



ROYAL HIGH INSTITUTE FOR DEFENCE
CENTER FOR SECURITY AND DEFENCE STUDIES

Focus Paper 6



A World Free Of Nuclear Weapons: Dream or Reality?

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February 2009

The views expressed are only those of the author

Abstract :

This article reviews existing treaties involved in the non-proliferation regime. Specifically in relation to the Non-Proliferation Treaty, existing nuclear postures are reviewed in the present economic context. If the world cannot be freed from nuclear and radiological weapons as well as their vectors in the near future, recommendations are proposed to limit existing stockpiles of warheads and fissile material.

This paper has been written in a series of focus papers comprising other proliferation issues as well as a research paper in the same field of research.

Key words: nuclear posture, START, Ballistic Missile Defence, non-strategic weapons.

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INTRODUCTION

After the first common statement of Schultz, Perry, Kissinger and Nunn in 2007² outlining a program to lay the groundwork for a world free from nuclear threat, the initiative was repeated in 2008³. Many parameters in world politics and security issues have evolved since then: amongst others, the Obama administration took office in January 2009 in a world bearing the yoke of an economic collapse. Supply of energy towards Europe was proven to be vulnerable during the gas supply cuts between Russia and Ukraine. In Iraq, American troops are looking forward to the planned retreat from an unstable region, still on the way to governance after the recovery from a long lasting war. Finally, the situation in Afghanistan worsened, due to spill-over effects of Taliban incursions in the Tribal Areas of Pakistan which endangered the security of supply lines of ISAF troops, on the one hand, and the stability of Pakistan, on the other hand.

With these few examples in mind, we must ask ourselves if these issues, involving global security, still allow hope for a world freed from any nuclear weapon. Can nuclear proliferation be stopped at all and can stockpiles be reduced to zero? The answers to these fundamental questions should be found in the historical context and the actual positioning of existing non-proliferation treaties, nuclear postures, and technological innovation in the current economic policies.

1. HISTORICAL SETTING OF EXISTING TREATIES

After the first use of nuclear weapons by the US in 1945, the USSR conducted first tests in 1949. From this point onwards, a massive nuclear arms race was the major issue between the two superpowers. Not only the amount of weapons increased, but the destructive yield increased from kiloton to megaton ranges. The technological evolution shifted from gun-type or implosion type weapons based on the principle of nuclear fission to nuclear fusion (also called thermonuclear weapons). These increased a thousand-fold the capabilities demonstrated in Hiroshima or Nagasaki. Shortly afterwards, the United Kingdom, France and China, joined the club of the Nations in possession of nuclear weapons, called the Nuclear Weapon States (NWS). As from 1961, the available stockpile exceeded 20,000 warheads in the US: horizontal and vertical proliferation was a fact, putting the world at risk for an accidental outbreak of another global conflict which would be the first of the nuclear era.

That very same year, the Irish resolution, voted at the General Assembly of the United Nations, was the first step towards the creation of the Non-Proliferation Treaty (NPT)⁴. Opened for signature in 1968, it entered into force in 1970. Ever since 1975, multiple five-yearly review conferences have been organized. One important issue in this treaty concerns the interpretation given to Art.VI⁵: while Non Nuclear Weapon States (NNWS) are encouraged not to acquire nuclear weapon capacity, the NWS

² Shultz, G., et al., "A World free of Nuclear Weapons", in *Wall Street Journal*, January 4, 2007.

³ Shultz, G., et al., "Toward A Nuclear-Free World", in *Wall Street Journal*, January 15, 2008.

⁴ Treaty on the Non-Proliferation of Nuclear Weapons, IAEA INFIRC/140, April 22, 1970.

⁵ See reference [13] for the complete text of the Art.VI

A World Free Of Nuclear Weapons: Dream or Reality?

were supposed to dismantle their stockpiles of nuclear warheads. Apart from these military implications, the peaceful use of nuclear energy was allowed to be pursued by any Nation according to Art. IV.

