



QUALITYFLY

Sailplanes in Integrated Programs

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Head of Training



United Nations
Framework Convention on
Climate Change

1st carbon neutral flight
academy in Spain

QUALITY FLY - E-ATO-197

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Sailplanes



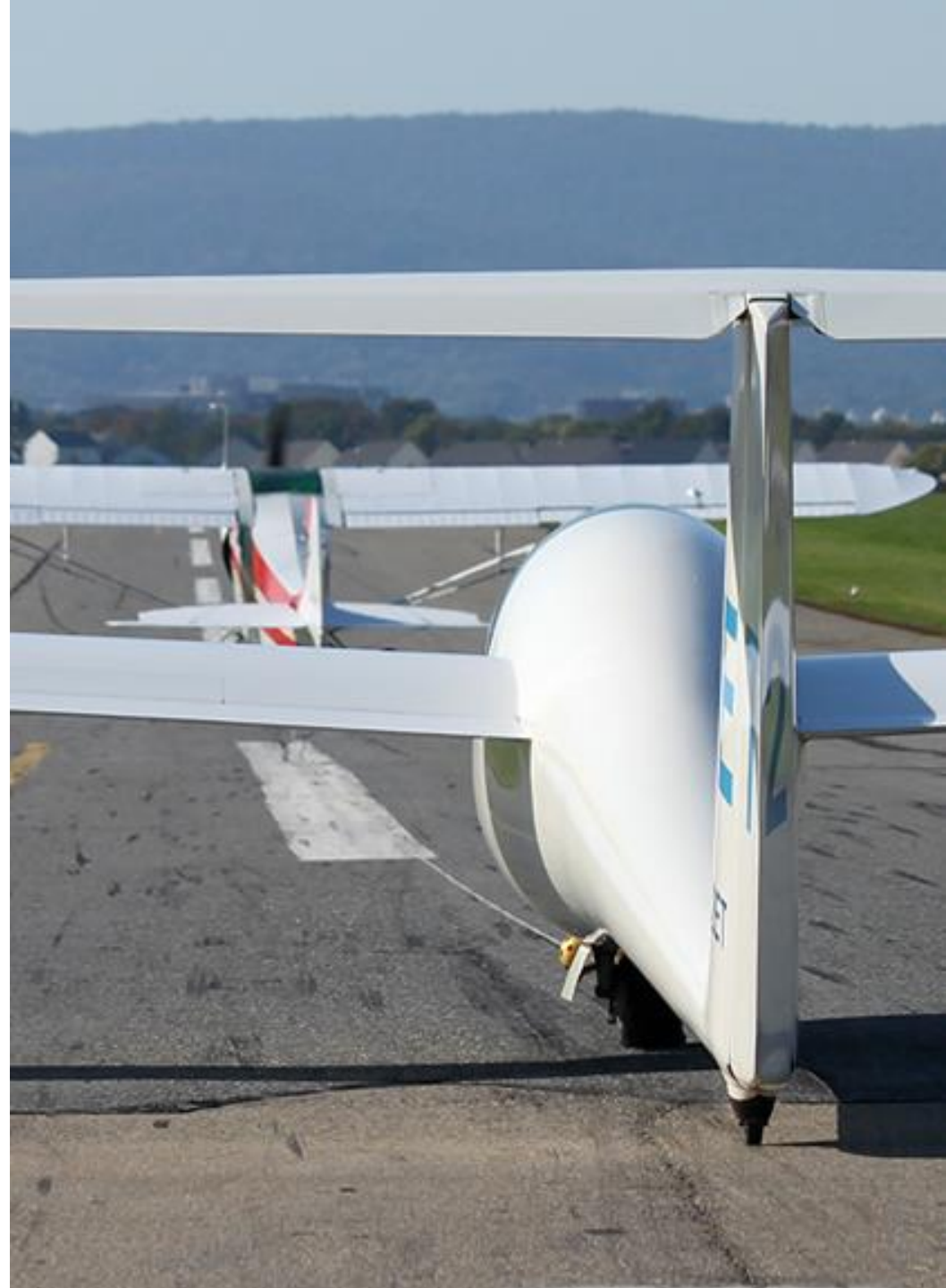
Classes

- Unpowered
- Powered:
 - TMG (Touring Motor Glider)
 - Self-sustaining
 - Self-launching



Launch Methods

- Self-launch
- Aerotow
- Winch



Soaring Techniques

- Thermal
- Ridge
- Wave



[Link to the video](#) played at this point during the presentation to show the discussed sailplane classes, launch methods, and soaring techniques.



