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Scaffold Program Optimization and Dose Reduction Guide

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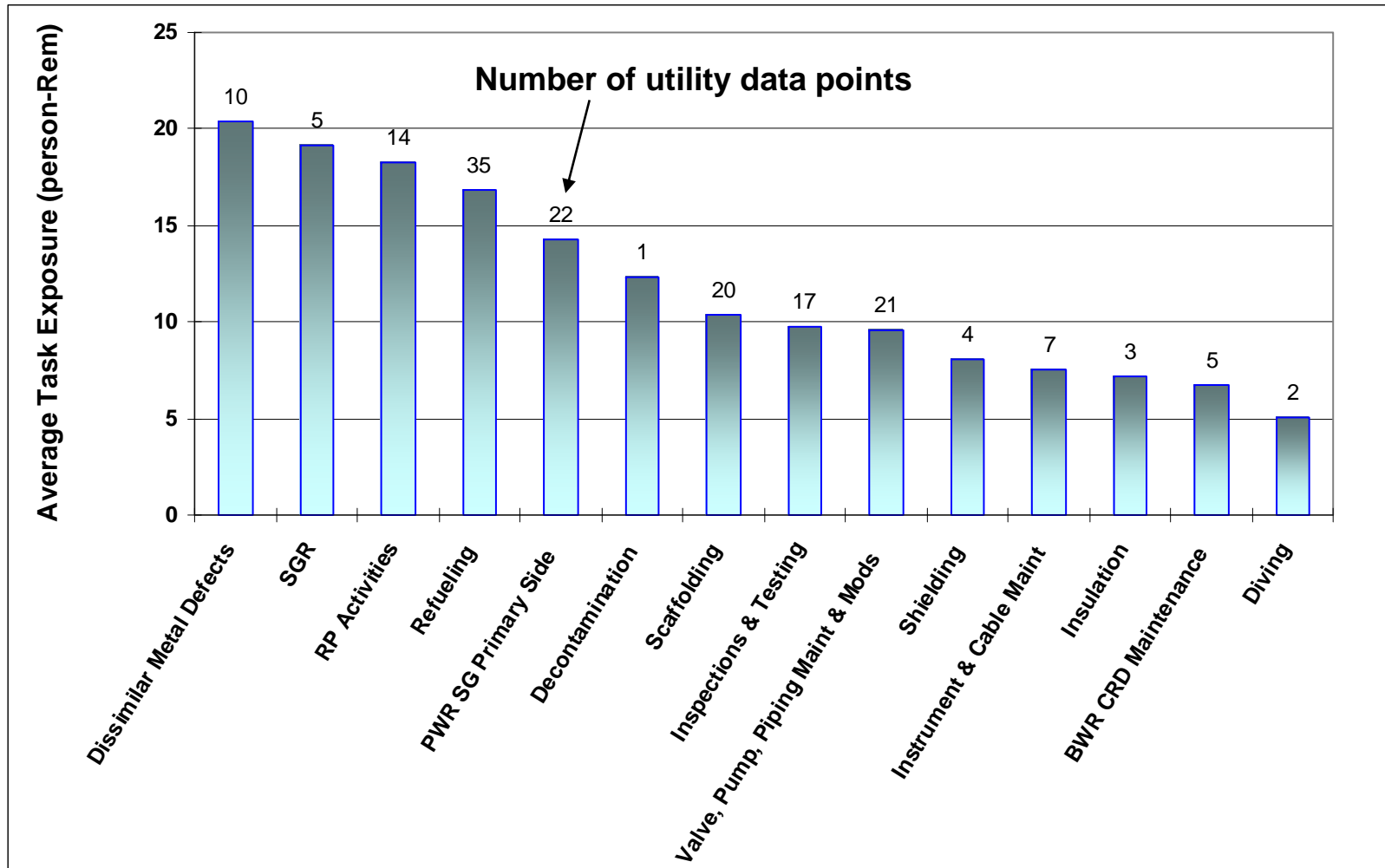
TAC Meeting
January, 2010

