SYSTEM OF ACCOUNTING AND CONTROL OF NUCLEAR MATERIALS (MCA) RELATIVE TO IAEA SAFEGUARDS AND IMPROVEMENT OF RADIOECOLOGICAL SITUATION OF JOINT STOCK COMPANY "ULBA" METALLURGICAL PLANT

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"Ulba" Metallurgical Plant" Joint Stock Company

Before 1991, Joint Stock Company "Ulba" Metallurgical pLant" (JSC "UMZ") was the Production Association "Ulba Metallurgical pLant" of USSR Atomic Industry Ministry producing beryllium, tantalum products, specific types of nuclear fuel and energy reactors nuclear fuel. To the present moment, it basically preserved its activities, except specific production areas.

Report authors	Previous tittle	Present tittle
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The project goal is to introduce Nuclear Materials Control and Accounting (NMCA) system following IAEA requirements.

Republic of Kazakstan had joined to "Non-Proliferation Treaty" as non-nuclear state requires IAEA Safeguards for all nuclear facilities of the country. One of the most important Safeguard components is a Materials Control and Accounting (MCA) developed system providing both reliable Physical Protection and valid, in-time nuclear materials accounting availability and transfer.

For this it is necessary not only to re-arrange the existing MCA system (book keeping and store-houses accounting) which is not conforming to IAEA requirements but also to improve considerable Physical Protection system both of Uranium and Thorium containing materials.

Following goals must be accomplished following this Project :

- Develop computerized and automated MCA data system;
- Provide up-to-date and reliable accounting and control of availability and transfer of nuclear materials, detect loss or theft of nuclear materials;
- Improve book keeping of nuclear materials, provide paperwork for raw materials and finished products sales and purchase control, process nuclear materials shipment data;
- Reduce sampling error and to obtain precise measure of nuclear materials to obtain ESADRA target values;
- Thorium concentrates transfer preliminary released from raw Beryllium to the new storage to prevent environment radiation pollution and obvious fire accidents;
- Improve radioecological situation of the territory caused by old storage demounting and decontamination of site;
- Improve accounting, storing and Physical Protection of Thorium.

At the present moment MCA system is developed in collaboration with US Nuclear Regulatory Commission and Swedish Nuclear Inspection within the limits of appropriate interstate commitments.

Project shall provide as follows:

- Establish updated automated MCA system providing nuclear materials transfer tracing within the facility introducing specific time for materials transfer to the destination point and notification of the facility Physical
- Protection Service of the time violation;
- Establish measure system and measurement control program to provide the improvement of measure results to obtain ESARDA target values;
- Containment/surveillance;
- Calculation precision measure during the materials balance estimation and MUF error;
- Improve radioecological situation of storage for production raw materials of "Ulba State Holding Company" as well as accounting, control and Physical Protection of Thorium.

Following is the proposal to obtain goals of the Project :

- Develop accounting and control systems
- Develop basic standards and procedures for MCA system
- Develop users specifications of MCA data system
- Develop software of MCA data system
- Assembly and adjustment of local network at the production facilities
- Automated MCA data system personnel training
- Develop measurement system
- Determination of the mistakes in sampling and measurement of Uranium and isotopes content
- Develop the procedures of sampling and measurement of Uranium and isotopes content providing ESADRA target values
- Develop measure control program covering scales and analytical equipment and measuring methods
- Develop software for measure control program support
- Thorium shipment, decontamination and improvement of Physical Protection of Thorium storage
- Accounting of Thorium containing materials when transferring to the new storage
- Arrange storage decontamination
- Develop new systems of Thorium Containment/Surveillance and Physical Protection

Project duration 36 months