

**SCIENCE AND  
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**NATO Parliamentary Assembly**

**SUB-COMMITTEE ON  
PROLIFERATION OF MILITARY TECHNOLOGY**

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**VISIT TO NEW YORK AND MONTEREY, USA**

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**SECRETARIAT REPORT**

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## ***I. INTRODUCTION***

The implications of Iran's nuclear policy, the future of the global WMD non-proliferation regime, prospects for nuclear disarmament and the challenges of net-centricity were the major topics of discussion during the visit of the Science and Technology Committee Sub-Committee on the Proliferation of Military Technology delegation to New York and Monterey from 12-15 June 2006. The sixteen members of the NATO PA delegation, led by sub-committee Chairman, **Jérôme Rivière (FR)**, and Committee Chairman, **Michael Mates (UK)**, met with several key ambassadors to the UN, senior UN officials, academics and representatives of defence technology companies.

## ***II. MEETINGS AT THE UNITED NATIONS***

The Sub-Committee visit in the US started in New York. **Ambassador Dr. Wolfgang Trautwein**, Deputy Permanent Representative of Germany to the UN, and **Bernd Heinze**, Political Counsellor of the German Mission, provided an overview of the main issues and challenges facing the UN. Ambassador Trautwein noted that the UN reform process, initiated in 2004 by the report of the Secretary General, Kofi Annan, is very comprehensive and is aimed at adjusting the UN system to the most relevant challenges of the modern world. The UN is considerably expanding its peacekeeping and peace-building activities, as demonstrated by the establishment of the UN Peace-Building Commission. In the area of human rights, the UN established a new institution, the Human Rights Council, as the old Human Rights Commission did not quite live up to the expectations. Another outstanding question facing the UN is that of a restructuring of its budget. Failure to resolve this issue seriously hampers the smooth functioning of the UN institutions.

From the meeting in New York, the sub-committee delegation gained the rather pessimistic impression that the UN system as a whole is in serious crisis. **Nobuaki Tanaka**, UN Under Secretary-General for Disarmament Affairs, observed that the existing stalemate both in nuclear disarmament and nuclear non-proliferation is a result of certain groups of countries preferring one solution to another. Mr. Tanaka, however, called for a balanced approach and exponential progress in both areas.

## ***III. MEETING WITH H.E. AMBASSADOR MOHAMMAD JAVAD ZARIF, PERMANENT REPRESENTATIVE OF THE ISLAMIC REPUBLIC OF IRAN TO THE UN.***

According to Ambassador Zarif, the logic of international law maintains that countries assume obligations in return for certain benefits. However, the NPT did not provide any benefits for his country. Iran had no other choice but to engage in cooperation with the clandestine network of A.Q.Kahn because Western countries would refuse to sell nuclear fuel cycle technology to Iran, despite their commitments under the Article IV of the NPT. On the other hand, countries like India are being rewarded without even being a member of the NPT. The ambassador believed it was a clear example of a policy of double standards.

With regard to the current tensions between the West and Iran, Mr. Zarif made it clear that Iran would not abandon its nuclear programme which – despite some initial assistance from outside – is essentially developed by the Iranians themselves. This makes the case of Iran completely different from that of Libya, which merely bought nuclear technology and did not put nearly as much effort to develop its own nuclear programme as the Iranians did. "The genie is out of the bottle", as Mr. Zarif put it, suggesting that the best solution is to accept Iran's nuclear programme and to put it under the most stringent international monitoring.

Mr. Rivière and Mr. Mates agreed with the Ambassador that it is necessary to avoid the escalation of tensions in the region. However, they pointed out that the rhetoric of the Iranian president, especially with regard to Israel, is counterproductive in this respect. The Iranian ambassador said that President's statements were taken out of context. He stated that his country is prepared to provide security guarantees to any country in the world and challenged the United States to do the same with respect to the Islamic Republic of Iran.

Asked by Mr. Mates about Iran's position towards "the package of incentives", the Iranian Ambassador stated that it would have been easier to reach an agreement between the West and Iran had Iranian representatives been involved in the preparation of such a package.

**Christian Buzea (RO)** questioned whether it was economically rational for Iran to embark upon an extensive nuclear programme while possessing abundant oil and natural gas resources. Mr. Zarif disagreed with this assessment and pointed out that, given the current rate of energy consumption in his country and the dramatic growth of the population, Iran would become an energy importer in the not too distant future. Besides, it is always reasonable to diversify a country's energy sector.

