

28 April 2009

NSA/0381(2009)-JAIS/4670

See CNAD AC/141 STANAG distribution


STANAG 4670 (EDITION 1) – RECOMMENDED GUIDANCE FOR THE TRAINING OF DESIGNATED UNMANNED AERIAL VEHICLE OPERATOR (DUO)

Reference: PFP(JCGUAV)D(2006)0004 dated 10 October 2006

1. The enclosed NATO Standardization Agreement, which has been ratified by nations as reflected in the NATO Standardization Document Database (NSDD), is promulgated herewith.
2. The reference listed above is to be destroyed in accordance with local document destruction procedures.

ACTION BY NATIONAL STAFFS

3. National staffs are requested to examine their ratification status of the STANAG and, if they have not already done so, advise the Defence Investment Division through their national delegation as appropriate of their intention regarding its ratification and implementation.

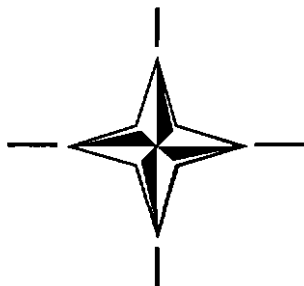


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Enclosure:
STANAG 4670 (Edition 1)

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**NORTH ATLANTIC TREATY ORGANIZATION
(NATO)**



**NATO STANDARDIZATION AGENCY
(NSA)**

**STANDARDIZATION AGREEMENT
(STANAG)**

SUBJECT: Recommended Guidance for the Training of Designated Unmanned
Aerial Vehicle Operator (DUO)

Promulgated on 28 April 2009

A handwritten signature in black ink, appearing to read 'Juan A. Moreno', is written over a horizontal line.

Juan A. MORENO
Vice Admiral, ESP(N)
Director, NATO Standardization Agency

RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date Entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Director NATO Standardization Agency under the authority vested in him by the NATO Standardization Organization Charter.
2. No departure may be made from the agreement without informing the tasking authority in the form of a reservation. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.
3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

4. Ratification, implementation and reservation details are available on request or through the NSA websites (internet <http://nsa.nato.int>; NATO Secure WAN <http://nsa.hq.nato.int>)

FEEDBACK

5. Any comments concerning this publication should be directed to NATO/NSA, Bvd. Leopold III, 1110 Brussels, Belgium.

NATO STANDARDIZATION AGREEMENT
(STANAG)

RECOMMENDED GUIDANCE FOR THE TRAINING OF DESIGNATED UNMANNED
AERIAL VEHICLE OPERATOR (DUO)

Annexes:

- A. Training Requirements
- B. Glossary of Terms and Acronyms

Related documents: None

AIM

1. The aim of this agreement is to establish a broad set of training guidelines and the skills required of a Designated UAV Operator (DUO) to operate a UAV in all classes of airspace.

AGREEMENT

2. Participating nations agree to adopt these guidelines, as a basis for the training of DUOs, adapting them where necessary to meet the specialist requirements of UAV type, mission or role. *Nations also agree to mutually recognise a DUO's qualification to operate a specific UAV type, if the DUO is trained under the guidelines contained in this STANAG.*

TERMS AND DEFINITIONS

3. Terms used in this document are defined at Annex B for the purpose of this document only.

DETAILS OF AGREEMENT

4. **General.** Noting that military operations may require deviation from peacetime rules and regulations, in general, UAV systems shall be operated in accordance with the rules governing the flights of manned aircraft as specified by the appropriate Air Traffic Services (ATS) authority. DUOs must be able to show an equivalent level of compliance with ATS regulations governing training and operational qualifications while UAV systems must meet equipment requirements applicable to the class of airspace within which they intend to operate.

5. Well-trained DUOs and national training requirements to produce them are essential for safe, effective UAV System operations. National authorities must continually refine these training requirements based on the data from evolving UAV system doctrine

and operations. Adoption of these operator training requirements by the military services, national aviation certification agencies and the segments of aerospace industry involved in UAV system training and operation will ensure that appropriate safety levels are maintained and public trust in UAV system operations is gained and maintained.

6. As UAV system operations expand and evolve, data collected and experience gained will aid national aviation authorities in determining the best methods of certifying, controlling and integrating UAV system operations into existing procedures. However, certain basic aeronautical knowledge and skills such as those identified in paragraph 15 following, are common to nearly any UAV system operation and the design and content of UAV system training courses should strongly consider inclusion of those topics at a minimum.

