

AOE 4154 AEROSPACE ENGINEERING LABORATORY LABORATORY REPORTS

An important part of an undergraduate engineer's education is to learn how to write technical reports. Technical reports are perhaps the primary means of communicating the results of engineering work. Another major means of communication is the verbal presentation. Verbal presentations are usually organized the same as reports and, in fact may be condensed versions of technical reports where the figures are presented as slides or transparencies. In any case, it doesn't do anyone any good if engineering design studies, research etc. are done unless the work can be communicated to others.

After graduation employed as engineers you will undoubtedly be responsible for writing reports when you become full project engineers or even before. The laboratory report format described below is essentially an abbreviated version of the format used in industry and research labs.

Basically, the report should be a self-contained description of the experiment, background, apparatus, technique, applicable theory, results and interpretation of results. The report should be complete enough so that someone could repeat the experiment independently (based on information only in your report) and get the same results. This does not mean that the report has to be long or filled with padding. It is possible to say a lot in just a few sentences if the writing is carefully thought out and you know the subject matter. Generally speaking, the report should contain sketches or drawings of the test apparatus and models used, as well as plots of reduced data. Drawings and graphs are very effective and efficient ways of communicating information.

It is important to make every effort to use proper grammar, spelling and punctuation. Sloppy report writing indicates careless work and poor understanding of the subject matter and does not inspire confidence in the report writer. This is especially true in industry where sloppy work reflects poorly on the employer as well as the writer. For this reason it is important to master report writing as soon as possible in your career.

The major sections of the laboratory report are delineated below with a brief description of the purpose of each section. This description of report format should be used as a checklist after writing each report to make sure that you have included everything needed for a self-contained description of the experiment.

Title Page Make up a concise title (5-10 words) that adequately identifies the experiment. Include course name, number, instructors, lab section and date.

Abstract Concise (3-5 sentences) description of what the experiment was about and results. This is not the same as a background discussion or introduction. It should be a summary of the most important observations and conclusions of the experiment and complete in itself. You should put some thought into writing abstracts, as they are commonly used in computerized listings and may be the only part of your report most people will read. The abstract, though it appears first in the report, should be written last by the author, after all other parts of the report have been completed.

Introduction General discussion of theory and background information on the experiment. Indicate importance, relevance, and purpose of experiment.

Description of Experiment Describe test apparatus and model used, if any. Sketches or drawings of apparatus and models should be included. Sketches or drawings should include key dimensions. Include enough information so someone could duplicate the experiment independently using just the information in your report.

Describe the calibration procedure and indicate calibration factors if applicable. Describe electronic equipment, recorders (model numbers, make etc.). Describe experimental procedure, that is, how you performed the experiment.

Results of Experiment Describe the data, how data reduction was done and formulas used in data reduction. For example, definition of lift and drag coefficients and resolution of normal and axial forces into lift and drag forces. Describe the data, referring to figures (graphs or plots). Include a discussion of what you think the data indicates or means, that is, your interpretation of the data.

Conclusion Overall summary of the experiment and what the results of the experiment indicate. Significance of experiment.

References List of outside sources of information referred to in the text of the report.

Figures Figures may be interspersed in the main body of the report near where they are first referred to in the written text or put all together at the end of the report.

Appendix or Appendices An appendix is used to describe or discuss something not essential to the main text of the report, but which is useful for someone who may want to check your results or delve into the subject matter in more depth.