During the 2000 Non-Proliferation Treaty (NPT) Review Conference, the State Parties tried to reinforce the principles laid down in Art.VI by adopting the 13 practical steps for a comprehensive implementation of Art.VI of the Non-Proliferation Treaty (NPT)⁶. Emphasis was laid on a Comprehensive Test Ban Treaty (CTBT) to promote entry into force as soon as possible. Furthermore, negotiations for the reduction of the nuclear weapon stockpiles of the US and Russia, were encouraged by the entry into force of the second Strategic Arms Reduction Talks (START II) treaty. However, in reality it never came to this. This second Strategic Arms Reduction Treaty (START II) was never ratified for entry into force. Worse, the first Strategic Arms Reduction Treaty (START I), providing step-by step reductions of the stockpile will be terminated by December 2009. The Moscow Treaty, ratified in 2003, is supposed to lower the actual stockpiles of each party down to 1700-2200 warheads by 2012. Unfortunately, no control measures or intermediate counting of remaining warheads have been included in this Treaty.

Today's stockpiles of fissile material, are still the largest in the US and Russia: estimates as of mid 2008 reach 250 metric tons of highly enriched uranium (HEU) in the US and 590 metric tons in Russia⁷, all available for weapons. The actual amount of operational warheads is estimated at 5,400⁸ for the US and 5,200⁹ for Russia.

2. NUCLEAR POSTURES

The Nuclear Weapon States (NWS), signatory parties of the Non-Proliferation Treaty (NPT) (NPT-NWS) hold nuclear doctrines based on ground based forces, marine forces and air strike capability, commonly called the nuclear triad. The repartition of the total strike power capabilities, is traditionally based on a repartition over army-, naval- and air forces for a total account of respectively 60% for the land forces, 30% for naval forces and 10% to the air strike forces. From the five NPT-NWS, Russia is the only Nation which deviates from this repartition, reaching a 55/20/25 threshold. This disproportionate number allocated to air strike forces outnumbers the strategic marine force, which is in complete contradiction to the geostrategic position of Russia.

Part of the explanation of this phenomenon can be found in the stubbornness of Russian leadership to maintain a nuclear triad that would be capable of competing with the US-triad: since the Soviet-Union fell apart, the Warsaw-Pact Grand Policy had to be submitted to revision, in order to maintain regional stability, since most members of the Pact reviewed their position vis-à-vis Moscow. In this context, military forces were not priority number one, for the Pact no longer existed, and Russia, focused on internal struggle for power, was balancing at the edge of economic collapse. During this process of transformation, the US kept pace in the technological improvement of its' own nuclear forces. At that very same moment, Russia was struggling to keep up to date, but had to postpone elementary maintenance programs and hold the outdated technology instead of focusing on innovation and R&D.

⁶ Center for International Security and Cooperation, "P-5 Nuclear Doctrines and article VI", Stanford University, Workshop from October 16-17, 2007, p.58

⁷ Global Fissile Material Report 2008, International Panel on Fissile Materials, Princeton University, September 2008, p.11

⁸ Norris, R., et al., "U.S. nuclear forces, 2008" in *Bulletin of the atomic scientists*, Vol.64, March-April 2008, p.50.

⁹ Norris, R., et al., "Russian nuclear forces, 2008" in *Bulletin of the atomic scientists*, Vol.64, May-June 2008, p.54.

A World Free Of Nuclear Weapons: Dream or Reality?

In spite of diverging means, the posture of both Nations, however, remains comparatively similar today: permanent targeting of opponents, however, is no longer the main issue. The actual capacity of both is even revised in reduced numbers. This seems to endorse Art. VI of the Non-Proliferation Treaty (NPT), but in reality, none of both is willing to give up the complete set of their nuclear deterrent force. A similar position is to be found in the UK and France. During the presentation of France's latest nuclear submarine "Le Terrible", president Sarkozy developed on the nuclear deterrent capability¹⁰ and explained his views: the Non-Proliferation Treaty (NPT) is put forward as the reference to be pursued, together with the accompanying treaties outlined in the 13 steps program. But nuclear deterrence remains a part of the policy "...because nuclear deterrence protects us from any aggression against our vital interests emanating from a state-wherever it may come from and whatever form it may take. Our vital interests, of course, include the elements that constitute our identity and our existence as a nation-state, as well as the free exercise of our sovereignty". Vital interests are not explicitly defined in this speech, but having a closer look at the running program for the protection on Critical Infrastructure in Europe, the main interest lies with transport and energy. This sheds a new light on the recent cuts of the gas-supply from Russia to Ukraine as some countries of the European Union (EU) were not supplied with NLG in mid winter as a result of the crisis between Russia and Ukraine. Not that this might lead to nuclear reprisals, but the show has been put forward: for times to come, vital supplies are part of vital interests and anyone (state or non-state actors) who would try to disrupt these, would expose himself and his Nation to what might be an unconventional response!

