Computer-Based Procedures For Field Workers

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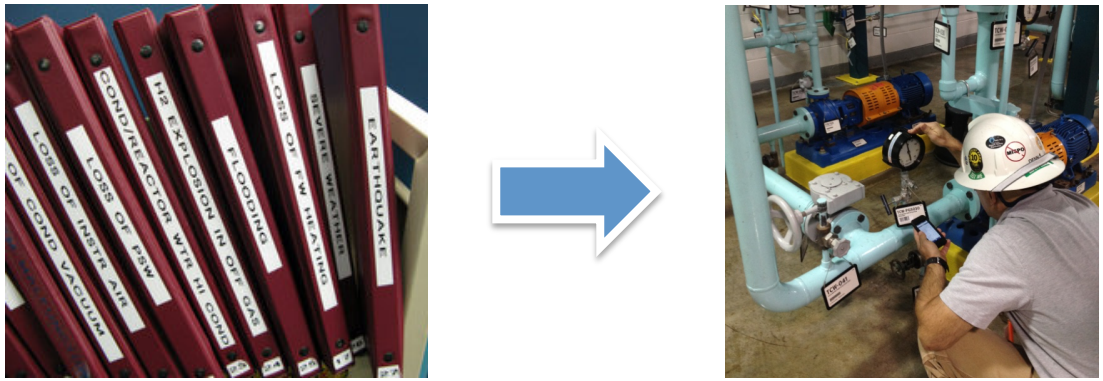
LWRS
Light Water Reactor Sustainability

Project Overview

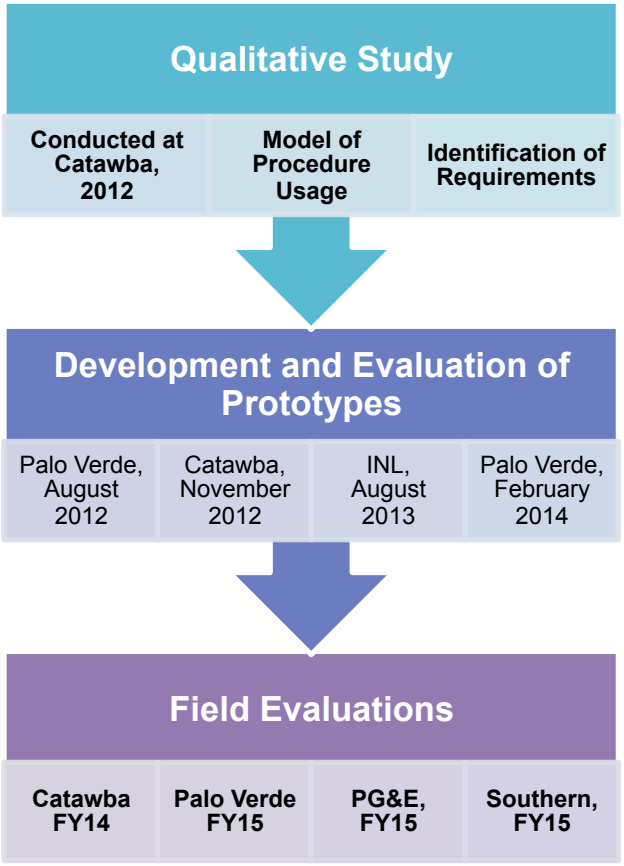
- **DOE LWRS II&C:** R&D to address long-term aging and modernization of current instrumentation and control technologies to provide an enhanced understanding of plant operating conditions and available margins and improved response strategies and capabilities for operational events.
- **CBP research:** Take the industry from current procedure practices (paper) to utilizing advantages of advanced technologies (computer-based procedures) and provide a standardized design guidance for CBPs to enhance efficiency and safety

