North American Aviation P-51D Mustang

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The P51A was made to fulfill a British Order

- The P-51A replaced the Spitfire in 1940
- First flight was on October 20, 1940

https://www.flickr.com/photos/24874528@N04/28252911108/in/album-72157695881354594/

The P-51D Was The Most Popular Variant

1579 P-51A's WERE BUILT

https://loc.gov/pictures/resource/fsac.1a35324/

ABOUT 2200 P-51B's WERE BUILT

https://www.mustangsmustangs.net/p-51/variants/p51b

ABOUT 8500 P-51D's WERE BUILT

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MustangsMustangs.com

1750 P-51C'S WERE BUILT

The P51D Was A Bomber Escort Fighter

Red Tails

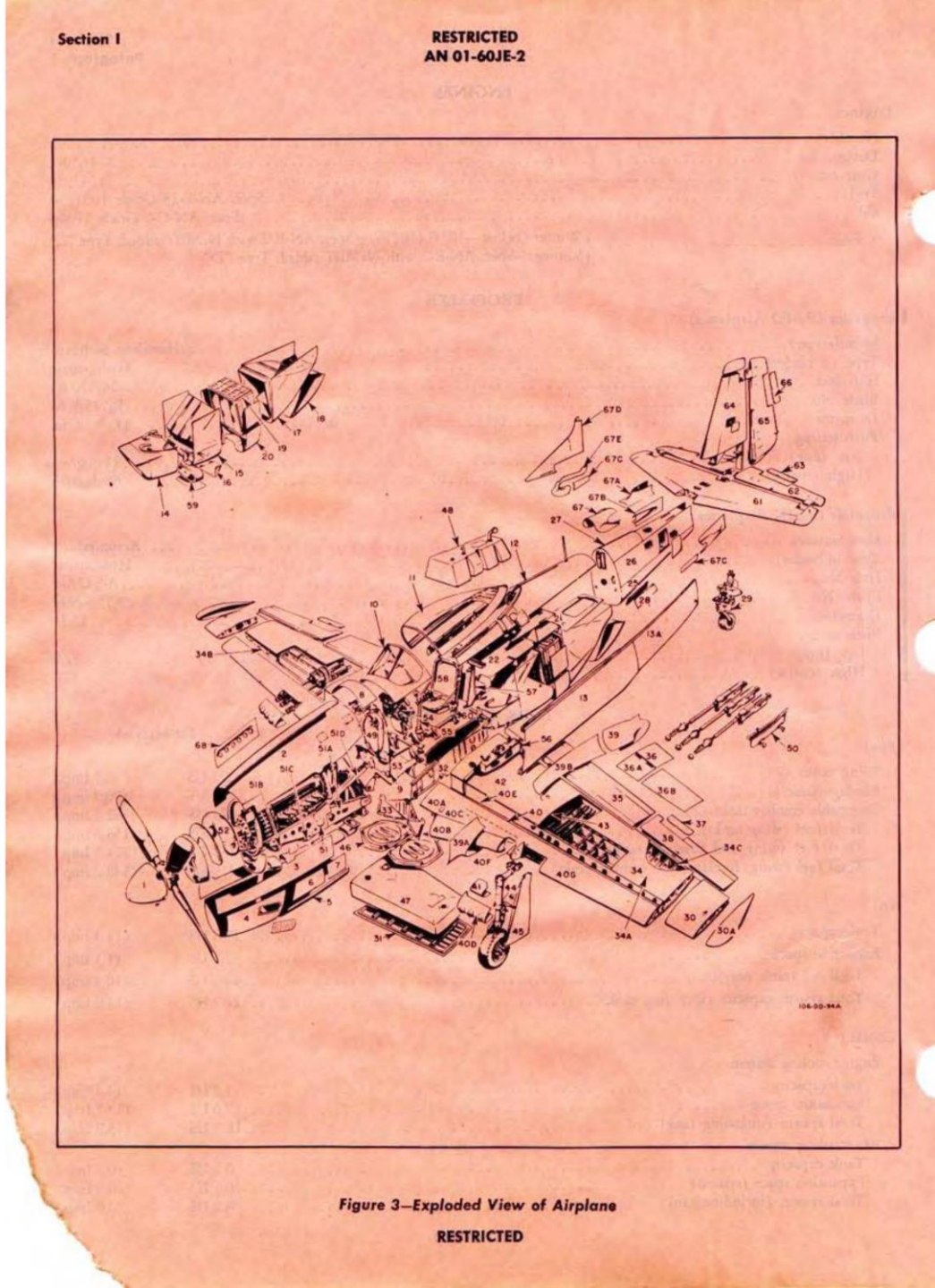
The P51 Gained Air Superiority In The European Theatre

