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REPORT BY THE U.S.

General Accounting Office

Duplication In The Navy's Management Information Systems Is Costly

Most major Navy commands have developed their own management information systems for accounting, supply, payroll, personnel, and facilities management, even though these and related functions are common to all commands regardless of mission or structure.

The Navy does not have enough systems analysts or computer programmers for so many systems. When procedural changes are required, scarce personnel are used to implement the same change in each separate system. Contractors often are needed to effect changes or redesign systems.

The Navy needs to establish Department-wide requirements and use data resources in support of functional information requirements rather than to support individual commands.
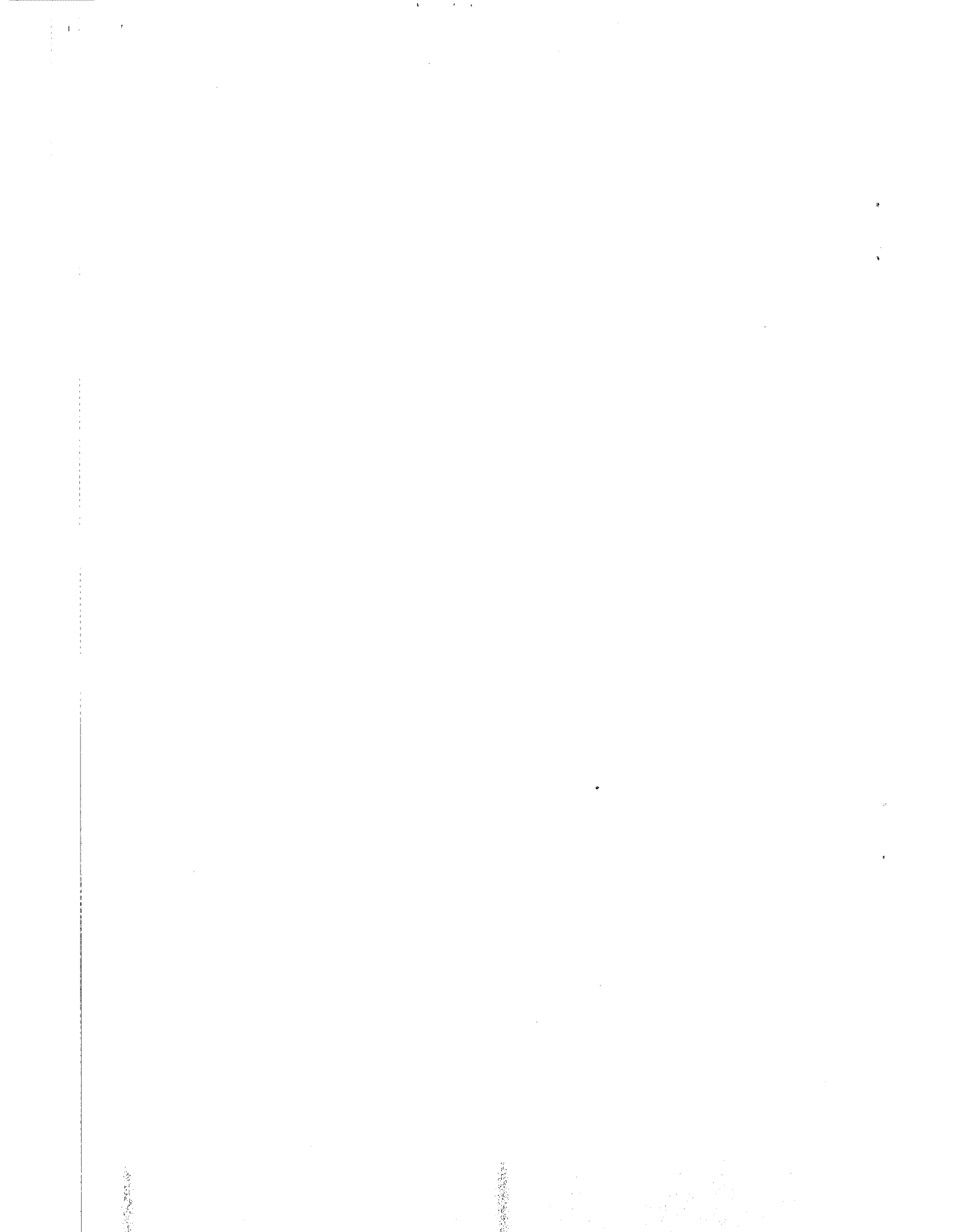
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GAO

United States General Accounting Office
Washington, DC 20548

Logistics and
Communications
Division

B-163074

The Honorable R. James Woolsey
Acting Secretary of the Navy

Dear Mr. Secretary:

This report discusses improvements that can be made in
developing and using computer software to support functional
rather than commandwide information systems. These comput-
erized applications are essentially the same. The automated
procedures and processes to support the management functions
are the same. Much of the data the automated management
information systems accumulate, process, and store is the same,
and a large majority of the management reports the systems
produce are the same. However, these systems are designed
independently by individual commands without consideration
of the information needs of functional managers on a Navy-
wide basis.

Opportunities exist for the Navy to more efficiently and
effectively use its scarce technical resources--systems analysts
and programmers--to develop, operate, and maintain the numerous
and essential management information systems it operates.

This report contains recommendations to you on page 27.
As you know section 236 of the Legislative Reorganization Act
requires the head of a Federal agency to submit a written
statement on actions taken on our recommendations to the
Senate Committee on Governmental Affairs and the House
Committee on Government Operations not later than 60 days
after the date of the report and to the House and Senate
Committees on Appropriations with the agency's first request
for appropriations made more than 60 days after the date
of the report.

We are sending copies of the report to the Chairmen,
Senate Committees on Appropriations, Armed Services, and
Governmental Affairs; the Chairmen, House Committees on

Appropriations, Armed Services, and Government Operations; and the Secretary of Defense.

Sincerely yours,

R. W. Gutmann
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE SECRETARY
OF THE NAVY

DUPLICATION IN THE
NAVY'S MANAGEMENT
INFORMATION SYSTEMS
IS COSTLY

D I G E S T

During fiscal year 1978, the Navy spent
$481 million to operate and maintain
automated management information systems
that support many similar management functions.
These different computerized systems produce
essentially the same kinds of management
reports; have approximately the same automated
procedures and processes; and accumulate,
process, and store much of the same data.

The Navy does not have an adequate number of
systems analysts and computer programmers to
maintain the numerous management information
systems it operates. Central design activities,
responsible for maintaining the systems, have
huge backlogs of requests for system improve-
ments, and resources are not available to
satisfy the requests. When changes in func-
tional procedures are mandated, these scarce
personnel must implement the changes in each
automated system. (See pp. 18 to 20.)

The Navy does not need separate management
information systems for each of its major
commands. Automated data processing is a
management tool that, when properly used, can
rapidly accumulate, process, analyze, store,
and report accurate information. Effective
use of this tool does not depend on organi-
zational structures or command lines.

The primary differences among the automated
information systems are

--the extent that manual procedures and
  processes have been automated,

--the way the systems have been designed,
  and

--the makes and models of computers the
  systems operate on. (See p. 14.)

LCD-79-113

However, these differences occur because systems are designed independently of the information needs of Navy-wide functional managers. For example, as described on page 14, one supply officer uses an "out-dated" locally developed system which produces inaccurate and untimely data and is cumbersome to use because many of the processing procedures have not been automated and are performed manually, although a standard or uniform system would meet his needs.

The lack of sufficient programming resources is a factor which dictates the extent to which manual procedures can be automated. Independently developing systems without considering information requirements on a Navy-wide basis results in the acquisition of computers that are used exclusively in support of a single system. This condition makes it difficult, if not impossible, to effectively exchange data and/or equipment between commands. It also compounds analyst and programmer training because what has been learned about the operating character-istics of one vendor's equipment and software cannot be applied to the equipment and software of another vendor even though the same or similar applications are processed on the equipment. (See p. 16.)

Efforts currently are underway to develop standard, Navy-wide systems to support payroll and personnel management. However, these development efforts are not without problems. They need strong central co-ordination. (See pp. 15 and 16.)