Background

- Why?
 - Scaffold Programs are Expensive
 - Typical Single Outage Costs: **\$1- 3 Million**
 - Additional Liabilities
 - **High Dose**
 - Industrial Safety
 - Unplanned Trips
 - Regulatory Compliance
 - Aggressive Schedules
 - No Single Comprehensive Guide



Average Task Exposure for High Dose Tasks (Utility Data)



Scaffold Guide - 1021102

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Scaffold Program Optimization and Dose Reduction Guide



- Objective
“Develop Comprehensive Guidance that Targets Vertical Access Program Efficiency and Quality that Will Result in Reductions to Collective Radiation Exposure. Focus: Outage

Directly Applicable to On-Line Activities As Well

Report

Comprehensive Report
Based on Industry
Standards, Best
Practices and
Technologies, Regulatory
Requirements and
Letters of Interpretation.

Target Audience: Scaffold
Program Managers.

- 21 Industry Experts
- 8 Scaffold Work Shops
- EPRI Vertical Access Performance Database
- Numerous Station Procedures
- Service & Product Vendor Info
- 18 EPRI Scaffold Assessments

Key Element: Senior Management Support



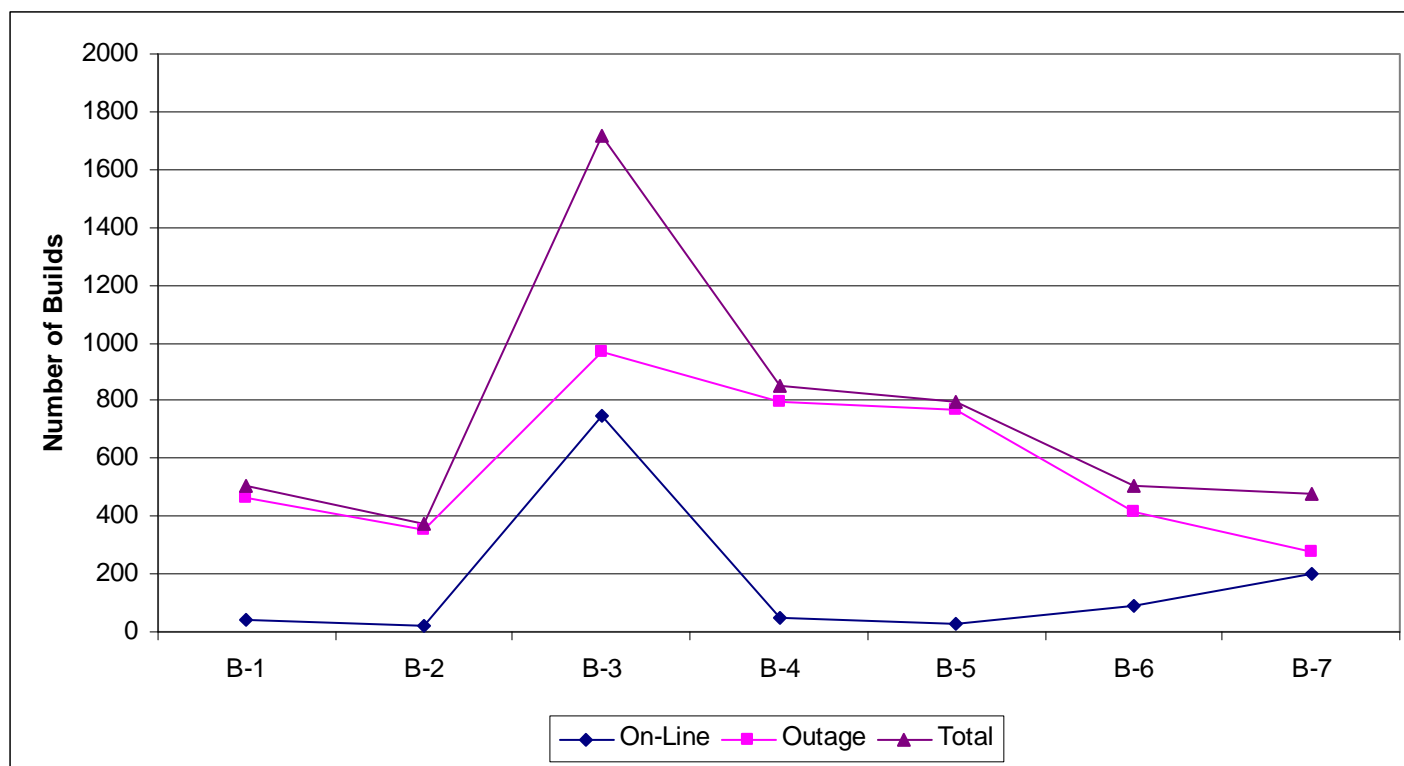
- Dedicated Program Manager
- Scope Control
- Mandate Accurate Work Plans and Required Financial Resources for the Program

