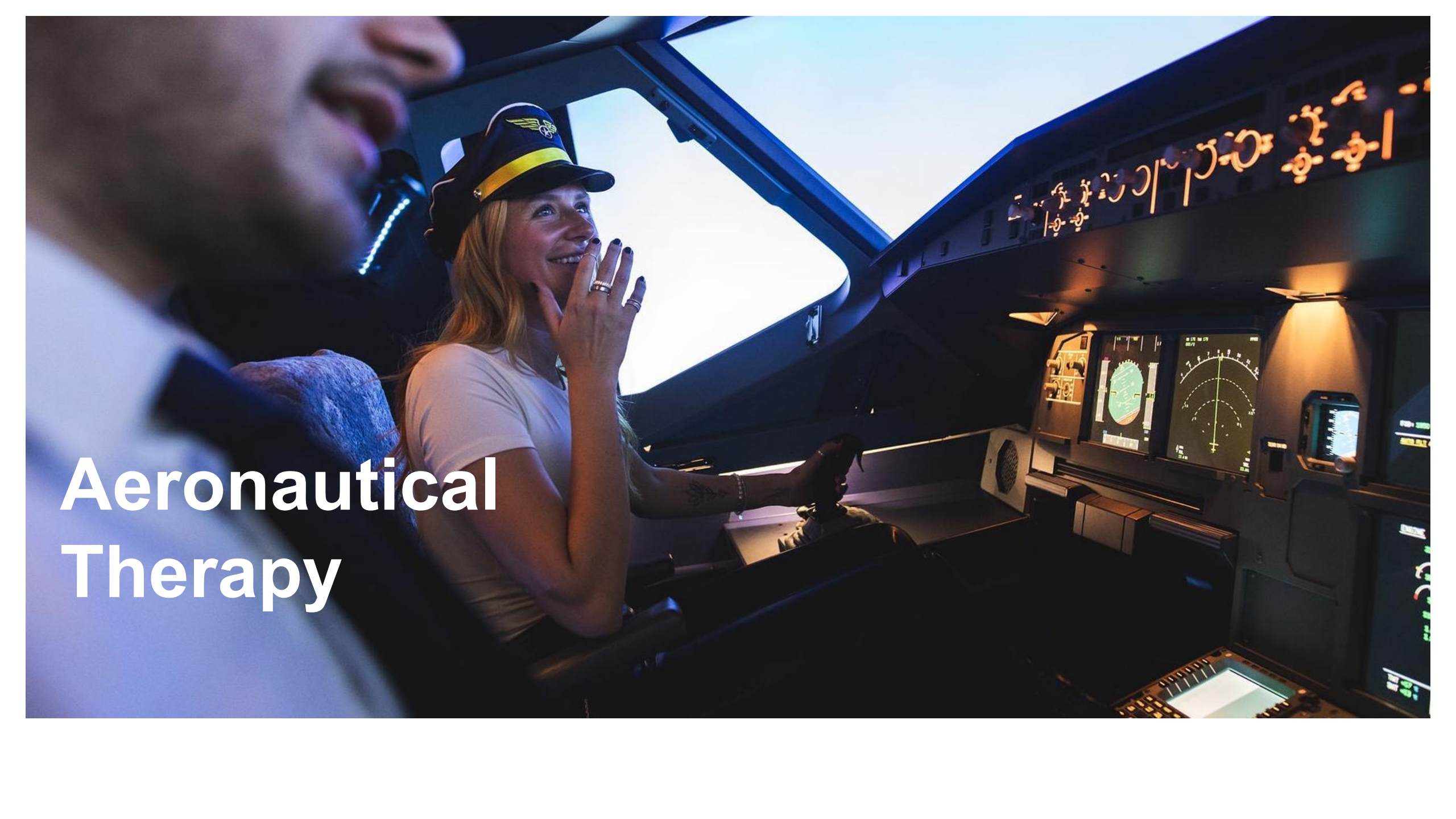




Aeronautical Therapy

Lesson Plan



- Objectives
- Safety Information
- Aerodynamics
- Aviation Regulations
- Weather Theory
- Emergency procedures



Objectives



Give the self-assurance that will allow you to apprehend your upcoming travel.

Bring rational explanations about flight, risks and mitigations.