7. The diversity in UAV system designs, missions and vehicle technology architectures makes it difficult to prescribe a standard set of universally applicable training certification requirements for the DUO. For example, highly automated systems may not include manual controls and limit DUO control to keyboard entry or "point and click" methods. In such cases, training certification requirements for manual control should not be imposed. Likewise, many UAV systems are limited to Global Positioning System (GPS) navigation and are not capable of using legacy radio aids to navigation and approaches. In such cases, training certification requirements for navigation should reflect the use of GPS skills. Therefore not all training criteria listed in Annex A will be applicable to all UAV Systems.

8. Operating some UAV systems requires a skill set that approximates that of piloting a manned aircraft. However, there are additional skills that are unique to UAV systems such as relying on synthetic presentations to develop situational awareness. Other differences such as the lack of physical influences such as G-forces that provide performance indicators in manned systems present a unique challenge to DUO. UAV system control systems vary significantly; some systems use only manual flight controls while others may use a mix of manual and automated, or only automated control modes. Regardless of the type of controls, the DUO must be capable of safely conducting UAV system missions including precise and efficient response to emergency situations. These unique skills are especially critical when operating in conjunction with other manned and unmanned airborne systems.

9. Cost is also a significant factor as the training criteria needed for DUOs with significant endurance, altitude, airspeed and range would be financially unacceptable for other systems. For example, military personnel who operate UAV systems that are limited to line-of-sight ranges and altitudes of a few hundred feet do not need the breadth of training that operators of systems capable of intercontinental ranges using satellite relay for command and control and mission data.

10. UAV system training criteria must consider Crew Resource Management (CRM) techniques. CRM is essential for UAV system operations and the DUO must be able to communicate effectively to ensure safety.

11. DUO must have the ability to use and understand standard procedures and checklists throughout the mission and must understand how their system operates within the force structure and contributes to the mission goals.

12. DUO must understand how to coordinate with Air Traffic Service Providers (ATSP) when required. DUO must have a thorough understanding of applicable national and international controlling authorities' flight regulations as well as integration with overall military operations.

13. *Annex A presents a baseline list of training and instruction skill requirements.*

14. **Training Criteria.** When designing UAV system training programs, the military services shall ensure that DUOs are trained and certified to an appropriate level for the type of UAV system and for the anticipated flight operations. This training should include both the general requirements listed in *para. 15* below as well as the system-specific knowledge required to operate the UAV System in a safe manner.

15. **Ground Training Content and Instructor Qualifications.** DUO must have completed thorough ground instruction equivalent to that undertaken by aircrew of comparable civil or military aircraft operating in similar airspace. Just as pilots of manned aircraft operating in Class G airspace are not required to meet the qualifications required to operate in Class A airspace, the depth of knowledge required of DUO will depend on the complexity of the UAV System, mission and the operating environment. The following topics, which are not exhaustive, generally reflect ground-training requirements included at Annex A:

- a. Airspace design and operating requirements
- b. ATC procedures and rules of the air
- c. Aerodynamics, including effects of controls
- d. Aircraft systems
- e. Performance
- f. Navigation
- g. Meteorology
- h. Communications procedures (including competent Aeronautical English)
- i. Mission preparation

16. **Flight Training.** DUO should have completed a thorough practical flight training, a portion of which may consist of flight training on approved simulation flight training devices (FTD). Flight training should enable DUO to demonstrate control of a specific

UAV System throughout its performance parameters and potential operating conditions, including dealing correctly with emergencies and system malfunctions at any phase of the mission. Flight training requirements are found at Annex A.

17. **Proficiency / Currency Requirements.** DUO shall maintain proficiency / currency to conform with minimum national currency requirements. All operators should be subject to periodic theoretical and practical examination by designated military service examiners.

18. **Certification.** The military services shall certify DUOs who successfully demonstrate satisfactory knowledge of ground and flight operations via oral / written examinations and flight checks in accordance with military service standards. Foreign nations hosting UAV operations should accept the approved training certification program for the DUOs similar to current pilot certification agreements.

19. **Implementation of the Agreement.** This STANAG is considered implemented when a nation has issued the necessary orders and instructions putting the contents of this agreement into effect.

