

This document is a suggested format to base your final report on. We welcome creativity and would encourage your own unique format, as long as the main points are clearly presented. In the end, use your best judgment.

Title Page

1. Problem and Approach

1.1. Design Specifications:

- List design requirements in a table:

Number of Passengers	...
Weight of Cargo	...
Range	...
TOFL	...
...	...
...	...

- Summarize the general design/sizing procedure 2-5 lines

1.2. Wing Sizing Results

- 4 Required plots:
 - o AR vs DOC for all Aluminum over multiple sweeps
 - o AR vs DOC for all Composite over multiple sweeps
 - o AR vs TOGW for all Aluminum over multiple sweeps
 - o AR vs TOGW for all Composite over multiple sweeps
- Briefly discuss the wing sizing trends and how the optimal values were expected to differ for the 2 different aircraft 3-7 lines
- May also include the hybrid wing sizing as two extra plots as well

1.3. Primary Analysis: Detailed Composite vs Aluminum

- Compare the weight of major aircraft components for all three configurations
 - o Wings, Fuselage, Nacelles, PP, Tails, Fuselage, Fixed Equipment ect.
 - o May be presented as a table or graph as long as numbers are clear
 - o Ex)

Component Weight Breakdown	Full Aluminum	Full Composite
Wing		
Tails		
Power Plant		
....		

- Compare the fuel burned for all three configurations
- Qualitatively and quantitatively compare performance, cost, risk, and DOC
 - o This section should contain the majority of the report's critical comparison and presentation
 - o 1-4 pages including plots and tables

1.4. Secondary Analysis

- May use this space to present additional analysis performed, if applicable

1.5. Aircraft Comparison Specs

- Following is required for all 3 aircraft:

Model	All Aluminum		Composite
Wing			
Area (ft ²)
Span (ft)
AR		...	
Sweep		...	
Thickness (t/c)		...	
Airfoil Type		...	
Taper Ratio		...	
Fuselage			
Diameter			
Length			
Aisle/Abreast			
Structure			
Material(s)			
Engines			
Number			
Type			
Thrust Per Engine (lbs)			
Weight			
TOGW			
OEW			
Payload			
Fuel (lbs)			
Cost			
DOC			

- Required plot: Payload Range Chart

2. Results and Conclusions:

- Given the analysis of 1. above, describe the basis for the selection of the preferred design airplane: composite, aluminum, or a combination.
- Part 1 was critical comparison; Part 2 is now critical analysis justifying your selection
- May be qualitative analysis as well
- Should contain majority of reports analysis based on the above data

3. Description of the Configuration:

3.1. Wing and Tails

- Briefly present volume coefficients and basis for sizing wings and tails:
- Fuel tank sizing
- Spar locations

- Control surfaces if applicable

3.2. Fuselage and Exterior Configuration

- Briefly discuss justification for selecting the following secondary parameters:
 - o Fuselage Shape, Nacelle Sizing, Landing Gear, Cargo Containers ect...

3.3. C.G Design

- Present all 4 C.G. design scenarios
- Summarize 4 locations as well as operational weight **in a table**

3.4. Interior Configuration

- Describe selection process and reasoning for 2 class interior configuration: seats, pitch, aisle width, # lavs, # galleys, # carts, doors type , # exits, ect..
-

