



CIVIL AVIATION ADVISORY PUBLICATION

CAAP 15

FLYING DISPLAYS

GCAA PRESCRIBED TERMS FOR THE CONDUCT OF FLYING DISPLAYS

1. INTRODUCTION

1.1 General

The Civil Aviation Law requires that an aircraft flying acrobatically, in formation or as part of a display, requires the authorization of the appropriate Emirate Department of Civil Aviation (DCA) and in accordance with the terms prescribed by the Competent Authority (GCAA). This publication sets out those terms for the safety and administrative procedures to be followed by both the DCA and the organizer (hereafter referred to as the 'Flying Display Director') and participants in such events. Flying Display Directors, when making application for an Authorization to the DCA to hold a Flying Display, are required to confirm that the organization and conduct of the Flying Display will be in accordance with the provisions of this CAAP and any additional terms prescribed by the DCA. Nothing in this publication is intended to conflict with the CARs or other legislation which, in case of doubt, must be regarded as overriding.

1.2 Basis of Terms

This CAAP is based on the UK CAA CAP 403, which is in accordance with the Joint Aviation Authorities (JAA) 'Temporary Guidance Leaflet' No. 5 (TGL No.5). Applications to the DCA should be based on the guidance material contained in these references. As these terms could be UAE legislative requirements, compliance is required wherever the word "shall" is used in this document. Variation of these terms can only be granted by the GCAA in writing upon application from the DCA.

- Note 1: All Flying Displays are authorized by the appropriate DCA. However a condition of the authorization is notification to the GCAA by the DCA and a Letter of No Objection to the DCA from the GCAA.
- Note 2: Waivers and authorizations from the GCAA in respect to specific Flying Display participants and manoeuvres are required and application must be made from the DCA on behalf of the participant.

2. STATUS OF THIS CAAP

This is the first issue of CAAP 15, Flying Displays, dated 01 November, 2003. It will remain current until withdrawn or superseded.

3. APPLICABILITY

This CAAP applies to all flying displays, where aircraft are flown in proximity to the public or spectators and may include low flying, aerobatics, formation, or special activities unique to that aircraft. It would normally include air shows, open days (normally, but not necessarily at aerodromes) and promotional events but need not include stand-alone individual demonstration flights of an aircraft's capabilities. The conduct of low flying, aerobatics, formation, or special activities unique to that aircraft, where there is no public involvement (including practice for Flying Displays), still requires DCA authorization and conduct in accordance with GCAA terms.

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5. REFERENCES

- (a) UK CAA CAP 403
- (b) Joint Aviation Authorities (JAA) Temporary Guidance Leaflet No. 5 (TGL No.5).

6. TERMINOLOGY

Other terms applicable to Flying Displays, which are not applicable to this CAAP, may be found in the above references. Throughout this CAAP the following terms are used:

<i>Crowd Line</i>	The forward edge of the areas intended for spectators and any car park to which the public has access during a Flying Display.
<i>DCA</i>	The applicable Emirate Department of Civil Aviation, which is the Appropriate Authority under Civil Aviation Law.
<i>Display Authorization(DA)</i>	A National document, issued by the DCA, detailing the types or groups of aircraft in which a pilot is authorized to display, together with any limitations and other specific endorsements.
<i>Display Line</i>	A line defining the closest a display aircraft should approach the Crowd Line.
<i>Display Pilot</i>	A pilot who holds a Pilot Display Authorization or Exemption, issued by his appropriate National Authority, which allows him to take part in a Flying Display.
	Note: In the UAE this requirement only applies to civil display pilots. Military display pilots are approved and authorized as specified by the UAE GHQ.
<i>Event Organizer</i>	The Organizer of an event which includes a Flying Display.
<i>Flying Display</i>	Any flying activity deliberately performed for the purpose of providing an exhibition or entertainment at an event open to the public. This definition also applies to specific practice prior to the event.
<i>Flying Display Director</i>	The person responsible to the DCA for the safe conduct of a Flying Display.
<i>GCAA</i>	The UAE General Civil Aviation Authority, which is the Competent Authority under Civil Aviation Law.
<i>Spectator</i>	A person attending a Flying Display and remaining in the areas set aside for the public.

<i>Skill Levels</i>	The skill levels are as defined by the Commission Internationale de Voltige Aerienne (CIVA) of the FAI.
<i>Pleasure Flights</i>	Any passenger flight starting from, or arriving at, the display site purely for the purpose of commercial air transport flying. Note: In JAR TGL No. 5 the term ‘Local Flight’ is used for this definition.
<i>Static Aircraft Park</i>	A park for aircraft to which the public has access.
<i>Aircraft Parking Area</i>	A park for aircraft to which the public has no access.
<i>Car Parks</i>	Where the words ‘car parks’ are used in the text of this CAAP, the words are only intended to apply to car parks to which the public has access during the Flying Display.

7. LEGAL REQUIREMENTS

7.1 Legislation

7.1.1 Civil Aviation Law. Article 24 (4) of the Civil Aviation Law states that “no aircraft may be flown acrobatically, in formation or display, without the authorization of the Appropriate Authority (Emirate Department of Civil Aviation) and in accordance with the terms prescribed by the Competent Authority (GCAA).”

7.1.2 Civil Aviation Regulations. The following CARs may be applicable to aircraft operating at a Flying Display.

CAR Part III, paragraph 2.3

Minimum Heights

“Except when necessary for take-off or landing, or except by permission from the GCAA, aircraft shall not be flown over a congested area of cities, towns or settlements or over an open-air assembly of persons, unless at such a height as will permit, in the event of an emergency arising, a landing to be made without undue hazard to persons or property on the surface.”

CAR Part III, paragraph 2.5

Dropping Or Spraying

“Nothing shall be dropped or sprayed from an aircraft in flight except under conditions prescribed by the GCAA and in accordance with Part IV, Section B, Agricultural Aircraft Operations.”

CAR Part III, paragraph 2.6

Towing

“No person shall operate a civil aircraft towing any object, including a glider, unless that person has been issued a written authorization from the GCAA authorising the operation to be conducted.”

CAR Part III, paragraph 2.7

Parachute Descents

“Except in emergency, no pilot in command shall allow, and no person shall make, a parachute jump from an aircraft within the United Arab Emirates unless in compliance with Part IV, Section C, Parachuting Operations.”

CAR Part III, paragraph 2.8 Aerobatic Flight

“Unless specifically authorized by the GCAA no person shall operate an aircraft in aerobatic flight. Once authorized, no person shall operate an aircraft in aerobatic flight:

- (a) over any congested area of a city, town, or settlement;
- (b) over an open air assembly of persons;
- (c) within a control area (unless authorized by ATC), control zone, or airway;
- (d) below an altitude of 1500 feet above the surface; or
- (e) when the flight visibility is less than 8 km.”

CAR Part III, paragraph 2.9 Formation Flights

“No person shall operate an aircraft in formation flight except with the authority of the GCAA.

No person shall operate an aircraft, carrying passengers for hire, in formation flight.

Aircraft shall not be flown in formation except by pre-arrangement amongst the pilots in command of the aircraft taking part in the flight and, for formation flight in controlled airspace, in accordance with the conditions prescribed by the appropriate ATS authority(ies). These conditions shall include the following:

- (a) the formation operates as a single aircraft with regard to navigation and position reporting;
- (b) separation between aircraft in the flight shall be the responsibility of the flight leader and the pilots in command of the other aircraft in the flight and shall include periods of transition when aircraft are manoeuvring to attain their own separation within the formation and during join-up and break-away; and
- (c) a distance not exceeding 1 km laterally and longitudinally and 100 feet vertically from the flight leader shall be maintained by each aircraft.”

