ASET

THE ASSOCIATION OF SCIENCE
AND ENGINEERING TECHNOLOGY
PROFESSIONALS OF ALBERTA

ASET
Technical Report
Guidelines and
Requirements

ASET technical report guidelines and requirements

The Board of Examiners (BoE) has assigned the completion of a technical report as an alternative assessment to determine technologist-level theoretical knowledge equivalency. 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. A reviewer designated by the BoE must approve of a detailed proposed topic of the technical report before the applicant writes the report, to ensure the subject matter is appropriate. ***See page 6 for instructions.***

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

1. SUBJECT OF THE REPORT

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 should 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 solutions, how the recommendations were reached
- a conclusion that supports the recommendations; and
- acknowledgement of sources (bibliography, references, footnotes). Acknowledgement of sources shows intellectual courtesy and honesty, and enables the examiner to confirm reference materials.

Technical reports usually fall into one of three general categories:

1. **Research report:** A research report requires an extensive search of all material related to the subject (libraries, manufacturing specification sheets, literature and brochures, etc.). The report may require considerable correspondence with government agencies as well as industry sources. An example of a research report would be a study of recent and ongoing investigations into harmonics and their deleterious effects.
2. **Analytical (laboratory) investigative report:** An analytical laboratory investigative report would involve analysis of a process, system or piece of equipment. An example of this type of report would be a particular application for a programmable controller, or studying various aspects of a software package that analyzes distribution systems.
3. **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 meant to show not only the applicant's ability to write such a report, but also their capacity to apply the knowledge they have acquired during earlier academic studies and/or work experience. This highlights the applicant's technical and mathematical depth and appreciation, and demonstrates the report-writing expertise required for the report's completion.

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

> ***Technologist profile***
> *(From the ASET Certification Handbook)*
>
> *An applied science, information or engineering technology professional who is capable of assuming responsibility and exercising independent judgment to perform technical tasks and solve problems in complex technological areas with limited direct supervision.*
>
> *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.*
>
> *A technologist 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.*
>
> *A technologist may assume managerial or administrative responsibility for a wide range of technical endeavours. May supervise and coordinate 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 show a thorough understanding of the subject, with:
  - footnoted statements of engineering/applied science facts to show the basis for the statement(s); and
  - author statements on the sources' opinions, but not any conclusions or opinions of the author, just data.
- calculations and supporting data included in appendices and annexes to the report
- suitable illustrations, photographs, diagrams and tables
- appropriate elements of a technical report (see below)
- proper sizing in an 8.5 x 11 inch format, one-sided, double-spaced with one-inch minimum margins, written in Arial 12 font; and
- page numbers that must be:
  - lowercase Roman numerals for introductory pages, centred at the bottom of each page; and
  - Arabic numerals (numbers) for the body of the report, centred at the bottom of each page.
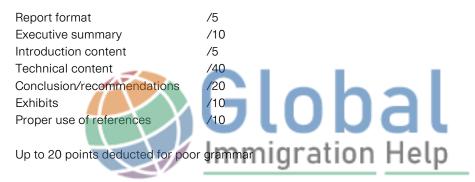
4. SUBMISSION OF THE REPORT

Submit the report to ASET by email at registration@aset.ab.ca or to the appropriate ASET staff member who contacted you when your topic was approved. The association does not require a physical copy. Once submitted, it will be evaluated by an ASET subject matter expert who will grade the technical report. Find the marking rubric below.

5. DECLARATION OF AUTHORSHIP

A completed declaration of authorship must accompany the technical report (see "DECLARATION OF AUTHORSHIP" on page 8). The form **must** be emailed by a sponsoring ASET or APEGA certified member to ASET. Email the form to either the ASET staff contact directly, or to registration@aset.ab.ca. The declaration will not be accepted from the applicant.

6. MARKING FORMAT

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

Report format	/5
Executive summary	/10
Introduction content	/5
Technical content	/40
Conclusion/recommendations	/20
Exhibits	/10
Proper use of references	/10

Up to 20 points deducted for poor grammar

Passing mark for the technical report is 65 per cent
Any plagiarism will result in a mark of 0 per cent

The BoE will make one of the following decisions:
    a) The report may be found to be acceptable.
    b) The report may be found to require additional work and/or correction.
    c) The report may be found to be not acceptable.

ASET staff will inform the applicant of the BoE's decision.

Proposed topic – requirements and submission for approval to write

Those who do not pass the technologist certification exam may apply for special consideration to complete a technical report in place of the exam requirement. The technical report allows applicants to demonstrate the theoretical knowledge necessary to practice safely and competently at the technologist level.

Applicants applying for special consideration must complete the following steps:

1. 1.Review the technical report guidelines and requirements and the technical report marking rubric to ensure a thorough understanding of the assessment process. A technical report writing training guide and a sample technical report are available as resources for additional support if needed.

