DEVELOPMENT AND RESEARCH OF NUCLEAR MATERIAL CONTINUOUS CONTROL AND ACCOUNTING SYSTEM AT RSC "KURCHATOV INSTITUTE"

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РАЗРАБОТКА И ИССЛЕДОВАНИЕ СИСТЕМ НЕПРЕРЫВНОГО КОНТРОЛЯ И УЧЁТА ЯДЕРНОГО МАТЕРИАЛА В РНЦ «КУРЧАТОВСКИЙ ИНСТИТУТ»

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To enhance the efficiency of nuclear materials control and accounting a complex of weight sensors and a complex of "smart shelves" were put into operation at one of the facilities of the RSC "Kurchatovskiy Institute".

The weight sensors and "smart shelves" equipment designed in ORNL provide for a continuous, remote measuring of weight of the controlled items and their constant inventory valuation.

After inspection, testing, adjustment and finishing of the used software the both complexes were built up at one of the nuclear material depositories. The complexes control more than 20 kg of uranium-containing nuclear material with enrichment of 90% by U-235, in form of small non-identified components placed in specific casks.

Research of the complex serviceability shows:

1. A high stability of their operation. After adjustment there was no an observed failure. The weight sensor signal fluctuations were equal to 0,1%.
2. The potential for instantaneous verification of location and availability of the casks with nuclear material at storage place.
3. Sensor sensitivity is about 10 g by actual (ligature) weight.

Thus, application of the weight sensor complex, combined with the complex of "smart shelves", provides for online detection of the clandestine, long-term removal of nuclear material in small portions.

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