



Pre-Display Season 23 Symposium Admin Intro – Evan Davies



Admin Brief



- Intro
- Fire Assembly
- Alarms (Other)
- Covid
- Security passes/Photography
- Smokers (no smoking)
- Phones
- Toilets
- Accommodation (Keys)
- Dining Arrangements
- Teas and Coffees
- Display stands
- Layout – Central door closure



Pre-Display Season 23 Symposium
CAA GA & RPAS Unit – James Shipp



Pre-Display Season 23 Symposium

Paul Sall - CAA GA & RPAS Unit

Wg Cdr B Smy - MAA Op Assurance



Aim



- **Aim:**

- Regulatory feedback
- Safety awareness
- Human factors training
- Identification of lessons learnt and to disseminate best practice to DAEs, Display Pilots, Event Organisers and Flying Display Directors (FDDs).
- Display community opportunity to share feedback with regulators.



2022 Pre-Season Symposium Survey



Attendees specifically requested:

- Greater discussion on in-season incidents i.e. warning calls and SRG 1305 reports.
- More discussion on FDD issues. c. Discussion on Display Item/Team preparation and issues arising.
- More Case Studies.
- More guest speakers.
- Discussion on how best to encourage Event Organisers to attend future Symposiums



Outline Agenda



Start	End	Session	Speaker/Lead
1200	1300	Main Symposium Registration	CAA/MAA
1300	1315	Welcome and Introductions	CAA/MAA
1315		Display Season 2022 Trends Analysis and DS 22 Safety Survey	CAA/MAA
		Display Season 2022 SRG 1305 Trends/Issues arising	CAA
	1415	European Airshow Convention Presentation – Airshow Accidents	CAA
1415	1445	CAP 403, CAP 1724 and RA2335	CAA/MAA
1445	1615	Baines Simmons HF Presentation (FAiR)	Ian Holder, Baines Simmons
1615	1645	Coffee/Tea (Provided)	
1645	1700	BADA Update	Matt Wilkins
1700	1800	HINTS for DISPLAY PILOTS (and of interest to EO's & FDD's)	Rod Dean
1800		Washup/ Questions & Brief for Day Two	CAA
	2000	Fork Supper (Provided)	



Outline Agenda



Start	End	Session	Speaker/Lead
0900		Aircraft Hazardous Materials	Al Daniels (Duxford SFO)
0920	1000	Sharing Experiences: 1. Formation flying during a routine display 2. Airprox report during 4 ship transit	D Barrell
1030	1100	Coffee/Tea (Provided)	
		Syndicate 1 Room tbc	Syndicate 2 Room tbc
		DAE/ Display Pilots	FDD/ EO
		Decision Making/Formation Flying	Risk Reduction and EO Liaison
1100		Spitfire Oil Leak – Decision Making	Major Incident Discussion
		Facilitated HF Discussion tbc	Teeside Airshow
	1230		Foreign Military Involvement Process
1230	1315	Lunch (Provided)	
1315	1345	DAE Brief	DAE Brief to wider community
1345	1500	Major Incident Discussion	CAA hosted with Panel from Display Community
1500		Closing Remarks	CAA/MAA



CAA Air Display Team



CAA - Air Display Team



- **Manager + 4 FSOs**
- **Paul Sall** - RAF Flight Engineer (C130, Sentry, Lancaster),
 - RAF Tours in MoD, NATO and as the Asst Defence Attaché (India).
 - Air Show Director: RAF Waddington International Airshow, Port Rush Airshow, Scampton Airshow and airshow consultancy. **GAU: 5 years**
- **Paul Szluha – DAE Evaluation Oversight Officer**
 - Commercial pilot/DA Holder/Engineer.
 - Owned an aircraft maintenance company. B17 pilot and owns a Tiger Moth. **GAU: 8 years**



CAA - Air Display Team



- **Matthew Hill** - Commercial pilot, held a DA.
 - One of two FSOs during Shoreham.
 - Harvard Pilot, CAA FI & UPRT Instructor and owns an RF-4. **GAU: 12 years**
- **Philip Brown** – Former RAF QFI and now a GA pilot.
 - Held a DA and continues to be a Flying Instructor specialising in vintage aircraft, aerobatics and formation training. **GAU: c2 years**
- **Richard Crockett** – Former CFI and DAE, and current CAA Senior Examiner with 5,000 hours GA/gliding.
 - Holds a DA and displays with the Shuttleworth Collection.
 - Volunteers for the British Gliding Association as a Senior Regional Examiner and Senior Investigator of Air Accidents. **GAU: 6 months**



GA@caa.co.uk



MAA Air Display Team



DS 22 Safety Survey



Safety Survey



The Annual Safety Survey, along with Accident/Incident reports, Post-Event reports, and MoR/DASOR reports is used to monitor, identify and analyse the contributing or causal factors for the following outcomes:

- Hazardous events (e.g. runway incursions or airspace infringement, etc.)
- Proactive controls (e.g. regulation, experience, etc.)
- Reactive controls (e.g. warning calls)
- Culture

and, if necessary, to review or introduce additional safety mitigations.



Military Aviation Authority



DS 2022 Safety Survey

- 17 Questions to allow for year on year Trend analysis

- By Specialisation

but otherwise

- Anonymous Survey – No Names

DS 2022 Safety Survey

59 responses – about 15% of the community

- **3 TDAs**
- **40 DAs**
- **19 DAEs**
- **13 FDDs**
- **3 FCC**
- **1 EO**
- **0 Commentators**
- **3 SAG**





Military Aviation Authority



DS 2022 Safety Survey

Age groups

- 30- 39 7%
- 40 – 49 17%
- 50 -59 20%
- 60- 69 34%
- 70 and older 22%

Years experience

- 1 7%
- 3 - 5 8%
- 6 - 10 17%
- 11 - 15 10%
- 16 - 20 12%
- 21+ 46%



Military Aviation Authority



DS 2022 Safety Survey

- *Over $\frac{3}{4}$ of the respondents are over 50 and have in excess of 6 years experience*
- *Why do the younger, less experienced display pilots not take part?*
- *Is it because they don't have a view?*
- *Is it because they have limited experience?*
- *Is it because they can't be bothered?*



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DS 2022 Safety Survey

	2019	2021	2022
	Agree/Strongly Agree	Agree/Strongly Agree	Agree/Strongly Agree
Have a strong safety culture	95	92	98
Rarely deviate from operating procedures, flying regulations or general flight discipline	93	85	96
Report all adverse incidents, near misses and issues encountered during a flying display	78	77	83
Operate a just culture where the reporting of safety violations, unsafe behavior or human error is encouraged	79	79	89



Military Aviation Authority



DS 2022 Safety Survey

What do you consider to be the most significant actions DAEs/DAs/FDDs/EOs/SAGs can take to improve air display safety?

- *Encouraging HF-related incident reporting*
- *Have a debrief after an event. The feedback is useful on many levels*
- *Warbird DAs should be encouraged to share mistakes and experience. The current environment is spoiled by a number of overly critical but very experienced aircrew that are struggling to adjust to the new rules*
- *Reduce the number of complex items in the show that have not been practiced prior*



Military Aviation Authority



DS 2022 Safety Survey

- *Encourage the regulator to listen to their opinions and legislate appropriately and proportionately.*
- *Keeping an eye on each other and communicating trends or safety issues that are spotted. Continue to report the 'near misses'*
- *Understanding Human Factors and their positive promotion*
- *Be open, honest and share experience, whilst keeping a watchful eye on future developments.*
- *Nothing - fine as it is*



Military Aviation Authority



DS 2022 Safety Survey

What is the biggest air display-related safety concern you have?