Efficient Training

F-CLFA

Tried and Tested

- Long military tradition
 - Inexpensive, robust platform
 - Proficiency training



[Link to the video](#) played at this point during the presentation to show how the military continues to use sailplanes to deliver competency-based training.



LEARNING ENVIRONMENT
Constructivism
Immediate feedback
Deliberate practice

ПОДЪЕЗД
ВНЕ РАБОТЫ НЕ
ОСТАВЛЯЙТЕ
САМОЛЕТ В
ЭТОМ ПОЛОЖЕНИИ

PT-PJH

COMM
131500
ON
OFF
HORIZONTE TURB & BANK

Weight and Balance
Empty weight 1000 lb
Max gross weight 1500 lb
Max payload 500 lb
Max baggage 100 lb
Max fuel 100 lb

Personnel (Pilot and Passengers)
Maximum in front cockpit
None seated
None standing
Maximum total weight
Maximum load front
Maximum load back

70 lb	154 lb
110 lb	242 lb
150 lb	282 lb

MOTIVATION
Flow state
Gamification
Teamwork

Capt. Amit Singh
EATS 2019



Relevant to Airline Pilots

- “High-alpha culture”
 - Capt. Sarah Kelman, 2013 RAeS International Flight Crew Training Conference
- Included as additional training:
 - Air France/Transavia (France)
 - Air Dream College ATO (Portugal)
 - Quality Fly ATO (Spain)