China is the only Nation from the P-5, as from its' accession to the club of NWS, that is willingly keeping its' nuclear capacity to the lowest possible level in order to maintain a nuclear deterrent. This stance can be explained by the entirely different approach, focusing on development and economic growth: China's economic power has always been the main pillar supporting further economic growth by improving R&D. In this framework, huge expenses, lost for the maintenance of ageing warhead stockpiles, do not fit in China's grand policy. Furthermore, China is the only P-5 member to openly support the No First Use (NFU) ¹¹ clause in its' nuclear doctrine and even claims to be willing to renounce completely to the nuclear arsenal. One could be astonished reading this, but there is a simple logic behind this position. Regarding the geostrategic position of China, the economic power that it represents, and the resources that it has at disposition, it was a normal way of thinking to favour the conventional military force. Hence, it is the only Nation in the world which is in a position that allows to give up its complete nuclear arsenal today, if other NWS would do the same, because it largely outnumbers any other Nation with its' conventional forces.

The reason for subscription to No First Use (NFU) being explained, we must expand this view to the possibility to complete nuclear disarmament. Art.VI of the Non-Proliferation Treaty (NPT) strives for disarmament, but attaining this goal can only be achieved when a new military balance is ensured. Looking at the P-5, we saw that China is capable of assuming this goal. The other P-5 Nations are not. Besides, India, Pakistan and Israel, the NWS not signatory of the Non-Proliferation Treaty (NPT), are fully relying on their nuclear strike capabilities for reasons of security. In other words, a Nation involved in a tense relationship with neighbours, capable of relying on large numbers of conventional forces, will not be the first one to give up a "last resort" strike capacity for the sake of survival. In some cases Nations will rely on the nuclear capacity of an Alliance, seeking a common nuclear umbrella (as is the case for many NATO countries): in that case, no proper nuclear deterrent is needed.

¹⁰ Sarkozy, N., Speech on the occasion of the presentation of Le Terrible in Cherbourg, March 21, 2008.

¹¹ Arbatov, A., "Reducing the role of nuclear weapons", presented at the International Conference on Nuclear Disarmament, Oslo, February 26-27, 2008, p.5.

A World Free Of Nuclear Weapons: Dream or Reality?

Reliance on nuclear weapons in military doctrines has repercussions on the interpretation of existing treaties and the realization of new ones. This will continue to put a burden on Disarmament Processes and as Arbatov correctly states, this stance already had consequences for the negative outcome of the Anti-Ballistic Missile (ABM) Treaty, Strategic Arms Reduction Treaty (START) II, Ballistic Missile Defence (BMD) systems, the Comprehensive Test Ban Treaty (CTBT), the Fissile Material Cut-Off Treaty and even the Non-Proliferation Treaty (NPT) review conference of 2005¹².

3. TECHNOLOGICAL INOVATIONS

Throughout history of weaponry, the invention of new weapon systems has always been followed by a race towards appropriate countermeasures consequently resulting in turn in innovation and counter-counter measures. The availability of weapons and countermeasures respectively, whether it be conventional or not, has influenced the military tactics, strategy, and policy of Nations. Therefore it is interesting to focus on today's giant in nuclear technology, the US.

In particular regarding nuclear arsenals and the historical build-up, a huge amount of fissile material has been subject to ageing. The reliability of a nuclear weapon is a crucial factor in the credibility of the nuclear deterrence, but the ageing of warheads is a natural process of fissile material, changing naturally the isotopic composition of the warhead. These have been designed to contain enough material as to obtain the critical mass needed to initiate a nuclear detonation, without too much excessive weight in order to allow proper delivery by the appropriate vectors. In order to verify their reliability, warheads were detonated on a regular basis, but the initiation of a comprehensive protocol for the Comprehensive Test Ban Treaty (CTBT) and the moratorium on nuclear test explosions, has put an end on these tests. According to scholars, enough technical data were available, so the necessity for additional testing could not outweigh the potential damage to ecosystems, for example. However the Comprehensive Test Ban Treaty (CTBT) has not yet entered into force since 4 signatory parties are still missing, no more tests are performed for the time being. To face the specter of unreliable weaponry, the US has developed the Reliable Replacement Warhead (RRW), which would make warheads less sensitive for ageing. But the system is still subject to controversy since opponents argue that the Reliable Replacement Warhead (RRW) is just a new of warhead design, being in direct contradiction with the obligations of Non-Proliferation Treaty (NPT) Art.VI. Consequently, the Reliable Replacement Warhead (RRW) has not passed the definition and cost analysis phase yet.