CAR Part IV, Section D, paragraph 2.2 Micro/Ultralight Operations

- “(a) No person may operate any ultralight or microlight aircraft in a manner that creates a hazard to other persons or property.
- (b) No person may allow an object to be dropped from an ultralight or microlight aircraft if such action creates a hazard to other persons or property.
- (c) No person may conduct aerobatic manoeuvres in an ultralight or microlight aircraft.
- (d) No person may operate in formation with another aircraft.
- (e) No person shall take off or land over buildings, roads in use and gatherings of persons.”

7.1.3 Waivers, authorizations and permits required by the above CARs may be obtained from the GCAA upon application from the applicable DCA. The DCA application should include sufficient justification and/or equivalent safety to warrant the request.

7.2 Department of Civil Aviation Responsibility

For any Flying Display, the compliance with these GCAA terms shall be the responsibility of the DCA. The DCA must satisfy itself that the organizer of a Flying Display and the participating pilots, are competent and conduct their aerial activities in accordance with DCA instructions and these terms. The DCA is required to ensure the UAE GHQ is notified and has issued any necessary permission and the applicable ATS has been notified and approval granted for flight above 250 knots below 10,000 ft if appropriate.

7.3 Authorization By DCA

7.3.1 The DCA authorization to participants shall be in writing and shall apply to the Flying Displays as well as to any practice or test sessions prior to the Displays.

7.3.2 Before an authority can be issued, the DCA must be satisfied that the Flying Display Director is a fit and competent person, having regard in particular to his previous conduct and experience, his organization, staffing and other arrangements, to safely organise the proposed Flying Display. For such an event, the Flying Display Director shall obtain an authority in writing from the DCA.

7.3.3 Similarly, a pilot must satisfy the DCA that he is a fit person to hold a DA (or acceptable equivalent authorization) and is qualified by reason of his knowledge, experience, competence, skill, physical and mental fitness. To this end, the pilot is required to provide such evidence and undergo such tests and examinations as the DCA may require of him/her. Attachment 1 is an example of a certificate supplied to the DCA or Flying Display Director by a participating pilot.

7.3.3 The DCA shall use either of the above references as the basis for authorization.

7.4 GCAA Involvement

7.4.1 General. The GCAA shall be notified by the Emirate DCA once an application for a Flying Display has been received. The GCAA does not approve the Flying Display.

7.4.2 GCAA Authorizations, Permissions and Waivers. Upon receipt of an application from the DCA, the GCAA shall process the necessary waivers, authorizations or permissions required by the CARs in a timely manner.

7.4.3 Participation. The GCAA shall be invited by the DCA to attend the final briefing to ensure all the terms of this CAAP are to be complied with. The nominated GCAA representative(s) shall also be invited to attend the Flying Displays and have access to the Flying Display Director and DCA coordinators. The GCAA may provide a Department of Flight Safety and Security Services Inspector(s) during the Flying Display, who can be available to the DCA in case a variation of these terms is requested.

7.4.4 Accident/Incident Investigation. The GCAA has the sole responsibility under the ICAO Annex 13 and the CARs to conduct the investigation into incidents and accidents of civil aircraft, which occur in the UAE. The GCAA may only be involved in military accidents and incidents, either upon request from the military, or for those occurrences which involve civil ATC or aerodrome issues.

8. FOREIGN PARTICIPATION

8.1 General

The GCAA require all participating display pilots to be authorized by the DCA. The DCA shall authorize these pilots in writing. The following information is to assist the DCA in making a determination for authorization.

8.2 Countries Operating a Display Authorization (DA) System

Certain countries have issued DAs to their display pilots. DAs issued by those countries may be recognized by the DCA for pilots participating in displays in the UAE.

8.3 Countries Without a DA System

A foreign civil licensed pilot from a country without a DA system wishing to take part in a Flying Display, must provide an equivalent document or evidence of competency to the DCA for review. The DCA may authorize those pilots without a DA but may request a competency demonstration in accordance with the above references at Section 5.

8.4 Foreign Military Participation

All military display teams require the specific approval of the UAE GHQ before participating in a civil Flying Display. Flying Display Directors should seek early clarification from the UAE GHQ if they believe that such teams or display items will be participating in their Flying Display. This is a DCA responsibility.

8.5 Civil Foreign Registered Aircraft

Operators of civil foreign registered aircraft appearing at any UAE Flying Display, shall provide copies of the Certificate of Insurance for the benefit of its crew, passengers and third party on the surface, the Certificate of Registration and the Certificate of Airworthiness to the DCA. Where foreign registered aircraft are carrying passengers during any display, the DCA must ascertain that the aircraft is permitted to do so by the State of Registry. Any civil foreign registered aircraft operating on an Experimental C of A or any form of non-standard or restricted Certificate of Airworthiness, including a Permit to Fly, requires an exemption to fly in UAE airspace. Exemptions may be issued by the GCAA Airworthiness Section upon application from the DCA.

9. UAE PARTICIPATION

9.1 General

The GCAA require all participating display pilots to be authorized by the DCA. The DCA shall authorize these pilots in writing. The following information is to assist the DCA in making a determination for authorization.

9.2 Civil Participants

The GCAA does not issue DAs to UAE display pilots and the DCA may recognize foreign DAs for UAE licensed pilots participating in displays. A UAE civil licensed pilot without a DA wishing to take part in a Flying Display, must provide an equivalent document or evidence of competency to the DCA for review. The DCA may authorize those pilots without a DA but may request a competency demonstration in accordance with the above references at Section 5.

9.3 Military Participation

All UAE military display teams require the approval of the UAE GHQ before participating in a civil Flying Display.

9.4 UAE Registered Aircraft

UAE registered aircraft appearing at any UAE Flying Display do not require authorization from the GCAA unless the aircraft requires a waiver against the CARs or is flown outside its Operations Specifications (for commercial operator) or private operation authorization (for private operator). A waiver, if required, may be granted after the operator submits an application through the DCA, which includes the complete flying sequence.

Any UAE registered aircraft operating on an Experimental C of A or any form of non-standard or restricted Certificate of Airworthiness, including a Permit to Fly, requires an exemption to participate in any Flying Display. Exemptions may be issued by the GCAA Airworthiness Section.

10. PERSONNEL RESPONSIBILITIES

10.1 General

The following information is to assist the DCA in organizing the Flying Display.

10.2 The Event Organizer

One person shall be approved by the DCA and assume overall responsibility as the Event Organizer. Responsibility for particular aspects (such as site survey, Air Traffic Services, provision of emergency services and conduct of flying activities) should only be allocated to people with the appropriate experience and, if applicable, licences. The event organizer may be the Flying Display Director.

10.3 Responsibilities Of The Flying Display Director

10.3.1 The Flying Display Director is the person responsible to the DCA for the safe conduct of the Flying Display and shall be named as such on the authority issued by the DCA under Article 24 of the Civil Aviation Law. It therefore follows that the Flying Display Director must be suitably experienced, dependent upon the size and complexity of the Flying Display, in all matters relating to flying in general and Flying Displays in particular before being appointed to the position. The Flying Display Director is responsible for flying discipline generally, the approval of individual display routines, control of the Flying Display programme and cancellation or modification to the programme in the light of prevailing weather or other conditions.

10.3.2 The Flying Display Director also has the prerogative to set higher limits than the minima specified in the display Authorization, either individually, if he has reason to believe an individual pilot requires greater safety margins, or generally, if he believes that the whole Flying Display should be flown to higher minima.

10.3.3 At a small Flying Display of 3 or less display items, the Operator or Commander of a participating aircraft may be nominated by the DCA as the Flying Display Director.

10.3.4 At a medium size Flying Display the role of Event Organizer and Flying Display Director may be combined if the Event Organizer is suitably qualified and with DCA approval. At the larger displays, it is recommended that a separate Flying Display Director is nominated to control the flying aspects.

10.3.5 The DCA shall ensure that Flying Display Directors of displays consisting of 7 or more items shall not take any flying role in the Flying Display.

10.3.6 The DCA shall ensure that the Flying Display Director has adequate communications with all appropriate agencies and the Flying Display participants throughout the Flying Display.

