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5 July 2007

NOTICE
EAPC(PC-SALW)N(2007)0009

EAPC IN POLITICAL COMMITTEE SESSION

**AD HOC WORKING GROUP ON SMALL ARMS AND LIGHT WEAPONS (SALW) AND
MINE ACTION**

**REPORT OF THE WORKSHOP "MANPADS AND ALL ITS ASPECTS"
12-13 JUNE 2007**

Note by the Chairman

1. Please find attached the report on the Workshop "MAN-Portable Air Defense Systems (MANPADS) and all its Aspects", which was held at NATO Headquarters from 12-13 June 2007.
2. Also enclosed, please find a copy of the CD-Rom with the briefings presented at the Workshop.

(Signed) M. MIGGINS

1 Annex
1 Enclosure

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Original: English

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**REPORT OF THE WORKSHOP “MANPADS AND ALL ITS ASPECTS”
12-13 JUNE 2007**

1. The Workshop on “MAN-Portable Air Defense Systems (MANPADS) And All Its Aspects” was held on 12-13 June 2006 at NATO Headquarters. The event was co-sponsored by the Euro-Atlantic Partnership Council (EAPC) and Organization for Security and Cooperation in Europe (OSCE). Ms. Susan Pond, Head of the Partnership and Cooperation Programmes Section at NATO, represented the EAPC with her co-host Colonel José R. Quevedo Ruiz, who represented the OSCE Chairman in Office and is also the Head of the Nonproliferation and Arms Control Office at the Spanish Ministry of Defense.
2. A total of 79 participants attended the Workshop from 29 countries all around the world, including Mediterranean Dialogue (MD) (Israel, Egypt, Morocco), Istanbul Cooperation Initiative (ICI) (Qatar and United Arab Emirates) and Contact Countries (Japan and Australia). Representatives from 7 different international and non-governmental organizations (IO's & NGO's) also participated in this event, namely the United Nations (UN), OSCE, International Air Transportation Association (IATA), International Civil Aviation Organization (ICAO), and Wassenaar Arrangement (WA) as well as the two NATO bodies; NATO Counter-Terrorism Unit and NATO Maintenance and Supply Agency (NAMSA). In addition, 9 defense industry firms sent their representatives to MANPADS Workshop: Janes Information Group, Small Arms Survey, Alenia Aeronautica, EADS, Indra, MBDA, Oerlikon Contraves S.P.A., Saab Industry and Thales Optronique SA. Sixteen guest speakers among those participants made presentations.
3. NATO Deputy Secretary General (DSG) Ambassador Alessandro Minuto Rizzo provided the **Opening Remarks** to the Workshop by welcoming the participants and provided a brief statement describing the threat of MANPADS to civil and military aviation. Ambassador Rizzo acknowledged the wide participation of attendees from such a geographically diverse group, and highlighted the issues of illicit MANPADS proliferation, stockpile management and destruction of excess or obsolete holdings. The goal of the Workshop, he noted, was twofold: 1) raise awareness and understanding of the threat of MANPADS and their proliferation; and 2) discuss ways to combat the illicit use of MANPADS and their proliferation.
4. After touching upon several of the agenda items, the DSG then set the stage for the Workshop by sharing a few facts drawn from a report on the threat of MANPADS by the nongovernmental organization Federation of American Scientists (FAS). He noted FAS estimates that over 500,000 MANPADS exist in the world today and are found in over 100 countries. They are highly portable and easily concealable — at around one and a half meters in length and approximately 14–18 kilograms in weight. They are easy to use, inexpensive — as little as 500 United States (US) dollars a piece — and readily available on the black market. Moreover, MANPADS are effective and lethal against both civilian and military targets, particularly unprotected targets. Finally, the ambassador observed the effort to outfit thousands of commercial aircraft with effective countermeasures will be both costly to the airline industry and our economies.

5. The Workshop was held in four parts, with morning and afternoon sessions each day. At the end of each session, lecturers sat on a panel, permitting participants to pose questions to briefers and further discuss their briefings. The first session of the Workshop, chaired by Mrs. Susan Pond, focused on the **Global Threat of MANPADS**.

