ISMS/EMS Lessons Learned on Plutonium Disposition Projects at SRS

Presented by:

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Joan Bozzone Bio Information

Joan Bozzone works for the NNSA Office of Fissile Materials Disposition Office at SRS in the Site Engineering and Project Integration Division. She currently oversees all aspects of environmental and construction permitting and environmental compliance for the plutonium disposition projects at SRS, including the MOX Fuel Fabrication Facility, Pit Disassembly and Conversion Facility, and Waste Solidification Building.

Joan has more than 25 years experience in project management of environmental restoration, cleanup technology research and development, and construction projects in private, commercial, and government settings. She has B.S. and M.S. degrees in geology and is a graduate of the USDA Executive Potential Program Graduate School. She has been nationally licensed as a Registered Environmental Manager, and has held positions as senior geologist, hydrogeologist, and federal project manager for multi-million dollar construction projects. She has overseen development and implementation of environmental restoration projects at more than 10 DOE sites around the country. She served as the DOE Headquarters Environmental Program Manager for the Pantex Plant.

She was the team leader for the Management Systems Evaluation for the multi-billion dollar Pit Disassembly and Conversion Facility project replanning effort, focusing on 413.3 Project Management compliance and Earned Value Management System certification. She assisted in the development of the Environmental Impact Statement and Supplement Analysis for the multi-billion dollar MOX Fuel Fabrication Facility.

In addition to project management, she has 3 years experience in program planning for the Savannah River Site, co-authoring both the national award-winning 2000 SRS Strategic Plan and the SRS Long Range Comprehensive Plan, and recently received an award for development of a new strategic vision for the Savannah River Site.

Her expertise in energy resources includes 5 years' experience in coal and oil shale research at Exxon Production Research Company and 3 years' experience in oil exploration for Arco Oil and Gas. She recently served on the Energy Supply Technical Work Group for the South Carolina Climate, Energy, and Commerce Advisory Committee.

Background: Pu Disposition Projects

- **DOE will produce mixed plutonium and uranium oxide (MOX) nuclear fuel from excess U.S. weapon grade plutonium resulting from nuclear arms reduction**
- **Pit Disassembly and Conversion Facility (PDCF) will disassemble weapons "pits" and convert weapon grade plutonium into plutonium oxide feedstock for MOX fuel**
- **MOX Fuel Fabrication Facility (MFFF) at SRS will turn 34 metric tons of plutonium into nuclear fuel assemblies so that, after irradiation in commercial reactors, plutonium in spent MOX fuel will be unusable for nuclear weapons**
- **Waste Solidification Building (WSB) will solidify liquid radioactive waste streams from PDCF and MFFF and package it for shipping and disposal**

Berlin Wall comes down -- 1989
End of Cold War

Weapons Dismantlement at Pantex

US Surplus Plutonium Disposition Paths

National Nuclear Security Administration

Arms Reduction Agreements

Weapons Dismantlement at Pantex

Plutonium Pits

Interim Storage at Pantex

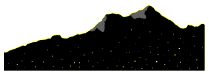
New SRS Facility

New SRS Facility

MOX Nuclear Fuel Assemblies

Burn in Existing, Domestic Commercial Reactors

Spent fuel is unsuitable and unattractive for use in nuclear weapons



Geologic Repository

Non-Pit Plutonium Stored at SRS

Clean Metal

Liquid Waste

Liquid Waste

Impure Plutonium Oxide*

New SRS Facility

Waste Isolation Pilot Plant

Low-level effluent treatment

*Non MOX-able surplus weapon-grade plutonium will be disposed of by DOE's Office of Environmental Management

Challenging Characteristics of NNSA Plutonium Disposition Projects

SRS is a large EM site in South Carolina

NNSA Office of Fissile Materials Disposition, a tenant on the EM site, is building three new projects in F Area

Integration of NNSA construction activities into:

- SRS infrastructure
- Established regulator relationships, agreements, and permits
- SRS site-level permits

Complex physical, regulatory, and legal interfaces exist between:

- **Projects** (MFFF-PDCF-WSB)
- **DOE** (NNSA/NN-NNSA/DP-DOE/EM)
- **Contractors** (MOX Services-SRNS-URS-USACE-SRR)
- **Regulators** (EPA-DHEC-NRC-OSHA-DOE)

