

### **Requirements for Final Presentation/Design Review and Report**

*Objective:* Present and document the basis for the airplane configurations being studied, and the initial sizing results. *You must demonstrate good progress and **technical depth** in your evaluation of the two or three concepts.* You will work in much more detail during the second semester on your “preferred concept.” Make sure you respond to the Mid-Term Design Review comments. This presentation builds directly on that work.

Pay special attention to responding to the RFP. If you created the RFP, explain the basis. Show the importance of advanced technology in making this design a reality. Besides TOGW and cost(s), identify qualitative and subjective issues which arise but which can’t be quantified easily. For the AIAA include noise and fuel burn relative to the RFP req’ts. Bottom line: what are the drivers for this design, how do your configurations reflect these imperatives? Describe the selection criteria used to choose the preferred concept. Software folks describe this in terms of a Requirements Traceability Matrix, which is a very descriptive term for what we need.

Important: Reread the RFP before designing your report and presentation:

1. Demonstrate a thorough understanding of the RFP requirements (interpreted to mean both mission requirements and “the problem,” as exemplified by current aircraft)
2. Identify critical technical issues and problems associated with designing the RFP aircraft. Describe your approach to handling these issues. This means defining your criteria for considering possible solutions for critical issues, and providing an analysis that can be used to evaluate your designs against the criteria.
3. Identify key decisions. Establish a quantitative basis for arriving at your preferred concept. The Pro/Con evaluation of your concepts to select the preferred concept is critical.

### **Fall Semester Final Presentations (45 minutes + 10 minutes Q&A)**

Open Presentations, the entire class can attend, and in fact each class member must attend two presentations, in addition to their own.

#### **Follow the schedule sent out separately**

Use the same basic requirements from the midterm presentation. Include but de-emphasize mid-term material slightly and emphasize progress since midterm. However, the presentation covers the entire semester. A totally new listener should be able to follow the presentation. Learning from your midterm, improve the quality of your presentation organization to tell your story.

Repeating some items from the list for the mid term design review:

- Your analysis of the RFP. What *is really important*?
- Key mission and specific project objective “drivers” -  
as listed in the RFP, how do these requirements affect the choice of a concept?
- Discuss your concept matrix, with the concept contributions that resulted from your comparator aircraft studies. Explain the reasons for your choices.  
How does each concept address the mission drivers and project goals? How did you arrive at your team’s final concepts? Define the selection criteria, *and* the decision making process and supporting technical/business/marketing analysis, emphasizing the critical fundamental configuration decisions (pro/con charts, *etc.*).
- What is your analysis/assessment of these concepts?
- What is your position on the role of advanced technologies?

- How did you arrive at a preferred concept?
  - tradeoff studies and selection criteria; *the decision making process*.
- Discuss your operation and organization as a team, and any problems.

### **1st Semester Final Report**

- Page limit: 65 pages including 4 fold outs (11 x 17 or 22) max
- This report should be considered the basis for the first half of the report to be submitted at the end of the Spring semester. If you are doing the AIAA design project, follow the RFP proposal guidelines, including your AIAA membership number.

Note: The graded 1st semester report must be kept and resubmitted with the “draft” of your proposal in the second semester. It will be used to make sure the second semester report incorporates the comments made in the 1st semester evaluation and that progress is evident.

Groups should be careful to save art and text for future use. Establish an art bank.

*Specific items of work to be included in the final presentation/report:*

- “Up and away” and “field performance” analysis relative to requirements.
- Selection of preferred concept, including *T/W* and *W/S* constraint diagrams and carpet plots (with constraints) and Pro/Con chart(s).
- Explicit consideration of issues and requirements identified during the mid-term review
- Include cost and fuel burn: considerations/analysis.
- Describe your cabin layout and basis for selection.

*Rework of work previously described in mid term presentation:*

- Consider the mid-term design review requirements and respond. General improvement required for final report/presentation relating missions and concepts, technology used, and the aircraft family concept. The concepts shown in the mid-term presentation should be revised to be more realistic. Ideally, they should be redrawn by one person to the same standard. These can be saved for the final report in the spring.
- Progress on control power critical aspects of the design and the materials selection/structural analysis should be evident. What are requirements that must be met?
- Identify advanced technologies considered and employed in the design: Why?

*Broad Scope of Report (determination of exact format is part of assignment, creativity allowed)*

#### I. Introduction and Summary

#### II. Understanding “The Problem”

Discuss the mission(s) to be flown, cost and technology issues, and identify the issues associated with current aircraft (use comparator aircraft study).

#### III. Configuration Concepts

- Write to reflect understanding of the problem. How do the concepts relate to the mission requirements?

#### IV. Sizing and Performance of Concepts

#### V. Evolution, Selection and Description of Preferred Concept

- include operational, cost/manufacturing, and other considerations

#### VI. Project Status and Plan for 2nd Semester.

Appendices: Technical Analysis Supporting Design Decisions

Note: *All* material and figures used from other sources must be properly cited.