Another technological issue of prime importance to nuclear doctrines is Ballistic Missile Defence (BMD). Initially developed for defence against enemy attack, the project induced harsh resistance from Russia, especially concerning the deployment of interceptors and radars close to the Russian border. In fact, a reliable Ballistic Missile Defence (BMD) could destabilize the nuclear deterrence equilibrium due to the possible destruction of enemy ballistic missiles carrying single warheads. Therefore, the response of Russia would be twofold. First, Moscow developed the multiple independently targeted reentry vehicles (MIRV) as first counter measure against Ballistic Missile Defence (BMD). Second, more specifically, a dual capable "Iskander" interceptor missile base would be deployed in Kaliningrad with the aim of destroying US interceptors launched from European soil. A more dubious system would also be available as it possesses maneuverable gliding reentry vehicles, especially designed to penetrate Ballistic Missile Defence (BMD) systems¹³.

¹² Arbatov, A., op.cit., p.3.

¹³ Babakin, A., "A launch under attack is inevitable" in *Nezavisimoye Voennoye Obozreniye*, May 20, 2006.

A World Free Of Nuclear Weapons: Dream or Reality?

In this framework, the position of China is clear cut once again: whether it concerns systems for the militarization of space, Ballistic Missile Defence (BMD) or other systems capable of disrupting the balance of forces, they are not to be pursued in order to maintain stability and lower tension amongst the P-5. We argued why China would prefer to lower numbers of nuclear weapons as well as weapon systems to counter Ballistic Missile Defence (BMD): their conventional forces allow them to take this stand, which is not the case for the other Non-Proliferation Treaty (NPT) and non-NPT NWS.

4. ECONOMIC POLICY

What can we expect on disarmament issues in a global context of economic stall? Economy markets are likely to protect themselves from further damage, shifting priorities and giving advantage to national progress instead of international cooperation. Reviewing our main issues we can expect advances, possible solutions and set-backs at different levels.

First, non-proliferation treaties could benefit from the shifting priorities from weapon systems and stockpiles towards demilitarization. However, taking the Non-Proliferation Treaty (NPT) as an example, disarmament is not solely about Article VI. Today, the economic crisis can not be resolved by budget cuts alone, but has also to take into account investments for the future, especially in infrastructure and energy supply. Nuclear energy, today, may not be a politically salient issue, but as fossil fuel reserves are running out, alternative forms of energy supply have to be found on the short term. Article IV. of the Non-Proliferation Treaty (NPT) is dealing with this problem, as every Nation has the right to make peaceful use of nuclear energy. One of the available alternatives for fossil fuels is the use of Nuclear Power Plants (NPP) and many States have requested new exploitation authorizations to the International Atomic Energy Agency (IAEA) in this sense. This is not necessarily a bad approach: both disarmament and NPP could be combined in the reprocessing of weapon-grade Uranium into fuel ready for use in NPP. However, nuclear fuel enrichment is a sensitive issue as it can be diverted towards covert weapons programs.

Second, nuclear postures are not very likely to change during the crisis: stockpiles could be reduced and R&D could perhaps suffer from budget cuts, but overall, P-5 postures will remain the same. The only erratic parameter is the timeframe of the crisis. As long as the economy is not recovering, the P-5, more specifically the US and Russia will be inclined to reduce their expensive stockpiles. As long as conventional forces can not balance for the loss of a nuclear deterrent, the actual postures will not tend to change. As an example, the Obama-Biden document mentions explicitly that the US will not disarm unilaterally¹⁴.

Third, technological innovation, as mentioned shortly will also suffer from the economic policy focused on recovery of the market. Therefore, it is not probable, as already stated by the Obama administration before accession to power, that a third Ballistic Missile Defence (BMD) site will be deployed in Europe soon. As an immediate sign of understanding, and probably because of own economic priorities, Russia announced not to deploy their "Iskander" missiles in Kaliningrad¹⁵. However, Ballistic Missile Defence (BMD) is not discarded as a whole. The Obama-Biden document states: "We must seek a nuclear missile defence and demand that those efforts use resources wisely to build

¹⁴ Barack Obama and Joe Biden on Defense Issues, available at http://www.barackobama.com/pdf/issues/Fact_Sheet_Defense_FINAL.pdf, accessed February 11, 2009.