3.5. Selected Aircraft Configuration

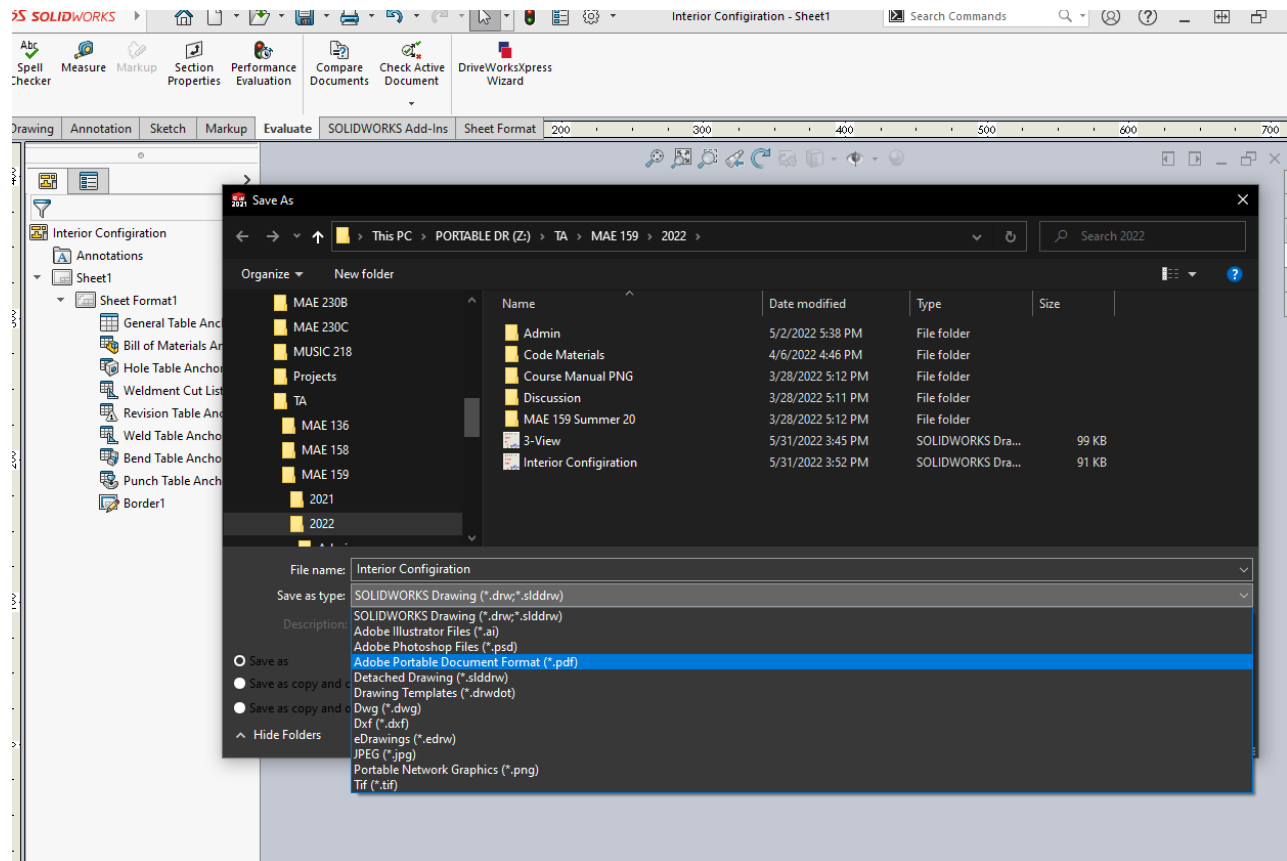
Final Detailed Layout of Aircraft X2 (Alu vs Comp)	
Aircraft Configuration	...
Wing Specifications	
Planform Area (ft^2)	...
Span (ft)	...
Aspect Ratio	...
Sweep	...
Taper Ratio	...
Root Chord (ft)	...
MAC (ft)	...
Dihedral Wings	...
Tails Specifications	
Horizontal Specifications	
Planform Area (ft^2)	
Span (ft)	
Aspect Ratio	
Sweep	
Taper Ratio	
Root Chord (ft)	
MAC (ft)	
Tail Arm Horizontal	
Dihedral Horizontal	
Vertical Specifications	

Planform Area (ft^2)	
Span (ft)	
Aspect Ratio	
Sweep	
Taper Ratio	
Root Chord (ft)	
MAC (ft)	
Tail Arm Vertical (ft)	
Dihedral Horizontal	
Engine Specifications	
Thrust	
Inlet Diameter (ft)	
Length (ft)	
Weight	
Fuel Tank Specifications	
Tank Volume	
Span Wise Location (in)	
Landing Gear	
Nose Gear Config. (# Wheels)	
Tire Size: Nose Gear	
Main Gear Config. (# Wheels)	
Tire Size: Main Gear	
Aft CG Angle	
Tip Back Angle (Lengthwise)	
Tip Back Angle (Spanwise)	
Landing Gear Weight (lb)	
Cargo Specifications	
Cargo Container	
Cargo Volume (ft^3)	
Interior Layout	
Main Door Type and Dimensions	
Emergency Door Type Dimensions	
First Class	
Number of Pax	
Seat Depth	
Seat Pitch	
Aisle	
# Galleys	

# Lavatory	
Economy	
Number of Pax	
Seat Depth	
Seat Pitch	
Aisle	
# Galleys	
# Lavatory	

4. Configuration Drawings

- Export Solid works drawings as a .pdf:



- Use a .pdf combiner to add drawings either in the middle of the end of report
- If added at the end, make a note in section 4 that drawing are located at the end of the report
- MAX size Sheet B (11x17)
- MIN size Sheet A (8.5X11)
- LANDSCAPE SHEETS ONLY
- Don't paste .png, .jpeg, or a screenshot of drawings in your report as final drawings
- Don't turn in a screenshot of a sketch as your final drawings

5. Conclusion
 - ½ page on final thoughts
6. Works Cited

Do not include appendix in final report