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STATUS STUDY OF

DATA PROCESSING SYSTEM OF

DEPUTY DIRECTOR (SUPPORT),

CENTRAL INTELLIGENCE AGENCY

19 FEBRUARY 1962

BOOK I

25X1A5a1

████████████████████████████████████

LETTER OF TRANSMITTAL

Mr. Joseph Becker
Chief, Automatic Data Processing Staff
Deputy Director (Support)
Central Intelligence Agency
1016 16th Street, N. W.
Washington, D. C.

RE: ██████████████████ 25X1A5a1

Dear Mr. Becker:

We are submitting herewith the status report in compliance
with the above contract. The total report is submitted under
two covers, one containing the printed text, while the other
contains various charts and diagrams that support the text.

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Project Manager

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STATUS STUDY OF

DATA PROCESSING SYSTEM OF

DEPUTY DIRECTOR (SUPPORT),

CENTRAL INTELLIGENCE AGENCY

BOOK I

25X1A5a1

25X1A5a1

19 February 1962

This document consists of _150_ pages
No. _1_ of _10_ copies. Series _1_

Rec. 22-(1)

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ABSTRACT

A thirteen week study to determine the status of the data
processing system of the Deputy Director (Support) was
initiated in October 1961. The computer based system
has never functioned to expectation.

This report delineates the present status by use of
charts and descriptions. It points out certain problem
areas that have been causing dissatisfactions and ineffi-
ciencies within the system. Recommendations are made
for actions, over an extended period, which will alleviate
the difficulties now found within this system.

It is further pointed out that the anticipated savings in
time, costs and personnel have not materialized. This
report shows that these expectations were not based on
fact and that they have not been achieved. Furthermore,
they are not significant factors in the operation of this
particular system. It is shown that the requirements
must be based on the ability and necessity to complete
assigned tasks. Until a comprehensive systems study
is completed, it is improbable that any rigorously effi-
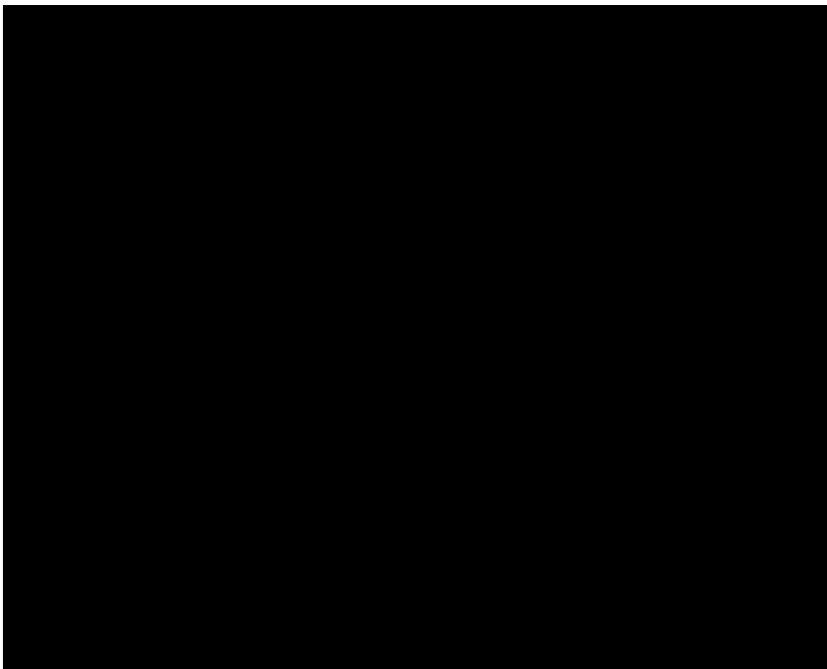cient system will come into being.

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CONTENTS

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LIST OF FIGURES

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Next 2 Page(s) In Document Exempt

TAB

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I. INTRODUCTION

A. Purpose

This is a Status Study of the data processing system of

the Deputy Director of Support (DD/S) as it relates to the RCA

501 Computer located in the Automatic Data Processing Division

of the Office of the Comptroller. The major purpose of this study

is to answer several questions propounded by the DD/S concerning

the achievement of goals that were specified in previous Feasi-

bility Studies made for the DD/S. Another purpose is to provide

a status study following the first year of computer operation. The

Deputy Director wishes to know whether the objectives outlined in

the Management Staff's Feasibility Studies (see Appendix A) have

been fulfilled with regard to the matters of reducing personnel and

saving money. It was upon the basis of the recommendations of

the original Management Staff's studies that a computer was decided

upon and the RCA 501 computer was leased. It was intended that

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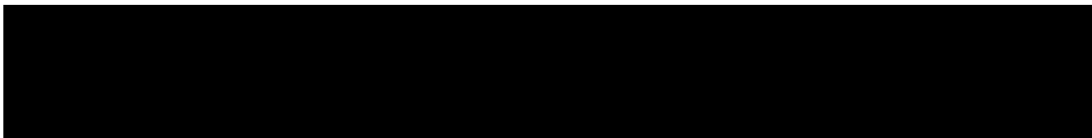
B. Objectives

The objective of this status study is not to prescribe an

ideal system for the Agency nor to improve the present system. The

1

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major objectives of this relatively short investigation are to

delineate the present status and to make recommendations for

definite action which, if applied, will solve most of the problems

disclosed by this study.

TAB

II. STATEMENT OF WORK

The statement of work for this systems study is as follows:

A. Scope

1. Evaluate performance and progress of the EDP

(electronic data processing) system.

2. Determine present operating costs and good computer

time.

3. Report on and analyze the progress being made towards

the fulfillment of the original EDP concept.

4. Access the likelihood of achieving a savings in man-

power, time, and equipment as originally conceived in the

feasibility study.

5. Report on the workload--present and future.

6. Access the effectiveness of scheduling activities.

B. Method of Analysis

1. Identify system and computer parameters.

2. Contact all levels of operation within the computing

system.

3. Contact the personnel who provide the computer input

or use computer output.

4. Obtain users' reactions to present operations.

C.   Reports

    1.   Report on the computer operations of the Automatic

Data Processing Division

    2.   Report the results of the systems analysis.

    3.   Recommend various courses of action.

TAB

III. ADDITIONS TO STATEMENT OF WORK

This contractor, after initial investigation of the system, has decided that it would be in the interests of this report to make certain additions to the Statement of Work. These in no way change the Statement of Work.

The areas covered in these additions are listed in the Table of Contents and include:

Section VII Model System

Section VIII Comparison of Present and Model Systems

Section IX Need for Systems Indoctrination

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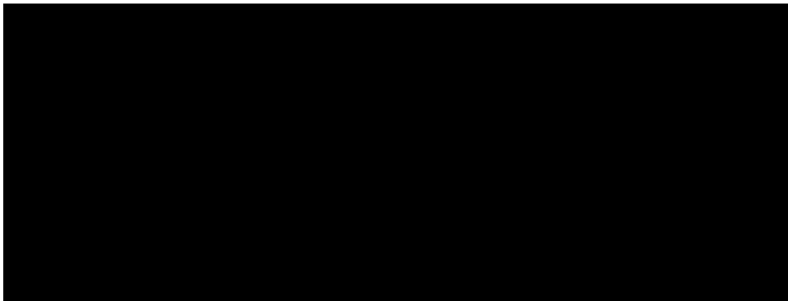
TAB

IV.   DEFINITION OF SYSTEM

In this report, the term system includes the equipment in the computer complex, the users of the computer (those who supply input to the computer as well as those who use the output of the computer), and the operators of the computer.   Since this computer is used to provide support services to the entire Agency, almost everyone within the Agency is a part of the system either as a generator of computer information, a user of computer information, or one involved in equipment operations.

6

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TAB

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V. METHOD OF ANALYSIS

The method of analysis used in this system study is specified

in section II, Statement of Work. This method has been followed

throughout. It is an approach which provided for the obtaining and

digesting of the maximum amount of information in the minimum

amount of time. All levels of personnel were contacted within the

major areas of this study. All of these areas are within the DD/S
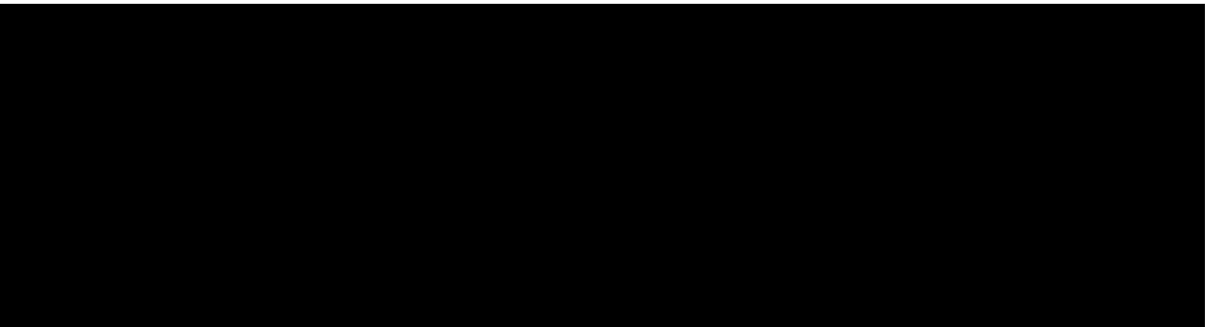
Ninety per cent of the information was obtained through personal

contacts with people in these various areas. The remaining ten per

cent was obtained by mail. The method of personal interview proved

most valuable and, from the start, a question and answer routine was

used, one question leading to another logical one. A formal question-

aire, prepared at the start of this study, was modified as necessary

during the course of the interviews. Questions were asked throughout

the various components, cross referenced, and then verified in other

areas of that component or other components. Thus, within a short

time, it was possible to obtain consistent information. It must be

realized in a study of any type, and especially in one of the complexity

of this, that the inaccuracy of personal communications must be taken

7

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into account. Therefore, it was especially important that information

be cross-checked.