¹⁵ Levy, C., "Russian Report Says Moscow Will Halt Missile Deployment" in *The New York Times*, January 28, 2009.

A World Free Of Nuclear Weapons: Dream or Reality?

systems that would actually be effective. Missile defense requires far more rigorous testing to ensure that it is cost-effective and, above all, will work.”¹⁶ Therefore, it is sound that in this timeframe of possible renewed cooperation with Russia, all sensitive issues concerning Ballistic Missile Defence (BMD) should be addressed in a timely manner.

Another vital question in the framework of the existent non-proliferation regime, is the positioning of non-strategic nuclear weapons in the P-5 postures. Denuclearization cannot be achieved without encompassing tactical weapons, not accounted for in existing treaties.

5. NON-STRATEGIC WEAPONS

The non-strategic (tactical) weapons are not taken into consideration in the main treaties for nuclear disarmament. This additional factor encompasses both low yield weapons deliverable by artillery shells or by aircraft. During Cold War, these weapons were differentiated from the strategic weapons due to their short delivery distances. Nowadays, it is commonly accepted that tactical nuclear weapons are weapons, not taken into account by the main treaties, endorsing low-yield weapons and radiological or mini-nuclear “bunker buster” weapons.

Non-state actors will remain another erratic parameter: as long as overall control over all nuclear and fissile material will not be possible, the use of unconventional weapons or dispersion devices can not be excluded, even in urban areas. Therefore, a comprehensive Fissile Material Cutoff Treaty should be promoted worldwide.

6. RECOMMENDATIONS

Whether the world can be freed from nuclear weapons remains uncertain. However, if it cannot, we must try to limit their numbers with all possible means at our disposal. Therefore, the non-proliferation regime should be strengthened and in that framework, various recommendations can be formulated on different issues:

(1) As agreed by the Non-Proliferation Treaty (NPT) Review conference of 2000, the 13 steps program for the systematic and progressive implementation of the Non-Proliferation Treaty (NPT) Article VI.-principles has to be executed. Similar thoughts have been expressed in the letter addressed by the EU-presidency to UN Secretary General Ban Ki-moon¹⁷.

(2) In the new context of economic decline, and the search for alternative energy supplies, a framework has to be put in place under control of the International Atomic Energy Agency (IAEA) for the reconversion of weapon-grade Uranium to NPP-grade nuclear fuel. Similarly, a closed fuel cycle has to provide reduction of actual stockpiling of spent radioactive fuel. This should be undertaken in a context of global cooperation, ensuring the access of all Nations to the produced fuel in order to avoid national fuel cycles, susceptible for deviation towards military applications.

¹⁶ Barack Obama and Joe Biden on Defense Issues, op.cit., pt.5.

¹⁷ Letter from the EU-presidency (N.Sarkozy) to UN Secretary General, December 9, 2008.

A World Free Of Nuclear Weapons: Dream or Reality?

(3) The ideals of the Strategic Arms Reduction Treaty (START) treaties have to be reinvigorated by a comprehensive approach of the Moscow Treaty, including systematic controls for reduction of the number of warheads in pre-established time schedules.

(4) A negotiated form for the deployment of Ballistic Missile Defence (BMD) systems has to be found in cooperation with Russia. Additionally, the ultimate position of weapons and weapon systems in space has to be negotiated in a global forum.

(5) Non-strategic weapons are dealt with in the 13 steps-plan, however, this should include radiological weapons and mini-nukes designed as “bunker busters”.

(6) Tighter follow-up of treaties can reinforce the Non-Proliferation Treaty (NPT)-treaty: these include the Comprehensive Test Ban Treaty (CTBT) and Fissile Material Cut-off Treaty (FMCT), as included in the 13 steps plan, but also the Hague Code of Conduct (dealing with ballistic missiles), and the establishment of a control system for the Convention on the Prohibition of the Development , Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (BTWC).

(7) Multilateral export control regimes as the Nuclear Supplier Group (NSG), the Zangger Committee (ZC), the Australia Group (AG) and the Missile Technology Control Regime (MTCR) have to be strengthened.

