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RUSSIA AND THE UNITED STATES IN THE NONPROLIFERATION AND NUCLEAR SECURITY MAZE

WMD nonproliferation and nuclear security problems are climbing up the agenda in a growing number of countries; resolution of these problems requires broad international cooperation. At the same time, bilateral cooperation between Russia and the United States remains very important for progress in this area.

What awaits Russian–U.S. cooperation now that the Nunn–Lugar Program has expired? What are the most pressing areas of nuclear cooperation? Can the two countries work together in developing advanced nuclear technologies? And how much scope is there for cooperative Russian–U.S. efforts in third countries?

The PIR Center workshop entitled "Prospects for International Cooperation on WMD Nonproliferation and Nuclear Disarmament"[1] was attended by PIR Center Information Program Director Andrey **Baklitskiy**; PIR Center Senior Vice President Evgeny **Buzhinsky**; Deputy Head of Research at the Russian Federal Nuclear Center "All-Russian Research Institute of Experimental Physics" Alexander **Chernyshev**; Head of the Department for international cooperation at the Rosatom State Nuclear Corporation Mikhail **Lysenko**; PIR Center Executive Board member Evgeny **Maslin**; PIR Center President Vladimir **Orlov**; Academician, Member of the Russian Academy of Sciences, Prof. Nikolay **Ponomarev-Stepnoi**; Senior Research Fellow at the Center for Disarmament, Energy and Ecology Studies Vladimir **Rybachenkov**; and Head of the Institute of International Relations of the National Research Nuclear University "MEPhI" Boris **Tulinov**.

ORLOV: The PIR Center project "The Future of the Global Partnership" included several aspects. First, it dealt with bilateral Russian–U.S. cooperation and multilateral cooperation in the G8 and the Global Partnership context, and possibly some broader contexts. We looked at the participating states, partner states, and recipient states that could also become partners.

Second, we focused on nuclear security issues.

Third, we looked at the broader aspects related to nuclear nonproliferation and other aspects of WMD, i.e. biological and chemical.

Fourth, we studied the experience of the already existing informal bodies working in this area, international institutes, and international organizations – especially the International Science and Technology Center (ISTC). We preferred to discuss the ISTC from the purely professional rather than political viewpoint.

THE NUNN–LUGAR PROGRAM: POST SCRIPTUM

RYBACHENKOV: The Nunn–Lugar Program has made an important contribution to strengthening global security. It has helped in the destruction of Russian chemical weapons, waste disposal, measures to strengthen security arrangements for nuclear materials, etc. It also contributed to the removal of nuclear ammunition from Ukraine, Belarus and Kazakhstan. It is perfectly clear that were it not for U.S. assistance, that process would have dragged on for much longer, and the risks would have been much greater.

ISSN 1993-4270 (print)/ISSN 2151-7495 (online) http://dx.doi.org/10.1080/19934270.2014.897075

Another large project is the fissile materials storage facility built outside Chelyabinsk. Now that facility is gradually being filled; a certain amount of plutonium is already being held there. Without that facility, there would not have been proper conditions in place for the protection of that plutonium. Now that storage, which meets the most stringent international requirements in terms of nuclear security, already exists; $400 million to $500 million has been spent on that project. The third example is building new filling capacity for the reactors in Tomsk and Krasnoyarsk; about $500 million has been spent on that new capacity.

For more analytics on nuclear security, please visit the section "The Future of the Global Partnership and Russia–U.S. Cooperation in Nuclear Security" on the PIR Center website: *gp.eng.pircenter.org*

These examples demonstrate that the Nunn–Lugar Program really has played a very important role. But, to begin with, the Americans were actually strengthening their own security by means of that program. And second, they were making sure that the nuclear arms reductions mandated by the START-1 treaty were being implemented on schedule.

Now that the Nunn–Lugar Program has expired, money has to be found in Russia's own treasury to continue several projects. For example, up to 100 million dollars was being allocated for the needs of the Russian nuclear forces every year [under that program]. Even during our best years we did not turn that money down. The work has largely been completed, but there are still some things that have yet to be finished. So we will have to find that money in our own treasury, which will not be an easy thing to do, given the recent reports that the government may have to resort to austerity.

TULINOV: We are now analyzing the situation and looking at the legacy of the Nunn–Lugar Program and its implementation. We can see that despite some political short-term difficulties, nuclear security-related problems are being resolved. Lengthy cooperation between our scientists and the confidence-building measures we have implemented are playing a stabilizing role in international relations, regardless of short-term political fluctuations.

