

2022 AIAA Aircraft Design Competition

## Responsive Aerial Fire Fighting Aircraft

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**AIAA**  
SHAPING THE FUTURE OF AEROSPACE

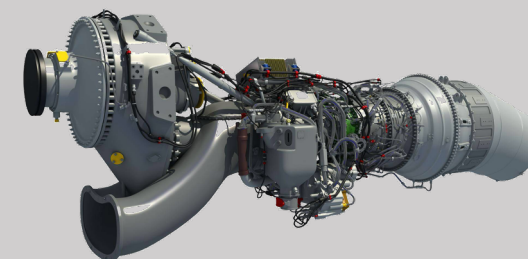


### FF-1853



- Overall length: 136.84 ft
- Empty weight: 146,600 lb
- Full weight: 296,965 lb
- Estimated position of center of gravity from the nose: 57.2 ft

### Engine



- Europrop TP400
- 4 total
- 14,850 Shaft Hp each
- Dash speed: 400 kts
- Range: 4000 nm

### Requirements/Objectives

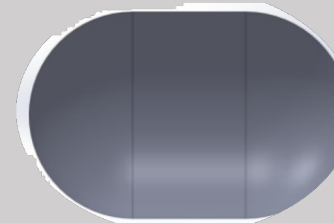
- Entry Into Service
  - 2030
  - Use existing engine/in service by 2028
- Fire Retardant Capacity
  - 4,000-8,000 gal
  - Multi-drop capable; minimum 2,000 gal per drop
  - Fire retardant reload  $\geq 500$  gal/min
  - Density  $\geq 9$  lbs/gal
- Payload Drop
  - Drop speed less than 125-150 kts
  - Drop altitude  $\leq 300$  ft AGL
- Design Radius with Full Payload
  - 200-400 n mi
- Design Ferry Range (No Payload)
  - 2,000-3,000 n mi
- Dash Speed (After Payload Drop)
  - 300-400 kts
- Field Requirements
  - Balanced field length less than 5,000-8,000 ft at 5,000 ft MSL elevation on a +35° F hot day

### Wing Structure



Wingspan:	196 ft
Chord:	28 ft
Taper Ratio:	0.357
Material:	2017-T4 Aluminum Alloy
Max Load on Wings:	229 MPa

### Fire Retardant



- Payload capacity: 6,000 gal
- 2 drops
- 2 tanks
- Tank shape: cylinder with spherical ends
- Reload: 12 min
- Density: 9 lbs/gal

### Fuselage Structure



- Dimensions
  - Height: 41.6 ft
  - Length: 67.62 ft
  - Width: 225.78 ft
- Back cargo door
- Semi-monocoque