The establishment of the Data Automation Command is a step in the right direction to better control and use automated data processing resources. The new command cannot be completely effective, however, until the Navy resolves a central issue that has plagued management of the data processing program since its inception; that is, whether data processing resources should be organized to support separate commands or functional programs. (See p. 18.)

The Secretary of the Navy should conduct a system-by-system analysis to identify, on a Navy-wide basis, the common management functions supported by the Navy's many information systems. This analysis should be used to develop a long-range plan for organizing and using technical resources along functional, rather than command lines. (See p. 27.)

The Navy officials with whom GAO discussed this report agreed that greater use should be made of standard systems for similar functions and they cited a number of steps being taken to accomplish this goal. (See p. 26.)

Contents

ABBREVIATIONS

ADP	automated data processing
CDA	central design activity
GAO	General Accounting Office
MIS	management information system
NIF	Navy Industrial Fund

CHAPTER 1

INTRODUCTION

Automated data processing (ADP) in the Department of the Navy is a large, complex, and diverse program. In terms of resources it represents

--1,160 computer configurations at 317 Navy activities around the world;

--over 13,000 staff-years of effort;

--an operating budget of $481 million for fiscal year 1978 (see app. II for details); and

--44 management information systems (MISs) supporting 22 different offices, commands, and bureaus. (See app. 1 for a list of the 44 systems.)

Although the ADP program makes up less than 2 percent of the total Navy budget, without computers the Navy would find it difficult to navigate its ships, fly its airplanes, repair engines, draw up budgets, issue spare parts, or prepare paychecks. Thus, all offices, commands, and bureaus are heavily dependent on data processing to carry out assigned missions and to manage day-to-day operations.

EVOLUTION OF THE NAVY ADP PROGRAM

The 1960s was a period of significant growth in the Navy's ADP program. With the introduction of third generation computers, higher level programming languages, and teleprocessing capabilities, the Navy, like the other military services, came to realize and began to exploit the full potential of the burgeoning computer technology.

It was a formative period during which differing management approaches and organizational structures for the use and control of the Navy's rapidly expanding ADP resources were adopted by the various offices, commands, and bureaus. During the 1960s, the data processing systems of single installations evolved into integrated MISs in support of the missions and functions of entire commands. These commandwide systems and the resources required to operate and maintain them were independently designed and organized to fit the needs of the individual commands and support activities without consideration of the information needs of functional managers on a Navy-wide basis.

The five major subordinate commands of the Naval
Material Command managed large and complex field activities
such as shipyards, supply centers, ordnance and weapons
stations, and aircraft rework facilities. These activities
were spread throughout the country, but because of the
differing missions for support of the operating forces,
they were concentrated in a small number of geographic
areas.

The complexity of operations and size of the workloads
at these activities were readily adaptable to automation.
The workloads were large enough to enable each activity
to acquire its own computer. Because each of the various
types of activities (shipyards, supply centers, etc.)
performed common functions and had similar information
requirements, the automated systems lent themselves to
standardization. To accomplish this, the major subordinate
commands established central design activities (CDAs).
CDAs represented a consolidation of systems analysts and
computer programmers into a single organizational entity
responsible for the design, development, implementation,
and maintenance of commandwide MISs. Although CDAs were
not computer operators, except for tests, and were not
considered system users, they were made responsible for
assuring that MISs were corrected, modified, and enhanced
to meet the everchanging information requirements of user
activities.

Because of centralized organizational structures, other
headquarters commands took a different approach to satisfying
the information requirements of functional managers. Large
centralized ADP support activities were established which
combined systems analysts and programmers and computer oper-
ations into one organization. These activities designed
the systems, accumulated and processed the data, and
produced management reports at a central location.

Three such ADP support activities were established in
the Washington, D.C., area to support the information re-
quirements of the Office of the Chief of Naval Operations,
the Naval Material Command, and the Office of the Comptroller.
The Education and Training Command established a centralized
ADP support activity in Pensacola, Florida, and the Naval
Facilities Command established a similar activity in
Port Hueneme, California.

These different approaches to using and allocating ADP
resources did not address the needs of innumerable smaller
Navy activities scattered throughout the country. The
approaches were inapplicable because these activities were

not (1) users of commandwide MISs and (2) located close
enough to central ADP support activities. Also, many of
them were not large enough to justify the acquisition of
their own hardware. To remedy this situation and other
problems that emerged during this period, the Navy, in
the early 1970s, initiated a program to establish regional
ADP service centers. The ADP resources--computers, analysts,
and programmers--of various field activities were consoli-
dated within the service centers to operate and maintain
designated systems, and to provide multicommand support
to other activities in the immediate area. Initially, six
regional ADP service centers were to be established in areas
where the Navy had high concentrations of field activities--
Norfolk, Virginia; Pensacola, Florida; Jacksonville, Florida;
San Diego, California; Alameda, California; and Cherry Point,
North Carolina.

The evolutionary process of allocating and distributing
ADP resources by individual commands has adversely affected
the Navy's ability to manage its ADP program. Many of the
different commandwide MISs were installed in field activities
in close proximity to one another. The ADP resources required
by these systems were concentrated in small geographic areas
and dedicated to the support of individual systems. This
concentration of ADP resources is illustrated by the map on
the following page of the Norfolk, Virginia, area where 23
Navy activities are located within a 20-mile radius of one
another.

Also, the distribution of ADP resources by individual
commands resulted in the development of MISs that supported
common management functions that cut across command organi-
zational boundaries.

MANAGEMENT OF THE NAVY ADP PROGRAM

Management of the Navy ADP program has been restructured
a number of times since the Navy installed its first computers.
Various offices and management staffs have been established
within the Offices of the Secretary of the Navy, Chief of
Naval Operations, and Chief of Naval Material. Authority and
responsibility for Navy-wide management of data processing
have shifted back and forth among these offices.

Groups from within and external to the Navy have made
a number of studies of the ADP program and management structure.
These groups generally recommended stronger, more centralized
leadership. Despite efforts to better manage the program and
to more effectively use resources, problems continue to
persist.

CONCENTRATION OF NAVY ACTIVITIES AND
INFORMATION REQUIREMENTS

NAVY ACTIVITIES

1   Naval Weapons Station
2   Mine Engineering Facility
3   Commander, Naval Surface Forces

4   Operations Support Facility
5   Atlantic Readiness Support Group

6   Naval Safety Center
7   Manpower Material Analysis
     Center

8   Ship Engineering Center
9   Fleet Aviation Accounting Center

10 Human Resources Management
     Center

11 Naval Supply Center
12 Naval Air Station, Norfolk
13 Naval Air Rework Facility
14 Data Processing Service Center

15 Public Works Center

16 Fleet Training Center

17 Electronics Systems Engineering
     Center

18 Facilities Engineering Command

19 Naval Shipyard
20 Amphibious School
21 Guided Missiles School
22 Naval Air Station, Oceana
23 Air Systems Command Representative
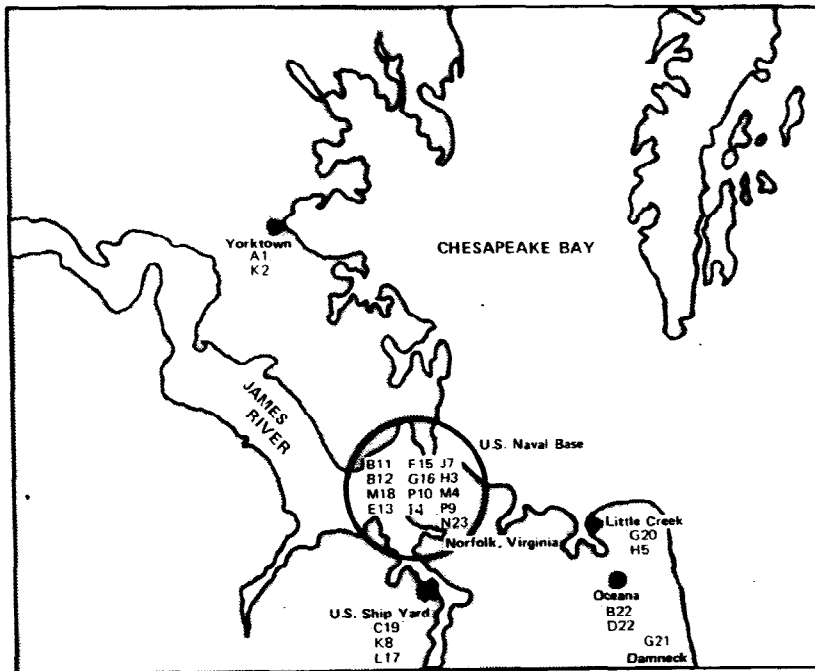
MIS SYSTEMS

