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Will Curtis

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MAA

Low Level VFR Flight in Adverse Weather

Some brief thoughts and a discussion
on getting to and from display sites safely

Who is this daft old man?

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My Risks

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Hazard	Severity	Likelihood	Rating	Mitigation	M/factor	Residual Risk
Engine Failure	3	2	6	Identify and operate over suitable landing areas. Oil analysis. Regular maintenance + weekly cowl off insp.	LH 1 SV 2	2
Mid-air conflict en-route	5	3	15	Keep enhanced look out. Fit TA/EC system. Use RADAR service where possible	LH 2	10
Terrain Impact During Display	5	2	10	Fly choreographed and well-rehearsed display routine with spare capacity. Avoid loose articles in pockets, cockpit etc. Thorough pre-fight insp.	LH 1	5
CFIT en-route	5	2	10	Good flight planning. Observance of en-route weather minima.	LH 1	5
Flying control jam	5	2	10	Clean cockpit policy. Avoid loose article in pockets, cockpit etc. Thorough pre-flight insp.	LH 1	5
Aircraft accident involving crowd	5	2	10	Observe crowd separation minima. Fly choreographed and well-rehearsed display routine	LH 1	5
Ground staff with turning propeller	5	2	10	Keep a good lookout all around. Shut down if in doubt. Seek help form a marshaller if needed	LH 1	5
Pilot incapacitation	4	1	4	Regular medical checks. Self-certify fit to fly. Challenge team members who appear to be unfit		4

