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RYBAK,B. Commonwealth Edison Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards pipe replacement radiation protection program summary in response to Generic Ltr 84-07,Rept addresses procedures,shielding,equipment & personnel training. Estimated cumulative dose less than 2,000 person-rem.

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Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

June 13, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Unit 3
Recirculation System Piping
Replacement Program - Radiation
Protection Summary Report
NRC Docket No. 50-249

References (a): D. G. Eisenhut letter to All Licensees of BWRs dated March 14, 1984 (GL 84-07)

(b): B. Rybak letter to H. R. Denton dated June 3, 1985

Dear Mr. Denton:

As requested in Reference (a), Commonwealth Edison encloses its Recirculation System Pipe Replacement Radiation Protection Summary Report to support the pipe replacement project at Dresden Unit 3. This summary report addresses the areas of procedures, shielding, equipment, personnel training and estimated total cumulative dose as requested in the Generic Letter. The estimated total cumulative dose for this project is expected to be less than 2000 person-rem. If at any time the estimate is expected to exceed 2000 person-rem, we will contact your staff.

If you have any questions concerning this matter, please contact this office.

One (1) signed original and forty (40) copies of this transmittal is provided for your use.

Very truly yours,

B. Rybak
Nuclear Licensing Administrator

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Attachment

cc: R. Gilbert - NRR
NRC Resident Inspector - Dresden

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COMMONWEALTH EDISON COMPANY

DRESDEN STATION UNIT 3

Pipe Replacement Radiation Protection Program Summary

1.0 Introduction

Commonwealth Edison will replace piping (Reference: Recirculation System Piping Replacement Plan Report submitted June 3, 1985) susceptible to intergranular stress corrosion cracking (ISGCC) at Dresden Station Unit 3 during the Fall 1985 refueling outage. Because projects of this type have the potential for individual and collective radiation exposures beyond that of other routine maintenance, the NRC requested in Generic Letter 84-07 that they receive a description of the project's radiation protection program. The program description that follows provides a summary of the Project Radiation Protection Plan (PRPP) and associated radiological control measures unique to the Project.

2.0 Project Radiation Protection Plan

The Project Radiological Protection Plan has been developed to meet the requirements contained in 10 CFR 20 and guidelines established in NRC Regulatory Guides 8.8 and 8.10. The policies and procedures set forth in the PRPP are consistent and in accordance with both CECo corporate policies and existing Dresden Station Procedures. The PRPP defines the tasks and responsibilities for the Project Radiation Protection Group's (PRPG) organization. The PRPP covers the following areas:

* Project Radiological Protection Organization
* Project Radiological Protection Program
* Radiation Exposure Monitoring and Control
* Personnel Training
* Facilities and Equipment
* Reports, Records, and Documentation

2.1 Project Radiological Protection Organization

The Project Radiological Protection Group will be formed to provide ALARA engineering support and radiological controls for the recirculation pipe replacement project. The PRPG will be staffed by Commonwealth Edison Company, Impell Corporation, and a health physics technician contractor. PRPP staff personnel will report to Commonwealth Edison Company's Station Project Health Physicist who will have overall responsibility for ALARA and radiological protection for the Recirculation Pipe Replacement Project (RPR).

The PRPG will be comprised of three support groups which report to a Project Radiological Protection Coordinator (PRPC). The PRPC has overall responsiblility for the implementation and documentation of the Project Radiological Protection Program. The support groups include:

* Operations Health Physics Group - Responsible for implementing the Project Radiation Protection Plan once the outage begins. The group will supply task surveillance and monitoring in radiologically controlled work areas.

* ALARA Group - Responsible for radiological evaluations required to maintain the project radiation exposure consistent with ALARA principles. The group will review, evaluate, and approve the installer's procedures, policies, and Task Work Packages (TWP).

* Records Group - Responsible for maintaining up-to-date exposure information for both personnel and tasks involved with the RPR. The group will organize the record system, input data, correlate and distribute reports, and provide documentation to support all phases of the PRPG activities.

2.2 Project Radiological Protection Program

The RPR Project requires that the utility have a strong commitment to the ALARA principle if the individual and collective man-rem are to be kept As Low As Reasonably Achievable. This commitment by Commonwealth Edison Company has been demonstrated in the CECo ALARA policy statement which states:

> "Occupational radiation dosage to the individual, and the sum of the doses received by all exposed workers at Commonwealth Edison Company's nuclear facilities is to be kept As Low As Reasonably Achievable (ALARA), consistent with Station Construction, Maintenance, and Operation requirements, as well as economic and social considerations."

