

Chapter 1

Background

1.1 Definition of a Technical Report

In the scientific and technical community, the term “report” is applied to a number of documents that, oftentimes, have common elements, such as an abstract, and share a collective purpose—to inform a specific audience about a particular subject. They range from the formal to the informal. However, a traditional scientific and technical report or, simply, technical report, as it is commonly known, is unique among reports. (“Scientific and technical report” and “technical report” are used interchangeably among the various scientific and technical disciplines and in the related standards; the terms are essentially synonymous. For brevity, “technical report” will be used hereinafter.)

By definition, technical reports “convey the results of basic or applied research and support decisions based on those results. A [technical] report includes the ancillary information necessary for interpreting, applying, and replicating the results or techniques of an investigation. The primary purposes of such a [technical] report are to disseminate the results of scientific and technical research and to recommend action.”⁴ (As explained later in this chapter, the term “technical report” has become more inclusive and less restrictive and includes documents that do not necessarily fit this definition.)

A technical report is similar to a technical or scientific paper. Both are an integral and essential part of research, and, by definition, both should pro-

2 How To Prepare Defense-Related Scientific and Technical Reports

vide enough information so that an experienced and knowledgeable investigator in the same field could repeat the described procedure and obtain the same results.

The differences between a technical report and a scientific paper are few but noteworthy. A technical report often has a limited distribution within an organization and, therefore, a limited readership. A scientific paper is usually published in a journal, which, for the most part, is publicly accessible, and it may be presented orally at a conference. (Notwithstanding, there are some journals that publish classified scientific papers.) Technical reports tend to be more extensive than scientific papers because of page restrictions in journals. Occasionally, some technical reports are submitted to journals for publication as scientific papers.

While the accompanying information contained in the front and back matter of technical reports distinguishes them from scientific papers, the core elements of technical reports and scientific papers are closely related, i.e., they contain an introduction, a section on materials and methods used, a section discussing the results obtained, and a section presenting the conclusions reached. However, a technical report reflects an organizational effort, as opposed to an individual or personal effort. As such, it should additionally contain a summary (in addition to an abstract) or, as it is more commonly known, an executive summary, which is intended to read by management within the particular organization sponsoring the work, and a recommendations section, which prescribes a future course of action for decisionmakers within the same organization.

Technical manuals, which are commonplace in the defense community, "are publications that contain instructions for the installation, operation, maintenance, training, and support of weapon systems, weapon system components and support equipment."⁶ Technical manuals should not be confused with or presented as technical reports, which serve a different purpose. Occasionally, portions of a technical manual may be incorporated into or appended to a technical report. This usually occurs when, as a result of research findings, a technical manual requires modification.

Warnings, cautions, and notes frequently appear in technical manuals to highlight certain information; their use in technical reports is rare and should only occur when they are part of an incorporated or appended technical manual. They should not be used to highlight other portions of a technical report. Further guidance on warnings, cautions, and notes is provided in MIL-STD-38784.⁶ Figure 1-1, derived from MIL-STD-38784, shows a warning, caution, and note and provides a description of each.

WARNING

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

CAUTION

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

Highlights an essential operating or maintenance procedure, condition, or statement.

Figure 1-1. Warning, Caution, and Note

Memorandums are often incorrectly substituted for technical reports. By definition, a memorandum is an internal document. A memorandum may appear similar to a technical report and eventually evolve into a technical report, but because of its transitory nature it does not, in itself, merit the significance or retain the permanence of a technical report.

Other technical documents "such as brochures, proposals, reliability plans, safety plans, viewgraph compilations, conference proceedings, computer programs, engineering change proposals, and specifications"⁷ also serve a different purpose than technical reports and should not be confused with or presented as such.

Because of category limitations on the various types of technical documents, some are often loosely considered technical reports and some, in fact, have been included in databases such as the Defense Technical Infor-

4 How To Prepare Defense-Related Scientific and Technical Reports

mation Center's (DTIC's) technical report database. Regardless, a distinction should be made between technical reports and other technical documents.

The definition of a technical report has, in itself, not always been standard and has changed over time, as have the various standards addressing technical reports.

1.2 Standards

1.2.1 History

The Department of Defense (DoD) began an initiative years ago to replace, where possible, military standards with industry standards. Originally, MIL-STD-847, "Format Requirements for Scientific and Technical Reports Prepared by or for the Department of Defense,"⁸ established guidelines on how to prepare a technical report for DoD. MIL-STD-847 is a relatively brief document that is less elaborative than its successor industry standards and now clearly dated; it does, however, provide some guidance regarding classified technical reports.

