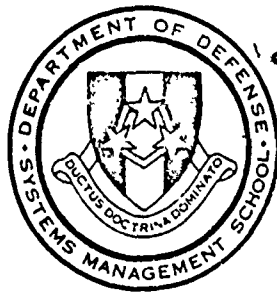# DEFENSE SYSTEMS

MANAGEMENT SCHOOL

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PROGRAM MANAGEMENT COURSE

INDIVIDUAL STUDY PROGRAM

INITIATION OF A MAJOR NAVY PROGRAM

STUDY PROJECT REPORT
PMC 76-1

William E. French Jr.
GS-14   DNC

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INITIATION OF A MAJOR

NAVY PROGRAM

Study Project Report

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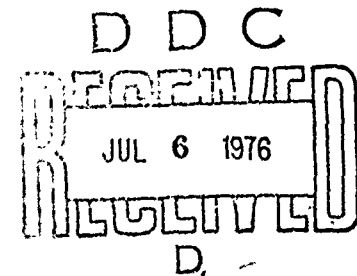Defense Systems Management School

Program Management Course

Class 76-1

by

William E. French Jr.
GS-14   DNC

May 1976

Study Project Advisor
Mr. William H. Cullin, DSMS Faculty

This study project report represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management School or the Department of Defense.

EXECUTIVE SUMMARY

This study addresses the Acquisition Management System within the Department of the Navy, with particular emphasis on determining the detailed steps leading up to the Program Initiation decision. Specifically, given the operational need, how does one go about requesting initiation of a new systems program to meet the operational need? What are the formal procedures, documentation and approvals required? How does one break into the budget cycle? What are the detailed activities and outputs of the Concept Formulation Phase? What are some of the pitfalls that the Program Manager may encounter along the way to the Program Initiation decision? These are the areas addressed in the study.

Section 2 provides an overview of the systems acquisition process in the Department of Defense and the Department of the Navy. Special attention is given to identifying the required procedures, documentation and approval cycles that are required at each level in the bureacracy. Obtaining funds for a new program is also considered. The Planning, Programming and Budgeting System (PPBS) and the DCP/DSARC Process are discussed, and the importance of being attuned to the "system" is stressed.

Some of the key activities that must be accomplished during Concept Formulation are discussed in section 3. Attention is given to key decision-making documentation (i.e., DP, NDCP and DCP) and the detailed information that must be developed in support of DSARC I. Section 4 provides a detailed account of the events leading up to the Program Initiation decision by the SECDEF, highlighting the DCP coordination at all levels in preparation for DSARC I.