TRAINING REQUIREMENTS

Recommended Rating Scales for DUO Skills

General. The recommended knowledge and skills listed in this annex are not intended to be comprehensive or apply to all types of UAV Systems. For example, in a system requiring manual control, a changing air vehicle heading may require the DUO to manually “fly” the aircraft to its new heading. However, a similar task in an autonomous system may require the DUO to “monitor” air vehicle performance. In such situations, the air vehicle would change headings based on pre- or reprogrammed flight plan and the DUO would enter a change to the flight plan, observe the displays to understand the air vehicle’s subsequent action, understand the response, and take appropriate action if required.

Subject Knowledge Levels:

- A. Can identify basic facts and terms about the subject facts.
- B. Can identify relationship of basic facts and state general principles about the subject principles.
- C. Can analyze facts and principles and draw conclusions about the subject analysis.
- D. Can evaluate conditions and make proper decisions about the subject evaluation.

Task Knowledge Levels:

- a. Can name parts, tools, and simple facts about the task (nomenclature).
- b. Can determine step-by-step procedures for doing the task (procedure).
- c. Can identify why and when the task must be done and why each step is needed (operating principles).
- d. Can predict, isolate, and resolve problems about the task (advanced theory).

Task Performance Levels:

- 1. Can do simple parts of the task. Needs to be told or shown how to do most of the task – extremely limited.
- 2. Can do most parts of the task. Needs help only on hardest parts-partially proficient.
- 3. Can do all parts of the task. Needs only spot check of completed work-competent
- 4. Can do the task quickly and accurately. Can tell or show others how to do the task-highly proficient.

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- O = DUO level
I = DUO Instructor/Test System Operator Level (Unique skills only)

	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
Top-Level DUO Skills												
Mission Preparation												
Aviation Weather			O				O				O	
CRM and Communications			O				O				O	
Emergency Equip/IFE Procedures			O				O				O	
Flight Checklists and Use			O				O				O	
Charts – Sectional, Tactical, Global			O				O				O	
ICAO / FLIP Procedures			O				O				O	
Aircraft Performance Data / Limitations			O				O				O	
Global Flight Ops Knowledge		O					O				O	
Publications			O				O				O	
Departure and Arrival Planning			O				O				O	
Computerized Flight Planning Systems			O				O				O	
Mission Route Selection & Analysis			O				O				O	
Communications												
Plan & Manage Communications			O				O			O		
Functions of Airborne Comm Systems			O				O				O	
Satellite Communications (SATCOM)			O				O			O		
Data Links			O				O			O		
Aircraft Operations												
Identify and Avoid Weather Hazards			O				O				O	
General Flight Rules			O				O				O	
Fuel Planning			O				O				O	
Operate Integrated Navigation Systems			O				O				O	
Instrument Flight			O				O				O	
Aviation Principles			O				O				O	
Instrument Flight Procedures (IRC)			O				O				O	
Global Navigation Procedures			O				O				O	
Time & Course Control			O				O				O	
Radio Aid Navigation			O				O				O	
Basic Manual Navigation		O					O				O	
Conduct Low Level Flying		O			O						O	
Radar Navigation / Fixing			O				O					
Aircraft Systems			O				O				O	
Emergency Procedures			O				O				O	
Manual Flight Control Skills			O				O				O	
Air Operations												
Air Tasking Orders (ATO)			O				O				O	
Search and Rescue (SAR)		O					O				O	