6. Mr. James O'Halloran, from **Jane's Information Group** and Editor of Jane's *Land-Based Air-Defence*, began the Workshop by providing an in-depth overview of the various types of MANPADS in the world. He presented examples of several civilian aircraft incidents with MANPADS, and then reviewed the capabilities of current and future types of MANPADS: their different generations, their countries of origin, approximate costs, ranges and types of tracking systems. Mr. O'Halloran emphasized proliferation of MANPADS causes significant unease to the international community, and he drew attention to the increased numbers of terrorists and organized militia which are gaining access to inexpensive weapons available on the black market. He concluded by touching upon some possible solutions to MANPADS proliferation, such as: sound intelligence activities and efforts to mitigate their proliferation; sharing of intelligence in interagencies and among national and international bodies; installing infrared (IR) countermeasures on aircraft; and continuing talks to improve international norms and regional regimes to counter MANPADS proliferation.

7. Mr. Michael Gallagher, from the **UK Heathrow Metropolitan Police**, emphasized that MANPADS are the biggest threat to civil aviation. He illustrated the details and methodologies of the "MANPADS Launch Denial Strategy," which Heathrow Airport authorities use to counter the threat. Moreover, he suggested other airport authorities and national policymakers could use the same strategy as a blueprint to secure their airspace and develop a national strategy against MANPADS attacks.

8. Mr. Steve Brown, from the NATO Maintenance and Supply Agency (**NAMSA**) reviewed the Partnership for Peace (PfP) Trust Fund project in Ukraine, a major portion of which includes securing Ukrainian MANPADS, improving their stockpile management practices and destroying their surplus holdings. He described in detail the methods NAMSA uses to destroy surplus Ukrainian MANPADS in a transparent and verifiable manner.

9. Mr. James Bevan, from **Small Arms Survey** provided the last presentation of the first session. Mr. Bevan, who has studied and published extensively on MANPADS in Africa, focused on the important issues associated with the diversion of MANPADS from state-owned stockpiles to non-state actors. He described the factors that lead to their diversion, including poor supplier controls, collapsing of state governments, and how poor stockpile management practices under these conditions often lead to loopholes or shortfalls in existing initiatives. He then offered suggestions on how to close these loopholes and better control state-owned stockpiles.

10. Following the morning's presentations, the briefers joined for the **first panel discussion**. Participants raised questions regarding the estimated number of MANPADS worldwide, the ways in which they are proliferated, which terrorist organizations own MANPADS, MANPADS production in Asia, and details concerning securing airports against the threat of a MANPADS attack.

11. The panellists discussed the concepts of intended and *unintended* proliferation and cited examples of both. For example, when troops withdraw from an area *unintended* proliferation may occur. Such occurred when Soviet troops withdrew from foreign countries, leaving unsecured or poorly secured MANPADS behind. Similar situations occur in conflicts in Africa and elsewhere in the world. Panellists also emphasized that destruction is a political decision and that the political value of destruction is more important than financial benefits. They also noted the need to destroy surplus stocks generally begins when a country starts restructuring of its armed forces, as occurred in Ukraine. Panellists also noted the political and military situation in Asia and South America is unique and in many ways more complex. At the same time, one panellist noted that there are even terrorists organizations in NATO countries which have been reported to possess MANPADS, and specifically cited ETA in Spain as an example. When asked which countries in Asia were major producers of MANPADS, one panellist cited China as a country with a large production capacity and that it sells MANPADS for profit (hard currency).

12. Following lunch, Col. Quevedo chaired the afternoon session, which concentrated **Countermeasures to MANPADS**.

13. Mr. Georges Thibaut, from the **NATO Air Force Armaments Group (NAFAG)** briefed on the air- and ground-based technical countermeasure systems being developed against MANPADS. Mr. Thibaut indicated IR decoy flares offer high protection against first and second generation MANPADS. However, third generation MANPADS employing IR Conventional Countermeasures (IRCCM's) require the use of advanced flare technologies. Mr. Thibaut also emphasized that emerging and future threats from MANPADS will require laser-type countermeasure systems, damaging laser or other directed energy technologies, which are currently under study at NATO. Mr. Thibaut also described space- and ground-based countermeasure systems, which could offer other solutions in countering MANPADS and indicated these systems are also under review at NATO.

14. Afterward, Air Defence Analyst Mr. James Raraty, from the **NATO Air Defence Unit**, gave a presentation on procedural countermeasures against MANPADS. He reviewed how aircraft approaching and departing an airport are vulnerable to MANPADS attacks over large distances. The aim of procedural countermeasures, he said, was to minimize the time of exposure to a MANPADS attack by making flight patterns less predictable. He illustrated these procedures with a case study on Kabul International Airport and showed how some operational techniques could reduce vulnerabilities while flying in and out of Kabul. He noted, however, the application of these techniques must be balanced between the perceived threat level, the impacts on flight safety, aircraft workload, and passenger satisfaction. In conclusion, Mr. Raraty suggested this case study could provide "food for thought," but added the case study should be supplemented through site surveys and expert validation.

