

ORGANIZATION AND CONTENT OF A TYPICAL GEOLOGIC REPORT



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The text of this booklet was originally prepared by a Committee of the American Institute of Professional Geologists (AIPG) consisting of: James R. Dunn, Henry H. Bailey, Severn P. Brown, Robert H. Paschall, Harold L. Fothergill, and Jack B. Graham.

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SCOPE

This guide outlines an effective organization for common types of geologic reports which are submitted to government agencies, private industry or other employers. The content of the reports, the reasons for the suggested organization and content and the letter of transmittal are described in sufficient detail to serve as models for actual reports.

This guide is not intended to cover all possible report writing situations nor to discuss the specifics of expository writing. A list of selected references on this latter matter is included at the end of this guide.

PURPOSES AND ASSUMPTIONS

The purposes of this guide are:

- (1) to give guidance in writing geologic reports so that recommendations, conclusions and text are clear, effectively arranged, easily followed and concise;
- (2) to show how to describe procedures so that the work is easily evaluated;
- (3) to provide a checklist to minimize the possibility of omitting critical items; and,
- (4) to insure that reports include those things needed to minimize the liability of the geologists who write them, where matters of public convenience, safety or investment of capital are involved.

For the purposes of this guide, it is assumed that many geologic investigations follow a more or less standard pattern.

THE GEOLOGIC REPORT

TITLE PAGE

The title page has the title of the report, the date of submittal and the organization or individual to whom submitted. In the latter case, a person's title or position as well as their organization are needed. Usually the individual to whom a report is submitted is the person who requested the report unless another individual or organization has been specifically designated. The title page also has the name and signature of the project geologist and of the advising or reviewing geologists, if any, and any required credentials (license, registration, etc.).

A sample title page follows.

A PRELIMINARY ANALYSIS OF THE QUALITY OF STONE TO BE USED IN THE SMITH DAM, NEW ALBANY, NEW YORK

Prepared for:

Mr. Radford N. Smith, President
Sampson Construction Company

Submitted by:

Jones Associates

Leonard R. James, CPG-0000
Project Head

Reviewed by:

William E. Jones, CPG-0000
President

Date: February 5, 1993

RECOMMENDATIONS AND CONCLUSIONS

All reports must contain conclusions. But a report leading only to conclusions without recommendations may be considered a passive report in that action is not demanded on the part of the person or entity for whom the report has been written. A report which also contains recommendations is viewed as a dynamic report, i.e., action is demanded by the work. In either case, recommendations and conclusions should ideally form the first portion of the report. If this is not possible, they should appear very early in the report. This is a courtesy to the people to whom a report is submitted. Because decision-making persons are primarily interested in the results of the report and not in its technicalities, they should not have to look beyond the first few pages to get the essence of the work.

Recommendations are "action-oriented," i.e., they are statements of what specifically must be done as the logical outgrowth of the work that is being reported.

Make recommendations short, concise and preferably listed numerically.

The recommendations should generally be listed in the same sequence as that of the conclusions which engendered them.

Write recommendations specifically for the use of the person most likely to act upon them.

Recommendations should not include any of the lines of reasoning which let to them.

Conclusions differ from recommendations in that they are pas-

sive, i.e., they do not demand action.

Make conclusions short, concise and preferably listed numerically.

Write conclusions specifically for the same person as the recommendations.

Conclusions should not include any of the lines of reasoning which led to them.

INTRODUCTION

The introduction puts the work into the context of time, space, personnel, bounding conditions and objectives.

INITIATION

This paragraph should identify the person who requested the work, his or her position, organization and the date and manner of the request.

In the case of a consultant, if the initial contact led to a proposal, this section should include the date of transmittal of the proposal, who accepted the proposal and how it was accepted. In the case of a government agency or company, show the date when the decision was made to carry out the work.

PURPOSE (OR OBJECTIVES) OF THE STUDY

Indicate the purposes for making the study.

Note the needs of the employer (agency, company or other) in terms applicable to the employer.

When, as frequently occurs, a geologist takes a somewhat different view of the objective of the work than does the person who requested it, precisely state the objectives as redefined. Also discuss the reasons for any changes. Note: If possible, clear any changes in objectives from those originally indicated with the employer, in advance.

SCOPE AND CONDITIONS OF THE STUDY

This section defines the bounding or limiting conditions for the work. Note unexpectedly good or poor conditions. Make it clear how much time was allotted for the work. Give the reader the critical information that is needed to evaluate the degree of thoroughness of the report i.e., that is imposed by virtue of time, funding, work conditions, availability of data, etc.

Clearly state limitations imposed by conditions not under the control of the geologist. Precise definition of these factors is critical in evaluating the work and helps protect against unfair comparisons.

When a geologist has had abnormally good luck during a job, in regard to either weather or other conditions, it is important to note this. On other similar jobs, more normal conditions may prevail and costs may be higher, the work may take longer or information obtained may be less complete. Recording of abnormal conditions in the body of the report will help make future budgeting and planning of a similar project more realistic and will clearly

convey to the recipient that future work may have a different cost base than that of the current project.