10.4 Responsibilities Of The Flying Display Committee

10.4.1 For large displays, which include foreign and/or military participation, the DCA shall ensure that a Flying Display Committee (FDC) is established. The roles of the FDC are:

- (a) to assist the Flying Display Director in the assessment of submitted display profiles;
- (b) to assist the Flying Display Director in monitoring display standards;
- (c) to provide specialist knowledge for specific display items;
- (d) to offer opinion in depth in the case of infringement of the regulations.

10.4.2 The majority of the FDC should be available throughout the period of the Flying Display. They should assess all items for breach of the display regulations, passing their comments to the Flying Display Director for appropriate action. One member of the FDC should be positioned on the Crowd Line, with direct communication to the Flying Display Director whilst flying is in progress. At least one member of the FDC should hold a current DA. It is recommended that members of the FDC do not take part in the display that they are monitoring. In normal circumstances the Chairman of the FDC should be the Flying Display Director.

10.5 Responsibilities Of Officials

10.5.1 Experienced staff must be detailed to supervise the parking of aircraft and cars, to operate any public address system, and to control messengers and other staff. Sufficient marshals must be available, either from the police or within the Flying Display organization, to control members of the public, to ensure that emergency vehicle access is kept clear, to be available in the case of emergency and to prevent public access beyond the Crowd Line.

10.5.2 It is generally possible to find persons competent to undertake such duties from among the membership of a flying club or other suitable aviation organization. At a large Flying Display, only persons trained and experienced in flight line ground handling of aircraft must be used in the aircraft movement area. For car parking, the services of one of the organizations which specialise in the arrangement and management of car parks may be worth considering. All officials must be thoroughly briefed in the duties expected of them and provided with some means of identification, such as arm-bands.

10.6 Responsibilities Of The Flight Crew

10.6.1 Any civil display pilot taking part in a Flying Display, which requires an authority from the DCA under Article 24 of the CAL, shall either possess a current and valid DA issued by the appropriate State, (or acceptable equivalent), or be specifically authorized by the DCA. Balloon pilots need not hold DAs to participate in tethered balloon Flying Displays, provided that the pilot has carried out a minimum of one tether, either for practice or at a Flying Display, in the 90 days preceding the Flying Display in question, or be specifically authorized by the DCA.

10.6.2 Exemptions from the need to hold a DA may exceptionally, be issued by the DCA provided no authorization, permission or waiver is required from the GCAA. This is of particular relevance to Air Operator's Certificate (AOC) operators (large transport aircraft, police, medical and S & R helicopters etc.) where the display given is a role demonstration or simple flypast. Before a DA Exemption can be considered, the proposed demonstration must be recommended to the DCA by the Flying Display Director.

10.6.3 Military display pilots are approved and authorized as specified by the GHQ. Flying Display Directors should note, however, that military pilots are subject to the limitations imposed within the Flying Display Authorization issued by the DCA when they appear at a civil Flying Display.

10.6.4 A participating civil pilot shall hold a valid flight crew licence (or validation of the licence) issued by the State of Registry, which entitles him to fly the type of aircraft to be displayed.

10.7 Responsibility of Aircraft Commander

The responsibility for ensuring that an aircraft is operated in accordance with its Certificate of Airworthiness or Permit to Fly rests with the aircraft commander.

10.8 Responsibility For Preliminary Planning

The Event Organizer and the Flying Display Director will in particular need to consider and make arrangements for:

10.8.1 Event site and Flying Display management covering:

- (a) site assessment;
- (b) spectator enclosures, car parks and public address system;
- (c) parking and ground manoeuvring of aircraft (participants, visitors, static display);
- (d) the Display Line;
- (e) over flight of spectators;
- (f) setting of minimum heights;
- (g) aircraft maximum speeds;
- (h) weather minima;
- (i) use and allocation of radio frequencies;
- (j) ground special effects safety;
- (k) briefing;

- (l) document checks and insurance;
- (m) pilot display programmes;
- (n) pleasure flights;
- (o) parachuting as part of a Flying Display;
- (p) model aircraft as part of a Flying Display.

10.8.2 Liaison with the DCA and the Local Authorities and Emergency Services including:

- (a) notification of time scales;
- (b) liaison with the Local Authority and emergency services.

11. LIAISON WITH AUTHORITIES

11.1 Notification To The DCA

The smooth and expeditious planning for a Flying Display, or any other Special Event, requires that various applications are made to the DCA in an appropriate time scale.

These time scales are dictated by the requirements of the DCA to discharge their obligations to third parties, to achieve preparation of appropriate documentation and to achieve satisfactory dissemination of the information to all interested parties.

11.2 Liaison With Local Authority And Emergency Services

11.2.1 Liaison with the Local Civil Defence, the Police and the Emergency services (including Coastguard for offshore display sites) at the start of the planning for the Flying Display or other Special Event is absolutely vital. Given the considerable variation of Flying Display activity, both in terms of size and content, it is impossible to specify in detail what level of emergency cover should be provided. The specific local circumstances, the availability of on-site services (particularly at an active airfield), the type and numbers of aircraft displaying and the anticipated crowd size will all influence the level of emergency cover required.

11.2.2 The DCA shall be responsible for an agreement with the local police and emergency services so that the planned support levels from all emergency services are adequate to meet the needs of any foreseeable emergency situation.

11.2.3 DCAs are advised to carry out a Risk Assessment, in co-ordination with the emergency services, of all planned Flying Display, general flying and ground related activities associated with the event. This assessment should confirm the level of emergency cover required and what planning provisions need to be made in the Emergency Plan.

11.3 The Emergency Plan

11.3.1 Written instructions on the action to be taken in the event of an aircraft accident or other emergency shall be drawn up by the DCA for the guidance of all persons concerned with the running of the event.

11.3.2 The extent of the Emergency Plan will vary depending on the size of the event. At a single aircraft Flying Display it may suffice to have a list of contact telephone numbers for the local emergency facilities (plus a mobile telephone). At major Flying Displays, a comprehensive written plan will be required specifying the responsibilities of all parties in the event of an emergency situation arising. The Emergency Plan must be agreed by all the services having a role to play within the plan.

11.3.3 The DCA should exercise the Emergency Plan prior to the Flying Display to ensure that all the emergency services are familiar with their roles and the layout of the site. This should include a full, on-site practice emergency.

11.3.4 Non-aircraft related emergencies and accidents must not be overlooked in the emergency planning.

12. THE FLYING DISPLAY MANAGEMENT

12.1 General

The following information is to assist the DCA in organizing the Flying Display.

12.2 Site Assessment

12.2.1 Where the Flying Display is held at a UAE National or International aerodrome the DCA shall be responsible for ensuring that the conditions of the aerodrome licence (if any) are not infringed. If any such condition is likely to be infringed then early discussion must take place between the Event Organizer or the Flying Display Director, the DCA and the GCAA. The DCA must be involved at all stages of preparation for the Flying Display.

12.2.2 Whilst many Flying Displays and Special Events are held at aerodromes and can take advantage of facilities already available, a number are staged at other sites. In assessing any proposed site the Flying Display Director should take into account:

- (a) The suitability of surfaces used by aircraft for take-off, landing and taxiing.
- (b) The take-off and landing distances available and required.
- (c) Obstructions in the vicinity, with regard to the aircraft types which are expected to take part.
- (d) The proximity of congested areas, particularly if they include schools or hospitals. A congested area is defined as being any area in relation to a city, town or settlement which is substantially used for residential, industrial, commercial or recreational purposes. It should be noted that, with few exceptions, flight below

1500ft over such areas is illegal except when an aircraft is taking-off, practising approaches to or landing at an aerodrome.

- (e) The proximity of any sensitive area (palaces or prison etc). Local police should be able to advise on such areas.
- (f) The presence of livestock (particularly horse studs, dairies or chicken farms), or wildlife conservation areas.
- (f) The proximity of controlled airspace, other aerodromes, heliports, helipads, airstrips, microlight sites, gliding sites, ballooning sites, parachuting, hang gliding and paragliding sites.
- (g) The availability of clear entry and exit routes for emergency service vehicles appropriate to the scale of the event.

