

**NATO STANDARD**

**AFSP-5**

**FLYING AND STATIC DISPLAYS**

**Edition A Version 1**

**October 2013**



**NORTH ATLANTIC TREATY ORGANIZATION**

**ALLIED FLIGHT SAFETY PUBLICATION**

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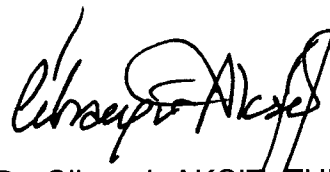
**NORTH ATLANTIC TREATY ORGANIZATION (NATO)**

**NATO STANDARDIZATION AGENCY (NSA)**

**NATO LETTER OF PROMULGATION**

28 October 2013

1. The enclosed Allied Flight Safety Publication AFSP-5, Edition A, Version 1, FLYING AND STATIC DISPLAYS, which has been approved by the nations in the Military Committee Air Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 3533.
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Director, NATO Standardization Agency

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## RECORD OF RESERVATIONS

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## **RECORD OF SPECIFIC RESERVATIONS**

[nation]	[detail of reservation]
CAN	<p>(1) Para 2.3 Display Air Traffic Zone: The STANAG does not define the size of air traffic zone to be established and what is appropriate for the size of the display and planned flying activity.</p> <p>(2) Para 2.5 Considerations, Sub Para 1. The minimum horizontal distance from display axes to spectator enclosures depends on the speed of the aircraft doing the air display and it is designed to ensure spectator safety in the event of a crash or incident reducing the amount of debris that will enter the spectator area. A note to that effect is recommended for inclusion in the AFSP.</p> <p>(3) Para 2.6 Minimum Horizontal Distances:</p> <ul style="list-style-type: none"> <li>(a) Sub-para a. Spectators in Canada and the US are not allowed within 200 ft of a helicopter for engine start and shutdown and hover taxi in ground effect/landings.</li> <li>(b) Sub-para d. Spectators are not allowed within 300 ft of aeroplanes with a Vref of 100kts or less and certified gross weight of 50,000 lbs or less.</li> <li>(c) Sub-para e. Spectators are not allowed with 500 ft of: <ul style="list-style-type: none"> <li>(i) Aeroplanes with Vref in excess of 100 kts;</li> <li>(ii) Aeroplanes with a certified gross weight in excess of 50,000 lbs;</li> <li>(iii) Aeroplanes conducting excessive non aerobatic manoeuvring on takeoff or landing; and</li> <li>(iv) Helicopter landing and takeoff.</li> </ul> </li> <li>(d) Para 2.6 sub paras i, j, k. Canada uses three Category definitions of aircraft depending on their speed and space them from the spectator area corresponding to their Category as follows: <ul style="list-style-type: none"> <li>(i) Cat 1 Aircraft = 245 kts or more fly along 1500ft display axis from spectator enclosure;</li> <li>(ii) Cat 2 Aircraft = 156 kts-245 kts fly along 1000ft display axis from spectator enclosure; and</li> <li>(iii) Cat 3 Aircraft = 156 and below along 500ft display axis from spectator enclosure.</li> </ul> </li> <li>(e) Annexes A1 to A4: Canada would adjust the diagrams in accordance with the reservations stated above.</li> <li>(f) Annex B – Minimum Weather Conditions: The limits indicated in B-GA-100-001/AA-00 National Defence Flying Orders would be followed as they are more restrictive than what is stipulated in the AFSP.</li> </ul>

GBR	<ul style="list-style-type: none"> <li>a. Where home nation or UK regulation (RA 2335) minima are more restrictive than this Standard, the more restrictive limit shall apply.</li> <li>b. Deliberate over flight of spectator areas is prohibited without explicit approval of MAA Director Operations.</li> <li>c. UK air shows may be conducted in UTC or local time at the discretion of the Flying Display Director (para 2.9).</li> </ul>
GRC	HAF military A/C participation in aerial events will comply with HAF regulatory guidance when that guidance is more restrictive than those set forth in STANAG 3533.
USA	USA military aircraft and installations participating in aerial events will comply with USA regulatory guidance when that guidance is more restrictive than those set forth in STANAG 3533.
<p>Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.</p>	

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## CHAPTER 1 INTRODUCTION

### 1.1. AIM

The aim of this standard is to establish basic safety procedures, regulations and responsibilities for flying and static displays, which involve aircraft of two or more nations.

