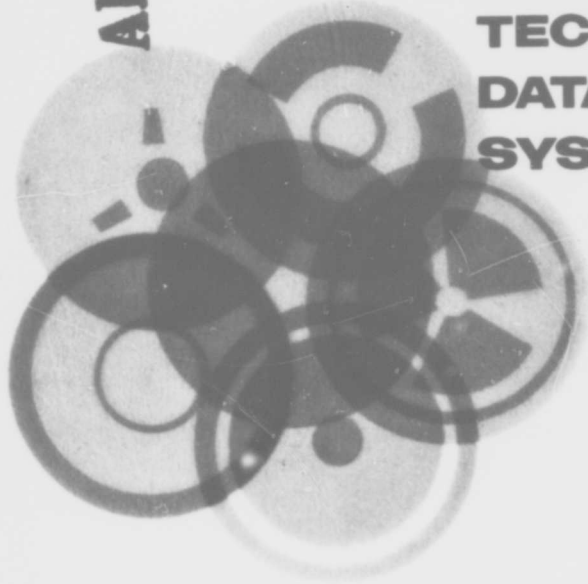


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# INTEGRATED TECHNICAL DATA SYSTEM



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## SYSTEM USER'S GUIDE

JUNE 1969

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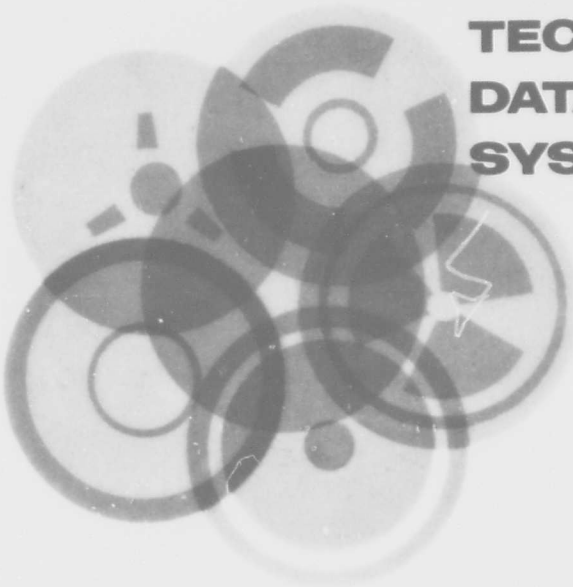
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**INTEGRATED  
TECHNICAL  
DATA  
SYSTEM**



**SYSTEM USER'S GUIDE**

**JUNE 1969**

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Document No. 06349-W512-R0-00

**Integrated Technical**

**Data System**

**User's Guide**

## 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 provide assistance to Army system management and technical functions by operating on relevant data to produce, summarize, and condense information. This allows managers and technical support personnel (a) to determine status and monitor technical progress, (b) to identify and predict system technical/management problems and their impact, (c) to comprehend and evaluate proposed system changes, and (d) to 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.

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### 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 Descriptions.
- Personnel Position Descriptions.

Computer Subsystem:

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

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

This User's Guide covers what users should know for the entire ITDS system. The emphasis is on the user. You will be referred to other manuals in the ITDS documentation structure for specific details about some of the subjects covered herein.

# ITDS USER'S GUIDE

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# ITDS USER'S GUIDE

## PART ONE: INTRODUCTION

### 1.1 PURPOSE

This Guide describes the U.S. Army Integrated Technical Data System (ITDS) and provides its users with a day-to-day reference manual. It is addressed to personnel of Army System Offices and to other associated Army organizations and components who employ technical and management data. Its purpose is to describe ITDS, to discuss its equipment and system operations, and to present a detailed examination of its applications in each of the functional areas (logistics, systems engineering, production and procurement, and so forth) of technical management. The Guide has been constructed to provide a clear definition of the system without oversimplification or superficial treatment of system functions and operations. The text avoids the use of detailed computer technical terminology and is oriented toward the system user rather than the system operator.

### 1.2 ITDS SCOPE

The U.S. Army ITDS handles all types of technical and management data generated by the Army and its contractors, including digital data, drawings, blueprints, messages, letters, photographs (including still and motion pictures), punched and aperture cards, tape, microform material, and information provided by data communication devices. The data stored in the digital data base is directly accessible via remote terminals, both for purposes of adding new information to the data base and for presentation of requested outputs.

It is apparent that large volumes of data inhibit or at times prevent those who have a need for specific data elements from identifying the information which satisfies their needs. ITDS overcomes this inability by taking facts and figures--data elements--and organizing them for rapid identification and access. It does this by storing data either in a digital data base and/or in document and microform files; by retrieving, manipulating, and recalling data; and, where desired, by associating data elements to each other according to a logical plan. ITDS provides outputs in the form of direct and indirect inquiry responses, computer printouts, visual displays, and reproductions of documents (reports, drawings, microfilm and photographic records).

In the inquiry mode, ITDS can be used to respond to such questions as:

- What reports on quality control were submitted by a given activity during a specified time period?
- What repair parts are associated with a certain part number?
- Has a test objective been met?
- When was it met?
- Do we have a drawing of the latest configuration of the power supply?
- What Engineering Change Proposals are in process for a particular configuration item? For the entire system?

The inquiry mode is the primary mode in which ITDS has been designed to operate.

A second mode of ITDS operation is that of report generation. The preparation and distribution of routine reports frequently require the use of technical and management data. Many routine reports are a compilation of data or an analysis of compiled data. ITDS can be used to produce data

compilations on a routine basis under a standard set of instructions prescribed by the user; and, because ITDS is a computer-assisted system, these data can be automatically generated.

The third mode of ITDS operation is that of exception reporting. For example, a user may require notification of the inability to procure a critical item of hardware, the development of a low-level point in inventory, or the failure to complete a specified test on time. In such situations, ITDS can be used to identify exceptions to anticipated status or action.

ITDS offers several unique capabilities and features not to be found in other data management systems. At the heart of its data processing capability is a new concept in information management systems. This new concept is called the software computer. This software computer should not, however, be compared with an electronic computer, because the software computer does not physically perform its functions. Its organization and structure may be compared more properly to the mind of a human being, in that both embrace concepts, or ideas, in the abstract. Clearly, the analogy stops there, for the software computer is nothing more than a series of complex algorithms and data processing instructions. But, these data processing instructions are generic in nature and, like the ideas of a human being, can be applied to any relevant object, in this case, the data base.

These generic concepts or instructions are recorded within a generalized processing program and therein lie three advantages of ITDS that cannot be found in other information management systems. First, the software computer embraced within the generalized processing program can be used on any electronic computer. That is, the software computer is hardware independent.

Second, communication between the user and the software computer takes place in simple English terms. The user does not have to learn a specialized programming language to use ITDS. Third, the software computer can be applied to any data base prescribed by the user. Unlike other data processing systems, ITDS does not compel the user to mold his data to fit a rigid form. The functional user defines his own files and records and manipulates them to meet his needs.

Another capability that gives ITDS its high degree of reliability and responsiveness is its professional management and technical personnel who are part of the system design. These personnel represent expertise in several functional disciplines, including management, engineering, test, and logistics. They constitute one of the three operating subsystems and perform the essential functions of defining data requirements, the content of the data base, source data evaluation, output quality assurance, and so forth.

### 1.3 ITDS COMPOSITION

The word "integrated" has special meaning for ITDS users. It refers to more than the mere internal correlation of data, although that function is an important capability of the system. In larger context, ITDS is an integrated system because, wherever employed, it becomes a vital part of the overall system of management and technical support. By this is meant that applications which have been the exclusive data base of a given system organizational element are no longer exclusive but are merged in a highly integrated data base structure. Thus, the logistics data application, which traditionally operated within the province of inventory and supply

management, no longer belongs exclusively to that functional area. Rather, because it uses data furnished by engineering and configuration management, among others, and provides input to production and procurement, it is associated with each of these functions as well.

A reference to internal data correlation and to managerial relationships does not, however, constitute all that is integrated in the ITDS. One must consider the elements of the ITDS themselves.

The ITDS is a balanced structure comprising three operating subsystems. They are (i) the functional disciplines (user applications) subsystem, (ii) the data operations subsystem, and (iii) the computer subsystem. The first subsystem is concerned with operations performed for ITDS by personnel trained in specific technical or functional disciplines, and it is here that the data integration feature of the system becomes apparent. Both government and contractor offices are normally staffed by personnel with specific skills. These skills embrace such functional areas as management, system engineering, engineering design, quality assurance, operational engineering, production engineering, test, logistics, and production and procurement. A distinctive feature of ITDS is that it requires personnel in various system functional disciplines to screen and evaluate their function-peculiar data before they are made available to the ITDS user. The integration of input source and output user is shown in Figure 1.

The data operations subsystem is composed of personnel, equipment, and supporting operating and maintenance documentation that are required to control the flow of data into and out of the ITDS, as well as within the system. This subsystem performs data management, analysis, and processing functions. It provides the interface between the computer support subsystem and functional disciplines (user applications) subsystem.

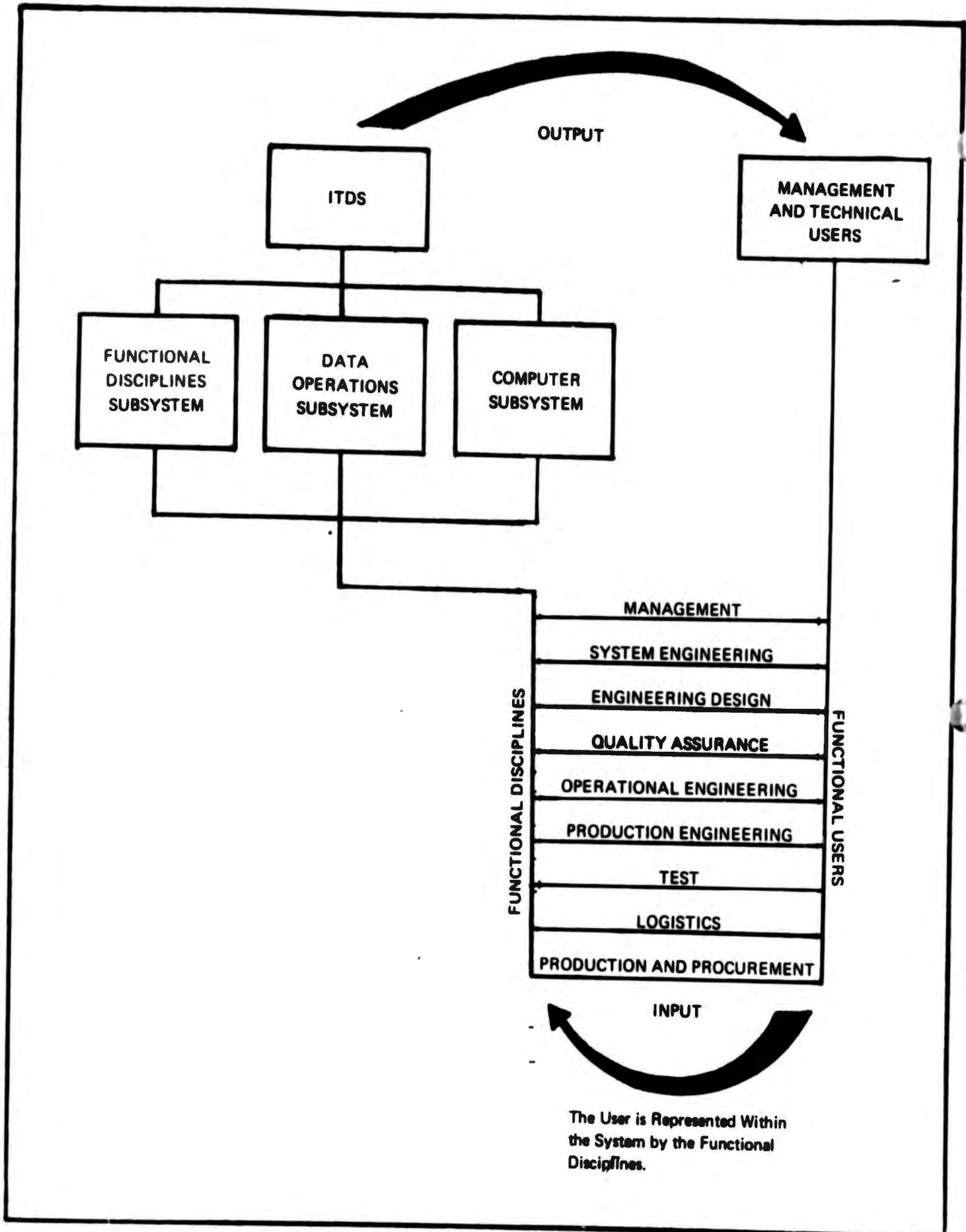


Figure 1. Integration of Functional Users With ITDS

The computer subsystem is composed of a third generation computer, a generalized processing program, associated applications programs and related peripheral programs, programming and operating personnel, and supporting documentation. The computer subsystem reduces, integrates, and summarizes the technical and management data for the purpose of producing information enabling managers and other functional users to determine status and monitor progress, identify and anticipate problems, assess problem impact, evaluate proposed changes, and assign and maintain surveillance of responsibility for actions.

#### 1.4 FOCUS OF THE USER'S GUIDE

ITDS exists primarily to serve the needs of management and technical users; accordingly, this Guide has been written not only from the point of view of a functional user but also from the point of view of a system manager and his staff. The uses of ITDS are not limited, however, to functional users and system managers, because ITDS can serve commands, contractors, and other activities which are not directly associated with a given system but which have a need for ITDS information. Hence this Guide acquaints all users, both inside and outside system management offices, with ITDS operations so that they may employ this new tool with efficiency and economy. For this reason, this Guide focuses on the users of ITDS--not system designers or operators. As a result, only issues of concern or of significance to ITDS users are discussed here.

Earlier, ITDS was described as part of an information management system. The relationship between information and management should be clarified if one is to see ITDS in its management perspective.

Management is a process not a system. It is neither a structure nor an organization, but a series of operations tending toward a desired objective. System development is undertaken to attain an objective. In other words, system development is a formal approach to a desired objective. The objective of system development can be to produce a feasibility study, to solve a technical problem, and to develop and support a hardware program. System management provides the means by which objectives are attained. The operations of system management involve the establishment of plans and policy, the evaluation of alternative courses of action, the identification of resources, the selection and implementation of choices, and eventually, control or the measurement of progress. Thus, in its essence, system management is a decision-making process.

Implicit in a decision-making process is the need for data and information. The distinction between data and information must be drawn in order to appreciate the statement. Data are facts, quantities, measurements, substantive or qualitative words, and numbers. Data may or may not be organized and correlated. Information is an intelligent organization of data for a specific end use. The ITDS furnishes both capabilities; it provides for the organization, correlation, storage, retrieval, and utilization of data, and it provides for the reduction, synthesis, summarization, retrieval, and dissemination of information derived from data input. The ITDS organizes and converts data into data lists (files), library storage, and other repositories from which information can be retrieved by whatever management or technical element requires it. ITDS, therefore, serves both as a management information system and as a technical data management system.

## 1.5 ITDS BACKGROUND

The need for an ITDS grew out of the necessity to develop a new integrated data and information processing system that would be fully responsive to AMC management and technical requirements. This need was identified at the time the U.S. Army was moving from the contract definition phase into full-scale development on its newest aircraft weapon system. The project manager made an intensive survey of the then-existing Army management information and technical data handling systems to determine what was available that he could adopt for use on the project. He found that there was no system available that could adequately serve the data handling and information processing requirements of a large-scale aircraft weapon system which was employing the then-new system management disciplines and techniques for project information and control, configuration management, system engineering, maintenance engineering analysis, quality assurance, logistics management, and so forth.

The principal deficiencies identified in the existing data and information systems as summarized below provided the design objectives for the new concept that evolved into the present ITDS. Existing systems:

- Failed to meet the project managers' wide range of information needs--both for decision-making and for technical management.
- Did not provide for the information needs of the several different technical and management disciplines represented in the project management office.
- Did not provide for a user-defined integrated data base.
- Failed to provide the capability for direct access to the data base from remote user terminals.

--Systems produced too many bulk, periodic reports and too few exception reports, and almost no single-inquiry or on-demand responses to user queries.

--Data system development and implementation costs typically far exceeded the worth of the services received in return for the investment.

Based on the data and information needs of the project manager, his staff, and the participating government and contractor organizations, a new system concept was defined and a design and development approach was established as defined below.

--The system concept definition and design and development effort received high-priority and top management commitment and support.

--Members of top management at both project and command levels became involved in the development and implementation of ITDS because they recognized the need for a new project management tool and the flexibility for a variety of applications that are integral features of ITDS system design.

--The design of the system is user-oriented, thus making possible selective applications to be defined as needed.

--Functional disciplines personnel (management and technical professionals/specialists) who represent the users and who are competent to determine the value of data handled are part of the total system design and operation. This unique feature of ITDS provides data and information output that are very highly reliable as well as highly useable.

--ITDS was designed around a modular building block approach that permits the system to be tailored to match the size, nature, complexity, duration, and importance of the project or organization to be supported.

--Its primary functional characteristics and features were designed and developed to serve the project manager and associated functional users. These principal features include:

- (i) Direct inquiry processing via remote terminals providing immediate responses to user queries.
- (ii) A planned, truly integrated digital data base that is defined by the system users.

- (iii) Decision/action criteria incorporated in the design of the generalized processing program making possible automatic exception reporting to support decision-making.
- (iv) Output requirements for forecasting rather than for historical use.
- (v) Selective, tailored periodic output reports only when a special requirement exists or inquiry processing does not completely satisfy the user's requirements.

#### 1.6 ORGANIZATION OF THE GUIDE

This User's Guide is divided into two parts and appendices. Part One is the introduction just presented. Part Two discusses general system operations. This second part, the major segment of the User's Guide, presents an overview of the three ITDS subsystems and assesses how the system operates in its inquiry, reporting, and exception-based modes for all functional users. It also presents a discussion of the ITDS software computer.

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## PART TWO: DESCRIPTION OF ITDS OPERATIONS

### 2.1 INTRODUCTION AND ORGANIZATION OF THIS PART

This part of the ITDS User's Guide is concerned with Integrated Technical Data Systems (ITDS) system operations from the user's point of view. Its goal is to explain the types, volumes, and frequencies of ITDS outputs, together with the manner in which they are provided to users; the manner in which inputs are introduced into the ITDS; and the storage, retrieval, and manipulations that are performed on these inputs by ITDS.

Since the software computer plays a significant role in the ITDS input/output operations, a substantial portion of this part of the Guide examines the generalized processing program.

The material presented in this part of the User's Guide begins with a review of the ITDS objectives. These objectives are then related to the data processing operations of the functional disciplines, data operations, and computer subsystems. This part of the Guide next discusses how the system operates in each of its three output modes--(i) inquiry, (ii) report generation, and (iii) exception reporting--and then examines the general input process common to all modes of ITDS operations. Finally, the generalized processing program and its associated programs are described and the equipment and personnel skills required by each of the subsystems are identified. Although simple flow-charting symbols have been used to explain the operation of the three subsystems, no special knowledge of data processing methods or techniques on the part of the reader has been assumed.

### 2.2 ITDS OBJECTIVES

The objectives of ITDS are closely aligned with the U.S. Army Materiel Command objectives for systems and technical management. The ITDS has been

designed to serve as a primary tool for the Army system and technical managers, providing them with a responsive decision-making and technical information management system. ITDS operates on relevant management and technical data to produce, summarize, and condense information, thereby allowing the managers and other functional users:

- To determine status and monitor technical progress in a given area.
- To identify and predict problems and their impact.
- To comprehend and evaluate proposed changes.
- To maintain awareness of (and assign responsibility for) action.

The design of the ITDS has universal application to systems programs and therefore has an unlimited useful life. Consequently, all documentation regarding the design and application of the system are similarly unrestricted. The application of the ITDS to a specific program is limited to the life cycle of such program only by the specific program data and documentation. It requires a partially dedicated computer (at minimum) to achieve its full performance capabilities, and its associated digital data base should have the capability of direct access from remote terminals. Integration of the data elements within the data lists (contained in the data base) permits retrieval of specific or generalized management and technical information.

