

Quad Cities Nuclear Power Station

NRC Regulatory Conference

ALARA Finding

Safety Relief Valve Replacement

February 13, 2001

Meeting Agenda

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| □ Introduction | Tim Tulon |
| □ Background, Root Cause
and Corrective Actions | Ellen Anderson |
| □ Station Concluding Remarks | Tim Tulon |
| □ Dose Estimation | Susan Landahl |

Introduction

Tim Tulon

Site Vice President

Quad Cities Generating Station

*Background, Root Cause and
Corrective Actions*

Ellen Anderson

Radiological Protection Manager

Quad Cities Generating Station

Background

□ Q1R16

- ❖ Drywell Dose Rates Much Greater Than Anticipated

- ❖ Moisture Carry-over Created Significant Dose Rate and Contamination Level in Steam Side Systems

□ Safety Relief Valve (SRV) / Electromatic Relief Valve (ERV) / Target Rock Replacement Was Impacted by Dose Issues

Background

- ❑ We Concur With the Facts in the Inspection Report
- ❑ Our ALARA Process Requires In-Process Reviews
- ❑ Conducted Post-job Review, Root Cause Investigations and Self Assessment of the ALARA Program
- ❑ Problems Identified with Ineffective Response to Changing Conditions of Job

Root Cause

- ❑ Ineffective Job Management by Radiation Protection (RP) and Maintenance Contractor.
- ❑ ERV/SRV Replacements Were Not Re-planned Although Several Critical Job Attributes Had Changed.

Corrective Actions to Prevent Recurrence

- ❑ Develop and Implement an Exelon Job Standard for Station ALARA Group that Provides Guidance to Ensure Effective Job Management is Maintained, Especially Under Changing Conditions. The Standard Will Include:
 - ❖ Criteria When Re-planning is Required
 - ❖ Criteria When Station ALARA Committee (SAC) Approval is Required for Updated Plans
 - ❖ Criteria for Use of Project Managers

Corrective Actions

- ❑ RP and Mechanical Contractor Determine Method for More Accurately Estimating and Monitoring Person-hours Versus Job Progress for High Dose Jobs
- ❑ Develop Contingency Plan for Extended Ventilation Outages
- ❑ Videotape ERV/SRV Replacement Next Refuel Outage As Training Tool
- ❑ Update SRV Replacement Procedure to Include Operating Experience Review

