

**GUIDELINES AND
REQUIREMENTS
FOR AUTHORIZING A
TECHNICAL REPORT**

**As a Partial Requirement
Toward Certification at the
Technologist Level**

GUIDELINES AND REQUIREMENTS FOR AUTHORIZING A TECHNICAL REPORT

Completing a satisfactory technical report is a requirement for certification as a technologist. This document provides requirements and guidelines for preparing and submitting a technical report.

The technical report must be no fewer than 3,000 words (excluding executive summary, table of contents, references, bibliography, and appendices). The subject must relate directly to the discipline in which the applicant seeks certification. An outline of the technical report should be approved by the ASET Registrar prior to the applicant writing the report to ensure the subject matter is appropriate.

Applicants should pay particular attention to the six areas indicated below.

1. SUBJECT OF THE REPORT

The report must be related to the discipline in which the applicant is seeking certification. The report must demonstrate engineering/applied science competence at the technologist level, (including elements of design and application of theory) with extensive technical and mathematical depth. This will illustrate that the author has a clear understanding and mastery of the subject.

The technical report must attempt to discuss an engineering/applied science issue and demonstrate:

- Critical analysis of a technical issue (i.e. a technical thought pattern leading from the identification of an issue to the creation of a hypothesis, and ultimately to a conclusion).
- Analysis of a technical issue, evaluation of alternate resolutions, how the recommendations were derived.
- A conclusion that supports the recommendations.
- Acknowledgement of sources (bibliography, references, footnotes).
Acknowledgement of sources not only indicates intellectual courtesy and honesty, it also enables the examiner to confirm reference materials.

Technical Reports usually fall into one of three general categories.

- **Research Report:** A research report requires an extensive search of all sources of material related to the subject (libraries, manufacturing specification sheets, literature and brochures, etc.). The report may entail considerable correspondence with government agencies as well as industry sources. An example of a research report would be a study of recent and on-going investigations into Harmonics and their deleterious effects.
- **Analytical (Laboratory) Investigative Report:** An analytical investigative report would involve analysis of a process, system, or equipment. An example of an analytical laboratory investigative report may be a particular application for a programmable controller, or studying various aspects of a software package for analyzing distribution systems.
- **The Construction Project:** A construction project report may require the applicant to complete performance tests, write specifications, or explore a range of applications. The emphasis of the report must be on the application of technology rather than the construction phase itself.

2. ACADEMICS/COMPETENCY AND LEVEL OF PRACTICE

The technical report is expected to demonstrate not only the ability to write a technical report but the capacity of the applicant to apply the knowledge they have acquired during earlier academic studies and/or work experience. This bears a direct relationship to the degree of technical and mathematical depth and appreciation and demonstrates the report writing expertise expected in the report.

The technical report must demonstrate academics/competency and level of practice at the technologist level as detailed in the technologist profile, below.

Technologist Profile

A professional, who through academic training and experience in the application of engineering or scientific principles, is capable of assuming responsibility and exercising independent judgment in the practice of engineering or applied science technology.

Carries out a wide range of complex work, either independently or under general direction.

Typical activities include design, production, marketing, testing, quality control, estimating, surveying, inspection, diagnostic evaluation, supervision,

management, technical sales and teaching. Such activities may be carried out in association with other professionals.

Uses an applied approach based on a comprehensive understanding of a specific technology.

Evaluates assignments, determines procedures and implements solutions, schedules work to meet objectives, participates in short- and long-range planning, and may become involved in developing and promoting conceptual change.

May assume managerial or administrative responsibility for a wide range of technical endeavours.

May supervise and co-ordinate a diverse working group and train less experienced technical and professional staff.