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	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
SKILL SETS												
(1) BEFORE FLIGHT CATEGORY												
Plan VFR Mission			0				0				0	
Get weather data for mission planning			0				0				0	
Get ops data form mission planning			0				0				0	
Compute takeoff and landing data			0				0				0	
Give/receive briefing on training flight			0				0				0	
Get clearance for local VFR flight			0				0				0	
Prepare maps for use during flight			0				0				0	
Plan an IFR mission			0				0				0	
Plan route to destination & alternates			0				0				0	
Compute ICE-T/ground speed			0				0				0	
Select enroute altitudes IAW FLIP			0				0				0	
File DD 175/ICAO 1801 (Flight Plan)			0				0				0	
Perform preflight check			0				0				0	
Review maintenance logs			0				0				0	
Perform exterior inspection check			0				0				0	
Perform interior inspection check			0				0				0	
Perform appropriate communications			0				0				0	
Perform starting engines check			0				0				0	
Perform before taxi check			0				0				0	
Perform verbal comms / radio procedures			0				0				0	
Operate Air Traffic Surveillance Equipment (IFF/SIF/TCAS/Sense and Avoid Sensors)			0				0				0	
Perform GPS position check			0				0		0			
Obtain appropriate clearances before flight			0				0				0	
Obtain clearance to taxi			0				0				0	
Obtain IFR clearance over radio			0				0				0	
Obtain clearance for takeoff			0				0				0	
Taxi to runway			0				0				0	
Perform instrument GCS check			0				0				0	
Check operation of navigation radios			0				0				0	
Perform before takeoff check			0				0				0	
Taxi into takeoff position			0				0				0	
Perform line up check			0				0				0	
(2) CONTACT CATEGORY												
Perform takeoff, initial climb & assoc. checks			0				0				0	
Accelerate to climb airspeed			0				0				0	
Perform tech order climb			0				0				0	
Perform basic departure procedures			0				0				0	
Perform level off from tech order climb			0				0				0	
Establish and maintain altitude			0				0				0	
Perform all applicable in-flight checks			0				0				0	
Set, establish, & maintain proper altitude/attitude throughout flight			0				0				0	
Perform level off check			0				0				0	
Establish basic area orientation			0				0				0	
Use local area map for orientation			0				0				0	

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	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
Perform each manoeuvre within assigned airspace			0				0				0	
Perform Clearing			0				0				0	
Change airspeed, straight-and-level as req'd			0				0				0	
Perform slow flight			0				0				0	
Perform basic aero manoeuvres			0				0				0	
Perform turns, climbs, descents as req'd			0				0				0	
Recognize unusual attitudes and perform recoveries			0				0				0	
Recognize stalls and perform proper recoveries			0				0				0	
Recognize departure and perform recovery			0				0				0	
Perform before descent check			0				0				0	
Perform descent			0				0				0	
Request and receive landing clearance			0				0				0	
Perform approach to field check			0				0				0	
Analyze wind conditions			0				0				0	
Perform normal traffic patterns			0				0				0	
Respond to traffic conflicts as appropriate			0				0				0	
Follow local breakout procedures			0				0				0	
Clear airspace in direction of turn			0				0				0	
Configure aircraft to land and perform appropriate checks			0				0				0	
Perform normal overhead and straight-in patterns as appropriate			0				0				0	
Fly final approach			0				0				0	
Initiate automatic approach & landing			0				0				0	
Perform approach to landing			0				0				0	
Perform landing & rollout			0				0				0	
Perform touch & go landing			0				0				0	
Perform closed pattern			0				0				0	
Perform go-around on final approach turn			0				0				0	
Perform go-around / missed approach check			0				0				0	
Perform go-ahead from final approach / flare			0				0				0	
Perform post landing checks & procedures			0				0				0	
Demonstrate airmanship, judgment, & decision-making while operating aircraft			0				0				0	
Perform & demo GCS safety procedures			0				0				0	
Demo flight line and air discipline			0				0				0	
(3) INSTRUMENT CATEGORY												
Perform auto/instrument takeoff, climb, & departure			0				0				0	
Perform instrument cross check			0				0				0	
Perform partial panel instrument flight			0				0				0	
Establish and maintain constant altitude, airspeed, and heading during instrument			0				0				0	

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	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
flight												
Perform aircraft manoeuvres under instrument conditions			0				0				0	
Recognize and recover from unusual attitudes under instrument conditions			0				0				0	
Recognize improper nose low condition			0				0				0	
Operate aircraft instruments and navigation equipment			0				0				0	
Perform course intercept			0				0				0	
Determine angle of intercept			0				0				0	
Determine intercept heading			0				0				0	
Establish and maintain appropriate heading			0				0				0	
Determine lead point			0				0				0	
Determine rate of intercept			0				0				0	
Complete intercept			0				0				0	
Perform IFR navigation			0				0				0	
Perform fix-to-fix navigation			0				0				0	
Maintain selected course, correcting for wind			0				0				0	
Establish arc			0				0				0	
Intercept arc			0				0				0	
Maintain arc			0				0				0	
Perform radial intercept from arc			0				0				0	
Perform holding / loiter			0				0				0	
Receive and understand with holding instructions			0				0				0	
Perform proper holding pattern entry			0				0				0	
Maintain position within holding pattern airspace			0				0				0	
Perform wind analysis to assist in maintaining position in holding pattern airspace			0				0				0	
Depart holding pattern			0				0				0	
Perform procedure turns			0				0				0	
Comply with standard instrument approach plate procedures			0				0				0	
Comply with ATC/approach control clearance			0				0				0	
Remain within procedure turn airspace			0				0				0	
Perform en route descent			0				0				0	
Determine descent gradient			0				0				0	
Perform instrument penetration			0				0				0	
Receive ATC clearance			0				0				0	
Comply with procedures			0				0				0	
Remain within cleared airspace			0				0				0	
Perform descent			0				0				0	
Perform instrument approach			0				0				0	
Perform radar pattern			0				0				0	
Follow GCA controller's directions			0				0				0	
Turn to directed headings			0				0				0	
Maintain directed altitudes			0				0				0	