- *unrehearsed dissimilar formation flying by inexperienced formation members. Large formations with little practice*
- *Intransigent attitude of some of the older members of the community*
- *focussing too much on rules rather than the actual flying safely.*
- *Operating with outwardly experienced and vocal individuals that are not as good as they think or are experiencing skill fade.*
- *Old fashioned attitudes in some DAEs and DAs that fail to appreciate the importance of human factors*
-



Military Aviation Authority



DS 2022 Safety Survey

- *The number of restrictions and no overflight in the display area*
- *The attitude, behaviour and apparent ego driven beliefs of some of the DAE community is worrying and outdated.*
- *Inexperienced display pilots with the means to purchase high performance aircraft, bypassing the traditional building blocks of a display pilot's career.*
- *Over regulation and the obsession that HF is the answer to everything.*



Military Aviation Authority



DS 2022 Safety Survey

- Cost driven lack of currency / practice for pilots on expensive aircraft types.
- Mainly civilian Display pilots trying to do too much in one day eg taking on multiple displays at different locations



FDD Reporting

Matthew Hill
CAA FSO



SRG 1305 Feedback

FDD Post-Display Reports



Post Event Reporting Process is now well established

Post Event Reporting - *100% returns*

*51% reported issues (calls/safety occurrences/undesirable events etc)
Air Display Team Review/Investigation*

73% of the issues reported required No Action



SRG 1305 Feedback

FDD Post-Display Reports



- **Common issues arising:**

Too Close and Too Low warning calls, the majority of which are minor transgressions that were immediately addressed by the FDD / pilot and not repeated.

- **NOTAM and RA(T) incursions:**

Continue to be an issue and are being raised through CAA infringement Co-ordination Group with education through GaSCO/ASTRAL Aviation Safety Promotion



SRG 1305 Feedback

FDD Post-Display Reports



	Accident	Safety Incident	Undesirable events	RA(T) / NOTAM Incursions	Mech failures	Stop Calls	Too Low Calls	Too Close Calls	Terminate Calls
2019	0	6	6	4	6	2	20	20	0
2021	1	2	8	5	4	0	10	16	3
2022	0	10	8	8	5	0	11	25	9



SRG 1305 Feedback

FDD Post-Display Reports



- **Trends developing:**
 - *No ongoing trends noted*

Occurrence reporting helps improve aviation safety by ensuring that relevant information is reported, collected, stored, protected, exchanged, disseminated, and analysed.

It is not to attribute blame or liability but supports continued learning to make flying safer.



SRG 1305 Feedback

FDD Post-Display Reports



Undesirable / HF Incidents: SRG 1305

- Two occurrences where the number of persons on board the aircraft exceeded expectation.
- Both involved military based tasking.
- CAP 403 (6.53) requires minimum crew for flying displays.

CAA Action:

- *Operator contacted upon receipt of the report –both operators are now reviewing their operating procedures.*

LEARNING point:

- ***Display operators to be aware of the requirement of minimum crew for flying displays.***



SRG 1305 Feedback

FDD Post-Display Reports



Safety Incident: SRG 1305

- Display aircraft held prior to landing, as another aircraft called finals for the reciprocal runway in use.
- The event was highlighted in the FDD report and MOR submitted by ATC.

CAA Action:

- CAA Investigation revealed that pilot appeared to line up against the primary runway, but then flew a landing configured circuit and landed on the duty runway.
- A CAA investigation concluded that non-standard RT phraseology was used to give a position report, which led to confusion in ATC and in other aircraft in the pattern as the intentions.

LEARNING point:

- ***All parties to use clear and unambiguous RT.***



SRG 1305 Feedback

FDD Post-Display Reports



Safety Incident: SRG 1305

- A/C displaying as part of a formation, pilot reported vibration and intention to land immediately.
- Decision to land immediately called on display frequency with no subsequent calls.
- The a/c was at c100 feet when the call was made, the aircraft then disappeared behind the trees. It was next seen on finals and executed a successful landing.
- It was not known if the aircraft had force landed behind the trees.

CAA Action:

- No Action.

LEARNING point:

- **Communications and Briefs are essential to keep all informed of intentions.**



SRG 1305 Feedback

FDD Post-Display Reports



Undesirable Incident: SRG 1305

- Display Pilot submitted SRG 1305 citing a communication issue.
- Whilst airborne, the picture created on the radio differed to what was actually happening in the air and on the ground. It also differed from that expected following the pre-display brief.
- All the pilots acted in a safe manner and any potential conflict was averted.
- Upon receipt of the SRG 1305 it was noted that there was the potential for the situation to develop into an undesirable outcome.

CAA Action:

- A meeting with the key stakeholders has been convened.

LEARNING point:

- ***The form SRG 1305 can be used by anyone in the community to report an area of concern (pse bear in mind normal Reporting requirements).***



SRG 1305 Feedback

FDD Post-Display Reports



Safety Incident: SRG 1305

- During a formation display a team member reported vibration through the controls. The team leader declared a "Terminate" and the display ceased. The lead aircraft conducted a visual check of the affected aircraft and reported the issue to the pilot. The pilot carried a slow speed handling check at a safe altitude and landed safely.
- AAIB were informed.
- MOR raised.

CAA Action:

- No Action from an Air Display perspective.

LEARNING point:

- **All the correct reporting procedures were followed enabling the community to record and investigate as required from the incident.**



SRG 1305 Feedback

FDD Post-Display Reports



Safety Incident: SRG 1305

- Aircraft landing on a bumpy grass runway where the prop struck the ground.

CAA Action:

- CAA Airworthiness Team advised and of the possibility of an MOR submission relating to a prop strike.
- No MOR or VOR was filed.

LEARNING point:

- ***The importance of filing an MOR when required.***



MOR

Occurrence reporting helps improve aviation safety by ensuring that relevant safety information is reported, collected, stored, protected, exchanged, disseminated, and analysed. It is not to attribute blame or liability but supports continued learning to make flying safer.



SRG 1305 Feedback

FDD Post-Display Reports



Too close Warning Call: SRG 1305

- The FDD issued a 'too close' warning call on two separate occasions, at the same location, on the same day, to the same pilot flying different aircraft types.
- The FDD cited that the topography and display area gave rise to the issues.

CAA Action:

- Monitor trend as required.

LEARNING point:

- **FDDs to be conscious of a pilot displaying different types over a short period.**
- **FDD to ensure that the display area is suitable for the aircraft performance.**
- **Pilots to be conscious of possible negative transfer of behaviours between aircraft.**



REGULATORY UPDATE

Paul Szluha
CAA EOO FSO

CAP 403 / 1724 UPDATE

Scope:

- *CAP 403 / CAP 1724 consultation*
- *CAP 403 changes*
- *CAP 1724 changes*
- *Changes to DAs*
- *Safety Survey*
- *Future dates*



CAP 403 / CAP 1724 Consultation

- *Drafting of both CAPs delayed this year to await outcome of Shoreham inquest*

CAP 403

- *Public consultation started 31/01/23*
- *Closes 24/02/23*
- *21 responses, 53 comments*



CAP 403 / CAP 1724 Consultation

CAP 1724

- *Public consultation started 13/02/23*
- *Closes 10/03/23*
- *9 responses, 20 comments*



- *Both consultations include a change document to try and encourage more responses*

CAP 403 changes

- *Minimal change, mostly focusing on further clarity where required and minor editorial changes*
- *Details of HF course*
 - *Mandatory for this year*
 - *HF to be covered during DA evaluations by DAEs*
 - *HF to be included at every Symposium*
 - *FDDs now required to attend one Symposium every three years*
 - *New FDDs and DAs will be required to complete the online course before they participate*

Safety and Airspace Regulation Group

CAP 403

Flying Displays and Special Events:
Safety and Administrative Requirements
and Guidance