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Pre-Flight Planning

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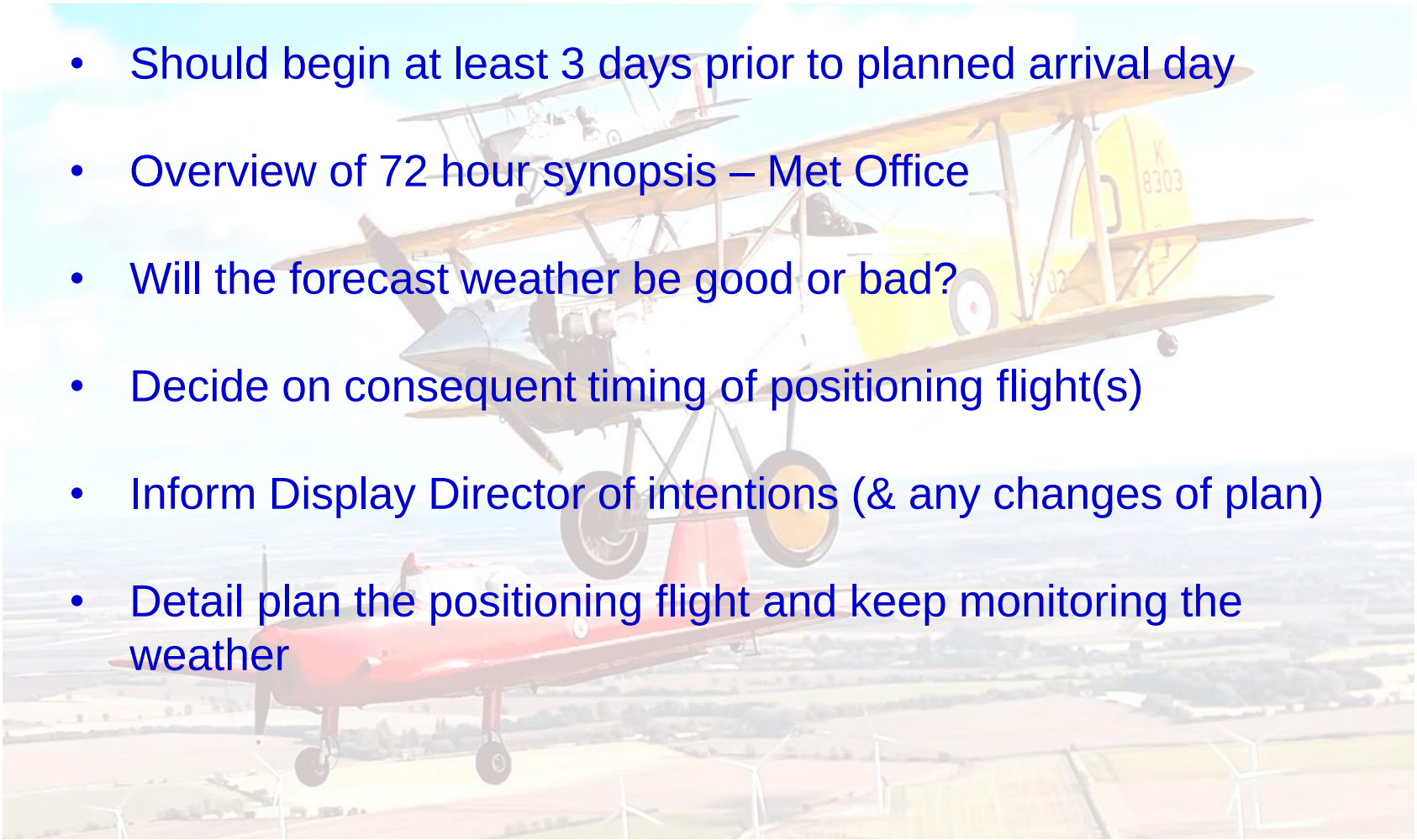
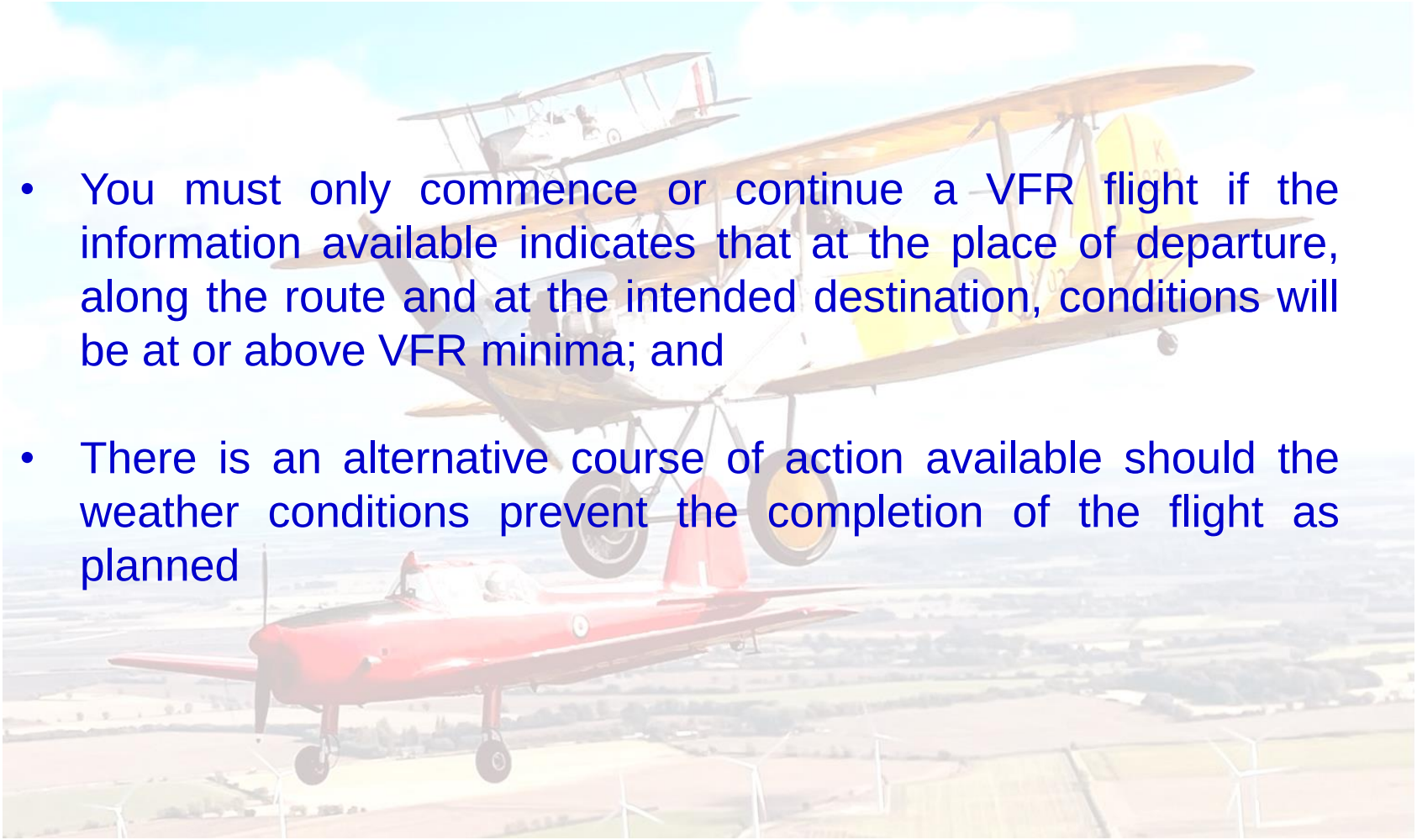