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	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
Maintain proper airspace			O				O				O	
Establish proper configuration			O				O				O	
Perform precision radar approach			O				O				O	
Make corrections to heading			O				O				O	
Establish Landing configuration			O				O				O	
Perform non-precision radar approach			O				O				O	
Perform gyro-out instrument pattern			O			O				O		
Perform half-standard rate turns on final			O			O				O		
Perform gyro-out precision radar approach			O			O				O		
Maintain glide slope control			O				O				O	
Maintain course control			O				O				O	
Transition from instruments to visual			O				O				O	
Calculate Visual Descent Point (VDP)			O				O				O	
Transition from glide path to runway			O				O				O	
Transition from MDA to runway			O				O				O	
Perform circling approach			O			O				O		
Comply with missed approach procedures			O				O				O	
Comply with ATC missed approach clearance			O				O				O	
Complete missed approach check			O				O				O	
React to hazardous/adverse weather conditions during flight			O				O				O	
Identify weather phenomena which affect flight			O				O				O	
Obtain in-flight IFR clearance			O				O				O	
(4) NAVIGATION CATEGORY												
Perform strange field departure			O				O				O	
Perform strange field visual and instrument approaches			O				O				O	
Make position reports			O				O				O	
Request in-flight clearances			O				O				O	
Perform dead reckoning navigation			O				O				O	
Perform visual navigation			O				O				O	
Perform map reading			O				O				O	
Identify appropriate visual landmarks			O				O				O	
Correlate position with map			O				O				O	
Compare actual and planned ground speeds			O				O				O	
Compare actual and planned rate of fuel consumption			O				O				O	
Calculate actual fuel consumption			O				O				O	
Perform in-flight navigation planning			O				O				O	
Calculate/compensate for in-flight winds			O				O				O	
Calculate new estimated time of arrival (ETA)			O				O				O	
Perform time and fuel management			O				O				O	
Use PMSV and ATIS, perform PIREP			O				O				O	
Interpret radio weather condition report			O				O				O	

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	SUBJECT KNOWLEDGE				TASK KNOWLEDGE				TASK PERFORMANCE			
	A	B	C	D	a	b	c	d	1	2	3	4
Alter navigation based on weather report			O				O				O	
Perform lost comm/C2 link procedures			O				O				O	
Perform low level navigation	O											
(5) EMERGENCY CATEGORY												
Recognize emergency conditions				O				O				O
Maintain aircraft control during emergency conditions				O				O				O
Analyze situation, including systems for possible emergency				O				O				O
Recognize and perform all applicable emergency procedures				O				O				O
Initiate communications/declare emergency (if required)				O				O				O
Recognize and properly respond to unplanned lost C2 link events				O				O				O
Land as soon as conditions permit				O				O				O
(6) AFTER FLIGHT CATEGORY												
Taxi clear of runway			O				O				O	
Perform after landing check			O				O				O	
Taxi to parking			O				O				O	
Perform engine shutdown check			O				O				O	
Perform all safety procedures for securing aircraft			O				O				O	
Perform post landing procedures			O				O				O	
Complete maintenance logs			O				O				O	
Complete flight time logs			O				O				O	
Close flight plan with ATC			O				O				O	
(7) INSTRUCTOR / TEST SYSTEM CATEGORY												
Instructor / test skills are in addition to those normally required of DUO												
Demonstrate understanding of learning theory				I				I				I
Demonstrate effective instructional presentation techniques				I				I				I
Demonstrate an understanding of courseware design theory				I				I				I
Demonstrate subject matter expertise				I				I				I
Demonstrate understanding of test plan				I				I				I
Perform system test procedures				I				I				I
Analyze test data				I				I				I

GLOSSARY OF TERMS AND ACRONYMS

TERMS

Terms used in the document are defined below for the purpose of this document only.