MIL-STD-847 defines a technical report as a document that "encompasses the evaluated relevant facts on a study or phase of a study of a particular art, science, profession, or trade, and stands as a permanent official record in a formal document."⁸ Interestingly, this definition of a technical report may more accurately describe what a technical report is currently considered, as discussed later in this chapter. The absence of a phrase regarding the need for "ancillary information necessary for interpreting, applying, and replicating the results or techniques of an investigation"⁴ is noteworthy and indicates the evolutionary nature of the definition of a technical report that would eventually be changed when an industry standard superseded the military standard.

ANSI Z39.18-1987, "Scientific and Technical Reports - Organization, Preparation, and Production,"⁹ which superseded MIL-STD-847, was sponsored by the National Information Standards Organization (NISO), approved by the American National Standards Institute (ANSI), and adopted by DoD. ANSI Z39.18-1987 defines a technical report as "a publication designed to convey the results of basic or applied research."⁹ ANSI Z39.18-1987 introduces the statement that a technical report includes "the ancillary information necessary for the interpretation, application, and replication of the results or techniques of an investigation."⁹ However, it does not contain the phrase "and support decisions based on those results."⁴ This

phrase, which highlights the role of management in technical reporting, was added in ANSI/NISO Z39.18-1995.

ANSI/NISO Z39.18-1995, “Scientific and Technical Reports—Elements, Organization, and Design,”⁴ was developed by NISO, approved by ANSI, and adopted by DoD. ANSI/NISO Z39.18-1995 closely resembles its predecessor, ANSI Z39.18-1987, in layout and appearance. ANSI/NISO Z39.18-1995 “establishes guidelines for the elements, organization, and design of scientific and technical reports.”⁴ The guidelines in ANSI/NISO Z39.18-1995 pertain exclusively to print (paper and ink) technical reports, and, as such, ANSI/NISO Z39.18-1995 soon became limited in its application with the increasing number of technical reports being prepared and presented electronically.

The standard on technical reports entered the electronic or digital age with the issuance of ANSI/NISO Z39.18-2005, “Scientific and Technical Reports - Preparation, Presentation, and Preservation.”²

1.2.2 ANSI/NISO Z39.18-2005, “Scientific and Technical Reports - Preparation, Presentation, and Preservation”

As stated in the preface, ANSI/NISO Z39.18-2005 is the current DoD standard for technical reports, and, like its predecessor, it was developed by NISO and approved by ANSI. ANSI/NISO Z39.18-2005 “outlines the elements, organization, and design of scientific and technical reports, including guidance for uniform presentation of front and back matter, text, and visual and tabular material in print and digital formats, as well as recommendations for multimedia [technical] reports.”²

While continuing to provide guidance that closely resembles ANSI/NISO Z39.18-1995 on how to present print technical reports, ANSI/NISO Z39.18-2005 is an otherwise significant departure from its predecessor. ANSI/NISO Z39.18-2005 discusses the evolution of the organization of a technical report from “a content-based to a user-based organizational pattern.”² As part of this discussion, the standard introduces “metadata” to the standard. Metadata “refer to information about information or, equivalently, data about data.”² A thorough description of metadata is provided by NISO in “Understanding Metadata.”¹⁰

To further define the term, ANSI/NISO Z39.18-2005 draws a distinction between content and metadata: “The body of the [technical] report, with its discussion of methods, results, and conclusions, is content. Any information that helps the user find, assemble, and properly attribute the [technical] report is metadata.”²

6 How To Prepare Defense-Related Scientific and Technical Reports

ANSI/NISO Z39.18-2005 emphasizes the significance of metadata and describes their three classes: descriptive, structural, and administrative.

Metadata are a significant matter . . . because of the large amount and diversity of data represented. The quantity and diversity of [technical] report content and format presented information management challenges in an era when [technical] reports were published exclusively on paper; in the digital age these challenges have multiplied considerably. A scientific [and] technical report that does not take metadata into account has no readily-found identify and will not be used. To avoid this problem, compilers of [technical] reports must provide metadata in three broad classes: descriptive, structural, and administrative.

Descriptive metadata . . . convey information that helps the user find a [technical] report and distinguish it from other similar ones. . . . Such metadata include the title and creator (author), as well as any keywords or subject references.

Structural metadata explain the relationship between parts of multipart objects and enhance internal navigation. Such metadata include a table of contents or list of figures and tables.

Administrative metadata support maintaining and archiving [technical] reports and ensure their long-term availability. . . . Such metadata include type and version of software used in preparing the [technical] report and rights-management requirements.²

Descriptive and structural metadata are integral parts of any good technical report—print or digital. Administrative data relate, primarily, to digital technical reports.

Acknowledging if not acquiescing to the evolving nature of what constitutes a “technical report,” ANSI/NISO Z39.18-2005 does not attempt to define a technical report. Furthermore, it also states that “there is no single format [regarding technical reports] that authors should use.”² Notwithstanding, ANSI/NISO Z39.18-2005 basically repeats the conventional format for technical reports presented by ANSI/NISO Z39.18-1995; however, it also prescribes optional, shortened formats.