- Should begin at least 3 days prior to planned arrival day
- Overview of 72 hour synopsis – Met Office
- Will the forecast weather be good or bad?
- Decide on consequent timing of positioning flight(s)
- Inform Display Director of intentions (& any changes of plan)
- Detail plan the positioning flight and keep monitoring the weather

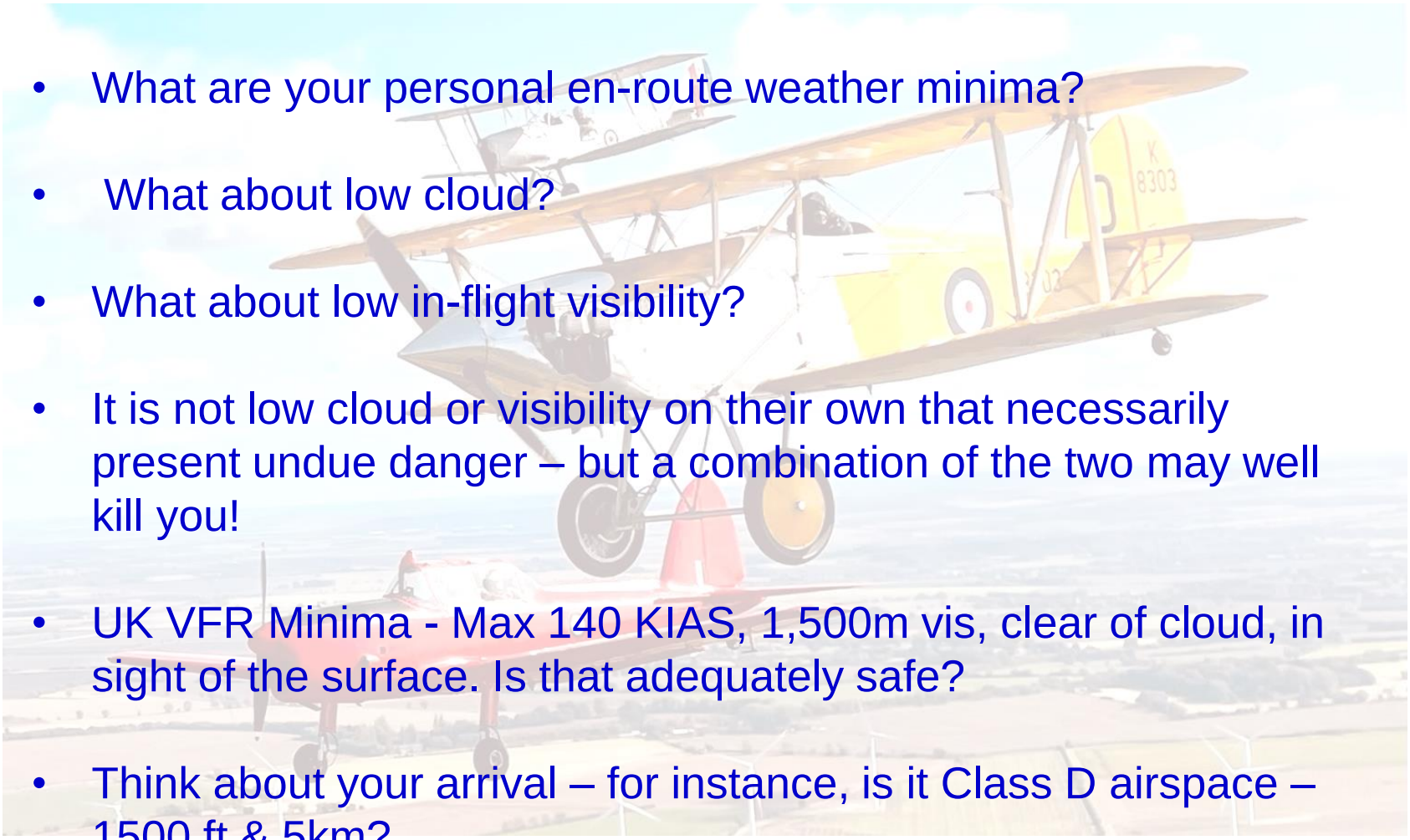
Key Regulations



- You must only commence or continue a VFR flight if the information available indicates that at the place of departure, along the route and at the intended destination, conditions will be at or above VFR minima; and

- There is an alternative course of action available should the weather conditions prevent the completion of the flight as planned

Bad Weather Planning



- What are your personal en-route weather minima?
- What about low cloud?
- What about low in-flight visibility?
- It is not low cloud or visibility on their own that necessarily present undue danger – but a combination of the two may well kill you!
- UK VFR Minima - Max 140 KIAS, 1,500m vis, clear of cloud, in sight of the surface. Is that adequately safe?
- Think about your arrival – for instance, is it Class D airspace – 1500 ft & 5km?