12.2.3 A site is sometimes used merely for the assembly of spectators and aircraft do not take-off or land there. In such cases items (a) and (b) above do not apply.

12.2.4 Flying Display Directors should consider imposing, if appropriate, minimum height restrictions over local sensitive and congested areas. Details of any restrictions imposed should be clearly promulgated to participating pilots in the Flying Display instructions.

12.2.5 Gas-filled toy balloons when released are a potential hazard to aircraft. Event Organizers must ensure that the vendors of such balloons are not allowed into the public enclosures.

12.2.6 Gas-filled advertising balloons shall not be flown in captive flight at or near an aerodrome without written permission from the DCA. If such permission has been granted or, in any event if the Flying Display is not sited at an aerodrome, the Event Organizer must arrange that any such balloon is lowered to ground level during the period of aircraft flying activity.

12.3 Spectator Enclosures, Car Parks And Public Address System

12.3.1 The Flying Display Director must carefully select sites for the spectator enclosures and car parks in relation to the aircraft flight paths during the Flying Display. Any area to which the public has access shall never be located closer than the appropriate distance to the planned Display Line or area.

12.3.2 Spectator enclosures and car parks must be positioned behind the Crowd Line, which is usually parallel to the Display Line. Normally spectator enclosures and car parks should be confined to one side of the site thus allowing aircraft maximum freedom of movement on the other side.

12.3.3 If no practical alternative exists, spectator vehicles and visiting aircraft may be parked under the Display Line or area provided the Flying Display Director does not permit access to these areas by the public for the duration of the Flying Display.

12.3.4 A public address system covering the spectator enclosures is of great assistance in crowd control and is essential where large numbers are involved. Such a system, when installed, must be audible along the entire length of the Crowd Line. If desired, arrangements can be made to switch off a selected number of loudspeakers for a period.

12.3.5 The commentator should be in a position where important messages or emergency information can be given to him for rapid broadcast to the public. Consideration should be given to pre-planning certain messages to cover possible major emergency situations.

12.4 Parking And Ground Manoeuvring Of Aircraft

12.3.1 Aircraft taking part in the Flying Display should be segregated from both visiting and static aircraft parks unless arrangements are made to tow aircraft from the static aircraft parks to an aircraft parking or manoeuvring area, appropriately segregated from the public, prior to start. In this case, adequate arrangements must be made to ensure public safety during the aircraft move. Under no circumstances will aircraft have any engines running or move under their own power.

12.3.2 Appropriate security should be in place to guard against interference with aircraft. Pilots should be advised to ensure that starting systems etc. are isolated. Fire extinguishers should be readily available and aircraft should be parked so that fire vehicles can achieve easy access and move freely among them. Parking areas should be out of bounds to spectators when aircraft engines are running or aircraft are taxiing.

12.3.3 The DCA shall ensure that spectator enclosures and car parks are sited away from taxiway and runway strips and so arranged that no part of a taxiing aircraft shall pass within 10 metres of them. This distance will need to be increased significantly if spectators are positioned behind or close to where aircraft are ground running engines particularly in the case of high powered aircraft, jet aircraft or large helicopters and more particularly when aircraft are likely to use significant amounts of power such as when turning. Helicopters should only be permitted to ground taxi in the above circumstances.

12.3.4 The DCA shall not allow spectators closer than 15 metres to any fixed refuelling area, nor closer than 15 metres radially from any fuelling or venting point on an aircraft or bowser whilst refuelling is being carried out.

12.3.5 Effective barriers and marshalling arrangements are required to keep spectators clear of aircraft manoeuvring areas. Areas in which spectators are not permitted must be properly enclosed at all times. Marshallers must be detailed to control the movement of spectators throughout the event.

12.3.6 In the interests of safety, the DCA shall not permit smoking in aircraft parking areas or static aircraft parks.

12.4 The Display Line

12.4.1 Displaying aircraft perform relative to the Display Line, which must be clearly identified. On an aerodrome this is usually parallel to a runway or, on off-aerodrome sites,

parallel to some significant feature. Where the Display Line is not clearly delineated by a paved runway or other obvious line feature it shall be marked with Dayglo pyramids or panels, whitewashed lines or by some other suitable method.

12.4.2 Marking of more than one Display Line is at the discretion of the Flying Display Director. Ideally, two clearly defined lines, covering the separation distances most likely to be used by pilots during the Flying Display, should be available allowing pilots to interpolate for intermediate distances. Intelligent positioning of the Crowd Line in relation to existing ground features, such as the runway edges, can be of great assistance in this respect.

12.4.3 The display datum or centre should be clearly marked where this is not co-located with some obvious ground feature.

12.4.4 The distance between the Display Line and the Crowd Line is related to the speed of the aircraft and the type of display. For aircraft flying in formation, the distances are applicable to the aircraft performing nearest to the Crowd Line.

12.5 Aircraft Take Off And Landing

12.5.1 Aircraft may take-off and land provided the runway centre line is at least 75 metres from the Crowd Line. The DCA may grant a concession to allow a lesser distance where geographical or topographical features or the layout of the airfield restrict the distances available. The grant of any concession may be conditional on the type of aircraft to be used in the Flying Display.

12.5.2 The runway should be kept available to the maximum extent for emergency purposes during the Flying Display and aircraft departing and landing should minimise the time they occupy the runway whilst other aircraft are displaying. Certain display items, such as the military formation teams, may require the runway to be available for emergency landings for the duration of their display.

12.6 Ground Special Effects Safety

The DCA shall ensure that the use of explosives for simulated ground bursts, smoke and other special effects are strictly controlled by a competent person appointed by the Event Organizer or the Flying Display Director. Debris from such effects must not impinge on aircraft, the spectators or the runway/taxiways and to this end the scale of any effects must be known before the event. Briefings for ground officials and display pilots must draw attention to the hazardous nature of such devices and authorization of all involved display pilots must be achieved before any demonstration goes ahead. The DCA shall ensure that the location of the explosives and safety radii, if appropriate, is out of bounds to all staff and spectators except those directly involved with their operation.

12.7 Use Of Radio Frequencies

12.7.1 With the exception of small events, most Flying Displays will require the use of some level of radio communications. The use of radio frequencies should be coordinated with the UAE Ministry of Communications.

12.7.2 Flying Display Directors should endeavour to allocate a quiet frequency for use during the Flying Display with another frequency being available for administrative requirements and control of non-display aircraft. If only one frequency is available, the Flying Display Director must emphasise, in the written brief and at the verbal briefing, the need for good R/T discipline and for the minimum use of R/T.

12.8 Pilot Display Programmes

12.8.1 The DCA shall ensure that the Flying Display Director is familiar with each pilot's planned sequence of display and that it complies with the appropriate safety criteria. Both the full display sequence and any bad weather alternatives should comply.

12.8.2 The DCA shall ensure that Flying Display Directors are aware that pilots of display aircraft are not permitted to carry out any form of impromptu display such as on arrival (unless a pre-planned and agreed display practice) or departure.

12.9 Carriage of Persons on Board Display Aircraft

The DCA shall ensure that no persons other than minimum crew are on board a civil aircraft during the display unless the prior written permission of the DCA has been obtained. The minimum crew is that stated in the appropriate aircraft documentation (AFM, Operations Manual, Permit to Fly, Pilots Notes etc). However, additional flight crew or specialist maintenance personnel employed by the aircraft operator may be carried.

12.10 Displays by Air Operator's Certificate Operators

12.10.1 Displays by foreign and UAE AOC operators (large transport aircraft, police, medical and SAR helicopters etc.) will normally be conducted under an Exemption from the need to hold a DA issued by the DCA. The requested display profile is to be submitted in advance to the DCA. The DCA may need to consult with the GCAA in regard to UAE operators.

