



MINISTRY OF ENERGY RK  
NATIONAL NUCLEAR CENTER OF THE REPUBLIC OF KAZAKHSTAN

# Current Situation and Future Plans of Nuclear Nonproliferation and Nuclear Security and Safeguards in Kazakhstan

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National Nuclear Center of the Republic of Kazakhstan  
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Kurchatov, September, 2015

# СЕМИПАЛАТИНСКИЙ ИСПЫТАТЕЛЬНЫЙ ЯДЕРНЫЙ ПОЛИГОН

Test Site Area ~18 500 км<sup>2</sup>

Foundation Date – 21.08.1947

Closure Date – 29.08.1991

First Test – 29.08.1949

Last Test – 19.10.1989

Above-ground Tests (Experimental Field) – 86

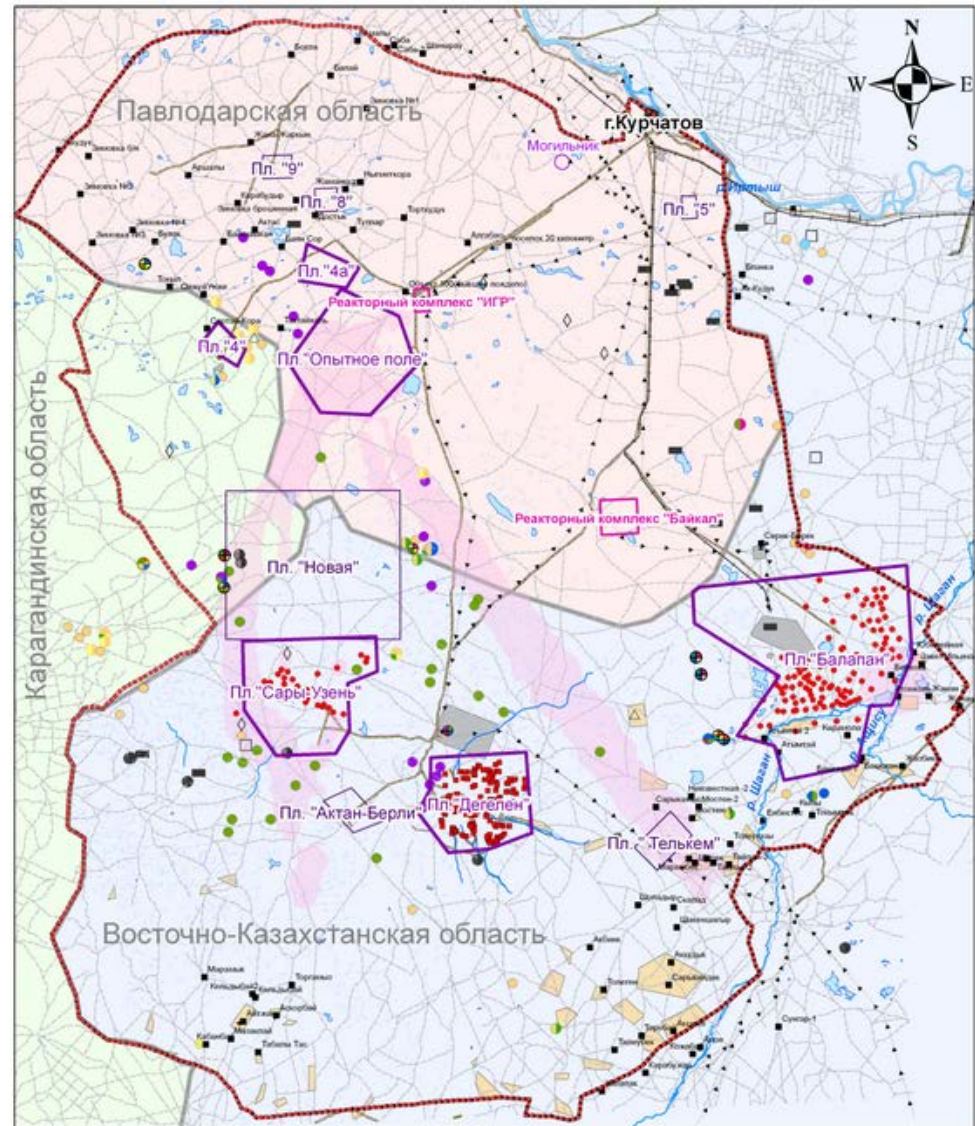
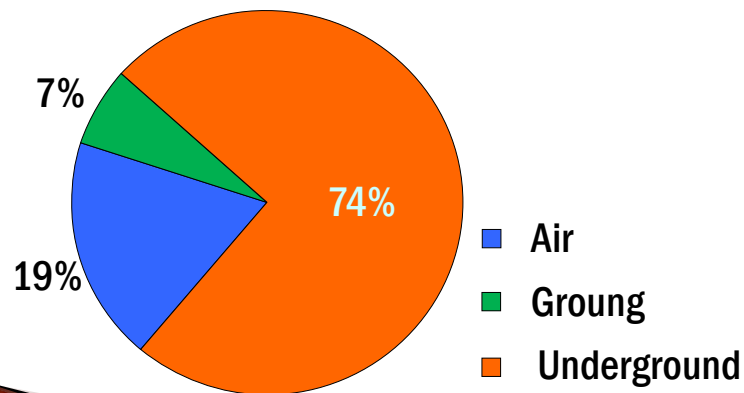
Ground Tests (Experimental Field) – 30

