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NATO AIR FORCE ARMAMENTS GROUP

Air Group 7 on Unmanned Aerial Vehicles

Review of UAV Procurement Activities in NATO

The purpose of this paper is to provide a top-level review of NATO activities as they relate to Unmanned Aerial Vehicle (UAV) research, development, and procurement. The discussion will include a brief overview of the NATO organisations responsible for UAV work, the current programs of work of these organisations, and lastly, a look to future activities.

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I. INTRODUCTION

The expanded use of Unmanned Aerial Vehicles (UAVs) in recent conflicts has resulted in both significant operational advantages, and increased questions on concepts of operations, especially as they relate to co-existence with manned aircraft. To address information gaps and ensure NATO members take advantage of UAV capabilities, the Alliance has encouraged the continued development and acquisition by nations, on a co-operative basis where appropriate, of UAVs to permit allies to contribute to operations. This paper will provide an overview of NATO organisations participating in UAV activities, programs of work currently focused on UAV operations, and a look in to the future of NATO efforts in research, development and procurement for this exciting weapon system.

II. NATO ORGANIZATIONS IN SUPPORT OF UAV PROCUREMENT

Co-operation between NATO countries in the armaments field is the responsibility of the Conference of National Armaments Directors (CNAD) (see Appendix 1 for organisational chart), which meets on a regular basis to consider political, economic and technical aspects of the development and procurement of equipment for NATO forces. Army (NAAG), Air Force (NAFAG) and Naval (NNAG) Armaments Groups support the work of the Conference and are responsible to it in their respective fields. A Research and Technology Board, which is an integrated NATO body responsible for defence research and technological development, provides advice and assistance to the CNAD and to the Military Committee. It conducts a programme of collaborative activities across a broad range of defence research and technology issues. Assistance on industrial matters is provided by a NATO Industrial Advisory Group (NIAG), which enables the CNAD to benefit from industry's advice on how to foster government-to-industry and industry-to-industry co-operation and assists the Conference in exploring opportunities for international collaboration. Other groups under the Conference, formerly known as Cadre Groups and renamed "CNAD Partnership Groups", are active in fields such as defence procurement policy and acquisition practices, codification, quality assurance, test and safety criteria for ammunition, and materiel standardisation.

Within the above structure, working groups and ad hoc groups are established to promote co-operation in specific fields. The overall structure enables member countries to select the equipment and research projects in which they wish to participate. At the same time, it facilitates exchange of information on national equipment programmes and on technical and logistics matters where co-operation can be of benefit to individual nations and to NATO as a whole.

In 1993, the North Atlantic Council approved revised policies, structures and procedures for NATO armaments co-operation. These were designed to strengthen co-operative activities in the defence equipment field; to streamline the overall CNAD committee structure in order to make it more effective and efficient; and to direct the work of the CNAD towards the following key areas:

- harmonisation of military requirements on an Alliance-wide basis;
- promotion of essential battlefield interoperability;

- pursuit of co-operative opportunities identified by the CNAD and the promotion of improved transatlantic co-operation;
- the development of critical defence technologies, including expanded technology sharing.

III. NATO Air Force Armament Group (NAFAG) UAV Program of Work

The NAFAG has three subordinate groups that are involved in UAV research, development, and procurement efforts.

Air Group 3 (AG/3), Air Aspects of Command and Control Warfare, Subgroup 2 (SG/2), EW Protection Measures for Tactical Aircraft, is sponsoring MACE XI, a NATO exercise that will feature 10-12 NATO nations bringing aircraft outfitted with their latest airborne EW systems. MACE XI will be the first EW exercises to feature close-in jamming with UAVs. MACE XI will take place September 2003 in Savannah, Georgia, US. For more details on AG/3 activities, please contact Mr. Georges Thibaut, g.thibaut@hq.nato.int.

