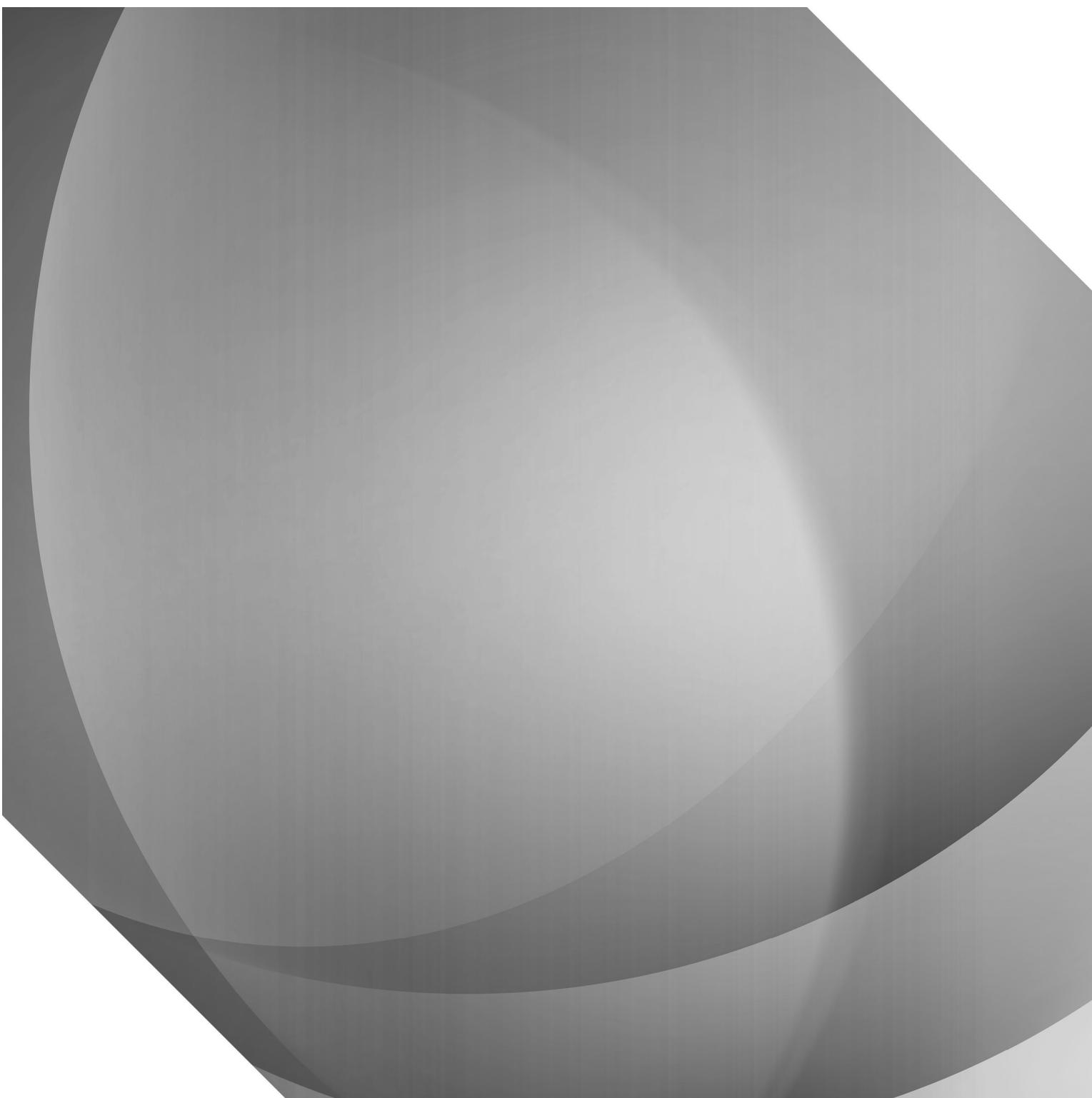


CAP 1724

# Display Standards Document

Edition 1 | **XXXX 2019**



Published by the Civil Aviation Authority, 2019

Civil Aviation Authority

Aviation House

Gatwick Airport South

West Sussex

RH6 0YR

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**First published XXXX 2019**

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## Revision History

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### Edition 1

XXXXX 2019

Initial issue.

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# Foreword

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The Civil Aviation Authority is the competent authority of the UK for issuing a Display Authorisation (DA) in accordance with the requirements of Article 86 of the Air Navigation Order 2016 (ANO) and for the continuing oversight of DA's. The CAA may authorise a Display Authorisation Evaluator (DAE) to conduct such examinations or tests for the purposes of this Article as it may specify.

It is important for the process of evaluation of display pilots to be standardised as far as is practicable. The CAA has therefore developed this standards document which contains guidance for DAE's and display pilots in areas such as preparation, standardisation and evaluations. Each evaluation will, by necessity, be a subjective assessment of the individual concerned, both in terms of fitness (attitudes and behaviours) and competence (practical skills and abilities).

This document contains regulatory guidance material to enable DAE's to perform their tasks, discharge their responsibilities and maintain compliance with applicable aviation law.

Unless otherwise stated, nothing in this publication is intended to conflict with the ANO or other legislation, which, for the avoidance of doubt, must be regarded as overriding. Also, compliance with this publication does not, by itself indemnify any person or persons against liability for an accident or serious incident occurring.

Whilst every effort is made to ensure that all information is correct at the time of publication, the CAA reserves the right to amend this document as required to accommodate changes to the law, to correct errors and omissions or to reflect changes in national policy and best practise.

Throughout this document the following editorial practises and definitions **shall** apply:

- 'Shall' and 'Must' are used to indicate a mandatory requirement.
- 'Expect' and 'Should' are used to indicate strong obligation.
- 'May' is used to indicate discretion.
- 'Applicant' is used to indicate a person who is seeking the issue, revalidation, upgrade or renewal of a DA.

This document **should** be read in conjunction with [CAP 403: Flying Displays and Special Events: Safety and Administrative Requirements and Guidance](#).

Please address any queries or comments on this document to the Evaluator Oversight Officer (EOO) at [GA@caa.co.uk](mailto:GA@caa.co.uk).



## Safety Management

**Display pilots** are responsible for ensuring that they comply with the Rules of the Air and the ANO, the conditions of their licence(s) and Display Authorisation, and the conditions of a Flying Display Permission issued by the CAA<sup>1</sup>. They will be accountable to the CAA for a failure to comply with any of the applicable regulations or conditions. Pilots are reminded that it is an offence under the ANO to recklessly or negligently endanger any person, property or aircraft.

The FDD must ensure that pilots' compliance with relevant regulations / conditions is monitored throughout the display and that unsafe displays are terminated. They should take into consideration the overall risk picture for the display or show and use all available resources to support their decision-making.

Any EO, FDD or pilot that is unsure about their safety responsibilities at a Flying Display should contact the [CAA GA Unit](#) to clarify the position.

## Reporting

The CAA is keen to encourage open feedback and reporting from any member of the Flying Display community operating in any capacity in an attempt to increase the safety and performance of the Flying Display industry as a whole. The CAA would like to receive any comments/observations/lessons learnt related to the safety of either a specific Flying Display or Flying Displays in general. Any issue can be reported, no matter how small and insignificant it may seem, and can cover aspects such as Human Factors, concerns over performance, near misses, things that might have led to an incident or accident had they been left or not caught, etc. Although Flying Display Directors **must** submit [SRG1305 / Form 4](#), the joint CAA/MAA 'Flying Display Director Post Display Feedback Form', the same form may be used by anyone wishing to report an issue in the interests of Flying Display safety. All reports will be treated confidentially and all personal information will be removed during any follow up to protect the reporter.

Participants, organisers and supervisors are also encouraged to report any incidents or examples of errors involving human factors that occur during a display to [CHIRP](#) who have a dedicated Flying Display reporting stream designed to promulgate to the wider community any lessons learned that could be of benefit to others.

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<sup>1</sup> Applicable also to aircraft limitations and conditions as attached to a Certificate of Airworthiness or Permit to Fly.

**Feedback**

The CAA seeks to continually improve its regulation and guidance and your feedback is helpful to us in doing so. If you have any comments on or suggestions about CAP 1724 please send them to [ga@caa.co.uk](mailto:ga@caa.co.uk) with subject line 'CAP 1724 feedback'.

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# Useful Terminology and Definitions

Throughout this CAP many of the following terms and definitions are used:

Term	Abbreviation	Definition
<b>Aerobatic Manoeuvre</b>		The definition of an aerobatic manoeuvre for the purposes of this CAP is as defined in the <a href="#">Air Navigation Order</a> (ANO)
<b>Airborne Flying Display Director</b>	<b>AFDD</b>	A Pilot holding a UK DA participating in their own single item Flying Display who is responsible to the CAA for the safe conduct of that Flying Display <sup>2,3</sup> .
<b>Close Formation</b>		Close Formation is defined as when an aircraft is flying in close proximity (usually within 50 metres) to another aircraft in such a manner as to require the following aircraft to take all external visual references solely from the lead aircraft.
<b>Congested Area</b>		A Congested Area is defined in Schedule 1 of the <a href="#">ANO</a> as being any area in relation to a city, town or settlement which is substantially used for residential, industrial, commercial or recreational purposes <sup>4</sup> .
<b>Crowd Line</b>		The line delineating the closest edge of any area, including Car Parks, accessible to Spectators with respect to the Display Area/line.
<b>Display Area</b>		The Display Area is the ground area footprint of the airspace within which displaying aircraft are manoeuvred in a manner which requires the pilot to exercise the privileges of their Display Authorisation and fly to prescribed conditions and minima. Any manoeuvres which are not compliant with SERA <b>must</b> be conducted within the Display Area; SERA.5005(f)(1) and SERA.5005(f)(2) apply outside the Display Area as applicable.
<b>Display Authorisation</b>	<b>DA</b>	A national document detailing the groups and categories of aircraft in which a pilot is authorised to display, together with any limitations and other specific endorsements.
<b>Display Authorisation Evaluator</b>	<b>DAE</b>	A person authorised by the CAA to conduct evaluations for the award of a Display Authorisation.
<b>Display Item</b>		A single, formation or group of aircraft, flying as one single display 'act' throughout.
<b>Display Line or Display Axis</b>		A line defining the track and distance along which displaying aircraft may operate.
<b>Display Pilot</b>		A pilot who holds a DA or exemption, issued by their national aviation authority, which allows them to take part in a Flying Display.

<sup>2</sup> The EO and the AFDD may in some cases be the same person.

<sup>3</sup> No more than 3 individual AFDDs may take part in the same event at the same location on a single day.

<sup>4</sup> For planning purposes and clarification, a golf course attached to a Congested Area is considered as part of that congested area and **must** be treated as such when considering overflight restrictions.

Term	Abbreviation	Definition
<b>Display Routine</b>		A series of linked manoeuvres to be performed during a Flying Display.
<b>Evaluator Oversight Officer</b>	<b>EOO</b>	The CAA Evaluator Oversight Officer (EOO) manages the DAE and DA process and is the first point of contact within the CAA for related matters.
<b>Event Organiser</b>	<b>EO</b>	The EO is the person responsible for all matters pertaining to the wider planning and execution of an event that includes a Flying Display and for the safety of the general public, both at the event and those affected by the wider impacts of the event.
<b>Fédération Aéronautique Internationale</b>	<b>FAI</b>	The world air sports federation.
<b>Flying Display</b>		Any flying activity deliberately performed for the purpose of providing an exhibition or entertainment at an event that has been advertised and is open to the public.
<b>Flying Display Director</b>	<b>FDD</b>	The person responsible to the CAA for the safe conduct of a Flying Display <sup>5</sup> .
<b>Flypast</b>		An aircraft flying, either singly or in formation, past a gathering of Spectators (any number) along a pre-planned route without manoeuvring, other than when necessary for safe and accurate navigation. Accordingly, this will not include Aerobatic Manoeuvres. A Flypast is considered to consist of one single pass unless otherwise specified on the appropriate Permission.
<b>Flypast Display</b>		A Flypast Display is defined for these purposes as a display made up of manoeuvres which do not require the pilot to exercise the privileges of an Aerobatic DA; where aerobatic manoeuvres are as defined in the UK ANO.
<b>Formation</b>		A Formation is considered as two or more aircraft conducting synchronised flying.
<b>Minimum Aerobatic Height</b>		The most restrictive of <sup>6</sup> : <ul style="list-style-type: none"> <li>▪ The minimum aerobatic height specified in the Permission</li> <li>▪ The minimum aerobatic height quoted on relevant pilot's DA (in relation to the aircraft category being flown)</li> <li>▪ The minimum aerobatic height imposed by the FDD</li> </ul>
<b>Non-aerobatic Flying Display</b>		A dynamic, manoeuvring display carried out without any Aerobatic Manoeuvres.
<b>Participant</b>		A Flying Display or Special Event performer, or any person directly involved in the conduct of a Flying Display performance.

<sup>5</sup> The Event Organiser and FDD may in some cases be the same person.

