Training (GET), Project-Specific Training, Supervisor ALARA Training, Respiratory Training and Radiation Protection Technician Training. The training of 129 Radiation Protection Personnel has been completed. A total of 1033 personnel have attended PRPAG GET training sessions. Since the last report 15 training modules have been developed or revised. A total of 266 formal training classes have been conducted in support of the Project.

6.0 PRISM System

PRISM is a computerized radiation work permit and dose tracking system. At present, PRISM maintains information on 1029 project workers, including personnel information, dose history, training qualifications and access information. To date, 157 radiation work permits have been written and maintained on the PRISM System. PRISM currently provides an average of 400 reports per week to the various project groups.

7.0 Radiation Protection Operations

The PRPAG Operational Radiation Protection Group staffing levels during the period grew to 85 technicians to support approximately 108,000 entries in controlled areas. There have been 79 personnel contaminations and 22 Radiological Occurrence Reports during 135,886.9 RWP-hours of work.

8.0 Support Services

The Support Services group started decontamination of large tools and equipment used for pipe cutting and machining. Respirator usage has dropped significantly.

9.0 Radwaste

The first shipment of Radioactive Material was made to the off- site contractor for processing on June 21, 1988, using the newly constructed RW handling building. The computerized waste tracking and manifesting system was used for this and subsequent shipments. A total of seven shipments, totaling 8775.5 net cubic feet (Project - 8149.5, Unit 1 - 626) and 235,187 net pounds (Project - 222,602, Unit 1 - 12,585) have been shipped during this period.

10.0 ALARA

The PRPAG ALARA Group completed 110 planning stage work package ALARA reviews, 52 in-progress reviews, over 100 prejob briefings and 2 work package closeouts. Review and approval of Design Change Notifications to already approved work packages is on-going.

Mock-up training was completed for shielding installation, containment construction and channel head entry.

Sixty shielding requests and 11 containment requests were processed for installation. Six containment requests and 17 shielding requests have been removed and/or closed out.

The ALARA Committee held 14 sessions during the period.

