



European
Unmanned
Vehicle
Systems
Association

NAVDROC & UAV-REG

**Furthering The Introduction Of UAVs/ROA
Into Civil Managed Airspace**

Peter van Blyenburgh

EURO UVS

86, rue Michel-Ange

75016 Paris

France

Tel.: 33-1-46.51.88.65

Fax: 33-1-46.51.05.22

pvb@euro-uvs.org

www.euro-uvs.org & www.ucare-network.org

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 02 SEP 2003	2. REPORT TYPE N/A	3. DATES COVERED -			
4. TITLE AND SUBTITLE NAVDROC & UAV-REG Furthering The Introduction Of UAVs/ROA Into Civil Managed Airspace		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) EURO UVS 86, rue Michel-Ange 75016 Paris France		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES See also ADM001676, UAV 2002 Conference & Exhibition., The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 11	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



WHAT ARE THE PROBLEMS?

European
Unmanned
Vehicle
Systems
Association

Emerging market

Products not fully mature

Most military systems are still “user specific”

Insufficient safety & reliability (flight statistics)

High development costs + low volume production ->

High acquisition cost

Operational costs still too high -> High ownership cost

Insufficient R&D funding (national & Euro level)

Few current producers have aeronautical experience

No airworthiness norms

No ATM regulations

Flight in civil controlled airspace is impossible

No international consensus on how to tackle problems

Civil/commercial market cannot develop



WHAT SHOULD BE DONE ?

European
Unmanned
Vehicle
Systems
Association

- ◆ **Airworthiness norms for UAVs are to be defined**
- ◆ **Elaboration of ATM regulations is to be initiated**
- ◆ **INDUSTRY SHOULD BE THE DYNAMO**
- ◆ **National approaches in cooperation with CAAs & military**
- ◆ **Efforts to be coordinated on an European scale in cooperation with NATO, Eurocontrol, JAA, DG TREN, national CAAs & military**
- ◆ **Efforts to be coordinated on international scale with FAA, USAF FSA & OSD**
- ◆ **Approaches on both sides of the Atlantic should be coordinated (EURO UVS & AUVSI)**
- ◆ **Australia & Japan to be part of process (commercial flight experience)**
- ◆ **International approaches should be harmonized at the earliest stage**

A common terminology in English should be defined



FEDERATING ACTION



Early 2000, the French CAA (DGAC) issued a RFP for the drawing up of recommendations for airworthiness norms for civilian UAVs (based on existing JARs).

NAVDROC Programme

November 2000, a one year study contract was awarded to **EURO UVS** (prime contractor), federating 3 corporate association members with complementary expertise as equal subcontractors:

- ◆ **Dassault Aviation**
- ◆ **Sagem**
- ◆ **Thales Airborne Systems**



FEDERATING ACTION



NAVDROC Programme

General Objectives

- Description of the current UAV-related airworthiness & air traffic management situation in Europe
- Identification of civil & military authorities involved
- Review & analysis of UAV classification methods
- Evaluate suitability of JAR-VLA, JAR-VLR & JAR 23 and suggest required modifications

Study Completed in December 2001

A Co-operative Effort between Industrial Competitors

NAVDROC Conclusions = Inputs for UAV-REG & UCARE



FEDERATING ACTION

**UAV-
REG**

In June 2001, the French Ministry of Defence (DGA) awarded EURO UVS a 2 year study contract concerning UAV-related airworthiness norms & air traffic management regulations.

UAV-REG Programme

EURO UVS (prime contractor) with:

- coordinated national inputs & study results from corporate EURO UVS members as Participants
 - ◆ **France + Spain** ◆ **Germany** ◆ **UK**
- inputs from Euro & non-Euro corporate EURO UVS members & institutional entities as Contributors

UAV-REG Conclusions = Inputs for New UCARE



FEDERATING ACTION

**UAV-
REG**

UAV-REG Programme

General Objectives

- A- Define within the European context the conceptual standards & acceptable means to demonstrate conformity applicable to all classes of UAVs.**
- B- Make proposals concerning specific means to assure the security of other aircraft sharing the airspace and the security of the population being over-flown.**



FEDERATING ACTION

**UAV-
REG**

UAV-REG Programme

Phase 1

June 2002

- 1.a Compilation & examination of the existing certification procedures & methods applicable to UAVs in Europe & outside of Europe.
- 1.b Identification of the involved European authorities (military & civilian).
- 1.c Description of the current situation in Europe.
- 1.d Identification of the current problems on a national & international level.

UAV-REG Programme

Phase 2

June 2002

- 2.a Categorisation of UAV missions (current & envisaged) in Europe.
- 2.b Definition of the pertinent UAV categories (micro to mega), that should be taken into account re: the establishment of certification standards.



FEDERATING ACTION

**UAV-
REG**

UAV-REG Programme

Phase 3

Jan 2003

- 3.a** Compilation and examination of the existing certification procedures & methods applicable to UAVs in Europe and outside of Europe.
- 3.b** Analysis of the status of the ground-based operator and his acceptance by the civil and military aviation authorities.
- 3.c** Recommendations relative to specific certification standards and methods for UAVs (taking into account the absence of an onboard pilot).
- 3.d** Recommendations relative to the certification standards and methods for specific UAV sub-assemblies (situational awareness sensors, real-time airborne computer systems, that operate as partial or total substitute of a pilot, ground control station, data links, global system architecture).
- 3.e** Examination of the potentially available tools, or their definition, required to assure and demonstrate the operational viability of a UAV system and its critical sub-assemblies, in particular in degraded modes.



FEDERATING ACTION

**UAV-
REG**

OVERALL COORDINATOR

EURO UVS

NATIONAL
COORDINATORS

PARTICIPANTS

**France &
Spain**

Dassault Aviation, EADS, EDT, INTA (Spain), Sagem, Thales Airborne Systems, Thales Communications

EDT

Germany

BGT, EADS, EADS-Dornier, ESG, IABG, Limbach, STN Atlas

UAV-WG

UK

BAE Systems, Remote Group, Stasys, Thales Defence

UAVS

Finalization: December 2002



EURO UVS

**86 rue Michel-Ange
75016 Paris, France**

Tel.: 33-1-46.51.88.65

Fax: 33-1-46.51.05.22

pvb@euro-uvs.org

www.euro-uvs.org

www.ucare-network.org

Voice of & Forum for the International UAV Community