### 2.3 ITDS SUBSYSTEM OPERATIONS

The objectives of ITDS are accomplished through its three subsystems, (i) the functional disciplines (user applications) subsystem, (ii) the data operations subsystem, and (iii) the computer subsystem. Figure 2 summarizes the operations, equipment, and personnel required by each of these subsystems.

#### 2.3.1 Functional Disciplines (User Applications) Subsystem

This subsystem is composed of personnel drawn from the several technical disciplines which represent the major functional areas (user applications)

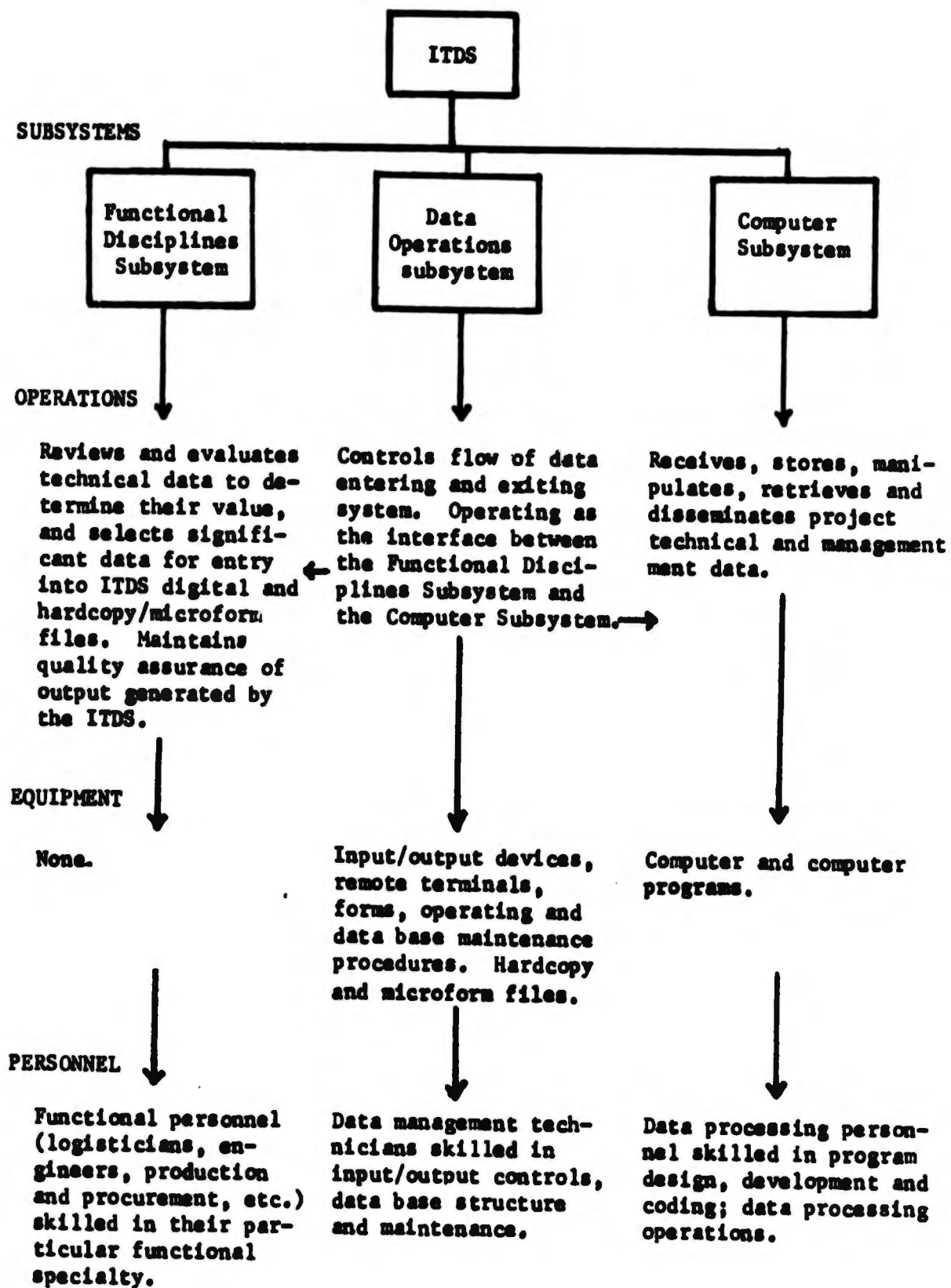


Figure 2. The Integrated Technical Data System

served by the ITDS. These are the technical personnel who represent the user in ITDS; that is, the system manager's technical staff, the commodity command technical support personnel, the contractor's project team, and any other authorized participant.

Personnel in each of the several functional disciplines represented in the functional disciplines subsystem undertake the following operations:

- Perform technical review and evaluation of source data.
- Define system output requirements for all three output modes (inquiry, periodic, and exception).
- Define minimum storage requirements for digital (disk and tape) storage, hardcopy, and microform storage.
- Identify authorized data sources.
- Designate appropriate keywords to identify each item of source data.
- Extract (and abstract) significant data for input into storage.
- Define and coordinate schedules for submittal of data.
- Review and validate system outputs.
- Perform continuous evaluation of ITDS effectiveness.

### 2.3.2 Data Operations Subsystem

The ITDS data operations subsystem consists of personnel who control the flow of data into and out of the ITDS, as well as within the ITDS itself.

Data operations personnel perform the following tasks:

- Establish and maintain hardcopy and microform master files of data and documentation.
- Receive, log, and control all incoming data.
- Maintain distribution control.
- Maintain identification and cross-reference indices on all data.
- Provide quality control over outputs.
- Integrate and manage data base contents.

### 2.3.3 Computer Subsystem

This subsystem comprises personnel who operate and maintain the programs which receive, store, manipulate, retrieve, and disseminate technical data. They perform these operations on the data base developed by the data operations subsystem. These programs include a generalized processing program plus supplemental applications programs, related peripheral programs, and associated program documentation. It should be noted that the user dictates the contents of the data base on which these programs operate.

The functions performed by each subsystem and their interactions during data processing operations are described in greater detail in succeeding paragraphs. These descriptions are presented to give the user a complete picture of how data flow through the ITDS and of the various operations that are necessary to receive, store, manipulate, retrieve, and disseminate useful data and information products.

### 2.4 ITDS OUTPUT PROCESSING

This paragraph examines the system output processing modes of operation. Although the system is designed primarily around the capabilities of a generalized processor program operating on a large, integrated, and user-defined data base that makes possible direct-access inquiry processing, it was necessary to provide the more conventional capabilities for bulk periodic reporting and exception reporting as well. The three modes available are:

- Inquiry processing.
- Periodic reporting.
- Exception reporting.

Inquiry processing and periodic and exception reporting modes, functions, and processes are illustrated in Figure 3, ITDS Operations Summary, and are described in succeeding paragraphs.

#### 2.4.1 Inquiry Processing Mode

The high volume of technical data generated in support of Army system projects has wide and continuing use not only within the Army project office but among various other Army organizations and their contractors. Because these data change frequently and are in wide demand, it is more efficient and economic to store the significant elements of data in the digital data base as well as the complete document in the hardcopy (and, when cost effective, in the microform) repository. Thus, a majority of the significant project technical data are reduced, are stored on disks, and are available via direct access to authorized system users. Normal use involves rapid response to specific inquiries through available remote terminals. Inquiries are submitted in the form of an ITDS access language statement as shown by the example in Figure 4 below. Normally, retrieval statements are input from a terminal and are analyzed automatically for validity. Retrieval responses involving low data quantity responses are returned to the terminal typewriter. Responses to inquiries that necessitate a longer computer run time may be returned to the terminal at a later time, or sent to the high-speed printer if a large volume of output data is involved. Figure 5 illustrates typical inquiry response formats that are returned to the terminal typewriter.

##### 2.4.1.1 Inquiry Response (Output Formats)

- a) Columnar Format. Responses to user inquiries are printed in columnar form with specified field heading, if the number of characters to appear on a line of output does not exceed the width of a standard print sheet.

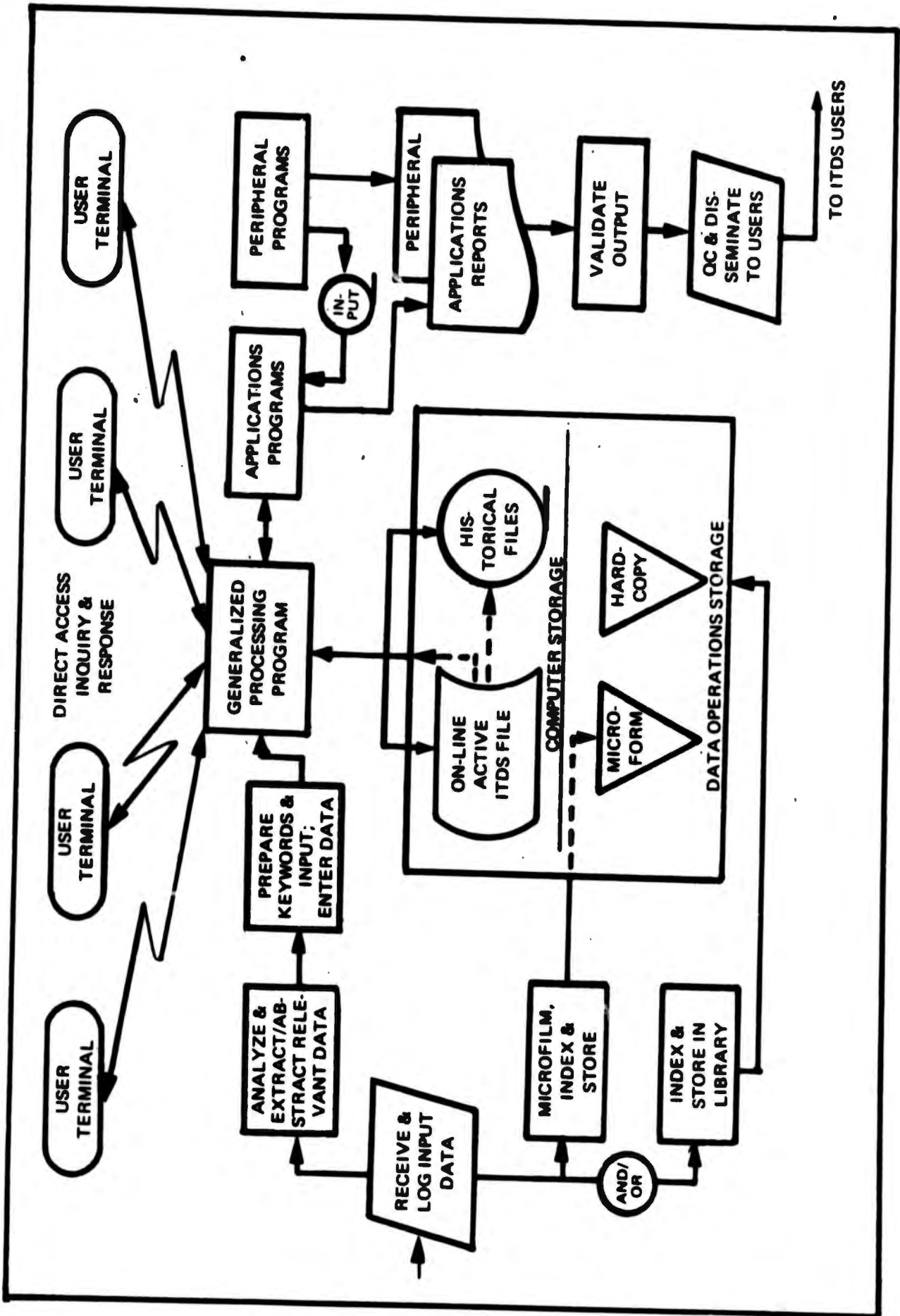


Figure 3. ITDS Operations Summary

## INQUIRIES

1. QUESTION: List GSE required at organizational level?  
QUERY: LIST THE GSE\*MODEL/PN-FILE WITH AN M/L OF "0" #
2. QUESTION: List description and function of (nomenclature and P/N)?  
QUERY: LIST THE DESCRIPTION AND THE FUNCTION OF GSE\* MODEL/PN-FILE 'FUELING HOSE\*B382'
3. QUESTION: List GSE cost for FY 69?  
QUERY: TOTAL THE COST FOR ALL GSE\* MODEL/PN-FILE WITH A FY-EQUIP-COST OF "FY-69" #
4. QUESTION: List GSE status total qty shipped for (nomenclature and P/N)?  
QUERY: LIST ONLY THE TOT - RFC FOR GFM\* MODEL/PN-FILE 'RADIO SFT\* AN/ARC-116' #
5. QUESTION: What GSE is categorized as ground handling equipment?  
QUERY: LIST ONLY EACH GSE\* MODEL/PN-FILE WITH A TYPE-FO OF "GHF" ANDD WITH GSE/GFM-IND OF "GSE" OR "GSE/GFM" #
6. QUESTION: What GSE is contractor-furnished material?  
QUERY: LIST ONLY EACH GSE\* MODEL/PN-FILE WITH THE SOURCE EQUAL "CFP" #
7. QUESTION: What are the key elements identifying all items of government furnished material?  
QUERY: LIST GFM REPORT FOR GFM\* MODEL/PN - FILE #
8. QUESTION: What is the status of GFM deliveries?  
QUERY: LIST THE GFM-STATUS OF THE GFM\* MODEL/PN - FILE #

Figure 4. Typical Inquiries - Government Furnished Materiel Data Lists

LIST CFM \*MODEL\* GPN-FILE 'ENGINE TURBOSHAF \* T64-GE-16 \* 6010T45G01' CFM REPORT

CFM \*MODEL\* GPN: ENGINE TURBOSHAF \* T64-GE-16 \* 6010T45G01

APPND NO	FSN	FMC	PLI	SOURCE	TP-CL	CC	UNIT COST
3.94		99207	15M	GFM	LP	CT	140,752.00

LIST CFM \*MODEL\* GPN-FILE 'ENGINE TURBOSHAF \* T64-GE-16 \* 6010T45G01' CFM STATUS

CFM \*MODEL\* GPN: ENGINE TURBOSHAF \* T64-GE-16 \* 6010T45G01

SCH-DT	SCH-QTY	REV-DT	REV-QTY	QTY RET'D	RMC-DT	DEL-DOC * SN	QTY-DUE	QTY-SHP	TOT-SHP
690331	1								
690430	2						375		
690431	2								
690630	2								

Figure 5. Typical Inquiry Responses - Government Furnished Materiel Data Lists

- b) Horizontal Format. When the number of characters to appear in a line of output exceeds the width of a standard print sheet, responses are printed across the page with identification appearing on the left.

#### 2.4.1.2 Indirect Inquiry Processing

When a user's query cannot be processed automatically for some reason, or the inquiry is of such a nature that human intervention and analysis is required, ITDS performs the steps summarized in Figure 6 to satisfy the user's requests.

#### 2.4.2 Periodic Reporting Mode

Although inquiry processing is the primary output operations mode, several current Army regulations and directives dictate requirements for fixed format periodic requirements; therefore, this capability has been incorporated in the system design. Subsequent subparagraphs present an overview of the major functions performed during this mode of operation. The subsystem responsible for the particular function is referenced after each paragraph heading.

##### 2.4.2.1 Generalized Processor (Computer Subsystem)

The periodic reporting mode begins with the inputs placed in the ITDS data base as a result of the action described in section 2.5, ITDS Input Processing. The generalized processing program operates on the ITDS data base in accordance with a given set of instructions received from a report generation application program to retrieve prescribed output data.

##### 2.4.2.2 Report Generator (Computer Subsystem)

The report-generator applications programs request and receive appropriate data from the Generalized Processing Program's digital data files, then sort, and display the information desired in the prescribed individual report formats.

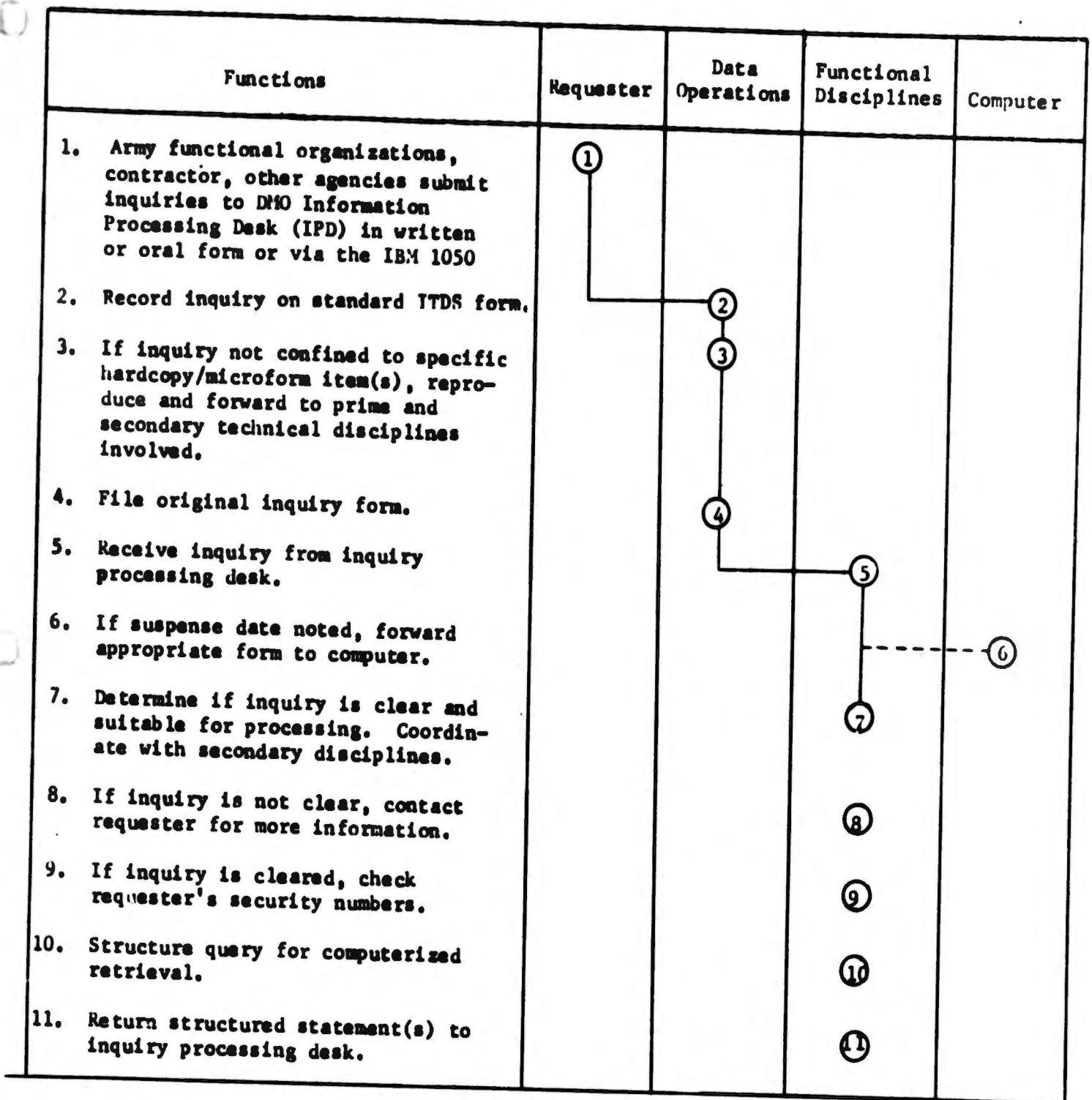


Figure 6. Processing Indirect Inquiries

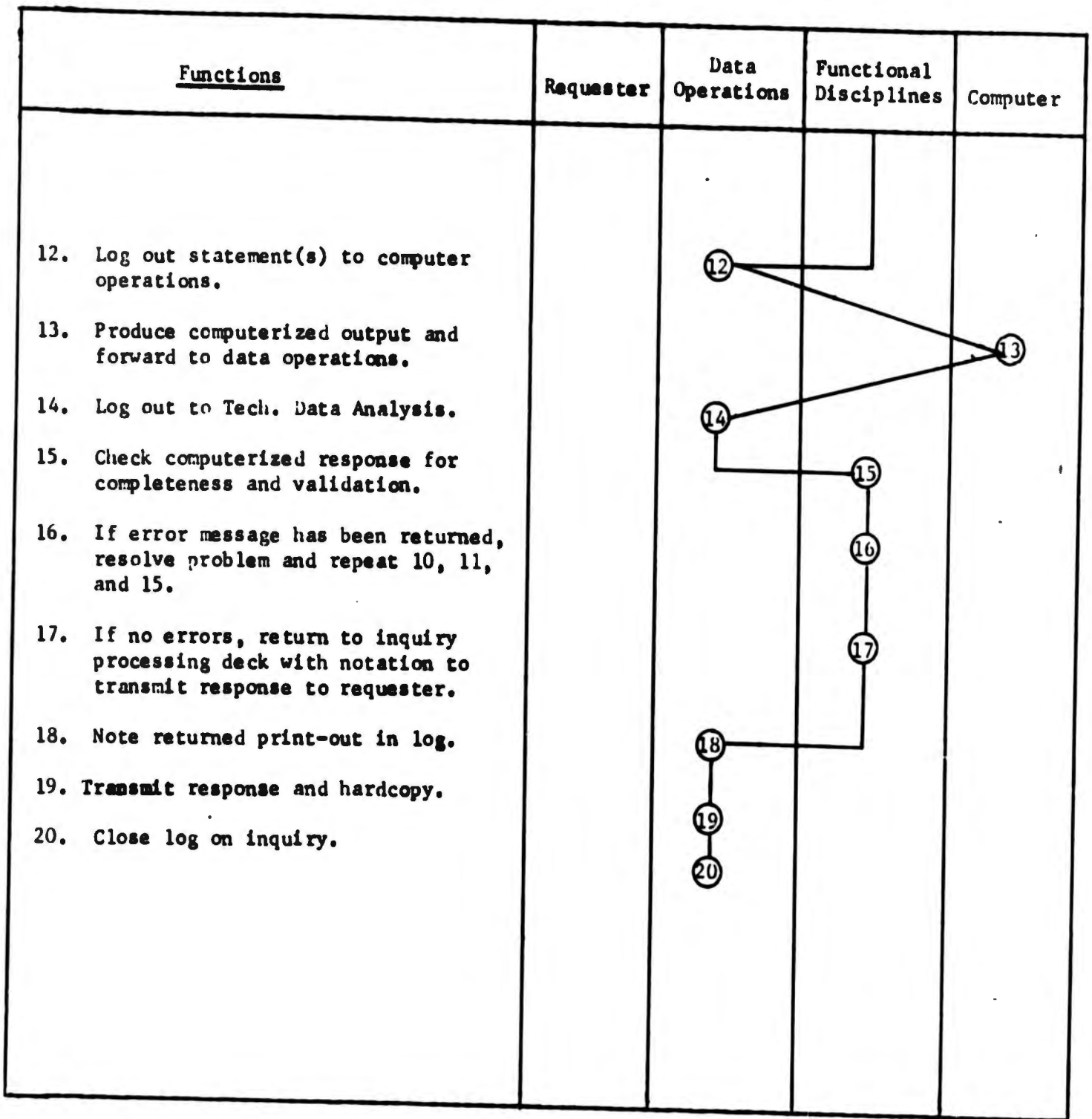


Figure 6. Processing Indirect Inquiries (Cont'd)