PREVIOUS WORK

Acknowledge work that has been completed and that is relative to the problem. Failure to acknowledge such work is, at the least, impolite, particularly if it was done by a member of the recipient's staff. In addition, previous work may provide invaluable information.

PROCEDURES

Describe the details of techniques and procedures which were used, when they were done, by whom and where.

Make the description of methods sufficiently detailed to allow independent evaluation of them and to make duplication of the work possible if it becomes necessary.

Whenever possible, refer to standard or published and generally accepted methods.

RESULTS

Provide a summary of facts unadorned by interpretations, conclusions or recommendations. Present non-controversial data, i.e., those which anyone else might have gathered using the same techniques under the same conditions.

Whenever possible, tabulate results or present results graphically or on maps.

INTERPRETATION OF DATA (OR DISCUSSION)

This section is based on the results, and is intermediate between results and conclusions and recommendations.

Any items of a controversial or semi-controversial nature belong here. Extrapolations also belong here, and, these should be clearly labeled as such.

ACKNOWLEDGMENTS

Acknowledge any person, agency or group that was particularly helpful in implementing the project.

BIBLIOGRAPHY

The bibliography must provide a complete listing of published and unpublished sources that are cited in the report or that were used to prepare the report. This accountability gives professional credit where it is due, and it adds to the credibility of the report. Citations include the author's name; publication date; full title of the publication; publication series, if appropriate; volume and part numbers, if applicable; publisher; address of publisher, in some cases; pagination; and, information that will enable a person to get a copy of the citation if it is "unpublished".

Use a consistent format for citations, patterned off technical reports with a wide circulation. Avoid abbreviations wherever possible. Citations in U.S. Geological Survey publications pro-

vide a standard, consistent format suitable for this purpose. Some typical citations are listed below:

Logman, S. W., and others, 1972, Definitions of selected terms—revisions and conceptual refinements: U.S. Geological Survey Water-Supply Paper 1988, 21 p.

American Society for Testing and Materials, 1983, Annual book of ASTM standards: gaseous fuels; coal and coke: Philadelphia, Pennsylvania, v.05.05, 534 p.

Zephyr, A. Z., 1984, Hampden Project: Zenon Corporation, 1355 Lilac Place, Bakersville, Maryland, 54 p.

APPENDIX

The appendix is the place for those bits of raw, undigested data which are included for documentation purposes, for the sake of completeness or as added backup reading. Typical inclusions are laboratory test data sheets, core logs or sample logs, supplementary articles, etc. The appendix is often the only place where the use of highly technical language is justifiable. It is usually only intended for reading by a highly trained person who wants to study the data base or who may want to duplicate or check the details of the work.

COVERING LETTER (OR LETTER OF TRANSMITTAL)

Accompany all reports with a covering letter.

The purposes of a covering letter are many:

- It is a record to both the geologist and the recipient that the report has been transmitted.
- It may contain instructions on the disposition of the report.
- It may highlight some recommendations or conclusions.
- It may include informal conclusions, recommendations or opinions which the author may not wish to put in the report.

A bill may be enclosed with the covering letter.

ONE FINAL PIECE OF ADVICE

Give a final check to your completed report before you submit it, not only for content and accuracy, but also for appearance. Better yet, have a colleague check it over. Are you satisfied that the final product meets your own high standards of accuracy and projects the image that you wish to convey?

SELECTED REFERENCES

Barrass, Robert, 1978, Scientists must write: a guide to better writing for scientists, engineers, and students: Chapman & Hall, London, England, 178 p.

Bates, R. L., 1988, Writing in earth science: American Geological Institute, Alexandria, Virginia, 50 p.

Bates, R. L., and Jackson, J. A., editors, 1987, Glossary of geology: American Geological Institute, Alexandria, Virginia, 788 p. (There is also a paperback version of this valuable glossary).

Bishop, C. T., 1984, How to edit a scientific journal: ISI Press, Philadelphia, Pennsylvania, 138 p.

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Brusaw, C. T., Alred, G. J., and Oliu, W.E., 1976, Handbook of technical writing: St. Martin's Press, New York, New York, 571 p.

Cochran, Wendell, Fenner, Peter, and Hill, Mary, editors, 1984, Geowriting, a guide to writing, editing, and printing in earth science: American Geological Institute, Alexandria, Virginia, 80 p.

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King, L. S., 1978, Why not say it clearly: Little, Brown & Company, Boston, Massachusetts, 186 p.

Malde, Harold E., 1985, Guidelines for reviewers of geological manuscripts: American Geological Institute, Alexandria, Virginia, 36 p.

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Roman, Kenneth, and Raphaelson, Jack, 1981, Writing that works: Harper & Row, New York, New York, 105 p.

Ross-Larsen, Bruce, 1982, Edit Yourself: Norton, New York, New York, 108 p.

Tichy, I. J., 1988, Effective writing for engineers, managers, and scientists: John Wiley & Sons, New York, New York, 580 p.

U.S. Government Printing Office, 1984, Style manual: Washington, D.C., 479 p.