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TECHNICAL ANALYSIS OF THE NAVY MANPOWER PLANNING SYSTEM (NAMPS), PHASE I.

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NAVAL COMMAND SYSTEMS
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Technical Analysis of the Navy Manpower Planning System (NAMPS) Phase I

Technical Report

October 1976
NAVCOSSACT DOCUMENT NO.
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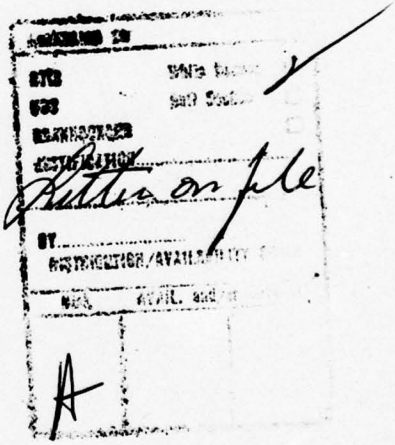

Prepared for
Manpower Analysis & Systems Development Branch (Op-121)

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This document was prepared by personnel of the Command Management Information Systems Department (Code 20) of the Naval Command Systems Support Activity (NAVCOSSACT).

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EXECUTIVE SUMMARY

The objectives of Phase I of the Technical Analysis of the Navy Manpower Planning System (NAMPS) was to develop an "operating scenario" for NAMPS, review recent and on-going efforts supporting NAMPS development, determine the general ADP requirements for supporting the "operating scenario," and identify subsequent phases of the Technical Analysis. The ultimate objective of the series of studies that will make up the Technical Analysis of NAMPS is to define overall ADP requirements for NAMPS, identify the shortfalls of current plans for developing the required support, and determine the feasibility of developing those applications.

An "operating scenario" for NAMPS is presented which describes, in narrative form, a hypothetical environment wherein ADP applications developed for NAMPS are used to generate viable manpower requirements for the Navy programs contained in the Program Objectives Memorandum (POM). General characteristics and categories of ADP support needed by the "operating scenario" are established and those ADP requirements currently identified for development under CNOCOM/MIS are described. NAMPS developmental efforts undertaken and/or completed since the 1974 study of CNOCOM/MIS support for NAMPS, NAVCOSSACT Document No. 53D109, TR-01 are reviewed and evaluated. Finally, those portions of the NAMPS concepts which require further study are identified.

The findings of Phase I of the Technical Analysis are that methodologies for a number of concepts embodied in the NAMPS philosophy have not been developed to the degree necessary for efficient, cost-effective implementation of ADP support. Analysis also indicates that there are questions concerning the technical coordination of NAMPS ADP development which need to be resolved. The report recommends that each of these problem areas be studied, but it refrains from attempting to establish a chronology for such studies in deference to the prerogatives of the Manpower Analysis & Systems Development Branch (Op-121).

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SECTION 1. INTRODUCTION

1.1 Purpose. The purpose of this report is to document the results of Phase I of a technical analysis of the Automated Data Processing (ADP) support to be provided for the Navy Manpower Planning System (NAMPS) under the egis of the Chief of Naval Operations Command/Management Information System (CNOCOM/MIS).

1.2 References. The project request setting forth the objective of and requirements for this report (Appendix A) was forwarded as enclosure (1) to CNO letter serial 913D3/583701 of 17 February 1976, subject: CNOCOM/MIS Project Request; forwarding of. This report assumes that readers are familiar with a prior report dealing with the subject matter, NAVCOSSACT Document Number 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)". Documents used for reference and background and cited in the body of this report are listed in Appendix B; a glossary of terms and acronyms is included as Appendix C.

1.3 Study Objectives. This report documents the results of the first phase of a series of study efforts intended to determine what ADP applications will be needed to support the "operating scenario" for NAMPS; the feasibility of developing those applications which should be developed under the egis of CNOCOM/MIS; and what shortfalls, if any, exist in current plans for developing ADP support for NAMPS. The objective of Phase I of this technical analysis was to determine what the subsequent phases of the study effort should be, based on a review and analysis of NAMPS concepts and philosophies, the contemplated "operating scenario" for NAMPS, and recent and current efforts in the manpower planning area.

1.4 Phase I Limitations. Concurrently with the development of this study, a separate effort directed to the justification of NAMPS as a separate Automated Data System (ADS) was also under way by a contractor working for Op-121. In addition, negotiations between Op-01 and the Bureau of Naval Personnel (BuPers) were addressing the use of the BuPers computer site as a possible location for the major portion of the NAMPS ADP support. In view of these developments, certain aspects of the NAVCOSSACT study have been curtailed in order to avoid possible conflicts of interest with other agencies which might, in the future, become major developers of ADP support for NAMPS. Consequently, this report does not completely satisfy the requirements of the study request (Appendix A) in that descriptions of ADP requirements in

Section 4 of this report are considerably less detailed than originally was anticipated.

SECTION 2. THE NAMPS CONCEPTS

The genesis of NAMPS, the reasons for its development, its basic philosophies and its basic structural design have all been set forth in an earlier report.[1] This section contains a review of the NAMPS structural design and a "scenario" describing a logical sequence of events that would take place once all of the required modules and ADP support for NAMPS become available.

2:1 The NAMPS Structure. NAMPS has been planned as a series of twelve interactive and interdependent "modules" or "nodes" representing the major functions of the NAMPS concept (Figure 2-01). Conceptually, NAMPS proposes that manpower requirements for the Navy be derived from statements of operational and support capabilities that are needed to attain a stated or given operational posture.[2] These statements of operational and support needs are to be defined as Required Operational Capabilities (ROCs), for fleet units, and as Required Functional Capabilities (RFCs), for elements of the Shore Establishment. Within the framework of the Operational Requirements/Productive Capacity Module of NAMPS, planners and sponsors will adjust their statements of operational requirements rather than applying increments or decrements of manpower to previous statements of manpower needs, as is done currently. At the same time, the impact of changes to operational needs will automatically be reflected in concomitant changes in support requirements.[3]

The staffing standards and algorithms for applying them to ROCs and RFCs would fall within the framework of the Manpower Reference Model and would be developed from existing manpower documentation programs.[4] The requirements for these data bases include accessibility (by OPNAV planners) and adaptability (to dynamic modifications of ROCs and RFCs).[5]

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1 NAVCOSSACT Document No. 53D109, TR-01, September 1974. "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)".

2 Ibid, p 7 et seq

3 Ibid, p 38 et seq

4 Ibid, pp 8, 26

5 Ibid, p 74 et seq

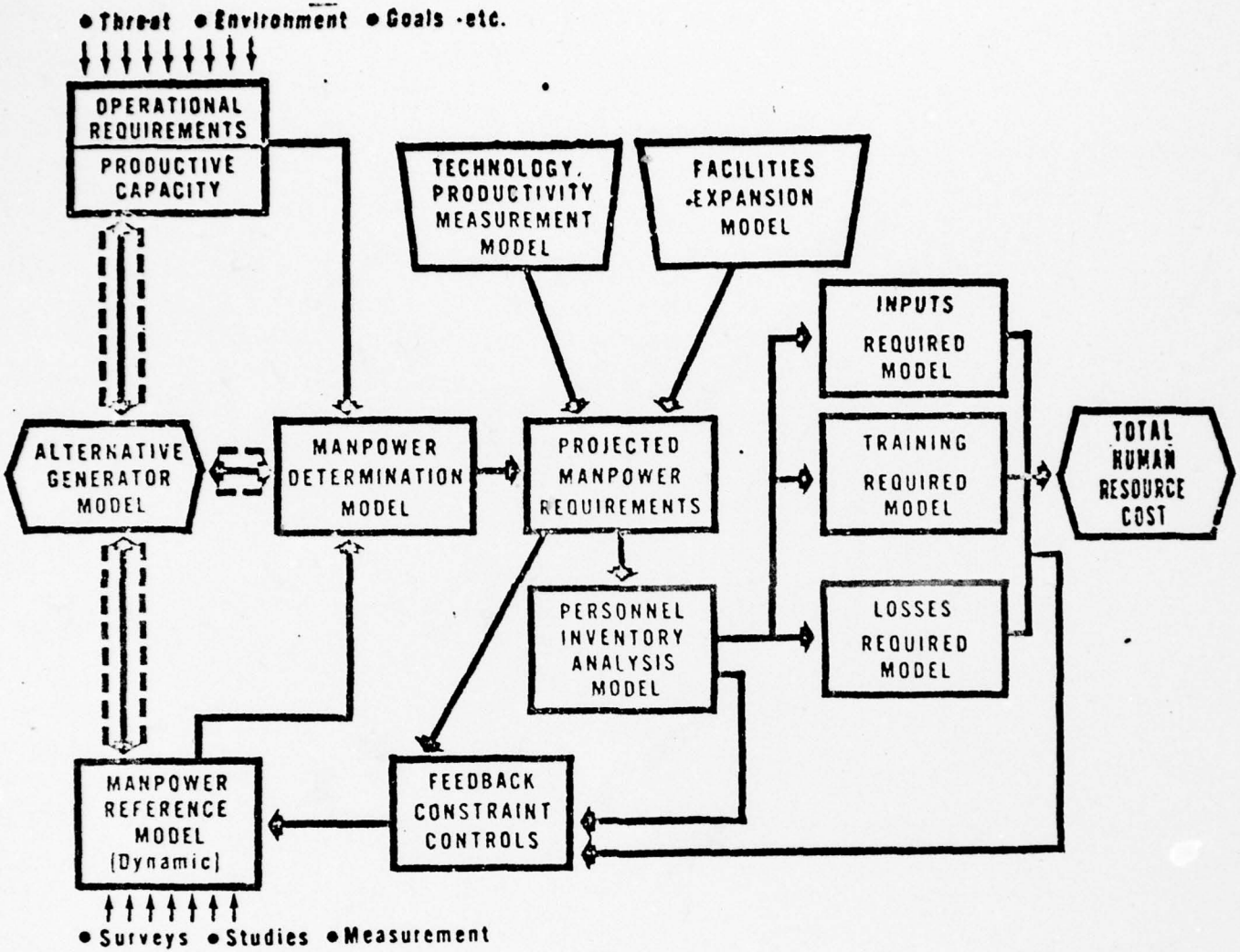

FIGURE 2-01. The Basic NAMPS Structure

The mechanisms that match operational and support requirements (in terms of ROCs and RFCs) to manpower reference data (in terms of billets needed), aggregate the basic manpower needs, and determine rough costs are incorporated within the framework of the Manpower Determination Model. This module must be able to cope with various levels of data aggregation, from the level of the individual unit or activity to the overall requirements of the entire Navy.[6]

Once the basic manpower needs have been ascertained, factors representing the impacts of technological improvements (maintained in the Technology/Productivity Measurement Model) and factors representing impacts of changes in the Navy's physical plant ashore (maintained in the Facilities Expansion Model) would be applied within the framework of the Projected Manpower Requirements Module.[7] The output of this process is then used by the Personnel Inventory Analysis Module to determine how well the projected personnel inventory (officer, enlisted, civilian) will satisfy the projected manpower requirements.[8] Part of the analysis of personnel inventory vs manpower requirements would cover the requirements for recruitment and training and the impact of attrition and other personnel losses (Inputs Required Model, Training Required Model, Losses Required (Expected) Model).

If any of the analytical processes disclose unmanageable disparities, significant overages or shortfalls, or other results implying that the array of manpower requirements is not feasible, "feedback" data indicating the nature of the infeasibilities would be collected (Feedback Constraint Controls) and used as input (together with the original set of data) to the Alternative Generator Model for the purpose of generating alternative operational requirements that would be feasible from the viewpoints of manpower, personnel and training.[9]

2:2 A "Scenario" for Using NAMPS ADP Support. While the prior report on NAMPS discussed at some length the genesis of NAMPS, its approaches, and the various manpower planning problems which motivated its development as a concept, very little was included

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6 Ibid, pp 44, 45

7 Ibid, pp 45-49

8 Ibid, pp 10, 53-61

9 Ibid, pp 11, 52

about the practical aspects of how NAMPS and its ADP support would be used by OPNAV. An examination of the manpower planning problems previously itemized[10] reveals that most are associated with the programming phase of the Department of Defense (DOD) Planning, Programming and Budgeting System (PPBS). The primary process executed by the Navy during this phase is the development of the Program Objectives Memorandum (POM), a process also discussed at some length in the prior report.[11] By implication, then, the primary utility for NAMPS will be in support of the "POM process"; and to be successful in its goals, NAMPS must incorporate automated methodologies that will be viable in the changing environment of the "POM process", operate easily, safeguard the confidentiality of data involved in that process, and still be responsive to the needs of the NAMPS users.

2.2.1 The "POM Environment". The term "POM environment" is used to identify the atmosphere of guidance documents, assignment of responsibilities, interdependent relationships between OPNAV offices having different and parochial concerns, and the constant pressures of deadlines, due dates, and almost continual interactions with persons and offices at all planning/programming levels. The term "POM process" is used to identify the sequence of events that transpire during the development of the POM.

The "POM process" and "POM environment" for development of the POM for fiscal year 1976 (POM-76) were described briefly in the prior report, as were changes proposed for POM-77.[12] Procedures used for manpower planning during POM-77, as well as modifications of those procedures used during POM-78, will be discussed in another section of this report. However, certain aspects of the "POM environment" for POM-78 need to be presented in this section in order to set the stage properly for the NAMPS "operating scenario".

The tentative schedule for POM-78 covered a period of time from 3 September 1975 to mid-May 1976.[13] Critical dates on this schedule included issuance of CNO Policy and Planning Guidance

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10 Ibid, pp 4-6

11 Ibid, pp 30-34

12 Ibid, pp 30-34

13 Op-901 memo of 2 Sep 1975, POM-78-1, ser 901/52352, subject: "Program Objective Memorandum Procedures for FY-78 (POM-78)", enclosure (1).

(CPPG) on 15 October; presentation of CNO Program Analysis Memoranda (CPAMs) beginning 9 January 1976; Secretary of the Navy (SECNAV) guidance issued 21 January 1976; presentations by platform sponsors beginning 11 February; issuance of CNO Program and Fiscal Guidance (CPFG) on 25 February; presentation of Sponsors Program Proposals (SPPs) commencing 1 March; finalization of the summary CPAM by 30 March; and presentation of the tentative POM (T-POM) to SECNAV on 1 May, with submission of the POM to the Secretary of Defense (SECDEF) on or about 15 May.

Of more significance to this discussion, however, is the summary of sponsor assignments and responsibilities for POM-78.[14] Three types of sponsors were identified:

a. Mission Sponsors (Figure 2-02). A Mission Sponsor was defined as "a DCNO or Director of a Major Staff Office (DMSO) charged with responsibility for developing overall goals, objectives, rationale, justification and resource requirements (including manpower, support and training) for a specified mission area."

b. Resource Sponsors (Figure 2-03). A Resource Sponsor, also referred to as a Force/Function Sponsor, was defined as "a DCNO or DMSO responsible for an identifiable aggregation of resources which constitute inputs to mission accomplishments. His responsibility covers interrelated programs or parts of programs found in several mission areas." Resource Sponsors include Platform (formerly called Warfare) Sponsors and sponsors of other types of resources.

c. Appropriation Sponsors (Figure 2-04). An Appropriation Sponsor was defined as "a DCNO or DMSO charged with supervisory control over an appropriation."

Although not specifically included as participants in the "POM process", two other types of sponsors should be identified for future reference, Program Sponsors and Program Element Sponsors. A Program Sponsor is defined as "the DCNO or Director of a Major Staff Office who, by organization charter, is responsible for determining program objectives, time-phasing and support requirements, and for appraising progress, readiness, and military worth for a given weapon system, function or task"; while a Program Element Sponsor is defined as "the DCNO or Director of a Major Staff Office responsible for force

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14 Ibid, enclosure (2).

Navy Mission and Mission Support Areas	Primary Sponsor
Mission Areas	
Strategic	Op-06
Sea Control (Overall)	Op-095
Ocean Surveillance	Op-095
Area Anti-Submarine Warfare (ASW(A))	Op-095
Local Anti-Submarine Warfare (ASW(L))	Op-03
Surface-to-Air Warfare (AAW)	Op-03
Anti-Ship Missile Defense (ASMD)	Op-03
Air-to-Air Warfare (AAW)	Op-05
Anti-Surface Warfare (ASUW)	Op-03
Projection	Op-05/03
CV/Air Strike Forces	Op-05
Amphibious; Mine; Special Warfare	Op-03
Fleet Support	Op-03
Mobility Forces	Op-04
Mission Support Areas	
C3 and Intelligence	
Intelligence	Op-009
Command & Control & Communications	Op-094
CCP	
General Support & Logistics	
Support and Logistics	Op-04
Shore Command	Op-09B
R&D Support	Op-09B
Support to Other Nations	Op-06
Manpower and Training	
Medical Support	Op-04
Training	Op-099
Personnel Support	Op-01

FIGURE 2-02. Mission Sponsors for POM-78

Resource Areas	Sponsors
Platforms	
Surface Warfare	Op-03
Submarine Warfare	Op-02
Air Warfare	Op-05
Other Resources	
Command & Control & Communications	Op-094
Ocean Surveillance	Op-095
Manpower	Op-01
Logistics	Op-04
Command/Administration	Op-09B
Research & Development	Op-09B
Training	Op-099
Military Assistance	Op-06

FIGURE 2-03. Resource Sponsors for POM-78

	Appropriations	Sponsors
	Ship Construction, Navy (SCN)	Op-03
	Aircraft Procurement, Navy (APN)	Op-05
*	Other Procurement, Navy (OPN)	Op-04
*	Weapons Procurement, Navy (WPN)	Op-03
	Research, Development, Test & Evaluation (RDT&E)	Op-098
	Military Construction (MILCON)	Op-04
	Operations & Maintenance, Navy (O&MN)	Op-92
	Military Pay, Navy (MPN)	CHNAVPERS
	Military Construction, Naval Reserve (MCNR)	Op-09R
*	Reserve Pay, Navy (RPN)	Op-09R
*	Operations & Maintenance, Naval Reserve (O&MNR)	Op-09R

* Op-92 acts as cognizant office for POM coordination.

FIGURE 2-04. Appropriation Sponsors for POM-78

composition, funding support, and programmed manpower for a specific program element".[15]

The significance of the sponsorship identifications lies in the interdependency of the different types of sponsors. For example, sponsorship of the Sea Control mission rests with Op-095 who, by implication, levies resource requirements on several different Resource Sponsors. Conversely, Op-03, as a Resource Sponsor, must support several different mission areas. For the purposes of the NAMPS scenario, it is assumed that responsibility for developing resources for each different mission area is delegated to separate offices under each Resource Sponsor and that NAMPS is concerned only with those resources which levy a workload requirement that must be satisfied with appropriate manpower.