#### 2.4.2.3 Application Reports (Computer Subsystem)

An application report is the product of processing an applications program. The data processing sequence described in subsections 2.4.2.1 through 2.4.2.3 produces these reports. Among the applications reports produced automatically by ITDS are milestone reports, contractor data requirements lists, reliability reports, maintenance reports, test status, technical publications index/status, drawing index/status, and a keyword-DAI cross-reference index. Examples of some typical periodic output reports are presented in Figure 7.

#### 2.4.2.4 Perform Output Validation (Functional Disciplines)

Periodic reports produced by the computer are returned to the personnel of the functional disciplines subsystem for validation. The accuracy of computer-produced output is verified by examination of computer processes and general logic, using mathematical functions where possible.

The computational accuracy of all manual updating is verified prior to release and distribution of information. Concurrent with this process, indices are prepared to facilitate later identification of report contents and to permit rapid retrieval of pertinent documents.

#### 2.4.2.5 Perform Output Quality Control (Data Operations)

After the computer-produced output has been validated by personnel in the functional disciplines subsystems, reports are returned to personnel in the data operations subsystem for the performance of quality control. All ITDS outputs are reviewed and edited to ensure that their contents correspond to the latest available input data.

#### 2.4.2.6 Disseminate Output Data (Data Operations)

All ITDS output data and reports are then disseminated in accordance with standard or special distribution lists approved by the project office.

CEI NO.	PART NUMBER	DESCRIPTION / SPECIFICATION	DRAWING NUMBER	I	C	NUMBER	FED. STOCK NO.	ECP NUMBER	COM. MGR.	PAG. PMS
A178	835465	CMJ054-3.114	835465				0026			
		DISPLAY MAP PLOTTER-PT489/ASJ104						AFS-041		

DESCRIPTION AND SPECIFICATION INDEX/STATUS

CEI NO.	REL. DATE	CEI NUMBER / SPECIFICATION	COM. SEC. CN DCP	MGR. CL.	PO DATE	FROM	EFFECTIVITY	THRU	REVISION	TO INCORP.
C00015	660121 8375	CT U 01 680619 8375-1001								AFS-017
		KIT MOUNTING (NGT RECD FOR AM56-A)								

ECP INDEX

ECP NUMBER	REL. DATE	CEI NUMBER / SPECIFICATION	ICD NUMBER	PART NUMBER	PROPOSED EFFECTIVITY THRU	TECH. PUBLICATIONS
(MOCKUP REV01)	R E C009	CE0010 CE0012 CE0034			66-8826 66-8826 66-8826	AND SUB AND SUB AND SUB

ECP/WAIVER PROCESSING AUDIT

ECP DESIGNATION / WAIVER NUMBER	CEI NUMBER / FED. STOCK NO.	SUBMIT DATE	CCB DISPOS.	MGR / CCB DATE	MCD / CCB DATE	MOD / CCB NUMBER	ELAPSED DAYS FROM SUBMIT TO CCB/MOD	CCM/MOD
(MOCKUP REV01)	C009	660610	APPA	660727	670630	P009	47	338
(MOCKUP REV02)	C031	660610	APPA	661034	670630	P009	116	385
(MOCKUP REV03)	C071	660610	APPA	661035	670630	P009	117	385

Figure 7. Typical Periodic Reports

### 2.4.3 Exception Reporting Mode

A third output processing capability included as part of system design is exception reporting. Exception reports are produced when necessary to identify and report unusual or unacceptable conditions. The method of report production depends upon the nature of condition to be analyzed. For example, an exception report may be generated when some quantity has reached a level greater or less than its specified limit. In cases like this, the exception report is generated automatically whenever the out-of-spec condition exists. The output report produced is then validated by the appropriate functional discipline, and it is disseminated by data operations in the same way that periodic reports are handled.

Need for an exception report may also result from a special user request in cases where his information needs cannot be satisfied by inquiry or with any of the available periodic reports. When such a request is received, it is channeled to the responsible functional discipline by data operations. Functional discipline personnel analyze the request and define the content requirements for exception reports and the required schedule for production of the output. When produced, the exception report output is validated by the functional discipline and distributed to the requester by data operations in the same manner as periodic reports.

## 2.5 ITDS INPUT PROCESSING

This portion of the ITDS User's Guide examines the general input process common to all forms of ITDS operations. The following subsections discuss how inputs are employed in each of the three ITDS modes: the inquiry mode, the periodic reporting mode, and the exception mode.

Each of the three subsystems of the ITDS plays a role in input preparation. Figure 3 indicates that these input efforts begin with the data operations subsystem, are transferred to the functional disciplines subsystem, and are completed by efforts undertaken by the computer subsystem. In the following discussion, each of the separate input tasks outlined will be examined separately. Note that the subsystem responsible for each function appears in parentheses after the subsection heading.

#### 2.5.1 Receive, Log, and Route Incoming Information (Data Operations)

A key to the successful operation of ITDS is control of incoming data. Every piece of incoming technical and management data relevant to a given project must be reviewed by a data analyst. The means by which data are received is no barrier to this review, because ITDS is capable of accepting documentation in all forms, including:

- Hardcopy (letter, message, ozalid, blueprint, computer printouts, and so forth).
- Photographic records (still and motion pictures).
- Roll microfilm and microfiche.
- Aperture cards.
- Punched cards.
- Computer tapes and disk packs.

This is the central data collection point, where the primary function of the analyst is to screen incoming source data to determine what ITDS processing actions are necessary. The receipt of a data item and initial processing instructions are recorded on a "Data Acquisition-ITDS (DAI)" form which is forwarded with the item to the analysis section of data operations.

#### 2.5.2 Prepare Entry for Master Document Data List (Data Operations)

After the analyst of incoming data has recorded the receipt of an item of data, he prepares an entry for the master document data list. This entry includes the DAI number, the originator of the individual item of information, the originator's file and/or serial number, the originator's date of origin, the name of the addressee, and a summarized statement of the subject or content of the document. The digital data file entries are comparable to an incoming mail log, but they can be sorted by the Generalized Processing Program in many ways to meet particular needs.

#### 2.5.3 Analyze Data and Determine Their Value (Data Operations)

After the incoming-data analyst has completed the action described in subsections 2.5.1 and 2.5.2, a senior specialist in data management reviews every item in detail to ascertain its probable value to ITDS. If the senior specialist determines that a particular item should not become a part of the active ITDS files, he routes it to an inactive file. However, if he determines that a particular item of data is relevant, he marks the DAI Form (see Figure 8) for routing to the responsible functional discipline.

#### 2.5.4 Determine Responsible Functional Disciplines (Data Operations)

The ITDS data management specialist who marks incoming documentation and data for ITDS routing has a detailed understanding of the type of work performed within each of the functional disciplines pertinent to a particular project. With the understanding as to how responsibility is divided among these functional disciplines, and with some on-the-job experience in a specific project, a senior technical-data analyst is able to make a rapid and



accurate determination as to which functional disciplines should be assigned cognizance over a particular item of data. The analyst makes this assignment in the appropriate box of the DAI Form presented in Figure 8.

As shown in Figure 8, the action stated in subsection 2.5.4 can lead directly to the inquiry output mode, or it can continue to the action of subsection 2.5.12 where periodic, inquiry, and exception reporting output modes begin.

#### 2.5.5 Review and Evaluate Source Data for Acceptance (Functional Disciplines)

This step marks the first time that an incoming document or other piece of data is seen by technical personnel. Up to this point, the actions associated with a given item of data have been largely administrative in nature. Now it becomes the responsibility of technical personnel in each of the functional disciplines appropriate to the specific piece of data to determine whether or not an item is relevant to their portion of the digital data base.

This procedure makes ITDS uniquely self-auditing. It compels those members most knowledgeable in a given functional discipline to inspect every item under their cognizance for relevancy and quality prior to its insertion into the data base. Although this inspection is only one element of data quality assurance in ITDS, it is a most important one; for, clearly, the quality of the ITDS's output cannot exceed the quality of the input.

If data are submitted in a form which is not directly usable in ITDS, personnel in the functional disciplines subsystem are responsible for converting these data into a processible form. If an incoming item of data results in the generation of new data requirements, or if it proposes changes

to the existing system, it is the responsibility of the functional disciplines personnel to review and report on the impact of these changes on overall system functional capabilities.

It should be noted that the quality assurance procedures applied during this step do not constitute the only point at which data in the system are subjected to audit, either by personnel or by computer techniques. Other audits take place at other points within the system; these audits will be identified during the course of this discussion. The importance of this initial audit has been stressed because of the system's dependence on a high quality of input.

#### 2.5.6 Keyword for Subject Indexing (Functional Disciplines)

Data analysts in the various functional disciplines subsystems are responsible for the designation of keywords applicable to a particular piece of data. A keyword thesaurus is used to assist in the designation of keywords for the content of every item of incoming information in a brief standard terminology which can be related to a digital code and stored in the digital data base. For example, a letter from the Department of Defense requiring a new report on configuration for military aircraft could be summarized as (i) DOD, (ii) A/C, (iii) CONFIG, and (iv) RPT.

The accuracy and usefulness of this function are dependent upon the skill of the individual who designates the keywords. Because the training, experience, and knowledge of personnel in the functional disciplines subsystem equip them more than others to comprehend an incoming document and to grasp its essence, they are the ones who are charged with the responsibility for designating the keywords. These keywords are recorded on loadsheets whose

disposition will be described in a subsequent function description. Each functional discipline reviewing the particular piece of data will prepare keywords appropriate to its discipline. (NOTE: Duplications are averted by edit features of the computer program.)

#### 2.5.7 Enter Source Documents in Hardcopy/ Microform Files (Data Operations)

As previously indicated, ITDS is capable of accepting data in various forms such as hardcopy, photographic records (stills and movies), microform, microfiche, aperture cards, punched cards, computer tapes, and disk packs.

There are three types of files maintained in ITDS: (i) hardcopy, (ii) microform, and (iii) digital files. Hardcopy files are the repository for all data acquired by ITDS in the form in which it was originally received. This means of storage is used primarily for material of the type which is impossible or undesirable to reduce to microform. Hardcopy files are retained as backup for items converted to other media. Microform files contain selected data furnished to the project in that form and data reduced to microform from hardcopy files. Thus micro-images provide a secondary reference source in addition to the basic hardcopy files. The nature of the digital storage file is explained in subsection 2.6.2 when the data base is discussed.

#### 2.5.8 Perform Data Extraction/Abstraction Routines (Functional Disciplines)

The major responsibility of ITDS functional disciplines personnel is the extraction and/or abstraction of data for input into the system. Although keywording is important for the reasons explained in subsection 2.5.6, it is incidental to the extraction and abstraction of data during this step of the input processing phase. A detailed knowledge of the functional discipline and of the administrative procedures associated with it is required

of the assigned personnel in order to accomplish this function. Each professional must have an understanding of the ultimate use of the data to be extracted and/or abstracted. Each must know whether the data will be loaded directly into the digital data base files or whether the data will be used as input for a peripheral program. The relevant data from an incoming document are recorded on loadsheets by technical personnel in the cognizant functional discipline and forwarded to the computer subsystem for input processing.

#### 2.5.9 Keypunch and Verify Input Data (Computer Subsystem)

It should be noted that this step is the first point in the input data processing phase at which computer subsystem personnel are introduced to the input processing cycle. The computer subsystem personnel must keypunch the loadsheets prepared during the data extraction/abstraction phase (see subsection 2.5.8) and produce a deck of cards which represents the output of these two efforts during the keyword-subject indexing phase (see subsection 2.5.6). This deck of cards is then verified by means of standard automatic data processing techniques. (NOTE: At a future date, this step may be obviated by loading directly from a terminal keyboard.)

#### 2.5.10 Prepare Inputs for Peripherally Processed Data (Functional Disciplines)

A peripheral program is a related stand-alone program. It is a part of ITDS because it may be an important source of data input into ITDS. However, because of its complexity or the desire to use an "off the shelf" model, for instance, the program is used separately from, but in conjunction with, the generalized processing program. Examples of peripheral programs are the

PERT/Time and PERT/Cost programs. A most important peripheral program in ITDS is the Action Item Program discussed in subsection 2.5.1 and 2.5.2. The input of these peripherally processed programs comes from the loadsheets prepared during the extraction/abstraction phase discussed in subsection 2.5.8. The outputs of peripheral programs include specialized reports and an output tape.

#### 2.5.11 Applications Programs (Computer Subsystem)

In contrast to a peripheral program, an applications program is directly related to the generalized processing program. Applications programs perform two general functions. First, extract/load applications programs are used for bulk-loading of data from peripheral programs into the ITDS data base in order that such data may be operated on by the generalized processing program. Second, report generator applications programs are used to produce special bulk reports from data which have been stored in the digital data files controlled by the generalized processing program.

#### 2.5.12 Generalized Processing Program (Computer Subsystem)

The generalized processing program is the principal ITDS computer program. As discussed subsequently, it consists of a software computer and a hardware adapter which updates and retrieves data from the digital data files.

### 2.6 THE GENERALIZED PROCESSING PROGRAM

The generalized processing program is the heart of the computer operations subsystem and is the unique element of ITDS. This program is flexible and allows the user to define, establish, maintain, and query the data base according to his own needs and environment. The user is not compelled, as in other data processing systems, to adapt his data to the rigid requirements

of a preestablished format. This orientation toward the needs of the user is made possible partly because the ITDS generalized processing program is independent of the hardware on which it is operated. This freedom from hardware constraints is achieved through a new concept in computer system design called the software computer.

The software computer, contained in the generalized processing program, provides the means for directing the digital data base to store, retrieve, update, and manipulate data. It also enables the user to create an integrated data base from information originating in hardcopy source documents and enables him to update and modify this base continually.

The generalized processing program processes data derived from remote terminals, punched cards, magnetic tapes, and disks. Outputs may be provided in vertical or horizontal form at remote terminals and, if necessary, by means of on-line high-speed printers.

No special effort is required for the software computer to format files and records. It needs no special programming to create the instructions for manipulating those files and records, and as previously mentioned, it need not be operated on a special kind of hardware. The software computer can be operated on any kind of automatic data processing equipment with the aid of a computer interface package.

Because the generalized processing program is critical to the effective, economical operation of ITDS, the next several paragraphs discuss this system in some detail. Included here is the concept of the software computer, the structure of the data base, and the development of data associations through correlatives. The user's interface problem is also discussed, and the

maintenance of data integrity and data security is reviewed. Finally, several special file-management features for maintaining an effective, efficient system are noted.

#### 2.6.1 The Software Computer Concept

The generalized processing program for ITDS embraces both a generalized information management language and a computer system. These two elements are designed for use in a communications network of several remote terminals and a central computer. The system as a whole permits natural language access to data stored in a random bulk-storage device which is also accessible to other computer programs. A remote user may select any available equipment in the network for an information output.

The design of the generalized processing program for ITDS adapts overall information management needs and accommodates the particular information requirements of any given application with an efficiency comparable with that of special-purpose software. The addressing scheme of this program permits required data to be retrieved in a single access from random storage, thereby eliminating the need for periodic file reorganization.

The language of the generalized processing program is limited natural English. The rules for formatting input are simple. Because they are stated directly in technical terminology natural to each functional discipline, inputs need not be processed by a programmer. Inputs for the ITDS automatic data processing use the lineal format natural to prose text. They may be stated in words of variable length with a limited freedom of word order. There are some limitations on vocabulary to ensure uniqueness, but these apply only to data list identifiers. No vocabulary prohibitions are imposed on information

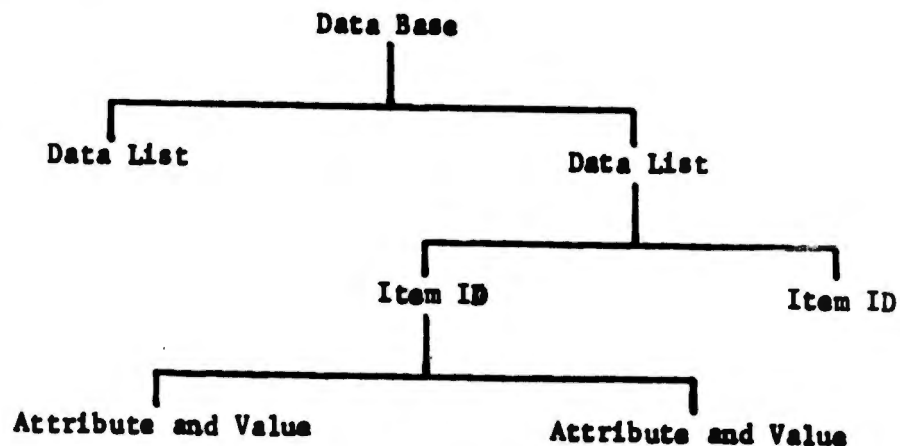
values. System outputs are expressed in plain language comparable to that used for inputs.

The software computer concept is displayed in Figure 9. The following text discusses the advantages of the software computer concept. The numbers in parentheses following the paragraph titles refer to the functional elements of the software computer and the interface package shown in Figure 9.

### 2.6.2 Data Structure (1)

The structure of the ITDS data base is hierarchical. In descending order it consists of three major entries including (i) data lists, (ii) item identifications (ID's), and (iii) attributes and values.