15. Mr. Herman Rediess, Counter-MANPADS Program Manager from the **US Department of Homeland Security (DHS)**, briefed on commercial transport vulnerabilities, the counter-MANPADS development program with Directed Infrared Countermeasures (DIRCM), the emerging counter-MANPADS technologies associated with non-DIRCM and ground-based countermeasures. Lastly, he described ongoing field

tests that DHS is conducting under Operation CHLOE, which is part of DHS countermeasures research against MANPADS under the Homeland Security Innovative Prototypical Solution (HIPS) Program.

16. The **second panel discussion** covered the following issues: on flight security; the technical aspects of threats caused by MANPADS; the effectiveness of countermeasures systems; and preventing terrorist groups from obtaining sensitive information. Concerning flight security, panellists discussed threat assessments of possible launch corridors as well as aircraft vulnerability evaluations, flight safety and Air Traffic Control operations. One member asked what could be done to address the dissemination of flight information on the Internet, which could be helpful in planning a terrorist attack. While panellists replied much had been done, particularly since September 11th, to remove current flight plans from government websites, they generally acknowledged too much information still remains available. Panellists, therefore, encouraged participants to review the information their governments post concerning flight plans and aircraft security. Panellists also acknowledged they could not prevent terrorists themselves from posting or re-posting sensitive information on flight safety or MANPADS on the Internet.

17. Col. Quevedo chaired the morning session of the second day, which focused on the **Response from International Organizations**. He began the day by outlining OSCE efforts to combat the illicit transfer of MANPADS. His comments focused on OSCE efforts to establish the *Best Practice Guide on National Procedures for Stockpile management and Security, Annex C: Man-Portable Air Defence Systems (MANPADS)* and projects undertaken by the OSCE to secure MANPADS stockpiles within the OSCE area.

18. Mr. Nazir Kamal, Senior Political Affairs Officer from the **United Nations (UN) Office for Disarmament Affairs**, lectured on how the UN tracks MANPADS in the UN Register of Conventional Arms. Mr. Kamal said thanks to this system UN Member States annually submit information on their international transfers of conventional weapons, including MANPADS. Mr. Kamal briefly introduced the UN Register system and noted the recent increased level of participation by Member States, including reports of MANPADS transfer. Mr. Kamal concluded his presentation by emphasizing that the UN Register promotes transparency in MANPADS transfers, and he expressed hope that the number of nations which report such transfers would continue to grow.

19. Mr. Sergei Zamyatin, Senior Assistant to the Head of the Secretariat of the **Wassenaar Arrangement (WA)**, briefed the Workshop on WA export controls of MANPADS. He described the recognized definition of MANPADS, the scope of export controls and the conditions WA participating states have agreed to apply before transferring MANPADS. These conditions require both the exporting and receiving countries to follow accepted PSSM and licensing standards to prevent potential diversion or misuse of MANPADS. He observed WA participating states have also agreed to share among themselves details of when, why and to whom they refuse to transfer MANPADS. In addition, he described the safety standards WA states agreed to when shipping MANPADS. He noted that WA is currently assessing its past accomplishments and trying to assess how to cope with new challenges.

20. Ms. Halina Biernacki, Aviation Security Officer from the **International Civil Aviation Organization** (ICAO), presented the legal countermeasures ICAO has initiated against MANPADS attacks and ICAO methodologies to conduct airport vulnerability assessments. Ms. Biernacki also reviewed the threat to civil aviation posed by MANPADS. She pointed out the risk of MANPADS attacks cannot be eliminated; it must be managed. She emphasized non-proliferation and counter-terrorism strategies and aviation security contingency plans together constitute the best means of countering the MANPADS threat. Equally, she added international and regional cooperation is vital to ensuring governments efficiently carry out those plans and strategies.

21. Mr. Len Hearnden, Manager of Safety, Operations and Infrastructure at the European Office of the **International Air Transport Association** (IATA), rounded out the morning's session by reviewing IATA's efforts to combat the illicit use of MANPADS. After briefly reviewing the threat, Mr. Hearnden emphasized that combating the threat of MANPADS is a state responsibility. This is because an attack—successful or not—would be an attack against a government, society and national or regional economy. Nonetheless, government policies and measures affect the airline industry in a number of ways. Thus, as an international industry trade group of airlines, IATA's objective is to ensure that government measures on MANPADS (operational, security, countermeasures, etc.) align with industry economic, operational and technical requirements. Toward this end, the Association has developed the *IATA Work Plan of 2007+*. Likewise, IATA has worked extensively with government agencies like DHS in the United States to harmonize approaches and ensure both feasibility and compatibility with current airline requirements.