A   Ordnance Station MIS

B   Stock Point MIS

C   Shipyard MIS

D   Operating Air Station MIS

E   Industrial Air Station MIS

F   Public Works Center MIS

G   Education and Training MIS

H   MIS for Fleet Staffs

I   Safety Office MIS

J   MIS for CNO Stations

K   Sea Command Support MIS

L   Electronics Command Support
     MIS

M   Facilities Command Support
     MIS

N   Air Logistics Support MIS

P   MIS for Fleet Stations

CHESAPEAKE BAY

Yorktown
A1
K2

JAMES RIVER

U.S. Naval Base

B11 F15 J7
B12 G16 H3
M18 P10 M4
E13 I4 P9
       N23

Little Creek
G20
H5

Norfolk, Virginia

U.S. Ship Yard
C19
K8
L17

Oceana
B22
D22
G21
Damneck

The latest effort to resolve these problems was initiated
in 1976 when the Vice Chief of Naval Operations convened a
staff study group to determine whether a realinement and/or
consolidation of the Navy ADP management and operational
functions was required.

In a comprehensive and rather critical self-analysis,
the study group reported:

"The present system of control of Navy ADP
personnel, dollars, and computer installations
does not insure optimum resource utilization
nor effective overall fullfillment of Navy
ADP user requirements.

"The completely decentralized management of
the approximate 13,500 ADP personnel appears
to foster immobility, duplication of effort,
inadequate career development, and maldis-
tribution of people in relation to the overall
ADP workload.

"This decentralized management of the large
computer installations has made it difficult,
if not impossible, to accurately forecast
overall hardware requirements and develop
and implement a consolidated long-range ADP
plan. Current user requests for large hardware
upgrades in the same geographic areas with
supporting information systems for shipyards,
ordnance stations, NARFs [naval air rework
facilities] and stock point programs cannot be
effectively coordinated under the present de-
centralized management structure to assure
adequate support at minimum cost."

The study group reviewed the Navy-wide organization for
management and use of ADP resources. It cited numerous in-
stances of fragmented responsibility and duplicate effort.
It concluded that consideration should be given to estab-
lishing a new command to be responsible for managing the
ADP program.

In January 1977, the Secretary of the Navy established
the Naval Data Automation Command and made it responsible
for administering and coordinating the Navy nontactical
ADP program. This responsibility included (1) collaborating
with all Navy claimants on ADP matters, (2) developing
policy and procedures, (3) approving systems development
and acquisition/use of ADP equipment and service contracts,

(4) sponsoring improvements in the use of ADP technology, and (5) providing career development and training of ADP personnel.

The new command absorbed the resources of many of the headquarters management staffs. The ADP service centers in the Washington, D.C., area were consolidated and realined, with most of the resources placed under the new command. Also, on a time-phased basis, the new command is to assume management control of five regional data processing service centers.

SCOPE OF REVIEW

Because of the different management approaches and organizational structures involved in the management and control of the Navy's ADP resources, we examined in detail 8 of the 44 MISs currently operated by various offices, commands, and bureaus. We selected these eight MISs for the following reasons.

--The annual cost to operate and maintain them represented almost 30 percent of the fiscal year 1978 ADP program budget.

--Computer program development and operating costs represented approximately 75 percent of the total costs of a system.

--Differing management approaches and organizational structures resulted in the costly duplication of computer programs that supported similar management functions.

--They were used by many different commands and field activities with diverse missions.

--They were centrally maintained.

In addition, we reviewed Department of the Navy regulations and guidelines related to the development, planning for, and management of ADP resources. We also reviewed ADP systems documentation and related functional descriptions for the eight MISs.

The results of our work were discussed with responsible officials throughout the Navy. The sites included in our examination are listed below.

--Office of the Comptroller, Washington, D.C.

6

--Office of Civilian Personnel, Washington, D.C.

--Naval Data Automation Command, Washington, D.C.

--Naval Material Command, Washington, D.C.

--Naval Air Systems Command, Washington, D.C.

--Naval Sea Systems Command, Washington, D.C.

--Naval Facilities Command, Washington, D.C.

--Naval Supply Systems Command, Washington, D.C.

--Naval Supply Center, Norfolk, Virginia.

--Naval Air Station, Norfolk, Virginia.

--Data Processing Service Center, Norfolk, Virginia.

--Naval Air Station, Oceana, Virginia.

--Naval Air Test Center, Patuxent River, Maryland.

--Management Systems Development Directorate,
  Patuxent River, Maryland.

--Central Naval Ordnance Management Information
  Systems Office, Indian Head, Maryland.

--Naval Shipyard, Philadelphia, Pennsylvania.

--Fleet Material Support Office, Mechanicsburg,
  Pennsylvania.

--Naval Avionics Center, Indianapolis, Indiana.

CHAPTER 2

DIFFERENT MANAGEMENT INFORMATION SYSTEMS

SUPPORT SAME MANAGEMENT FUNCTIONS

The Navy spends hundreds of millions of dollars each year to operate and maintain commandwide MISs that support similar management functions. The systems are designed independently by individual commands for use by field activities with similar missions and under jurisdiction of the respective command. Many of the management functions these systems support--accounting, supply, payroll, personnel, and facilities management--are common to most Navy field activities, regardless of mission or command structure.

Other activities that are not users of a commandwide MIS have developed local automated systems to support these same management functions.

The following table illustrates the extent of similarity among the functions performed by the MISs we examined.

| MIS | Management function | | | | |
	Industrial fund accounting	Supply	Personnel	Payroll	Facilities management
Stockpoint		x	x	x	x
Shipboard		x			
Ordnance Station	x	x	x	x	x
Shipyard	x	x	x	x	x
Air Station		x			
Industrial Air Station	x	x		x	
Public Works Center	x	x			x
Construction Battalion		x	x	x	x

The computerized applications of these different MISs are essentially the same. The automated procedures and processes to support the management functions are the same. Much of the data the systems accumulate, process, and store is the same, and a large majority of the management reports the systems produce are the same.

Thus, our work showed that most of the costs incurred to operate and maintain commandwide MISs were attributable to supporting functions common to Navy field activities. The

Navy does not need, nor can it afford the amount of similarity that exists within the MISs it currently operates.

INDUSTRIAL FUND ACCOUNTING SYSTEMS

There are 50 Navy activities whose operations are financed by the Navy Industrial Fund (NIF). The Navy operates and maintains 23 different automated systems to account for NIF financial operations.

NIF activities, such as shipyards, public works centers, and research labs, use working capital funds to finance their operations. Navy "customers" place orders with these activities to have ships overhauled, buildings remodeled, or research projects undertaken. NIF activities use their working capital to pay their employees, buy the needed material, and pay for other costs incurred to complete the work. NIF activities bill customers for completed services and use the cash to replenish their working capital funds.

NIF activities are supposed to operate on a nonprofit basis, therefore, they must have accurate cost accounting systems to record costs incurred against customers' individual work orders. Accurate accounting systems also enhance the budgeting process in that they enable NIF activities to better estimate the cost of doing work and their financial requirements for future periods.

Although the services the NIF activities provide are extremely diverse, the objectives of the cost accounting systems are the same--to record material, labor, and overhead costs against customer work orders.

A schedule of NIF activities and their accounting systems is illustrated on the following page.

We examined system documentation for 5 of the Navy's 23 computerized NIF accounting systems. Four of these were standard commandwide MISs, and the fifth was designed and maintained by a Navy laboratory. These 5 systems were used at 33 of the 50 activities as the following paragraphs illustrate.

All of the systems established computerized work order records upon receipt of customer orders. Work orders are controlled by numbering schemes, and larger orders may be broken down into a series of specific job orders. Job/work order numbers are recorded on employee time and attendance records. When these records are processed, direct labor

costs are charged against the work order. Material requisitions
also contain applicable job/work order numbers to permit ac-
cumulation of material costs against the work order.

