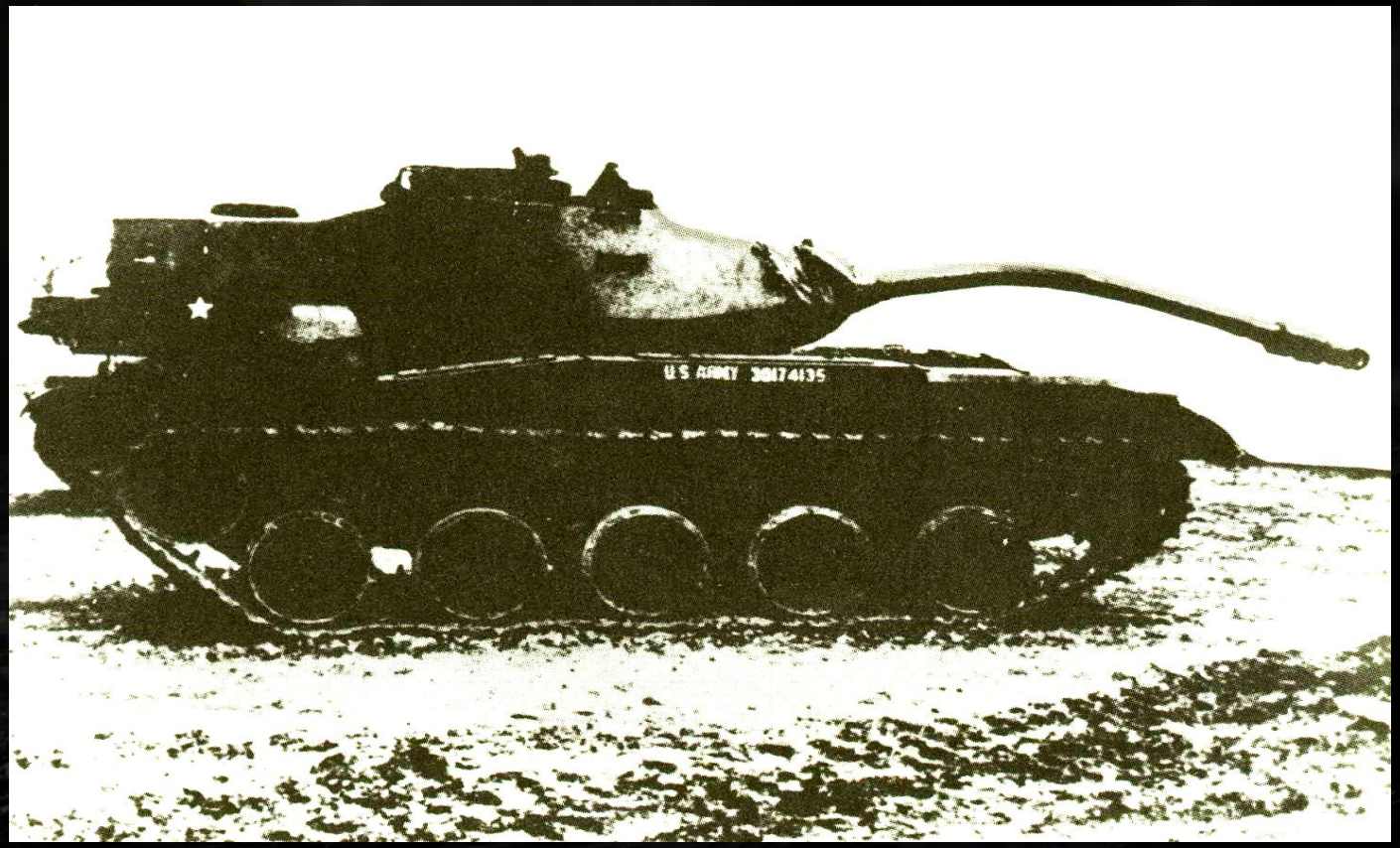
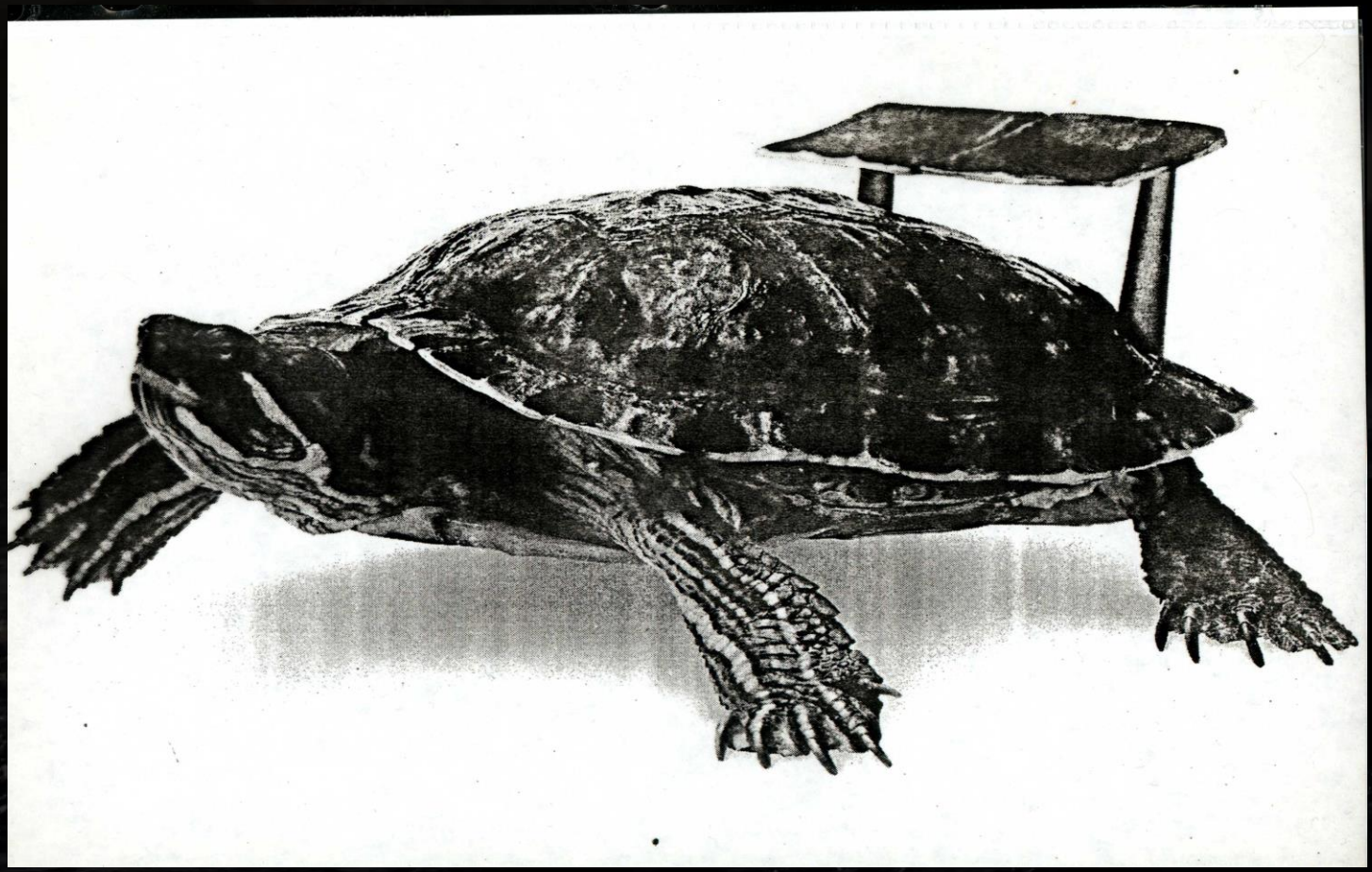
Defense Procurement in the Age of Cyber