Air Group 4 (AG/4), Air Intelligence, Surveillance and Reconnaissance, has maintained a close association with UAVs because of the overlap in mission coverage, and the desire to ensure interoperability across all ISR platforms, be they unmanned or manned. AG/4 activities in support of UAVs include leading the development of a high-level Defence Capability Initiative (DCI) Roadmap for Surveillance and Reconnaissance Systems, to include UAVs. DCIs are used to identify current operational shortfalls and provide direction for NATO to pursue resolution of these shortfalls across all member countries via detailed capability-based roadmaps. AG/4 work also includes development of multiple Standardisation Agreements (STANAGs) in the area of UAV-supported ISR. STANAGs provide member countries standardised requirements for procurement of systems to facilitate interoperability within NATO, especially critical to allow NATO participants in military operations to share ISR data gathered by STANAG-compliant National platforms. For more details on AG/4 activities, please contact Mr. Georges Thibaut, g.thibaut@hq.nato.int.

Air Group 7 (AG/7), Unmanned Aerial Vehicles, is the primary focus group for UAVs within NATO. AG/7 is a relatively new Air Group, established in 1999 after a two-year NAFAG study confirmed the requirement for a separate UAV group. Initial areas of concentration for AG/7 were UAV categorisation, airworthiness certification, tasking and retasking, and system vision, architecture, and roadmap. Additional programs of work include lead or co-lead on ten Defence Capability Initiatives, and development of an Alliance Co-ordinated Armaments Requirement (ACAR) for UAV Reconnaissance Surveillance and Target Assessment (RSTA), and co-ordination with other committees to clearly delineate air traffic management (ATM) requirements for UAVs inside and outside of reserved airspace. For more details on AG/7 activities, please contact Mr. Denis Vandensavel, d.vandensavel@hq.nato.int.

IV. NATO Army Armament Group (NAAG) UAV Program of Work

Land Group 6 (LG/6), Surveillance Target Acquisition Night Observation and Countersurveillance – Electronic Warfare, established Working Group 1 (LG/6-WG/1) to focus on tactical UAV systems. Programs of work include studies on UAV payloads, tactical UAV classification, and tactical UAV certification and flying conditions. For more details on LG/6 activities, please contact Mr. Hugues Briche, h.briche@hq.nato.int.

Land Group 7 (LG/7), Joint Nuclear Biological and Chemical (NBC) Defence, Air Sub Group (LG/7-ASG), has an ongoing study on the use of UAVs for NBC detection and monitoring. This study includes a review of UAV platforms capable of carrying NBC detection equipment, and military utility of dedicating UAVs for an NBC Defence mission. For more details on LG/7 activities, please contact Mr. Denis Vandensavel, d.vandensavel@hq.nato.int .

V. NATO Navy Armament Group (NNAG) UAV Program of Work

The primary focus group for UAVs within the NNAG is Project Group 35 (PG/35), Maritime UAV Systems. PG/35 produced a NATO Staff Requirement (NSR) on Maritime UAV Systems to facilitate international co-operative development. Current programs of work include planning for an International Technology Demonstration Program and pursuit of initial operational capability for UAV interoperable ground stations (STANAG 4186 on UAV Control Station under ratification). For more details on PG/35 activities, please contact Mr. Eddy Dransfeld, e.dransfeld@hq.nato.int .

VI. NATO Industrial Advisory Group (NIAG) UAV Program of Work

The NIAG's charter limits its activities to the pre-competitive stage of research and development, before companies actively compete for contracts. Even with this limitation, the NIAG can undertake substantial work in performing pre-feasibility studies that influence the character and definition of NATO programs. At the request of PG/35, NIAG conducted a study on UAV system architecture requirements. This study resulted in a flexible joint combined interoperable UAV system architecture. Five levels of interoperability were defined in which joint forces can control UAVs launched from land bases or surface/air platforms, gaining access to information from UAVs fitted with standard data links and UAV Control Systems (UCS). The NIAG, again at the request of PG/35, has initiated a study to define: 1.) the potential and feasibility of UAV system autonomy for autonomous flight operations in restricted, controlled and uncontrolled airspace, and; 2.) the potential and feasibility of UAV system autonomy for mission performance for core tasks in support of deterrence, information superiority, air and sea dominance and power projection warfare mission areas. This study is scheduled for completion by July 2004.