COOPERATION WITHOUT SLOGANS

PONOMAREV-STEPNOI: First, we are mostly focusing on the two *S*'s in these important issues, *Security* and *Safeguards*. I would like to talk about the third *S*, *Safety*, because the fundamental nature of all these problems is the same; it is based on the inherently dangerous nature of nuclear materials and processes. The problem is that, unfortunately, the first two *S*'s are dealt with by one government agency, both in the United States and in Russia, whereas the third *S* is the remit of another agency. As a rule, there are always certain barriers for cooperation between these different agencies. We, on the other hand, must consider these three *S*'s taken all together.

Second, even though there were no bilateral agreements in place to facilitate joint Russian–U.S. nuclear research, we still managed to cooperate. In 1988 the two governments agreed to set up a special coordination group for nuclear reactor safety; that group continued to work for six years. We analyzed safety arrangements at U.S. nuclear power plants. We were given the necessary materials, and we used our own methods to identify various vulnerabilities. The United States undertook a similar analysis with regard to our own NPPs. Both sides were given access to materials, designs, and methodology.

What is more, we conducted experiments at U.S. facilities to model serious accidents. That was a very useful experience. It was possible at the time because after Chernobyl we had to attain a new level of international mutual understanding.

Back at the time we also tried to work together in the area of dual-use technologies – more specifically, nuclear generators for spacecraft. That was a whole saga. Our own generators were brought to the Untied States, where they were tested on American test benches.

Nothing bad came out of it; besides, we had gained an understanding of the level of U.S. efforts in this area. The Americans, for their part, understood our level. There was no transfer of technology. That was our mutual understanding. Incidentally, that is when the first proposal came up about cooperation in developing space-based missile defense.

Third, we agreed to work together on nuclear material protection, control, and accounting (MPC&A). These were not unilateral efforts. For example, we found shortfalls in the U.S. control and accounting systems. There was genuine mutual interest. I will not even mention joint efforts concerning the naval programs. With the help of our U.S. colleagues we were able to take the MPC&A system to a whole new level.

Fourth, we cooperated with the Americans on the conversion of plutonium reactors in order to avoid the accumulation of plutonium while keeping these reactors operating in energy output-optimized mode. Now that we have new agreements that provide new opportunities for cooperation, we must make use of those opportunities.

Fifth, I am confident that more countries will continue to adopt nuclear energy – including countries that previously did not have the required capabilities, or lacked the proper nuclear energy culture. This is a very serious issue where Russian–U.S. cooperation would be very useful. Incidentally, when I talk about the adoption of nuclear energy by new countries all over the world, I mean all three *S*-words: *Security*, *Safety*, and *Safeguards*.

There is a large commercial component here, so commercial companies must also be involved. So far, we don't have a well-established dialogue between the four key participants: the supplier government, the supplier company, the recipient government, and the recipient company. International efforts must be aimed at integrating the responsibility of those four actors.

The suppliers must ensure the nuclear security and safety culture that can prevent the loss of nuclear materials, the proliferation of technologies, etc. This can also ensure nuclear safety; I would like to put a special emphasis on safety as well.

RYBACHENKOV: The agreement signed on September 16, 2013 is an important instrument for broadening Russian–U.S. cooperation in this area, giving that cooperation a fresh impetus, etc. But on the other hand, it would be an exaggeration to say that a whole new page has been opened – as if there were no previous direct contacts between the U.S. laboratories and our institutes. This will merely help to put such cooperation into a more clearly defined framework, and give it a fresh impetus.

CHERNYSHEV: I would like to draw your attention to the fact that we tend to underestimate the importance of bilateral relations for the IAEA, even though the September 16, 2013 agreement offers us broad opportunities not only for bilateral cooperation between Russian and U.S. laboratories, but also for improving the work of that organization.

In the context of rapid development of the nuclear energy industry, the requirements for nuclear material control will become even more stringent. That will necessitate the development of new instruments, new hardware, new assessment methodology, and new regulations. All these aspects can be dealt with in a bilateral format or in the format of nuclear states; they can also be discussed with the IAEA.

Let us take the demilitarization of the Semipalatinsk nuclear range as an example. At the 2012 Nuclear Security Summit in Seoul, the Russian, U.S., and Kazakh presidents announced the successful completion of the project there. That project set a precedent of nuclear infrastructure being dismantled on the territory of a non-nuclear state. This is a good example of how we can respond to future challenges.