ANSI/NISO Z39.18-2005 discusses “print-specific”² (paper and ink) technical reports versus “non-print-specific”² (totally digital) technical reports, the implication seemingly being that print technical reports may be “born digital”² or created electronically but, ultimately, are meant to be printed and, thus, read on paper. (Today, technical reports are rarely, if ever,

hand-written or, for that matter, produced on a typewriter.) Non-print technical reports are “born digital”² and remain digital and are intended to be read or viewed almost exclusively on screen and, in some instances, heard. Non-print technical reports may comprise multimedia and employ features unavailable to print technical reports, such as sound and animation. They, ultimately, present a distinct contrast to the common features of print technical reports.

The guidance provided herein prescribes two conventional formats applicable to any print defense-related technical report, regardless if it completely satisfies the traditional definition presented earlier in this chapter. While the logic employed in presenting print technical reports may, in certain instances, be carried over to non-print technical reports, the latter, nevertheless, remain the exception, not the rule, in the defense community. Furthermore, to attempt to address all facets of non-print defense-related technical reports would be challenging if not overwhelming and is, thus, beyond the scope of this effort.

1.2.3 Related NISO Standards

NISO has developed two other standards related to technical reports: ANSI/NISO Z39.23-1997¹¹ and ANSI/NISO Z39.14-1997.¹²

1.2.3.1 ANSI/NISO Z39.23-1997, “Standard Technical Report Number Format and Creation”^c

ANSI/NISO Z39.23-1997 provides formatting guidance on how to create a standard technical report number. The same subject is addressed herein, and an example of a typical DoD organizational technical report number is provided. ANSI/NISO Z39.23-1997 is referenced in NISO Z39.18-2005 and, therefore, is part of that standard.

1.2.3.2 ANSI/NISO Z39.14-1997, “Guidelines for Abstracts”^c

ANSI/NISO Z39.14-1997 provides guidance on how to write an abstract, which is a required element of a technical report. Abstracts are addressed herein, and visual examples of typical abstracts appearing in defense-related technical reports are provided. ANSI/NISO Z39.23-1997 is referenced in NISO Z39.18-2005 and, therefore, is part of that standard.

ANSI/NISO Z39.18-2005, ANSI/NISO Z39.23-1997, and ANSI/NISO Z39.14-1997 may be downloaded and printed free of charge at the following Web site: www.niso.org or purchased through NISO.

^cRevised in 2002.

1.3 Department of Defense's Scientific and Technical Information Program

DoD has established and maintains a scientific and technical information program (STIP) "to document the results and outcome of DoD-sponsored and/or performed research and engineering (R&E) and studies efforts and provide access to those efforts in an effective manner consistent with the DoD mission."¹³ As a source of documentation, technical reports are an essential if not the main component of DoD's STIP. DoD attaches special significance to its STIP:

The Department of Defense shall aggressively pursue a coordinated and comprehensive STIP, thereby providing maximum contribution to the advancement of science and technology. The STIP shall permit timely, effective, and efficient conduct and management of DoD research and engineering (R&E) and studies programs, and eliminate unnecessary duplication of effort and resources by encouraging and expediting the interchange and use of STI [scientific and technical information]. Interchange and use of DoD STI is intended to include the DoD Components, their contractors, other Federal Agencies, their contractors, and the national and international R&E community.¹⁴

Scientists and engineers in the defense community should be aware of their role in contributing to DoD's STIP. However, safeguards should be maintained. Sections 1.4 to 1.7 provide an overview of the responsibilities of those involved in the process, as well as a discussion of the various means of controlling STI.

1.4 Publishing Requirements^d

Research, development, test, and evaluation (RDT&E) is the general, inclusive category under which the defense community produces STI. Publication of RDT&E in the form of a technical report is a fundamental precept in the scientific and engineering profession. As such, it attests to the professionalism of one's organization and increases the stature of its scientists and engineers.

Technical reports are often the only RDT&E products seen by high level military personnel and congressional groups. RDT&E not reported is basically irrelevant. Technical reports assist congressional committees and DoD

^dMost of the information in Sections 1.4 to 1.6 was obtained from the *STI Handbook*.⁵ The information has been updated, expanded, and adapted to apply to technical reports, in particular, as opposed to STI, in general.

organizations plan how to allocate funding for RDT&E and determine what activities should receive funding. Conversely, lack of published RDT&E can decrease available funding.

Duplication of RDT&E causes loss of research funds. DoD considers this wasteful and possibly a matter to be investigated by an inspector general. An audit trail of how public funds have been spent is provided within the technical report. Because a technical report has been reported to DTIC, a permanent record of RDT&E has been established and DoD's expenditure of public funds has been maintained.