Attachment 2 to AEP:NRC:0980P

REPAIR PROJECT MAN-REM REVISION

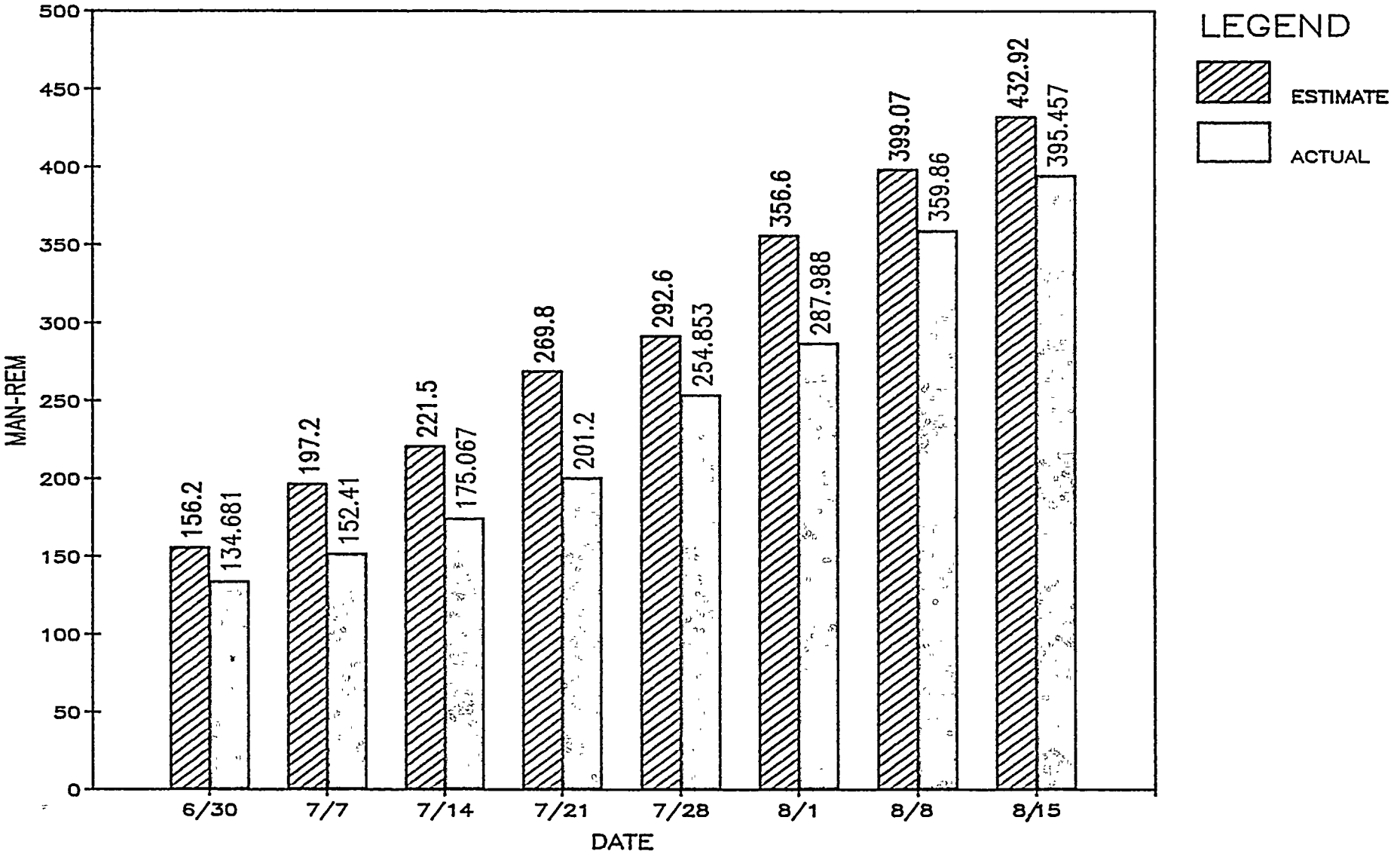
	Task/Activity	Man-Hour Estimate	Man-Rem Estimate
1.	Erect refueling cavity cover and supports and aux. building equipment hatch deck*	2,200	4.5
2.	Install temporary containments*	2,264	22.6
3.	Install and load test aux. building crane*	5,800	.7
4.	Defuel and fuel storage*	8,800	47.2
5.	Install temporary ventilation system*	275	2.5
6.	Install/Remove CCTV and Gaitronics*	48	1.3
7.	Install temporary lighting and power*	1,200	9.8
8.	General decon and housekeeping	31,331	52.4
9.	Temporary shielding installation*	1,197	44.3
10.	Engineering walkdowns	4,200	36.2
11.	Service air installation*	1,650	9.2
12.	Containment Preparation*	5,750	32.2
13.	Project Supervision	10,800	28.3
14.	Install temporary supports and RCS pipe restraints*	206	4.2
15.	Remove S/G concrete doghouse sections*	15,500	27.1
16.	Decon S/G concrete doghouse sections	6,300	0.6
17.	Insulation removal (All)*	5,974	25.5
18.	Interference removal (All)*	2,040	12.2
19.	Cut main steam and feedwater pipe*	500	2.0
20.	Cut and remove upper shell*	2,750	10.1
21.	Cut reactor coolant pipe*	1,250	25.4
22.	Disassemble S/G supports	200	2.5

	Task/Activity	Man-Hour Estimate	Man-Rem Estimate
23.	Install S/G cover plates*	250	5.1
24.	Remove S/G lower assembly*	5,903	33.4
25.	Refurbish S/G upper shell*	7,000	.5
26.	Misc. rigging and handling	28,000	26.7
27.	Radiation Protection	62,663	104.2
28.	Install S/G lower shell	3,250	18.4
29.	Install reactor coolant pipe	10,374	245.3
30.	Install upper shell, perform S/G girth weld	5,890	2.4
31.	Install main steam pipe, install feedwater pipe	4,840	5.4
32.	Perform fiberoptic cleanliness inspection	352	0.7
33.	Install S/G insulation	7,500	37.5
34.	Install pipe interferences	16,220	24.9
35.	Install S/G concrete doghouse sections	17,104	22.5
36.	Remove R/F cavity cover	2,308	6.6
37.	Perform hydrostatic tests	472	5.9
38.	Refuel reactor	3,150	26.7
39.	Remove temporary shielding	624	12.5
40.	Remove temp. power and lighting	176	3.2
41.	Containment Restoration	18,400	29.4
42.	Remove service air/breath air	767	4.8
43.	Misc. material handling and Radwaste activities	18,016	10.8
44.	Remove temp. ventilation	222	3.1
45.	Rigging/handling S/G in storage bldg.	212	1.1
	TOTAL	323,928	1032

* Contains a significant proportion of actual man-rem.