2.2.2 How NAMPS will be Used. When all NAMPS modules and all required ADP support have been fully implemented, there will exist a Navy Manpower Planning System that will be rapidly responsive to changing operational requirements, providing OPNAV planners with almost instantaneous assessments of the manpower impacts of changes in operational requirements; alerting personnel planners to changes that will be needed in recruitment, training, advancement, and release programs to cope with changes in manpower requirements; identifying problem areas that may develop should certain proposed changes in operational requirements be allowed to take place; developing alternative proposals for operational changes with which manpower and personnel planners can more easily cope; and ultimately providing data about approved changes in manpower requirements in a format that will permit rapid updates of manpower documentation and authorization files.

Based on the description of the "POM environment" discussed in preceding paragraphs (2.2.1 above) and on the fact that the primary usefulness of NAMPS will be in the support it provides to manpower planners during the "POM process", the "operating scenario" that will be followed can be postulated as transpiring in several logical increments or phases, as follows:

a. Phase 1. Representatives of Resource Sponsors prepare inputs (increments) for Mission and Mission Support Sponsors, with representatives of Platform Sponsors preceding representatives of other Resource Sponsors.

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15 Annex 4, Part 8, Department of the Navy Programming Manual, OPNAV 90P-1D, 5 June 1971, as amended.

b. Phase 2. Mission and Mission Support Sponsors aggregate the various inputs (increments) prepared during Phase 1 by representatives of Resource Sponsors and determine the viability of the aggregate. There will probably be alternative increments, properly prioritized, that will allow several alternative aggregations to be examined.

c. Phase 3. Resource Sponsors, in a manner similar to that of Mission and Mission Support Sponsors, aggregate increments of their "resources" prepared during Phase 1 by their representatives and determine the viability of the aggregate. Again, several different alternative aggregations will probably be available for examination.

d. Phase 4. The Manpower Resources Coordinating Panel (MRCP) (or Op-01 representatives on behalf of the MRCP) aggregate "all-Navy" requirements by collecting the sponsors' increments and determine the feasibility of the "all-Navy" aggregation. Again, multiple alternative aggregations will be possible.

The fact that only four discrete phases are defined should not be interpreted to mean that only these four phases will be followed, or that each phase will occur only once. On the contrary, there will probably be many iterations of each phase, with Phase 1 having the greatest number of iterations and Phase 4 the fewest. Nor should the implication be drawn that all four phases must transpire in the given sequence. Indeed, it is quite feasible to have some Phase 3 iterations preceding Phase 2 iterations, and it is very likely that during Phase 2 or Phase 3 processing it will be found necessary to perform more Phase 1 iterations to correct significant disparities.

In the following paragraphs the expected "scenario" for each phase or increment is examined in some detail.

2.2.2.1 Phase 1 Processing for Platform Sponsors. To exemplify Phase 1 of the NAMPS "operating scenario" as it would apply to Platform Sponsors, assume that Mr. John Smith, employed in the mythical office of Op-399, has been tasked with the responsibility of developing three alternative proposals for providing surface ship resources to support surface-to-air warfare under the Sea Control mission. He has been given some general guidance with respect to alternative force structures; he also has some idea of the budgetary constraints on the MPN costs that he will have to try to satisfy. To develop his proposals and determine their manpower requirements and costs, he will exercise NAMPS Phase 1 processing substantially as follows:

a. Step 1, Preparation. Before attempting to develop his proposals in automated form, Mr. Smith does some "prior planning":

(1) First, he reviews his copy of the NAMPS Users Manual promulgated by the NAMPS System Services Office[16] to refresh his memory of how he can use NAMPS ADP support to help him develop his proposals.

(2) Next, he formulates, in the "language" provided for conversational interactive processing under NAMPS (described in the NAMPS User Manual), the queries, statements, commands, etc, he will want to use in framing and developing his proposals.

(3) Next, he telephones the nearest NAMPS Terminal Facility[17] for an appointment to use a terminal device.

(4) Finally, he double-checks his NAMPS "credentials" stored in his safe to insure he will gain access to that portion of NAMPS data he is allowed to see and use.[18]

b. Step 2, Execution. At the NAMPS Terminal Facility, Mr. Smith's identity is confirmed and he is given access to a remote terminal device. The sequence of steps that transpire at the terminal is substantially as follows:

(1) From his prepared notes, Mr. Smith "signs on" at the terminal and invokes the NAMPS ADP Executive System by a simple command. Conversationally, the NAMPS processor asks for a "countersign" to

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16 The NAMPS System Services Office is conceived to be an organizational element in Op-01 responsible for developing NAMPS management procedures and overseeing the maintenance and use of NAMPS ADP support.

17 At least two such facilities (one in the Pentagon, one in the Navy Annex) would be established with two or more terminal devices. Trained personnel of the NAMPS System Services Office would be available to provide any help needed.

18 "Credentials" would consist of "password and countersign" known only to the holder, the Security Officer of the NAMPS System Services Office, and the NAMPS ADP system itself.

double-check Mr. Smith's credentials (a "password" is included as part of the "sign on" procedure).[19]

(2) Having confirmed Mr. Smith's credentials, the NAMPS processor then solicits Mr. Smith's desires. In conversational English, guided by tutorial comments given by the NAMPS processor, Mr. Smith asks for a summary array of manpower requirements and costs for the current "base case",[20] which is quickly provided, with the option to receive "hard copy" (printed listing produced either at the terminal or at the computer site for later delivery to Mr. Smith).

(3) Mr. Smith is then afforded the opportunity to test out his first proposal. Guided by the processor, Mr. Smith first examines and then alters the Required Operational Capabilities (ROCs) and Projected Operational Environment (POE) for a number of ships. He might also "strike" some ships and/or speed up commissioning and activation of ships under construction. In the latter case, if ROCs and POEs are not available with which to project manpower requirements, the NAMPS processor may ask for help from Mr. Smith in setting up manpower requirements.

(4) Having made all his initial modifications to ROCs and POEs, Mr. Smith then asks the NAMPS processor for summary manpower requirements and costs for his first "test case". He is given an opportunity to examine these results in various levels of detail (e.g., by Program Element; by class of ship; by individual ship, if necessary). He is also asked by the NAMPS processor if he wishes to retain the "test case".

(5) Mr. Smith is not quite satisfied and asks to make more modifications, which he is allowed to do.

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19 These security procedures insure access only by authorized personnel and protect the privacy of data by restricting authorized access to previously defined segments of data files.

20 A set of data files prepared by the NAMPS System Services Office from various "master" files as of a given date.

Having readjusted the ROCs and POEs to his satisfaction, Mr. Smith decides to retain his "test case" as his first alternative. The processor asks for a file identifier and a priority number and then stores the "test case" for future use, creating appropriate references to it. The statements of ROCs and POEs in the proposal are then used by the processor to determine what the support requirements for the proposal are in terms of underway replenishment (ship-to-ship), resupply by shore bases, and the concomitant support of shore bases by other shore facilities (support-on-support). The processor will generate a second "support requirements" file containing statements of operational and functional capabilities that must be provided by support forces afloat and ashore, creating appropriate references to that file.

(6) Mr. Smith is then given the opportunity to prepare another "test case" if he wishes. Now Mr. Smith has a choice: he may go back to the "base case" data and start again; or he may make a copy of his first proposal, modify the copy (without destroying the original), and thus create a slightly different version. Mr. Smith chooses the latter option, creates his second proposal, finds it satisfactory, and has the NAMPS processor store it away with an appropriate file identifier and priority number.

(7) The same process is repeated for Mr. Smith's third proposal. After he has had his third proposal stored, Mr. Smith has some second thoughts about priority numbers. Again under tutorial guidance by the NAMPS processor, Mr. Smith rearranges his priority numbers for his three proposals while the processor ensures that Mr. Smith doesn't inadvertently duplicate his priorities.

c. Step 3; Evaluation. Having finished his work at the NAMPS Terminal Facility, Mr. Smith returns to his office to await any printed outputs he may have ordered. When they are delivered, he reviews them, together with printed results received at the terminal. He may find, after more thorough review, that one or more of his proposals should be "updated" or further modified; or he may decide on a fourth proposal that he may wish to substitute for one of the others, or add to his array

of proposals. Any or all of these alternatives can be accomplished during a second visit to the NAMPS Terminal Facility.

2.2.2.2 Phase 1 Processing for Other Resource Sponsors. Basically, the Phase 1 processing applicable to representatives of other Resource Sponsors is the same as that for representatives of Platform Sponsors, with one significant exception. As mentioned in the preceding paragraph, when a Platform Sponsor representative saves a "test case" proposal, the NAMPS processor not only saves the data but also automatically generates a file of "support requirements", with appropriate references. Now when a representative of a Resource Sponsor who is not a Platform Sponsor "signs on" and is recognized by the NAMPS processor, the processor will automatically seek out any applicable generated support requirements and present them to the sponsor representative for consideration.

The first requirement that the sponsor representative should be prepared to cope with is a comparison of a summary of generated support requirements, both those already attributable to a specific activity and those that are "unassigned", to the arrays of Required Functional Capabilities (RFCs) already established in the "base case". Another requirement will be to provide the NAMPS processor with appropriate annotations indicating what action was taken with respect to generated requirements; these comments will be filed with the file of generated support requirements.

Of course, the sponsor representative will probably wish to alter RFCs for various shore activities, formulating and storing his own proposals for supporting Mission Sponsors. For those activities which have no ROCs, POEs, or RFCs, sponsors will have to work directly with arrays of manpower requirements data which, for shore activities, can also include civilian manpower requirements as well as military manpower requirements.

2.2.2.3 Phase 2 Processing. Under NAMPS Phase 2 processing, representatives of Mission and Mission Support Sponsors would be scheduled for appointments at an appropriate NAMPS Terminal Facility to examine the various alternative proposals prepared by the Resource Sponsors' representatives. Subject to the same password and countersign procedures, a Mission or Mission Support Sponsor would be allowed access only to that data pertinent to his area of interest. The NAMPS processor would first itemize the proposals that have been made, identifying the priority assigned to each. Then the sponsor's agent would be asked to

identify those proposals he would like to evaluate first. The processor would provide a summary aggregation of resources, manpower requirements, and costs, with "hard copy" (printed listings) optional. The agent would then be allowed to make a more detailed examination of the data, under tutorial guidance provided by the processor, should he wish to do so.

While agents of Mission and Mission Support Sponsors would not be able to alter proposals prepared by representatives of the Resource Sponsors, they would be able to create proposals of their own based on the Resource Sponsors' proposals, compare them to the Resource Sponsors' proposals and obtain printed listings of the differences. They would also be able to prepare various alternative aggregations from different combinations of Resource Sponsor proposals, for which the NAMPS processor would prepare summaries of manpower requirements and costs. Those aggregate proposals found to be acceptable would be stored and referenced.

2.2.2.4 Phase 3 Processing. In most aspects, NAMPS Phase 3 processing will duplicate Phase 2 processing, except that the data processed will be that data pertinent to a specific Resource Sponsor. The one significant difference will be that Resource Sponsor representatives[21] will be able to modify, alter, or replace any of the existing proposals, as well as create new ones. Procedures will be included in the NAMPS processor for automatically notifying Mission Support Sponsors when changes made by a Resource Sponsor representative create new or different support requirements.

2.2.2.5 Phase 4 Processing. Before NAMPS Phase 4 processing can begin, the NAMPS System Services Office must be advised of the number of different aggregations to be evaluated and the component parts of each aggregation. By the time NAMPS Phase 4 processing should take place, so many different individual (component) proposals can exist that it would be impractical to evaluate all possible combinations. Therefore, each Resource and Mission (and Mission Support) Sponsor must identify their priorities in some form related to their SPPs and further identify the proposals that they wish to have used.

With this guidance in hand, staff members of the NAMPS System Services Office can proceed to use the full NAMPS ADP

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21 The direct representatives of Resource Sponsors are not necessarily the same as those who originally prepared the various proposals. They would be authorized to address the entire range of resources, not just a segment of them.

support to derive evaluations of the various proposals. After "signing on" in the NAMPS Terminal Facility, a staff member advises the NAMPS processor of which proposals to include in the first aggregation. The NAMPS processor will undoubtedly have to ask for some specific assistance as it matches proposals to the "base case" to ensure that no existing activity is overlooked. When all questions have been resolved, the processor can then aggregate the manpower requirements, cost them, and present them for preliminary review.

In all processing so far described, only the capabilities provided by the NAMPS Operational Requirements Module, the NAMPS Manpower Reference Model, and the NAMPS Manpower Determination Model have been exploited. Assuming that an "all-Navy" aggregation of sponsors' proposals has so far successfully met all imposed constraints, the next step is for the staff member to direct the NAMPS processor to create a data file that can be further modified by applying factors obtained from the NAMPS Technology/Productivity Measurement and Facility Expansion Models. Under tutorial guidance given by the NAMPS Processor, the staff member at the terminal would review the factors as they are retrieved by the processor, determine their applicability, and provide instructions to the processor with respect to their use.

With all appropriate modifications completed, the NAMPS processor would automatically save the modified data file and then create from it three separate files, one for officer manpower requirements, one for enlisted manpower requirements, and one for civilian manpower requirements. Each of these three files would be used as input by appropriate programs of the NAMPS Personnel Inventory Analysis Model. Assuming that these programs are available for interactive processing, the results of their various processes would be furnished in summary form to the staff member at the terminal, with more detailed "hard copy" to follow later on.

After all alternatives have been considered, the NAMPS System Services Office will have in hand computer-generated evaluations of each proposed "five-year Navy" showing manpower requirements (officer, enlisted, civilian) qualitatively defined (designator/grade, rate/rating, grade/series), together with estimated costs and an assessment of the ability of the personnel inventory to satisfy the requirements. These evaluations can be discussed and weighed by the CNO Executive Board (CEB) in their final deliberations of the POM.

2.3 Pre-POM and Post-POM Processing. While the emphasis in this section has been on the support rendered by NAMPS to the "POM process" itself, it should be noted that a considerable usage of NAMPS ADP capabilities will be required both before the "POM process" begins and after it is completed. Already mentioned is the need for the NAMPS System Services Office to build a "base case"; and when the final POM has been determined, the manpower requirements data which supports it must be translated into authorizations and data base updates for those applications and offices that help prepare the budget. Finally, it must be mentioned that maintenance of the basic data files needed to support the NAMPS processing described in this section will be a basic continuing requirement; this aspect will be discussed in more detail in a later section of this report.

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SECTION 3. RECENT DEVELOPMENTS

The 1974 NAVCOSSACT report[22] identified a number of planned and on-going ADP applications, some of which were initial efforts to provide support for NAMPS and some of which were considered "interim support" for manpower planning pending development of NAMPS itself. In addition, numerous problems were identified and questions raised with respect to the feasibility for developing ADP support for certain NAMPS concepts. This section examines some of the efforts that have been undertaken and/or completed since the previous report was published.

3.1 Applications Under CNOCOM/MIS. Among the various ADP applications identified in the 1974 report were a number of projects being developed, or proposed for development, by NAVCOSSACT under the egis of CNOCOM/MIS.[23] Three projects have been completed and placed in production (operational) status; a fourth project has recently been started, while enhancements to or modifications of existing applications have already been undertaken or are being contemplated.

3.1.1 Activity Reference File (ARF). The successful development and implementation of the Activity Reference File represents a major step forward in the development of ADP support for NAMPS. The concept of the ARF as a key requirement for NAMPS ADP support, the range of data that it would contain, the procedures by which the ARF data base would be maintained, and the concepts of how the data base would be used were discussed in some detail in the prior report.[24] The ARF data base has been created and is being updated several times each month with data from the Manpower and Personnel Management Information System (MAPMIS), the Ships Management Information System (SMIS), and the Navy Cost Information System (NCIS). As of 25 March 1976, over 9000 separate Navy "activities" were recorded in the ARF data base. Of the more than 50,000 records in the master file, over 16,000 records contain data representing the current status of activities; over 1000 records contain data reflecting planned changes to the status of activities; almost 14,000 records contain historical information (status of activities prior to

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22 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)".

23 Ibid, Section 7

24 Ibid, pp 62-65

recent changes); over 6000 records contain cross-reference information describing component and/or subordinate activities; and the balance of the records contain "audit trail" data reflecting the currency of data values for the different activities.

In addition to the ARF Master File, four peripheral index files and an ARF "dictionary" are automatically updated as part of the periodic updating process. The ARF dictionary contains various types of tables used as part of the data acquisition, maintenance, and reporting processes, while the four index files maintain cross-references showing where, in the ARF Master File, different values for certain key data elements can be found.[25] For example, every "activity" in the ARF Master File is indexed in one file under the 5-character Unit Identification Code (UIC) or codes for that activity; all MAPMIS 10-digit Activity Codes are indexed in a second file; the distinct record keys that are unique to the records provided by each of the "source systems" (MAPMIS, SMIS, NCIS) are indexed in a third file; and the fourth file cross-references all Program Element (PE) code values found in the ARF Master File.

At present, data retrieval from the ARF is limited to fixed-format exception reports and exception and discrepancy listings that are by-products of the data acquisition and maintenance processes.[26] Most of these reports were designed to satisfy specific informational needs within Op-01; however, one reporting capability could be of use to others. The "selective activity display" format provides, for any specified activity and for one of three time frames, the array of data in the ARF Master File. The time frames that can be specified are current data only (Report Format 1), current data plus projected (future) changes (Report Format 2), and past, present and future data (Report Format 3). Provided the same time frame is used, any number of activities identified by a 10-digit activity code or one of the "source system" keys can be printed out.

The ARF is also used by the Qualitative Requirements Application (QRA) as a source of information relevant to its processing. The information is retrieved selectively, dynamically, and immediately by interaction through specially designed "linkage modules".[27] While these "linkage modules" have

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25 NAVCOSSACT Document No. 53D302, UM-01, July 1975, "Activity Reference File (ARF) Users Manual", pp 26-27

26 Ibid, p 54 et seq, p 89 et seq

27 Ibid, pp 23, 24

been specifically "tailored" for the QRA, they can readily be modified, adapted, or enhanced to satisfy requirements of other applications. This, in fact, is being done to satisfy the needs of the Qualitative Requirements Application for Officers (QRAO).

3.1:2 Shore Required Operational Capabilities (SHOROC). Another data base of considerable significance to NAMPS is that being developed and maintained by the SHOROC system. This system was also described in some detail in the 1974 NAVCOSSACT report.[28] Operational since December 1974, the amount of data in the data base has been increasing over the past year or so to the point that as of mid-March 1976 input from 322 shore activities has been accepted for a total of over 51,000 statements of Required Functional Capabilities (RFCs).

There are several sources of input for the SHOROC data base.[29] Most of the inputs are cards punched from coding sheets prepared by the various shore activities or by the system user, the Manpower Requirements Branch (Op-124); however, two automated systems also provide data used by the SHOROC system. Activity information is obtained from a magnetic tape file furnished by the Unit Identification Application (UIA), maintained on the Honeywell 6000 computer at NAVCOSSACT, while information concerning relationships between Unit Identification Codes (UICs) and Program Element (PE) codes is provided by Dictionary 90 of the Navy Cost Information System (NCIS), maintained on the NAVCOSSACT UNIVAC equipment.