(8) The six-party talks have to come to a positive development vis-à-vis North Korea in order to turn the Korean peninsula into a nuclear weapon-free zone: China is a major partner in this issue. Japan may feel unhappy with this, consequently the security of Japan must be guaranteed in order to get these talks on track.

(9) The International Atomic Energy Agency (IAEA) additional protocol to the safeguards agreements has to be forced into universal application: that means that it will be applicable for the NPT-NWS (P-5) on an equal basis as for the non-NWS. Therefore Iran has to be granted the supply of nuclear fuel (as foreseen in recommendation 2), providing that agreements make clear that, in a fixed time schedule, the enrichment process is stopped as well as the research in implosion technology, missile technology and the development of re-entry vehicles. A direct US-Iranian dialogue could improve the willingness of Iran; an additional advantage in resumed negotiations, could provide a solution for the war in Afghanistan by pressing Taliban on the eastern Afghan border.

(10) The non-NPT NWS have to adhere to Non-Proliferation Treaty (NPT)-agreements and the additional protocol to the safeguards agreements. Where necessary, security has to be guaranteed by the international community in exchange for a comprehensive collaboration.

(11) Commercial deals with regard to nuclear issues have to match the spirit of international treaties. In the current economic situation, this seems hard to achieve, since everyone tends to favour national economy. However, nuclear issues are a global issue and cannot be part of a nuclear economic deal such as the US-India agreement. The “tailoring” of this deal with a non-NPT NWS for economic purposes only, deprives the international community of its credibility to intervene in other cases, such as the Iran issue.

7. CONCLUSION

“A World Free of Nuclear Weapons” will remain a dream since the arms race has always fitted a policy to reach a balance of forces. The efforts to downgrade the nuclear arsenals should also focus on the tactical (non-strategic) nuclear and radiological weapons; moreover, nuclear balance should gradually be taken over by the guarantee of stability of sole conventional force. The economic crisis and the scarcity of energy resources have reinforced the demand for nuclear energy as a replacement or transition to sustainable alternatives. *De facto*, the use of nuclear energy on the one hand, and the necessity for a nuclear fuel cycle on the other hand, constitutes a new risk for diversion of fissile material as a new pathway towards proliferation.

The economic reality of States reflects the possibility to balance existing nuclear deterrence with conventional forces. For this reason, it is highly unlikely that the world would be freed of any nuclear weapons (whether they are strategic, tactical or radiological). It is hard to conceive that this situation would change soon in years or even decades: historical decisions and economic priorities have forged the actual balance of conventional forces. As long as this balance cannot take over the existing nuclear deterrent, none of the NWS will change current stances and give up a complete nuclear arsenal.

References:

[1] Arbatov, A., “Reducing the role of nuclear weapons”, presented at the International Conference on Nuclear Disarmament, Oslo, February 26-27, 2008, p.5.

[2] Babakin, A., “A launch under attack is inevitable” in *Nezavisimoye Voyennoye Obozreniye*, May 20, 2006.

[3] Barack Obama and Joe Biden on Defense Issues, available at http://www.barackobama.com/pdf/issues/Fact_Sheet_Defense_FINAL.pdf, accessed February 11, 2009.

[4] Norris, R., et al., “U.S. nuclear forces, 2008” in *Bulletin of the atomic scientists*, Vol.64, March-April 2008.

[5] Levy, C., “Russian Report Says Moscow Will Halt Missile Deployment” in *The New York Times*, January 28, 2009.

[6] Letter from the EU-presidency (N.Sarkozy) to UN Secretary General, December 9, 2008.

[7] Sarkozy, N., Speech on the occasion of the presentation of *Le Terrible* in Cherbourg, March 21, 2008.

[8] Shultz, G., et al., “A World free of Nuclear Weapons”, in *Wall Street Journal*, January 4, 2007.

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[10] Global Fissile Material Report 2008, International Panel on Fissile Materials, Princeton University, September 2008.

[11] Treaty on the Non-Proliferation of Nuclear Weapons, IAEA INFIRC/140, April 22, 1970.

[12] Center for International Security and Cooperation, “P-5 Nuclear Doctrines and article VI”, Stanford University, Workshop from October 16-17, 2007.

[13] Art.VI of the Non-proliferation Treaty states:

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control.