12.10.2 Formation flights by large commercial air transport aircraft will not normally be permitted but specific applications to the GCAA will be considered on their merits.

12.11 Document Checks And Insurance

12.11.1 The DCA shall ensure all participants hold the required licences and DA and that aircraft documents, including insurance, are in order. Flying Display Directors are advised to check all required pilot/aircraft documentation details (Pilot Licence, DA, display currency confirmation, aircraft airworthiness documents (C of A, Permit to Fly, insurance etc.) prior to the date of the Flying Display.

12.11.2 Although there is no requirement within UAE civil aviation legislation for specific third party insurance cover of Flying Displays and other aviation events, DCAs and participants are strongly advised to give this particular aspect serious consideration. This type of insurance may be a local authority requirement. Insurance cover is normally conditional on compliance with legal requirements, and violation of the law or the conditions of an Authorization or Exemption may render insurance invalid.

12.11.3 DCAs and Event Organizers are strongly advised to seek professional guidance on liability aspects and to obtain advice from a reputable insurance broker with aviation experience as to the appropriate level of third party liability coverage that should be effected. This should be done at the earliest possible stage in planning.

13. BRIEFING

13.1 General

13.1.1 Regardless of the size of the Flying Display, the importance of thorough, formal briefing cannot be over-emphasised. The DCA shall ensure that no pilot will take part in a Flying Display unless he has received an appropriate briefing.

13.1.2 A comprehensive written brief on the arrangements for the flying programme should be circulated in advance to all participating pilots, Air Traffic Control, pleasure flight operators and those in charge of particular aspects of the display, such as safety services.

13.1.3 The DCA shall ensure a formal verbal briefing is given on each day of the Flying Display and at any rehearsal or press day, and all participants must attend if physically possible. The briefing should include a meteorological forecast, Air Traffic briefing, a time check, any changes to the programme or procedures, and a reminder about the authority of the Flying Display Director to curtail or modify the display programme once it has started. The need for strict adherence to procedures should be stressed, particularly in the event of cancellation of part or the whole of the programme. Pilots must also be specifically reminded that they may not fly over spectator enclosures or car parks, or make turns towards them which cannot be completed without infringing the safety zone between the Display Line and the Crowd Line. If a NOTAM or Temporary Restricted Airspace (TRA) has been issued, specifying the limits of the airspace within which the aircraft will be performing, pilots must be reminded of the need to keep within those boundaries, and of the fact that they are still required to observe the rules for avoiding aerial collisions.

13.1.4 The DCA shall ensure that the display minima, whether these be DA or other limits imposed by the DCA or the Flying Display Director, are confirmed at the verbal

briefing. The extent and method of marking the Display Line(s) and display datum must be confirmed, preferably with the use of a large scale map.

13.1.5 The DCA shall ensure participants not landing at the Flying Display site or flying in to display prior to landing contact the Flying Display Director by telephone, or other means, immediately prior to the display to obtain a formal briefing and to confirm the display timing.

13.2 The Written Brief

The Flying Display Director is responsible for ensuring that, in advance of the Flying Display, all participants are sent a written flying briefing. The content of the briefing will vary depending on the complexity of the Flying Display but the following items should, where appropriate, be included:

- (a) Place, date, time (UTC or local time) and duration of the Flying Display.
- (b) Provisional flying programme.
- (c) Map of the display location showing the site layout and local area with spectator enclosures, car parks, the Crowd Line, Display Line(s) or area and any adjacent sensitive areas clearly marked.
- (d) Air Traffic Services information including:
 - (i) Type of Air Traffic Service available to pilots – A/G, AFIS or ATC
 - (ii) Arrival and departure procedures
 - (iii) Radio frequencies and, if required, transponder codes
 - (iv) Procedures during the Flying Display
 - (v) Holding areas and altitudes
 - (vi) Adjacent Air Traffic conflicts
 - (vii) Local flying restrictions
- (e) Flying Display limits and weather minima.
- (f) Need for aircraft commanders to ensure that the aircraft is operated in accordance with any airworthiness limitations.
- (g) Only manoeuvres that are known and have been practised, including bad weather ‘flat-shows’, to be flown.

- (h) Aircraft positioning at all times to be such that, in the event of an engine or airframe failure causing a forced landing or uncontrolled ground impact, this would be outside the crowd area.
- (i) Documentation – Copies of all required pilot and aircraft documentation to be forwarded prior to the Flying Display.
- (j) Unless specifically authorized in writing by the DCA, only minimum crew to be carried during the Flying Display.
- (k) Procedures to be followed when the Flying Display includes parachuting or parasending.
- (l) Procedures for cancellation or variation of programme.
- (m) Aircraft parking and refuelling.
- (n) Arrangements for pleasure flights and visiting aircraft.
- (o) Emergency services and procedures.
- (p) Contact details for the Flying Display Director and other organization personnel.
- (q) Administrative arrangements – hotel, road transport, feeding arrangements etc.
- (r) Details of place and time where the formal pre-Flying Display briefing will be conducted at the event.

13.3 The Verbal Brief

The Flying Display Director is responsible for ensuring that all participating pilots receive a verbal briefing prior to the Flying Display on each day of the event. A copy of the Flying Display Permission must be available at the briefing. At Flying Displays on non-airfield sites, or for participants who are flying into a display from a different location, this briefing may be conducted by telephone. The following items should be included in the briefing:

- (a) Time check (UTC or local time).
- (b) Attendance check.
- (c) Air Traffic Services information including:
 - (i) Type of Air Traffic service available to pilots – A/G, AFIS or ATC
 - (ii) Arrival and departure procedures
 - (iii) Radio frequencies and, if required, transponder codes
 - (iv) Procedures during the Flying Display

- (v) Holding areas and altitudes
- (vi) Adjacent Air Traffic conflicts
- (vii) Local flying restrictions
- (d) Weather briefing including current actual conditions, forecast for the duration of the display and conditions at any required diversion airfields.
- (e) Conditions of the Flying Display Permission and the associated display and weather minima.
- (f) Layout of the spectator enclosures, car parks, the Crowd Line, Display Line(s) or area and any adjacent sensitive areas.
- (g) Review of the flying programme including:
 - (i) Confirmation of pilots, aircraft and call signs and any individual minima, restrictions or requirements.
 - (ii) Programme timing.
 - (iii) Proposed plan if timing running early or late.
 - (iv) Specific briefing on any parachuting activity.
 - (v) Activities before and after the Flying Display programme.
- (h) Handling of ground and air emergencies, including R/T failure, and associated procedures and services available.
 - (i) Any specific ground handling, parking or refuelling procedures.
- (j) Contact telephone numbers and/or location for the Flying Display Director or his deputy throughout the period of the Flying Display programme.

14. FLYING DISPLAY OPERATIONS

14.1 Proximity To Crowd Line

14.1.1 The DCA shall ensure that the speed ranges given below are the maximum display speed of the aircraft at any particular time during the display. A pilot shall observe these distances and may vary the separation distances if the speed of the aircraft varies during the display. If any doubt exists about a particular aircraft and the relevant distances, the DCA should be consulted. For aircraft flying in formation, the distances are applicable to the aircraft performing nearest to the Crowd Line. The minimum distances are as follows:

Aircraft Display Speed	Flypast	Aerobatics	Helicopter >3175 kg
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100 – 200 kts IAS	50 metres	100 metres	150 metres
100-200 kts IAS	100 metres	150 metres	
200 – 300 kts. IAS	150 metres	200 metres	
Above 300 kts IAS	200 metres	230 metres	

14.1.2 Pilots should plan their flying sequence such that they can always regain the Display Line without infringing the minimum lateral separation distance from the Crowd Line. Effects of any on-crowd velocity vectors and on-crowd wind component must be taken into account.