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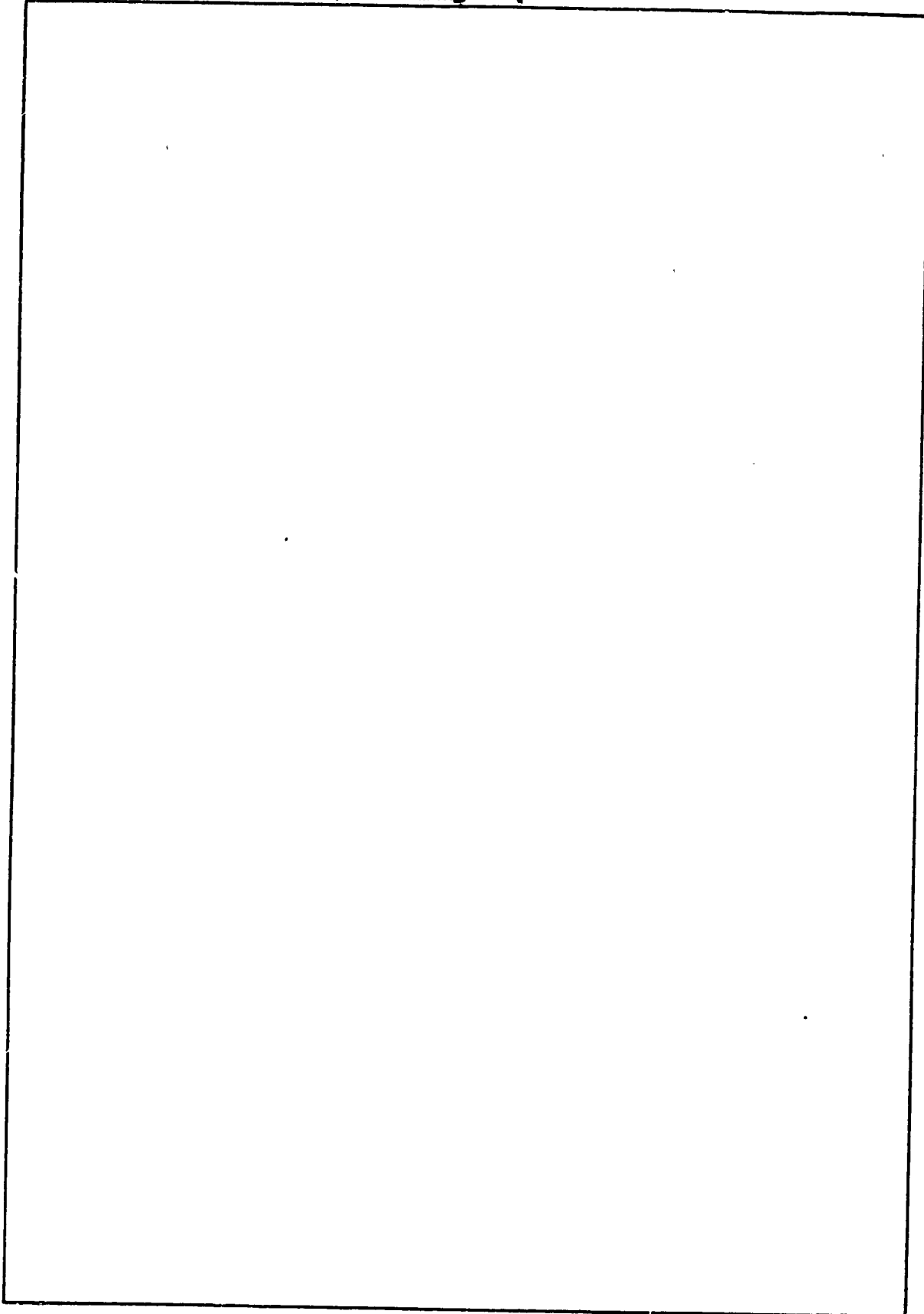
STUDY TITLE: INITIATION OF A MAJOR NAVY PROGRAM

STUDY PROJECT GOALS:
To determine the required procedures, documentation and approval cycles leading up to the Program Initiation Decision for a new Navy program.

STUDY REPORT ABSTRACT:

An overview of the systems acquisition process in the Department of Defense and the Department of the Navy is presented, based on a survey of DOD/ Navy directives, instructions and other related documents. Special attention is given to identifying procedures, documentation and approval cycles at each level in the bureaucracy. Some of the key activities that must be accomplished during Concept Formulation are presented, with special attention given to the detailed information that must be developed in support of DSARC I. A detailed account is given of the events leading up to the Program Initiation decision by the SECDEF, highlighting the DCP coordination at all levels in preparation for DSARC I. Potential problems areas are discussed as they relate to four areas, namely: (1) organizational size and complexity, (2) funding considerations, (3) Concept Formulation authorization and funding, (4) preparation for DSARC I. This report should be useful to those involved in the initiation of a new program within the Navy.

KEY WORDS: PROGRAM INITIATION, CONCEPT FORMULATION

NAME, RANK, SERVICE	CLASS	DATE
William E. French Jr., GS-14 DNC	PMS 76-1	May 1976

Some potential problem areas are identified in section 5. Specifically, the problem areas discussed are related to four areas, namely: (1) Organizational size and complexity, (2) Funding Considerations, (3) Concept Formulation authorization and funding, (4) preparation for DSARC I.