Type of Activity	Number	Automated system	
		Standard	Unique
Shipyards	8	1	—
Air rework facilities	6	1	-
Ordnance activities	10	1	1
Public works centers	8	1	—
Research labs and test centers	13	-	13
Publications and printing office	1	-	1
Polaris missile facilities	2	-	2
Military Sealift Command	1	-	1
Naval avionics facility	1	-	1
Total	50	4	19

In four of the systems we examined, general and
administrative overhead costs were allocated among work orders
based on the number of direct labor hours charged. Overhead
expenses incurred by the research lab were not NIF financed.

The systems all contained validation processes that
edited accounting transactions to assure accuracy of the
data and the validity of job/work order numbers. Transactions
that did not pass the validation process were listed on
unallocated cost reports for manual review and error cor-
rection.

All of the systems maintained summary data files of
customer orders, most of which showed the amount and source
of funds authorized by customers, activity cost estimates
to perform the work, and actual costs incurred to date and
charged to the job/work orders.

The four systems that were part of commandwide MISs
had computerized routines that prepared customer bills and
automatically posted accounting transactions to the general

ledger. These functions were not automated as part of the local system maintained by the research laboratory, and comptroller personnel at that activity had to prepare manually customer bills and post to the general ledger.

The five NIF systems we examined produced a wide variety of management reports for use at the activity and command level. While the reports varied considerably in format and level of detail, the basic information contained in many of the reports was essentially the same. For example, all of the systems we examined produced:

--Reports of actual and authorized expenditures by customer order.

--Reports of actual and authorized expenditures by cost center.

--Detailed transaction lists of expenditures allocated to customer orders.

--A summary of the various sources of revenue.

--Lists of valid customer orders against which costs can be allocated.

The Comptroller of the Navy is required to periodically furnish consolidated financial statements to the Department of Defense showing the status and financial position of NIF. This information is accumulated from the various NIF activities. The systems supporting those activities must be able to produce for specified time periods total revenues received, direct costs, production, and general expenses incurred, inventory values onhand, orders received, obligations incurred, profit and loss statements, balance sheets, and summary data showing results of financial operations.

Each of the various types of activities use NIF handbooks which outline detailed procedures to be followed in accounting for NIF funds. These handbooks have been tailored to fit the detailed requirements of the various types of NIF activities. Six such handbooks have been published by the Office of the Comptroller. One Navy official told us that the handbooks were available before the Navy began using computers for NIF accounting, and that the different systems were designed in accordance with the detailed procedures in each handbook. He said that if only one handbook had been available, the Navy probably would have developed only one automated NIF accounting system.

11

In this regard, the Under Secretary of the Navy requested in October 1977 that a study be made to determine the feasibility of having a single automated NIF accounting system for the 13 research and development laboratories. The Under Secretary cited the economies of scale that might be available if the development and maintenance of the accounting system was assigned to a single CDA.

Such a study was made under the auspices of the Deputy Assistant Comptroller of the Navy. In a report issued in July 1978, the study group concluded that it was feasible for a single activity to design and maintain a standard NIF accounting system for use by the 13 laboratories. Preliminary estimates indicated that this approach would make resources in excess of $5 million available to the laboratories for other purposes. The Navy is currently pursuing this course of action.

SUPPLY MANAGEMENT SYSTEMS

All of the commandwide MISs examined provided automated support for supply and related financial management functions. Although the Navy has designated the Stockpoint MIS as its standard supply system, other commands and field activities continue to operate and maintain different automated systems for supply support.

The following schedule summarizes these supply systems by user activity.

MIS	User activities	Number of activities
Stockpoint	Supply centers/depots, air stations, shipyards, air test centers	33
Shipboard	Ships, Marine air groups	82
Ordnance	Ordnance/weapons stations	9
Shipyard	Shipyards	8
Air Station	Operating air stations	10
Industrial Air Station	Air rework facilities	6
Public Works Center	Public works centers	8
Construction Battalion	Construction battalions	3

The Navy manages about 1.7 million secondary line items of supply with an inventory value of $6 billion. About half of the dollar value of this inventory is owned by the Navy stock fund and is centrally managed by two Navy inventory

12

control points. These two inventory points achieve central management by receiving daily transaction reports for the more than 57 local supply activities. The remaining inventory represents items which are (1) centrally managed by another Government agency or military service, (2) stored aboard ships, or (3) purchased from the Navy stock fund by industrially funded activities. This inventory is managed locally by individual supply activities.

Since the Stockpoint MIS was designated as the Navy's standard supply system, we reviewed the documentation for that system. We identified 11 modules or subsystems with automated routines in support of certain basic supply functions. We then reviewed documentation for seven additional systems to determine whether automated support was provided for the same basic functions.

The following chart illustrates the results of our comparison.

Supply Function	Management Information System							
	Stockpoint	Shipboard	Ordnance Station	Shipyard	Air Station	Industrial Air Station	Public Works Center	Construction Battalion
Requisition monitoring	X	X	X	X		X	X	X
Receipt/due in-due out processing	X	X	X	X	X	X	X	X
Demand processing	X	X	X	X	X	X	X	X
Requirements determination	X	X	X	X	X	X	X	X
Financial inventory control	X	X	X	X	X	X	X	X
Stores accounting	X				X			X
Transaction item reporting	X		X		X			X
Physical inventory	X	X	X	X	X	X	X	X
Excess/disposal	X	X	X	X	X	X	X	X
Master file maintenance	X	X	X	X	X	X	X	X
Repairable item management	X	X						

13

The data needed to perform these basic supply functions was essentially the same. Likewise, the information needed to manage supply operations was essentially the same. We found that basically the same data was accumulated and stored in the systems' computerized files. The data identified and described the item and classified it by various management categories. It showed item peculiarities such as shelf-life or hazardous material and physical storage locations. Considerable quantitative data was stored showing quantities onhand, due-in, backordered, and issued and their planned requirements and reorder points. Unit prices and dollar values of line items were also stored. While the computerized files of the larger systems generally contained more detailed data, essential information was the same in all the systems.

Like NIF accounting, the management reports produced by the different supply systems varied widely in format and level of detail; however, the basic management information was comparable. For example, all of the systems produced reports showing

--values of inventory onhand at the supply activity,

--various standard effectiveness rates to measure supply performance,

--summary results of physical inventories,

--detailed transaction listings processed against master files, and

--potential excess item lists.

The primary differences we identified among the supply systems were (1) the computers used to run the systems, (2) the way the systems were designed, and (3) the degree to which supply functions had been automated. For example, the eight supply systems we examined operated on six different makes and/or models of computer hardware. File structures and sizes, record formats, and storage media varied considerably because of the way the systems were designed. Some systems were more highly automated than others.

One field activity we visited did not use any of the commandwide MISs, but it had developed a local automated supply system. The supply officer said the system was "outdated," the information was inaccurate and untimely, and because many supply functions had never been automated, it required a great deal of manual processing. This activity was planning to bring in the Stockpoint MIS.

14

However, these differences are not significant and represent the conditions that occur when systems are designed independently of the information needs of functional managers on a Navy-wide basis. It does not appear reasonable for one supply officer to use an independently (locally) developed system which is "outdated," produces inaccurate and untimely data, and is cumbersome to use because many of the processing procedures have not been automated and are performed manually. These are the conditions that can be eliminated by the design and development of standard or uniform management information systems that give recognition to the information needs of functional managers on a Navy-wide basis, as opposed to a commandwide basis. In addition, the exclusive use of computers in support of each commandwide MIS makes it difficult, if not impossible, for the Navy to effectively plan for and coordinate its future computer requirements on a Navy-wide basis.

In our opinion, the differences we identified among the systems could be reconciled by defining functional information requirements and planning for hardware acquisitions on a Navy-wide, rather than a commandwide basis.

COMMONALITY OF OTHER MANAGEMENT FUNCTIONS

There were no essential differences among the payroll and personnel applications in the MISs we examined. The Navy is aware of this similarity and has been directed by higher authorities to take corrective action. Efforts are currently underway to develop standard, Navy-wide systems to support these functions. These development efforts are not without problems, however, and they need strong central co-ordination.