The cooperation of all concerned has been much appreciated. It

was only through the freely given opinions and statements and demon-

strations of operations that it was possible to achieve the results that

are discussed in the following sections.

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TAB

ORGANIZATION CHART
DEPUTY DIRECTOR / SUPPORT

```
              ┌─────────────────────────┐
              │ DEPUTY DIRECTOR/SUPPORT  │
              └─────────────────────────┘
                         │
                         │          ┌──────────────────────┐
                         ├──────────│  AUTOMATIC DATA       │
                         │          │  PROCESSING STAFF     │
                         │          └──────────────────────┘
        ┌────────────────┼────────────────────────────┐
        │                │                             │
  ┌───────────┐    ┌───────────┐              ┌───────────┐
  │  OFFICE   │    │  OFFICE   │              │  OFFICE   │
  │    OF     │    │    OF     │              │    OF     │
  │ PERSONNEL │    │COMPTROLLER│              │ LOGISTICS │
  └───────────┘    └───────────┘              └───────────┘
        │                │                             │
  ┌───────────┐    ┌───────────┐              ┌───────────┐
  │  OFFICE   │    │  OFFICE   │              │  OFFICE   │
  │    OF     │    │    OF     │              │    OF     │
  │  MEDICAL  │    │ TRAINING  │              │ SECURITY  │
  └───────────┘    └───────────┘              └───────────┘
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FIGURE 1
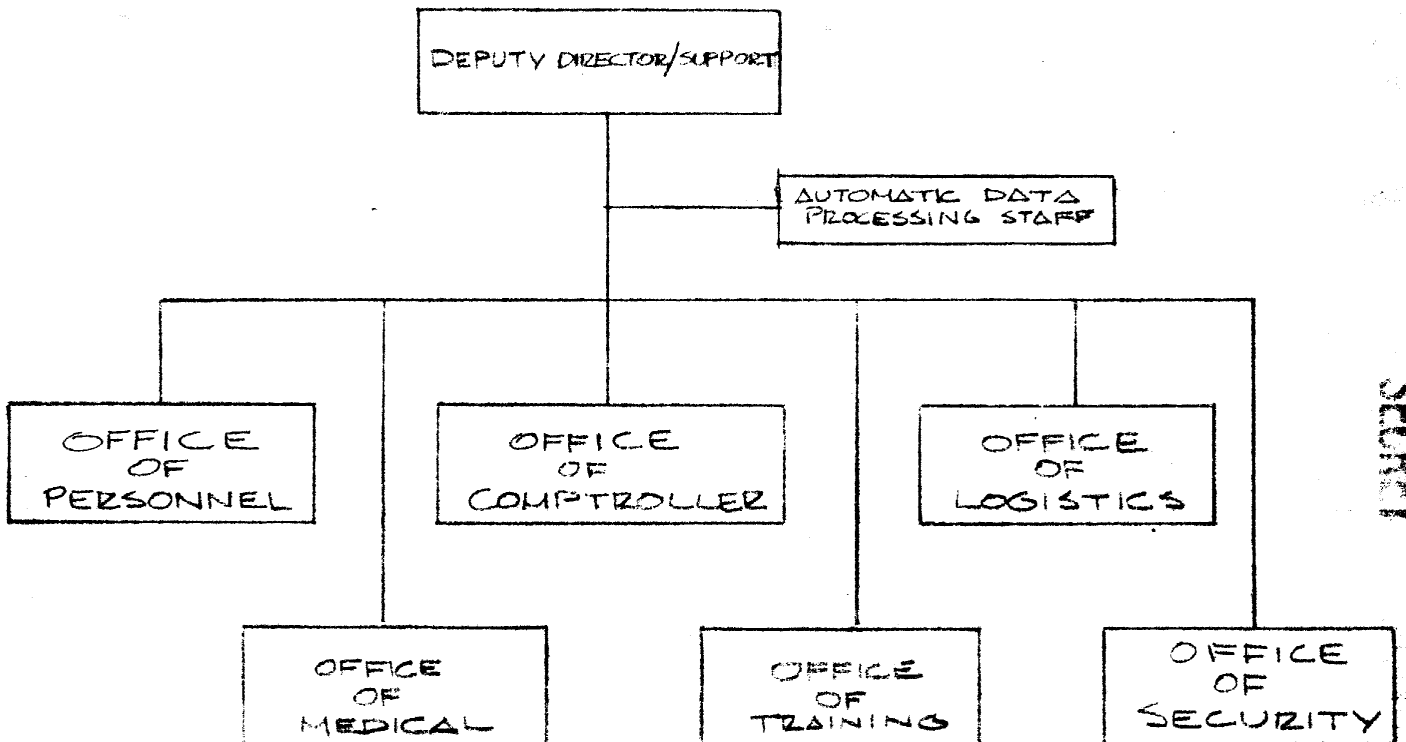
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3. Office of Logistics: Supply Division

The Functions of the Office of Logistics are listed

in Appendix C. The Supply Division represented the only

area of interest to this report. Its most important document

produced by the EDP system is the Stock Status Report.

a. Supply Division

The Supply Division requires immediate

information of stock status in response to inquires

and requirements which are always coming in through

all channels of communication. At present, the Stock

Status Report is listed monthly by the Electronic Data

Processing Division. The list is updated manually

during the month so that immediate status information

is available upon request. The list consists of 56, 000

lines, and spaces are left between line items to per-

mit manual posting for inventory updating. (See "Depot

Stock Control Branch Procedures" Section I Chapter 5 -

Procedures for Maintenance of the Stock Record Account)

Changes in physical inventory are a result of

requisitioning, procurement or adjustment. The flow

for accomplishing these basic functions are shown in

Figures 35, 36 and 37. Changes in the recorded inven-

tory may take as many different forms as there are

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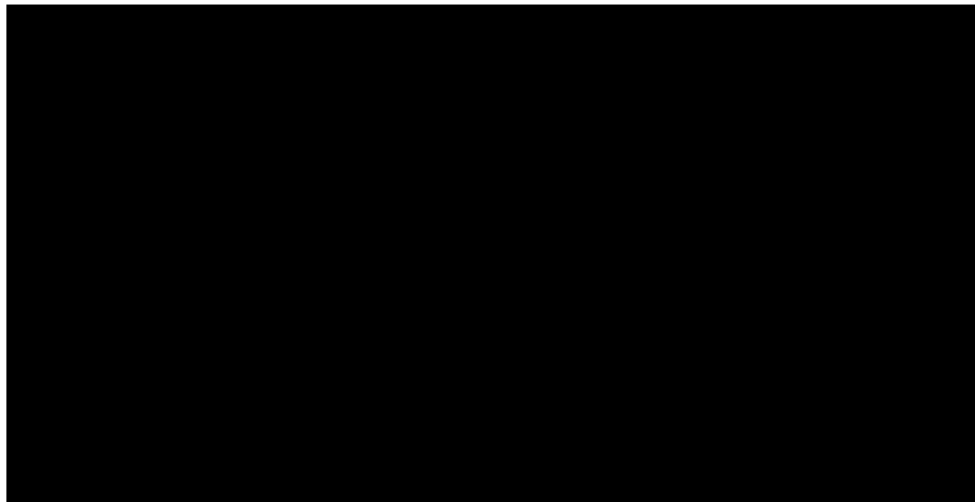
Nine copies of the Stock Status Report are

printed. Each copy contains 6,000 pages. The only

copy which is updated is that of the stock analyst.

All other copies are incorrect with respect to any

item which has been requisitioned, replenished or

adjusted at any time after the monthly printing.

Inquires are made to the Chief's office of the Office

of Logistics and that of the Supply Division, in both

of which these monthly copies are kept. Reference

to these copies can be made only for administrative

information. Stock status information must be

referred by either of these offices to the stock analyst.

Another problem in the use of the Stock Status

Report is its bulk and the delay caused by the manual

search process. Since all stock information is even-

tually put on IBM cards, it is justifiable to look at

these IBM cards with regard to actually using them
for stock status recording and information at the
stock analyst's desk. This is an application unit
record keeping. All items against which trans-
actions are recorded during a day, could be separated
for repunching and machine record updating. If the
number of transactions per day is limited, the inter-
filing of cards could be done manually. In this way,
the cards would daily represent a master file from
which the latest stock status report could be printed
at prescribed intervals. If the volume of transactions
is such that it is not feasible to interfile manually. The
whole file of 50, 000 cards could be passed for sorting
and collating by machine methods. This however would
consume 3-1/2 to 4 hours. The frequency of repunch-
ing of cards could then be reduced and manual updating
of cards could be accomplished as at present. Again,
at any time a new list is required, only the cards for
which transactions have been made need be repunched,
followed by punching of the entire file.

The management report for the acquisition of
the IBM computer identifies many areas of the Office
of Logistics procedures and reports which can be

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modified. No doubt some of these changes have already been made. ████████ review of this report is found in Appendix A.

b. Inspection and Inventory Branch

In addition to its inventory responsibilities, (see Figure 37) the Inspection and Inventory Branch of the Supply Division conducts the internal audit of Supply Division procedures. It reviews regulations, instructions and responsibilities of the various units of the Supply Division. It is responsible for identifying problem areas by personal interview methods and preparing Supply Division instructions to correct procedures. In this function the, Inspection and Inventory Branch acts in a staff capacity responsible directly to the Chief of the Office of Logistics.

C.   Equipment :

The following list is of the equipment leased by the

Automatic Data Processing Division.   The electronic data

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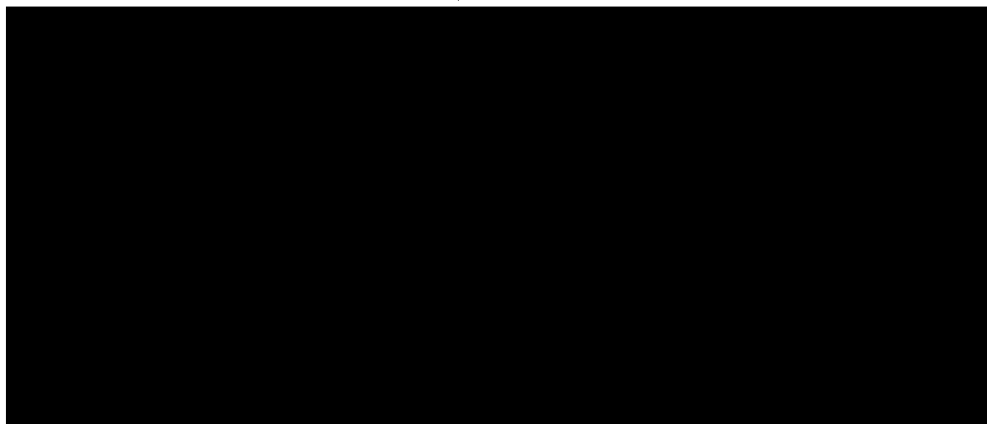
Electronic Data Processing Machines

(RCA)

Model No.	Description	Quantity
503	Computer	1
561-2	Hi Speed Storage (32, 768) Memory Locations	1
581	Tape Station	8
535	Electro Mechanical Printer	1
527	Card Punch	1
538	Card Punch	1
547-6	Tape Switching Unit	1
525	Tapewriter Verifier	3

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VII. MODEL SYSTEM

A.   Management's Role

Management is the art and science of planning, organizing, and controlling human effort to achieve useful ends. Management proper is a function concerned with the execution of policy within the limits set up by administration, and the employment of the organization for the particular objects set before it. Organization is defined as the division of work to be done into separate tasks and the assignment of these tasks to individuals qualified by training and natural characteristics for their efficient accomplishment.

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B. Functional Groups

   1. Description

      An organization of the governmental support type may be divided into three principal functional groups: Financial, Personnel, and Supply. There is, in addition, a fourth group, Support Services, that performs those functions which are not assignable to the three principal groups. These four groups are shown in Figure 40.