Complexity of Pu Projects in F Area

National Nuclear Security Administration

Waste Solidification Building

- Designed and constructed by Sav r Solutions, the or
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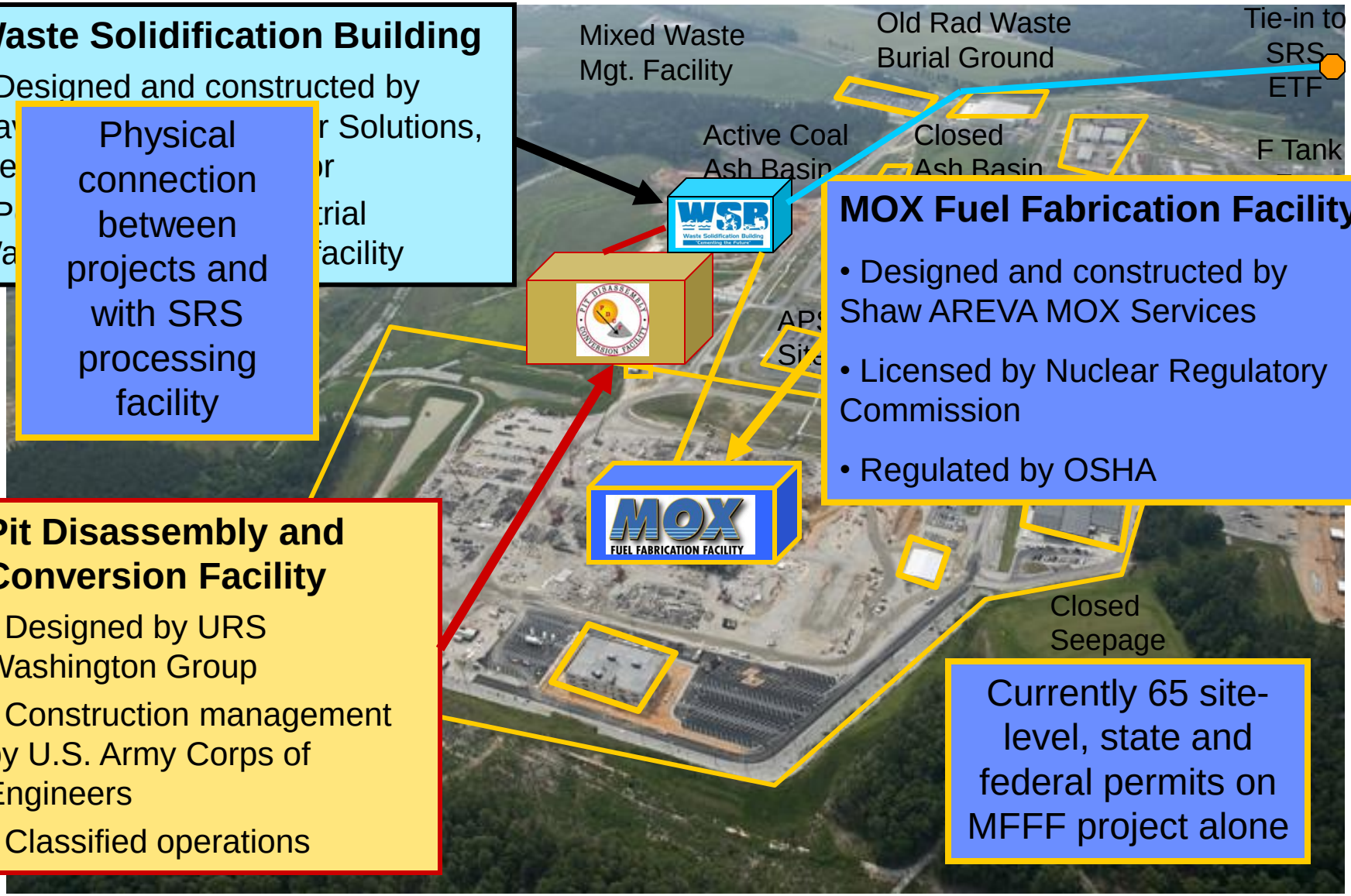
Physical connection between projects and with SRS processing facility



MOX Fuel Fabrication Facility

- Designed and constructed by Shaw AREVA MOX Services
- Licensed by Nuclear Regulatory Commission
- Regulated by OSHA

Pit Disassembly and Conversion Facility

- Designed by URS Washington Group
- Construction management by U.S. Army Corps of Engineers
- Classified operations

Currently 65 site-level, state and federal permits on MFFF project alone

MFFF Environmental Features

April 2009

MOX FUEL FABRICATION FACILITY

- **Brownfield locations**
- **Pollution prevention design with zero liquid effluents**
- **Waste minimization throughout construction and operations**
- **Subcontractor and employee training in environmental management and energy efficiency**
- **Ongoing environmental monitoring by Savannah River Ecology Lab**