Navy-wide personnel/payroll systems

The Bureau of Naval Personnel has under development an automated system to support centralized management of all elements of manpower and personnel--active, reserve, civilian, and contractor. The system envisions colocation of 3,500 military personnel offices and 500 disbursing offices into 100 pay/personnel sites. These sites will be supported by a series of minicomputers, coupled with a central host computer site and remote terminals through a worldwide telecommunications network. The system is supposed to be largely operational by 1983, and it will cost an estimated $130 million.

This effort was undertaken after the Senate Committee on Armed Services and the Defense Manpower Commission were

critical of Navy manpower management practices. For example,
in Senate report 94-878 (May 14, 1976), the Senate Committee
on Armed Services stated:

> "* * * Navy manpower and personnel management
> appears to be fragmented * * * Different offices
> are responsible for planning, developing require-
> ments, training, and managing the allocation and
> assignment of military, civilian, and reserve
> manpower. The result is a piecemeal approach
> to manpower issues."

The Defense Manpower Commission expressed similar criticisms.

At the request of the House Committee on Government
Operations, we reviewed the Navy's developmental effort for
this new system. We reported in September 1978, 1/ that if
the system were to meet its objectives, basic deficiencies
regarding the management approach, the acquisition of computer
equipment, and the design selected for the field reporting
system needed to be corrected. We also reported that concur-
rent with this effort, the Naval Education and Training
Command and the Naval Bureau of Medicine had efforts underway
to develop automated personnel systems to meet their own man-
agement requirements.

Also, for the past 2 years, the Office of Civilian
Personnel has been exporting a standard system to civilian
personnel offices at field activities throughout the country.
At the time of our September 1978 review, the system was being
operated on a commercial time-sharing service, and the Navy
planned to have it fully operational at 188 civilian personnel
offices by 1984.

A task force, under the auspices of the Office of the
Comptroller, is currently defining functional requirements
for a standard Navy-wide civilian payroll system. This study
is the result of the Department of Defense directing the Navy
in 1975 to standardize its civilian payroll systems to effect
the economies of operation and maintenance of a single system.

Officials of the Data Automation Command informed us
that these efforts to standardize Navy-wide pay/personnel
systems would be coordinated.

1/"The Navy's Advanced Information System--A Personnel
  Management Information System for the 1980-1990s,"
  (LCD-78-122).

Facilities management applications

Five of the MISs we reviewed contained some type of an automated application to schedule and/or record the cost of maintaining buildings, equipment, military housing, vehicles, utilities, etc. The cost reports, for the most part, were by-products of MIS cost accounting applications. We found, however, that the Office of the Comptroller was requiring every Navy field activity to submit periodic reports showing the cost incurred for utilities and maintenance of buildings, equipment, military housing, and vehicles.

For ease of compilation, the Office of the Comptroller has prescribed standard formats for each of the various reports. We believe it would be more efficient if these standard reports were produced by standard cost accounting systems.

CONCLUSIONS

We do not believe that the Navy needs separate management information systems for each of its major commands. Initial design of these systems began 15 to 20 years ago. Since that time, they have been redesigned, enlarged, and made more sophisticated to the point where they now support virtually every function performed by the activities that use the systems. Many of these functions, however, are common to most Navy field activities.

We do not believe, for example, that separate automated supply systems are needed for each type of activity that performs a supply function. The information a supply officer at a shipyard needs is much the same as that a supply officer at an aircraft rework facility needs. We acknowledge that the repair parts these activities use may be different, but the information they need to manage and control the parts is the same.

We believe that the information these activities require to manage any function common to more than one type of field activity should be defined on a Navy-wide basis. Until this is done, MISs supporting the same functions will continue to be designed differently, and it will be very difficult for the Navy to acquire compatible hardware to support the systems.

CHAPTER 3

INADEQUATE RESOURCES TO MAINTAIN

SIMILAR MANAGEMENT INFORMATION SYSTEMS

The Navy does not have adequate technical resources to maintain the numerous MISs it operates. About 3,400 systems analysts and computer programmers are spread throughout the various offices, commands, and bureaus to support 44 MISs. In addition, almost $40 million was budgeted in fiscal year 1978 for contractor support in software development.

CDAs responsible for maintaining commandwide MISs have huge backlogs of user requests for system improvements. CDA officials informed us that resources were not available to satisfy all of the requests. When changes in accounting, supply, or payroll procedures are mandated by a higher author-ity, these scarce resources are used to implement the same change in each automated system.

Currently, the Navy is formulating plans that call for the complete redesign of two major MISs in our review. Many of the management functions these systems support are similar. The two CDAs responsible for these systems will have to rely on contractor support to accomplish some of the redesign effort. These efforts are being pursued independently because the MISs have supported historically functional requirements of separate commands.

The establishment of the Data Automation Command is a step in the right direction to better control and use ADP resources. We are concerned, however, that the new command cannot be completely effective until the Navy resolves a central issue that has plagued management of the ADP program since its inception; that is, whether ADP resources should be organized to support separate commands or functional programs.

CENTRAL DESIGN ACTIVITIES'
WORKLOAD AND STAFFING

As the following table illustrates, four of the five major commands of the Naval Material Command have CDAs which are responsible for maintaining designated command-wide MISs.

CDA	MIS

Naval Air Systems Command/
  Management Systems   Industrial Air Station
  Development Directorate   Operating Air Station (note a)

Naval Facilities Command/   Public Works Center
  Facilities Systems Office   Construction Battalion

Naval Sea Systems Command/
  Computer Application Support
  and Development Office   Shipyard

  Central Naval Ordnance
  Management Information
  System Office   Ordnance Station

Naval Supply Systems Command/ Inventory Control Point
  Fleet Material Support   Stockpoint
  Office   Shipboard (note a)

a/Responsibility for maintenance of these systems has been
  transferred recently. (See pp. 22 and 24.)

     CDAs follow the same general procedures in satisfying user
requests for system changes and enhancements. Periodic meet-
ings are held with representatives of user activities to dis-
cuss and define system changes. Requests for changes are given
priority either by user activities or parent commands. Portions
of the CDAs' analyst/programmer time are set aside to complete
work already in progress and to make mandatory changes which a
higher authority has directed. The remaining time available
is allocated to the list of new change requests. This repre-
sents the CDA workload for the ensuing period. Change requests
for which resources are not available represent CDA backlogs
of work. Officials of three CDAs said that it would require
approximately 1 to 2 years of total resource effort to complete
this backlogged work.

     In April 1975, 1/ and again in December 1978, 2/ we
reported that standard MISs in the Navy were standard in
name only, and that user activities modified the systems or

1/"Ways to Improve Management of Automated Data Processing
  Resources--Department of the Navy" (LCD-74-110, Apr. 16,
  1975).

2/Letter report to the Secretary of the Navy (LCD-78-107,
  Dec. 1, 1978).

developed local computer programs for use in lieu of
standard systems. One reason cited for this condition
was that standard systems did not meet the needs of user
activities.

We believe one reason that CDAs cannot keep standard
systems current with user needs is because too many of the
resources are devoted to making the same changes in similar
systems.

MAINTENANCE OF SIMILAR
SYSTEMS IS COSTLY

The maintenance of similar commandwide MISs results
in inefficient use of scarce resources. Numerous changes
in functional procedures are directed each year by higher
authorities. These changes can require considerable time
and the expenditure of large amounts of resources to in-
corporate them into computerized systems. When the same
procedural change must be incorporated into similar systems,
unnecessary expenditure of resources occurs.

For example, in 1976 the Navy directed that all
industrially funded activities adopt the use of predetermined
rates for billing customers. The rates were to be expressed
as costs per hour, per day, unit of output, etc., and were
intended to enable customers of NIF activities to more accu-
rately budget for work. The Navy directed that this change
be implemented in phases beginning in fiscal year 1976.

The CDA that maintains the Ordnance Station MIS spent
12.1 staff-years--or an estimated $176,000--to incorporate
this mandatory change into the automated NIF accounting
system. The responsible CDA for Shipyard MIS spent 3.4
staff-years--or an estimated $76,000--to incorporate the
same change into its NIF accounting system..

