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**INTEGRATED
TECHNICAL
DATA
SYSTEM**

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**DATA OPERATIONS
SUBSYSTEM:
EQUIPMENT DESCRIPTION**

JUNE 1966

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PREPARED FOR
U.S. ARMY MATERIEL COMMAND
CONTRACT NO. DA-49-186-ANG-324 (X)

TRW
SYSTEMS GROUP

WASHINGTON OPERATIONS
1201 STREET N.W. • WASHINGTON, D.C. 20045

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FOREWORD

TRW Systems was awarded a contract [Contract Number DA-49-186-AMC-324(X)] by the U.S. Army Materiel Command to develop an Integrated Technical Data System (ITDS). The ITDS is intended to assist the Army Systems Manager in performing his management and technical tasks by operating on relevant data to produce, summarize, and condense information. This allows the manager and technical support personnel to a) determine status and monitor technical progress, b) identify and predict system technical/management problems and their impact, c) comprehend and evaluate proposed system changes, and d) assign and maintain awareness of responsibility for action.

The ITDS is composed of personnel, procedures, equipment, and computer programs. The organization of these elements provides a capability for the processing of systems program data, including the following functions:

- Data receipt and indexing
- Validation and verification for authenticity
- Storage
- Manipulation
- Retrieval
- Display and dissemination.

The organization is divided into three major subsystems: the Functional Disciplines Subsystem, the Data Operations Subsystem, and the Computer Subsystem. ITDS user documentation, of which this manual is a part, is oriented to the above subsystems, with the exception of an overall System User's Guide and a Configuration Management Plan.

Following is a tabulation of ITDS user documentation (title of this volume is heavily underscored):

ITDS - Overall

- System User's Guide
- Configuration Management Plan

Functional Disciplines Subsystem

- Administrative Manual
- Operations Manual
- Personnel Position Descriptions

Data Operations Subsystem

- Administrative Manual
- Operations Manual
- Equipment Description
- Personnel Position Descriptions

Computer Subsystem

These 12 manuals, in general, cover administration of the subsystem, operating and maintenance instructions for the programs, computing equipment description, and personnel position descriptions.

- Administrative Manual
- Generalized Processing Program, General Description
- Applications Programs, General Description
- Peripheral Programs, General Description
- Computer Programs Maintenance Manual
- Computer Programs Operations Manual
- Data Processing Center Operator's Manual
- Equipment Description
- Personnel Position Descriptions
- Generalized Processing Program, Programming Documentation
- Applications Programs, Programming Documentation
- Peripheral Programs, Programming Documentation

This manual describes the equipment for the Data Operations Subsystem.

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DATA OPERATIONS SUBSYSTEM: EQUIPMENT DESCRIPTION

1. INTRODUCTION

1.1 PURPOSE

This document provides performance specifications for ITDS Data Operations Subsystem equipment. It is intended for use by system management as a requirements guide in planning, installing, or expanding the ITDS.

1.2 SCOPE

This document describes the generic kinds of equipment known to meet the varying requirements for the operational support of an ITDS. The equipment described here will fit into a normal office environment and may provide multiple functions. Quantities required are in proportion to the activity and volume of a given operation. Equipment required for support of low-volume, unique requests is not included since service agency capabilities provide a more economical processing method.

1.3 ORGANIZATION

Four functional groups of equipment have been identified for description:

- Reproduction
- Microphotography
- Data Communications
- Storage and Retrieval.

2. REPRODUCTION EQUIPMENT

Reproduction equipment shall provide the ability to produce information copies from source materials for immediate dissemination to on-site and remote locations. It shall be capable of producing reduced, enlarged, or same-size copies of documents. Output speed of single or multiple copies may vary but shall be adequate for volume and schedule requirements at each location. Automatic machine controls shall be utilized for efficiently producing multiple copies in high volume reproduction areas, thus eliminating operator attention.

2.1 PAPER COPIERS/DUPLICATORS

Paper copiers/duplicators shall be capable of reproducing paper copy from writing, print, typed material, drawings, or photographs contained on any opaque, translucent, or transparent material of any color and density, inscribed by ink, pencil, or crayon. Paper copiers/duplicators shall be capable of copying pages from bound books, magazines, cardboard originals, overlays and pasteups, stapled material, as well as producing images of small objects. Maximum size for same-size originals is 8-1/2 by 13 inches; however, portions of larger documents may be copied. Minimum output size may vary according to requirements.

2.2 MICROFORM DUPLICATORS

Microform duplicators are contact printers and shall be capable of providing extra film copies for distribution or security files. They shall be capable of duplicating roll-to-roll, card-to-card, fiche-to-fiche, card-to-roll, or fiche-to-roll. They shall be capable of accepting materials of silver halide, diazo, thermal, or Kalvar and producing output of silver halide, diazo, or Kalvar.