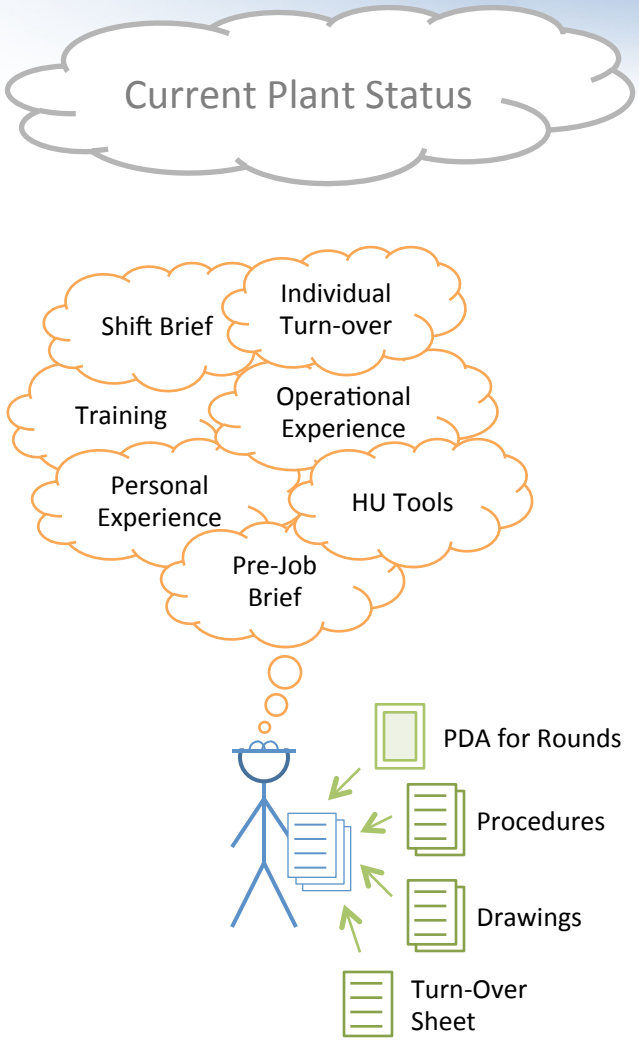


Project Overview

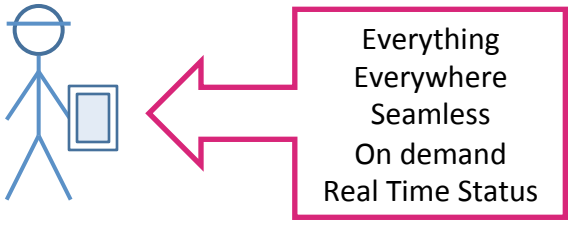
Research Objectives

- Define design requirements
- Use dynamic presentation to:
  - Increase efficiency
  - Improve the ease of use
  - Reduce opportunities for errors
  - Incorporate human performance tools





Current



Future

Accomplishments

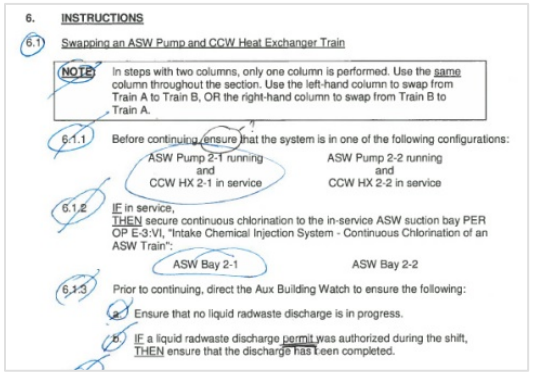
- Milestones:
  - M3LW-16IN0603094, Complete a report describing the final results from 2015 field study, simulator demonstration, performance test, and initial result from the 2016 field study by the publication of the report “Computer-Based Procedures for Field Workers – FY16 Research Activities” (INL/EXT-16-39984)
  - M3LW-16IN0603095, Complete report describing the detailed design guidance for computer-based procedures based on result from all research activities conducted in the project by the publication of the report Design Guidance for Computer-Based Procedures for Field Workers. The report (INL/EXT-16-39808)
  - M4LW-16IN0603098, Complete feasibility study for data mining and analytics for employing information from computer-based

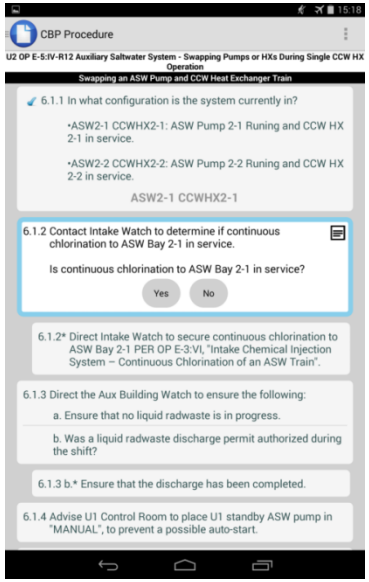
Accomplishments

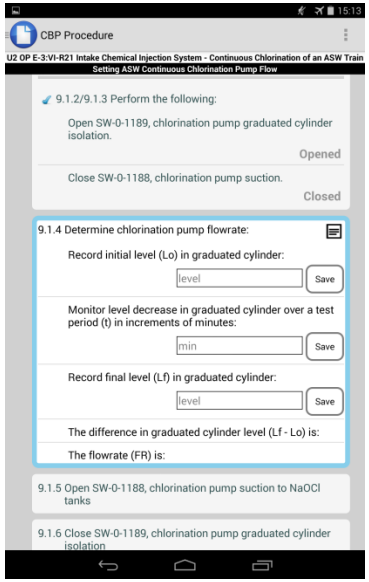
- Oxstrand, J., Le Blanc, K., Supporting the Future Nuclear Workforce with Computer Based Procedures. Nuclear Future. January 2016. Vol. 12, pp. 34-39.
- Computer-based Procedure System for Field Workers, technology commercialization grant

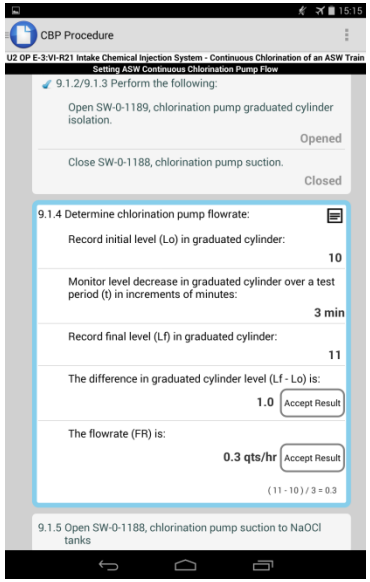
Technology Impact

- Automatic placekeeping
- Digital correct component verification
- Calculations
- Photos and drawings
- Checking ranges and tech specs
- Notifications
- Timers









Technology Impact - Outcomes

- Leading industry standards efforts on CBPs
  - NEWPER Requirements documents
    - Electronic Work Packages
    - Dynamic Smart Documents
  - Comprehensive Design Guidance
    - Document
    - Web-based tool

Industry Impact – Industry Partners

Conclusions

- Research has provided a technological basis for effective design of CBPs
- The work has led to industry support of using CBPs for field activities to improve performance and efficiency
  - Many utilities are moving to adopt CBPs for field workers
- Numerous industry partners ensure broad impact and applicability of work
- Design Guidance and commercialization funding are the next steps in deploying CBPs in the nuclear industry

We look forward to future collaboration endeavors!

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