**Lord Jopling (UK)** agreed that it would be very difficult, if not impossible, to induce Iran to relinquish its nuclear ambitions. Therefore, he suggested considering the option of recognising Iran's right to conduct limited research-scale uranium enrichment activities, strictly limiting the number of centrifuges to the degree that would make it impossible for Iran to produce sufficient quantities of enriched uranium to produce nuclear weapons. The Iranian Ambassador did not completely rule out this idea, but did not believe it was likely that his government would agree to such limitations. Nevertheless, he reiterated Iran's willingness to accept international monitoring, although he stressed that there is no fool-proof mechanism to completely preclude clandestine activities.

#### **IV. BRIEFINGS AT THE MONTEREY CENTER FOR NON-PROLIFERATION STUDIES (CNS)**

**Dr. William Potter**, Director of the CNS, addressed the concerns raised by the controversial nuclear cooperation agreement between the US and India. He called this deal a 'wound' to the global nuclear non-proliferation regime. Although countries like France and the UK as well as the Head of the IAEA Dr. ElBaradei welcomed the deal, Dr. Potter believed such a shift in US policy is counterproductive and may lead to mushrooming of new nuclear weapons states. In a way, the US administration differentiates "good proliferators" from 'bad proliferators'. The principle of exceptionism will erode the norms of the NPT and will make it more difficult to maintain effective multinational export control regime, Dr. Potter warned. Following this path, Russia, for example, might rightfully demand exceptions for Iran and China, and also might do so with regard to Pakistan. Dr. Potter regretted that the current US administration is less and less emphasising the importance of the NPT and other non-proliferation agreements.

**Jean du Preez**, Director of the International Organizations and Non-proliferation Program of the CNS, focused specifically on the case of Iran. The historical overview of Tehran's nuclear endeavours clearly shows that "Iran has played a bluffing game" with the international community. The winner of this game is clear – it's Iran. At this point, the West is prepared to offer an extremely generous 'package of incentives' to Iran. According to the speaker, in return for Iran halting uranium enrichment, these incentives include assistance in building a light-water reactor, a guaranteed supply of nuclear fuel, a dialogue on regional security issues, membership to the WTO, and the easing of US trade sanctions on Iran. Reported disincentives include travel bans for individuals associated with the nuclear programme, asset freezes, bans on investment in certain areas of Iranian activity, and an embargo on missile and nuclear technologies. However, according

to Mr. du Preez, these disincentives are nothing more than a 'paper tiger', as Iran would not be seriously affected by them. Nevertheless, he believed there was no alternative to a comprehensive 'sticks and carrots' strategy towards Iran.

In his second presentation, Mr. du Preez discussed the issue of nuclear disarmament. The CNS is working on a project "Progress towards Reducing the Threat and Numbers of Nuclear Weapons". Its purpose is to provide factual information on nuclear weapons related issues to the general public, policy-makers, journalists, students, etc. and to raise public awareness about the continued threat of nuclear weapons. The commitment towards the eventual elimination of nuclear arsenals is indicated in the NPT Article VI and reiterated in the conclusions of 2000 NPT Review Conference. Nevertheless, while thousands of nuclear warheads were destroyed during and immediately after the Cold War, very little concrete progress has been achieved since. Fifteen years after the end of the Cold War, more than 27,000 warheads remain.

In the post-Cold War period, one could witness more emphasis being put on nuclear non-proliferation rather than on nuclear disarmament. Yet there is a correlation between these two objectives. As Kofi Annan, UN Secretary General, put it: "the objective of nuclear non-proliferation is not helped by the fact that the nuclear weapon states continue to insist that those weapons in their hands enhance security, while in the hands of others they are a threat to world peace. If we were making steady progress towards disarmament, this situation would be less alarming". Mr. du Preez argued in favour of accelerating the pace of nuclear disarmament. He believed that there is no justification for US nuclear deployment in the European NATO countries and that US nuclear weapons withdrawal from NATO countries will positively impact global nuclear disarmament and non-proliferation. He mentioned that, according to the Strategic Communications survey, 63 % of Europeans want a nuclear-free Europe. Committee Chairman Mr. Mates challenged some of the speaker's conclusions by pointing out that democratic countries hastily scraping their nuclear weapon capabilities would leave them in an unfavourable situation vis-à-vis some rogue countries that seek to develop such capabilities.

In her presentation, **Elena Sokova**, Director of the CNS Newly Independent States Non-proliferation Program, argued that the threat of nuclear terrorism is to be taken seriously. A gun-type improvised nuclear device (IND) is well within the technical reach of terrorists and designs are available in open source. In addition, highly-enriched uranium (HEU) is hard to detect. The largest obstacle to nuclear terrorists is access to nuclear materials. Currently, there are 1,900 tons of HEU globally, including 50-100 tons in the civilian sector. Civilian facilities often lack adequate security. In the civilian sector, HEU is still used in research and test reactors, medical isotope production, icebreakers and some other applications. However, in most, if not all civilian applications low-enriched uranium (LEU) can be substituted for HEU. The key element for a coordinated international effort to eliminate the civilian use of HEU are in place, but a political decision is needed to move forward and institutionalise a global phase-out of civilian HEU.