### 1.2. AGREEMENT

Participating nations agree that basic safety procedures, regulations and responsibilities for flying and static displays which involve aircraft of two or more nations are as detailed herein.

### 1.3. TERMINOLOGY

The definitions of pertinent terms used in this agreement are as follows:

- a. Flying Display. A demonstration of aircraft, parachutists or any flying activity performed to a set program before spectators on a public occasion, including tactical manoeuvres and demonstrations of simulated weapons deliveries or attack techniques outside recognized danger areas.
- b. Static Display. A display of aircraft and related equipment which does not involve flight, taxiing or engine start.
- c. Display Air Traffic Zone. Airspace of well-defined dimensions within which the aircraft manoeuvres performed in a flying display can be completed, and which is exclusively reserved for this purpose.
- d. Spectator Enclosure. An area which isolates spectators from the display area and from aircraft movements areas.

### 1.4. IMPLEMENTATION OF THE STANDARD

This standard is implemented when a nation has issued the necessary orders/ instructions to the forces concerned putting the details of this agreement into effect.

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## CHAPTER 2 FLYING AND STATIC DISPLAY REGULATIONS

### 2.1. DISPLAY DIRECTOR

The national body which authorizes a display involving the aircraft of two or more nations shall designate a Display Director who will be the overall director for the display and who must be experienced in such work. The Display Director is responsible for all aspects of planning and conducting the display. As appropriate, liaison with security organizations shall be made to mitigate the risk of terrorist activities before, during and after the display.

### 2.2. SAFETY CONSIDERATIONS

The paramount consideration in the planning and conduct of flying and static displays is spectator safety. All flying activity (includes ultralights, gliders, remote controlled model aircraft, parachutists, etc) shall be planned and conducted such that neither spectators nor aircraft are endangered. All flying manoeuvres shall be evaluated to ensure that spectator safety is not compromised in the event of any mishap. All flying activities must be approved by the Display Director for inclusion in the flying display program.

### 2.3. DISPLAY AIR TRAFFIC ZONE

A display air traffic zone shall be established which is appropriate for the size of the display and the planned flying activity. The display air traffic zone shall be closed to all flying activity other than display flying activity from 15 minutes before the flying display/rehearsal until 15 minutes after the flying display/rehearsal. Only the Display Director can approve exceptions to this restriction. A NOTAM shall be issued detailing the restrictions on flying in the display air traffic zone and in any additional area(s) required for display flying activity. The Display Director shall ensure that this NOTAM action is taken at least 28 days prior to the display

### 2.4. DISPLAY AXIS

A display axis, or display axes, shall be established as the reference(s) for the display. Display axes shall be orientated to ensure maximum spectator safety and must be easily discernible from the air. Display axes which are not clearly delineated by a paved runway/taxiway or other obvious line feature shall be clearly delineated by day glow panels or other suitable means. In this case, the panels or other suitable means should have a vertical dimension and should be fixed firmly to the ground. Flying demonstrations should normally be performed parallel to a display axis and exclusively in front of the spectator enclosures. Aircraft shall not be manoeuvred closer to spectator enclosures than the display axes except as detailed in paragraph 2.6.

## **2.5. CONSIDERATIONS**

1. Spectator enclosures shall be provided to facilitate spectator safety. Spectator enclosures shall be located at one side only of display axes, and shall be outside of the approach and departure sections of the airfield and the display area. The minimum horizontal distance from display axes to spectator enclosures shall be 230 m, and this minimum distance shall be increased accordingly if demonstration aircraft operate on both sides of the display axis (e.g. the wingman in a formation). Examples of spectator enclosure locations are contained in Annex A. In addition, spectators shall not be permitted:

- a. In aircraft parking areas when aircraft engines are running or when aircraft are taxiing.
- b. Within 15 m of any fixed refuelling area.
- c. Within 65 m of any area where balloons are filled or launched.

2. Fire fighting, crash rescue and medical services in accordance with host nation requirements shall be available at the location of the display, and these services shall be appropriate to the size of the display. The Display Director shall advise the appropriate civil authorities responsible for these services of the location, date, time and size of the planned display activities.

3. Minimum separation requirements shall be established for all flying activities which are appropriate to the specific aircraft and flying manoeuvres involved (e.g. greater separation for aircraft which are not radio equipped, such as ultralights, gliders, remote controlled scale models, etc).

