

## **Background**

This document has been published in order to highlight proposed significant changes in edition 20 of CAP 403. It does not include minor changes / corrections to previous text. The aim is make the consultation process easier and less time consuming by providing an alternative to reading through the entire CAP in order to find proposed changes. The full draft version of edition 20 of CAP 403 has also been offered for consultation for those who prefer to view the complete document and for context if required for those who chose to use this document.

To avoid numerous extracts it should be noted that the term of 'non-aerobatic' or 'non-aerobatic Flying Display' has replaced the term of 'Flypast' throughout the CAP as appropriate.

All proposed amendments are underlined in red.

## **Definitions**

|                      |  |  |
|----------------------|--|--|
| <b>Special Event</b> |  | Any flying activity, <u>other than a Flying Display or Private Flying Display</u> , deliberately performed requiring a Permission to operate contrary to the requirements of the <u>ANO</u> , the Rules of the Air or <u>SERA</u> . Special Events include Funeral Flypasts, the dropping of articles and can include film work or any other unusual activity <sup>8</sup> . |
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## **General Information**

### **Introduction**

Flying Displays and aerial Special Events form a significant part of the UK leisure industry. Organisation, administration and participation in displays needs careful consideration if the highest safety standards are to be achieved and maintained. This publication contains specific requirements and is intended as a code of best practice. It offers guidance material to enhance the safety of Participants, Spectators and the general public.

## Human Factors (HF) in Air Displays

HF issues impact all parts of the aviation environment and **should** be considered before, during and after Flying Displays by everyone involved.

Improving the understanding of how HF impacts on the safety of Flying Displays is a priority for the CAA. Increasing awareness of HF influences amongst the air display community led to the CAA commissioning two specific studies to look at, and better understand, Flying Display HF; the first of which was conducted by NATS: [Human Factors in Flying Displays](#). The second study was conducted by the Health and Safety Laboratory: [CAP 1694. Human Factors in Air Displays: Transfer of Behaviours and Error Path Study](#).

The outcomes of the two reports feed into our ongoing commitment to make discussion of HF a routine part of our engagement with the Air Display community. HF briefings will be integral element of pre and post-season symposia, DAE seminars, DA evaluations and FDD accreditation courses and aim to ensure that experiences, insights and best practice, not only those of display participants / organisers, but also those from the wider aviation community are shared.

As part of awareness raising and, in line with the direction set out in the [CAA HF strategy](#), an on-line area to act as a [repository for HF material](#) that will be of interest to the Air Display community has been developed. Any suggestions for additional material would be welcomed and should be directed to [ga@caa.co.uk](mailto:ga@caa.co.uk) or [human.factors@caa.co.uk](mailto:human.factors@caa.co.uk).

## Air Display HF course

In addition to the routine engagement at pre and post-season display symposia, DAE seminars, DA evaluations and FDD accreditation courses, for Display Season (DS) 23 an on-line Air Display HF Course is available and comprises:

- a) five online videos on Performance Influence Factors (PIFs), available to view as required
- b) two online interactive webinars (one on the FAiR Model and another on PIFs)

The online Air Display HF Course is a mandatory requirement for all DAEs, DA holders and FDDs for completion prior to their next planned display activity. The course is a one-off requirement and once completed HF will be covered as set out below. Course completion is not a prerequisite for the issue / renewal / revalidation of a DA or FDD accreditation. For access to the course email [ga@caa.co.uk](mailto:ga@caa.co.uk).

### Display Symposiums - HF in Air Displays

Following completion of the online course and to ensure HF in air display experiences, insights and best practice are continued to be exposed to the wider display community:

- a) FDDs **shall** ensure they attend a **minimum** of one Display Symposia every 3 years
- b) AFDDs, DA holders and DAEs **shall** continue to have HF discussed at their respective DA Evaluations
- c) AFDDs, DA holders and DAEs **shall** continue to ensure they attend a minimum of one display symposia every 3 years.

Further information on HF in air displays is available on the CAA website: [Human Factors in Air Displays](#). Additional sources of information on aviation related HF considerations includes the following:

[CAP 719 "Fundamental Human Factors Concepts"](#)

[CAP 737 "Flight Crew Human Factors Handbook"](#)

## Chapter 1, Flying Display legal requirements

- 1.4 In deciding if an application for a Permission under Article 86 is required, the FDD **should** note that the 'open to the public' requirement is the principal requirement rather than the 'advertised' element. If the general public are permitted onto the site and any flying activity is deliberately performed for the purpose of providing an exhibition or entertainment for those present,~~for the purposes of witnessing a Flying Display~~ with or without payment, an Article 86 Permission will be required.

