



U.S. DEPARTMENT OF
ENERGY

Environmental
Management

Office of Engineering and Technology

Radioactive Waste Immobilization Community of Practice

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Mission Statement

- **To provide a seamless integration of DOE's waste vitrification technology know-how to enable optimized complex-wide facility performance**
- **To stimulate the waste vitrification technology knowledge base by providing a forum to present, discuss and disseminate technical information**
 - glass chemistry, vitrification processes, vitrification melter technologies, and waste glass environmental performance
- **Serve as a conduit to global waste vitrification and related programs**
- **Serve as a technical platform for DOE reviews**



Leadership Team

- **Responsible for identifying or coordinating technical research areas which are common across the DOE complex within the waste vitrification arena**
 - David Peeler, SRNL, Chair
 - John Vienna, PNNL, IDT Lead
 - Ian Pegg, CUA, University Lead
 - Innocent Joseph, ES, Industrial Lead
 - James Marra, SRNL, EM International, ICG Chair
 - Kurt Gerdes and Nick Machara, DOE-EM

Current Status

■ Technical leadership team discussions

- Identified several key technical areas
 - *Melter Technology*
 - *Glass Formulation / Properties*
 - *Waste Form Performance*
 - *Client / Site Needs*
 - *Pretreatment Interface*
- Identified national and international experts that could be used to support specific technical discussions
- Identified initial technical exchange topic
 - *Al-dissolution or Al-management with DOE Complex*



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Technical Workshops

Environmental Management



***Aluminum Management In The DOE Complex
EM-21 Waste Vitrification Workshop
September 24 – 25, 2008***

Workshop Overview

■ DOE/Facility Updates and Perspectives

- WTP and DWPF
- SRS Planning
- DOE-ORP

■ Pretreatment Perspectives on Al-dissolution

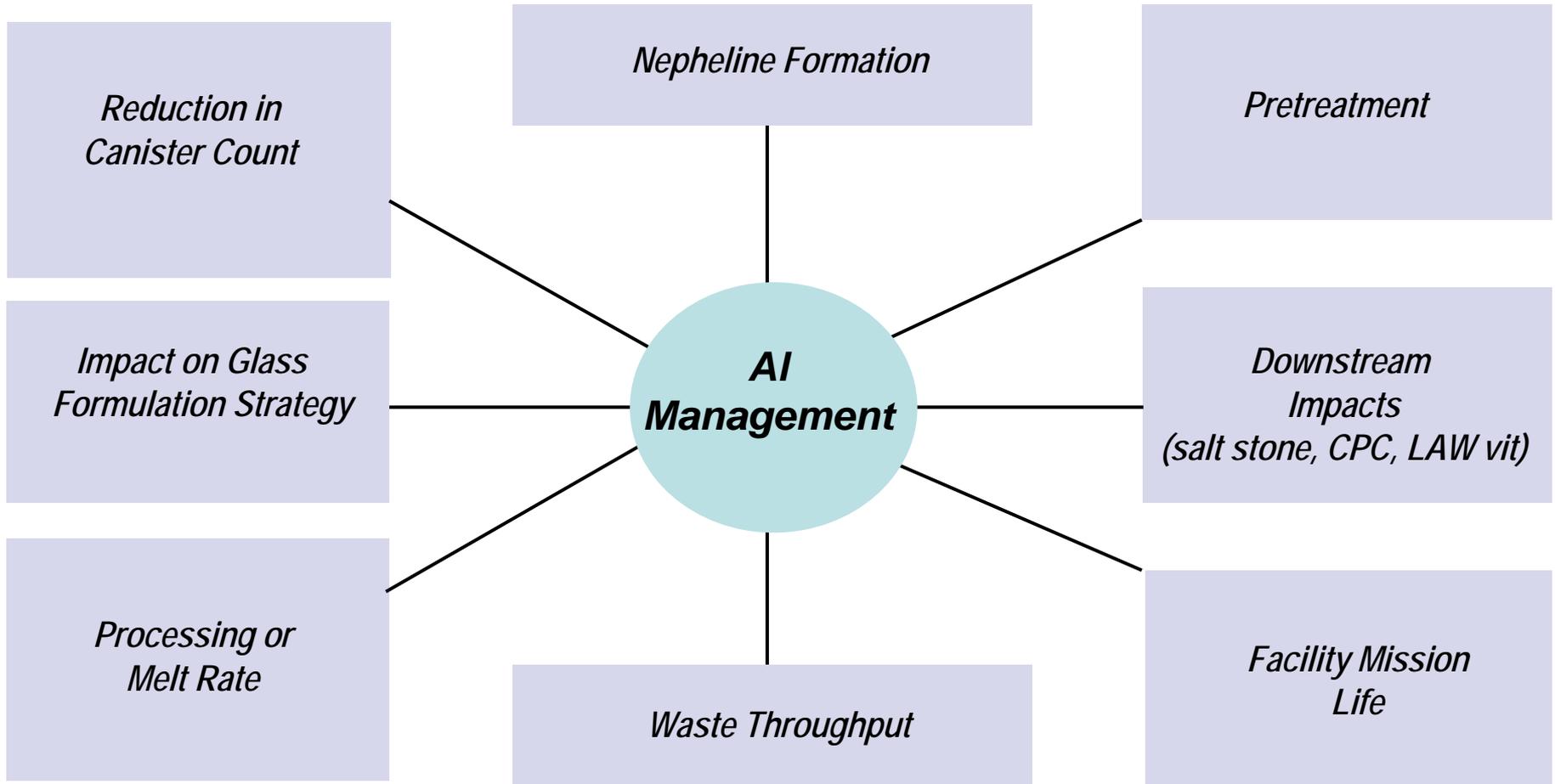
- SRS and Hanford
 - *Al-dissolution flowsheets*
 - *Different forms of Al in sludge*
 - *Al-dissolution demonstrations and tank farm operations*