4. Display participants shall be properly trained and briefed for the demonstrations they are to perform. Aircraft shall be flown within their established aircraft operating limitations.

5. For fixed-wing aircraft in close formation, each formation taking part in a mass-formation flypast shall not exceed 16 aircraft, and a formation not taking part in a mass-formation flypast may exceed 16 aircraft. For rotary-wing aircraft, there is no limit to the number of aircraft in a formation.

6. For tactical demonstrations, each manoeuvre flown shall not be in conflict with the regulations, restrictions and minimum clearance requirements specified in the Display Order which are appropriate to the type of aircraft and manoeuvre involved.

7. Weapons and ammunition, except as required for ballast, shall not be carried. When ammunition is carried as ballast, gun chambers shall be clear and ammunition belts shall be disconnected or otherwise made safe. In all cases, armament circuits shall be made safe.



8. Aircraft demonstrations which involve the stopping and starting of engines shall be conducted such that there is no danger to spectators from aircraft fuel spillage.
9. During the period(s) scheduled for parachuting, there shall be no flying activity within the descent airspace and drop zone except the flying activity necessary for parachuting. The engines and rotors of aircraft on the ground within an area specified by the Display Director shall remain stopped until the last parachutist has landed.
10. Aerobatic flying in clouds within the display air traffic zone is prohibited.
11. A Mach number of 0.95 shall not be exceeded.
12. Crossover manoeuvres by fixed-wing aircraft towards spectator enclosures are prohibited except as specifically authorised by the Display Director in accordance with host nation regulations.
13. Flight over spectator enclosures is prohibited except as specifically authorised by the Display Director for non-aerobatic manoeuvres in accordance with host nation regulations.

## **2.6. MINIMUM HORIZONTAL DISTANCES**

The minimum horizontal distance from spectator enclosures shall be as follows:

- a. 15 m for aircraft:
  - (1) During taxiing/hover taxiing on/over taxiway.
  - (2) During taxiing/hover taxiing clear of a taxiway with a marshaller.
  - (3) During ground servicing.
- b. 65 m for aircraft during taxiing/hover taxiing clear of a taxiway without a marshaller.
- c. 65 m for helicopters and VSTOL aircraft during hovering manoeuvres.
- d. 65 m to the edge of the runway used for take-offs or landings by helicopters and light aircraft which have a normal take-off or landing speed of less than 100 KIAS.
- e. 100 m to the edge of the runway used for take-offs or landings by aircraft which have a normal take-off or landing speed of 100 KIAS or more.
- f. 100 m for light aircraft.

- g. 100 m for helicopters during non-hovering manoeuvres and during manoeuvres with slung loads.
- h. 100 m for VSTOL aircraft during transition manoeuvres.
- i. 230 m for aircraft during manoeuvres when the velocity vector is not towards a spectator enclosure, except as specified in sub-paragraphs c., f., g. and h. above.
- j. 230 m for aircraft flying at less than 300 KIAS during manoeuvres when the velocity vector is towards a spectator enclosure, except as specified in sub-paragraphs c, g and h above.
- k. 450 m for aircraft flying at 300 KIAS or more during manoeuvres when the velocity vector is towards a spectator enclosure.

## **2.7. DISPLAY ORDER**

The Display Director shall ensure that detailed regulations and procedures for the display are issued and are provided to all participating nations/host nation participants at least 42 days prior to the display. The Display Order will normally reflect the regulations, restrictions, minimum clearance requirements and minimum weather conditions of the host nation, and these shall not be in conflict with the details of this standard. The minimum weather conditions permitted for flying displays are specified in Annex B. If any of the regulations, restrictions, minimum clearance requirements or minimum weather conditions issued by the Display Director are in conflict with those of a participating nation/host nation participant, that nation/host nation participant shall provide the Display Director with details of the conflict(s) and with the specific restriction(s) and minimum weather conditions which will apply to their proposed demonstration. The following information shall be included in the Display Order:

- a. Location and date(s) of the display, and of the rehearsal if applicable.
- b. Date(s) and time(s) proposed for the arrival/departure of participating aircraft, and any requests for arrival/departure manoeuvres.
- c. Details of the display air traffic zone.
- d. Location of display axis/axes, and details of run-in and departure lanes.
- e. Location and frontage of spectator enclosures.
- f. Detail of holding areas.
- g. Details of avoidance and warning areas.

