Next in the Family: First of its Kind –

AT-1002

Outline

- **Reminder – Brain Rules!**
- **Air Tractor Family**
- **The At-1002 Specs**
- **Design Strategies**
- **Flight Test Considerations**

Air Tractor Family

Air Tractor Family (cont.)

	300	401B	402B	502A / 502B	602	802A / 802 / 802F
Engine Type:	P&W R985-AN1	P&W R1340	P&W PT6A-15AG	P&W PT6A-45R	P&W PT6A-60AG	P&W PT6A-67
Engine S.H.P.:	450 @ 2300 RPM	600 @ 2250 RPM	680 @ 2200 RPM	1,100 @ 1,700 RPM	1,050 @ 1,700 RPM	1,424 @ 1,700 RPM
Take-Off Weight:	5000 lbs.	7,860 lbs.	9,170 lbs	10,480 lbs.	12,500 lbs.	16,000 lbs.
Hopper Capacity:	320 U.S. gal.	400 U.S. gal.	400 US gal	500 U.S. gal.	630 U.S. gal.	800 U.S. gal.
Fuel Capacity:	76 U.S. gal.	126 U.S. gal.	170 US gal	216 U.S. gal.	216 U.S. gal.	254 U.S. gal.

SO WHAT'S NEXT?!

THE AT-1002!

Engine Type: P&W PT6A-67F
Engine S.H.P.: 1,700
Take-Off Wt.: **20,000 lbs.**
Empty Wt.: 9,000 lbs.
Hopper Cpty: 1060 U.S. gal.
Fuel Cpty: 450 U.S. gal.

AT-1~~0~~~~2A Cockpit

Equipment

Production Pitot/Static Probe

Flight Test Probe

Design & Safety Strategies

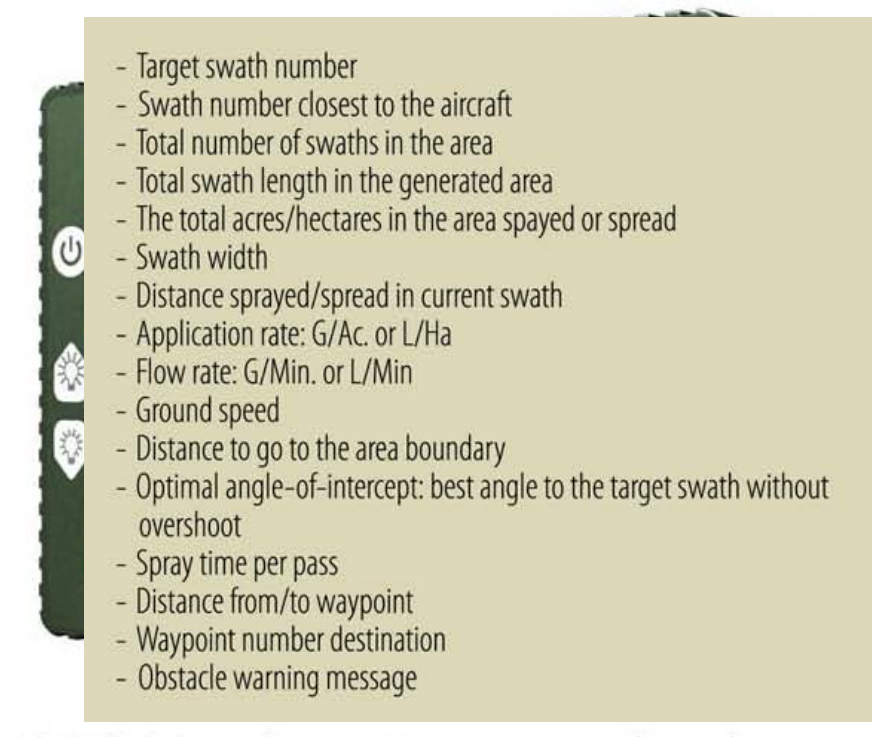
- **MISSION BASED DESIGN**
  Spray ops
  Fire Bombing
  Aerial Patrol
  Fuel Tanker

- **WEIGHT AND BALANCE**

Design & Safety Strategies

- **Missions**…

  Spray ops – Still Some Old School Operators, but the majority use:



Design & Safety Strategies

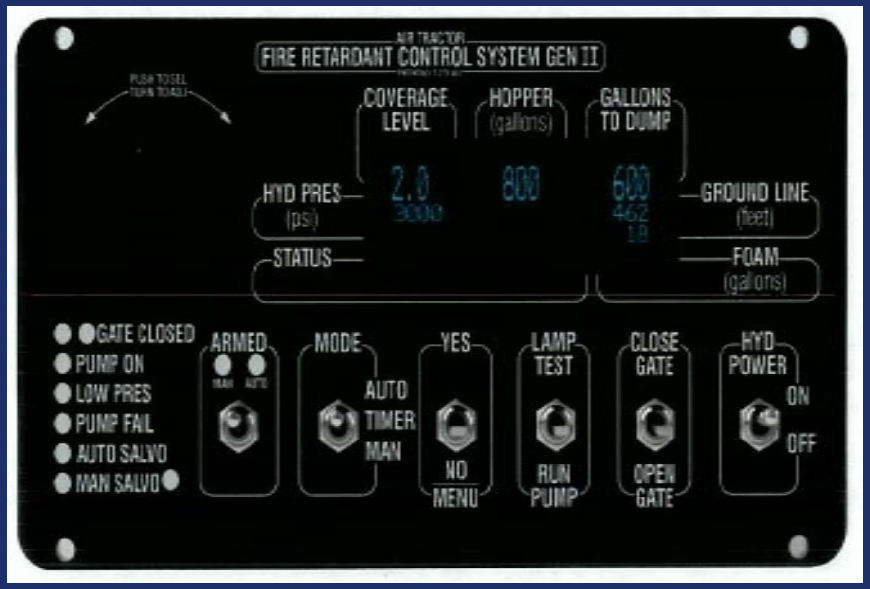
- **Missions**…

  Fire dump –

  Retardant vs. Water Dumps

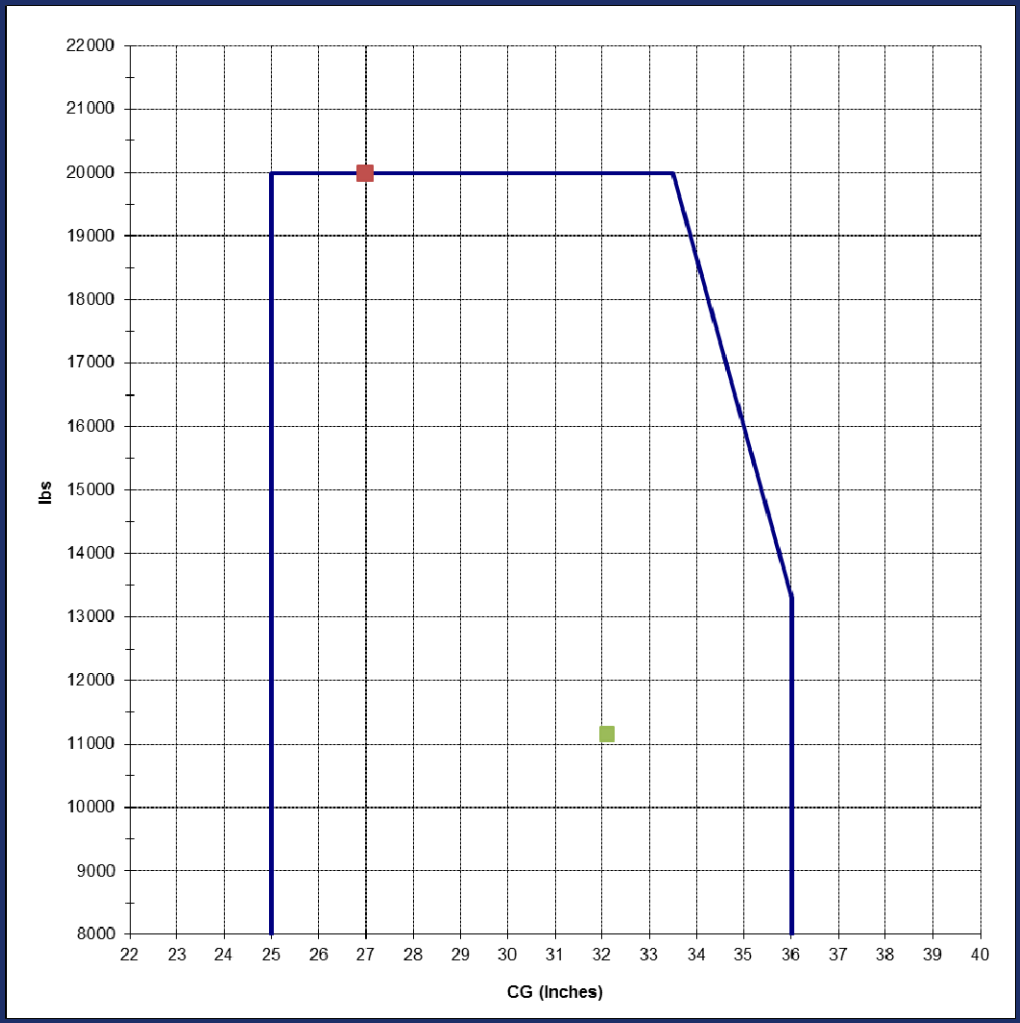
  Fire Patrolling vs. Fire Fighting

  Equipment Location & Usage



Design & Safety Strategies

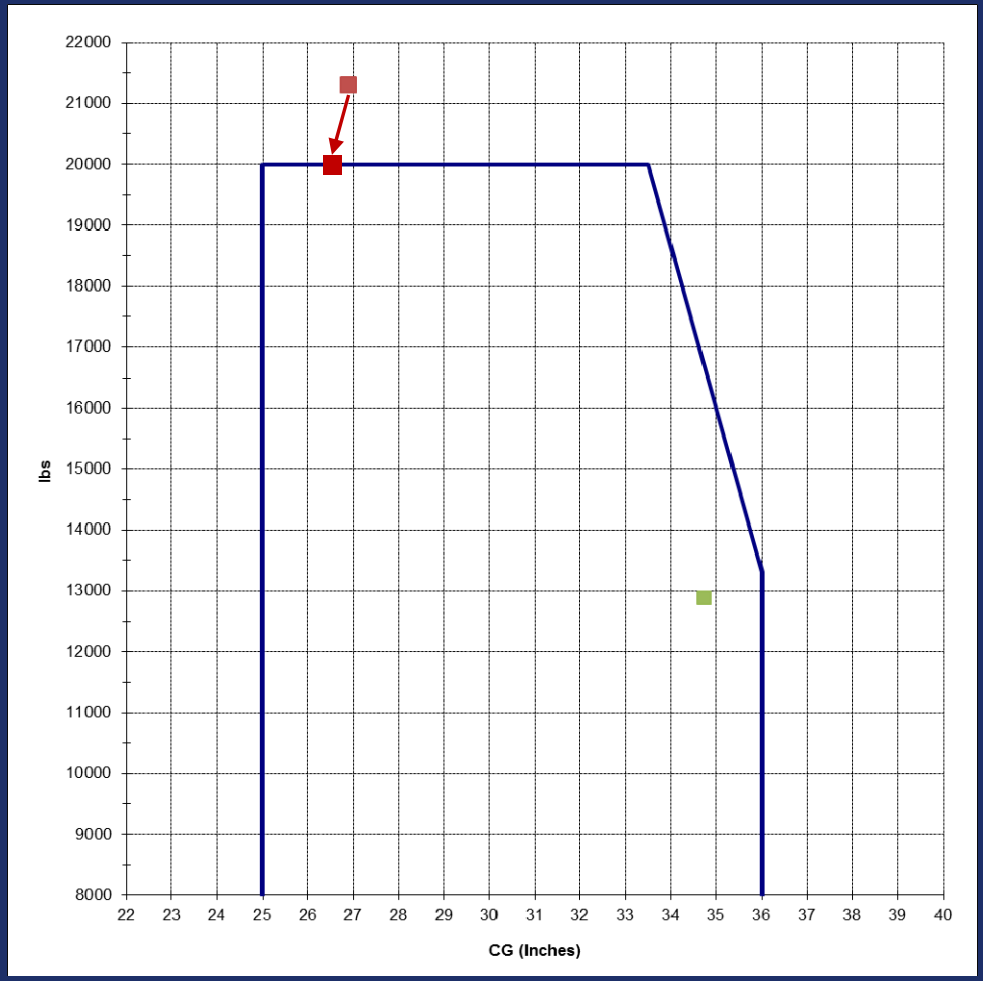
- **Fire Dump Change in Weight and CG:**
  - Full Release of the Hopper Load equates to:
    - <9000 lbs.
    - 5 in CG shift (45%)
    - All in less than 8 seconds!
  - Design Considerations?
    - Hopper and Dump Gate Locations
    - Pitch Authority
    - Trim Settings
    - Procedures
    - Training
  - Video – 200 gallon max coverage rate
  - Video – 300 gallon min coverage rate