Key Element: Planning & Scheduling

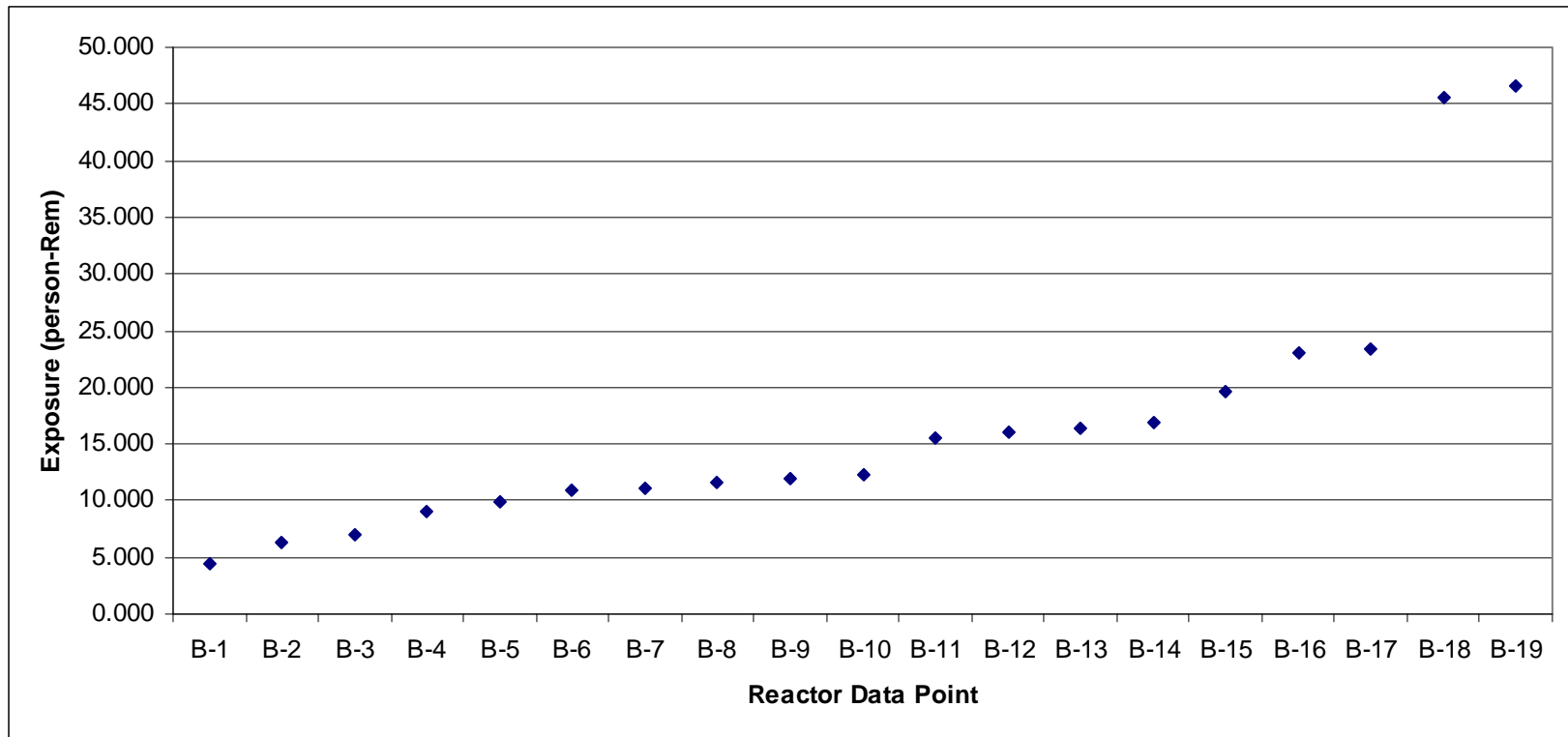


- Accurate Planning & Scheduling Processes
- Standards for Unplanned Builds that Mirror Other Unplanned Work Requirements
- Performance Indicators

