

CAP 1724

Flying Display Standards Document

Edition 3 | For consultation

DRAFT

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Enquiries regarding the content of this publication can be addressed to:
General Aviation Unit, Safety and Airspace Regulation Group, Civil Aviation Authority,
Aviation House, Beehive Ring Road, Crawley, West Sussex RH6 0YR

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www.caa.co.uk/General-aviation/Displays

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Revision History

Edition 1**February 2019**

Initial issue.

Edition 2**January 2020**

Amendments to this Edition of CAP 1724 are based on a review of the feedback received from the Flying Display community following publication of Edition 1.

Revised text in red underline.

There have been significant changes to the layout to make it easier to understand the categorisation of DAs and aerobatic, formation and tailchase skill levels. The General Rules and Limitations have been amended and moved from an Appendix to the main body of the CAP to make it clear that they are mandatory. There have been changes to the groups and categories of aircraft for DAs. Amendment of aerobatic skill levels, including the addition of an entry-level Limited Aerobatic skill level.

Edition 3**XXXXX 2021**

This edition incorporates feedback from the Flying Display community, mostly focussed on providing further clarity where required, and minor editorial changes. Amendments include clarification of DA requirements for a large formations with multiple elements, considerations for low speed / high angle of attack manoeuvres, clarification of the manoeuvres to be declared on form SRG 1327, further guidance concerning the documents check carried out as part of a DA evaluation, display pilot considerations concerning the management of G-forces, considerations for variations to a display to be covered as part of a DA evaluation, clarification of the validity of initial issue DAs, the introduction of a DA Exemption process, further recommendations for Human Factors content of DA evaluations and minor amendments to the Appendix C checklist.

Changes and amendments

Changes and amendments in this CAP are underlined in red

Terminology and Definitions

Throughout this CAP the following terms and definitions are used:

Term	Abbreviation	Definition
Aerobatic Manoeuvre		The definition of an aerobatic manoeuvre is defined in Schedule 1 of the Air Navigation Order (ANO).
Airborne Flying Display Director	AFDD	A Pilot holding a UK Display Authorisation (DA) participating in their own single item Flying Display who is responsible to the CAA for the safe conduct of that Flying Display ¹ .
Aircraft Parking Area		An area used for the parking of aircraft to which the public has no access during the period of the display.
Airfield Boundary		The line delineated by the Airfield Boundary fence, or where no such fence exists, the area confined to that prepared and used solely for the purpose of ground manoeuvring of aircraft.
<u>Air Navigation Order</u>	<u>ANO</u>	<u>Air Navigation Order 2016 (as amended).</u>
Air Traffic Services	ATS	References to 'ATS' contained in this CAP apply to all ground to air radio telephony transmission communications carried out.
Applicant		A person seeking the issue, renewal or upgrade of a CAA Permission, Exemption, approval or authorisation.
Car Park(s)		Where the words 'Car Park(s)' are used in the text of this CAP, they are intended to apply to Car Park(s) to which Spectators have access during the Flying Display and as such must be considered in the same manner as the Spectator area.
Confidential Human Factors Incident Reporting Programme	CHIRP	The UK Confidential Human Factors Incident Report Programme for Aviation.

¹ The EO and the AFDD might in some cases be the same person.

Term	Abbreviation	Definition
Close Formation		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.
Congested Area		A Congested Area is defined in Schedule 1 of the ANO ² .
Crowd Line		The line delineating the closest edge of any area, including Car Parks, accessible to Spectators with respect to the Display Area / line.
Danger Area		“Danger Area” means airspace which has been notified as such within which activities dangerous to the flight of aircraft may take place or exist at such times as may be notified.
Display Area		The Display Area is the ground area footprint of the airspace within which displaying aircraft may be manoeuvred at a height below that imposed by SERA.5005(f)(1), SERA.5005(f)(2), subject to the limits of the flying display permission, any further restrictions imposed by the FDD, and the pilot’s DA / Military Public Display Authority (PDA).
Display Authorisation	DA	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.
Display Authorisation Evaluator	DAE	A person authorised by the CAA to conduct evaluations for the award of a Display Authorisation.
<u>Display Datum</u>		<u>The Display Datum is the point upon which individual displays are based and is normally the centre point of the crowd.</u>
Display Item		A single, formation or group of aircraft, flying as one single display ‘act’ throughout.
Display Line or Display Axis		A line defining the track and distance along which displaying aircraft may operate.

² 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
Display Pilot		A pilot who holds a Display Authorisation (DA) or exemption, issued by their National Aviation Authority, or an appropriate military Public Display Authority (PDA), or military exemption, which allows them to take part in a Flying Display.
Display Routine		A series of linked manoeuvres to be performed during a Flying Display.
Evaluation Oversight Officer	EOO	The CAA Flight Standards Officer (FSO) responsible for the management of the DAE and DA process.
Essential Personnel		A person or persons authorised and permitted to be within designated restricted areas, forward of the Crowd Line, during a Flying Display. Examples of Essential Personnel include members of Emergency Services, essential ground support crew, air traffic services personnel, the FDD and members of the FCC, refuelling operatives, barnstorming display act ground participants when in conjunction with their specific role and CAA FSO's whilst pursuant to their duties. NOTE: Once a specific duty has been completed, those personnel become non-essential and must re-locate to an area compliant with published Flying Display lateral separation distances.
Event Organiser	EO	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.
Fédération Aéronautique Internationale	FAI	The world air sports federation.
Flying Control Committee	FCC	A group of suitably experienced persons assembled to assist the FDD in safety management of a Flying Display.
Flying Display		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.

Term	Abbreviation	Definition
Flying Display Director	FDD	The person responsible to the CAA for the safe conduct of a Flying Display ³ .
Flying Display Director Mentor	FDDM	A Flying Display Director that has been accredited under the joint CAA / MAA FDD accreditation scheme so endorsed as to permit mentoring of aspiring FDDs.
Flypast		An aircraft flying, either singly or in formation, past a gathering of Spectators 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.
Flypast (Mil)		A Flypast (Mil) involves aircraft flying, either singly or in formation, over or past a gathering of spectators along a pre-planned route without manoeuvring, other than when necessary for safe and accurate navigation. Accordingly, they will not include aerobatic manoeuvres.
Funeral Flypast / Funeral Flying Display		Flying activity performed on commemorative and 'in memorial' occasions. The terms 'Flypast' and 'Flying Display' in this context are as defined elsewhere in this section.
Military Aviation Authority	MAA	The military authority responsible for the regulation of military-registered air systems, and military flying displays.
Minimum Aerobatic Height		<p>The minimum height above which the aircraft must be capable of complete recovery from an aerobatic manoeuvre. This will be the most restrictive of:</p> <ul style="list-style-type: none"> ▪ The minimum aerobatic height specified in the Permission; ▪ The minimum aerobatic height quoted on relevant pilot's DA (in relation to the aircraft category being flown); or ▪ The minimum aerobatic height imposed by the FDD.

³ The Event Organiser and FDD might in some cases be the same person.

Term	Abbreviation	Definition
MOD Occupied Property		<u>An aerodrome in the occupation of the MOD or of any visiting force in the UK⁴ or any other premises in the occupation or under the control of the MOD⁵.</u>
Minimum Separation Distance	MSD	The minimum separation, in all directions, between any part of an aircraft in flight and the ground, water or any obstacle.
Non-Aerobatic Flying Display		A Non-Aerobatic 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 Schedule 1 of the ANO .
Participant		A Flying Display or Special Event performer, or any person directly involved in the conduct of a Flying Display performance.
Permission		The document issued by the CAA permitting the proposed flying activity to take place.
Pleasure Flights		Any passenger flight starting from, or arriving at, the display site (or adjacent site) purely for the purpose of Commercial Air Transport pleasure flying on the day of a Flying Display or Special Event.
Private Flying Display		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 SERA.5005(f) . (See also 'Flying Display' ⁶)
Regulatory Article 2335	RA2335	Regulation detailing the requirements for Flying Displays held over MOD Occupied Property and events over non-MOD Occupied Property where the only participants are military registered aircraft.
Role Demonstration	Role demo	Any flying activity designed to demonstrate an aircraft's performance commensurate with that normally carried out during routine operations and training.

⁴ Visiting Force is any visiting foreign military in this context.

⁵ Refer to the ANO Article 86 Para 15 (a).

⁶ Where reference in this CAP is made to a 'Flying Display' the content applies also to a 'Private Flying Display'.

Term	Abbreviation	Definition
Separation Distance		The lateral distance between the displaying aircraft and Crowd Line.
Secondary Spectator		A person viewing a Flying Display from a location which has not been specifically designated for spectators by the FDD.
Special Event		Any flying activity deliberately performed requiring a Permission to operate contrary to the requirements of the ANO , the Rules of the Air or SERA . Special Events include Funeral Flypasts, the dropping of articles and can include film work or any other unusual activity ⁷ .
Spectator		A person attending a Flying Display specifically to witness the event.
Static Aircraft Park		An area used for the parking of aircraft to which the public may have access.
Swept Wing Jet		Any jet aircraft the CAA classifies as 'Swept' including, but not limited to, those where the wing leading edge is at an angle of 30 degrees or more from the perpendicular to the longitudinal axis ⁸ .
Tailchase		A Tailchase is defined as one or more aircraft following a leader through a series of manoeuvres.
Twilight		The period from sunset to 30 mins after sunset and from 30 mins before sunrise to sunrise, where sunset and sunrise are measured at surface level at the display location ⁹ .
Tyro Display Authorisation	TDA	An authorisation available to a newly qualified display pilots subject to the conditions detailed in CAP1724.

⁷ Special Event Permissions do not include aerobatics, unless otherwise stated

⁸ Classification of a particular aircraft type is the responsibility of the CAA.

⁹ Schedule 1 of the ANO refers to the definition of night.

General Information

Introduction

Flying Displays demand the highest level of skill and precision from pilots who often fly a variety manoeuvres at energy levels and proximity to people that is outside normal aviation practice. Because of this, Display Pilots must approach display flying with the appropriate attitude and have the knowledge, skill and experience to mitigate the relevant risks. This publication sets down the required standards and provides guidance on best practice to ensure that pilots participating in Flying Displays can demonstrate the correct attitude, acquire the necessary knowledge and skills, and continue to maintain such attitudes and skills over time.

As the Competent Authority for the UK, the CAA is responsible for issuing Display Authorisations (DA) in accordance with Article 86 of the Air Navigation Order 2016 (ANO). The CAA authorises Suitably Qualified and Experienced Personnel (SQEP) to act as Display Authorisation Evaluators (DAE) who use the processes in this document to mentor and evaluate display pilots. 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). The CAA provides oversight of this process to ensure that the necessary standards are maintained.

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. Furthermore, 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 practice.

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

- ‘**Shall / Shall not**’ and ‘**Must / Must not**’ are used to indicate a mandatory requirement.
- ‘**Expect**’, ‘**Should**’ and ‘**Should not**’ are used to indicate strong obligation.
- ‘**May**’ is used to indicate discretion.
- ‘**Applicant**’ is used to indicate a person who is seeking the issue, renewal or upgrade 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 CAA GA Unit at ga@caa.co.uk.

Safety Management

At Flying Displays, DA holders 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, the conditions of a Flying Display Permission issued by the CAA, the limitations and conditions attached to an aircraft's Certificate of Airworthiness or Permit to Fly and the relevant limitations of this CAP, and [CAP 403](#). 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 responsibilities of the FDD, FCC and EO at Flying Displays are detailed within [CAP 403](#).

Reporting

Open and honest reporting is an important part of an effective flight safety system; this allows all those involved in Flying Displays to learn from others' incidents in order to prevent accidents in the future. The CAA welcomes open reporting from all involved in Flying Displays such that they can be shared with others. Furthermore, reporting to the CAA allows the Authority to focus its regulation and support efforts

into the areas that will make the greatest difference; if the Authority doesn't know about an issue it will not be able to do anything about it.

Any observation, incident or issue **should** be reported, no matter how small and insignificant it may seem, and can cover aspects such as Human Factors (HF), 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 (FDDs) **must** submit form [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.

Subject to exercising discretion in relation to the confidentiality of the individual(s) involved, participants, organisers and supervisors are also encouraged to report any incidents or examples of errors of a Human Factors nature 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.

Feedback

The CAA seeks to continually improve its regulation and guidance and feedback from practitioners is essential to success. Any comments on or suggestions about CAP 1724 should be sent to ga@caa.co.uk with subject line 'CAP 1724 feedback'.

Chapter 1

General Rules and Limitations

Legal requirements

- 1.1. All pilots of civil registered aircraft flying in the UK are required, by UK law, to comply with the ANO and the associated Rules of the Air / National regulations including the Standardised European Rules of the Air (SERA). Failure to comply may be a criminal offence and can result in suspension of licence privileges and criminal prosecution.
- 1.2. Pilots have specific responsibilities with regard to their participation in Flying Displays in the UK. The ANO¹⁰ states that any pilot flying at a Flying Display **must**:
 - a) Ensure that the FDD has the required Permission for the event
 - b) Ensure that they are capable of complying with the conditions of the Flying Display Permission
 - c) Hold an appropriate, valid Display Authorisation¹¹
- 1.3. Pilots **shall** ensure that any required exemptions from the ANO, Rules of the Air Regulations and SERA, are in place before carrying out practice flights at any location.
- 1.4. Where a long term CAA Permission for display practice is in effect, pilots **must** ensure they understand the precise nature of the permitted activity and any conditions contained in that Permission prior to flying.
- 1.5. Pilots **must** comply with an aircraft's Certificate of Airworthiness or Permit to Fly at all times. More restrictive limits contained within such documents

¹⁰ Article 86(2), The Air Navigation Order 2016 refers.

¹¹ In exceptional circumstances, the CAA **may** issue an Exemption to the requirement to hold a DA. Applications for DA Exemptions should be made using form [SRG1328](#)

take precedence over any CAA Permission issued for a Flying Display or Special Event.

Airborne Flying Display Directors (AFDD)

- 1.6. Provided a pilot holds a DA and a valid AFDD accreditation, and the appropriate behavioural and attitudinal assessment has been completed satisfactorily, Display Pilots **may** act as AFDDs at Flying Displays consisting of up to 3 single Display Items per day at the location of the event.
- 1.7. Further details of AFDD accreditation and requirements can be found in [CAP 403](#).