Underground Tests – 340

incl. : Degelen Site – 209

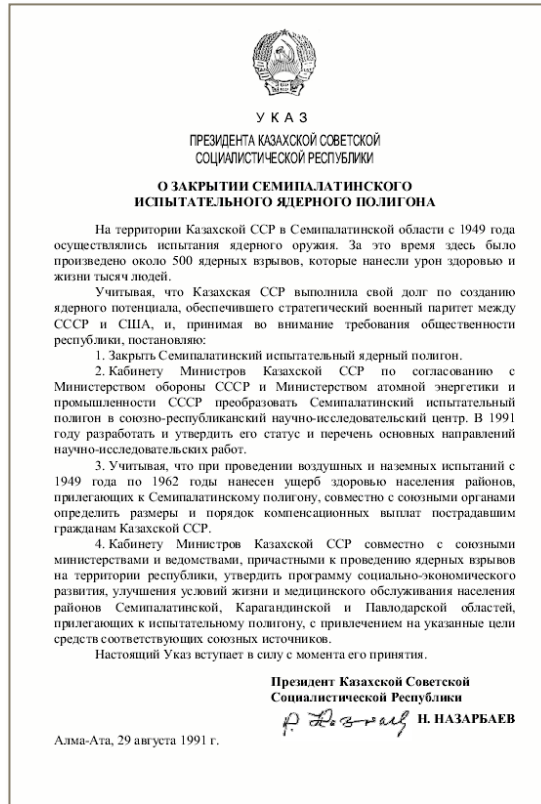
Balapan Site – 108

Sary-Uzen Site – 23

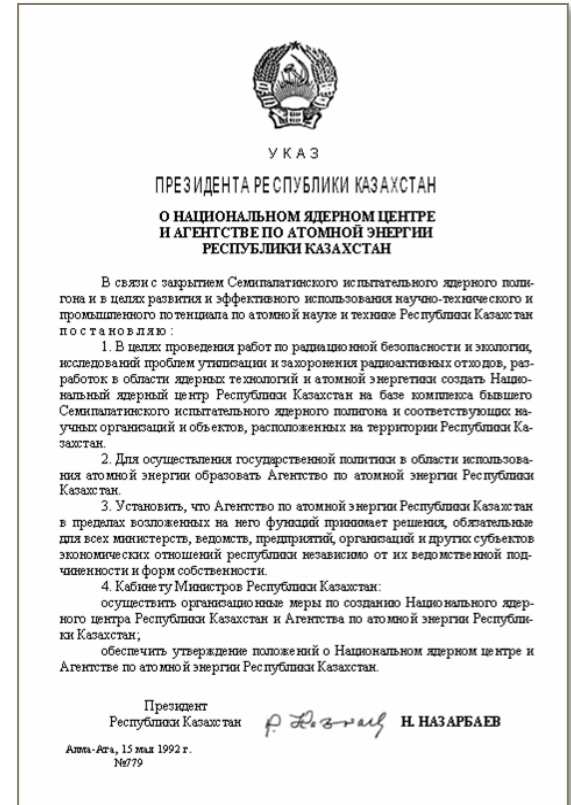


0 5 10 20 30 40 KM

# Establishment of the National Nuclear Center of the Republic of Kazakhstan



Presidential Decree #409 dated August 29, 1991  
concerning “Closure of the Semipalatinsk  
nuclear test site



Presidential Decree #779 dated May 15, 1992  
concerning establishment of “National Nuclear  
Center and Atomic Energy Agency of the  
Republic of Kazakhstan

# National Nuclear Center of the Republic of Kazakhstan



RSE “NATIONAL NUCLEAR CENTER  
OF THE REPUBLIC OF KAZAKHSTAN” (NNC RK)  
Kurchatov

## BRANCHES

Institute of Atomic Energy (IAE) Kurchatov

Institute of Radiation Safety and Ecology (IRSE) Kurchatov

Kazakh State Center of Blasting Operations (KSCBO) Almaty

“Baikal” Enterprise Kurchatov

As of June 1, 2015:

Total number – 1 498 pers.

including – with higher education – 590 pers.