      The Financial Group provides the basic functions of accounting, auditing, budgeting, contracts adminis-tration, and disbursing. These functions are divided into additional categories in the cases of accounting and auditing. The individual functions in the Financial Group, as well as in the other groups, are defined in the next section.

      The Personnel Group performs those functions which concern the relationship between the employees and the organization.

      The Supply Group provides functions that relate mainly to the acquisition, storage, movement, and control of materials, supplies, and equipment.

The Support Services Group provides functions of a staff nature and also those functions that relate to the three principal functional groups.

A fifth group, Data Processing, furnishes data processing services to the three principal functional groups: Financial, Personnel, and Supply. Owing to the need for providing relatively comparable services to these three groups, it is essential that they be separated organizationally from the Data Processing Group.

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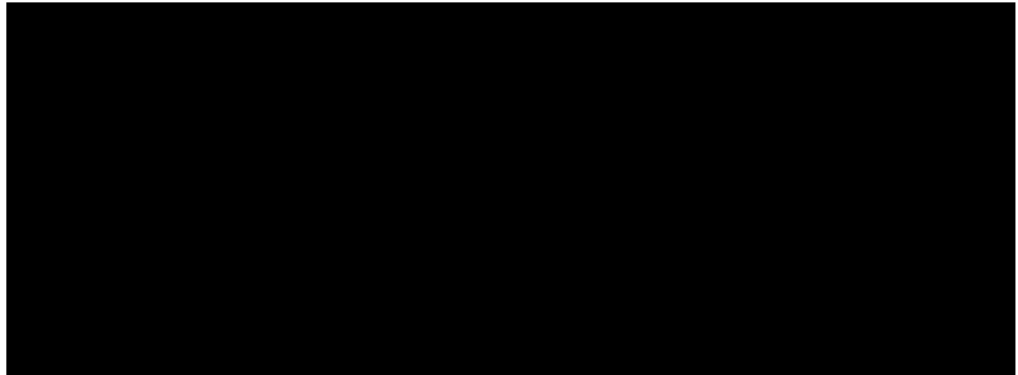
c. Supply Functions

Cataloging--The collecting and filing of catalogs

and other product and vendor information to enable

later retrieval when required by using personnel.

Inspection--The visual examination of materials

and equipment to insure their adequacy or quality with

respect to specifications or other descriptive literature

and the recording of the results of those examinations.

Inventory Control--The preparing, communi-

cating, accumulating, and summarizing of information

concerning a large number of daily occurrences affect-

ing actual and planned inventory balances; the main-

taining of quantitative, descriptive, and procurement

data regarding each inventory item; and the manipu-

lating, correlating, and review of the above information

as the basis for making inventory decisions and taking

the required action; the handling and storage of supplies,

materials, and equipment in stock.

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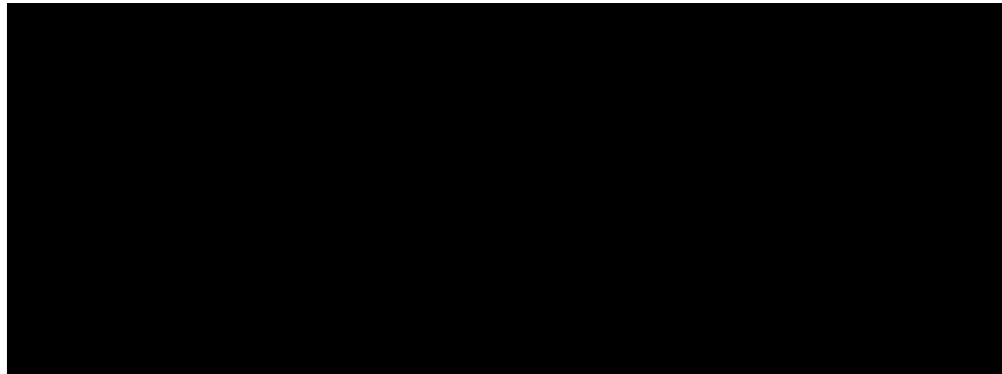Product Testing--The testing of materials and
equipment to insure their adequacy or quality with
respect to specifications or other descriptive literature
and the recording of the results of the tests.

Purchasing--The translation of purchase requi-
sitions into purchase orders by the process of endeav-
oring to obtain the specified items, of suitable quality,
on or before their required delivery date at the best
possible price; the submission of requests for price
quotations to several vendors in the case of compe-
titive items, the supplying of aid in the selection of the
vendor in this case, and finally the authorization of
purchase.

Quality Control--The determination of the
standards by which materials and equipment should
be tested and evaluated; the development, selection,
and distribution of statistical methods for insuring that

the quality of the materials and equipment being

tested is adequate.

Receiving--The receipt of incoming materials

and equipment, the checking of quantities received

with respect to quantities ordered, and the recording

of appropriate specified data concerning incoming

materials and equipment.

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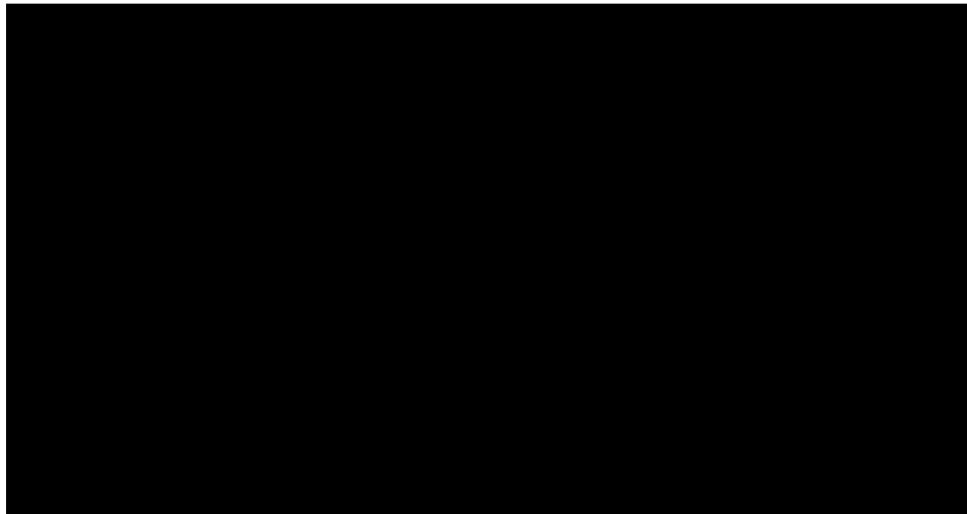
Space Utilization--The planning for the total

future required work area and the optimum division

of that total area into individual work spaces.

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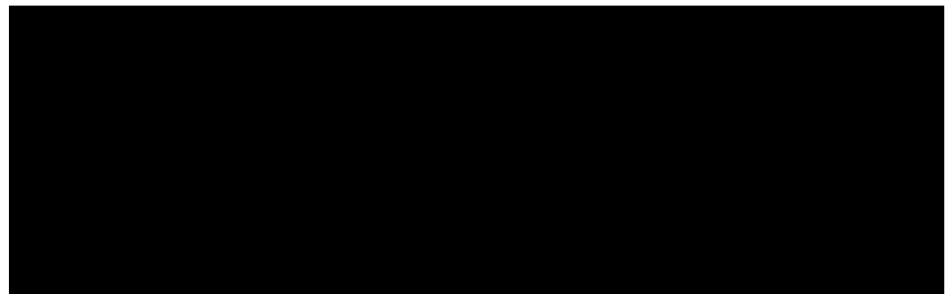
Transportation--The provision and maintenance

of an operating supply of vehicles, and the scheduling

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of the efficient usage of these vehicles.

Vendor Qualification--The determination of the financial, technical, and production aspects of a vendor's ability to deliver a product of required quality by a required date.

d. Support Services Functions

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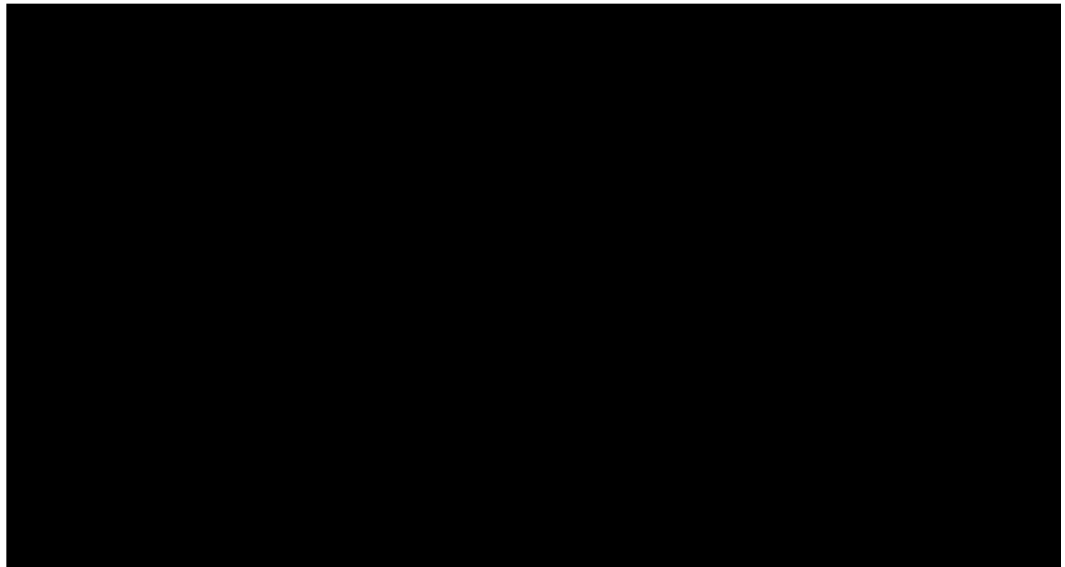
Grounds and Buildings--The maintaining of grounds and buildings in optimum condition, the alteration of grounds and buildings as required, and the arranging for and supervising of all maintenance and alterations that are performed by outside vendors on the company's grounds and buildings.

Legal--The review and analysis, and the approval of the form, of all legal documents which concern the company, the providing of assistance to the Contracts

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███████████████████████████████████
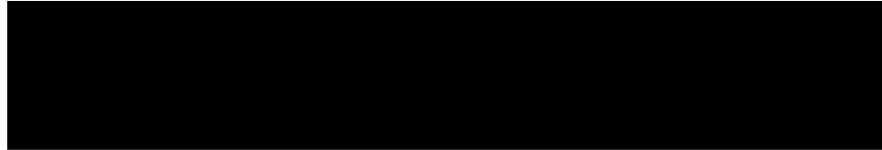
Programming--The preparation of programs as required for the timely and efficient production of output data by the electronic data processor.

Processor Operating Group--The operation of the electronic data processor; the printing and issuing of registers, records, reports, and pay checks; and the handling and protection of punched card and magnetic tape records.

Card Processing Group--The key punching and verifying of punched cards; the operation of all punched card machines exclusive of the electronic data processor.

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C.   Information Flow

If information is to be processed effectively and efficiently in

any organization, it is necessary first to arrange for its proper flow.

For each individual application, such as standard payroll or equip-

ment purchases, this flow will occur both between groups and within

groups. A separate flow chart should be prepared for each of these

two cases. In addition to the flow charts, there should also be a

written description of the information flow sequence. With this

combined information it is possible to analyze the flow to determine

if duplication of purpose, procedure, or forms exists and if improved

or more appropriate equipment can be used to process the data.

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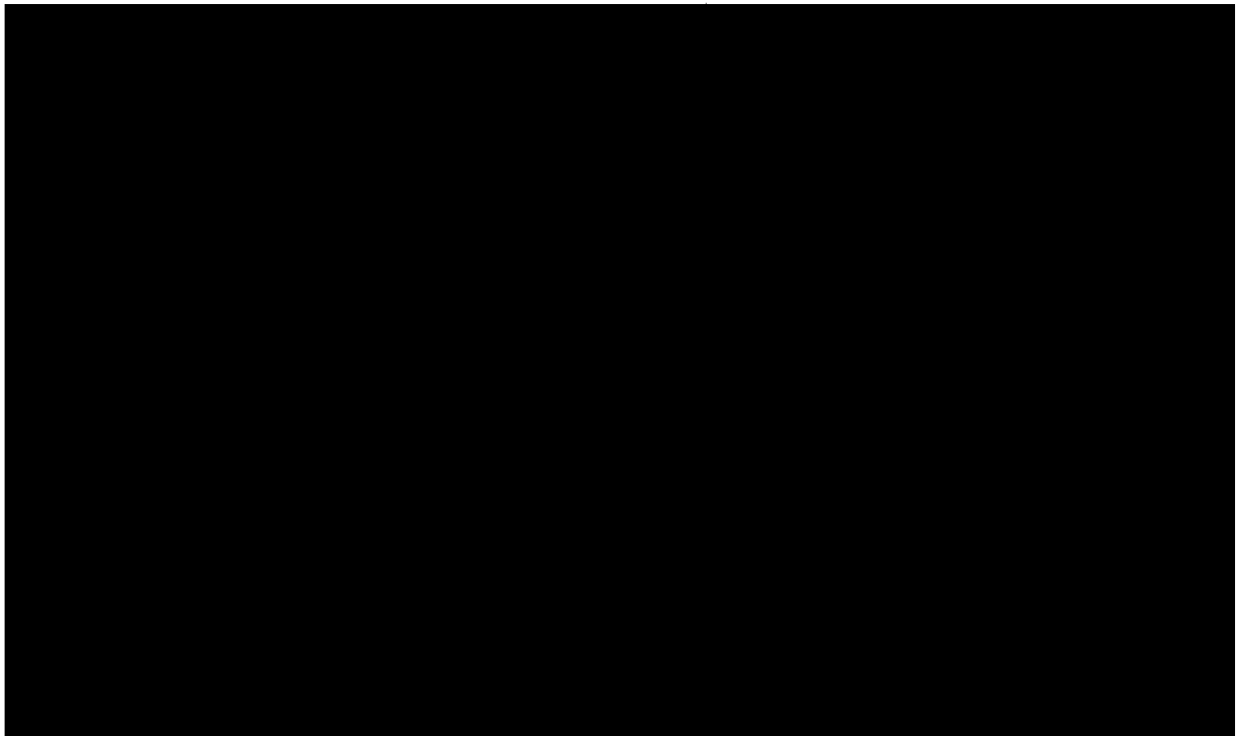
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2. Equipment Purchases

A tentative model information flow sequence is presented on the next page. This sequence is mainly illustrative of the flow that occurs between the various groups. It is not detailed as in the case of Standard Payroll. The model flow for equipment purchases, Figure 43, shows the tentative paths of information flow between groups. A model flow chart similar to Figure 42 showing data processing operations has not been included in this status study.

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D.   Development of a Computer-Based Data Processing System

1.   Introduction

A data processing system developed and operated by
means of manual or conventional accounting machine methods
lacks three important qualities found in the more advanced
computer-based data processing systems. They are:

1. The information is not sufficiently timely to
meet the requirements for all management decisions
and sometimes is not selective enough to focus
attention on situations requiring immediate attention.