Safety Information



ICAO iSTARS^{4.0}

Accidents



63

Accidents

6.11

Accident Rate
Per Million Departures

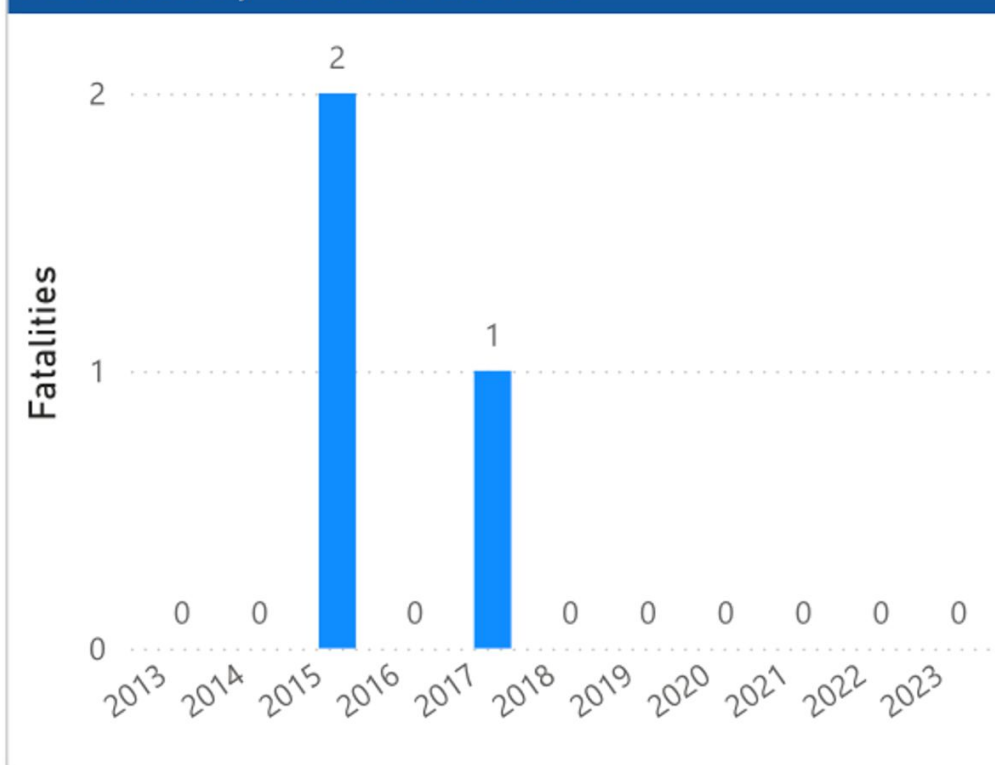
2

Fatal Accidents

3

Fatalities

Fatalities by Year for Canada



- There is going to be approximately between 35.9 and 40.1 million commercial flights in 2024.

- On August 11th of 2023, airlines operated 18.6 million seats, making it the busiest day of the 2023 period.