2.3 MICROFORM PRINTERS

Microform printers shall be capable of providing hardcopy prints in varying sizes of all microforms to a maximum size of 18 by 24 inches. Print speeds may vary depending upon location and volume requirements. This equipment may be combined with an enlarger-viewer capability.

2.4 FACSIMILE EQUIPMENT

Facsimile equipment shall be capable of providing paper copies of printed hardcopy, hand-written notes, and photographs to remote locations. Maximum copy size is 8-1/2 by 14 inches.

3. MICROPHOTOGRAPHY EQUIPMENT

Microphotography equipment shall be capable of converting information from source materials to a microform, providing the advantages of reduced storage space, preservation of original documents, increased file integrity, and lower reproduction costs.

3.1 CAMERA

The camera shall be capable of photographically reducing graphic data to a microform.

3.2 FILM PROCESSOR

The film processor shall be capable of performing the operations necessary to process photographic material such as developing, fixing, washing, and drying the exposed film.

3.3 APERTURE CARD PREPARATION EQUIPMENT

3.3.1 Keypunch

The keypunch machine shall be capable of cutting coded holes representing alphameric characters into tabulating cards.

3.3.2 Interpreter

The interpreter shall be capable of translating the holes cut in cards and printing the corresponding data (both numerical and alphabetical characters) in a specified format across the face of a card.

3.3.3 Mounter

The mounter shall be capable of converting roll film into aperture cards by positioning, cutting, and pressing 35 mm frames of microfilm on the adhesive of the aperture cards.

3.4 MICROFICHE PREPARATION EQUIPMENT

3.4.1 Slitter Assembly

The slitter assembly shall be capable of trimming 16 or 35 mm roll film in preparation for the stripping process.

3.4.2 Strip-up Station

The strip-up station shall be capable of mounting film strips to make a master fiche.

3.4.3 Microjacket Reader-Filler

The microjacket reader-filler shall be capable of cutting and inserting roll film into microjackets.

3.5 INSPECTION AND FILM TEST EQUIPMENT

The inspection and film test equipment shall be used to insure compliance with applicable specifications for film quality.

3.6 MICROFILM READERS

Microfilm readers shall be capable of viewing micro-images in roll form, aperture cards, or microfiche.

4. DATA COMMUNICATIONS EQUIPMENT

Data communications equipment shall provide the functions of connecting input/output terminals to one another and to the central data processor. The Data Operations Subsystem equipment requirements that satisfy these functions are (1) terminal devices and (2) transmission facilities. The interface between these equipments and the central data processor is provided by communication adaptors (transmission control devices) which are part of the Computer Subsystem.

4.1 CAPABILITY REQUIREMENTS

4.1.1 General

Data communication equipment shall provide twenty-four hour two-way communication on attended and unattended service. Transmission shall be half-duplex (two ways but not simultaneously) between the central terminal and the remote terminal(s) or between two remote terminals. The capability shall be furnished for providing data immediately or on a scheduled routine basis to attended or unattended recipient terminals. Transmission, depending on the carrier, shall be in the range of 75 to 300 bits per second, which is adequate to handle frequent transmission of simple messages and occasional lengthy messages or formatted reports to single or multiple addressees. Capability shall be provided for transmitting a variety of data forms including oral, visual display (written, printed, or graphic), punched cards and for receiving in the same or a converted form, as desired. Error conditions shall be automatically indicated by both the receiving and transmitting locations.

4.1.2 Inter-terminal Communication

Data communication equipment shall be capable of transmitting and receiving the specified data forms between terminal locations without interface with the central data processor.

4.1.3 Terminal-Computer Linkage

Data communications equipment shall provide linkage between the terminal and the central data processor via the communications adaptor interface.

4.2 EQUIPMENT REQUIREMENTS

4.2.1 Terminal Device

The terminal device shall receive data in an environment associated with the job to be performed and shall be capable of transmitting entries to and obtaining output from the system of which it is a part. The terminal shall permit simultaneous preparation of data while transmitting or receiving. Correction features shall provide the operators an efficient means of correcting errors that occur in data preparation. Multiple terminal units may be required at high traffic volume locations.

4.2.2 Transmission Facilities

Transmission shall be accomplished via leased common carrier lines.

5. STORAGE AND RETRIEVAL EQUIPMENT

Storage and retrieval equipment may be manual or automatic and shall include all files, containers, machines, devices, and furniture used for maintaining and servicing files. Such equipment shall be adequate for handling all documents regardless of size, shape, or form. Storage equipment shall be adequate for storing classified and proprietary documentation according to applicable regulations.