Chapter 15

Formal Elements of Reports

This chapter focuses on the major formal elements found in different kinds of reports. Formal elements, such as tables of contents, executive summaries, and abstracts, are generic units of information that help make your document accessible; an experienced reader knows what kind of information an abstract contains, for example, and therefore turns to it for an answer to a particular kind of question. In creating the formal elements in your reports, therefore, you communicate your information more effectively by shaping it to fit your readers' expectations and then labeling it with terms your readers will immediately understand.

Even though you probably will not include all the formal elements discussed in this chapter in every report you write, it is useful to understand these formal elements so that you can use them whenever you feel they will help you communicate with your readers.

Before you write any of these formal elements, you probably have completed drafting the body of the document. (See Chapter 18 for a discussion of writing the body of a completion report.) The

formal elements are discussed here in the most common order of presentation:

transmittal letter
title page
table of contents
abstract
executive summary
[body]
appendices

In writing these elements, however, you are more likely to begin with the body and appendices, delaying the front matter until the end of the drafting stage.

Transmittal Letter

The transmittal letter, which is attached to a report or simply included on top of it, is an important component because it is the first thing the reader sees. Although it generally provides no information that isn't included elsewhere in the report, it is a courteous and graceful way to present the report. Some writers use memos instead of letters when the report is presented in-house, but others prefer the more formal impression made by a letter.

The transmittal letter begins with a brief paragraph defining the subject of the report and indicating that the report is enclosed. The body of the letter is one or two paragraphs communicating the important information: the problem or opportunity and the major findings. The final paragraph is a courteous statement of your willingness to answer any questions raised by the report and perhaps to carry out any other projects for the reader.

A transmittal letter can fulfill a second function: if the report contains an error or omission or something has occurred since the report was assembled, the cover letter is a convenient location to tell your reader about it.

Occasionally, a transmittal letter will also function as the executive summary. A writer who wishes to communicate confidentially to the primary reader, without having any of the other readers see it, will put the sensitive information in the transmittal letter, which is not distributed with the report.

Figure 15–1 is an example of an effective transmittal letter.

March 13, 1993

Captain Lonnie Willis
Engineering Analysis Section
Submarine Antenna Engineering Department
Naval Ship Systems Engineering Station
Philadelphia, PA 19112

Dear Captain Willis:

I am pleased to present the report on nondestructive testing of submarine antenna masts, originally proposed on December 12, 1992. A nondestructive testing system would save money and reduce the chances of mast failure.

To carry out this project I established technical, use and upkeep, and financial criteria, and then tested four leading ultrasound scanners against them. The ultrasonic scanning system from Ultrasonic Testing Inc. met or exceeded all the criteria.

It would cost approximately $40,000 to purchase the Ultrasonic system and train a crew, plus $1,000 per test. It will pay for itself in less than two months.

I strongly recommend that the Submarine Antenna Engineering Department purchase one of the Ultrasonic scanners for a six-month pilot program. If it meets our expectations, I recommend that the scanner be recommended for purchase by all submarine bases.

Please contact me (x3088) if you have any questions; I will be happy to talk with you about them.

Sincerely,

Stephen Moorhatch
Mechanical Engineer II

Enclosure (1)

Figure 15–1 Transmittal Letter (Source: Moorhatch [1993])

Title Page

Although title pages vary from company to company, most have three major elements:

- *Title.* As discussed in Chapter 5, the title should make clear the subject and the purpose of the report, as in "Nondestructive Testing Equipment: A Recommendation for the Failure Analysis Lab." The title should be centered, about one-third of the way down the title page. Often the title appears in large type, such as 18 or 24 point.
- *Names of the writer and the principal reader.* If either of these persons holds a professional title, such as P.E. or Ph.D., include it. The names are commonly written about two-thirds of the way down the page, in smaller type than the title.
- *Date.* The date of submission of the report is added a few lines below the names of the writer and the principal reader.

Table of Contents

Most reports have no index. The table of contents, therefore, is crucial, for it enables your readers to find what they're looking for. A good table of contents should include all the headings and subheadings used in the report. After you put together your table of contents, look at the number of pages between headings; you should have a heading for virtually every page of the report. If you don't, check to see whether you can add additional headings to the report.

One major reason that some tables of contents are insufficiently specific is that they rely too much on generic headings, the general terms that describe an entire class of items. Here is a thoroughly typical "lazy" generic table of contents.

Contents

Introduction	1
Materials	3
Methods	4
Results	7
Recommendations	19
References	22

This contents page isn't much help if a reader is hunting down a specific piece of information.

Once you have made sure your table of contents includes all the headings from the report itself, check to see that you have reproduced the format of the headings accurately. That is, if second-level headings are presented in uppercase letters in the report, they should be presented that way in the table of contents as well; you want to create a visual pattern in the table of contents and sustain it in the report.