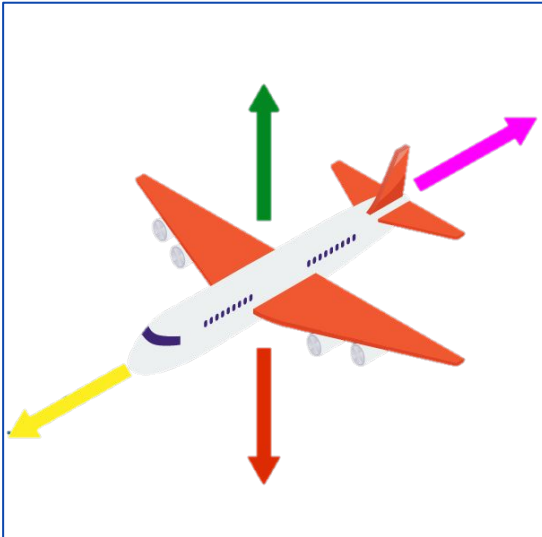




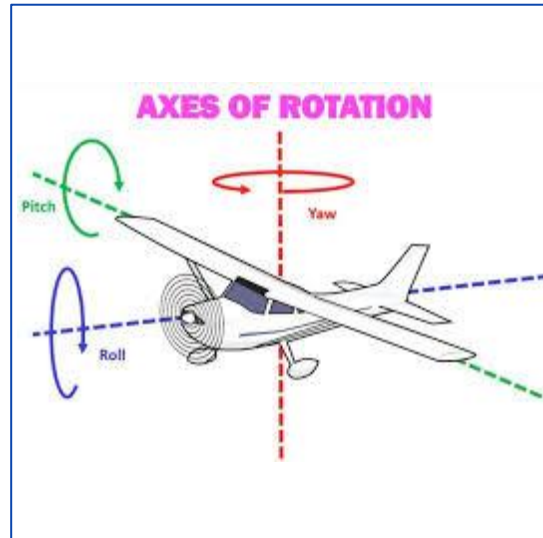
Aerodynamics



Forces of Flight



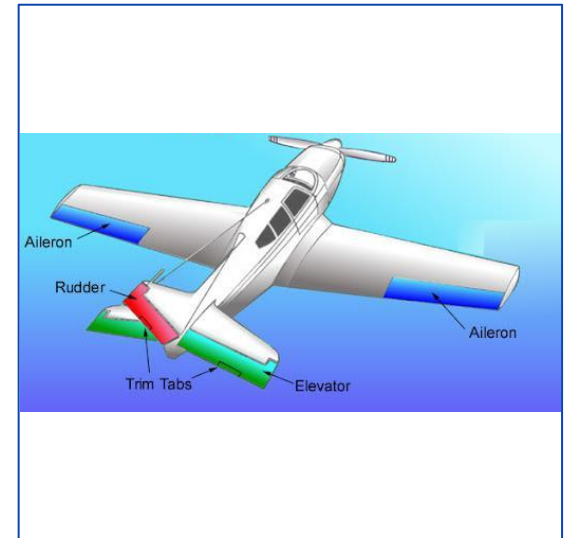
Axes of Movement



Engines



Flight Controls

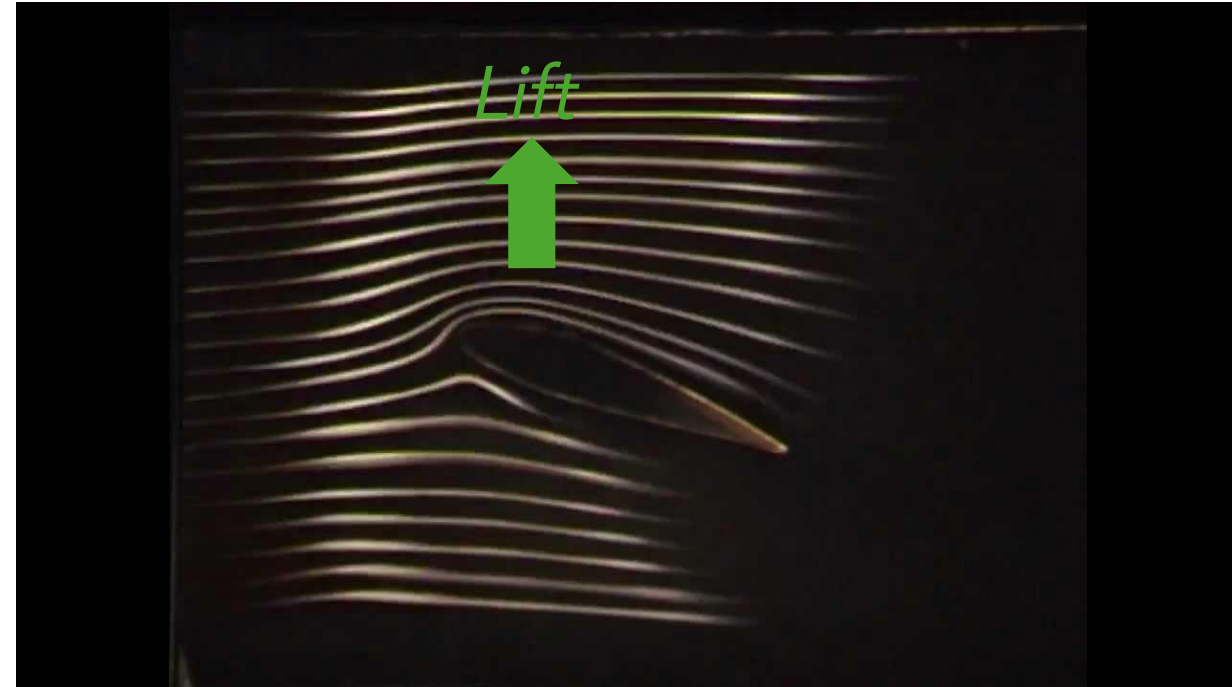


How does the airplane fly?

- How does the airplane fly?
- Which are the forces acting during flight?