Minimum rest

- 1.8. Prior to the beginning of any day containing Flying Display activity, display pilots **should** have a minimum period of 11 hours continuous rest, of which 8 continuous hours are available for sleep. Pilots returning to the UK having crossed multiple time zones **should** consider appropriate acclimatisation to ensure they are suitably rested.

Close Formation (f)

- 1.9. 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
 - e) Ensuring each formation member has the appropriate formation skill level on their DA
 - f) Establishing to his satisfaction that for each formation member, their recent practice (or experience) in close formation is adequate

- 1.10. 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.
- 1.11. The size of the planned close formation dictates the DA requirements of all participants. All formation members **must** have a valid DA for the required number of aircraft in the formation.
- 1.12. Where a large formation is planned with multiple elements consisting of up to four 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, as a minimum, a formation leader DA for not less than the number of aircraft in the element
 - c) All participating formation members **must** hold, as a minimum, a formation member DA for not less than the number of aircraft in the element
 - d) The elements **must** be flown 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 from the formation without endangering other aircraft. The separation required will depend on individual aircraft characteristics but, as a guide, **should** be at least 200 metres between the rear of one element and the lead of the next element

Formation briefings and walk throughs

- 1.13. A formation leader is responsible in ensuring that a thorough formation briefing is given and **must** ensure sufficient time is available to conduct one.

- 1.14. All formations at Flying Displays **must** be briefed prior to flying¹² and the brief **should** include a walkthrough. The following **must** be briefed as a minimum:
- a) Overview - Leader establishes the skill level and recent formation experience of formation members, gives an overview of the intended display, and confirms that members have the required competence
 - b) The formation positions of each pilot and aircraft
 - c) SUTTO – start-up procedures, taxi order and spacing, line-up positioning, takeoff formation and stream interval as appropriate
 - d) Formation join-up
 - e) Formation changes
 - f) Formation spacing
 - g) Formation flypast / aerobatic minimum height(s) (the most restrictive of the entire formation)¹³
 - h) Formation minimum separation distance from the crowd
 - i) Display components such as aerobatic elements, splitting into sub formations, separation, tailchase elements (aerobatic and non-aerobatic), timings, and situational awareness calls.
 - j) Recovery / landing sequence
 - k) Loser plan (including formation leadership)
 - l) Break-out, unsighted, loss of situational awareness (SA)
 - m) Emergencies – power loss, systems failures, shepherding, radio failure
 - n) Questions – Leader to confirm that members have understood the brief and are prepared to proceed. If the formation leader is not content with the ability, currency or competence of any of the pilots in the formation, then the leader **should not** allow that pilot to take part in the formation

¹² Where possible, formation leaders should circulate pertinent pilots notes prior to their formation briefing.

¹³ For formations (including display teams) consisting of pilots who hold differing DA minimas, leaders must adopt the highest individual minima for the whole formation whilst flying in formation. Recognising that formation members may be stepped down the leader **must** fly at a height which permits the lowest aircraft to remain above the required minimum height.

- 1.15. Walk throughs are not exclusive to formation briefs and can also be of significant benefit to the solo display pilot.
- 1.16. Following the formation detail, the formation leader **should** conduct a post flight debrief to identify any safety issues and lessons learnt.

Tailchase (t)

- 1.17. 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.
- 1.18. 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.
- 1.19. A flypast of individual aircraft in loose trail (>200 metres separation) with manoeuvres restricted to gentle turns is not a tailchase and a Formation / Tailchase DA is not required for this type of display.
- 1.20. 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.

Displaying multi-engine aircraft

- 1.21. Deliberate asymmetric flight **must not** be conducted as part of a display routine at UK Flying Displays.
- 1.22. Multi-engine aircraft **must not** be flown below the speed at which it is possible to climb away without change of configuration in the event of engine failure.

- 1.23. Furthermore, low speed / high angle of attack manoeuvres entail additional risks as the aircraft could be flying close to or below its minimum one engine inoperative control speed for that flight condition particularly if the engine fails to respond as thrust is increased for the next manoeuvre. An engine failure below minimum control speed could lead to a yawing and rolling departure which might be toward the crowd. Recovery may require a prompt reduction of thrust from the operating engine(s) (whether initiated by the pilot or by an automatic device) which could result in a loss of height before the recovery is completed. To increase the safety margin, pilots performing such manoeuvres **should** consider the likely handling characteristics of their type and increase the minimum height accordingly.
- 1.24. DAEs **must** ensure that during initial evaluation or renewal, pilots of multi-engine types have planned escapes manoeuvres for asymmetric emergencies during their display planning.

Flight exceeding 250 KIAS

- 1.25. Operators of aircraft that intend to exceed the maximum speed limit of 250 KIAS when flying below Flight Level 100 **must** apply for a specific approval from the CAA GA Unit to allow alleviation from the SERA speed limitations. Applications for such approvals **should** be made using the [Flying Display, Special Event or unusual aerial activity notification application form](#).

Crowd separation distances

- 1.26. **General.** The minimum lateral Separation Distances between display aircraft and the crowd line are detailed in [CAP 403](#). The following paragraphs provide additional guidance.
- a) **On-crowd wind.** During any display, pilots **should** be aware of, and make due allowance for, an on-crowd wind component.
- b) **Formations.** The minimum lateral separation **must** be observed by the aircraft nearest to the crowd. This applies equally to formation flypasts, tailchases, low approaches and run and breaks, during which the

leader may need to offset outside the marked display line to allow aircraft nearer to the crowd to maintain the required minima. If a formation consists of aircraft with differing minimum lateral separation distances, formation leaders **must** adopt the most limiting separation distance for the entire formation.

c) **Getting it wrong.** If a pilot misjudges their separation from the crowd, e.g. if the wind is stronger than anticipated, they **should** make an early decision to abort / escape a manoeuvre if safe to do so. However, the safe flight of the aircraft should be prioritised over crossing the display line as it is better to end up 'Too Close' than risk a departure from controlled flight (or an aircraft overstress) in an attempt to avoid a 'line bust'.

d) **Taxiing.** [CAP 403](#) states the absolute minimum distance for taxiing aircraft, however, pilots must consider the effect of propeller slipstream, rotor downwash, jet efflux from their aircraft and ensure they taxi at a suitable distance from spectators so as not to cause an unsafe situation. This is particularly relevant to rotary aircraft, which may need to hover-taxi. Consideration must also be given to the surface condition and any on-crowd wind.

Minimum heights during displays

- 1.27. All aerobatic manoeuvres **must** be flown such that the aircraft can be fully recovered above the minimum aerobatic height as per the pilots DA, FDD limitation or CAA Permission (whichever is higher).
- 1.28. The aerobatic minimum height for Category G1, G2 and H aircraft **must not** be lower than 500' AGL / ASL.
- 1.29. 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 apply¹⁴:

¹⁴ This paragraph does not apply to non-aerobatic displays.

- a) Where one Aerobatic Manoeuvre is linked directly to another, the aircraft **must** remain above minimum aerobatic height throughout the transition.
- b) Where a mixture of aerobatic and non-aerobatic manoeuvres are flown, blending is permitted as follows:
 - i) Once certain of being able to recover by minimum aerobatic height, where the next manoeuvre is 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 practice, the descent will be shallow and flown at much less than 30 degrees). The minimum flypast height **must not** 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 minimum aerobatic display height.

1.30. When applying for, renewing or upgrading a DA, pilots **must** demonstrate an understanding of the requirement to:

- a) 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)
- b) 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' to continue the manoeuvre
- c) Ensure that complete recovery is possible above minimum aerobatic height
- d) Plan and, where possible, practise escape manoeuvres for those occasions when gate parameters are not achieved
- e) Remain above minimum aerobatic height when directly linking aerobatic manoeuvres

Spinning as part of a display

- 1.31. In order to conduct spinning as part of a display, a pilot **must**:
- a) Hold an appropriate aerobatic DA
 - b) Ensure that spinning is a permitted manoeuvre in the display aircraft
 - c) Have been evaluated by a suitably qualified DAE whilst conducting such a manoeuvre
- 1.32. When developing a display routine that includes spinning, the pilot **must** 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

- 1.33. 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

- 1.34. The pilot-in-command **must** ensure all aircrew licences, authorisations and aircraft documents are current and valid before flight.
- 1.35. A certified declaration as contained at form [SRG1327](#) is considered to be an acceptable minimum level of documentation for civilian pilots to provide to the FDD. However, FDDs have the right to check all documentation at their discretion¹⁵.
- 1.36. The pilot **must** ensure that the information included in the form [SRG1327](#) (Display Pilot's / Aircraft Owner / Operator Certified Declaration for submission to the FDD) is correct and accurate. It is the pilot's responsibility to ensure that any flight is undertaken with valid documentation¹⁶.
- 1.37. Form [SRG1327](#) is divided into two parts, part 1 containing pilot specific information and part 2 concerning aircraft details. To provide a degree of flexibility and offer the option of the use of alternative aircraft to cover eventualities such as unserviceability, a pilot may submit a form [SRG1327](#) Part 2 for multiple aircraft to a FDD.
- 1.38. In addition to the mandatory requirement to inform the FDD of hazardous materials contained on or within the display aircraft, it is in the pilot's own interest to ensure that details recorded on the SRG 1327 are as accurate as possible. Pilots should consider the things that first responders need to know in the event of an incident. It may be deemed beneficial to provide additional information regarding such things as break-in locations, canopy / cockpit access, seat belt release, etc, in the form of a First Responders Guide to better support the response to an emergency.

¹⁵ The FDD **must not** permit any person to act as pilot of an aircraft which participates in a Flying Display unless such person holds an appropriate pilot display authorisation. A copy of the pilot's DA **should** be submitted to the FDD along with the form SRG1327.

¹⁶ Display Pilots are reminded that it is an offence under Article 256(1)(c) of the ANO that a person **must not**, with intent to deceive, make any false representation for the purpose of procuring for any person the grant, issue, renewal or variation of any such certificate, licence, approval, permission, exemption or other document.

- 1.39. Civilian pilots participating at civilian Flying Displays are required to submit their form [SRG1327](#) declaration to the appropriate FDD no later than 7 days prior to the Flying Display.
- 1.40. Any pilot intending to fly aerobatic manoeuvres **must** notify the FDD, in advance, of the routine / sequence / repertoire of manoeuvres that they intend to perform¹⁷ by entering the required detail on their form [SRG1327](#). 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

- 1.41. Under military flying regulations (RA2335), military organisers are required to review the DA of participating civilian pilots as evidence of display competency and limitations.

STOP, TERMINATE and standard call procedures

- 1.42. Display Pilots **must** be fully conversant with the 'STOP', 'TERMINATE' and standard calls along with the 'STOP call and Safety Breach Reporting and Procedures' sections contained in [CAP 403](#).
- 1.43. Where a 'STOP' call is issued, display pilot(s) will be subject to an immediate provisional suspension of their Display Authorisation pending the outcome of an investigation by the CAA. 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 the provisional suspension of their DAs¹⁸. The pilot(s) **must not** exercise the privileges of their Display

¹⁷ This allows the FDD to identify any concerns specific to their event in advance and allows the FDD and FCC to identify early any concerns that may arise during a display.

¹⁸ In the case of large formations or tailchases of greater than 4 aircraft, this will apply to the relevant element only.

Authorisation until the CAA withdraws the provisional suspension or the outcome of further regulatory enforcement action is known¹⁹.

- 1.44. FDDs and pilots **should** note that a STOP call, by itself is not a presumption of 'guilt' for a pilot, the provisional suspension is issued in order that any safety issues can be highlighted as quickly as possible and will remain in place for the duration of the subsequent CAA investigation. This investigation begins immediately the STOP call is reported to the CAA and will be kept to the minimum time possible, the length of the investigation will depend on the nature of the STOP call and the provision of supporting information and therefore can be of variable length.
- 1.45. The FDD and pilot **should** consider whether, following a TERMINATE call, it is safe to recommence the display. It is advisable to consider 'what ifs' such as this prior to commencing the display.

The recording of Flying Display related activities

- 1.46. DA holders **should** record all DA renewals, upgrades and displays (both actual and practise) along with all associated skill levels in their log books to provide:
- a) Documented evidence of compliance with currency requirements
 - b) DAEs with reference material for consideration when assessing evaluation requirements
 - c) Evidence and supplementary information when applying for DA renewals and upgrades

¹⁹ See ANO, Article 253 'Powers and Penalties'.

Chapter 2

The Display Authorisation Evaluator (DAE)

Appointment as a DAE

- 2.1. To be nominated as a DAE an individual **must** first be recommended by either a member of the CAA Flying Display regulation team or an organisation associated with a particular display discipline. Members of the Flying Display community may nominate candidates for CAA consideration. The sponsor **must** have personal knowledge of the individual's work, standards and integrity.
- 2.2. Appointment as a DAE is conditional on CAA assessment of current competence, experience and fitness and normally includes the minimum requirements detailed below. The candidate:
- a) **Must** hold a valid pilot's licence with a minimum of 1,000 hours as pilot-in-command or equivalent experience acceptable to the CAA
 - b) **Must** have normally held a Display Authorisation (DA) for three years
 - c) **Should** be an active Display Pilot
 - d) **Should** have civilian and / or military flying instructional experience²⁰
- 2.3. 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, renewal and upgrade processes
 - e) Experience of mentoring and knowledge of ongoing responsibilities in relation to Display Pilot monitoring
 - f) Knowledge of display flying HF
 - g) Knowledge of CAP 1724, [CAP 403](#), the ANO and SERA

²⁰ A CRI rating by itself is insufficient for this purpose.

- h) Ability to write useful and meaningful assessment reports
 - i) Ability to maintain personal records of Evaluations and Mentoring
 - j) Willingness to engage with both the CAA and the Military Aviation Authority (MAA) to assist in continually improving Flying Display regulation and the safety of the sector
- 2.4. Prospective DAE candidates are required to submit an Application for Fitness Assessment for a Flying Display Role (form [SRG 1303B](#)) to the [CAA GA Unit](#) during the appointment process to inform the fitness assessment and confirm suitability for the role.
- 2.5. For the avoidance of any doubt, DAEs are required to sign the CAA / DAE Agreement (found at appendix E) upon appointment.
- 2.6. DAEs are appointed for 3 years at a time. 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 syndicate meeting
 - c) They complete at least one evaluation observed by the CAA
- 2.7. The [CAA GA Unit](#) organises two DAE syndicate meetings each year, often as part of the bi annual Flying Display Symposia, where current issues relating to DAs and display flying are discussed. Where possible, DAEs **should** attend annually, but **must** attend at least one out of every six syndicate meetings.
- 2.8. Upon appointment a DAE will receive a DAE certificate issued by the [CAA GA Unit](#).