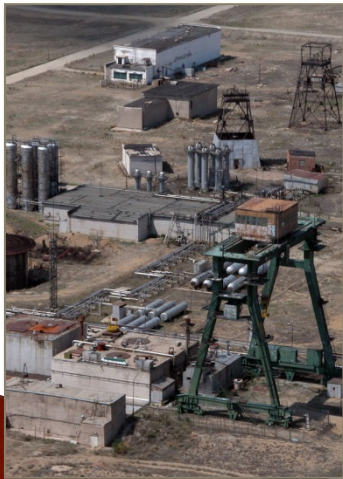
– young specialists – 309 pers.



# **Mission of NNC RK – Science and Technology Support to the Implementation of Kazakhstan’s Policy in Peaceful Use of Atomic Energy**

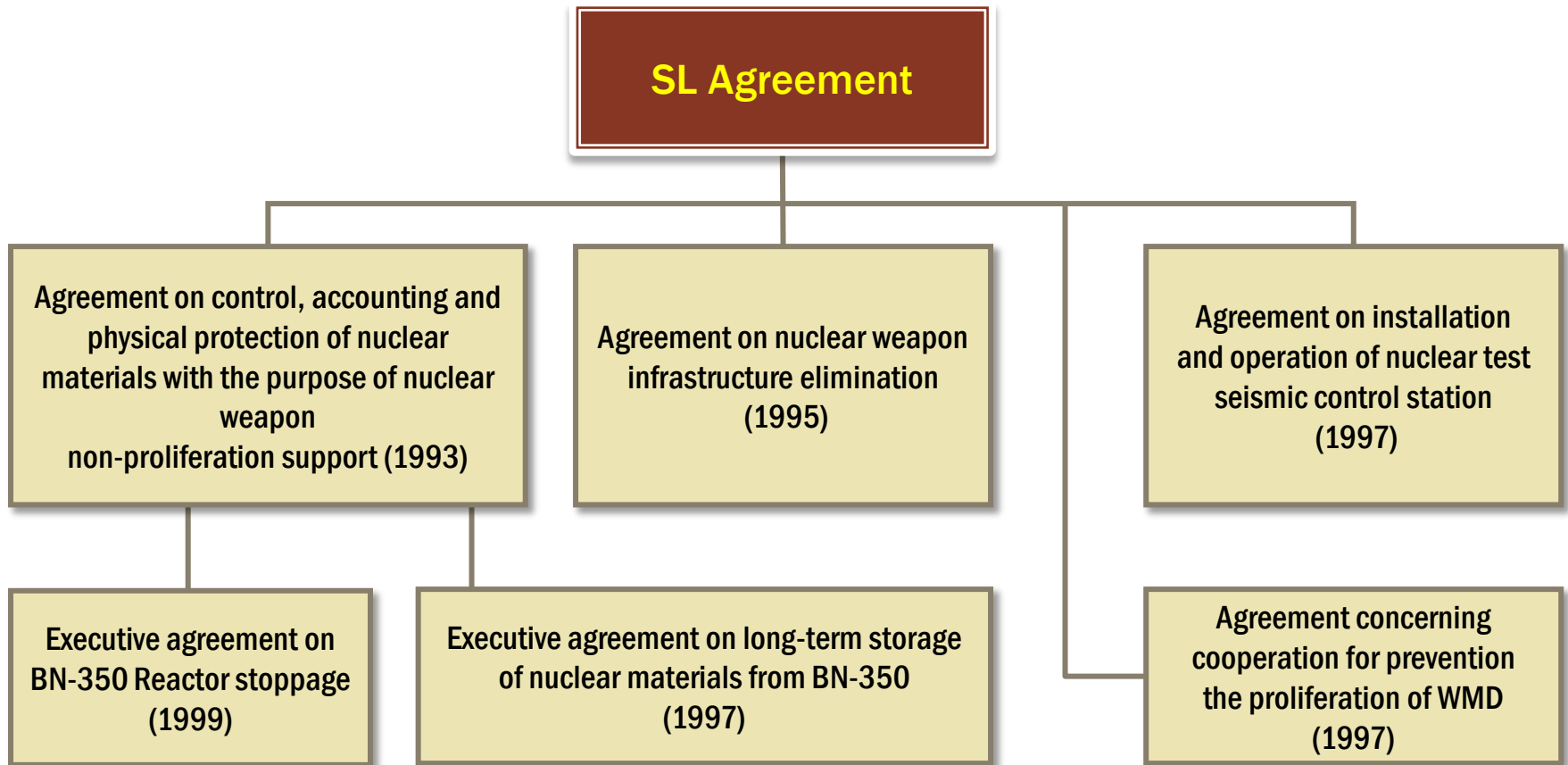
## **STRATEGIC ACTIVITY AREAS**

- I. Nuclear power development in RK**
- II. Nuclear science and technological development in RK**
- III. Radiation ecology in Kazakhstan and STS**
- IV. Support of non-proliferation regime**
- V. Information and personnel support to nuclear branch**



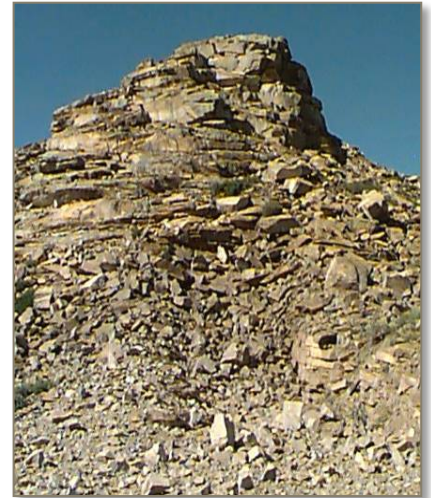
