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SUB-COMMITTEE ON THE PROLIFERATION OF MILITARY TECHNOLOGY

VISIT TO NORWAY

SECRETARIAT REPORT

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* This Secretariat Report is presented for information only and does not necessarily represent the official view of the Assembly.

I. SUMMARY

1. Fifteen members of the Science and Technology Committee (STC) Sub-Committee on Proliferation of Military Technology visited Norway on 05-08 June 2007. Led by Sub-Committee Vice-Chairman **Jan Arild Ellingsen** (Norway) and STC Chairman **Michael Mates** (United Kingdom), the members met with Norwegian Ministry of Defence Officials, political analysts and environmental scientists and visited Hydro and Statoil companies as well as NATO Joint Warfare Centre and Sola Search and Rescue centre.

II. MEETING WITH MR ESPEN BARTH EIDE, STATE SECRETARY, MINISTRY OF DEFENCE

2. **Espen Barth Eide**, State Secretary at the Ministry of Defence, provided a general overview of the Norwegian foreign and security policy strategy. He stated that the strategic geopolitical environment is currently undergoing a major transformation; while the post-9/11 period focused on asymmetric threats, the post-post-9/11 world is marked by the revival of certain nation states that vigorously pursue their national interests (particularly, Russia, China and India).

3. Norway's foreign and security policy is strongly influenced by the country's geographic location, fishery zones and the abundance of oil and gas resources in its continental shelf. For Norwegian policymakers, the main objective is to reconcile increased exploitation of oil and gas resources in the High North with preservation of marine environment and continuation of good relations with neighbouring countries. Several factors make Norway particularly important in terms of geopolitics:

- Norway is the third largest net exporter of oil in the world.
- It also supplies 14% of Europe's natural gas consumption.
- The climate change and rising temperatures can be expected to cause opening of the Northeast Passage.
- New oil and gas lines are envisaged in the High North.

4. Mr Eide also told that Norwegian armed forces are undergoing profound transformation process, changing their posture from static structures focused on territorial defence into light, expeditionary and agile forces. Being a small country, Norway is a strong advocate of multilateralism and international institutions. This is why Norway chose to discontinue its participation in the Operation Enduring Freedom since it is predominantly seen as a US-led initiative. Norway supports the international role of the United Nations, the European Union and other multilateral bodies. NATO is considered to be fundamental for the country's security. Almost 900 Norwegians serve in international peace missions, including some 700 in Afghanistan. Political leaders in Oslo are also convinced that the US plan to install elements of its strategic missile defence system in Poland and the Czech Republic must be implemented within the framework of NATO. Mr Eide was convinced, however, that the proposed US system poses absolutely no threat to Russia's security interests.

5. The emphasis on multilateralism should be at the core of the new NATO Strategic Concept. However, the Norwegian officials are sceptical about the idea to introduce the new StratCon prematurely in 2009. They are convinced that the new US administration – which will take over only in 2009 – needs to be involved from the early stages of the preparation of this important document.

III. BRIEFINGS AT THE NORWEGIAN INSTITUTE OF INTERNATIONAL AFFAIRS (NUPI)

6. In Oslo, members of the Sub-Committee visited the Norwegian Institute of International Affairs (NUPI) and were briefed on a number of relevant issues. The meeting was chaired by **Geir Flikke**, Deputy Director of NUPI.

7. **Sverre Lodgaard** provided an excellent overview of the current status of proliferation of Weapons of Mass Destruction (WMD). He stressed that the Nuclear Non-Proliferation Treaty (NPT), which served well for decades, is currently being seriously challenged by several developments: 1) the continuing modernisation of nuclear arsenals of the five official nuclear-weapon states; 2) the existing potential for proliferation of WMD technologies and materials; 3) the existence of at least three nuclear-weapons states outside of the NPT (India, Pakistan and Israel); and 4) the emergence of ambiguous nuclear programmes, such as that of Iran.