2. The conventional data processing system is
periodic in nature while the operations of an organi-
zation are not.

3. The informational reports are organized in such
a manner that the inter-relationship between functions
are not readily apparent.

There are three possible justifications for using a
computer in the management field aside from the obvious
applications in the design and engineering fields. They are:

1. To cut clerical costs.

2. To produce faster and better management control
information than is practicable by alternate methods.

3. To facilitate the application of mathematical techniques to the solution of management problems.

To cut clerical costs, we look to changing the nature of the work we now require from clerks who handle data. Much of the present clerical effort is directed toward the endless repetitive tedious monotonies of sorting, filing, collating, copying, and matching. A computer can equal the efforts of many clerks in the performance of operations of this type. The systems designer who takes the approach that he can simply replace manual or conventional machine accounting methods with the computer soon finds that he has created many more problems than he has solved by speeding up an isolated processing area.

Manual and machine accounting methods are characterized by multiple files and batch operations. Basically, in a manual system we find many processing operations proceeding independently of one another, whereas in the computer the processing cycle is sequential. That is to say, the computer undertakes every possible operation on a given piece of data before going on to the next. Therefore, the processing cycle is necessarily orientated by type of input document rather than by type of report or operation.

81

This means that the input must arrive at the computer on a scheduled basis in order that the desired output in the form of reports is both correct and timely.

The key to the solution of this problem, which is somewhat new to the machine accounting analyst in both scope and magnitude, lies in the systems approach to setting up a computer. The systems approach results in subjecting the entire data processing operation of an organization to a critical re-examination in order to determine the requirements of its information system. During the study the purpose of each of the present reports is examined and questioned. The reports are looked upon as a continuous flow of information required to carry on the objectives of the organization.

During the systems study, the analyst should be aware that the informational needs of the organization are not necessarily the output of present procedures. Current methods are often a patchwork imposed by present machine limitations, supervisory inflexibility, and reaction to past emergencies. As a consequence, the information for policy guidance and control of day-to-day operation may not be clearly reflected by current office activity. Reports are meant to convey information and information is meant to cause action.   82

A prime consideration in designing the system is to
determine a method of checking input data to preclude the
introduction of erroneous data. In a manual system, the
input data is characteristically re-checked at each level
of summarization. In a computer system, the data, once
accepted, tends to flow into the various reports without
question as to its validity. As a result, the analyst often
finds that erroneous data has entered so many reports
that it is difficult to devise correction procedures which
are easily handled by the present clerical force and
consequently his system is subject to criticism and correctly
so. Successful computer systems overcome this obstacle
by placing a great deal of emphasis on the possible types
of input errors and devise techniques within the computer
program to detect suspect data and reject it at an early
point of the processing cycle. The rejected data is then
immediately returned to the originating department for
correction. This feedback of erroneous information then
tends to strengthen the data processing cycle rather than
weaken it, as do so many elaborate error-correction
techniques which require the attention of a computer
specialist with a thorough knowledge of the program.

2.   Systems Study

Having decided that the systems approach to installing

a computer-based data processing system is the preferred

method, the first step is to gather data concerning the

present system. Data is gathered in order to discover the

fundamental requirements of the organization before

describing the step-by-step data collection and processing

operations for the computer programmer. One criterion

most helpful during this initial phase of the study is to keep

in mind that information is the basis for making management

decisions and also it should reflect the result of the decision-

making process. That is to say, it should convey informa-

tion regarding what should be done as well as report on the

effectiveness of previous decisions.

As the analyst tours the organization to gather infor-

mation concerning the nature and volume of all transactions,

records, and reports, it is imperative that his investigation

be systematic and thorough. It is recommended that he have

an organization chart so that he may check authority and

functions in each department to insure that all the informa-

tional needs of the area are determined. As he collects

copies of all forms, records, and reports, he notes on each

where he got it. In each area, the personnel are questioned

concerning the decisions which they make during the prepara-

tion of the input documents and, specifically, the manner in

which all the data on the source document is obtained. The

records collected should be filled out with actual represen-

tative data since blank forms often convey misleading infor-

mation to the analyst. If the analyst has limited his questions

to the work actually done in each specific area where the

information was obtained, the data should be reasonably

correct. With this data he can now return to his desk and

flow the basic information required to conduct the organi-

zation's work in order to plan the computer programs.

The analyst will now investigate methods to simplify

the flow of the documents and, in many cases, by-pass areas

previously receiving copies of source documents and replace

them with reports which will report on an exception basis

the item requiring attention and action. Much of the apparent

duplication of effort found in manual systems has arisen due

to the fact that manual systems, in essence, operate in the

simultaneous mode in order to obtain timely information.

In a computer-based system, however, the information will

be processed in a sequential mode and be timely as well, due

to the computer's great processing speed.

85

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The most challenging problem facing the systems

designer is to determine how to provide input data to the

computer so that output data in the form of reports will

be available at the proper time. A common method of

scheduling the production and delivery of reports is to