3. FORMAT OF THE REPORT

The technical report must adhere to specific ASET guidelines and must contain:

- Properly documented references to current technical literature to demonstrate an up-to-date and full understanding of the subject.
- Suitable illustrations, photographs, diagrams, and tables.
- Proper sizing in an 8.5 x 11 inch format, one-sided, double-spaced with one-inch minimum margins.
- Appropriate elements of a technical report (see [ASET Technical Report Components](#) on page 6).
- Calculations and supporting data included in appendices and annexes to the report.
- Footnoted statements of engineering/applied science fact to show the basis for the statement(s).

4. SUBMISSION OF THE REPORT

The report should be submitted to the ASET Registrar. It will then be evaluated by the ASET Board of Examiners who will grade the technical report. The Board will make one of the following decisions:

- a. The report may be found to be acceptable.
- b. The applicant may be required to present an oral defence of the report.
- c. The report may be found to require additional work and/or correction
- d. The report may be found to be not acceptable.

The decision of the Board will be communicated to the applicant by the ASET Registrar.

5. DECLARATION OF AUTHORSHIP

A completed Declaration of Authorship must accompany the technical report (see [Declaration of Authorship](#) on page 15).

6. MARKING FORMAT

The general marking format used to evaluate a technical report is as follows:

Report Format	/05
Executive Summary	/20
Introduction Content	/05
Exhibits	/10
Conclusion/Recommendations – Content and Logic	/20
Technical Content	/30
Proper use of References	/10

Up to 20 points deducted for poor use of grammar ()

Passing Mark for Technical Report 65%

Any Plagiarism will result in a mark of 0%

ASET TECHNICAL REPORT COMPONENTS

Below is an ordered list of components of an ASET technical report. Each section is the start of a new page.

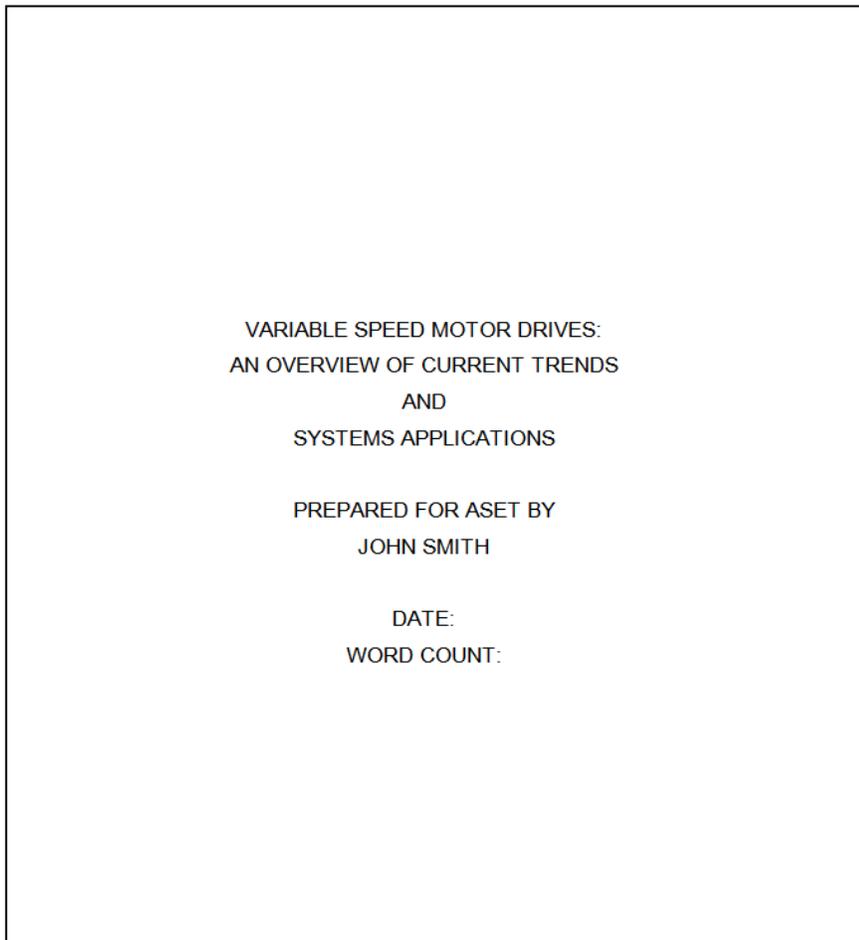
1. COVER

A standard binder or report cover is an appropriate cover.