Finally, section 6 provides some conclusions and recommendations. Briefly, these are as follows:

(1) To counter potential communication breakdowns due to layering effects, one must develop good informal working relations with the Laboratories, SYSCOMS, NAVMAT and OPNAV at all levels.

(2) It is mandatory that anyone concerned with the initiation of a new program be attuned to the "system", with special emphasis on the PPBS and the DCP/DSARC Process.

(3) Due to inherent delays in the PPBS cycle new program funding requirements should be submitted in the POM at least 29 months before the money is actually needed for obligation.

(4) The "homework" necessary for DSARC I must be done during the Concept Formulation Phase. Alternatives considered must include foreign systems and modifications to existing systems.

(5) Make the DCP thresholds challenging but attainable.

(6) Pre-DSARC I briefings, if properly handled, can lay the ground work for a smooth DSARC I meeting.

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LIST OF ILLUSTRATIONS

LIST OF ACRONYMS

ADO - Advanced Development Objective

APP - Advanced Procurement Plan

ARC - Acquisition Review Committee

ASC - Advanced System Concept

ASD - Assistant Secretary of Defense

ASN - Assistant Secretary of the Navy

ASPR - Armed Services Procurement Regulations

CEB - Chief of Naval Operations (CNO)

      Executive Board

CND - Chief of Naval Development

CNM - Chief of Naval Material

CNO - Chief of Naval Operations

CPAM - CNO Program Analysis Memoranda

CPPG - CNO Planning and Programming Guidance

DCP - Decision Coordinating Paper

DDR&E - Director, Defense Research and Engineering

DN - Department of the Navy

DNSARC - Department of the Navy Systems Acquisition

      Review Council

DOD - Department of Defense

DP - Development Proposal

DPPG - Defense Policy and Planning Guidance

DPM - Development Proposal Manager

DSARC - Defense Systems Acquisition Review Council

DTC - Design to Cost

LIST OF ACRONYMS (CON'T)

EPA - Extended Planning Annex

EPG - Extended Planning Guidance

FSD - Full-Scale Development

FYDP - Five-Year Defense Plan

GOR - General Operational Requirement

IRAD - Independent Research and Development

JLRSS - Joint Long-Range Strategic Study

JRDOD - Joint Research and Development Objectives

      Document

JSOP - Joint Strategic Operations Plan

NAC - Navy Advanced Concepts

NDCP - Navy Decision Coordinating Paper

NAVMAT - Naval Material Command

OPNAV - Office of the Chief of Naval Operations

OR - Operational Requirement

OSD - Office of the Secretary of Defense

OSN - Office of the Secretary of the Navy

OT&E - Operational Test and Evaluation

PDA - Principal Development Activity

PM - Program Manager

PMP - Project Master Plan

POM - Program Objectives Memorandum

PPBS - Planning, Programming and Budgeting System

PTA - Proposed Technical Approach

R&D - Research and Development

LIST OF ACRONYMS (CON'T)

RFP - Request for Proposal

SECDEF - Secretary of Defense

SECNAV - Secretary of the Navy

SIRCS - Shipboard Intermediate Range Combat System

SOR - Specific Operational Requirement

SSURADS - Shipboard Surveillance Radar System

STO - Science and Technology Objective

SYSCOMS - System Commands

T&E - Test and Evaluation

TDP - Technical Development Plan

TSOR - Tentative Specific Operational Requirement

WBS - Work Breakdown Structure

1. Introduction

1.1 **Purpose.** The purpose of this Individual Study Project is to help the author understand the detailed steps leading up to the formal authorization of a new major[1] systems program within the Navy. The author was motivated to select this particular topic by his current job assignment,[2] which is concerned with the initiation of a new systems program. Hopefully, the author will obtain enough information from this study to help take this new systems program through DSARC I[3]. While the author's primary purpose is related to a specific program, the information developed is general and the study results should therefore be helpful to others involved in a program initiation effort.