determine what action is taken as a result of a report

and then determining the priority that this action has in

the operation of the organization rather than asking each

report recipient when he needs the report.

3.   Systems Design

Having determined the informational needs of the

organization and established an order of priority based

on the relative importance of management action, the

analyst organizes the data into computer tape files. The

files are organized based on data usage and content. Basic

record files contain master information, usually updated

only when a basic record bit of information changes. Other

files are working files and contain current updated trans-

actions. At each succeeding level of summarization the

information becomes more condensed. It is usually very

important not to build into the system the requirement that

all or any input errors be rectified before further processing

of non-error items proceed. At each processing step, there

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must be an input which is either new data or the output from

a previous step. Those outputs from previous steps deter-

mine the processing sequence to that point. When this causes

problems in timing of output reports, alternative methods of

gathering the required input must be sought or, perhaps,

duplicate processing of the original inputs may be considered.

Each "test" situation where a computer decision determines

the next course of action can have only one of two possible

solutions. If this is not so, then the information available

to the computer has not been sufficiently detailed to program

the report. All input data, of course, must result in an

output of either intermediate or final reports or the input data

has no place in the information system.

The real need in the reports area is not to super-

impose a great many more reports on the existing informa-

tion structure. Rather, the need is to think critically and

determine what information is really needed or can profit-

ably be used for planning and controlling the organization.

87

TAB

VIII. NEED FOR SYSTEMS INDOCTRINATION

This status study has pointed out the fact that there is a great need for overall systems indoctrination within the Agency. It is true that some training courses were presented by RCA in the computer field; but they were very inadequate. RCA is one of the younger companies in commercial computers and cannot be thought of as one of the more capable when it comes to back-up material for their computers. The courses that they gave were brief (a day or two at the most, in general). There was a large task to be accomplished because the Agency was just starting in the field of electronic data processing. For the main part, the courses that were given were presented to the wrong audiences. For instance, management people received the detailed programming courses and technical people, the executive courses. Be that as it may, these courses never were sufficient to convey the desired knowledge to the employees of the Agency. It is essential that proper training be accomplished, however, in order that this multi-million dollar system composed of equipment and methods can be properly implemented. Indoctrination, however, is not an easy task when one considers the involvement. The knowledge to be imparted is not only for present operations but also for future needs and must cover machine systems ranging from simple input devices, such as, the typewriter, through the high-speed computer now in use.

A. Training Courses

The courses recommended would be of two types: general
and specific. The general course would consist mainly of material
on computers and the application of computers to business systems.
Even at this stage of man's acceptance of computers, it is not
easy to find a good general course that can be presented in a
matter of a week or two to people who are not completely oriented
to receive it. However, there are already many firms who do
offer courses to their employees and most of the computer manu-
facturers do have general courses. In addition, there are books
and certain college courses which can be used as back-up. The
Agency will be using computers as far in the future as we can
see.. It will have to keep up with the general trend toward auto-
matic data processing and there is no doubt that the ensuing years
will find more computer usage, not only by the people presently
involved but by everyone.

It has been mentioned, there are courses that are already
being given in general business and scientific fields. However,
it must be pointed out very strongly that the work of the Agency
in many cases is unique among Government and industry. Any
course given must not only be general in order to teach the
basic underlying principles but must also go into the very specific
needs of the Agency.

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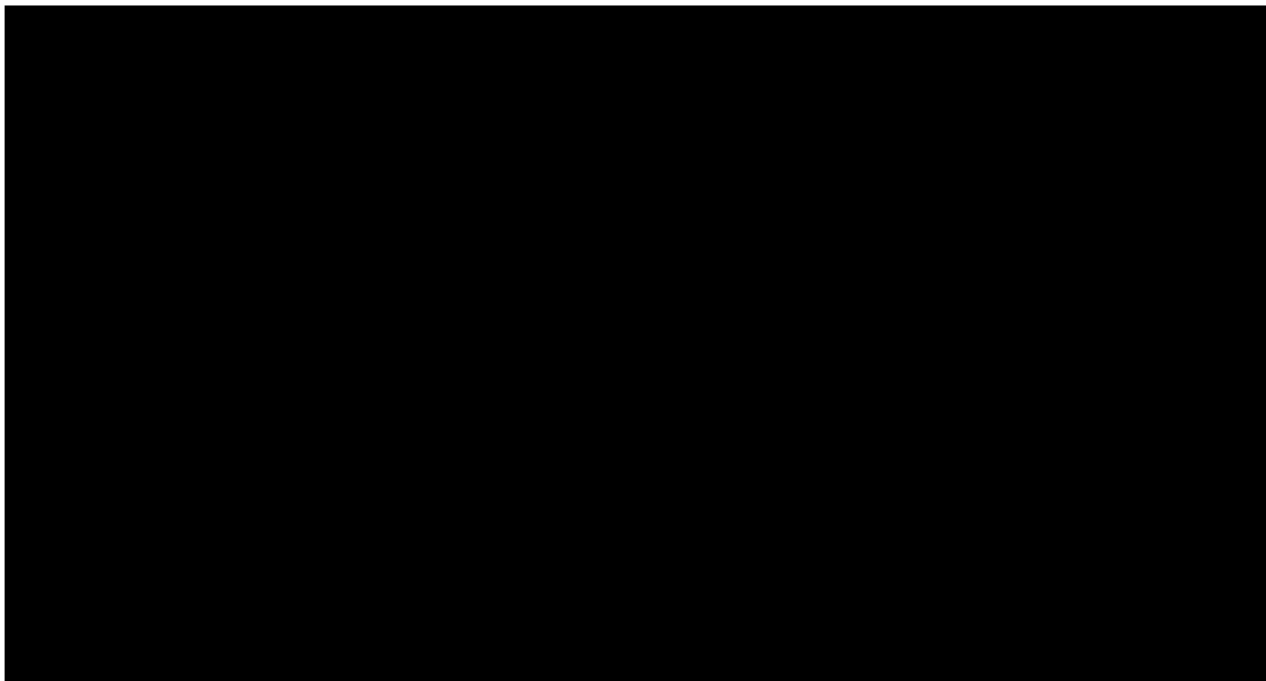
B. Limitations

The concept of limitations is one aspect of computer systems

that one does not often find in general courses, especially the

courses given by computer manufacturers. As a result of this

study, however, it has become apparent that this important area

should be presented to Agency personnel. Many of them are

aware of computer capabilities from collateral reading and they

know that an electronic data processor is nothing more than a

tool; however, as a result of lack of indoctrination, the limita-

tions of this tool are not fully understood.. Most of the personnel

think it will do more than it actually will. The RCA 501 Computer,

however is limited and is on the low end of a medium-sized and

-priced computer. It will not do all of the wonderful things that

one reads about in various publications because it is not a

large-scale, expensive computer containing the most modern and

up-to-date advancements. Agency needs do not call for that type

of computer. They do call for a typical business computer, which

this is. A typical business computer, however, does not have

the capabilities of the scientific types that we hear about with

large, fast memories with instant access to millions and millions

of bits of data. The 501 is relatively small. Its use must be

carefully planned. It can handle only one problem at a time.

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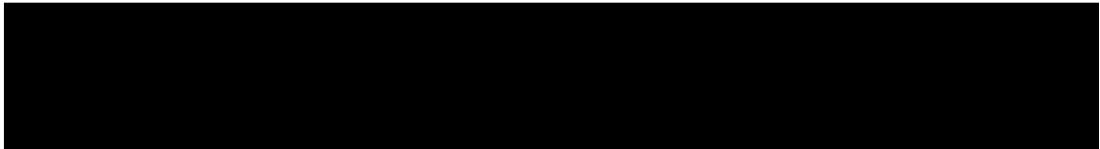
Although a computer will handle many problems, it can only handle

them in the order in which they are programmed. There are many

ramifications of computer limitations and it was not the intention

of this status study to go into them. However, the necessity of

pointing them out, so that personnel will utilize the computer

accordingly, is established. Much of the dissatisfaction involving

this computer will be alleviated when users become aware of the

systematic cooperation that is essential in its operation.

The cooperation of the employees is an important aid to the

success of an electronic data processing program for reasons

such as the following:

(1) The development of an electronic data process-
ing program is a large project involving the efforts
of numerous individuals, most of whom are not
