

**Record of Meeting
JCCEM U.S./Russian Workshop on
Decontamination of Plutonium Gloveboxes**

**December 13-14, 2000
Miamisburg, Ohio**

Russian Participants:

Evgeny Krjukov, MINATOM
Igor Smirnov, Khlopin Radium Institute
Alexander Pavlov, VNIPIET
Viktor Tishkov, Khlopin Radium Institute
Genrich Zakharchuk, VNIPIET
Valery Shilov, VNIPIET

U.S. Participants:

Steve Bossart, DOE-NETL.
John McFee, IT Corp., LANL
Ellen Stallings, LANL
Kevin VanCleave, LANL
Doug Wedman, LANL
Charles Brown, Kaiser-Hill Co., Rocky Flats Site
Ted Venetz, PNNL
Ron Borisch, Fluor Hanford
Kevin Stoner, BWXT Savannah River Co.
Sam Cheng, DOE-MEMP
Douglas Maynor, DOE-OH
William P. Davis, BWXT of Ohio
Mikhail Khankhasayev, Florida State University
Mark Whitney, SAIC

Interpreters:

Tanya Albert, TEA
Paul Grenier, TEA

Activities:

Steve Bossart (DOE-NETL) welcomed the workshop participants and outlined main workshop objectives. John McFee (Los Alamos LSDDP Administrative Project Manager, IT Corporation) presented the Workshop Agenda and introduced the speakers. Evgeny Krjukov (MINATOM) expressed thanks on behalf of the Russian delegation and stated his desire that the workshop be an effective and successful step in U.S.-Russian cooperation on D&D issues.

Valery Shilov (VNIPIET) presented background information on the history and direction of main activities at VNIPIET, which is focused on design and construction of nuclear defense and nuclear industry facilities, and R&D work in the D&D area.

Kevin VanCleave (LANL) presented a comprehensive overview of the history and main objectives of the decontamination of plutonium gloveboxes at Los Alamos National Laboratory. The LANL Decontamination & Volume Reduction System (DVRS) is targeted at adapting and integrating existing and emerging technologies to resolve the DOE-wide legacy of oversize metallic TRU waste. Currently, LANL conducts characterization of the fiberglass-reinforced plywood crates containing plutonium gloveboxes, which includes X-Ray assessment and gamma spectroscopy. Finishing the construction of a confinement facility will make it possible to perform decontamination and dismantling of plutonium gloveboxes. The LANL glovebox decontamination approach includes mechanical, chemical, electrochemical, and wet wiping methods.

Discussion of the VNIPIET electrochemical technology for decontamination of plutonium gloveboxes was started by Genrich Zakharchuk (VNIPIET) who presented basic ideas and principal elements of this technology. Alexander Pavlov (VNIPIET) presented the results of testing this technology within the framework of the JCCEM Contract "Detailed Analysis of Applicability of Electrochemical and Foam Decontamination Techniques for the Needs of Los Alamos National Laboratory" (Period of performance Dec.1, 1999 - August 30, 2000). During this presentation, Dr. Pavlov showed a short movie that was produced by VNIPIET to demonstrate the electrochemical decontamination technology equipment and its operational features and effectiveness during the decontamination of a glovebox and lead bricks, performed within the context of the JCCEM project.

After a detailed discussion that followed these presentations, the speakers clarified many technical details (such as commercial availability, number of needed personnel and training requirements, electrolyte average consumption, etc.) of the VNIPIET electrochemical technology.

Doug Wedman (LANL) overviewed the history of the application of electrochemical decontamination technologies in the U.S. and other countries. He presented the Efficient Portable Unit, which was developed at LANL. This technology has been applied for decontamination of some of the LANL plutonium gloveboxes, and the results of its performance were presented and discussed.

Alexander Pavlov (VNIPIET) presented the results of the application of the foam technology that was developed at VNIPIET. The results were obtained within the JCCEM project, Detailed Analysis of Applicability of Electrochemical and Foam Decontamination Techniques for the Needs of Los Alamos National Laboratory" (Period of performance Dec.1, 1999 - August 30, 2000).

John Mcfee (IT Corp.) presented an overview of applications of the foam decontamination technology "Glovebox D&D Using Foam Decontamination." In his

discussion he analyzed various available technologies from the aspects of (1) technology performance, (2) decontamination factors achieved and final activity, (3) manpower required, (4) typical production rate, (5) capital cost system, (6) operating cost, and (7) commercial status of system.

Charles Brown (Kaiser-Hill, Rocky Flats Site) presented the Rocky Flats Closure Project. According to the current schedule, this site should be closed by 2006. He presented the results of the Building space 779 D&D Project, which has resulted in the complete demolition of Building 779. He listed main typical stages that are needed during the site closing process and showed how they were performed at Rocky Flats. One component in this process is the waste size reduction system methods. A Remote Centralized Size Reduction System has been developed and constructed. The cost of glovebox decontamination can be reduced strongly if decontamination of gloveboxes is performed prior to the system reduction process. Other DOE sites have needs in all areas of technology deployment currently underway at Rocky Flats.

Valery Shilov (VNIPIET) presented a Steam-Ejection Decontamination technology for (remote and manual application) of plutonium polluted surfaces. This technology is commercially available and practically applied in decontamination activities in the nuclear industry. Decontamination solutions can be added to the steam.