22. In the third **panel discussion**, questions reflected concern over the lack of specific countermeasures taken by international and non-governmental organizations. Most organizations, participants noted, only request general information from nations about their MANPADS holdings like registration and reporting details. Participants also noted these measures were only politically binding, not legally binding. Panellists acknowledged registration and reporting systems are the basis of most measures. However, they noted, most regional organizations throughout the world have adopted these export control standards, which are based primarily on the WA model. At the same time, they generally expressed hope that further measures would be agreed upon to enforce and strengthen international norms in the coming years, perhaps as early as 2009.

23. The final and fourth session of the Workshop, which was chaired by Ms. Pond, focused on the **Response of National Governments and Private Industry**.

24. Mr. Thomas Roth, Counsellor at the **Australian Embassy and Permanent Mission to the UN in Vienna**, highlighted Australia's response. After reviewing the threat from a national and regional perspective, Mr. Roth outlined Australia's international efforts which include its sponsorship of numerous resolutions in international fora, perhaps most notably two UN General Assembly resolutions (in 2004 and 2005) on MANPADS. In 2005, Australia announced its international MANPADS initiative to raise the international profile of the threat both politically and diplomatically as well as via industry and business engagement. Toward this end, Australia has organized and sponsored many regional and international seminars on MANPADS, which he listed. In conclusion, Mr. Roth said he hopes Australia's initiatives help restrict MANPADS availability, particularly of modern

generations of MANPADS. He also hoped that Australia's efforts would help identify some synergies to build capacities and capabilities to address the threat. Nonetheless, he recognized older unaccounted for systems, in illicit hands, will continue to present a threat. Therefore, enhanced international cooperation and vigilance are urgently needed.

25. Mr. David Diaz, **US Interagency MANPADS Taskforce** and Liaison from the US Department of Defense, outlined three aspects of the US response. One, the US National Strategy for Aviation Security (NSAS) created the national strategy and policy to address aviation security and organizes government efforts to counter aviation threats. Two, the International Aviation Threat Reduction Plan (IATRP) concentrates on the international aspects of the threat while working to stop illicit proliferation to terrorists and insurgents. IATRP efforts include destruction of MANPADS, improving foreign national stockpile management practices and security, infrastructure upgrades, and airport vulnerability assessments. Three, the Interagency MANPADS Task Force (MTF) coordinates IATRP efforts across the US government and is the national point of contact for cooperation and assistance on MANPADS issues.

26. Mr. Andrey Odnoral, First Secretary, **Department for Security and Disarmament, Russian Ministry of Foreign Affairs**, lectured on Russia's efforts to combat illicit trade in MANPADS and to strengthen controls in this sphere. Specifically, Mr. Odnoral outlined Russia's MANPADS efforts within Commonwealth of Independent States (CIS). He pointed out Russia has signed multilateral and bilateral agreements with CIS partners on information exchange and transfers within the CIS of some types of MANPADS. Mr. Odnoral emphasized that Russia cooperates with international organizations and that Russia is ready to work constructively with all WA participating states to counter MANPADS proliferation.

27. Following those three national briefings, the Workshop turned to briefings from two defense industry companies. Mr. Christer Zätterqvist, Product Leader from **Saab Avionics**, briefed on Saab capabilities, its approach to airborne protection systems and how to counter the MANPADS threat from a technical perspective. In doing so, he offered some of the technologies and countermeasure systems that Saab has developed. In describing these systems, he noted that the following aspects of product development were key in creating feasible solutions: detection methods; modes of operation for countermeasures (reactive, pre-emptive); placement of countermeasures on airframes; and the characteristics of decoys and their dispensing methods. He emphasized that when combating MANPADS it is important to understand characteristics of the threat, both current and future.

28. Lastly, Mr. Jaime Manuel Temes Jimenéz from **Indra Sistemas**, after briefly talking about MANPADS vulnerabilities, presented their multi-line laser based DIRCM (Directional Infrared Countermeasure) system called MANTA (MANPADS Threat Avoidance). The system protects aircraft against all types of IR-guided missiles. MANTA's design, which does not have mobile elements outside the aircraft, permits a fast response time. Moreover, its closed-loop operation allows MANTA to defeat multiple missiles, even if launched simultaneously from short distances. These features, he stated, make MANTA an effective solution in countering MANPADS and protecting aircraft.