- h. Details of local obstructions.
- i. Procedures in case of emergency.
- j. Location of diversion fields.
- k. Details of jettison/ejection areas.
- l. The language used for control.
- m. Radio frequencies and call signs.
- n. Restriction.
- o. Minimum clearance requirements.
- p. Minimum weather conditions.
- q. Procedures and proposed sequence of flying activities.

## **2.8. DEMONSTRATION DETAILS**

Participating nations/host nation participants shall ensure that their demonstration manoeuvres are not in conflict with the details of this standard nor with the regulations, restrictions, minimum clearance requirements or minimum weather conditions specified in the Display Order. Participating nations/host nation participants shall provide the Display Director with details of their proposed flying demonstration and alternate flying demonstration(s) not later than 30 days prior to the display. These details shall be provided in writing and shall include a description plus ribbon diagrams and/or video of the demonstrations, and the restrictions, minimum clearance requirements and minimum weather conditions which apply to these demonstrations. The Display Director shall also be notified if any participants are not familiar with the language used for control. Thereafter, participating nations/host nation participants shall provide the Display Director with details of any changes to the proposed programme(s) as early as possible but not later than the day prior to the display.

## **2.9. DISPLAY SCHEDULE**

The Display Director is responsible for all display scheduling, including the detailed flying program and alternate flying program(s). The flying programs shall contain detailed times (UTC) for each participant/formation to ensure the safe and orderly flow of all flying activity. During the display, the flying programs which were approved by the Display Director can be reduced but cannot be modified by changing manoeuvres or expanded by adding manoeuvres that were not previously programmed.

## **2.10. CONTROL OF FLYING**

The Display Director is responsible for the control of flying at the display and at the rehearsal(s). There shall be an official in charge of flying for the display and for the rehearsal(s), and this shall be the Display Director or a person detailed by the Display Director. Flying shall be controlled from a suitable and adequate control centre and position. The control frequency, and where possible, the discrete frequencies, should be recorded on tape. If any participants are not familiar with the language used for control, a responsible person (preferably a team coach, manager or Air Attaché) who is proficient in the participant's language and the control language shall be present beside the controller.

## **2.11. DISPLAY BRIEFING**

The Display Director shall ensure that a detailed display briefing is given on the day of, and prior to, the display. Participating aircraft commanders and/or formation leaders shall attend the display briefing unless precluded by commitments or distance considerations. The Display Director shall ensure that participants who are unable to attend the display briefing receive the display briefing information (as much as is determined) by telephone or in writing as early as possible but not later than the day prior to the display. These participants shall confirm/update this briefing information with the Display Director by telephone on the day of, and prior to, the display. The display briefing shall include, but is not limited to, the following:

- a. Weather briefing, and minimum weather conditions.
- b. Radio frequencies and call signs.
- c. Details of the display air traffic zone.
- d. Location of display axis/axes, and details of run-in and departures lanes.
- e. Location and frontage of spectator enclosures.
- f. Details of holding areas.
- g. Details of avoidance and warning area.
- h. Details of local obstructions.
- i. Procedures in case of emergencies.
- j. Location of diversion fields.
- k. Details of jettison/ejection areas.

- l. Restrictions.
- m. Minimum clearance requirements.
- n. Procedures and sequence of flying activities.
- o. Time check.