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My In-Flight Operating Minima

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In-Flight Visibility	Ceiling AGL
7 km	1,200 feet
6 km	1,400 feet
5 km	1,500 feet
4 km	1,800 feet
3 km	2,000+ or MSA

Weather on the day of flight

Build a mental picture of the weather along the route:

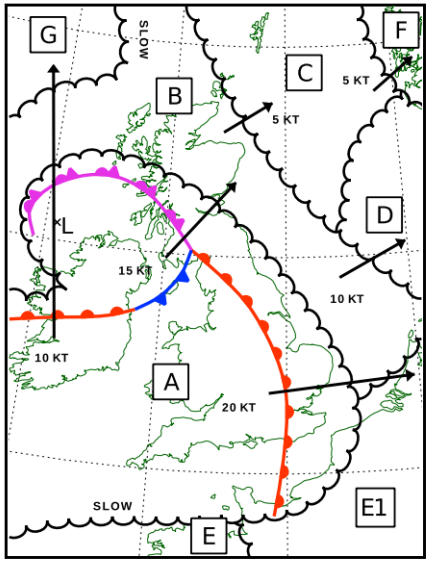
- General Synopsis
- Significant Weather FC215
- TAFs
- METARs

Pay attention to all METARs along planned route along with those to windward. These are a real time data check.

Check movements of fronts (Sig Weather FC215)

