

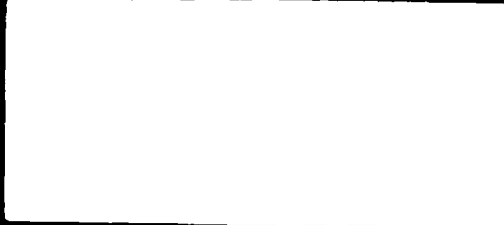


General Systems Group, Inc.

51 Main Street  
Salem, New Hampshire 03079

AD A 096107

LEVEL II (2)



DRG FILE COPY

EXHIBIT STATEMENT A  
Approved for public release;  
Distribution Unlimited

81 1 16 037

**LEVEL II**

②

REVIEW OF THE OPNAV TOTAL FORCE  
INFORMATION SYSTEMS MANAGEMENT DIVISION  
(OP-16) AND THE NAVY MILITARY PERSONNEL  
COMMAND TOTAL FORCE AUTOMATED SYSTEMS  
DEPARTMENT (NMPC-16)  
Contract #N0014-80-C-0218  
Final Report  
CDRL #A003

DTIC  
ELECTE  
MAR 09 1981

DISSEMINATION STATEMENT A  
Approved for release:

REPORT DOCUMENTATION PAGE			READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER GSG 001Z	2. GOVT ACCESSION NO. AD-A096 107	3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) Review of the OPNAV Total Force Information Systems Management Division (OP-16) and the Navy Military Personnel Command Total Force Automated Systems Department (NMPC-16)		5. TYPE OF REPORT & PERIOD COVERED Final 10/15/79-9/30/80	
7. AUTHOR(s) General Systems Group		8. CONTRACT OR GRANT NUMBER(s) N00014-80-C-0218	
9. PERFORMING ORGANIZATION NAME AND ADDRESS General Systems Group, Inc. 51 Main Street Salem, N.H. 03079		10. PROGRAM ELEMENT PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS Office of Naval Research 800 No. Quincy Street Arlington, Va. 22217		12. REPORT DATE 11/30/80	13. NUMBER OF PAGES 21
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) DCASMA - Boston 666 Summer Street Boston, Mass. 02210		15. SECURITY CLASS. (of this report) Unclassified	
16. DECLASSIFICATION STATEMENT (if different from GPO SCHEDULE) N/A			
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p><b>DISSEMINATION STATEMENT A</b>            Approved for public release;            Distribution Unlimited</p> </div>			
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Rep. 10)			
18. SUPPLEMENTARY NOTES N/A			
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) 1) OP-16      3) Deputy Chief of Naval Operations 2) OP-01      4) Total Force Information Systems			
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The development and implementation of a long range strategic plan for the Deputy Chief of Naval Operations (OP-16) was preceded by acceptance of the proposition that current computer science ideas concerning top-down approaches to requirements definition and layered systems architecture should be reflected in the organizational structures performing the work. Implementation was accomplished by specifically addressing OP-16 specific tasking with planning, development, and direction of Total Force Information Systems for OP-01 and its field commands. Organizational structures with			

411 664

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

7 specific functions were addressed for the design and integrity of the overall systems plan. Long range information systems development; development and maintenance of generalized core software for host and distributed OP-01 computer support of Total Force applications; coordination and integration of ADP modelling functions to facilitate the design, development and implementation of modelling efforts; planning for and managing development, enhancement, and maintenance of ADP applications were supporting and including the development of a high level management standards manual. /

Unclassified

2

REVIEW OF THE OPNAV TOTAL FORCE  
 INFORMATION SYSTEMS MANAGEMENT DIVISION (OP-16)  
 AND THE NAVY MILITARY PERSONNEL COMMAND  
 TOTAL FORCE AUTOMATED SYSTEMS DEPARTMENT (NMPC-16).

9 Final Report, 1-61471-3754 & P.

CDRL #A003

⑩ 11/11/80

Prepared For 102

OP-01  
 Department of the Navy

⑭ GSG-90121

Under  
 Contract #N0014-80-C-0218

N0014-80-C-0218

By

GENERAL SYSTEMS GROUP, INC.