<sup>6</sup> Minimum heights **should** be considered as limits and not targets

Term	Abbreviation	Definition
<b>Permission</b>		The document issued by the CAA permitting the proposed flying activity to take place with regard to the <a href="#">ANO</a> and <a href="#">SERA</a> .
<b>Private Flying Display</b>		Any flying activity deliberately performed for the purpose of providing an exhibition or entertainment at a private event requiring a Permission to operate contrary to the requirements of <a href="#">SERA</a> .5005(f). (See also 'Flying Display' <sup>7</sup> )
<b>Role Demonstration</b>	<b>Role demo</b>	Any flying activity designed to demonstrate an aircraft's performance commensurate with that normally carried out during routine operations and training.
<b>Separation Distance</b>		The lateral distance between the displaying aircraft and Crowd Line.
<b>Secondary Spectator</b>		A person viewing a Flying Display from a location which has not been specifically designated for spectators by the FDD.
<b>Special Event</b>		Any flying activity deliberately performed requiring a Permission to operate contrary to the requirements of the <a href="#">ANO</a> , the Rules of the Air or <a href="#">SERA</a> . Special Events include Funeral Flypasts, the dropping of articles, and can include film work or any other unusual activity <sup>8</sup> .
<b>Spectator</b>		A person attending a Flying Display specifically to witness the event.
<b>Swept Wing Jet</b>		A jet aircraft is considered to be swept wing if the leading edge of the wing is at an angle of 30 degrees or more from the perpendicular to the longitudinal axis. <sup>9</sup>
<b>Tailchase</b>		A Tailchase is defined as a number of aircraft (maximum 4) following a leader in loose proximity, in line astern, whilst the leader carries out a series of manoeuvres of an aerobatic or semi-aerobatic nature.
<b>Twilight</b>		The period of time falling between sunset/night and night/sunrise. In this context, the term 'night' is as defined in the <a href="#">ANO</a> . <sup>10</sup> The terms 'sunset' and 'sunrise' are determined at surface level at the display location.
<b>Tyro Display Authorised Pilot</b>	<b>TDA</b>	A display pilot operating within the first 25 months from initial evaluation for the grant of a Display Authorisation.

<sup>7</sup> Where reference in this CAP is made to a 'Flying Display' the content applies also to a 'Private Flying Display'.

<sup>8</sup> Special Event Permissions do not include aerobatics, unless otherwise stated.

<sup>9</sup> Classification of a particular aircraft type is the responsibility of the CAA.

<sup>10</sup> "Night" means the time from half an hour after sunset until half an hour before sunrise (both times inclusive), sunset and sunrise being determined at surface level.

## Chapter 1

# The Display Authorisation Evaluator (DAE)

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## Appointment as a DAE

- 1.1 To be nominated as a DAE an individual **must** first be recommended from either the CAA EOO, an organisation associated with a particular display discipline or a credible source from within the Flying Display community. The sponsor **must** have personal knowledge of the individual's work, standards and integrity.
- 1.2 Appointment as a DAE is conditional on CAA assessment of current competence, experience and fitness and normally includes the following minimum requirements:
  - a) **must** hold a valid pilot's licence with normally a minimum of 1,000 hours as pilot-in-command or equivalent experience acceptable to the CAA
  - b) **must** have normally held a DA for at least three years
  - c) **must** have extensive flying display experience
  - d) **must** normally be an active Display Pilot
- 1.3 The appointment process includes an assessment of the potential DAE's:
  - a) current competency in display flying
  - b) ability to act as a role model for the CAA in carrying out Display Authorisation Evaluations
  - c) knowledge of display flying and flying display regulation
  - d) knowledge of DA approval, revalidation and upgrade processes
  - e) experience of mentoring and knowledge of ongoing responsibilities in relation to Display Pilot monitoring
  - f) knowledge of display flying Human Factors
  - g) knowledge of CAP 403, the ANO and SERA
  - h) ability to write useful and meaningful assessment reports
  - i) ability to maintain personal records of Evaluations and Mentoring
- 1.4 DAE nominees are required to submit an Application for Fitness Assessment for a Flying Display Role questionnaire (form [SRG 1303B](#)) to the [CAA GA Unit](#) during the appointment process to inform the fitness assessment.

- 1.5 DAEs are appointed for a maximum of 3 years. During this time DAEs may continue to conduct display competency evaluations as long as:
- a) they remain current in Flying Display activity
  - b) they attend at least one annual CAA hosted DAE Seminar
  - c) they complete at least one evaluation observed by the CAA EOO
- 1.6 Upon appointment a DAE will receive a DAE certificate issued by the CAA GA Unit.

### Reappointment as a DAE

- 1.7 Following a 3 year appointment period, DAEs may be reappointed having:
- a) passed through a further satisfactory fitness assessment following submission of an Application for Fitness Assessment for a Flying Display Role form [SRG 1303B](#)
  - b) attended at least 1 DAE seminar in the previous 3 year appointment period
  - c) been observed for at least one DA evaluation by the CAA EOO in the previous 3 year appointment period

### Roles and Responsibilities

- 1.8 When conducting DA evaluations, DAEs are operating on behalf of the CAA. As such they **should** discharge their duties accordingly. The roles of a DAE are as follows:
- a) to set examples of best practise for members of the display community
  - b) to conduct evaluations of display pilots in accordance with CAA guidance
  - c) to encourage reporting of all incidents and occurrences to the CAA
  - d) to actively monitor display pilot standards throughout the display season<sup>11</sup>
- 1.9 DAEs are responsible to the CAA for:
- a) conducting assessments of display pilots in accordance with CAA requirements
  - b) accurately reporting on the assessments of display pilots by completing form SRG 1300
  - c) ensuring that the display pilots they mentor and assess maintain a high standard of professionalism and safety

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<sup>11</sup> Where a DAE perceives a lapse in safety standards he **shall** bring the matter to the attention of the Display Pilot and, if no improvement noted, the CAA EOO. If any lapses are observed at a Flying Display, the FDD **should** be informed, followed by the CAA EOO.

- d) keeping a personal record of all evaluations and mentoring carried out on behalf of the CAA

### **DAE aerobic (a) approvals**

- 1.10 Only DAEs who are appropriately approved for aerobic (a) evaluations may recommend an applicant for the inclusion or upgrade of a aerobic authorisation on a DA.
- 1.11 The following levels of aerobic evaluation approval are available to DAEs:
  - a) Standard level aerobic approval (aS) - Allows DAEs to recommend the issue or upgrade of a DA to include Standard level aerobatics
  - b) Intermediate level aerobic approval (aI) - Allows DAEs to recommend the issue or upgrade of a DA to include Standard and Intermediate level aerobatics
  - c) Advanced level aerobic approval (aA) - Allows DAEs to recommend the issue or upgrade of a DA to include Standard, Intermediate and Advanced level aerobatics
  - d) Advanced level plus aerobic approval (aA+) - Allows DAEs to recommend the issue or upgrade of a DA to include Standard, Intermediate, Advance level and Advanced level plus aerobatics
  - e) Unlimited level aerobic approval (aU) - Allows DAEs to recommend the issue or upgrade of a DA to include Standard, Intermediate, Advanced, Advanced plus and Unlimited level aerobatics

### **DAE formation (f) approvals**

- 1.12 Only DAEs who are appropriately approved for formation (f) evaluations may recommend an applicant for the inclusion or upgrade of a formation authorisation on a DA.
- 1.13 The following levels of formation evaluation approval are available to DAEs:
  - a) Basic Formation approval (fB) - Allows DAEs to recommend the issue or upgrade of a Formation DA, as a formation member or leader with up to 4 aircraft but excluding tailchasing unless specifically authorised
  - b) Intermediate Formation approval (fI) - Allows DAEs to recommend the issue or upgrade of any level of Formation DA, except Advanced Formation



- c) Advanced Formation approval (fA) - Allows DAEs to recommend the issue or upgrade of any level of Formation DA, including aerobatic formation flying

### DAE tailchase (t) approvals

- 1.14 Only DAEs who are appropriately approved for tailchase (t) evaluations may recommend an applicant for the inclusion or upgrade of a tailchase authorisation on a DA.
- 1.15 The tailchase approval covers evaluations of tailchases of 2, up to 3 and up to 4 aircraft authorisations.

### The Evaluation Oversight Officer

- 1.16 The CAA Evaluator Oversight Officer (EOO) manages the DA and DAE process and is the DAE's first point of contact within the CAA. The EOO is charged with:
  - a) co-ordination between any pilot seeking to achieve DA issue with a DAE in their required discipline and geographical area
  - b) recommending DAEs to DA holders seeking mentoring, if directly approached
  - c) conducting annual DAE assessments
- 1.17 The [CAA GA Unit](#) organises a DAE seminar each year, where current and topical issues relating to DAs and display flying are discussed. Where possible, DAEs **should** attend annually, but **must** attend at least one out of every three seminars.

### Review and Enforcement

- 1.18 DAE performance will be subject to ongoing review. If it becomes necessary to remove an evaluator from the list of DAEs due to inactivity, then the CAA will give notification in writing explaining the reason for such termination.
- 1.19 In the event a DAE is found to be underperforming, the EOO will convene a review board and an investigation will be undertaken in accordance with the FAIR System at Appendix F.
- 1.20 Once the investigation is complete, a decision will be made as to whether any further action is required. Potential outcomes include: reinstatement,

downgrading categories and skill levels, further training, suspension or revocation<sup>12</sup>.

- 1.21 A DAE will be offered the right of review in circumstances where enforcement action follows an investigation. A request for a review **must** be made to the [CAA GA Unit](#) within 14 days of receipt of written notification.<sup>13</sup>

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<sup>12</sup> In accordance with the Air Navigation Order, Article 253 'Revocation, suspension and variation of certificates, licences and other documents'.

<sup>13</sup> In accordance with Regulation 6 of The Civil Aviation Authority Regulations 1991.

## Chapter 2

# DAE standardisation

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## General

- 2.1 The standards set by the DAE are the standards that display pilots will strive to achieve, therefore, DAEs **should** set themselves the highest standards and strive to achieve them at all times. Although the conduct of one DAE will invariably differ from another due to varying experience and aircraft type, it is the frame of mind and professional approach required for display flying that needs to be conveyed to the display pilot. Accordingly, whilst there will be some differences in practise, the CAA will endeavour to ensure standardisation through EOO visits and the annual DAE seminar.

## Standards

- 2.2 The accuracy, professionalism and attitudes that individuals fly to and demonstrate will define their standards and formulate their reputation; they will also define how others view them. As mentioned above, the CAA **expects** each DAE to set the highest possible standards. They **must** encourage and mentor each display pilot to achieve the same. DAEs **should** strive to achieve the highest possible standards across the full spectrum of flying, including, but not limited to:
- a) accurate flying
  - b) understanding of and adherence to rules and regulations
  - c) time keeping
  - d) briefing
  - e) preparation
  - f) general conduct
  - g) regulatory knowledge

## What to look for

- 2.3 DAEs **should** pay particular attention to, and continuously monitor, display pilots preparation and flying standards. If standards are being eroded, the DAE **should** intervene and inform the EOO.

- 2.4 **Preparation.** Particular attention **should** be paid to the production of correct documentation, aircraft readiness and personal preparation.
- 2.5 **Flying standards.** When observing flight demonstrations, DAEs **should** pay particular attention to adherence to the brief, observe the ability to be flexible when required and above all *energy management*.
- 2.6 **Through-life monitoring of standards.** Through-life mentoring is beneficial as it allows DAEs to continually monitor the standards of display pilots under their mentorship. This is an important part of ensuring the safety of the DA and DAE system and it is therefore vital that DAEs and display pilots maintain regular contact with each other.
- 2.7 **What to do if standards are being eroded.** If, during the course of through-life mentoring, it is noted that standards are being eroded, the DAE has a duty to step in and discuss any concerns with the display pilot. Early intervention can often rectify a situation and prevent further deterioration. However, if the situation is considered to be irrecoverable, due to either a lack of flying ability or poor attitude, the EOO **should** be contacted.

## Chapter 3

# Pre-evaluation mentoring

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## General

- 3.1 A pilot who wishes to apply for a DA will first be required to establish contact with a DAE who holds a current authorisation (pertinent to the skill(s) and group(s) the potential display pilot wishes to be evaluated in) and agree to be mentored by that DAE. Once contact has been made, the DAE **should** satisfy himself that the candidate is suitable to undertake the rigours of Display Flying.

## Pre-evaluation mentoring

- 3.2 The aim of pre-evaluation mentoring is for the DAE to establish the DA applicant's motivation and commitment and for the DA applicant to understand what is required of them. Human Factors plays a large role in the initial assessment. This process forms the basis for the follow-on mentorship, guidance and support that the DAE provides to the pilot and underpins the safe delivery of display flying across the UK. Pre-evaluation mentoring also provides an opportunity for the DAE to support the applicant during their application process.

## The initial evaluation

- 3.3 An initial evaluation **should** be conducted, ideally as a face to face meeting between the DAE mentor and the DA applicant. A detailed explanation of what is required of a DA holder **should** be given by the DAE. The following topics **must** be covered:

- a) **Experience.** Inspect the applicant's logbook to determine total flying experience, display experience, aerobatic or other relevant experience, total time on both the aircraft type and display aircraft category that will be used in the flight demonstration<sup>14</sup>.

The following **should** be used as a guide for DA applicants and DAEs when considering the minimum sensible level of experience required before a DA application can be considered:

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<sup>14</sup> Consideration **should** be given as to how recent the majority of the flying hours relating to the specific aircraft type / group / category have been accrued.

- i) Pilots of aircraft with piston engines of 800hp or greater, 2730 kg mass or greater, jet powered or helicopter - a minimum of 500 hours total time, of which not less than 300 hours **should** be as pilot-in-command
  - ii) Pilots of fixed-wing aircraft that do not fall within the categories in i) above - a minimum of 200 hours total time, of which not less than 100 hours **should** be as pilot-in-command
  - iii) Pilots of microlight aircraft - a total of 100 hours flying of which not less than 50 hours **must** be as pilot-in-command of a microlight aircraft
  - iv) Pilots of gliders - a total of 100 hours flying of which not less than 50 hours **must** be as pilot-in-command of a glider
  - v) Pilots of powered parachute, powered paragliders, powered hang gliders, hang gliders or paragliders - a total of 50 hours flying of which not less than 25 hours **must** be as pilot-in-command of a powered parachute, powered paraglider, powered hang glider, hang glider or paraglider as appropriate
- b) **Documentation.** Check the applicant's pilot licence, medical certificate,<sup>15</sup> certificate of experience or test (if any) to enable particular aircraft types to be included in the DA.  
Check the aircraft documentation including the Certificate of Airworthiness or Permit to Fly (and the limitations contained within) and the aircraft certificate of insurance which **must** specifically cover the type of flying to be conducted. If the aircraft is operated on any alternative system of certification then all relevant documents **should** be checked.
- c) **Motivation.** The DAE **should** use open questioning to establish the motivation of the potential applicant for display flying in order to judge whether the applicant is suitable. The principle behind this is that pilots **must** show a desire to proficiently display the aircraft and not to display themselves (or to show off) by taking unnecessary risks.
- d) **Commitment and training.** The DAE and applicant **should** agree what will be necessary to achieve the required standard for DA evaluation, including a realistic timeframe to do so. This may involve a significant

<sup>15</sup> Display Authorisation for pilots of all registered aircraft are only valid if the pilot holds either an EU medical certificate issued by an Aeromedical Examiner or an International Civil Aviation Organization medical certificate that is of an equivalent or higher standard.

commitment from the applicant in terms of time, training and financial outlay and **should** not be underestimated.