Figure 15–2 is an example of an effective table of contents that uses a combination of generic and specific headings as well as standard format options. The report from which it is taken is titled "Nondestructive Testing Methods for Submarine Antenna Masts: A Recommendation."

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1. **Summary** 1
2. **Introduction** 2
3. **Methods** 4
   - 3.1 *Establish Criteria* 4
   - 3.2 *Select Units to Test* 5
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4. **Results** 7
   - 4.1 *Technical Criteria* 7
     - 4.1.1 Detection Abilities 7
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5. **Conclusion** 16
6. **Recommendation** 17
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   Appendix A: Test Results 18

   Appendix B: Initial and Operating Costs 20

Figure 15–2 Table of Contents (Source: Moorhatch [1993])

Some reports require an additional kind of table of contents for the figures, the tables, or for both. This element, called a *list of illustrations*, is a convenience for readers who want to turn directly to a particular graphic. The list of illustrations begins on the same page as the table of contents if there is enough room, or on the next page if there isn't. Generally, figures and tables are listed separately. If the list of illustrations begins on a new page, it is listed in the table of contents.

Figure 15–3 is a typical list of illustrations.

Figures

Figure 1. Mounting Location of Electronic Panel 4
Figure 2. Propulsion Powercircuit Modification 6
Figure 3. Electronic Panel Circuitry 9

Tables

Table 1. Troubleshooting Costs, 1993 4
Table 2. Troubleshooting Costs, 1993-1996 (Projected) 7
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Table 4. Repeat No-Power Faults, 1993-1996 (Projected) 16

Figure 15–3 List of Illustrations

Abstract

An abstract is a summary addressed to technical readers. It is a guide to the report; the technical person reads it to determine whether or not it is worth the time and effort to read the report. Because it is addressed to technical readers, the abstract can contain technical vocabulary and concepts.

If you are asked to provide an abstract, you should know that there are two basic types: descriptive and informative.

- A *descriptive abstract*, which is sometimes called a *topical, indicative*, or *table-of-contents abstract*, merely lists the topics covered in the report. You can create a descriptive abstract by

turning the table of contents into sentences. If a heading in the table of contents reads "Types of Acoustic Monitoring," you can write "The types of acoustic monitoring are discussed." In other words, a descriptive abstract answers the question, "What is the scope of the report?"

- An *informative abstract*, on the other hand, summarizes the important information in the report, emphasizing the results, conclusions, and recommendations. An informative abstract answers the question, "What are the important points made in the report?"

Figure 15–4 is an example of a descriptive abstract based on the report about testing submarine masts mentioned earlier in this chapter.

A mast failure at sea can cause a potentially catastrophic communication breakdown. Therefore, the Navy has an extensive program to investigate mast damage while the submarine is at port. The present method for determining the extent of damage to a mast involves tapping it to try to hear the waterlogged areas that might indicate a void or crack. However, this method is highly inaccurate, leading to two problems: the scrapping of masts that could be repaired, and the faulty repair of masts that have to be taken out of service again. The research reported here concerns a study to determine whether any commercially available ultrasonic test equipment would improve the accuracy of the mast damage program.

Figure 15–4 Descriptive Abstract (Source: Moorhatch [1993])

Notice that this descriptive abstract sketches in the problem but provides no specific information about the findings of the study.

Figure 15–5 is an informative abstract based on the same report.

In the informative abstract, the writer communicates the major findings of the study. As these examples show, the informative version provides a lot more useful information than the descriptive version does. If you are asked to provide an abstract but are not told which kind, write an informative one. Use the descriptive abstract only when space is at a real premium.

A mast failure at sea can cause a potentially catastrophic communication breakdown. Therefore, the Navy has an extensive program to investigate mast damage while the submarine is at port. The present method for determining the extent of damage to a mast involves tapping it to try to hear the waterlogged areas that might indicate a void or crack. However, this method is highly inaccurate, leading to two problems: the scrapping of masts that could be repaired, and the faulty repair of masts that have to be taken out of service again. The research reported here concerns a study to determine whether any commercially available ultrasonic test equipment would improve the accuracy of the mast damage program. Our conclusion is that the ultrasonic scanner from Ultrasonics Testing Inc. would do an excellent job. This system sends ultrasonic waves from a transducer through the mast to another transducer, determining the number, nature, and locations of any defects. This unit also plots a map of the defects, enabling analysts to determine whether the mast is repairable.

Figure 15–5 Informative Abstract (Source: Moorhatch [1993])

Executive Summary

Perhaps the single most important component of any kind of report is the executive summary, which is a summary addressed to managers and executives, who presumably are less interested in the technical details of the project and more interested in the managerial aspects. The executive summary and the abstract differ in both purpose and content:

Purpose

An executive summary is meant to be a substitute for the report itself; the manager or executive reads it because he or she doesn't have the time, the expertise, or the need to read the full document. An abstract is meant to be a guide to the report; the technical person reads it to determine whether it is worth the time to read the whole report.