For most flights in southern UK METARs are best source of real time information

Weather on the day of flight



Forecast Weather below 10000 FT

Met Office Valid 120800 to 121700 Z MAR 24 Fronts/zones valid at 121200 Z

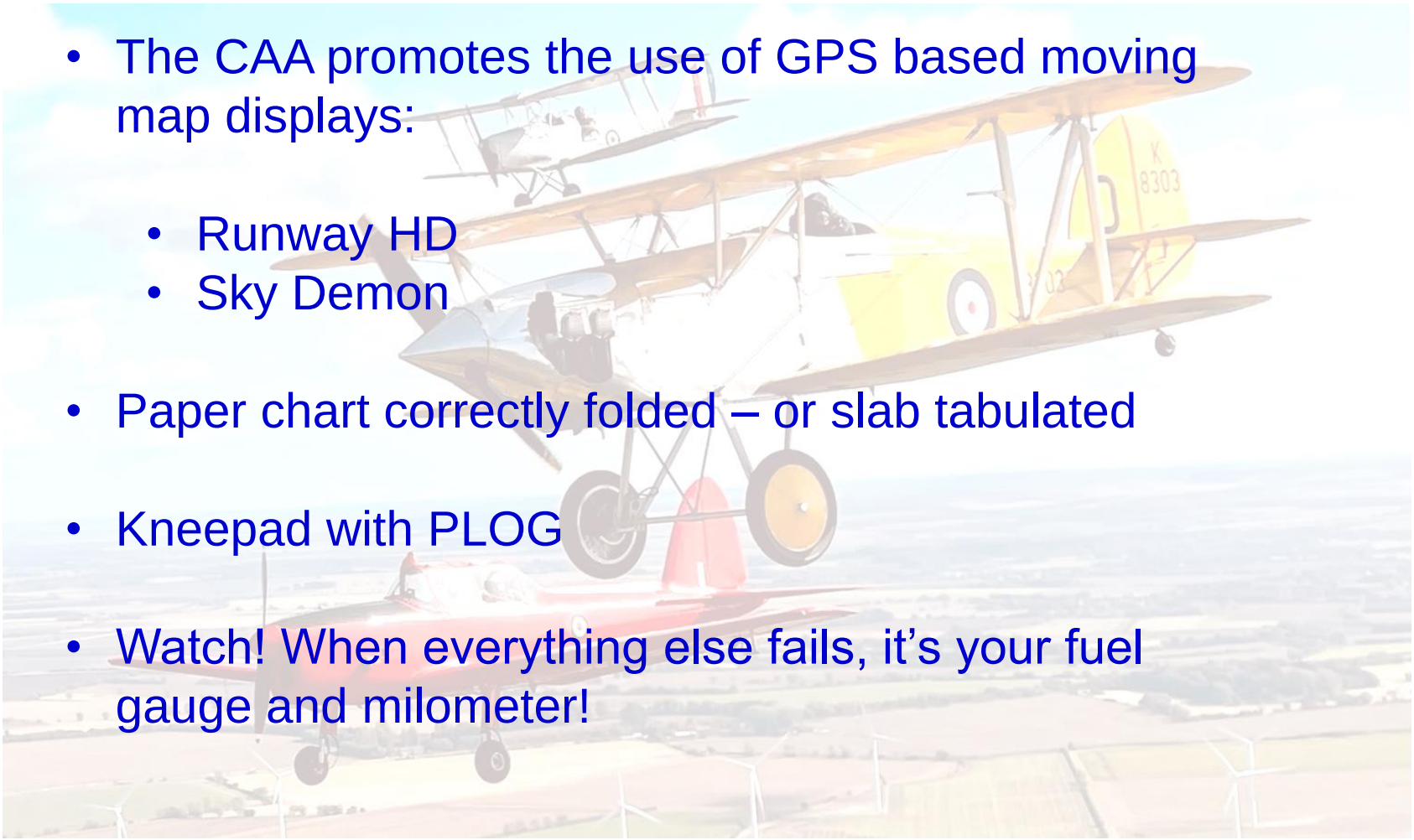
AREA	SURFACE VIS AND WX	CLOUD	0 C
A	20 KM NIL/-RA WDSPR 6 KM RA/SHRA ISOL (OCNL FRONTS) 3500 M +RA ISOL 2000 M BR/DZ SEA COT ISOL 1500 M SN MON SCOTLAND MTW MAX VSP 500 FPM AT 090 OCNL (WDSPR WARM SECTOR) ISOL SW OCNL HILL FG	BKN/OVC CU SC AC AS ... ... 015-025 / XXX OCNL SCT/BKN ST 005-012 / 015 ... ... (LCA BASE 002-004 SEA COT)	040 FAR N 060-080
B	30 KM NIL OCNL 6 KM HZ ISOL 6 KM -RADZ UPSLOPES ISOL 2000 M BR LAN TL 11 Z ISOL 1000 M SN MON SCOTLAND ISOL 200 M FG LAN TL 10 Z ISOL HILL FG	WDSPR BKN/OVC CU SC ... ... 025-040 / 050-080 ISOL SCT/BKN ST ... ... 007-012 (BASE 000 FG)	030-040 NW 040-050 SE
C	20 KM NIL/-RA OCNL 6 KM RA/SHRA ISOL 3000 M +TSRA FAR W ISOL 200 M +SHSN MON OCNL HILL FG	WDSPR BKN/OVC CU SC AC AS ... ... 020-030 / XXX ISOL EMBD CB 015-025 / XXX FAR W OCNL SCT/BKN ST 005-010 / 015	015-030
D	20 KM NIL OCNL 7 KM HZ OCNL 6 KM RA/SHRA/(-RASN N) ISOL 2000 M DZ/BR ISOL 800 M FG/DZ ISOL MAINLY N OCNL HILL FG	SCT/BKN AC AS 080 / XXX BKN/OVC CU SC ... ... 015-025 / 060-080 WDSPR SCT/BKN ST 007-010 / 015 ... ... (OCNL BASE 000-004)	030-050
E	20 KM NIL ISOL 7 KM SHRA MAINLY **E1** ISOL HILL FG	SCT/BKN (ISOL OVC **E1**) CU SC ... ... 015-030 / 060-080 ISOL SCT/BKN ST 007-010 / 015 ... ... MAINLY **E1**	050-080
F	35 KM NIL ISOL 200 M FG/FZFG LAN ISOL HILL FG	ISOL SCT/BKN CU SC ... ... 030 / 040-060 ISOL SCT/BKN ST 000-007 / 010	010-020
G	40 KM NIL	OCNL SCT/BKN CU SC ... ... 020-030 / 040-050	030

Outlook Until 130000 Z: SIMILAR.