- e) **Options.** The DAE **should** also discuss the difference between display flying and aerobatic competition flying. Display flying will place additional demands on the pilot, including route planning, fuel management, slot times, and potential commercial pressures that largely do not arise in aerobatic competition flying. If a pilot does not have sufficient aerobatic experience for an aerobatic DA to be issued, it might be appropriate to suggest some aerobatic competition flying to develop these skills.

## Suitability

When considering candidate suitability, the following **should** be taken into account. There are generally five grounds for the CAA deciding that an applicant is not appropriate to be issued with a DA:

- a) lacking appropriate behaviours and attitudes
- b) insufficient experience
- c) inadequate or insufficient training
- d) lack of ability
- e) previous 'history' with the CAA

3.4 **Lacking appropriate behaviours and attitudes.** Where a lack of appropriate attitudes or behaviours has been identified an assessment **should** be made as to how the shortfall may be addressed. The applicant **should** be notified promptly by the DAE that the recommendation to the CAA for the issue of a DA may not be possible. This **should** be accomplished early on in the process to allow the candidate an opportunity to correct any failings and not left until the day of the test. A recommendation is only possible once the applicant has addressed any issues identified. If inappropriate personal motivation, attitude, or other human factors issue has been identified, the pilot **should** be advised that it is unlikely that he or she will ever be granted a DA. If this situation does arise then the EOO can assist in supporting the DAE with that decision.

3.5 **Insufficient experience.** If an applicant does not possess the requisite experience as per para 2.3 (a), then it is unlikely that they will have the requisite flying ability to safely perform in Flying Displays. However, if in the opinion of the DAE, the applicant will be competent to display, but lacks the requisite experience, the EOO **should** be consulted. This may result in confirmation that

the candidate requires more experience before entering into DA training or that an exception can be made<sup>16</sup>.

- 3.6 **Inadequate or insufficient training.** If an applicant has entered into DA training but has failed to commit fully to the agreed training programme, the DAE **should** not enter the applicant into a DA evaluation test. Instead, the applicant **should** be encouraged to undertake further training. If they subsequently fail to commit to the training programme, consideration **should** be given to terminating their DA training.
- 3.7 **Lack of ability.** Despite enthusiasm, a positive attitude, experience and training, some pilots will not possess the skills and ability required to participate in display flying. If this is the case, the DAE **should** terminate the applicant's training and inform the EOO – *'it is OK to say no'*!
- 3.8 **Previous History with the CAA.** Investigations, prosecutions, enforcement or other regulatory action will be taken into consideration when applying for a Display Authorisation.
- 3.9 Once the DAE is satisfied that the candidate is suitable for DA training, the DAE should notify the CAA and training and mentoring can begin<sup>17</sup>.
- 3.10 DAEs **should** note that ultimately the CAA will issue a DA based on a recommendation from a DAE and therefore, if any doubt exists as to the suitability of an applicant, the EOO **shall** be contacted to confirm suitability.

### **Failure to achieve the required standard**

- 3.11 Where a candidate fails to achieve the required standard for the initial issue of a DA, the DAE **shall** ensure that the application form is returned to the [CAA GA Unit](#) clearly indicating the situation, stating the reasons and any recommended remedial action such as further training. The candidate **should** contact the EOO prior to arranging any further evaluation.

<sup>16</sup> Any exceptions will require a written and signed proposal from the DAE including the proposed mitigations to cover the shortfall in experience.

<sup>17</sup> At this point the prospective DA applicant should also submit a copy of [SRG1303B Application for fitness assessment for a flying display role](#) to the CAA.



## Chapter 4

# Display Authorisation evaluation process

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## Display Authorisation Evaluation process

- 4.1 When assessing a display pilot, either for initial issue, revalidation or upgrade, details **shall** be recorded on form SRG 1300.
- 4.2 The evaluation consists of the following main areas:
- a) Oral examination
  - b) Pre-flight brief and inspection
  - c) Flight demonstration
  - d) Post flight de-brief
  - e) Recommendation

## Oral examination

- 4.3 The aim of the oral examination is to establish that the applicant has a solid understanding of the operation and limitations for the aircraft to be used along with an assessment of the candidates attitude and motivation. This discussion can take the form of a Q & A session, however, this is also an opportunity to impart experience and knowledge.
- 4.4 The DAE **shall**:
- a) discuss airframe weight, balance and loading limitations, engine operating limitations, 'G' load restrictions and any other limitations applicable to the demonstration aircraft
  - b) discuss personal motivation, philosophy and reason for the candidate's wish to obtain / renew a DA. Include in the discussion common causes of Flying Display accidents and Flying Display related human factor considerations / lessons learnt
  - c) require the applicant to describe the display which they intend to demonstrate. Discuss the logic of their routine, **energy management**, planning of the manoeuvres in relation to aircraft limitations, effects of

density altitude, effects of surface and upper winds and how to adjust the display to compensate for external constraints<sup>18</sup>

- d) Discuss and observe a display briefing whether the applicant is displaying as a singleton or leading a formation
- e) Highlight the importance of a walk through as preparation for a singleton or formation display or flypast
- f) discuss and ensure a thorough understanding of the need to:
  - i) establish entry parameters for all aerobatic manoeuvres, including the speed adjustment required when entering from a climb to aerobatic minimum height (e.g. from Flypast minimum height)
  - ii) achieve aerobatic gate parameters at all critical junctures of a manoeuvre, such as the apex of a loop before committing to 'pulling through the vertical' and continue the manoeuvre
  - iii) plan and practise escape manoeuvres for those occasions when gate parameters are not achieved
  - iv) remain above minimum aerobatic height when directly linking aerobatic manoeuvres
- g) ensure pilots understand the restrictions that apply when flying with a minimum aerobatic height higher than minimum flypast height:
  - i) When climbing from minimum Flypast height into an Aerobatic Manoeuvre, the pilot **must** fly straight and at no more than 30 degrees pitch angle until passing minimum aerobatic height
  - ii) **When certain of being able to recover from an Aerobatic Manoeuvre by minimum aerobatic height** and the next manoeuvres are non-aerobatic, that it is permitted to fly a straight descent at no more than 30 degrees pitch angle when descending through minimum aerobatic height to minimum Flypast height (In practice, the descent will be shallow and flown at much less than 30 degrees)
- h) discuss the applicant's emergency planning and escape manoeuvres for items, such as awareness and avoidance of inadvertent stalls/spins,

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<sup>18</sup> To obtain a Display Authorisation, pilots **must** be able to demonstrate that they can plan and perform a series of linked manoeuvres.

engine or system failures, key heights and speeds and actions if these are not achieved and changes in the weather during the display

- i) examine the applicant's understanding of the symptoms and recovery from, an inadvertent departure from controlled flight. The applicant **must** be fully aware of the characteristics of the aircraft to be flown in the demonstration and know the risks associated with flying at the limits of the flight envelope
- j) discuss the pilot's responsibilities during a Flying Display briefing and on receipt of any written brief
- k) discuss human performance and its limitations relating to display flying, including stressors such as anxiety, pressure or physiological limitations, cognitive biases, cumulative fatigue, mental attitude and personal limitations
- l) discuss the importance of thoroughly reading and checking the conditions contained on any CAA Permission granted for a Flying Display or Special Event
- m) discuss acceptable profiles for arrivals and departures at Flying Displays
- n) discuss when and where the privileges of a DA can be exercised
- o) discuss the correct application of ATC approvals and clearances as laid out in CAP413 Radiotelephony Manual
- p) confirm the applicant has a thorough working knowledge of [CAP 403 'Flying Displays and Special Events – Safety and Administrative Requirements and Guidance'](#). A Q & A session is recommended
- q) discuss relevant rules and regulations currently in force with particular reference to low flying, flight in the vicinity of congested areas, and any limitations related to aircraft Permits to Fly or Certificates of Airworthiness

#### 4.5 The DAE **shall** determine the applicant's knowledge of:

- a) the terms and conditions of a Flying Display Permission issued by the CAA
- b) the [Rules of the Air Regulations](#) currently in force
- c) the Standardised European Rules of the Air ([SERA](#)) in force with particular reference to SERA.5005
- d) the [ANO](#) currently in force with particular reference to Articles 7, 11, 86, 240 and 241
- e) limitations imposed by the pilot's licence
- f) the actions necessary to maintain a valid pilot's licence and DA
- g) the minimum lateral separation distances between display aircraft the crowd line

- h) mandatory requirements to adhere to minimum heights specified or referred to in any Permission granted by the CAA which override the holder's DA minima
- i) compliance with any limitations or conditions associated with an aircraft's Certificate of Airworthiness (C of A) or Permit to Fly at all times. Such conditions always take precedence over any CAA Permission issued for Flying Displays and Special Events
- j) the procedures to be adopted in the event of a radio failure during a flying display

### Pre-flight inspection

4.6 The DAE **shall** observe the applicant making their normal pre-flight inspection but **should** take the opportunity to remind the applicant of display specifics in the following areas:

- a) Fuel and oil adequate for the planned flight with contingency reserve;
- b) Aircraft structural integrity and freedom of flying surfaces and engine controls
- c) Thorough check for loose objects in the cockpit and elsewhere in the aircraft
- d) Parachute, if carried, and emergency equipment inspection
- e) Altimeter set to correct reference
- f) Planned use of transponder
- g) Emergency door or canopy releases inspected for correct operation, security and marking
- h) Safety precautions and checks on ejection seats and explosive canopy release or MDC, if fitted

### Flight demonstrations

4.7 At the discretion of the DAE, pilots who are demonstrating aerobatic manoeuvres for the first time may be required to conduct an initial flight at a safe height which is commonly above 1000 feet AGL/ASL, before demonstrating at a lower height as may have been requested by the applicant. For low level display evaluations, an [exemption from SERA.5005\(f\)\(2\)](#) may be required.

4.8 The DAE **must** be satisfied that the demonstrating pilot is operating well within their personal competence, capacity and experience level, in a safe and controlled manner and with strict adherence to limits.

4.9 Evaluation criteria **must** include<sup>19</sup>:

- a) precision of manoeuvres
- b) orderly execution of planned manoeuvres
- c) airspeed and height control
- d) energy management
- e) ability to conform to Display Area and lateral separation minima requirements
- f) ability to compensate for wind drift
- g) ability to adjust routine to accommodate unplanned constraints
- h) ability to execute a planned series of manoeuvres in an order specified by the DAE
- i) ability to handle simulated emergencies during a Flying Display routine
- j) ability to perform escape manoeuvres when gate parameters are not achieved
- k) maintenance of slot times and duration

4.10 For all evaluation flight demonstrations the DAE **must** formally de-brief the pilot after the performance covering any variation of planned display due to conditions and include a discussion on how the pilot would have varied the display to accommodate other unplanned constraints. The written details of the de-brief **shall** be included in section 4 of the form SRG 1300.

4.11 Other than for the revalidation of Formation and Tailchase disciplines, evaluation flight demonstrations for the initial issue or revalidation of a Display Authorisation cannot be assessed whilst the applicant is following any other aircraft.

## Flypasts

4.12 Single flypasts are in isolation, normal flight flown at a lower height when in the display environment and as such may be considered the simplest way of presenting an aircraft.

4.13 Flypasts that involve dynamic manoeuvring which may be required to reverse the direction of flight can be innocuous and **must** be flown with caution. It follows that the dynamic manoeuvring **should** be appropriately briefed in detail by the DAE preceding the observation of a flypast evaluation.

<sup>19</sup> Items g), i) and j) **should** be covered verbally and demonstrated where possible.

## Spin training and departure awareness

- 4.14 An initial application for a DA that includes an authorisation for display aerobatics **must** include evidence that the applicant has received appropriate spin training. Additionally, the applicant **must** show that they are current on spin entry and recovery techniques, preferably on the aircraft type flown during evaluation (if permitted), by logbook evidence and / or demonstration. DAEs **shall** indicate that these conditions have been satisfied in the 'Applicant's Previous Spin / Aerobatic Training' section of Form SRG 1300.
- 4.15 If the DAE is not satisfied that the applicant is sufficiently aware of, or current in, wing over aerodynamic departure and recovery / spin entry and recovery techniques then the recommendation **must** be restricted to non-aerobatic display (with a specific wing over exclusion) until such time as the applicant has received additional appropriate training.

## Recommendation

- 4.16 Following successful evaluation, the DAE will provide a recommendation for issue / revalidation / upgrade using the relevant form and **shall** submit the application to the [CAA GA Unit<sup>20</sup>](#). The contents will be processed, the DAE's comments / recommendations reviewed and the CAA's records updated accordingly. Subject to satisfactorily completing the procedure, either a new DA or upgraded DA will be issued or, for DA revalidations, a display pilot will be permitted to continue to exercise the privileges of their existing DA.
- 4.17 If making a recommendation for an inclusion of a 'comedy flying' authorisation, DAEs **must** clearly declare the nature of the flying activity being endorsed by choosing from:
- a) crazy flying
  - b) balloon bursting
  - c) flour / eggs / grapefruit / etc bombing
  - d) limbo
  - e) ariel marksman
  - f) streamer cutting
  - g) other

<sup>20</sup> Any completed paperwork **must** be received by the CAA no later than 14 days from the date of the evaluation with at least 28 days allowed for the processing of correctly completed and submitted forms.