Design & Safety Strategies

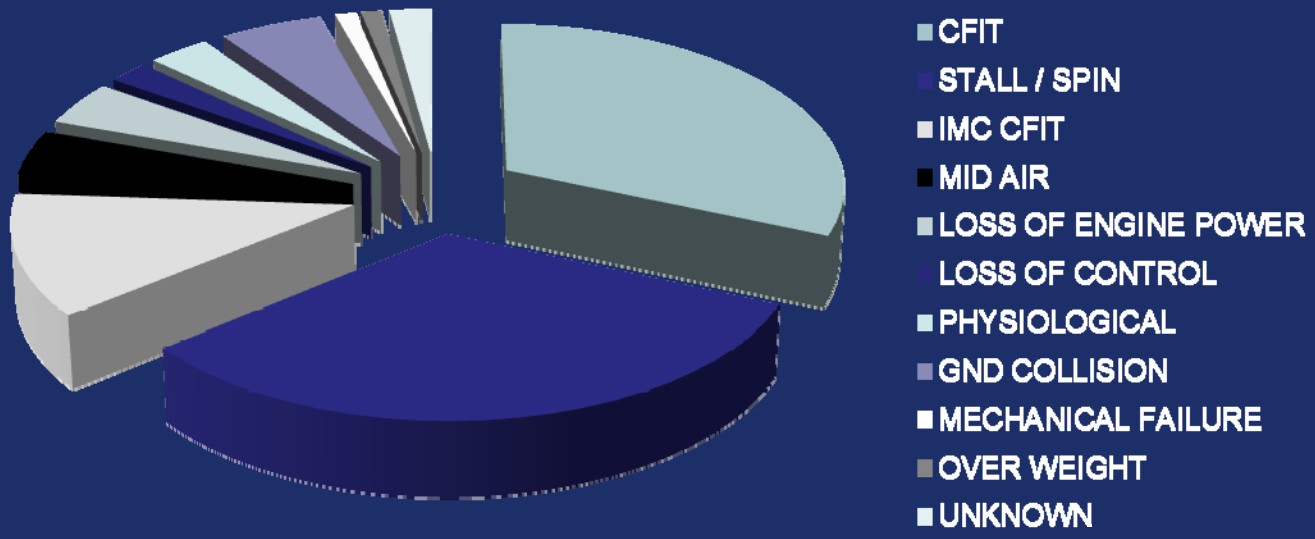
- **Weight and Balance:**
  - If you load the airplane within the limits you will be within the allowable CG range (not necessarily weight range)
    - Hopper Load – 970 gal. (Ag) or 1057 gal. (Fire)
    - Baggage Compartment – 80 lbs.
    - Fuel – 454 gal (~3060 lbs)
    - 1 Pilot

    - RED = FWD CG
      - Light Weight pilot
      - Full Hopper
      - Full Rinse Tank
      - Full Fuel load
      - Empty Baggage
    - GREEN = AFT CG
      - Heavy Weight Pilot
      - Empty Hopper
      - Empty Rinse Tank
      - Full Fuel
      - Full Baggage



Flight Test Considerations

- **BOTTOM LINE!**
  Reduce the accidents / fatalities!



Flight Test Considerations

- **Flight Test Considerations:**
  The Regulations (discuss 21.25)
  Single Pilot (Experience, Proficiency, etc)
  Installed Equipment (Avionics, Spray Equipment, Fire gate, etc)
  No autopilot
  No Recording Instrumentation System (Proposed using: Audio, Video, Hand written notes)
  No Telemetry
  No Spin Chute (why?)
  Egress Ability / Procedures

- **How do the above considerations affect the overall risk assessments?**

- **Multiple Configurations**…(what will repeat??)
  Initial TC will be Single Seat, Ag Version, VFR Only
  Follow-on Versions: 2-Seat, Fire Bomber, **IFR**

QUESTIONS