November 30, 1980

51 Main Street  
 Salem, N.H. 03079  
 Tel. (603)893-1000  
 TWX (710)366-0508  
 Telecopier (603)893-4723

1700 No. Moore Street  
 Suite 800  
 Rosslyn, Va. 22209  
 Tel. (703)524-7242  
 Telecopier (703)524-0720

Accession For	
NTIS GSA/1	<input checked="" type="checkbox"/>
DSIC TAP	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<input type="checkbox"/>
<i>Letter on File</i>	
By _____	
Distribution/	
Availability Codes	
Dist _____ or	
Dist _____	Special _____
<b>A</b>	

TABLE OF CONTENTS

	<u>Page</u>
1.0 Introduction	1
2.0 Background	2
3.0 Work Accomplished	3
3.1 System Architecture Plan	3
3.2 Job Cost Accounting	5
3.3 CORE Software System	6
3.4 Distributed Processing	8
3.5 Operational Functions and Staffing	11
3.6 Facilities Management Function	12
3.7 Data Center Planning	14
3.8 Procurement Strategies	15
3.9 Senior Technical and Expert Support	17
4.0 Summary of Items Delivered	18

1.0 Introduction

This report summarizes the work accomplished by G.S.G. as defined in our proposal No. 3067 dated October 15, 1979. Although the work was planned to be accomplished during the period October, 1979, through September, 1980, a start date was not forthcoming until January 1, 1980, under ONR contract #N0014-80-C-0218. A small level of effort was accomplished for Task 9 (Senior Technical and Expert Support) during the period October through December, 1979, under separate contract from ONR. In addition support of the NACMIS project was provided under a separate contract to assist in the planning for conversion of Air Force Civilian Personnel software in San Antonio, Texas, for prototype demonstration in Washington, D.C.

2.0 Background

The G.S.G. contract was designed to support a number of functional areas and levels of the OP-16 and NMPC-16 organizations. Work products were produced over the life of the contract for the functional areas listed below. These products are explained in greater detail in section 3.0 and are listed in section 4.0 of this report. The OP-16 and NMPC-16 personnel listed were the principal points of contact and delivery of the products were made to these individuals.

<u>Organization Code</u>	<u>Title</u>	<u>Personnel</u>
OP-16	Director, Total Force Information Systems Management Division	Mr. Bob Lehto
OP-16B	Deputy Director	CAPT. Gruendl
OP-160	Systems Architecture Branch	Dr. Earl Chavis LCDR J. Kramer Mrs. A. Hook
OP-161	Information Systems Plans and Policy Branch	Mr. J. Hanley CAPT. Stevenson
OP-167	Data Resource Management Branch	CAPT. Acosta
NMPC-16	Total Force Automated Systems Department	Mr. Bob Lehto
NMPC-16B	Deputy Director	CAPT. Gruendl Mr. D. Skeen
NMPC-16F	Utilization & Quality Control Branch	LCDR Simpson
NMPC-163	CORE Software Systems Division	CDR Abrams
NMPC-164	Decision Support Systems Division	CDR Buckley
NMPC-165	Management Information Systems Division	Ms. L. Smith
NMPC-1654	Field Applications Branch	Mr. B. Banks
NMPC-166	ADP Facilities Management Division	CDR D. Baker

### 3.0 Work Accomplished

#### 3.1 System Architecture Plan

Task 1 of the proposal and the contract called for G.S.G. to provide expert technical support to OP-160 in the first production of an integrated System Architecture Plan for OP-01 and its field organizations. Because of the changing organizational goals and the integration of the Architecture Plan publishing dates with other OP-16 and NMPC-16 planning documents, several iterations of G.S.G. efforts were necessary until a satisfactory draft was delivered in June, 1980. Several months of internal changes and coordination were made by the organizations concerned until the plan was published in the Fall of 1980. G.S.G.'s efforts for the plan is outlined below:

- a. Preliminary work on identification of the critical technological changes to be proposed for the Architecture Plan, including the tradeoffs imposed by personnel, funding, and time constraints over the next two years, culminated in a formal briefing by Dr. Gagliardi to Bob Lehto and his program managers on February 27, 1980.
- b. Successive work included several drafts of outlines and completed versions of the Constrained Plan chapter and remaining chapters. The last version of the Architecture Plan, running to several hundred pages, was turned over to OP-160 in June, 1980.

In addition to the Architecture Plan draft, the contract also called for G.S.G. assistance in the planning for a revised Standards Program for OP-16. This effort required extensive coordination with OP-16 and NMPC-16 personnel to analyze past standards efforts and to draft a report for a proposed new ADP standards effort. This resulted in a draft and final version of a new standards manual being turned over to OP-160 in August, 1980.

### 3.2 Job Cost Accounting

Task 2 of the proposal and the contract called for G.S.G. to perform a comparison of the current project job cost accounting systems and prepare a report defining the deficiencies and make recommendations for improvements, highlighting similar systems in the private sector that are recognized as effective management information tools.