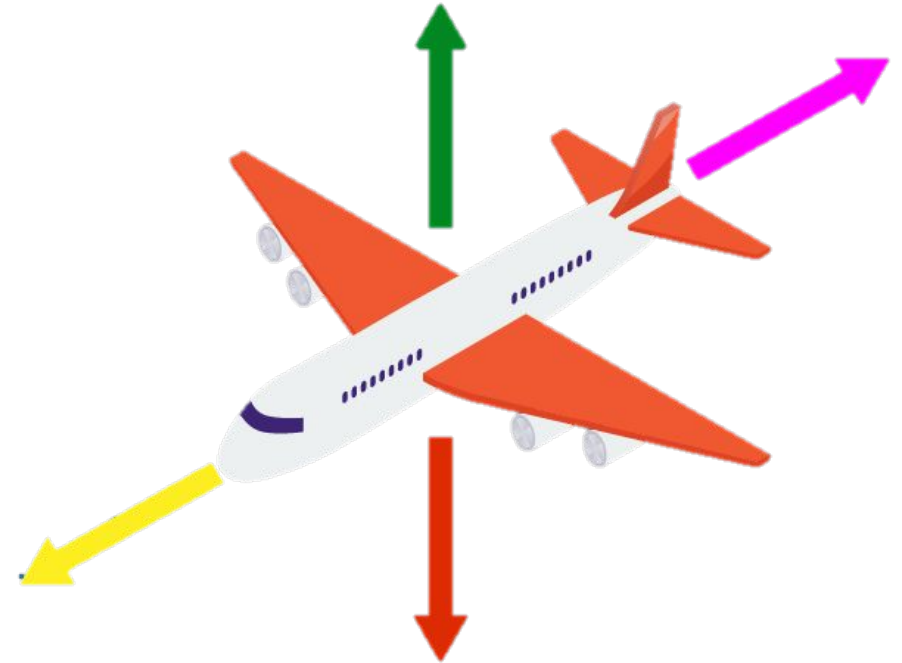
Daniel Bernoulli



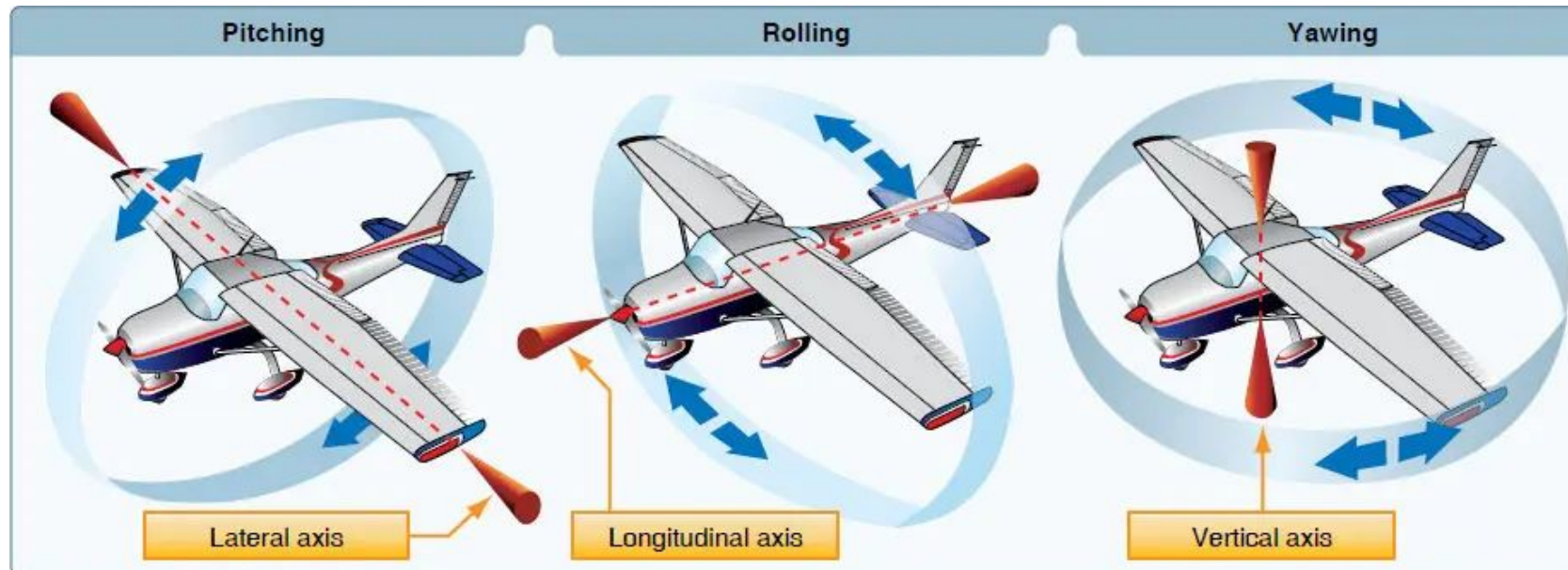
Forces of Flight



- Lift
- Weight
- Thrust
- Drag



Axes of movement



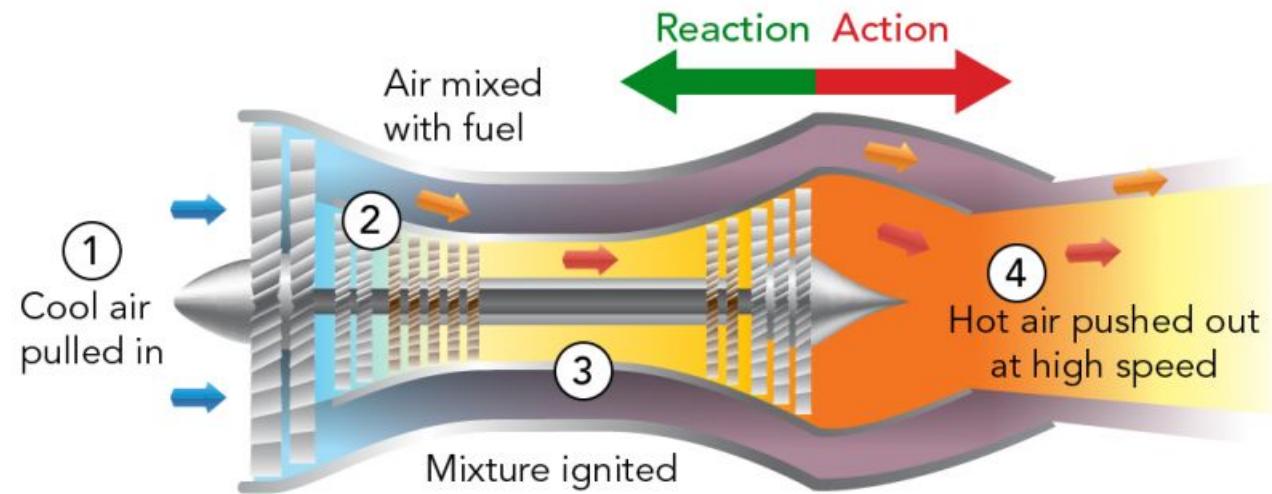
Engines



Engines help us generate thrust. And thrust is generated by:

- Expansion of hot gases
- Air pushed back by the fan

Thus, engines also go through different safety inspections to ensure proper operation



Engines (Safety Inspections)



**The Trent 1000 engine
has more than:**

12,000 flight time in testing

4,800 in flight testing

1,800 flights before certification.



Engines (Maintenance)



A Check:

Every 300 cycles or 125 flight hours, whichever comes first.

B Check:

Every three months.

C Check:

Every 12 - 18 months

D Check: (high maintenance visit)

Every 4-5 years (Lasts 2-3 months)

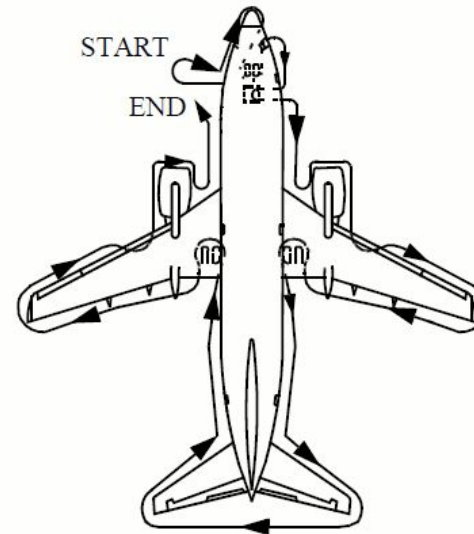


Flight Controls (Safety Inspections)



Walk arounds are performed to verify exterior components.

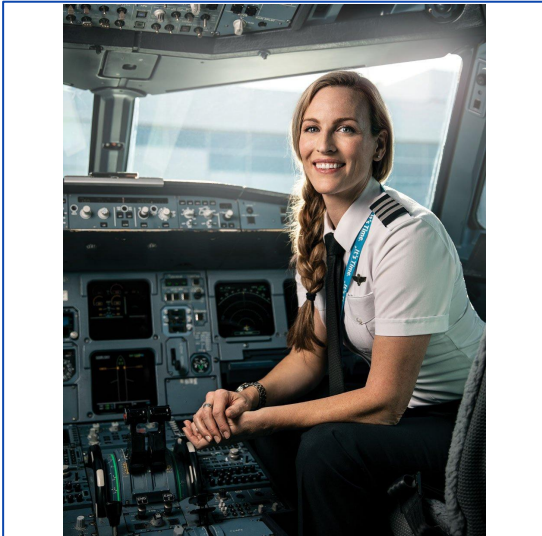
If there are anomalies, the flight won't take place until the aircraft is re-inspected thoroughly and repaired if needed.