Re-Calibraing Government and Contractor Responsibilities

Unacceptable Outcome



Unacceptable Outcome



Noah's Ark

Noah's Ark
A Mission-Critical Procurement

- Layout:
  - "Make rooms in the ark"
  - "Make it with lower, second and third decks"
  - "Make a roof"

Noah's Ark
A Mission-Critical Procurement

- God omits the obvious:
  - *Leakproof – not stated*
  - *Watertight – not stated*
- Seal:
  "Cover it inside and out with pitch"

Noah's Ark
A Mission-Critical Procurement

- What else did the specs omit or not mention?
- Whose responsibility was it to catch the oversight?

Noah's Ark
A Mission-Critical Procurement

Omitted features:

- Steerage: no rudder
- Power: cast adrift
- Safety: none in this "life boat"
- Storage for food: delicate silence
- Extent of seaworthiness: 40 days on stormy waters

- Exit for search craft:

  "At the end of forty days Noah opened the window, and sent forth a raven"

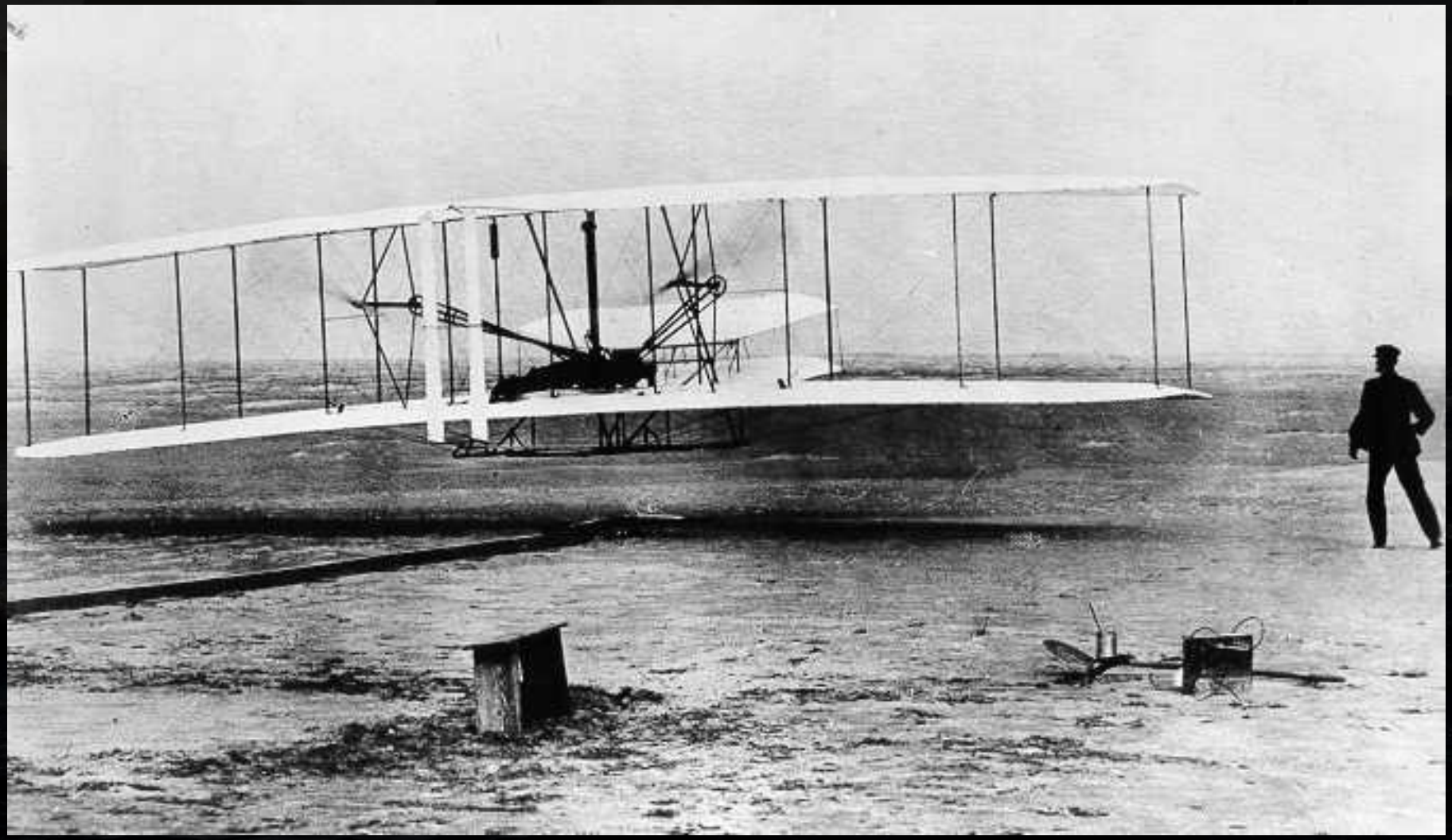
Noah's Ark
A Mission-Critical Procurement