Reappointment as a DAE

- 2.9. Following a 3 year appointment period, DAEs may be reappointed having:
- a) Satisfactorily passed a further fitness assessment following submission of an Application for Fitness Assessment for a Flying Display Role (form [SRG 1303B](#))
 - b) Attended at least 1 DAE syndicate meeting in the previous 3 year appointment period

- c) Been observed for at least one DA evaluation by the CAA in the previous 3 year appointment period
- d) Supported the CAA in improving regulation and the safety of the sector
- e) Re-signed the CAA / DAE Agreement²¹

Roles and Responsibilities

2.10. The roles of a DAE are as follows:

- a) To set examples of best practice 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 season²²

2.11. When conducting DA evaluations, DAEs operate on behalf of the CAA. As such they **shall** discharge their duties accordingly. 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
- d) Keeping a personal record of all evaluations and mentoring carried out on behalf of the CAA
- e) To actively improve the safety of the sector

²¹ Where there have been changes

²² 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 is noted, the CAA EOO. If any lapses are observed at a Flying Display, the FDD **should** be informed, followed by the CAA EOO.

DAE aerobic approval

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

DAE formation approval

- 2.14. 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.
- 2.15. 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 Basic Formation DA, as a formation member or leader
- 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 approvals

- 2.16. 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.
- 2.17. The tailchase approval is based on the total number of aircraft undertaking a tailchase. DAEs will be authorised to evaluate tailchases comprising of two aircraft, three aircraft or up to four aircraft.

The Evaluation Oversight Officer

- 2.18. The CAA 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) Assisting prospective display pilots to find a DAE in their required discipline and geographical area
 - b) Recommending DAEs to DA holders seeking mentoring, if directly approached
 - c) Conducting periodic DAE Observation visits
 - d) The management of the DAE and DA system on behalf of the [CAA GA Unit](#)
 - e) The organisation of DAE syndicate meetings

Review and Enforcement

- 2.19. 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.
- 2.20. In the event a DAE is found to be underperforming, the CAA will convene a review board and an investigation will be undertaken in accordance with the Flowchart Analysis of Investigation Results (FAiR) System at Appendix F.
- 2.21. 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 revocation²³.
- 2.22. 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 notification²⁴.

²³ In accordance with the ANO, Article 253 'Revocation, suspension and variation of certificates, licences and other documents'.

²⁴ In accordance with Regulation 6 of The Civil Aviation Authority Regulations 1991.

Chapter 3

DAE standardisation

General

- 3.1. 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 aim 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 practice, the CAA will endeavour to provide standardisation, continuous improvement and the sharing of best practice through periodic CAA visits and the DAE Syndicate meetings.

Standards

- 3.2. 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** every DAE to set the highest possible standards; DAEs **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 and debriefing
 - e) Preparation
 - f) General conduct
 - g) Regulatory knowledge

What to look for

- 3.3. 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 CAA.
- 3.4. **Preparation.** Particular attention **should** be paid to the production of correct documentation, aircraft readiness and personal preparation.
- 3.5. **Flying standards.** When observing flight demonstrations, DAEs **should** pay particular attention to pre-flight briefing, observe the ability to be flexible when required and above all flying accuracy.
- 3.6. **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 Flying Display sector and it is therefore vital that DAEs and display pilots maintain contact with each other where possible.
- 3.7. **What to do if standards are being eroded.** If it is noted that standards are being eroded, the DAE has a duty to intervene and discuss any concerns with display pilots. 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 [CAA GA Unit](#) **should** be contacted.

Chapter 4

Mentoring and initial assessment

General

- 4.1. 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 categories(s) the potential display pilot wishes to be evaluated in) and agree to be mentored by that DAE²⁵. Once contact has been made, the DAE **should** satisfy himself that the applicant is suitable to undertake the rigours of Display Flying.

Pre-evaluation mentoring

- 4.2. The aim of pre-evaluation mentoring is for the DAE to establish the applicant's motivation and commitment and for the applicant to understand what is required of them. Human Factors play a large role in the initial assessment and this early rapport forms the basis for follow-on mentorship, guidance and support that the DAE **should** provide to the pilot and underpins the safety of UK display flying. Pre-evaluation mentoring also provides an opportunity for the DAE to support the applicant during their application process.

The initial assessment

- 4.3. An initial assessment **should** be conducted, ideally as a face to face meeting between the DAE mentor and the applicant. A detailed explanation of what is required of a DA holder **should** be given by the DAE. The following areas **must** be considered by the DAE:
- a) **Experience.** Inspect the applicant's logbook to determine total flying experience, any previous display, aerobatic or other relevant

²⁵ A list of DAEs can be found on the CAA website [here](#). Note that this list is not exhaustive and contains only the names of those whose consent has been received by the CAA for the purpose.

experience, total time on both the display aircraft type and display aircraft category that will be used in the flight demonstration²⁶. The following **should** be used as a guide for applicants and DAEs when considering the minimum sensible level of experience required before a DA application can be considered:

- i) Pilots of aircraft with piston engines of 800hp or greater, 2730kg mass or greater, jet powered, helicopter or gyroplane - 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 certificate²⁷, Certificate of Renewal (as applicable) to enable particular aircraft types to be included in the DA.

²⁶ 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.

²⁷ 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.

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 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.

4.4. In order to further assess and understand the applicant's flying ability, DAEs are encouraged to fly with candidates. Assessment flights for this purpose need not necessarily be carried out in the proposed aircraft type for display (if single seat for example) and **must** be carried out in compliance with SERA and the Rules of the Air Regulations.

Suitability

- 4.5. When considering applicant suitability, there are generally five grounds for the CAA deciding that an applicant is not suitable and would therefore not be issued with a DA:
- a) A lack of appropriate behaviours and attitudes
 - b) Insufficient experience
 - c) Inadequate or insufficient training
 - d) A lack of flying ability
 - e) A previous investigative or enforcement history with the CAA or other National Aviation Authority (NAA)
- 4.6. **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 applicant an opportunity to correct any failings and not left until the day of the test. In this case, a recommendation to the CAA for the award of a DA **should** only be made once the applicant has addressed any issues identified. If inappropriate personal motivation, attitude, or other Human Factors issues have been identified, the pilot **should** be advised that it is unlikely that they will be granted a DA. If this situation does arise then the [CAA GA Unit](#) can assist in supporting the DAE with the decision.
- 4.7. **Insufficient experience.** If an applicant does not possess the requisite experience as per para 4.3 (a), they will not normally be issued with a DA by the CAA. If the DAE feels that despite the lack of experience it is appropriate for the applicant to be issued a DA, they **must** provide comprehensive details of a proposal to the [CAA GA Unit](#). It **should** be noted that in this case, a DA will only be issued in exceptional circumstances.
- 4.8. **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** consider the applicant for a DA evaluation. Instead, the applicant **should** be encouraged to undertake further training to address the shortfall. If the candidate subsequently fails to commit to the training programme, consideration **should** be given to terminating their training.

- 4.9. **Lack of ability.** Despite enthusiasm, a positive attitude, experience and training, some pilots will not possess the skills and ability required to safely participate in display flying. If this is the case, the DAE **should** terminate the applicant's training and inform the [CAA GA Unit](#) – 'it is OK to say no'!
- 4.10. **Previous investigative or enforcement history with the CAA or other NAA.** Investigations, prosecutions, enforcement or other regulatory action will be taken into consideration when applying for a DA.
- 4.11. Once the DAE is satisfied that the applicant is suitable for training, the DAE **should** notify the [CAA GA Unit](#) and training and mentoring can begin²⁸.
- 4.12. 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 [CAA GA Unit](#) **should** be contacted.

Failure to achieve the required standard

- 4.13. Where an applicant fails to achieve the required standard for the initial issue of a DA, the DAE **shall** ensure that the details are emailed to the [CAA GA Unit](#) clearly indicating the situation and stating the reasons for the failure and any recommended remedial actions. If this occurs, the applicant **should** contact the [CAA GA Unit](#) prior to arranging any further training or evaluation.

²⁸ At this point the prospective applicant should also submit a copy of form [SRG1303B Application for fitness assessment for a flying display role](#) to the CAA.

Chapter 5

Display Authorisation evaluation process

Display Authorisation Evaluation process

- 5.1. When assessing a display pilot, either for initial issue, renewal or upgrade, details **shall** be recorded on form [SRG 1300](#) and emailed to the CAA within 14 days of any evaluation.
- 5.2. The evaluation **must** consist of the following main areas:
- a) Documents check
 - b) Oral examination
 - c) Pre-flight brief and inspection
 - d) Flight demonstration
 - e) Post flight de-brief
 - f) Recommendation

Documents check

- 5.3. DAEs **should** always ensure that the flight they are evaluating is conducted in accordance with the necessary legal requirements by checking pilot and aircraft documentation to ensure validity. Copies of the required documents can be requested and checked in advance to maximise the time on the day of the evaluation.
- 5.4. It is recommended that DAEs include a request for a completed sample form [SRG 1327](#) from the display pilot as part of the documents check in order to assess the accuracy of the information entered and to offer guidance where required.

- 5.5. DAEs **should** check that a valid Permission for display practice is in place²⁹ for the location of the intended evaluation flight and obtain the approval of the Permission holder for its use, as appropriate.

Oral examination

- 5.6. The aim of the oral examination is to establish that the applicant has a solid understanding of the operation and limitations of the aircraft to be flown along with an assessment of the applicant's attitude and motivation. This discussion can take the form of a Q & A session, however, this is also an opportunity to share experience and knowledge.

- 5.7. 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 applicant's wish to obtain / upgrade / renew a DA
- c) Discuss the display that the applicant intends to demonstrate including the following topics:
 - i) the logic of the routine
 - ii) energy management
 - iii) the planning of the manoeuvres in relation to aircraft limitations
 - iv) the planning of the manoeuvres in relation to G management.

Ask the applicant to explain the considerations that have been made to ensure the G onset rate is kept at a level where warning signs of grey out give sufficient time to either offload and / or execute an escape manoeuvre where applicable.

²⁹ unless the DAE, and display pilot, are prepared to accept the associated risks involved with the flight being carried out without Permission and strictly iaw SERA and / or ORS 4 No. 1174 and with the agreement of airfield managers / land owners / etc.

Planning of manoeuvres should have sufficient contingency to allow for offloading G if vision becomes impaired

- v) the effects of density altitude
- vi) the effects of surface and upper winds and how to adjust the display to compensate for external constraints³⁰
- d) Discuss variations to the intended routine. Consider asking the candidate to carry out a second, non-aerobatic sequence, once their normal routine is complete (with a suitable pause to re-orientate as necessary) with an unplanned constraint such as a simulated lower cloud base or blocked road or pop-up avoid. The unplanned presentation should be simple and used to check that the candidate has sufficient spare capacity to safely adapt to an unforeseen constraint. This could also be used as a consideration as a possible course of action following a Terminate call where it may be inappropriate or not possible to recommence a practiced routine. Although Terminate calls are rare, having possibly had the cadence and energy management of a practiced routine disrupted, a pre-planned idea of possible continuation options **should** be discussed with candidates.
- e) Discuss the importance of conducting a display briefing whether the applicant is displaying as a singleton or leading a formation
- f) Highlight the importance of a walk through as preparation for a singleton or formation display or flypast
- g) Discuss and ensure a thorough understanding of the need to:
 - vii) 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)

³⁰ To obtain a Display Authorisation, pilots **must** be able to demonstrate that they can plan and perform a series of linked manoeuvres.

- viii) 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'
- ix) Ensure that complete recovery occurs above minimum aerobatic height
- x) Plan and practise escape manoeuvres for those occasions when gate parameters are not achieved
- xi) Remain above minimum aerobatic height when directly linking aerobatic manoeuvres
- h) Discuss the applicant's emergency planning and escape manoeuvres for:
 - i) Manoeuvres that might lead to inadvertent stalls or spins
 - ii) Engine or system failures
 - iii) Changes in the weather during the display
- i) Examine the applicant's understanding of the symptoms, and recovery from, 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) Ensure pilots understand the following 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 height³¹

- k) Discuss the pilot's responsibilities during a Flying Display briefing and on receipt of any written brief
- l) Discuss aircraft emergency egress and abandonment drills
- m) Discuss human performance and its limitations relating to display flying, including G-loc and A-loc avoidance planning and recovery tactics, factors that may influence G tolerance, stressors such as anxiety, pressure or physiological limitations, cognitive biases, cumulative fatigue, mental attitude and personal limitations. Include in the discussion common causes of Flying Display accidents and Flying Display related human factor considerations / lessons learnt. Cover the importance of being suitably 'fit to fly on the day' (i.e. physically and mentally rested and in the right frame of mind)
- n) Discuss the importance of thoroughly reading and understanding the conditions contained on any CAA Permission granted for a Flying Display or Special Event
- o) Highlight the FDD's ability to override display minima and the pilot's requirement to adhere to that minima
- p) Discuss acceptable profiles for arrivals and departures at Flying Displays
- q) Discuss when and where the privileges of a DA can be exercised
- r) Discuss the procedures to be adopted in the event of a radio failure during a Flying Display

5.8. The DAE **shall** determine the applicant's knowledge and understanding of:

- a) Applicable regulation, such as, but not limited to:
 - i) This CAP
 - ii) [CAP 403 'Flying Displays and Special Events – Safety and Administrative Requirements and Guidance'](#)

³¹ In practice, the descent will be shallow and flown at much less than 30 degrees.

- iii) The current version of the [Rules of the Air Regulations](#)
 - iv) The Standardised European Rules of the Air ([SERA](#)) in force with particular reference to SERA.5005
 - v) The current version of the [ANO](#) with particular reference to Articles 7, 11, 86, 240 and 241
- b) Applicable limitations such as:
- i) Those contained on the holder's DA and any associated CAA Flying Display Exemptions held³²
 - ii) Those imposed by the pilot's licence (if applicable)
 - iii) The minimum lateral separation distances between display aircraft the crowd line
 - iv) The 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
 - v) The compliance with any limitations or conditions associated with an aircraft's Certificate of Airworthiness (C of A) or Permit to Fly. Such conditions always take precedence over any CAA Permission issued for Flying Displays and Special Events

Pre-flight inspection

5.9. The DAE **should**, during the briefing session, take the opportunity to remind the applicant of display specific pre-flight inspections such as:

- 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) A thorough check for loose objects in the cockpit and elsewhere in the aircraft
- d) Parachute, if carried, and emergency equipment inspection
- e) Altimeter setting

³² An Exemption to display at a reduced minimum lateral separation distance between display aircraft and crowd line being an example.