These entries may be arranged graphically as follows:



From this graphical arrangement, one can see that a data list is related to ITDS as a file is to other automatic data processing applications. An item identification is comparable to a record, and the attribute and value of an item identification is comparable with an entry and its value in a record.

The structure of the ITDS data base permits an unlimited number of data lists to be accommodated. A large hardware program may include more than 100 data lists or files each with its own format and composition. A typical data list for a hardware program is shown in Figure 10.

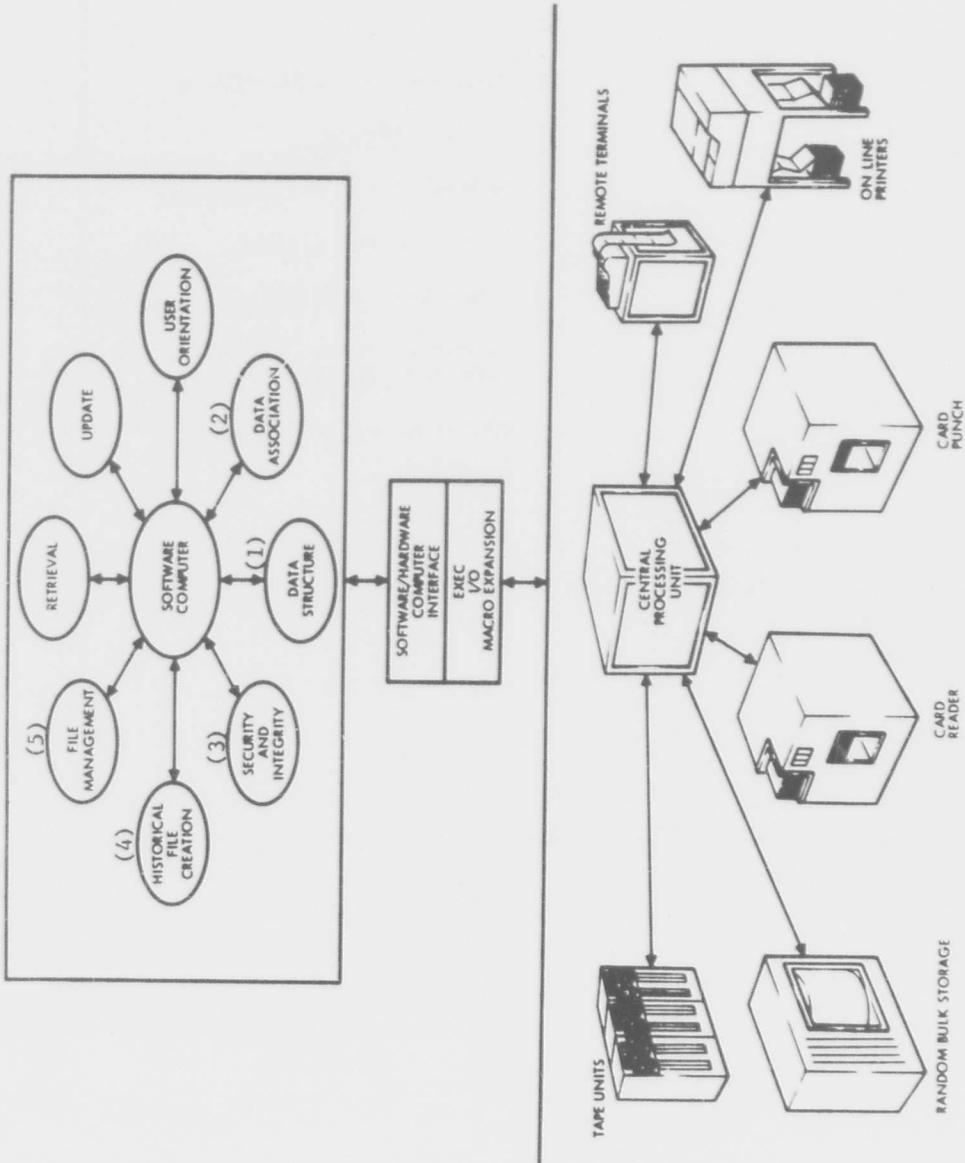


Figure 9. Software Computer Concept

DATA BASE

DATA LIST

ITEM ID

ATTRIBUTE AND VALUE

ITDS

CONFIGURATION END ITEMS (CEI's)

- 0 CEI Nr/ (Value)
- 1 Federal Stock Nr/ (Value)
- 2 Nomenclature/ (Value)
- 3 Other CEI Affected/ (Value)
- 4 Spares or Repair Parts Affected/ (Value)
- 5 Revision Letter/ (Value)
- 6 Etc.

Note: The "0" Attribute is the Item ID.

Figure 10. Sample Data Base Structure

An attribute of one item identification may become the basis of the next item identification. For example, in Figure 10, the Federal Stock Number under the Configuration End Item Number could become the item identification or attribute of a subsequent data list.

The format of the entries in the data base is independent of the rest of the system; that is, the data base can be described without reference to the hardware itself. In addition, data base formats can be changed without affecting any of the ITDS software. Each entry in the data base can be directly addressed in a hierarchical manner, and any entry can be accessed without a sequential search.

Since the ITDS data environment is independent of the hardware on which it is used, data base entries vary completely in both format and length. Accordingly, one can mold the data base to the data environment rather than adapt the data environment to a preestablished data base; and because the lengths of data entries may be varied, ITDS is required to store only relevant data, and irrelevant characters (that is, filler) are unnecessary.

### 2.6.3 Data Associations (2)

Data stored in the data base can be combined or associated in a variety of ways. The ITDS user prescribes specific data associations in accordance with his needs. The number of data associations the user is permitted to establish is limited only by the capacity of the data processing equipment to which the generalized processing program is mated. In essence, this means that the number of possible data associations for the user is unlimited. In the following paragraphs, these associations are explained in broad context. No attempt is made to treat in detail the full range of possible data

associations. Rather, data associations are examined in full, and a few examples of the various types of data associations are presented.

When an ITDS user is developing his data base needs, he is expected to discuss his specific needs for data associations with ITDS data management personnel. They are prepared to advise him as to the availability of the information which he requires, not only from his own data list but also from the data lists of other functional disciplines.

There are two types of data associations, interlist and intralist. As these names imply, interlist associations refer to those transactions which take place between data lists, while intralist associations refer to those transactions which take place within a data list. Both interlist and intralist associations are equally powerful in producing the information which an ITDS user may require. However, interlist associations will be described first because they are less complex. Both interlist and intralist data associations are accomplished through the use of correlatives. Correlatives, best described as procedural instructions, are defined by the ITDS user according to a predetermined structure. Correlatives are retained in the self-describing data base in the form of algorithms. Once established, a correlative automatically carries out its defined function, whenever an entry is properly accessed.

#### 2.6.3.1 Interlist Associations

There are two types of interlist correlatives: bridges and spans.

Bridges are used to store information from one list in other lists. For example, a bridge can be used to transfer a part number from a configuration end item (CEI) data list to a part number data list. With this bridge

correlative, a new part number that is entered into the CEI data list will be entered simultaneously into the part number data list. This same capability can be used for verification. Thus, by using the bridging correlative, a part number in a CEI data list may be verified against part numbers in a part number data list.

Spans are used to retrieve information from other data lists whenever a specific entry in one data list is accessed. Spans can be used whenever data from several data lists are necessary to present a complete data image. For example, an Engineering Change Proposal (ECP) data list with a security classification attribute can be associated with a security classification data list by means of a spanning correlative. When the security classification attribute is specified in a retrieval transaction from the ECP data list, the appropriate data are simultaneously retrieved from the security classification data list.

#### 2.6.3.2 Intralist Associations

There are several types of intralist correlatives; and as indicated in the introduction to this section, the System User's Guide does not present an exhaustive discussion of those correlatives. However, a sufficient number of examples of intralist associations are given to help the reader understand the capability and flexibility inherent in this aspect of the generalized processing program.

2.6.3.2.1 V-Correlatives. Data may be associated vertically within a single data list by means of V-correlatives. For example, it will be remembered that a work breakdown structure (WBS) summarizes related work at increasingly greater levels of detail. If a WBS is organized into a data list, a vertical

correlative can be used to retrieve information at a given level of the WBS and at all related lower levels of detail. Similarly, a vertical correlative can be used to retrieve information from a given level in the WBS and at all related higher levels of summarization. This upward and downward association of data within a data list assures the maintenance of interrelationships among item identifications.

2.6.3.2.2 I-Correlatives. Attributes and values may be arranged in a data list so as to maintain an algebraic summation of the quantities considered. I-correlatives permit the user to update individual attributes and values at any time and to rely on the correlative to update the sum simultaneously without further instruction.

2.6.3.2.3 F-Correlatives. In the previous paragraph it was explained that I-correlatives could be used to store and maintain a sum related to specific attributes and values within a data list. It is sometimes desirable to manipulate values within a data list without storing the results of that manipulation. F-correlatives are used for this purpose. They add, subtract, multiply, and divide values as directed and print out rather than store the results of these operations.

2.6.3.2.4 D-Correlatives. D-correlatives permit an ITDS user to fold together data within a data list to produce additional data from within that list. For example, an ITDS user may desire to collect costs from several different breakdowns and several different categories. The categories and breakdowns of cost may be contained within a data list but need to be arranged in a matrix to yield the desired information. The cost categories may be called target, actual, production, or support. The D-correlatives

can be used to retrieve this information, and assemble it from the pertinent data list.

2.6.3.2.5 M-Correlatives. M-correlatives permit the ITDS user to retrieve several attributes and values from a single data list in one operation. For example, an ITDS user may require four items of information for a monthly report which may be stored as attributes and values within a data list. The user can retrieve this information by asking for the four specific data elements. With the aid of an M-correlative, however, all four data elements can be more easily retrieved.

2.6.3.2.6 Miscellaneous. Several other correlatives are available to the ITDS user. Among them are Y-correlatives. One of the Y-correlatives permits the user to instruct the program to erase and store new information when the value of an attribute is updated. It can also be used to store updated information redundantly or to prevent information from being stored at the location of a given attribute. Other correlatives are G-correlatives which permit concatenation and deconcatenation. This allows the ITDS user to link a series of attributes and values together in a chain or to extract attributes and values from a chain.

#### 2.6.4 Security and Integrity (3)

The data base may be secured through a system of codes. The security referred to in this paragraph is not security protection in the sense of classified information, but rather security of the data base from access by unauthorized users. There are two reasons for imposing security on the data base: functional protection and data sensitivity.

Functional protection prevents the inadvertent or unauthorized modification of data. While it may be necessary to allow a number of activities

to have access to the same group of data, it may not be desirable to allow each of these activities to have the ability to update that data. The data base can be protected by applying security codes to the update and/or retrieval functions of the data in question. It may be that the data base contains certain entries which are considered sensitive, such as employee salaries, legal records, and proposed equipment designs. Security codes can then be established at the appropriate data level to restrict sensitive-data update and/or to restrict access to authorized personnel only.

The three levels of data at which security can be imposed are (i) data base, (ii) data list, and (iii) attribute.

The imposition of a security code at the data base level denies access of unauthorized personnel to the entire data base. The imposition of a security code at the data list level restricts an authorized user to data lists he requires. The imposition of a security code at the attribute level restricts authorized data base and data list users to only those data within a given list applicable to their needs. The integrity of the data base is maintained through data audit and system failure protection.

The configuration of every value in every attribute is defined. The extent of this definition is determined by the user. Every value entry inserted into the system is audited to comply with its defined configuration. The system rejects those values that fail the audit. For example, an attribute may have a value configuration specifying that every value stored under it must have a minimum of 3 characters and a maximum of 8 characters--the first character alphabetic and the rest numeric. Then all values entered for this attribute must meet these criteria to be accepted. When data are rejected, appropriate messages are generated.

The data base is protected against system failure by the recording of every transaction made against the data base. If the data base is damaged by system failure, it may be restored at any time to its last known state of accuracy. The development of this historical file is discussed in the next paragraph.

#### 2.6.5 Historical File Creation (4)

The generalized processing program maintains an historical log on magnetic tape of all system transactions. Every value, attribute, and item identification can be traced from its current state back to its inception. Every transaction made upon each element of data is available for examination and evaluation. Data lists can be reactivated to a specified point in time from the historical tapes. The reactivated data list can then be used as any other data list. Any specified group of transactions can be recovered from the historical tapes. If such a re-creation becomes necessary, the user may specify his own criteria in making this selection.

#### 2.6.6 File Management (5)

File management is performed through special programs which provide the functions necessary to maintain the efficiency and effectiveness of ITDS. As protection against hardware and software errors that may damage the data base, the system may be dumped onto magnetic tape at specified intervals designated as checkpoints. When the dump is made, the current physical base point of the data base is stored on the tape with the data. This allows the tape to be reloaded onto the system at the same physical location, thereby restoring it to its prior state.

A statistical analysis of the data base can be made at any checkpoint. When the data base is dumped, a complete set of allocation statistics is generated. These statistics can be analyzed for such purposes as data list space requirements studies, data list allocation evaluation, and system hardware requirements studies.

When the system is damaged through a hardware or software malfunction, it must be correctly restored. This is accomplished by use of the last good checkpoint dump to reload the system.

#### 2.6.7 ITDS Access Language

An ITDS user must employ machine-sensible language for addressing his inquiry and updating instructions to the generalized processing programs. He must either learn this language himself or turn for help to an ITDS specialist in order to communicate directly with the digital data base. Fortunately, as noted in paragraph 2.6.1, ITDS access language is a form of limited natural English and can be learned easily and rapidly with a minimum of training. Its statements are essentially free of constraints with respect to format and syntax, and its use is governed by a small number of special rules.

ITDS access language contains four components which are analogous to the parts of speech in conventional English. They are:

- Verbs.
- Nouns.
- Connectives.
- Values.

#### 2.6.7.1 Verbs

Verbs are general words prescribing action. They are used for inquiry and for updating data in the digital data base. In ITDS access language, a verb is used to initiate a function within the generalized processing program. No more than one verb may appear in each ITDS statement; however, as many different verbs as the user desires may be used to trigger a single function. There are two kinds of verbs: inquiry verbs and update verbs. Inquiry verbs are such words as LIST, COUNT, and TOTAL. Update verbs are such words as ADD, CHANGE, and DELETE.

#### 2.6.7.2 Nouns

Nouns are the names of data lists and their attributes. In contrast to verbs, which are general words denoting functions within the generalized processing program, nouns are special words chosen by the user to identify his peculiar data lists and the entries therein. Like verbs, nouns may have as many synonyms as the user desires. Three rules on the use of nouns prevent ambiguity:

- The name of a data list may not contain more than four words.
- A word used as a noun may not be the same as a verb or other language component.
- The name of an attribute may not be the same as the name of a data list. However, identical attribute names may appear in as many data lists as the user desires.

#### 2.6.7.3 Connectives

There are three types of connectives, each of which performs a specific function:

- Modifiers which apply exclusively to nouns or noun phrases. Modifiers limit the depth of action initiated by a verb. They include such words as EACH, EVERY, ONLY, WITH and TO.

- Qualifiers which apply exclusively to values. Qualifiers limit the action which a verb may initiate with respect to a value. They include such expressions as EQUAL, GREATER THAN, LESS THAN, and NOT.
- Convenience connectives which are used for naturalness and ease of expression. Convenience connectives have no impact on the generalized processing program. In fact, the generalized processing program ignores convenience connectives. Among the words ignored as convenience connectives are A, AN, THE, ANY, and OR.

#### 2.6.7.4 Values

Values are precise entries associated with an attribute or attributes. A complete description of a value and its relationship to the data base structure is presented in subsection 2.6.2.

#### 2.6.7.5 Dictionaries

As in the English language, words in ITDS access language are stored in a dictionary. For reasons of convenience, however, ITDS uses two types of dictionary. These two dictionaries are the system dictionary and user dictionaries.

2.6.7.5.1 System Dictionary. Of the two dictionaries, the system dictionary represents a higher order of compilation. It contains verbs, nouns as they refer to the names of data lists, and connectives. It also contains the identification and storage locations of the user dictionaries. The system dictionary exists as a data list within the digital data base and may be queried and updated.

2.6.7.5.2 User Dictionaries. The user dictionaries list the names of all attributes in each of the data lists contained in the system dictionary. It also contains the location of the lowest level data base containing values.

#### 2.6.7.6 Sample Queries

The following sample queries, expressed in ITDS access language and translated into normal English, illustrate how one can formulate simple instructions for the generalized processing program:

- LIST THE TITAL FSN CEI VALIDITY BASELINE AND CON-NO FOR GRM-DATA-FILE 'TOOL KIT, ACFT MECH'#  
User: Request GFM data on Aircraft Mechanics Tool Kit.
- LIST ADL-FILE '01-003'#  
User: Request a list of data received against data item 01-003.
- LIST ONLY TST-PARAM\*RESULTS AND TST-SUMMARY OF 'DTP \* 79'#  
User: Give me summary test report for "Detailed Test Plan 79."
- LIST ONLY TST-ART-CEI OF 'DTP\*79'#  
User: Which end item was DTP 79 performed against?
- LIST ONLY APRVD-DT OF 'DTP\*79'#  
User: What was the approval date of DTP 79?
- LIST CEI OF ANY DWG-FILE WITH CEI "C073"  
User: Give me drawing list of configuration and item number C073.
- LIST THE OLD-FEDERAL-STOCK-NUMBER NEW-FEDERAL-STOCK-NUMBER OLD-PRIME-CONTRACTORS P/N NEW-PRIME-CONTRACTORS P/N CHANGE-AUTH AND OLD-ITEM-NO OF ANY DCN-NO-FILE WITH OLD-ITEM-NO "3333"#  
User: Give me change data on item No. "3333" from DCN file.
- LIST ANY MGT-PROB-FILE WITH CRIT-COD "9"#  
User: Give me all management problems with criticality code less than 9.
- LIST P/N OF ANY MEADS-FGC-FILE WITH NOIEN = "POWER PACKAGE HYD UTILITY SYSTEM NO 2"#  
User: Give me P/N of the power package hydraulic utility system number 2.

### 2.6.8 Generalized Processing Program Summary

Those readers who wish to explore the concepts and operations of the generalized processing program will find an in-depth discussion of this element of ITDS in the Generalized Processing Programming Manual (see Appendix B).

## 2.7 PERIPHERAL AND APPLICATIONS PROGRAMS

The preceding material has dealt in considerable detail with the generalized processing program and more particularly with the ITDS software computer. While the generalized processing program incorporates most of the computerized features of ITDS and is critical to overall ITDS operations, it is not the only program encompassed by the system. Others include supplemental applications and related peripheral programs. Each of these series of programs is discussed briefly below.

### 2.7.1 Applications Programs

Applications programs perform two functions. They provide the capability to produce bulk reports, or they extract and load data into the ITDS from other machine-sensitive data files.

### 2.7.2 Peripheral Programs

Peripheral programs perform functions different from the generalized and applications programs in that they are directly related to specific outputs requested and required by the functional personnel of the project office. Unlike the applications programs, a peripheral program requires its own independent data base. Examples of typical peripheral programs follow.

#### 2.7.2.1 Logistics Peripheral Programs

A typical logistics peripheral program is the Maintenance Engineering Analysis Data System (MEADS). This program provides ITDS functional users

the ability to generate all the technical data and analyses required by this system.

#### 2.7.2.2 Engineering Peripheral Programs

The Engineering Fact Sheet--a concise description of a particular aspect of project hardware--is a typical engineering peripheral program. Another typical program is Engineering Problem Narratives--a summary of the results of the analysis of data pertaining to an engineering problem.

#### 2.7.2.3 Project Information and Control Peripheral Programs

Typical programs here include PERT/Time, PERT/Cost and Material Acquisition Status Technique (MAST). MAST provides status information and related projections of identified requirements. The Summary Cost/Input/Output List (SCIOLIST) provides a vehicle for monitoring funding and obligation aspects of a project.

### 2.8 EQUIPMENT AND PERSONNEL

The following sections discuss the equipment and personnel required to operate ITDS in terms of the functional disciplines, data operations, and computer subsystems.

#### 2.8.1 Functional Disciplines

##### 2.8.1.1 Functional Disciplines Subsystem--Equipment

Personnel who operate the Functional Disciplines Subsystem are not assigned any particular equipment although they are expected to be able to employ remote terminal devices for input/output purposes. As with all three subsystems, however, a number of forms and procedures are employed to carry out their daily operations. The Functional Disciplines Administrative and Operations Manuals explain and discuss these instructions and procedures. Appendix C excerpts each of these manuals.

