13.012 Hydrodynamics for Ocean Engineers Laboratory Reports

Report Guidelines:

At the completion of an experimental investigation, a report must be written that explains the design of your experiment in a manner that will permit others to understand and repeat your measurements, and presents an analysis of your data, including a discussion of its limitations, and the conclusion you draw about the posed problems. This report should be as concise as possible. In order to get in the habit of writing in an acceptable technical format each report should contain the following sections:

1) An **abstract** that gives a 30-50 word summary of the experimental objectives, the results obtained, and any important conclusions. This should be the last section to be written but is placed at the head of the report to entice others to read further. It should also contain measured values where pertinent.

2) An **introduction** that outlines the objectives of the experiment and provides the theoretical background needed for its understanding, the data analysis, and the conclusions that can be drawn from the measurements. This is often the appropriate place to include the answers to the pre-lab questions. Give references to technical works consulted in this and other sections of the report.

3) A **results** section in which the data is presented in a reduced form, using graphs where possible, and in a manner suggested by the theoretical models discussed in the introduction. Select the graphs with care and direct them towards the conclusions you expect to draw in your discussion. ***In your graphs be sure to show appropriate error bars on your data point*****s**. It is not necessary to present every experimental measurement in your report, although these should all be recorded in your laboratory notebook.

4) A **discussion** section that evaluates your results in the context of the theoretical predictions and the results of previous measurements, and also draws conclusions about the suitability of the system for the postulated task. This section ***MUST*** evaluate the sources of error in your measurements, identify any limitations of the techniques used, draw conclusions from a comparison of your data to theoretical predictions, prior experiments, and accepted values for measured parameters, and make recommendations for ways in which the experiment could be extended or improved. The discussion section is particularly important as it communicates your understanding of your experimental results and their relationship to the original questions posed, (this is the appropriate place to include the answers to any post-lab questions posed in this manual). This section should not become a sequence of off-hand comments and complaints, justify your statements. The treatment of errors in data and how they propagate through calculations will be handed out in class. The overall report must be typed using a word processor and should contain no more than three typed pages of text. Graphs should be produced using MATLAB or some other plotting program.

All reports are to be prepared individually, however, since the experiments are a joint effort, data can be reduced and conclusions discussed by the group. References to collaborators and information sources consulted must be given in the text. The quality of the text and the technical content will be taken into account in assigning the grade. Reports of poor quality, or those that fail to follow the required format, will be returned for editing. It is good practice to edit your material before handing it in to the Technical Assistants. SI units must be used.

Reports are due in the next laboratory period following the completion of the experiment. Reduced credit will be given for late reports.

