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Characterization of Nuclear Materials Using Complex of Nondestructive and Mass-Spectroscopy Methods of Measurements

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Information and Analytical Centre for nuclear materials investigations was established in Russian Federation in the February 02 of 2009 by ROSATOM State Atomic Energy Corporation (the order # 80). Its purpose is in preventing unauthorized access to nuclear materials and excluding their illicit traffic. Information and Analytical Centre includes analytical laboratory to provide composition and properties of nuclear materials of unknown origin for their identification.

According to Regulation the Centre deals with:

- identification of nuclear materials of unknown origin to provide information about their composition and properties;
- arbitration analyses of nuclear materials;
- comprehensive research of nuclear and radioactive materials for developing techniques characterization of materials;
- interlaboratory measurements;
- measurements for control and accounting;
- confirmatory measurements.

Complex of nondestructive and mass-spectroscopy techniques was developed for the measurements. The complex consists of:

- gamma-ray techniques on the base of MGAU, MGA and FRAM codes for uranium and plutonium isotopic composition;
- gravimetric technique with gamma-spectroscopy in addition for uranium content;
- calorimetric technique for plutonium mass;
- neutron multiplicity technique for plutonium mass;
- measurement technique on the base of mass-spectroscopy for uranium isotopic composition;
- measurement technique on the base of mass-spectroscopy for metallic impurities.

Complex satisfies the state regulation requirements of ensuring the uniformity of measurements including the Russian Federation Federal Law on Ensuring the Uniformity of Measurements # 102-FZ, Interstate Standard GOST R ISO/IEC 17025-2006, National Standards of Russian Federation GOST R 8.563-2009, GOST R 8.703-2010, Federal Regulations NRB-99/2009, OSPORB 99/2010. Created complex is provided in reference materials, equipment end certificated techniques. The complex is included in accredited analytical laboratory of JSC "VNIINM's" nuclear materials account and control system.

Country or International Organization

Russian Federation

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