Edition 20 | March 2023





CAP 403 changes



- *Use of the term 'Flypast' has been replaced with 'non-aerobatic' or 'non-aerobatic Flying Display' where appropriate (also in CAP 1724)*
 - *DAs will reflect change when renewed*
- *Clarification of when an Art 86 Permission is required*
 - *If the general public are permitted onto the site and any flying activity is deliberately performed for the purpose of providing an exhibition or entertainment for those present, ~~for the purposes of witnessing a Flying Display with or without payment,~~ an Article 86 Permission will be required.*

CAP 403 changes

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





CAP 403 changes



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

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



CAP 403 changes



- *The strong obligation for pilots to terminate a display for known radio failures has been removed*
- *A recommendation that FDDs consider the number of events being carried out in a single day by a single pilot and communicate with each other*
- *Several amendments in Chapter 16 concerning pyro displays – read it if it applies to you*
- *New Chapter 17 for twilight displays*



CAP 403 changes

- *The introduction of “in the field” FDD Accreditation revalidations*
 - *Must be current*
 - *Every other revalidation*
 - *Subject to FSO availability*



CAP 1724 changes

- *Minimal change to content, mostly focusing on further clarity where required and minor editorial changes*
- *Except chapter 6, aerobatic skill levels! (more in a bit!)*
- *Name change: Flying Display Pilot Authorisation and Evaluation: Requirements and Guidance*

Safety and Airspace Regulation Group



CAP 1724

Flying Display Pilot Authorisation and Evaluation: Requirements and Guidance

Edition 5 | March 2023



Chapter 6

Significant consultation and input from DAEs

- *Single or multiple aerobatic manoeuvres can be endorsed on a DA without having to hold a skill level*
- *Manoeuvres from more advanced aerobatic skill levels may be included as “add-ons”*
- *aL has been removed*
- *aA+ has been removed*
- *Remaining skill levels simplified – references to competition type manoeuvres deleted*



CAP 1724 Changes

Chapter 6

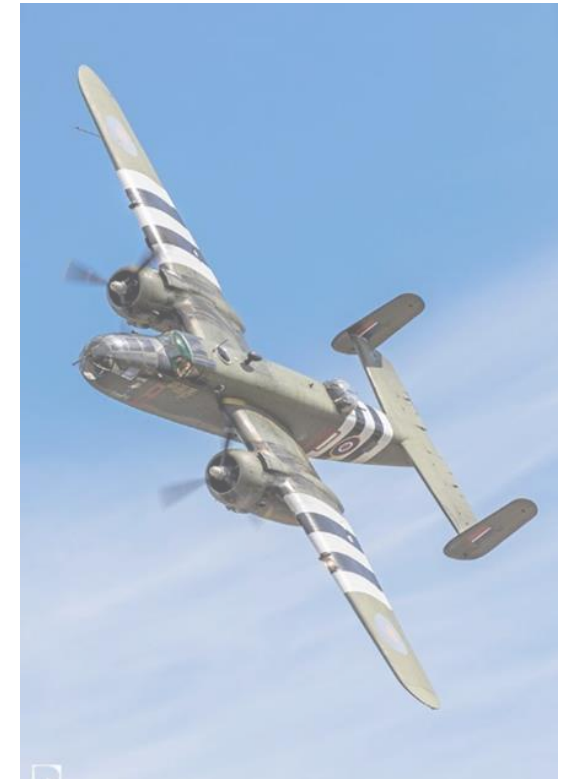
- *If you currently hold a skill level there is nothing that you could do then but can't do now*
- *Cuban 8s and roll off the top now in aS*
- *Sustained inverted flight in al*



CAP 1724 changes

Jet Powered Aeroplanes (JPA)	G1	Straight wing, single engine jet aircraft
	G2	Swept wing, single engine jet aircraft
	H1	<u>Straight wing, multi engine jet aircraft</u>
	H2	<u>Swept wing, multi engine jet aircraft</u>

- *New Chapter 13 – Human Factors (HF) in Flying Displays*
 - *HF content previously included elsewhere in the CAP has been moved here*
 - *Details of the HF course (as covered earlier)*



CAP 1724 changes

TEMPORARY REVALIDATION

I the undersigned, being a person authorised by the Civil Aviation Authority to sign Certificates of Test and Competence in respect of a Display Authorisation, certify that I am satisfied that on the date shown below, the holder of this certificate successfully passed a test of their ability to display.

Aircraft: Group / Category / Type

Aerobatic Skill Level: Eg: Non-aerobatic, aS, al, aA, aA+, aU

Non-Aerobatic: Eg: Flypast, Comedy Flying,

Other:

DAE Signature: DAE Name: DAE Number:

Date of Issue:

This temporary revalidation is valid for 28 days from the date of issue, after which the holder must apply for and fly under a newly issued Display Authorisation issued by the CAA.

TEMPORARY VALIDATION

I the undersigned, being a person authorised by the Civil Aviation Authority to sign Certificates of Test and Competence in respect of a Display Authorisation, certify that I am satisfied that on the date shown below, the holder of this certificate successfully passed a test of their ability to display.

Aircraft type: DA Category:

CAP 1724 Aerobatic Skill Level: (if non-aerobatic enter N/A)

CAP 1724 Formation Skill Level: (if solo enter N/A)

Other: (for example Limbo, Flour bombing, Stand-on-wing, etc)

DAE Signature: DAE Name: DAE Number:

Date of Issue:

This temporary validation is valid for 28 days from the date of issue, after which the holder must apply for and fly under a newly issued Display Authorisation issued by the UK CAA.

OLD.....OLD



SCHEDULE 1

(The aircraft and flight categories are specified in Schedule 3 and 4 hereto)

Categories, Types & Minimum non-aerobatic height	Aerobatic Category & Minimum Height	Formation Member	Formation Leader	Tailchase Member	Tailchase Leader	Other permitted manoeuvres, activities and limitations.



Your Help is Needed

PLEASE engage!

PLEASE take part in consultations!

PLEASE communicate!