Omitted features:

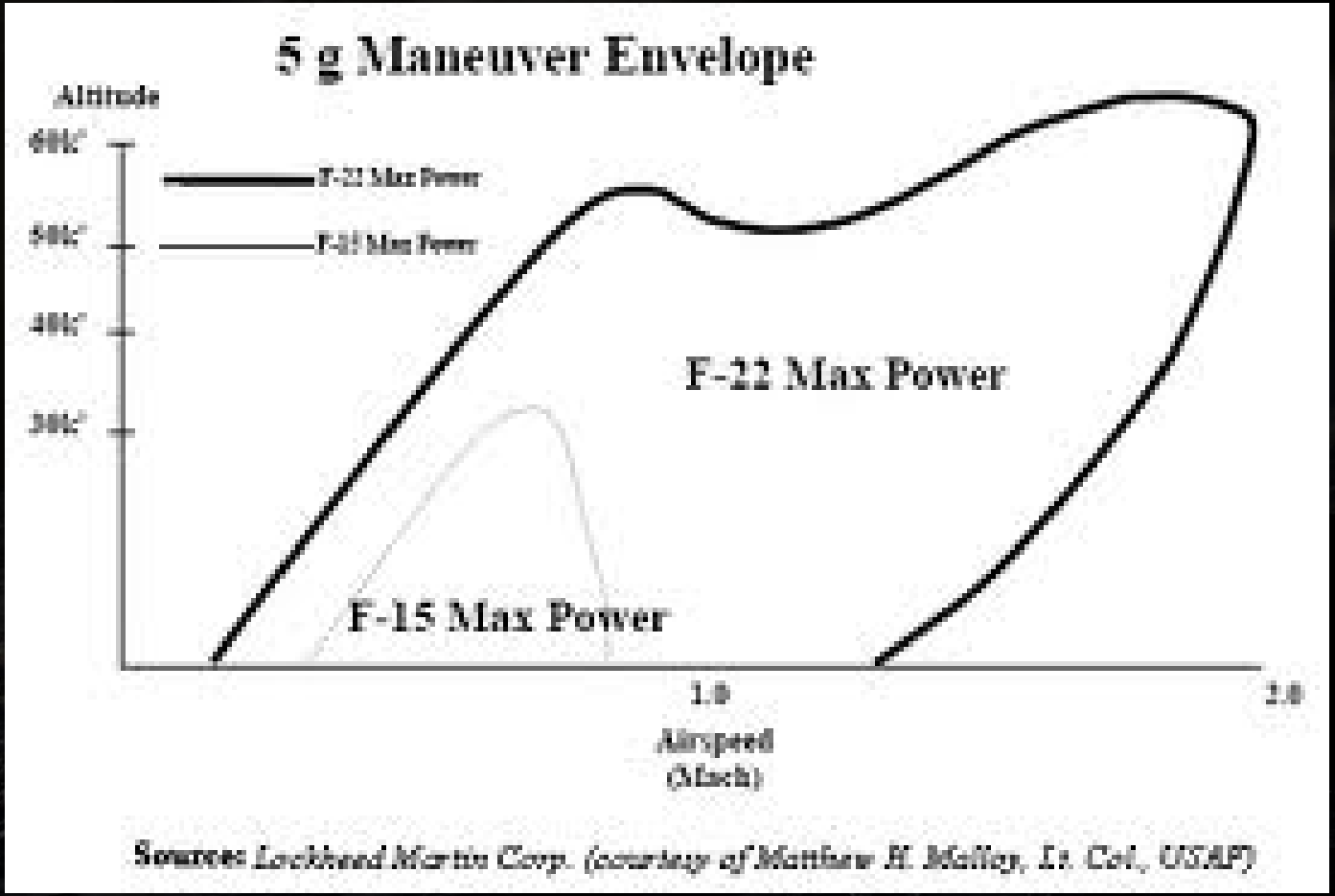
Test procedures & acceptance tests

Required the builder to trust it with his life

Heavier than air flying machine



How did US Army Signal Corps Specify the Flight Envelope?



Source: *Lockheed Martin Corp. (courtesy of Matthew R. Malloy, Lt. Col., USAF)*

How did US Army Signal Corps Specify the Flight Envelope?

4. The flying machine should be designed to have a speed of at least forty miles per hour in still air, but bidders must submit quotations in their proposals for cost depending upon the speed attained during the trial flight, according to the following scale:

→ 40 miles per hour, 100 per cent

39 miles per hour, 90 per cent

38 miles per hour, 80 per cent

37 miles per hour, 70 per cent

36 miles per hour, 600 per cent

→ Less than 36 miles per hour rejected.

41 miles per hour, 110 per cent

42 miles per hour, 120 per cent

43 miles per hour, 130 per cent

44 miles per hour, 140 per cent

How did US Army Signal Corps Specify the Flight Envelope?