## Chapter 5

## Display Authorisation aerobatic (a) evaluation

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### Standard level (aS) aerobatic evaluation criteria

5.1 The evaluation criteria for standard level aerobatic authorisations is as follows:

- a) **Lines.** Mainly horizontal or up to 45° climbing/diving lines in normal flight.
- b) **Turns.** Turns through 90° to 360° in normal flight.
- c) **Spins.** Erect Spins of one turn, with entry and exit in normal flight.
- d) **Stall turns.** Stall turns with normal entry and exit.
- e) **Loops and eights.** Inside circular loops with normal entry and exit.
- f) **Combinations.** For example:
  - i) half an inside loop followed by a half roll ('Roll off the Top')
  - ii) five eighths of an inside loop combined with a half roll on diving exit Line ('Half Cuban 8')
  - iii) 45° climbing line followed by a half roll and pull through to level flight ('Reverse Half Cuban 8')
- g) **Rolls.** Slower aileron rolls on horizontal line, or where combined with a combination manoeuvre listed above, on the diving or climbing line.

5.2 Pilots authorised at this level are only permitted to perform loops or aileron rolls in civil registered ex-military jet aircraft at civil flying displays if they have received explicit approval from a suitably authorised DAE.

### Intermediate level (aI) aerobatic evaluation criteria

5.3 The evaluation criteria for intermediate level aerobatic authorisations is as follows:

- a) **Lines.** Mainly horizontal or 45° climbing or diving lines in normal or inverted flight.
- b) **Angles.** Change of flight path between lines normally through angles of not more than 90°.
- c) **Turns.** Turns through 90° to 360° in normal flight, starting and finishing in normal or inverted flight.
- d) **Spins.** Erect spins of one or two turns with entry and exit in normal flight.

- e) **Stall turns.** Stall turns with normal entry and exit, with or without half rolls in the vertical climb and / or dive.
- f) **Loops and eights.** Inside half loops, loops and ‘Cuban 8s’ with normal entry and exit. Loops may be circular or square
- g) **Combinations.** For example:
  - i) Half to five eighths of an inside loop may be combined with entry or exit lines and angles
  - ii) Quarter or half rolls may be included on the lines
- h) **Rolls.** By definition these are inserted in lines or other figures. Slow, aileron or barrel rolls, two point or four point rolls with between a quarter and one rotation flown in any one of the positions referred to above. Positive flick rolls.

5.4 Pilots authorised at this level are only permitted to perform loops, aileron and barrel rolls in civil registered ex-military jet aircraft at civil flying displays if they have received explicit approval from a suitably qualified DAE.

#### Advanced level (aA) aerobatic evaluation criteria

5.5 The evaluation criteria for advanced level aerobatic authorisations is as follows:

- a) **Lines.** Horizontal, climbing and diving in normal flight and vertical lines climbing and diving. All lines may be flown with or without rolls.
- b) **Angles.** Flight through any angle between such lines, with a change of flight path typically between 45 and 135°.
- c) **Turns and rolling turns.** Turns through 90 to 360° starting and finishing in normal or inverted flight, with or without rolls, with rotation in the same or opposite direction to the turn.
- d) **Spins.** Normal and inverted spins with entry and exit in normal or inverted flight.
- e) **Stall turns.** Stall turns with normal or inverted entry and exit with or without rolls in the vertical climb and/or dive.
- f) **Loops and eights.** Inside and outside half loops, loops and horizontal eights (‘inside’ + ‘outside’) with normal or inverted entry and exit. Loops may be circular, square, diamond or eight-sided. Rolls may be inserted in loops and eights.
- g) **Combinations of lines, angles, loops and rolls.** Half to three-quarters of an inside or outside loop may be combined with entry or exit lines or angles and rolls may be included on the lines.



- h) **Rolls.** By definition these are inserted in lines or other figures. Multiple rolls, or fractions of, on various lines up to a maximum of 2 x 360 degree rotations. Multiple flick / snap rolls, positive and negative, on various lines up to a maximum of 2 x 360 degrees rotation.

5.6 DA pilots applying to upgrade to this level **must** be able to demonstrate the required recovery techniques for inadvertent entries to tailslides, ie from a stall turn or any vertical line.

### Advanced level plus (aA+)

5.7 All advanced level DA pilots applying for upgrade to advanced level plus **must** be able to produce evidence of adequate training covering the requirements of this upgrade. Training **shall** include advanced spin training covering flat erect spinning, flat inverted spinning and cross over spinning all recovering onto specific headings<sup>21</sup>.

5.8 The evaluation criteria for advanced level plus aerobatic authorisations is as follows<sup>22</sup>:

- a) **gyroscopic figures / tumbles / Lomcevak.** Limited to a maximum of 2 rotations with a climbing vector. All gyroscopic elements **must** be recovered by 1000 feet AGL.
- b) **Mulleroid / Spiral Tower.** Limited to a maximum of 2 turns of flat spinning.

### Unlimited level (aU) aerobatic evaluation criteria

5.9 All DA pilots applying for upgrade to unlimited level aerobatics **must** have passed through advanced and advanced level plus.

5.10 The evaluation criteria for unlimited level aerobatic authorisations is as follows:

- a) By definition, there are no restrictions on aerobatic figures, including autorotative figures which a pilot flying Unlimited category aerobatics may perform.
- b) Applicants must be current with flat erect spinning, flat inverted spinning and cross over spinning all recovering onto specific headings.

<sup>21</sup> A written statement from an appropriately qualified trainer or log-book evidence **must** be provided.

<sup>22</sup> Torque rolls, hovering and simulated hovering / ultra high AoA flight and knife edge spins are not permitted at this level.

Although based on FAI skill levels, these aerobatic DA skill levels have been adjusted to reflect the normal display aerobatic environment and are not to be confused with FAI skill levels.

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## Chapter 6

## Display Authorisation formation (f) evaluation

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### Formation (f) categories

- 6.1 In order to take part in a formation display the pilot **must** hold a DA permitting formation flying at the required skill level. Formation DA authorisations are broken down as follows:
- a) Where Close formation station keeping is permitted it will be limited to:
    - i) Close formation station keeping with up to 4 aircraft or
    - ii) Close formation station keeping with unlimited numbers of aircraft
  - b) Where Close formation leading is permitted it will be limited to:
    - i) Close formation leading with up to 4 aircraft or
    - ii) Close formation leading with unlimited numbers of aircraft
- 6.2 Close Formation flying numbers may be restricted by the CAA GA Unit where necessary.
- 6.3 Close Formation flying is further classified into Basic (B), Intermediate (I) and Advanced (A) (Aerobatic) skill levels. The levels are defined as:
- a) **Basic (fB)**. Gentle Formation manoeuvring where bank and pitch angles are limited to approximately 30 degrees. Formation manoeuvring **should** be smooth and progressive.
  - b) **Intermediate (fI)**. Formation manoeuvres, including gentle wingovers, with pitch and bank angles limited to approximately 60 degrees. Formation manoeuvring **should** remain smooth and progressive. However, the formation may be required to undertake more rapid changes in pitch and bank angles during the flight.
  - c) **Advanced (fA)**. Formation manoeuvring where there is no limit to bank angle or pitch angle (Aerobatics).

### Formation category evaluations

- 6.4 DAEs **shall** satisfy themselves that the DA applicant has completed a period of formation training prior to being assessed for a formation DA; as a minimum, this

**should** include a check of the applicant's logbook, paying particular attention to recency.

- 6.5 The level of formation authorisation recommended will be dependent on the previous formation experience level of the applicant, the extent and level of the training carried out and the applicant's performance during the evaluation which **must** include demonstrating situational awareness and adherence to SOP's.
- 6.6 Before any unlimited formation authorisation is recommended, the applicant **must** have extensive previous formation experience or **must** have demonstrated a consistently high standard of ability over a number of display seasons at a lower level of authorisation.
- 6.7 To add formation to a Display Authorisation a pilot needs to be assessed by carrying out a flight evaluation. In many cases the pilot may not have extensive formation experience but provided a DAE considers that a required standard has been achieved a recommendation for upgrade can be made on form SRG 1300 citing specific conditions such as:
- a) BASIC FORMATION up to 2 aircraft only
  - b) BASIC FORMATION up to 4 aircraft as part of '[Team Name]' display team only
- 6.8 These restrictive conditions **shall** remain in place until the display pilot is successfully re-evaluated when a DAE may recommend that these restrictions be removed / amended.

### Close formation flying - up to 4 aircraft

- 6.9 Before a DAE recommends an applicant for a 'Close Formation flying with up to 4 aircraft' authorisation<sup>23</sup>, the applicant **must** show a clear understanding of the basic principles of formation flying including:
- a) the principles of safely joining into Close Formation
  - b) the safe escape manoeuvre if the join-up is incorrect
  - c) the break from Close Formation and the rejoin
  - d) the effects of inertia
  - e) assessment of closing speed
  - f) throttle handling<sup>24</sup>

<sup>23</sup> Subject to an applicant's experience, a DAE may consider close formation with '2 aircraft', or 'up to 3 aircraft', more appropriate than 'up to 4 aircraft' and the recommendation **should** be made accordingly.

<sup>24</sup> if appropriate, the differences between jet and piston engine handling and response **must** be appreciated by the applicant

- g) the effects of flying controls
- h) clear definition of the position cues for the three basic formation positions - echelon starboard, echelon port and line astern - in relation to the aircraft being flown in the evaluation
- i) procedures for moving safely from one formation position to another;
- j) the executive commands for making a change of Formation
- k) the safety aspects and routine of moving formation when more than two aircraft are involved
- l) the need for regular monitoring of aircraft parameters, particularly engine temperatures, pressures and fuel contents, and the timing of these airmanship checks
- m) aircraft emergency procedures and handling when in formation
- n) the actions in the event of losing sight of the lead aircraft

6.10 During a formation flight evaluation the DAE **should** either fly as the formation leader or, if the applicant's aircraft is suitably equipped, with the applicant. It is recommended that initial formation manoeuvring be carried out at medium altitude to confirm the applicant's ability. However, before a recommendation is made, representative manoeuvring **must** be carried out at display height. The flight **should** consist of at least two aircraft and **should** cover the following minimum requirements:

- a) A pairs take-off in echelon, if appropriate
- b) Manoeuvres in the three basic formation positions. Within the constraints of the aircraft limitations and performance, the manoeuvres **should** include straight and level, climbing, descending and turning, at both high and low speeds / power settings
- c) Change of formation position in straight and level flight and moderate banked turns, appropriate to the level of approval sought
- d) Breaks and rejoins from both echelon positions in straight and level flight and moderate banked turns
- e) Emergency breaks during manoeuvres
- f) Confirmation that the applicant is carrying out airmanship checks (fuel calls, etc)
- g) A Close Formation run and break into the visual circuit

### Close formation flying – unlimited aircraft

- 6.11 Before a DAE recommends an applicant for an 'Unlimited formation member' authorisation, in addition to the basic principles of formation flying listed above, the candidate **must** be able to demonstrate an in-depth knowledge of the skill and discipline required for formation flying supported by extensive evidence of formation flying experience, including leading with up to four aircraft.

### Close formation leading - up to 4 aircraft

- 6.12 Before a DAE recommends an applicant for a 'Close Formation leading with up to 4 aircraft' authorisation the following **must** be considered:
- a) The applicant **must** have adequate experience in flying as a formation member in addition to suitable training in formation leading.
  - b) The applicant **must** be aware of their responsibilities as a leader specifically in relation to:
    - i) the need to fly smoothly and with consideration for the other Formation members
    - ii) the use of power and the power margins the leader needs to allow for other formation members, particularly in manoeuvre and where the formation contains more than one aircraft type
    - iii) the responsibility for terrain clearance, lookout and positioning relative to the display line for all formation members
    - iv) actions in the event of an emergency.
  - c) The applicant **must** brief and lead a formation with the DAE acting, ideally, as the applicant's wingman. The briefing **must** cover all required aspects, particularly safety precautions, in a logical manner and include a walk through of the planned display routine or flypast.
  - d) The in-flight portion of the evaluation **must** include an assessment of the applicant's leader's abilities in all normal and display related manoeuvres including, if appropriate, formation aerobatics.

### Close formation leading - up to 4 aircraft

- e) Before a DAE recommends an applicant for an 'Unlimited formation lead' authorisation the candidate **must** be fully conversant with and demonstrate an in-depth knowledge of the skill and discipline required for formation flying supported by extensive evidence of formation flying and formation leading with up to four aircraft. The DAE **should** also take into consideration the content of SOP's used and the quality, and

thoroughness, of the candidate's briefing before recommendation to the CAA.

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## Chapter 7

# Display Authorisation tailchase (t) evaluation process

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## Tailchasing with up to 4 (t4) aircraft and tailchase lead evaluations

- 7.1 An application for tailchase authorisation will not be considered unless the applicant already holds, or is recommended for, a formation member authorisation.
- 7.2 Before a DAE recommends an applicant for a 'tailchasing with up to 4 aircraft' authorisation<sup>25</sup>, the applicant **must** demonstrate the following minimum standards during an evaluation:
- a) During the pre-flight briefing the applicant **must** demonstrate awareness of the following areas:
    - i) The positions usually flown
    - ii) How the position can be maintained by use of 'lead and lag' and the need to follow the leader's flight path without over anticipating a manoeuvre
    - iii) Assessment of separation distances and closing speeds
    - iv) The avoidance and dangers of encountering another aircraft's slipstream and the subsequent actions to be taken
    - v) Loss of leader (or aircraft ahead) procedure - 'safe area', radio call, no rejoin until visual contact with all other members and then only when all are aware of the rejoining aircraft
  - b) The applicant **must** successfully carry out a realistic Tailchase at medium level and at a representative display height during the in-flight portion of the evaluation.
- 7.3 An application for a tailchase lead authorisation will not be considered unless the applicant already holds, or is recommended for, a tailchase member authorisation and a formation leading authorisation.