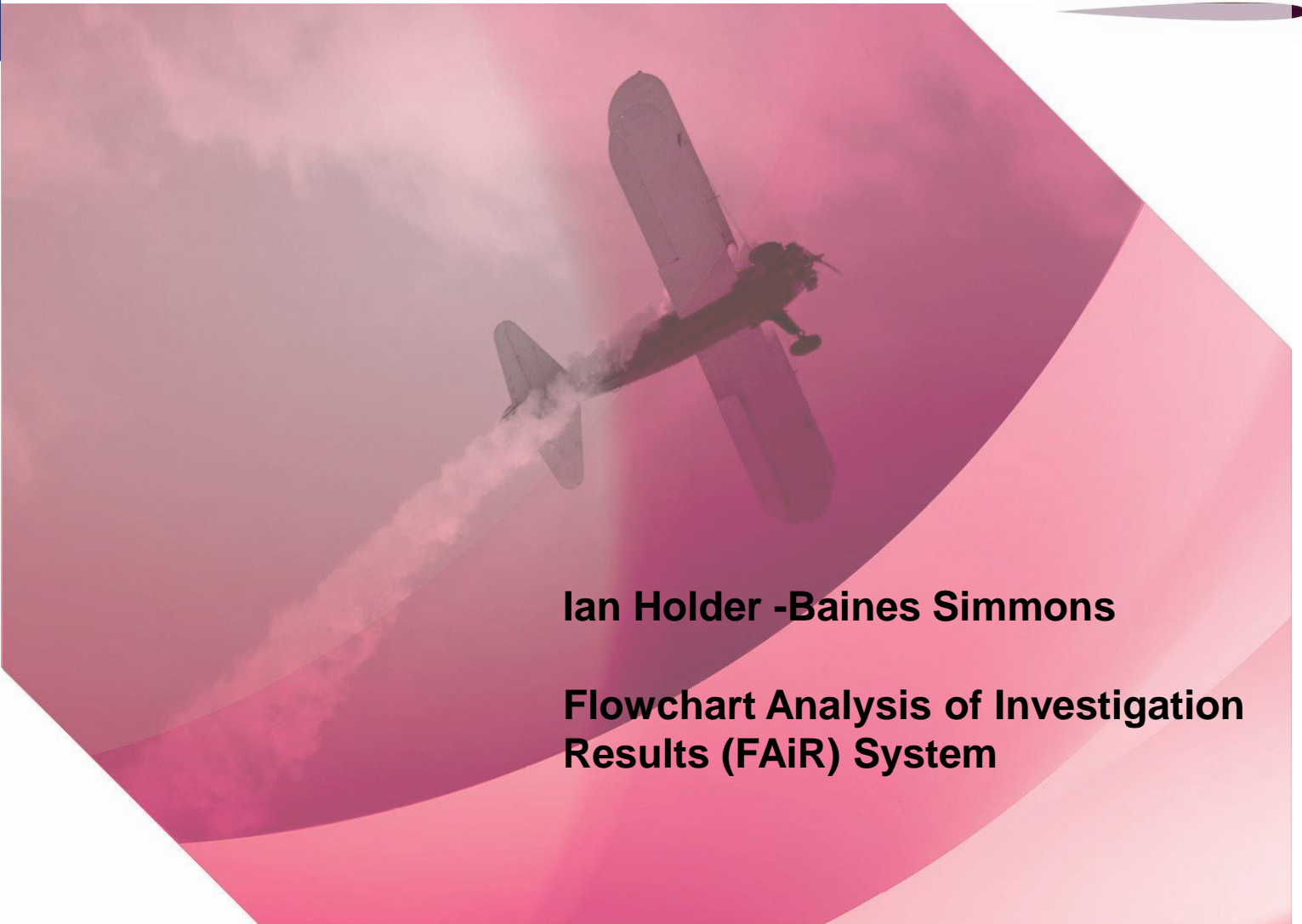
PLEASE offer constructive suggestions!

If we don't know we can't do anything about it!



QUESTIONS ?





Ian Holder -Baines Simmons

**Flowchart Analysis of Investigation
Results (FAiR) System**



Pre-Display Season 23 Symposium

Coffee



Matt Wilkins

BADA Update



British Air Display Association
Pre Season 23



What do we do?

“TO ENCOURAGE, PROMOTE AND ADVANCE SAFETY AND STANDARDS IN BRITISH AIR DISPLAYS”*

*** WE’RE REVIEWING EVERYTHING**

“

Attendance: 4.4 million
Poorest result since 2014
due to loss of big shows
Economic Impact:
£100 million +

”

A hand is shown holding a single green leaf, symbolizing care for the environment. The background is a soft-focus green, suggesting a natural setting. A blue vertical bar is visible in the top right corner.

Sustainability & Environmental Issues



Health, Safety & The Purple Guide

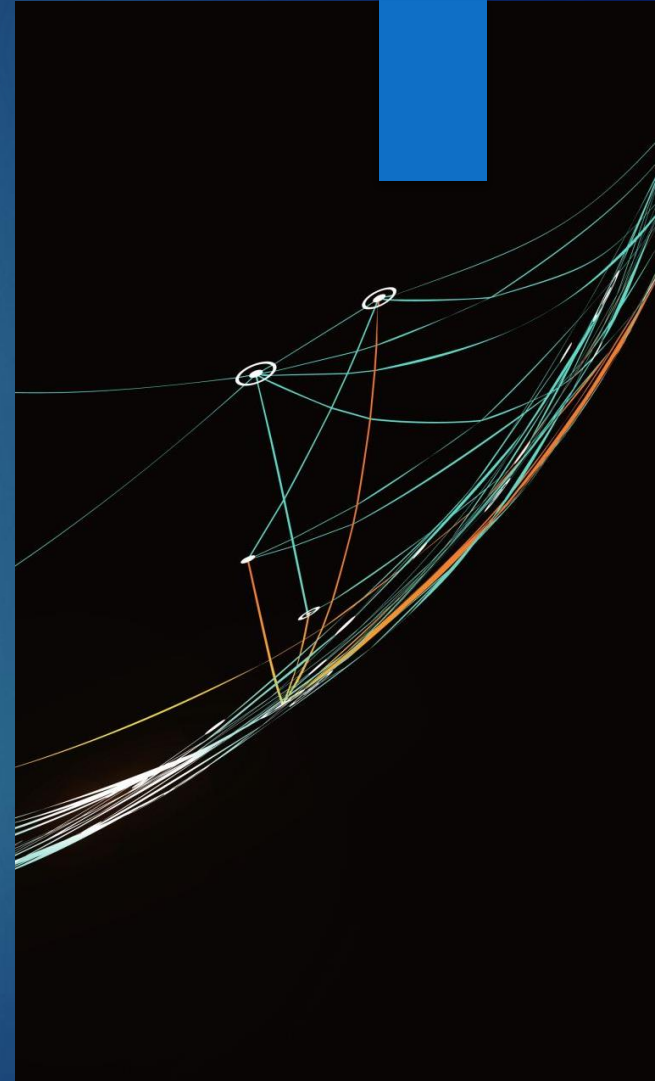


Budgets & Contractor Support

Budget & Contractor Support

- ▶ **Reports of Massive issues with Contractors**
 - ▶ **Labour**
 - ▶ **Companies going bust**
 - ▶ **Costs up 30%**
 - ▶ **Car Parking Expertise at all time low**
 - ▶ **Security Expertise**
 - ▶ **Differences Region by Region**

Succession Planning



Succession Planning

- ▶ **New FDD's – We've only got 50 (and some are over 50)**
- ▶ **New DA's – help finding DAE's and Bookings**
- ▶ **FCC's - can we put an end to the panicked ring around?**

Some answers

- ▶ **Shadow Roles – count for CAA currency**
- ▶ **Mentoring**
- ▶ **Encourage booking of TDA's**
- ▶ **Free BADA Membership for both new DA's and FDD's**

NEW EVENTS

CAN WE HELP START MORE?

New Events

- ▶ **Air Displays in support of other events**
 - ▶ **Village Fetes, maybe worth another look**
 - ▶ **Thinking out of the box Property Show in Brighton.**
 - ▶ **Existing Event Venues**
- ▶ **Aerodromes looking for additional income stream.**



Future Tours

2024 MAY BE A BIG YEAR

Tours in '24

- ▶ **B-24 Liberator?**
- ▶ **Hydrogen Powered Islander**
- ▶ **Electric Aircraft on the Rise**



A BETTER CALENDAR

BADA AGM TO MOVE TO NOVEMBER

Thank You Mel





Rod Dean

PRACTICAL HINTS
for
DISPLAY PILOTS
(and of interest to EO's & FDD's)

ROD DEAN

THE DISPLAY PILOT'S DAY



THE INEXPERIENCED PILOT

- **STAY OUT OF THE CLUTCHES OF THE “FEDS”**
- **GET THROUGH THE DAY WITHOUT DAMAGE TO SELF OR AIRCRAFT**
- **AVOID UPSETTING ANYONE (SEE POINT 1)**
- **HAVE AN EXCITING DAY (BUT NOT TOO EXCITING)**
- **GET BACK HOME IN ONE PIECE**

THE “OLD HAND”

- **STAY OUT OF THE CLUTCHES OF THE “FEDS”**
- **HOURS OF TOTAL BOREDOM!**
- **10 MINUTES EXCITEMENT**
- **POSSIBLY (HOPEFULLY NOT) A FEW SECONDS OF SHEER TERROR (Have you seen my landings!!!!)**

BUT HOW DO WE GET THERE?

- **MOTIVATION**

WHY DO YOU WANT TO DO IT?

- **COMMITMENT**

DOES YOUR “BETTER HALF” KNOW WHAT IS INVOLVED?