This commitment is further demonstrated by the implementation of the Recirculation Pipe Replacement Project specific Radiological Protection Program. The intent of this program is to keep the individual and collective radiation exposures to ALARA levels by studying the tasks of the pipe replacement project from a radiation exposure point of view and evaluation of past RPR project's lessons learned. To accomplish this objective, a project specific ALARA committee will be organized to supplement the Dresden Station ALARA Committee and to study each task of the project that falls into the review criteria as defined in the PRPP.

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Based on the man-hour and man-rem estimates, each individual task for the recirculation pipe replacement project will be classified according to the projected total dose. For this project four classifications of collective estimated dose will be adopted which are consistent with the Dresden Station Policy and Procedures for maintaining occupational radiation exposures As Low As Reasonably Achievable (ALARA). These classifications are: Less than 1 man-rem, 1-10 man-rem, 1-30 man-rem, and greater than 30 man-rem. Tasks in categories greater than 1 man-rem will be reviewed against ALARA principles and health physics practices prior to work initiation and after completion of the work.

2.3 Radiation Exposure Control - Monitoring and Tracking

Health Physics practices and procedures for the RPR Project will involve methods of both internal and external exposure control, monitoring, and tracking.

A. Principle methods of external exposure control are designed to monitor and/or lower individual as well as collective radiation dose. These methods include:

* Dosimetry - Whole body badging, electronic dosimetry (remote and self-reading), extremity badging and standard self-reading pocket dosimetry will be utilized to monitor doses on the project.

* Radiation Work Permit (RWP) - All work will be governed by the station RWP program as implemented by the PRPG.

* Drywell Access Control - No individual will be allowed to enter the drywell area without having reviewed and signed the appropriate RWP.

* Shielding - Shielding in the drywell will be designed, supplied and placed by the installer in accordance with the installer's procedures after RPR Radiation Protection Group review and approval. Whenever shielding is put in place or removed, a new radiation survey of the area will be performed before personnel are allowed to resume work in the area. Specially engineered shielding will be installed in certain high radiation areas where normal temporary shielding would prove to be ineffective or inefficient.

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* Worker Surveillance - Health physics technicians will provide continuous work surveillance in the drywell by on-the-job dedicated technician coverage and/or remote monitoring by closed circuit television. They will keep workers informed of any changes to radiological conditions, RWP updates, and ensure that workers are utilizing good health physics practices. They will monitor workers to ensure that they are in compliance with RWP requirements.

* Radiological Survey - Health physics technicians will perform both routine and special radiation surveys which will be posted at the radiation protection office and control point accesses. As new surveys are performed, the survey data will be updated in a timely manner.

* Area Postings - The drywell will be posted by the PRPG health Physics Group in accordance with the regulation set forth in 10CFR20.

* Special ALARA Considerations - Internal decontamination, special nozzle plugs and shields, reactor water level, control rod drive configuration, and special tooling will be evaluated by the PRPG prior to the start of work.

B. Principle methods of internal exposure control are designed to insure that ingestion or inhalation of contaminates is ALARA. These methods include:

* Portable Ventilation - Units using HEPA filters will be used wherever necessary and practical.

* Special Containments - Glove bags, tents, and other types of containments will be evaluated and utilized where necessary.

* Contamination Control - An initial drywell decontamination program will be performed by a contractor group prior to the start of the installer's work. A drywell housekeeping program will be initiated by the installer and monitored by the PRPG throughout the pipe replacement outage.

* Respiratory Protection - The PRPG will adhere to Reg Guide 8.15 and Station Approved Procedures and will first investigate alternate methods for reducing airborne concentrations of radioactive materials prior to recommending the use of respirators as a control technique.

* Bioassay Program - A thorough program will be implemented to confirm the adequacy of the respiratory protection program by monitoring for intake of radioactive material.

C. Radiation exposure tracking for the Dresden Unit 3 Recirculation Pipe Replacement Project will be accomplished by utilization of a computerized dose tracking system. This system will allow up-to-date (each shift) estimates of man-rem and man-hour expenditures by task and by individual. It will also be capable of presenting specific exposure data in a report and graphic format.

2.4 Personnel Training

Training will be conducted for all on-site personnel involved in the recirculation piping replacement at the Dresden Nuclear Plant. The Nuclear General Employee Training (NGET) program will be the responsibility of and will be conducted by the Dresden Training Organization. It will be the Installer's responsibility to perform specific training for the piping replacement operation including mock-up training and task specific training. The Project Radiation Protection Group (PRPG) will assist the Installer with the preparation of the mock-up and task specific training to ensure that the individual worker is aware of the policies in the Project Radiological Protection Plan and that good health physics practices are followed.