TAF EGTK 121059Z 1212/1221 22010KT 9999 SCT010 BKN025
TEMPO 1212/1216 6000 -RADZ BKN010
PROB40 TEMPO 1212/1214 4000 RADZ BKN005
PROB30 TEMPO 1214/1221 4000 RADZ BKN007=

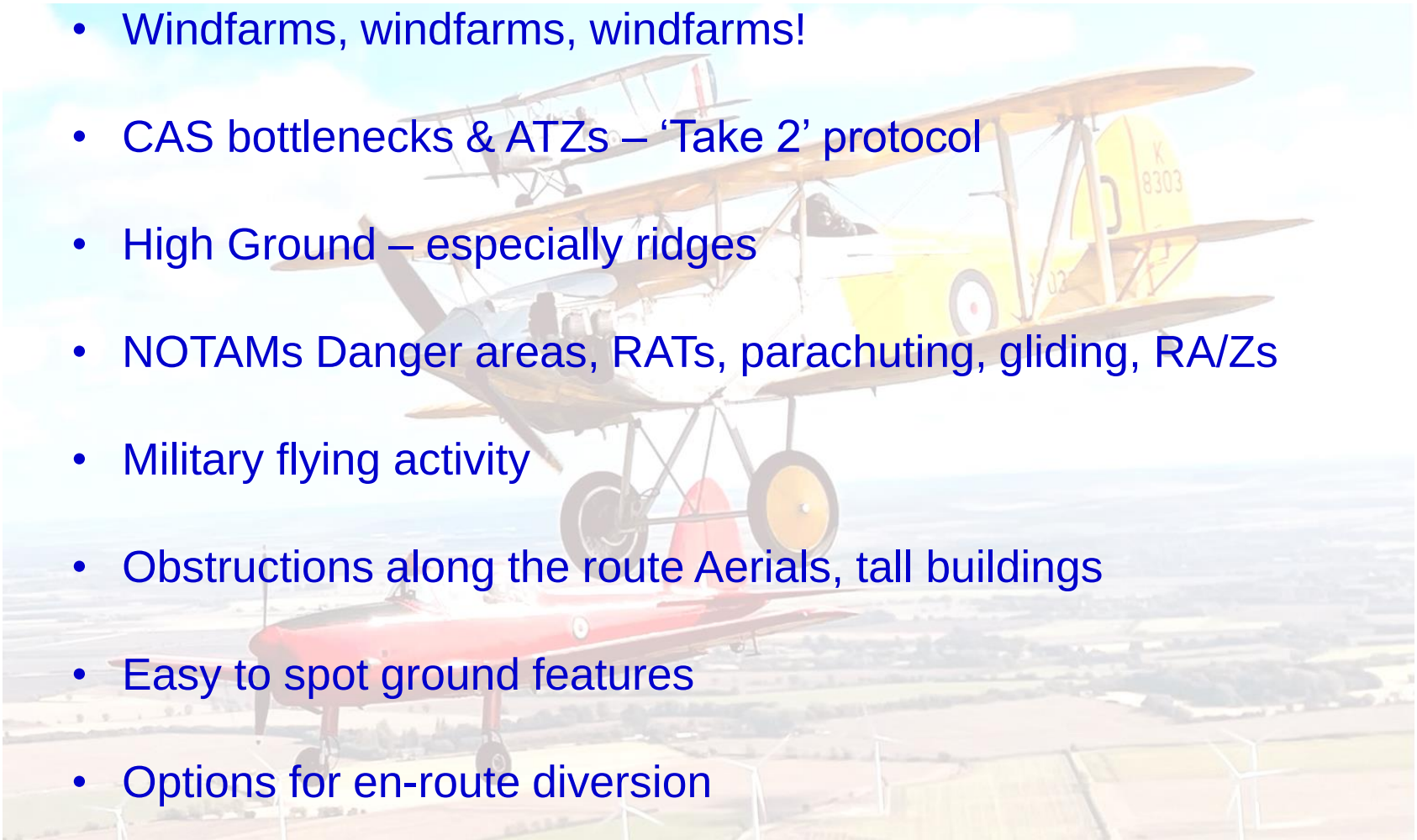
METAR EGTK 121150Z 24011KT 9999 VCSH BKN007 BKN010 12/12 Q1008=

Navigation Aids?