Officials of the responsible CDA for the Industrial
Air Station MIS informed us that the computer programs that
needed to be revised to effect the mandatory change were
not part of the standard MIS. They said that changes needed
to incorporate predetermined billing rates were made by local
analysts and programmers at each of the six rework facilities,
and that we would have to determine the amount of resources
expended at each individual activity. We did not attempt
to determine the cost incurred to incorporate this same
revision into the other 19 automated NIF accounting systems
the Navy operates and maintains. It is apparent that the
costs incurred by CDAs to incorporate the same change into

different automated systems results in the inefficient
and costly use of resources to maintain similar systems.

REDESIGN EFFORTS REQUIRE
CONTRACTOR SUPPORT

The Shipyard and Industrial Air Station--two of the
MISs included in our review--cost $17,681,000 and $19,661,000,
respectively, to operate and maintain in fiscal year 1978.
These are extremely large and complex systems that support
depot level maintenance for ships and aircraft. Both systems
contain automated applications for supply management, indus-
trial fund accounting, payroll, and other similar maintenance
functions.

At the time of our review, efforts were underway to
completely redefine the information requirements of functional
managers at both the shipyards and aircraft rework facilities.
This is the first phase of the developmental process for
automated MISs.

The shipyards began this effort in 1975. After 3 years
and an expenditure of $2.7 million in personnel and travel
costs, a plan for the complete redesign of Shipyard MIS was
undergoing review through the Navy approval process. Func-
tional managers of the air rework facilities had been meeting
periodically for about a year, and they had not completed
defining functional requirements.

Officials involved in both of these projects informed
us that CDAs responsible for these systems did not have
sufficient resources to accomplish the redesign, and would
have to rely on contractor support. One official said
that the existing plan for redesign of Shipyard MIS repre-
sented a detailed description of functional information
requirements and a general overview of the ADP system
design. He said that systems analysts of the Sea Systems
Command will need contractor support in converting the
general ADP system design into detailed design specifications,
and they will have to rely totally on contractor support to
develop computer programs. Preliminary estimates of the
costs to design, program, test, and implement the new
Shipyard MIS are $30 million.

In view of the cost of this effort and the fact that
the air rework facilities have a similar effort underway,
we believe there is an opportunity for significant savings
if the common information requirements of functional managers
at these different types of activities can be satisfied
jointly.

RECENT CHANGES HAVE NOT
ELIMINATED DUPLICATE SUPPORT

In the past 2 years the Navy has reassigned responsibility for a number of MISs among its various CDAs. Studies are currently being conducted which may result in further realinement. These actions are being taken, however, without any apparent central direction, and they adversely affect the Navy ADP program.

For example, the Supply Systems Command CDA has historically supported the supply and non-NIF accounting system the many shore based activities use, and the Shipboard MIS that performs these functions for the fleet.

In 1977, responsibility for maintaining the Operating Air Station MIS was transferred from the Air Systems Command CDA to the Supply Systems Command CDA. The transfer was based on an Inspector General report which pointed out that the Air Command CDA did not have adequate resources or expertise to support the supply and financial systems used by the air stations, and the support being provided duplicated the supply and financial support provided other Navy activities by the Supply Command CDA.

In May 1978, the Supply Command CDA was given responsibility for designing and developing a new system to support operational and intermediate level maintenance at shore-based fleet activities, including operating air stations.

The Naval Material Command established a new CDA in October 1978 to support the information requirements of the fleet and affiliated shore activities. Responsibility for the supply and financial management of systems used by the fleet, along with the analysts and programmer personnel, was transferred from the Supply Command CDA to the new Material Command CDA.

Also, design and development of the operational and intermediate level maintenance system for shipboard use will be the responsibility of the newly established Material Command CDA. These actions will result in duplicating the same systems support that the Inspector General reported in 1977. The Material Command CDA will support the maintenance, supply and financial management systems for shipboard use, while the Supply Command (a suborganizational element of the Material Command) will support the same systems for shore activities.

The study conducted in 1978 by the Deputy Assistant Comptroller of the Navy recommended that the Supply Command

CDA be given responsibility for a standard NIF accounting system for research and development laboratories. It is significant to note that the Supply Command has no functional responsibility for NIF accounting, and its CDA does not maintain any NIF accounting systems. The shipyards, air rework facilities, and ordnance stations are among the largest industrially funded activities in the Navy. These activities are under the jurisdiction of the Air Systems Command and the Sea Systems Command. CDAs that support these activities all maintain MISs which include large automated NIF accounting applications.

Assignment of NIF accounting system support for research and development laboratories to the Supply Command CDA duplicates support being provided by other CDAs.

Organizational realinements and changes in missions and responsibilities of this magnitude are usually disruptive to the day-to-day operations of any organization. When employees who are affected by these changes do not fully understand the reasoning behind them, the disruption and trauma are even greater.

Data processing professionals--both military and civilian--from numerous commands and bureaus expressed to us a general feeling of frustration and dismay over these various reorganizations and realinements and the unwillingness of these commands and bureaus to work together cooperatively.

ADP SUPPORT FOR THE OPERATING FORCES

In its ADP reorganization study of 1976, the Navy highlighted the lack of a single coordinated ADP program to support the information requirements of the Operating Forces. The study identified 11 commands, bureaus, and offices that placed information requirements upon the fleets and affiliated shore-based activities. Information systems support was being provided by five different system design activities.

A number of efforts were underway at the time of the study to improve the fleet's ADP capability. The efforts included plans to

- --replace existing shipboard hardware and acquire new compatible hardware for smaller ships and shore-based activities;

--design, program, and implement a new computerized
   information system to support aircraft maintenance
   programs for shipboard and shore activity use;

--redesign the Shipboard MIS for supply and financial
   management;

--provide source data automation equipment for about
   300 smaller ships; and

--establish shore-based maintenance activities for surface
   ships which would require compatible hardware and soft-
   ware in support of supply and maintenance functions.

The study pointed out that the decentralized and
uncoordinated approach of providing ADP support had resulted
in an unsatisfactory readiness posture for the fleet.
Further, the study noted that the current efforts to improve
this posture addressed information requirements of almost 500
Navy activities afloat and ashore and could cost about $500
million. The study recommended establishment of a single
office to coordinate the various command and bureau infor-
mation requirements being placed on the fleet. It further
recommended that the resources of seven different ADP
support activities be consolidated into a single CDA under
the command of the recently established Regional Data
Center in Norfolk, Virginia.

Acting on this recommendation, the Chief of Naval
Operations in July 1978 established the Fleet Non-tactical
ADP Policy Council of senior level managers to establish
policy, provide centralized direction, reconcile conflicting
demands, and assure a proper balance between shipboard and
shore-based information systems requirements. Also, the
Chief directed that the Fleet Technical Support Department
be established within the Regional Data Center, Norfolk,
Virginia.

In October 1978, the Chief of Naval Material established
the Navy Maintenance and Supply Systems Office--also in
Norfolk, Virginia--by consolidating the resources of four
ADP support units. Some of the functions assigned these
new ADP support offices were as follows:

Data Automation Command Technical Support Department	Naval Material Command Maintenance and Supply Systems Office
1. Act as a central coordinating point with vendors of software products to develop, maintain, and distribute system software including operating systems, compilers, file and data base management systems, and utility programs. Develop and maintain all system software not provided by vendors.	1. Design, develop, integrate, implement, and maintain fleet maintenance, supply, and financial management systems.
2. Prepare and publish technical standards for the development of computer programs.	2. Develop and maintain standard automated system design and procedures for systems installed in the fleet.
3. Provide training and assistance relative to computer equipment operations and system software utilization.	3. Train and assist fleet users in the use and operation of fleet installed maintenance, supply, and financial information and data processing systems.
4. Monitor the configuration and utilization of computer equipment and software to allow timely planning for increased capacity.	4. Evaluate the performance of automated systems and procedures and make recommendations for policy changes and hardware requirements.
5. Test all application software and its revisions for technical compatibility with Navy standards and system constraints.	5. Perform detailed analysis, programming, program testing, and system testing for implementation and maintenance of standard fleet systems.
6. Act as a single point of contact for fleet units to get assistance in resolving computer equipment, system software, or application software discrepancies.	6. Plan and schedule training and provide on-site assistance in support of fleet units including system pre-conversion, conversion, post conversion, and follow-on assistance as required.

