# FNCA

Forum for Nuclear Cooperation in Asia

# COUNTRY REPORT
# Republic of Kazakhstan

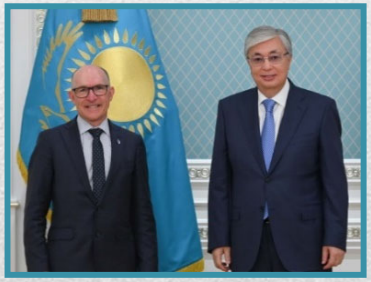
2021

# Kazakhstani Initiatives on Nonproliferation and Peaceful Use of Nuclear Energy

## Nuclear Power Development

The President of the Republic of Kazakhstan had entrusted the Government and JSC “Samruk Kazyna” to study the possibility of developing safe and eco-friendly nuclear energy in Kazakhstan.

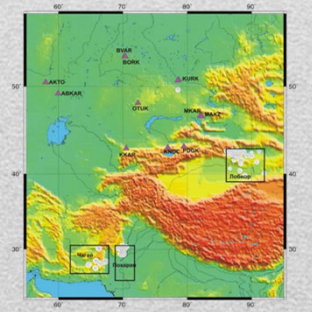
Joint Statement by Deputy Prime Minister – Minister of Foreign Affairs of the Republic of Kazakhstan, Mr. Mukhtar Tileuberdi and CTBTO Executive Secretary was made on the occasion of the International Day against Nuclear Tests during the first official visit of Mr. Robert Floyd.



## Kazakhstan chairs the CTBTO Working Group B for 2021–2024

As part of the support of the Comprehensive Nuclear Test Ban Treaty (CTBT), the infrastructure of Kazakhstan nuclear monitoring system has been continued to function smoothly.

The efficiency of the Kazakhstan stations of the International Monitoring System was highly appreciated by the CTBTO.




# Nuclear Power and Nuclear Fuel Cycle

## Leading Positions in the Uranium Market

Kazakhstan, represented by NAK JSC “KAZATOMPROM”, keeps its leading position of the largest supplier in the world natural uranium market, being the guarantor of uninterrupted operation of nuclear power plants all over the world.

## New Ulba Fuel Assembly Plant

On November 10, the official launch of the plant under “Ulba-FA” project was carried out. The plant was constructed using high-tech equipment manufactured in France to produce fuel assemblies for the generation of thermal power in nuclear reactor.

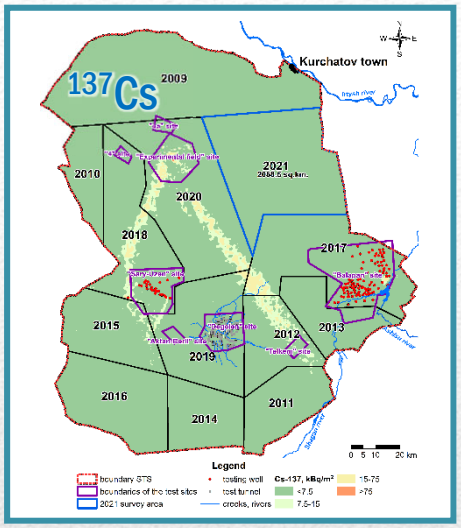
The IAEA International Low Enriched Uranium Bank continues its operation at the base of Ulba Metallurgical Plant.

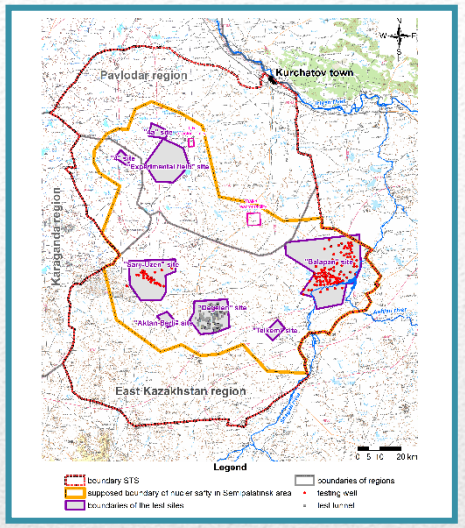
# Radiation Ecology of Kazakhstan and STS. Nonproliferation

- In 2021, due to the 30th anniversary of the independence of the Republic of Kazakhstan and the 30th anniversary of STS closure, a large-scale work on comprehensive environmental survey of the Semipalatinsk test site has been successfully completed.

- In 2021, a project to enhance security at the Aktan-Berli site was completed. A three-level protection and remote monitoring systems were installed and put into operation at security objects.

- In June 2021, the “Experimental Field” site was transferred for the protection by forces of the National Guard of the Republic of Kazakhstan. In 2020, the project on bringing this site to a safe condition was fully completed.