Content

Whereas an abstract summarizes the technical content of the report, an executive summary avoids technical vocabulary and concepts, concentrating instead on managerial concerns:

- What was the problem or opportunity that led to the project? How does this project relate to other current or anticipated projects or initiatives?
- In carrying out the project, did you use any new methods that are themselves of interest? Or did any of the methods involve serious safety or environmental risks?
- How will your findings—the results, conclusions, and recommendations—affect the overall operation of the organization? How much will it cost? What kind of improvements in our operation can we hope to see? When can we hope to see them? Are there any hidden costs, in new hiring, administrative expansion, retraining, down time?

In other words, managers and executives want to know how what you did will affect them in their own areas: hiring or firing of personnel, administrative changes, capital expenditures, regulatory agencies. Think about return on investment and payback periods. Think in terms of money.

The popularity of the executive summary complements the popularity of appendices. Just as the least technical information—the executive summary—is placed in a prominent position, before the body, the most technical information is relegated to the least prominent location, at the end of the document.

The strategy of writing an executive summary is that you are providing the managers and executives with an alternative to the report; the executive summary is their version of the report, and they are actually unlikely to read the rest of the document (for reasons of time, interest, and expertise). Therefore, you have to tell the whole story—from the past through the future—and tell it concisely; many organizations impose a length limitation, such as 300 words or one double-spaced page.

Figure 15–6 is an example of an effective executive summary.

A mast failure at sea can cause a potentially catastrophic communication breakdown. Therefore, the Navy has an extensive program to investigate mast damage while the submarine is at port. The present method for determining the extent of damage to a mast involves tapping it to try to hear the waterlogged areas that might indicate a void or crack. However, this method is highly inaccurate, leading to two problems: the scrapping of masts that could be repaired, and the faulty repair of masts that have to be taken out of service again. In FY 1991–92, the Department of the Navy spent more than $192,000 in unnecessary or faulty repairs of submarine masts; in addition, a mission was delayed two days, at a cost of many thousands of dollars, when a faulty repair job was detected and had to be redone at the last minute.

The research reported here concerns a study to determine whether any commercially available ultrasonic test equipment would improve the accuracy of the mast damage program.

Our conclusion is that the ultrasonic scanner from Ultrasonics Testing Inc. would do an excellent job. This system determines the number, nature, and locations of any defects, enabling analysts to determine whether the mast is repairable. The scanner costs less than $25,000 and is expected to last more than five years. The training costs for personnel amount to less than $16,000, and the cost per analysis of a mast is less than $1,000. The Ultrasonics scanner would pay for itself in less than two months. We recommend that the Ultrasonics scanner be purchased and tested for six months and, if performance meets expectations, the scanner be recommended for purchase by all submarine bases.

Figure 15–6 Executive Summary (Source: Moorhatch [1993])

Notice that the executive summary focuses less on the technical information—how the scanner works—and more on costs: the cost of the problem and the purchase price and operating costs of the equipment.

Appendices

An appendix is any item attached to the end of a document—a table or figure, a bibliography, a computer printout, supporting letters or other documents, a glossary, or similar item.

Today the average report is shorter than it used to be, but it has far more appendices. What happened? Writers are likely to be much more selective about what will go into the body of the report. Instead of feeling the need to prove every point to their readers in the body, they assert their points and indicate that the full documentation appears in, say, Appendix 3, page 18. In this way, the body of the report is not interrupted by extensive details.

It would be logical to assume that all writers would take advantage of appendices to make the reader's job easier. After all, it's just as easy to put a simple graph in an appendix as it is to include it in the body of the report. But in terms of psychology, the easy way is harder, because it forces the writer to confront the fact that all those hard-earned details are not of primary interest to most of the readers. People don't like to admit things like that.

Try to get into the habit of asking yourself, as you draft the body of the report, whether your readers actually need to read all the information you are including. Is it all necessary if they are to understand you and make their decisions, or is some of it merely extra substantiation, documentation, or amplification?

For example, you are discussing the prices of seven popular laser printers and wish to make the point that Brand C is the least expensive. Why not simply write that Brand C is $175 cheaper than its nearest competitor (and add, if you wish, the price difference between it and the median-priced printer and the most expensive one)? Then, add a parenthetical note cross-referencing the appendix that gives the full listing of the prices. This way, a table doesn't clutter up the body of the report. Remember, when people see a graphic, they stop and study it. Unless they really need to know the prices of all seven models, save them the trouble.

Although information in an appendix is by definition subordinate, appendices are listed in the table of contents.

Reference

Moorhatch, S. 1993. Nondestructive testing methods for submarine antenna masts: A recommendation. Unpublished document.