We believe there are inherent conflicts in the respective missions of these organizations and, because of the similarity of tasks to be performed, they will have to compete with one another to acquire and retain scarce technical resources. Further, the Material Command CDA will be responsible for supply, financial, and maintenance systems for shipboard use, while the Supply Command CDA will maintain these same systems for shore-based activities.

We do not believe such an arrangement is in the best interest of the Operating Forces.

CONCLUSIONS

The Navy does not have sufficient ADP resources to effectively support the information requirements of functional managers in each separate command and bureau. Qualified systems analysts and computer programmers are a scarce and expensive resource. Application of these resources to perform duplicate functions is inefficient and wasteful.

CDAs that maintain commandwide MISs do not have adequate resources to keep these systems current with user needs. When these systems need complete redesign, the Navy has to rely on contractor support.

The Data Automation Command is relatively new, and it is too early to tell how effective it will be in resolving Navy ADP problems. However, management actions taken to realine ADP support functions since the establishment of the new command had not completely resolved the problem of duplicate support.

AGENCY COMMENTS AND OUR EVALUATION

We discussed the contents of this report with responsible officials from the Office of the Chief of Naval Operations, Assistant Secretary of the Navy (Financial Management), Naval Data Automation Command, and Navy Material Command. We obtained their comments which have been included in the report where appropriate. The Navy agreed that greater use should be made of standard systems for similar functions. Actions cited as being taken to further standardization included

--the reorganization of the ADP Management Steering Committee to include substantially greater participation of functional users,

--the establishment of an ADP Planning Subcommittee
tasked with identifying Navy-wide sponsors for
functional areas and defining information require-
ments for functional managers, and

--the initiation of an ADP planning effort to set
objectives and establish a framework for the imple-
mentation of standard Navy-wide MISs on a functional
level.

In our draft report, we recommended that the Secretary
of the Navy direct functional managers to reorganize CDAs so
that a single activity would be responsible for a single
functional area on a Navy-wide basis. The Navy did not believe
that organizational changes were necessary to accomplish Navy-
wide standardization, and suggested realining portions of the
workload among existing CDAs as an alternative.

We support realining CDA workloads so long as it
effectively eliminates the duplicate support being provided
by Navy CDAs.

RECOMMENDATIONS

We recommend that the Secretary of the Navy direct:

--The Naval Data Automation Command, in conjunction
with the offices, commands, and bureaus--the
functional managers--to identify the common func-
tions which are incorporated into the 44 MISs the
Navy currently operates.

--The Naval Data Automation Command, in conjunction
with the functional managers, to define infor-
mation requirements on a Navy-wide basis.

--The Naval Data Automation Command, in conjunction
with the Assistant Secretary of the Navy (Financial
Management) and the functional managers, to develop
a long-range ADP plan that provides for the phased
design, development, implementation, and operation
of standard or uniform MISs that provide functional
managers the information they need to accomplish
assigned missions and conduct day-to-day operations.
The plan should provide for the efficient, effec-
tive, and economical organization and use of current
and planned ADP resources on a functional rather
than commandwide basis.

27

--The functional managers to realine the workloads
  of CDAs so that a single activity will be
  responsible for a single functional area--supply,
 accounting, etc.--on a Navy-wide basis.

Properly prepared, the long-range plan should be directed
toward eliminating the duplication in functional areas that
now exists in the Navy's MISs. Although there may be a need
for some offices, commands, or bureaus to retain dedicated
analysts and programmers to support peculiar or other mission
essential functions, these resources should not be allowed
to duplicate services provided by functionally alined CDAs.

SCHEDULE OF MANAGEMENT INFORMATION SYSTEMS
DEPARTMENT OF THE NAVY
Number of User Activities/Installations by Major Office, Command, Bureau

Navy Management Information Systems [1/]	Bureau of Personnel	Naval Reserve Command	Education & Training Command	Telecommunications Command	Atlantic Fleet	Pacific Fleet	Electronics Command	Chief Naval Operations	Facilities Command	Military Sealift Command	Naval Forces, Europe	Supply Command	Office of Oceanographer	Intelligence Command	Director Naval Laboratories	Office Naval Research	Strategics Systems Offices	Sea Systems Command	Air Systems Command	Bureau of Medicine	Office of Comptroller	Office of Civilian Personnel	Total No. Activities/ Installations	Operation & Maintenance Cost - FY 1978 (000 Omitted)
1. Navy Manpower/Personnel MIS	4																						4	$29,722
2. MIS for Personnel Stations	2																						2	209
3. Navy Recruiting Data System	1																						1	1,852
4. Naval Reserve Command MIS		16																					16	2,868
5. MIS for Education and Training Command			13																				13	16,939
6. Automated Communications Processing System				1				1															2	398
7. MIS for Fleet Staffs					16	7	1	1															25	10,322
8. Anti-Submarine Warfare Command & Control					2	1	1																4	4,367
9. Worldwide Military Command & Control					3	5	1	1		1	1												12	19,998
10. Atlantic Fleet Support Stations					1																		1	96
11. MIS for European Stations											4												4	1,471
12. Shipboard MIS					44	38		3				1											86	22,342
13. Navy Environmental Data Network													7										7	6,060
14. Naval Observatory System													1										1	470
15. Oceanographic Information System													1										1	3,664
16. Ocean Surveillance Information System					1	1					1												3	4,885
17. Intelligence Data Handling System					3	3								2									8	28,890
18. Laboratory Support System															9	5							14	48,341
19. Strategics Systems Information Support								1				2					3						6	7,258
20. Supply Command Stations Support System												5											5	-0-
21. MIS for Stockpoints			1		3	4						13											21	25,720
22. MIS for Inventory Control Points												10											10	29,257
23. Sealift Information System										4													4	2,197
24. MIS for Shipyards																		10					10	17,661
25. MIS for Industrial Air Stations			1		2	2													7				12	19,661
26. MIS for Operating Air Stations			1		10	12													2				25	16,863
27. International Logistics Data System												3											3	-0-
28. Navy Safety System								1															1	1,196
29. Chief, Naval Operations Command MIS								2															2	5,803
30. Chief, Naval Operations Stations MIS								17															17	26,836
31. MIS for Naval Investigations														1									1	93
32. Navy Medical Information System																				38			38	6,554
33. Navy Finance Information System					1						2	2									16		21	12,209
34. Joint Uniform Military Pay System																					1		1	5,938
35. MIS for Ordnance Activities																		12					12	18,437
36. Small Arms Serial Number Control System																		1					1	101
37. Conventional Ammunition Integrated MIS											1												1	1,148
38. Sea Systems Command Support System																		22					22	22,667
39. Material Support System								1			2												3	12,312
40. Electronics Command Support Systems							11																11	5,933
41. Facilities Command Support Systems									21														21	12,101
42. MIS for Fleet Stations					8	40																	48	7,200
43. Civilian Manpower MIS																						1	1	2,193
44. Air Logistics Support Systems																			21				21	18,816
																							522	$481,068