SGRP REMOVAL PHASE

PERSONNEL EXPOSURES
ESTIMATE VS. ACTUAL

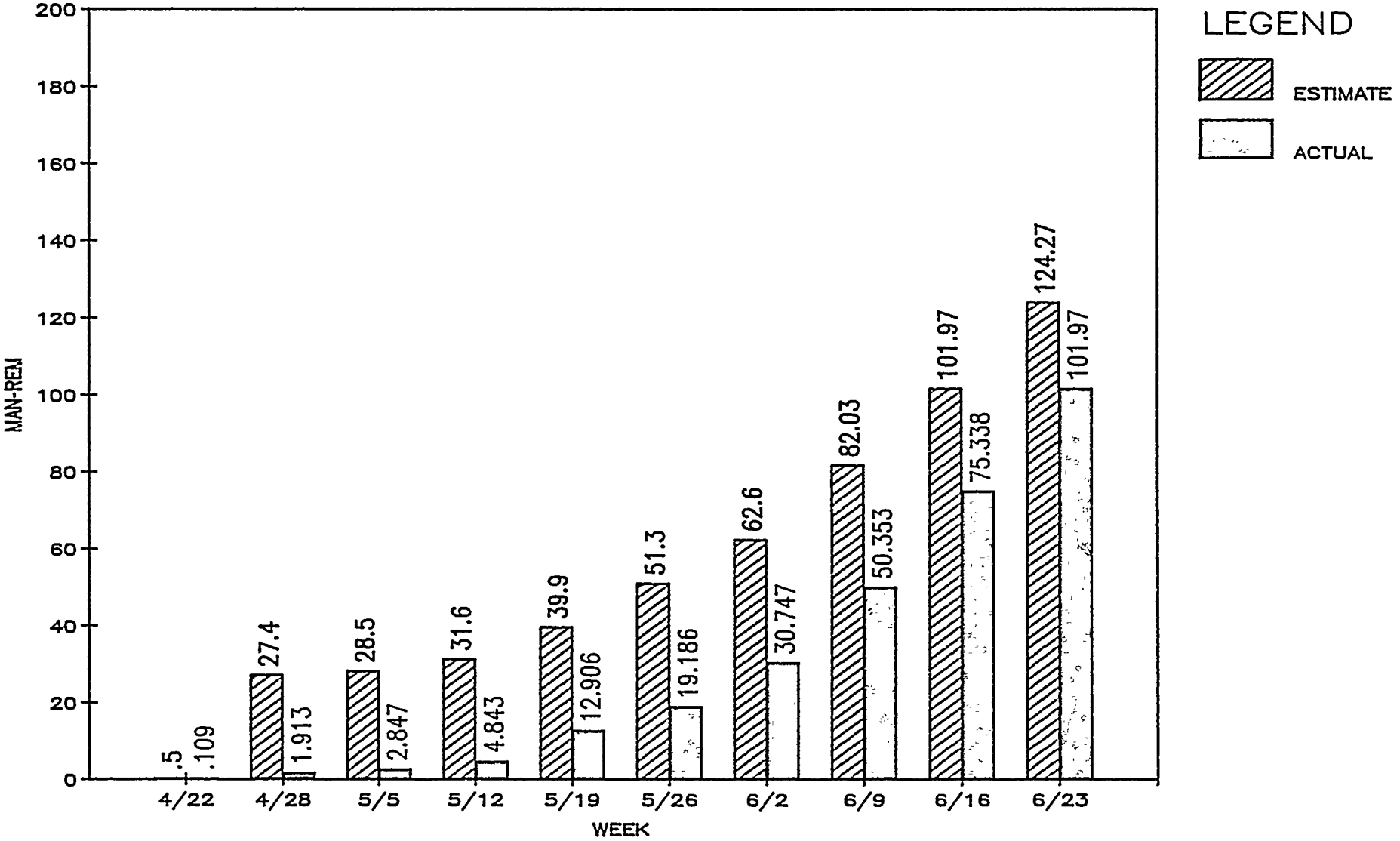


NOTE: ESTIMATE VALUES DERIVED FROM PERCENT COMPLETE BY HOURS

ATTACHMENT 3 TO AEP:NRC:0980P

SGRP PREPARATION PHASE

PERSONNEL EXPOSURES
ESTIMATE VS. ACTUAL



NOTE: ESTIMATE VALUES DERIVED FROM PERCENT COMPLETE BY HOURS

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