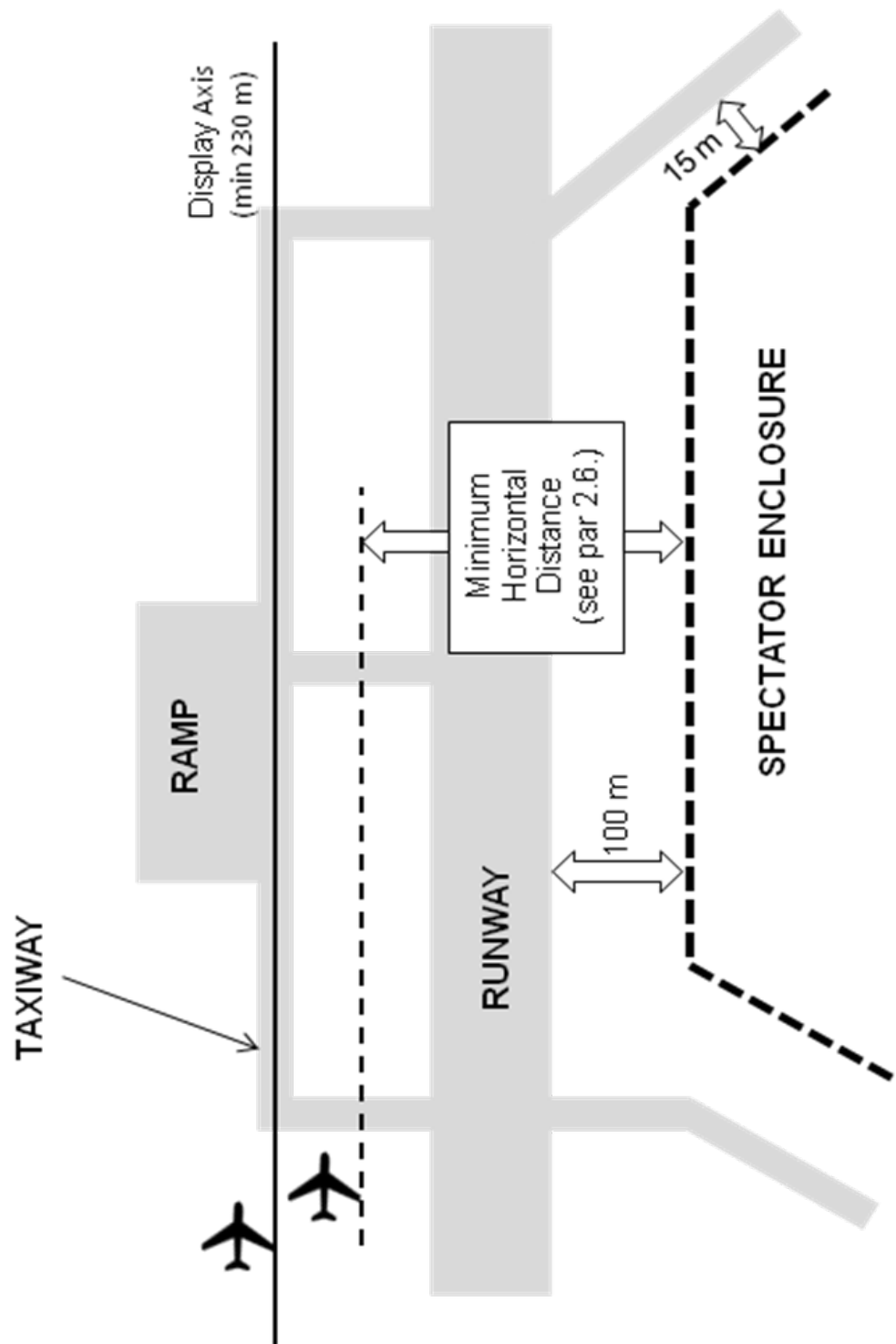
## **2.12. STATIC DISPLAY**

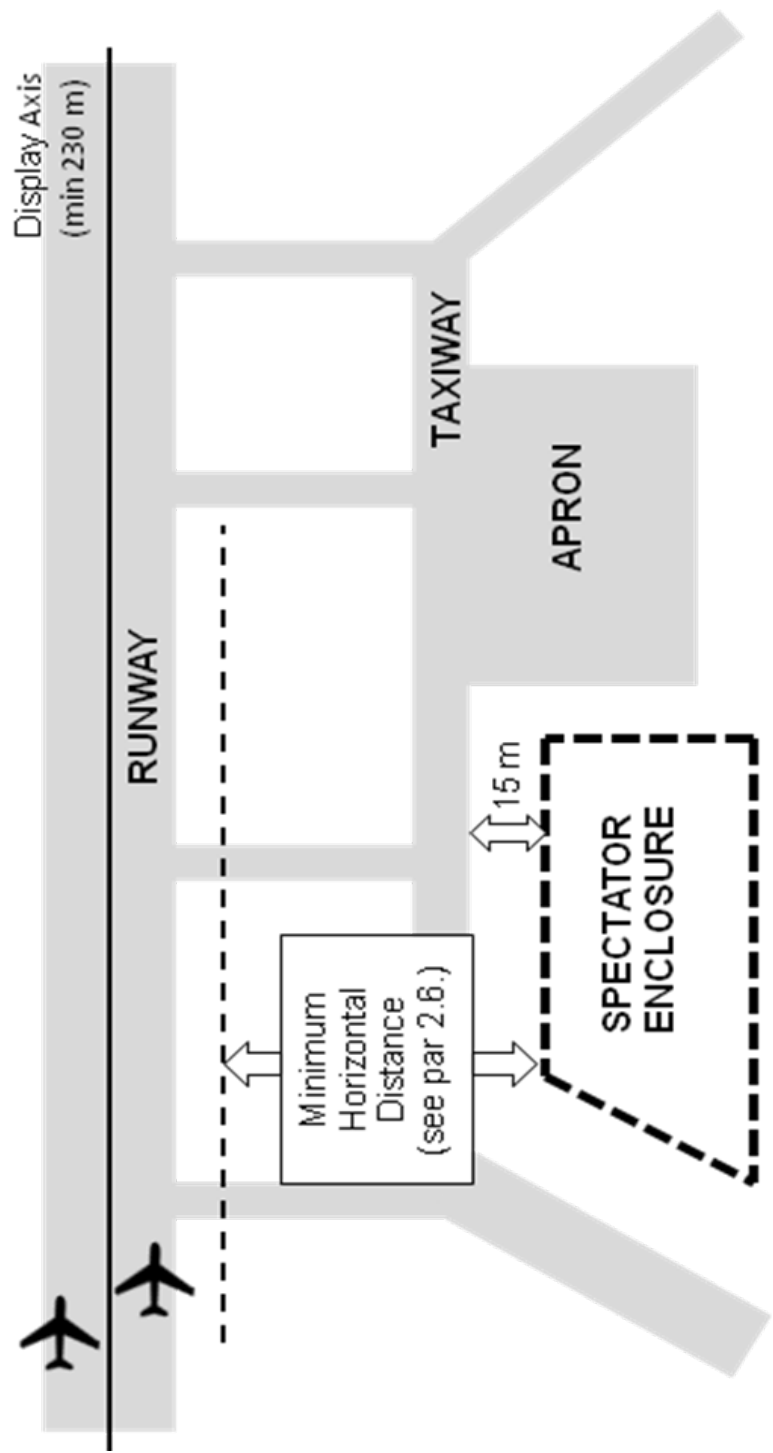
Aircraft that are open to the public or parked in areas accessible to the public shall be properly safeguarded to prevent injury to spectators or damage to equipment. In particular, the explosive charges in jettison and ejection systems shall be removed if the public has access to the cockpit. Safety precautions shall include:

- a. Compliance with all national static displays safety requirements.
- b. Adequate briefing of all those involved in the conduct of the static display.
- c. Enclosures for the aircraft and/or the posting of guards.
- d. The presence of qualified personnel when the aircraft is open to the public.
- e. Where possible, disconnecting the aircraft batteries or electrics unless these are essential for the display of electrically operated equipment.
- f. The installation/positioning of all safety devices, pins, guards, covers, wheel chocks, etc, and if available, engine intake and exhaust blanking plugs.
- g. The canopies of unattended display aircraft shall be closed.
- h. Detailed procedures for safety measures to be taken before engine starting and ground movement of aircraft.
- i. A thorough internal and external inspection prior to flight.
- j. A prominently displayed, clear and unmistakable ban on smoking within 15 m of aircraft, fixed refuelling areas, and refuelling trucks.