1/ Many of the MISs have been established for budget purposes only, to accumulate ADP costs incurred by similar activities or in support of common functions. They are not standard operating MISs.
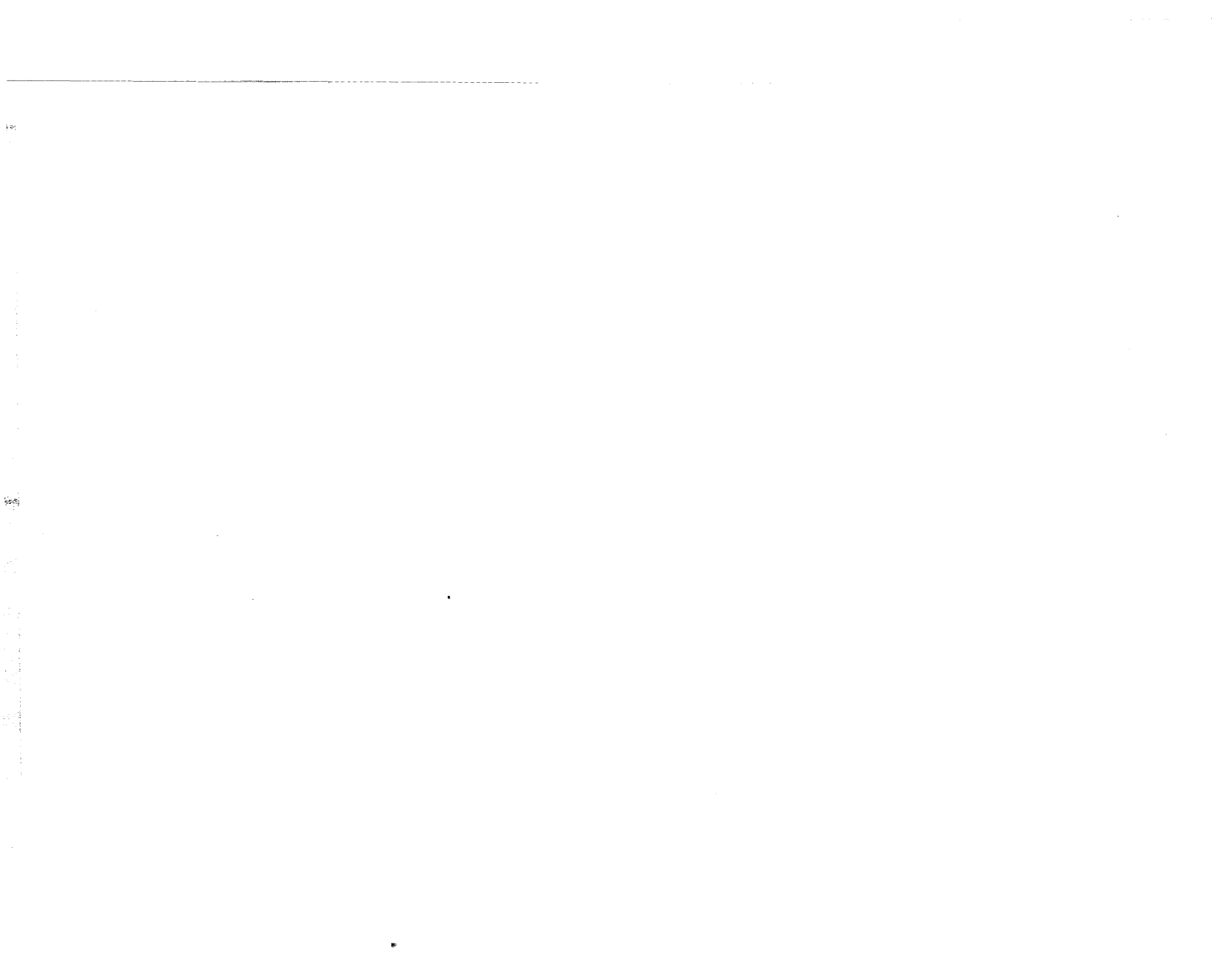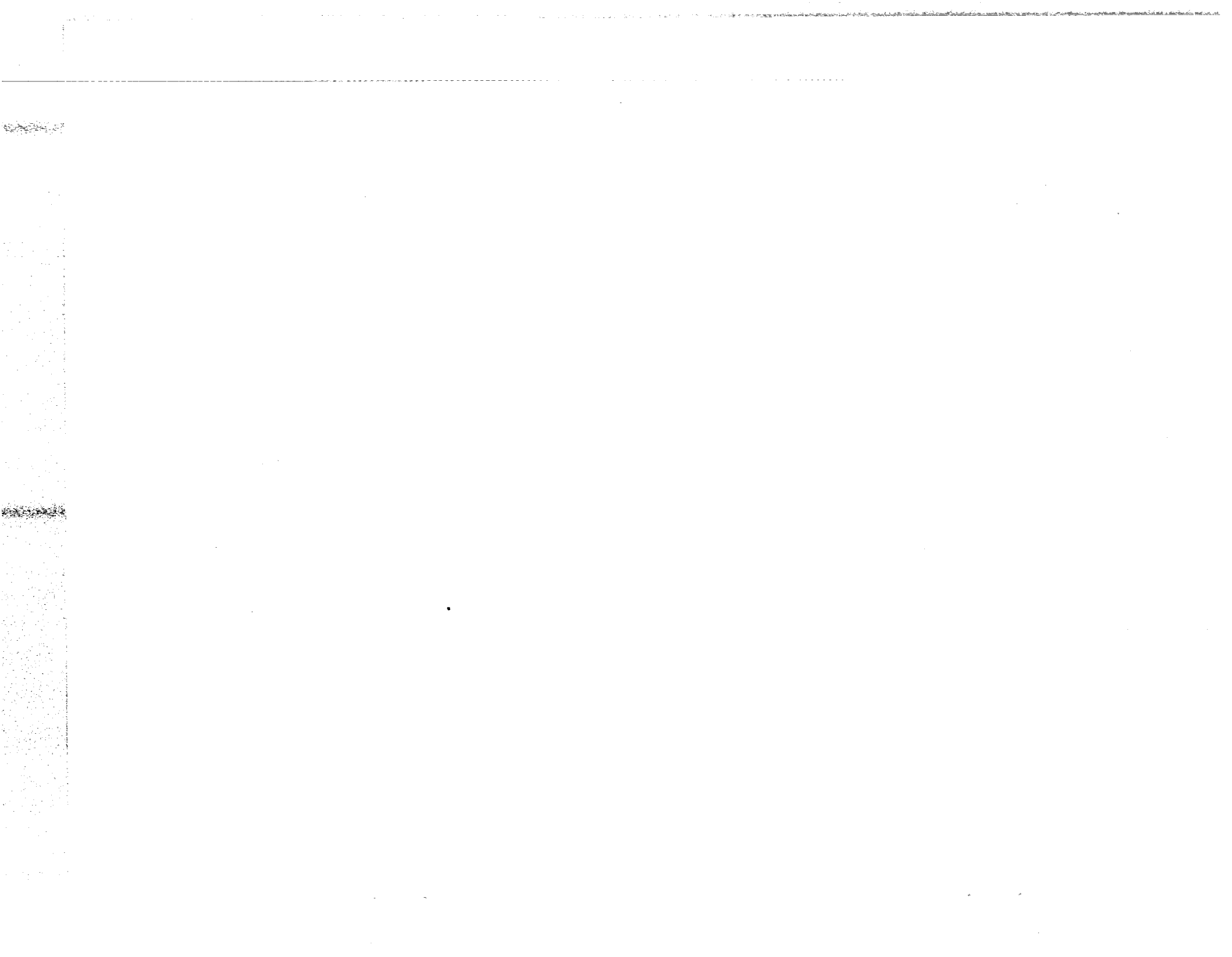
ALLOCATION OF FISCAL YEAR 1978 ADP PROGRAM BUDGET

		Fiscal year 1978	
		Amount (millions)	Percentage
Staff offices:			
Office of the Comptroller	$11.1		
Office of Naval Research	8.0		
Office of Civilian Personnel	1.9	$ 21.0	4.4
Chief of Naval Operations (note a)		78.6	16.3
Operating Forces:			
Atlantic Fleet (note a)	24.5		
Pacific Fleet (note a)	31.8		
Naval Forces, Europe	2.9		
Sealift Command	2.2	61.4	12.8
Naval Material Command:			
Air Systems Command	42.2		
Sea Systems Command	62.6		
Electronics Command	16.2		
Supply Systems Command	53.5		
Facilities Command	12.1		
Strategic System Support Offices	2.7		
Naval Laboratories	40.3	229.6	47.7
Education and Training Command (note a)		19.9	4.1
Naval Reserve Command		2.9	.6
Naval Intelligence Command		20.7	4.3
Telecommunications Command		.4	.1
Office of Oceanographer		7.8	1.6
Bureau of Naval Personnel		32.3	6.7
Bureau of Medicine and Surgery		6.5	1.4
Total		$481.1	100.0

a/At the time of our review, resources were being transferred
  from the Atlantic Fleet, Pacific Fleet, and the Education
  and Training Command to the Chief of Naval Operations.

(941147)

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