5. The speed accomplished during the trial flight will be determined by taking an average of the time over a measured course of more than five miles, against and with the wind. The time will be taken by a flying start, passing the starting point at full speed at both ends of the course. This test subject to such additional details as the Chief Signal Officer of the Army may prescribe at the time.

How did US Army Signal Corps Specify the Flight Envelope?

6. Before acceptance a trial endurance flight will be required of at least one hour during which time the flying machine must remain continuously in the air without landing. It shall return to the starting point and land without any damage that would prevent it immediately starting upon another flight. During this trial flight of one hour it must be steered in all directions without difficulty and at all times under perfect control and equilibrium.

How did US Army Signal Corps Specify the Flight Envelope?

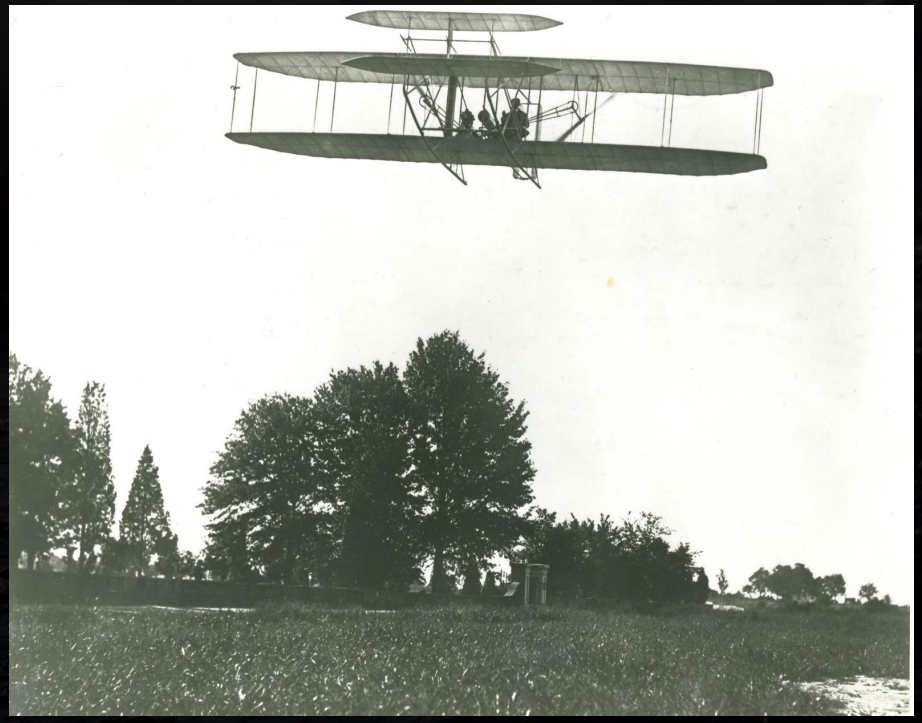
8. It should be so designed as to ascend in any country which may be encountered in field service. The starting device must be simple and transportable. It should also land in a field without requiring a specially prepared spot and without damaging its structure.
9. It should be provided with some device to permit of a safe descent in case of an accident to the propelling machinery.