■ Glass Formulation

- General Approach and Constraints
- High Al Waste: Formulation Strategies
- Nepheline Formation
- Processing / Melt Rate



Technical Issues Associated with AI-Management



- **Free, open, and productive exchange of information and ideas**
- **Identification of key technical issues and/or data gaps that the Waste Vitrification COP can address:**
 - Identify approaches or alternative solutions to specific technical issues
 - Potentially integrate into EM-21 WBS 1.5 (Immobilization) program
 - develop data and models for slow cooled glass durability (1.5.2.2.3)
 - high WL glasses for DWPF using existing melter technology (1.5.2.1.2)
 - develop predictive models for Hanford and DWPF high WL glasses (1.5.2.2.1)
 - melt rate modeling (1.5.2.3.2)
- **Workshop presentations issued on CD**
 - Contact David Peeler (david.peeler@srnl.doe.gov)



- Immobilization Community of Practice (I-COP) website
 - Foster communications
 - Summary of research programs
 - List of Contacts
 - Links
 - “Ask the Expert”
- Roll-out in the June 2009 timeframe
- Rosalind Blocker – key contributor

Office Of Waste Processing
Community of Practice

About the Program

Mission
The mission of the Office of Waste Processing is to reduce the technical risk and uncertainty of EM waste processing programs and projects through the timely development of solutions to technical issues. The Office offers guidance and technical assistance to EM's waste processing operations and is responsible for the development of technology needed to address waste processing problems. Additionally, the Office of Waste Processing provides technical direction and/or assistance to sites to address difficult technical problems, sponsor cross-site integration and technology information exchange efforts, and provides engineering and scientific expertise for external technical reviews and technology readiness assessments to address difficult technical problems or for resolution of issues identified by project managers.

Vision
The Office of Waste Processing identifies and reduces engineering and technical risks associated with key waste processing project decisions. The risks, and actions taken to mitigate those risks, are determined through technology readiness assessments, program reviews, technology information exchanges, external technical reviews, technical assistance, and targeted technology development and deployment. The Office works with other DOE Headquarters offices, project and field organizations to proactively evaluate technical needs, identify multi-site solutions, and improve the technology and engineering associated with project and contract management. Participants in this program are empowered with the authority, resources, and training to implement their defined priorities, roles, and responsibilities.

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■ COP currently planning a technical exchange

- Proposed schedule: November 2009
- Proposed topic: Next Generation Melter Initiative
 - *national and international experts*
 - *current baseline technologies*
 - Results, technical limitations, failure modes, possible advancements
 - *new melter concepts or technologies that could support transformational gains in waste loading and waste throughput*