1.2 **Background.** Getting a new systems program started is not easy. Historically, there has been great reluctance in the Navy to solve fleet problems by developing new systems - at least in the author's experience. The tendency has been to give highest priority to "patching-up" existing systems, even though technological obsolescence in such systems assures ineffectiveness of the result. In such cases, "real" solutions would lie in the development of new systems, using the latest technology---but, invariably the scarce money resources are eaten up by the "patch-up" approaches.

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[1]A major program is defined by DODD 5000.1 as one which meets one or more of the following criteria: (1) Estimated RDT&E costs in excess of 50 million dollars or estimated production costs in excess of 200 million dollars (all in FY 72 dollars); (2) national urgency; (3) recommendation by DOD Component Heads or Office of the Secretary of Defense (OSD) officials.

[2]The author is with the Radar Systems Branch of the Naval Ship Engineering Center and is currently assigned to the Shipboard Surveillance Radar Systems (SSURADS) Program.

[3]There are three major reviews by the Defense Systems Acquisition Review Council (DSARC) during the development of a major Defense system. The first, DSARC I, addresses Program Initiation; the second, DSARC II, addresses transition to Full-Scale Development; and the third, DSARC III, addresses transition to Production.

The dilemma of this situation is that the technology base exists to solve many of the fleet's problems; but, there does not seem to be an effective means for planning and initiating orderly, longer-term development programs to use this technology in new system applications. In other words, the problem is not so much a technical one as it is one of management.

The issuance of SECNAV Instruction 5000.1, OPNAV Instruction 5000.42 and NAVMAT Instruction 5000.22, in the author's opinion, takes a giant step in the right direction in providing a solution to this management problem. On the surface, these instructions appear to streamline the Navy systems planning and selection process compared to the old[4] procedures (i.e. the OR, DP, NDCP, DCP cycle replaces the old GOR, TSOR, PTA, ADO, SOR, TDP morass)[5]. However, it has been the author's experience that there is considerable difference of opinion at various levels in the System Commands (SYSCOMS), the Naval Material Command (NAVMAT) and the Office of the Chief of Naval Operations (OPNAV) as to just what constitutes adequate documentation, procedures, approval cycles and funding according to the new system. Many of these problems, admittedly, may be "growing-pains"---symptomatic of making an adjustment to the new system ---but many have political overtones and some are due to "die-hard" bureaucrats who do not want to let go of the "old way".

1.3 Scope. To put the study in perspective, then, the author is trying to take a look at the Program Initiation process from the "bottom-up".

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[4]Readers interested in a concise summary of the old system are referred to Appendix J of reference (1) or pp 3-7 of reference (2) in the Bibliography.

[5]The reader is referred to the list of acronyms at the beginning of the report.

That is, given the operational need, knowing the deficiencies in existing equipment and having the technology at hand, how does one go about requesting initiation of a new systems program to meet the operational need? What formal procedures, documentation and approvals are needed? How does one break into the budget cycle? These are the main areas that will be addressed in the study.

1.4 <u>Organization</u>. The structure of the remainder of this report is now briefly summarized. Section 2 provides an overview of the systems acquisition process within the Department of Defense (DOD) and the Department of the Navy (DN) with emphasis on those aspects which lead up to the Program Initiation decision by the Secretary of Defense (SECDEF). The material in section 2 is based on a survey of DOD/NAVY directives and instructions. Special attention is given to the required procedures, documentation and approval cycles at each level in the bureacracy. Obtaining funding for a new program is also given some attention. Then, section 3 describes the main activities that occur during the Concept Formulation Phase in preparation for DSARC I. Section 4 briefly describes the coordination required for DSARC I and the SECDEF Program Initiation decision. Section 5 discusses potential problem areas and finally, section 6 provides conclusions and recommendations.

2. An Overview of the Systems Acquisition Process

When undertaking a new program initiation effort one must be attuned
to the DOD/Navy acquisition system environment, with its mass of direc-
tives, instructions and approval cycles at each organizational level. In
short, one must work within the "system". This section provides an
overview of DOD/Navy acquisition process for major defense programs.

