

*Planning and Coordination of Activities Supporting
the Russian System of Control and Accounting of
Nuclear Materials at Rosatom Facilities in the
Framework of the U.S.-Russian Cooperation*

V.V. Sviridova (VNIIA), V.V. Erastov (Rosatom), N.V. Isaev
(VNIIA), V.A. Romanov (Rosatom), V.S. Rudenko (VNIINM),
A.S. Sviridov (VNIIA), and G.V. Titov (VNIINM)
RUSSIA

And

B. Jensen (US DOE), L. Neymotin (BNL), and J. Sanders (INL)
USA

*Nonproliferation and National Security Department, Brookhaven National
Laboratory, Upton, NY 11973, USA.*

*Presented at the Third Russian International Conference on Nuclear
Material Protection Control and Accounting
Obninsk, Russia
May 16-20, 2005*

Brookhaven National Laboratory

P.O. Box 5000
Upton, NY 11973-5000
www.bnl.gov

Managed by

Brookhaven Science Associates, LLC
for the United States Department of Energy under
Contract No. DE-AC02-98CH10886

DISCLAIMER

This work was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

**Planning and Coordination of Activities Supporting the Russian System of
Control and Accounting of Nuclear Materials at Rosatom Facilities
in the Framework of the U.S.-Russian Cooperation**

V.V. Sviridova (VNIIA), V.V. Erastov (Rosatom), N.V. Isaev (VNIIA), V.A. Romanov (Rosatom),
V.S. Rudenko (VNIINM), A.S. Sviridov (VNIIA), and G.V. Titov (VNIINM)
RUSSIA

and

B. Jensen (US DOE), L. Neymotin (BNL), and J. Sanders (INL)
USA

1. Introduction

The MC&A Equipment and Methodological Support Strategic Plan (MEMS SP) for implementing modern MC&A equipment and methodologies at Rosatom facilities has been developed within the framework of the U.S.-Russian MPC&A Program. This plan developed by the Rosatom's Russian MC&A Equipment and Methodologies (MEM) Working Group and is coordinated by that group with support and coordination provided by the MC&A Measurements Project Office of National Infrastructure and Sustainability, US DOE.

Implementation of different tasks of the MEMS Strategic Plan is coordinated by Rosatom and US DOE in cooperation with different U.S.-Russian MC&A-related working groups and joint site project teams. This cooperation allows to obtain and analyze information about problems, current needs and successes at Rosatom facilities and facilitates solution of the problems, satisfying the facilities' needs and effective exchange of expertise and lessons learned.

2. Objective of MEMS Strategic Plan

The objective of the MEMS Strategic Plan is to enhance effectiveness of activities implementing modern equipment and methodologies in the Russian State MC&A system. These activities are conducted within the joint Russian-US MPC&A program aiming at reduction of possibility for theft or diversion of nuclear materials and enhancement of control of nuclear materials.

3. Approach in development and coordination of implementation

- MEMS SP is developed and coordinated by the Russian MC&A Equipment and Methodologies (MEM) Working Group created by a Minatom Order No. 292, May 22, 2000. Its development and coordination in the area of US-Russian cooperation is funded within a contract between Brookhaven National Laboratory (BNL, USA) and All-Russian Research Institute of Automatics (VNIIA, Russia).
- Sections of MEMS SP related to regulatory documents and reference materials are agreed with the Regulatory Documents and Reference Materials working groups, respectively.
- MEMS SP includes MEM improvement activities both at the industry and Rosatom facilities levels.
- Implementation is conducted in agreement with existing Russian regulatory documents in the MC&A area.
- As its basis, the MEMS SP uses proposals derived from Rosatom facilities' plans (programs) for implementing MEM.
- In the process of its implementation, MEMS SP can be modified and consequently approved by RF Rosatom and US DOE.

4. Major directions of MEMS SP

The following activities in MEM area at the industry and facility levels must be completed within the US-Russian cooperative program in order to establish a sustainable MC&A system:

- Development of MEM documentation
- Improvement of infrastructure supporting sustainable MC&A MEM system
- Supply and implementation of modern equipment and methodologies gradually establishing an effectively functioning MC&A system at all Mass Balance Areas (MBAs) at Rosatom facilities, including:
 - System of measurement and identification of characteristics of nuclear materials;
 - Video and radioactive environment surveillance systems;

- System of control of attributive characteristics of nuclear materials using barcoding;
- System of control of access to nuclear materials using tamper indication devices (TID).