1.4.1 Author Responsibilities

Scientists and engineers (authors) in the defense community should comply with the following publishing requirements:

- DoD scientists and engineers, as well as those scientists and engineers under contract to DoD (industry and academia), should publish the results of RDT&E in the form of a technical report and submit the technical report to DTIC for inclusion in its technical report database.
- Positive and negative results should be published. Specifically, defense community scientists and engineers should ensure that all significant scientific or technological observations, findings, recommendations, and results derived from DoD endeavors, including those generated under contracts or grants pertinent to the DoD mission, that contribute to the DoD or national scientific or technological base are recorded.
- Technical reports should be completed in a timely manner, usually within 6 months of the conclusion of the RDT&E or within 6 months of a significant scientific or technological observation. Draft technical reports should not languish so that their relevance is diminished if not obsolete.
- Scientists and engineers should budget for the costs of editing and publishing their technical reports. Technical editors and illustrators should, if possible, assist authors in the preparation of technical reports. The involvement of technical editors and illustrators is usually dependent upon authors. While authors are inclined to seek the help of illustrators, they are seemingly reluctant to approach technical editors for assistance. The primary job of a technical editor is to evaluate not what is being presented in a technical report, which is the responsibility of a technical reviewer (Section 1.5.1), but how it is being presented. Technical editors usually become involved after a draft has been completed; however, they should begin advising au-

thors at, preferably, an earlier stage in the technical report process to alleviate potential problem areas.

1.4.2 Non-Author Responsibilities

In addition to the authors' responsibilities, others have certain responsibilities with regard to publishing RDT&E:

- Supervisors should ensure that engineers and scientists under their supervision and those of their DoD contractors publish their RDT&E in the form of a technical report.
- Project and program managers should ensure that the results of their projects and programs, respectively, are published in the form of a technical report. They should also budget for and fund the publication of technical reports and coordinate their respective project's and program's requirements.
- A contracting officer's technical representative (COTR) should ensure the results of contract RDT&E are published in the form of a technical report. Acquisition regulations require that DoD contractors provide technical reports, consistent with the objectives of the RDT&E involved, as a permanent record of the RDT&E accomplished under the contract. COTRs should also include applicable data item descriptions (DIDs) for a technical report in the contract and ensure that DoD contractors are aware of their responsibilities.

1.5 Review of Technical Reports

All technical reports should be reviewed by someone other than the author before publication; however, technical reports intended for public release are required to be reviewed to ensure that they are suitable for public release and, thus, have the correct distribution statement. The review process usually includes the public affairs office of the performing organization. The individual responsible for releasing a technical report to the public should be specifically authorized by the appropriate officials to perform this function.

The purpose of the total review process is to do the following:

- Check the technical report for technical adequacy;
- Verify the classification level of the technical report and, if the technical report is classified, to ensure all portions are properly marked and all applicable notices are included;
- Select the appropriate distribution statement;
- Determine if export-controlled information has been included in the technical report; and
- Check for patentable information.

1.5.1 Technical Review

The purpose of a technical review is to improve the value of the technical report by evaluating the scientific and technical merit of the work. The role of a technical reviewer is to ascertain the technical adequacy of a technical report. As such, the basic concerns of a technical reviewer are to ensure accurate reporting of the material, reasonable interpretation of the data, and logical inferences.

Supervisors usually perform a technical review; however, an independent review of the technical report may be performed by another engineer or scientist who is a subject matter expert. The technical content is evaluated, and ways are suggested to improve communication with the intended audience. While comments regarding non-technical matters, e.g., grammar and punctuation, are usually welcome, technical reviews should not concentrate on these aspects of a technical report; they are best left to a technical editor (Section 1.4.1).

A technical reviewer should remain aware of the status of the technology being reported and should, if possible, do the following:

- Become a subject matter expert on the status of the technology in the defense community, including industry and academia, and the international arena;
- Ask the internal security office for assistance in interpreting security guidelines;
- Use DTIC and the organization's library or technical information center (TIC) for resources and should, ideally, be a regular contributor to both;
- Stay aware of independent research and development (IR&D) in academia and industry;
- When applicable, use the local intelligence office to obtain STI on military equipment belonging to U.S. Allies and adversaries;
- Participate in technical professional societies; and
- Use the Militarily Critical Technologies List and provide input to DoD to change the list as technology changes.

1.5.2 Security Review

The author usually makes the initial determination concerning the classification of the technical report. If the author is in doubt about its classification, the organization's security office should be consulted. In deciding if the information in the technical report is classified, the following are areas that might require classification:

- Performance and capabilities

- Specifications
- Vulnerabilities
- Procurement and production plans and schedules
- Operations.

If the technical report is classified, all portions should be properly marked, the correct classification source should be cited, and the declassification or review information should be correct. If multiple sources are used to classify the technical report, a list of those sources should be included with the technical report. Classified technical reports are discussed in greater detail in Section 1.7.

