

## WM2015 Conference Panel Report

**PANEL SESSION 102: Challenges in US DOE HLW Tank Management: Start-up & Commissioning**

**Session Co-Chairs:** **Ken Picha Jr.,** *US DOE*  
**Richard 'Chip' Lagdon,** *US DOE*

**Panel Reporter:** **Craig West,** *US DOE*

### **Panelists:**

- **Richard 'Chip' Lagdon,** *Chief of Nuclear Safety, US DOE*
- **Frederic Bailly,** *Vice-President Integration and Strategic Development, Back-End Business Group AREVA, Inc.*
- **William (Bill) Hamel,** *Assistant Manager for the Waste Treatment Plant Project, US DOE*
- **Pamela (Pam) Marks,** *Federal Project Director, Salt Waste Processing Facility, US DOE*
- **Joel Case,** *Integrated Waste Treatment Unit Operations Activity Manager, US DOE*

This panel focuses on the successes and challenges of the US DOE HLW Tank Management from the perspective of Startup and Commissioning representatives.

He then introduced the five panelists who shared their individual perspectives on challenges in High Level Waste (HLW) tank management: Startup and Commissioning.

### **Summary of Presentations:**

**Richard 'Chip' Lagdon** spoke about EM's challenges in starting up and commissioning of Hanford and Savannah River sites capital projects. He thinks there may be a better model and approach to support and accomplish the upcoming operational readiness reviews (ORR) across the EM complex. He went on to discuss challenges of nuclear projects. Namely, when to transfer design authority, project management order requirements, training and maintaining technical contractor and federal staff, certification and verification, and defining acceptable readiness and how best to achieve it. Mr. Lagdon went on to discuss EM objectives for supporting facility startup and commissioning. He provided an overview of lessons learned in preparing large scale facilities for startup. An example is the use of prototype testing before full scale design and operation. He states the ORR is only one component of a comprehensive commissioning effort. The proposed path forward is to convene the next Startup and Commissioning meeting at major project or the next Tank Waste Corporate Board meeting and developing successful transition strategy to operations by having well qualified and prepared ORR teams to conduct reviews. He concluded his presentation by discussing identifying an increase needed to focus on commissioning as budgets shrink and scrutiny of critical project continues.

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**Frederic Bailly** opened with the French past and recent historical experience with vitrification operational facilities that treated nearly 8,800 metric tons of high level waste and produced over 22,000 glass canisters for disposition. Mr. Bailly went on to discuss Areva's commissioning methodology from design through construction turnover and commissioning testing and operations. He went on to provide further detail on each phase of the methodology. He provided discussion on France's R7 and T7 performance and reliability of each facility's cold crucible induction approach. He discussed how proficiency was increased and time to commercial operation with each successive facility was decreased. Mr. Bailly stated success is based on having qualified and experienced personnel who understand how the facilities are to perform and better identify if issues requiring resolution are process or technology based. He concluded his discussion by highlighting Areva's experience outside France in the countries of United States, Savannah River Site's Defense Waste Processing Facility and MOX Fuel Fabrication Facility, the United Kingdom's Sellafield Site Vitrification Assistance Program, and Japan's Rokkasho-Mura Partnership.

**William (Bill) Hamel** spoke to the perspectives of and lessons learned on the startup and commissioning topic.

### Perspectives

- Not all facilities can be commissioned the same way. Startup needs to be specific to the facility.
- Outage management skillset is not equivalent to commissioning skillset. Generally, outages have an operations history.
- DOE orders increased stringency, DOE tolerance for risk has decreased, and DOE expectations have increase.
- System checks, integrated system pre-checks, and system turnover are integral steps before cold commissioning.
- Department is losing startup and commissioning talent
- Size and scale matter when it comes to startup and commissioning.
- Must focus on entire facility and not just critical systems.

**Pamela (Pam) Marks** provided an overview of Savannah River Site's Liquid Waste System of which the Salt Waste Processing Facility (SWPF) is an integral component. Ms. Marks then reviewed the SWPF process. She also touted the benefits piloting the technology prior to the construction of the full scale SWPF. She added that additional technology development in the area of solvents will enhance the operational efficiency and throughput of the facility. Collectively, this has resulted in no major technical issues. She provided an overview of the testing approach being used by the project and suggests that it is important to start planning and testing early. She provided greater detail on the testing types and testing oversight that will be executed in preparation for startup. She concluded with six lessoned learned: invest in technology, operate with the end in mind by embedding a construction and operations mindset early, plan with realism, integrate construction and testing & commissioning, test with rigor, and synchronize planning at the site and project levels.

**Joel Case** opened by giving a description of the Integrated Waste Treatment Unit (IWTU) and located at the Idaho Operations Office, a coal fired steam reforming hazard category 2 nuclear facility, built to treat ~900,000 gallons of radioactive liquid waste contained in 3 tanks. Mr. Case

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provided a high level review of the IWTU process. He provided a timeline for commissioning for the project and noted different lessons learned at each major juncture.

He spoke about the facilities startup testing procedure, Test Instruction aka TI-102, where ~62,000 gallons of Sodium Bearing Waste Simulant was processed. Although the facility is current in an outage, Mr. Case discussed several lessons learned. Namely, have realistic and quantifiable commissioning expectations, using appropriate testing scale (at least 50% scale), ensuring vendor qualifications are supportive of a nuclear environment, having the an experienced personnel base available when needed, ensuring the documented safety analysis (DSA) is aligned with the facility processes and operations and realizing the DSA will have to be fully implemented to operation, utilizing experience of the national labs and industry, and continually reviewing the project to ensure its achievability and feasibility.