THE TRAFFICKING CONTROL OF FISSIONAL AND RADIOACTIVE MATERIALS IN KAZAKHSTAN

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After disintegration of the USSR the problem of control for transfers of radioactive and fissile materials has getting more and more urgent in sovereign Kazakhstan.

Fissile materials, which theoretically could be used to creation of nuclear weapons, were available at the following enterprises of Kazakhstan:
- The Institute of Nuclear Physics - National Nuclear Center - Almaty
- The Institute of Atomic Energy - National Nuclear Center - Kurchatov
- Mangyshlak Atomic Energy Combine - Aktau
- Ulbinskiy Metallurgical Plant - Ust-Kamenogorsk

At last time mass-media have reported many incidents of a new type of theft. Individuals are detained, trying to sell fuel pellets made of enriched uranium, radioactive contaminated cables, or various components of technological purposes from the enterprises.

A significant problem is the legal and illegal collection of ferrous and non-ferrous metals. This made at places of realization of nuclear tests (former Semipalatinsk nuclear test-site (STS), Azgir, Lyra and others) and at working and closed uranium mines.

Nominally, the incidents can be divided into three groups:
- theft of materials, hazardous in term of nonproliferation;
- theft of materials, non-hazardous in terms of nonproliferation (radioactive scrap metal, sealed radioactive sources);
- theft due to an inefficient system of physical protection (the tank for transportation of radioactive waste products at Institute of Atomic Energy of NNC RK).

PART 1. THE BASIC TRENDS OF THE EXPORT CONTROL SYSTEM IN KAZAKHSTAN

In soviet time the nuclear material physical protection system in totalitarian state with it’s extremely rigid requirements for entry facilities was very strong.

Nobody tried to steal nuclear materials because it was impossible to sell them. It was possible to receive capital punishment for such "export".

After the disintegration of the USSR new independent states, including Kazakhstan, have encountered a number of serious problems in the sphere of nonproliferation.

Kazakhstan was a non-nuclear state, but formally it possessed nuclear weapons.
The main deposits of uranium, the fuel industry and nuclear science were available also. Even more, complicated problems were re-orientation of the scientific potential to peaceful research and preventing "brain drain" and appurtenance of information on nuclear technologies, that had collected for more than 50 years.

In 1991, Kazakhstan began to create an effective system of accounting and control.

In 1992 the Kazakhstan Atomic Energy Agency began its work, on:

- supervision of safe operations at nuclear-industrial complex;
- the control of export and import of nuclear materials and nuclear technologies.

In 1992 the first disturbing publications in mass-media about illegal nuclear materials trafficking appeared. Fortunately, Kazakhstan appeared infrequently in the reports.

International cooperation in the nuclear sphere was widely developed:

- 1993 RK joined the NPT as non-nuclear weapons state; Kazakhstan signed the Agreement on Safeguards with the IAEA, RK was unanimously joint as a member.
- Since 1994, the US Nuclear Regulatory Commission has been working cooperatively to support the strengthening of nuclear MPC&A in Russia, RK and Ukraine.
- 1995-96 the Mangyshlak Combine became the first facility in Kazakhstan to receive US Department of Energy experts with the intent to develop MPC&A program.
- middle of 1990’s the export to Russia of " the nuclear inheritance of the USSR "; liquidation of infrastructure at the former Semipalatinsk test-site; action "Sapphire".

The nuclear policy of RK began to transform from a passive phase to active.

Attempts to illicit trafficking became more frequent too. For the first time Kazakhstani Ulbinsky Mettalurgical Plant (UMP) faced the theft of fuel pellets.

If there was only an external threat, now following kinds of threat were determined:

- theft of nuclear materials by workers who have access on territory of enterprisewithout arrangement or in arrangement to the persons who do not have such access;
- threat of deliberate creation radioactive pollution (act of sabotage).

Many western analysts consider, that the increase in cases of theft, including the Kazakhstani ones, is only as the first wave of smuggling.

Now Kazakhstan and the world community solve the problems of nuclear safety very seriously.

- 1997 the countries of Central Asia proposed the creation of a Free-Nuclear Weapons Zone in their region.
- 1998 modern systems of physical protection were established on all reactors of NNC, at UMP and Mangyshlak by the experts of USA.
- In July, 2000 liquidation of the nuclear infrastructure of STS was finished.
The legislative bases is under establishment:

- The Law “On Use of Atomic Energy”;
- The Export Control Act for Arms, Military Hardware and Dual-Use Items;
- Customs Act of The Republic of Kazakhstan;
- A Cabinet of Ministers Decree on Import and Export Services in the RK.

In general the tendency of stabilization at nuclear facilities is on. The assistance and experience of donor-country has helped to use the gain potential in peaceful ways and to introduce safeguards more rapidly. The employees of all nuclear facilities in Kazakhstan has contracts for scientific research and manufacturing, and stable salaries. Staff reductions have stopped, and some enterprises - have even increased the number of staff.

