INSURANCE EXAM · IC-76

IC-76 Aviation Insurance

Revision book

9	2	111
chapters	master tables	numbered sections

FREE SAMPLE: Chapter 1 of 9

CHAPTER 1

Introduction

1.1 History of flight
1.2 Details to recall
1.3 Features of aviation insurance
1.4 Aviation class and civil aviation
1.5 Characteristics
1.6 Organisations

MUST KNOW

1. First flight **17 Dec 1903** (**852 ft**, 59 s); first practical airplane **1905** (Wright brothers).
2. DELAG **1909** = first passenger airline, on an airship. Airmail by heavier-than-air craft: India, **18 Feb 1911**.
3. Aviation began in the marine department; "hull" came from marine. Hull is mostly on agreed value.
4. Military self-insures; combat operations are uninsurable. Aviation serves civil aviation + aerospace segment.
5. Since the 1970s one combined single limit (CSL), per occurrence.
6. **Few risks:** weak law of large numbers, volatile results, reinsurer driven, facultative.
7. Airline placement = subscription market + auction; leader sets terms and wording. Verticalisation vs reverse verticalisation.
8. **Demand drivers:** civil aviation authorities and aircraft financiers. Market centred on London.
9. IUAI 1934, ICAO **1944** (in force **1947**), IATA **1945**; IOSA (**2003**) needed for IATA membership.

1.1 History of flight

Year	Event
1903	Wright first flight, Kitty Hawk, 17 Dec: **852 ft** in 59 s
1905	First practical airplane (their third); 5 Oct Wilbur: 24.5 miles in 59 min 23.8 s
1909	DELAG, first passenger airline (Zeppelin offshoot, rigid airship)
1911	First official airmail by heavier-than-air craft, 18 Feb, Allahabad to Naini, India
1912	First flight attendant (DELAG), March
1914	First commercial air passenger service, USA (St. Petersburg to Tampa)
1918	First regular airmail, Austria, 31 Mar to 15 Oct
1919	Alcock and Brown, first non-stop Atlantic crossing, Vimy IV
1926	USA Air Commerce Act; Bureau of Aeronautics
1927	Lindbergh, first solo non-stop Atlantic flight (20-21 May)

1.2 Details to recall

- **DELAG:** **1910**-14 carried 34,000+ passengers on 1,500+ flights, no injury. Bodensee **1919**: 370 miles in **4-9 h** (rail **18-24 h**), 26 passengers.

- **Alcock and Brown:** **14-15 June 1919**, Newfoundland to Ireland, **16 h** 27 min, 1,890 nautical miles, Daily Mail prize GBP 10,000 (from Churchill), knighted by George V. Height **4,000-7,000 ft**; 106 knots (about **196 km**/h).
- **Lindbergh:** **33.5 h**, Long Island to Le Bourget (Paris); Guggenheim Fund tour: 75 cities, 22,350 miles; 1930s charted airline routes with wife as co-pilot.
- **Airmail 1911:** pilot Henri Pequet (French, 23); 5 miles at **130 ft**, 40-50 mph; 6 annas surcharge for a student hostel; Kumbha festival; aircraft brought on SS Persia in **1910** by Windham (Humber Motor Co.).
- Helicopter needs more power than fixed wing, most in hover; more complex.
- Internal combustion engine gave better power-to-weight than steam; jet engines and war-surplus aircraft boosted growth after World War II.

1.3 Features of aviation insurance

- **Diverse:** hang-gliders, parachutes, balloons, helicopters, fixed wing, drones (UAV). 2-seater to 550+ passengers (B747, A380).
- **Also served:** caterers, airport contractors, security, fuel providers, airports and ANSPs, MRO, lessors and financiers, parts suppliers, ground handlers.
- **Crosses borders:** international law and foreign jurisdiction; other classes avoid aviation exposure (tyre maker example).
- **Hull:** agreed value basis; emergency expenses for immediate safety = like sue and labour.
- **Early defect detection:** certification, testing, accident investigation (A380 wing cracks **2012**).
- **High risk:** 550 x USD **1 m** = USD **550 m**; airlines buy USD **500 m** to **2,500 m** liability; 11 Sep attack.
- **Volatile results:** few risks. Dated: 25,000+ aircraft (**2014** census, 14+ seats); 18,000 business jets (**2014**).
- **Needs skill:** aerodynamics, design, finance, international and national law, many jurisdictions.

TRAP

- Self-insurance is for MILITARY aviation, not civil.
- Hull is on agreed value, not market value.

1.4 Aviation class and civil aviation

- **Written in aviation (aerospace segment):** caterer's product liability to airline passengers; aircraft tyre product liability.
- Activity from aircraft operations at airport premises falls in aviation.
- **Military:** self-insure or none; personnel cover sometimes; hull only non-combat.
- **Civil liability:** passengers and third parties (passengers under separate legislation) + baggage, cargo, mail.
- **Old way:** separate policies. From about 1970s: one CSL per occurrence; sublimits possible.

TRAP

Per occurrence limit with many occurrences = effectively unlimited in the year.

- **Operations:** airline or general aviation. Aerospace segment: airport operators, refuellers, MRO, ground handlers, air caterers, security, parts suppliers, software/design/engineering providers.

1.5 Characteristics

- **Law of large numbers weak:** about 32,000 commercial aircraft (end **2024**) with a few hundred airlines.

Aircraft	Value (dated example)
Medium commercial	USD **40-150 m**
Wide-bodied	USD **150-250 m**
A380-800	about USD **300 m**
A340-600 / B777-300	about USD **250 m**

FORMULA AND WORKED SUM

- 200 seats x USD 2.5 m = USD 500 m. US single death award above USD 6 m.

- Wide-bodied = 2 aisles; narrow-bodied = 1 aisle.
- **Subscription market:** one risk, many underwriters, each a percentage line, several not joint. Brokers co-ordinate. Leader sets terms, wording, handles claims.
- **Small aircraft:** local insurer **100%** or one reinsurer; costly ones a handful of reinsurers; airline: a couple of dozen underwriters.
- **General aviation:** fragmented, local rating. Airline: unified, same rating trend worldwide.
- **Airline placement:** subscription + auction. Followers offered lower terms (**5%**, **15%**); standard offer e.g. **10%** below leader = verticalisation. Followers ask higher than leader = reverse verticalisation.

FORMULA AND WORKED SUM

- Leader 1.00; standard follower offer 10% lower = 0.90.

- **Reinsurer driven:** few risks, no treaty portfolio, facultative.
- **Underwriter judgment:** seats 50-600, age **0-35 years**, technology, avionics.
- **Heavily regulated:** licensing, registration, certification, permits; better data; minimum insurance by law (like compulsory motor).
- **Demand:** civil aviation authorities and aircraft financiers (aircraft may be detained or confiscated).
- London centred (also USA, Europe); standard wording; USA and Canada vary. Growth in Australia, Asia, Middle East. India now absorbs almost all risks locally. Airline capacity led by Americas and Europe.

1.6 Organisations

Body	Key facts
IATA	Airlines' trade body; head office Montreal, executive office Geneva; founded **1945** by 57 members from 31 countries; **2024**: about 330 airlines, 120 countries, **84%** of traffic; membership needs IOSA registration (launched **2003**)
ICAO	UN agency; Chicago Convention 1944, in effect **1947**
IUAI	Aerospace underwriters' body, **1934**; represents members to governments, shares technical and statistical data, promotes best practice