1.5.3 Distribution Statement Review

The author should make the initial determination concerning what organizations can have access to the technical report. This decision then forms the basis for selecting the correct distribution statement. In making the decision, the author tentatively determines if the technical report can be released to the public without any restrictions; if so, the technical report is in the public domain, where it can be appropriated by anyone, including foreign nationals or representatives of foreign industries or governments.

DoD has the following seven broad RDT&E categories:

- Basic research
- Applied research
- Advanced technology development
- Advanced component development and prototypes
- System development and demonstration
- RDT&E management support
- Operational systems development.¹⁵

Two of the RDT&E categories affect whether a technical report may be unlimited or limited in its distribution: basic research and applied research.

Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes a scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high payoff research that provides the basis for technological progress. Basic research may lead to: (a) subsequent applied research and advanced technology developments in Defense-related technologies, and (b) new and improved military financial capabilities in areas such as communications, detection, tracking, surveillance, propulsion, mobil-

ity, guidance and control, navigation, energy conversion, materials and structures, and personnel support.

Applied research is systematic study to understand the means to meet a recognized and specific need. It is a systematic expansion and application of knowledge to develop useful materials, devices, and systems or methods. It may be oriented, ultimately, to the design, development, and improvement of prototypes and new processes to meet general mission area requirements. Applied research may translate promising basic research into solutions for broadly defined military needs, short of system development. This type of effort may vary from systematic mission-directed research beyond that in [basic research] to sophisticated breadboard hardware, study, programming and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges. It includes studies, investigations, and non-system specific technology efforts. The dominant characteristic is that applied research is directed toward general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters.¹⁵

To help determine if work performed under basic research or applied research can be released to the public, basic research may usually be released to the public until the “state of emergence”⁵ is evident, i.e., the transition has been made from basic research to applied research with specific military applications. After that has occurred, the distribution of the technical report should be limited. (The distinction between basic research and applied research is a sensitive if not controversial issue in the defense community; a thorough review process should be conducted before releasing a technical report to the public.)

If the technical report cannot be released to the public, the author should determine the extent of its availability without additional approval of the controlling organization. The controlling organization is usually the sponsoring organization or the preparing organization. Distribution statements allow the author to limit access of the technical report to any of the following groups:

- U.S. Government agencies
- U.S. Government agencies and their contractors
- DoD and U.S. DoD contractors
- DoD components
- U.S. Government agencies and private individuals or enterprises eligible to obtain export-controlled technical data.

In addition, the author can completely limit access to the technical report and require that all requests for the technical report be approved by the controlling organization.

After the author has decided on the level of access, the author should select a reason for the limitation. Reasons for limiting access to a technical report are as follows:

- Foreign government information
- Proprietary information
- Critical technology
- Test and evaluation
- Contractor performance evaluation
- Premature dissemination
- Administrative/operational use
- Software documentation
- Specific authority
- Direct military support.

An author's decision to select a certain distribution statement should be reviewed and approved by the author's supervisors and any other internal office that makes the final determination regarding distribution statements. Technical reports approved for public release should be reviewed and approved by the appropriate DoD component. Distribution statements are discussed in greater detail in Chapter 3, Section 3.12.6.

1.5.4 Export Control Review

An author should make a decision regarding export controls when determining a distribution statement. When making the decision, the author should consider DoD's Militarily Critical Technologies List, the Department of State's U.S. Munitions List, the Department of Commerce's Commerce Control List, and the author's knowledge concerning the state of the art of the applicable technology. Export controls are discussed in greater detail in Chapter 3, Section 3.12.7.

1.5.5 Patent and Technology Transfer Review

All defense-related technical reports should be reviewed for inclusion of STI that can be patented and, if there is commercial interest, transferable as a technology to business and industry. Financial incentives are often put in place by various organizations for authors who produce such STI. The legal counsel of the author's organization should perform the patent review. (Most large organizations retain patent counsels.) Some large organizations maintain a technology transfer office, which should be able to review a technical report for applicable STI.

1.6 Distribution of Technical Reports

1.6.1 Basic Guidelines

When distributing a technical report, a recipient other than DTIC and, perhaps, an organization's library or TIC should, at a minimum, receive one paper copy. (DTIC's distribution requirements are further discussed in Section 1.6.2.2.1 and Appendix A, Section A.2.1.2; organizational distribution is discussed in Section 1.6.2.1.) A digital or electronic copy is provided if an organization's library or TIC specifically requests it to facilitate reproduction and preservation or a portion of the technical report is solely electronic in nature, e.g., a multimedia appendix or a software program; otherwise, an electronic copy of the technical report is optional. Occasionally, a technical report comprises a combination of the two.

With the exception of DTIC and an organization's library or TIC, caution should be exercised when distributing electronic copies of final technical reports. Paper copies are more difficult and, therefore, less likely to be altered and reproduced without the author's knowledge and approval; thus, the author retains greater control over the technical report's integrity and distribution. Electronic copies of final technical reports should be saved in an unalterable or read-only status before they are distributed.