Preliminary meetings were held with OP-161 managers and analysts in January and February, 1980, culminating in delivery and briefings of the report in February. A final version of the report incorporating OP-161 comments, was delivered to OP-161 in March, 1980. The report recommended, among other items, that the method of computing overhead costs be simplified to a more accounting-oriented method. This recommendation was adopted and implemented within a matter of a few days after the method had been briefed to OP-161 personnel.

### 3.3 CORE Software System

Task 3 of the proposal and contract provided that G.S.G. would provide technical input in the development and implementation of decentralized services and distributed processing. During the contract life, G.S.G. attended many technical meetings at OP-16 and NMPC providing technical advice and consultation of the following matters:

- Methods of providing system programming support with limited in-house expertise and greater use of contract support.
- Maintenance of system utilities (e.g. reduction of the number of report writers and overlapping data base maintenance tools).
- Impact of distributed processing initiatives by NMPC-16 on CORE programming resources.

In addition, G.S.G. provided a demonstration of how microprocessor technology could be used in the OP-16/NMPC-16 organization by developing and turning over to OP-160 a software system which interfaced microprocessors built by two manufactures (IBM and Hewlett-Packard). This demonstration project utilized APL programs in an IBM 5110 microprocessor to drive color graphics plotters manufactured by Hewlett-Packard (themselves containing two 8080 micros each). On the 5110 end of the demonstration, the interactive input routines were designed to make it easy for

secretary-level personnel to input and maintain an image data base of briefing transparencies and graphs without a detailed knowledge of the complicated graphics setups. This system was demonstrated several times during development and delivered in September, 1980.

### 3.4 Distributed Processing

Task 4 of the proposal and contract called for G.S.G to provide the following items:

- Expert technical support for the incorporation of advanced technology principles of distributed processing.
- Support in generating detailed data base design and data element definition and implementation plans.
- Data base administration and data access plans to be critically reviewed in light of the forthcoming distributed data processing requirements.
- Marketplace evaluation of technology available to support distributed initiatives.

G.S.G. accomplished the following during the life of the contract:

- Performed a marketplace survey of distributed processors available in the near term to support the SDS/PASS program. Determined that there were at least two viable contenders already in place, and that many manufacturers would have competitive products available over the life of the SDS/PASS project, depending on what procurement strategy was used. Briefings were conducted on the findings of the survey, including hands-on demonstrations of several vendor's software and hardware.

- Provided system design expertise to the SDS prototype developers with the consulting advice that the use of software engineering principles should be used to provide both programmer productivity improvements for prototype implementation and reduce the risk of software migration from prototype to ultimate distributed hardware after SDS selection is made for the procurement.
- Developed technical specifications for the DELIS mini-computer (first in-house "command net" minicomputer to demonstrate distributed processing technology). Drafts of these specifications were turned over to OP-160/OP-164 in July and August, 1980.
- Developed a conceptual data base design as part of the Architecture Plan effort and turned over to OP-160 and OP-167 in June and July, 1980.
- Developed several drafts of tasks and mission statements for the new Data Resource Manager organization (op-167) which culminated in a formal briefing by Dr. Gagliardi in January, 1980.
- Maintained contact with the ANSI effort to standardize data dictionary efforts through the ANSI technical committee, X3H4, which will produce a draft of Information Resource Dictionary System (IRDS) requirements in the Spring of 1981, and a draft national standard in 1982.

- Maintained contact with the CODASYL committee on End User Facilities (EUF), which produced a draft of the facility to improve programmer productivities through the use of direct end-user manipulation of forms oriented objects and operations (e.g. in-baskets, out-baskets, desk top spots, binders, forms, files, data base, local storage, memos, etc.). Also held in-house seminars on the potential use of these EUF constructs for OP-01 and its field organizations.
  
- Produced a draft of the Data and Information Resource Directory (DIRD) System Functional Description, dated 29 September 1980, and produced multiple copies for in-house coordination efforts.

### 3.5 Operational Functions and Staffing

Under Task 5 of the proposal and contract G.S.G. provided the following:

- Training sessions and seminars on the use of project management tools and techniques utilizing PC70 as the available in-house tools for practical work sessions.
- Provided a paper to the MIS program director that outlined the distribution of high technical positions in her organization in relation to similar organizations in industry.