A summary of the systems acquisition process is illustrated in figure
2-1. The Director of Defense Research and Engineering (DDR&E) has divided
the Research and Development (R&D) portion of the system acquisition
process into two groups (2: I-1 to I-15)[1]. Group I programs include those
R&D efforts up to DSARC II and have as their primary objective the creation
and demonstration of system options, which may be useful for future
military capabilities. Group II programs are concerned with the full-
scale development of selected options for potential deployment. These two
R&D groups are indicated in figure 2-1. A sharp management line is drawn
between Group I and Group II programs since the full-scale development
decision requires commitment of much larger resources than required by the
Group I programs.

Referring to figure 2-1, Group I Programs include the development
of a technology base, system alternatives and demonstration of the system
alternatives. Evaluation of the technology base is of a continuing
nature and is unconstrained by specific system applications. The tech-
nology base evolves primarily from Research (6.1) programs and Exploratory

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[1] This notation will be used throughout the report for sources of
quotation and major references. The first number is the source listed in
the Bibliography; the following numbers are the pages in the reference.
When the entire source is referenced in general, only the first number is
used. Thus, the notation (2: I-1 to I-15) means reference (2), pages
I-1 to I-15.
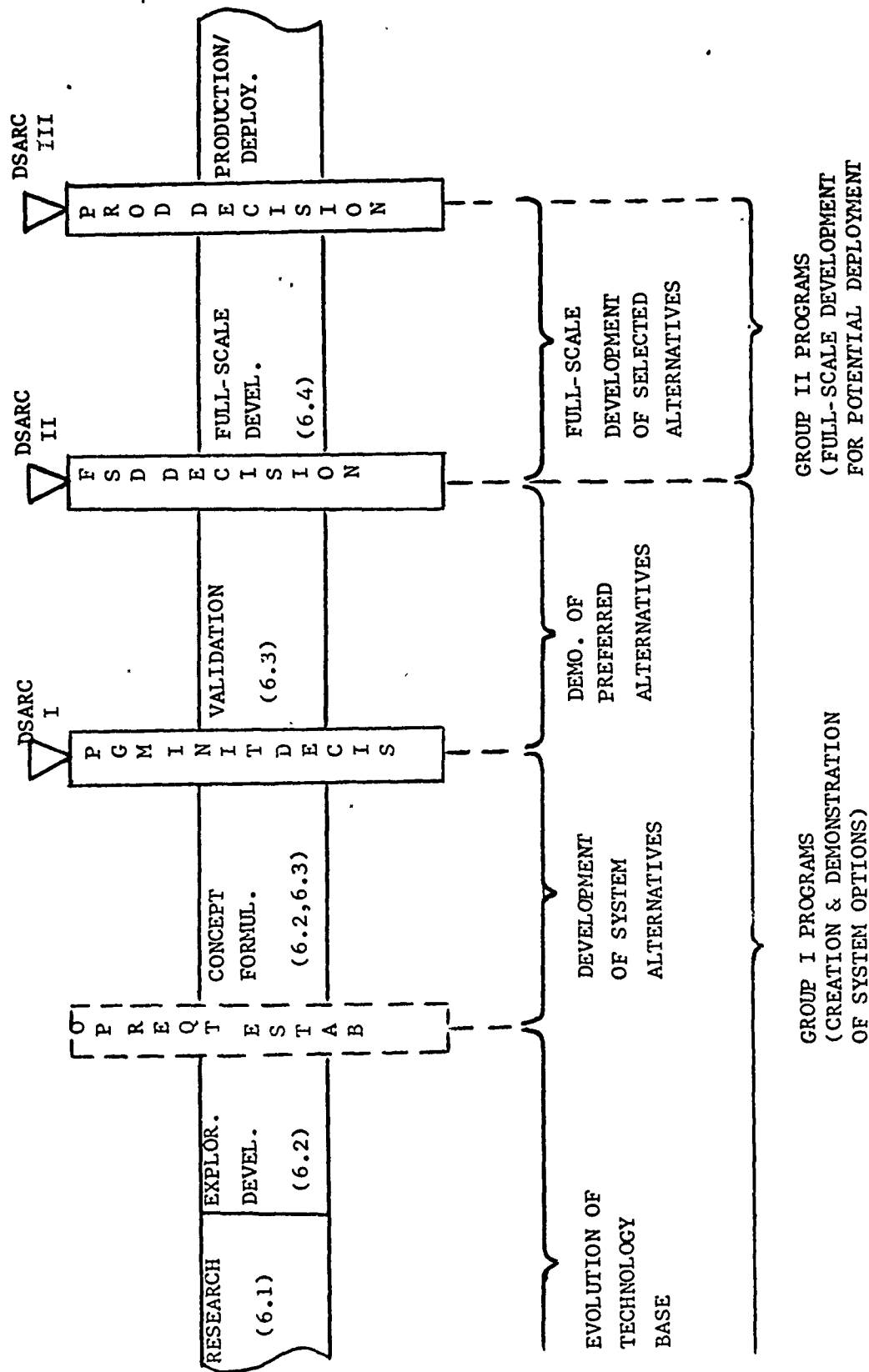
FIG. 2-1 ACQUISITION PROCESS FOR MAJOR DEFENSE SYSTEMS