- **ABILITY**

**DISPLAY FLYING
REQUIRES DIFFERENT
SKILLS**

GETTING STARTED

- **FIND A **DAE MENTOR****
- **UNDERSTAND THE RULES & REGS**
 - **ANO ARTICLE 86**
 - **SERA**
 - **CAP 403**
 - **CAP 1724**
- **IF YOU ARE GOING TO DO DISPLAY AEROBATICS**
 - **SPIN & STALL TRAINING AND AWARENES**
 - **AEROBATIC PROFICIENCY TO THE REQUIRED LEVEL**

DESIGN YOUR DISPLAY

- **SAFETY COMES FIRST**
- **THE DISPLAY MUST BE EASILY VISIBLE TO THE CROWD**
- **LOW PERFORMANCE AIRCRAFT (**CHIPMUNK**) ARE MORE DIFFICULT TO DISPLAY THAN HIGH PERFORMANCE (**SPITFIRE**) ONES – WHY?**
- **ALTERNATE & ESCAPE MANOEUVRES – WHAT TO DO IF I DON'T HIT THE REQUIRED PARAMETERS?**
- **IS A FIXED SEQUENCE USEFUL?**

DESIGN YOUR DISPLAY SEQUENCE

- **YOUR MANOEUVRES MUST BE**
 - **WELL WITHIN YOURS AND THE AIRCRAFT'S CAPABILITIES – NEVER OPERATE “ON THE EDGE”**
 - **CAPABLE OF BEING FLOWN SAFELY AT LOW LEVEL**
(The Barrel Roll!)
 - **ABLE TO SHOW THE AIRCRAFT TO BEST ADVANTAGE**
 - **WITH MINIMUM TIME STRAIGHT AND LEVEL**
 - **AWARE OF CROWD LOCATION AT ALL TIMES**
- **DISPLAY THE AIRCRAFT – NOT YOURSELF**
(MOTIVATION)
- **APPLY THE “KISS” PRINCIPLE – REPEATABILITY?**

SOME OTHER SEQUENCE THOUGHTS

- APPROPRIATE USE OF THE VERTICAL AND HORIZONTAL
- ENERGY MANAGEMENT (AGAIN)
- **NOISE** (OR SILENCE) AS PART OF THE DISPLAY!
- USE OF DIFFERENT AXES
 - “A” AXIS IS PARALLEL TO THE CROWD
 - “B” AT RIGHT ANGLES
 - INTERMEDIATE IS ALSO USEFUL – 45° ANGLE?

GETTING STARTED

- **PRACTICE, PRACTICE, PRACTICE (AT A SAFE HEIGHT & WORK DOWN)**
 - **PRACTICE LOCATION/CONSPICUITY?**
 - **LIAISE WITH YOUR DAE**
 - **GOPRO (LEGAL INSTALLATION) VERY USEFUL FOR DEBFIEFING**
- **GET YOUR **DISPLAY AUTHORISATION!!!!!!****
 - **CURRENCY – CAP 1724, PARA 11.7 ARE **MINIMUMS** AND NOT THE EXPECTED CURRENCY REQUIREMENTS**
- **YOUR FIRST DISPLAY**
 - **DON'T PANIC**



PRESSURES OF THE DISPLAY

- **PRE-DISPLAY PLANNING**

- **GETTING THERE**
- **ACCOMMODATION**
- **FUEL**
- **WEATHER**
- **REHEARSAL TIME**
- **DISPLAY SITE LAYOUT (SOMETIMES IT IS NOT AS ADVERTISED)**
- **SUPPORT REQUIREMENTS?**

PRESSURES OF THE DISPLAY

- **PRE-DISPLAY PLANNING**

- **EARLY CONTACT WITH FDD – A GOOD WORKING RELATIONSHIP IS ESSENTIAL**
- **FILL IN THE SRG 1327 CORRECTLY!!!!!!**
- **PAPERWORK IS THE BAIN OF THE FDD'S LIFE – GET IT IN EARLY AND CORRECTLY FILLED IN AND YOU WILL HAVE A FRIEND FOR LIFE (AND A REPEAT BOOKING FOR NEXT YEAR?)**
- **MAKE SURE THE EO FULLY UNDERSTANDS YOUR ACCOMMODATION REQUIREMENTS – LAST MINUTE CHANGES/CANCELLATIONS COST MONEY.**

PRESSURES OF THE DISPLAY

- **ON THE DAY**

- **GIVE YOURSELF TIME (AND THEN MORE TIME)**
 - ✓ PREPARE THE AIRCRAFT FIRST
 - ✓ ATTEND THE BRIEFING
 - ✓ MAKE SURE YOU KNOW – EXACTLY – WHAT YOU ARE DOING AND **WHEN** YOU ARE DOING IT
 - ✓ KNOW WHO IS AHEAD OF, AND BEHIND, YOU
 - ✓ **THERE ARE NO STUPID QUESTIONS – IF UNSURE, ASK**

- **MENTAL REHEARSAL**

- WALK THROUGH THE ROUTINE (EVEN IF SOLO)
- A “QUIET” TIME BEFORE FLYING – THE “BUBBLE”

PRESSURES OF THE DISPLAY

- **EXPECT THE UNEXPECTED**
 - **GERMANY**
 - **FAIRFORD!**
- **PLAN FOR EMERGENCY SITUATIONS**
 - **KNOW WHAT YOU ARE GOING TO DO**
 - ✓ **PARTICULARLY WHEN YOU ONLY HAVE 10 MINUTES FUEL LEFT!**



2023 PRE SEASON
DISPLAY SYMPOSIUM

PRESSURES OF THE DISPLAY

- **EXPECT THE UNEXPECTED**
 - **GERMANY**
 - **FAIRFORD!**
- **PLAN FOR EMERGENCY SITUATIONS**
 - **KNOW WHAT YOU ARE GOING TO DO**
 - ✓ **PARTICULARLY WHEN YOU ONLY HAVE 10 MINUTES FUEL LEFT**
 - **PRACTICE THEM AT A SAFE HEIGHT/SIMULATOR**
 - **CROWD SAFETY MUST COME FIRST**

PRESSURES OF THE DISPLAY

- **THERE ARE A MILLION AND ONE THINGS OUT THERE READY TO BITE YOU: FOR EXAMPLE**
 - **DISPLAY TIMING & YOUR FUEL STATE**
 - **DISPLAY ORGANISER'S PRIORITIES (NOT ALWAYS THE SAME AS YOURS)**
 - **WEATHER (WIND IN PARTICULAR)**
 - **TEMPERATURE, WEIGHT AND ALTITUDE (DENSITY ALTITUDE?)**

PRESSURES OF THE DISPLAY

- **FLYING THE DISPLAY**
 - **THE EASY BIT!**
 - **DON'T BE TEMPTED INTO THE UNREHEARSED – EVEN IF ASKED TO EXTEND YOUR DISPLAY SLOT**
 - **BE AWARE OF WHAT IS GOING ON AROUND YOU, BUT**
 - **AVOID DISTRACTION (R/T, OTHER AIRCRAFT ETC.)**
- **IF IN DOUBT – SELF TERMINATE!!!!**

PRESSURES OF THE DISPLAY

- **SO WHERE DO THE FDD & EO FIT INTO THIS?**
 - **DON'T OVER-COMPLICATE YOUR FLYING PROGRAMME – PARTICULARLY FOR THE TYRO.**
 - **GET THE FLYING PROGRAMME/WRITTEN BRIEF OUT WELL IN ADVANCE – TWO WEEKS AT LEAST**
 - **HAVE AN UNCOMPLICATED WEATHER PLAN – “WE STICK TO TIME AND IF, WHEN YOUR SLOT COMES UP, THE WEATHER IS NOT FIT – EITHER BY ME OR BY YOU – YOU DON'T FLY”**