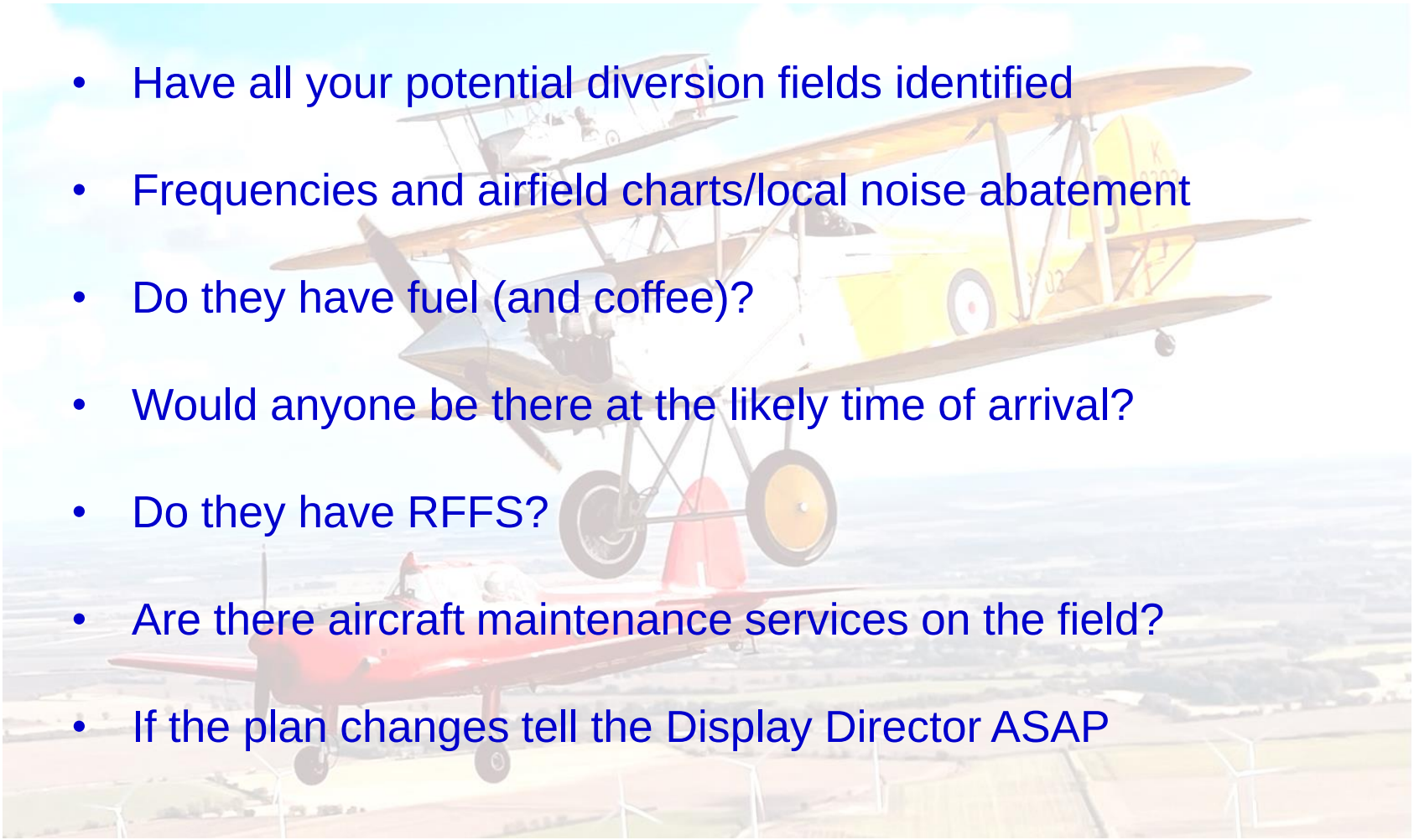
- The CAA promotes the use of GPS based moving map displays:
  - Runway HD
  - Sky Demon
- Paper chart correctly folded – or slab tabulated
- Kneepad with PLOG
- Watch! When everything else fails, it's your fuel gauge and milometer!

Low Level Considerations



- Windfarms, windfarms, windfarms!
- CAS bottlenecks & ATZs – ‘Take 2’ protocol
- High Ground – especially ridges
- NOTAMs Danger areas, RATs, parachuting, gliding, RA/Zs
- Military flying activity
- Obstructions along the route Aerials, tall buildings
- Easy to spot ground features
- Options for en-route diversion

En-route Diversion



- Have all your potential diversion fields identified
- Frequencies and airfield charts/local noise abatement
- Do they have fuel (and coffee)?
- Would anyone be there at the likely time of arrival?
- Do they have RFFS?
- Are there aircraft maintenance services on the field?
- If the plan changes tell the Display Director ASAP