5. Management of implementation and development of MEMS SP

5.1. Organizations controlling development and implementation of MEMS SP within the US-Russian MPC&A program are:

- From Russian side – Department of Budget Planning and State Procurement of Rosatom (UBP&GZ) Pocatoma;
- From US side – Office of National Infrastructure Sustainability of US DOE;

5.2. Organizations responsible for coordination and implementation of MEMS SP within the US-Russian MPC&A cooperative program:

- From Russian side – VNIIA; under VNIIA-BNL contract, is responsible for coordination of the MEM WG activities developing and implementing MEMS SP within the US-Russian cooperative program;
- From US side – BNL; through its contract with VNIIA and in cooperation with the US DOE “Measurements” project team, coordinates development and implementation of MEMS SP.

5.3. Participants:

- Russian MEM Working Group – development and coordination of implementation of MEMS SP in cooperation with the Russian reference materials and regulatory documents working groups;
- Rosatom facilities – analysis of needs and implementation of tasks according to their program and plans for MEM support and MC&A systems improvement;
- Joint US-Russian site project teams responsible for site activities within the Russian-US MPC&A program;

5.4. Types of MEM WG activities coordinating implementation of MEMS SP:

- Formal requests for and analysis of information obtained from Rosatom facilities regarding status of implementation activities and needs, and distribution proposals and deliverables according to the Document, “MC&A Provision at Rosatom”;
- Organization of working meetings of MEM WG Secretariat to discuss proposals for MEMS SP with participation of representatives of:
 - Rosatom;
 - MEM Working Group;
 - Secretariat of Reference Materials Working Group;
 - Regulatory Documents Working Group;
 - BNL and US DOE “Measurements” project team;
- Organization of scheduled meetings discussing status of implementation activities and developing joint decisions with representatives of US DOE Office of National Infrastructure and Sustainability:
 - Joint meetings of MEM WG Secretariat and US representatives (four times a year);
 - Joint meetings of MEM WG with US representatives (two times a year).

6. Main tasks of MEMS SP

MEMS SP includes tasks in the following areas:

- MC&A equipment: identification of needs, supply, implementation, and operation;
- Measurement methodologies (attestation at the industry and facility levels): identification of needs, development, attestation, and implementation;
- Sources and reference materials: identification of needs and technical specifications (*Reference Materials working group is responsible for coordination of manufacture, attestation, and implementation*);
- Documents related to MEM support;
- Information support of Rosatom facilities and organizations.

Information about the status of implementation and additional needs in the MEM area obtained from Rosatom facilities is used in development and coordination of implementation of MEMS SP.

7. Status of MEMS SP implementation

Following MEMS SP activities have been completed:

- Analysis of implementation of MC&A equipment provided to Rosatom facilities within US-Russian MPC&A program.

- Identified activities that must be conducted to complete implementation of equipment provided to facilities, including certified methodologies and reference materials.
- Identified needs in additional equipment by Rosatom facilities that is proposed to be provided within the US-Russian cooperation.
- Conducted analysis of failures of equipment provided to the facilities and developed a proposal for technical support and maintenance of foreign equipment.

Ongoing tasks and activities:

- Review of existing equipment, measurement methodologies and reference materials for measurement of nuclear materials in scrap and development of proposal for an industry-wide program for scrap measurement.
- Review and testing of bar coding technologies and development of a draft proposal for establishment of a unified bar coding system for nuclear materials transferred between Rosatom facilities.

Following activities are discussed for possible implementation during the next fiscal year:

- Implementation of modern TIDs at several Rosatom facilities.
- Development of documentation for MC&A measurement quality control.
- Implementation of neutron coincidence counters for accounting measurements at the Rosatom facilities (certification and technical support and maintenance of equipment, development and attestation of measurement methodologies and reference materials).
- Development of proposal for upgrading Russian-made mass spectrometers.
- Information support of Rosatom facilities in the area of MC&A equipment and methodologies.