2. TITLE PAGE

This page must show the **REPORT TITLE** and the **AUTHOR'S NAME**. Both of these must be centred on the page.

EXAMPLE:



VARIABLE SPEED MOTOR DRIVES:
AN OVERVIEW OF CURRENT TRENDS
AND
SYSTEMS APPLICATIONS

PREPARED FOR ASET BY
JOHN SMITH

DATE:
WORD COUNT:

4. ACKNOWLEDGMENTS

It is appropriate to acknowledge and thank individuals who aided, contributed, or acted as a technical advisor to the author.

EXAMPLE:

I would like to thank Dr. Jane Smith for the mentoring she provided during this project. I would also like to acknowledge Bob Green, P. Tech. (Eng.) for allowing my access to the laboratory and use of the test equipment.

5. TABLE OF CONTENTS

The Table of Contents lists major topics and the related page numbers. Minor topics are included as sub-topics under the appropriate major topic.

EXAMPLE:

Table of Contents	
	Page
Table of Contents.....	4
Exhibits.....	5
Executive Summary.....	6
Introduction.....	7
Discussion.....	8
Conclusion.....	34
Recommendations.....	38
References.....	42
Bibliography.....	43
Appendices.....	46

6. LIST OF EXHIBITS

EXAMPLE:

List of Exhibits	
	Page
Exhibit 1, (Example) System drawing.....	36
Exhibit 2, (Example) Test results.....	37
Exhibit 3, (Example) cost comparison.....	38

7. LIST OF ACRONYMS (OPTIONAL)

EXAMPLE:

Acronyms
OSB – Oriented Stand Board
TWT – Traveling Wave Tube

8. EXECUTIVE SUMMARY

The executive summary includes (very briefly):

- Why the investigation was initiated
- How the investigation was performed
- An overview of the results
- The conclusions based on the results
- The recommendation (actions) based on the conclusion

Rationale: A brief description of the report content. As the name suggests, the executive summary is a summary at the beginning of the report provided as a courtesy to the reader (possibly a busy executive) who may not have time to read the entire report. It should be written so a reader with some knowledge of the subject matter can determine if they need to read the entire report to get more detail.

*The executive summary is brief (a few paragraphs to a page or two) and should be written last. Once the report has been written, highlight the important aspects of the report in the executive summary. **The Executive Summary is marked out of 20.***

9. INTRODUCTION

The introduction may include (in no particular order):

- The scope of the report
- The purpose of writing the report
- General sources of information
- Who authorized the report (if appropriate)

*Rationale: A brief introduction to the report content. The introduction should not impact the material covered in the remainder of the report. **The Introduction is marked out of 5.***

10. BODY OF REPORT AND PAGE NUMBERING

- The entire report must be in 8 1/2 x 11" format, double-spaced, and printed on one side only with minimum of one-inch margins.
- Arial 12 font
- Page numbers must be:
 - Lower-case Roman numerals for introductory pages, centred at the bottom of each page.
 - Arabic numerals for the body of the report, centred at the bottom of each page.
- The author may state the opinions of sources, but must not include any conclusions or opinion of the author, just data.

*Rationale: Proper formatting ensures that the technical report is organized effectively and logically. **Report Format is marked out of 5.***

Discussion (Body of Report)

The discussion is the body of the report and will include the details of the investigation. The discussion will include the procedure used and data collected during the evaluation (voluminous amounts of data should be included in the appendices and simply referred to in the discussion). The discussion should be divided into subsections as needed to provide a clear presentation of the subject matter.