- 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
- 5.10. The DAE **should** observe the applicant making their normal pre-flight inspection. Consideration **should** be given to observing³³ from a distance so as not to distract and to allow the pilot to get into their display ‘bubble’. If any points other than safety issues are noted they should be covered in the de-brief carried out post evaluation flight.

Flight demonstrations

- 5.11. At the discretion of the DAE, applicants 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.
- 5.12. The DAE **should** be satisfied that the applicant is operating well within their personal competence, capacity and experience level, in a safe and controlled manner and with strict adherence to limits.
- 5.13. Evaluation criteria **must** include³⁴:
- a) Correct accomplishment and orderly execution of planned manoeuvres
 - b) Airspeed and height control
 - c) Energy management
 - d) Ability to conform to Display Area and lateral separation minima requirements
 - e) Ability to compensate for the effects of wind

³³ When observing pre-flight inspections and flight demonstrations it is recommended that DAEs consider the use of a Dictaphone to record observations to enable constant monitoring.

³⁴ Items f), h) and i) **should** be covered verbally and demonstrated where possible.

- f) Ability to adjust display routine to accommodate unplanned issues
 - g) Ability to execute a planned series of manoeuvres
 - h) Ability to handle simulated emergencies during a Flying Display routine
 - i) Ability to perform escape manoeuvres when gate parameters are not achieved
 - j) Maintenance of slot times and duration
- 5.14. For all evaluation flight demonstrations the DAE **must** formally de-brief the pilot afterwards and **should** cover any variation of planned display due to weather conditions. The discussion **should** also include a check on how the pilot would have varied the display to accommodate other unplanned issues that may arise. The written details of the de-brief **shall** be included on form [SRG 1300](#).
- 5.15. Other than for the renewal of Formation and Tailchase disciplines, evaluation flight demonstrations for the initial issue or renewal of a DA cannot be assessed whilst the applicant is following any other aircraft.

Flypasts / non-aerobatic displays

- 5.16. Single flypasts in isolation, are considered to be normal flight but flown at a lower height and in the display environment. As such, flypasts may be considered the simplest way of presenting an aircraft.
- 5.17. Non-aerobatic displays consisting of multiple flypasts that involve dynamic manoeuvring, including reversals, can appear to be benign, however displays such as these **must** be flown with caution. Such manoeuvring **should** be specifically briefed in detail by the DAE preceding the observation of a flypast evaluation.

Spin training and departure awareness

- 5.18. An initial application for a DA that includes an authorisation for display aerobatics **must** include evidence that the applicant has received appropriate spin training.

- 5.19. Additionally, applications for the renewal or upgrade of an aerobatic DA **must** be able to demonstrate 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 when completing form [SRG 1300](#).
- 5.20. If the DAE is not satisfied that the applicant is sufficiently aware of, or current in, the recognition and recovery from unusual attitudes³⁵ the recommendation **must** be restricted to non-aerobatic displays (with a specific 'wingover' exclusion) until such time as the applicant has received additional training.

Recommendation

- 5.21. Following successful evaluation, the DAE will provide a recommendation for issue / renewal / upgrade using form [SRG 1300](#) which **shall be submitted, by the applicant,** to the [CAA GA Unit](#)³⁶ for approval. The contents will be processed, the DAE's comments / recommendations reviewed and the CAA's records updated accordingly. Subject to satisfactorily completing the procedure a new DA will be issued.
- 5.22. Any recommendations for the inclusion of specific authorisations covering capabilities that fall outside of the scope of the defined flying disciplines in the following chapters **should** be specifically included by the DAE in the recommendation.

Record keeping

- 5.23. DAE's **shall** keep detailed records of all evaluations and **must** be able to produce such records when requested by the CAA. The method and

³⁵ Unusual attitudes can include, but are not limited to: nose high / low speed, nose low / spiral dive and inadvertent entries to tailslides.

³⁶ 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.

quality of record keeping will be subject to inspection during evaluations observed by the CAA.

- 5.24. DAE's **should** produce and use checklists for reference during evaluations. For standardisation, the checklist found at Appendix C **should** be used. These checklists will subsequently form an integral part of the records to be kept and it is important to ensure that the topics required by this CAP (as applicable) are included in each evaluation.

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Chapter 6

Display Authorisation - Aerobatic (a)

- 6.1. In order to perform aerobatic manoeuvres during a Flying Display, the pilot **must** hold a DA or DA Exemption permitting aerobatics at the required skill level. This chapter details the authorisations that are available.
- 6.2. Evaluations for the issue or upgrade of an aerobatic DA **should** cover the basic physiological principles of exposure to G force and the effects of increased G, the factors that increase or decrease the risk of G-related impairment or incapacitation, the fact that a pilot's G tolerance can vary and that alteration of consciousness can affect any pilot undertaking aerobatic manoeuvres. There **should** be awareness of both anticipated levels of G associated with each manoeuvre and suitable anti G straining manoeuvres. Pilots **should** be made aware that visual or other premonitory symptoms may not necessarily occur with rapid onset high G and G-LOC may occur without warning.

Limited level (aL) aerobatic evaluation criteria

- 6.3. Limited level aerobatic authorisations are designed to provide a stepped entry into aerobatics for display pilots. As such, the authorisation will be limited to simple, upward vector manoeuvres only.
- 6.4. The evaluation criteria for limited level aerobatic authorisations are as follows:
- a) **Combinations.** Half Cuban 8 only (five eighths of an inside loop combined with a half roll on diving exit line)
 - b) **Rolls.** Upward vector aileron rolls

Standard level (aS) aerobatic evaluation criteria

- 6.5. The evaluation criteria for standard level aerobatic authorisations are 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) Half Cuban 8
- g) **Rolls.** Slower aileron or barrel rolls on horizontal line, or where combined with a combination manoeuvre listed above, on the diving or climbing line

Intermediate level (al) aerobatic evaluation criteria

6.6. The evaluation criteria for intermediate level aerobatic authorisations are 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) 45° climbing line (or steeper as appropriate to type) followed by a half roll and pull through to level flight (Reverse Half Cuban 8)

- ii) Half to five eighths of an inside loop may be combined with entry or exit lines and angles
 - iii) Quarter or half rolls may be included on the lines
- h) **Rolls.** By definition these are inserted in lines or other figures and include:
- (i) 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
 - (ii) Positive flick roll

Advanced level (aA) aerobatic evaluation criteria

6.7. The evaluation criteria for advanced level aerobatic authorisations are 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

Advanced level plus (aA+)

- 6.8. All advanced level aerobatic pilots applying for upgrade to advanced level plus **must** be able to produce evidence of adequate training covering the requirements for this upgrade. Training **should** include advanced spin training covering flat erect spinning, flat inverted spinning and cross over spinning, all of which **should** be recovered onto specific headings³⁷.
- 6.9. The evaluation criteria for advanced level plus aerobatic authorisations are as follows³⁸:
- 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

- 6.10. All DA pilots applying for an upgrade to unlimited level aerobatics **must** have passed through advanced and advanced level plus first.
- 6.11. The evaluation criteria for unlimited level aerobatic authorisations are as follows:
- a) By definition, there are no restrictions on aerobatic figures, including gyroscopic figures which a pilot flying Unlimited category aerobatics may perform

³⁷ A written statement from an appropriately qualified instructor or log-book evidence **must** be provided.

³⁸ Torque rolls, hovering and simulated hovering / ultra high AoA flight and knife edge spins are not permitted at this level.

- b) Applicants **must** be current with flat erect spinning, flat inverted spinning and cross over spinning all of which **should** be recovered onto specific headings

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

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Chapter 7

Display Authorisation - Formation (f)

Formation skill levels

- 7.1. In order to take part in any close formation flying at a Flying Display the pilot **must** hold a DA, or DA Exemption with the appropriate close formation annotation. The following table details the formation skill levels and associated limits:

Close formation Categories and Limits		
Skill	No of ac	Description
fB 2	Max 2	Basic - Formation manoeuvring must be smooth and progressive with slow changes in pitch and roll. Bank and pitch angles must not exceed 30°.
fB 4	Max 4	
fB U	Unlimited	
fl 2	Max 2	Intermediate - Formation manoeuvring must remain smooth and progressive and can entail increased pitch and roll rates. Bank and pitch angles must not exceed 60°.
fl 4	Max 4	
fl U	Unlimited	
fA 2	Max 2	Advanced - Formation manoeuvring is unlimited. Includes formation aerobatics.
fA 4	Max 4	
fA U	Unlimited	

Formation category evaluations

- 7.2. 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 and consideration of the applicant's formation currency.
- 7.3. The recommended level of formation authorisation **should** 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. The applicant **must** demonstrate sound situational awareness and adherence to SOP's during the evaluation³⁹.
- 7.4. 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.
- 7.5. A formation evaluation (whether initial or upgrade) **must** include a flight evaluation and **must** include the elements in the following paragraphs.
- 7.6. Having completed an assessment, the DAE **should** make a recommendation using form [SRG 1300](#). The recommendation **must** include the recommended formation skill level and number of aircraft (e.g. FB 2) and whether it is for formation member or leader.

Close formation flying – up to 4 Aircraft

- 7.7. Before a DAE recommends an applicant for a 'Close Formation flying with up to 4 aircraft' authorisation⁴⁰, the applicant **must** show a clear understanding of the basic principles of formation flying including:

³⁹ The DAE **shall** ensure that applicants for formation DA endorsements are familiar with routine formation radio calls and visual signals such as those to be used in the case of communications failure, etc.

⁴⁰ Subject to an applicant's experience, a DAE **may** consider formation with '2 aircraft' more appropriate than 'up to 4 aircraft' and the recommendation **should** be made accordingly.

- a) Formation briefing and walk through requirements
- b) The principles of safely joining into Close Formation
- c) The safe escape manoeuvre if the join-up is incorrect
- d) The break from Close Formation and the rejoin
- e) The effects of inertia.
- f) Assessment of closing speed
- g) Throttle handling⁴¹
- 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 changing Formation
- k) The safety aspects and routine of changing 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 and / or other aircraft used for formation reference

7.8. During a formation flight evaluation, the DAE can conduct the evaluation from the ground, fly as the formation leader⁴² 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 before conducting manoeuvring at display height. 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:

⁴¹ If appropriate, the differences between jet and piston engine handling and response **must** be understood by the applicant.

⁴² If assessing close line astern, flying as formation leader is not a valid option for the DAE. It may be considered more suitable to fly as a formation member (e.g. as number 3 with the applicant flying as number 2) so the applicant can be observed flying in this position.

- a) A formation brief, including walk-through, as required by this CAP
- b) An echelon pairs take-off (if appropriate)
- c) Basic formation manoeuvres⁴³
- d) Change of formation position in straight and level flight and moderate banked turns, appropriate to the level of approval sought
- e) Practice break outs and rejoins from both echelon positions in straight and level flight and moderate banked turns
- f) Emergency break outs during manoeuvres
- g) Confirmation that the applicant is carrying out airmanship checks (fuel calls, etc)
- h) A Close Formation visual run in and break into the visual circuit (if appropriate)
- i) A thorough formation debrief to identify any areas for improvement which the leader or formation members may have identified

Close formation flying – unlimited aircraft

- 7.9. Before a DAE recommends an applicant for an 'Unlimited formation member' authorisation, in addition to the basic principles of formation flying listed above, the applicant **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 experience⁴⁴.

Close formation leading – up to 4 aircraft

- 7.10. Before a DAE recommends an applicant for a 'Close Formation leading with up to 4 aircraft' authorisation⁴⁵ the applicant **must** be able to demonstrate the following:

⁴³ 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 in echelon, line astern and line abreast as appropriate.

⁴⁴ Holding a formation lead DA for up to four aircraft would be one way of fulfilling this requirement.

⁴⁵ An application for a formation leading authorisation will not be considered unless the applicant already holds, or is recommended for, a formation member authorisation.

- a) Adequate experience of flying as a formation member in addition to suitable training in formation leading
- b) A detailed knowledge of the formation briefing requirements laid out in this CAP
- c) A detailed understanding of the requirements and recommendations specific to formation flying set out in this CAP
- d) A high level of awareness 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 when manoeuvring and where the formation contains more than one aircraft type
 - iii) terrain clearance, lookout and positioning relative to the display line for all formation members
 - iv) ensuring that the lateral separation minima are maintained with respect to the aircraft nearest the crowd line
 - v) the actions to be taken in the event that one or more wingmen lose sight of the leader and / or other formation members
 - vi) height with regard to ensuring that the lowest member of a formation can comply with the required minimum display height
 - vii) actions in the event of an emergency
- e) The applicant **must** brief and lead a formation with the DAE acting, ideally, as the applicant's wingman or flying in the applicant's aircraft. The briefing **must** cover all required aspects, particularly safety precautions, in a logical manner and include a walkthrough of the planned display routine or flypast
- f) The in-flight portion of the evaluation **must** include an assessment of the applicant's leading abilities in all normal and display related manoeuvres including, if appropriate, formation aerobatics

- g) The applicant **must** demonstrate the ability to clearly communicate by radio and hand signals to formation members

Close formation leading – unlimited aircraft

- 7.11. Before a DAE recommends an applicant for an 'Unlimited formation lead' authorisation the applicant **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 SOPs used and the quality and thoroughness of the applicant's briefings before recommendation to the CAA.