Lord Jopling noted that, for terrorists, radiological dispersal devices, known as 'dirty bombs', could be more attractive than INDs, as 'dirty bombs' are considerably easier to produce and the effect of using them would be dramatic. Mrs. Sokova replied by stressing that the magnitude of a nuclear explosion using INDs would be incomparably more devastating than the effect of a 'dirty bomb'. She also noted that INDs are not too sophisticated to pose serious technological problems in producing them.

**Dr. Raymond Zilinskas**, director of the CNS Chemical and Biological Weapons Non-proliferation Program, briefed the delegation on the interesting issue of possible security implications of synthetic biology (SB). SB is a new discipline at the frontier of biological science and engineering that will make it possible to build living machines from off-the-shelf chemical ingredients. Dr. Zilinskas predicted that over the next decade, the field will enter a phase of exponential growth and spread to many countries. Creation of bio-engineered synthetic organisms will be able to

produce pharmaceuticals, detect toxic chemicals, repair defective genes, destroy cancer cells, generate hydrogen as a fuel source, etc. However, SB may pose risks of inadvertent harm or deliberate misuse. SB can be used to re-create known pathogens as well as to develop new, more lethal or effective BW agents. The Biological Weapons Convention (BWC) bans development and synthesis of microbes for hostile purposes, but BWC is not universal, lacks a formal verification mechanism and is not binding on persons or sub-national entities. Dr. Zilinskas urged legislators to pass appropriate laws to control the development of SB.

Members of the STC were concerned that all necessary information, including DNA sequence of deadly pathogens, was available on the Internet. Mr. Rivière asked if SB would have a potential of creating bioagents that can target specific people or ethnic groups. Dr. Zilinskas was sceptical about such a prospect and believed that it was impossible to explicitly differentiate people by their genetic characteristics.

**Dr. James Clay Moltz**, Deputy Director of the CNS, addressed the emerging space security issues. Despite of numerous attempts to use space for military purposes, he stated that there is still time to make a decision about whether or not the realm of space should be placed under specific international control, banning all military activities. In the US, opinions vary on this questions. The opponents of the G.W. Bush administration's plans to develop a strategic missile defence (MD) system with space-based assets underline that there is no immediate threat for the US in this regard as no other nation has placed its weapons in space. They also question the effectiveness of the system, particularly given the enormous amount of funding it receives. Deployment and tests of space weapons, especially kinetic energy weapons, would also considerably exacerbate the problem of space debris. The proponents of the space-based MD system, on the other hand, believe it is within the national interests of the United States to remain firmly in the forefront of developing such capabilities, as it is only the matter of time until other nations will engage in military-related activities in space. For example, China already has ambitious civilian and passive military space programmes. However, Dr. Moltz underlined that even the major American space-based weapon systems, especially more sophisticated ones, such as lasers, are still in the very initial stage of development. Asked by **Andrius Baranauskas (LT)** about the technological possibilities to defend the Earth against a massive meteorite impact, Dr. Moltz noted that no nation has such capabilities yet.

## V. CISCO

On 15 June, members of the STC visited the Cisco Systems Corporate Headquarters in San Jose. Cisco Systems is the worldwide leader in networking for the Internet. Today, networks are an essential part of business, education, government and home communications, and Cisco's Internet Protocol-based (IP) networking solutions are the foundation of these networks. As **Brad Boston**, Senior Vice President and CIO of the Cisco Systems, told NATO Parliamentarians, Cisco is the market leader in multiple areas, such as routing and switching, unified communications, wireless and security. The company helped catalyse the industry's move toward IP and, now that it is fully underway, the company is at the centre of fundamental changes in the way the world communicates. Cisco spends \$3.2 billion on research and development, and it employs 12,000 engineers. The company's branches are spread all over the world. Its customers include commercial companies, private persons and governments as well as military and intelligence sectors. The Cisco Systems' Global Government Solutions Group (GGSG) and especially its branch Global Defense, Space and Security Group (GDSS) work with relevant governmental and defence agencies, defence companies such as Lockheed Martin, and space customers to identify and meet their advanced technology solution needs in an increasingly network-centric world. The company has working relations with NATO for which Cisco Systems is an important technology advisor.

Cisco engineers are particularly preoccupied with issues of network delays and network security, elaborating various mechanisms to counter cyber-attacks against critical infrastructure networks. The goal of these efforts is to allow network access only to compliant and trusted endpoint devices. Asked by Lord Jopling what legislative support is required for these efforts, Mr. Boston replied that one should be extremely cautious when it comes to introducing new legislation in this area. The experience of the Cisco Systems shows that excessively invasive regulation can have many unexpected negative effects.