under the direct supervision of the head of the
program.

(2) The computer program usually cuts across
departmental lines and requires inter-departmental
cooperation.

(3) The development of a sound program often
requires full and ready access to the records of
other departments and an understanding of their
system procedures.

(4) The success of new systems and procedures
depends on the desire of employees to see that they
work properly.

(5) Willingness of employees to transfer to the
electronic data processing organization depends on
their enthusiasm and interest in their new venture.
The same can be said for their willingness to coop-
erate with that organization.

(6) The Agency is greatly compartmentalized and
there are many misunderstandings which arise because
of the fact that communications are limited. Therefore,

it is necessary for employees in an establishment of

this type to make an effort to maintain cooperative

links of communication.

It is essential that all employees be apprised of the system

because, by definition, the system involves all of the employees.

It is something that need not be gone into in great detail except

as each individual part of it affects each individual's job. How-

ever, it has been found that people of reasonable intelligence

function best when they are aware of what they are doing, what

is expected of them, and what their contributions will add to the

success of the overall effort. The Agency has people of better

than average intelligence. This type of individual is not satis-

fied with routine jobs and the piecework approach to operations.

This type of individual is a professional and once he is apprised

of the relationship of his position with the rest of the organi-

zation, he works more efficiently toward the common goal.

Because of this inherent intelligence, it can be stated optimis-

tically that proper systems indoctrination and training will
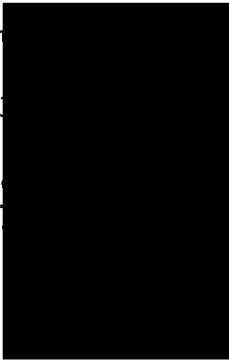
result in cooperation in the majority of cases.

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should be. It must be pointed out here that this is not a computer

equipment problem alone. It is a systems problem if the input does

not come in at the proper time, or in the proper form or go to

the proper place. It is then impossible for the computer to comply

with the demands that output be delivered at a certain time and in

a certain form.

The peripheral equipment failures, that is, the failure in

the high-speed printer, the card punch, and the card reader have

definitely acted to the detriment of the system. It is impossible

to perform and fulfill Management's role of input-output and

production of reports without the 100% use of these devices.

In the first year of the computer's operation, it was necessary

to spend much time in order to produce computer routines and 25X1A

programs. The decision had been made to bring electric acco

ing people up to electronic data processing jobs. Much valuab

time was lost while these people were trained to be programm

and during the first six months of operations certain chaotic

conditions existed. This was due to the fact that some of the

people who had formerly been in charge of electric accounting

machine operations had now left that job and were programming   ILLEGIB

for the data processor. During this period, the data processor

was not working to full efficiency (because the programs were

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1.   Logistics Stock Status Book

This is a book that is printed every month on the

high-speed printer. It contains every line item that is

carried by the Agency. Approximately 66,000 items are

carried in this book. Each book consists of 6,000 printed

pages and nine copies are made each month. It takes

approximately 33 hours to run these nine copies. The

book is used in Logistics as a reference and also as an

actual working document for stock additions and stock

withdrawals. Whenever stock is obligated the amount is

entered into the book, adjacent to the item, by the stock

analyst. At the same time, the stock analyst fills out a

voucher which is sent to the Automatic Data Processing

Division. This voucher is used to print the next book.

In other words, at the end of the month, all of the vouchers

are tabulated for each item and this gives the amount of

withdrawals. The stock status book is also used for

additions, and whenever stock arrives, it is added into

the book by hand. At the same time, vouchers are sent

to Automatic Data Processing notifying them that addi-

tional stock has arrived. These vouchers are then used

at the end of the month to up-date the stock status book

to give the amount added. Several problems arise here.

One is the fact that it is necessary to run nine copies of this

book. It is usually run on five-part forms. Therefore, in

order to run nine copies it is necessary to print twice.

Analysis may easily show that only five copies would be

required rather than nine. If some of the receivers of

this volume were to be apprised of the cost and the time

involved to run the listing twice, they may very well realize

that it is not necessary for them to receive a volume. The

first step in any systems analysis is often to check the

advisability of printing certain reports or of printing multi-

ple copies of certain reports. Very often a little ingenuity

can be applied at this point to save time and money. If it

is necessary for everyone to receive one of these reports,

then the time and the money spent can be justified. If it

is not necessary, this fact should be determined and steps

taken accordingly. There has been quite a bit of discussion

pointing toward the fact that stock status should be kept

in a random-access type of computer so that in an instant

the stock being withdrawn or being added to can be updated;

and also, similarly, within an instant, Management can

query the computer to find out what the exact amount of

stock on hand is. This cannot be done with the present

system without calling the stock analyst--asking him to

check his books, add up all the withdrawals, add up all

of the receivers, and come up with the actual amount on

hand.

It is not an easy thing to specify a random-access

device or a computer device to be used for Logistics

without studying the situation. Such factors as the time

involved, the people, and the location, must be considered.

If a computer is needed for stock control, all well and good;

but this problem must be very carefully investigated.

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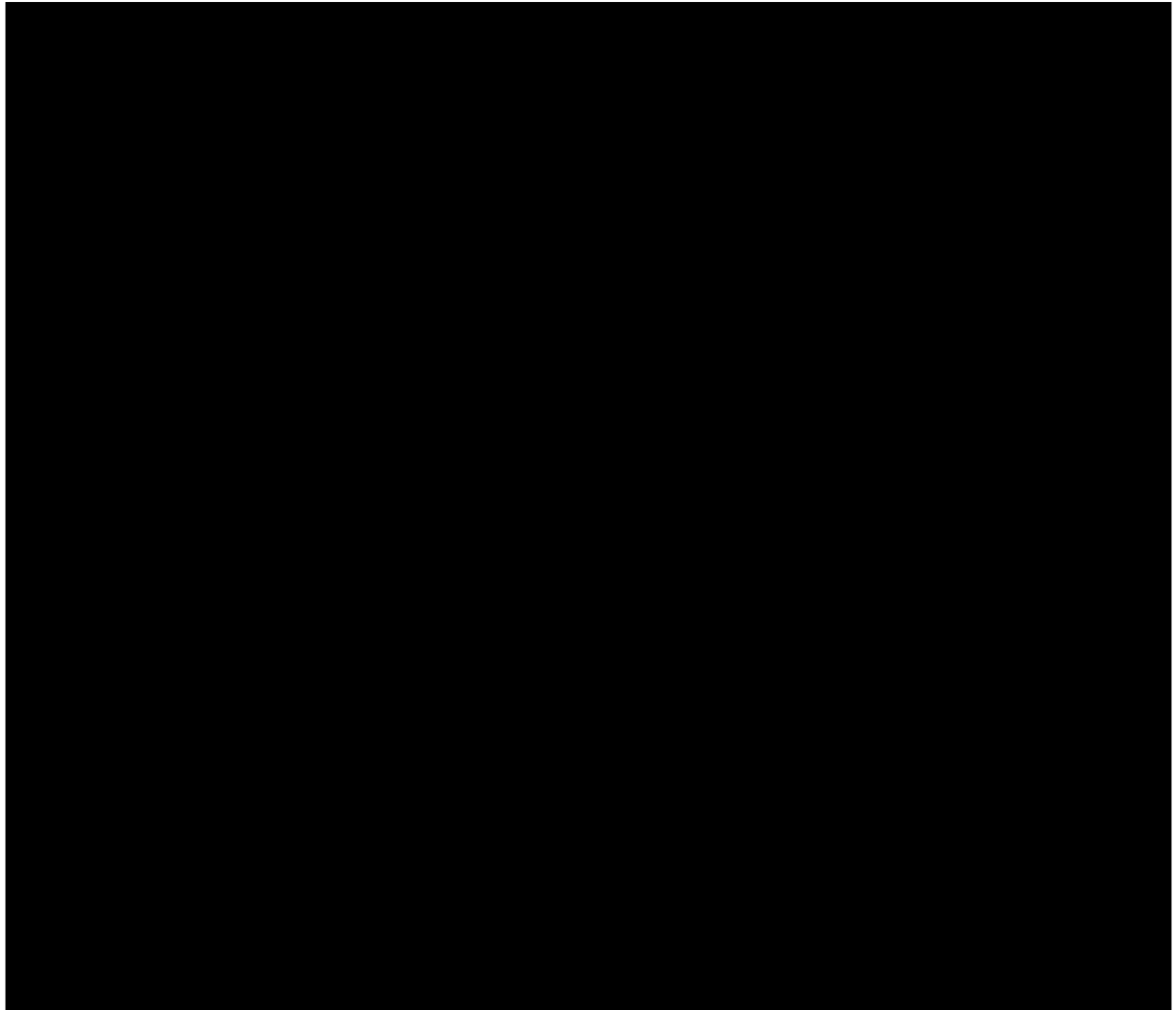
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13.   Summary

These typical problem areas have been chosen to

represent the drawbacks to the performance and progress

of this EDP system which have necessitated this status

study. It has been pointed out in this section that there

are problems and difficulties and that in the main they

stem from the fact that the recommendations of the

Management Staff, pointing up the need for an overall and

complete systems study, were never implemented.