Regulations



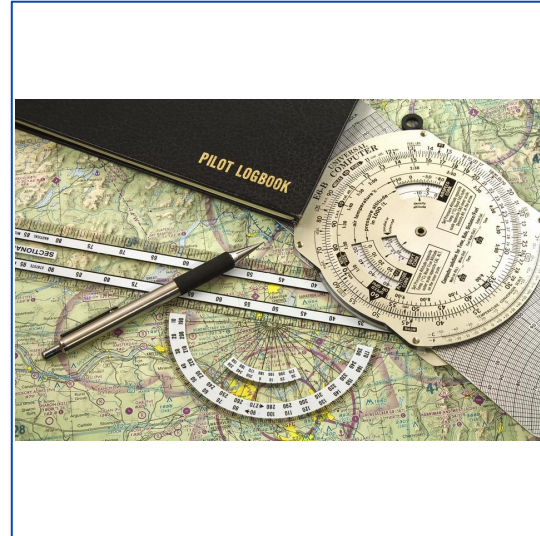
Pilots



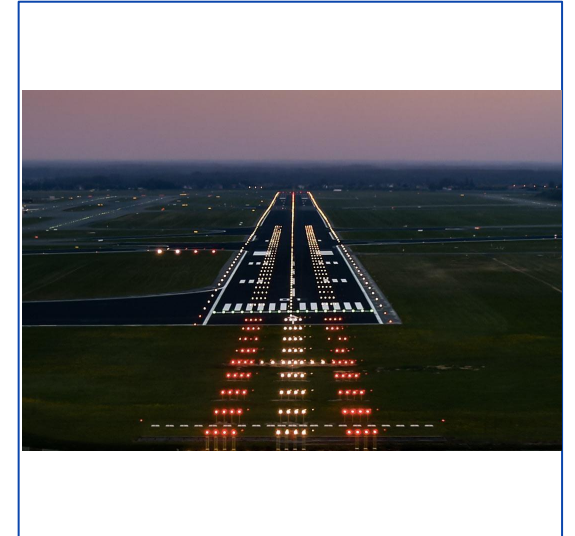
Flight Attendants



Flight Planning



Approach Categories



Pilots



Both pilots need:

- Aviation document issued by Transport Canada.
- A class 1 medical certificate performed by a certified doctor once a year (twice if +40 years old)
- Specific training for the type of aircraft

Transport Canada / Transports Canada

Canada
MEDICAL CERTIFICATE
CERTIFICAT MÉDICAL

This certificate is part of a
Functional Permit or Licence
issued under the Canadian
Aviation Regulations. It
constitutes medical validation
and must be carried with the
Permit or Licence it relates.

Le présent certificat fait partie d'un
permis ou d'une licence de personnel
émis en conformité avec le Règlement
de l'aviation canadien. Il constitue la
validation médicale et doit accompagner
le permis ou la licence qui valide.

The period of validity of the
medical examination is calculated
from the first day of the month
following the date of the medical
examination or medical
examination. For validity periods,
refer to the chart on the reverse.

La période de validité des examens
médicaux est calculée à partir du
premier jour du mois suivant la date de
la consultation médicale ou de l'examen
médical. En tableau des périodes de
validité se trouve au verso.

Signature of Pilot - Signature du Pilote

Date of Birth / Date de naissance

Medical Exam Date / Date de l'examen médical

Medical Category / Catégorie médicale

Name and Address - Nom et adresse

Issued - Délivré

Y-A M D-J

28-0335 (0202-02)

RENEWAL/RENOUVELLEMENT		
CGME Stamp Exemple du MEAC	CGME Stamp Exemple du MEAC	
A	B	
ECG Y-A M E-J	ECG Y-A M D-J	
CGME Signature Signature du MEAC	CGME Signature Signature du MEAC	
Y-A M D-J	Y-A M D-J	
CGME Stamp Exemple du MEAC	CGME Stamp Exemple du MEAC	
C	D	
ECG Y-A M E-J	ECG Y-A M D-J	
CGME Signature Signature du MEAC	CGME Signature Signature du MEAC	
Y-A M D-J	Y-A M D-J	

Permit/Licence Permis/Licence	Validity Period Période de validité	
	Under 40 Moins de 40	40 and Over 40 ans et plus
Commercial or ATPL Pilote professionnel ou pilote de ligne	12 mois/mois	6 mois/mois
*Private, Gyroplane, *Ballon, Recreational *Trotinette, *Autoglyde, *Ballon, *Autoglyde de *Trotinette	60 mois/mois	24 mois/mois
Ultra-light Aeroplane, *Glider, Student Pilot *Permis *Autoglyde ultra-léger, *Planeur, *Permis *Élève-pilote	60 mois/mois	60 mois/mois
Air Traffic Controller Contrôleur de la circulation aérienne	24 mois/mois	12 mois/mois
Flight Engineer Mécanicien navigant	12 mois/mois	12 mois/mois
*Outside of Canada - 24 months *À l'étranger du Canada - 24 mois		
Reference: CAP 608 (0-3) / Référence: SAC 608 (0-3)		

Aviation Transport and Commerce
Aviation, Transports et Commerce

CGME Stamp
Exemple du MEAC

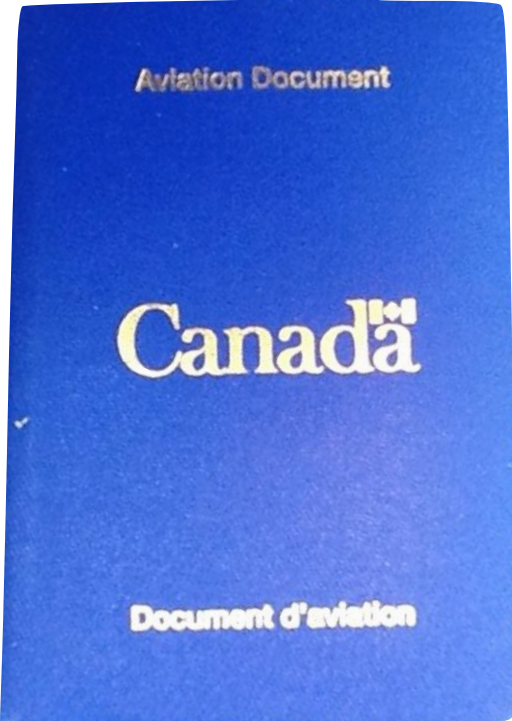
CGME Stamp
Exemple du MEAC

CGME Signature
Signature du MEAC

CGME Signature
Signature du MEAC

Y-A M D-J

Y-A M D-J



Flight Attendants

Flight attendants receive an extensive initial training. Additionally, they must pass their medical certification and undergo recurrent training (once a year).