In addition to the information about shore activities and the RFCs for each, the SHOROC system has an index file that allows identification of all activities having given RFCs. The index file is updated concurrently with the updating of the master file; it is used during the generation of certain reports. The SHOROC system also maintains the SHOROC dictionary that defines the various codes to be used by shore activities when submitting their SHOROC inputs (RFC statements and modifiers,

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28 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 65-67

29 NAVCOSSACT Document No. 53D107, UM-01, December 1974, "Shore Required Operational Capabilities (SHOROC) Users Manual", p 81 et seq

mission areas, scope statements, limiting parameters);[30] it is reissued periodically by Op-124.

Currently, all SHOROC processing is done in "batch" mode. While the SHOROC Reports Subsystem can produce some eight different report formats varying from an itemization of all RFCs for a given activity to a summary listing of all activities having a given RFC, no interactive query capability exists. There is also no current interface between SHOROC and other manpower planning applications under CNOCOM/MIS; its primary interface is with the Navy Manpower Requirements System (NMRS) being developed by the Navy Manpower and Material Analysis Center, Atlantic (NAVMMACLANT), for which up to three different data base tapes can be created when requested by Op-124.[31]

3.1.3 Qualitative Requirements Application (QRA). Identified in the 1974 report as an application providing interim support for NAMPS,[32] the QRA may actually have a permanent role in NAMPS even though in itself it is not "workload-driven". Its basic function is to match, activity by activity, the authorized end fiscal year strength figures, found in the MAPMIS Manpower Requirements Plan (MARP), to authorized billets found in the MAPMIS Enlisted Billet File; determine what differences must be adjusted; determine, by rate and rating, how those differences should be distributed so as to best maintain desired rating levels, grade balances and sea/shore ratios Navy-wide; and finally allocate, by rate and rating, the necessary adjustments to bring unbalanced activities into balance with the MARP figures.[33]

Operational since October 1975, the QRA has successfully demonstrated that it can rapidly produce an Enlisted Requirements Plan (ERP) that is acceptably accurate. The QRA consists of three subsystems: a Controls Maintenance Subsystem for

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30 Enclosure (1) to OPNAVINST 5310.12, 15 November 1974, "Shore Requirements, Standards, and Manpower Planning System (SHORSTAMPS)"

31 NAVCOSSACT Document No. 53D107, UM-01, December 1974, "Shore Required Operational Capabilities (SHOROC) Users Manual", pp 107, 108

32 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", p 62

33 Ibid, pp 67-69

maintaining files of user-supplied guidance with respect to grade structure, rating floors, and sea/shore ratios; an ERP Create/Update Subsystem that creates (or updates) an ERP data base; and a Reports Generation Subsystem for producing the ERP itself and (optionally) displays of ERP data at the activity level.[34] The ERP Master File generated by the ERP Create/Update Subsystem contains all MARP and Enlisted Billet Summary Data supplied as input to the program; a record of how that data was modified because of "unmatched activity" conditions; all "net changes" generated by the program's algorithm and applied by rate and rating at the activity level; and the summary data that was derived for the ERP itself.[35]

All subsystems provide printed outputs which reflect the results of data processing. The ERP Create/Update Subsystem produces 10 different listings, some of which are optional or exception reports. Five of these listings are "audit trails" showing the user just how the program's algorithm calculated the changes that should be made; one is a draft ERP; one reflects the effects of the grade guidance that was used; others show input errors and tapes used; and one optional listing provides activity-level data displays showing rate/rating changes for those activities for which the magnitude of change for the activity equalled or exceeded a user-supplied value.[36] The latter report format can also be supplied by the Reports Subsystem for selected activities identified by 10-digit Activity Codes.[37]

The ARF system described in paragraph 3.1.1 plays two roles in the QRA processing. First, as a byproduct of the processing of MAPMIS input data for the ARF, the computer program generates a machine-readable file that is made available (on magnetic tape) as the MARP end-strength file used as input to the ERP Create/Update Subsystem. Second, the ARF "linkage modules" incorporated into QRA programs allow dynamic access, on an "as required" basis, to the files of the ARF data base. These

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34 NAVCOSSACT Document No. 53D303, UM-01, September 1975, "Qualitative Requirements Application (QRA) Users Manual", pp 6-8

35 Ibid, pp 86, 90

36 Ibid, p 89 et seq

37 Ibid, p 93

modules are capable of providing answers to the following questions:

a. There are billets written in the Enlisted Billet File for an activity, but there are no matching end strengths in the MARP file. Where are the end strengths to be found?

b. Conversely, there are end strengths authorized but no billets written. Where are the billets, if any, to be found?

c. If no billets have been written as yet, what activities of the same type have billets written that can be checked for use as a "prototype"?

In addition, one set of modules can provide, when needed for activity-level reports, items of information about the activity, such as 10-digit Activity Code, Activity Name, etc., that are not part of the QRA data base.[38]

As a last-minute addition to the QRA, the capability was developed to produce a punched-card output containing the Navy-wide summary, by rate and rating, of the adjusted billet data that appears in the printed ERP. This additional output was provided as a primary input for "POM-78" processing by the "Mini-NAMPS" system (see paragraph 3.2.3 below).

3.1.4 Qualitative Requirements Application for Officers (QRAO). The QRAO currently under development is intended to perform, for officer manpower requirements, the same functions that the QRA does for enlisted manpower requirements and in somewhat the same way. The officer billet data will be provided in summarized form by the MAPMIS; the MARP end-strength data for officers will be provided by the ARF, currently being enhanced to meet that requirement. Problems of unmatched activities (billets but no end-strengths and vice versa) will be resolved through interfacing with the ARF as in the QRA. The basic QRAO output will be an Officer Requirements Plan (ORP) and an ORP data base.

The QRAO consists of three subsystems: a Create Subsystem, which builds an initial ORP data base from MARP and billet data; a File Maintenance Subsytem, through which changes are applied to "balance" billet data (by activity) to end-strength data; and a Report Generation Subsystem for generating the printed ORP

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38 Ibid, pp 67, 68

document and other reports. The primary difference between the QRA and the QRAO lies in the methodology for "balancing" the master files. While the QRA employs a complex algorithm that functions automatically (with or without user constraints) and runs in the batch mode, the QRAO will use the following methodology:[39]

a. The Create Subsystem will generate an Activity Exception Report that will identify those activities that are not in balance with respect to end-strength vs billets and provide a Billet Summary Listing.

b. Using this listing, the Officer and Enlisted Plans Branch (Op-104) will determine what changes should be made; then through interactive processing using the File Maintenance Subsystem, Op-104 will apply changes and "balance the books".

3.2 The "Mini-NAMPS" System. The 1974 report mentioned briefly what at that time was a proposed new approach for manpower and personnel planning during the POM cycle for POM-77 calling for the establishment of a Manpower Resources Coordinating Panel (MRCP), the identification (by sponsors) of both quantitative and qualitative manpower increments and decrements associated with the POM development, and the use of ADP support provided by BuPers and B-K Dynamics, Inc., to assist in assessing the effects of changes in manpower requirements.[40] The ADP system has subsequently become known as "Mini-NAMPS".

3.2.1 System Structure for POM-77. The "Mini-NAMPS" was developed for POM-77 by B-K Dynamics, Inc., Rockville, Maryland, under joint sponsorship of the Office of Naval Research (ONR); DCNO, Manpower (Op-01); the Assistant Chief of Naval Personnel for Personnel Planning and Programming (Pers-2); and the Naval Personnel Research and Development Center (NPRDC), San Diego, California. The system was designed to perform four major tasks, not including a number of utility and maintenance tasks. The four tasks were the formatting, updating, and adjusting of (enlisted) manpower requirements; the formatting of (enlisted)

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39 NAVCOSSACT Document No. 53D306, FD-01, June 1976, "Qualitative Requirements Application for Officers (QRAO) Functional Description", p 9.

40 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 31-33

personnel inventory data and interfacing with BuPers systems/programs; the generation of reports relating to (enlisted) manpower requirements, summaries of increments and/or decrements of manpower requirements, and comparisons of manpower requirements with projected personnel availability; and the generation of manpower cost reports. The "Mini-NAMPS" resides currently on the complex of IBM 360/370 computers at the National Institutes of Health (NIH) and operates under conventions and constraints of that site.[41]

The basic interactions of the "Mini-NAMPS" are shown in Figure 3-01; the functions performed by each of the four major subsystems are shown in Figure 3-02.[42] Processing of data basically was as follows:

a. Enlisted manpower requirements extracted by Op-01 from the MAPMIS Enlisted Billet File were processed into the initial Requirements Data File.

b. Punched card changes prepared by Op-01 personnel were applied to bring the requirements into line with Five Year Defense Program (FYDP) end-strengths.

c. Grade guidance covering the top six enlisted pay grades (E4 thru E9) was applied and an all-Navy Enlisted Requirements Plan was created for use by the BuPers Advanced, Strength, and Training Planning Program (ADSTAP) System.

d. Results of ADSTAP processing were processed into an Enlisted Personnel Inventory Data File and apportioned (on a "fair share" basis) to program sponsors.

e. Costing data was processed into a Cost Data File.

f. Various manpower requirements reports were produced for the initial "base case" data.

g. As increments and decrements of enlisted manpower requirements were received, they were entered (as card input) and stored in Increment/Decrement Files.

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41 B-K Dynamics, Inc. report TR-3-196, 1 July 1975, "Mini-NAMPS Programmer's Manual", pp 1-4

42 B-K Dynamics, Inc. report TR-3-194, 1 July 1975, "New Developments in Navy Manpower/Personnel Planning - Support of the POM-77 MRCP", pp 6-7

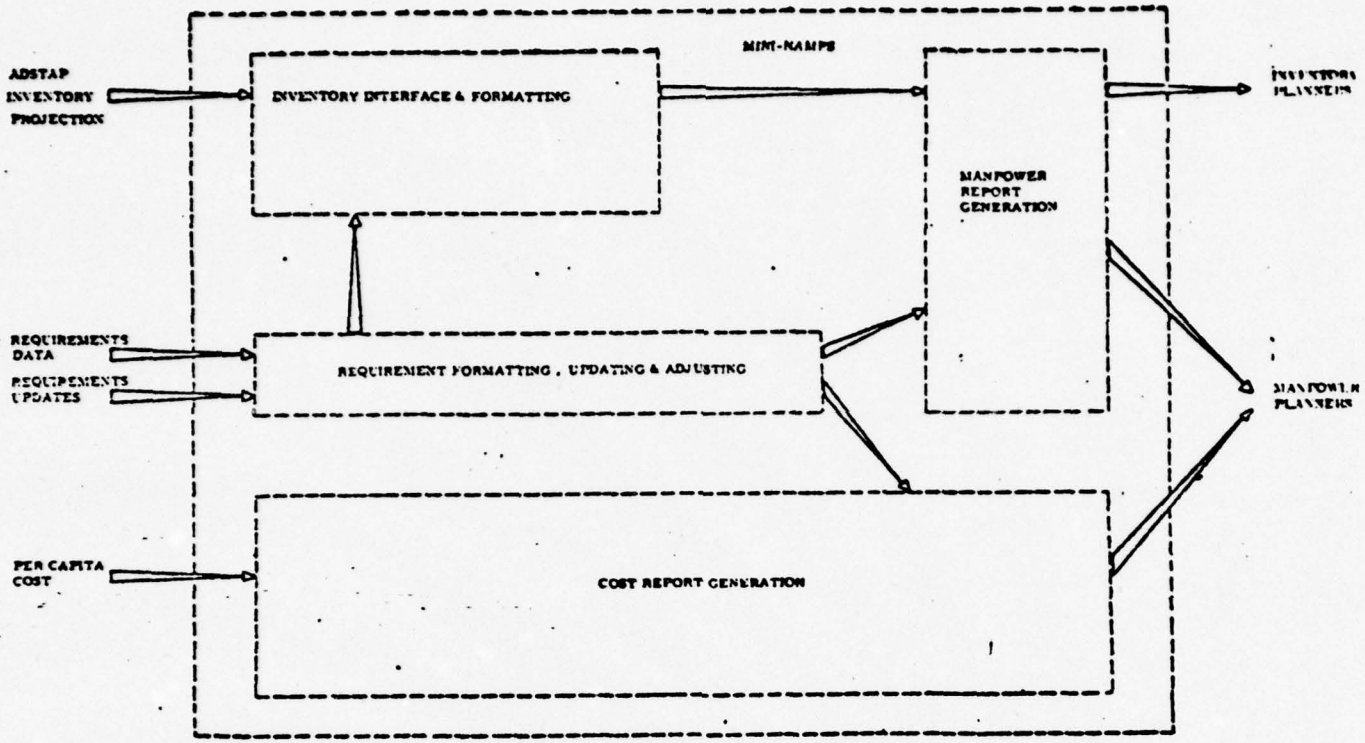

FIGURE 3-01. Basic "Mini-NAMPS" Interactions

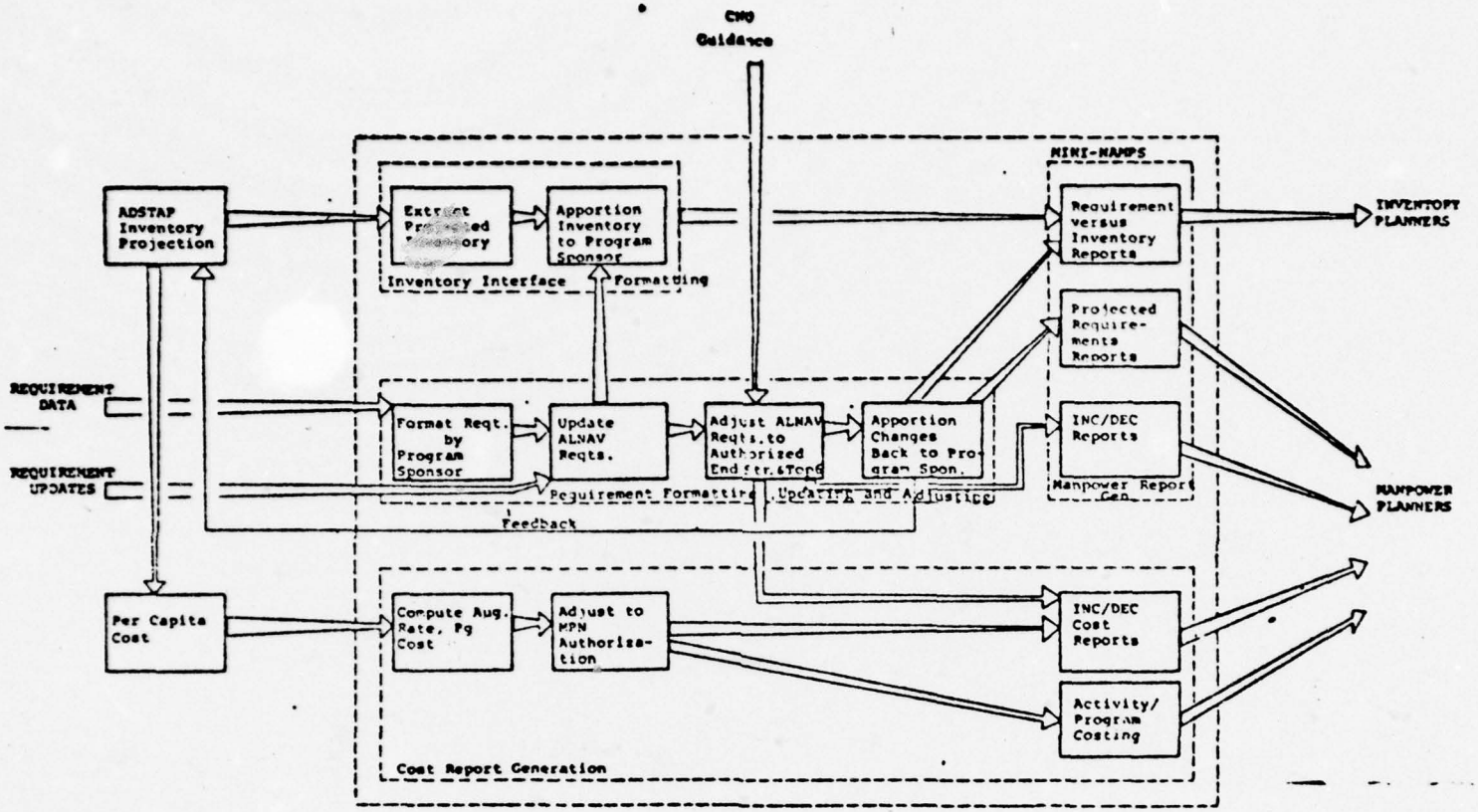

FIGURE 3-02. "Mini-NAMPS" Tasks and Functions

h. By selective, temporary application of increments and/or decrements to "base case" files, various alternative manpower requirements data sets were created, matched to inventory data, costed, and evaluated.

i. After all POM-77 decisions were made and appropriate data changes applied, a final set of all-Navy enlisted requirements was prepared for the BuPers ADSTAP system.

3.2.2 System Results. As with any new system, problems were encountered. Large amounts of manually prepared card input called for hundreds of man-hours of preparation effort;[43] management outputs were designed on a case by case basis, during the POM process, because users of the system were unable to define their needs explicitly until experience was gained.[44] Nevertheless, the system did succeed in providing significant data that allowed a manpower assessment to be completed for POM-77 six months earlier, and in greater detail, than for any previous POM cycle.[45] Manpower costs were assessed with greater accuracy than before, and training needs became known almost a year earlier than was previously possible.[46]

3.2.3 System Changes for POM-78. To enhance and improve the capabilities of the POM-77 "Mini-NAMPS" for POM-78, B-K Dynamics, Inc., proposed the following:[47]

a. Inclusion of a tracking system for requirements by Navy Enlisted Classification (NEC) codes so that a "C" School Training Plan can be projected.

b. Inclusion of inputs, processing, and outputs for officer requirements.

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43 Ibid, p 47

44 Ibid, p 45

45 Ibid, p 2

46 Ibid, p 28

47 B-K Dynamics, Inc., Proposal BKD-2374, 1 December 1975, "Proposal to Implement POM-78 NAMPS"

c. Refinement of algorithms for projecting support overhead. Quantitative data reflecting force/support estimates will be obtained from the Navy Resource Model (NARM) and the support quantities "qualitized" by "Mini-NAMPS" software.

d. Inclusion of methodology for "qualitizing" billet changes applied "across the board" (e.g., 10% reduction).

e. Inclusion of capability for dynamic inventory projection, reducing the frequency of interfacing with the ADSTAP system.

f. Expansion of interactive processing capabilities.

g. Expanded interfaces with other systems (Figure 3-03). The systems to be used include:

(1) MAPMIS, the host system for the "RENLQUAL" and "ROFFQUAL" data files. The "ROFFQUAL" file will be the source of officer billet data; the "RENLQUAL" is the source of enlisted billet requirements by NEC.

(2) ADSTAP, the BuPers system for modelling personnel inventory plans and requirements.[48]

(3) "C" School Training Model; develops the "C" School Training Plan.