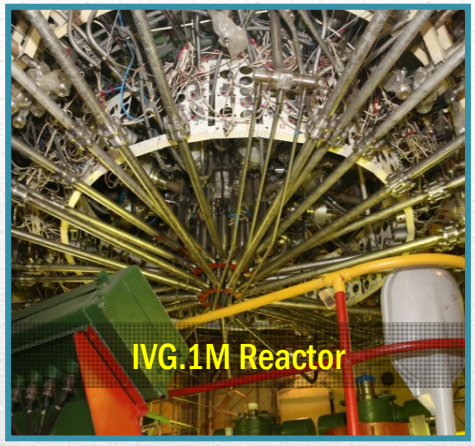



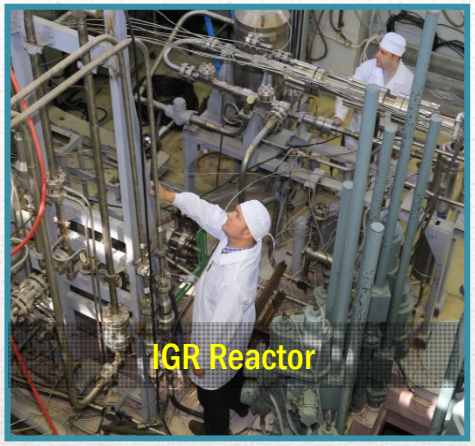

# Nonproliferation and Nuclear Safety

## Nonproliferation Policy Implementation

Conversion of two reactors to low enriched uranium fuel (LEU) and utilization of highly enriched uranium (HEU) is under way:

- Conversion work has been continued under the international program on minimizing the use of highly enriched uranium and reducing the risk of illegal proliferation of fissile nuclear materials.
- On February 27, 2021, LEU fuel was delivered to the IVG.1M reactor site. The work on incoming inspection and certification tests for delivered products has been completed. The physical start-up of this reactor with new fuel is planned to be realized in 2022.




Transfer of LEU fuel from the Railway for Transportation to the IVG.1M Reactor Site and Incoming inspection

# Nuclear Technologies and Cooperation

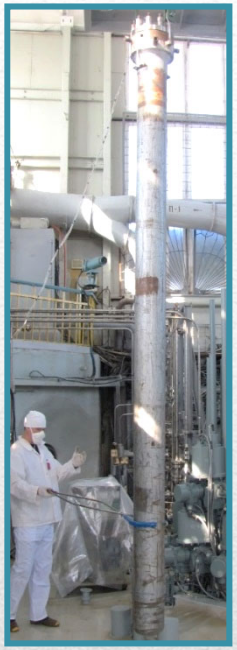
## Radionuclide Therapy

For the first time, a Radionuclide Therapy Department has been established in Kazakhstan in Semey on June 24, 2021. Production of the radiopharmaceutical iodine ($^{131}I$) is performed at the Institute of Nuclear Physics.

## Regional Long-Term Storage Facility

Creation of a regional long-term storage facility for spent ionizing radiation sources has been completed as a part of a cooperative program between the Ministry of Energy of the Republic of Kazakhstan, Global Affairs Canada (GAC), and the U.S. Department of Energy (DOE).

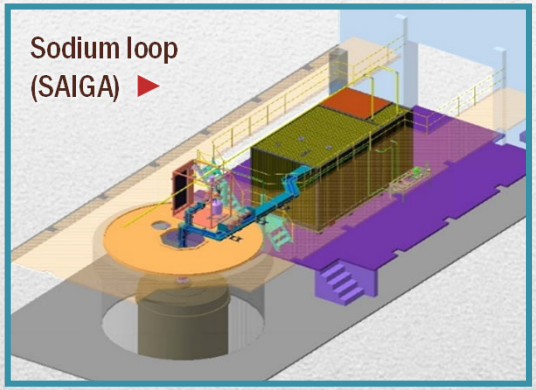
# Nuclear Technologies Promotion

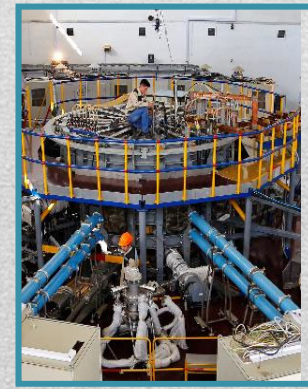


▲ Tests conduction (EAGLE-3)

▲ Melt trap before and after RT-11 experiment (CORMIT-2)

Sodium loop (SAIGA) ▶





KTM Design Parameters:

- plasma current – 750 kA
- discharge duration ~5 s

Achieved Parameters in 2021

- plasma current – 150 kA
- discharge duration > 200 ms

RSE NNC RK Ongoing Projects:

- EAGLE-3 (JAEA, Japan) aimed at searching the ways to mitigate the consequences of severe accidents with the core materials melt in sodium-cooled fast reactor, which is currently being developed in Japan, has been continued.
- CORMIT-2 (Toshiba, Marubeni, Japan) on the search for heat-resistant materials for the protective coating of a specially developed core melt trap in a severe loss of coolant accident was completed.
- SAIGA (CEA, France) for studying FA behavior at ASTRID reactor in conditions of loss-of-flow accident (project is developed and experiment possibility is approved at IGR reactor).
- Under the current project BREST-OD-300 (JSC NIKIET, Russia) in 2021, testing of 5 irradiation devices with 15 fuel rods with the new mixed uranium-plutonium nitride fuel of the BREST-OD-300 reactor were carried out at the IGR reactor, the construction of which is started in Russia.
- Kazakhstan Material Testing Tokamak (KTM). An experimental camping to bring out the KTM to higher parameters of operation and measurement of experimental parameters using the developed diagnostics, was implemented .

# THANK YOU FOR YOUR ATTENTION!