## Foreign participation

- ~~1.22 — DAs issued by other countries **may** be accepted by the UK CAA for pilots participating in Flying Displays in the UK where they provide a similar level of assurance to the UK system. The limitations imposed on pilots holding a DA issued in another country whilst displaying in the UK are the more restrictive of the limits specified in the pilot's DA or the limits imposed in the Flying Display Permission or by the FDD.~~
- ~~1.23 — Questions concerning the acceptability of holders of any other non-UK DA **should** be directed to the UK CAA GA Unit.~~

## Chapter 2 Applying for Flying Display or Special Event

- ~~2.4 — If applying for an Article 86 or SERA Permission to conduct a Flypast, unless otherwise informed, the CAA will issue a Permission for a single Flypast as defined in this CAP. If multiple Flypasts are required, details of the intended number of passes must be entered in the 'display item description' area of the online application form so that any Permission can be issued accordingly.~~

## Chapter 3 Application Timescales

### 90 days prior to the event

- 3.2 Applications **should** be made online to Airspace Regulation Operations (AROps) at least 90 days prior to the event using the [Airspace Co-ordination and Obstacle Management](#) application form. Select "Airspace Restrictions (including exemption requests) from the dropdown menu<sup>1</sup>.

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<sup>1</sup> [Further information or guidance is available via AROps@caa.co.uk or 01293 983880](mailto:AROps@caa.co.uk)

## Air Traffic Service personnel

3.10 (FISOs) intending to provide an ATS at a Flying Display or Special Event based at a temporary site, or a site not normally providing the service intended **must** ensure that they:

- a) provide a minimum of 60 days' notice to the appropriate Principal Inspector (ATM) specifying the type of service they wish to provide, confirming their licence details and requesting examination dates

### 42 days prior to the event

3.17 If the event consists of, or includes, military aircraft carrying out a Flying Display or military Parachute Display Teams the FDD **must** complete and submit form [Airspace Co-ordination and Obstacle Management \(caa.co.uk\)](#) no later than 42 days before the event.

### 14 days prior to the event

3.19 If an event consists of, or includes, military aircraft Flypasts, form Airspace Co-ordination and Obstacle Management (caa.co.uk) must be completed and submitted no later than 14 days before the event.

## Chapter 5 The Flying Display – planning and categorisation

5.1 Where the Flying Display is held at a certificated or licensed aerodrome, the FDD must involve the holder of the certificate or licence, their representative or the aerodrome operators (if the aerodrome is unlicensed) in those aspects that affect the aerodrome and its environs, airspace, RFFS provision and ATS as applicable. ~~the holder of the certificate or licence, their representative or the aerodrome operators (if the aerodrome is unlicensed) must be involved at all stages of preparation for the Flying Display.~~

5.34 Once the Display Area has been promulgated, Display Pilots **should** review any aspects of their display that might not fit within the available Display Area and adjust accordingly. Where these changes constitute a variation to their 'practised display', they **should** ensure they have adequate opportunity to practise any modifications before the display. EOs, FDDs and operators must not allow a display pilot to feel under any pressure to fly an unpractised display. ~~Pilots who are required to substantially alter or restrict their display must not be pressured into flying an unpractised display.~~

5.44 The following table **should** be used by the FDD to categorise the Flying Display into the appropriate Tier. The FDD applying for a Flying Display Permission **must** be accredited to at least the same Tier as that of the display. FDDs should note that the CAA may categorise the Flying Display at a different Tier on review of application.

| No of Display Items | Low Complexity |             | High Complexity |             |
|---------------------|----------------|-------------|-----------------|-------------|
|                     | Low Energy     | High Energy | Low Energy      | High Energy |
| 1                   | Tier 1         | Tier 1      | Tier 1          | Tier 1      |
| 2-3                 | Tier 1         | Tier 2*     | Tier 1          | Tier 2      |
| 4-7                 | Tier 1         | Tier 2      | Tier 2          | Tier 2      |
| 8-12                | Tier 2         | Tier 2      | Tier 2          | Tier 3      |
| 13+                 | Tier 3         | Tier 3      | Tier 3          | Tier 3      |

\* If the high energy content is non-aerobatic ~~event consists of Flypasts~~ only, the Flying Display can be considered Tier 1.

## Chapter 6 The Flying Display – Management

### Impromptu displays at Flying Displays

6.33 FDDs are to ensure that pilots of display aircraft are specifically instructed not carry out any form of impromptu display such as on arrival or departure.

### Standard Warning and STOP calls

6.37 The following Standard Calls and responses **shall** be used:

| FDD / FCC Warning call                     | Pilot response               |
|--|------------------------------|
| “(call sign) TOO LOW”                      | “ROGER (call sign)”          |
| “(call sign) TOO CLOSE”                    | “ROGER (call sign)”          |
| “(call sign) <u>TOO HIGH</u> ”             | “ <u>ROGER (call sign)</u> ” |
| FDD / FCC Terminate call                   | Pilot response               |
| “(call sign) TERMINATE”                    | “WILCO (call sign)”          |
| FDD / FCC STOP call                        | Pilot response               |
| “(call sign) STOP, STOP, STOP acknowledge” | “WILCO (call sign)”          |

6.40 **Too High Call.** A ‘Too High’ call **should** be used, for example, when an aircraft using a Reduced Lateral Separation Distance Exemption (containing a maximum height) is too high.