Chapter 8

Display Authorisation - Tailchase (t)

Tailchasing with up to 4 (t4) aircraft

- 8.1. An application for tailchase authorisation will not be considered unless the applicant already holds, or is recommended for, a formation member authorisation.
- 8.2. The following table details the Display Authorisation tailchase annotations:

Tailchase Categories and Limits		
Skill	No of ac	Description
t2	Max 2	The manoeuvres conducted during tailchases must be in accordance with the most restrictive DA in the tailchase.
t3	Max 3	
t4	Max 4	

- 8.3. Before a DAE recommends an applicant for a 'tailchasing authorisation'⁴⁶, the applicant **must** demonstrate awareness of the following during the pre-flight briefing:
- a) The positions to be flown
 - b) 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
 - c) Assessment of separation distances and rate of closure
 - d) The avoidance and dangers of encountering another aircraft's slipstream and the subsequent actions to be taken
 - e) Loss of leader (or aircraft ahead) procedure

⁴⁶ Subject to an applicant's experience, a DAE **may** consider tailchase with '2 aircraft', or '3 aircraft', more appropriate than 'up to 4 aircraft' and the recommendation **should** be made accordingly.

- 8.4. Additionally, 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.

Tailchase lead

- 8.5. 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.
- 8.6. Before a DAE recommends an applicant for a 'tailchase lead' authorisation the applicant **must** demonstrate consideration of the following during the pre-flight briefing:
- a) Maximum speeds and power to be used
 - b) Maximum 'g' loading (both positive and negative)
 - c) Type of manoeuvres used in tailchasing
 - d) Consideration of other formation members
 - e) The emergency and loss of leader procedures
- 8.7. The applicant **must** demonstrate the ability to satisfactorily brief, lead, and debrief a representative tailchase.

Aerobatic tailchases

- 8.8. To fly or lead a tailchase with aerobatic manoeuvres, a pilot **must** hold the appropriate aerobatic skill level and **must not** be limited to non-aerobatic tailchase on their DA.

Chapter 9

Display Authorisation – Groups and Categories

Aircraft groups and categories

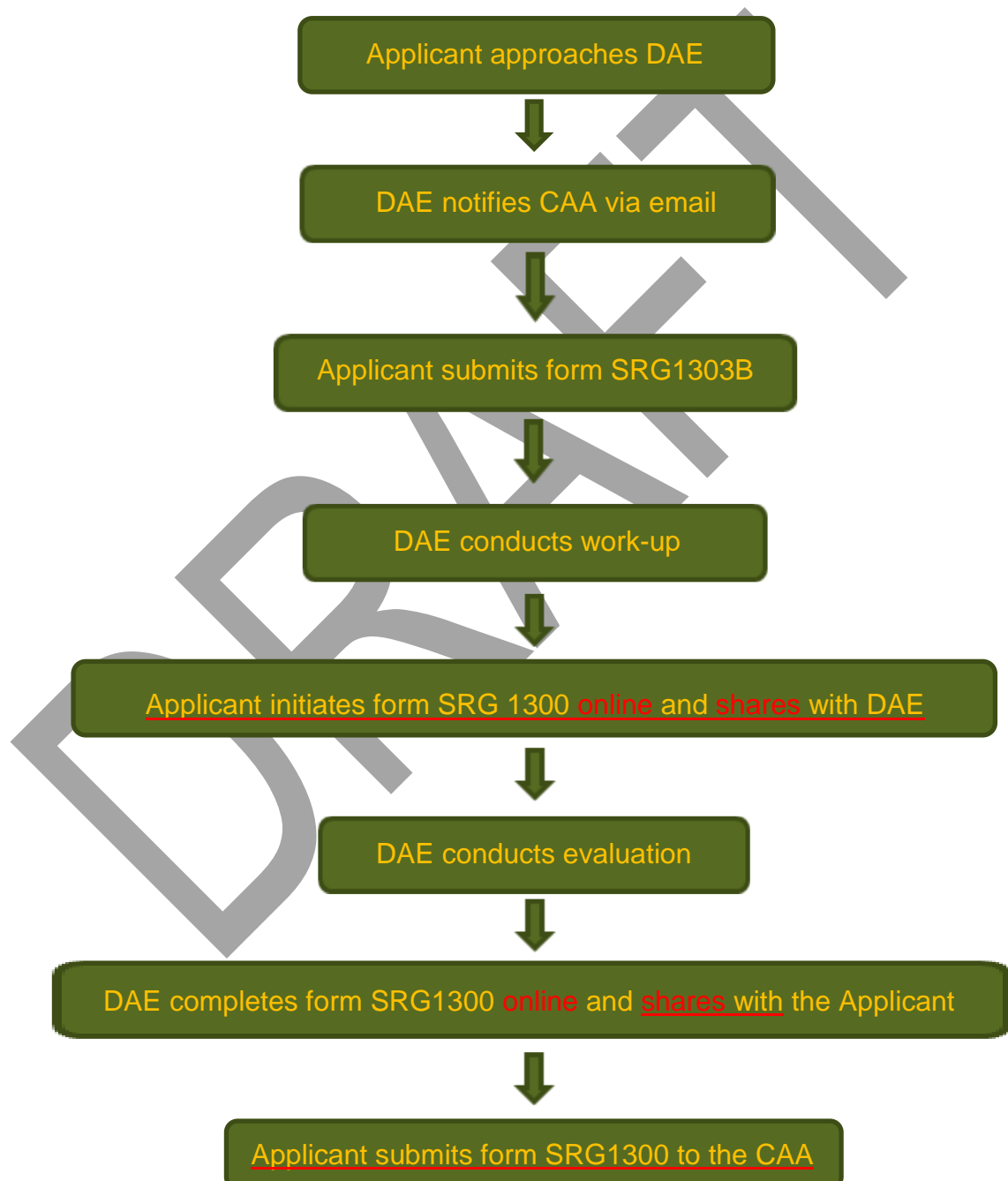
9.1. The following table illustrates the Display Authorisation aircraft groups and categories.

Aircraft Categories for Display Authorisations		
Notes: 1. All engine power ratings in this table are measured at Sea Level in ISA conditions.		
Group	Category	Description
Single Engine Piston (SEP)	A	≤200 hp
	B	201 hp to ≤600 hp
	C	>600 hp
Multi Engine Piston (MEP)	D	≤300 hp total
	E	301 to ≤600 hp
	F	>600 hp, single pilot
	Z	>600 hp, multi-pilot/crew
Jet Powered Aeroplanes (JPA)	G1	Straight wing, single engine jet aircraft
	G2	Swept wing, single engine jet aircraft
	H	Multi engine jet aircraft
Turbo Prop Aircraft (TPA)	I1	Single engine turboprop aircraft ≤600 shp
	I2	Single engine turboprop aircraft >600 shp
	J	Multi engine turboprop aircraft
Helicopters and Gyroplanes (H & G)	L	Helicopters
	M	Gyroplanes
Gliders, Hang Gliders and Paragliders (GLI)	N	Gliders
	O	Hang gliders
	P	Paragliders
Microlight Aeroplanes (MLA)	T	Microlights with weight shift control
	U	Microlights with three-axis control
	V	Microlights with hybrid control
Powered Parachutes, Powered Paragliders, Powered Hanggliders (LPA)	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

Chapter 10

The Display Authorisation - initial application and issue

DA initial application



- 10.1. 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 form [SRG 1303B](#) to the [CAA GA Unit](#).
- 10.2. Following DA mentoring and training, and once the DAE is content that the applicant 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 following should be undertaken:
- a) The **applicant** completes the personal details section of form [SRG 1300](#) and emails it to the **DAE**
 - b) The **DAE** completes the narrative and recommendation and returns the completed form [SRG 1300](#) to the **applicant**
 - c) The **applicant** submits form [SRG 1300](#) to the [CAA GA Unit](#) for consideration along with online payment
- 10.3. **It is the applicant's responsibility** to ensure that the information contained on the form [SRG 1300](#) is accurate (agreed with the DAE) and that the form SRG 1300 is emailed to the [CAA GA Unit](#) within 14 days of the evaluation.
- 10.4. Provided the applicant has met the minimum requirements set out above, passed the Fitness Assessment for a Flying Display role and is recommended for display flying by the DAE via form SRG 1300, the [CAA GA Unit](#) will issue the DA.

Issue of the Display Authorisation

- 10.5. 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, minimum heights and the skill levels associated with any aerobatic / formation / tailchase endorsements⁴⁷. Additionally, any other specifics such as wing walking, balloon bursting, flour bombing

⁴⁷ For initial DA and DA upgrades, a minimum of 500 feet for aerobatics and 200 feet for flypasts is normally issued unless specific circumstances can be endorsed by DAE recommendation.

etc. will be included in the 'other' column of the DA. Initial issue will be in one of the categories shown Chapter 9.

- 10.6. 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 [CAA GA Unit](#) if this is likely to be requested.

Tyro DA (TDA) privileges

- 10.7. To help facilitate opportunities 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 Display⁴⁸ to TDAs without incurring any extra charge if the additional item(s) move their display into a higher price band⁴⁹.
- 10.8. To benefit from the scheme a TDA pilot **must** have attended a Display Symposium.
- 10.9. TDA privileges are not available for previously expired DAs.
- 10.10. 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](#)
- 10.11. TDA privileges expire after 25 months or 8 display appearances⁵⁰ from initial DA evaluation, whichever occurs first.
- 10.12. To apply for TDA privileges, a display pilot **should** 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

⁴⁸ The maximum number of TDAs permitted vary depending on the size of a Flying Display. For further details of TDA participation refer to [CAP 403](#).

⁴⁹ 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.

⁵⁰ Any scheduled display performance not completed, for whatever reason, is not included in this total.

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.

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Chapter 11

Display Authorisations - Validity, currency, renewals, upgrades, exemptions and enforcement

General

- 11.1. This chapter focuses on DA validity, currency, renewals and upgrades and includes details of DA Exemptions and their applicability. It also details what constitutes a lapsed and expired DA and the actions to be taken by the CAA in the case of a DA suspension.

Behavioural and Attitudinal Fitness Assessment

- 11.2. A Behavioural and Attitudinal Fitness Assessment is required for all initial issues, renewals and upgrades. Applicants **must** complete a form [SRG 1303B](#) and submit to the [CAA GA Unit](#) alongside, or ahead of any DAE submissions of form [SRG 1300](#).

Validity of a DA

- 11.3. All DA holders **must** complete a successful renewal evaluation at least every 13 months; failure to do so will result in a lapsed DA which is no longer valid.
- 11.4. Initial issue DAs are valid for a period of 6 months. A minimum of two 6 month evaluations and a period of 12 months must have elapsed between the date of initial issue before a DA can be issued for 13 months⁵¹.

⁵¹ Evaluations of an initial issue DA may be conducted by the same DAE to the point of issue of the first 13 month DA or for the first 2 years (whichever occurs later) to provide consistent mentoring in the early stages of a pilot's display career. Subsequent evaluations will require a different DAE as described in Chapter 11.

- 11.5. After 13 months, if a DA has not been renewed it is considered lapsed (see above). A lapsed DA may be renewed by conducting a successful evaluation as described below.
- 11.6. After 36 months, if a DA has not been renewed it is considered expired. An expired DA cannot be renewed and the pilot **must** apply for an initial issue DA as described in Chapter 10.
- 11.7. Display Pilots **must** attend a Flying Display Symposium at least once every 3 years⁵². DAs will only be renewed where this requirement is met⁵³.

Currency

- 11.8. 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. Display routines flown at Flying Displays, and those flown during dedicated practices, may be used to maintain currency. To fulfil the currency requirement, representative display routines **must** be flown and recorded in the pilot's logbook. Only practices that are representative of a typical display routine will count towards the pilots display currency. Lapsed currency cannot be regained by flying in a Flying Display. The Display Pilot **must** satisfy the applicable currency requirements prior to participating in an actual Flying Display.

⁵² Initial DA holders must attend a Display Symposium within the first 12 months of point of issue of the DA.

⁵³ DAEs may attend either a DAE Seminar or a Display Symposium to satisfy this 3 year requirement.

Display Pilot minimum currency requirements preceding Flying Display		
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 in DA category
800 hp or greater, and / or 2730 kg or greater, and / or Jet powered, and / or Turbo-prop	3 complete display routines flown or practised in DA category	1 complete display routine flown or practised in DA category

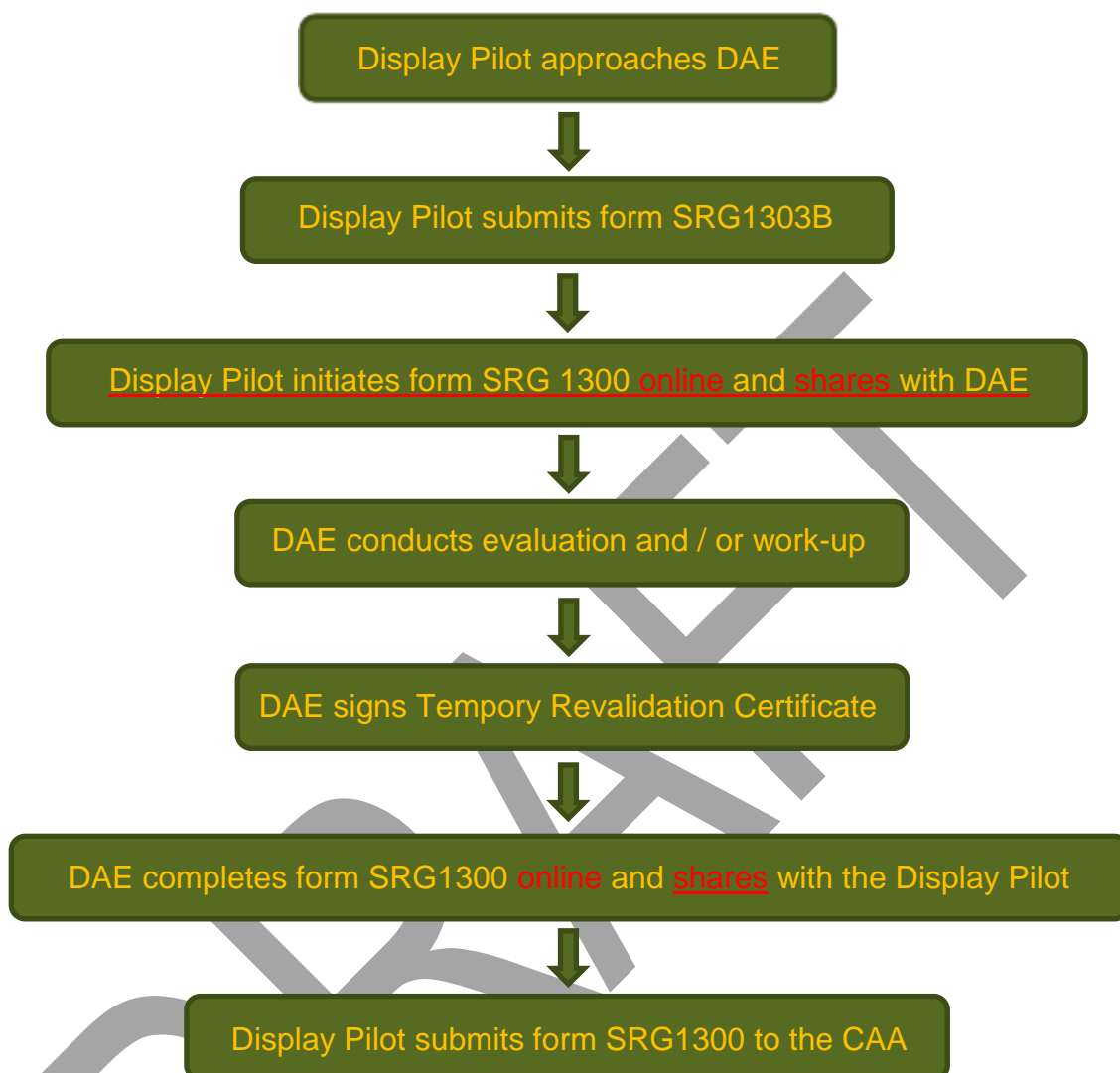
Display Pilot minimum aerobic currency requirements preceding Flying Display		
Aerobic Skill Level	Within 90 days of date of display	Within 30 days of date of display
Limited Standard	3 complete display routines flown or practised	1 complete display routine flown or practised in DA category
Intermediate, Advanced, Advanced plus, Unlimited.	3 complete display routines flown or practised in DA category	1 complete display routine flown or practised at appropriate aerobatic skill level in DA category

- 11.9. 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.