- Before it's implementation the U.S. lost 9.1% of bombers and 45.6% came back with damaged when they were attacked.
- After it's implementation, the corresponding numbers fell to 3.5% and 29.9%

Mark Stevenson/Stocktrek Images

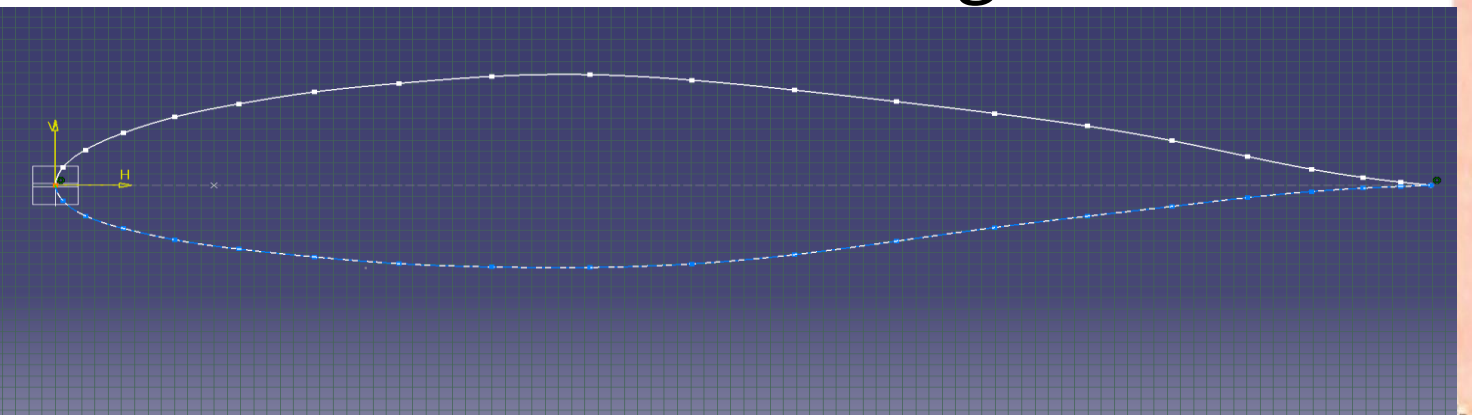
The P-51D Had An Incredible Fighting Range

- Wingspan: 37 ft.
- Length: 32 ft
- Weight: 12,100 lbs
- Max speed: 437 mph
- Cruising speed: 275 mph
- Max range: 1000 mi.
- Max range with drop tanks: 2400 mi.
- Max payload: 2000 lbs. of bombs/10x 5 in. rockets
- Armament: 6x .50 caliber machine guns



The P-51D Had Two Technical Firsts

- The P-51D was the first aircraft to employ the NACA laminar-flow airfoil design
  - The Airfoil allowed the aircraft to dive up to Mach 0.8
  - Helping the Airfoil was the Merlin V-1650 engine