How did US Army Signal Corps Specify the Flight Envelope?

- Speed: 40 mph
- Endurance: 1 hr
- Airworthiness:

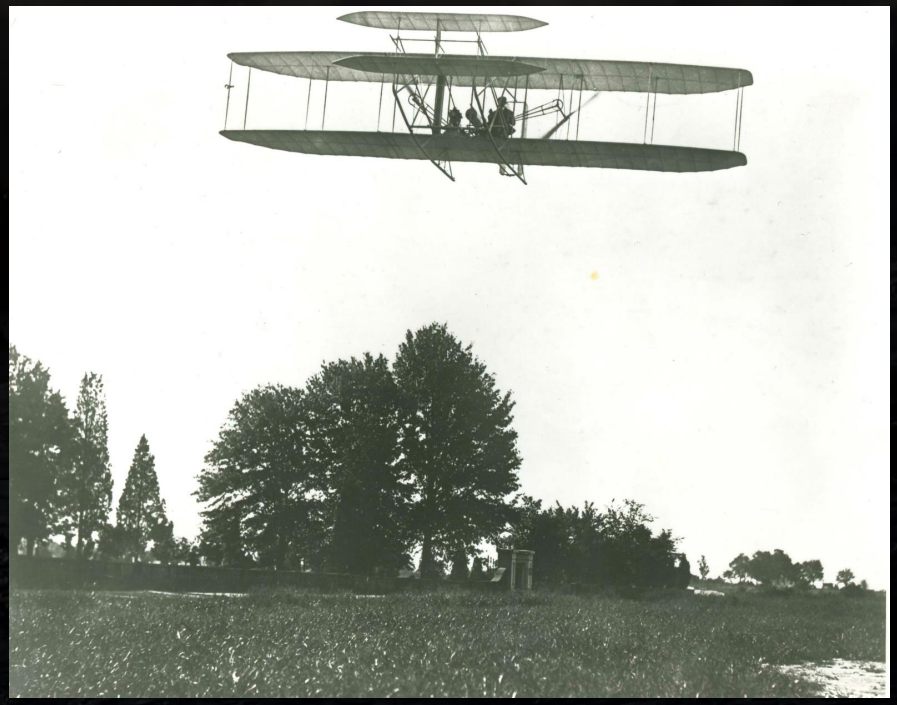
  "steered …. at all times under perfect control"

  And -- land safely



How did US Army Signal Corps Specify the Flight Envelope?