Electronic copies of technical reports may be distributed in a number of formats; however, a Portable Document Format (PDF), especially if the software used to create the technical report is uncommon, is generally the preferred format. The International Organization for Standardization (ISO) published a standard in 2005 for archiving PDF files, called PDF/A-1,¹⁶ which should facilitate the long-term preservation of electronic technical reports. The standard may be obtained from ISO. ISO's Web site is www.iso.ch/iso/en/ISOOnline.

The preparing organization is responsible for distributing the technical report to certain individuals. Only personnel with a need to know and an appropriate security clearance should receive a copy of classified and unclassified, limited distribution technical reports. All technical reports should be properly reviewed to assign the correct distribution statement, determine the classification level, and verify their technical adequacy.

1.6.2 Primary Distribution

Primary distribution is the initial distribution (internal and external) of technical reports, i.e., those copies of a final technical report distributed immediately after printing or after an electronic copy of the technical report has been made.

1.6.2.1 Internal Distribution

Internal distribution refers to distribution to personnel within an author's organization. In addition to copies for the author and any co-authors, the internal distribution list should include the following: the author's chain of command up through the head of the organization, colleagues of the author who might have an interest in the technical report, the organization's library or TIC (reference and archival use), and the organization's legal counsel (patent counsel). Stock paper copies should be created for anticipated secondary distribution; however, large quantities should be unnecessary because of the ease of electronic reproduction.

1.6.2.2 External Distribution

1.6.2.2.1 General Guidelines

External distribution refers to distribution to individuals and organization's outside one's own organization. This includes DTIC, sponsors, other DoD organizations, and DoD contractors, including academia. The following guidelines for external distribution should be used:

- a. The Government-Industry Data Exchange Program (GIDEP) should be provided a copy. GIDEP is managed by DoN; however, it encompasses the entire defense community and is "a cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information essential during research, design, development, production and operational phases of the life cycle of systems, facilities and equipment."¹⁷ Classified technical reports and technical reports that contain proprietary information should not be sent to GIDEP. GIDEP's Web site is www.gidep.org.
- b. If the technical report is classified, the security clearances of any contractors on the primary distribution list should be verified to ensure they can receive classified information up to the overall classification level of the technical report and they have a need to know the information revealed in the technical report. Verification is done through DoD's Defense Security Service (DSS). DSS's Web site is www.dss.mil.
- c. If the technical report contains export-controlled information, the eligibility of any contractors on the primary distribution list to receive specific export-controlled information should be verified. Verification is done through the Defense Logistics Agency, specifically the

Defense Logistics Information Service's United States/Canada Joint Certification Program (JCP). JCP's Web site is www.dlis.dla.mil/JCP.

- d. Transmittal letters should be prepared if the author's organization requires transmittal letters for technical reports sent to other organizations. Classified technical reports should follow the appropriate instructions regarding mailing classified information.

1.6.2.2.2 Secondary Distribution

Secondary distribution refers to requests received after primary distribution is completed. Most secondary distribution requests come either in response to DTIC's announcement and inclusion of the technical report in its technical report database or through the use of the technical report as a reference. Although a performing organization may receive a request for secondary distribution of a technical report, it is the responsibility of DTIC to perform this task. Requesters, except those within the author's organization, should be referred to DTIC.

One of the principal functions of DTIC is to acquire, store, announce, retrieve, and provide secondary distribution of DoD STL. DTIC services are available to all components of DoD, DoD contractors, other Government organizations and their contractors, grantees, and potential contractors. Before DTIC can release a limited distribution technical report to someone not authorized by the assigned distribution statement to receive the technical report, DTIC must have the approval of the controlling (sponsoring) organization identified in the distribution statement. Approval or disapproval is obtained through the use of DTIC Form 55. If the technical report is classified or subject to export control regulations, DTIC verifies that the requester has the appropriate clearances, i.e., security and export control registration, before forwarding DTIC Form 55 to the controlling organization. Figures 1-2 and 1-3 show DTIC Form 55. Figure 1-2 shows the form itself; Figure 1-3 shows the instructions for completing it. DTIC Form 55 is available online at www.dtic.mil/dtic/forms/user_form55.html.

1.6.2.2.3 Foreign Distribution

Distribution of technical reports to foreign nationals is strictly controlled. The performing organization's security office should be consulted before releasing a technical report to a foreign national.