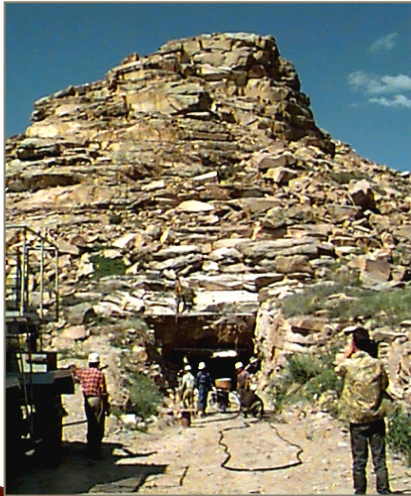
# SL Agreement

## Agreement and Executive Agreements (NNC RK participation)



# SUPPORT OF NON-PROLIFERATION REGIME

- Stage 1** (1996–2000) – elimination of nuclear testing infrastructure
- Stage 2** (2000–2007) – proliferation prevention of weapon of mass destruction and associated materials, technologies and knowledge
- Stage 3** (2008–2012) – enhance barriers, erected under stage 1, and avoid unauthorized access to residues of nuclear activity



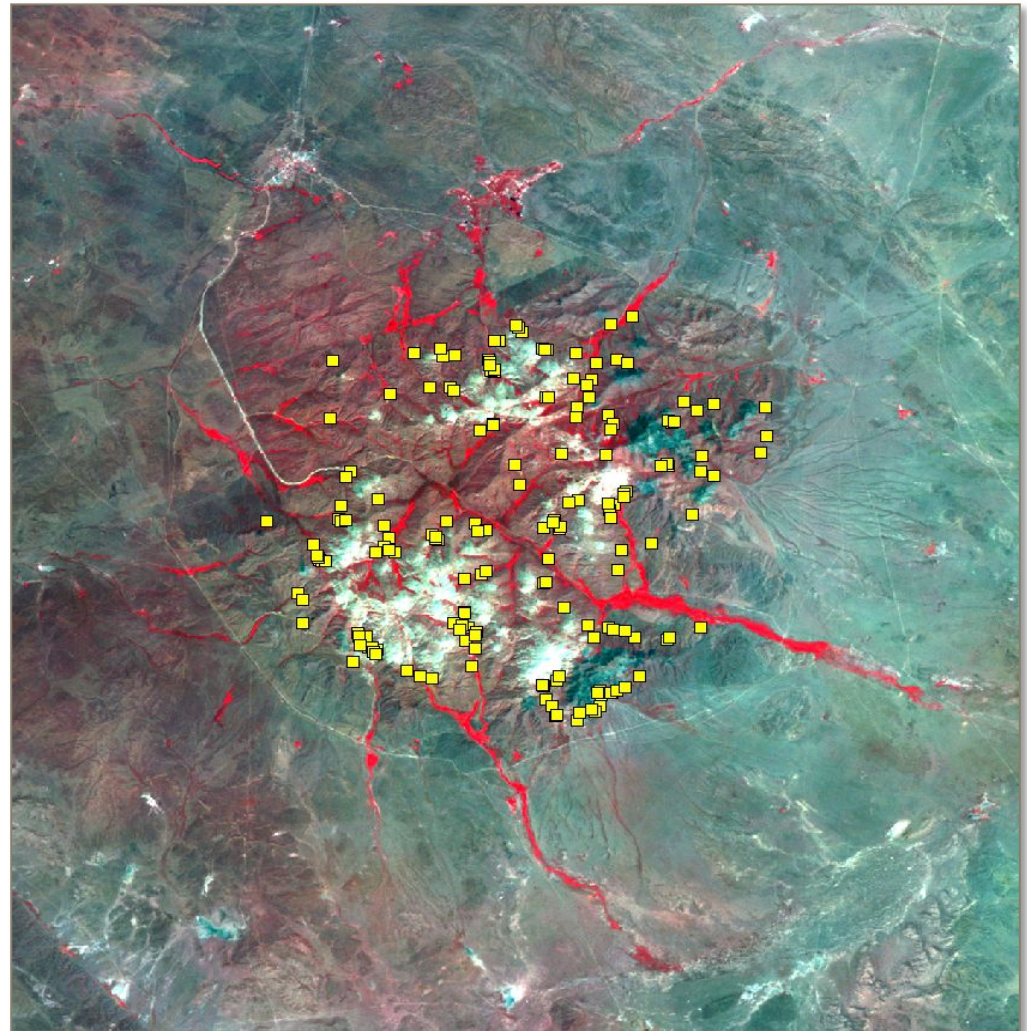
# Elimination of Nuclear Testing Infrastructure