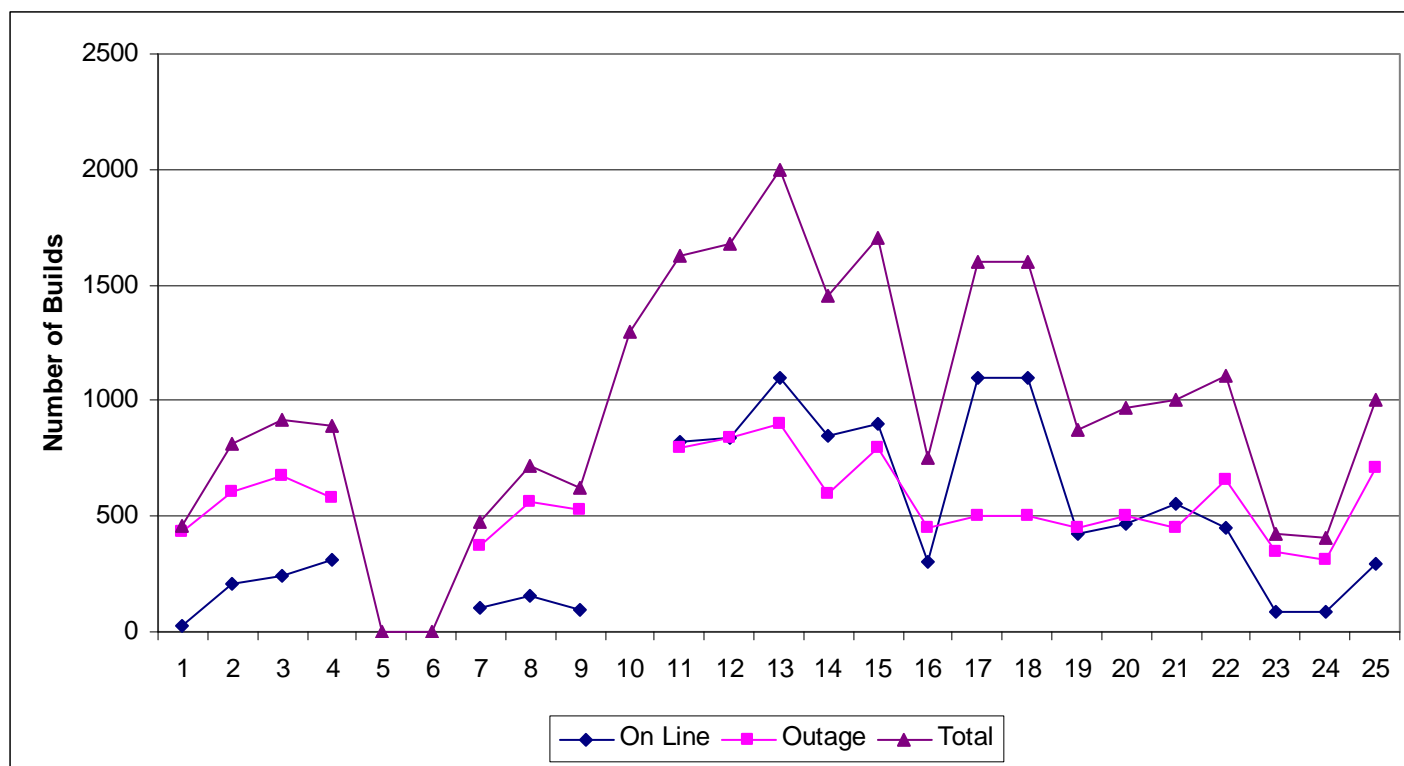
BWR Number of Builds



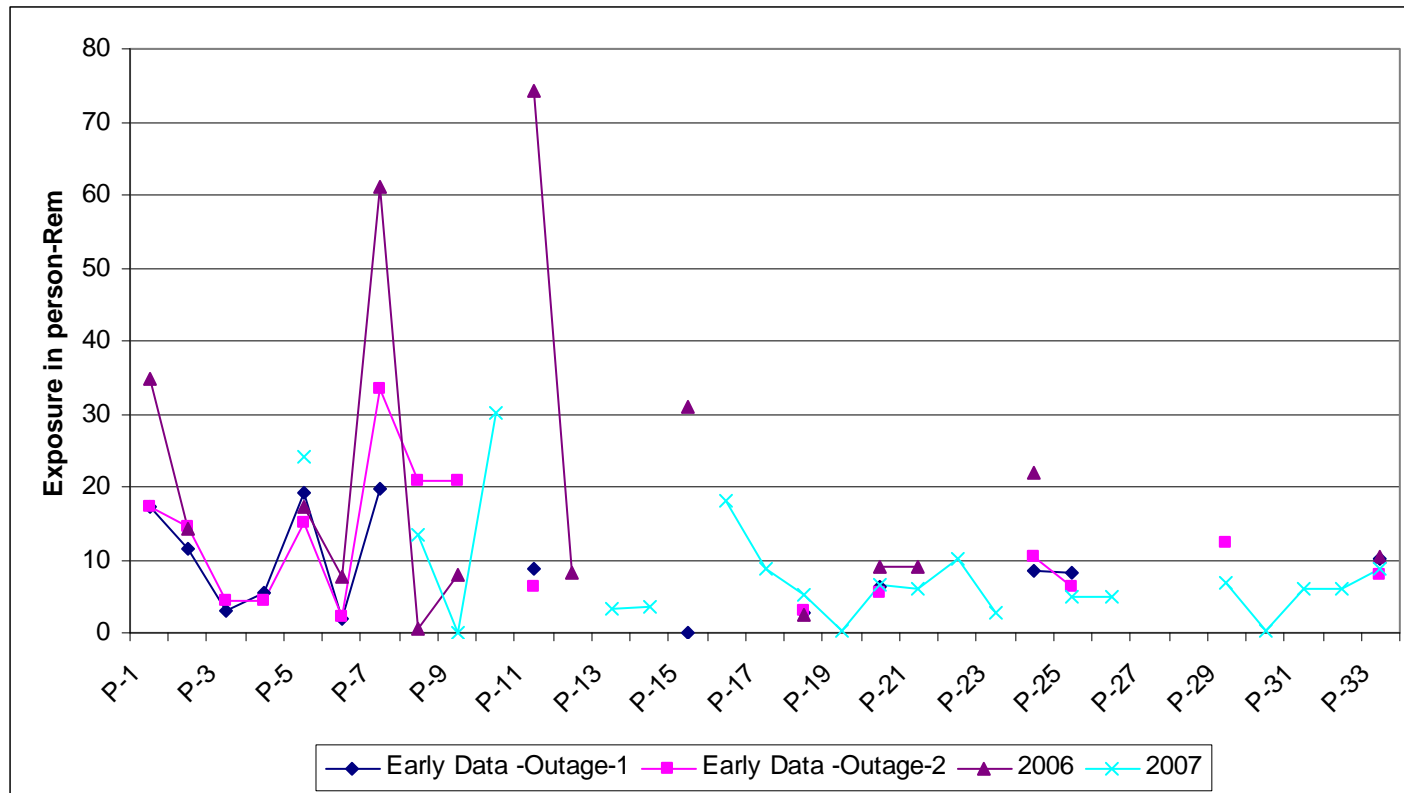
BWR Exposure



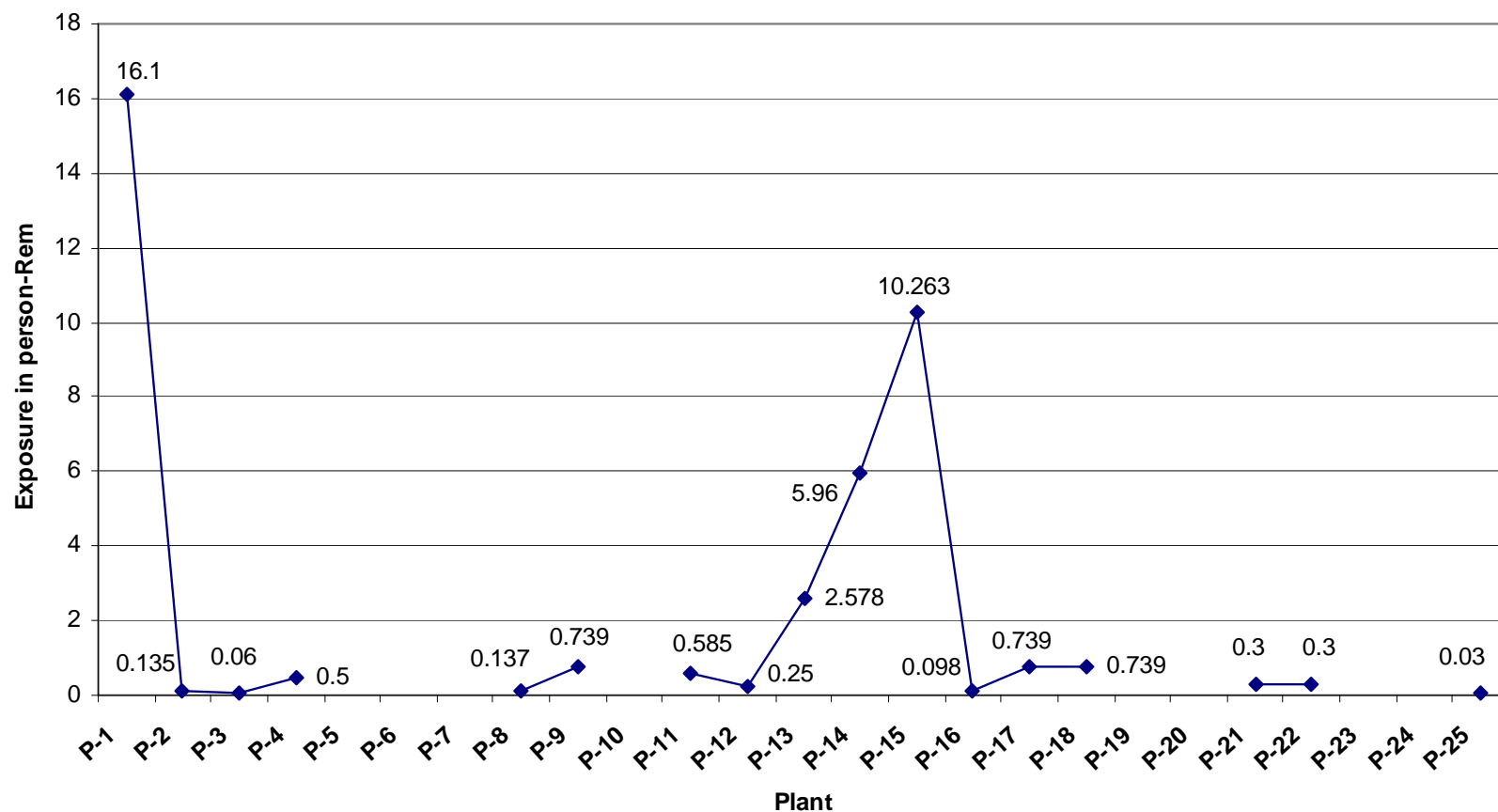
PWR Number of Builds



PWR Exposure



PWR On-Line Exposure



Key Element: Optimized Technology Application



- Alternative Advanced Technologies
- Laser Scanning
- Quick Erect Scaffolding
- Communication Tools

Key Element: Training & Worker Awareness



- Aggressive Training For “New-To-Nuclear”
 - Union Halls
- On-Site Training Includes Classroom & Building in PC’s
- Nuclear Plant Standards vs. Conventional Construction
- OJT on Conventional Builds Prior to RCA Builds