6.43 A fully briefed procedure is to be established and in place to communicate a STOP or Terminate call to any participating non-radio aircraft. Similar methods of communication **must** be considered to cater for a radio failure during a Display Routine. If an Aldis lamp signal is to be used for such a purpose, for standardisation, it is recommended that a ‘steady white’<sup>2</sup> signal be used. The same signal **may** be used to communicate both STOP and Terminate calls. ~~However, for radio-equipped aircraft, pilots should consider terminating the display if a radio failure is recognised.~~

<sup>2</sup> ‘Steady white’ light signal recommended as this is not a current ICAO light signal.

## Chapter 8 Flying Display Director (FDD) – Requirements and information

- 8.19 It is recommended that FDDs review the information listed on a pilot's SRG1327 concerning participation in other events on the same day from a Human Factors view point. Consideration **should** include the number of events, geographical locations, time available for any positioning / pre-flight preparations / rest / etc between events and the variation in type of aircraft flown in any one day. Where any potential conflict is identified it is recommended that FDDs communicate with each other using the contact details entered by the pilot on the SRG1327 in order to suitably mitigate.
- 8.45 a)ii) When easing down to non-aerobatic height after an aerobatic recovery the aircraft **shall** remain straight and at no more than 30 degrees pitch angle. ~~It is important that FDD / FCC monitor visually all aerobatic recoveries to confirm that linked aerobatic manoeuvres are flown to the aerobatic minima rather than Flypast minima~~The FDD / FCC **must** monitor all recoveries from aerobatic manoeuvres that are directly linked to one another to check that they are always completed above the pilot's minimum aerobatic height or, that when the manoeuvres are not directly linked and the pilot elects to descend further, that when the aircraft passes through minimum aerobatic height (both downwards and upwards) it is within the stipulated  $\pm 30^\circ$  pitch attitude
- 8.47 It is vital that Display Pilots acting as AFDDs are fully aware, and understand, the extent of the responsibility being accepted when accepting and agreeing to act in this role (see the summary of FDD and AFDD responsibilities below).



## Chapter 9 Air Traffic Services

### General

- 9.2 FDDs / EOs **should** ensure that the type of service they intend to provide is appropriate for their event, based on the anticipated number of movements and complexity of the air traffic environment in which they will be operating. FDDs / EOs **must** ensure that notification periods outlined in both this Chapter, and Chapter 3, are complied with.
- 9.3 As a general guide, if an event is likely to generate more than 100 movements **per day**, or more than 10 movements **per hour**, proposals **should** be discussed with the appropriate Principal Inspector (ATM).

### FDD use of ground aeronautical radio station

- 9.19 There is a demonstrable need for FDDs to be able to intervene in Flying Displays and issue the standard calls set out in this CAP. For FDDs who do not hold an appropriate WTA licence that permits the use of a ground aeronautical radio station, a Restricted Radio Operator's Certificate of Competence (ROCC) is available to permit transmission from a ground station. The scope of the ROCC is limited to the calls set out in chapter 6 of this CAP only.
- 9.20 Issue of a ROCC as described above is dependent on the FDD completing and passing the CAA FDD accreditation course and paying a one off certification fee at the point of application<sup>3</sup>.
- 9.21 Once issued, the ROCC **must** be signed and validated by each radio station's licensee before a FDD is permitted to operate the station's radiotelephony equipment.
- 9.22 Application for a ROCC **shall** be made on form SRG 1413A.

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<sup>3</sup> Note, the fee for a FDD ROCC is the same as all other ROCCs but does not include the other privileges.

- 9.23 Further information can be found in Supplementary Amendment (SA) 2023/01 and CAP 452 Aeronautical Radio Station Operator's Guide.

## Chapter 16 Airborne pyrotechnic displays

Notes: Previously chapter 16 was titled "Twilight and airborne pyrotechnic displays". As not all twilight displays include pyrotechnics it is proposed to split the content of the old chapter 16 into separate chapters dealing with twilight displays and pyrotechnic displays in their own right. Chapter 16 now deals solely with pyro displays and a new chapter 17 covers displays during twilight.

The significant changes to chapter 16 (pyros) that have been considered as a result of recommendations made as part of the night and pyro study are:

### General

- 16.1 Pilots / operators are reminded that Article 89 prohibits the dropping of articles from an aircraft in flight unless the exceptions or alleviations in that article apply. An Exemption to Art 89 is required for the use of any pyrotechnic where dross, embers or remnants reach the surface. Pilots / operators **must** apply for an Exemption for each location / display (public and private) at which the use of airborne pyrotechnics are to be used. An application for a LTP is permissible for the dropping of articles at a single location for the purposes of display practice.