## DEGELEN Test Site

Area - 300 km<sup>2</sup>

Tunnel quantity - 181

From 1961 to 1989 - 209 tests were conducted.





# Elimination of Nuclear Testing Infrastructure

## Balapan Test Site

Area – 784 км<sup>2</sup>

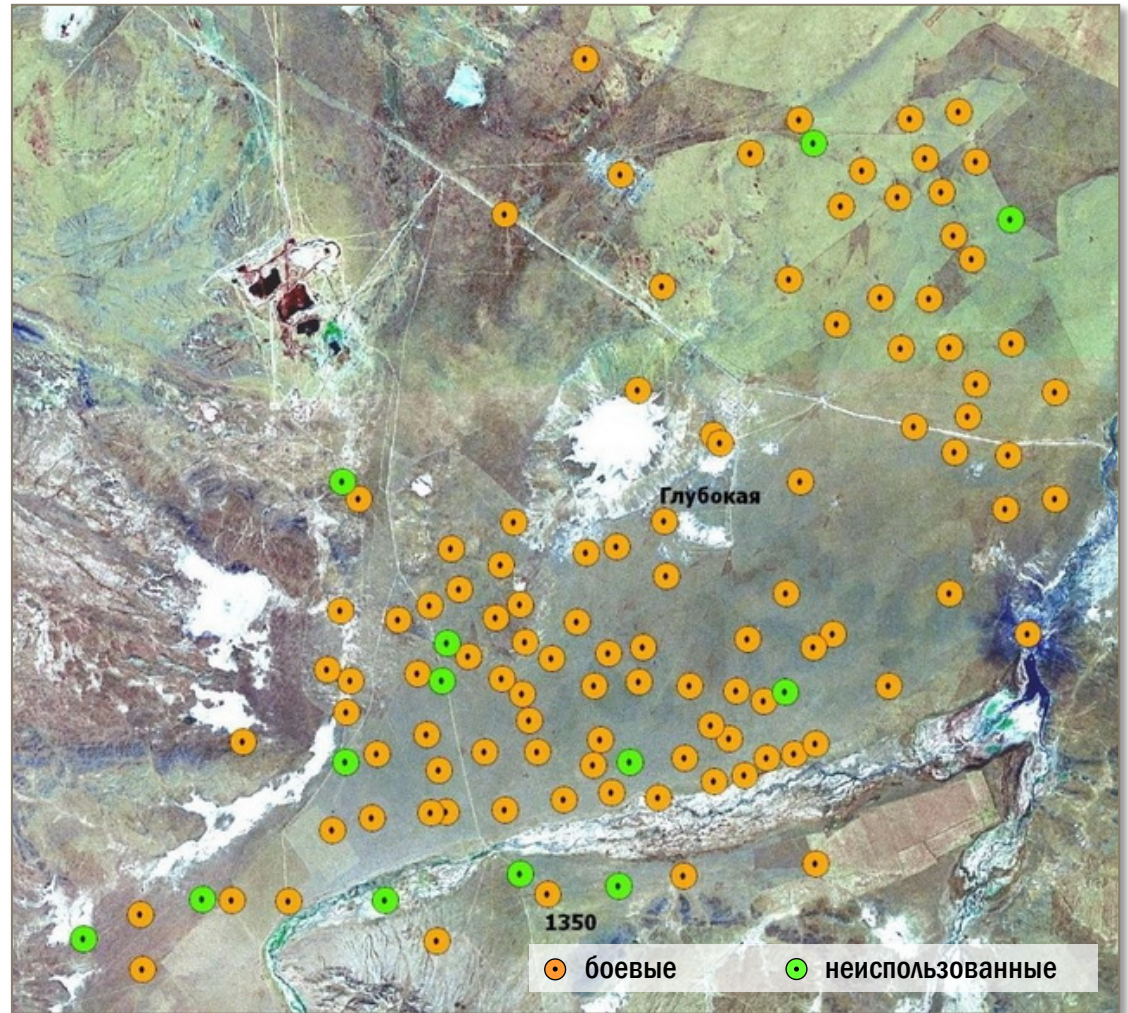
From 1963 to 1989 –  
108 nuclear tests were conducted.