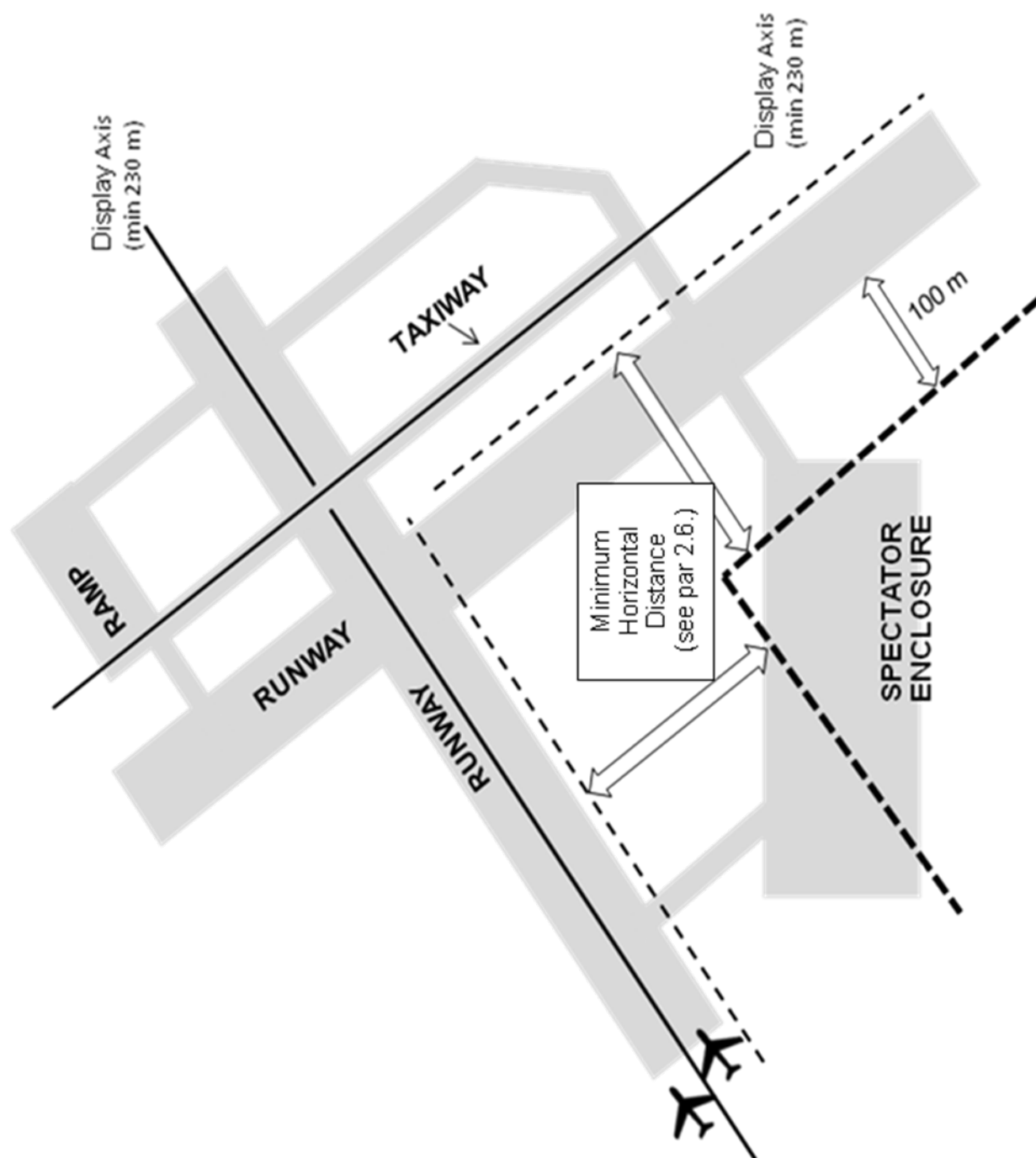
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ANNEX A- SPECTATOR ENCLOSURE LOCATIONS









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**ANNEX B - MINIMUM WEATHER CONDITIONS WITHIN THE DISPLAY AIR  
TRAFFIC ZONE**

Type of Manoeuvres	Number of Aircraft	Rotary- wing		VSTOL (power borne)		Fixed-wing	
		(1)	(2)	(1)	(2)	(1)	(2)
Fly Past (straight and level)	1	1.0	200	1.5	300	3.7	1000
	2-6	1.5	300	3.7	1000	3.7	1000
	7-16	1.5	300	3.7	1500	3.7	1500
	over 16	1.5	300	8	2000	8	2000
Aerobatic Flat Show (no vertical manoeuvres)	1	3.7	1000	3.7	1000	3.7	1000
	2-6	3.7	1000	3.7	1000	3.7	1000
	7-16	3.7	1000	3.7	1500	3.7	1500
Aerobatic Full Show	As issued by Display Director (see paragraph 1.9)						

(1) Visibility in km.

(2) Base of clouds in ft AGL (cover 5/8 and more)

**NOTE:** When one or more aircraft break away from a formation and continue in the demonstration, the minimum weather conditions which apply are those applicable to the separately sized group

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