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The operating time of the main electronic components has been excellent. Whereas, all of the computer peripheral equipment (card reader, card punch, high-speed printer) have been unsatis- factory. In the past, it was necessary to skip normal preventive maintenance because of lack of time. Since the inception of this study, these procedures have been carried out. The results have been an improvement in the card reader and card punch operation. The printer, however, is still unable to turn out really acceptable work. The failure of this peripheral equipment is more fully discussed in section E which follows.

C. Progress Towards Original EDP Concept

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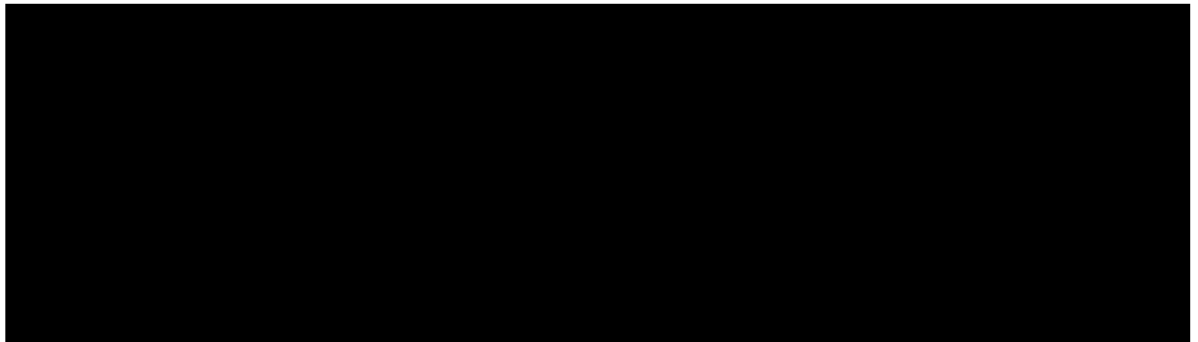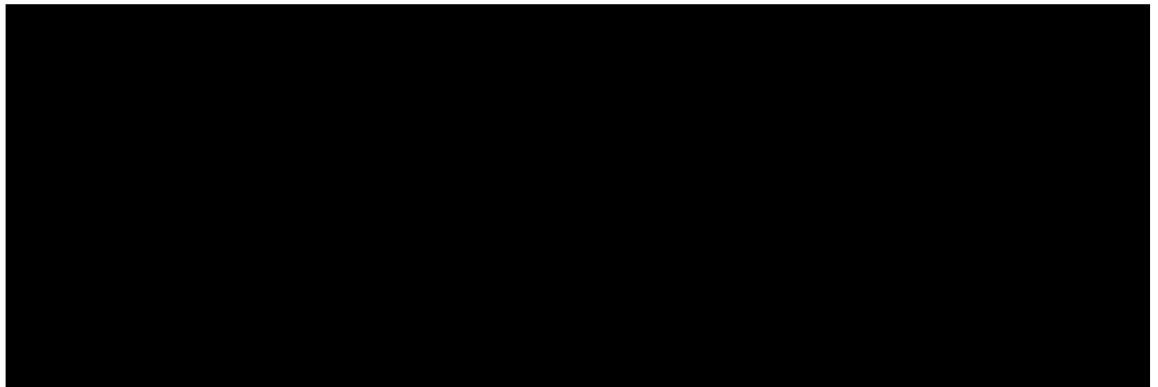
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concept was a phase-one, phase-two concept in which phase one

would be the one-to-one change over from EAM to EDP and phase

two would be the optimization of all of the programs. This state-

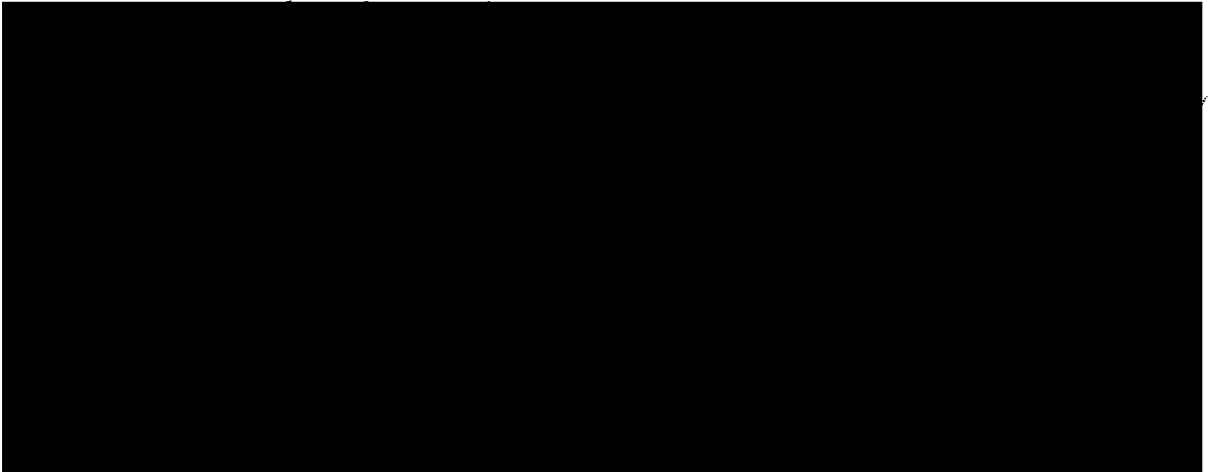ment about four hours and also a clear definition of phase one and

phase two activities was never seriously presented and, therefore,

should be discounted. In the first place, it would have been very

difficult to determine what the exact operating times of the com-

puter would be when no detailed study had been done of programs

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Therefore, the major concepts that are understood from

the original recommendations are that there would be a saving

both in personnel and in money. It is truly unfortunate that these

were taken as concepts, because a system need not save money or

people in order to be efficient. This Agency's work is vital, and

must be done in a timely fashion regardless of cost and involve-

ment of personnel. Many years ago when computers were brand

new, they were sold on the strength of saving money and saving

people. At that time, these were overriding considerations. How-

ever, as computers became more advanced, expensive, and complex,

it was realized that they could very well justify their existence on

other factors such as accuracy, speed, memory, compatibility, and

suitableness for the operation. Therefore, the fact that this machine

has not saved money (in fact it is more expensive than the EAM equip-

ment) and has not saved people is not a factor that can be seriously

considered at this time. One must forget the desire to save people

and money. The only true judge of a modern computer is does it do

the job in an efficient and satisfactory manner and is it worthwhile?

Does it justify its keep? This computer is not operating in an orderly

system at present. It is not operating in an optimized or idealized

condition and it cannot be fully judged as to whether it earns its keep

until an over-all system is evolved which is based about the com-

puter. Once this optimized system is delineated, it will be apparent

whether a computer does justify itself. One of the basic underlying

concepts of the original studies was that a detailed systems study

was necessary and that detailed work would be necessary before the

computer arrived. In addition, it stated that programming and all

other systems work must be accomplished, either beforehand or as

soon as possible. This concept was never followed, and the original

115

SECRET

plans for a systems study was never done. The team assembled to

do the systems study in the Automatic Data Processing Division

were also in charge of the programming. This became such an

involved task, due to the fact that there was no experience and

these people had to learn a new field, that it became impossible

for them to do the systems study. Therefore, the progress toward

the original concept has been negligible. There has been no saving

in money, there has been no saving of people, there has been no

saving in time of processing, and there has been no systems study.

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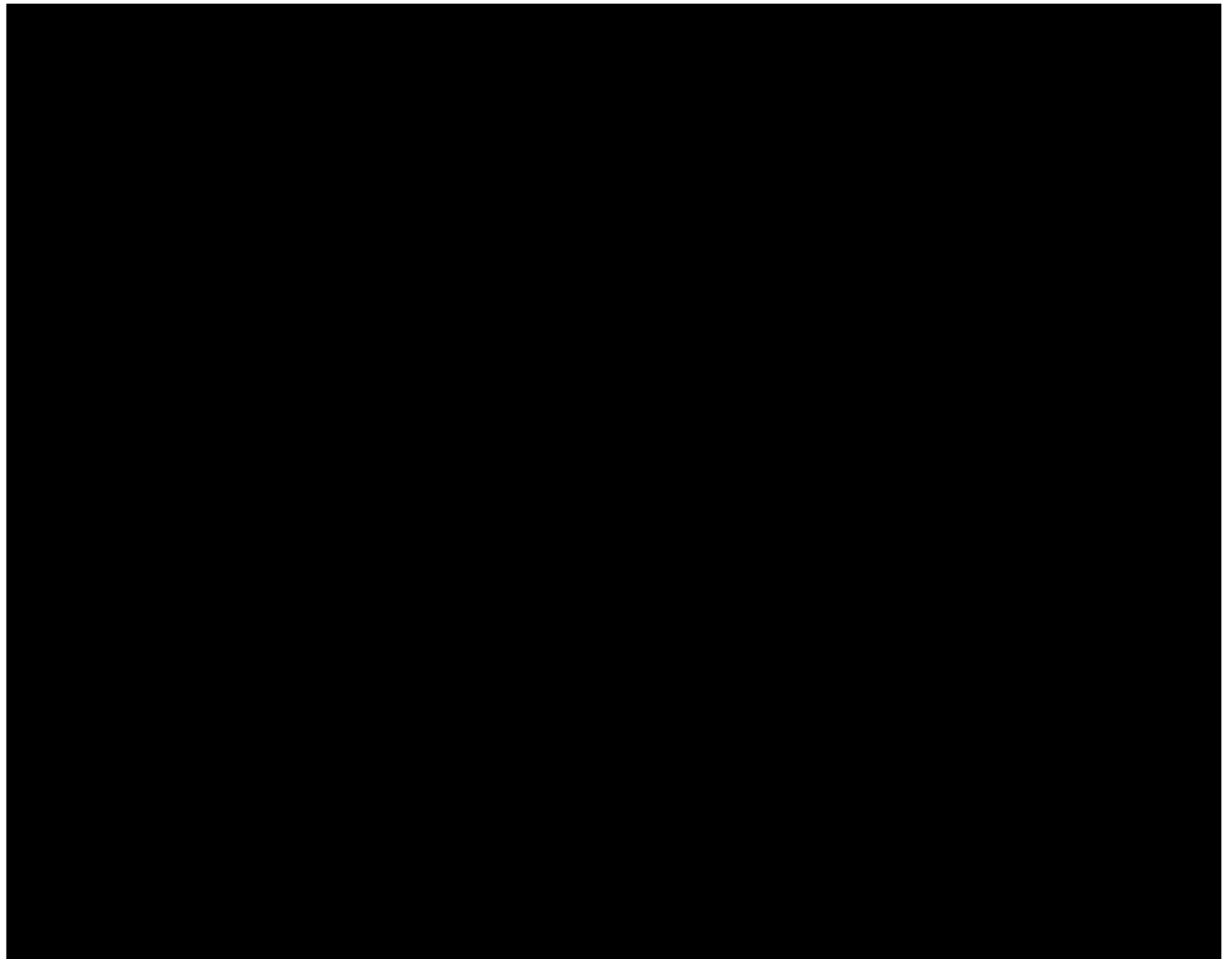
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lease, there has been no great decrease in the amount of equip-

ment being operated. As mentioned previously, there has been

no saving in either time or people. The reasons for this is that

savings cannot be made and optimization cannot be done in a hit-

and-miss fashion. They can only result from an overall con-

scientious effort to devise a completely integrated system in which

there is a relation between all factors in such a manner as to pro-

vide for complete efficiency. Until this is done, there can be none

of these savings. This efficiency has never been achieved and

there have been no appreciable savings in equipment, in time, and

in manpower.

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savings from systems redesign, and that this would come about

as redesign was accomplished. However, as pointed out previously,

this was never accomplished.

There have been failures and unsatisfactory performance

within the equipment complex. One item of equipment in Room 2,

the RCA high-speed printer has never turned out satisfactory

copies. One of the greatest problems existing in this system is

due to that fact. The printer is of little value as far as quality out-

put is concerned. For one thing, its rated speed is unacceptable to

industry. In fact, as of the first of January of this year, RCA reduced

the cost of this equipment on GSA lease to one-half its former price.

ILLEGIB   Even at that rate it is not acceptable. The card punch and reader used

16 hours or so per month, yet they are on lease throughout the entire

month. The cost of these are $1,174. 00 a month for the card reader

and $876. 00 a month for the card punch. This is considerable money

to pay for only 16 hours of use throughout the month. These machines

do specific jobs, and, if those jobs can be modified or changed so that

the reader and the punch are not necessary, great savings can be

effected. (If it is necessary to use them to accomplish the present

jobs then more jobs should be placed on this leased equipment so that

it will be economically justifiable.

The present combined rental cost of the reader, punch, and

printer is, $3, 801. 00 per month. Since the printer is unacceptable,

120

the manufacturer has come up with an interim suggestion. That

is, that a new system involving what is known as a satellite com-

puter be leased. This small computer has a card punch, a card

reader, and a printer. It is compatible with the present system

and is known as the RCA 301. For an additional $573.00 a month,

or a total of $4374.000 a month, it is possible to lease this new

equipment. The RCA 301 does have a satisfactory printer, reader, *THIS IS questionABLE*

and punch. Thus, it will be able to produce good results immediately

upon arrival. By substituting equipment, it will be possible to

eliminate the problems of bad printing. Since this problem extends

to everyone in the Agency who is a user of these reports, this additional

$500.00 a month will be repaid in good will and in increased efficiency.