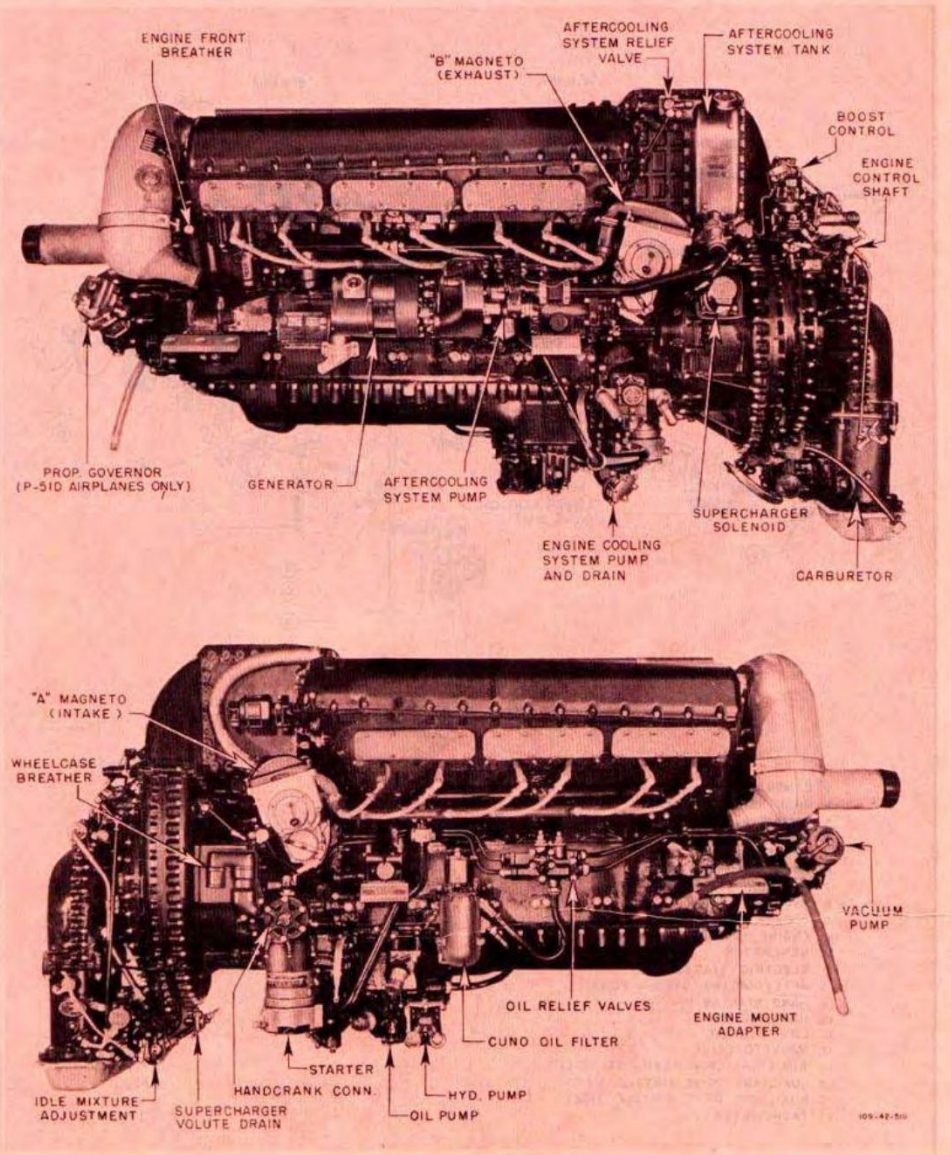