PRESSURES OF THE DISPLAY

- **SO WHERE DO THE FDD & EO FIT INTO THIS?**
 - **THE GROUND ENVIRONMENT NEEDS TO SUPPORT THE DISPLAY CREWS – DISTANCE BETWEEN BRIEFING, REST AREAS AND AIRCRAFT.**
 - ✓ **FAIRFORD YEARS AGO?**
 - **IF APPLICABLE – ROAD TRANSPORT/ACCOMMODATION/FOOD & WATER**
 - **PAY YOUR BILLS ON TIME!!!!**

PRESSURES OF THE DISPLAY

- **IT'S NOT OVER UNTIL YOU ARE IN DISPERSAL AND THE AIRCRAFT IS SHUT DOWN**
- **AS I FOUND OUT**
 - **VAMPIRE UNDERCARRIAGE LEVER**
- **AND SO DID THIS GENTLEMAN**

SOME FINAL THOUGHTS

HAVE FUN

- **FOR MOST DISPLAY PILOTS THE FLYING IS A HOBBY – IT SHOULD BE FUN OVERALL**
- **WHILST BEING SAFE!**
- **THE ART OF AIRSHOW FLYING IS TO MAKE THE EASY LOOK DIFFICULT, TO MAKE THE DIFFICULT APPEAR IMPOSSIBLE AND TO LEAVE THE IMPOSSIBLE WELL ALONE (BARRY TEMPEST!!)**



QUESTIONS?

2023 PRE SEASON
DISPLAY SYMPOSIUM



Fork Supper



DS 23 Pre Season Symposium



Outline Agenda



Start	End	Session	Speaker/Lead
0900		Aircraft Hazardous Materials	Al Daniels (Duxford SFO)
0920	1000	Sharing Experiences: 1. Formation flying during a routine display 2. Airprox report during 4 ship transit	D Barrell
1030	1100	Coffee/Tea (Provided)	
		Syndicate 1 Room tbc	Syndicate 2 Room tbc
		DAE/ Display Pilots	FDD/ EO
		Decision Making/Formation Flying	Risk Reduction and EO Liaison
1100		Spitfire Oil Leak – Decision Making	Major Incident Discussion
		Facilitated HF Discussion tbc	Teeside Airshow
	1230		Foreign Military Involvement Process
1230	1315	Lunch (Provided)	
1315	1345	DAE Brief	DAE Brief to wider community
1345	1500	Major Incident Discussion	CAA hosted with Panel from Display Community
1500		Closing Remarks	CAA/MAA



Alan Daniels

**Senior Fire Officer
Duxford Aerodrome**

AIRCRAFT ACCESS AND HAZMAT MANAGEMENT





AIMS

- ☀️ To illustrate the potential problems faced by aerodrome RFFS in;
 - ☀️ Gaining initial access in to an aircraft
 - ☀️ Shutting down an aircraft if crew are incapacitated
 - ☀️ Releasing crew and occupants from harnesses
 - ☀️ Obtaining HAZMAT information for an aircraft

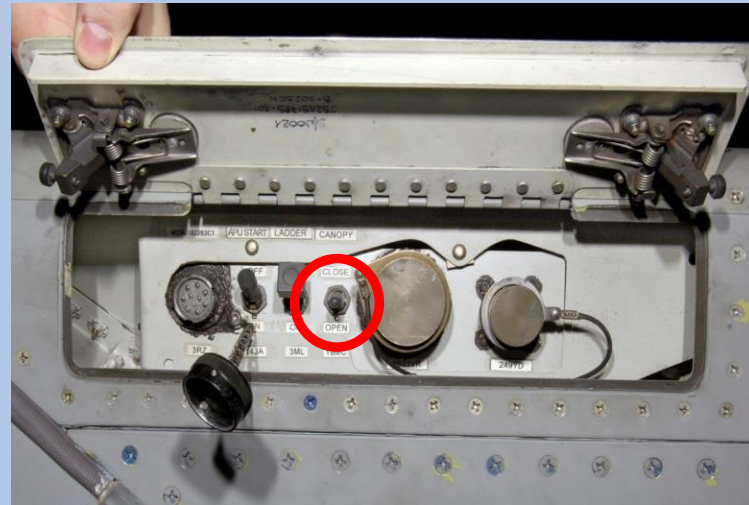


GAINING ACCESS INTO AN AIRCRAFT SPITFIRE Mk1





GAINING ACCESS INTO AN AIRCRAFT TYPHOON FGR4





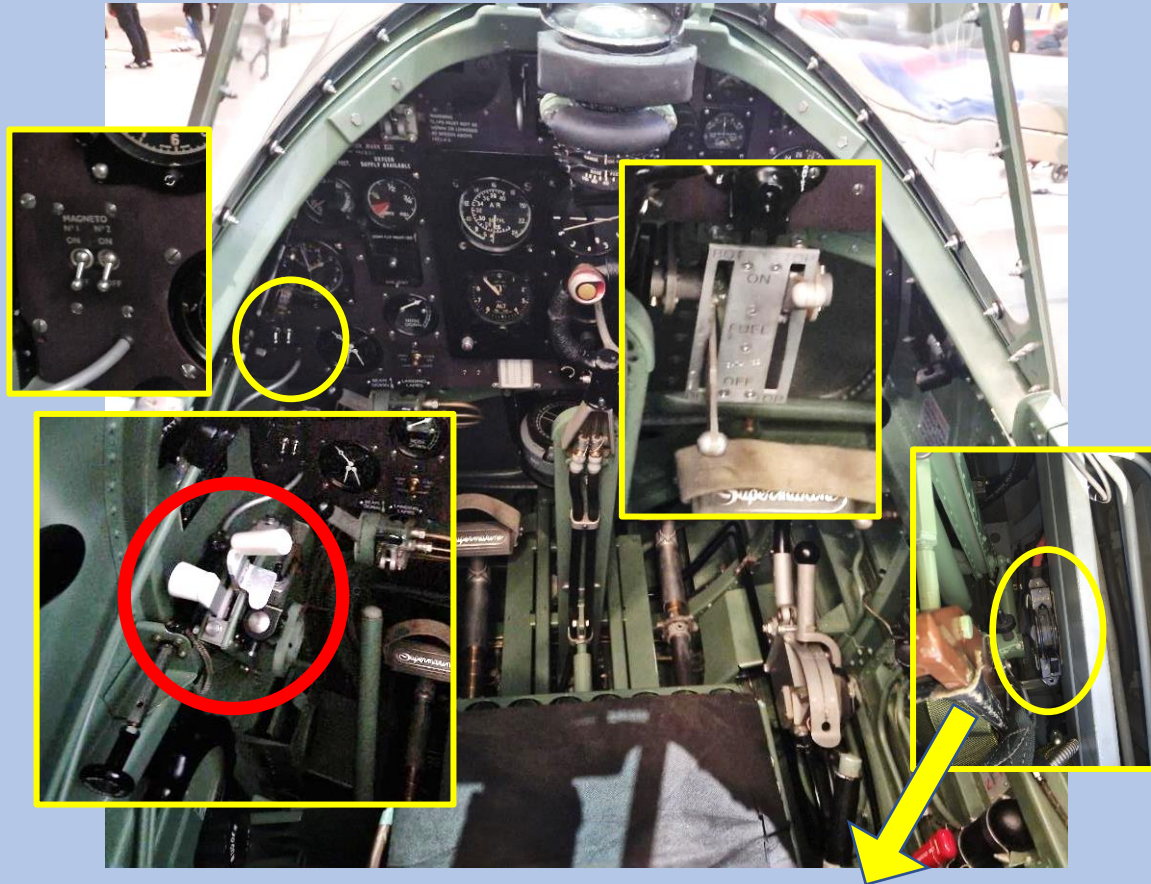
GAINING ACCESS INTO AN AIRCRAFT GRUMMAN WILDCAT





SHUTDOWN OF AN AIRCRAFT – SPITFIRE Mk 1

- ✦ Throttle fully shut & Mixture to fully lean
- ✦ Fuel selector to OFF
- ✦ Magnetos OFF
- ✦ Battery Master to OFF or isolate battery - Immediately behind pilots seat in this aircraft (other Mk 1s battery may be inside access hatch on rear right of fuselage)