*Rational: The technical report must attempt to solve an engineering or applied science issue. The report must demonstrate a critical analysis of a technical issue. **Technical Content is marked out of 30.***

In-Text Citations

The technical report must be the original work of the author of the report, but every report will require outside sources of information to substantiate and validate the report author's results. It is not only required to research the subject matter of the report and include that research in the report, but it is also required to properly document the source of the research material.

In-text citations indicate where to find the source of the outside information. The references are numbered sequentially as they appear in the body of the report. Also indicated in the citation is the page number where the quote can be found. The citations are listed numerically in the reference section where additional information is provided. *For more information on documenting sources, please review an appropriate style guide (for example, the [APA Style Guide](#)).*

EXAMPLE:

Test 6 and 7 of the investigation were performed outside in February when the temperature reached -40^o C. The results obtained were consistent with results obtained above this temperature, but it should be noted that the instrument manufacturer indicates the "lowest reliable operating temperature is -30^o C" [1, p185]

Footnotes

Explanations and other notes not easily incorporated in the text may be inserted as footnotes. They will appear at the bottom of the page.

EXAMPLE:

Forms of Footnotes

* See, for example, Andrew Catalog 25, pp. 69-111, Andrew Corporation, Orlando Park, Illinois, 1967.

** By the same token, when reflection is from an open circuit, it is the voltage that is unaffected, and the current is reversed in phase. Both of these phenomena can be explained mathematically. See for example (a) Terman, F.E.: Electronic and Radio Engineering, 4th ed., pp. 82-87, explained by elaborate example, as in (b) DeFrance, J.J.: Communications Electronics Circuits, pp. 382-389, Holt Rinehart and Winston Inc., New York, 1966.

** These are well described in Galsier, E.V.D. and H.R.L. Lamont: Transmission and Propagation, Vol. 5 in The Services' Textbook of Radio, pp. 370-374, H.M.S.O. London 1958.

Quotations

Short direct quotations of not more than two or three lines should be made part of the text and enclosed in double quotation marks (“...”).

Quotations longer than three typewritten lines begin on a new line, are introduced by a colon, are single-spaced, and are not enclosed in quotation marks. It is best to indent such quotations from both sides of the page to set them off clearly from the text. Follow the paragraphing and punctuation of the original. All quotations must be exact.

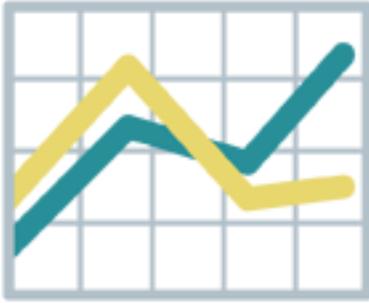
Identify all direct quotations by using a footnote, which gives precise details of title, authorship, publication and exact page. The singular abbreviation for page is “p” (plural “pp”).

*Rationale: Proper documentation of sources not only indicates intellectual courtesy and honesty; it also enables the examiner to confirm reference materials. **Proper use of References is marked out of 10.***

Exhibits

A proper technical report is supported by data. This data is often in the form of tables, charts, drawings, graphs, pictures, etc. which are considered 'Exhibits'. Exhibits are numbered sequentially from the beginning of the report using the format below (Exhibit #, Title) and must be included in the List of Exhibits.

Exhibit 1, Title



Any drawings included should be 8 1/2" x 11" or 11" x 17" format.

*Rationale: A technical report involves an investigation of a technical matter and must be supported by tables, charts, drawings, graphs, pictures, etc. These are all considered 'Exhibits' and must be listed at the beginning of the report. **Exhibits are marked out of 10.***

11. CONCLUSION

The conclusion contains the author's conclusions on the data. In many cases it is convenient to number conclusions.

Rationale: The conclusion is the culmination of the investigation and interpretation of the results. The interpretation and explanation of the results must demonstrate the author's ability to think critically. Often this is done by comparing and contrasting the results with known theory, the expected results, or the results of similar investigations.