(4) Modified Force Analysis and Simulation Technique (M-FAST) model. This is an interactive processor developed under ONR sponsorship that approximates the outputs of a batch-oriented model in ADSTAP and develops personnel inventory projections dynamically.

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48 For details, see NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", p 55 et seq

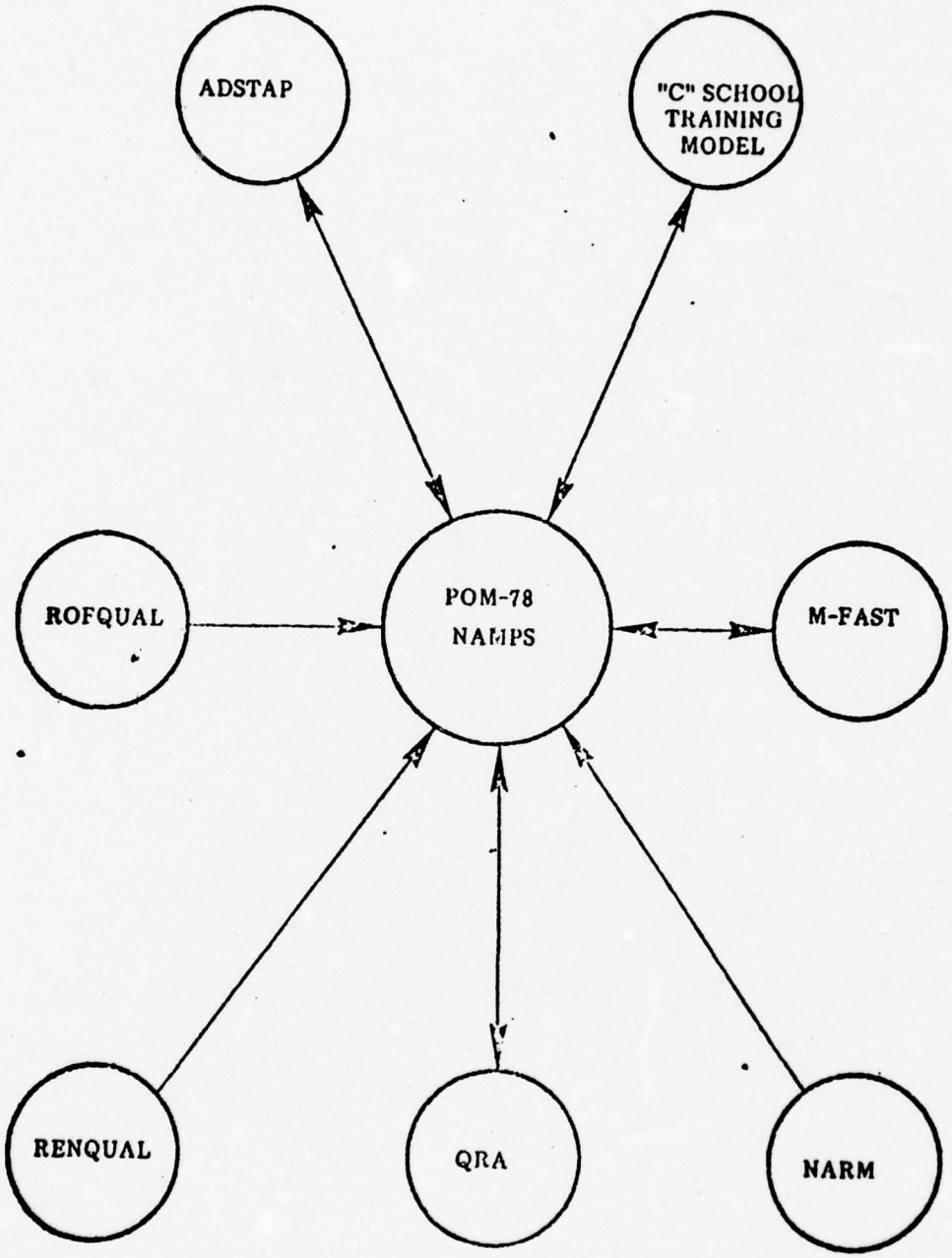

FIGURE 3-03. System Interfaces for POM-78 "Mini-NAMPS"

(5) NARM; source of factors for deriving quantitative estimates of manpower required for support functions needed for the operating and support forces.

(6) QRA (see paragraph 3.1.3); source of enlisted manpower requirements, by rate and rating, balanced to January FYDP end strengths.

To improve the quality of input data for manpower increments and decrements, a new and comprehensive data collection document has also been developed.[49] The form contains sufficient information to permit a computer-generated itemization of approved billet changes that can be applied almost immediately to the MAPMIS billet files.

3.3 Navy Manpower Requirements System (NMRS). In the 1974 report the NMRS being developed by the Navy Manpower and Material Analysis Center, Atlantic (NAVMMACLANT) was cited as the foundation for the NAMPS Manpower Reference Model (MRM) and was described in some detail, based on information set forth in the System Requirements Plan for the NMRS.[50] More recent information[51] indicates that a number of system design changes have been made, a data base management system is to be used for storage and retrieval of system data, and new requirements have been levied.

3.3.1 Current NMRS System Design. The NMRS consists of seven major interfacing subsystems, each having its own unique functions (Figure 3-04). The ultimate products of the NMRS are the manpower documents presenting the minimum quantitative and qualitative manpower requirements for given activities.[52] The processing sequence through the seven subsystems is as follows:[53]

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49 B-K Dynamics, Inc., undated manual "Manpower - Data Collection Sheets for POM-78"

50 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", p 20 et seq

51 NAVMMACLANT Briefing Document, 9 January 1976, "Navy Manpower Requirements System (NMRS)"

52 Ibid, NMRS Overview Section, p 3

53 Ibid, NMRS Overview Section, p 3 et seq

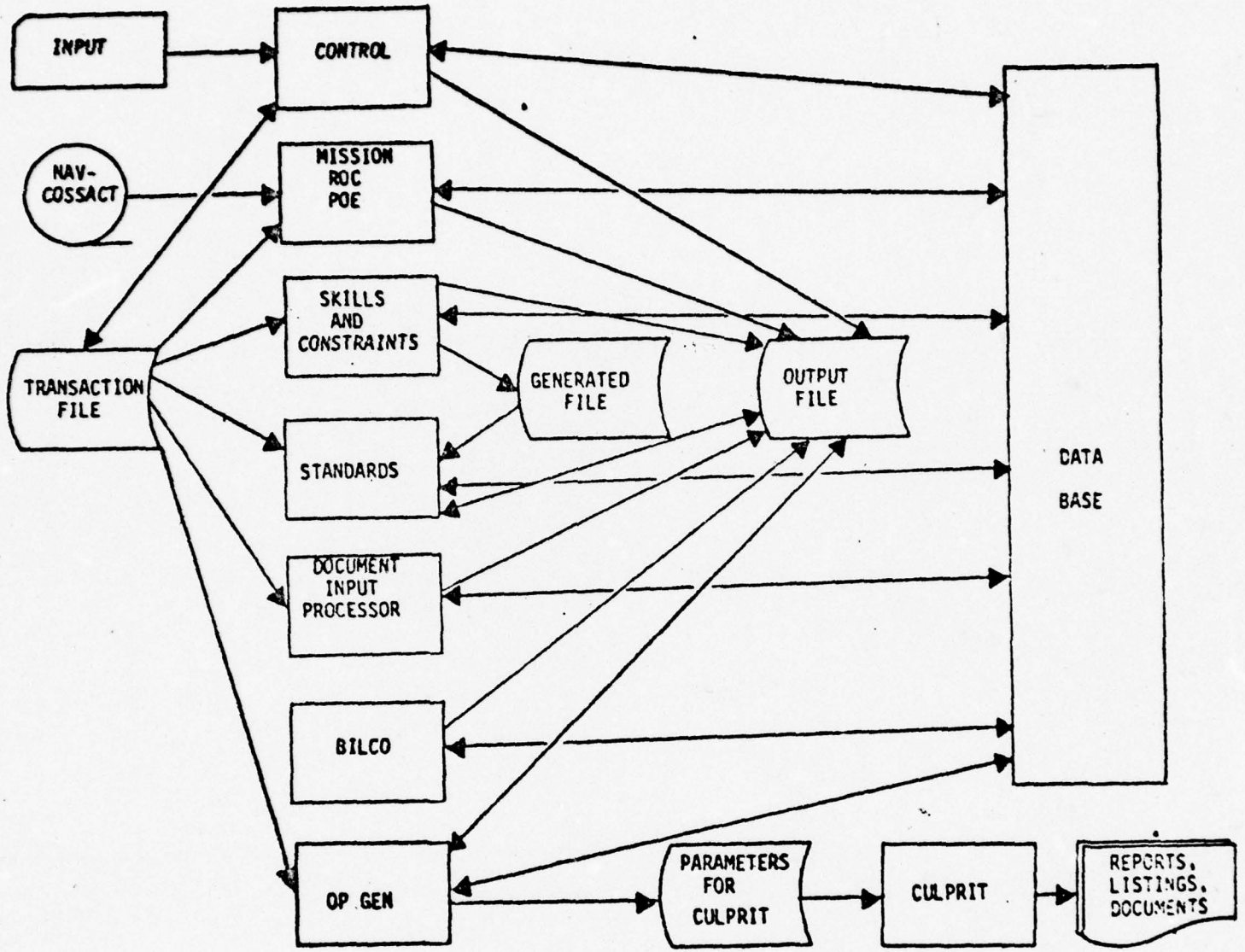

FIGURE 3-04. The NMRS and its Subsystems

a. Control Subsystem. The Control Subsystem processes all input data transactions, selectively validating certain fields, placing valid transactions in a common work file, and rejecting transactions that cannot be validated. After all input data has been processed, the work file is then sorted to a predetermined sequence and read. Based on control data in the work file records the Control Subsystem "calls" another subsystem to further process a set of transactions. The subsystem monitors processing by other subsystems, evaluates results, and maintains the status of the processing.

b. Mission, ROC, POE, (MRP) Subsystem. The MRP Subsystem processes input transactions into appropriate NMRS data base files for organizational activities, Required Operational Capabilities (ROCs), Projected Operational Environment (POE), Required Functional Capabilities (RFCs) and other tasking statements. Input data comes from two sources, the work file created by the Control Subsystem and a magnetic tape file provided by SHOROC (see paragraph 3.1.2 above).

c. Skills and Constraints Subsystem. The Skills and Constraints Subsystem processes input transactions in the work file into NMRS data base files pertaining to enlisted ratings, officer designators, Navy Enlisted Classification (NEC) codes, Naval Officer Billet Codes (NOBC), occupation codes, paygrade distribution and compression, work week compression, and billet titles. Based on evaluation of the input data, the subsystem may generate other types of transactions for the NMRS data base ("system-generated transactions").

d. Standards Subsystem. The Standards Subsystem processes input data transactions and "system-generated transactions" into those NMRS data base files pertaining to staffing standards, equations, tables, organizational structures, directed requirements, and non-RFC standards.

e. Document Input Processor (DIP) Subsystem. The DIP Subsystem, based on organizational identification codes supplied as input to the work file, accumulates from the work file and the (updated) NMRS data base files the data necessary to create work load, watchstation, and non-billet RFC records used by the next subsystem, storing the data in the NMRS data base.

f. Billet Position Converter and Optimizer (BILCO) Subsystem. Acting on the data records created by the DIP Subsystem and retrieving from the NMRS data base such other data it may require, the BILCO Subsystem creates a set of

billets/positions in an organizational structure that provides the manpower required to satisfy the given work load. The records are then used to update billet files in the NRMS data base.

g. Output Generator (OP GEN) Subsystem. The OP GEN Subsystem processes input transactions containing textual information for documents and listings into the NMRS data base and generates report, listing, and document parameters to be used by the commercially procured report generator program ("CULPRIT") to produce the printed outputs.

3.3.2 NMRS Data Base. The NMRS data base consists of a variety of files grouped into five general categories (Figure 3-05),[54] tasking, skills, constraints, billets ("BILCO"), and a reference area. These files, or subsets, of the NMRS data base are managed by a commercial data base management system called the Integrated Database Management System (IDMS).[55] IDMS was selected by NAVMMACLANT after review of several commercially available data base management systems on the basis that it best met "all of the NAMPS data base requirements", that it offered the maximum flexibility in data base structure, and that it was the only data base management system that implemented specifications for such systems issued by the Conference on Data Systems Language (CODASYL).[56]

3.3.3 New Requirements. The basic concept of the NMRS design, as originally conceived and subsequently modified as described in paragraph 3.3.1 above, centers around the production of printed documents containing manpower requirements derived from a single set of required operational or functional capabilities for each Navy activity for which data has been collected. To satisfy NAMPS requirements, there must be capabilities available that will cope with the following conditions:

a. Manpower requirements data must be provided within NAMPS for all Navy activities, including those for which work load data has not been collected.

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54 NMRS figures have been taken from the NMRS Briefing Document dated 9 January 1976

55 Ibid, NMRS Overview Section, pp 7, 8

56 NAVMMACLANT ltr ser 1280/8 of 10 October 1975, "Data Base Management System (DBMS) Selection", with enclosed report

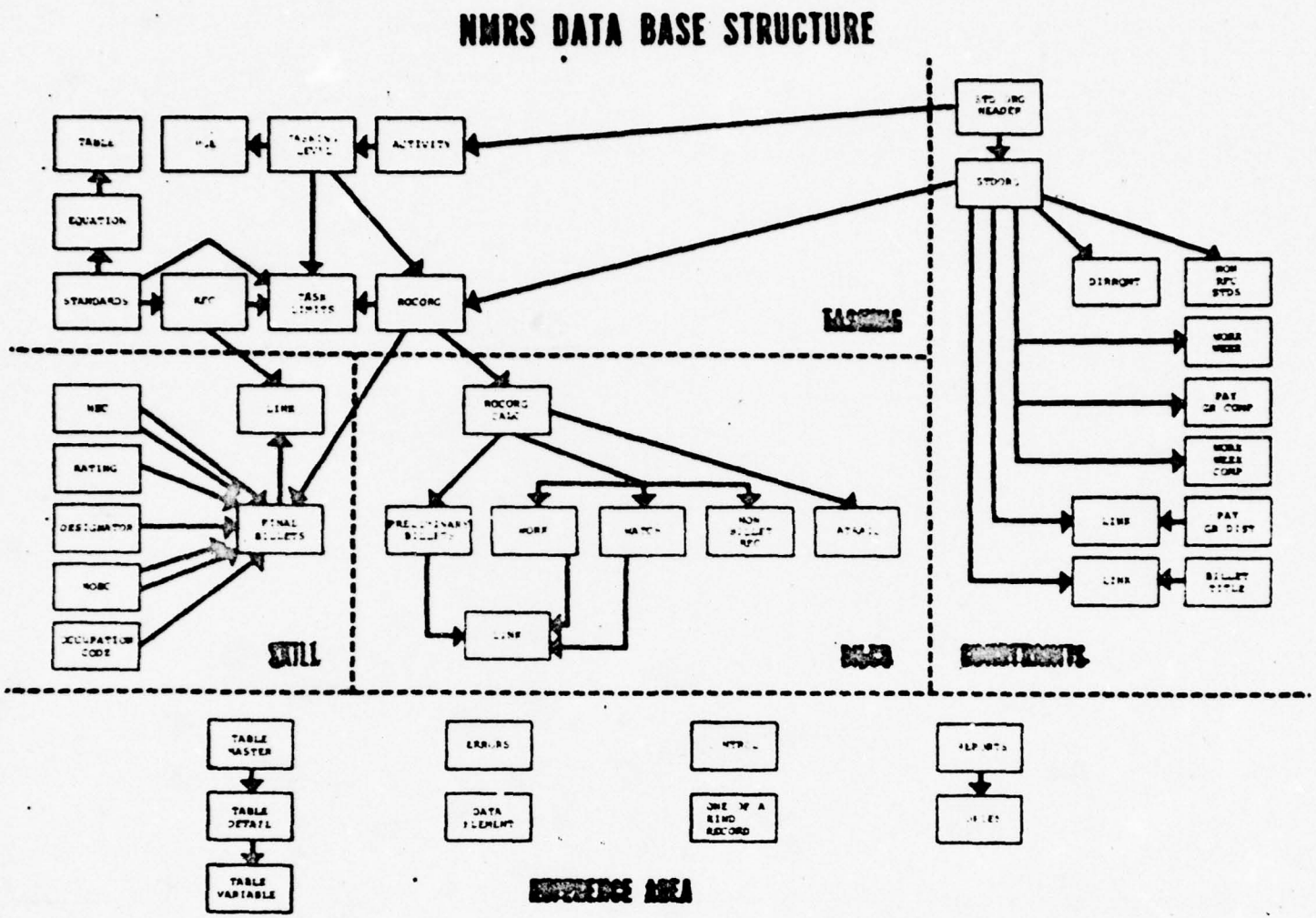

FIGURE 3-05. The NMRS Data Base Components

b. For NAMPS to answer satisfactorily "what if" questions dealing with variations of ROCs, POEs, and RFCs, the system must provide a means of testing alternative combinations of work load measurements and producing equivalent variations in manpower requirements.

It having been decided that these capabilities should be available for use during "POM-79" and that the NMRS should provide them, these requirements (and others) were accordingly levied upon NAVMMACLANT with a firm completion (readiness) date of 1 October 1976.[57] To accomplish these tasks, additional resources were provided in the form of contractor assistance.

3.3.4 Modifications of the Current NMRS Design. Even later information reflects that NMRS design is still undergoing modification. The BILCO Subsystem described above has been replaced by a new process called Billet Derivation (BILDER).[58] This process consists of three central subsystems (Figure 3-06), one for ships, one for aviation squadrons, and one for shore activities. In addition to replacing the BILCO Subsystem, the new process calls for some changes in the DIP and OP GEN Subsystems,[59] with which the central subsystems interface.