Flight Planning

A Pilot must gather all available information concerning their flight prior to takeoff.

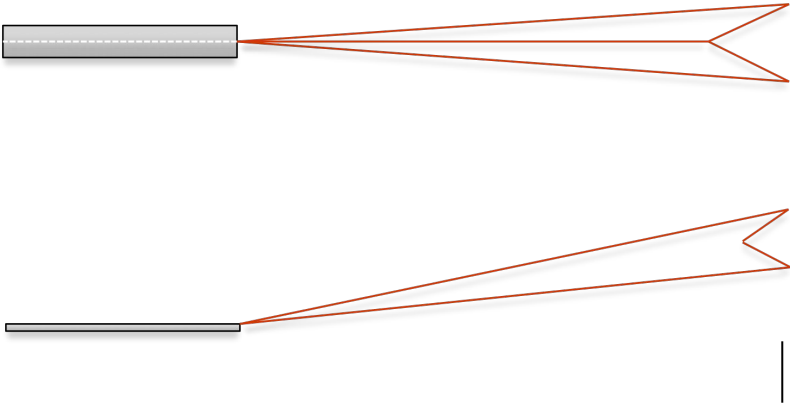
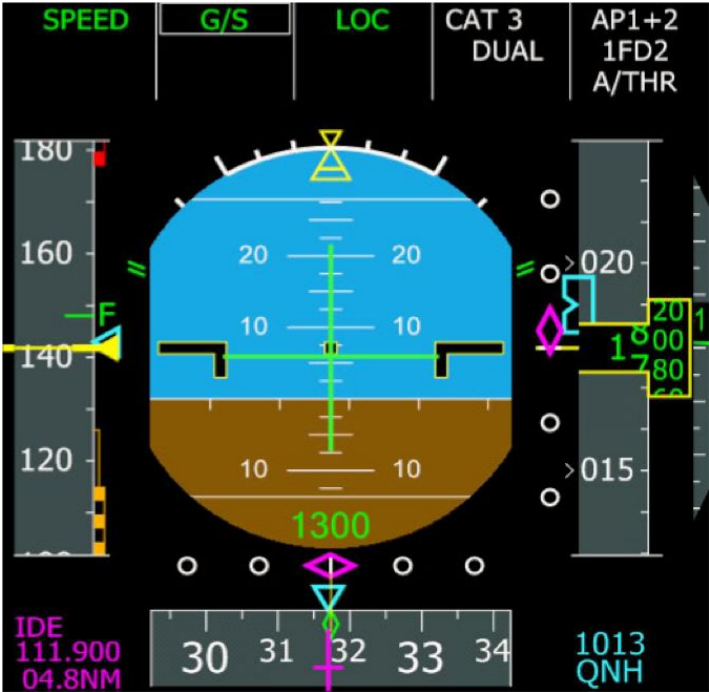
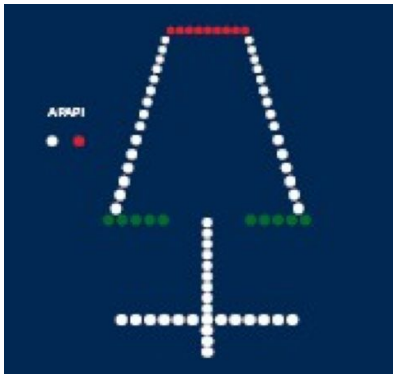
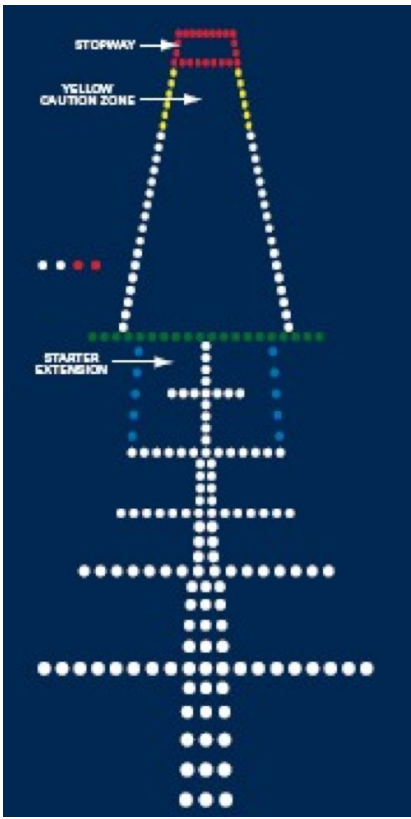
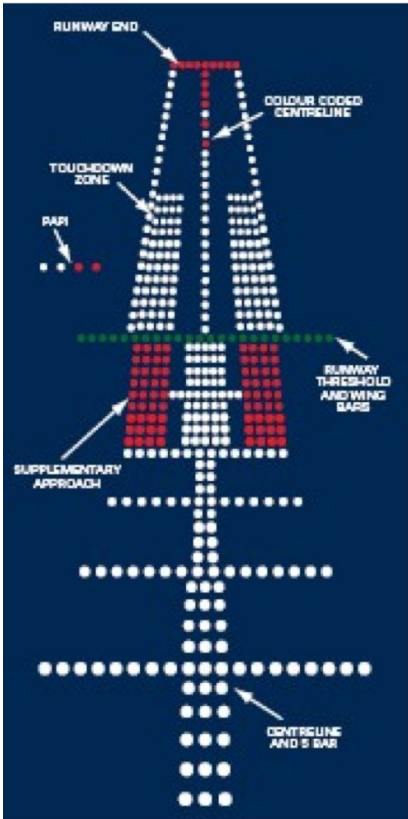


Approach Categories



ILS Approaches

When visibility falls under certain values and becomes zero visibility, some pilots are train to do automatic landings.