2.8.1.2 Functional Disciplines Subsystem--Personnel (Ref. ITDS 06349-W532-RO-00, "Functional Disciplines Subsystem: Personnel Position Descriptions")

Responsibilities of the various functional disciplines personnel are described below. This list is not exhaustive, nor is one limited to the functional disciplines enumerated. On the contrary, this listing of personnel disciplines indicates the flexibility of ITDS in adapting itself to the needs of a particular project.

2.8.1.2.1 Management

--Configuration Management Personnel. Configuration management personnel identify the descriptions and/or specifications applicable to a project and provide a record of all changes, of their effects and of revisions for each description and/or specification. They identify the engineering drawings and provide a record of all changes and their effects. They identify all engineering change proposals (ECP's) and related hardware and affected documentation. They also establish the resulting contractually authorized hardware and data configurations. They identify all interface control action, monitor the processing of engineering changes and waivers, identify technical publications applicable to a system (technical manuals, training manuals, operators' handbooks, and so forth), and provide a record of all changes and revisions for each technical publication. They also maintain indenture drawings (top down) to support ECP evaluation and in-design reviews.

--Project Information and Control Personnel. Project information and control personnel prepare the project summary WBS. They simulate and analyze problems to determine decision possibilities, decision alternatives, and the effects of such decisions on aspects of overall program effort. Finally, they identify and monitor critical items of responsibility, including the status of analysis, review, and decision with respect to these problems.

--Data Management Personnel. Data management personnel are responsible for the identification and maintenance of the contractor data requirements lists (CDRL) and government data requirements lists (GDRL) that contain the identification of official project data requirements. They monitor the contractor and government compliance with project data requirements. They maintain pertinent information on project data and prepare reports on the status of submittals against the CDRL and GDRL requirements.

2.8.1.2.2 System Engineering Personnel. System engineering personnel assess system engineering plans, system specifications, system mission definitions, and profile descriptions. They participate in development of system performance definitions (in the form of requirements allocations); identify system function analysis data; correlate system effectiveness and analysis requirements; and develop system manpower requirements.

2.8.1.2.3 Engineering Design Personnel. Engineering design personnel compare analytical and experimental performance data. They produce bibliography of documents that describe technical problems in any of several categories of end items. They support participation in design reviews such as applicable specifications and/or descriptions, drawings, ECP's, analytical and test results, problems, interfacing equipment and interface types, and open technical actions. They evaluate ECP's from the technical standpoint and monitor responsibility for and status of technical actions assigned at design reviews and technical interface meetings.

2.8.1.2.4 Quality Assurance Personnel. Quality assurance personnel maintain contractor data, test results, and selected data such as contained in MEADS for the purpose of identifying equipment components with the greatest discrepancy between predicted and actual maintenance time at all levels (total maintenance). They identify items with the largest adverse deviations between predicted and measured time on the basis of total products, task frequency, and maintenance time. They identify the highest rank reliability problems on the basis of comparison between predicted (or allocated) and measured mean-time-between-failures (MTBF). They also identify the items which have most frequently failed and required corrective action within the time period considered.

2.8.1.2.5 Operations Engineering Personnel. Operations engineering personnel correlate operations plans and operational requirements analysis reports. They develop system and subsystem support requirements, analysis reports, and plans. They update documentation in the areas of maintenance requirements standards, maintainability, reliability, safety, and human-factors engineering.

2.8.1.2.6 Test Personnel. Test personnel identify all elements of a test program, correlate test objectives by test phase to the test plan, compare the planned and actual delivery status of test articles and support equipment, and estimate the impact of delays on test program schedules. They compare required and actual performance and estimate the impact of any discrepancies. They estimate the effect of critical test results discrepancies on subsequent program testing and review and comment on test planning documents.

2.8.1.2.7 Logistics Personnel. Logistics personnel monitor deliveries of customer-furnished materials. They identify delinquent or potentially delinquent shipments of customer-furnished material requiring management action to avoid slippage in the delivery of hardware items. They establish initial provisioning actions and identify maintenance skills and the level of skill required to maintain hardware in effective operating condition.

2.8.1.2.8 Production and Procurement Personnel. Production and procurement personnel approve production configurations and supplementary requirements such as manuals, technical services, facilities and equipment. They monitor schedule and delivery requirements, consider competitive or sole-source procurement considerations for various items of hardware, and approve quality

assurance requirements. They monitor procurement requirements and constraints, review proprietary considerations, examine critical materiel applications, and monitor test requirements, spare-parts data requirements, and reprourement data requirements.

## 2.8.2 Data Operations

### 2.8.2.1 Data Operations Subsystem--Equipment (Ref. ITDS 06349-W528-RO-00, "Data Operations Subsystem: Equipment Description")

The equipment employed by the Data Operations Subsystem includes telecommunications equipment, microform and aperture card handling equipment, and photoreproduction equipment. The telecommunications equipment consists of inquiry terminals (remote terminals) and accompanying communication units. The terminals operate in a transmitting mode (data entered into the terminal keyboard is transmitted to the computer's control unit) and an inquiry mode (the terminal receives information from the computer's control unit).

Microform, aperture card, and photoreproduction equipment include:

- A microform reader-printer capable of displaying microform aperture cards on a viewing screen with a capability to make a hardcopy print of the microform card.
- An aperture card storage device.
- A microform reader capable of storing rolls of microform reproductions.
- Photoreproduction equipment capable of photoreproducing limited numbers of copies of hardcopy technical data.

In addition to this equipment, a number of forms and instructions are employed to carry out daily operations. The Data Operations Administrative and Operations Manuals explain these instructions in detail.

2.8.2.2 Data Operations Subsystem--Personnel (Ref. ITDS 06349-11529-RO-00, "Data Operations Subsystem: Personnel Position Descriptions")

The Data Operations Subsystem is staffed by personnel who possess skills and experience in data operations, data processing and control, data quality control, documentation analysis and control, and analysis of technical data. In addition, this subsystem typically employs a hardcopy and microform librarian, inquiry terminal operators, and microform equipment operators.

2.8.3 Computer Subsystem

2.8.3.1 Computer Subsystem Equipment (Ref. 06349-11521-RO-00, "Computer Subsystem: Equipment Description")

As previously explained, ITDS, with minor isolated software revision, can be operated on any standard automatic data processing equipment. ITDS is implemented on the user's existing hardware by modifying only the interface package. Typically, this modification of the interface package can be accomplished at a fraction of initial system development cost.

In one sense, the interface package makes ITDS both hardware independent and software independent. If, however, a user desires to operate ITDS in a stand-alone environment, a minimum hardware configuration is required, as presented in Figure 11. This minimum configuration consists of:

- Central processing unit with 64K bytes of core storage (or the equivalent).
- Four magnetic tape drives.
- Disk storage (7M bytes plus bytes needed for data).
- One card reader.
- One card punch.
- One high-speed printer.

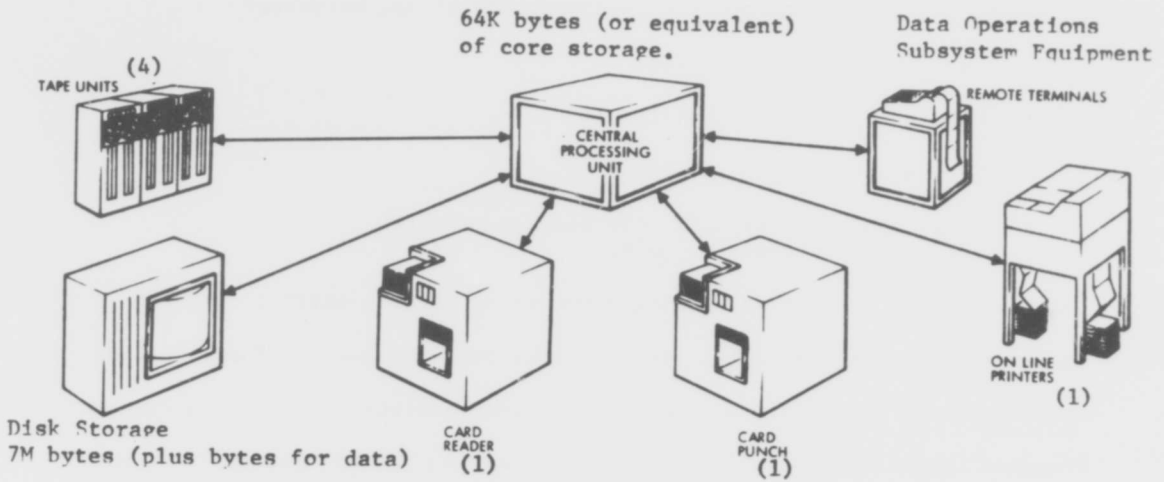


Figure 11. Minimum Hardware Configuration for ITDS

The design of ITDS gives the user the option of maintaining and retrieving data from his data bank either locally as batched transactions through conventional methods--cards and magnetic tapes--or remotely as single transactions from distant locations using data transmission equipment. The use of remote terminals requires the following additional hardware:

- One communications device.
- Remote terminals (as desired).
- Two dataphones per terminal.
- Additional 32K bytes of core storage added to the central processing unit.

In addition to this equipment, a number of manuals exist to provide guidance and direction to the computer subsystem personnel. These include an Administrative Manual, a Computer Programs Maintenance Manual, a Computer Programs Operations Manual, and a Data Processing Center Operator's Manual. Each of these manuals is more fully excerpted in Appendix B.

2.8.3.2 Computer Subsystem Personnel (Ref. ITDS 06349-W522-R0-00, "Computer Subsystem: Personnel Descriptions")

This computer subsystem is staffed by personnel who possess skills and experience in ADP management; they include analysts of generalized, applications, and peripheral software systems; programmers of generalized, applications, and peripheral computer software; computer and keypunch operators; schedulers; input/output controllers; and a disk and tape librarian.

## 2.9 SUMMARY

ITDS is a tool for those who are responsible for managing large quantities of complex data and information in technical programs. Because it is a computer-assisted system, ITDS enhances the ability of those who must work with

data and information in technical programs by enlarging their capacity to store, retrieve, and manipulate data. ITDS has three modes of operation: (i) the inquiry (or primary) mode, (ii) the periodic mode, and (iii) the exception reporting mode.

These three modes of operation were illustrated in the composite flow diagram in Figure 3. In general, the operation of ITDS in all its modes may be summarized in the following operations.

- a) Receive, log, and route incoming data.
- b) Screen to determine value.
- c) Route nonrelevant data to inactive storage.
- d) Route relevant data to the responsible functional disciplines for review and evaluation.
- e) Perform keywording and extraction/abstraction of pertinent data from source documents.
- f) Enter extracted/abstracted data into digital files and place source documents in hardcopy or microform files.
- g) On a periodic or demand basis, retrieve data from digital and hardcopy or microform files.
- h) Prepare output report for system users.
- i) Inspect reports for quality control.
- j) Disseminate reports to system users.

ITDS is a powerful tool in the hands of the decision-maker. It provides him with a direct means with which to communicate with top management on project status and problem areas. Because it is a continuous and current source of information, ITDS can provide immediate comparisons between actual performance and approved plans and schedules. It can forecast on an exception basis potential technical, time, and cost problems.

ITDS eliminates some of the trial and error in new system planning by enabling other activities to draw upon past experience with respect to technical feasibility, developmental costs, performance attainments, and so forth. It eliminates duplication of effort, screens out useless and extraneous data, and improves the quality and quantity of specific information available to operating managers. The most immediate result of this improved quality and quantity of specific system information is improved system management.

**APPENDIX A**

**INQUIRY PROCESSING**

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APPENDIX A  
INQUIRY PROCESSING

1. PURPOSE

The purpose of this Appendix is to provide "short form" user instructions for employing the direct access inquiry mode as described in paragraph 2.4.1 of the User's Guide. These instructions are designed to enable the untrained user to begin employing the remote-terminal direct access capability of the ITDS.

2. SCOPE

The instructions contained in this Appendix are introductory and are limited in scope and detail to the basic essentials that enable the new user to begin employing the remote-terminal direct access retrieval capability after a minimum of three hours of instruction. Following a review of ground rules for retrieval, the instructions are presented in sequence. A series of retrieval statements are illustrated, proceeding from broad requests for dictionary contents to requests for specific values of an attribute within a particular data list.

3. REVIEW OF ITDS DATA BASE STRUCTURE AND ACCESS LANGUAGE

Before discussing the retrieval examples and instructions, the prospective user should review briefly some fundamentals of the ITDS data base structure, the characteristics of its dictionaries and data lists, and the basic rules in employing the ITDS access language. These are illustrated and describes in succeeding subsections.

### 3.1 ITDS DATA BASE STRUCTURE

The data base is a self-contained, self-describing entity: the data item (record) formats can be changed without affecting the ITDS generalized processing program. The data base is composed entirely of data lists (files), some of which describe other data lists or provide the basis for those descriptions. All are interrelated to provide an integrated structure.

The data base items (records) are variable in format and length, allowing a data base that is structured to the data environment rather than vice versa. The variable-length items (records) permit the system to store only relevant data. Filler or other irrelevant characters are stripped from the data as it is stored.

Data stored in the ITDS data base are associative; that is, data lists, items (records), attributes, and values are correlated (associated) in several ways through four types of correlatives: horizontal, vertical, internal, and treatment.

Horizontal associations are data list to data list; a data list (file) is a logical grouping of data items (records).

Vertical associations are item to item; an item is a set of information pertaining to one data list entry and is composed of attributes.

Internal associations are attribute to attribute; an attribute is an element of an item (record) in which values are stored.

Treatment associations are value to value; a value is the datum stored in an item (record) attribute.

### 3.2 ITDS DATA BASE DICTIONARIES

The data lists which form the dictionaries provide the definitions of the ITDS data base. They are logically separated into two sections:

System Dictionary and User Dictionaries. The System Dictionary provides the basic operating needs of language, dictionary definition formats, and data list names that the user must have but will not always affect directly. The User Dictionaries provide the detailed definitions of the user application data lists; thus, they are constructed directly from user inputs. The characteristics of the system and user dictionaries are illustrated in Figure A-1.

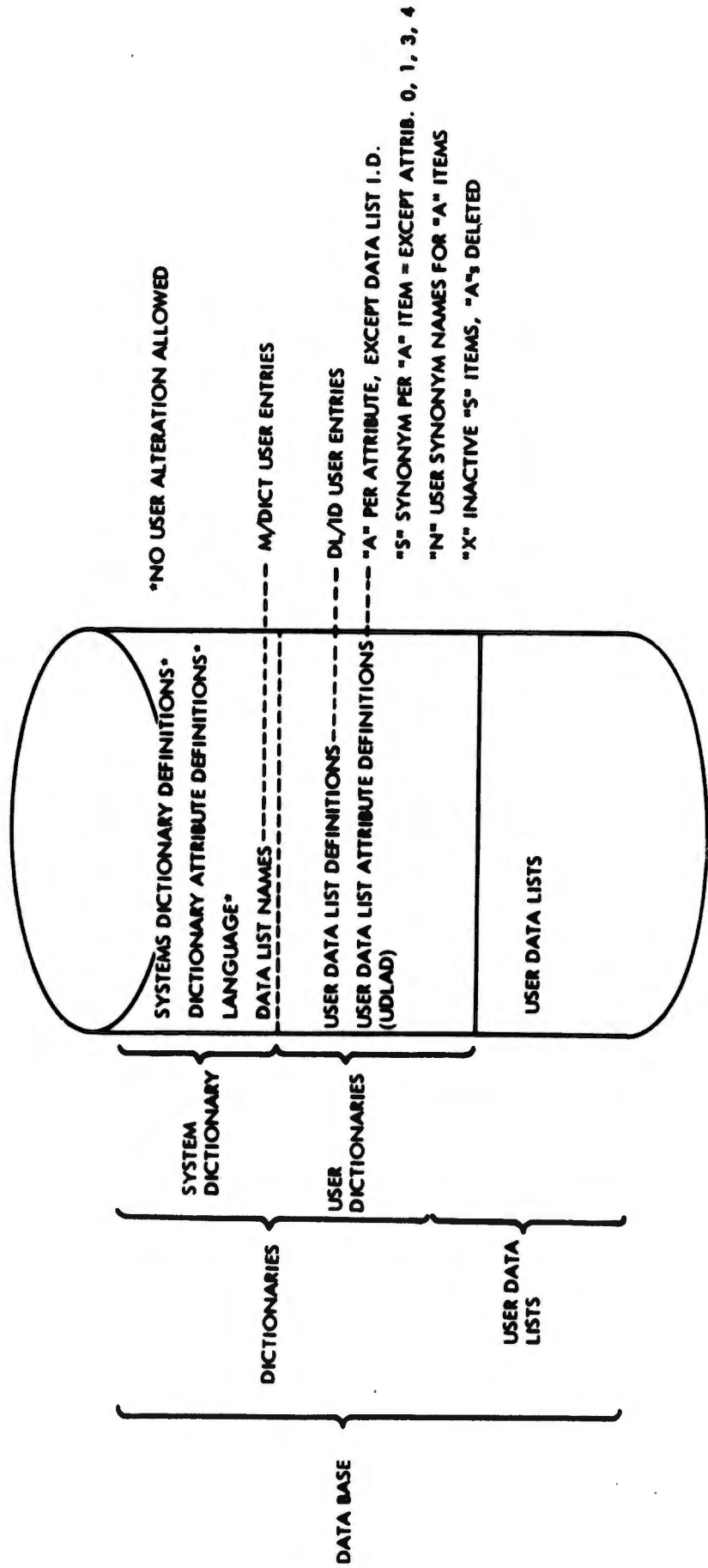
### 3.3 ITDS ACCESS LANGUAGE RULES

1. All vocabulary that is legal and usable as input appears in either the System Dictionary or the User Dictionaries of the data base.
2. The only verbs, modifiers, and connectives which can be used are those in the System Language Data List of the System Dictionary.
3. No system language word can be used as an individual word-portion of an attribute name.
4. Each word or symbol representing a system vocabulary word or a user name must be preceded and followed by at least one blank space.
5. All data list ID's must be unique. No words used in them can appear as attribute names or individual word-portions thereof.
6. All item ID's must be immediately enclosed in ' '.
7. All values except item ID's must be immediately enclosed in " ".
8. The first word of every statement must be an ITDS language verb.
9. Only one data list can be referenced per input statement.

VOCABULARY					
		← MODIFIERS →		← CONNECTIVES →	
VERBS	PROCESS	ID	VALUE	LOGICAL	CONVENIENCE
ADD	DICT	EACH	EQUAL/TO	ANDD	A
BULK		EVERY	GREATER/THAN	INN	ALL
CHANGE		ONLY	LESS/THAN		AN
COUN		TO	NOT		AND
DELETE		WITH			ANY
LIST					FOR
					IN
					OF
					OR
					THE

Figure A-1

ITDS Data Base Structure



#### SAMPLE FORMAT

VERB | MODIFIER | DATA LIST I. D. | PARAMETERS | (END)

- A. 'ITEM I. D.'

  - 1. 'ATTRIBUTE I. D.' → DICTIONARY ITEMS
  - 2. 'ITEM I. D.' → USER DATA LIST ITEMS

- B. ATTRIBUTE I. D.'s

  - 1. DICTIONARY ATTRIBUTE → DICTIONARY ITEMS
  - 2. DATA LIST ATTRIBUTE → USER DATA LIST ITEMS

- C. "VALUE"

  - 1. VALUE STORED IN DICTIONARY ATTRIBUTE DEFINITION ITEM → DICTIONARY ITEMS
  - 2. DATA LIST ITEM ATTRIBUTE VALUE → USER DATA LIST ITEMS.

#### 4. PROCEDURE AND INSTRUCTIONS

The instructions presented below assume that the user has not yet received any formal training in the definition and structure of an ITDS digital data base, in access language, or in remote-terminal operations. Therefore, the procedure will manipulate a series of retrieval statements that enable the user: (i) to retrieve the names of all the data lists (files) from the ITDS data base system dictionary, (ii) to select a particular data list and to retrieve all its attribute names from the ITDS user dictionary, (iii) to select specific attribute names and to retrieve definitions for each one from the user dictionary, (iv) to retrieve a count of the items (records) in a selected data list, (v) to retrieve a listing of the items in a selected data list, and (vi) to retrieve specific values for selected attributes from a particular data list.