8. Mr Lodgaard was convinced that the policies of the current US administration do not contribute to strengthening the NPT. The administration, he argued, shifted focus from nuclear weapons or materials *per se* to specific countries. In other words, nuclear weapons are legitimate as long as they are "in the right hands". Such a selective approach was one of the reasons the 2005 NPT Review Conference failed. If the 2010 RevCon fails as well, Mr Lodgaard warned, the NPT will hardly survive.

9. With regard to Iran, the speaker pointed out that Israel would exert pressure on the United States to resolve the existing crisis – one way or another – while George W. Bush is still President. A diplomatic solution would be preferable, but there are no sighs of Iran backing down and therefore the possibility of using force cannot be ruled out. Mr Lodgaard doubted that the 'sticks and carrots' approach would convince Iran or North Korea to relinquish their nuclear ambitions. The breakthrough might only be possible if major powers would really live up to their NPT Article VI commitments (reducing and eliminating their nuclear weapon arsenals). For example, Mr Lodgaard believed that UK's unilateral decision to get rid of nuclear weapons would be very helpful in persuading Iran and North Korea.

10. Overall, the speaker was pessimistic about the future of nuclear non-proliferation efforts. He saw no tangible progress since mid-1990s, when the last arms control agreements were concluded. The world is becoming an increasingly dangerous place. However, the speaker believed that there is still time to agree on certain breakthrough from the existing deadlock. He advocated the idea of the US-European summit in 2009, which would prepare specific proposals to reinforce the NPT. The new system could include concrete security assurances for non-nuclear weapon states, Mr Lodgaard suggested.

11. **Morten Bremer Maerli** addressed the issue of nuclear terrorism and crude nuclear explosives. He noted that a possible terrorist attack using crude nuclear devices is controversial since the likelihood of such an attack is very low, but there would be dire consequences. Hence the question how much should we invest in preventing this threat?

12. To would-be nuclear terrorists, access to fissile material is the most formidable obstacle to their nuclear ambitions. If non-state actors have sufficient quantities of highly enriched uranium (HEU), the production of crude nuclear explosives could be within their reach. Terrorists will have far less stringent requirements to nuclear explosives than states in terms of reliability, safety, security and delivery.

13. Technical barriers to the construction of crude nuclear explosives based on HEU would not be sufficient to avoid nuclear terrorism, because necessary technical information is easy to find from

open sources. Manufacturing a "gun-type" nuclear devise is especially feasible. There would be very few possibilities for meaningful mitigation after a nuclear terrorist attack. Reducing vulnerability by shielding particular or possible targets is neither prudent nor desirable. Accordingly, efforts to thwart nuclear terrorism should aim entirely at prevention.

14. Mr Mates and **Lord Jopling** (United Kingdom) suggested that instead of focusing on crude nuclear weapons, the international community should be more concerned about biological attacks or the use of 'dirty bombs' (radiological disperse devices) as they might cause panic and have an immense psychological effect. Mr Maerli replied that nuclear weapons are, in fact, the only true weapons of mass destruction, and the casualties of a nuclear weapon attack would be incomparably higher than the use of 'dirty bombs' or pathogens. Bioterrorism might be the threat of the future, but at the moment crude nuclear devices in the wrong hands pose a real threat.

15. **Indra Øverland** discussed the issue of energy security, which has become a buzzword for NATO. The speaker noted that the term has different meaning in various countries. In case of the US, it is generally associated with the supply of crude oil, while most European nations are more concerned about securing the supply of natural gas. For Russia, on the other hand, the term means securing new markets for its oil and gas exporters.

16. From Norway's standpoint, the policymakers in Oslo hope that their country will play an increasingly important geopolitical role due to abundant oil and gas resources in the Norwegian North. However, Mr Øverland argued, the Norwegians are thinking in a realist theoretical perspective, expecting all international players to act rationally and to seek to maximise their profits. Yet in today's world the realist approach does not always prove true, and the opposing liberalist view is dominant: many countries can choose less profitable options due to political or cultural considerations.