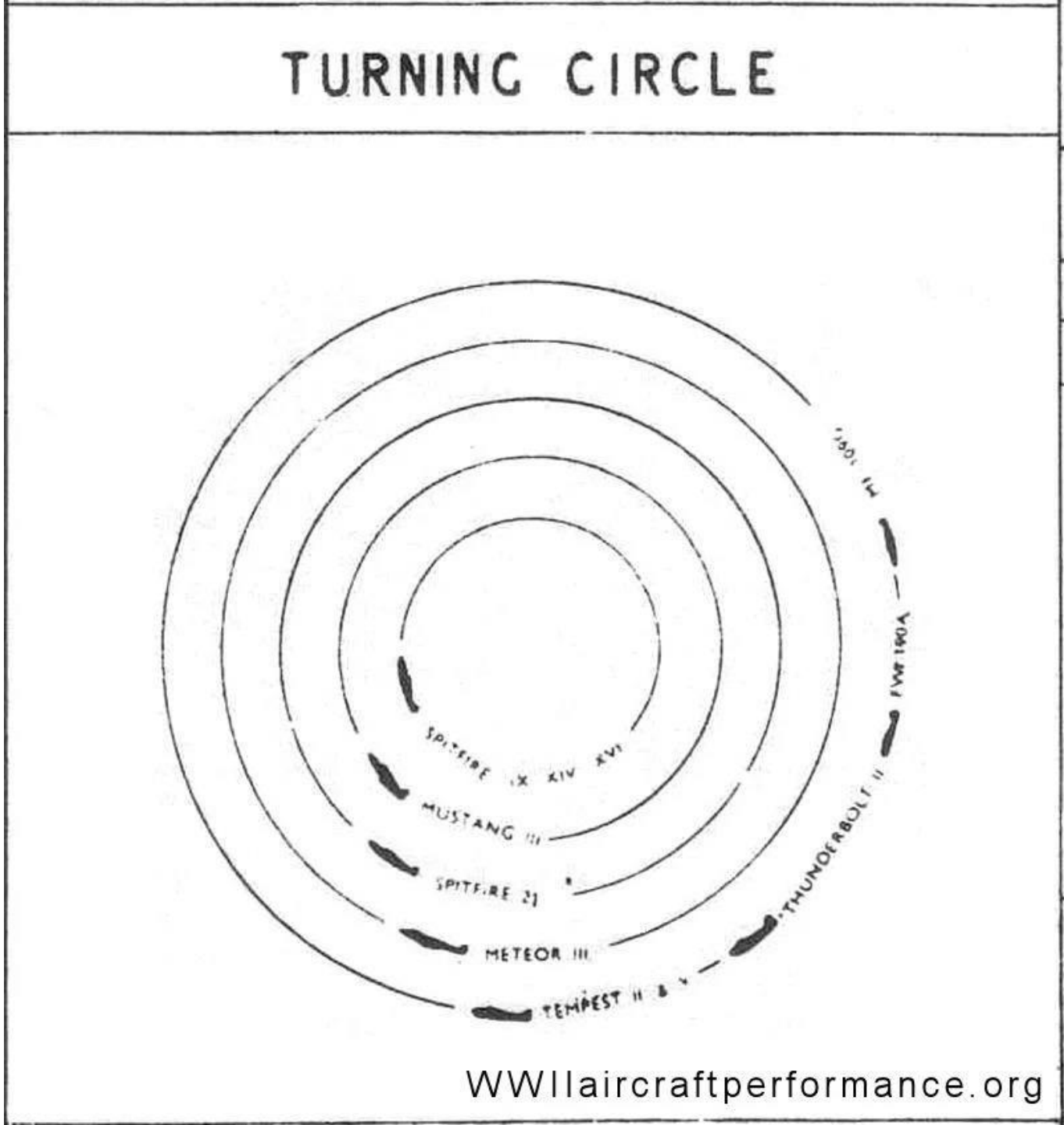