3.4 Analysis of Navy Military Manpower Planning. As reported in the 1974 report, in mid-1973 research and development (R&D) efforts, which earlier had produced a study of existing computer models for manpower and personnel management, were formally given the title "Manpower Requirements and Resources Control System" (MARRCS).[60] In late 1973, under R&D Advanced Development Project Number P43-07X, the Navy Personnel Research and Development Center (NPRDC), San Diego, initiated "Phase I" of MARRCS, a systems analysis and description of current manpower planning and decision processes.[61] This effort resulted in a number of

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57 CNO ltr ser 12/98123 of 23 December 1975, "Navy Manpower Requirements System", with enclosure

58 NAVMMACLANT Functional Description dated 15 March 1976, "NMRS Billet Derivation and Associated Processes".

59 Ibid, p 10

60 NAVCOSSACT Document No. 53D109 TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", p 15

61 CNO ltr of 30 November 1973, ser 987E/498, Subject: "Advanced Development Project P43-07X, 'Manpower Requirements and Resources Control System'; implementation support"

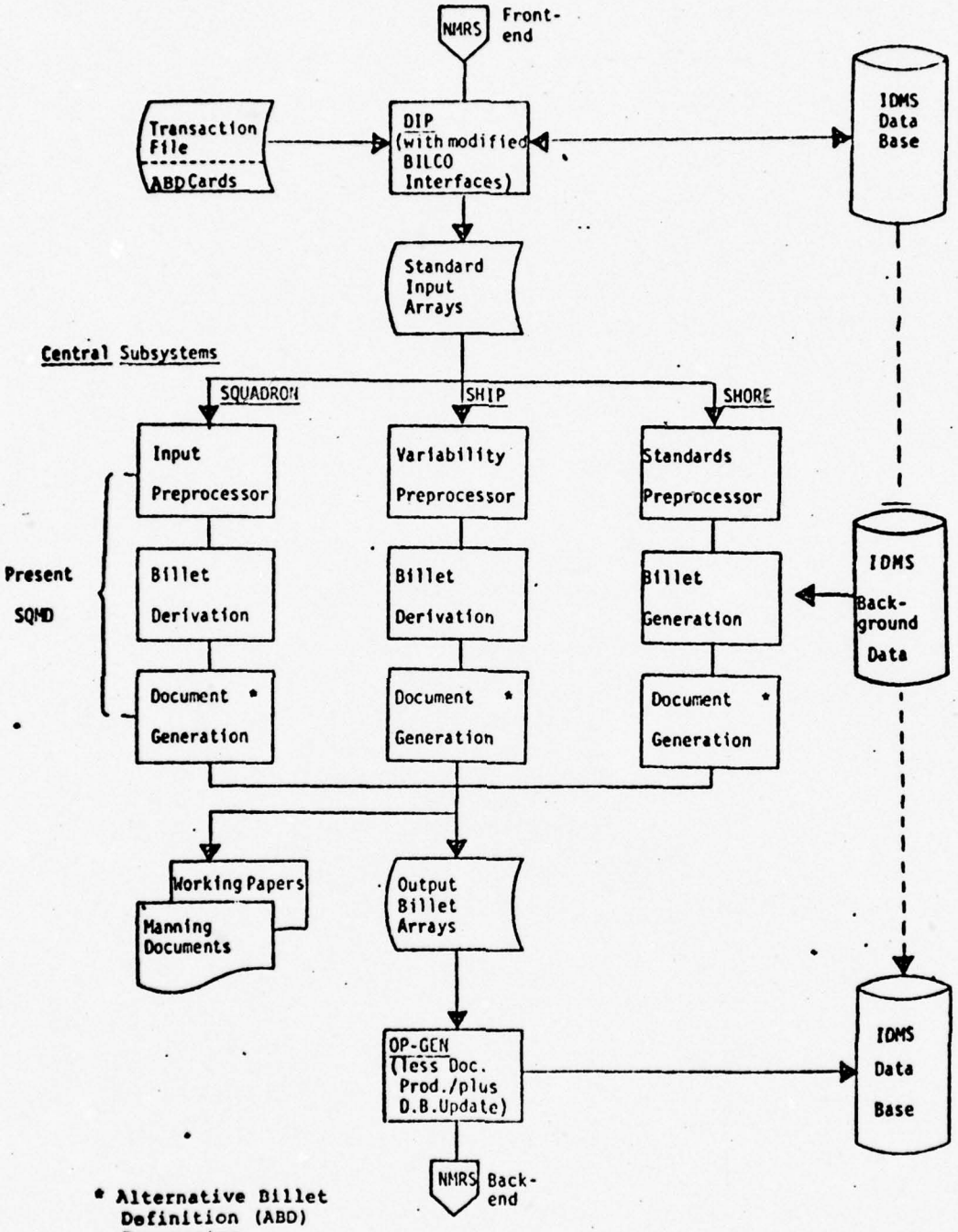

FIGURE 3-06. Billet Derivation (BILDER) Process

reports that described the methodology used in conducting the analysis and the results of the analysis itself.

One effort of the MARRCS Phase I analysis resulted in an overview of the Navy's participation in the Department of Defense Planning, Programming and Budgeting Sytem (PPBS), with emphasis on the Navy's management structure as it pertains to this system.[62] Of particular significance are the various tables and diagrams that portray the interrelationships of the different types of sponsors, e.g., Mission Sponsors and Force/Function (Resource) Sponsors; Mission Sponsors and Program Element Sponsors, etc.[63]

A second effort of the Phase I analysis resulted in schematic "flow charts" of the functions of major offices of the Assistant Deputy Chief of Naval Operations (Manpower Planning and Programming) (Op-01C) using the Operation Sequence Diagram (OSD) techniques.[64] These diagrams helped to identify some "70 internal and external organizational interfaces relating to manpower planning" and a minimum of 400 functional interactions related to manpower planning that are carried out on a continuing basis.[65]

Concurrently with these efforts, a data collection document of considerable complexity was devised as a means of gathering information with which to analyze the information-processing network involved in the manpower planning process.[66] The questionnaire was aimed at identifying, for each "communication" between two participants in a manpower planning function, not only the nature, intent and content of the "communication" but also how each of the two participants (the "producer" of the "communication" and its recipient) evaluated the worth of the "communication". Separate sections of the questionnaire asked for identification of inputs, processes, and outputs (information

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62 NPRDC TR 75-19, October 1974, "Navy Manpower Planning and Programming: Basis for Systems Examination"

63 Ibid, pp 46, 47, A-17 et seq

64 NPRDC Special Report 75-5, July 1974, "Exposition of Significant Manpower Planning Decisions in a Major Navy Command Organization"

65 Ibid, p 67

66 NPRDC TR 75-20, October 1974, "An Approach and Instrumentation for Management System Analysis"

flow) with which the respondent was involved; descriptions of each; the type or category of information that described each input and output (eight choices were offered); specific characteristics of each input and output (frequency, tone, format, etc); and many other details covering utilization, benefits, value, related costs, etc.

To process the mass of details provided by the returned data collection documents, a set of interactive computer programs known collectively as the Technique for Interactive Systems Analysis (TISA) was developed.[67] While specifically developed to support the MARRCS effort, TISA has been adapted for use in the Bureau of Naval Personnel (BuPers) to assess the current and future ADP needs of BuPers and to help in evaluating the effects of the then projected move to New Orleans.[68] The TISA data base for the MARRCS Phase 1 study was constructed from the data contained on returned data collection documents described in the preceding paragraph. Each "communication" described in the data collection documents has 88 attributes, any one of which, or any set, can be used to begin an analysis using TISA.[69] TISA includes the capability for "flow-charting" processes using the OSD technique previously described, for interactively modifying the data under analysis so that alternatives can be tested,[70] and for measuring costs and benefits of systems or parts of systems.[71] The TISA structure is depicted in Figure 3-07; its role in the MARRCS Phase I study can be seen in the graphic depiction of the MARRCS effort (Figure 3-08).[72]

The ultimate product of the study is a four-part report[73] that is far too comprehensive and voluminous to treat properly

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67 NPRDC TR 75-22, October 1974, "Technique for Interactive Systems Analysis (TISA)"

68 Ibid, p 18

69 Ibid, p 12

70 Ibid, p 6

71 NPRDC TR 75-21, October 1974, "An Approach for Measuring Benefit and Cost in Management and Information Systems"

72 Figures are taken from NPRDC TR 75-22

73 Draft NPRDC report, April 1975, "An Analysis of the Navy Manpower Planning and Programming System"

TISA STRUCTURE

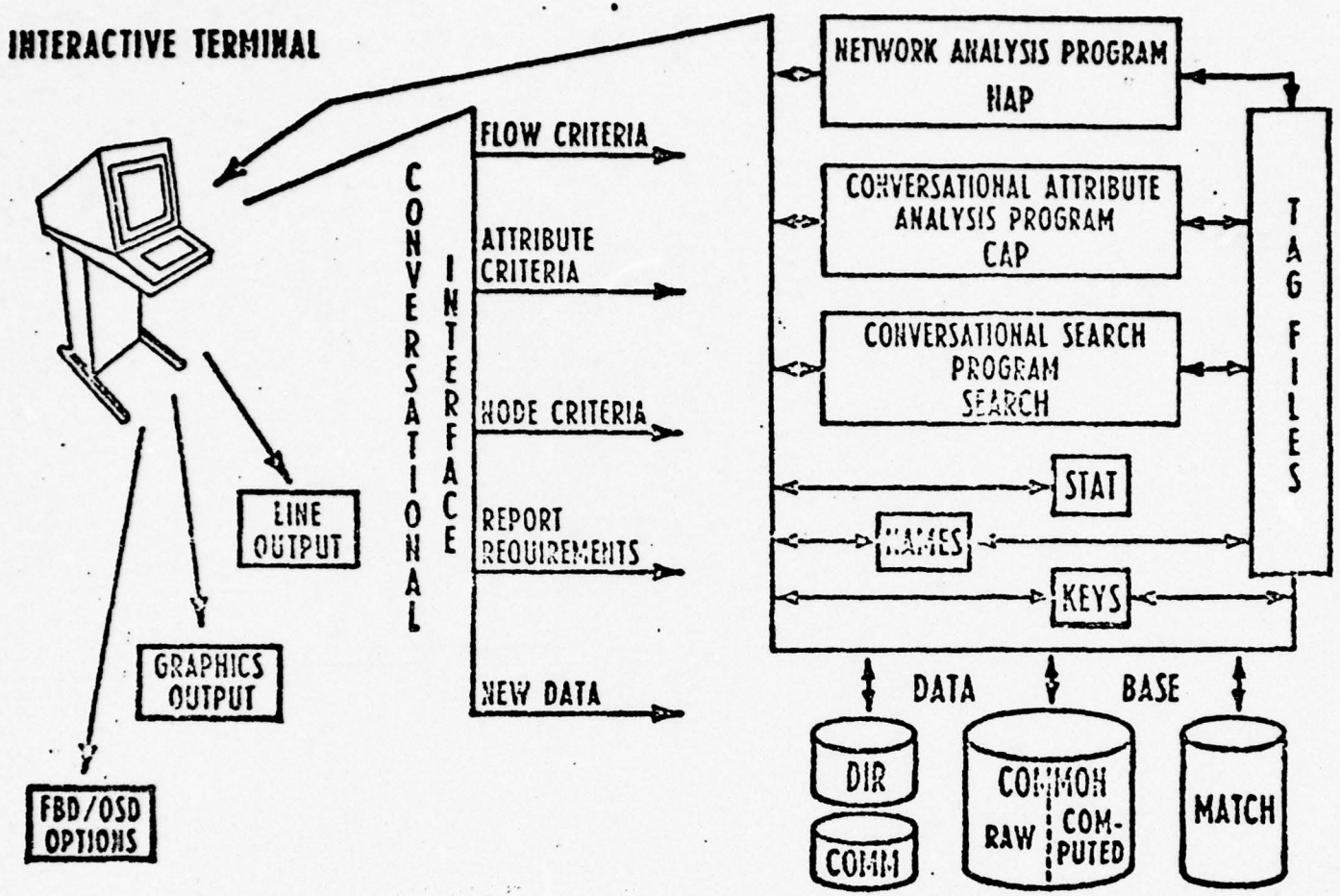

FIGURE 3-07. The TISA Structure

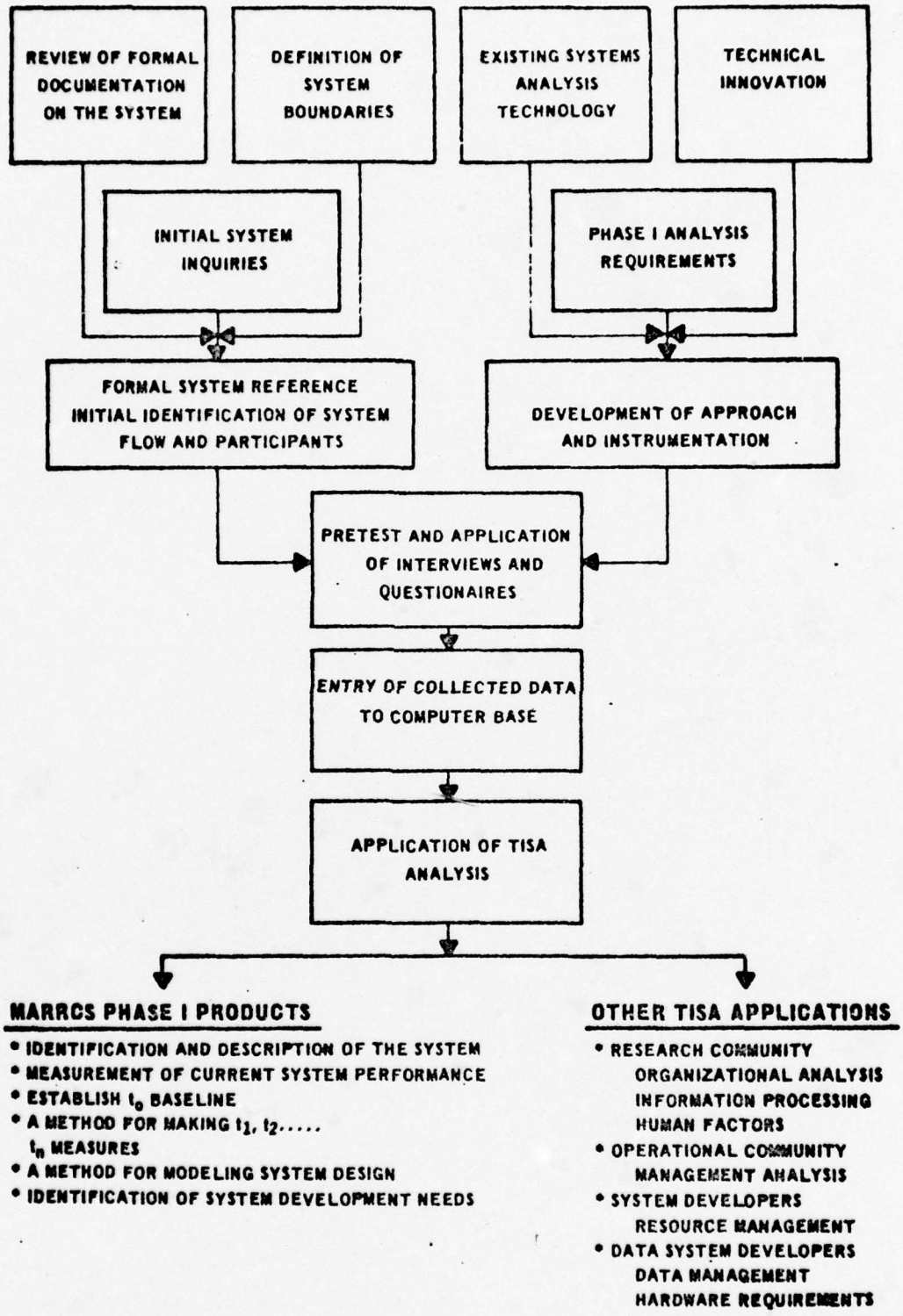

FIGURE 3-08. Overview of MARRCS Phase I

within the constraints of this review. The highlights of each of the four parts appear to be the following:

a. Part One; Management System Analysis. The bulk of the report, of course, deals with the analysis of the data about 1631 identificable "communications" (interactions) from 71 usable respondent questionnaires.[74] There are numerous tables and system descriptions that are either direct or transformed outputs of TISA.[75] Of particular interest are those results dealing with costs and benefits. For example, the total annual personnel cost for manpower planning was estimated at $11.833 million (FY 74 dollars); this figure does not include ADP support costs, fixed costs, overhead, etc.[76] "Product" costs ranged from nothing to a maximum of $746,983; however, the greatest number of "products" cost less than $10,000, with the average cost being approximately $36,000 which, when shared among more than one recipient, became an average "shared cost" of about $20,000.[77] With respect to benefits realized from the existing system and its products, the report indicates that only 63% of the potential usefulness of system "products" is being realized[78] due, in large part apparently, to the problems perceived with respect to timeliness and accuracy of the data. As much as 31% of the system information is perceived to be inaccurate most of the time, while the timeliness was perceived to be unsatisfactory most of the time for 37% of the information.[79] An analysis of various comments supplied by respondents supported the TISA results, for more than half the comments called for improvements in timeliness or accuracy.[80]

b. Part Two; Manpower Planning Process Description. Based in large part on observations made during meetings, conferences, and briefings that took place during the POM-77 cycle and on

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74 Ibid, p 13

75 Ibid, p 4

76 Ibid, p 94

77 Ibid, p 95

78 Ibid, p 106

79 Ibid, p 119

80 Ibid, p 159

interviews with various participants in that process,[81] the second part of the final report is an assessment of the success of the MRCP and the "Mini-NAMPS" (see paragraph 3.2 above), including an analysis of the doubts, problems, and other "intangible" human factors impacting on the POM-77 process and manpower planning in general. Despite the official recognition of the MRCP in POM directives[82] and the acknowledgement of past problems associated with manpower planning, "there was considerable doubt among the Navy's top manpower management that its analyses would be appreciated and acted upon" by the CNO Executive Board (CEB); and there was also an opinion held by some that Navy's top management was more concerned with getting as much "hardware" as possible than with ensuring that there would be enough people to run the "hardware",[83] that the CEB might not want to be told that it should not approve procurement of certain "hardware" because personnel needed for it would not be available in time.[84] In fact, however, the assessments that were made possible with the new procedures received "high compliments" from key members of the POM Development Review Committee (PDRC) and an acknowledgement by the CNO himself that the work of the MRCP was significant.[85] The new procedures appear to have resulted in three main gains:

(1) It was found that Mission Sponsors were sensitive to the "manpower intensiveness" of their programs and were able to identify both the quantity and quality of the manpower impacts.[86]

(2) Personnel planners gained valuable lead time in developing personnel programs that would ensure that personnel would be available to meet projected manpower requirements. The Chief of Naval Education and Training (CNET) was given an "A" School Training Plan almost a year earlier than was

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81 Ibid, p 169

82 Ibid, p 166

83 Ibid, p 171

84 Ibid, p 172

85 Ibid, p 181

86 Ibid, p 182

previously possible, only 3 days after the FY 76 plan.[87]

(3) The synergism between manpower planning and personnel planning demonstrated that problems can be predicted to a level of detail in sufficient time for management to find solutions during POM deliberations. For example, of some three dozen "sick ratings" (those wherein less than 90% of programmed billets could be filled), all but four were made "well" by FY 77.[88] In another case, it was possible to identify a training problem for the CNO and obtain his suggestion to defer part of one program in order to pay for the training requirements of another.[89]

c. Part Three; Information Needs of Manpower Planning. This section reports on the results of a sampling of opinions with respect to five areas of interest relating to future capabilities that will be needed by a manpower management system. One area of interest dealt with the implications of a specific directive from the Office of the Secretary of Defense (OSD); the other areas were concerned with types of "what if" questions that a manpower management system should be prepared to cope with and the pros and cons relating to the existance and use of a management tool that could answer such questions.[90] A very large number of "what if" questions were derived from records of Congressional budget hearings.[91] These, and others developed by interview, dealt generally with the impacts of percentage reductions and the relationships of support requirements to operating forces; projections of manpower requirements based on changes in force structure; the impact on readiness of changes in a variety of Navy policies; the impact of base closures or consolidations on fleet readiness; the impact of "tension levels" on manning levels; and improved forecasting of training requirements.[92] With respect to factors affecting the usefulness

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87 Ibid, p 179

88 Ibid, p 178

89 Ibid, p 180

90 Ibid, p 198

91 Ibid, p 200

92 Ibid, pp 200-209

of a comprehensive manpower management system, a need to "rectify the loss of credibility which Navy management has suffered in the past several years" appears to support the development of data systems capable of substantiating and quantifying answers to OSD and Congressional questions.[93] On the other hand, too much information from such a system; a perceived loss of command prerogative and flexibility because of centralization of manpower planning; a high turnover rate of military managers; and a fear that having such a system might contribute further to a "narrowing of ... command discretion vis-a-vis Congress and other outsiders" were seen as mitigating against acceptance and use of a comprehensive manpower management system.[94]

d. Part Four; A Structure for Accomplishing Workload-based Manpower Requirements Planning with a Discussion of Related Development Tasks. This section identifies three broad areas in which improvements should be developed: information processing, organizational representation, and technological expansion.[95] In the first area, it is proposed that the information flow discussed in Part One be examined, data inputs "purified" and "integrated", and a Data Base Management System established.[96] Organizationally, more integrating mechanisms such as the MRCP are recommended.[97] Most of the section is devoted to exploring the possible avenues of technological development, with emphasis on the need for variability in statements of ROCs and the relationships of Operating Force needs to concomitant support requirements.[98] A pilot study is proposed as an approach to determine feasibility of variable ROCs,[99] while the use of "input/output" modelling is supported as the best approach to the force/support linkage problem.[100]

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93 Ibid, pp 211, 212

94 Ibid, pp 211-213

95 Ibid, p 218

96 Ibid, pp 218-221

97 Ibid, pp 221, 222

98 Ibid, p 222 et seq

99 Ibid, pp 240-243

100 Ibid, pp 230, 231

3.5 Studies of NAMPS Problem Areas. Five major "problem areas" were identified and described in the 1974 NAVCOSSACT report.[101] As far as can be determined, only one of these areas has received extensive study, that being the problem of defining variable operational requirements and deriving therefrom the necessary "support tail". The two parts of this problem (ROC variability and derivation of "support tail") have been studied separately, but no study has been made as yet of how to link solutions of the two parts of the problem, i.e., how to vary the "support tail" based on dynamic changes to ROCs for the operating and support forces.