SHUTDOWN OF AN AIRCRAFT – LANCASTER

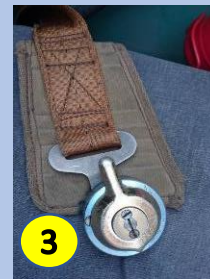
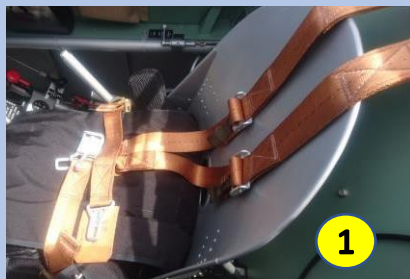
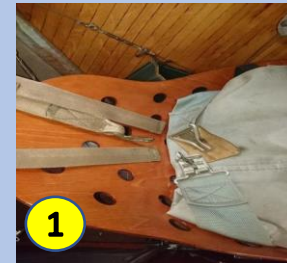
- ✦ Throttles closed
- ✦ Master Fuel Cocks OFF
- ✦ Fuel Selectors (engineers panel on right of cockpit) OFF
- ✦ Magnetos OFF
- ✦ Battery Master (by step into cockpit by Navigators position) OFF





HARNES AND BELT RELEASE

- ✦ There is a huge variety in the type of restraints for aircrew and passengers;
- ✦ Top row 2 point / Lap strap: 1) Twist release, 2) Lift buckle
- ✦ Middle row 3 point : 1) 3 point hook (shoulder and bottom strap)
2) 3 point shoulder strap and lap strap (seat belt)
- ✦ Bottom row 4 point: 1) Hook latch - Lap strap with shoulder straps 2)
Twist release with side mounted lock 3) Twist release with side mounted
handle 4) Twist release (no lock) 5) Press and turn release
- ✦ This is just a selection of the types that may be encountered – and there
are also 5 point types.....





HAZMAT (**H**AZARDOUS **M**ATERIALS) IN AIRCRAFT



HAZMAT (**HAZARDOUS MATERIALS**) IN AIRCRAFT

☠ This contains HAZMAT....

☠ But what about this?.....





HAZMAT (HAZARDOUS MATERIALS) IN AIRCRAFT





NOTHING TO DECLARE?.....

- ☀ From an SRG1327 submitted at Duxford last year
- ☀ No mention of:
 - ☀ Avgas
 - ☀ Engine Oil
 - ☀ Hydraulic Fluid
 - ☀ Lead Acid Battery
 - ☀ Lithium Batteries in any devices onboard

Display Pilot's / Aircraft Owner's / Aircraft Operator's Certified Declaration for Submission to the Flying Display Director

Form SRG1327 Part 2

(for completion by the display pilot or aircraft owner or aircraft operator)



The following table contains details of hazardous materials contained on or within the said aircraft and contact details for competent personnel or organisations available on the day of the said Flying Display able to advise, or assist, in making safe should an incident occur.

Hazardous material	Location on aircraft	Competent person or organisation available on the day able to advise
		Contact name: Organisation: Contact telephone: Alternative contact:
		Contact name: Organisation: Contact telephone: Alternative contact:
		Contact name: Organisation: Contact telephone: Alternative contact:
Continue on separate sheet if required		

c.) Examples of hazardous materials include pyrotechnics contained in jettison/ejection release units, canopy jettison systems, MDC (miniature detonating cord), fire bottle squibs, cartridge engine starters, etc. Consideration should also be given to any hazardous materials used in the manufacture of aircraft structures and components such as phenolic asbestos drop tanks. Note: Details of pyrotechnics used as part of a "pyro display" must be entered in Part 1 of this form



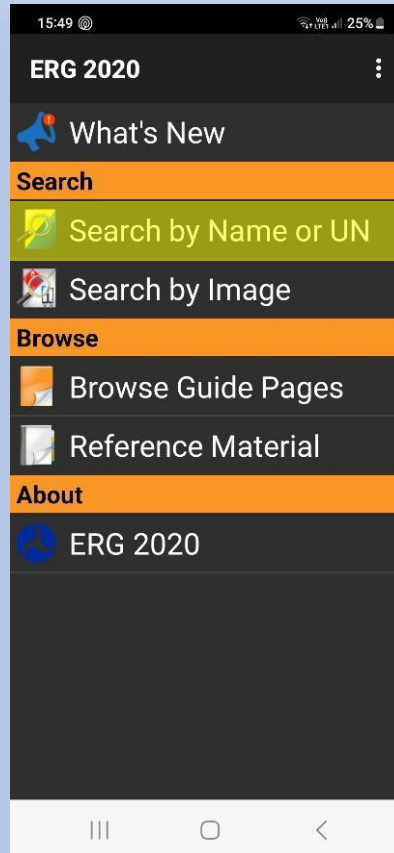
ERG 2020 APP





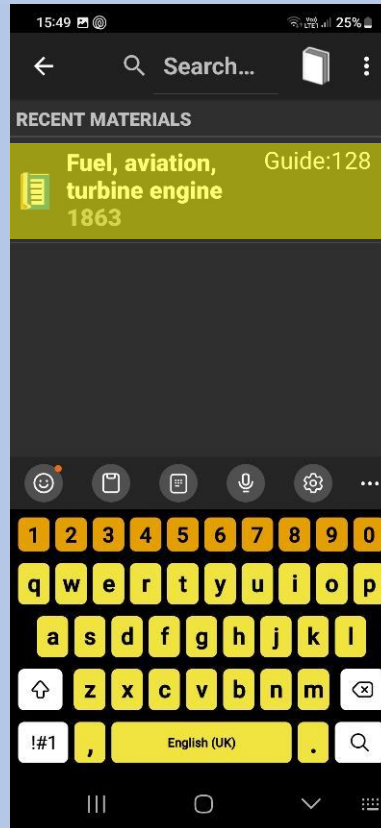
ERG 2020 APP

- ☀ Press on Search by Name or UN
And type in Name of substance
or
UN ID number



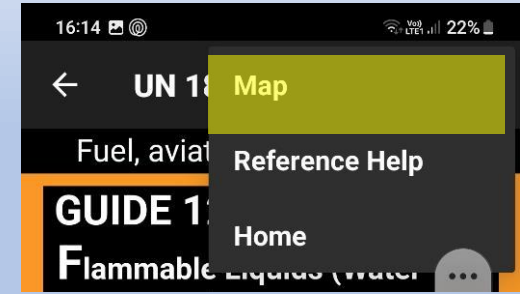
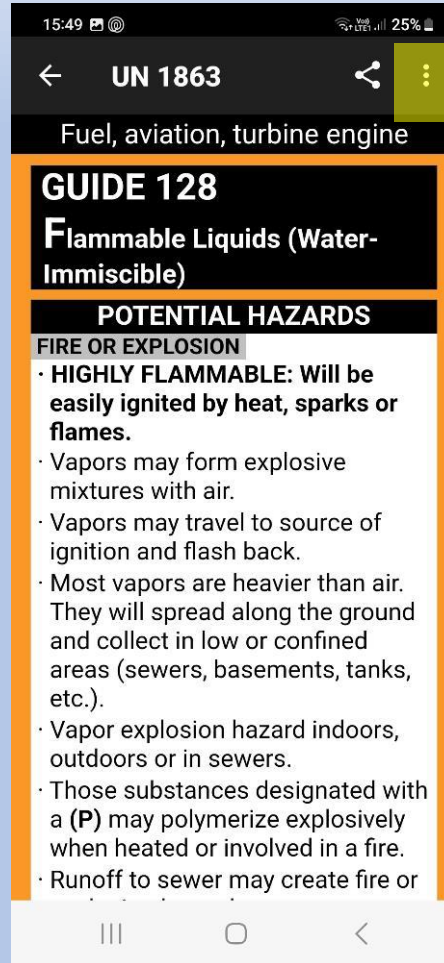