##### 4.1 RETRIEVAL INSTRUCTIONS

4.1.1 Review Section 2.6 (The Generalized Processing Program) in the User's Guide, in particular subsections 2.6.2 (Data Structure), 2.6.3 (Data Associations), and 2.6.7 (ITDS Access Language) before proceeding to the instructions on formulating retrieval statements.

4.1.2 Formulate retrieval statements in accordance with the sequence of examples presented below.

4.1.2.1 The first step of the logical sequence is to determine what data are stored in the ITDS data base and are available for retrieval. To obtain this knowledge, the user will address his inquiry to the ITDS system (master) dictionary where the names of all the data lists (files) are maintained. The inquiry statement is shown below in two forms: its normal English form and ITDS language form.

English: List the names of the data lists in the system dictionary.

ITDS Language: list dict m/dict with dict/code "d" v/def

4.1.2.2 After reviewing the data list names retrieved, the user selects one (or more) in which he has an interest and determines what kinds of data are stored and available from that particular data list. To accomplish this, the user will address the user dictionary to retrieve the names of all the attributes stored in the selected data list. The inquiry statement is shown below in two forms: its normal English form and ITDS language form:

English: List the names (only) of all the attributes in the selected (ECP-file) data list.

ITDS Language: list only each dict ecp-file with dict/code "a"

4.1.2.3 After examining the attribute names retrieved, the user selects one or several in which he has an interest and obtains a definition for each of the attributes selected. To obtain these attribute definitions, the user will again address his inquiry to the user dictionary for the selected data list. Both normal English and ITDS language statements are shown below.

English: List the definitions of attributes: category, type, and GSE-affected (selections) from the selected (ECP-file) data list dictionary.

ITDS Language: list v/def dict ecp-file 'category' 'type' 'gse-aff'

4.1.2.4 Thus far, the user has retrieved (i) the names of all of the data lists contained in the data base from the master dictionary, (ii) the names of all the attributes contained in a selected data list from the user dictionary, and (iii) the definition of selected attributes for a data list from the user dictionary. The user is now ready to examine some of the actual data that are stored in the selected data list.

In this step, the user will determine how many data items (records) are contained in the selected data list. To accomplish this, he will request a count of the items in the data list. Both normal English and ITDS language retrieval statements are shown below:

English: How many items are stored in the selected (ECP-file) data list.

ITDS Language: count ecp-file

4.1.2.5 After retrieving the number of items contained in the data list, the user next determines the identity of one or more of these items. To accomplish this, he requests a listing of all or any part of the data list. Both normal English and ITDS language statements are shown below.

English: List the item ID's (identifiers) contained in the ECP file.

ITDS Language: list only each ecp-file

4.1.2.6 The last step in the retrieval sequence is to retrieve specific values of a specific attribute stored in the selected data list. This is accomplished by selecting one of the attributes retrieved in step two (e.g., category) and one of the value definitions retrieved in step three (e.g., category "E"), and then formulating an inquiry against data list ID

for any items meeting those conditions. Both normal English and ITDS language statements are shown below.

English: List only those ECP's in the ECP file data list that are category E.

ITDS Language: list only ecp-file with category "e"

These examples are presented for the purpose of explaining to the prospective user of ITDS a method of initially utilizing the ITDS remote-terminal direct access capability (and data base) prior to attending the formal user training course. Each inquiry statement and response is presented below with an explanation of the step-by-step process that enables the user to begin with broad requests for dictionary contents and to sharpen methodically the focus of his inquiry until he can request a specific attribute value from a specific data list and item identifier. The inquiry statements and responses are reproduced exactly as they were processed at an ITDS terminal. An explanation of each transaction has been added on the right-hand side of the pages. Additionally, rules of access language syntax and mnemonic abbreviations are defined.

#### 4.2 EXAMPLES

Actual inquiry statements and responses that were processed at an ITDS remote terminal are presented in succeeding pages.

Inquiry Statement 1:

\* List dict m/dict with dict/code "d" v/def

Rationale: This inquiry statement

is recommended when the user has no prior

knowledge of the contents of the ITDS data

base. The statement requests a listing of

the names of all the data lists in the ITDS

data base from the system (master) dictionary.

From the response listing, the user selects

one or more data lists that are of interest

to him and prepares the next inquiry statement.

Language: "List" is a retrieval verb that is

used to retrieve the contents of a dictionary

data list, or record--in this instance a listing

of the contents of the system dictionary.

Phonetics: dict = dictionary; !/dict = master

dictionary; dict/code = dictionary code; "d" =

code which defines data list name function;

v/def = definitions of dictionary entries/names

of data lists.

M/DICT : CONTRACT-TBL

M/DICT : MEADS-FGC-FILE

M/DICT : ECP-FILE

M/DICT : ECP-COST-LAC-FILE

M/DICT : WAIVER-FILE

M/DICT : ADMIN-FILE

M/DICT : ACT-OFF-TBL

M/DICT : DAISYN

M/DICT : INTFAC-DEFIN-FILE

M/DICT : SUPPLY-CNTRL-FILE

M/DICT : SPEC-TOOL/EQ-CD-TBL

M/DICT : TYP-EQ\*ORGN\*CNTRL-NO-FILE

Inquiry Statement 2:

\* list only each dict ecp-file with dict/code "a"

ECP-FILE.....

/GSE-AFF  
KO-LTR-NO  
SYS-AFF  
MMO-GEN  
REL-AFF  
MAINT-PROC-AFF

DT-CONTR-AUTH-REQD  
ELAPSED-DAYS-CCBD-TO-MOD  
ACT-DT  
STAT

DCP/SCN-REQD  
SRP-AFF  
COMB-EFF-AFF  
TRAINER-AFF  
DEPOT-TEST-EQUIP-AFF  
CCBD-DT

CATEGOR<sup>MS</sup>  
OPER-PRG-LAFF  
AID  
TECH-PUB  
CEI-AFF

DOC-AFF  
SER-LIFE-AFF  
PKG-AFF  
SN-RTR-EFF-FROM  
CALIB-AFF  
MOD-DT  
DATE

TRNG-AFF  
OTHER-SYS-AFF  
SUBM-AGENCY  
ICD-AFF  
SCTY-CLASS  
DEV-SN-EFF-TO  
PRIORITY  
NEW-PN  
MAINT-AFF  
FLD-TEST-EQUIP-AFF  
✓TYPE

SN-EF. ROM

Rationale: This inquiry statement is the next logical step in narrowing the search for data. The user has reviewed the dictionary listing of all the names of the data lists and has selected one engineering change proposal (ECP) file to examine. As in the first step, this inquiry is directed to a dictionary, in this instance the user dictionary, in order to retrieve a listing of the contents ("a" attributes) of this particular data list. The response retrieved lists the names of the "a" attributes in the ECP-file data list.

Language: "List" is the retrieval verb with two modifiers, "only each" added in order to limit the computer search to the user dictionary and the specific attribute names of a data list. Without the limiters "only each," the response would have included synonym names also.

Mnemonic: dict = user dictionary (user data list attribute definitions); dict/code "a" = dictionary code "a," which indicates the name of each attribute.

Inquiry Statement 3:

\* list v/def dlist ecp-file 'category' 'type' 'gse-aff'

ECP-FILE : CATEGORY  
V/DEF : ECP CATEGORY FROM BLOCK IH AMC 1370 FORM D=DESIGN DEFICIENCY C=COMPATIBILITY S=SAFETY P=OPERATIONAL  
REQUIREMENTS PS=PRODUCTION STOPPAGE CR=COST REDUCTION V=VALUE ENGINEERING E=EDITORIAL FA=FAA REQUI  
RED E=NO COST

ECP-FILE : TYPE  
V/DEF : ECP TYPE FROM BLOCK IG AMC 1370 FORM

ECP-FILE : GSE-AFF  
V/DEF : GROUND SUPPORT EQUIPMENT AFFECTED BY THE ECP Y=YES N=NO FROM AMC FORM 1370 BLOCK 22

4  
11

Rationale: As in the previous step, this inquiry statement addresses the user dictionaries. Having reviewed the attribute names in the ECP-file data list, one or more are selected (in this example three attributes) for which definitions are desired. The inquiry statement is phrased to retrieve the definitions of three of the attributes in the ECP-file dictionary.

Language: Again, the "list" retrieval verb is employed to obtain the definitions of the attributes: category, type, and GSE-aff, from the ECP-file user dictionary.

Mnemonics: V/def = the feature which enables retrieval of the attribute definitions from the user dictionary.

Inquiry Statement 4:

count ecp-file

NUMBER OF ACCEPTABLE ITEMS = 5

Rationale: The ECP-file data list is the selected example from the 100-plus data lists available in the data base. Rule-of-thumb:

Before attempting to retrieve any specific attributes and values from the contents of the data list (when he does not know the quantity of records that it contains), the user enters a retrieval statement requesting the number of records in the data list.

Language: The "count" retrieval verb is employed with the name of the data list. In this example, the response to the retrieval statement, count ecp-file, was the number of acceptable items (records) stored in the data list. Since there were a small number of records stored in the data list, the next retrieval statement requests a listing of those items; however, if there had been 50 or 500, the retrieval statement would have been composed with additional modifiers (limiters) in order to retrieve only those records in which the user had an interest.

Inquiry Statement 5:

List only each ecp-file

ECP-FILE.....

64E-23  
AFS-041  
AFS-991  
AFS-043  
AFS-013

\*\*\*\*\*

Rationale: This inquiry statement is addressed to the selected data list itself, rather than to the dictionaries as in the three previous steps. The user is retrieving the contents (attribute value only) of the ECP-file data list.

Language: The "list" retrieval verb with "only each" modifiers is used to limit the data search and responses to the attributes of the ECP-file data list.

Inquiry Statement 6:

List only each ecp-file with category "e"

Rationale: This inquiry statement is directed to the ECP-file data list for the purpose of re-

ECP-FILE.....

trieving specific attribute values for a specific

attribute (category). The values in this example

AES-041  
AFS-991  
AFS-043

are the particular ECP's designated as category

"e," editorial changes. The response to the inquiry

indicates three ECP's in the data list with the

category "e" designation.

4-14

Language: The "list" retrieval verb with "only

each" modifiers was employed for the purposes of

limiting the response to ECP numbers (excluding

titles, submittal dates, approval dates, and so

forth). The response is further narrowed by the

specification of only those assigned category

(attribute) "e" by use of the double quotes around

the value "e."

## 5. SUMMARY

The retrieval steps 2 through 6 illustrated above can be used to retrieve the contents of any of the user dictionaries and data lists that were listed in response to the first request for the data list names in the master dictionary. Many alternative steps (inquiry statements) can be used in the retrieval process; however, the steps presented are typical of the logical process by which the user can begin employing the ITDS remote-terminal direct access (and data base) capability without extensive prior knowledge and training. It should be noted that formal training courses in data base structuring, ITDS access language, and ITDS terminal operations are necessary in order to become a highly efficient and independent user.

**APPENDIX B**

**ITDS REPORTS**

APPENDIX B  
ITDS REPORTS

1. PURPOSE

The purpose of this Appendix is to illustrate and describe the several periodic output reports that are produced by ITDS applications and peripheral programs, as well as some of those reports that can be produced as a response to an inquiry at a remote terminal.

2. SCOPE

This Appendix covers representative samples of the output reports that are identified in the System Description Part II: Product Description for the Integrated Technical Data System. These reports are available to authorized users on a periodic (recurring) basis, or in some cases on an as requested (nonrecurring) basis. The reports represent information required by the supporting management and technical functional disciplines and the Army systems managers. Reports chosen for inclusion are fully representative of those required by current Army regulations and directives.

3. CONTENTS

The reports are arranged in groups by functional disciplines, and within functional disciplines by applications and peripheral programs or generalized program. A sample page(s) from each report is illustrated with an accompanying description of the report appearing on the lower half of the page.

An index to the reports follows:

<u>Functional Discipline</u>	<u>Sub-Element</u>	<u>Program</u>	<u>Report Title</u>	<u>Page</u>
1. Management:	Project Control	Application	Master Detail Milestones	B-5
		Peripheral	PERT/Time (Not Illustrated)	
		Peripheral	PERT/Cost (Not Illustrated)	
		Peripheral	Material Acquisition Status Technique (MAST)	B-6
		Peripheral	Summary Cost Input/Output List (SCIOLIST) Reports	B-7 thru B-13
		Generalized	Time Status Report	B-14
		Generalized	Cost Status Report	B-15
		Generalized	Funding Status Report	B-16
	Configuration	Application	CEI Configuration Index	B-17
	Management	Application	Description and Specification Index/Status	B-18
		Application	Drawing Index/Status	B-19
		Application	ICD Index/Status	B-20
		Application	ECP Index/Status	B-21
		Application	ICWG Action Status (Not Illustrated)	
		Application	ECP Waiver Processing Audit	B-22
		Application	Technical Publications Index/Status	B-23
		Application	Master Drawing List by Work Breakdown Structure (WBS) (Not Illustrated)	
	Data Management	Application	Contractor Data Requirements List (CDRL)	B-24

<u>Functional Discipline</u>	<u>Sub-Element</u>	<u>Program</u>	<u>Report Title</u>	<u>Page</u>
Management		Application	Government Data Requirements List - Contractor Required	B-25
2. System Engineering	None	Peripheral	Engineering Fact Sheets (Not Illustrated)	
		Peripheral	Engineering Problem Narratives (Not Illustrated)	
3. Engineering Design	None	None	None	
4. Quality Assurance	None	Peripheral	Maintenance Engineering Analysis Data (MEADS) Reports (Not Illustrated)	
5. Operations Engineering	None	None	None	
6. Production Engineering	None	None	None	
7. Test	None	Application	Test Requirements Status Reports	
		Application	Part 1 - Test Requirements - DT <sup>2</sup> Status	B-26
			Part 2 - Requirements for Contractor Test - Status Report	B-27
			Part 3 - Specifications/ Descriptions - Test Status Report	B-28
			Part 4 - Development Test Status Report	B-29
8. Logistics	None	Application	Maintainability Problem Reports - Hi 25	B-30
			Maintainability Problem Reports - Hi/Lo 25 (Not Illustrated)	

<u>Functional Discipline</u>	<u>Sub-Element</u>	<u>Program</u>	<u>Report Title</u>	<u>Page</u>
Logistics			Maintenance Man-Hour per Usage Unit per Mos	B-31
		Generalized	GFM Functions and Status Reports	B-32 & B-33

ITDS Data Operations Reports

<u>Program</u>	<u>Report Title</u>	
Applications	Keyword-DAI Cross-Reference Index	B-34
Applications	Master Microform Listing	B-35
Applications	Keyword Thesaurus	B-36
Applications	ITDS Data Element Manual	B-37

CUTOFF 01MAY69

MASTER DETAIL MILESTONES - AMCPM-AFS  
BY MILESTONE NUMBER

MILESTONE NUMBER	MILESTONE DESCRIPTION	RESP AGENCY	DA MS NO	SCHED DATE	DIR/ACT/ EXP. DATE	LATEST ALL. DATE	RELEASE DATE
0100	QUALITATIVE MATERIEL DEVELOPMENT OBJECTIVE LUMDUJ APPROVED		1	APR64	A 6APR64		15MAY69
0110	REQUEST FOR PROPOSALS ISSUED	AMC	2	AUG64	A 1AUG64		
0120	PROPOSALS RECEIVED	AMC	3	NOV64	A 23NOV64		
0700	QUALITATIVE MATERIEL REQUIREMENTS APPROVED	AMC	11	NOV65	A 20NOV65		
0710	REVISED TECHNICAL DEVELOPMENT PLAN SUBMITTED			APR66	A 25APR66		
0900	TECHNICAL DEVELOPMENT PLAN APPROVED			DEC64	A 15DEC64		
0920	CDP CONTRACTORS SELECTED	OCRD	5	FEB65	A 19FEB65		
0930	CDP CONTRACTS AWARDED	AMC	6	MAR65	A 12MAR65		
1100	CONTRACT DEFINITION PHASE (CDP) INITIATION APPROVED	OCRD	4	FEB65	A 9FEB65		
1200	REQUEST FOR AUTHORITY TO NEGOTIATE DETERMINATION AND FINDINGS APPROVED	CCRD	7	OCT65	A 26OCT65		

Master Detail Milestones. This report shall contain the planned schedule and current status for all project Detail Milestones as of the last day of each month. Processing of project PERT output milestones update information reported on PMM Action Items and coordination meetings between ITDS and PMO personnel shall provide the necessary data for the report.



PROGRAM FUNDING STATUS  
 COMMAND REPORT THRU 30 APR 69

FY	CCS NO	DESCRIPTION:	TOTAL RCHTS	REL TO PROJECT	DISTRIB TO FIELD	OBLIGATED	UNOBLIG BALANCE	UNIDSTRIB AMOUNT
AVSCOM	67 111101	BASIC PRIME CONTRACT	12000000	12000000	12000000	12000000	00	00
AVSCOM	67 111100	BASIC PRIME CONTRACT	12000000	12000000	12000000	12000000	00	00
AVSCOM	67 111202	ECP'S 1,2,3,5,6	4700	4700	4700	4700	00	00
AVSCOM:	67 111203	IPR APPROVED CHANGES	120000	120000	120000	100000	2000	00
AVSCOM:	67 111204	DUST SEPARATION: TESTS	2000	2000	2000	1500	500	00
AVSCOM:	67 111205	XP-129	1400	1400	1400	1400	00	00
AVSCOM:	67 111206	XM-140	3000	3000	3000	2000	1000	00
AVSCOM:	67 111207	TOV	10000	10000	10000	10000	00	00

SCIOLIST. Summary Cost Input/Output List is a computer program designed to provide a vehicle for implementing cost (funding) management, planning and reporting aspects of a program. It is a system by which cost categories (requirements, funding, distributions, obligations) and their variances are formatted into several reports by which the program can be efficiently managed.

NOT REPRODUCIBLE

PROGRAM FUNDING STATUS  
FISCAL YEAR REPORT THRU 30 APR 69

FY	CFS FO	DESCRIPTION	TOTAL PCMTS	RFL TO PROJECT	DISTRIB TO FFLD	ORIGIATED BALANCE	UNDISTRI- BUTED AMOUNT
67	111101	BASIC PRIME CONTRACT	1200000	1200000	1200000	00	00
67	111100	BASIC PRIME CONTRACT	1200000	1200000	1200000	00	00
67	111202	FCP'S 1,2,3,5,6	6700	6700	6700	00	00
67	111203	IPP APPROVED CONTRACTS	12000	12000	10000	2000	00
67	111204	DUST SEPARATION TESTS	2000	2000	1500	500	00
67	111205	YM-129	1600	1600	1600	00	00
67	111206	XM-140	3000	3000	2000	1000	00
67	111207	TOL	10000	10000	10000	00	00
67	111208	ALTF:PA, AS-1306A	5000	5000	6700	300	00
67	111209	ADF A:TF:PA	8000	8000	8000	00	00

SCROLLIST (Cont'd.)

APPENDIX 11

PROGRAM FUNDING STATUS  
 CCS NO. REPORT THRU 30 APR 67

FY	CCS NO	DESCRIPTION	TOTAL AMTS	PFL TO PROJECT	DISTRIB TO FLD	OBLIGATED	UNOBLIG BALANCE	UNDISTRIB AMOUNT
	111101	BASIC PRIME CONTACT	47129000	47129000	47129000	47129000	00	00
	111100	CASIC PRIME CONTACT	47129000	47129000	47129000	47129000	00	00
	111201	MISCELLANEOUS	5127000	900000	00	00	00	900000
	111202	FCP'S 1,2,3,5,6	47000	47000	47000	47000	2000	00
	111203	IPR APPROVED CHAIFCS	12000	12000	10000	10000	00	2000
	111204	DUST SEPARATION TRSTS	12750	12750	1750	12750	00	00
	111205	XI-120	120000	120000	100000	100000	00	200000
	111206	XF-140	140000	140000	100000	100000	00	400000
	111207	TOI	270000	270000	270000	270000	00	00
	111208	AIRTEL, AS-13042	14000	14000	14000	17000	1500	00

SCIENTIST (Cont'd.)