3.5.1 Variability in Workload Requirements. Under the OSD-sponsored Ship Mobility and Operational Readiness Evaluation (SMORE) program, the Navy was directed in 1975 to evaluate the effects on readiness of various ships of arbitrary manpower configurations based on percentage values. Dissatisfaction with the nature of the SMORE program led to its redirection using the superior Readiness Assessment Program (RAP) which was under development at the time. The latter program is based on assessing the operational capabilities which obtain from varying the requirements (and related manpower) in one or more of four areas:[102]

a. Endurance, i.e., period of time for intensive watchstanding.

b. Workload, e.g., amount of time devoted to maintenance.

c. Special evolutions, e.g., underway replenishment, flight quarters, etc.

d. Operational requirements (reduction or elimination), e.g. eliminating ASW, manning one gun instead of two, etc.

Using Ship Manpower Document (SMD) data and methodology, the RAP process applies rational logic to alter parameters in these areas and derive reduced ROC levels that can be related to manpower reductions to obtain the percentage of reduction. Various

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101 NAVCOSSACT Document No. 53D109, TR-01, September 1974. "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", p 72

102 Op-121 "talking paper" dated March 1976, "Readiness Assessment Program"

combinations of changes in parameters can be tested to determine the effects of each combination on ship readiness and manpower requirements.

While the RAP process was originally developed as a manual process, automation of the process is considered feasible by adaptation of a computer program developed by the Navy Manpower and Material Analysis Center, Pacific, (NAVMMACPAC) in February 1976. This program is known as the Interactive Manpower Analysis Program (IMAP).

RAP and its automated version IMAP are considered to be the forerunners for the NAMPS Alternative Generator Model. Since the essence of the RAP concept is the variation of ROC parameters (including the reduction or elimination of specific ROCs), its use as a solution to the problem of ROC variability cannot be overlooked.

3.5.2 Determining Workload Requirements for Supporting the Fleet. Another major problem of long standing is that of relating support requirements to changing demands of the Operating Forces. Two studies dating from the early 1970s were cited in the 1974 NAVCOSSACT report;[103] the more recent study by NPRDC also commented on the problem and cited on-going efforts by NPRDC to develop viable models using the Leontief input/output approach.[104]

In one effort, an input/output model was constructed with data selected from the Logistic Support Requirement (LSR) system, "Statistics of Navy Medicine" for fiscal year 1972, and "Personnel of the Naval Shore Establishment" (NAVSO P-111) for December 1971.[105] These data pertained to twenty activities of the 11th Naval District selected for their size and availability of input data.[106] Output measures for the various activities

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103 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 38, 39

104 Draft NPRDC report, April 1975, "An Analysis of the Navy Manpower Planning and Programming System", pp 229-231

105 Draft NPRDC document (undated), "Manpower Forcasting for Activities via an Input-Output Model", p 7

106 Ibid, pp 4, 6

varied from dollars worth of contracts and man-hours or man-days expended to hospital admissions and numbers of students. Several hypothetical problems were "solved" with the model, including a disestablishment of a major activity, a percentage reduction of the Operating Forces, transfers of ships from one home port to another, etc.

While the model generated answers for these hypothetical "what if" questions, the validity of the data used as input was questioned. The quantitative data from the LSR was described as varying in consistency;[107] the constraints on the choice of output measures were "unsatisfactory".[108] There would be a great deal of labor involved in collecting data for a linear model even on an annual basis,[109] and the report concludes that "implementation of the model requires more work on data sources, fleet structure and the level of detail in the model".[110]

A second effort concentrated not on the use of an input/output model but "with the way support for the fleet is accomplished".[111] Using a variety of statistical techniques, data sources, assumptions, and data analysis approaches, a study was made of four different types of activities: a Navy Supply Center, where the study concentrated on an analysis of customer demands represented by requisitions; a Navy Calibration Laboratory, where the impact of budget and manpower constraints was examined; a Naval Air Station, where the study concentrated on the problem of many dissimilar functions being performed that do not have a common measure of output; and a Navy Hospital, where the problem of adequate workload measurement without adequate customer identification was examined.[112] A fifth study

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107 Ibid, p 7

108 Ibid, p 6

109 Ibid, p 4

110 Ibid, p 21

111 NPRDC paper, "The Structure of Demands on Navy Shore Activities", presented at ORSA/TIMS Joint National Meeting at Las Vegas, Nevada, 18 November 1975; p 1

112 Ibid, pp 2, 3

of the impact of a proposal to change the home port of an aircraft carrier was terminated when it appeared that there would be no appreciable impact.[113]

Although the studies were admittedly preliminary, the results of the studies led to the following conclusions, among others:[114]

a. It is possible to "model" the support structure, and the data needed for such a model exist. "However the data are scattered among individual activities and are often in a raw form. Thus, collection and organization of the data are laborious and costly."

b. "Navy activities are comparable by class on an aggregate level.....Consequently, individual differences are not as critical as local managers believe."

c. As customers, units of the Operating Forces levy less than half the workload demands for many shore activities; the major portion of the demands comes from shore-based customers. "Consequently, any model linking the fleet to the shore must include second order effects of the fleet on an activity via other activities."

d. While the requirements of customers within a class of customers were uniform, there are significant differences between customer classes.

e. "Workload relationships change over time. They depend upon organizational structure and external events which alter the mix of demands by customer classes."

Research and development (R&D) effort in the area of fleet support demands is to be continued over the next five fiscal years at an estimated aggregate cost of $2.2 million, with the principal cost of the models to be developed being in the collection of data.[115] Work will be done by NPRDC.

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113 Ibid, pp 4-6

114 Ibid, pp 51, 52

115 Navy Decision Coordinating Paper (undated), "Fleet-Support Demand Network"

3.6 Research and Development (R&D). Numerous R&D initiatives in addition to that cited in the preceding paragraph have been proposed for the next five-year period. These initiatives address problems that can be divided into the following general areas:

a. Development of manpower requirements during the programming cycle; programmed for $625,000 in fiscal year 1977.

b. Development of manpower requirements during the planning cycle; programmed for $575,000 in fiscal year 1977.

c. Personnel inventory management; programmed for $350,000 in fiscal year 1977.

d. Interface between manpower planning and personnel planning; programmed for $100,000 in fiscal year 1977.

While it is hoped that the R&D efforts will be continued through the ensuing four fiscal years at the same funding levels programmed for fiscal year 1977, funding levels are subject to change not only because of programming and budget considerations but also because of results of the R&D efforts themselves.

3.6.1 R&D in Support of Requirements Programming. In addition to the proposed study of the "fleet-support demand network" previously cited, at least two other efforts have been proposed. One proposal cites the existence of a range of problems inhibiting the integration of military and civilian manpower requirements development and suggests a two-year study to delineate the problems, identify solutions, and develop integrating methodologies.[116] The other identified proposal addresses the suggestion that application of economic analysis to manpower resource allocation can help identify labor-intensive Navy functions that are not cost effective when compared to other resource allocation alternatives, suggesting a three-year "case study" to test the theory.[117]

3.6.2 R&D Support of Long-Range Manpower Planning. Two basic problems are addressed in this area: the need to develop tools to

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116 Navy Decision Coordinating Paper (undated), "Integrated Military/Civilian Manpower Planning"

117 Navy Decision Coordinating Paper (undated), "Economics of Manpower Resource Allocation"

permit forecasting of manpower requirements and personnel availability in the period from five to 20 years into the future, and the need to introduce into the R&D cycle covering new Navy systems (platforms, weaponry, etc) tools and techniques that ensure consideration of manpower cost-benefit alternatives from the outset. In the first instance, the proposal suggests a five-year project to identify and measure factors affecting supply (of personnel) and demand (required billets) and develop, test, and evaluate statistical models that will forecast, with reasonable accuracy, the long-range manpower demands and personnel availability under various conditions.[118] In the second instance, the proposal suggests a five-year project that would produce computer-assisted techniques (models) that could be used by system design teams to evaluate the manpower costs of alternative design approaches.[119]

3.6.3 R&D Support for Personnel Inventory Management. At least seven R&D efforts to develop improved personnel inventory management capabilities have been proposed for the five-year period beginning with fiscal year 1977. These proposals recommend:

a. Enhancing an existing model and developing additional models to improve planning for and management of Navy officer personnel.[120]

b. Improving selection procedures for Naval Academy and Navy Reserve Officers Training Corps (NROTC) so that career-motivated applicants can be identified.[121]

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118 Navy Decision Coordinating Paper (undated), "Long Range Manpower Planning"

119 Navy Decision Coordinating Paper (undated), "Manpower Cost and Configuration in Systems Design"

120 Navy Decision Coordinating Paper (undated), "Officer Management Systems"

121 Navy Decision Coordinating Paper 12 January 1976, "Selection for Officer retention"

c. Identifying factors which motivate officers to remain in the Navy, evaluating the impacts on officer retention of various "detailing" procedures, and developing improved techniques that would enhance those factors which motivate officer career continuance.[122]

d. Enhancing the existing enlisted personnel planning system to improve reaction and response time and develop capabilities not now available.[123]

e. Developing an interactive network of minicomputers and processors with data base management capabilities to provide improved recruitment and assignment capabilities.[124]

f. Studying attitudinal/motivational factors which influence decisions by Navy enlisted personnel facing reenlistment with a view to developing knowledge that can be used to improve enlisted retention rates.[125]

g. Testing the feasibility of using data communications networks and minicomputers to improve personnel planning for Navy shore installations, known as the Shore Activity Manpower Planning System (SAMPS).[126] This system relates to planning and management of civilian personnel, with computer programming being done by NAVCOSSACT under project number 02J012.[127]

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122 Navy Decision Coordinating Paper, 19 January 1976, "Officer Career Continuance"

123 Navy Decision Coordinating Paper, (undated), "Personnel Policy Simulation"

124 Navy Decision Coordinating Paper (undated), Navy Personnel Acquisition"

125 Navy Decision Coordinating Paper (undated), "Selective Retention: A Longitudinal Analysis"

126 Navy Decision Coordinating Paper (undated), "Shore Activity Manpower Planning System"

127 Office of Civilian Manpower Management (OCMM) letter serial 64:JV3, dated 25 Mar 1976, subject "Project Request 02J012, OCMM Shore Activity Manpower Planning System (SAMPS)"

3.6:4 R&D Support for Interfacing Manpower and Personnel Planning Systems. A five-year effort is proposed for modifying an existing system by developing additional knowledge about variables affecting the size and configuration of manpower requirements and personnel inventories and applying that knowledge to enhanced computer models.[128] Although not specifically identified as such, the existing system referred to is the "Mini-NAMPS" described in paragraphs 3.2 et seq.

128 Navy Decision Coordinating Paper (undated), "Planning Interface for Manpower and Personnel"

SECTION 4. ADP CAPABILITIES NEEDED FOR NAMPS

In this section an analysis is made of the NAMPS structure and "operating scenario" with respect to data bases required, software needed to use and manipulate those data bases, and the data base maintenance capabilities needed.

4.1 ADP Implications of the NAMPS Scenario. The general implications that can be derived from a review of the NAMPS scenario described in Section 2 are as follows:

a. Most, if not all, ADP support for the POM process must be conversationally interactive.

b. There is a wide range of requirements for interactive processing, implying a need to compartmentalize and exercise processing control through an executive supervisor program.

c. Access to the data in automated data bases needs to be carefully monitored, implying a need for access control software.

d. The creation of an apparently unlimited number of notional data files (sponsor's proposals) that can be retrieved in any combination or sequence implies a need for automated file directory, file indexing, and file retrieval capabilities.

e. The need to create "base case" files implies that there will be master data files that will be subject to regular updates; that selected data in these files needs to be "frozen" as of a given point in time; and that 100% duplication of master data files for "base case" files is not required.

4.2 Types of ADP Programs Needed. The computer programs needed to support the ADP requirements of the NAMPS operating scenario would appear to fall into five groups:

a. Data base maintenance programs to create, update and audit basic master data files that would be the primary sources of data for the "base case" data files generated for sponsors' use.

b. Basic data extract programs to construct, index, and validate "base case" data files created from data taken from basic master data files.

c. Interactive programs with which to create, update, and manipulate "notional" data files belonging to various sponsors.

d. Executive control programs to monitor and constrain the interactive processing, identify and index sponsors' data files, and maintain the security and privacy of those files.

e. System support programs to perform various functions common to different subsystems.

All programs must be functionally organized into subsystems focussed on specific types of data or on specific functional requirements.

4.3 Master Data Base Requirements. It would appear that a number of separate master data bases will be required in order to provide the data needed by NAMPS. There can be no accurate determination of precisely how many separate data bases should be maintained under NAMPS until there has been a determination of what existing automated data bases can be used as sources for NAMPS data. Master data files needed for NAMPS ADP subsystems would appear to include the following:

a. Operational Requirements Files.

(1) Statements of ROCs, POEs, and RFCs for ships, squadrons, shore activities, and other navy organizations.

(2) Statements of relationships between operational requirements for fleet units and the supporting functional capabilities that the Shore Establishment must provide.

(3) Information about Navy organizations and the relationships that exist among them, including who has sponsorship responsibilities and what the supportive interactions are.

b. Manpower Reference Files.

(1) Statements of manpower requirements related to statements of operational requirements (Manpower Reference Model).

(2) Statements of manpower requirements not related to operational requirements but related to organizational needs (such as QRA and QRAO).

(3) Manpower cost data.

c. Technological and Facilities Forecast Files.

(1) Statements of quantitative factors applicable to sets of manpower requirements.

(2) Algorithms for applying factors.

d. Personnel Inventory Files.

e. Supporting dictionaries, indices, equivalency tables, etc.

4.4 ADP Support to be Provided Under CNOCOM/MIS. For reasons set forth in paragraph 1.4, it is not possible at this time to define with any exactitude the entire scope of ADP support that will be asked for under the aegis of CNOCOM/MIS. However, some general guidelines have been proposed that include the development of ADP systems to create, update, audit, and use basic master data files for operational requirements and for manpower requirements unrelated to operational requirements (see paragraphs 4.2a, 4.3a, and 4.3b(2) above). The general nature of the automated data files for which maintenance systems would be needed under CNOCOM/MIS can be described as follows:

a. Operational Requirements Files. Conceptually, these data files would contain the most recent officially approved statements of Required Operational Capabilities for Navy fleet units and shore activities. For operational units, statements of Projected Operational Environment (POE) would also be needed. Because of the differences in how these statements need to be phrased, it is believed that the following data files are needed:

(1) Ship Required Operational Capabilities (SHIPROC), to include statements of POE.

(2) Squadron Required Operational Capabilities (SQUADROC), to include POE statements.

(3) Shore Required Operational Capabilities (SHOROC).

(4) Required Operational Capabilities for Mobile Activities (ROCMA), such as staffs afloat, SEAL teams, Explosive Ordnance Units, Construction Battalions, etc.

b. Support Relationships Files. In Section 2, paragraphs 2.2.2.1 and 2.2.2.2, mention is made of programmatically generated files of support requirements based on the sponsor's proposal for fleet operational requirements. If this capability is to be at all feasible, there must be data files (and algorithms for their use) containing statements of relationships between Required Operational Capabilities (ROCs) afloat and the support-type ROCs and shore-based Required Functional Capabilities (RFCs) that define the support needed for fleet operating units. There could be three types of relationships, each requiring different phrasing and different forms of data files:

(1) Ship-to-ship support relationships, e.g., the need for underway replenishment generated by the ROCs and POEs for ships and units afloat.

(2) Ship-to-shore support relationships, e.g., the need for shore supply facilities to support ships and units afloat.

(3) Shore-to-shore relationships, e.g., the need for procurement functions to support the shore supply facilities.

c. Activity Status Files. The Activity Reference File (ARF) described in paragraph 3.1.1 would probably satisfy the requirements for activity status data provided that the system capabilities are sufficiently enhanced to provide the data needed. The enhancements that are needed include, but are not necessarily restricted to, the following:

(1) Inclusion of data from aviation planning files.

(2) Inclusion of data from civilian planning files maintained by the Office of Civilian Manpower Management (OCMM), limited to activity identification data of the type currently included in the ARF.

(3) Inclusion of data which reflects the satelliting of activities afloat and ashore on shore installations for logistic support.

d. Current Manpower Authorization Files. The need for data files that contain summaries of manpower authorizations and manning documents is justified by the following considerations:

(1) It has already been conceded that there will be some Navy activities whose functions cannot be quantified or measured by statements of ROCs or RFCs; yet the manpower required to run these activities must be considered when evaluating sponsors' proposals in an "all-Navy" environment.

(2) As part of the assessment of manpower impacts, it may be desirable to display a "before" and "after" comparison.