Air Vehicle Control Station:	The subsystem designed to plan and execute a UAV system mission, including sensor employment and connectivity with the appropriate airspace controlling authority.
Air Traffic Services	The national or international authority governing flight in any airspace. For example, the FAA or ICAO.
Autonomous Operation:	Pre-programmed automated flight that does not require human intervention for normal operation. Can include all operations from takeoff to final landing or any portion thereof.
Built In Test (BIT):	A set of internal software procedures to determine the condition and/or level of functionality of pre-determined critical systems or components.
Controlled Airspace:	Airspace of defined dimension within which air traffic control service is provided to flights in accordance with the airspace classification.
Controlled Flight:	Any flight that is subject to an air traffic control clearance.
Designated UAV System Operator (DUO):	The UAV system Operator in the Air Vehicle Control Station tasked with overall responsibility for operation and safety of the UAV system. Equivalent to the pilot in command of a manned aircraft.
Designated UAV System Operator Training Course:	Instruction that produces measurable improvements in performance, certified to meet national requirements. Completion qualifies an individual to assume overall responsibility for the operation and safety of a UAV system from takeoff through final landing in any airspace.
Flight Training:	Instruction normally consisting of actual flight or simulated flight and observed by a qualified instructor.
Global Positioning System (GPS):	A satellite constellation providing highly accurate latitude, longitude and altitude fixes that are suitable for IFR air navigation.
Ground Training:	Instruction normally consisting of academic subject matter relating to flight operations. Can be instructor-lead or self-paced using hard-copy manuals or computer-based instructional systems monitored by a qualified instructor.
Instrument Approach:	A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. (Reference ICAO Annex 2.)
Instrument Flight Rules:	A set of procedures prescribed by the appropriate controlling authority for conducting flight operations under conditions not meeting the requirements for visual flight or in certain types of designated airspace. Under IFR, the controlling authority is responsible for flight separation with other IFR aircraft. Separation from VFR aircraft is only provided on a workload permitting basis .

NATO/PfP UNCLASSIFIED
Releasable to Australia and Israel

Non-Reserved Airspace:	Regions open to all traffic, including the various ATS airspaces, in which, no temporary airspace reservation is established for the use of special aircraft activities.
Preflight Inspection:	Set of visual condition observations and functional procedures / tests performed prior to any launch.
Proficiency / Currency:	A set of required activities to maintain qualifications to perform as a Designated UAV system operator. May consist of actual flight time, use of an approved simulator, subject matter examinations and meeting / maintaining medical qualifications.
Reserved Airspace:	Airspace of defined dimensions wherein activities must be confined because of their nature and / or wherein limitations are imposed upon flights that are not part of those activities.
Unmanned Aerial Vehicle (UAV):	A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and carry a lethal or non-lethal payload. Ballistic or semi-ballistic vehicles, cruise missiles, and artillery projectiles are not considered unmanned aerial vehicles.
UAV System (UAVS)	The UAVS comprises individual UAVS elements, consisting of the flight vehicle (UAV), the control station, guidance and control links and any other UAVS elements necessary to enable flight such as launch and recovery element.
UAV System Instructor:	A highly qualified person with expertise in UAV system operations and / or maintenance who meets the qualifications to teach others to operate UAV systems.
UAV System Test System Operator:	A Designated UAV system operator who is additionally qualified to control a UAV system or UAV systems during developmental and experimental flights.
Visual Flight Rules (VFR):	A set of procedures prescribed by the appropriate controlling authority for conducting flight operations under conditions meeting the requirements for visual flight or in certain types of designated airspace. Under VFR, the designated operator is responsible for flight separation from other aircraft.

ACRONYMS

ATC	Air Traffic Control
ATS	Air Traffic Services
CRM	Crew Resource Management
DUO	Designated UAV System Operator
GPS	Global Positioning System
FTD	Flight Training Devices
ICAO	International Civil Aviation Organization
IFE	In-Flight Emergency
IFR	Instrument Flight Rules
TCAS	Traffic Collision Avoidance System
UAV	Unmanned Aerial Vehicle
VFR	Visual Flight Rules