Commonwealth Edison Company will document and maintain records of all individuals selected for training/retraining and will provide written or practical examinations to demonstrate that personnel have received and comprehend the program objectives as presented in the NGET training program.

Records of Installer job specific/mock-up training will be maintained by the Installer until they are given to the Commonwealth Edison Company at the completion of the project.

2.5 Facilities and Equipment

Existing Dresden station facilities and equipment will be supplemented during the replacement project. Additional training, equipment storage, personnel change, and frisking facilities will be required. Adequate additional health physics survey and counting equipment will be obtained for the project.

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Special remotely operated equipment for machining and welding will be used, where practical, to minimize work time in high radiation fields, and hence, worker exposure. Closed circuit television monitoring equipment will be provided to help reduce exposure to supervisory and health physics personnel during critical jobs in the drywell. In addition, the video tape recordings of drywell tasks can provide training and documentation as an aid to post job review for any task which will be performed more than once.

2.6 Reports, Records, and Documentation

As directed by government regulation, CECo policy, and to meet the needs of project management and the large number of diverse organizations involved, the PRPG will issue formal reports throughout planning and construction phases of the recirculation piping replacement project.

A system will be established to document and store all reports, records, correspondence, transactions, etc., generated by the Project Radiological Protection Group.

3.0 Additional Project Radiological Control Measures

Incorporated into the project are additional major ALARA features that will provide important exposure reduction are incorporated in the PRPP.

3.1 Replacement Piping Design

Important ALARA features in the design of the new recirculation piping are a reduction in the number of welds and electro-polishing of the pipe interior surfaces. In addition, passivation of the interior pipe surfaces is being considered.

3.2 Core Removal

The entire core will be unloaded and stored in the spent fuel pool at the beginning of the RPR outage.

3.3 Control Rod Drive Placement

Control rods will be left fully inserted with the exception of selected rods which will be operated as necessary for maintenance during the duration of the RPR Project.

3.4 Vessel Water Level

Reactor vessel water level will be maintained at or just below the jet pump slip joints.

3.5 Pre-Outage Planning

During the second quarter of 1985, Dresden Unit 3 performed a short outage to inspect and accumulate data necessary for pre-outage planning activities. Material pathways, laydown and work areas were reviewed for electrical and mechanical systems/components that would impede the replacement effort and increase worker exposure. A scheduled sequence of activities based on the walkdown information will be developed to control traffic routes, and laydown areas.

3.6 HVAC Control

Adequate HEPA filter units will be installed to maintain a constant flow of air into the reactor pressure vessel and upwards to the refueling floor. These HEPA filter units will provide a slight negative pressure in the drywell with respect to the secondary containment by taking a suction from various locations within the drywell and exhausting to the reactor building.

In addition, the reactor building ventilation system will be used to maintain a slight negative pressure within secondary containment to prevent any leakage of airborne containment out of the building.

3.7 Drywell and Recirculation System Piping Decontamination

Prior to the start of major work in the drywell, a decontamination process will be performed on the reactor recirculation system, RWCU, Isolated Condenser return, Shutdown Cooling, and other RPR related systems. In addition, a thorough surface decontamination of the entire drywell area will be performed.

4.0 Pre-Outage Exposure Estimate

As stated in NRC Generic Letter 84-07: " ... most pipe replacement programs can be accomplished through suitable controls so as to limit cumulative exposures to less than about 2000 person-rem." In order to determine that the Dresden project is within the NRC guidance of 2000 person-rem limit and aid in RPR Project planning, a pre-outage person-rem estimate has been developed. This estimate details each aspect of the project and what the expected exposures will be. The total occupational exposure for the Dresden Project is estimated to be 1906 person-rems as shown below:

Description	Person-Rem
Installer	
General Tasks	340
Phase I - Removal of pipe and interferences	469
Phase II - Removal/Reinstallation of Safe Ends and Flued Heads	295
Phase III - Pipe Installation	195
Phase IV - Restoration	223
Electrical Work	89
Installer Sub-Total	1611
Other Organizations	
CECo QA/QC/NDE	140
Impell (A/E)	12
Station Depts.	23
PRPG (Radiation Protection)	89
Start-Up and Additional Testing	21
Pipe Decontamination (London Nuclear)	10
Other Sub-Total	295
Person-Rem Estimate Total	1906