(3) If an approved Navy manpower "suit" derived from NAMPS processing is to be applied to existing manpower authorization and documentation files, there must be a set of "base case" data from which to compute increments and decrements.

While files developed by the QRA and QRAO systems (paragraphs 3.1.3 and 3.1.4) may be of considerable value, as would automated files of data relating to manning documents, other files providing data with respect to specialization (NEC, NOBC) within activities may also need to be developed, as well as files containing civilian manpower authorization data and relationships (equivalencies) between military billet definitions and civilian position definitions.

In addition, the requirements for certain interim applications previously defined[129] are considered still valid.

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129 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 69, 70

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SECTION 5. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in this section identify some of the difficulties associated with the development of ADP support for NAMPS and suggest actions that could be taken in subsequent phases of the technical analysis of NAMPS.

5.1 Technical Management of NAMPS ADP Development. During the review of the various documents used in preparing this report, it became apparent that the development of ADP support for NAMPS must be coordinated and controlled in a way that clearly delineates the responsibilities of each participating organization. It must consider the ultimate goals and objectives of NAMPS, the feasibility of integrating separately developed components, and how NAMPS should ultimately be used. Reasons for concluding that improved developmental coordination is needed can be found in the following examples:

a. While the 1974 NAVCOSSACT report reflected the probability that different agencies would have mutually exclusive roles in the development of ADP support for NAMPS, documents produced by some of those agencies subsequent to the 1974 report do not appear to recognize those roles, although the report was approved by Op-01 and widely disseminated. In more than one such document the publishing agency appears to assign to itself the lead role in NAMPS development, ignoring roles supposedly to be played by other agencies.

b. As a result of inadequate staffing, a lack of technical knowledge, and the urgent necessities of day-to-day operations, the Manpower Analysis & Systems Development Branch (Op-121) has had difficulty in sustaining a continuous coordinated effort to provide technical management of the development of ADP support for NAMPS.

c. Individual agencies appear to have independently initiated developmental efforts that apparently have not considered or been coordinated with efforts by other agencies or the overall requirements of NAMPS. Some efforts appear to duplicate other efforts; at least one effort seems to offer little of value to the future development of NAMPS ADP support. For example, much of the results of the NPRDC study effort devoted to the analysis of manpower planning covers ground covered

before and may prove to have only historical interest, contributing little to the development of NAMPS.

Measures that have been initiated by Op-Ø1 since this study was undertaken but which have not yet been consummated may alleviate the difficulties described above.

5.2 The Computer Siting Problem. To date, the development of ADP support for NAMPS has been carried out on a variety of computers, predominantly IBM and UNIVAC equipment. "Pieces" of the NAMPS ADP support currently exist on UNIVAC equipment at NAVCOSSACT (Washington Navy Yard), on the IBM 360/370 complex at the National Institutes of Health (NIH) on a rental basis, and on an IBM 360/65 at the Bureau of Naval Personnel (Bupers), Arlington, Virginia. The NIH computer complex is not considered a "secure" site and cannot be used for classified data, but both other sites are "secure" and do process classified data. The Navy-owned sites are currently operating at close to saturation level.

The "scenario" set forth in Section 2 of this report requires remote terminal access to automated data files and data processing computer programs tne prototypes for which are spread among tne different sites. In order to make the data and computer programs accessible for demand-mode processing, one of two approaches should be considered:

a. All data files and computer programs needed to support the NAMPS "scenario" described in Section 2 must be made available at a single secure computer site accessible by secure remote terminals and capable of holding all needed ADP components.

b. Dynamic access to data files and computer programs located at different computer sites must be provided by a data commmunications network such as AUTODIN II, currently under development.[130]

A third alternative of having some of the data files and computer programs accessible through one terminal and others accessible through a different terminal, with transfer of data between computer sites accomplished with a transportable machine-readable medium (magnetic tape or punched cards), is feasible but obviously degrades the responsiveness and reaction capabilities of NAMPS.

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130 Draft NAVCOSSACT Document No. 84C049, TR-01, October 1975, "Implementation of AUTODIN II Phase I within the Navy, Feasibility Study"

The first alternative is accompanied by numerous problems of equipment procurement, conversion of data files and computer programs, and actual site location. It is assumed that current computer equipment configurations at available sites are inadequate to cope with the volume of data and computer usage that would be required under NAMPS, and there are known incompatibilities among data files and computer programs that have already been developed on UNIVAC and IBM equipment, presenting the problem of program and data file redesign during a substantial conversion effort.

The second alternative is accompanied by a large number of "unknowns", such as feasibility, date of availability, cost effectiveness, etc.

It would appear that a separate study of this problem needs to be completed at an early date. The study should consider all the pros and cons of the different approaches, evaluate the cost effectiveness of each, and present a recommended solution that is viable within the NAMPS concepts.

5.3 The "Support Tail" Problem. The question of how best to derive the requirements for support capabilities based on the ROCs and POEs for units of the Operating Forces has been addressed but not answered. The use of an input-output model has been explored in pilot studies (see paragraph 3.5.2), but some of the potential difficulties associated with this type of model were alluded to in the NPRDC study of manpower planning (see paragraph 3.4). "It stands to reason that the support sectors...exist to support the Operating Forces...[and]...a change in the make-up or level of Operating Forces should be translatable to effects on the support sectors...The input/output approach seems to present great promise for solving the technological aspects of the linkage problem...However, the identification of all of the necessary linkages and... data flows [representing] the volumes of supply and demand traveling over these linkages is a massive undertaking... The linkages identified for the various support sectors must be integrated at some level of detail and coupled with an appropriate interactive management interface capability... [requiring] consideration of response time, format, flexibility of access and so forth that is implicit in the manner in which management must use its information resources...".[131]

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131 Draft NPRDC report, April 1975, "An Analysis of the Navy Manpower Planning and Programming System", pp 229-231

The pilot studies of input-output modelling as a solution to this problem used a wide array of disparate input data from source documents that do not appear to be automated. To support that approach to data collection for an all-Navy system would appear to be a very costly undertaking. Secondly, the studies used different approaches for different types of support activities. This implies the need for a wide range of input-output models each tailored to a specific type of support activity, a questionable solution. To be successful in supporting the NAMPS scenario outlined in Section 2, a model for the derivation of support requirements from required capabilities of the Operating Forces must be simple, easily supported with available automated data sources, and applicable to all types of support activities.

Further study of this problem and various alternative solutions appears to be a necessity. Such a study should not concentrate on the feasibility of a single solution, such as input-output modelling, but should consider and present the pros and cons of other possibilities. At least two other areas for investigation appear worthy of consideration:

a. Examination of the methodology used in the Long Range Planning System (LRPS) of the Naval Sea Systems Command, cited in the NPRDC study.[132]

b. Correlation (by computer) of RFCs for shore activities (automated in the SHOROC system and available in the NMRS) with ROCs and POEs of ships and other fleet units (also automated in the NMRS) to determine if viable relationship factors can be derived.

5.4 The Fleet Support Network Problem. In considering the fleet support problem area, the 1974 NAVCOSSACT report differentiated between the development of support requirements based on ROCs and POEs for activities of the Operating Forces and the assignment of requirements to specific shore activities.[133] The more recent NPRDC studies do not make the distinction but seem to consider

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132 Ibid, p 230

133 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 38-43

both aspects of the problem as a single entity, leaving the question of which activity performs what support functions for which fleet units for later study.

The fact is that the home ports and home stations of fleet activities are constantly being changed. Shore installations are phased out and functions and responsibilities transferred to other installations. So far as is known, this constant ebb and flow of work load, occasioned by policy decisions made in Washington, is not recorded in any automated data base except as unrelated fragments of information. The effects of this type of workload shift may not become apparent to the shore installations until some time after the reassignments are effective. If manpower planners are to keep abreast of the changes in workload at shore installations and be able to assess the impacts of shifting workloads on manpower requirements, there must be an automated data system that shows the functional interdependencies of shore activities that provide fleet support through the home ports and home stations (the "support network"); and this data system must be maintained with periodic updates.

While the Activity Reference File described in paragraph 3.1.1 does record recent and projected changes in home ports and home stations of fleet units, the available data does not extend into the "support network" beyond the home port identifications. It cannot be determined, for example, which shore activities provide specific support functions for fleet units whose home port is Norfolk. Conversely, the data in the SHOROC system (paragraph 3.1.2) does not include identifications of activities that benefit from services provided.

It seems apparent that an in-depth study of this problem is required. Existing data systems of the systems commands and other agencies should be examined to see what useful data is already recorded; a specific file that should be examined is the Master Activity General Information and Control (MAGIC) file maintained by the Systems Division (Code Ø11) of the Naval Facilities Engineering Command (NAVFAC). The study should consider the pros and cons of incorporating into the ARF more data available in automated systems not currently used by the ARF; of collecting "support network" data with which to build a new automated data base for that purpose alone; and of such other possible solutions as may present themselves.

5.5 Sponsorship Network Problem. The NAMPS "operating scenario" described in Section 2 places considerable emphasis on the roles

played by various types of sponsors (see also Figures 2-02, 2-03, and 2-04). In one of the NPRDC study documents[134] the various interactions and interrelationships have been graphically depicted (Figures 5-01, 5-02, 5-03). The problem which this complex network of sponsors raises for the development of ADP support of the NAMPS is that automated definition of this "sponsorship network" does not exist. Furthermore, as the charts clearly show, the identification of sponsors does not extend below the DCNO/DMSO level into the staff organizations themselves. For example, in Figure 5-02 the DCNO, Logistics (Op-04), is identified in four different subordinate "boxes", implying input from four different staff offices, but these staff offices are not identified.

It is recommended that the problem of how to automate the sponsorship network, how specific the identification of individual sponsor offices should be, and how the automated sponsorship network should be integrated into the NAMPS be made the subject of a separate study.

5.6 Other Problem Areas. With the exception of the problems described in paragraphs 5.1 and 5.5 above, the problem areas discussed in this section were previously identified in the 1974 NAVCOSSACT report,[135] and many of the questions raised in that report remain unanswered. In addition, the earlier report also discussed other problems not addressed in this report because apparently no action has been taken. Specifically, the other problem areas requiring further study include:

a. How to derive and apply manpower costs.

b. How to develop and apply factors representing future technological improvements.

c. How to develop and apply factors representing changes in Navy facilities.

d. How to develop and apply "feedback" data from various points in the NAMPS process.

e. How to integrate civilian manpower planning data with military manpower planning data.

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134 NPRDC report TR 75-19, October 1974, "Navy Manpower Planning and Programming: Basis for Systems Examination"

135 NAVCOSSACT Document No. 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)", pp 72-77

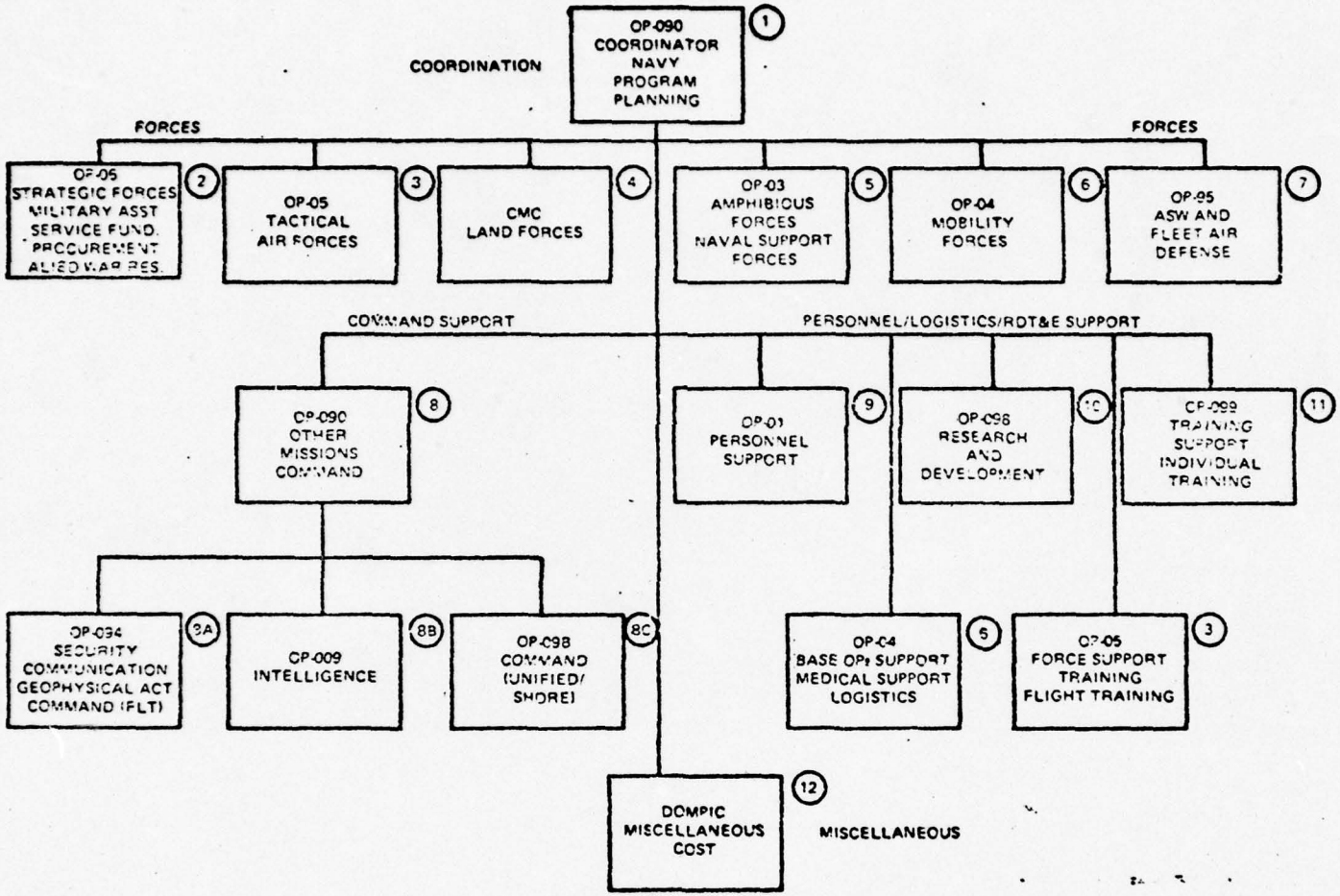

FIGURE 5-01. The "Ad Hoc" Organization of Mission and Mission Support Sponsors for POM Development

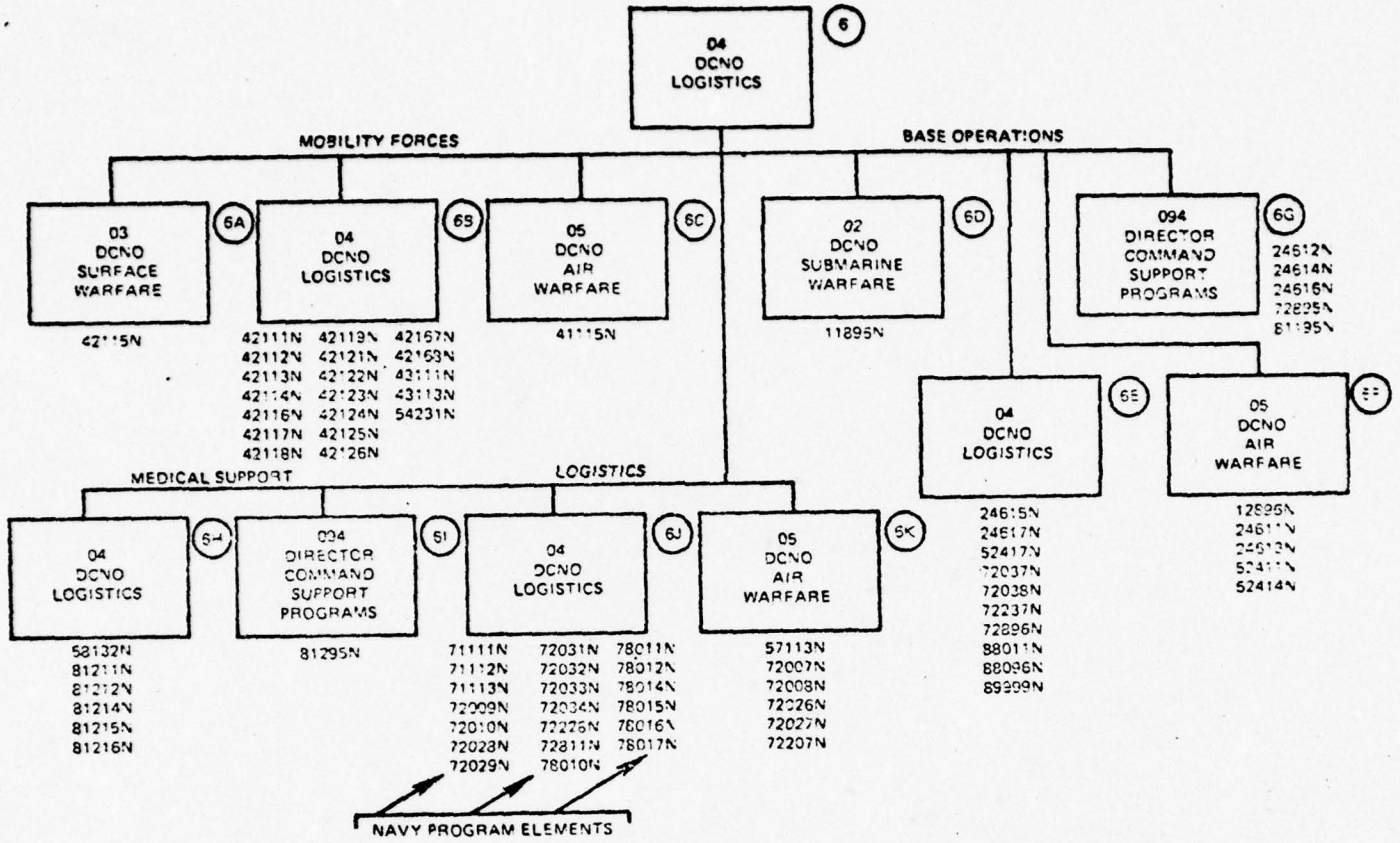

FIGURE 5-02. Support of One Mission Sponsor by Various Resource Sponsors (by Program Element)