- 11.10. If a display routine is relatively new, or if a display pilot is at minimum currency, the DA holder **should** consider setting more restrictive minima⁵⁴ for practise and / or actual display purposes, until they are fully capable of conducting the display routine at their minimum height. 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.
- 11.11. Display Routines or practices **must** be recorded in the pilot's logbook.

⁵⁴ 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.

Renewal

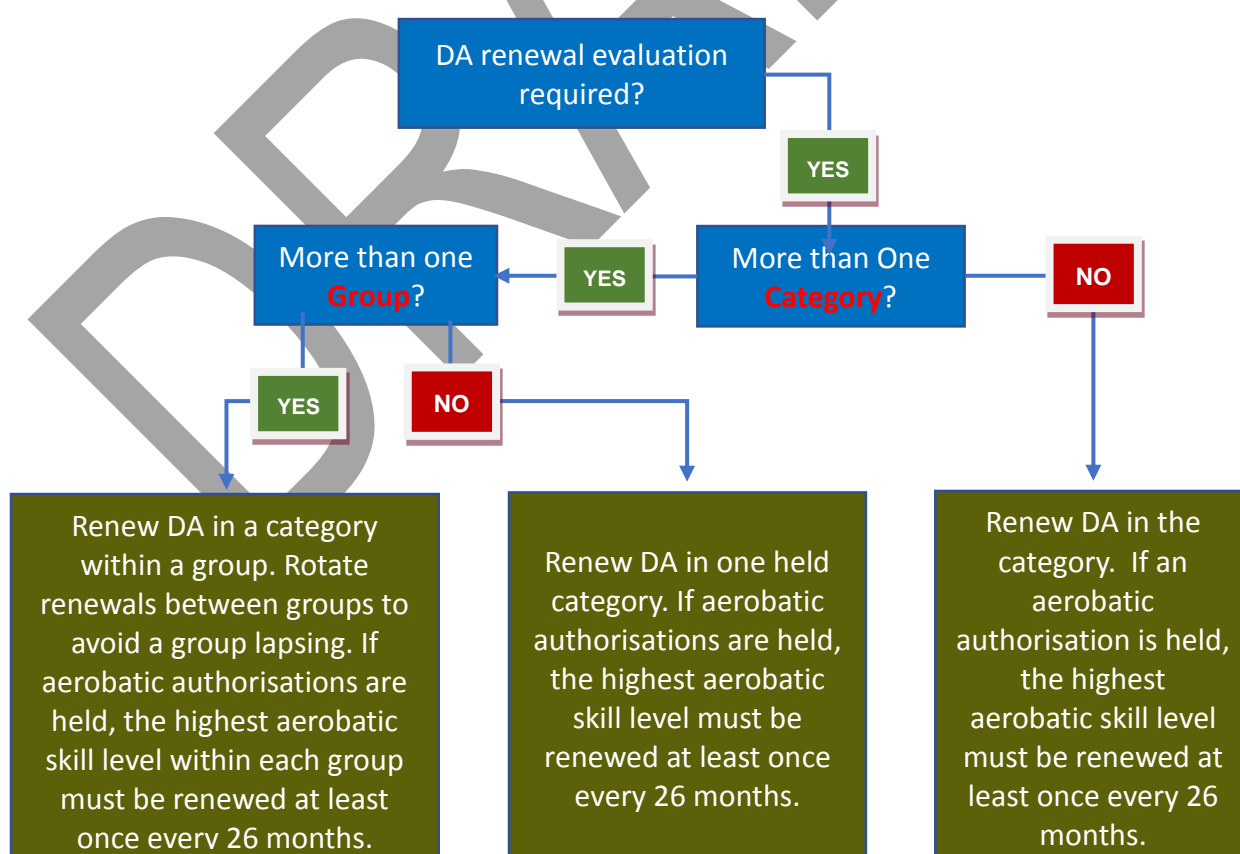


- 11.12. The DA renewal evaluation must be conducted by a suitably qualified DAE and a written report made to the CAA GA Unit using form [SRG 1300](#) within 14 days of the evaluation.
- 11.13. A DA renewal **must** include, as a minimum, the following:
- a) A review of recent display activity (actual and practice) and currency
 - b) A pre-arranged observation of the pilot's display flying competence, this may be a practice or at a Flying Display
 - c) Confirmation of understanding of the relevant parts of this CAP
- 11.14. On completion of a satisfactory renewal evaluation, the DAE **shall** sign the Temporary Revalidation Certificate (valid for 28 days) on the existing

DA. The Display Pilot will then submit the completed form SRG 1300 to the CAA. As per the initial issue requirements, it is the **Display Pilot** who is responsible for the accuracy of the information on the form SRG 1300 (agreed with the DAE) and for the email submission.

- 11.15. If a pilot fails to achieve the required standard for a renewal or upgrade⁵⁵, the DAE **must** ensure that the reasons, and any recommended remedial actions, are comprehensively noted on form [SRG 1300](#) and submitted to the [CAA GA Unit](#). The applicant **must** contact the [CAA GA Unit](#) prior to arranging a further evaluation.
- 11.16. Any pilot who is denied a recommendation to obtain a DA by a DAE may apply directly to the [CAA GA Unit](#) for consideration by the CAA GA Unit DA panel.

Renewal requirements



⁵⁵ Following a failed renewal evaluation, and with immediate effect, a candidate **must not** exercise any of the privileges contained on a DA regardless of whether or not an existing DA contains a later expiry date.

- 11.17. Every Display Pilot **must** complete a successful renewal evaluation within each rolling 13 month period⁵⁶ otherwise their DA will lapse⁵⁷.
- 11.18. A display pilot authorised in one category **shall** renew their DA in the appropriate category. If an aerobatic authorisation is held, a renewal at the highest aerobatic skill level **must** be carried out at least once every 26 months.
- 11.19. A display pilot authorised in more than one category within one group **may**⁵⁸ renew their DA by rotating between each category. If aerobatic authorisations are held, the highest aerobatic skill level must be renewed at least once every 26 months⁵⁹.
- 11.20. A display pilot authorised in more than one group **must** renew their DA in a category within a group. To avoid a group lapsing, display pilots **must** renew by rotating between groups. If aerobatic authorisations are held, the highest aerobatic skill level within each group **must** be renewed at least once every 26 months⁶⁰.
- 11.21. Where more than one group is held, any group that hasn't been renewed within a 26 month period **shall** be considered as lapsed. Display Pilots are required to 'unlock' the lapsed group before they can display in a category within that group. Provided the DA has not expired, the lapsed group may be 'unlocked' at any time by carrying out a renewal evaluation with an appropriately qualified DAE.

⁵⁶ Initial issue DAs can only be renewed for a period of 6 months.

⁵⁷ Provided a DA is renewed in accordance with this paragraph, additional endorsements such as 'Stand on Wing', 'Limbo', etc do not require evaluation every 13 months and **should** be assessed at the DAE's discretion.

⁵⁸ At the DAE's discretion.

⁵⁹ G2, if held, **must** be renewed at least once every 26 months

⁶⁰ G2, if held, **must** be renewed at least once every 26 months

DA Renewal cycle

- 11.22. A display pilot is not permitted to have a DA renewal assessment conducted by the same DAE for more than two consecutive years⁶¹.
- 11.23. Where geographical coverage and specialisation of DAEs means that this is not possible, the following options are available:
- a) Renewal by the same DAE observed by the CAA⁶²
 - b) Application to the [CAA GA Unit](#) for exemption from the requirement⁶³
- 11.24. DA renewals **may** be anticipated and carried out up to 90 days prior to expiry dates without loss of continuity.

DA Upgrades

- 11.25. Where a pilot seeks to upgrade the privileges of a DA, they **must** engage with a suitably qualified 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](#) **must** be returned to the [CAA GA Unit](#) for appropriate action.
- 11.26. All upgrade recommendations **must** specify the requested level. Appropriate evidence of competence will need to be provided when submitting the recommendation via form [SRG 1300](#).
- 11.27. Following a successful upgrade application, the DA will be automatically renewed at the same time.

⁶¹ A list of DAEs can be found on the CAA website here. Note that this list is not exhaustive and contains only the names of those whose consent has been received by the CAA for the purpose.

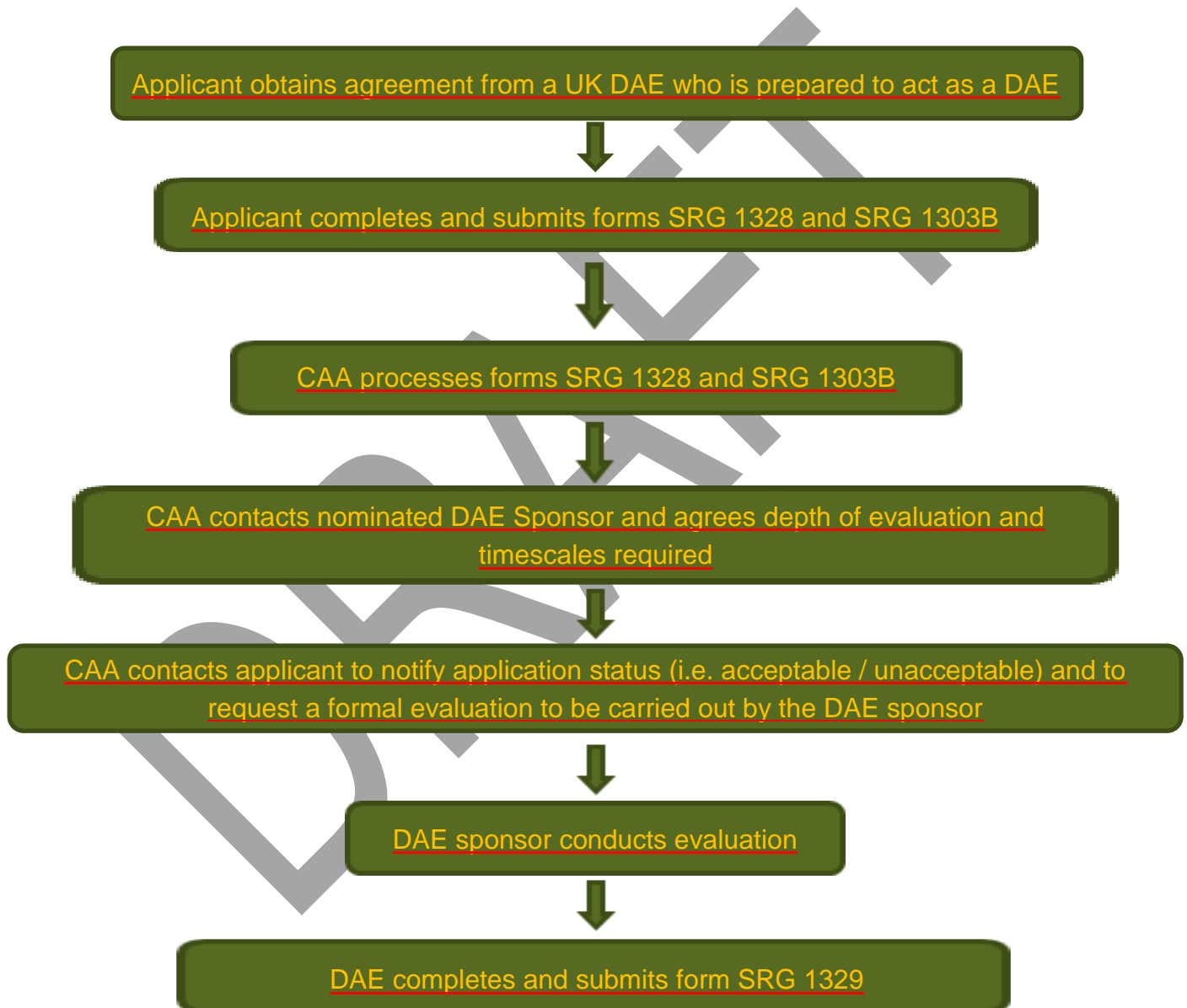
⁶² Following such an observation, and with regard to any DAE geographical / specialisation constraint, consideration **may** be given to allow a DAE to evaluate the same display pilot for a further two renewals provided satisfactory written justification can be provided.

⁶³ Applications for retrospective exemptions will not be accepted.

DA Exemptions

- 11.28. DA Exemptions may be applied for by non-UK civilian display pilots / teams and operators / pilots of Commercial Air Transport (CAT) aircraft.