Efficient Flying



Power Required

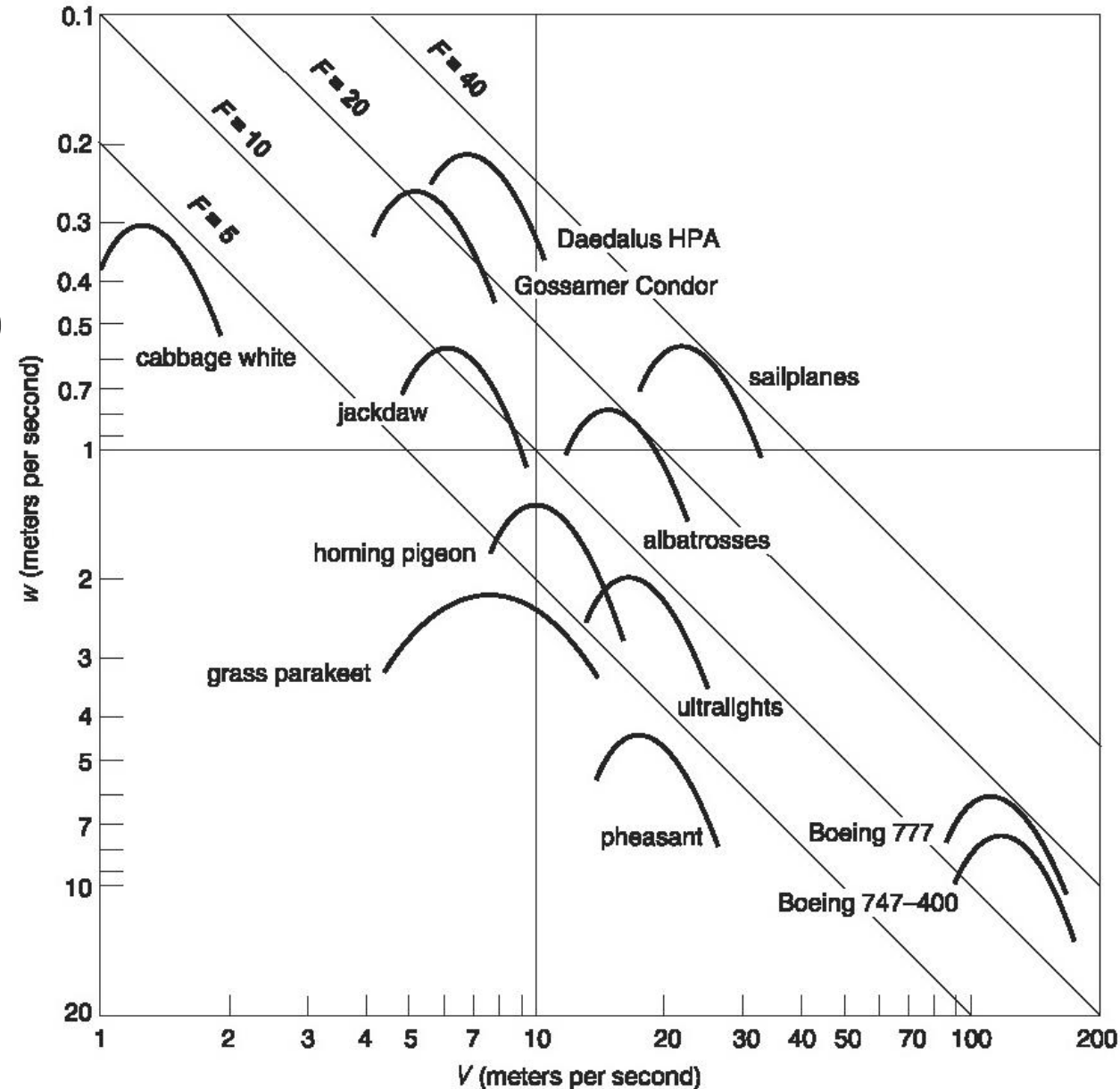
$$P_{req} = vD = v \frac{W}{F} = wW$$

- Finesse or lift-to-drag ratio:
 - Training aeroplane: 10 to 15
 - TMG: 25
 - Training sailplane: 40
 - Competition sailplane: 55+



Practical Soaring Limit

- Henk Tennekes: $w < 1$ m/s
- Achieved with light weights, low speed, $F > 30$
- Soaring techniques extract energy from the atmosphere
- Sailplanes represent existing, zero-emission technology capable of prolonged flight



Sustainability: leader

- Sailplanes push schools to high solar irradiance zones:
 - New criteria for school location/expansion
 - Airspace decongestion
 - Seasonal distribution of programs
 - Solar farms at the airfield
 - Virtual battery to balance supply and demand



Sustainability: companion

- Sailplanes compensate for some of the challenges of new technologies:
 - SAF: availability and cost
 - FSTDs, including XR: degree of fidelity
 - Electric airplanes: endurance and downtimes
- Sailplanes can also strengthen them:
 - Energy/fuel-conscious pilots
 - Promote the use of VR in online competitions
 - Ease the student transition to electric airplanes, maximizing their endurance when flown using soaring techniques





Rulemaking Proposal

Current Regulations

- Part-FCL & Part-SFCL
- Crediting:
 - Modular: up to 30 hours PIC (toward 200 hours)
 - Integrated: up to 20 hours dual in TMG or helicopters, but not sailplanes (toward 195 hours)



Rulemaking Proposal

- Review of AMC1 to Appendix 3 to include sailplanes and the SPL syllabus
 - 15% of airplane time of a standard integrated program
- Equivalency of exercises:
 - Phases 1 and 2: local and basic UPRT
 - Phase 3: navigation
- Further developments in electric, self-launching sailplanes could allow more crediting

Expected Benefits

- Enriched integrated route
- Extra license as a sustainable tool to prevent competency decay
- ATOs can reduce operating costs and continue to invest in clean, developing technologies
- Increased demand allows manufacturers to improve electric-powered sailplanes
- Gas emissions are reduced



Credits

- Featured photographers:
 - Marc Palliser
 - Marc Michel
 - Marcelo Castilhos de Oliveira
 - J.B.
 - Julien Bersheim
 - Chris Muir
 - Odin Van Oord
 - Lennart Batenburg
 - Vincent Posbic
 - Emanuel Linert
 - Stuart Schofield
 - Sergio Gómez Brito
- Polar diagram:
 - H. Tennekes, *The Simple Science of Flight: from Insects to Jumbo Jets*, MIT Press, 2009
- Featured videos
 - Cumulus Production (Nicolas)
 - U.S. Air Force Academy
- Featured organizations
 - Air France/Transavia
 - Air Dream College
 - Alexander Schleicher GmbH
 - Força Aérea Portuguesa
 - Royal Air Force Air Cadets
 - U.S. Air Force Academy



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Q&A



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