Station Concluding Remarks

Tim Tulon

Site Vice President

Quad Cities Generating Station

Dose Estimating

Susan Landahl

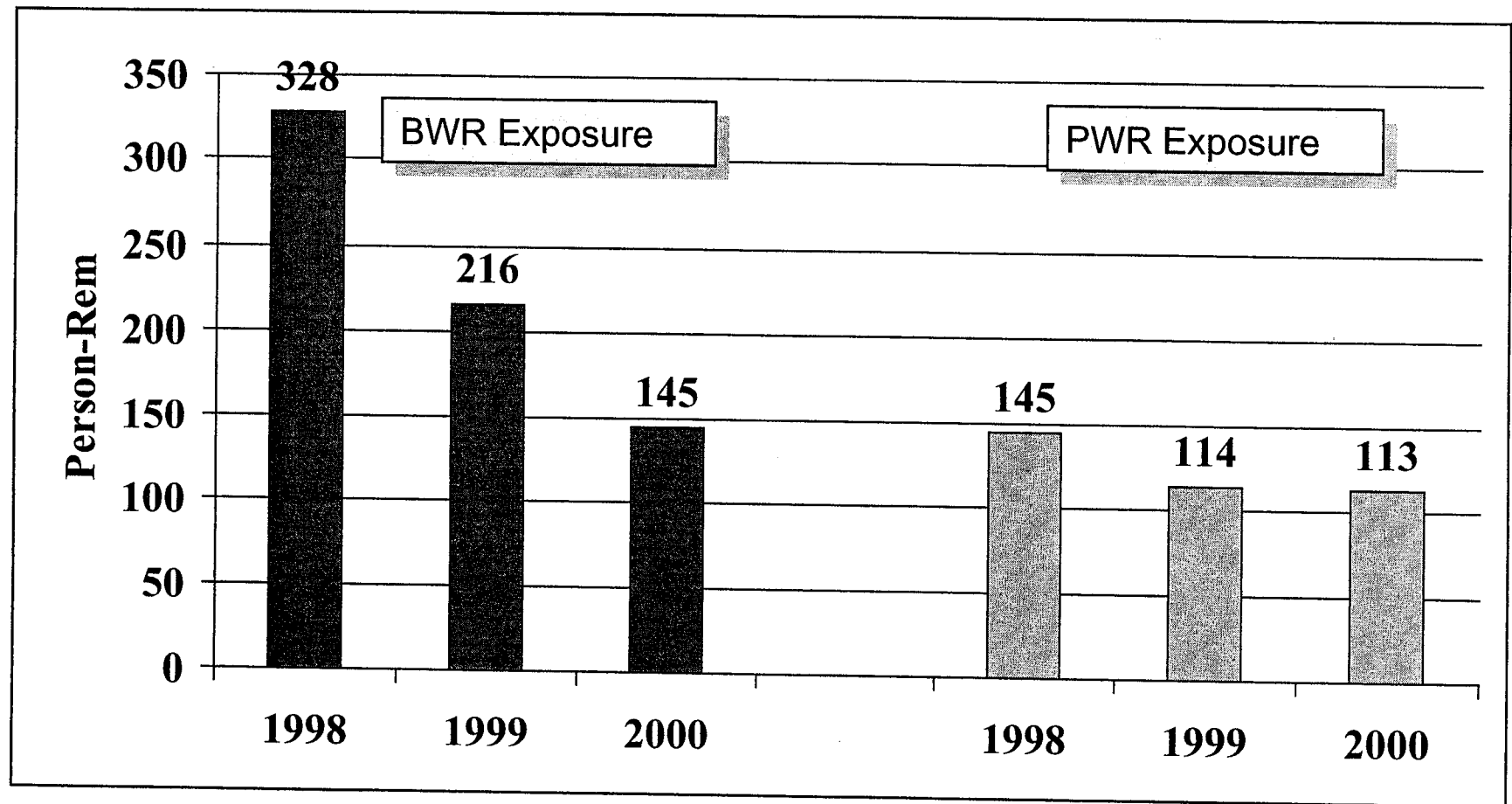
Director, Generation Support

Midwest Regional Operating Group

ALARA Performance

- ❑ Exelon does not agree with the position that the estimate prior to start of work is the only estimate to use to determine an ALARA Finding
- ❑ Setting challenging goals and driving to meet them are the key elements of continuous improvement in any program
- ❑ Central to our discussion today is the issue of dose estimating - but first some perspective on our overall ALARA performance

Average ComEd Unit Refuel Outage Exposure (BWRs vs PWRs, excluding Q1R16)



Exposure Control Improvements

- ❑ Aggressive goal setting
- ❑ Material condition improvements (zinc and NMCA)
- ❑ Improved planning - on-line and outage
 - ❖ Detailed ALARA Planning for daily activities
 - ❖ Micro ALARA Planning at lower thresholds
 - ❖ Dose Reduction High Impact Teams (HIT) chartered by the SACs
- ❑ Management challenges for high exposure jobs
- ❑ Integrated self-assessments across all sites
- ❑ Implement “lessons learned” (Exelon-wide) to accelerate the cycle of continuous improvement

Industry Guidelines on Dose Estimating

- ❑ INPO 91-014, “Guidelines for Radiological Protection at Nuclear Power Stations”
 - ❖ Chapter I addresses Radiological Performance Goals
 - ❖ Radiological performance goals should be established to encourage continual improvement
 - ❖ Goals should be based on attaining standards of excellence.

Industry Guidelines on Dose Estimating

- INPO 91-014 also describes work-in-progress and post-work reviews (Chapter V.2)
 - ❖ In-progress reviews are recommended at pre-established intervals for jobs exceeding the station's action levels. . . .
 - ❖ Intervals can be designated as a percent of estimated man-rem or person hours, percent complete

Industry Guidelines on Dose Estimating

- National Council on Radiation Protection and Measurements (NCRP) guidance
 - ❖ Report No. 120, “Dose Control at Nuclear Power Plants”
 - ❖ “After goals are established, changes sometimes occur in work program requirements. **If these changes are significant, goals should be adjusted (lowered or raised) to ensure that they remain realistic.**”
(emphasis added)

Industry Guidelines on Dose Estimating

- Re-estimation of jobs in progress is a standard practice of industry best ALARA programs
 - ❖ 3 of 4 INPO-identified “top performers” change dose estimates as a result of in-progress reviews
 - ❖ Responses from ten other industry peers identified only one other plant who does not
 - ❖ Exelon’s sites consistently apply this practice as an integral part of our ALARA program

Quad Cities Specifics

- The finding was based on the job estimate at the start of work
 - ❖ This practice does not acknowledge emergent issues that arise during execution of the job
- Factors impacting the SRV job
 - ❖ Internal contamination, heat stress issues, additional dose impacts
 - ❖ The October 23, 2000 revised projection of 59.2 rem should have been used as the point of reference

Conclusion

- ❑ Re-estimation of dose during performance of work is the correct practice
- ❑ Application of the screening criteria for this specific case does not acknowledge this practice
- ❑ The ALARA re-estimate of 59.2 rem, not 45 rem should be used in evaluation of potential ALARA findings
- ❑ Exelon requests that the application of the screening criteria for this specific finding be reconsidered
- ❑ Exelon will use the established process and work through industry groups to resolve this issue generically