Aggressively Challenge Need For Scaffolding

- Ladders
 - New Generation Tie-Offs
- Permanent Platforms
 - Hard Iron for Frequent Build Areas
 - Permanent Towers
- Small Portable Lifts
- Optimized Preventative Maintenance
- Scope / Remote Monitoring For Inspections

TOP Dose
Reduction




Formal Incorporation of Scaffold Requests Into Work Planning



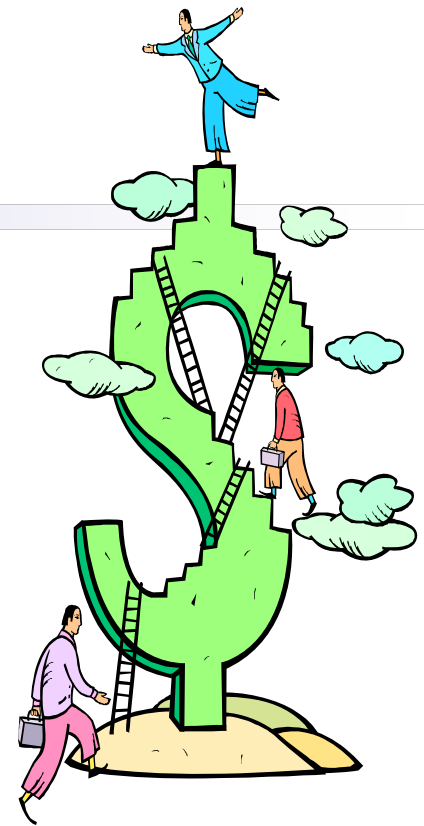
- Look for Multi-User of Single Tower or Build
- Parent Child Work Orders
- Area Based Planning & Scheduling
- Work Scope Freeze Dates

EPRI Scaffold Assessment - Overview

- 
- Matrix of <200 criteria
 - Four Days On-Site – 32 Man-Hours Minimum
 - Pre-Assessment Preparation Review- 80 Hours
 - Report - Approximately 30 Days
 - Over 37 Years Experience -Priceless

Plant A Assessment

- **Plant Feedback**
 - Scaffold Program Manager: “Very thorough scrub of program that will be beneficial to the station”
- **Recommendations (>50)**
 - Install Permanent Towers for Select Locations
 - 8 Work Control Priority Recommendations
 - Perform Laser Scanning of Drywell and Rx Building
 - Create a Permanent Scaffold Crew
 - Assigning a **Dedicated Senior RP Technician** to Support the Scaffold Group Each Outage using Project Engineering Budget to Report Directly to Project Engineering Group
 - ~30 Procedure Related Recommendations
- **Benefits**
 - Potential for ~30% reduction in number of builds/effort
 - **LOP Savings: Labor = \$12.2M, Dose = 75 person-Rem**



Plant B Assessment

- **Plant Feedback**

- Plant Manager: “was especially impressed (with the assessment)” and expressed his support to the entire leadership team”
- RP Technical Support Lead: “Management at my level and up were very positive about (the) observations and recommendations ”

- **Recommendations (>60)**

- Training improvements: contractor certification program, DLA, site specific, new-to-nuclear
- Technology: wireless comm., scaffold material, mobile platforms
- Enhanced use of existing laser scans for planning and design development
- 9 programmatic: technology selection, planning, links in work control software
- Procedure enhancement recommendations

- **Benefits**

- **Potential LOP Savings Labor ~\$3.8M; ~45 person-Rem**

Plant C Assessment

- **Plant Feedback**

- Plant Interim ALARA Supervisor: “Excellent review of the program”

- **Recommendations (>50)**

- Planning: walkdowns, work crew engagement, digital photo management, Develop parent child work orders in Maximo
- Training improvements: Maximo use for scaffold crew leads, contractor OSHA training, DLA, site specific, new-to-nuclear
- Data management: tracking sheet enhancements, collection process during outages, snubber location maps by elevation
- Improve the use of existing laser scan for surrogate tours and build designs
- Installing the service water intake access modification

- **Benefits**

- **Potential LOP Savings Labor ~\$10M; ~60 person-Rem**

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