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<sup>25</sup> Subject to an applicant's experience, a DAE may consider tailchase with '2 aircraft', or 'up to 3 aircraft', more appropriate than 'up to 4 aircraft' and the recommendation **should** be made accordingly.



7.4 Before a DAE recommends an applicant for a ‘tailchase lead’ authorisation the applicant **must** demonstrate the following minimum standards during an evaluation:

- a) During the briefing the applicant **must** demonstrate awareness of the pertinent leadership factors such as:
  - i) maximum speeds and power to be used
  - ii) maximum ‘g’ loading
  - iii) type of manoeuvres used in tailchasing
  - iv) consideration of other formation members
  - v) the emergency and loss of leader procedures
- b) The applicant **must** demonstrate the ability to satisfactorily lead a representative tailchase.

## Chapter 8

# The Display Authorisation – initial application and issue

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## General

- 8.1 In order for any pilot to fly in a Flying Display the pilot **must** hold a valid DA issued by the CAA or by a country with an approved DA evaluation system<sup>26 27 28</sup>  
<sup>29</sup>. Additionally, Civilian pilots **must** hold a current licence with a current class or type rating, or, where no type rating exists, an Aircraft Type Rating Exemption (ATRE), which entitles them to fly the type of aircraft to be displayed.
- 8.2 Exemptions from the need to hold a DA may exceptionally be issued, but only for a specific display approved by the CAA GA Unit. No deviation from the agreed routine is permitted, except where this is justified by safety concerns. This is of particular relevance to Air Operator's Certificate (AOC) operators of large transport aircraft where the display Permission will generally be for a simple demonstration or Flypast.

## DA initial application

- 8.3 Once a DAE has agreed to mentor, train and evaluate a pilot, the DAE **shall** notify the CAA and the DA applicant **must** submit a completed [SRG 1303B](#) to the [CAA GA Unit](#).
- 8.4 Following DA mentoring and training, and once the DAE is content that the prospective display pilot has reached the required standard, an evaluation for the issue of a DA may be carried out. If the outcome of this evaluation is satisfactory the DAE **shall** complete SRG 1300 and submit it to the [CAA GA Unit](#) for consideration. It is the prospective display pilot's responsibility to ensure that the DAE completes and submits the SRG 1300 to the [CAA GA Unit](#).
- 8.5 An initial application for a DA that includes an authorisation for display aerobatics **must** include evidence that the applicant has received appropriate spin training.

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<sup>26</sup> Military pilots holding a PDA or who have been specifically authorised for Flypast (Mil) are exempt from this requirement. For foreign military participation, see chapter 1.

<sup>27</sup> Norway and Switzerland are currently the only countries that the CAA has agreement with.

<sup>28</sup> For foreign civilian pilots that wish to display in the UK who do not come from an approved country, the pilot would need to obtain a UK DA.

<sup>29</sup> Whilst not essential, a second pilot of a multi crew aircraft **should** hold a DA if possible.

Additionally, the applicant **must** show that they are current on standard spin entry and recovery techniques, preferably on the aircraft type flown during the evaluation (if permitted), by logbook evidence and/or demonstration.

- 8.6 An initial application for a DA that includes an evaluation of wingovers or similar ‘reversal manoeuvres’ **must** include aerodynamic departures and their associated recovery. The written submission to the [CAA GA Unit](#) via SRG 1300 **must** include evidence that these manoeuvres have been executed correctly and safely.
- 8.7 Once SRG 1300 has been submitted to the [CAA GA Unit](#), the CAA will convene a DA panel to assess the candidate. Provided the applicant has met the minimum requirements as set out above, passed the Fitness Assessment for a Flying Display role and is recommended for display flying by the DAE via SRG 1300, the [CAA GA Unit](#) will issue the DA.

### Issue of the Display Authorisation

- 8.8 Following a successful evaluation by a UK CAA appointed DAE the completed form SRG 1300 should be sent to the CAA. The contents of the application will be processed and the DAE’s recommendation reviewed. On completion of the process, and if the application is acceptable, a new DA will be issued.
- 8.9 A DA consists of the Display Authorisation and a Certificate of Test and Competence. The categories or specific aircraft types authorised along with the type of display, any specific approvals to perform loops and barrel rolls, the level of Formation and Tailchase approval and the minimum altitude for aerobatics (if authorised) and Flypasts will be specified in the DA<sup>30</sup>. Additionally any other specifics such as wing walking, balloon bursting, flour bombing etc. will be included in the ‘other’ column of the DA. Initial issue will be in one of the categories shown in the table below.
- 8.10 The initial issue of an unlimited level aerobatic DA will only be granted under specific circumstances, on a case by case basis, after written application to and consideration by the [CAA GA Unit](#) DA panel. Please contact the EOO if this is likely to be requested.

<sup>30</sup> For initial DA and DA upgrade, a minimum of 500 feet for aerobatics and 200 feet for flypasts is normally issued unless extenuating circumstances can be endorsed by DAE recommendation.

## Tyro DA (TDA) privileges

- 8.11 To help facilitate an opportunity for newly qualified display pilots to gain experience and exposure within the Flying Display community, the CAA allows FDDs to offer up to 2 display items per Flying Display<sup>31</sup> to TDAs without incurring any extra charge if the additional item(s) move their display into a higher price band<sup>32</sup>.
- 8.12 To benefit from the scheme a display pilot must have attended a Display Symposium.
- 8.13 TDA privileges may be exercised within the first 25 months following the initial DA evaluation and are valid for the first 8 displays of the new display pilot's career.
- 8.14 TDA privileges are not available for previously expired DAs.
- 8.15 Display pilots who passed initial DA evaluation within the previous 18 months, have completed fewer than 8 public displays and attended a Display Symposium may apply for TDA privileges by contacting the [CAA GA Unit](#).
- 8.16 TDA privileges expire after 25 months or 8 display appearances<sup>33</sup> from initial DA evaluation, whichever occurs first.
- 8.17 To apply for TDA privileges, a display pilot is to email the [CAA GA Unit](#) with a request containing details of evaluation and symposium attendance. Once satisfied, the CAA will issue a certificate stating the expiry date of the TDA period and an area where any display flown using TDA privileges is to be logged. A copy of this certificate and log must be presented to an FDD as evidence of eligibility to qualify as a free TDA display item.

<sup>31</sup> The maximum number of TDAs permitted vary depending on the size of a Flying Display. For further details of TDA participation refer to CAP403.

<sup>32</sup> It is permissible for a single display item to contain more than one TDA provided they are a constituted display formation or act. However, display items containing a combination of established DAs and TDAs do not qualify.

<sup>33</sup> Any scheduled display performance not completed, for whatever reason, is not included in this total.

## Chapter 9

# Display Authorisation categories, validity and currency

## Aircraft categories for Display Authorisation

9.1 The following aircraft categories and individual type classifications are used in the DA<sup>34</sup>:

Category	Group
	<b>Single-Engine Piston aeroplanes (SEP)</b>
A	Less than 200 hp
B	Between 200 and 599 hp (inclusive)
C	600 hp and above
	<b>Multi-Engine Piston aeroplanes (MEP)</b>
D	Less than a total of 300 hp
E	Between a total of 300 and 599 hp (inclusive)
F	Single Pilot, a total of 600 hp and above, specified by type
Z	Multi-crew, a total of 600 hp and above, specified by type
	<b>Jet Powered Aeroplanes (JPA)</b>
G1	Straight-wing single engine jet aeroplanes specified by type
G2	Swept-wing single engine jet aeroplanes specified by type
H	Multi-engine jet aeroplanes specified by type
	<b>Turbo-prop Powered Aeroplanes (TPA)</b>
I	Single-engine turbo-prop aeroplanes specified by type
J	Multi-engine turbo-prop aeroplanes specified by type

<sup>34</sup> For the purposes of the classifications in this table, an aircraft's horsepower is rated at sea-level.

Category	Group
	<b>Helicopters and Gyroplanes (H &amp; G)</b>
L	Helicopters specified by type
M	Gyroplanes specified by type
	<b>Gliders, Hang Gliders and Paragliders (GLI)</b>
N	Gliders of all types
O	Hang Gliders of all types
Y	Paragliders of all types
	<b>Microlight aeroplanes (MLA)</b>
T	Microlight aeroplanes of all types with weight shift control
U	Microlight aeroplanes of all types with three axis control
V	Microlight aeroplanes of all types with hybrid control
	<b>Powered Parachutes, Powered Paragliders and Powered Hang Gliders (LPA)</b>
W1	All types of Trike Unit Powered Parachutes
W2	All types of foot launched Powered Paragliders
W3	All types of foot launched Powered Hang Gliders

9.2 The following disciplines are used to define the skill levels in the DA:

<b>Aerobatic skill level (a)</b>	
aS	Standard
al	Intermediate
aA	Advanced
aA+	Advanced plus
aU	Unlimited
<b>Formation Skill Level (f)</b>	
fB	Basic
fl	Intermediate
fA	Advanced
<b>Formation numbers</b>	
2	Total 2 aircraft
3	Up to 3 aircraft
4	Up to 4 aircraft

U	Unlimited
<b>Tailchase (t)</b>	
t2	Total 2 aircraft
t3	Up to 3 aircraft
t4	Up to 4 aircraft

## Validity

- 9.3 The DA is valid once the pilot receives a copy issued by the [CAA GA Unit](#).
- 9.4 An initial DA is valid for a period of 6 months from the date of successful evaluation. Following revalidation the DA will remain valid for a further 6 month period. Subsequent revalidations are then valid for periods of 13 months at a time. During this 25 month period, the same evaluating DAE may be used to conduct revalidations and, if appropriate, upgrade evaluations.
- 9.5 First time DA pilots **shall** attend a DA seminar or workshop<sup>35</sup> within the first 12 months from the date of initial evaluation. Thereafter a seminar or workshop **must** be attended at least once every 3 years for the DA to remain valid<sup>36</sup>.

## Currency

- 9.6 In addition to a valid Certificate of Test and Competence, to maintain a valid DA a Display Pilot is required to meet certain currency requirements as depicted below before taking part in a Flying Display. Routines flown at flying displays, and those flown during dedicated practises, may be used to maintain currency. In each case, a complete routine **must** be flown to count towards currency; simply flying some aerobatic manoeuvres during a flight is not sufficient to maintain display currency. Lapsed currency cannot be regained at a Flying Display.

<sup>35</sup> Usually held as part of a Display Symposium

<sup>36</sup> When attending DA seminars or workshops, DA holders **must** bring their DA's for stamping and dating to record attendance.

Display Pilot <b>minimum</b> currency requirements preceding <b>Flying Display</b>		
Display aircraft	Within 90 days of date of display	Within 30 days of date of display
All except those included below	3 complete display routines flown or practised	1 complete display routine flown or practised <b>in that category</b>
800 hp or greater, and/or 2730 kg or greater, and/or Jet powered <sup>37</sup>	3 complete display routines flown or practised <b>in that category</b>	1 complete display routine flown or practised <b>in that category</b>

Display Pilot <b>minimum aerobatic</b> currency requirements preceding <b>Flying Display</b>		
Aerobatic Skill Level	Within 90 days of date of display	Within 30 days of date of display
Standard	3 complete display routines flown or practised	1 complete display routine flown or practised <b>in that category</b>
Intermediate Advanced Unlimited	3 complete display routines flown or practised <b>in that category</b>	1 complete display routine flown or practised <b>in that category</b>

9.7 It is emphasised that the above requirements **should** be viewed as the minimum requirements for display currency and that pilots are encouraged, particularly during the winter months or pre-season work up, to undertake sufficient practise to ensure that a high standard of safety is maintained.

9.8 If a display routine is relatively new, or if a display pilot is at minimum currency, the DA holder **should** consider setting more restrictive minima<sup>38</sup>, for practise and / or actual display purposes, until such time as full capacity is obtained. For assistance in conforming with any such increase in minima and to facilitate appropriate monitoring and feedback, it is recommended that for Flying Displays the FDD is notified accordingly.

9.9 Display Routines or practises **must** be recorded in the pilot's logbook.

<sup>37</sup> As defined in CAP 632.

<sup>38</sup> More restrictive minima could mean an increase in minimum height, an increase in minimum lateral separation distance between display aircraft and crowd line, or both.



## Chapter 10

# DA revalidations, upgrades, lapses and enforcement

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## General

- 10.1 This chapter focuses on DA revalidation, upgrade, what constitutes a lapsed / expired DA and CAA actions in the case of a DA suspension. The DAE is at the core of all of these decisions, the CAA relying on a good DAE / DA mentoring relationship and effective communication between the DAE and the EOO to assist in appropriate, timely and accurate decision making.

## Revalidation

- 10.2 The revalidation of a DA will be by certification of the DA Certificate of Test and Competence. The revalidation evaluation **must** be conducted by a suitably qualified DAE and a written report made to the [CAA GA Unit](#) using form SRG 1300.
- 10.3 In the case of a lapsed DA, where no upgrade<sup>39</sup> of privileges is being sought, the Certificate of Test and Competence can be signed and revalidated by a DAE provided a period of no more than 3 years has elapsed since the last evaluation.
- 10.4 Revalidation is dependent on a positive Behavioural and Attitudinal Fitness Assessment. For revalidations where there has been no change to details entered on a previously submitted [SRG 1303B](#) fitness assessment questionnaire, a simple declaration can be made on the SRG 1300 DA revalidation form by way of a tick box. If there has been any change to any of the information previously declared, form [SRG 1303B](#) **must** be completed in full and submitted to the [CAA GA Unit](#) along with the SRG 1300 DA revalidation form.
- 10.5 The necessary criteria to satisfy a DAE of a pilot's display competency will combine a check of recent display activity (actual and practise) and an observation of the pilot's flying competence. Any observation of a pilot's display flying competency, either at a display or during practise, **must** be pre-arranged with the DAE conducting the evaluation.