2. Complete and submit the Board of Examiners special consideration form, including a detailed proposed topic for the technical report. *You can get this form from the ASET staff member who contacted you about the report or find it in your portal (if made available).*

    a. When selecting a report topic, applicants must choose a subject that directly relates to the discipline in which they seek certification. The report must show engineering/applied science competence at the technologist level (including elements of design and application of theory), with extensive technical and mathematical depth.
    b. Email the completed form directly to the ASET staff member who contacted you about the report, or to registration@aset.ab.ca.

3. Once your technical report proposal has been approved by a reviewer designated by the BoE, ASET staff will notify you by email, and then you will be able to complete and submit the technical report, in line with the technical report components on the next page.

Important notes

Applicants approved to write a technical report instead of the certification exam may submit a report previously prepared as part of a capstone academic project or as part of a work assignment, but **the report must have been authored solely by the applicant** (not as part of a group or team assignment), meet the technical report requirements set by the BoE, and be signed by a sponsor with direct knowledge of the applicant's work. Acceptable report types include: research reports, analytical (laboratory) investigative reports and construction project reports (see the detailed guide on pg. 2 for more information on these report types).

In preparing a technical report, applicants should strive to achieve:

a. 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)
b. analysis of a technical issue, evaluation of alternative resolutions and how the recommendations were reached
c. a conclusion that supports the recommendations made in the report; and
d. acknowledgment of all sources.

ASET technical report components

Below is an ordered list of components of an ASET technical report. Each section must start on a new page. **You must submit your report electronically in PDF format.**

1. **TITLE PAGE**

   This page must show the **report's title** and the **author's name**. Both of these must be centred on the page.

2. **ACKNOWLEDGMENTS**

   It is important 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 me access to the laboratory and use of the test equipment.

3. **TABLE OF CONTENTS**

   The table of contents lists major topics and the related page numbers. Minor topics are included as subtopics under the appropriate major topic.

4. **LIST OF EXHIBITS**

5. **LIST OF ACRONYMS (OPTIONAL)**

6. **EXECUTIVE SUMMARY**

   The executive summary is a summary at the beginning of the report. This serves as a courtesy to the reader 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 includes (very briefly):

   - why the investigation was initiated
   - how the investigation was performed
   - an overview of the results
   - the conclusions based on the results; and
   - the recommendation (actions) based on the conclusion.

7. **INTRODUCTION**

   The introduction may include (in no particular order):

   - the scope of the report
   - the purpose of writing the report
   - general sources of information; and
   - who authorized the report (if appropriate).

   The introduction should not impact the material covered in the remainder of the report.

8. BODY OF REPORT

a. Discussion

The discussion is the body of the report and will include the details of the investigation. The discussion will break down the procedure used and data collected during the evaluation (large amounts of data should be found in the appendices and simply referred to in the discussion). The discussion should be divided into subsections as needed to present the subject matter clearly. The technical report must attempt to solve an engineering or applied science issue and must demonstrate a critical analysis of a technical issue.

b. In-text citations

The technical report must be the original work of the author, but every report will require outside sources of information to substantiate the report author's results. A proper report must contain well-researched subject matter, and properly cite the source of that subject matter.

In-text citations show where to find the source of the outside information. 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).

c. 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.

d. 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. 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 is "pp").

e. Exhibits

A proper technical report involves an investigation of a technical matter and must be supported by 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.

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

9. CONCLUSION

The conclusion is the result of the investigation and author's interpretation of the outcomes (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 outlined in the introduction. The conclusion demonstrates critical thinking related to the author's investigation. There are often a number of possible conclusions. These can range from an interpretation of the results to an interpretation of the underlying theory, or possibly an interpretation of the validity of the test procedures used.

The applicant must clearly demonstrate a technologist level of academics and competency, and a technologist level of practice (i.e. consistent with the technologist profile), as the conclusion contributes significantly to the report evaluation. The interpretation and explanation of the results must show 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.

10. RECOMMENDATION(S)

Recommendations are based off of to specific conclusions and refer to actions that are required or suggested based on the author's analysis of the data. In the introduction the purpose of the report should be indicated. The recommendation section details potential solutions to the issue the report is written to address. There must be a recommendation for each conclusion.

11. 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. The list entries are arranged in the order in which they are cited in the article. *For more information on listing references, please review an appropriate style guide (for example, the APA Style Guide).*

12. 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.**

13. APPENDICES

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

14. ANNEXES

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

15. INDEX (OPTIONAL)

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

16. 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 must be signed by the applicant, and countersigned by a sponsor. The sponsor should be an immediate advisor or manager of the applicant and be a registered member of ASET or APEGA in good standing. Self-employed applicants may obtain a sponsor declaration from a client who is a registered member of ASET or APEGA in good standing. This declaration of authorship must be submitted with your technical report (see below for instructions).

I, _____ , hereby affirm that the enclosed

report 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 (From a registered ASET or APEGA member)

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

_____   _____
Signature of sponsor   ASET/APEGA No.

_____   _____
Name and designation (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 by acknowledging all references.

Submission of the completed declaration (manually completed form (printed, signed and scanned) or electronically completed form) must be done by the sponsor only. It can be emailed to registration@aset.ab.ca or to the ASET staff member who directly contacted the applicant regarding the technical report, with the subject line including the applicant's name.