At the international level, we also need to deal with the issues of nonproliferation and the environment. For example, the U.S. Department of Energy spends 2.5 billion dollars every year on nonproliferation programs. Spending on the U.S. nuclear arsenal is 7.9 billion dollars; in other words, the difference is only threefold.

Speaking of the industry, the situation there is quite complicated. Nuclear energy is a very delicate area; it has low liquidity and low profit margins. The Nunn–Lugar Program was a

brilliant example of quiet and effective cooperation in organizing airlifting operations for spent nuclear fuel, but that experience cannot be replicated for commercial use.

Nevertheless, there is a whole range of opportunities for international cooperation. For example, in our research we use fuzzy logic methods to quantify the state of affairs in different countries' nuclear industries. We have databases that we use to formulate our assessment either via neuron networks, or using fuzzy logic methods to predict how states will behave in different situations, to determine how close they are to resolving the nuclear problem, etc. But, very surprisingly, we were unable to apply that model to North Korea. Now, the September 16, 2013 agreement enables us to discuss problems of creating databases using non-classified materials, of granting various countries access to those databases, etc.

LYSENKO: It is important to understand that cooperation is already under way. We are now building a multirole research reactor in Zelenograd. It will be used on a multilateral basis. There is a trilateral U.S.–French–Russian agreement on conducting experiments there. We will preside over the project, but all countries are invited to take part in the experiments. This is an important long-term project. There is also the old BOR-60 reactor there, but it will remain operational for many years after upgrades; the Americans and the Japanese have already shown interest in using that reactor.

Another potential project centers on the Armenian nuclear power plant, i.e. the [life] extension of the reactor that remains in operation. But to do that, a number of technical problems with operational stockpiles will have to be resolved. We are working there in cooperation with the Americans and the EU to provide assistance.

Another program that still continues is the removal of spent fuel from the research reactors. It includes Romania, Ukraine, and other countries, 14 in total. The Americans are removing fuel from the reactors they built. To summarize, the September 16, 2013 agreement will enable us to work closer, to pursue technology cooperation, as opposed to mere exchanges. It will enable us jointly to create intellectual property that can then be used for the good of our countries and other interested countries.

PONOPAREV-STEPNOI: Cooperation between Russia and the United States will develop because both countries need it; even more importantly, third countries need it as well. We must not view this as trying to be the first to establish a foothold in those countries. Our priority should be to facilitate the safe and secure development of nuclear energy in those countries.

RYBACHENKOV: I would like to add a few words. I completely agree that it's important for Russia and the United States to work together in third countries – but so far, we have only declarations. Incidentally, our pullout from the ISTC is not conducive to cooperation, either. In my opinion, sooner or later Russia will have to rejoin the ISTC.

THE MIDDLE EAST TRIAL

BUZHINSKY: Speaking of Russian–U.S. cooperation, as well as joint efforts by the G8 countries and the Global Partnership members in Syria, nobody could have foreseen how quickly the Syrian leadership would accept the Russian proposal on the destruction of Syrian chemical stockpiles. Many unknowns still remain. Under the rules of the Organization for the Prohibition of Chemical Weapons [OPCW], information about the size of chemical weapons stockpiles is classified. Without knowing the size of those stockpiles, it is very difficult to predict how they can be destroyed, when, or how much it will cost.

One option for destroying Syrian chemical weapons is to do it on-site, which is the usual practice in such cases. But undertaking such a project amid a civil war would be very risky. As of October 31, 2013, the OPCW had managed to inspect 21 out of Syria's 23 chemical weapons sites and to destroy all the equipment that could be used to make chemical weapons. But there still remains the huge undertaking of destroying the chemical weapons themselves. Doing that in Syria itself while the civil war rages on would be very difficult.

Another option would be to remove the chemical stockpiles from the country. The possibility of removal to Albania has been discussed, but there are major technical problems with such

an approach. There have been no precedents of chemical weapons being removed to another country for destruction. In any case, it would be a very risky project, and there is no relevant experience of chemical weapons being removed by sea.

As for the cost of all these projects, the figure of 1 billion dollars has been named. That seems fairly reasonable; one of our own facilities in Udmurtia, with annual chemical weapons destruction capacity of 2,500 tonnes, cost us about 1 billion dollars.