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<sup>39</sup> Upgrades are not permitted in the case of lapsed DA revalidations. Upgrades are permitted at routine revalidations or at any time during the validity period.

- 10.6 A display pilot authorised to perform at or above standard level aerobatics in one or more aircraft groups<sup>40</sup> is required to revalidate their Display Authorisation in a category within that group every 13 months.
- 10.7 A display pilot authorised to perform at standard level aerobatics in one of these groups will be required to revalidate their DA in a category within that group every 26 months.
- 10.8 A display pilot authorised to perform **at or above** standard level aerobatics in multiple aircraft groups that include Jet Powered (JPA) and / or Helicopter (H & G) groups, is required to revalidate their DA on a type within the JPA and / or H & G group every second revalidation.
- 10.9 A display pilot authorised to perform at standard level aerobatics in one or more of the Turbo-Prop (TPA), Multi-Engined Piston (MEP) or Single-Engined Piston (SEP) groups is required to rotate their revalidations across each group year on year, thus ensuring that their DA is revalidated on a type within that group at least every second revalidation.
- 10.10 A display pilot authorised in one category and in more than one type is required to revalidate their DA by rotating between those types year on year.
- 10.11 When a DAE has prepared a report recommending the issue / revalidation of a DA it **must** be forwarded direct to the [CAA GA Unit](#).
- 10.12 Where a pilot fails to achieve the required standard for the revalidation or upgrade, a DAE **shall** ensure that details of the reasons and any recommended remedial actions are entered on the revalidation form and submitted to the [CAA GA Unit](#). The candidate **shall** contact the [CAA GA Unit](#) prior to arranging any further evaluation.
- 10.13 Any pilot who is denied a recommendation to obtain a DA by a DAE may apply directly to the EOO at the [CAA GA Unit](#) for consideration by the [CAA GA Unit](#) DA panel.

### Rotating DAEs

- 10.14 A display pilot is not permitted to have a DA revalidation assessment conducted by the same DAE for more than two consecutive years.
- 10.15 Where geographical coverage and specialisation of DAEs means that this is not possible the following options can apply:

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<sup>40</sup> As detailed in the table in chapter 9.

- a) Revalidation by the same DAE observed by the EOO<sup>41</sup>
- b) application to the EOO for exemption from the requirement<sup>42</sup>

## DA Upgrades

- 10.16 Where a pilot seeks to upgrade the privileges of a DA, they **must** engage with an appropriate DAE for mentoring and guidance in fulfilling the necessary requirements. In addition, the Certificate of Test and Competence can only be signed and revalidated by the [CAA GA Unit](#). In all cases, a completed form SRG 1300 application for the upgrade of a DA **must** be returned to the [CAA GA Unit](#) for record keeping or action purposes as appropriate.
- 10.17 **Aerobatic upgrade.** Applications for upgrades in aerobatic skill level **should** specify the requested level. DAEs will need appropriate evidence of competence before submitting the recommendation to the EOO.
- 10.18 **Formation upgrade.** Applications for formation DAs will need to specify the level of authorisation requested in both formation level and formation numbers. DAEs will need appropriate evidence of competence before recommending a specific formation authorisation.
- 10.19 An application for a formation leading authorisation will not be considered unless the applicant already holds, or is recommended for, a formation member authorisation.
- 10.20 Extensive formation experience, or a proven track record of a consistently high standard of ability over a number of display seasons at a lower level of Formation Authorisation, will be pre-requisite before any of the unlimited authorisations can be considered.
- 10.21 **Tailchase upgrade.** Tailchase authorisations will not be issued unless a Close Formation authorisation is already held by the applicant or recommended by the DAE as part of the application. To participate in a tailchase a pilot **must** hold a DA which specifically authorises tailchasing.
- 10.22 Tailchase leading authorisations will not be issued unless a Tailchase Authorisation and Formation Leading Authorisation are already held by the applicant or recommended by the DAE as part of the application. To lead a

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<sup>41</sup> Following such an observation, and with regard to any DAE geographical / specialisation constraint, consideration may be given to allow a DAE to evaluate the same display pilot for a further two revalidations provided satisfactory written justification can be provided.

<sup>42</sup> Applications for retrospective exemptions will not be accepted.

tailchase a pilot **must** hold a DA which specifically authorises the holder to lead tailchasing.

- 10.23 To fly or lead an aerobatic tailchase, a pilot **must** hold an aerobatic authorisation on their DA and be specifically evaluated for aerobatic tailchasing. If an aerobatic DA is not held by the applicant, tailchase flying will be restricted to non-aerobatic tailchasing only.

### Lapsed and expired DAs

- 10.24 The DA is considered to be lapsed if a period of greater than 13 months has passed without revalidation but a period of not more than 3 years has elapsed since the date of the last evaluation. In this case, the DA may be revalidated by conducting a successful revalidation evaluation.
- 10.25 If a period of more than a 3 years has elapsed since the date of the last evaluation, the DA is considered to have expired. In this case the DA will require to be renewed. To renew the DA, the full initial process for gaining a DA **must** be followed.
- 10.26 In addition to the above, the DA's validity is based on the holder attending a DA seminar or workshop at least once every 3 years. If a DA seminar or workshop has not been attended in a 3 year period the DA will lapse. However, a DA cannot be renewed on the strength of attending a DA seminar or workshop alone, nor (in the case of not attending a DA seminar) can it be renewed solely by conducting a revalidation flying evaluation.

### Enforcement

- 10.27 In circumstances where the CAA has issued a DA, following successful completion of the assessment and application process, the ongoing regulatory oversight and mentoring of display pilots will enable the early identification of any deterioration of attitudes and behaviours or practical abilities. In such circumstances this may prompt enforcement action by the CAA, which could include a requirement for additional mentoring, or in more serious cases, a rejected revalidation,, suspension or revocation of a current DA. If such a deterioration is observed, the EOO **should** be contacted in the first instance.

### The provisional suspension of a DA – what happens next?

- 10.28 Where the CAA deems it necessary to provisionally suspend a DA, either as a result of a STOP call or safety breach, formal notification will be given to the DA holder. Upon receipt of this, the DA holder **must** surrender their DA by sending

it, accompanied by the acknowledgement slip, via recorded delivery to the [CAA GA Unit](#).

10.29 At this point the [CAA GA Unit](#) will investigate the circumstances leading to the provisional suspension. This will be conducted in two areas:

- a) An investigation will be conducted to understand what happened and consider any mitigating circumstances. The CAA GA Unit will contact relevant parties in order to establish the nature, cause and circumstances of the incident. In most cases this will include the FDD, members of the FCC, pilots at the air display, members of airfield staff and others present at the relevant time.
- b) The provisionally suspended pilot(s) will be invited to interview.

10.30 Once the facts have been established the pilot(s) will be informed of the proposed course of action. Potential outcomes include reinstatement, reinstatement following further training/evaluation by a CAA nominated DAE, suspension or revocation and will be considered with reference to FAIR System illustrated at Appendix F<sup>43</sup>.

10.31 At all stages of this process, pilots will be kept informed of events by the [CAA GA Unit](#).

10.32 Appeals **should** be made to the [CAA GA Unit](#) within 14 days of notification<sup>44</sup>.

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<sup>43</sup> If such a safety breach results in external investigation such as by the police or AAIB, the result of the provisional suspension may be dependent on any additional evidence brought to light as a result of that investigation.

<sup>44</sup> In accordance with Regulation 6 of The Civil Aviation Authority Regulations 1991.

## Chapter 11

# Safety culture, reporting, Human Factors and continuous mentoring

## General

- 11.1 DAEs **should** ensure they promote a 'just culture' with everything they do. DAE / DA mentoring is a key part of that culture, along with generating an effective reporting culture and an awareness of Human Factors (HF) issues that affect display pilots.

## Generating a mentor – mentee relationship

- 11.2 The DAE / DA relationship is extremely important and **should** not be taken lightly. It is likely that during any pre-DA mentoring, the pilot will seek to emulate the DAE in everything they do. This generates a significant opportunity to set the new display pilot up for success by helping and guiding them down the right path, setting appropriately high standards and assisting the new display pilot in achieving them, which will help cement the DAE / DA relationship.
- 11.3 In the early stages of pre-DA mentorship, DAEs **should** take the opportunity to discuss with the new DA pilot the requirements for post-DA mentoring and continuing supervision of standards. This will include encouraging the pilot to take responsibility for maintaining their own currency and standards. The DAE **should** also offer an explanation of the resources available for obtaining advice and assistance when a pilot is having some doubts or misgivings about their display flying. This can include suggesting liaison with other DAEs willing to act as mentors and, if required, direct access to the CAA EOO.

## Promotion of a positive safety culture

- 11.4 A positive safety culture is the key to a safe flying display community. This culture hinges on:
- a) the behaviours demonstrated by the CAA towards DAEs and display pilots
  - b) the relationship developed between DAEs and display pilots
  - c) the standards that are set
  - d) the adherence to rules and regulations

- e) the encouragement of open and honest reporting in the interests of improving the display environment by allowing others to learn from mistakes / lessons learnt

## Safety reporting

11.5 There are several methods for reporting safety concerns, issues, incidents and indeed accidents. However, the most important aspect of safety reporting is that the issue is actually reported, even if an accident didn't actually occur but it is thought that the display community (and maybe even the wider GA community) could benefit from the information. Common reporting methods are listed below:

- a) **Mandatory Occurance Reporting (MOR).** An MOR **shall** be raised under the following circumstances:
  - i) Any time flight safety is compromised
  - ii) Any time it is felt others will benefit from the knowledge of a circumstance
  - iii) A breach of regulation
- b) **Confidential Reporting Programme (CHIRP).** Each member of the flying display community is encouraged to report any observed incidents or examples of errors involving human factors to [CHIRP](#), who have a dedicated flying display reporting stream used to promulgate any lessons learned that could be of benefit to others within wider community<sup>45</sup>.
- c) **Email.** If the incident does not fit into the MOR category, and there is a desire to disseminate information quickly, then email the [CAA GA Unit](#) entering 'Safety Occurance Report' in the subject line. Any emails will be treated confidentially and acted upon swiftly for the good of the display community.
- d) **Telephone.** If the issue is considered to be of an urgent nature, the CAA GA Unit can be contacted on 01293 573988<sup>46</sup> if a discussion with the EOO or Duty Flight Standards Officer is required.

## What to do if safety is being breached

11.6 Members of the Flying Display community **should** actively monitor standards throughout the display season. If any lapses in safety standards are perceived

<sup>45</sup> Note that CHIRP can take a reasonable amount of time to disseminate any information. If quick promulgation is required, additional channels **should** be considered.

<sup>46</sup> Note, this is not the dedicated Flying Display STOP call number and as such is only manned during normal working hours.



they **must** be brought to the attention of the parties involved and, if no improvement noted, the [CAA GA Unit](#). If any lapses concerning display pilots are observed at a flying display, the FDD **should** be informed, followed by the CAA EOO<sup>47</sup>.

## Human Factors in flying displays

11.7 An understanding of Human Factors issues, the teaching of them and evaluation of issues occurring during a display season will assist DA pilots. The DAE is a key enabler in HF training and evaluation via their through-life mentoring relationship with the DA pilot. The CAA website contains a number of HF resources which can be used to refresh, inform and educate DAEs and display pilots on HF issues. HF topics worthy of covering initially and recorded on a periodic basis are as follows:

- a) Pressures including time pressure, commercial pressure, or not wanting to disappoint the crowd.
- b) Adequate preparation including paperwork, the display routine, understanding the weather, procedures, knowing the venue well, and acknowledging personal and aircraft performance limitations.
- c) A thorough understanding and discussion of the physiological and cognitive limitations and biases imposed by display flying, and how they will be managed.
- d) Fatigue considerations, which may include transit flying to and from the venue, and cumulative fatigue in conjunction with other flying work
- e) Experience levels and currency, acknowledging that low levels of experience may result in a lack of flexibility, and a high level of experience may make pilots complacent.
- f) An acknowledgement that human factors risks are dynamic and will need constant re-evaluation, and being comfortable withdrawing from a display if the risk is considered to be too great by the pilot and/or the DAE.

<sup>47</sup> DAEs **should** forward a report to the [CAA GA Unit](#) clearly stating the nature of the breach with supporting evidence, in order for the CAA to consider any course of action.



## Appendix A

# Useful guidance for display pilots

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## General

- A1 The following paragraphs, whilst not exhaustive, are intended to give Display Pilots some display flying guidance.
- A2 The actual construction of a display routine will vary considerably from pilot to pilot because of requirements to deal with varying factors such as experience and competence levels, aircraft capabilities, requirements to deal with varying weather conditions and display sites etc. For the novice, early guidance **should** be sought from a DAE or an experienced Display Pilot and from [CAP1047](#) 'Civil Air Displays - A Guide for Pilots'.

## Legal requirements

- A3 Before participating in any Flying Display the pilot **must** seek confirmation from the FDD that an appropriate Permission has been obtained and is also required to obtain a copy for self briefing.
- A4 When applicable, pilots **shall** also ensure that any necessary exemptions from the ANO, Rules of the Air Regulations and SERA are in place before carrying out practise flights at any location. This is particularly important where it would not be possible to adhere to the provisions of any relevant low flying rules.
- A5 Where a long term CAA Permission is in effect careful attention **shall** be paid to the precise nature of the permitted activity and any conditions contained on the document. For example, where a long term Permission exists permitting flight below 500ft for the purpose of 'display practise or rehearsal', any unusual aerial activity outside of that scope will require a separate specific application and Permission from the CAA.