### **Minimum Pyrotechnic Release Heights (MPRH)**

- 16.8 Pyros **must** be fired or released above a height at which they will have burnt out and cause no risk to public safety by the time they reach the surface. As pyros have varying burn and descent rates, pilots **must** have tested and practiced with the pyros in order to establish the MPRH and PRT. MPRH **must** incorporate a margin for error to allow for any pyro malfunction during release.

16.9 Pyros falling into the PRT 1 and 2 categories may be fired or released from below the established MPRH, but no lower than the higher or either the issued Permission height minimum, that specified in the pilot's DA or any FDD imposed minimum, if the pyros are fired or released over water such that all fallout will fall in the water regardless of wind conditions.

Routing to and from the venue, along with the routing to any emergency landing area, should be carefully planned so as to minimise the risks associated with falling debris.

### Parking of loaded aircraft

16.19 When an aircraft is loaded with live or unspent pyros it **must not** be parked in a location where inadvertent ignition of the pyro could present a hazard to people, equipment or property. The parking location **must** be sufficiently remote and the aircraft parked pointing in the safest direction.

### Safety information and special handling details

16.24 When pyro displays are contemplated in drought / heatwave conditions FDDs and operators **should** assess surface conditions and if a potential for wild-fire is determined the display **should** be either postponed or adapted to minimise the risk.

## **Chapter 17: Flying Displays during twilight**

17.4 The light level available during twilight can vary from near day conditions throughout, to near night conditions well before the end of evening twilight. Therefore, prior to a twilight display, pilots **should** assume the worst and familiarise themselves with the local topography, emergency landing areas, crowd lines, display lines, and consider the availability of key visual references. Flying during evening twilight has the additional

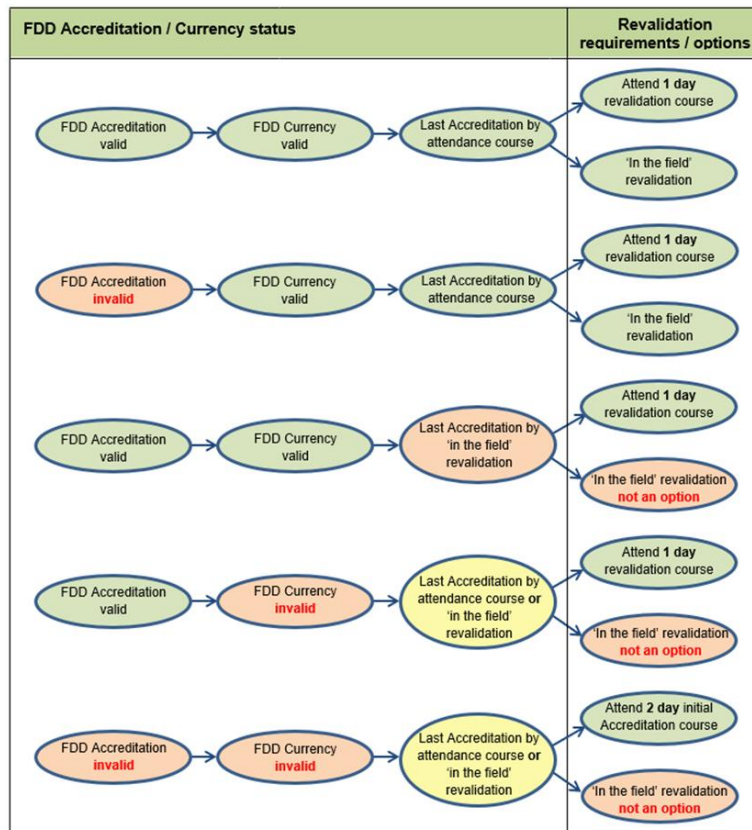
risk that any delay could result in night flying for which the pilot and / or the aircraft may not be qualified.

## Appendix A, Risk Assessments:

A53 I) **Sign off by the FDD and the EO (if a different person).** A declaration that the risk management activities conducted are suitable and sufficient to manage the risks associated with the Flying Display. Although not mandatory for single item AFDD events, an EO sign off is highly recommended.

## Appendix C – Flying Display Director Accreditation:

### Revalidations



C17 'In the field' revalidations may be carried out in extremis, subject to CAA FSO availability, provided the FDD is current. Requests for 'in the field'

revalidations **must** be made at the time of application for the display Permission and coordinated with the CAA. 'In the field' revalidations **must not** be relied upon to maintain FDD Accreditation as FSO availability may change at short notice due to other operational requirements. The in 'the field option' is only possible for the first revalidation following an attendance course. Every second revalidation **must** be by attendance course.