Foreign civilian display pilot / team application



- 11.29. The initial stage of the process consists of the applicant obtaining an agreement from a suitable UK DAE⁶⁴ prepared to act as sponsor and recommend the issue of a DA Exemption. The FDD of the UK Flying Display at which the applicant has been invited to perform at may be consulted when identifying a suitable UK DAE.
- 11.30. Once in agreement, the applicant **should** fill in and complete form SRG 1328 and submit to ga@caa.co.uk along with a completed form SRG 1303B and the other requested detail. For display teams, a completed form SRG 1328 and SRG 1303B is required for each pilot, including reserves.
- 11.31. The CAA **shall** process the application and contact the nominated DAE sponsor to obtain further confirmation and background information and to agree the depth of evaluation and timescales required.
- 11.32. The applicant (team leader in the case of a display teams) will be notified if the submission is acceptable within 28 days of receipt of all required information. If acceptable, the applicant **must** then arrange for a formal DA evaluation to be carried out by the nominated UK DAE sponsor.
- 11.33. The UK DAE sponsor **shall** carry out an evaluation using the CAP 1724 appendix C checklist to the depth agreed with the CAA GAU.
- 11.34. Following a successful evaluation the DAE sponsor **shall** submit a recommendation for the issue of a UK DA Exemption using form SRG 1329.
- 11.35. The CAA GAU **shall** issue a UK DA Exemption within 7 days (or as agreed) of receipt of an acceptable recommendation.

CAT pilots / operators

- 11.36. Details on applications for DA Exemptions for CAT aircraft can be found in CAP 403.

⁶⁴ A display pilot is not permitted to have a DA Exemption assessment conducted by the same UK DAE for more than two consecutive evaluations.

Enforcement

- 11.37. In circumstances where the CAA has issued a DA, 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 renewal, suspension or revocation of a current DA. If such a deterioration is observed, the [CAA GA Unit](#) **should** be contacted in the first instance.

The suspension of a DA – what happens next?

- 11.38. Where the CAA deems it necessary to provisionally suspend a DA, either as a result of a STOP call or safety breach, the DA holder will be contacted without delay.
- 11.39. At this point the [CAA GA Unit](#) will investigate the circumstances leading to the provisional suspension in accordance with the FAiR System⁶⁵ at Appendix F. 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 Flying Control Committee, pilots at the display, members of airfield staff and others present at the relevant time.
- 11.40. At this point the CAA **may** reinstate the provisionally suspended pilot(s), or if further investigation is required, the pilot(s) will be invited to interview. If this is the case, formal written notification will be given to the DA holder.
- 11.41. Once the investigation is complete, a decision will be made as to whether any further action is required. Actions can include reinstatement, reinstatement following further training / evaluation by a CAA nominated

⁶⁵ FAiR@3 System , Version 31 , March 2019 , © Baines Simmons Limited

DAE, suspension or revocation and will be considered with reference to FAiR System illustrated at Appendix F⁶⁶.

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

11.43. Appeals **should** be made to the [CAA GA Unit](#) within 14 days of notification⁶⁷.

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⁶⁶ 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.

⁶⁷ In accordance with Regulation 6 of The Civil Aviation Authority Regulations 1991.

Chapter 12

Safety culture, reporting, Human Factors and continuous mentoring

General

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

Generating a mentor – mentee relationship

- 12.2. 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.
- 12.3. 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 doubts or misgivings about their display flying. This can include suggesting liaison with other DAEs willing to act as mentors and, if required, direct contact with the [CAA GA Unit](#).

Promotion of a positive safety culture

12.4. A positive safety culture is the key to a safe Flying Display community.

This culture is dependent 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 errors and lessons learnt
- f) The relationship between DAEs, display pilots and the CAA

Safety reporting

12.5. 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 did not 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 Occurrence 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

Further guidance on MORs (or Voluntary Occurrence Reports (VORs) for Annex II aircraft) can be found on the [CAA website](#).

- b) **Confidential Reporting Programme (CHIRP).** Each member of the Flying Display community is encouraged to report any observed

incidents or examples of errors involving HF 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 community⁶⁸.

- c) **Form [SRG 1305](#).** Although the primary purpose of this form is post-event feedback from FDDs, 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.
- d) **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 Occurrence Report' in the subject line. Any emails will be treated confidentially and acted upon swiftly for the good of the display community.
- e) **Telephone.** If the issue is considered to be of an urgent nature, the CAA GA Unit can be contacted on 01293 573988⁶⁹ if a discussion with the EOO or Duty Flight Standards Officer is required.

What to do if safety is being breached

- 12.6. Members of the Flying Display community **should** actively monitor standards throughout the display season. If any lapses in safety standards are perceived 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 CAA⁷⁰.

⁶⁸ Note that [CHIRP](#) can take a reasonable amount of time to disseminate any information. If quick promulgation is required, additional channels **should** be considered.

⁶⁹ Note, this is not the dedicated Flying Display STOP call number and as such is only manned during normal working hours.

⁷⁰ 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.

Human Factors in Flying Displays

- 12.7. An understanding of HF issues, the sharing of them and debriefing / analysis of issues arising during the display season will assist display pilots in improving their own abilities and maintaining safety. The DAE is a key enabler of HF training and evaluation via their through-life mentoring relationship with the DA pilot.
- 12.8. HF topics worthy of covering initially and on a periodic basis during DA evaluations include the following:
- a) Pressures associated with display flying. These include time pressure, commercial pressure, or not wanting to disappoint the crowd
 - b) Adequate preparation. This includes paperwork, the display routine, understanding the weather, procedures, appreciation of the limitations of the venue 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) The potential for and types of error during Flying Displays.
 - e) Practical strategies / measures that could be taken to mitigate the likelihood of error occurring before, during and immediately after a display
 - f) The potential for negative transfer of behaviours and how negative transfer can influence safety behaviour / the potential for error
 - g) Fatigue considerations, which may include transit flying to and from the venue and cumulative fatigue in conjunction with other flying work
 - h) 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
 - i) An acknowledgement that HF risks are dynamic and will need constant re-evaluation. This includes being comfortable with withdrawing from a display if the risk is considered to be too great by the pilot and / or the DAE

- j) The importance of a display pilot being able to reflect on their own attitudes and skills and the ability to constructively critique their own performance
- 12.9. The HF topics mentioned above are an element of the HF syllabus as delivered at Flying Display symposiums.
- 12.10. It is recommended that DAEs produce and use an HF crib sheet, such as the example below, to prompt discussions during DA Evaluations.

DA assessment human factors topics

G-loc and A-loc – avoidance planning and recovery tactics

Workload/distraction management

Personal standards

Situational awareness

Handling the aircraft

Knowledge/application of the rules

Teamwork

Comms

Problem solving

Decision making

Anxiety

Pressure

Biases

Fatigue

Mental attitude

Limitations

Common causes of accidents

- 12.11. There are a number of HF resources available which can be used to refresh, inform and educate DAEs and display pilots on HF issues including following:
- a) [CAP 1694](#) “Human Factors in Air Displays”
 - b) [CAP 719](#) “Fundamental Human Factors Concepts”
 - c) [CAP 737](#) “Flight Crew Human Factors Handbook”
 - d) The [CAA website](#) or by email to human.factors@caa.co.uk

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Appendix A

Guidance for the completion of forms

General

A1 This chapter details the forms and provides guidance on their completion.

Responsibilities

A2 An applicant for a DA 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 form [SRG 1303B](#) **should** be emailed to ga@caa.co.uk.

A3 Applicants 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

A4 Following an evaluation for an initial DA issue, or the renewal 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

A5 Following an evaluation for the initial issue of a DA, form [SRG 1300](#) **shall** be completed as follows:

- a) The applicant **must** complete their personal details and email the form to the DAE
- b) DAEs **shall**:
 - i) Only recommend what has been evaluated unless additional evidence supports a broader recommendation

- ii) Ensure that the recommendation is supported by a detailed and accurate narrative
- iii) Be clear what it is that the DA certificate needs to reflect once issued
- iv) Ensure the applicant's details are correct
- v) Email the form back to the applicant
- c) **It is the applicant's responsibility** to ensure that the form [SRG 1300](#) has been accurately completed, in particular the recommendations section, and to then submit the form to the [CAA GA Unit](#) for consideration along with online payment.

Existing DA renewal

A6 Following an evaluation for the renewal of an existing DA, form [SRG 1300](#) **shall be completed** as follows:

- a) The applicant **must** complete their personal details and email the form to the DAE
- b) DAEs **shall**:
 - i) Only recommend what has been evaluated unless additional evidence supports a broader recommendation
 - ii) Ensure that the recommendation is supported by a detailed and accurate narrative
 - iii) Be clear what it is that the DA certificate needs to reflect once issued
 - iv) Ensure the applicant's details are correct
 - v) Check that all the relevant sections have been completed, in particular the Display Symposium attendance and previous DAE sections
 - vi) Email the form back to the applicant

- c) **It is the applicant's responsibility** to ensure that the form [SRG 1300](#) has been accurately completed, in particular the recommendations section, and to then submit the form to the [CAA GA Unit](#) for consideration along with online payment.

Existing DA upgrade

A7 Following the upgrade evaluation of an existing DA, form [SRG 1300](#) shall be completed as follows:

- a) The applicant **must** complete their personal details and email the form to the DAE
- b) DAEs **shall**:
- i) Only recommend what has been evaluated unless additional evidence supports a broader recommendation
 - ii) Ensure that the recommendation is supported by a detailed and accurate narrative
 - iii) Be clear what it is that the DA certificate needs to reflect once issued
 - iv) Ensure the applicant's details are correct
 - v) Check that all the relevant sections have been completed, in particular the Display Symposium attendance and previous DAE sections
 - vi) Email the form back to the applicant
- c) **It is the applicant's responsibility** to ensure that the form [SRG 1300](#) has been accurately completed, in particular the recommendations section, and to then submit the form to the [CAA GA Unit](#) for consideration along with online payment.

Charges

A8 Details covering the charges payable in respect of DA applications can be found in [ORS5 No. 363: CAA Scheme of Charges \(General Aviation\)](#).

A9

Reporting by DAEs

A10 Where an applicant does not achieve the required standard for either the initial issue of a DA or the renewal or upgrade of an existing DA, the DAE shall ensure that the details are emailed to the [CAA GA Unit](#) 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 [CAA GA Unit](#) to obtain agreement of any remedial action required prior to arranging any further evaluation.

Appendix B

Timescales

Forms

B1 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 accompany all SRG 1300 applications	DA

Display Authorisation Evaluators

B2 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

B3 The following table contains pertinent timescales relevant to display pilots:

Timescale	Required action
6 months	<u>Initial issue DAs are valid for a period of 6 months. A minimum of two 6 month evaluations and a period of 12 months (from the date of initial evaluation) must have elapsed before a DA can be issued for 13 months.</u>
12 months	Initial DA holders must attend a Display Symposium within the first 12 months of validity.

13 months ⁷¹	An existing DA must be renewed 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 must attend a Display Symposium an absolute minimum of once in every 3-year period.

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⁷¹ DA renewals may be anticipated and carried out up to 90 days prior to expiry dates without loss of continuity.

Appendix C

DAE Example evaluation checklist

APPLICANT DETAILS							
Applicant's name		Applicant's DA number (if held)		Expiry date of existing DA			
Applicant's address							
Applicant's email		Applicant's mobile number					
Applicant's full licence number		Applicant's medical expiry date		Date of last DA / DAE symposium attendance.			
Applicant's flying experience: Background flying experience civilian / military. Display experience specific to recommendation (formation / spinning etc)							
EVALUATION DETAILS							
Type of evaluation required:		Initial issue / Renewal / Upgrade (delete as applicable)					
Evaluation date				Start time		Finish time	
<u>Aircraft type</u>		<u>Aircraft category</u>		<u>Skill level</u>		Take-Off Time	Landing Time
Comments. Comment on the overall presentation and conduct of the flight. 							

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
DOCUMENTS						
1	Certificates and Ratings	Check evidence of certificates relating to the recommendation applied for i.e. formation training, aerobatic training, etc.				
2	Aircraft	Check that documentation is available to calculate the aircraft's C of G.				
		Discuss specific airframe & engine limitations				
		Check overflight permission (foreign registered aircraft only)				
		Check 250kt Exemption (if applicable).				
3	Location	If required, check that a valid Permission is in place to conduct the activity.				
		Check for any local restrictions.				
4	Behavioural and Attitudinal Fitness	Ensure a completed form SRG 1303B has been prepared by the applicant for submission with SRG 1300 (or already submitted)				
GROUND BRIEFING						
5	Regulatory Knowledge	Determine the applicant's knowledge of applicable regulation				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
6	Personal	Discuss any self-imposed limitations – wind limits, visibility limits, etc.				
		Discuss time management.				
7	Human Factors	Discuss Human Factors relating to display flying. Include examples.				
8	Display Regulations	<p>Discuss the Conditions contained on CAA Permissions</p> <p>Ensure understanding of:</p> <ul style="list-style-type: none"> - minimum lateral separation distances - the conditions associated with any minimum lateral separation distance Exemption (if held) - minimum heights - acceptable profiles for arrivals and departures at Flying Displays 				
DISPLAY PLANNING						
9	Routine	Discuss the logic of manoeuvre string and energy management.				
		<u>Discuss the planning of the manoeuvres in relation to G management.</u>				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
		Discuss manoeuvre gates and speeds.				
		Check evidence of last spinning detail				
		Discuss the pit-falls of wingovers and relevant precautions.				
		Discuss the execution and pit-falls of manoeuvres that pull through the vertical.				
		Discuss the execution and pit-falls of combined pitch and roll manoeuvres (barrel-rolls for example).				
10	Emergency planning	Discuss appropriate escape manoeuvres.				
		Discuss and assess knowledge of autorotation as applicable to specific types and areas of irrecoverable curves and other blade effects.				
		Discuss asymmetric flight and seek evidence of recent practises including controlling flight not below VMCA.				
		Discuss actions to be taken in the event of systems failure: engine; radio; etc.				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
11	Low level	Discuss stable flight requirements when conducting low level ops e.g. Flour Bombing, Limbo, Streamer cutting, etc				
DISPLAY BRIEF						
12	Presentation brief	Is the brief clear and unambiguous?				
		Does it highlight areas of low energy and include mitigations?				
		Does it include SERA considerations both inside and outside of the proposed area to be flown over.				
13	Walkthrough	Discuss and highlight the importance of a walkthrough				
14	Variation	Assess the capability of the applicant to handle variations to the intended routine imposed by the DAE.				
15	Time Check	Was there a time check?				
16	Weather	Did the applicant cover the Met brief and include any on / off crowd wind component both at the top and the bottom of their routine?				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
17	ATC brief	Did the applicant cover ATC considerations and liaison?				
18	Specific Briefing	For formation evaluations, does the briefing adequately cover all phases of flight and emergency precautions?				
		For solo evaluations, does the brief adequately cover all phases of flight and include any specifics such as the use of pyrotechnics, comedy flying, limbo, flour bombing, etc?				
Pre-flight inspection						
19	Pre-flight inspection	Discuss display specific areas to be checked as part of the pre-flight inspection.				
		Observe applicant making pre-flight inspection.				
Presentation						
20	Framing / positioning	Was the display positioned / orientated appropriately within the display area?				
21	Content	Was the presentation carried out as briefed?				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
22	Adherence to limitations and minima	Did the applicant comply with minimum lateral separation distances?				
		Did the applicant comply with minimum height requirements? (Inside and outside of the display area)				
		Adherence to other conditions / limitations				
23	Timing	Did the applicant perform on time?				
24	General Handling	Record observations concerning the applicant's general handling.				
25	Safety	Were there any safety concerns arising from the observed demonstration?				
25	Points for de-brief	List points for de-brief below:				

Item	Topic	Guidance	SAT	UN SAT	N/A	Comments
Additional comments including details of de-brief discussions:						

DRAFT

Appendix D

Insurance

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 (DAEs) 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 [SRG 1300](#).
- D4 Third party liability cover does not extend to any other mentoring or training of pilots conducted by DAEs in a private or commercial capacity.

