FNCA

Forum for Nuclear Cooperation in Asia

COUNTRY REPORT
Republic of Kazakhstan

2019

Nuclear Fuel Cycle

Leading position at uranium market

Kazakhstan keeps the leading position (40%) at the world market of natural uranium production

Uranium products output

Enterprises of Kazakhstan produce natural uranium oxide concentrate, uranium dioxide powder and fuel pellets. A new facility for fuel assemblies' production (200 tons FA/year) is under construction

Geographic expansion of sales

Current market of uranium products from Kazakhstan includes the China, Canada, USA, Russia and France and tends to extension (Great Britain, Sweden and Brazil is added in 2018–2019)

Nonproliferation and Safeguards

Kazakhstan implementation of nonproliferation policy

- Joint statement of ME RK and US Department of Energy's National Nuclear Security Administration on cooperation to reduce risks of global threats and nuclear security.
  The statement contains a joint work plan for treatment of high-enriched fuel of research reactors in the Republic of Kazakhstan
- In 2019–2020 Kazakhstan is chaired international association "Nuclear Suppliers' Group"

Joint statement of ME RK and US DoE
September 17, 2019 at 63rd session of IAEA GC

Ambassador Kairat Sarybay,
Chair of the Nuclear Suppliers Group, 2019–2020

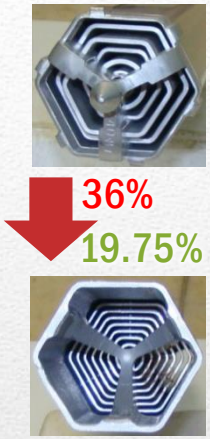
Nonproliferation and Safeguards

- Decision was made concerning delivery of radioactive rare gas monitoring station – network element of Comprehensive Test Ban Treaty Organization (CTBTO), to Kazakhstan
- In October, first batch of low-enriched uranium was delivered to the IAEA bank. Suppliers – “NAK Kazatomprom” JSC and Orano Cycle, France

October 16, 2019 first uranium batch delivered to the IAEA LEU bank in Kazakhstan

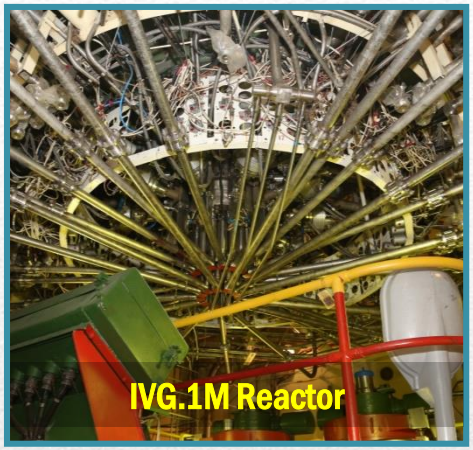
“Sauna II” radioactive rare gas monitoring station

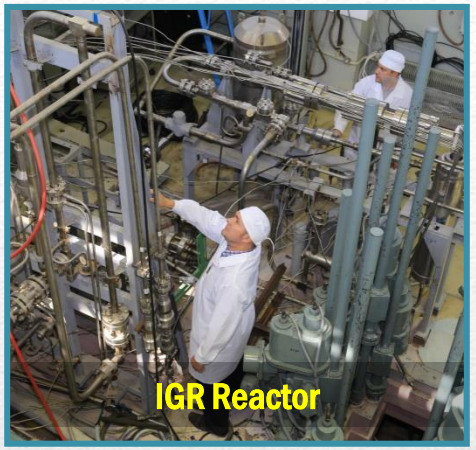
Conversion of Highly Enriched Fuel



WWR-K Reactor conversion is completed

Testing non-irradiated HEU-fuel at “UMP” JSC





Conversion of uranium-235 fuel with enrichment of 90% to 19.75% in cooperation with American and Russian partners

IVG.1M Reactor:

- Completed in-pile resource tests of two experimental assemblies with new LEU fuel

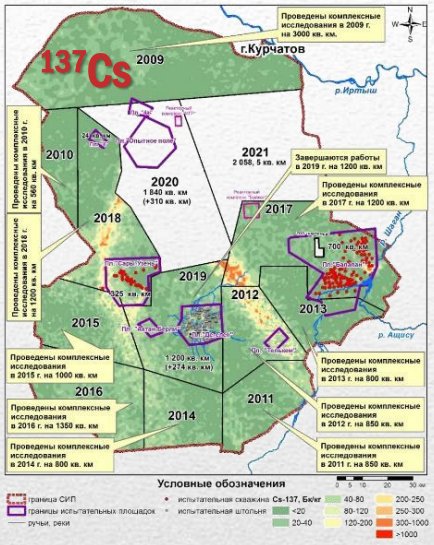
IGR Reactor:

