



USE OF BAR-CODE TECHNOLOGY IN MC&A SYSTEM

V. MYKHAYLOV, N. ODEYCHUK, V. TOVKANETZ, V. LAPSHIN
National Science Centre "Kharkov Institute of Physics & Technology" (KIPT),
Kharkov, Ukraine

T. EWING
Argonne National Laboratory, Chicago, USA

Significant problem during the treatment with nuclear materials is the usage of reliable, rapid, integrant automated systems of nuclear material control and account. Thus the dose loading of attending technical personnel is essentially reduced. One of the directions of the solution of the indicated problems is the usage of bar-code technology. Such integrated system should include protection of materials, measuring of materials, and record of materials and drawing up of an inventory list. Especially it is important for the enterprises, on which the enriched uranium and other nuclear materials, which are under IAEA warranties, are utilized.

According to US assistance program in the field of MC&A, NSC KIPT has been received indispensable equipment and software, including equipment of nondestructive analysis and automated inventory material accounting system (AIMAS), which was intended for modernizing of nuclear material account system in NSC KIPT. The purpose of operations was estimation of generalized procedures on both MC&A and nondestructive analysis, and updating them so that they might obey the specific conditions of the Enterprise and demands of the Ukraine Regulatory Administration. In NSC KIPT, which is the largest nuclear and physics research center in Ukraine, the measures on enactment of bar-code technology for nuclear materials control and account with the usage of equipment and software of US leading firms (Intermec, Prodigy Max, Tharo Systems, Inc) have been conducting since 1999.

During the introduction of this technology, it has been installed the software on nuclear material control and account (AIMAS data base), which was intended for this activities, on NSC KIPT computers. The structure of the NSC KIPT's facility has been determined according to demands of the State and IAEA demands. The key measuring points of inventory quantity has been determined in nuclear material balance zone and the concrete computers, on which is kept nuclear material control and account in each key measuring point, has been assigned. The items of information on the structure of the Facility, and data, which was verified and prepared for input, on nuclear material for each key measuring point of inventory quantity of the material have been set into nuclear material control and account system.

Not only data fields for the NSC KIPT's facility have been set into nuclear material control and account system, but also those fields, which allow utilizing of system advantages effectively during IAEA inspections conducting: bookkeeping of seals account and determination of the correspondence between old and new places of nuclear material storage in each key measuring point.

Bar-code technology usage has been ensured rapid, reliable multilateral control and account of nuclear material in NSC KIPT. Furthermore, the dose loading for attending technical personnel has been reduced more than in 2 times.