**Ms. Laura Ipsen**, Vice-President of Worldwide Government Affairs for Cisco Systems, spoke about the impact of the Information Age on society. She explained that there is a clear correlation between the growing use of IT technologies and the overall growth of the world's economy. New technologies foster educational programmes and contribute significantly to increasing standards of living in many countries of the world. However, Mrs. Ipsen pointed out that governmental support is crucial for these programmes to succeed.

The keynote presentation on network-centric warfare was given by **Terrence Morgan**, Director, GDSS Net-Centric Operations, Cisco Systems. He accentuated that we are living in a time of profound change called 'the digital revolution'. In effect, NATO commanders must forget everything they know about C3 (command, control and communications). The importance of network-enabled capabilities is being increasingly realised by militaries of many countries. Net-centricity is about leveraging technology to create new synergies in the way militaries train, organise, and lead that will enable more effective military operations. Network-centric capabilities (NEC) provide information superiority, deeper sensor reach, shared battlespace awareness, faster decision cycle, etc. According to Mr. Morgan, maneuver, mass, surprise, firepower, and logistics have been coins of the military realm. But in the Information Age, information is transforming both the concepts of mass and maneuver, redefining firepower, and greatly simplifying logistics. Information can, in effect, be directly substituted in the "manufacture" of each of these capabilities.

Today's operational C4ISR (C3, computers, intelligence, surveillance and reconnaissance) environment is still far from perfect: bandwidth is limited with choke points and interoperability issues, infrastructure is too diverse and complex to support plug and play, and the time to field new applications is unacceptably long. In other words, sensor and shooter have too much separation. In coalition warfare, network-centric capabilities enable commanders and warriors to get immediate access to the information necessary to accomplish their mission. While mastering networks, it is important to filter and prioritise relevant information as its overflow can be counterproductive on a battlefield. Mr. Morgan suggested that it would be wiser for military leaders to use standard-based, commercial off-the-shelf components to create such networks, rather than highly specialised proprietary military equipment. Mr. Morgan also emphasised that technological compatibility is not the only prerequisite of net-centricity. Human factor and joint training are equally, if not more important.

After the briefings, the Cisco Systems representatives organised a tour of technologies demonstrations for the STC members to get a feel for what is in the realm of the possible for addressing the needs of citizens, first responders and the military. The NATO legislators were particularly impressed by the company's video-communication systems that enable military commanders and warriors to communicate easily and effectively.

## **VI. LOCKHEED MARTIN**

On the last day of their visit, the NATO PA delegation visited the **Lockheed Martin Space Systems Company (LMSSC)** headquarters in Sunnyvale, California. LMSSC is one of the 5 major business divisions of Lockheed Martin. LMSSC is a world leader in the design, production and integration of launch vehicles and systems, satellite communications and navigation, remote sensing and space science, as well as missile systems for defensive and strategic missions. **Ms. Jeannie Seelbach**, Vice President Business Development, introduced the LMSSC, whose major customers are the US Department of Defence and NASA. The company employs 18,000 people and its annual sales amount to \$6.8 billion.

**Julie Pound**, Director, Business Development, gave an overview of LMSSC achievements in the field of missile defence systems. The company is working on systems designed to intercept enemy missiles in all three phases: 1) the boost phase (kinetic energy interceptors, airborne laser); 2) the midcourse phase (Aegis ballistic missile defence, ground-based midcourse defence, multiple kill vehicles), and 3) the terminal phase (Patriot Advanced Capability-3, Terminal High Altitude Area Defence-THAAD). LMSSC is also engaged in NATO's pursuit of the Active Layered Theater Ballistic Missile Defence (ALTBMD).

**Tom McGrath**, Vice President and Programme Manager of the THAAD Programme, focused specifically on the THAAD development programme. THAAD defends against short- to intermediate-range ballistic missiles on various altitudes. The system provides unique and cost-effective capabilities for critical ballistic missile defence missions; it is highly lethal and easily transportable. The speaker explained in detail how different components of the system co-work in order to ensure interception of a missile. He also explained the differences between the THAAD and the MEADS, which can intercept cruise missiles, in addition to ballistic ones, but cannot be used against intermediate-range missiles. Mr. McGrath further said that the cost of one THAAD system is approximately \$400-500 million, but the maintenance costs are much higher. It takes at least 100 military persons to operate a THAAD system.

**Chuch Rudiger** from the Lockheed Martin Advanced Technology Centre (ATC) spoke about the research areas and products designed by the ATC. 646 engineers and scientists at the ATC are working on development of the Airborne Laser (ABL), which is a key part of the U.S. Air Force theatre missile defence system, the next generation optics, solar observation techniques and highly-sophisticated space-related technologies.

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