## Minimum rest

- A6 Before performing in any Flying Display, display pilots **should** have a minimum period of 11 hours continuous rest, of which 8 continuous hours are available for sleep. This is particularly relevant to commercial pilots who **should** also consider appropriate acclimatisation, and ensure they remain compliant with their commercial flight time limitations scheme, where applicable.

## Briefings and walk throughs

- A7 It is essential that in addition to the FDD's written and verbal briefings that all display items consisting of formations are thoroughly briefed. It is vital that every member of the formation has a clear picture of the objectives of the formation as a whole and of their individual positioning and responsibilities within it. Walk throughs are an integral part of this briefing process and it is strongly recommended that they are adopted as a standard part of all formation briefings.
- A8 Walk throughs are not exclusive to formation briefs and can also be of benefit to the solo display pilot.

## Vintage or unique aircraft

- A9 Owners, operators, pilots and DAEs are encouraged to take into consideration the age, the rarity value and the need for continued preservation of aircraft when developing display routines. 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.
- A10 Limitations and conditions associated with an aircraft's Certificate of Airworthiness or Permit to Fly **must** be complied with at all times and take precedence over any CAA Permission issued for Flying Displays and Special Events, a condition that an 'aircraft **shall** not be flown over any assembly of persons or any congested area of a city, town or settlement' being an example.

## Displaying multi-engine aircraft

- A11 Deliberate asymmetric flight as part of a display routine is not permitted at UK Flying Displays.
- A12 As set out above at A6, limitations and conditions associated with an aircraft's Certificate of Airworthiness or Permit to Fly **must** be complied with at all times and take precedence over any CAA Permission issued for Flying Displays and Special Events.
- A13 DAEs **must** ensure, during initial evaluation or revalidation, that pilots holding DAs covering multi-engine types have made adequate preparation for asymmetric difficulties during their display planning.

## Displays exceeding 250 KIAS

- A14 Operators of aircraft due to perform at a Flying Display that intend to exceed the maximum speed limit of 250 KIAS when flying below Flight Level 100, are required to apply for a specific approval from the [CAA GA Unit](#) to allow alleviation from the SERA speed limitations. Applications for such approvals are to be made using [Form SRG 1318](#).

## Crowd separation distances

- A15 **On crowd wind.** During any display, pilots **should** 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 overflying the crowd, may be preferable to risking an overstress or departure from controlled flight by pulling too hard.
- A16 **Taxiing.** The minimum distance between spectator enclosures and any part of a taxiing aircraft at a Flying Display **shall** be no closer than 10 metres.
- A17 **Refuelling.** The minimum distance between spectator enclosures and any refuelling or aircraft vent point **shall** be no closer than 15 metres.

## Minimum heights during displays

- A18 All aerobatic manoeuvres (including passes flown at high angle of attack/below normal approach speed, inverted flypasts and manoeuvres which involve pulling through the vertical) **must** be fully recovered above the approved aerobatic minimum height. For ex-military jet aircraft, this height can be no lower than 500 feet AGL/ASL.
- A19 For pilots operating to different aerobatic and non-aerobatic minimum display heights, whether as part of their DA or the event requirements, the following also apply<sup>48</sup>:
- Where one Aerobatic Manoeuvre is linked directly to another, the aircraft **must** remain above minimum aerobatic height throughout the transition.
  - Where a mixture of aerobatic and non-aerobatic manoeuvres are flown, blending is permitted as follows:

<sup>48</sup> This paragraph does not apply to non-aerobatic displays.

- i) Once certain of being able to recover by minimum aerobatic height, when the next manoeuvres are non-aerobatic, a gentle straight descent to minimum flypast height is permitted providing the aircraft remains at a pitch angle of 30 degrees or less (in practise, the descent will be shallow and flown at much less than 30 degrees). Under no circumstances is the minimum flypast height to be used as the target minimum for recovery from aerobatic manoeuvres.
- ii) A straight climb from minimum flypast height into an aerobatic manoeuvre is permitted providing the aircraft remains at a pitch angle of 30 degrees or less until passing aerobatic display height.

A20 When applying for, revalidating or upgrading a DA, pilots will be required to demonstrate an understanding of the need to:

- c) achieve aerobatic gate parameters at all critical junctures before committing to continuing the manoeuvre
- d) plan and practise escape manoeuvres for those occasions when gate parameters are not achieved
- e) establish entry parameters for aerobatic manoeuvres, including the speed adjustment required when entering from a climb to aerobatic minimum height (e.g. from flypast minimum height)

A21 For display teams consisting of pilots who hold varying DA minima, consideration **should** be given in adopting the highest individual minima for the whole team to avoid possible confusion during monitoring and inappropriate warning calls being made.

### Spinning as part of a display

A22 Pilots are only permitted to include spinning as part of their display routine if they hold an aerobatic DA, the aircraft is approved for the manoeuvre and they have been evaluated conducting such a manoeuvre.

A23 When developing a display routine that includes spinning, the pilot **shall** determine the spin parameters that will ensure adequate safety margins are maintained throughout the manoeuvre. 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

## Arrivals and departures

A24 All arrivals and departures **must** be in accordance with the aerodrome procedures, command orders (for military Flying Displays) and relevant regulation. Pilots **must** not use the privileges of their DA / PDA during arrivals or departures unless arriving into a pre-organised display practise or display. Unbriefed and unexpected manoeuvres are equally, if not more, dangerous during arrivals and departures to and from a Flying Display as those carried out during a display. For pilots of civilian aircraft who do not hold a DA / PDA, use of the Military Long Term SERA 5005(f)(2) Permission for MOD Occupied Property is not permitted. This also applies to static display aircraft captains who might be keen to fly a non-standard arrival or departure.

## Pre-display notification to FDDs

- A25 The pilot-in-command is responsible for the safe operation of the aircraft and **must** be legally certified to operate the aircraft for the specific flight. Part of this responsibility is to ensure all aircrew licences, authorisations and aircraft documents are current and valid before flight.
- A26 It is the duty of the display pilot to ensure that the information included in the [SRG1327](#) (Display Pilot's / Aircraft Owner / Operator Certified Declaration for submission to the FDD) is correct and accurate.
- A27 It is the display pilot's responsibility to ensure that the information submitted is not false, inaccurate or misleading and that any flight is undertaken with valid documentation<sup>49</sup>.
- A28 Civilian pilots participating at civilian Flying Displays are required to submit their [SRG1327](#) declaration to the appropriate FDD in good time prior to the Flying Display.

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<sup>49</sup> Display Pilots are reminded that it is an offence under Article 256 of the Air Navigation Order 2016 (as amended) to make, with intent to deceive, any false representation for the purpose of procuring the grant, issue, renewal or variation of any certificate, licence, approval, permission or other document.

- A29 Pilots **shall** be able to produce copies of the documents declared in their [SRG1327](#) on request if required for inspection. Electronic or paper copies are acceptable for this purpose.
- A30 As part of the [SRG1327](#) declaration, pilots are required to provide contact details for FDDs of events that they intend to perform at later on the same day.
- A31 At least one day before a Flying Display, any pilot intending to fly aerobatic routines that flow directly from one manoeuvre into the next **must** notify the FDD of the series of linked aerobatic manoeuvres that they intend to perform<sup>50</sup>. It is acknowledged that pilots may need to adapt their aerobatic display routine appropriately to local conditions on the day of the display. Pilots **should** discuss any aspect of the local conditions that might affect their display routine with the FDD.

### Responsibilities to military organisers

- A32 Under military flying regulations ([RA2335](#)), military organisers will require to see the DA of participating civilian pilots as evidence of display competency, currency and limitations.

### STOP, TERMINATE and warning call procedures

- A33 Display Pilots are required to be fully conversant with the 'STOP', 'TERMINATE' and standard warning calls along with the 'STOP call and Safety Breach Reporting and Procedures' sections contained in [CAP 403](#).
- A34 If in receipt of a 'STOP' or 'TERMINATE' call the display **must** be ceased immediately and acknowledgement of compliance passed to the FDD by way of a simple RT response of "WILCO" followed by callsign.
- A35 Where a 'STOP' call is issued, display pilots will be subject to an immediate provisional suspension of their Display Authorisation. If the safety breach or 'STOP' is called due to an issue associated with a formation or tailchase, **all** of the pilots involved will be subject to a provisional suspension of their DAs<sup>51</sup>. The

<sup>50</sup> Notification will enable the FDD to identify early if a display item is going to plan so that any necessary steps can be taken to mitigate risks. The notification to the FDD **shall** be made on [SRG1327](#) and **must** also include measures the pilot would take if they needed to diverge from their intended display.

<sup>51</sup> In the case of large formations or tailchases of greater than 4 aircraft, this will apply to the relevant element only.

pilot(s) **shall not** exercise the privileges of their Display Authorisation until an investigation by the CAA is complete<sup>52</sup>.

- A36 Pre-consideration **must** be taken by the FDD and the DA pilot as to whether, following a TERMINATE call, it is safe to recommence the display.

### Close formation (f)

- A37 A close formation leader is responsible for all aspects of their formation of aircraft. This includes, but is not limited to:

- a) briefing and walk through of the planned display routine or flypast
- b) safety, including procedures for joining, breaking and escape
- c) terrain clearance
- d) positioning and handling

- A38 It is highly recommended that all formation teams / scenarios develop and adopt their own SOPs covering all aspects of normal operation and escape / emergency procedures.

- A39 The size of the planned close formation dictates the DA requirements of all participants. Any close formation with more than 4 participating aircraft requires all pilots, including the leader, to hold an Unlimited Numbers Formation / Leader DA, as appropriate.

- A40 However, where a large formation is planned with elements consisting of four or less aircraft in each element, pilots holding a 4 Aircraft Formation / Leader DA may participate subject to the following limitations:

- a) The overall formation leader **must** hold an Unlimited Numbers Formation Leader DA
- b) Individual formation element leaders **must** hold, at a minimum, 4 Aircraft Formation Leader DAs
- c) All participating formation members **must** hold, at a minimum, 4 Aircraft Formation DAs
- d) The elements **shall** be flown in trail (line astern) with sufficient separation between each element to enable each element leader to clearly define their own flight path and, if necessary, for them to disengage their element

<sup>52</sup> In accordance with the Air Navigation Order, Article 253 'Prohibited behaviour, directive, rules, powers and penalties'.

from the formation without endangering other aircraft. The separation required will depend on individual aircraft characteristics but, as a guide, **should** be in the order of 100 to 200 metres between the rear of one element and the lead of the next element

### Tailchase (t)

- A41 During a tailchase, each aircraft in turn will generally follow the leader's flight path but retain a high degree of individual decision making over the exact path taken using the principles of lead and lag. Separation distances between aircraft usually vary from 50 to 200 metres.
- A42 Mock combat or dog-fight displays, whilst not necessarily following the definition of a Tailchase, do require many of the same skills such as assessment of closing speed and angle off. Consequently, these types of display are to be treated as tailchases from the DA point of view.
- A43 A flypast of individual aircraft in loose trail (200 metres plus) with manoeuvres restricted to gentle turns is not a tailchase and a Formation / Tailchase DA is not required for this type of display.
- A44 Tailchases are restricted to a maximum element size of 4 aircraft. However, more than one element may participate in a tailchase with the leader of the rear element(s) deciding the specific flight path for their element under the overall direction of the main leader. Where more than one element is involved in the tailchase, each element leader **must** hold a DA which specifically authorises the pilot to lead tailchasing and, additionally, the overall formation leader **must** hold an authorisation for Unlimited Formation Leading on their DA.



## Appendix B

# Guidance for the completion of forms

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## General

B1 This chapter details the forms and provides guidance on their completion.

## Responsibilities

B2 A prospective DA holder is responsible for ensuring that they complete and submit form [SRG 1303B](#) to the [CAA GA Unit](#) prior to the commencement of any DA workup training for the initial issue of a DA. The [SRG 1303B](#) **should** be emailed to [ga@caa.co.uk](mailto:ga@caa.co.uk).

B3 Display pilots are responsible for ensuring that DAEs complete all forms in a timely and accurate fashion and submit them to the [CAA GA Unit](#) within the prescribed timescales.

## Forms and reporting

B4 Following an evaluation for an initial DA issue, or the revalidation or upgrade of an existing DA, the DAE **shall** make a full written recommendation to the [CAA GA Unit](#) on form SRG 1300.

## Initial DA issue

B5 Following an evaluation for the initial issue of a DA, form SRG 1300 **shall** be emailed to the CAA GA Unit at [ga@caa.co.uk](mailto:ga@caa.co.uk).

B6 Guidance for the completion of this form is as follows:

- a) Only recommend what has been evaluated unless evidence supports the recommendation
- b) The recommendation **must** be supported by a detailed accurate narrative
- c) Be clear what it is that the DA certificate needs to reflect once issued
- d) Ensure the applicant's details are correct.

## Existing DA revalidation

B7 Following the revalidation of an existing DA, the DAE **shall** complete SRG 1300 and email it to the CAA GA Unit at [ga@caa.co.uk](mailto:ga@caa.co.uk). Completed forms **shall** include:

- a) A recommendation for only what has been evaluated
- b) A detailed accurate narrative supporting the recommendation for revalidation

The DAE **must** check that:

- a) The DA is correct in all aspects (CATS, Groups, Skill Levels etc)
- b) The applicant's contact details are correct
- c) All the relevant sections have been completed, in particular the DA seminar / workshop attendance and previous DAE sections
- d) There are no changes to the Behavioural and Attitude fitness assessment. If there are, then the DA will need to submit a separate SRG 1303B to the CAA

### Existing DA upgrade

B8 Following the upgrade of an existing DA, the DAE **shall** complete SRG 1300 and email it to the CAA GA Unit at [ga@caa.co.uk](mailto:ga@caa.co.uk). Completed forms **shall** include:

- a) A recommend for only what has been evaluated unless additional supporting evidence can be provided
- b) A detailed accurate narrative supporting the recommendation

The DAE **must** check that:

- a) The applicant's contact details are correct
- b) All the relevant sections have been completed, in particular the DA seminar / workshop attendance and previous DAE sections
- c) There are no changes to the previously submitted Behavioural and Attitude fitness assessment. If there are, the DA holder will need to submit a separate [SRG 1303B](#) to the CAA.