Borehole diameter: 820-1440 мм

Depth : 270-1200 м

Test yield: 15-140 кт

13 boreholes were not used



# KOLBA Agreement



# Prevention of RONA Distribution



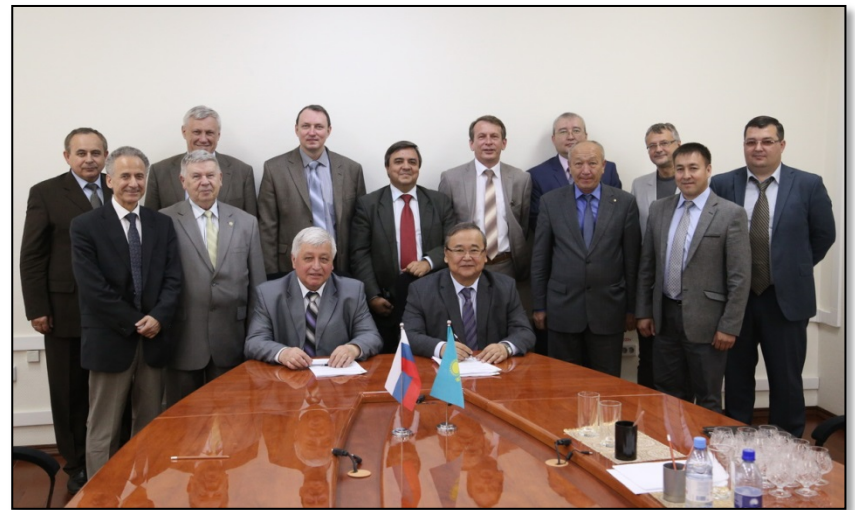
# Construction of Additional Protective Barriers



# WORK COMPLETION

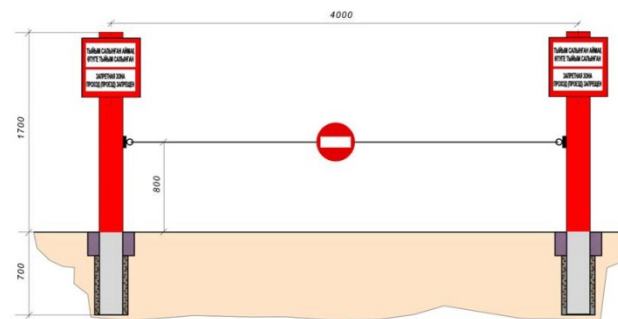
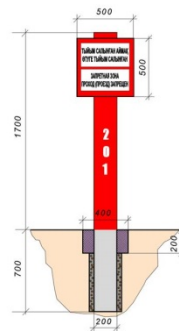
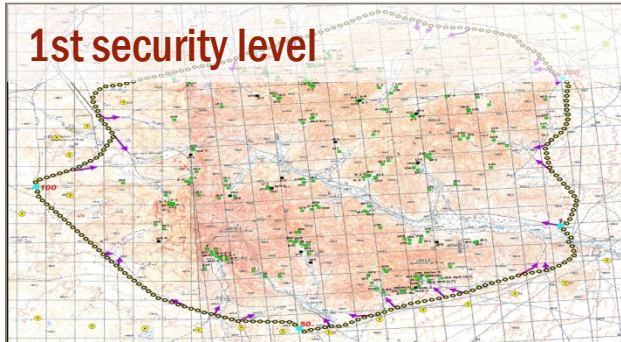