2-2

Development (6.2) programs. Research programs are aimed at developing a fundamental knowledge base in particular fields, related to long-term national security needs, for application to solution of particular military problems. Making use of the knowledge generated by the Research efforts, Exploratory Development programs are directed toward establishing a technology base by developing and evaluating the feasibility and practicability of proposed solutions to specific military problems, short of major development projects. Exploratory Development programs can vary from fundamental applied research to breadboard hardware, including studies, investigations and minor development effort. Both Research and Exploratory Development programs are characterized by high-risk and low-cost expenditures for a particular project. A successful project, however, can have large payoffs, perhaps leading to technical "breakthroughs" in particular areas. The total number of Research and Exploratory Development projects is large (typically in the thousands) and often there is intentional redundancy between many of the projects (e.g. two or more scientists working on the same basic problem to get the benefit of different approaches). Appendix A summarizes the structure of the Navy's Research and Exploratory Development Programs.

The next step in the system acquisition process is to draw upon the technology base in formulating system concepts which are directed toward satisfying particular operational needs. This leads to the Concept Formulation phase. Usually, there will be some overlap of Exploratory Development (6.2) and Advanced Development (6.3) in the conceptual phase. It is during this phase of the acquisition process that the R&D effort becomes system-oriented. The beginning of the Concept Formulation phase starts

2-3

with the establishment of a definite operational need. In the Navy this occurs when the Office of the Chief of Naval Operations (OPNAV) issues an Operational Requirement (OR) document. The duration of the Concept Formulation phase can vary from about six months to several years (or more) depending on the particular program situation, whereas the time required to develop the technology base can be as much as ten years (or more) before a particular technology finds system application.

The conceptual effort results in the definition of alternative system concepts for providing a particular operational capability. At this point a formal request is made via the Defense Systems Acquisition Review Council (DSARC) for initiation of an advanced development validation phase. This review is called the DSARC I milestone. Approval of the transition to a validation phase constitutes formal authorization for Program Initiation.

The Advanced Development (6.3) phase is then directed toward developing and testing particular system hardware in the high-risk areas to validate particular alternatives (normally at least two alternatives are carried through validation). In some cases, full alternative systems may be prototyped and tested during the validation phase, depending on the size and expense involved. More typically, one could expect prototyping and testing of just the risky portions of alternative systems (rather than the whole system) while other system aspects might be validated by detailed analyses and/or simulations. The output of the validation phase would be the selection of a preferred system approach (usually one) for full-scale development.

The development up to DSARC II has been directed at creating and demonstrating system options (i.e. Group I programs) with the recommendation of alternative system solutions for an operational need. DSARC II is a critical milestone, which will determine whether or not the program

proceeds to full-scale development. Authorization of the full-scale development phase would transition the program to a Group II program, which is aimed at full-scale development of a system for potential deployment. Of course, much larger sums of money are now involved, hence the rigorous program scrutinization up to the SECDEF level.