Weather



Turbulence



Storms and Lightning



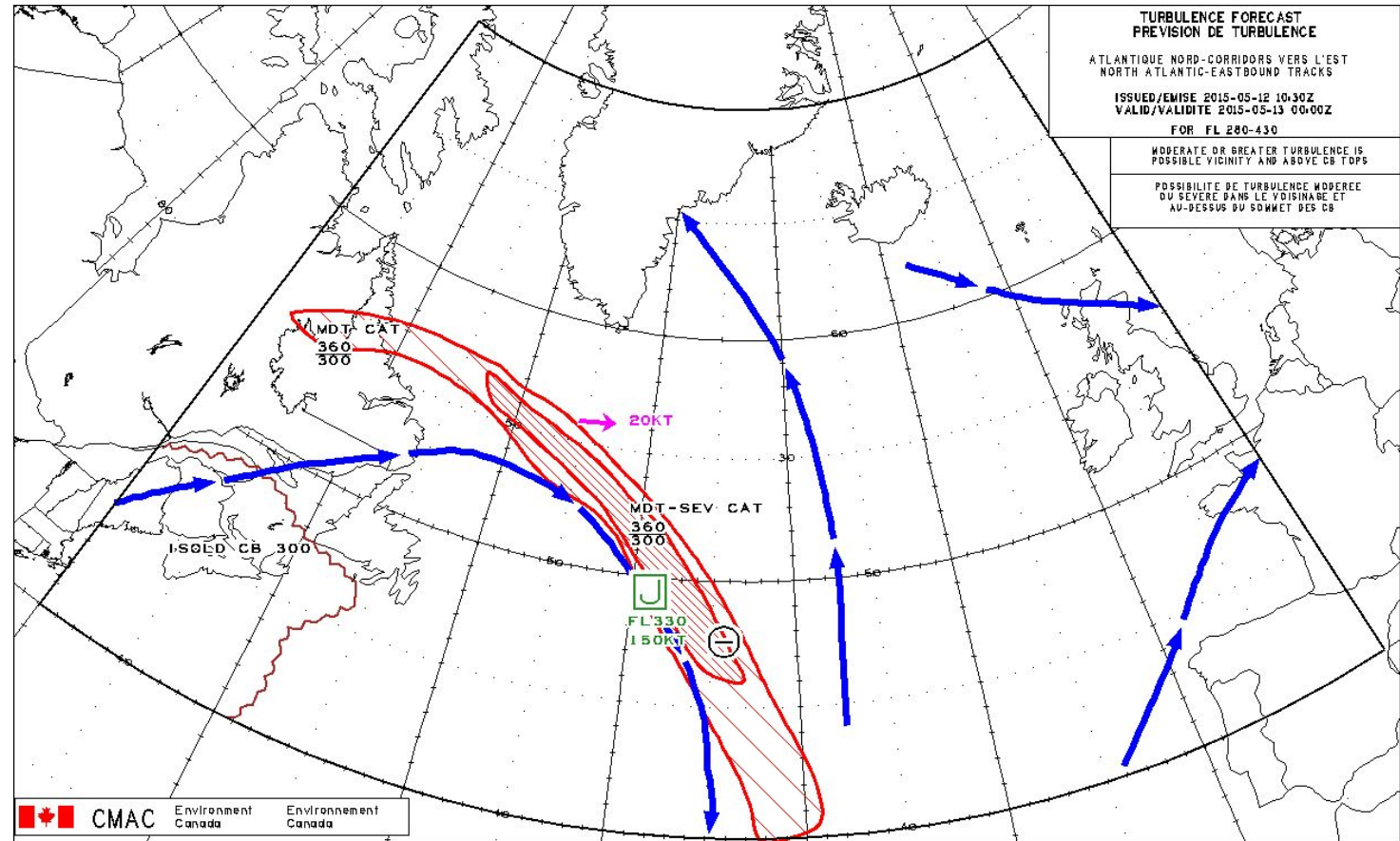
Icing



Turbulence

Where does turbulence come from? We will see two types, and how they originate.

- Clear Air Turbulence
- Associated with clouds



Turbulence



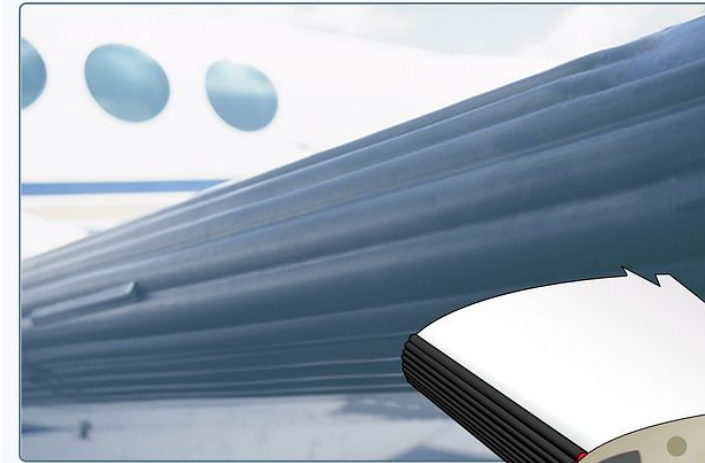
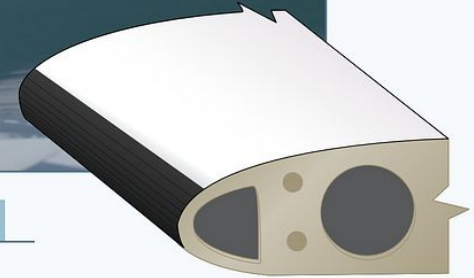