NOT REPRODUCIBLE

PROGRAM FUNDING STATUS  
 NEGATIVE VARIANCES REPORT TIRU 30 APR 69

FY	CCS NO.	DESCRIPTION	TOTAL RCMTS	REL TO PROJECT	DISTRIB TO FIELD	ORALICATED	UNOBLIG BALANCE	UN-DISTRIB AMOUNT
CON:	67	112301	3478000	3478000	3478000	3478000	19000	00
VSCOM:	62	111211	200000	200000	200140	200140	00	-140
VSCOM:	68	111302	114000	114000	114271	114271	00	-271
VSCOM:	68	111311	647000	647000	647329	647329	00	-329
M-AI	69	113102	2200	2200	2253	2253	00	- 53
M-AI	69	113102	5600	5600	5781	5781	00	-181

SCIOLIST (Cont'd.)

APPENDIX 15

PROGRAM FUNDING STATUS  
SUMMARY REPORT THRU 30 APR 69

FY	CCS NO.	DESCRIPTION:	TOTAL RCMTS	REL TO PROJECT	DISTRIC TO FFLD	OBLIGATFD	U.OBLIG BALANCE	U:DISTRIF AMOUNT
67	110000	RDTE PROGRAM	24000000	24000000	23000000	23000000	00	1000000
68	110000	RDTE PROGRAM	6700000	67000000	67000000	64371000	2629000	00
69	110000	RDTE PROGRAM	41000000	41000000	2525000	20197000	5053000	15750000
70	110000	RDTE PROGRAM	110740000	00	00	00	00	110740000
71	110000	RDTE PROGRAM	53271000	00	00	00	00	53271000
	110000	TOTAL RDTE	206011000	132000000	115750000	107568000	7682000	180761000

NOT REPRODUCIBLE

SCIOLIST (Cont'd.)

PROGRAM FUNDING STATUS  
UNFUNDED REQUIREMENTS AND REPROGRAMMING POSSIBILITIES REPORT THRU 30 APR 69

FY	CCS NO	DESCRIPTION	TOTAL POINTS	REL TO PROJECT	UNFUNDED POINTS	UNDISTRIB AMOUNT	UNOBLIG BALANCE	AVAIL REPROGRAM
AVSCOM	67	111306	15000	15000	00	00	407	407
OTHER	67	112302	58000	58000	00	58000	00	58000
OTIFR	67	112303	9700	9700	00	720	360	1260
FCOM	67	114401	221000	221000	00	54000	2860	56860
ECON:	68	114201	470000	470000	00	23261	6570	29831
MICON:	68	114201	87000	87000	00	3120	00	3120
WFCOM:	68	114201	797000	797000	00	68470	12500	80970

NOT REPRODUCIBLE

SCIOLIST (Cont'd.)

APPENDIX 17

PROGRAM FUNDING STATUS  
PROGRAM SUMMARY REPORT THRU 30 APR 69

CCS NO	DESCRIPTION	PRIOR	FY69	FY70	FY71	FY72	FY73	TOTAL
11101	BASIC PRIME CONTRACT	22889000	16240000	8000000	3000000	00	00	47129000
11100	BASIC PRIME CONTRACT	22889000	16240000	8000000	3000000	00	00	47129000
111201	MISCELLANEOUS	673000	2100000	1400000	3000000	00	00	3127000
111202	ECP'S 1,2,3,5,6	24000	20000	3000	00	00	00	47000
111203	IPR APPROVED CHANGES	9000	6000	2000	1000	00	00	18000
111204	DUST SEPARATION TESTS	650	10500	1600	00	00	00	12750
111205	XM-129	300000	300000	00	00	00	00	1200000
111206	XM-140	360000	740000	300000	00	00	00	1400000
111207	TON	1100000	1240000	350000	00	00	00	2700000
111208	ACTFHA, AS-1304A	13000	1000	00	00	00	00	14000

NOT REPRODUCIBLE

SCIOLIST (Cont'd.)

APPENDIX 20

TRANSACTION 586

STATEMENT LIST TIME-STATUS REPT IN: EVENT FILE

EVENT FILE	1-DETL-PRED-EV-NO	1-TA/TE-IND	1-TA/TE-DT	1-TL	1-SL
2040	1205	A	20 JAN 69	22 APR 69	10.2
	1210	A	27 JAN 69	22 APR 69	9.2
2075	4310	F	03 FEB 69	22 APR 69	11.2
2240	2005	F	10 MAR 69	19 SEP 70	27.2
2250	2185	E	13 AUG 69	25 MAR 70	31.2
	2215	E	13 NOV 69	11 MAR 70	16.2
	2235	E	16 OCT 69	11 MAR 70	20.2
2405	2245	F	30 OCT 69	11 MAR 70	18.2
	2260	F	11 SEP 69	22 APR 70	31.2

NOT REPRODUCIBLE

**Time Status Report.** This report, produced upon inquiry request, shall provide detailed PERT information as backup for the monthly Master Detail Milestone Report.

TRANSACTION: 588

STATEMENT LIST COST-STAT-RPT IN COST-STAT-FILE

COST-STAT-FILE	CONTR-ORIG-TGT-CST	CONTR-LAT-TGT-CST	COM/TP-DFLTA	WPK-PFRF-TO-DT-ACTL	TOT-AT-COMPL-LRE
1130000	7002000	12599000	-5507000	10020000	13797000
1131000	1197000	2106000	- 909000	1747000	2106000
1132000	887000	593000	294000	576000	593000
1133000	1041000	2744000	-1603000	1464000	2761000
1134000	618000	609000	9000	291000	592000

**Cost Status Report.** This report, produced upon inquiry request, shall provide contractor-reported PERT/Cost data.

TRANSACTION 587

STATEMENT LIST FUND-STAT-RPT IN FUND-STAT-SUMMARY-FILE

FUNDING-STAT-SUMMARY-FILE	COMD	FY	TOT-RQMTS	REL-TO-PROJ	DISTR-TO-FLD	OBLIGATFD
111110	AVSCOM	67	420000	420000	420000	420000
	ECOM	68	750000	725000	675000	645000
		69	900000	000000	000000	000000
111110	AVSCOM	67	140000	140000	140000	140000
	ECOM	68	175000	175000	175000	175000
		69	250000	000000	000000	000000
111111	AVSCOM	67	120000	120000	120000	180000
	ECOM	68	350000	350000	325000	300000
		69	350000	000000	000000	000000
111112	AVSCOM	67	100000	100000	100000	100000
	ECOM	68	225000	200000	175000	170000
		69	300000	000000	000000	000000

**Funding Status Report.** This Report, produced upon inquiry request, shall provide formatted SCIOLIST report information.

CEI CONFIGURATION INDEX

PAGE NO. 2

CEI NO.	PART NUMBER	FED STOCK NO.	DESCRIPTION / SPECIFICATION	DRAWING NUMBER	ICD NUMBER	PROGRAM REPORT NO.	AFS-CM-1	TECHNICAL MANUAL NO.	COM MGR PMS
C032-69	TRM-PART-NJ-AAB1001	FED-STK-MO-10	DESC-NR-AA-010A0010 DESC-NR-AA-020A0020 DESC-NR-AA-030A0030	DRG-NR-AAAC1000 DRG-NR-AAAE1000 DRG-NR-AAAF1000	ICD-NR-AAEB8888	TECH-NRAAA0000111200 TECH-NRAAA0000111200 TECH-NRAAA0000111200	MOD-WORK ORDER VO.	889	389
	US AIR FORCE FLIGHT PLAN	ALTIMETER ADJUSTER				ECP-NR-AA-700A09 ECP-NR-AA-773A09 ECP-NR-AA-730A09			
C033-69	TRM-PART-NJ-AAD1020	FED-STK-MO-20	DESC-NR-AA-040A0040	DRG-NR-AAAC1000		TECH-NRAAA0000111200		879	379
	US AIR FORCE FLIGHT PLAN	ALTERNATE ROUTE GUIDE							
C040-69	TRM-PART-NJ-AAE1020	FED-STK-MO-20	DESC-YR-AA-050A0050	DRG-NR-AAAC1000	ICD-NR-AAC44444	TECH-NRAAA000C111200		859	369
	US AIR FORCE FLIGHT PLAN	ALTERNATE CONTROLLER MANUAL							
C050-69	TRM-PART-NJ-AAF1019	FED-STK-MO-20	DESC-NR-AA-011B0011	DRG-NR-AAAC1000		TECH-NRAAA0000111200		871	371
	US AIR FORCE FLIGHT PLAN	ALTERNATE PILOT ASSISTANCE GUIDE							

**CEI Configuration Index.** This report shall identify all Configuration End Items (CEI's) comprising a system and provide an index to the applicable documentation, changes, part number(s) and Federal Stock Number(s) for each CEI. This report serves primarily as a key to other reports.

DESCRIPTION / SPECIFICATION INDEX / STATUS

CUTOFF 69 MAY 3

PROGRAM REPORT NO. AF-S-CM-2  
RL ET REV REVIS  
VR DATE TO INCORP.

.....EFFECTIVITY.....  
FROM THRU ECP NUMBER

REL. CEI NUMBER / COM SEC CN DCP  
DATE FED. STOCK NO. MGR CL. PO DATE

DESCRIPTION / SPECIFICATION

TITLE

B2	8123461	SEC 17						10	AB1
	RESEARCH STUDY B2								
B3	680112 AB1	RAC CLA OU						00 690102	AB1
	50ZABRAN-OKAY	01	B0001	GO	DRLK-123456			01 690101	
		01	COM	NO	AFES-1				
		01	HIM	HER	AFS01			02	
	RESEARCH STUDY B3								
B4	680112 AB2	CAP SEC 01						10	AB2
	33333333333	01							
	RESEARCH STUDY B4								
B5	680210 AB4	BLE CON 02						10	AB3
		02	SPEKEL	FRID	67				AB5
		02	BAR	BALL					AB6
		02	PIN	BALL					AB7
		02	SE	BE	68				AB9
		02	SPEAK	EASY					
		02			341				
	RESEARCH STUDY B5								
B6	680311 AB1	APL TS 09						99 690103	AB1
		09	TOWN	HOUSE	321				
		09							
		09							
		09							
	RESEARCH ST								

Description and Specification Index/Status. This report shall identify the descriptions/specifications which are applicable to a project and provide a record of all changes, their effectivities and revisions to each description/specification. This report is used as an official source for the current issue and changes to each description/specification.





ECP INDEX

CUTOFF 69 APR 21

PROGRAM REPORT NO. AFS-CM-5

AFS-031

PCRT	CEI NUMBER / FED-STOCK NO.	DESCRIPTION / SPECIFICATION	ICD NUMBER	PART NUMBER	TECH. PUBLICATIONS	CONTRACT NUMBER	MOD. NO.
R P	C111	C00042	0017	1005961-204	66-8852	66-8861	K0231
					66-8853	66-8867	
					66-8871	66-8875	
					66-8872	66-8876	
					66-8872	66-8876	

ARMOR-1592, MODEL KF16-25

DAAE11-66-C-4157(H)

W005 E001 CODE OTHER THAN N FOUND AT START OF A NEW GROUP IN RECORD: AFS-035

ECP Index/Status. This report shall identify all proposed engineering change proposals and the related hardware and documentation affected by each. This report is used in conjunction with reports CM-1 through 4 and 6 through 8 to establish the contractually authorized hardware and data configuration resulting from each ECP.

CUTOFF 69 APR 08

ECP PROCESSING AUDIT

PAGE NO. 02

ECP NUMBER	CEI NO.	SUBMIT DATE	CCB DISPOSITION	CCBD DATE	MOD DATE	MOD. NO.	PROGRAM REPORT NO. AFS-CM-5A		ELAPSED DAYS		SUBMIT	
							TO	CCBD	CCBD	MOD	TO	MOD
AFS-211	A043	680203	DISAPPROVED	680419	680314	K1800	75	36	36	39		
AFS-221	C183	680214	APPROVED	680419	680319	K8170	64	31	31	33		
AFS-238	C175	680216	APPROVED	680421	680321	K9270	54	31	31	23		
AFS-239	C062	680219	APPROVED	680430	680330	P091	70	31	31	39		
AFS-246	C189	680314	APPROVED	680429	680331	P197	46	29	29	17		
AFS-355	C981	680401	DISAPPROVED	680520	680417	K0817	29	30	30	21		
AFS-362	C307	680409	DISAPPROVED	680616	680516	K0927	49	30	30	19		
AFS-376	C037	680426	DISAPPROVED	680615	680514	P019	68	31	31	37		
AFS-390	C751	680429	DISAPPROVED	680621	680514	P791	50	32	32	18		
AFS-463	C871	680506	APPROVED	680819	680520	K1940	53	32	32	21		
AFS-462	A183	680513	APPROVED	680717	680630	K1940	100	32	32	55		
AFS-510	A175	680516	DISAPPROVED	680717	680718	K9410	65	34	34	68		
AFS-596	A062	680522	DISAPPROVED	680722	680613	K1409	67	32	32	31		
AFS-621	A189	680603	DISAPPROVED	680727	680620	P419	64	26	26	35		
AFS-621	A961	680603	DISAPPROVED	680727	680719	K8219	64	27	27	38		
AFS-621	A961	680603	DISAPPROVED	680727	680630	P801	54	27	27	5-621		
					680630	P801	54	27	27	27		

**ECP/Waiver Processing Audit.** This report shall provide a capability to monitor the processing of engineering changes and waivers as required by AMCR 11-26. The report provides the status and the number of days required for processing each engineering change and waiver. Exception reports may be generated to identify any items for which processing is delinquent.

TECHNICAL PUBLICATION INDEX / STATUS

CUTOFF 69 APR 23

PROGRAM REPORT NO. AFS-CM-10

CEI NUMBER / REL DATE ECP NUMBER MOD. WORK ORDER NO. REV. DATE

...CHANGE PAGES... SCHEDULE REL. DATE ACTUAL REL. DATE

PUBLICATION NUMBER

CEI NUMBER / REL DATE	ECP NUMBER	MOD. WORK ORDER NO.	REV. DATE	PROGRAM REPORT NO. AFS-CM-10	...CHANGE PAGES... SCHEDULE REL. DATE	ACTUAL REL. DATE	REV. DATE
A300	12345	22226	690110	690115	690115	690115	690115
A350	12346	22227	690115	690115	690115	690120	690120
A360						690210	690210
A370						690215	690215
A390							
1380							

PRTS AN4 PARAMETERS

W008-EG03 DUPLICATE RECORD KEY = CM100017 0006

**Technical Publications Index/Status.** This report shall identify the technical publications (technical manuals, training manuals, operators' handbooks, and so forth), which are applicable to a project/system and provide a record of all changes and revisions to each publication. This report is used as an official source for the current issue and changes to each technical publication. Exception reports may be generated when changes to the publications are not released on schedule.

ERROR MESSAGE FOR W008

CONTRACTOR DATA REQUIREMENTS LIST

DAAF11-66-C-3667(H)  
 LOCKHEED CALIFORNIA COMPANY

REPORT DATE 15 MAY 69

08-002[REV] TITLE: DESIGN TEST PROGRAM

SUBTITLE: CONTRACTOR TEST PLAN

CT-REF: APPENDIX I TECH OFFICE: AMCPM-AFS DD250: APPR: A FRQ: ONE/R LAC: --- ADD: ASREQ ---

FIRST SUBM: 90 DAC SUBQ SUBM: ---

REMARKS: ---

ADDRESSEE: AMCPM-AFS DISTR: 6/0 TOTAL DIST: 11/0 SC'D DATE: 21 JUN 66 RECD DATE: 21 JUN 66

AMSAV-EAS 1/0  
 AMSEL-VL-S 3/0  
 AMSEL-PP-EA 1/0

Contractor Data Requirements List (CDRL). This periodic report shall be designed to serve two primary purposes: (i) it provides an updated list of data items to be furnished by a contractor under the terms of his contract, as reflected on DD Forms 1423 and as modified by contract amendment. It shall contain data item identification, submittal schedule and distribution requirements; and (ii) it shall provide a record of the contractor's data item submittals via shipping document (DD Form 250) and/or data item transmittal letter inputs. The CDRL shall provide a comparison between the data item schedule and the delivery status of each data item, thus providing measurement visibility of the contractor's performance.

1.11

C O N T R A C T O R R E Q U I R E D D A T A

GOVERNMENT DATA REQUIREMENTS LIST  
DAAE11-66-C-5667(H)

RESPONSIBLE AGENCY: AVSCOM

ISSUE DATE: 15 MAY 69  
ISSUE NO: 001

V - VIVALID] P(PRELIM)  
C - TENTHS COMPLETED  
B - CHARGE CONTROL

NOMENCLATURE OR REQMT TITLE	FSI OR DOCMT NO.	REV	DOC. DATE	NEED DATE	SCHEDULE DATE	RECEIVED DATE	V	C	B	AVBLTY	CONTROL NUMBER
ENGINE, TURBO- SHAFT	FSN1234-567-899										
MODEL SPECIFI- CATION	E1123	B	15 NOV 67	23 MAY 68	23 MAY 68	23 MAY 68	V	X	B	Y	101001
CG LOCATION	6010743	A	17 JUN 66	1 JAN 66	11 JAN 67	22 JUL 67	P	B		Y	101035
FIRE EXTINGUISH- ER	FSN4210-555-8837										

Government Data Requirements List--Contractor Required Data (GDRL). This periodic report shall be designed to serve two primary purposes: (i) it shall list the agreed upon list of data items to be furnished by the Government to the contractor in support of Government-Furnished Material (GFM) hardware items, and shall contain data requirement identification related to the nomenclature and FSN identification of the GFM items as well as need date and scheduled delivery dates; (ii) it shall provide the means of identifying data furnished to satisfy the contractor's data item requirements and status of data item deliveries.

ISSUE DATE 11 APR 69

TEST WITNESSING

DTP NO.	TITLE	CONTRACT APPENDIX/ PARA NO.	SCHEDULE PROPOSED START DATE	DTP PROPOSED START DATE	ACTUAL START DATE COMPLETED	COGNIZANT COMMODITY COMMAND	COMMENTS
6	ANTENNA SYSTEM TEST 20 SEPT 66	7.2.2.14 (1)	1 NOV 66		S-19 AUG 67 C-8 SEPT 67	ECOM	FINAL REPORT IN MTPR NO. 14
7	RADAR ANTENNA SYSTEM 20 SEP 66	7.2.2.15 (1)	15 MAR 66	NONE	S-4 SEP 66 C-20 JUN 67	ECOM	FINAL REPORT IN MTPR NO. 11
8	ENGINE AIR INDUCTION SYSTEM. 3 OCT 66	3.2.1 (1)	4 OCT 66	10 OCT 66	S-7 OCT 66 C-14 OCT 66	AVCOM	FINAL REPORT IN MTPR NO. 4.
9	ELECTRICAL SYSTEM MOCK-UP. 20 OCT 66	4.1, 4.2, 4.3 (1)	3 JAN 67	1 DEC 66 TO 30 JUN 67	S-26 OCT 66 C-JUN67	ECOM AVCOM	FINAL REPORT IN MTPR NO. 12.
10	FLIGHT CONTROL SYSTEMS TESTING	5.2.2 (1)	27 DEC 66 TO MAY 67	15 DEC 66	S-24 AUG 67	AVCOM	THE TORSION POSITIVE SPRING ASSEMBLY WAS INSTALLED IN THE TEST FIXTURE FOR EVALUATION. INITIAL TEST RESULTS INDICATE EXCESSIVE HYSTERESIS, WHICH WAS ATTRIBUTED TO LATERAL MOVEMENT OF THE SPRING ALONG THE BOLT THROUGH THE INPUT ARM. MODIFICATIONS OF THE INPUT ARM HAVE BEEN INCORPORATED AND THE TEST RESULTS INDICATE MARKED IMPROVEMENT. THE EVALUATIONS WERE STARTED ON JAN 20, 69, AND WILL BE CONTINUED WITH THE OBJECTIVE OF FURTHER REDUCTION OF SPRING HYSTERESIS.

Part 1--Test Requirements - DTP Status. This part shall provide the current status of testing (by detail test plan). Included are scheduled test start dates, actual test start-complete dates and results of testing conducted during the period.

