FNCA

Forum for Nuclear Cooperation in Asia

Country Report
Republic of Kazakhstan

2018

Kazakhstan Peace Initiatives

Project "ATOM" is oriented at global support of final and irreversible abolishing of nuclear weapon testing and total destruction of nuclear weapon.

- In 2009 the UN supported the initiative of President N. Nazarbayev to declare August 29 as the International Day to Abolish Nuclear Weapon.
- On August 29, 2012 during Parliamentary Assembly in Astana "ATOM" Project was commenced in commemoration of Semipalatinsk Test Site closure in 1991.
- On September 28, 2015 Initiative was proposed towards achieving nuclear-weapon-free world up to 2045 – 100th Anniversary of UN.

Foreign policy priorities:

- Global nuclear safety assurance.
- Joining together efforts to address the challenges and threats.
- Nonproliferation regime maintaining and peaceful use of nuclear energy.

Global Nuclear Safety

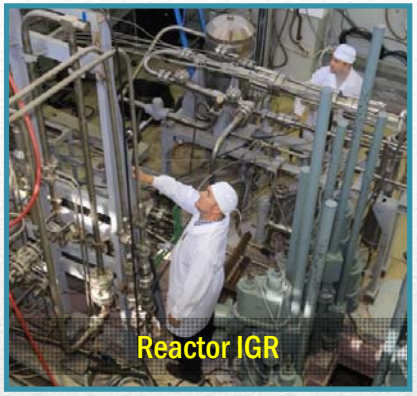
Kazakhstan implemented legal aspects of non-proliferation policy

- Fully implements provisions of UN Security Council Resolution 1540 and supports strengthening of countermeasures against illicit trafficking of nuclear and other radioactive materials.
- As a member of Nuclear Supplier Group and Zangger Committee, takes all possible measures to control nuclear export.
- Among 69 states signed Treaty on the Prohibition of Nuclear Weapons, adopted on July 7, 2017 – first international legal document to prohibit nuclear weapon.

November 1, 2018 in UN Headquarters in New York First Committee (disarmament and international security) voted for Kazakhstan resolution "Universal Declaration on the Achievement of a Nuclear-Weapon-Free World"

Research Reactors' Conversion

Conversion of fuel with enrichment of 36% to the level of 19.75%



Conversion of fuel with enrichment of 90% to the level 19.75% in cooperation with American and Russian partners

Sealing TPC-19 by IAEA inspectors for spent fuel transportation

Full-scale tests of experimental FA of IVG.1M reactor

Preparation to LEU-fuel tests of IGR reactor

Nuclear Fuel Cycle

Unique technology of HEU-LEU reprocessing

Technology is developed for reprocessing IGR reactor's highly-enriched fresh uranium-graphite fuel to reduced uranium-235 content from 90% to the level of 20%.

Bank of low-enriched uranium

Under activities related to LEU bank operation, IAEA achieved an agreement with Russian Federation for low-enriched uranium and equipment transportation. IAEA has signed contracts to purchase LEU, its delivery is expected in 2019.

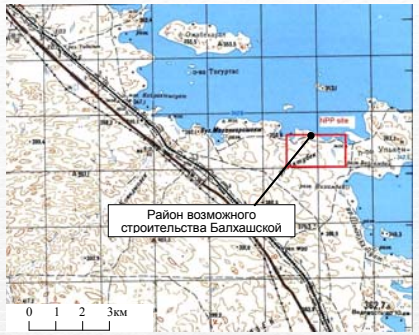
FA production for NPP

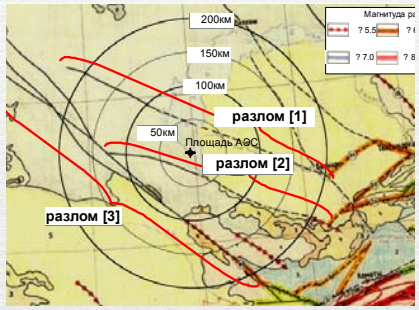
Enterprise is being established with capacity of 200 tons of FA per year. Equipment delivery and installation is ongoing.

LEU Bank – world's first international nuclear fuel storage facility. Established on August 29, 2017 in Ust-Kamenogorsk town at JSC UMP (NAC "KAZATOMPROM") site

Feasibility Study for NPP Construction

JSC “Kazakhstan Nuclear Power Plants” (together with national and foreign scientific-research enterprises) is engaged in development of marketing part of Feasibility Study for NPP construction.