Technical reports that have been cleared for public release may be released to foreign nationals. Foreign nationals may be included on the primary distribution list in technical reports that have been cleared for public

18 How To Prepare Defense-Related Scientific and Technical Reports

DEFENSE TECHNICAL INFORMATION CENTER		DTIC CONTROL NO.	USER ROUTING
REQUEST FOR RELEASE OF LIMITED DOCUMENT			
SECTION I - REQUESTING INFORMATION			
1. REQUESTING ORGANIZATION AND ADDRESS:	2. DTIC USER CODE NO.	3. DATE OF REQUEST	
	4. TYPE COPY AND QUANTITY <input type="checkbox"/> Paper Copy _____ Copy(s) <input type="checkbox"/> Microfiche _____ Copy(s)		
	5. CONTRACT NUMBER	6. CONTRACT SECURITY LEVEL	
7. GOVERNMENT SPONSOR AND ADDRESS (Contractors and Grantees Only)	8. METHOD OF PAYMENT (X ONE) Acct. No. _____ <input type="checkbox"/> VISA <input type="checkbox"/> MC <input type="checkbox"/> AMEX Expires: _____ <input type="checkbox"/> Charge to my NTIS Deposit Account No: _____		
	9. CONTRACT NUMBER AND TELEPHONE NUMBER (Contractors and Grantees Only)	10. NAME, TITLE, TELEPHONE OF REQUESTING OFFICIAL	
		EMAIL	FAX NO.
SECTION II - BIBLIOGRAPHIC INFORMATION			
11. AD NUMBER (if known)			
12. TITLE, REPORT NUMBER, AUTHOR(S)			
SECTION III - REQUESTER JUSTIFICATION			
13. REQUESTER JUSTIFICATION (Explain need in detail)			
SECTION IV - RELEASING AGENCY			
1. RELEASING AGENCY ADDRESS (if known)		2. RELEASING AGENCY DECISION (if the report was developed under the SBIR Program, refer to instruction E.3) <input type="checkbox"/> APPROVED FOR RELEASE TO THE ABOVE REQUESTER <input type="checkbox"/> DISAPPROVED. REASON FOR DISAPPROVAL _____ <input type="checkbox"/> APPROVED FOR PUBLIC RELEASE <input type="checkbox"/> DISTRIBUTION AUTHORIZED TO U.S. GOVT AGENCIES AND THEIR CONTRACTORS <input type="checkbox"/> DISTRIBUTION AUTHORIZED TO U.S. GOVT AGENCIES ONLY <input type="checkbox"/> DISTRIBUTION AUTHORIZED TO DOD ONLY <input type="checkbox"/> DISTRIBUTION AUTHORIZED TO DOD/ THEIR CONTRACTORS	
FAX NUMBER			
EMAIL ADDRESS			
3. NAME/TITLE OF RELEASING OFFICIAL	TEL NO.	5. SIGNATURE	6. DATE
DTIC FORM 55 FEB 2004 (EG)		PREVIOUS EDITIONS ARE OBSOLETE	

Figure 1-2. DTIC Form 55 (Page 1 of 2)

DTIC - FORM 55 INSTRUCTIONS**A. DTIC REQUESTER (Complete Sections I, II, and III)**

1. Enter your routing information in the User Routing block, if desired, for your internal control purposes.
2. Contractors and Grantees must identify in Section I their government sponsor's name and telephone number, for need-to-know purposes. Please also provide FAX number and email address.
3. Separate Form 55's must be completed for each request, unless the Releasing Agency is the same for all Air numbers requested.
4. Explain in detail your requirement for the document. Include appropriate contract information and explain need-to-know in Section III.
5. Method of payment is required. Retain a copy for your records, mail or fax to:

DEFENSE TECHNICAL INFORMATION CENTER
 ATTN: DTIC-5C (Registration)
 8725 JOHN J. KINGMAN ROAD, SUITE 0944
 FORT BELVOIR, VA 22060-6218

Commercial:	703-767-8271	DSN:	427-8271
FAX:	703-767-9459	DSN:	427-9459

DTIC will not accept any form of prepayment with this request.
 (Service charge will be made only for documents approved for release.)

B. RELEASING AGENCY (Complete Section IV)

1. Contractor's Government Sponsor's address, name and telephone number is included in Section I (Blocks 7 & 9) for your use.
2. Indicate in Section IV, (Block 2) approval or disapproval. Also check the appropriate block, if the distribution statement should be changed.
3. It is important to complete blocks 3-5. DTIC cannot process Form 55's without a signature.
4. Please provide your FAX number and email address.
5. Retain a copy for your records, mail or fax a copy to:

DEFENSE TECHNICAL INFORMATION CENTER
 ATTN: DTIC-5C (Registration)
 8725 JOHN J. KINGMAN ROAD, SUITE 0944
 FORT BELVOIR, VA 22060-6218

Commercial:	703-767-8271	DSN:	427-8271
FAX:	703-767-9459	DSN:	427-9459

6. Any documents needed for review can be provided free of charge. DTIC policy requires a memo for Code 5 documents (Further Dissemination Only) stating that the document is needed for review. Classified documents require a DTIC User Code before they can be ordered.
7. As directed by ODDR&E (AT/L), Releasing Agencies should complete the form and return it to DTIC within 15 days.
8. **WARNING:** If the requested information is proprietary data developed under a SBIR contract, it cannot be released outside the U.S. Government for a period of FIVE years, after acceptance of the last contract deliverable item, without the written permission of the contractor (DFAS 252-227-7018).