The conclusion contains the author's interpretation of the results (i.e. the selection, analysis, design, evaluation, etc.). The conclusion clearly articulates how the results achieved in the discussion section relate to the purpose for writing the report that was indicated in the introduction. The conclusion is a demonstration of critical thinking related to the author's investigation. There are often a number of conclusions that can range from the interpretation of the results to an interpretation of the underlying theory, or possibly an interpretation of the validity of the test procedures used.

It is important that the applicant clearly demonstrates a technologist level of academics /competency and a technologist level of practice (i.e. consistent with the technologist profile), as the conclusion contributes significantly to the report evaluation.

12. RECOMMENDATION(S)

Recommendations correspond to specific conclusions and refer to actions that are required based on the author's interpretation of the data.

Rationale: The recommendations are linked to the conclusion and provide the author with additional opportunity to demonstrate critical thinking.

*The recommendations are suggestions for change based on the conclusion(s). In the introduction a purpose of the report was indicated. The recommendation section details potential resolution to the underlying issues that were the purpose for writing the report. There must be a recommendation for each conclusion. **The Conclusion and Recommendations are marked out of 20.***

13. REFERENCE LIST

References can be cited by inserting a reference number into the report at the appropriate point. The list of references is limited to materials that are definitely cited, and the entries are arranged in the order in which they are first cited. *For more information on listing references, please review an appropriate style guide (for example, the [APA Style Guide](#)).*

EXAMPLE:

References	
1	Smith, P.H.:Transmission Line Calculator, <u>Electronics</u> , January, 1939 (original reference) p. 29.
2.	Smith, P.H.: An Improved Transmission Line Calculator, <u>Electronics</u> , January, 1944, p. 130
3.	Krauss. H.L.: Transmission Line Charts, <u>Electron. Eng.</u> , September 1949, pp. 767-768.
4.	Bromwell, A.B., and R.E. Beam: <u>Theory and Application of Microwaves</u> . McGraw-Hill Book Company, New York, 1947. p. 165.
5.	Terman, P. P., and J.M. Pettit: <u>Electronic Measurements</u> . McGraw-Hill Book Company, New York, 1952, pp. 57-61.

14. BIBLIOGRAPHY (OPTIONAL)

The Bibliography includes an alphabetical list of books, articles and works reviewed in the preparation of the report. **The Bibliography should not contain those sources included in Reference List.**

EXAMPLE:

<p>Bibliography</p> <p>1. <u>The Merriam-Webster Dictionary</u>. Pocket Books, New York, 1974.</p>

15. APPENDICES

Supplementary data **created by** the author that may be too voluminous for the body of the report but not essential to the body of the report should be included as an appendix.

16. ANNEXES

Supplementary data **not created by** the author that may be too voluminous for the body of the report but not essential to the body of the report should be included in the appendix (for example, data sheets and manufacturers data).

17. INDEX (OPTIONAL)

An Index is alphabetical list of specific topics in the report.

18. GLOSSARY OF TERMS (OPTIONAL)

A glossary of terms is an alphabetical list of terms and words used in the report.

DECLARATION OF AUTHORSHIP

The following declaration is to be signed by the applicant, and countersigned by a sponsor who should be an immediate advisor or manager of the applicant. Self-employed applicants will require the signature of a recognized professional. This declaration of authorship must be submitted with your technical report.

I, _____, hereby affirm that the enclosed manuscript entitled _____, is my own composition. I declare that I have personal knowledge of the facts and conclusions set out therein, except where I have stated otherwise, and have in no degree committed plagiarism. On this basis I agree to have the report judged.

Signature of Applicant

Sponsor's Declaration

I have taken all fair precautions necessary to enable me to assure the Registration Board of The Association of Science and Engineering Technology Professionals of Alberta that the above statement is true.

Signature of Sponsor

Name (Please Print)

Position

The above declaration does not preclude the applicant from referring to books or office files or even obtaining verbal information to supplement points made in the paper. The applicant is expected, however, to give proper recognition for the type of information through the use of proper references.

This declaration when signed should be bound in the report and may follow the letter of transmittal.