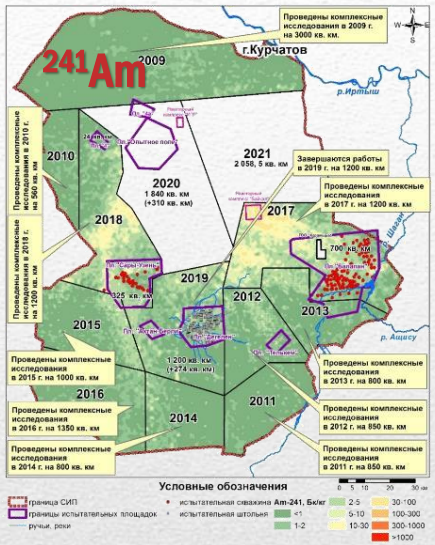
- Conceptual technology of dry mixing is considering for disposing irradiated HEU-fuel
- Down blending non-irradiated HEU-fuel is scheduled for the nearest future at “Ulba Metallurgical Plant” JSC (a technology is developed, fuel is delivered to the plant)

Elimination of Nuclear Weapon Testing Consequences

Survey of radiation situation at Semipalatinsk Test Site

To provide radiation safety and nuclear security, a comprehensive radioecological survey is being carried out at the former Semipalatinsk Test Site (STS).
By now, surveyed area is ~12 500 km^2 (about 70%).





Comprehensive Action Plan on bringing STS area to a safe condition and developing its infrastructure

Current annual plan provides for decision on matters of STS lands' return to economic use:

- preparation to survey of special radiation risks zones on STS and adjacent areas
- development of Act concept concerning the STS and its agreement with interested governmental authorities

Operations to bring the sites, containing wastes of nuclear activity, to a safe condition

The operations are planned to be completed in 2020 and included construction of physical barriers and physical security systems

Promoting Nuclear and Fusion Technologies

- On November 20, 2019 the physical start-up of Kazakhstan fusion material-testing KTM tokamak was conducted
- Under an agreement on joint use of KTM Tokamak, Kazakhstan scientists perform researches with organizations of Russian Federation

- Project is being implemented on construction of facility for neutron radiography and tomography for researches in material science, nuclear technologies, paleontology, geophysics, cultural heritage objects, etc. Start-up is planned for this December
- At production and technological complex of Center of nuclear medicine and biophysics, launched in 2018, operations are ongoing to introduce production technology of new diagnostic and treatment radiopharmaceuticals: "Fluorine(^{18}F) choline", "Fluorine(^{18}F) DOPA", "Samarium (^{153}Sm) – EDTMF"; a method was developed to produce RPH "Lutecium (^{177}Lu)- elagolix for diagnostics and treatment of breast cancer
- At accelerator ILU-10, a technique was developed for radiation sterilization of variety of medical products, and technology of radiation material processing is planned to be introduced for industry and agriculture

Nuclear HRD Support

Personnel is actively trained at the universities as:

- Domestic universities – Al-Farabi KazNU, K. Satpaev KazNTU, L.N. Gumilev ENU, etc., which graduate young nuclear specialists every year in cooperation with scientific research organizations;
- Traditional cooperation with Russia's universities – TPU, MEPhI, MPTI, N.E. Bauman MSTU, MISA, SPbSTI, UPhU and others, providing training for specialists in radiochemistry, uranium geology, nuclear medicine, etc.;
- "Bolashak" Program – state scholarship program on personnel and specialists training in top-priority economic sectors. The program includes academic education (Master's and PhD program), and scientific traineeship at leading companies and universities of the world. In 2014, at VIII International conference Going Global in Miami (USA), the program was acknowledged the best scholarship program in the world among 11 similar ones;
- Extension of cooperation and geography in training and traineeship – thus, in 2018 an Agreement was signed between the Government of RK and European nuclear research organization (CERN) aimed at creating a base for long-term participation of scientists, engineers, students and technical specialists from Kazakhstan in research and development projects of CERN;
- Cooperation between Kazakhstan and Japan on personnel training in nuclear and radiation technologies under programs funded by MEXT – scientific traineeship upon the nuclear researchers' exchange program (NREP), JAEA courses for nuclear industry specialists in "Reactor Engineering", "Environmental Monitoring", "Nuclear Emergency preparedness and response", etc., hundreds of employees were trained at the courses in Japan and Kazakhstan.

THANK YOU FOR ATTENTION!