Figure 201—Engine Accessories

P51 Drawbacks

- The P51 Mustang had a long range, but wasn’t very maneuverable
- The Mustang's top speed was reduced significantly at higher altitudes



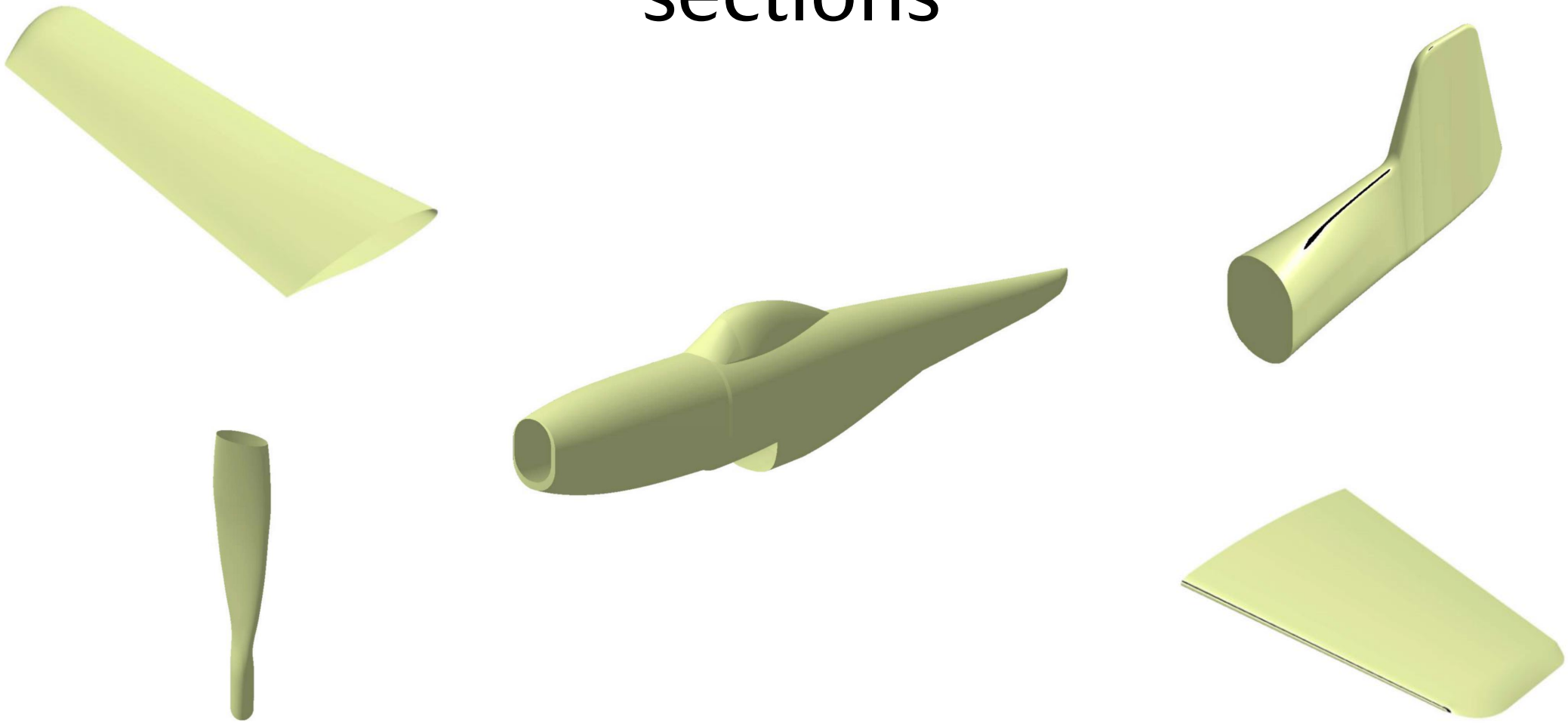
The P51 Was Replaced by Jet-Fighters In The Korean War

https://www.dvidshub.net/image/2503535/formation-legacy-hertiage-flight-merges-aviation-past-and-present

The P-51D Is Popular With Civilian Fliers

ttps://www.aopa.org/news-and-media/all-news/2016/february/17/unlimited-passion-for-aviation

