



CITY COLLEGE OF SAN FRANCISCO
DEPARTMENT OF ENGINEERING AND TECHNOLOGY

THE LABORATORY LOGBOOK

The educated technical individual will usually be involved with two types of written records: (1) the laboratory logbook and (2) the semiformal and/or the formal laboratory report. These types of writing both contain technical information, but they are not prepared in the same manner or at the same time.

The laboratory logbook is a running record of daily activities and is completed in chronological order as experimental work is being readied, done, and analyzed. The informal and formal reports are prepared from the logbook at the end of a period of time (progress report) or at the completion of a project by the person who usually has supervisory responsibility. The laboratory log is used to assist in the preparation of these reports.

It should be noted that data copied from scratch paper, in order to keep the log neat, is not legally acceptable data. Furthermore, such a procedure does not fulfill the intent of the laboratory log. The experimenter must learn to record data in a form that can be read and interpreted as the experiment is performed. This form of logbook entry helps keep the laboratory log from becoming an art project.

Remember that the log is an official record that must be clearly understood by another person in your absence. You should also remember that a signed and dated bound-type laboratory logbook serves as the official (legal) record for technical experiments that lead to patent applications. Because the log is an official document admissible in a court of law, the experimenter should understand that all erasures are looked upon with suspicion. **RECORDING ERRORS SHOULD NEVER BE ERASED!** They should be indicated as an error by drawing a single line through them. Indicating the (possible) error in this way retains the measurement for future use if it should be found important. In some experiments the possible error is the only interesting part of the experiment and the measurement would be completely lost if it were erased.

The following suggestions will help you maintain the laboratory log. Remember that the order in which the items are listed are not necessarily the order in which they appear in the log. The order in the log is always chronological.

1. NAME AND DATE

The experimenter's name and the date must appear at the beginning of each day's work and at the top of each subsequent page. (Some organizations require a witness to sign the log also. In academic situations the witness is usually the laboratory instructor.)

2. OBJECTIVE

The experiment is to be performed for some definite reason. Write a brief statement that explains why the experiment is to be performed.

3. REFERENCES

The books, magazine articles, and technical notes that are read in preparation for the experiment should be listed, along with the page number and brief outline of important facts that were noted.

4. EQUIPMENT AND SPECIAL SUPPLIES

The manufacturer, model number, and serial (or laboratory inventory) number of the equipment used in the experimentation should be recorded. In some cases the experimenter may be asked to repeat the data collection to show why unusual results have been obtained. These unusual results could be due to a faulty instrument, which the person can prove only if the instrument used is known.

5. DIAGRAMS AND DRAWINGS

Include schematic drawings, circuit diagrams, or other sketches to show or explain the setup details of the experiment. Leave plenty of room for changes (not erasures) at a later time if necessary. Label all drawings or sketches with a title and figure number.

6. PROCEDURE

To explain the procedure, short comments near the recorded data tables about the measurements, instruments used, and special techniques are usually sufficient. Long explanations are not necessary and, in fact, are undesirable. The comments on procedure, however, should be complete enough to allow another person to perform the experiment for verification.

7. DATA TABLES

In almost all experiments a number of measurement values must be recorded. Tables are the most convenient method of recording these data, since all values are readily available for analysis.

8. CALCULATIONS

All experiments require a certain number of calculations before final results are obtained. Sample calculations that are completely identified should be included. It is not necessary and is actually undesirable to show repeated calculations.

9. GRAPHS

Data that have been recorded in long columns in tables cannot be quickly analyzed. The graph provides a visual presentation of the data which can then be inspected and analyzed quickly to determine tendencies, discrepancies, and unusual results. All graphs should be carefully labeled and plotted. Each graph is given a figure number and a title.

10. RESULTS AND CONCLUSIONS

The statement of results and conclusions is probably the most important part of the experiment. The entire experiment is a loss if the experimenter is unable to understand the results and cannot decide what remarks should be made to express the conclusion. Keep the conclusion as brief as possible. Long conclusions tend to bury the actual results of the experiment.