17. **Ståle Ulrichsen** spoke about the Revolution in Military Affairs and current trends in military transformation. He pointed out that the scope of this revolution is immense thanks to remarkable technological progress in recent years. The old equipment is becoming obsolete so fast that a number of nations are increasingly forced to launch new procurement projects. With current levels of defence budgets, it is extremely difficult to keep up with militarily-advanced countries. The outcome of these developments is impossible to predict, which causes a degree of uncertainty in international politics. For example, how are we to react to the anti-satellite weapon test by China?

18. On the other hand, Mr Ulrichsen argued, one can witness the growing realisation that high-tech capabilities are not the ultimate answer to everything - for example, they are not very effective against asymmetrical threats. Stabilisation operations in Afghanistan and Iraq raised a number of arguments in favour of the so-called effects-based approach and increased focus on cultural aspects in order to make these operations a success.

IV. HYDRO AND STATOIL

19. The NATO PA delegation had an opportunity to visit the headquarters of two Norwegian energy giants: Norsk Hydro and Statoil, located in Oslo and Stavanger, respectively.

A. HYDRO

20. Norsk Hydro is a Norwegian oil and energy and integrated aluminium company, founded in 1905. The Norwegian state holds a 43.8 percent ownership interest in the company. Hydro has 33,000 employees in nearly 40 countries and its turnover is NOK 196 bn (25 bn Euro). Currently, Norsk Hydro is planning to concentrate on aluminium production, merging its oil and gas division

with Statoil. The merger will make the joint company by far the largest offshore oil and gas operator in the world. It will keep its focus on the Norwegian continental shelf, but will also be involved in activities all over the world.

21. In the autumn of 2007, Hydro will commence exploitation of the Ormen Lange gas field, the largest field in Norwegian continental shelf. It will be able to supply up to 20% of Great Britain's gas requirements for up to 40 years via the Langeled pipeline. This NOK 66 bn (8.4 bn Euro) project is extremely challenging from the technological perspective, as not a single installation will be visible on the surface of the sea above Ormen Lange when the field comes on stream. All the installations will be at sea depths of 800 to 1,100 meters. The Langeled pipeline will also be the world's largest subsea pipeline.

22. The representatives of Hydro also stressed that energy companies are becoming increasingly interested in exploitation of resources in the High North (the Barents Sea). This region has a potential of becoming a primary energy source for the United States and Europe. It is a politically stable area and it is much closer to Europe than the Gulf region. There is a number of related challenges, however, such as: 1) environmental sensitivity of the area; 2) lack of reliable information on the volume of oil and natural gas resources; 3) costly development and operations. The experts of Hydro explained how development and operation of oil and gas fields in the High North is hindered by remote location, cold weather, limited logistics and infrastructure, presence of sea ice, reduced daylight, etc.

23. With respect to environmental concerns, Hydro is developing a system of 5 types of barriers to deal with possible oil spill contingencies. Norwegian energy companies are also actively co-operating with Russian counterparts in preparation for contingencies, since Russia is also becoming increasingly interested in the Arctic resources (Gazprom plans to develop a very rich Shtokman field in the Barents Sea). It is likely that oil and gas resources in Russia's Artic shelf are much larger than those of Norway.

24. NATO Parliamentarians were interested if the Norwegian oil and gas could be supplied not only the United Kingdom, but also to Central and Eastern European countries in order to provide an alternative to the Russian energy resources. The Norsk Hydro representatives said that, from a technological perspective, this could be done, but it is up to respective governments to conclude such agreements.

B. STATOIL

25. **Lars Røssland**, Vice-President of Technology and Projects, briefed the NATO PA delegation on the Statoil technology strategy. He stressed that his company, which is one of the world's largest sellers of crude oil and a substantial supplier of natural gas to the European market, has a long tradition of innovation and development of cutting-edge technologies. During the last decade, the company is moving towards development of smaller and mobile platforms, capable of operating in very harsh environment. Mr Røssland also asserted that future platforms would be deployed completely under the sea and remotely controlled.

