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November 1950

TOPOGRAPHIC INSTRUCTIONS

BOOK 1

Part 1-A
PREFACE AND CONTENTS

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UNITED STATES DEPARTMENT OF THE INTERIOR
OSCAR E. CHAPMAN, SECRETARY

GEOLOGICAL SURVEY
W. E. Wrather, Director

This circular has been prepared as the first part of a manual of Topographic Instructions

WASHINGTON, D. C.

Free on application to the Geological Survey, Washington 25, D. C.

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TOPOGRAPHIC INSTRUCTIONS

Book 1, Part 1A

Chapter 1A1

PURPOSE AND USE OF TOPOGRAPHIC INSTRUCTIONS

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PURPOSE AND USE OF TOPOGRAPHIC INSTRUCTIONS

The primary purpose of Topographic Instructions is to guide members of the Topographic division in the preparation of topographic maps to prescribed standards. For the new employee, these instructions will also serve as a comprehensive textbook during his training period. The preceding Topographic Instructions were issued as Geological Survey Bulletin 788, in 1928. Since that date it has been necessary to issue numerous supplements in the form of technical memorandums or, in some cases, complete instruction pamphlets where radical changes in procedure had been developed. These older instructions ultimately will be entirely superseded by the current manual.

The need for a new manual has become acute because, with the increasing use of photogrammetry and other interdependent technical procedures, the coordinated operation of topographic mapping has become exceedingly complex. Furthermore, with operations carried on in four separate field regions, written instructions are essential to insure that map materials are interchangeable between regions and that each map series shall be uniform throughout the United States.

Responsibility for the preparation and revision of the manual officially rests with the Research and Technical Control branch of the Topographic division. However, the technical staff will require considerable assistance from experts and specialists in the regional organizations, particularly in preparing original drafts of chapters dealing entirely with operational procedures.

The procedures described herein are designed to produce maps that will meet standard specifications at the lowest cost. Changing conditions may require that specifications be changed from time to time, which in turn may require that the procedures and instructions be revised accordingly. It is emphasized that the mapping procedures approved for use by these instructions should be scrutinized constantly for opportunities to reduce costs, to reduce time required for an operation, or to improve quality. Suggestions to these ends are always in order.

MANUAL FORMAT

The contents of Topographic Instructions have been subdivided and grouped into books, parts, and chapters. For example, Book 2 deals with control surveys, Part 2 A discusses triangulation field work, third-order, and Chapter 2 A 2 contains instructions for triangulation reconnaissance and signal building. The general arrangement of the contents is in chronological sequence in the order that work is performed, insofar as this is practical.

Each chapter provides essentially complete coverage of its subject. Whenever major revisions are required, the entire chapter will be reissued with an appropriate revision label. Likewise, a revised table of contents will be issued as often as warranted. It is planned that each chapter will be published as a separate and issued to employees of the Topographic division. These separates will be punched for the standard three-ring loose-leaf binder to facilitate the handling of revisions. When all of the chapters comprising a part have been published, they will be assembled under one cover and issued to the public as a Geological Survey circular.

Because the chapter is the unit of publication and also of revision, pages are numbered by chapters, each chapter starting with page one. Illustrations and tables are numbered consecutively within each chapter. An abstract of the subject matter is given at the beginning of each chapter and, when appropriate, a bibliography of reference material appears at the end of the chapter. Center headings and side captions serve to identify sections and articles within each chapter, to aid in classifying subject

[1]The number 1 A 1 signifies Book 1, Part A, Chapter 1 of the Geological Survey loose-leaf manual of Topographic Instructions. For a table of contents, see Chapter 1 A 2.

matter and to facilitate reference. Although major changes in subject matter will be handled by revising and reissuing the chapter concerned, minor changes or corrections of errors may be issued as errata notices, coded or dated for identification.

Some of the chapters deal with subjects whose procedures already have been well established in the Topographic Instructions of 1928 and subsequent technical memorandums. Other chapters contain entirely new material, concerning procedures heretofore not standardized. These latter chapters will be published only after they are reviewed and commented upon by operational groups in the regional offices. Also, some of these chapters probably will be issued provisionally until operational trials have confirmed the soundness of the procedures set forth therein.

MANUAL OBJECTIVES

Each chapter is intended to be written for a reader having an engineering education or equivalent, plus six months of experience in topographic mapping work, three months of which were in the specific operation discussed in the text. Therefore, although each chapter is intended to be reasonably complete, general discussions and reference material are omitted.

One of the aims of the manual is to distinguish for the employee between required procedures and permissible alternatives, as well as between specific and general procedures. Whenever a single procedure is specified, the use of an alternative procedure will usually not be sanctioned, until formally recommended by a Region or Staff Engineer, and approved by the Chief Topographic Engineer. When two or more alternative procedures are suggested, any of the suggested procedures, or other newly devised procedures, may be authorized by each Region Engineer, always provided that the procedure selected will produce equally satisfactory results, at comparable costs. Similarly, when only general procedures are specified, each Region Engineer will be expected to determine the specific procedures to be used in his Region.

All members of the Topographic division have a vital interest both in the welfare of the organization and in increasing the rate of progress toward completion of the mapping of our country. The surest way to promote these objectives is to strive continually to keep the division in the forefront in developing new or improving older methods or equipment, in improving products, and in maintaining economical operation. Because these improvements and developments should be reflected quickly in the official operating instructions, all members of the organization are again urged to participate in constructively criticizing these instructions, and to make suggestions for their improvement.

Gerald FitzGerald
Chief Topographic Engineer

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EXPLANATION

A chapter has been assigned for each topic now deemed appropriate for inclusion in this manual. As the detailed instructions are developed, it may be found desirable to revise some of these titles, to add new chapters, or to omit some of those now proposed. Therefore, space has been provided for writing in a reasonable number of changes in the Contents, pending publication of a revised issue.

Also, spaces have been provided after each chapter title for notations regarding date of original issue and date of any revision that may be published. These dates will be included in future issues of a revised table of contents. If these spaces are filled as chapters are issued they will provide a convenient means of indicating the publication status of each chapter, that is, whether it has been issued, and whether it has been revised.

[1]The number 1 A 2 signifies Book 1, Part A, Chapter 2 of the Geological Survey loose-leaf manual of Topographic Instructions.

Book 1. GENERAL POLICIES

Book 2. CONTROL SURVEYS

Book 3. MAPPING PROCEDURES

Book 4. CARTOGRAPHIC PROCEDURES

Book 5. MAP FEATURES AND TREATMENTS

Book 6. ADDENDA

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