If the Syrians have about 1,000 tonnes of chemical weapons, that's not too much. In other words, it would not be a huge problem to build a facility that can handle such a volume – unless of course there is a war going on.

Another potential option would be to use mobile facilities – but such facilities are designed to handle relatively small amounts of toxic agents. A large number of such mobile facilities could be brought to Syria in order to handle the volume, but, once again, there are a lot of unknowns here.

As for cooperation between the Global Partnership members, this is exactly the kind of project where such cooperation could receive a major boost. Russia, China, and the EU are ready. We have the expertise, we have the technologies, and we have the hardware. But the tasks we set for ourselves must be realistic. We know that the Syrians have 23 chemical weapons sites. By the Americans' count, there are 49 such sites that could potentially be used to make chemical weapons; that number includes pharmaceutical and chemical plants. These are all dual-use facilities, and theoretically they can produce toxic agents. But if that is the kind of task we set before ourselves, such a task would not be realistic, either practically or politically.

MASLIN: The problem of chemical weapons in Syria is very urgent and pressing. Speaking of the destruction of these stockpiles, I believe the more realistic approach would be to destroy them on site using mobile facilities. These facilities can process about 25 [metric] tons of toxic agents every day. There are now two such facilities there; that number could rise to seven by the end of 2013.

ORLOV: We can now see obvious progress. Israel is ready to ratify the Chemical Weapons Convention. Iran is ready to ratify the Comprehensive Nuclear Test Ban Treaty. There is a positive wave under way; it has more optimism than realism about it, but we must try to grab the opportunity and use it.

BAKLITSKIY: Speaking of the Middle East, we must take into account the entire range of threats, including chemical, nuclear, and bacteriological.

No one seems to be paying any attention to the bacteriological threat. That may only be natural; indeed, two years ago no one was discussing the chemical threat, either. Egypt and Israel have yet to ratify the convention, and nobody knows for sure what kind of stockpiles they have. In this context, I think we should not overestimate the importance of the recent statements by Israel, or rather the Israeli president, about the country's willingness to ratify the CWC. But if Israel really starts to move in that direction, it would be much easier to get other countries moving as well – including Egypt and Iraq.

Libya is still in the process of destroying its chemical weapons. We are now worried about the chemical weapons in Syria, which is in the throes of a civil war – but something very similar is happening in parts of Libya as well. The Italians have built the facilities; those facilities are already operational, but there are still some toxic agents left in the country. People also find old chemical weapons munitions in Iraq from time to time; the threat is not that great, but it does exist.

Syria, Egypt, and Israel have yet to sign the bacteriological weapons convention. In Syria, there is the danger of non-government actors gaining access to chemical weapons. But we should be just as careful to make sure that they don't gain access to bacteriological weapons, either. Besides, unlike chemical weapons, if a potent virus is unleashed from a laboratory, it could potentially kill a lot of people all over the region.

Therefore, my recommendation would be to pay more attention to the problem of establishing a WMD-free zone in the Middle East. This is not just a matter of good intentions; there is a pressing and urgent need for such a zone.

ORLOV: The important thing is, we know that there has been some progress on the Israeli ratification of the CWC. They have already signed the convention; they only need to ratify. It would be a small but very important step. The Iranians are now playing a very constructive role in the matter of chemical weapons. Their moral authority in that matter (the country having been a victim of chemical attacks) is really useful. Tehran's voice can now be heard in the whole region, including Israel.

For more analytics on the Middle East region, please visit the section "Russia and the Middle East: Promoting Strategic Interests" on the PIR Center website at: *middle-east.eng.pircenter.org*

PONOMAREV-STEPNOI: The thing that has happened in Syria is absolutely astonishing. There seemed to be a complete impasse; the problem had escalated to the highest level. The people there at the top seemed to be in an impossible situation, but they managed to find the right solution. Unfortunately, we are still very dependent on people at the top being able to agree.

MASLIN: All of this gives us real reasons to expect closer cooperation between Russia and the United States. I have a firm conviction that we must be strategic partners on many issues. The Americans also intend to pursue further cooperation with Russia, especially in such areas as fighting terrorism, bolstering cybersecurity, and working together with Russia in third countries.

NOTE

[1] The PIR Center workshop entitled "Prospects for International Cooperation on WMD Nonproliferation and Nuclear Disarmament" was held in Moscow on October 3, 2013.