26. Adopting new technology has allowed Statoil to develop the first offshore complex in the Barents Sea called the Snøhvit project. Without surface installations, this project involves bringing huge volumes of natural gas to land for liquefaction and export. The Liquefaction plant is the first of its kind in Europe and the world's northernmost. One of the major challenges is to increase pressure in gas reservoirs in order to push gas towards production wells. To this end, Statoil uses a practice to inject cold seawater into reservoirs.

27. **Olav Karstad**, CO2 Coordinator, Statoil, presented impressive achievements of Statoil in developing Carbon Capture and Storage (CCS) technology. In its climate strategy, Statoil recognises that there is a link between production and consumption of fossil fuels, carbon dioxide emissions and global warming. Statoil's goal is to reduce carbon emissions from the group's facilities through four key initiatives: energy efficiency, renewables, carbon trading and CCS.

28. Statoil is regarded today as the world leader in CCS with the foundation being laid with carbon storage in the North Sea's Sleipner area. Sleipner is Statoil's environmental flagship and has stored over eight million tonnes of carbon over the last 10 years. Statoil has inspired other companies that have started carbon management projects including in the UK, USA, Canada and Australia.

29. Other examples of Statoil's achievements include:

- The use CCS in the Snøhvit project: instead of being released into the atmosphere, carbon dioxide from gas production at the Snøhvit field will be stored 2,600 metres below the seabed.
- Salah gas and condensate field in Algeria, where 1.2 million tonnes of carbon per year are separated out from natural gas, pumped under ground and stored in sandstone formations.
- The Mongstad oil refinery, which is expected to be the refinery with the lowest carbon emissions in the world.

V. CLIMATE CHANGE AND ENVIRONMENTAL ISSUES IN THE NORTH

30. The Sub-Committee delegation has spent one day in Ålesund where they were briefed by three Norwegian experts on the Northern environment.

31. **Dr. Nalan Koc**, leader of Polar Climate Programme at the Norwegian Polar Institute, discussed the 2007 report of the Intergovernmental Panel on Climate Change (IPCC). She emphasised that each IPCC report (released every six years) increases a level of precision thanks to new and more sophisticated capabilities. In the 2007 report, scientists and government officials were able to state – with 90% certainty – that the climate change is real and that it has mainly anthropogenic causes. However, she asserted that, by many accounts, this eye-opening IPCC report is still too conservative, and that the true scope of the climate change could be greater. For example, one has to take into account the fact that the capacity of oceans to absorb CO2 will be diminished over time as they warm up.

32. In a long-term perspective, our planet had short periods of warmth with higher levels of CO2 in the atmosphere, but the current warming is unique. Between 1970-2004, the level of greenhouse gases in the atmosphere has increased by 70%. One can also witness serious changes in precipitation – dry regions are becoming even dryer while rainfall in higher altitudes is increasing. The increased intensity of hurricanes, draughts, floods, heat waves and other natural disasters also has to be attributed to the climate change.

33. The warming of the Arctic region is even more alarming. In last 50 years, the average temperature in this part of the world has increased by more than 2C (in Alaska and the Western Canada the increase is even more substantial – 3-4C). It is expected that the temperature in the Arctic will increase from 3,5-6C in the 21st century. Since 1978 (when satellite data has become available), the Northern ice cap is shrinking at the rate of 2,7% per decade. Melting of permafrost could release significant volumes of methane (one of greenhouse gases) into the atmosphere, contributing to further acceleration of the global warming. Navigability of Arctic waters is expected

to increase from 20-30 days a year now to 90-100 days by 2080, which will have important economical and geopolitical implications.

34. Dr. Koc also described the activities of the Polar Institute, which is engaged in a number of multinational projects to monitor Arctic environment, particularly in relation to the International Polar Year (2007-2008). She also urged politicians to realise the importance of the climate change issue and to provide political support for the initiatives designed to address this problem.