Figure 1-3. DTIC Form 55 (Page 2 of 2)

release after approval by the performing organization's security office; secondary distribution requests should be sent to the performing organization's security office.

The release of unclassified, limited distribution and classified technical reports to foreign nationals should be cleared by DoD. Requests to include a foreign national on the initial distribution list on unclassified, limited distribution and classified technical reports are evaluated by DoD on a case-by-case basis; primary and secondary distribution requests should be forwarded to the performing organization's security office, which will coordinate the request with DoD.

1.7 Classified Technical Reports

1.7.1 Description

Classified technical reports contain classified information, which is "information that has been determined pursuant to this order [Executive Order 13292] or any predecessor order to require protection against unauthorized disclosure and is marked to indicate its classified status when in documentary form."¹⁸ While some foreign countries have additional levels of classification, there are only three levels of classification for U.S. defense-related technical reports: Top Secret, Secret, and Confidential.

- a. Top Secret "shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause exceptionally grave damage to the national security that the original classification authority is able to identify or describe."¹⁸ Examples include information whose unauthorized release could result in armed hostilities against the United States or its Allies, a disruption of foreign relations vitally affecting the national security, the compromise of vital national defense plans, the disclosure of complex cryptographic and communications intelligence systems, the disclosure of sensitive intelligence operations, and the disclosure of significant scientific or technological developments vital to national security.¹⁹
- b. Secret "shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause serious damage to the national security that the original classification authority is able to identify or describe."¹⁸ Examples include information whose unauthorized release could result in the disruption of foreign relations significantly affecting the national security, the significant impairment of a program or policy directly related to the national security, the disclosure of significant military plans or intelligence operations,

and the disclosure of scientific or technological developments relating to national security.¹⁹

- c. Confidential “shall be applied to information, the unauthorized disclosure of which reasonably could be expected to cause damage to the national security that the original classification authority is able to identify or describe.”¹⁸ Examples include information whose unauthorized release could result in disclosure of ground, air, and naval forces (e.g., force levels and force dispositions) or disclosure of performance characteristics such as design, test, and production data of U.S. munitions and weapon systems.¹⁹

Most defense-related technical reports are unclassified. A technical report should not be considered for classification unless it concerns one or more of the following areas listed in Executive Order 13292¹⁸:

- a. Military plans, weapons systems, or operations;
- b. Foreign government information;
- c. Intelligence activities (including special activities), intelligence sources or methods, or cryptology;
- d. Foreign relations or foreign activities of the United States, including confidential sources;
- e. Scientific, technological, or economic matters relating to the national security, which includes defense against transnational terrorism;
- f. U.S. Government programs for safeguarding nuclear materials or facilities;
- g. Vulnerabilities or capabilities of systems, installations, infrastructures, projects, plans, or protection services relating to the national security, which includes defense against transnational terrorism; or
- h. Weapons of mass destruction.

1.7.2 Author Responsibilities

An author of a classified technical report is responsible for the following:

- Correctly marking the technical report, including electronic copies, so that no doubt exists about its overall level of classification;
- Correctly marking pages, headings, paragraphs, lists, figures and tables, figure and table titles, and footnotes in the technical report;
- Determining how long the technical report should remain classified based on the classification instructions pertinent to the subject matter;
- Incorporating any additional measures necessary to protect the technical report, e.g., identifying export-controlled information; and
- Identifying the originator of the technical report (usually the preparing organization).

1.7.3 Original and Derivative Classification

Original classification involves determining that the material requires protection from unauthorized disclosure and the level of protection required. These original classification determinations are usually issued as program security classification guides. Subsequently, any time this material is used in any form, it is derivatively classified based on the original classification determination.

Derivative classification is done by anyone who incorporates, paraphrases, restates, or generates in new form material that is already classified. Derivative classification is most commonly done by marking material according to the program security classification guide. Most classified information produced by DoD is derivatively classified.

Chapter 3, Section 3.12.8 provides further guidance regarding original and derivative classification markings.

1.7.4 Marking Requirements for Classified Technical Reports

The basic marking requirements for classified technical reports are as follows:

- Overall classification marking (Top Secret, Secret, or Confidential): required
- Classification source of material: required
- Declassification date of material: required
- Date of origin of material: required
- Office that originated the material: required
- Distribution statement: required
- Downgrading date of material: if available from source document
- Intelligence control marking: if required by source document
- Warning notice: if required by source document
- Export control notice: if required by export documents.

The preceding information should be included on the cover and title page of a classified technical report. Chapter 3 provides specific information regarding these marking requirements.

Chapters 2 to 5 provide further guidance regarding the marking of the various elements in a classified technical report.