Ted Venetz (Fluor Hanford) overviewed the Hanford Plutonium problem, experience, and management approach. The site has accumulated about 500 Pu contaminated gloveboxes. The future plan of the Hanford site concerning the disposal of Pu gloveboxes involves in (1) Size reduction; (2) Construction of an on-site waste processing facility, and (3) Implementation of the Canyon disposition initiative, which includes entombment of waste and contaminated equipment in the Process Canyon Building. The plans for specific decontamination technologies/methods are not yet determined.

Kevin Stoner (BWXT Savannah River Co.) provided an overview of the Savannah River Site's plutonium glovebox experiences. The SRS complex in Aiken, SC was built and began operation in the early 1950's. These facilities include fuel fabrication, 5 production reactors, 2 separations (canyons) and laboratory facilities. The majority of the Pu contaminated gloveboxes at SRS are associated with the canyon facilities. The remainder of these gloveboxes are associated with the laboratory facilities and special processing lines. He gave an overview of the operational history of the 2 canyon facilities, discussing process upgrades and the partial dismantlement and removal of one of the Pu-238 process lines in the 1980's. Current baseline schedules show continued operation of the separation facilities into 2006/08. Other glovebox deactivation work at SRS was associated with the fuel fabrication facility (highly enriched uranium process). Mr. Stoner also discussed TRU glovebox dismantlement experiences associated with the decommissioning efforts at the Barnwell, SC Nuclear Fuel Reprocessing Facility.

Ellen Stallings (LANL) reviewed the up-to-date status of the Los Alamos LSSDP program specifically focusing on the Pu glovebox issues. FY 99 Demonstration program has been completed, and LANL LSSDP is looking for new proposals. E. Stallings presented and discussed some of the technologies that were demonstrated successfully with the LSSDP program in FY99 -00.

John McFee (IT Corp., LANL LSSDP) presented and discussed the LANL/DVRS Needs List. John McFee told that the Technology Selection Committee of the LANL Large-Scale Demonstration and Deployment Project will be reviewing the technologies for selection for the demonstration in FY01 in January 2001. These technologies include VNIPIET electrochemical and foam decontamination technologies. Strippable coatings may also be considered.

John McFee and Kevin VanCleave made two informative presentations on glovebox D&D using a soft media blasting and a strippable coatings.

Soft media is designed to clean-up contaminated surfaces. The surface is decontaminated using soft granular media (non-abrasive fiber media, abrasive fiber media, aluminum oxide fiber media) "blasted" against the surface. The technology is commercially available.

Strippable coatings system is designed to clean-up a contaminated surface by using temporary coating that is easily removed. A specific type of a coating is selected in accordance with the type of contamination and the type of a surface. Strippable coatings are commercially available.

During the workshop, the following DOE site needs in the area of decontamination plutonium gloveboxes were identified:

Los Alamos LSDDP /DVRS:

- Equipment for removal of lead shielding
- Analysis of residual lead on stainless steel
- Equipment for in-process TRU characterization
- Improved monitoring systems for Be, Hg, Tritium
- Tools for opening the fiberglass reinforced plywood crates
- Equipment for spot decontamination
- Systems for operational data collection and management
- Headspace gas sampling for combustible gases
- Quiet, high volume air filtration system
- Improved PPE (cooling, communication)

Savannah River Site:

- In-situ (in place) size reduction that is capable of remote or automated operation; system plus would be non-airborne contamination generating during cutting

- In place (high background) characterization or identification of hot spots (i.e. reactive chemicals or coatings)
- Non-aqueous decontamination techniques
- Stabilization coatings for long term interim storage of gloveboxes

Hanford Site:

- Size reduction Techniques
 - In place, Remote and Centralized Systems Size to fit into 55 gallon drum
- Improved Characterization / Measurement
 - Decreased error on 100nCi/gram determination
- Glovebox Decontamination Techniques
 - Preference to "dry" methods
 - "Sturdy and Simple"
 - Robust
 - Coupled with robotic size reduction system
- Equipment removal techniques which reduce glove cutting/piercing risk

Rocky Flats Site

- In -place cutting
- Decontamination to SLO
- Tank sludge removal without adding liquid
- Assay systems

U.S. participants expressed interest in the following Russian technologies discussed during the Workshop:

- Continue to review the VNIPIET Foam and Electrochemical decontamination technologies for possible demonstration in LANL LSDDP.
- Continue review the NIKINT strippable and non-strippable coatings for possible demonstration
- Getting more information on strippable coating that change color based on the level of Plutonium contamination

Action Items:

1. The U.S. side will provide, through official JCCEM channels, more details on the DOE sites technology needs where the aforementioned Russian technologies may have applications. The correspondence will identify the sites and their specific needs and will solicit proposals from the Russian side.
2. Based on the information presented from the U.S. side during the workshop, the Russian side will identify additional Russian-developed technologies with potential

applications to DOE site needs. These technologies should be presented in a JCCEM proposal format through standard JCCEM channels.

3. US speakers will e-mail a copy of their presentations for further distribution to Mark Whitney at james.m.whitney@saic.com
4. U.S. side will provide LANL Large-Scale Demonstration needs
5. Russian foam and electrochemical decontamination technologies will be reviewed by the Technology Selection Committee of the LANL Large-Scale Demonstration and Deployment Project on oversized metallic TRU waste.
6. Explore possible workshop(s) on the following topics:
 - Project management
 - Stakeholder/public interaction
 - Transfer of buildings, land, and property for private sector use
 - Contracting for environmental remediation work

The Record of Meeting was signed by

Steve Bossart
Department of Energy, NETL

and

Evgeny Krjukov
MINATOM