If the economic crisis and lack of legislative base were the main problem of creation of independent Kazakhstan, now we have following export control problems:

- necessity of perfection of legislative base;
- increase of corruption;
- financing problems;
- lack of the modern equipment;
- necessity of full automation of appropriate employees workplaces;
- professional training, lack of the qualified customs officers.

Theft of radioactive materials continues. Periodic reports in the mass-media excite the public, a sense more in detail to investigate this problem.

**A PART 2. THEFT OF NUCLEAR MATERIALS.**

For the first time this problem was faced at the end of 1995, and since then such cases have increased steadily. According the chronology of mass - media reports for the last 2 years we see cases of seized containers of radioactive material for every 2 month.

From our point of view there are following negative tendencies of it:

- corruption;
- inefficient customs control; lack of equipment for monitoring illicit trafficking;
- potential threat of use of conventional weapons against nuclear-critical objects;
- terrorist actions on south of former USSR republics;
- organized crime.

The positive tendencies are available too:

- 1995 completion of transfer to Russia of nuclear weapon from territory of RK;
- stabilization of political situation;
- stabilization of economic situation on nuclear-critical enterprises;
- 1998 according DOE program all nuclear-critical objects were equipped with the newest equipment of physical protection, training of personnel was carried out;
- new rules of conducting the accounting and control.
Unfortunately, the illicit traffic has not stopped, it has even increased. At first sight, there are two reasons for it:

- necessity of survival;
- wish to have a profit.

To survive, owing to a low standard of living and the salary. As a rule, this involves unskilled workers, who have access to materials. As a rule, such people are the handicraftmen - singles who are not able even to sell the goods correctly.

Theft by this way has become less possible after MPC&A program finished. Why are cases of nuclear materials thefts come across, if we have this new protection system?

We think, there are 2 souses:

- There is an illegal warehouse of material which was stolen before and forwarded by parties now, and part of this falls into the hands of police.

- Material is in transit from Russia.

The majority of analysts consider, that the market of end users of weapon nuclear materials exists. The most probable the end users are follows:

- threshold states with nuclear ambitions;
- criminal organizations;
- terrorist groups.

The need in acquisition of several kg of fuel pellets by illegal way seems to be unreasonable. Because such quantity of fuel pellets is insufficient for production of section of reactor rods. Threshold states have reactors, and it is possible to make all this legally.

It is possible to carry out additional enrichment of *U-235*. But, it is very expensive. Besides, IAEA follows such processes, and bombs from *Pu - 239* are smaller by weight and are much more effective.

If these fuel pellets are sold to owners of nuclear power plants the problems connected with the control, accounting and certification create.

Will criminal organizations want to use nuclear materials?

On the one hand, they incline to risk and receive the fast results from their actions.

On the other hand, it is difficult to find buyers and to observe safety precautions for using such stuffs.

Is it profitable for terrorist groups to use nuclear materials?

On the one hand - yes. Because it is possible to have a small nuclear device. This weapon (ore usual weapon with radioactive admixcher) is capable to create serious panic among population, which is a very attractive factor for any terrorist organization.
On the other hand, a nuclear weapon demands skilful manipulation, an access to it is complicated and more special skills to hide the plans of using nuclear materials.

Under the circumstances it is obviously necessary both to strengthen already well-known and accepted measures and to give new recommendations.

1. The general recommendations:
   - improve legislative foundation, including criminal legislation;
   - strengthen protection of borders.

2. Recommendations of urgent action:
   - special equipment for latent and open export control. The project of Nonproliferation and Export Control Center for urgent examination of seized nuclear materials by analytic methods is creating;
   - equip customs points with equipment for monitoring illegal nuclear trade;
   - cooperation of frontier guards both inside the country, and on adjacent borders;
   - propagation in mass - media of the danger of handing radioactive materials (from a minute advertising roller up to a series of telecasts on radio and TV);
   - periodically training for nuclear enterprises workers, customs officers, police, employees of the ministries and departments create.

3. Long-term measures:
   - create workplaces for people (reinvigorate non-working factories and plants, based on fiscal of discipline and with good salary which workers would be afraid to lose);
   - define strategy of development of atomic energy from the view of necessary components of development of a national economy.

CONCLUSION

Thus, prime "burning" measures on improving of the export control and physical protection at nuclear-critical objects have been implemented.

Reliability of the illicit trafficking in Kazakhstan is considered from the point of view of technical aspects more often. This is also actually "a human problem".

There is yet another important question. What is in the future? Will Kazakhstan develop atomic engineering? While the future is unclear - any economic control, any rigid and correct measures, will not help.

The "know-how" of nuclear weapons is not a secret anymore. The critical obstacle as far as proliferation of nuclear weapons and possibly nuclear terrorism is the strict control of nuclear materials and - first of all - materials of weapon quality. Improvement of this control and strengthening of safety of such materials is a problem not only for Kazakhstan, but also for other countries with advanced nuclear technology.