Additionally, the NIAG, in conjunction with the NAFAG, sponsored a very successful Workshop on the Alliance Co-ordinated Armaments Requirement (ACAR) for UAV Reconnaissance Surveillance and Target Assessment (RSTA). Over 100 participants from NATO, National Governments and Industry shared national UAV concepts, provided Industry with insight into requirements issues, and received Industry perspectives on the ability of current technology to meet performance goals. The Workshop also resulted in the establishment of a NIAG Support Group for AG/7 UAV efforts. For more details on NIAG activities, please contact Mr. Raymond Schaus, r.schaus@hq.nato.int .

VII. Theatre Missile Defence Project group (TMDPG)

The TMDPG implements the NATO Programme Plan for Theatre Missile Defence (TMD), acts as Steering Committee for TMD project feasibility phase, and provides TMD expertise to other NATO bodies. Although the TMDPG is not conducting any specific projects or developing concepts related to UAVs, the TMD Feasibility Study may determine how

UAVs could contribute to the architecture for a defensive system. For more details on TMDPG activities, please contact Mr. Denis Vandensavel, d.vandensavel@hq.nato.int .

VIII. NATO Air Traffic Management Committee (NATMC)

The NATMC program of work includes development of Air Traffic Management (ATM) procedures and operational support for military UAVs, and to develop a UAV information program. NATMC has tasked one of its subordinate groups to look into the issue of integrating UAVs into civil airspace in light of the fact that international air traffic regulations remain based on aircraft controlled by an onboard pilot. In the absence of international regulations covering all aspects of UAV operations, NATMC developed a document providing recommendations to nations on UAV operations, design specifications and maintenance procedures. NATMC's aim is to recommend the development of appropriate procedures and hardware to ensure safe integration of UAVs into controlled airspace. For more details on NATMC activities, please contact Mr. Juan-Carlos Marti Garcia, jc.marti@hq.nato.int .

IX. Alliance Ground Surveillance (AGS) Steering Committee

The AGS SC has been tasked to define and implement a NATO AGS capability. This ongoing study includes review of several surveillance platforms, to include UAVs. The AGS SC task is to field a NATO ground surveillance system by 2010. The ASG SC is currently in the study phase, with UAVs as potential solutions at the system and/or subsystem level.

X. Research and Technology Organisation (RTO)

The NATO RTO's involvement in UAVs is primarily addressed within the Applied Vehicle Technology (AVT) Panel. Recent activities have included symposiums on UAVs for Aerial, Ground, and Naval Military Operations, and Warfare Automation: Procedures and Techniques for UAVs, both held in Turkey. The RTO has also produced several key studies related to UAV research and operational use. For more details on RTO activities, please contact Mr. Roland Decuypere, Roland.Decuypere@RMA.AC.BE .

XII. FUTURE NATO UAV PROCUREMENT ACTIVITIES

Future UAV efforts across the CNAD groups will focus on completion of the UAV RSTA ACAR. The ACAR will lead to the development of a NATO Staff Requirement (NSR) for UAV systems. Interoperability issues, resolution of UAV airspace management concerns, support in the development of concepts of operations for UAVs (High Altitude Long Endurance and Medium Altitude Long Endurance) used in RSTA strategic missions, and the potential development of a NATO UAV capability to support Allied military and intelligence operations and augment National UAV assets will also be pursued.

The NAFAG will conduct a Topical Meeting on 22-23 January 2003 at NATO HQ to acquaint nations with recent and future developments on UAVs with a focus on NATO. The meeting will be a tri-service event, with participation of key governments and industries, in which air, land and maritime UAV applications will be addressed. For more details about the Topical Meeting, please call Mr Wulf Hausen, wulfhausen@bwb.org or Mr. Denis Vandensavel, d.vandensavel@hq.nato.int .

UAV efforts span all CNAD subgroups and will continue to figure prominently in NATO research, development, procurement, and operational decision-making processes.

NAFAG STRUCTURE

North Atlantic Council

CNAD

7 - permanent groups
5 - temporary working groups