### Charges

B9 A charge is made for the initial issue of a DA, an upgrade or change to the DA privileges or where a replacement copy of the DA is required. The charges are as specified in the [ORS5 No. 312: CAA Scheme of Charges \(General Aviation\)](#). DAEs **should** remind DA applicants to ensure payment is included with all such applications.

B10 No charge is made for the revalidation of the DA.

## Reporting by DAEs

- B11 Where a candidate does not achieve the required standard for either the initial issue of a DA or the revalidation or upgrade of an existing DA, the DAE **shall** ensure that the application form is returned to the EOO clearly indicating that the applicant has not met the standard required, together with an explanation of why the standard has not been met. The report **should** also include a recommendation for any remedial action including further training or practise. The applicant **should** contact the EOO to obtain agreement of any remedial action required prior to arranging any further evaluation.

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## Appendix C

# Timescales

## Forms

C1 The following table contains pertinent timescales relevant to forms:

Form	Timescale	Person Responsible
SRG 1300	To be received by the CAA within 14 days of evaluation	DA
	Once received from the DAE the CAA will process and issue / re-issue DAs no later than 28 days after receipt	CAA GA Unit
SRG 1303B	To be received by the CAA prior to commencing initial DA training and, for DA holders, where there has been any notifiable changes to previously declared information.	DA

## Display Authorisation Evaluators

C2 The following table contains pertinent timescales relevant to DAEs:

Timescale	Required action
25 months	Consecutive period of evaluations conducted by the same DAE following an initial DA issue. (6 months + 6 months + 13 months)
36 months	Period of a DAE's appointment

## Display Pilots

C3 The following table contains pertinent timescales relevant to display pilots:

Timescale	Required action
6 months	An initial DA <b>must</b> be revalidated as close as reasonably practicable 6 months from the date of initial issue. Initial DAs will then be revalidated for a further 6 month period before progressing to the 13 month revalidation cycle.
12 months	Initial DA holders <b>shall</b> attend a DA seminar or workshop within the first 12 months of validity.
13 months	An existing DA <b>must</b> be revalidated prior to the expiry date on the DA certificate.

3 Years	If a DA has lapsed by more than 36 months from the date of last evaluation it will have expired. The initial application process must be followed.
3 years	A DA holder <b>must</b> attend a DA seminar / workshop an absolute minimum of once in every 3 year period.

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## Appendix D

# Insurance

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**Display Authorisation Evaluator and CAA Third Party Liability Insurance**

- D1 The Civil Aviation Authority (CAA) has in place an Aviation General Third Party Liability Insurance Policy, which covers all third party liability for bodily injury (including death) and property damage arising out of the performance of its statutory functions and duties.
- D2 This policy includes third party liability coverage for Display Authorisation Evaluators (DAE's) who are authorised by the CAA in accordance with Article 86 (10) of the Air Navigation Order 2016 (ANO).
- D3 The extent of the CAA's third party liability policy cover is limited to DAE's conducting such examinations or tests as required for the purposes of a decision by the CAA under Article 86(8) of the ANO. For each evaluation conducted by a DAE, the extent of the policy cover will only apply to those activities performed by a DAE and approved by the CAA in accordance with the signed declaration on form SRG1300.
- D4 Third party liability cover does not extend to any other mentoring or training of pilots conducted by DAE's in their personal capacity.

## Appendix E

# The CAA, DAE Agreement

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## General

- E1 The Civil Aviation Authority is the competent authority of the UK for issuing a Display Authorisation (DA) in accordance with the requirements of Article 86 of the Air Navigation Order 2016 (ANO) and for the continuing oversight of DAs.
- E2 In accordance with Article 86(10) the CAA may authorise a person to conduct such examinations or tests for the purposes of this Article as it may specify. This paragraph therefore authorises DAEs to conduct evaluations on behalf of the CAA.
- E3 The Display Authorisation (DA) and Display Authorisation Evaluator (DAE) system is a key enabler in assuring the Secretary of State for Transport, through the CAA, of the safety of UK Flying Displays. DAEs acting on behalf of the CAA play a critical part in this process.
- E4 Therefore, the CAA will **expect** certain discipline, standards and activities of DAEs to ensure the safety of the public. Equally, DAEs can **expect** a certain level of support from the CAA when they discharge their duties on behalf of the CAA.

## The Agreement

- E5 The CAA **expects** the following of each DAE:
- a) The maintenance of the highest possible flying standards
  - b) The adherence to all up-to-date rules and regulations, including this document and those pertaining to GA and display flying
  - c) The imparting of experience and knowledge to display pilots that fall under their supervision
  - d) A willingness to discuss and share human factors considerations with the display flying community
  - e) Attendance at the annual DAE Seminar at least once every 3 years

- f) Regular engagement with the EOO over matters pertaining to DAs and the DAE / DA system in general
- g) Engagement with the EOO regarding availability for observation
- h) A willingness to learn from each other
- i) The promotion of a 'just culture' amongst the display community in general, but particularly towards display pilots that fall under their supervision
- j) The timely and accurate completion of DA and DAE related forms
- k) Feedback to the CAA GA Unit or EOO as appropriate regarding any Flying Display related matters

E6 DAEs can **expect** the following from the CAA:

- a) Support through the EOO for all matters relating to DA applications, revalidations and upgrades
- b) Support in decision making regarding the suitability of new DA applicants
- c) Feedback from at least one DAE evaluation every 3 years
- d) The organisation of, and invitation to, the annual DAE Seminar
- e) Timely communication of pertinent safety information in the event of any DA suspension where the CAA considers there are lessons to be learnt by the wider community
- f) Continued engagement when developing Flying Display matters and particularly the safety culture

I, the undersigned agree to the conditions stated above:

Signed

Signed

C R Kidd

xxxxxxxx

Air Display Regulation Manager

Display Authorisation Evaluator

Civil Aviation Authority

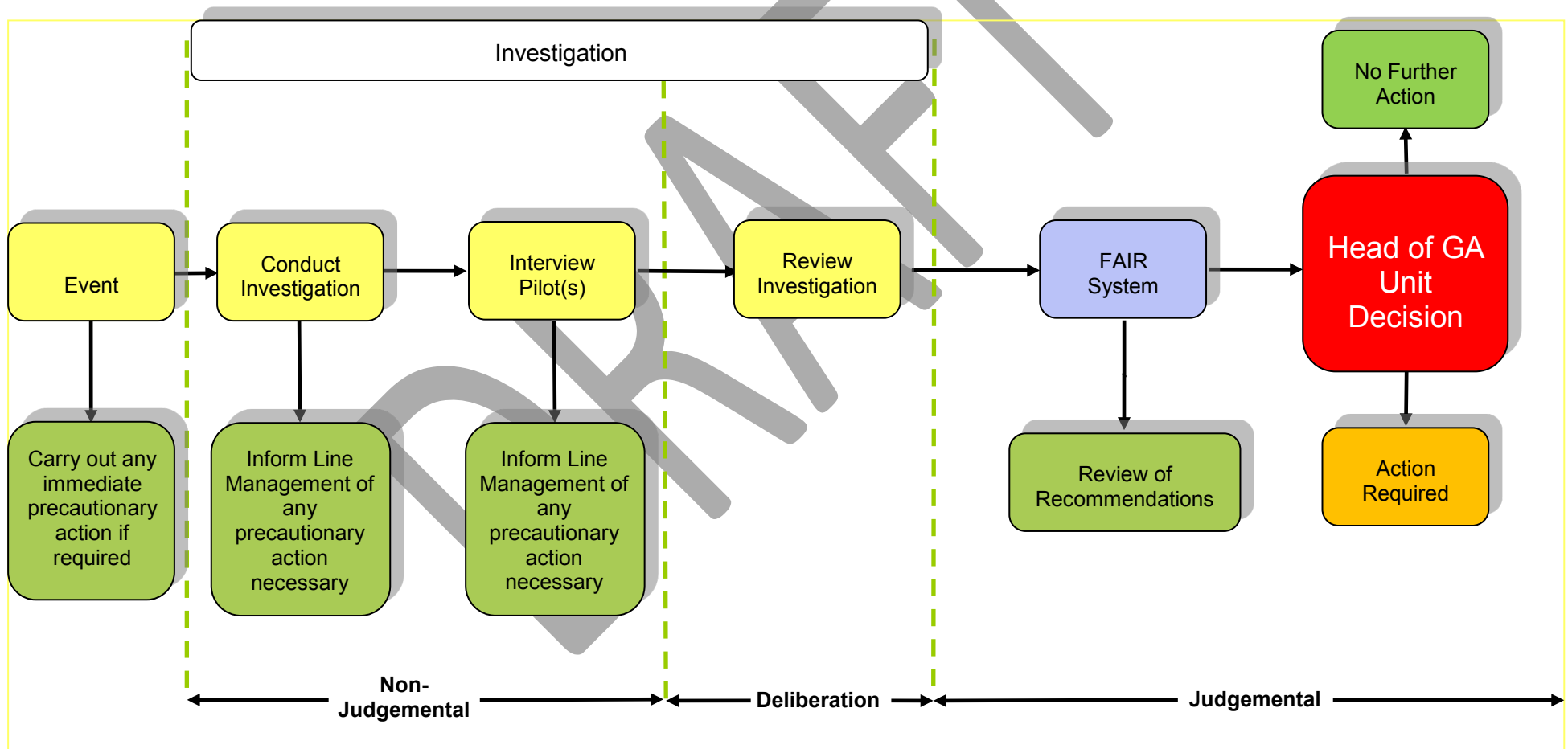
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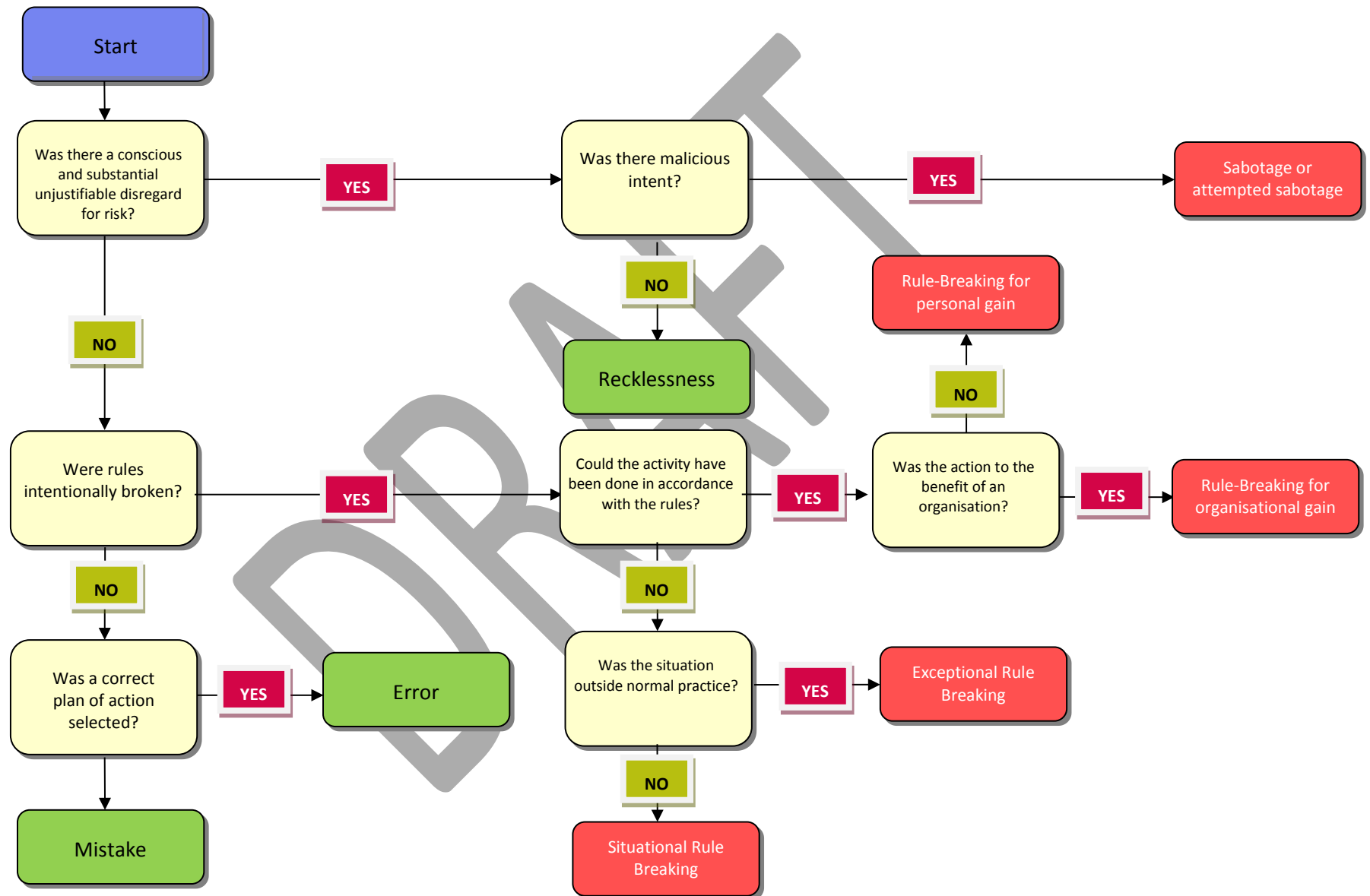
## Appendix F

# FAIR System

F1 Flowchart Analysis of Investigation Results (FAIR) System. Distinction between non-Judgmental and judgemental phases of an investigation



## F2 Just culture, behavioural types.



## F3 Accountability framework