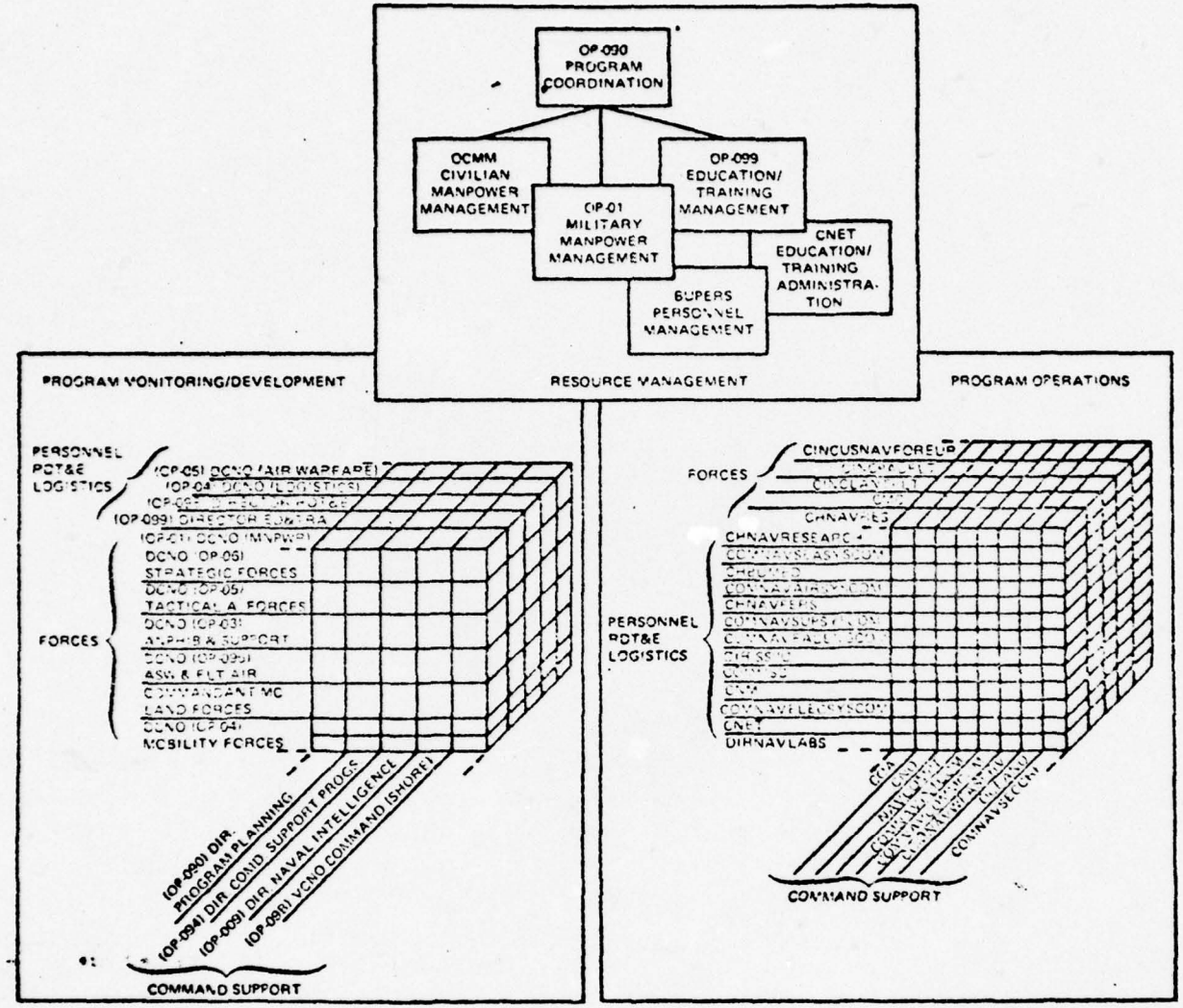

FIGURE 5-03. Interlocking Relationships Affecting the Development of Manpower Requirements

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APPENDIX A

PROJECT REQUEST

PROJECT REQUEST

1. Project Request Code: 53D109A

2. Project Request Title: Technical Analysis of the Navy Manpower Planning System (NAMPS), Phase I

3. Objectives:

a. The long-range objectives of the entire series of efforts that will make up the complete study of ADP applications for NAMPS are:

(1) To determine what ADP applications will be required to support the operating scenario for using NAMPS.

(2) To determine the feasibility of developing those ADP applications which should be provided by the Chief of Naval Operations Command/Management Information System (CNOCOM/MIS).

(3) To determine the shortfalls of current plans for developing ADP support for NAMPS.

b. The limited, short-range objective of Phase I of the study is to determine what the subsequent phases of the study will be based on a description of the NAMPS operating scenario and a review of on-going efforts.

4. Concept of Operations:

a. Phase I of the study will include the development of an operating scenario describing how the NAMPS concepts will be employed and how ADP would be used to support that scenario; a review of documentation describing on-going and planned NAMPS projects, supplemented by a limited number of interviews to obtain

a better understanding of any points needing clarification; and preparation of recommendations with respect to subsequent study efforts and, where possible, specific ADP applications which should be developed under CNOCOM/MIS.

b. Subsequent phases will pursue specific areas of study identified in Phase I, with the ultimate goal of developing a complete technical analysis and determination of feasibility for providing ADP support for NAMPS.

5. Tasks.

a. Assist the Manpower Analysis & Systems Development Branch (Op-121) in developing a detailed operating scenario for NAMPS and the use of ADP.

b. Review available documentation describing on-going NAMPS projects.

c. Conduct such interviews as may be necessary to supplement and clarify document review. All interviews will be conducted in the Washington area.

d. Identify and describe specific study efforts which should be pursued in subsequent phases of the study.

e. Where possible, identify and describe specific ADP applications which should be developed under CNOCOM/MIS to support the NAMPS, relating these applications to specific study areas. Descriptions will be limited to objectives, basic functions, and interfaces with other ADP applications.

f. Document, in a Technical Report, the results of the Phase I study effort.

6. Security Classification: Unclassified

7. Priority Within Module: 1

8. Schedule:

   Commence: January 1976

   Complete: May 1976

9. NAVCOSSACT Module Leader: Mr. H.R. Haas, Code 20.2, 433-4272

10. Op-91 Task Monitor: LCDR George A Gould III, Op-913, 697-0523

11. User Contact: Op-121, Mr. I. LINSKY , 694-3413

APPENDIX B

REFERENCES

APPENDIX B

REFERENCES

The following references have been used in the preparation of this report:

a. OPNAV 90P-1D, Department of the Navy Programming Manual, 5 June 1971 (as amended).

b. OPNAVINST 3501.3B, 30 June 1972, "Required Operational Capabilities Statement (ROC) and Projected Operational Environment (POE); Instructions for Preparation of."

c. OPNAVNOTE 5310, 1 February 1974, "Shore Requirements, Standards, and Manpower Planning System (SHORSTAMPS)."

d. NAVCOSSACT Document Number 53D109, TR-01, September 1974, "CNOCOM/MIS Support for the Navy Manpower Planning System (NAMPS)."

e. Op-901 memo of 2 September 1975, POM-78-1, ser 901/52352, subject: "Program Objective Memorandum Procedures for FY-78 (POM-78)."

f. NAVCOSSACT Document Number 53D302, UM-01, July 1975, "Activity Reference File (ARF) Users Manual".

g. NAVCOSSACT Document Number 53D107, UM-01, December 1974, "Shore Required Operational Capabilities (SHOROC) Users Manual".

h. OPNAVINST 5310.12, 15 November 1974, "Shore Requirements, Standards, and Manpower Planning System (SHORSTAMPS)".

i. NAVCOSSACT Document Number 53D303, UM-01, September 1975, "Qualitative Requirements Application (QRA) Users Manual".

j. NAVCOSSACT Document Number 53D306, FD-01, June 1976, "Qualitative Requirements Application for Officers (QRAO)."

k. B-K Dynamics, Inc. report TR-3-196, 1 July 1975, "Mini-NAMPS Programmer's Manual".

l. B-K Dynamics, Inc. report TR-3-194, 1 July 1975, "New Developments in Navy Manpower/Personnel Planning - Support of the POM-77 MRCP".

m. B-K Dynamics, Inc. Proposal BKD-2374, 1 December 1975, "Proposal to Implement POM-78 NAMPS".

n. B-K Dynamics, Inc. undated manual, "Manpower - Data Collection Sheets for POM-78".

o. NAVMMACLANT Briefing Document, 9 January 1976, "Navy Manpower Requirements System (NMRS)".

p. NAVMMACLANT letter ser 1280/8, 10 October 1975, "Data Base Management System (DBMS) Selection", with enclosed report.

q. CNO letter ser 12/98123, 23 December 1975, "Navy Manpower Requirements System", with enclosure.

r. NAVMMACLANT Functional Description, 15 March 1976, "NMRS Billet Derivation and Associated Processes".

s. CNO letter ser 987E/498, 30 November 1973, "Advanced Development Project P43-07X, `Manpower Requirements and Resources Control System`; implementation support".

t. NPRDC Technical Report 75-19, October 1974, "Navy Manpower Planning and Programming: Basis for Systems Examination".

u. NPRDC Special Report 75-5, July 1974, "Exposition of Significant Manpower Planning Decisions in a Major Navy Command Organization".

v. NPRDC Technical Report 75-20, October 1974, "An Approach and Instrumentation for Management System Analysis".

w. NPRDC Technical Report 75-22, October 1974, "Technique for Interactive Systems Analysis (TISA)".

x. NPRDC Technical Report 75-21, October 1974, "An Approach for Measuring Benefit and Cost in Management and Information Systems".

y. Draft NPRDC report, April 1975, "An Analysis of the Navy Manpower Planning and Programming System".

z. Op-121 "talking paper", March 1976, "Readiness Assessment Program".

aa. Draft NPRDC document (undated), "Manpower Forcasting for Activities via an Input-Output Model".

bb. NPRDC paper, "The Structure of Demands on Navy Shore Activities", presented at ORSA/TIMS Joint National Meeting, Las Vegas, Nevada, 18 November 1975.

cc. Navy Decision Coordinating Paper (undated), "Fleet-Support Demand Network".

dd. Navy Decision Coordinating Paper (undated), "Integrated Military/Civilian Manpower Planning".

ee. Navy Decision Coordinating Paper (undated), "Economics of Manpower Resource Allocation".

ff. Navy Decision Coordination Paper (undated), "Long Range Manpower Planning".

gg. Navy Decision Coordinating Paper (undated), "Manpower Cost and Configuration in Systems Design".

hh. Navy Decision Coordinating Paper (undated), "Officer Management Systems".

ii. Navy Decision Coordinating Paper, 12 January 1976, "Selection for Officer Retention".

jj. Navy Decision Coordinating Paper, 19 January 1976, "Officer Career Continuance".

kk. Navy Decision Coordinating Paper (undated), "Personnel Policy Simulation".

ll. Navy Decision Coordinating Paper (undated), "Navy Personnel Acquisition".

mm. Navy Decision Coordinating Paper (undated), "Selective Retention: A Longitudinal Analysis".

nn. Navy Decision Coordinating Paper (undated), "Shore Activity Manpower Planning System".

oo. Office of Civilian Manpower Management (OCMM) letter ser 64:JVW, 25 March 1976, "Project Request 02J012, OCMM Shore Activity Manpower Planning System (SAMPS)".

pp. Navy Decision Coordinating Paper (undated), Planning Interface for Manpower and Personnel".

qq. Draft NAVCOSSACT Document No. 84C049, TR-01, October 1975, "Implementation of AUTODIN II Phase I Within the Navy, Feasibility Study".

APPENDIX C

GLOSSARY OF TERMS AND ACRONYMS

APPENDIX C

GLOSSARY OF TERMS AND ACRONYMS

SOURCES -

a. Department of the Navy Programming Manual, 5 June 1971, as amended.

b. OPNAVINST 3501.3B, 30 June 1972, "Required Operational Capabilities Statement (ROC) and Projected Operational Environment (POE); Instructions for Preparation of".

c. OPNAVNOTE 5310, 1 February 1974, "Shore Requirements, Standards, and Manpower Planning System (SHORSTAMPS)".

d. Op-901 memo of 2 September 1975, POM-78-1, ser 901/51352, subject: "Program Objectives Memorandum Procedures for FY-78 (POM-78)".

ADP - Automated Data Processing.

ADS - Automated Data System.

ADSTAP - Advancement, Strength and Training Planning Program. See paragraph 3.2.1.

APPROPRIATION SPONSOR- A DCSO or DMSO "charged with supervisory responsibility over an appropriation" (source d). See paragraph 2.2.1.

ARF - Activity Reference File. See paragraph 3.3.1.

BASE CASE - A set of data as of a given point in time, used as a point of reference for subsequent changes to produce alternative proposals ("notional" files, q.v.).

BILCO - Billet/Position Converter and Optimizer. Formerly part of NMRS (q.v.).

BILDER - Billet Derivation, part of NMRS (q.v.). See paragraph 3.3.4.

BUPERS - Bureau of Naval Personnel.

CEB - CNO Executive Board.

CNO - Chief of Naval Operations.

CNOCOM/MIS - Chief of Naval Operations Command/Management Information System.

CPAM - CNO Program Analysis Memorandum.

CPFG - CNO Program and Fiscal Guidance.

CPPG - CNO Policy and Planning Guidance.

CULPRIT - Commercial report generator used by NMRS (q.v.).

DBMS - Data Base Management System.

DCNO - Deputy Chief of Naval Operations.

DIP - Document Input Processor, part of NMRS (q.v.).

DMSO - Director of a Major Staff Office (in OPNAV).

DOD - Department of Defense.

ERP - Enlisted Requirements Plan.

FAST - (Enlisted) Force Analysis and Simulation Technique. A computer model that is part of ADSTAP (q.v.). See paragraph 3.2.3.

FORCE/FUNCTION SPONSOR - See Resource Sponsor.

FYDP - Five Year Defense Program.

IBM - International Business Machines.

IDMS - Integrated Data Management System, a commercial DBMS used by NMRS (q.v.).

IMAP - Interactive Manpower Analysis Program. See paragraph 3.5.1.

LSR - Logistic Support Requirements (system).

MANPOWER DOCUMENT (formerly MANNING DOCUMENT) - A documentation of the manpower required for a given activity or type of activity derived by the application of staffing standards to statements of required capabilities, as modified by statements of operational environment (for Ship and Squadron Manpower Documents).

MAPMIS - Manpower and Personnel Management Information System.

MARP - Manpower Requirements Plan.

MARRCS - Manpower Requirements and Resources Control System.

MINI-NAMPS - A contractor-produced system used during POM-77 and POM-78 (see paragraph 3.2).

MISSION SPONSOR - A DCNO or DMSO "charged with responsibility for developing overall goals, objectives, rationale, justification and resource requirements (including manpower, support and training) for a specified mission area" (source d).

MPN - Military Pay, Navy.

MRCP - Manpower Resources Coordinating Panel.

MRM - Manpower Reference Model. Part of NAMPS (q.v.).

MRP - Mission, ROC, POE Subsystem of NMRS (q.v.).

NAMPS - Navy Manpower Planning System. See paragraph 2.1.

NARM - Navy Resources Model. See paragraph 3.2.3.

NAVCOSSACT - Naval Command Systems Support Activity.

NAVMMACLANT - Navy Manpower and Material Analysis Center, Atlantic.

NAVMMACPAC - Navy Manpower and Material Analysis Center, Pacific.

NCIS - Navy Cost Information System.

NEC - Navy Enlisted Classification.

NIH - National Institutes of Health.

NMRS - Navy Manpower Requirements System (see paragraph 3.3).

NOBC - Naval Office Billet Code.

NOTIONAL FILE - A set of data representing the results of proposed modifications of or changes to a "base case" (q.v.).

NPRDC - Naval Personnel Research and Development Center.

OCMM - Office of Civilian Manpower Management.

ONR - Office of Naval Research.

OP GEN - Output Generator; part of NMRS (q.v.).

OPNAV - CNO staff.

ORP - Officer Requirements Plan.

OSD - Office of the Secretary of Defense.

OSD - Operation Sequence Diagram, a technique for graphically portraying management processes. See paragraph 3.4.

PE - Program Element.

PLATFORM SPONSOR - A type of Resource Sponsor (q.v.).

POE - Projected Operational Environment. A statement establishing the most demanding condition of operation for which a ship or aircraft squadron must be manned (source b).

POM - Program Objectives Memorandum.

POM CYCLE - The annual sequence of actions and events which result in the production of the POM (q.v.).

POM PROCESS - The procedures used during a POM cycle.

PPBS - Planning, Programming, and Budgeting System. The process for collecting intelligence, appraising the threat, developing strategy to meet the threat, and devising force levels to support the strategy; programming weapons systems, manpower, and support over a period of time to attain the force levels; and budgeting annual allocations of funds to procure personnel and materials so as to carry out the programs (source a).

PROGRAM ELEMENT SPONSOR - A DCNO or DMSO "responsible for force composition, funding support, and programmed manpower for a specific program element" (source a). See paragraph 2.2.1.

PROGRAM SPONSOR - A DCNO or DMSO "who, by organization charter, is responsible for determining program objectives, time-phasing and support requirements, and for appraising progress, readiness and military worth for a given weapon system, function, or task" (source a). See paragraph 2.2.1.

PROGRAMMING CYCLE - The annual sequence of actions and events which constitutes the programming phase of the PPBS (q.v.).

QRA - Qualitative Requirements Application. See paragraph 3.1.3..

QRAO - Qualitative Requirements Application for Officers. See paragraph 3.1.4.

R&D - Research and Development.

RAP - Readiness Assessment Program. See paragraph 3.5.1.

RENLQUAL - An end-month extract from the MAPMIS Enlisted Billet File. See paragraph 3.2.3.

RESOURCE SPONSOR - Formerly referred to as Force/Function sponsor. A DCNO or DMSO "responsible for an identifiable aggregation of resources which constitute inputs to mission accomplishment. His responsibility covers interrelated programs or parts of programs found in several mission areas" (source d). See paragraph 2.2.1.

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RFC - Required Functional Capabilities. Tasking phrases analogous to statements of Required Operational Capabilities for ships and aircraft squadrons but applicable to shore activities (source c).

ROC - Required Operational Capability. A specific functional requirement which must be performed by a ship, aircraft squadron or unit in support of its assigned mission under a particular degree or condition of readiness (source b).

ROFFQUAL - An end-month extract from the MAPMIS Officer Billet File. See paragraph 3.2.3.

SAMPS - Shore Activity Manpower Planning System under OCMM. See paragraph 3.6.3.

SECDEF - Secretary of Defense.

SECNAV - Secretary of the Navy.

SHOROC - Shore Required Operational Capabilities (see paragraph 3.1.2.). Part of SHORSTAMPS (q.v.).

SHORSTAMPS - Shore Requirements, Standards and Manpower Planning System.

SMD - Ship Manpower Document.

SMIS - Ship Management Information System.

SMORE - Ship Mobility and Operational Readiness Evaluation. See paragraph 3.5.1.

SPP - Sponsors Program Proposals.

STAFFING STANDARDS - Manpower required for the performance of identified tasks, derived by the application of accepted industrial engineering techniques to work measurement data collected according to a predetermined plan (source c).

SUPPORT "TAIL" - Workload requirements generated by operational demands; consists of ship-to-ship support (e.g., underway replenishment), ship-to-shore support, and shore-to-shore support (also referred to as "support on support").

TISA - Technique for Interactive Systems Analysis. See paragraph 3.4.

T-POM - Tentative POM (q.v.).

UIA - Unit Identification Application.

UIC - Unit Identification Code.

WARFARE SPONSOR - Term formerly used for Platform Sponsor (q.v.).