29. During the last **panel discussion**, questions focused on the technical countermeasures presented by SAAB Avitronics and INDRA Sistemas. Participants raised technical questions asking about costs, the feasibility of employing INDRA's MANTA defence systems on civilian aircraft, and its operational aspects. In addition, participants inquired about implementation in relation to provisions of Wassenaar Arrangement. In response, INDRA's representative noted the MANTA system is currently used only on military aircraft. It would be necessary to modify and adapt it to civilian aircraft. The costs of adapting it are presently unknown, but INDRA is studying the possibilities. Panellists also discussed the operational and technical aspects of MANPADS, their guidance systems and jamming them. Finally, several participants asked the national representatives about their implementation of the Wassenaar Arrangement as it relates to MANPADS.

30. Mr. Robert F. Simmons Jr., Deputy Assistant Secretary General for Security Cooperation and Partnership, provided the **Closing Remarks** of the Workshop. He thanked the guest speakers for sharing their valuable knowledge and experience, and expressed appreciation to the attendees for demonstrating their support and willingness to contribute to international peace and security. Mr. Simmons observed the Workshop's aims had included raising international awareness of the MANPADS threat and sharing information about the current countermeasures being taken against that threat. He added, according to the reports he had received, the Workshop had successfully reached those aims. Furthermore, Mr. Simmons noted that NATO-OSCE cooperation and co-sponsorship of the MANPADS Workshop was a sign of the seriousness of the threat. Mr. Simmons then summarized some of the presentations and subjects covered during the panel discussions. Finally, he expressed hope that future attempts by the international community would build upon this Workshop's success in addressing the very real and dangerous threat that MANPADS proliferation is to all our societies, their stability and economic well-being.

WORKSHOP ON MANPADS AND ALL ITS ASPECTS
12–13 JUNE 2007, NATO HEADQUARTERS

FINAL AGENDA

Tuesday, 12 June 2007

9:30 – 10:00 *Opening Remarks by NATO Deputy Secretary General, Ambassador Alessandro Minuto Rizzo*

GLOBAL THREAT AND COUNTERMEASURES

Session I: The Threat

10:00 – 10:30 *Global Threat of MANPADS*

Jane's Defense
Presentation by Mr. Jim O'Halloran; Editor of Jane's Land-Based Air-Defence

10:30 – 10:45 *Coffee Break*

10:45 – 11:15 *Civilian Impact of MANPADS Attack*

Heathrow Airport, Metropolitan Police Authority, United Kingdom
Presentation by Mr. Michael Gallagher; Chief Superintendent

11:15 – 11:45 *MANPADS Physical Security, Stockpile Management and Destruction - MANPADS destruction element of the NATO/PfP Trust Fund Demilitarisation project in Ukraine*

NATO Maintenance and Supply Agency (NAMSA)
Presentation by Mr. Steve Brown; Head of NAMSA Project Office in Ukraine

11:45 – 12:15 *MANPADS Diversion from State Forces to Non-State Actors & Analysis and Loopholes/Shortfalls in Existing Initiatives*

Small Arms Survey
Presentation by Mr. James Bevan, Researcher, Small Arms Survey, Geneva

12:15 – 12:45 Panel Discussion on Global Threat of MANPADS

12:45 – 14:15 *Lunch break*

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Session II: Countermeasures to MANPADS

14:15 – 15:15 *Technical Air & Ground-Based Countermeasures*

NATO Air Force Armaments Group (NAFAG)
Presentation by Mr. Georges THIBAUT, NATO IS in Defense Investment
Division, Counter-Terrorism Unit & Secretary of the NATO Aerospace
Capability Group 3 on Survivability

15:15 – 15:30 *Coffee Break*

15:30 – 16:00 *Procedural Countermeasures & Tactics*

NATO Defense Investment Division, Air Defence Unit
Presentation by Mr. James Raraty; Air Defence Analyst

16:00 – 16:30 *Aviation Security, US DHS Counter-MANPADS Programs*

U.S. Department of Homeland Security (DHS) Explosives Division,
Science and Technology Directorate

Presentation by Dr. Herman Rediess; Transition Programs Lead, Counter-
MANPADS Program Manager

16:30 – 17:00 Panel Discussion on MANPADS Countermeasures