14.1.3 The DCA shall ensure that rotorcraft are not be flown in such proximity to spectators' enclosures, buildings or aircraft on the ground as to cause a possible hazard either from downwash or as a result of control difficulties. Similarly, helicopters with under slung loads should only be flown over clear areas.

14.1.4 The DCA shall ensure that aircraft involved in dropping or spraying operations shall not be flown as to cause a possible hazard to persons on the ground.

14.2 Aerobatics

The DCA should make reference to the FAI Aerobatic Catalogue when determining the type of aerobatics to be performed. It should be appreciated that some manoeuvres are not contained in that catalogue although they are recognised internationally.

14.3 Over flight Of Spectators

The DCA shall ensure that, with the exception of the military formation teams, display aircraft do not overfly the spectator enclosures or car parks below 1000 feet.

14.4 Parachute Dropping Aircraft and Parachutists

The aircraft containing a parachute team may overfly the spectators enclosures or car parks whilst positioning to drop the team but the DCA shall ensure that the aircraft does not fly below a minimum height of 1500 feet above surface level.

14.5 Manned Balloon Separation Criteria

The DCA shall ensure that manned balloons do not overfly the spectator enclosures or car parks below the following minimum heights:

Type of Display	Separation Distance	Minimum Height and Conditions for Over flight of the Spectators
Tethered Flight	20 metres	N/A
Free flight take-off from the display area	20 metres	75 feet above ground level in climbing flight. 50 feet clear of obstacles.
Free flight landings into the display area	50 metres	300 feet above ground level for over flight in level flight. 50 feet clear of obstacles.

14.6 Setting Of Minimum Heights

14.6.1 Where Flying Displays are held at an aerodrome, the DCA may authorize the Flying Display Director to allow pilots to fly down to the minimum height specified in their individual DA.

14.6.2 Where Flying Displays are held away from an aerodrome, the DCA shall impose a minimum height. This is usually 200 feet above ground level over land and 100 feet above surface level over water. Higher minima may be imposed if considered necessary at a particular venue.

14.6.3 Irrespective of the location, Flying Display Directors are free to impose higher limits.

14.6.4 The DCA shall ensure that Flying Display Directors brief pilots of the minimum heights applicable at the Flying Display in both verbal and pre-circulated written briefings.

14.6.5 Pilots of military aircraft participating in a civil Flying Display should be asked to advise the Flying Display Director of their individual height minima. Where the limits laid down in the Authority issued by the DCA are higher than the military pilots limits, the pilot is to be informed that the more stringent limit applies during the Flying Display.

14.6.6 The DCA shall ensure that for parachute displays, the minimum height by which parachutists must have their main parachute open is 2000 ft agl. FAI 'D' Certificate holders on displays may, exceptionally be authorized by the DCA, to deploy the parachute so as to be open by 1500 feet agl.

14.7 Aircraft Maximum Speeds

14.7.1 The DCA shall ensure that an absolute true limit of Mach 0.90 or 600kts, whichever is reached first, shall not be exceeded in straight and level flight. Aircraft flying at or approaching this speed should reduce speed further before initiating any manoeuvre to avoid inadvertent sonic booms.

14.7.2 Aircraft taking part in Flying Displays, for which an Authority has been granted by the DCA, are normally exempt from the maximum speed limit of 250kts IAS when flying below 10,000 feet in United Arab Emirates airspace. Flying Display Directors should clarify this with the DCA and be aware that this exemption only applies during the validity period of the Flying Display Authorization and within the vicinity of the Flying Display site.

14.8 Weather Minima

14.8.1 Minimum weather conditions must be determined in advance, published and strictly observed. The DCA shall ensure that the following weather minima be observed:

Aircraft Type	Type of Display		Weather Minima	
			Cloud Ceiling or > 4/8 cloud	Visibility
V/STOL aircraft, Rotorcraft and other aircraft with a stalling speed below 50 knots.	Flypasts or Flat Aerobatic Displays	Solo Aircraft	500 ft*	1.5 km
		Formations	500 ft	3.0 km
	Full Aerobatic Displays	Solo Aircraft	500 ft	3.0 km
		Formations	800 ft	5.0 km
Flying Displays by other aircraft	Flypasts or Flat Aerobatic Displays	Solo Aircraft	500 ft	3.0 km
		Formations	800 ft	5.0 km
	Full Aerobatic Displays	Solo Aircraft	1000 ft	5.0 km
		Piston Formations	1000 ft	5.0 km
		Jet Formations	1500 ft	8.0 km

* Note: The minimum cloud base may be reduced to 250 ft agl when aircraft are operating from the Flying Display site. Flights at this lower level should only be allowed in the display area.

14.8.2 Flying Display Directors should consider carefully the operating characteristics of participating aircraft, which may necessitate specific increases in the above minima. Military displays, particularly jet formations, may have significantly higher weather limitations than those specified.

14.8.3 The minima for cross country Air Races should be VFR whether associated with a Flying Display or not:

14.8.4 It should be borne in mind that participants may be further restricted by their licence or rating privileges.

14.9 Pleasure Flights

14.9.1 The DCA shall ensure that pleasure flights are only conducted by operators holding an AOC. With the exception of flights in helicopters, or specifically approved by the GCAA, pleasure flights may take place only at a UAE National or International aerodrome.

14.9.2 Flying Display Directors are required to coordinate pleasure flights and ensure that they do not take place during the Flying Display period itself, unless the prior approval of both ATC and the Flying Display participants has been obtained. At other times care should be taken to ensure integration with other aerodrome traffic.

14.9.3 The DCA shall ensure that aircraft engaged on pleasure flights are parked away from aircraft taking part in the Flying Display itself, and passengers are escorted in parties between the spectator enclosures and the aircraft before and after each flight. This route must be planned to take them well clear of other aircraft. Smoking shall not be permitted in the aircraft parking area.

14.9.4 Operators shall maintain a list of passenger names so that it is known who is on board the aircraft during each pleasure flight. This information could prove invaluable to police and rescue services in the event of an accident.

14.9.5 If helicopters are used for pleasure flights they must be positioned and routed so as to prevent problems with rotor downwash. In all cases the site used for passenger loading and unloading must be well clear of the flying area, and be approved by the DCA. If the helicopter operating area is not adjacent to the spectator enclosure, as could be the case at off-aerodrome events, those parts of the site at which passengers would be expected to assemble before being escorted to the helicopter should be fenced off securely. Arrangements must also be made to prevent access to the helicopter operating area by third parties.

14.9.6 Escorts must remain on duty until all pleasure flights have finished. Escorts must be briefed on, and demonstrate their knowledge of, the correct manner of boarding and alighting from aircraft. A pre-arranged system of signalling between escort and pilot is essential so that the pilot may know when passengers and escort are clear of the aircraft. To avoid the possibility of any misunderstanding between the pilot and escort they must, before the start of flying, discuss together and agree such matters as the positioning of the aircraft at the changeover point, and the boarding and alighting procedures to be used. Clear procedures are vital where operational circumstances make it desirable to keep engines running or helicopter rotors turning during changeover.

14.10 Parachuting As Part Of A Flying Display

14.10.1 Section 18 – Display Parachuting outlines the essential requirements for the conduct of a parachute display.

14.10.2 Aircraft landing or taking off, other aircraft with engines running and turning propellers or rotors constitute a hazard to parachutists. In order to minimise the risks Flying Display Directors shall ensure that the following procedures are followed:

- (a) All pilots are to be briefed on the procedures to be followed during any parachute drop.
- (b) Under no circumstances are propellers, jet engines or helicopter rotors to be turning closer than 250 metres to the intended parachute landing site during the period that the parachutists are descending.
- (c) Pilots of aircraft outside a radius of 250 metres (1000 metres in the case of pleasure flights), both airborne and on the ground, should remain aware of the progress of the descending parachutists and, if on the ground, be prepared to stop engines or rotors if the descending parachutists are seen to be drifting close to their aircraft.

14.10.3 Flying Display Directors should consider programming events in such a manner that potential conflicts between aircraft and parachutists are minimised.