35. **Lars Otto Reiersen**, the Executive Secretary for Arctic Monitoring and Assessment Programme (AMAP), discussed the issue of pollution in the Arctic region. AMAP has been the first to raise alarm over surprisingly high levels of chemicals present in the Arctic ecosystem, in the bloodstreams of a range of Arctic indigenous peoples as well as in the Arctic fauna. This came as a surprise to many as the Arctic is often regarded as a pristine environment, far removed from the heavy chemical pollution of the more industrialised continental Europe. Chemicals such as such as DDT and PCBs are not easily broken down by the body and accumulate in the food chain as the chemicals in one marine creature are ingested by another (which already has its own level of contamination). Heavy metals, such as mercury, are also an increasing problem. These contaminants arrive by ocean streams and rivers. AMAP experts with their technology are often able to trace them back to their source.

36. Indigenous peoples are extremely exposed as their traditional diet relies heavily on fish, seals and whale meat. AMAP exposed alarming effects on the health situation in the region. Even the gender parity is changing: twice as many girls are being born than boys. Many boys are also born prematurely and are smaller than the norm.

37. Melting permafrost and shrinking sea ice also dramatically changes the habitat for many Arctic species, such as seals and reindeers.

38. Mr Reiersen also urged parliamentarians of the countries who have not ratified the Stockholm Convention to do so, a global treaty to protect human health and the environment from persistent organic pollutants.

39. **Inger Margrethe H. Eikelmann**, Senior Advisor, Norwegian Radiation Protection Authority, discussed a very sensitive issue of nuclear safety in the Barents Sea. The main challenges include:

- Safety of nuclear power plants. There are no such plants in Norway, but some neighbours in the Arctic do have them. In particular, safety conditions and the general safety culture at the Russian Kola nuclear plant could be improved, and Norway is assisting Russia to reach this end. Norway is also concerned about Russia's intentions to build several floating nuclear power stations to provide electricity for Russia's remote Arctic regions. Responsible Norwegian and Russian institutions have also developed an early notification and emergence preparedness mechanism in case of a nuclear or radiological incident. This mechanism employs modern technologies, including videoconferencing between centres in Norway and Russia.
- Storage of nuclear waste. A particular problem is the Andreyeva Bay, Russia's storage facility for radioactive waste, particularly spent nuclear fuel. The storage is in urgent need of modernization. Large amounts of spent fuel rods are stored in concrete containers, many of which are kept out in the open and unprotected. There is a certain risk of leaking radioactivity. The Norwegian government as well as several other countries have initiated assistance projects for Andreyeva Bay.
- Utilising decommissioned Russian nuclear submarines. Norway was a pioneer to promote cooperation with the Russian Federation on this issue. Norway itself funds utilisation of 2-3 submarines a year.

- Securing radioisotope thermoelectric generators (RTGs). RTGs are used as power sources in remote areas. They contain radioactive strontium, which can pose a threat to environment and security since it can be used to produce 'dirty bombs'. Norway is helping Russia to replace RTGs with safer substitutes.
- Norway is also concerned about the plans to transport nuclear waste from Western Europe to Russia's Mayak nuclear fuel reprocessing plant in the Ural region. The sea route to Mayak would lie along the Norwegian coastline.

VI. JOINT RESCUE COORDINATION CENTRE – SOUTHERN NORWAY

40. In Stavanger, the delegation had an opportunity to visit Joint Rescue Coordination Centre – Southern Norway (JRCC-SN). JRCC-SN is one of the two headquarters of the Norwegian Search and Rescue (SAR) Service, responsible for SAR operations in the Southern part of the country (the second JRCC, responsible for the Northern part, is located in Bodø).

41. **Major Bårdsgård**, the head of the JRCC-SN, said that the mission of the Norwegian SAR service is to save people's lives in all types of environment (maritime, aeronautical and inland). In many parts of Norway, the climate is harsh and unforgiving, and many activities can suddenly make prompt lifesaving action necessary. According to Major Bårdsgård, some 45,000 incidents were registered in Southern Norway in last 20 years and the numbers are increasing every year. Approximately 20% of all accidents involve foreign tourists that are not adequately prepared and not familiar with the conditions of Norway's winter and its mountain environment.