APPENDIX I STATUS

APP I/CTP PARAGRAPH	TEST TITLE	DTP COMPDTE	REQ'T	REMARKS
5.2.1	HYDRAULIC POWER SYSTEM	18	MIL-H-5440D	
5.2.2	FLIGHT CONTROL SYSTEM TESTING - MECHANICAL AND HYDRAULIC COMPONENT TESTS	10,38 43	C	
5.2.3	LANDING GEAR	57	C	
6.0	MISCELLANEOUS SUBSYSTEMS			
6.1	COCKPIT HEATING SYSTEMS TESTS		C	[4.2.2.4]3.1.1.2.1.10 HEAT-VENT, ANTI- ICE, [2], [3] COCKPIT HEAT-VENT
6.2	AIR DISTRIBUTION EVALUATION FOR COMFORT			
6.3	MANUAL DUST TEMPERATURE CONTROL TESTS			
6.4	COCKPIT AND AVIONICS ENVIRONMENTAL CONTROL			
6.5	VULNERABILITY BALLISTIC TESTING	51	C	(4.2.1)3.1.2.7.2.1 PROT OF COMP
7.0	AVIONICS	92,97		
7.1	GENERAL		CP0001	(4.2.2.4)3.3.1.6.1.7 INSTALLATION
7.1.1	INTRODUCTION	105		
7.1.2		105		
7.2	LABORATORY TESTS	71,105	MIL-1-8700	
7.2.1	BENCH AND INTEGRATION TESTING [GENERAL	71 105		

Part 2--Requirements for Contractor Test - Status Report. These two parts shall provide a cross-reference of all pertinent test documents in the system program. Appropriate test status information and remarks are entered against contract requirements.

APPENDIX L STATUS

CP0001

REQUIREMENTS	TEST	TITLE	QMR	APPENDIX I	DTP	COMP DATE	TEST STATUS AND REMARKS
3.1.1.1.4.2	4.2.2.4 4.2.2.5	ADDITIONAL REQUIREMENTS		10.2.1.8	67 95		
A THRU L (EXCEPT C)		CHANGES TO MIL-H-8501 AND MIL-F-8785					
C		TABLE OF CONTROL FORCES TO BE DEVELOPED AND SUBMITTED TO ARMY FOR APPROVAL.					
3.1.1.1.4.3	4.1.4.2.1 4.2.2.2	FLUTTER AND VIBRATION		10.2.3.1	64		GROUND SHAKE TEST
3.1.1.1.5	4.1.4.2.1 4.2.2.2	STRUCTURAL CAPABILITIES	7J	10.2.1.6(4.1) 2.2.2(4.1) 2.2.3	86 50 65 85		MAIN LANDING GEAR DROP TEST TAIL LANDING GEAR SHIMMY TEST STRUCT, COMPONENTS (CASTING FACTORS) MAJOR LOAD CARRYING FITTINGS
				2.2.4.1(4.1)	86		
				2.2.4.2(4.1)	63		
				2.2.4.3(4.1)	32		
				2.2.4.4(4.1)	72		

Part 3--Specifications/Descriptions - Test Status Report. This part shall provide a cross-reference of end item and major component specifications/descriptions (section 4, Test and Evaluation Requirements) to the tests conducted in satisfaction of each requirement.

DEVELOPMENT TEST STATUS

1007

ACFT. S/N			66-8832				ENGINE S/N				268008				TRANS. S/N		1007	
DATE	LOCATION	TEST FLT.	GRD. TIME	FLT. TIME	TOTAL FLT. TIME	A/C	ENG. I.T.	XSM. TIME	REF.	REQ.	REMARKS							
1/10	Yuma	40	.3	.7	30.1	48.2	48.2	30.1		L	Main Rotor Tracking							
1/10	"	40	.1	.3	30.4	48.6	48.6	30.4		L	"							
1/10	"	40	.1	.2	30.6	48.9	48.9	30.6		L	"							
1/10	"	40	.3	.2	30.8	49.4	49.4	30.8		L	"							
1/10	"	40	.1	.3	31.1	49.8	49.8	31.1		L	"							
1/15	"	41	1.0			50.8	50.8	50.8		L	Preflight-tracking							

Part 4--Development Test - Status Report. This part shall provide a chronology of all equipment end item and major component tests conducted, including time (by item/component serial number), stalled item and component time (by serial number) and pertinent remarks concerning each test.

LEGEND A - ARMY L - LAC  
F - FAA (T) - TERMINATED

Week Ending 15 January 1969  
Revised 3-8-69

MAINTAINABILITY PROBLEM REPORT DATE 15 MAY 69  
 ORGANIZATIONAL  
 HIGH TWENTYFIVE (25)

FGC NUMBER	NOMENCLATURE	FEDERAL STOCK OR PART NUMBER	HIGH 25 DELTAS ACTUAL/PREDICTED (MMH/FH)	REMARKS
19380	NAVIGATION "J" BOX	1003461-101	350	
18100	AUXILIARY POWER UNIT	380510-1-2	1000	
19301	TURN RATE GYRO	A285J-6	1000	
19840	UHF/AM RCVR/XMTR	5M8596500	1060	AH/ARC-116
19830	VHF/AM RCVR/XMTR	5M8596225	1060	AH/ARC-115

Maintainability Problem Reports - H1 25 (2 sorts). These reports shall identify the high maintenance man-hour users and the high variances in maintenance man-hours to predicted. Management can then decide whether change action is required, desired, or not desired.

MAINTENANCE MAN-HOUR DISTRIBUTION SUMMARY

-FCC--	DRAWING/PART NUMBER/F S#	DESCRIPTION			1001540-105
		MAINTENANCE MAN-HOURS	PPF 300 FLIGHT HOURS--	FLIGHT HOURS--	
		OPG-- --O/S--	--C/S--	-DEPOT	-TOTAL
02001	1001541-111	STRUT ASSEMBLY, TAIL LANDING GEAR			
	67X20	54.28			54.28
	68A10	6.06			6.06
	68H20	16.78	42.26		59.04
		54.28	42.26		110.38
02002	404088-5	CYL ASSY, MASTER BRAKE AID PARK VALVE			
	67X20	1.65			1.65
	68H20		1.53		1.53
		1.65			1.10

Maintenance Man-Hour per Usage Unit per MOS. This report shall identify the time required for each MOS to perform each maintenance task expressed in relation to "usage units." Management can evaluate the TO&E manning levels required for various usage programs, to provide the proper mix of skills. The "usage units" shall be defined, but will vary with the type of system involved (e.g., for Aircraft systems, the usage units will be Flying Hours).

GFM=MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*B606' GSE-REPORT

ITEM NO	GSN	TYP-EQ	FMC	PTL	M/L	SOURCE	TP-CL	CALI B	FGC	CMD	UNIT
3001		-TEST SPT	36659	11	ORG.	CFE	DEVL	NO	30006	AVSCOM	COST
					G.S.				30021		3350.00
									30073		

LIST GFM=MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*B606' FUNCTION

DESCR: TEMPLATE, 3 1/2" DIAMETER, 1/16" THICK, .6 LBS

LIST GFM=MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*B606' FUNCTION

FUNCTION: SHOWS A COMPARISON OF THE ACTUAL FIRE AND TRAVEL LIMITS OF THE ARMAMENT WHEN USED IN CONJUNCTION WITH A GUN BARREL INSTALLED ADAPTER AND A MULTIPLE BAR, CONNECTED TO THE FIRE INTERRUPT SWITCH, THE TEMPLATE SET REFLECTS THESE LIMITS FOR FOUR DIFFERENT SITUATIONS. XM-51, XM-52, XM-53 WITH A MAXIMUM STORES ON THE AIRCRAFT AND THE XM-52 WITH NO STORES MOUNTED ON THE AIRCRAFT

LIST GFM=MODEL/PN-FILE ' SET TEMPLATE, FIRE INTERRUPT\*B606' GSE-STATUS

SCH-DT	SCH-QTY	REV-DT	REV-QTY
690201	10	690301	9

LIST-SPECIAL GSE=MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*B606' GSE-DL

DEL-DOC=SM	QTY-REC	LOC	REC-DT	QTY-DUE	TOT-REC
CK62K0X15001	NONE	YN	690301	0	9

Part 1 - GFM Function and Status. This report shall identify each item of GFM required by the prime contractor, the required, revised, and actual delivery dates and quantities. Management may use this report to assure adequate and timely deliveries of equipment and remedial action necessary in the event of late deliveries to minimize cost impact.

LIST GFM\*MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*8606' GSE-COST

DEVELOPMENT COST

TOOLING:

NON-RECUR:

E/F COST

QTY:

COST:

TRAINING FACTORY

QTY:

COST:

TOTAL

QTY:

COST:

COMMODITY COMMAND FUND

STOCK FUND:

PEAA:

ONIA:

LIST GSE\*MODEL/PN-FILE 'SET TEMPLATE, FIRE INTERRUPT\*8606' COST QTY

GSE*MODEL/PN-FILE	8606	FY-EQUIP-COST	COST	QTY
SET TEMPLATE, FIRE INTERRUPT		FY69	6700.00	2
		FY70	3350.00	1
		FY71	10050.00	3
		FY72	3350.00	1

GFI Function and Status (Cont'd.)

KEYWORD-DAI CROSS REFERENCE LIST  
15 MAY 69

SUPPORT-FRONT-MACH	04076DN	04076DT						
SUPPORT-ITEM	11242	14526						
SUPPORT-ITEMS	03632	05386C	05429B	08448A	09252A	10668	10668	11636
SUPPORT-MAINT-PROG	00750H	05646C	11898					
SUPPORT-MATERIAL	01468	01468A	01468B	03773	04544	06036	06036A	06036B
SUPPORT-MATERIEL	02749A	02749B						
SUPPORT-PHASE-CHART	20100							
SUPPORT-PLAN	00177	00178	00179	00182	00183	01189	02518	03253
SUPPORT-PROPOSAL	03195	03195A	03195B	04088	04088A	04088B	040894B	06859
SUPPORT-RECEIVER-LH	05820L	05820M	06669G					
SUPPORT-RECEIVER-RH	05820J	05820K	06669G					
SUPPORT-REQUIREMENT	05459							
SUPPORT-ROUND-GUIDE	05820DR	05820JC	06669NW	06669NX	06669NY	07206		
SUPPORT-ROHT	00013J	00013K	00271	00387	00387A	00409	00535B	02747

**Keyword-DAI Cross-Reference Index.** This shall be a formatted computer-produced report which lists alphabetically all keywords together with the numbers of the documents (DAI numbers), the contents of which the keywords have been used (assigned) to describe.

AS OF DATE 69 MAY 16

MASTER MICROFORM LIST

DOCUMENT NUMBER	FSCM	DT	SC	CONTRACT NUMBER	T	F LOCATION
A008337	36659	DWG	U	DAA E11-66-C-3667(H)	C	
00-5000-49	77200	SPEC	U	DAU4-495-AMC-8878	F	1448-41
00031AB	00286	DWG	C	DAAH01-69-C-0004	C	
26604492	80234	DWG	U	DA AHU-69-C-0004	C	
2887	07148	DWG	U	DA AHU-69-C-0004	C	
3U086	36659	TP	U	DAI U1-64-C-1753	R	K003-129
983	36659	SPEC	U	DAA E11-66-C-3667(H)	C	

Master Microfilm Listing. This shall be a periodic computer-produced printout which lists, by source in number sequence, all engineering documents in the data bank which have been microfilmed.

NOT REPRODUCIBLE

KEYWORD THESAURUS  
15 MAY 69

KEYWORD	COMMENT	DEFINITION OR ABBREVIATION	DATA LIST REFERENCE
ADL	DO NOT USE FOR AUTOMATIC DATA LINK	AUTHORIZED DATA LIST	ADL-TITLE-SUB-TITLE-FILE
AMC		ARMY MATERIEL COMMAND	KEY-WORD-FILE
AMP		ARMY MATERIEL PLAN	KEY-WORD-FILE
BUI:FPS	USE FASC EXCEPT FCP SPEC	BUREAU OF WEAPONS, US NAVY	KEY-WORD-FILE
CFSR		COMPACT FUNDS STATUS REPORT	COMP-FUNDS-STAT-FILE
COI:ARC		CONFIDENTIAL ARMY COMMAND	KEY-WORD-FILE
DAI	MAY BE FOLLOWED BY NO.	DATA ACQUISITION-ITDS	DATA ACQUISITION-ITDS FILE
F:AA		FEDERAL AVIATION AGENCY	KEY-WORD-FILE
FSI	MAY BE FOLLOWED BY I.O.	FEDERAL STOCK NUMBER	PART-NUMBER FILE
ICD	MAY BE FOLLOWED BY I.O.	INTERFACE CONTROL	ICD-FILE

**Keyword Thesaurus.** This shall be a computer-produced project-oriented listing of authorized words, terms, abbreviations and acronyms, called keywords, which shall be used to describe the contents of documents also.

ITDS DATA ELEMENT MANUAL  
15 MAY 69

ITEM/ATTRIBUTE-IDENTIFIER	DESCRIPTION	V/MAX	V/MIN	V/TYPE	V/CONN	DICT/CODE	MEMORIC	DATA LIST CODE	ASSOCIATION: ATTRIBUTE	AMC
L	STORAGE									
IS	ASSOCIATED DATA LISTS									
SFL	ITEM/ATTRIBUTE DEFINITION:									
TLO	IT-TERRELATIONSHIP DESCRIPTION									
	ITDS APPLICATION:									
001	AUTHORIZED DATA LIST FILE									
002	!DI:-REDUNDANT STORE									
003	DAI-FILE;ADRSEE/ADRORSOR TBL									
010	!NUMBER ASSIGNED TO A CATEGORY OF DATA REFLECTED IN AR 700-51 OR OTHER AUTHORIZATIONS.									
100	SPAN TO DAI-FILE FROM AD26 AND RETRIFVE MD16;MD17. BRIDGE TO ADRSEE/ADRORSOR-TBL FROM AD10 AND AD14 AND RETRIFVE ABI.									
200	SPAN TO ADRSEE/ADRORSOR-TBL FROM AD10 AND AD14 AND RETRIFVE ABI.									

DATA LIST CHANGE

ADL-FILE AD

M,D,S

L

008

AD1,AD26,MD02,MD16,MD17,AB0,AB1

AD1,AD26,MD02,MD16,MD17,AB0,AB1

AD1,AD26,MD02,MD16,MD17,AB0,AB1

15 MAY 69

Data Element Manual. This Data Element Manual shall consist of user dictionary entries which reflect the characteristics of each item ID and attribute. The definition of each item ID and attribute shall be incorporated as attribute 16 of the user dictionary.

**APPENDIX C**

**ITDS MANUALS AND ALLIED DOCUMENTATION**

## APPENDIX C

### ITDS MANUALS AND ALLIED DOCUMENTATION

This Appendix presents a description of the manuals and allied documentation (system descriptions, planning documents, manuals, programs, equipment and personnel descriptions) that pertain to ITDS. Each of the three ITDS subsystems (functional disciplines, data operations, and computer) has its own administrative, operations, personnel position and equipment description manuals. In addition, the computer operations subsystem maintains documentation that describes ITDS computer programs. A summary description of each of these documents is presented below. In addition to those listed, a supplemental document is prepared for each project employing ITDS, which describes any project-peculiar requirements that are applied.

#### ITDS SYSTEM DESCRIPTIONS:

##### System Description, Part I: Performance Requirements

Describes the overall performance requirements of the ITDS and the system specification for ITDS design.

##### System Description, Part II: Product Description

Describes the design of the ITDS and relates how it fulfills the performance requirements delineated in Part I.

#### PLANNING DOCUMENTS:

##### Test and Demonstration Plan

Describes the general and detailed approaches to testing efforts to be conducted in all facets of the ITDS and prior to and during the initial system description.

Configuration Management Plan

Describes the plans and procedures for ensuring the orderly control of changes to ITDS.

MANUALS:

Functional Disciplines Subsystem: Administrative Manual

Describes the administrative practices necessary to support the primary operations of the subsystem, including such clerical functions as:

- a) Logging in or registering source data, inquiries, and requests for exception reports.
- b) Logging in or registering output data and inquiry responses.
- c) Maintaining correspondence and message files.
- d) Maintaining security procedures to protect data while in custody of the subsystem.

Functional Disciplines Subsystem: Operations Manual

Describes the functions and operations performed by the subsystem, including descriptions of the personnel who perform the functions. It incorporates the detailed functional flow and narrative function descriptions.

This manual covers all operations relative to input and output processing as well as subsystem responsibilities and functions pertaining to maintenance of the data base.

Data Operations Subsystem: Administrative Manual

Describes the administrative practices and procedures inherent in the operation of the data operations subsystem. Major operations covered include:

- a) logging or registering source data, inquiries, requests, and output reports;

- b) correspondence control; and
- c) security requirements and procedures.

Data Operations Subsystem: Operations Manual

Describes the procedures necessary to operate the three functional subsections contained within the data operations organization. Major operations covered include input processing, output processing, and data base management.

Computer Subsystem: Administrative Manual

Contains a description of the following computer subsystem administrative functions:

- a) Data processing library management.
- b) Scheduling and traffic control of computer operations.
- c) Machine time accounting.
- d) Security of data.

Computer Subsystem: Computer Programs Maintenance Manual

Describes the necessary procedures to maintain, update, and incorporate changes to the generalized processing, applications, and peripheral computer programming systems.

Computer Subsystem: Computer Programs Operations Manual

Describes the general operational procedures necessary for the generalized processing, applications, and peripheral programs.

Computer Subsystem: Data Processing Center Operator's Manual

Contains the console operator's instructions for the execution of the generalized processing, applications, and peripheral programs.

## PROGRAM DESCRIPTIONS AND DOCUMENTATION:

### Generalized Processing Program: General Description

Describes the functions of the generalized processing programs, delineates the relationship to a project-peculiar data base structure, and provides detailed discussion of the operations of the generalized processing program.

### Generalized Processing Program: Programming Documentation

Contains the detailed individual program documentation and covers the following items for each program:

- a) Statement of program requirements and operations.
- b) Program master flow charts (charts show inputs required and outputs produced).
- c) Detail level program flow chart showing the elementary logical construction of each distinct program module.
- d) A listing of each distinct program module.
- e) Error messages, and input/output formats.

### Computer Subsystem: Applications Programs, General Description

An introduction to applications programs; discusses the general capabilities and concepts used in writing each of the applications programs in broad terms; includes a brief discussion of the programming languages and techniques.

### Computer Subsystem: Peripheral Programs, General Description

An introduction to the peripheral programs. It discusses the general capabilities and concepts used in writing each of the peripheral programs in broad terms. A brief discussion of the programming languages and techniques employed is also presented.

**Computer Subsystem: Applications Programs,  
Programming Documentation**

Contains the detailed individual program documentation and includes the following items for each program:

- a) Statement of program requirements and operations.
- b) Program Master Flow Chart (chart shows only inputs required and outputs produced).
- c) Detail level program flow chart showing the elementary logical construction of each program.
- d) A listing of each program.
- e) Miscellaneous elements necessary to describe the program's logical construction (excluding operator's instructions) to include, for example, possible error messages, special maintenance procedures, list of logical switches, and so forth.

**Computer Subsystem: Peripheral Programs,  
Programming Documentation**

Contains the detailed individual program documentation and includes the following items for each program:

- a) Statement of program requirements and operations.
- b) Program Master Flow Chart (chart presents inputs required and outputs produced).
- c) Detail level program flow chart showing the elementary logical construction of each program.
- d) A listing of each program.
- e) Miscellaneous elements necessary to describe the program's logical construction (excluding operator's instructions) to include, for example, possible error messages, special maintenance procedures, list of logical switches, and so forth.

**EQUIPMENT DESCRIPTIONS:**

**Data Operations Subsystem: Equipment Description**

Describes the equipment inherent in the ITDS data operations subsystem.

Computer Subsystem: Equipment Description

Describes the equipment inherent in the ITDS computer subsystem.

PERSONNEL DESCRIPTIONS:

Functional Disciplines Subsystem:  
Personnel Position Descriptions

Describes the qualifications of all personnel required for effective operations of the ITDS functional disciplines subsystem.

Data Operations Subsystem:  
Personnel Position Descriptions

Describes the qualifications of all personnel required for effective operations of the ITDS data operations subsystem.

Computer Subsystem:  
Personnel Position Descriptions

Describes the qualifications of all personnel required for effective operations of the ITDS computer subsystem.

(.)