We chose to model the aircraft in multiple sections

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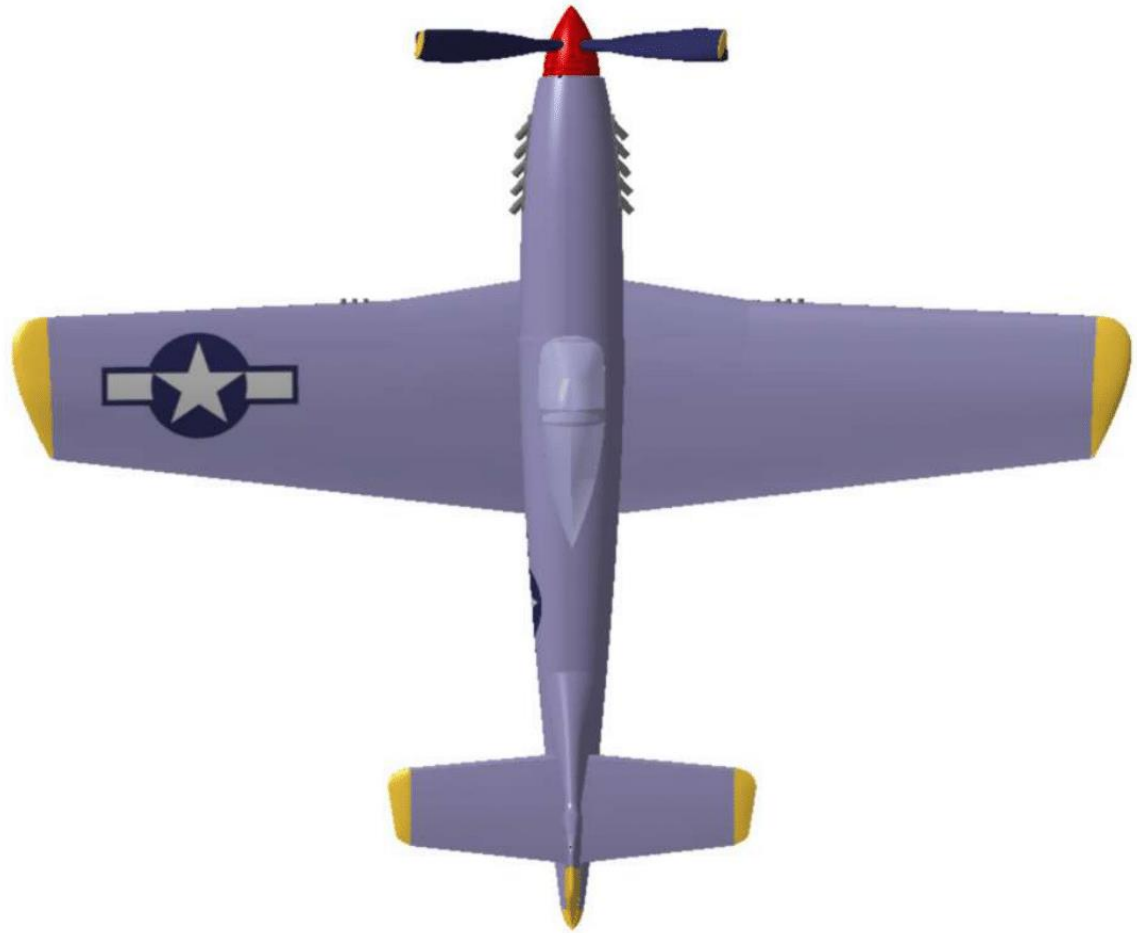
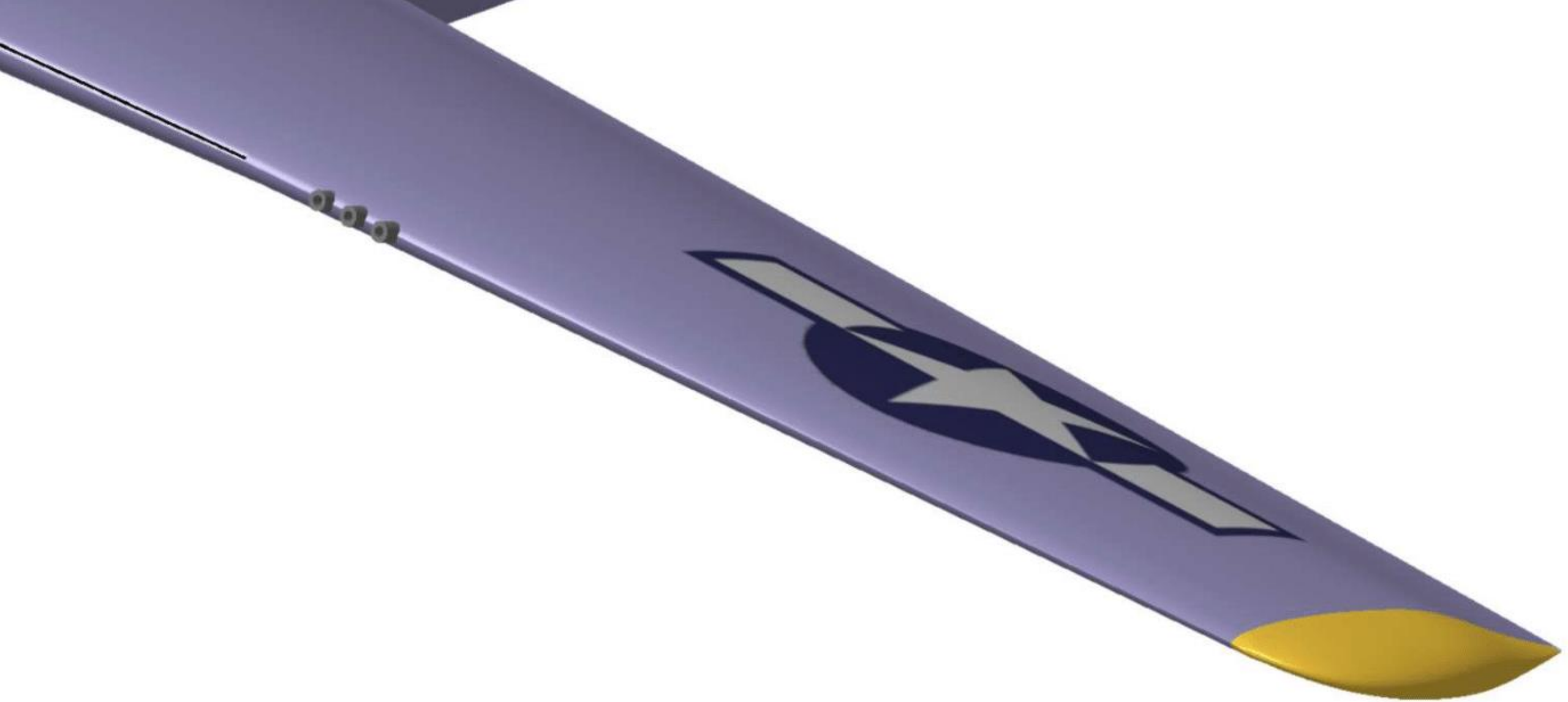