Project Permitting Lessons Learned #1

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Lessons Learned:

- **Develop construction and permitting teams' working relationship and processes**
- **Foster and protect "SRS delegated authority" and the permitting teams' relationship**
- **Provide practical environmental training for managers, employees, and subcontractors**
- **Remind workers about permitting in meetings and on the job**

MOX Environmental Management

Environmental design and promotion

Temporary energy saving office facilities

Employee "Commitment Wall"

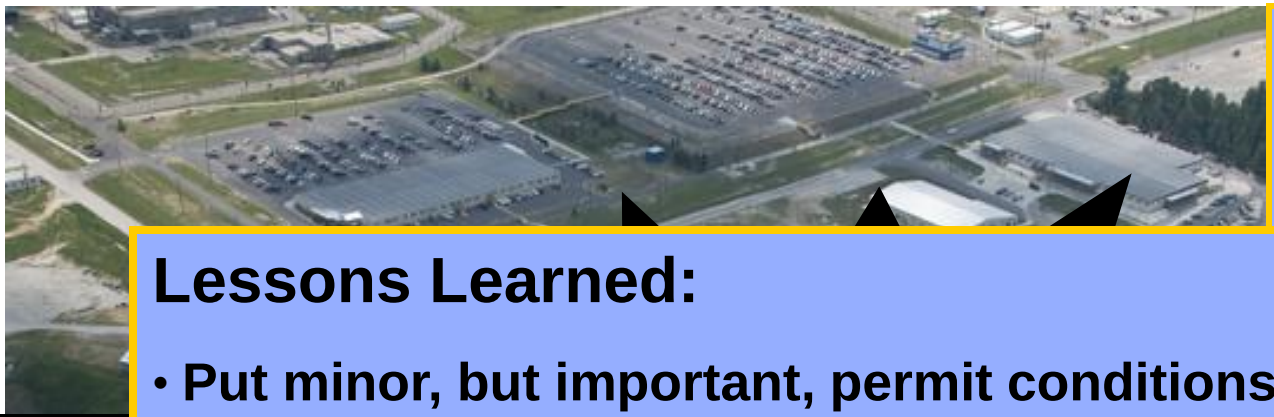
Segregating/recycling construction waste

Avoiding permit infractions

Communicating conservation

Project Permitting Lessons Learned #2

National Nuclear Security Administration



Situation:

- **Project is shown almost one year after permit**

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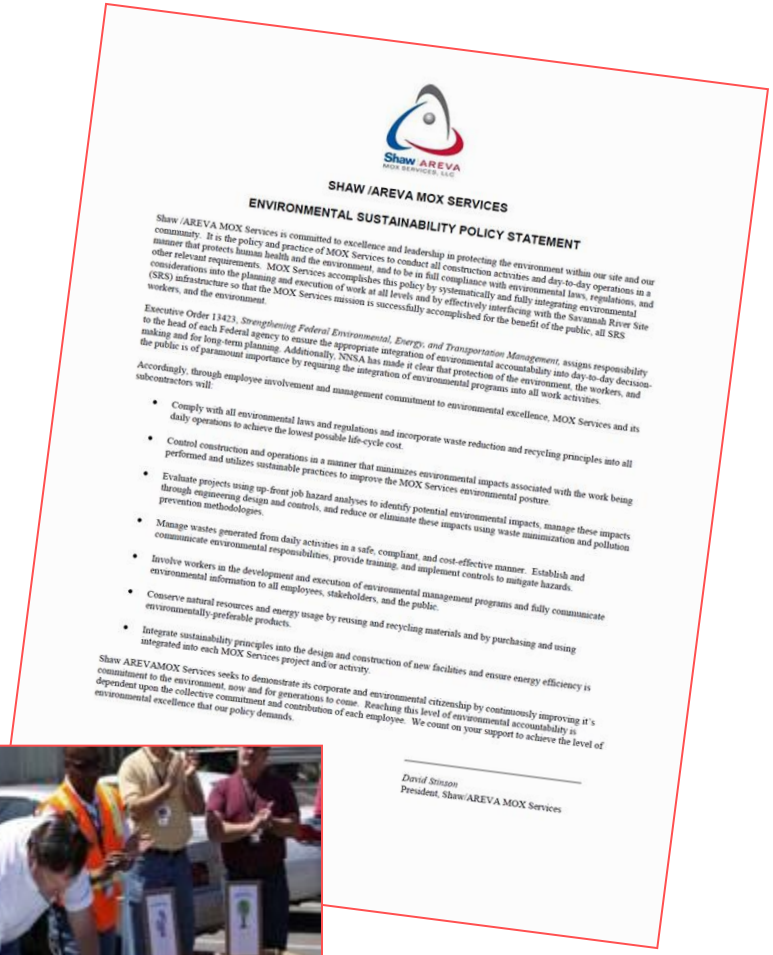
Lessons Learned:

- **Put minor, but important, permit conditions on integrated project schedules so they aren't forgotten**
- **Communicate openly with regulators and keep them apprised of field activity status**
- **Encourage working relationships between contractor groups**

MOX Environmental Sustainability Policy

National Nuclear Security Administration

Underground rainwater collection tank for irrigation



SHAW /AREVA MOX SERVICES

ENVIRONMENTAL SUSTAINABILITY POLICY STATEMENT

Shaw /AREVA MOX Services is committed to excellence and leadership in protecting the environment within our site and our community. It is the policy and practice of MOX Services to conduct all construction activities and day-to-day operations in a manner that protects human health and the environment, and to be in full compliance with environmental laws, regulations, and other relevant requirements. MOX Services accomplishes this policy by systematically and fully integrating environmental considerations into the planning and execution of work at all levels and by effectively interfacing with the Savannah River Site (SRS) infrastructure so that the MOX Services mission is successfully accomplished for the benefit of the public, all SRS workers, and the environment.

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, assigns responsibility to the head of each Federal agency to ensure the appropriate integration of environmental accountability into day-to-day decision-making and for long-term planning. Additionally, NNSA has made it clear that protection of the environment, the workers, and the public is of paramount importance by requiring the integration of environmental programs into all work activities.

Accordingly, through employee involvement and management commitment to environmental excellence, MOX Services and its subcontractors will:

- Comply with all environmental laws and regulations and incorporate waste reduction and recycling principles into all daily operations to achieve the lowest possible life-cycle cost.
- Control construction and operations in a manner that minimizes environmental impacts associated with the work being performed and utilizes sustainable practices to improve the MOX Services environmental posture.
- Evaluate projects using up-front job hazard analyses to identify potential environmental impacts, manage these impacts through engineering design and controls, and reduce or eliminate these impacts using waste minimization and pollution prevention methodologies.
- Manage wastes generated from daily activities in a safe, compliant, and cost-effective manner. Establish and communicate environmental responsibilities, provide training, and implement controls to mitigate hazards.
- Involve workers in the development and execution of environmental management programs and fully communicate environmental information to all employees, stakeholders, and the public.
- Conserve natural resources and energy usage by reusing and recycling materials and by purchasing and using environmentally-preferable products.
- Integrate sustainability principles into the design and construction of new facilities and ensure energy efficiency is integrated into each MOX Services project and/or activity.

Shaw AREVA MOX Services seeks to demonstrate its corporate and environmental citizenship by continuously improving it's commitment to the environment, now and for generations to come. Reaching this level of environmental accountability is dependent upon the collective commitment and contribution of each employee. We count on your support to achieve the level of environmental excellence that our policy demands.

David Stinson
President, Shaw AREVA MOX Services

Signing Ceremony on Earth Day

Project Permitting Lessons Learned #3

National Nuclear Security Administration

Situation:

materials prior to permitting

Lessons Learned:

- Hold regular, structured integration meetings between the different projects' environmental teams to make sure each project is aware of the others' permitting actions
- Coordinate communication with regulators through SRS site environmental team
- Actively participate on the Savannah River Integration Team comprised of environmental managers from SRS, EPA, and State
- Assign a designated integrator from the M&O to facilitate regulatory communication and dispute resolution

ISMS in Environmental Permitting

- Design features into the facility to minimize permit requirements
- Insure that permit requirements flow down to subcontractors
- Schedule and facilitate joint communication with environmental management stakeholder teams
- Develop wr
- Include per
- Assure that permi
contracts
- Track constructio
- Evaluate propose
- Coordinate draft
teams

- Spend time on the jobsite to know what the contractors are doing in the field
- Regularly monitor contractor environmental performance and flowdown to subcontractors

- Incentivize environmental performance
- Maintain communication with regulators on project status
- Track progress on meeting environmental goals
- **KEEP PERMITTING ACTIVITIES OFF OF THE PROJECT CRITICAL PATH!!!**

Lessons Learned in Project Permitting Show the Importance of ISMS/EMS!