Monument “1996-2012 The World Has Become Safer” (Degelen Mountain)



Meeting 39 of Coordination Group (Kurchatov, 2015)

# Physical Protection Securing



Знаки на полевых дорогах



# Reduction of Proliferation Risks

## Access remote control systems



# Elimination of WMD Test Consequences

## Experimental Field Test Site

Area – 300 км<sup>2</sup>

From 1949 to 1962 year 116 nuclear tests were conducted, incl.:

- air – 86
- Ground - 30





# Elimination of WMD Test Consequences

## Radiological survey of “Test Field”

- Survey site - 380 km<sup>2</sup>
  - 2012 - 70 km<sup>2</sup>
  - 2013 - 145 km<sup>2</sup>
  - 2014 - 165 km<sup>2</sup>
- Survey route ..... > 15 000 km
- Gamma spectrometry measurements..... > 2 500 000



## Remediation operations

Site territory was surveyed thoroughly, ground contaminated by RONA was removed, bound with special solutions, packed in containers and placed for long-term storage at “Baikal-1” reactor complex.



# BN-350 decommissioning



Реактор БН-350



Цезиевая ловушка



Установка для сверления реактора



Тук и железнодорожный транспортер для перевозки ОЯТ на хранение



Начало строительства установки по очистке натрия

Работы ведутся в соответствии с Постановлением Правительства РК от 22 апреля 1999 года №456 «О выводе из эксплуатации реактора БН-350 в городе Актау Мангистауской области».

# BN-350 Spent Fuel Transfer



- ❑ From 29.02.10 to 15.11.10 12 railroad and 60 transportations were conducted
- ❑ 60 SF casks were transferred for long-term storage

# Conversion of Kazakhstan Research Reactors



# Underground Nuclear Tests Control



PS23-Makanchi



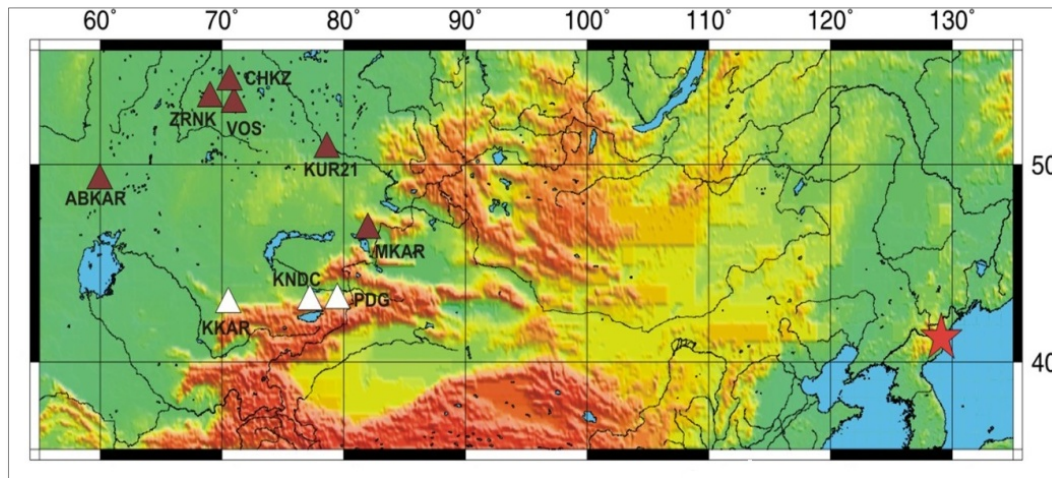
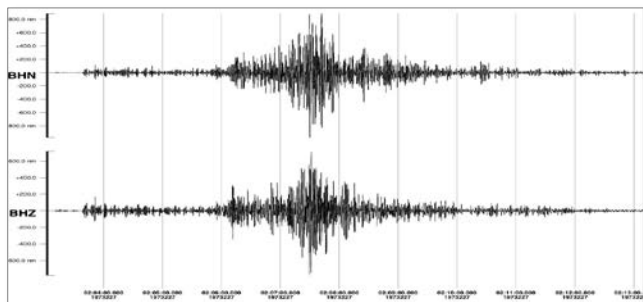
AS057-Borovoe