14.11 Model Aircraft As Part Of A Flying Display

14.11.1 Flying of model aircraft should come under the control of a Flight Line Director who should be an experienced model aircraft flyer responsible to the Flying Display Director for the safe conduct and control of the model flying activities.

14.11.2 Uncontrolled free flight models should not be flown during the period of the Flying Display.

14.11.3 Where the designated model aircraft display area is in an area set aside for the spectators it should be safely enclosed.

14.11.4 The DCA shall ensure that the following separation distances between spectators and model aircraft is maintained whether the models are flown in a specified area or on the display side of the Crowd Line.

Model Aircraft Type	Model Aircraft Weight (Kgs.)	Separation Distance
Control Line	any	15 metres
Radio Controlled (Piston)	less than 7 kgs more than 7 kgs.	30 metres 50 metres
Radio Controlled (Turbine)	any	75 metres

14.11.5 The Flying Display Director or the Flight Line Director may add an additional separation distance for models of exceptional dimensions or performance.

14.11.6 The DCA shall ensure that the Flying Display Director adequately separates model aircraft displays in distance or time from other flying events. Where the model flying is taking place on the display side of the Crowd Line, there should be direct communications between the Flying Display Director and the Flight Line Director to ensure that in the event of an aircraft emergency the model flying can be stopped as quickly as possible.

14.11.7 The Flight Line Director is responsible for arranging strict control and use of model aircraft transmitters and frequencies.

14.11.8 The DCA shall ensure that the weather limits for model aircraft flying is a minimum visibility of 500 metres and a maximum wind strength of 25 knots.

14.12 Recreational Aircraft As Part Of A Flying Display

Section 16 – Recreational Aircraft Events, outlines the essential requirements for the conduct of these events.

14.13 Ballooning As Part Of A Flying Display

Section 17 – Ballooning Events, outlines the essential requirements for the conduct of a ballooning display.

15. DISPLAY CRITERIA

15.1 General

The actual construction of a display sequence will vary considerably from pilot to pilot because of various factors such as experience and competence levels, aircraft capabilities, requirements to deal with varying weather conditions and display sites etc. The DCA should satisfy itself as to display sequences.

15.2 Vintage or Unique Aircraft

Owners, operators, and pilots are encouraged to take into consideration the age, the rarity value and the need for continued preservation of aircraft when developing display sequences.

In general terms, the limitations placed on the operation of the aircraft, either generally or in a display situation, should show a level of sympathetic appreciation of these factors whilst allowing the aircraft to be safely flown and displayed.

15.2 Displaying Multi-Engine Aircraft

15.2.1 The DCA shall ensure that deliberate asymmetric flight, as part of a display routine, is not permitted at civil Flying Displays.

15.2.2 Emergency asymmetric handling problems, particularly with some of the older historic aircraft types, are a potential source of difficulties during a display in these aircraft. A multi-engine aircraft should not be flown below a speed at which it is possible to achieve a positive rate of climb, without change of configuration, should any engine fail to respond to an acceleration demand.

15.3 Crowd Separation Distances – On Crowd Wind

During any display, pilots are to be aware of, and make due allowance for, any on-crowd wind component. Note that if flying towards the crowd, but inadvertently too close to turn safely, an early decision to terminate the manoeuvre and climb, even if this involves the final resort of over flying the crowd, is preferable to risking an overstress or departure from pulling too hard.

15.4 Minimum Heights During Displays

All aerobatic manoeuvres, including inverted flypasts, and manoeuvres which involve pulling through the vertical are to be executed above the authorized aerobatic display height. Descent below the authorized aerobatic display height to the authorized fly-by height is permitted once certain of capturing the aerobatic display height. Slow speed, high angle of attack flypasts are regarded as aerobatic manoeuvres from the minimum height point of view.

15.5 Spinning as Part of a Display

15.5.1 The DCA shall ensure that pilots permitted to include spinning as part of their display sequence hold aerobatic DA authorization and the aircraft is approved for the manoeuvre.

15.5.2 When developing a display sequence that includes spinning the pilot is to determine the spin parameters that will ensure adequate safety margins are maintained during every spin. Specifically, the following should be taken into account when determining the minimum spin entry height:

- (a) spin characteristics of the aircraft including ability to recover consistently;
- (b) height lost per spin turn;
- (c) height lost during normal recovery;

- (d) margin required to allow for inconsistencies in either the aircraft or on the part of the pilot.

15.6 Formation Flying

In order to take part in a formation display the DCA shall ensure that the pilot holds a DA permitting formation flying in the required category as described in the references at Section 5.

16. RECREATIONAL AIRCRAFT EVENTS

16.1 General

For the purpose of this Section, recreational aircraft events include microlight aircraft, ultralight aircraft, gyrocopters and home built aircraft, which may or may not be registered aircraft. The terms included in this Section are applicable for a Flying Display in which recreational aircraft participate or as a stand alone event. Notification of a recreational aircraft event, whether including a Flying Display element or not, must be made to the appropriate DCA.

16.2 Requirements

16.2.1 The DCA shall ensure that any event held under the conditions laid down in this document is subject to the direct supervision of a Safety Officer who is nominated by the sponsor club and who is acceptable to the DCA. The Safety Officer may delegate duties but retains overall responsibility for safety at the flying event.

16.2.2 It is the responsibility of the Event Organizer, the Safety Officer and the pilots of the participating aeroplanes to ensure that the planned activity does not infringe airspace restrictions.

16.2.3 The DCA shall ensure that facilities are provided for the booking in and briefing of pilots on all rules laid down for participation in the event and such rules must be in writing and available prior to the event.

16.2.4 Adequate first aid and fire fighting equipment should be available with communication to outside services arranged to deal with any emergency.

16.2.5 The DCA shall ensure that if a landing or take-off is to be made at the site of the event, the area available is adequate for the intended operations, taking into account the aeroplane performance, weather conditions and the ability of the pilots. The minimum operating area provided must not be less than 200 x 25 metres with all approach and departure paths clear of buildings, persons, vehicles, trees and overhead electricity or telephone cables.

16.2.6 The DCA shall ensure that a suitable forced landing area is available and accessible throughout the event.

16.2.7 The DCA shall ensure that each pilot taking part in a race, contest or display, has gained at least 45 hours as pilot in command of aeroplanes or microlight aeroplanes and at least 5 hours must be on the type of microlight aeroplane to be flown at the event.

16.2.8 The DCA shall ensure that each aircraft taking part in the event is registered, is displaying correct registration markings and has a valid Permit to Fly or individual Exemption.

16.2.9 The DCA shall ensure that engines are started or run only in areas separated from the public by a suitable barrier.

16.2.10 Clearance to a specified holding point clear of the take-off area is to be the responsibility of an authorized marshal or, where air traffic control is in operation, given by the controller.

16.2.11 The decision when to take-off remains the responsibility of the pilot except where air traffic services are available. The Safety Officer must ensure that the number of aircraft in the circuit at any one time does not exceed a safe number.

16.2.12 The DCA shall ensure that no local area flying is permitted during competitive events taking place on the site.

16.2.13 The DCA shall ensure that no over flights of the crowd or a car park area, or of any built-up area or congested area enroute to, from, or at the event site are allowed.

16.2.14 The DCA shall ensure that the minimum separation distance from spectators is as follows:

- (a) Passes in front of the spectators – 50 metres.
- (b) Take-off and landing – 40 metres for the first 50 metres of the operating area and thereafter 50 metres.

16.2.15 Cross wind limitations are to be those stipulated in the manufacturer's handbook. However where no published limits exist, the DCA shall ensure that the maximum acceptable cross wind component is 5 knots.

16.2.16 The DCA shall ensure that no aerobatic manoeuvres are permitted. Maximum bank and pitch angles are as prescribed in the Permit to Fly or other relevant aircraft document, but in any case must not exceed:

- (a) For Microlights with Permit to Fly – bank 60° pitch 30°.
- (b) For Microlights with individual Exemptions – bank 40° pitch 30°.