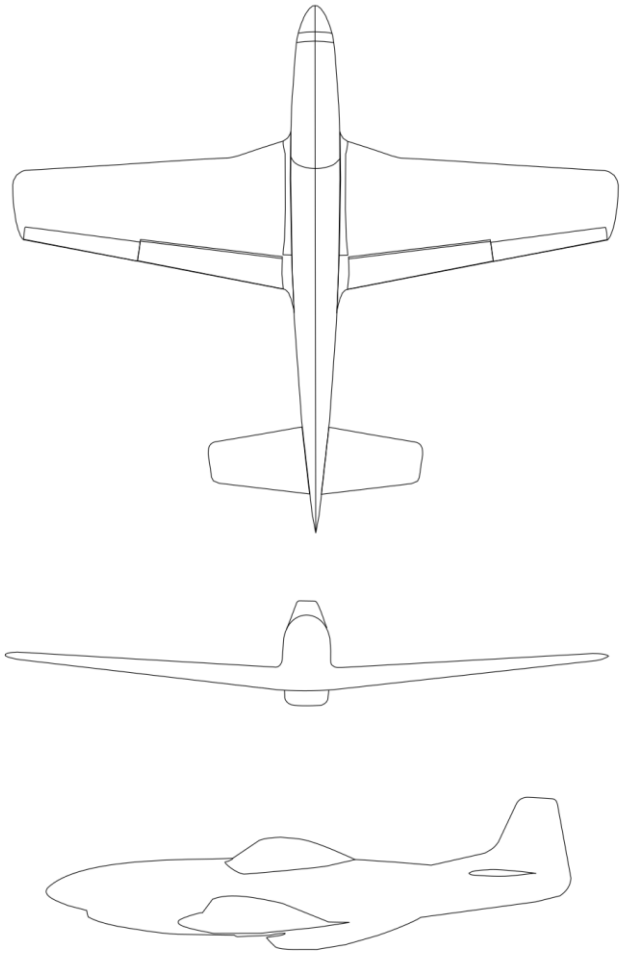



Blondie


Blondie

We learned…

- How to render images using CATIA
- Overlays in CATIA
- Colors/Material renders
- GSD tricks (Blend, Multi section surface)
- Airfoils/NACA airfoil codes



Challenges/Difficulties Encountered

- Complex shapes in CATIA can be very difficult
  - The Wing tips and Vertical tail were especially hard
- Finding accurate dimensions
  - It took us a week or so to find most of our dimensions
- Making sure the parts fit together
- Stickers had to be applied one panel at a time
  - This approach leads to clipping