☀ This will give you search results found,
Click on the appropriate entry





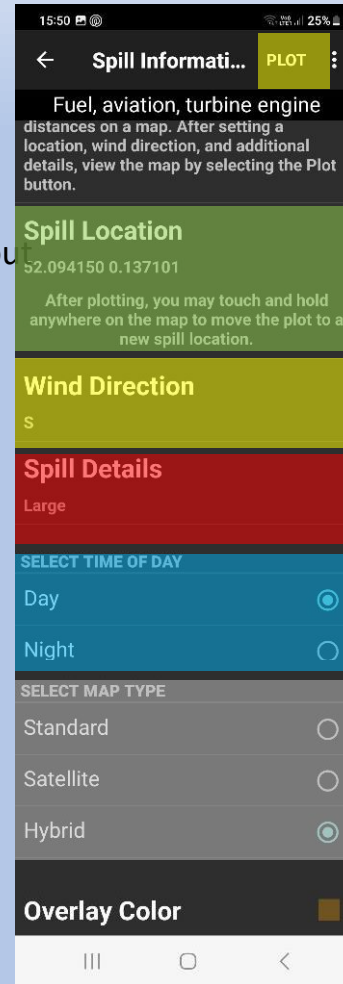
- ☛ You should then see this screen
- ☛ Click on the 3 dots top right to bring up the sub-menu shown on the right. Click on Map

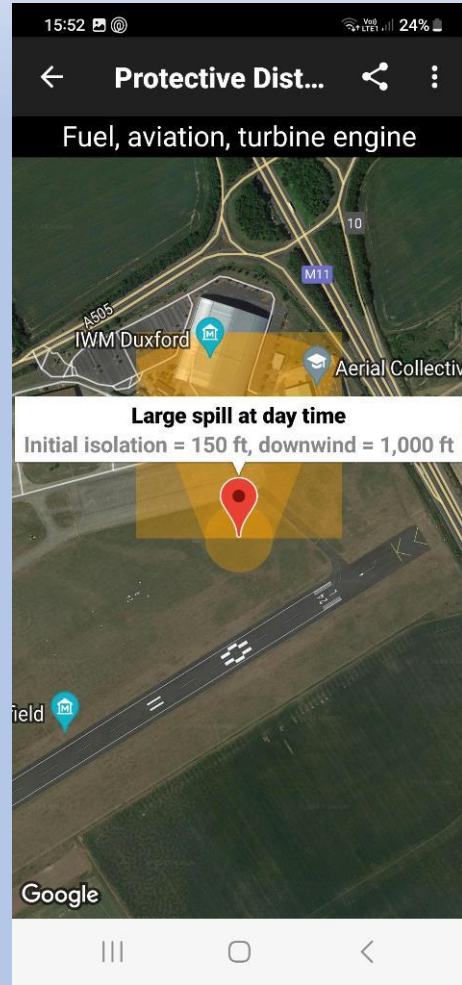
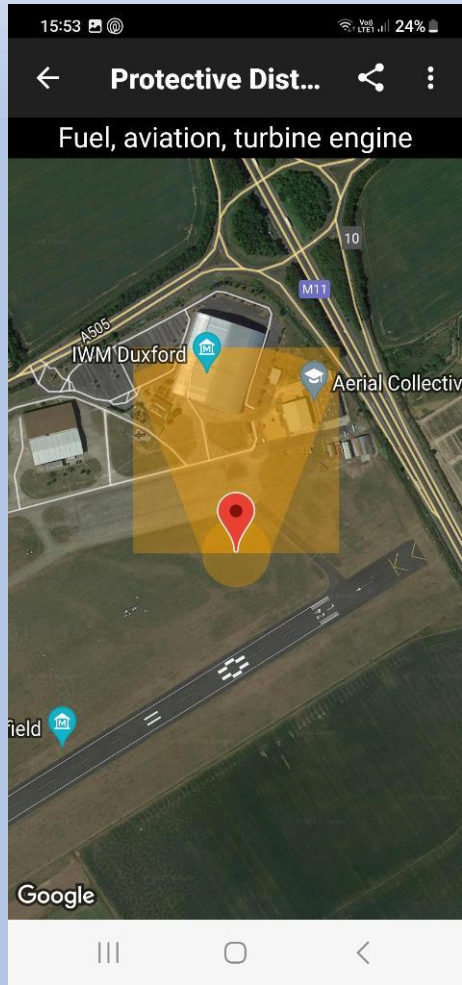




Enter the relevant details;

- ☛ Spill location (use CURRENT LOCATION – you can then carry out fine adjustment of position on the map)
- ☛ Wind Direction – press to bring up the compass rose on the Right and set the direction.
- ☛ Spill details – a Small spill is less than 200 litres of fluid or 300 Kg of a solid.
- ☛ Select Day or Night.
- ☛ Select Map type
- ☛ Press plot to show the map (next slide)







LITHIUM BATTERY FIRES

- ⚠️ Do you carry a Personal Electronic Device? (Phone, Tablet, GPS) – if it is rechargeable, it will almost certainly contain a Lithium-Ion battery.
- ⚠️ If a Li-Ion battery is damaged by impact or being pierced the results can be quite dramatic (on some occasions a battery can ignite without any external help....)





Any Questions?

Thank you for your attention



Dave Barrell

Sharing Experiences



Pre-Display Season 23 Symposium

Coffee



	Syndicate 1 Room tbc	Syndicate 2 Room tbc
1100	Decision Making/Formation Flying	Risk Reduction and EO Liaison
	Spitfire Oil Leak – Decision Making	Major Incident Discussion
	Facilitated HF Discussion tbc	Teeside Airshow
1230		Foreign Military Involvement Process
1230-1315	Lunch	



Pre-Display Season 23 Symposium

Lunch



Pre-Display Season 23 Symposium

DAE Brief – Rich Pillans



Pre-Display Season 23 Symposium

Major Incident Discussion



Major Incident Discussion



Discussion Around:

- 1. Could this happen here?**
- 2. What do we have in place to minimise the risk?**
- 3. Are there any EO specific issues we should also consider?**



Panellists :

Rod Dean
Dave Middleton
Roger Steele
Peter Kuypers
Rich Pillans
Tim Routsis
Mike Wood
Les Garside Beatty
Willy Hackett
Mark Linney



Transcript



Future Dates

Date	Event	Location
14 November 2023	DAE Seminar	Duxford tbc
15 November 2023	Post Season Display Symposium	Duxford tbc
Late March 2024	Pre - Season Display Symposium	Duxford/Farnborough tbc



Future Dates

FDD and AFDD Accreditation courses:

- **11 December 2023** - FDD revalidation course on
- **12 December 2023** - AFDD Course
- **12-13 December 2023** - FDD initial course

To be held at the Defence Academy Shrivenham

Apply through [FDD Training Website](#)

..... and finally finally

- I want to know how the CAA can help you, what are we not doing?
- If, in the run up to, or during DS 23, we are not supporting you, then I want to know
- You can email me on paul.sall@caa.co.uk at any time
- I look forward to working together with you so that we can all achieve a safe and effective DS 23.

Questions

GA@caa.co.uk

paul.sall@caa.co.uk