Prospective NPP location

Studies to Substantiate the Safety of Reactors



ANGARA Test-Bench


EAGLE Test-Bench

VCG-135 Test-Bench

CORMIT Project (Toshiba, Marubeni, Japan)
Corium and Refractory Materials Interaction Test is preparation and performance of experimental research of core melting interaction with refractory materials of melting under reactor trap protective covering

Fukushima Project (Toshiba, Marubeni, Japan)
Modeling and further studying the properties of core melt solidified fragments of NPP Fukushima-1 reactor with the purpose to draw up recommendations on mechanisms structure for solidified fragments reprocessing

EAGLE-3 Project (JAEA, Japan)
Experimental study of cooling processes for molten fuel simulator in the pool with sodium (EAGLE test bench) and study of experimental devices, tested in IGR reactor aimed at solution of key safety problems addressing at mitigation of consequences in result of core melting accident at fast neutron reactor

SAIGA Project (CEA, France)
Performance of reactor tests for ASTRID generation IV reactor core elements using experimental base of NNC RK

MYRRHA (7-th Framework Program EU FP7-Fission-2012)
Experimental justification of thermal fuel reliability of MYRRHA research reactor in transient and emergency modes of operation up to fuel melt

Controlled Thermonuclear Fusion Technologies

- Kazakhstan has become the 9th state in the world possessing its own tokamak.
- KTM is the world's first tokamak which is specially designed for wide range of material testing researches aimed at development of materials for chamber and intrachamber elements of future thermonuclear reactors including ITER.

KTM Tokamak reactor hall

Cooled lithium diverter model

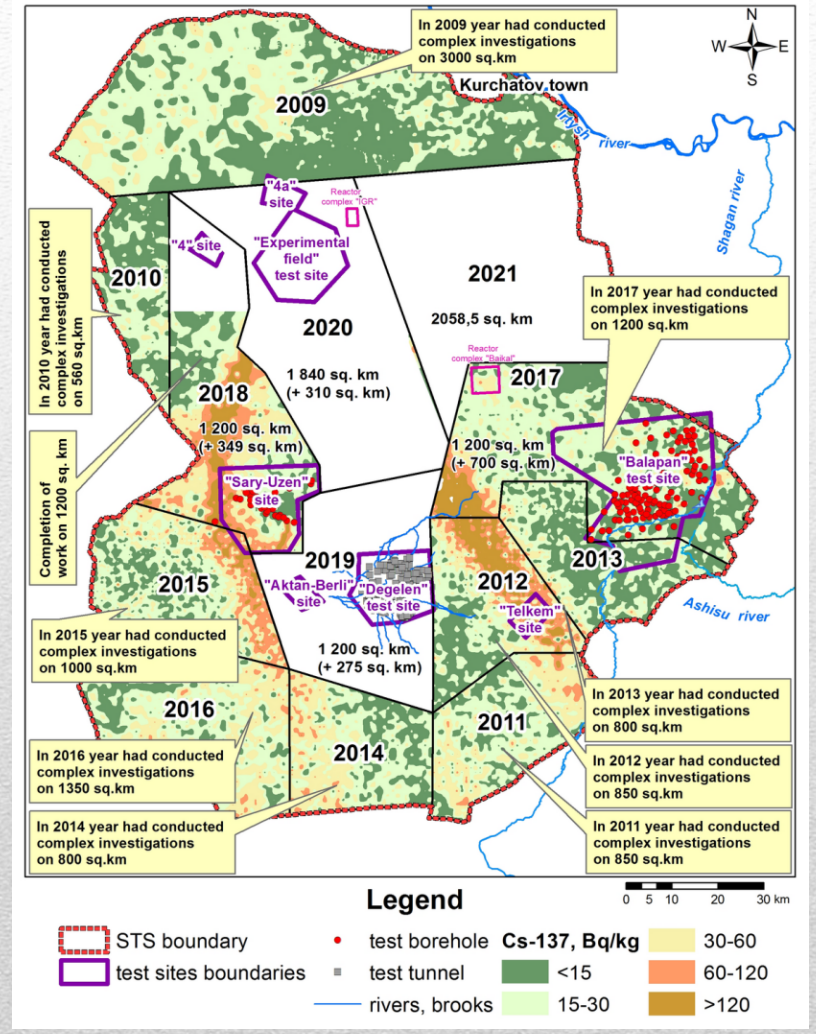
Hall sensor in vacuum chamber

- Operations are ongoing to prepare KTM for second physical start-up stage scheduled for 2019.
- Practical implementation of agreement on cooperation between KTM operating enterprise (NNC RK) and ITER is started.

Elimination of Nuclear Weapon Tests Consequences at STS

Comprehensive radioecological survey of the Test Site area

- Surveyed ~11 100 km^2 (about 60% of total area).
- Materials of the comprehensive survey at northern, western, all south-eastern parts obtained positive international evaluation of IAEA experts. And survey materials of southern and south-western STS parts were submitted.
- Survey at Balapan site of 1200 km^2 and Sary Uzen site of 300 km^2 area was completed.
- Monitoring of air (6 posts) and water medium (15 water use objects) is conducted.



Radiation Technologies in Agriculture

Production of Super-Water Absorbents

- Facility capacity – up to 200 tons/year.
- Potential users – plant breeding, surgery, hygiene.
- RK Innovative Patent was obtained.
- Pilot batch of the absorbent was produced.

Laboratory of ESR-spectrometry for absorbed dose monitoring

Researches on food products radiation processing

- wheat, buckwheat, rice, flour, meat products and canned meat.

Standards harmonization on food products radiation processing

- National regulatory framework for food product processing is required for coordination with international standards and rules of FAO-WHO, guidelines of WTO, CU, EAEU and EEC, in compliance with Kazakhstan's interests and responsibility.
- In 2020, IAEA TC project KAZ2018006 related to food products processing by ionizing radiation is planned.

THANK YOU FOR ATTENTION!