16.2.17 The DCA shall ensure that intentional stalling at events is prohibited.

17. BALLOON EVENTS

17.1 General

For the purpose of this Section, balloon events include only manned balloons, which may or may not be registered. The terms included in this Section are applicable for a Flying Display in which balloons participate or as a stand alone event. Notification of a balloon event, whether including a Flying Display element or not, must be made to the appropriate DCA.

17.2 Requirements

17.2.1 The DCA shall ensure that any event held under the conditions laid down in this document is subject to the direct supervision of a Safety Officer who is nominated by the sponsor club and who is acceptable to the DCA. The Safety Officer should be a CPL (Balloon) holder with experience of ballooning at public events. The Flying Director may act as the Safety Officer if independent from the Event Organizer. The Safety Officer may delegate duties but retains overall responsibility for safety at the flying event.

17.2.2 The Safety Officer should be involved in the planning stages of the event and should be present on site during all planned launch and inflation times, except that he may delegate specific duties but retain overall responsibility for the event, including the right to cancel a planned flight due to meteorological or any other reasons bearing on safety. Except where the Safety Officer has banned flying, the decision to take off or not remains with the pilot.

17.2.3 It is the responsibility of the Event Organizer, the Flying Director, the Safety Officer and the participating pilots to ensure that the planned activities do not infringe airspace restrictions. If at the planning stage it seems likely that flights may affect an aerodrome then liaison should be established with Air Traffic Control at this stage. For mass ascents, the use of transponders on some balloons should be considered so that ATC has an indication of the track and extent of the activity. The relevant ATC should also be informed of actual launch time and again when all balloons have landed.

17.2.4 Rules governing the event must be made available, in writing, prior to the event. These must include the limits of acceptable weather conditions for flights, including tethered flights, to be made. Variations in rules not pertaining to safety may be notified by means of a pilots' briefing.

17.2.5 Adequate first-aid and fire-fighting equipment should be available on site to deal with minor incidents. Prior consultations with outside services should be made and communications established with them on the day of events, so as to facilitate their rapid help in the case of emergency.

17.2.6 Event Organizers are particularly reminded that a large balloon meet necessitates effective control that will require adequate assistance for the Safety Officer and landowner relations staff. An event should not take place unless the Safety Officer and Event Organizer ensure that a level of support is provided in the areas of safety and landowner relations appropriate to the number of balloons participating in the event.

17.2.7 Mass take offs should only take place in wind speeds of less than 8 knots on the surface. In winds exceeding 8 knots, take offs may be staged in 'waves' so as to maximise the separation of balloons. (See paragraph 14.5 for separation distances and minimum heights for over flight of spectators.)

17.2.8 Prior to take off, pilots must ensure that their projected track out of the site is clear of balloons either on the ground or in the air. A check for balloons overhead must be made immediately before take off, either by a member of the crew or by a marshal appointed by the Safety Officer.

17.2.9 If the wind speed exceeds 5 knots the crowd should be separated from the balloons in such a way that in the event of a change of wind direction prior to launching no part of a balloon will come into contact with the crowd.

17.2.10 All free and tethered flights must be made within the criteria contained in the manufacturers' flight manuals for the specific balloon.

17.2.11 Refuelling should take place in an area to which the public does not have access. The propane tanker or fuel dump should be separated from any large gathering of people by at least 100 metres and sited so as to avoid drainage of propane towards such an area.

17.2.12 Pilots must respect the landowner relations, LPG and safety codes. The following points should be noted in relation to landowner relations:

- (a) The Event Organizer should nominate an experienced person as the Landowner Relations Officer to handle any landowner problems caused by the event;
- (b) Because of the disturbance that large groups of balloons can cause to livestock, pilots should be briefed to fly at a minimum height of 1000 feet above ground level except when making a final approach;
- (c) Competition tasks should be not set in such a way that they cause large concentrations of balloons in the proximity of livestock or sensitive areas;
- (d) A system should be in place to ensure that each pilot receives a landing card for each flight and returns it to the Event Organizer so that should there be a subsequent complaint the balloons involved can be identified.

17.2.13 Officials and commentators must be briefed by the Safety Officer on the contingency plan to be followed in the event of a fire or other emergency on the launch field.

18. DISPLAY PARACHUTING

18.1 Legal Requirements

18.1.1 Display parachuting may be arranged as an additional attraction at many events including Flying Displays, or as an event in its own right.

Display Teams must be in possession of a valid parachuting authorization. This document is issued by the DCA and it is a condition that all operations of the Team are conducted in accordance with the relevant provisions of a parachuting Operations Manual for the time being in force and which has been submitted to the DCA.

18.1.2 Aircraft may only be used for parachute dropping if there is information available in the Flight Manual (or in a Flight Manual Supplement or upon the individual Certificate of Airworthiness) relating to parachute dropping for that particular aircraft. The aircraft must have approved modifications if necessary for the purpose of parachute dropping and must be operated in accordance with the Aircraft Flight Manual and any applicable Flight Manual Supplements. Note that parachute dropping aircraft are not permitted to execute a low pass after the drop, unless the pilot holds a valid DA or has been authorized by the DCA.

18.1.3 The parachute Display Team Leader is responsible for obtaining any Air Traffic permission in principle and for notifying the proposed display to the ATC at the time of the event.

18.2 Liaison And Reconnaissance

18.2.1 An experienced Team member will need to visit the proposed landing area in order to plot existing and anticipated hazards. The Event Organizer or Flying Display Director should be present at this visit in order to discuss:

- (a) Weather minima;
- (b) Dimensions of the landing area required by the Team (See below);
- (c) Arrangements for crowd control;
- (d) Location of overshoot/undershoot areas, buildings and power lines;
- (e) Locations of spectator enclosures, car parks, marquees and other hazards (e.g. cranes used for bungee jumping);
- (f) First Aid.

18.2.2 The Flying Display Director must ensure that the Display Team is informed of any other aviation related activities known to be taking place at the event or nearby (e.g. helicopter pleasure flights, tethered balloons, model aircraft).

18.3 The Landing Area

18.3.1 Where the designated landing area is on the display side of the Crowd Line, no part of that area should be closer than 15 metres to the Crowd Line.

18.3.2 Where the designated landing area is in an area set aside for the spectators, it should be enclosed with rope, tape or fencing and no parachutist should land closer than 15 metres to any spectator.

18.3.3 The landing area should be suitably marked and should be clearly identifiable by each parachutist from the time he exits the aircraft.

18.4 The Display

18.4.1 When the display of parachuting forms part of a Flying Display, the commander of the parachute dropping aircraft shall require briefing in accordance with Section 13.

18.4.2 The parachute Display Team will provide a ground party at the landing site who will be able to communicate with the parachute dropping aircraft by means of signal panels and/or radio.

18.4.3 The Event Organizer is responsible for the arrangements for crowd control.

ATTACHMENT 1

EXAMPLE
of
Certificate Supplied to the Flying Display Director by a Participating Pilot

I (.....name.....) being the pilot of Aircraft type....., Registration No....., intending to participate in a Flying Display to be held aton.....hereby certify that:

- (a) There are current and valid Certificates of Registration and Airworthiness or Permit to Fly for the above aircraft to allow it to be flown at the Flying Display, details of which are given above.
- (b) I hold a valid (.....Country.....) (.....Type of Licence.....) Pilot's Licence No....., together with a Certificate of Test/Experience dated.....and Medical Certificate Class valid to to allow me to fly in the above-mentioned aircraft.
- (c) My Display Authorization, No. is valid for the aircraft and I have flown 3 displays or practice displays within the last 90 days with at least one display or practice display on the specific type or category of aircraft.

Signature:

Date:

Note: This certificate should be completed by the pilot. If this is not possible, the operator of the aircraft may complete it provided that the operator has access to the pilots records and the certificate is appropriately annotated.