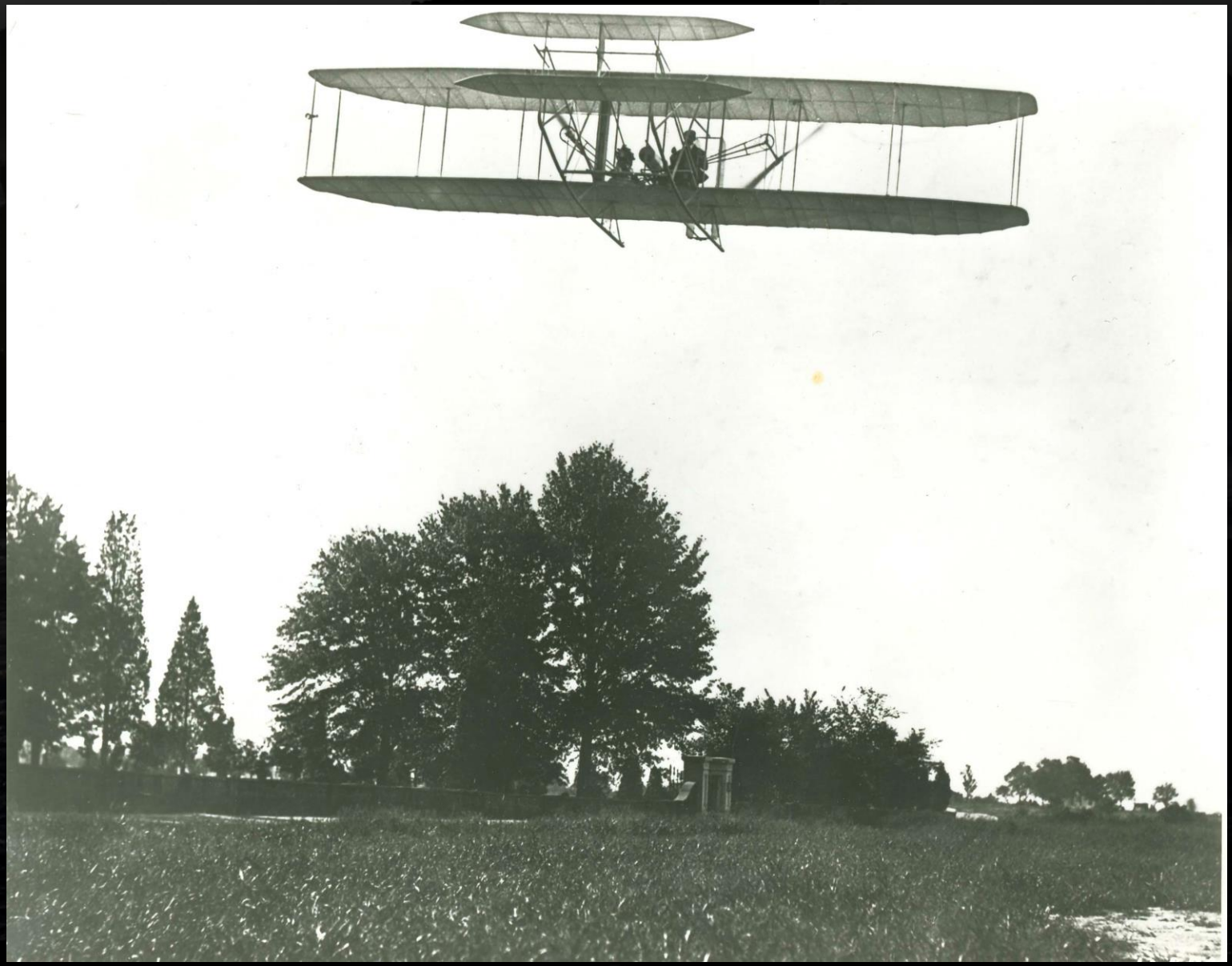
- **Altitude**:
  - None specified!
- **Test Criteria**
  - Who decides if there has been a departure from “perfect control”?



How did US Army Signal Corps Specify the Flight Envelope?

- **Acceptance:**
  - How were other key spec requirements to be tested?
  - How would disputes over test results be settled?
  - Who would own the intellectual property -- such as the patented invention of the Wright propeller design?

September 17, 1908



Agenda
Risks to Successful Procurements

- Supply chains are vulnerable to stealthy, cyber attack
- How will you address cyber risks when you advise on a contract?

Agenda
Risks to Successful Procurements

- Airworthiness can be compomised by ill-performed maintenance, repairs, and upgrades
- How will you apply the lessons of *The Nimrod Review?*

Agenda
Risks to Successful Procurements

- Regulations to improve defense procurement may undermine it
- How will you interpret the EU directives?

Agenda
Risks to Successful Procurements

- Unacceptable outcomes often begin before the contracts are signed
- How will you protect your MoD and armed forces from such outcomes?

Procurements are High Risk Work