Akbulak



AS058-Kurchatov



# CTBT Support

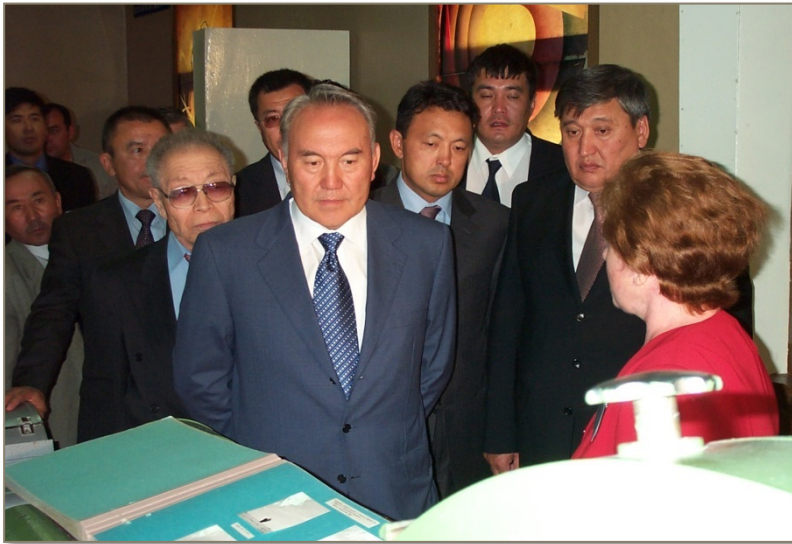
## Calibration experiments ("Omega-1, 2 and 3)



## Integrated Field Experiment (IFE-08) under CTBTO On-Site Inspection



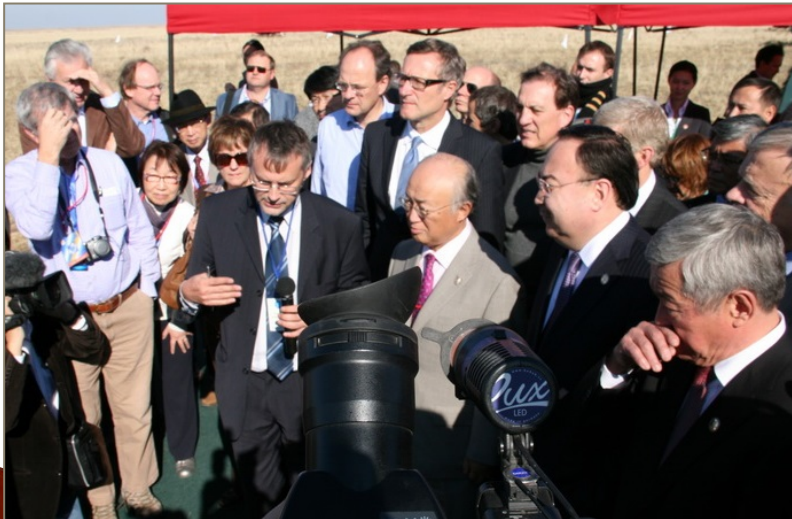
# Non-Proliferation Support



the President of RK Nursultan Nazarbayev (August,13,2003)



UN Secretary General Ban Ki-moon(April,6, 2010)



IAEA Director General Yukiya Amano (October,13,2011)



Prime Ministers of RK K. Masimov (June,22,2011)

## RESULTS OF NON-PROLIFERATION ACTIVITY

- ❑ **NNC RK is successfully carrying out all assigned tasks in WMD non-proliferation.**
- ❑ **Results of a number of operations executed by NNC to support non-proliferation regime were remarked:**
- ❑ **in a joint statement of Presidents of Kazakhstan and USA at the meeting on April 11, 2010 in Washington;**
- ❑ **in a joint statement of Presidents of RK, USA and RF at the Nuclear Security Summit on March 27, 2012 in Seoul;**
- ❑ **in a joint statement of Presidents of Kazakhstan and USA at the Nuclear Security Summit on March 25, 2014 in the Hague.**
- ❑ **Experience obtained from the joint operations enables to consider possible continuation of the developed partnership and cooperation.**





# IAEA Cooperation

- ❑ In 2009, Kazakhstan took the initiative to host IAEA Low Enriched Uranium Bank on its territory.
- ❑ On June 11, 2015 the IAEA Board of Governors unanimously adopted the draft agreement for establishment of LEU after the consideration of the item in the agenda. In this regard, it was emphasized that Kazakhstan is a world leader in uranium production and has necessary experience in nuclear sphere and highly qualified specialists.
- ❑ The agreement on establishment of International Nuclear Fuel Bank was signed in Kazakhstan on August 27, 2015 with the participation of the Head of the IAEA and representatives from “Six nations” for regulating Iran nuclear program (Russia, USA, France, Great Britain, China and Germany) and the official ceremony on it was held.
- ❑ LEU Bank is located in Ulba Metallurgical Plant in Ust-Kamenogorsk in East-Kazakhstan Region.



**Thank You  
for Attention!**