Appendix E

The CAA, DAE Agreement

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 display flying standards
 - b) The adherence to all rules and regulations, including this document and those pertaining to General Aviation and display flying
 - c) The sharing of experience and the imparting of knowledge to display pilots that fall under their supervision
 - d) A willingness to discuss and share HF considerations with the display flying community
 - e) Attendance at the DAE Syndicate meeting held at a Flying Display Symposium at least once every 3 years

- f) Regular engagement with the CAA GA Unit 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 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, renewals and upgrades
- b) Support in decision making regarding the suitability of new DA applicants
- c) Feedback from at least one DAE Observation visit every 3 years
- d) 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
- e) Continued engagement when developing Flying Display matters and particularly the safety culture
- f) Third party liability insurance as detailed in Appendix D

I, the undersigned agree to the conditions stated above:

Signed:

Signed:

Date:

Date:

Civil Aviation Authority

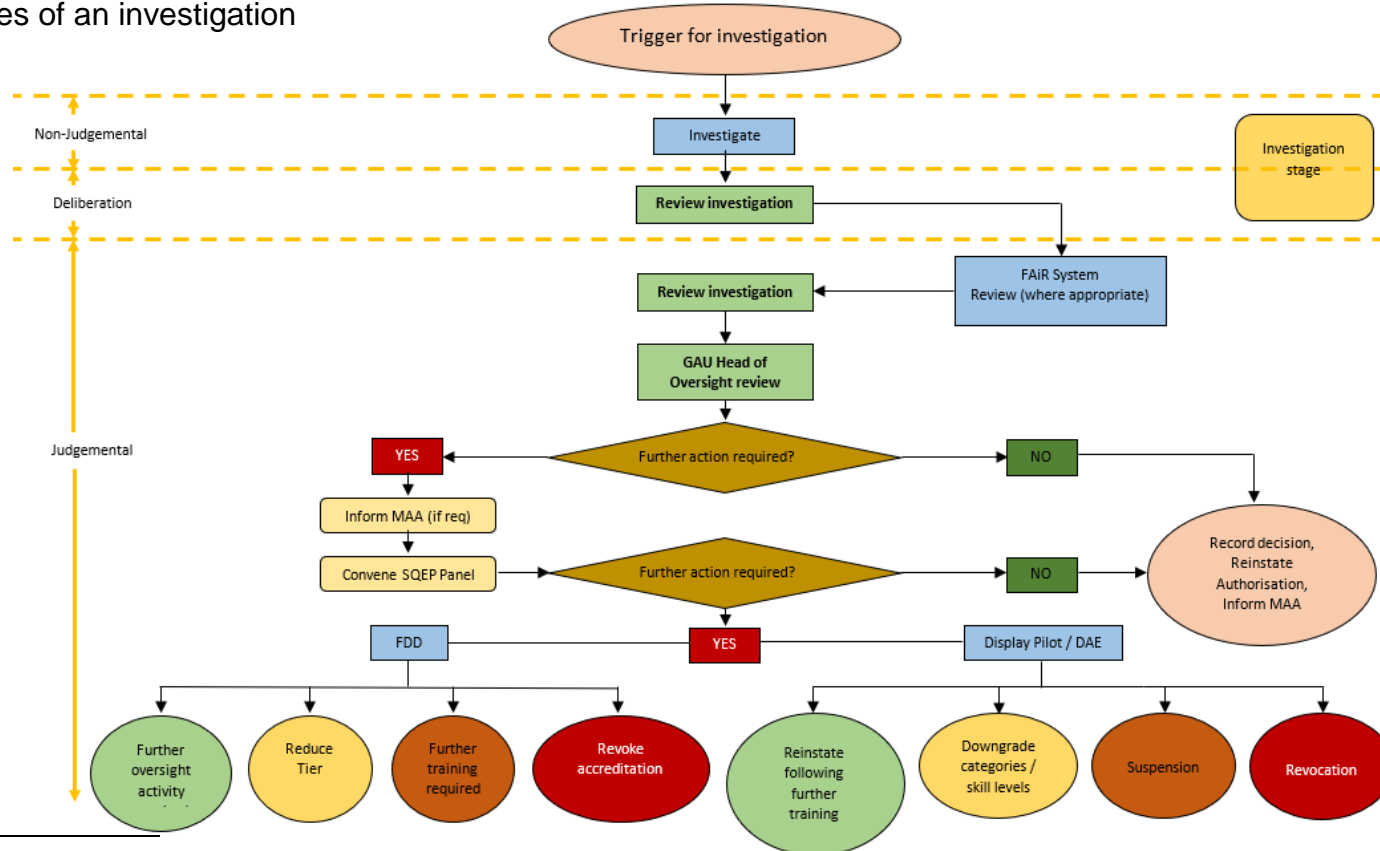
Evaluator

DAE number:

Appendix F

FAiR System

F1 Flowchart Analysis of Investigation Results (FAiR) System⁷². Distinction between non-Judgmental and judgemental phases of an investigation

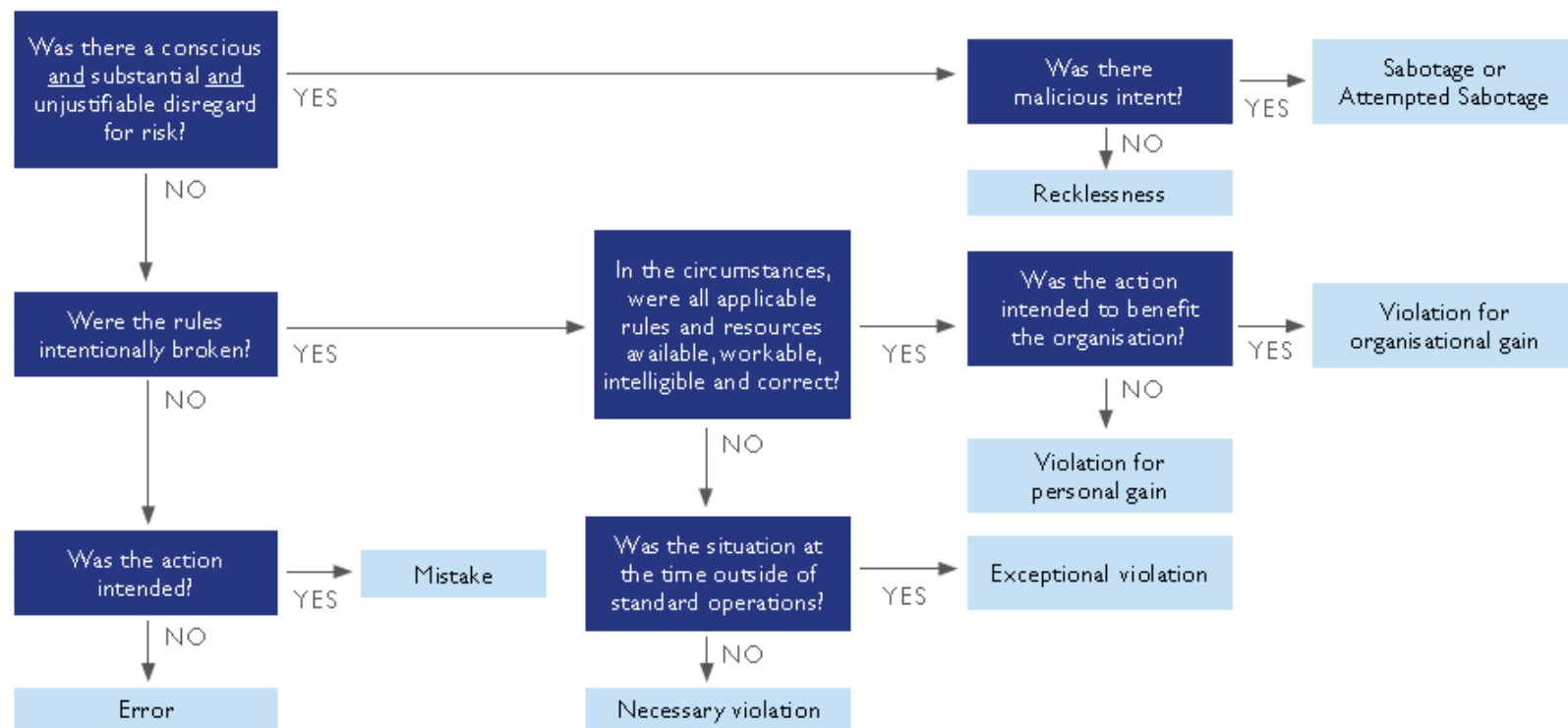


⁷² FAiR©3 System , Version 31 , March 2019 , © Baines Simmons Limited

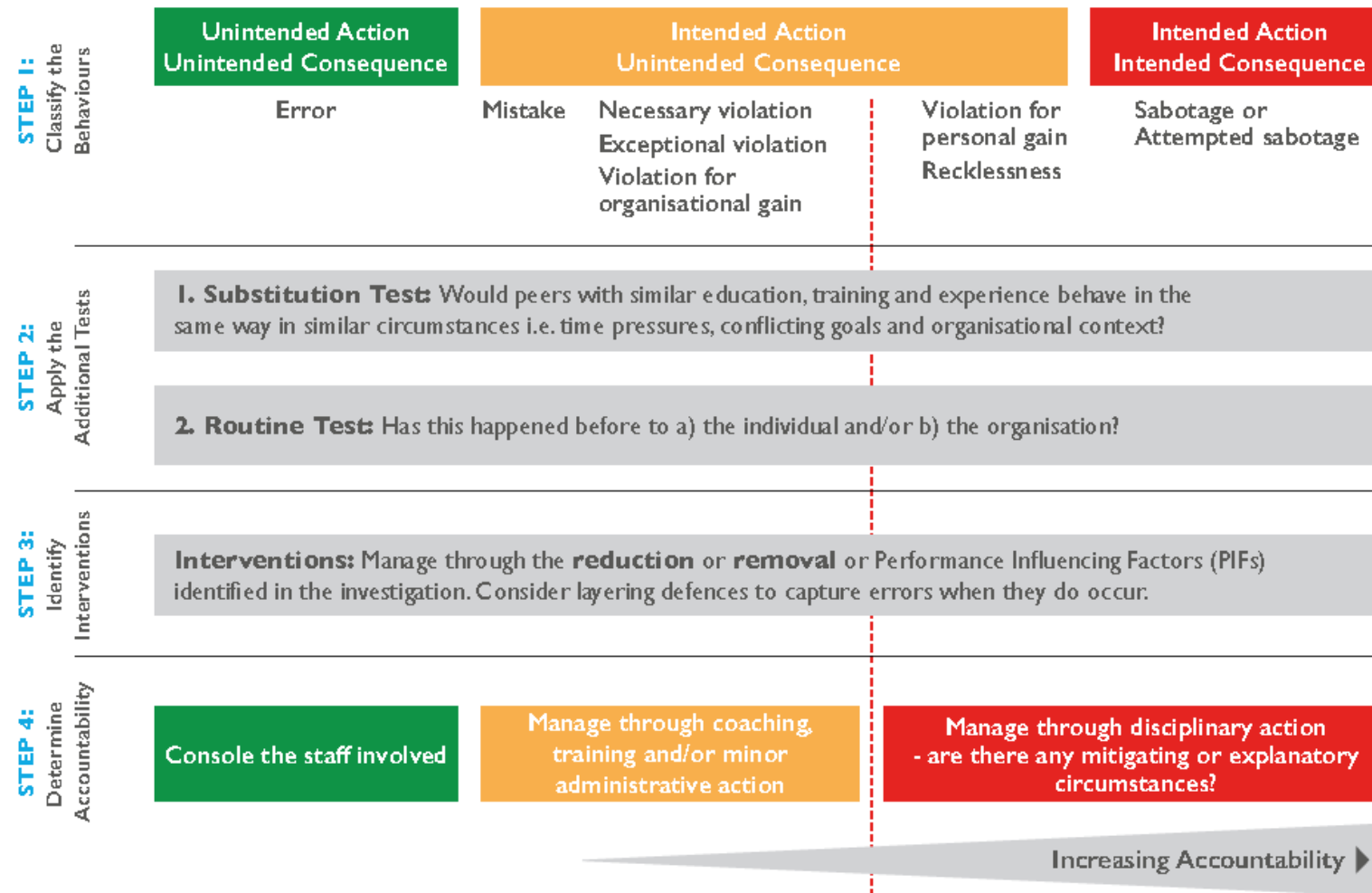
F2 Just culture, behavioural types.

FAiR®3 Behaviour Identification

START: Review the factual, non-judgmental, human performance oriented investigation data provided by your trained investigators



F3

Accountability framework⁷³

⁷³ The references and excerpts to FAiR in this chapter have been reproduced with the permission of the copyright holder, Baines Simmons Limited. Further information concerning the FAiR System can be found at: <https://www.bainessimmons.com/aviation-consulting-services/smarrt-tools/fair-system/>