42. JRCC is primarily a coordination body and does not have its own operational assets. In the event of major accidents, the JRCC mobilizes additional personnel. The SAR management is called in, together with extra rescue controllers as well as professional information officers. All resources – whether national, county, local, commercial or private – suitable for immediate deployment for the saving of lives, are registered, trained and mobilized for duty in a public SAR service. JRCC can requests immediate recruitment of experts from the police, the fire department, medical authorities, pilot service, port authorities, armed forces, etc. For example, The 12 Sea King helicopters of the 330 Squadron of the Norwegian Air Forces are considered the major lifesaving resource of the SAR services. The Sea King is specially designed for sea SAR operations, though it also performs quite well over land. Members of the Sub-Committee had an opportunity to fly aboard the Sea King helicopter.

43. One central element in the Norwegian SAR Service is the large number of voluntary organizations that take part. The ability of these organizations to field, on short notice, large numbers of personnel who are both trained for the situation and familiar with the terrain, makes them a valuable asset particularly in search operations in forested and mountainous areas.

44. The JRCCs are equipped with modern computer systems and other advanced equipment, as well as a well-developed, high-capacity communications system. The NATO PA delegation was able to see the control room of the JRCC-SN and was very impressed by the level of the equipment. The effectiveness of the Norwegian SAR services is known well beyond the country's borders. Therefore, Norway is often asked to provide help to other countries, and it does so without regard to boundary lines or recovery of expenses.

VII. NATO JOINT WARFARE CENTRE

45. In Stavanger, the NATO legislators also visited the Joint Warfare Centre, which is a branch of the Allied Command Transformation (ACT). Air Marshall Peter Walker, Director of JWC, greeted the parliamentarians and gave a presentation about the Centre.

46. The mission of the JWC is to provide best-trained multinational command and control (C2) capabilities. Thus, JWC is a world-class training centre for staff officers that drives NATO transformation forward through an innovative concept development, experimentation and doctrine development process. JWC stays in close contact with NATO operational headquarters in Mons, Brunssum, Naples and Lisbon in order to better address C2 interoperability requirements for NATO operations. JWC pays a particular attention to developing interoperability mechanisms for the NATO Response Force in order to ensure smooth transition from one rotation to another. JWC also have a tailored training programme for ISAF HQ officers, aiming at replicating main players and real data as in theatre. In addition, twice a year JWC hosts groups of senior Iraqi military officers.

47. Air Marshall Walker stressed that JWC focuses not on high-intensity military operations, but rather on post-war challenges. Therefore, the Centre provides courses in areas such as understanding the UN and other international organisations, the rule of law, ethnic and cultural issues, search and rescue operations, integrated cross department planning, post-conflict reconstruction, the role of media, etc.

48. Members of the Assembly were interested if JWC is dealing with the problem of information sharing among the allies in multinational operations, as some nations are very protective of the sensitive information they possess. The Director of the JWC admitted that it is a serious problem, which is unlikely to be completely eliminated in foreseeable future. On its part, JWC is trying to do to address this issue by training staff officers to operate in an environment where sometimes not all necessary information is available. Air Marshall Walker was also asked if new emerging technologies, such as network-enabled capabilities or unmanned systems, are altering traditional C2 chains, as they allow strategic level commanders to interfere into tactical level operations. The Director of JWC replied that the fundamental task of the Centre is to discourage such practice and to bring top-level commanders out of detail so that they could concentrate on a broader picture and on future-oriented decisions.

49. The NATO PA delegation visited JWC at the time when it was conducting the Exercise Steadfast Jackpot 2007, involving around 2,000 personnel from various headquarters and units assigned to the ninth rotation of the NATO Response Force (NRF 9). The goal of this computer-assisted exercise was to validate and certify the chain of command and control elements dedicated to the NRF. Exercise events focused on the training of the NRF assigned headquarters as a combined and joint force, using a fictitious scenario involving NATO-led operations conducted under Chapter VII of the UN Charter, beyond NATO's area of responsibility. NATO Parliamentarians had an opportunity to visit the central venue of the computer-assisted exercise and observe how modern computer and communication technologies are being used to improve interoperability of staff officers from various NATO countries.