Lightning

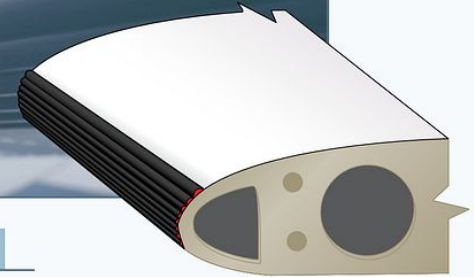
Icing



Tubes deflated



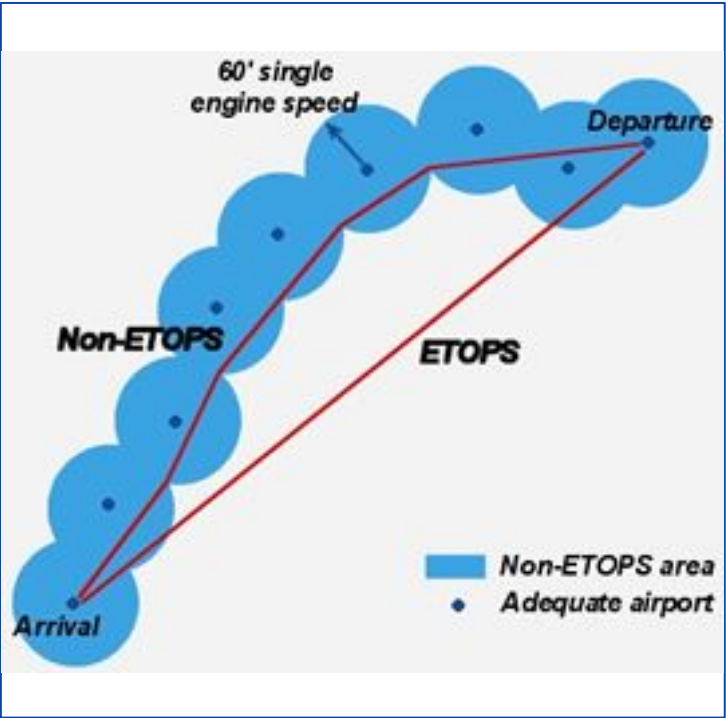
Tubes inflated



Failures



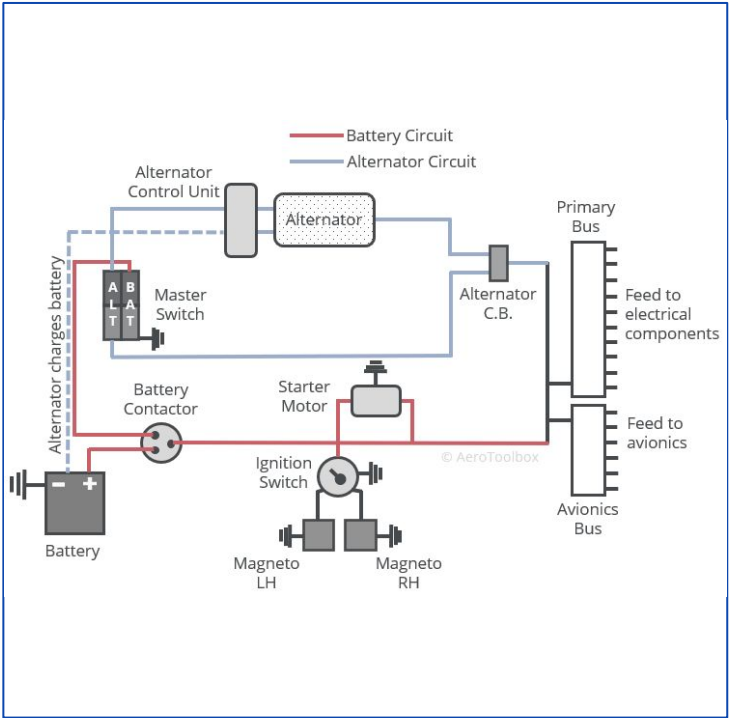
ETOPS



Mid-air collision



Electrical failure



ETOPS

Pilots are quick to react in the eventuality of an engine failure thanks to the memory items.

Twin engine airplanes have more than often more power than necessary (overpowered). Hence, in case of an engine failure, one engine is more than enough to assure a safe flight to an alternate airport.



Engine Fire



The engine will be shut down by the crew and they will follow a checklist to verify all systems potentially affected by the associated failure and make sure that the reminder systems work.

Depressurization

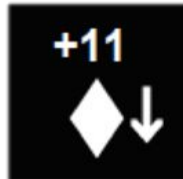


Oxygen masks have a capacity of 15 to 20 minutes per passenger. Pilots have a separate system of oxygen for redundancy.

Mid-air collision



Traffic nearby
No altitude information



Traffic nearby
1100ft higher and descending



Traffic Advisory (TA)
900ft lower cruising



Resolution Advisory (RA)
500ft lower and climbing
Requires immediate action





Hijacking Attempts



What actions are taken by the flight crew to avoid hijackings?

- Emergency descent to avoid an explosive depressurization
- Control the unruly passenger
- Emergency landing in order for the competent authority to arrest the passenger and search the aircraft

Congratulations!



Congratulations!

Now you have the knowledge
required for a demonstration
flight!

Have a Great Flight!