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Human Factors

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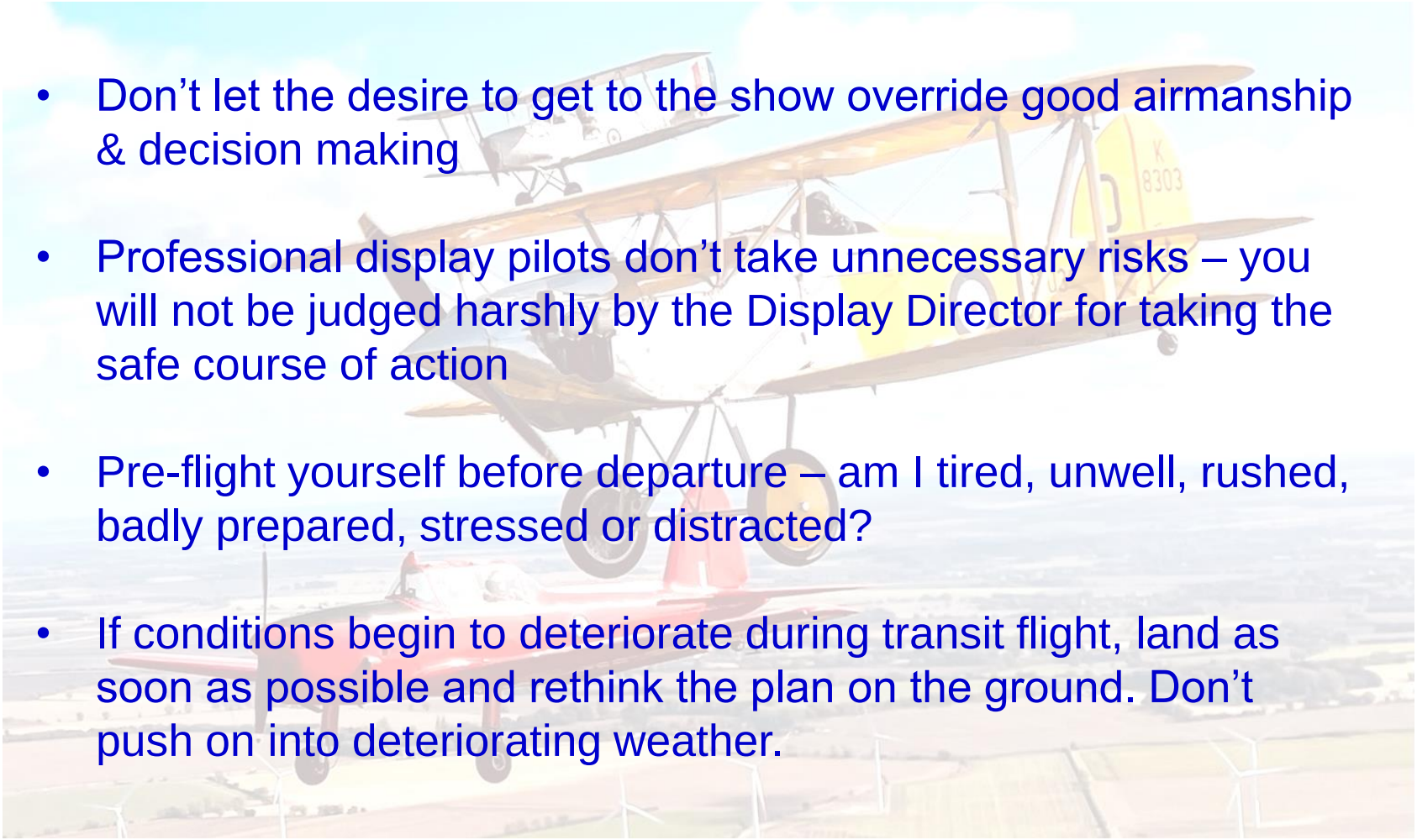

- Don’t let the desire to get to the show override good airmanship & decision making
- Professional display pilots don’t take unnecessary risks – you will not be judged harshly by the Display Director for taking the safe course of action
- Pre-flight yourself before departure – am I tired, unwell, rushed, badly prepared, stressed or distracted?
- If conditions begin to deteriorate during transit flight, land as soon as possible and rethink the plan on the ground. Don’t push on into deteriorating weather.

Time & Space

- Plan your air display day from alarm clock thru RTB
- Ensure that you have time to complete the required tasks without undue haste
- If you have constraints, tell the Display Director ASAP – you don't want to be rescheduled at short notice!
- In an emergency, if you have time to think through how best to respond then use it – don't rush!
- If justified, declare an emergency (MAYDAY/PAN) and use ATC capability if required
- Remember- if you have time and space, use it!

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Set a good example!

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- We are watched by our fellow display pilots, by GA pilots and by student pilots
- It matters how we talk and how we behave
- It matters how we pre-fight our aircraft
- It matters how we board up and call for start
- It matters how we depart and how we arrive
- Set a good example at all times!

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Questions & Discussion

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