### 3.6 Facilities Management Function

Under Task 6 of the proposal and contract G.S.G. was required to define and deliver technical requirements for the facilities management function, including the development of specifications for diagnostics of equipment failures. In this area the following was accomplished:

- Produced technical specifications for two initiatives. One initiative provides configuration management services, environmental control coordination services, and equipment installation and start-up services. This initiative also provided performance monitoring and analysis services.
- Present status - Contract specifications were provided for both sole source and competitive contracting. Approval has been provided by GSA on the Delegated Procurement Authority for both contracts. Both are awaiting procurement action by NRCO.
- The second initiative provided for an integrated hardware/software monitoring capability for measuring the in-house computer systems using advanced "power-plant" feed-back techniques. This capability provides:
  - detection and reporting the availability of each component in the configuration in real time.

- measuring the utilization of each component in the configuration.
- storage of the utilization data for each component and the total configuration in an easily returnable form.
- identification of trends in utilization of individual components and the configuration as they approach their capacity.
- A program that ties the above four facilities together and permitting management review and selection of component and performance failure thresholds.
- Present status - The performance measurement hardware procurement requires resubmission to FEDSIM for approval of the agency procurement request.

### 3.7 Data Center Planning

Under Task 7 of the contract and proposal, G.S.G. provided technical support for the planning of the consolidation of the NMPC computers (17-odd computers at 6 sites) with the NAVFINCEN computers (2 computers at 1 site) to an eventual combined operation in Cleveland, Ohio. Specific milestones achieved in the effort were:

- Workload analysis and projection of the combined workload of all computers involved using recent SMF and other data (Jan-Mar 80). Projection reports were produced using APL software and OP-16 timesharing computer for current and six fiscal years in the future. These reports and their summaries were used in the published versions of the Architecture Plan (Sept 80 publication date) as well as being included in the Delegation of Procurement Authority (DPA) requested from GSA for the consolidation and interim procurements.
- Conducted a space search in the Washington, D.C. area for potential location of interim equipments called for in the change of direction initiated by the House Appropriations Committee report (see next section).
- Attended numerous planning sessions with OP-160, NAVDAC, and NAVFINCEN personnel in planning for the combined computer center.

### 3.8 Procurement Strategies

Task 8 of the proposal and the contract called for expert technical assistance in planning for the procurement of the combined computer Data Center (see section 3.7) so that the following may occur:

- OP-01 not cause the project to slip in its milestones.
- The eventual Data Center to be able to absorb an enormous computer capability without disabling the OP-01 organization and its field organizations during the migration of the data and processing.

During the year, a change of direction in the procurement occurred when the House Appropriations Committee published its report on the 1981 Budget. This redirection authorized the procurement of interim equipments in Washington and Cleveland in order to make both systems compatible in operating systems, processing procedures, and data base design and development. G.S.G. provided technical advice on how this redirection could be used to further the aims described above. The workload studies conducted earlier as part of Task 7, were revised to explore various combinations of CPU's in order to specify the interim equipments necessary in both Washington and Cleveland. As part of this effort, a portable terminal and timesharing software was provided by G.S.G. to the personnel in Cleveland for a short period of time so that the ADP managers themselves

could participate in the computer modelling effort directly,  
and at the same time experienced, for the first time, some  
favorable aspects of interactive remote timesharing technology.

### 3.9 Senior Technical and Expert Support

Task 9 of the proposal and contract called for G.S.G. to provide senior technical and expert support to ensure that industry and private sector technology views are being considered in the planning and implementation of new technologies for OP-16 and NMPC-16.

During the period of the contract, G.S.G. provided such support for many minor review sessions and at three major review meetings (Jan 10-11, May 13-14, and Sep 18-19). In addition all of the past G.S.G. reviews of OP-16 and its predecessor organizations were studied to detect continuing trends and problems. A formal report of this review process was turned over to OP-16 in early November, 1980.

4.0 Summary of Items Delivered

<u>Task</u>	<u>Item</u>	<u>Final Version Delivery Date</u>
1	Architecture Plan Briefing Materials	Feb, 1980
1	Architecture Plan Draft	June, 1980
1	Top-Level Standards Manual	Aug, 1980
2	Job Cost Accounting Report	Feb, 1980
3	Microprocessor/Graphics Software and User Manual	Sep, 1980
4	DELIS Minicomputer Technical Specs	Aug, 1980
4	Conceptual Data Base Design	Jul, 1980
4	Data Resource Manager Tasks and Missions Paper	Jan, 1980
4	Data and Information Resource Directory System Functional Description	Sep, 1980
6	Technical Specifications for Facilities Maintenance Requirements	Apr, 1980
6	Hardware/Software Monitoring Equipment Specifications	May, 1980
7	Workload Projection Modelling Software and Reports	Sep, 1980
9	Summary of G.S.G. Annual OP-01 Reviews	Nov, 1980