The accompanying table shows a comparision of the cost between the

present RCA 501 equipment and the new RCA 301 computer. Although

cost is not an essential factor here, as stated before, it does enter

into the determination. The main thing to bear in mind here is that

the problems of the punch, reader, and printer can be reduced with no n

need to make decisions involving hundreds of thousands of dollars.

ALL computers can be leased subject to cancellation This RCA 301 equipment can be leased subject to cancellation and, if

future system studies determine that some other course of action should

be takne, it can then be returned.

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Comparison of

RCA PERIPHERAL EQUIPMENT

501		301	
Card Trans. (527)	$1,174	Adapter (393-1)	$ 330
Card Punch (538)	876	Adapter (393-2)	381
Printer (535)	1,751	Processor (303)	1,803
		Card Reader (323) Card Control (314-1)	495
		Card Punch (334) Punch Control (315)	489
		Printer (333) Printer Control (316-1)	876
Monthly Rental (200 hours use)	$3,801		$4,374

SECRET

Next 2 Page(s) In Document Exempt

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to use the present system to its fullest efficiency and optimize it as

much as possible. At the same time, efforts should be

directed toward completing an overall systems study which

is projected at least five years into the future. This study

is the only thing that can indicate whether the present com-

puter facility will be able to operate in an efficient manner

within the next few years. The course of action, to summarize,

should then be to retain this computer, upon which employees

have been trained, until definite deep consideration and delib-

eration would indicate that it may not be suitable in the future.

G. Scheduling Effectiveness

It has been difficult to assess the scheduling effectiveness of the com-

puter because there has not been an orderly system to provide for feeding

data into the computer or accepting its output. Scheduling, of course, must

be done for a device of this type because every minute counts. In a saturated

system such as this, minutes that are not utilized mean that someone's work

is not going to be done.

In this present system, the major work has been accomplished through-

out the day and far into the evening by much overtime work. Scheduling has

been done and is continuing to be done, however, it is difficult to adhere

to any schedule when the users of the computer information are not fully

aware of how a computer facility operates. This is pointed out very clearly

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been done and is continuing to be done, however, it is difficult to adhere

to any schedule when the users of the computer information are not fully

aware of how a computer facility operates. This is pointed out very clearly

126

coming for input. In these cases, it is necessary to shift the schedule.
For this reason, this status study has determined that no assessment
of scheduling activities would be significant at this time. Only when
there is an orderly system evolved can it be determined how scheduling
may be done effectively. At that time, an evaluation can be made as to
whether these objectives are being met. The only thing that can be stated
is the fact that with all of the difficulties that the Automatic Data Proces-
sing Division has faced from the outset, it is the opinion of this study that
they have been doing an outstanding job in meeting the requirements placed
upon them. They, of course, have not been complying with the needs of
the Agency, but have been doing more than will be found in a cross section
of computer activities in general. This is more than should be required
of them at this point in the development of the system.

H. Users' Reaction to Computer Services

There has been much dissatisfaction throughout the Agency with the
entire system. This study was performed within the DD/S and the dissat-
isfaction was found mainly in these areas. It is only by hearsay that we have
been apprised of some of the thoughts throughout the rest of the Agency.
The major drawback with the computer has been the fact that reports seem
to be coming out slower, the people are unable to get certain reports that
they want, certain reports are not in the form that is desired, and people

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cannot get their information exactly when they want it. There has

been nothing observed by the members of this status team that would

indicate that the users cannot be satisfied. There is no reason whatso-

ever why an orderly system cannot be evolved which will satisfy the

majority of people. In addition, when there is a general understanding

of what the computer system is all about, what the costs and involve-

ments are in producing reports, changing forms, making exceptions,

and so forth, they will be satisfied.

I. Summary

This status study has:

(1) Evaluated development of the system to date.

(2) Ascertained the system's lack

(3) Determined the misunderstanding resulting from the computer

and electronic data processing system

(4) Discussed the equipment problems

(5) Demonstrated the need for management by exception, and

exception reporting

(6) Delineated large problem areas in flow of information, input

forms, and output reports

(7) Shown areas of inefficiency and error

(8) Indicated a definite lack of communication

(9) Indicated the great effort among employees

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(10) Concluded that everyone wants a change now

(11) Presented flow charts and details to indicate the present

status and operation of this system

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X. RECOMMENDATIONS

A. First and foremost is the recommendation that an overall
systems study be completed in order to permit development of
an effective, orderly system.

B. It is recommended that the detailed study be made by a com-
petent team formed of members who know the intimate work of
the Agency and also of members who are aware and conversant
with systems of this type.

C. Complete flow charting of the entire system should be accom-
plished.

D. Portions of this system that are suited for electronic data proces-
sing should be placed upon a computer.

E. It should be determined if the present computer is suitable
and whether it should be retained.

F. The need for additional or replacement computers should be
determined.

G. New peripheral equipment should be obtained as soon as possible
to alleviate the difficulties presently encountered in printing reports and
in punching and reading cards. It is further recommended that all forms
and reports be studied to see whether they can be streamlined, optimized,
and reduced in number.

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I. A systems indoctrination for personnel should be initiated and directed toward the specific needs of the Agency.

J. The entire concept of data processing should be examined apart from considerations involving the saving of money and the reduction of personnel. The proper consideration must be that of evolving the most suitable operating system for the specific, unusual needs of this particular Agency.