After successful full-scale development and Operational Test and Evaluation (OT&E), a production decision will be made via DSARC III followed by deployment of the system in the fleet. The operational deployment of a system can be 20 years or more while the full-scale development, OT&E and initial production may take as much as 10-12 years from the time of the initial system concept.

How does a program manager break into the system acquisition process just described? First, it must be recognized that there are two complementary management processes (3: III-10) superimposed on the DOD Acquisition System just described. These form a continuum of activity, with which the Program Manager must be attuned. These are: (1) The Planning, Programming and Budgeting System, (2) The DCP/DSARC Process. The Planning, Programming and Budgeting System (PPBS) is primarily fiscally oriented; that is, with getting money into the budget to support approved programs. The DCP/DSARC Process is primarily a program-oriented SECDEF decision-making process. It provides a vehicle for SECDEF approval (or disapproval) of proposed new major programs and/or review of existing major programs at critical milestones. Each of these processes is briefly discussed in sections 2.1 and 2.2. Then, section 2.3 describes the system acquisition process in the Department of the Navy.

2.1 The Planning, Programming and Budgeting System

The Planning, Programming and Budgeting System (PPBS) in the Department of Defense (3:6-9)[2] is the process through which the SECDEF administratively controls the military departments and defense agencies. It is through the PPBS that the SECDEF provides policy and guidance on force levels, manpower and fiscal constraints, issues decisions regarding program goals to support the forces and budgets annual funds to support the programs. The main products of the PPBS process are the Five-Year Defense Plan (FYDP) and the annual budget. The FYDP is the official program of the DOD; it summarizes the approved five-year programs of all military departments and defense agencies. It is a viable plan which is updated three times a year as changes occur in accordance with the PPBS cycle. The FYDP projects manpower and material fiscal requirements for five-years and force levels for eight years.

The FYDP is fiscally oriented. It is not the vehicle through which the merits of new programs are judged. It is primarily concerned with balancing all approved programs within the financial constraints provided by the SECDEF. The Department of the Navy Program Objectives Memorandum (POM) is the vehicle by which the Secretary of the Navy proposes revisions to the approved programs in the FYDP. Because of the cyclic nature of the PPBS and the overlapping of the planning, programming and budgeting phases it takes approximately 21 months to get a new program into the budget.

Figure 2-2 illustrates the overlap in the PPBS phases for any given

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[2]For a more complete description of the PPBS process, the reader is referred to references (3), (4) and (18) in the Bibliography.

fiscal year and points out the reason for the 21 month delay in entering a new program into the President's budget. Note that in any current fiscal year there are three budget activities that take place (4:7), (18:35). First, the current fiscal year budget is being executed. Second, the budget for the "budget year" (i.e. the current fiscal year plus one) is reviewed at Service headquarters and SECDEF levels during the first quarter of the current fiscal year and is submitted to the President for inclusion in his budget in January. The President's budget is then submitted to Congress for enactment for the next fiscal year (i.e. the budget year). Third, during the current fiscal year, programming and shaping of the budget for the "programming year" (i.e. current fiscal year plus two) takes place as indicated in figure 2-2. Finally, planning is done for the current year plus two and beyond.

Indicated in figure 2-2 is a time delay of 21 months from entering the planning cycle until the President's budget is submitted to Congress. It takes an additional 8 months for Congress to enact the budget. So, the minimum time delay in obtaining funds for a given program is about 29 months. This time delay[3] emphasizes the importance of the Program Manager attuning himself to the PPBS cycle and providing POM inputs as early as possible to establish a "line-item" in the FYDP.

2.2 The DCP/DSARC Process

The DCP/DSARC process (3:III-10,11) is the means by which the

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[3]Since the budget for the "programming year" rapidly firms up during the current year, the Program Manager must be particularly astute or he may become "locked-out" of the budget for an additional year - thereby increasing the 29 month delay to 41 months or more.
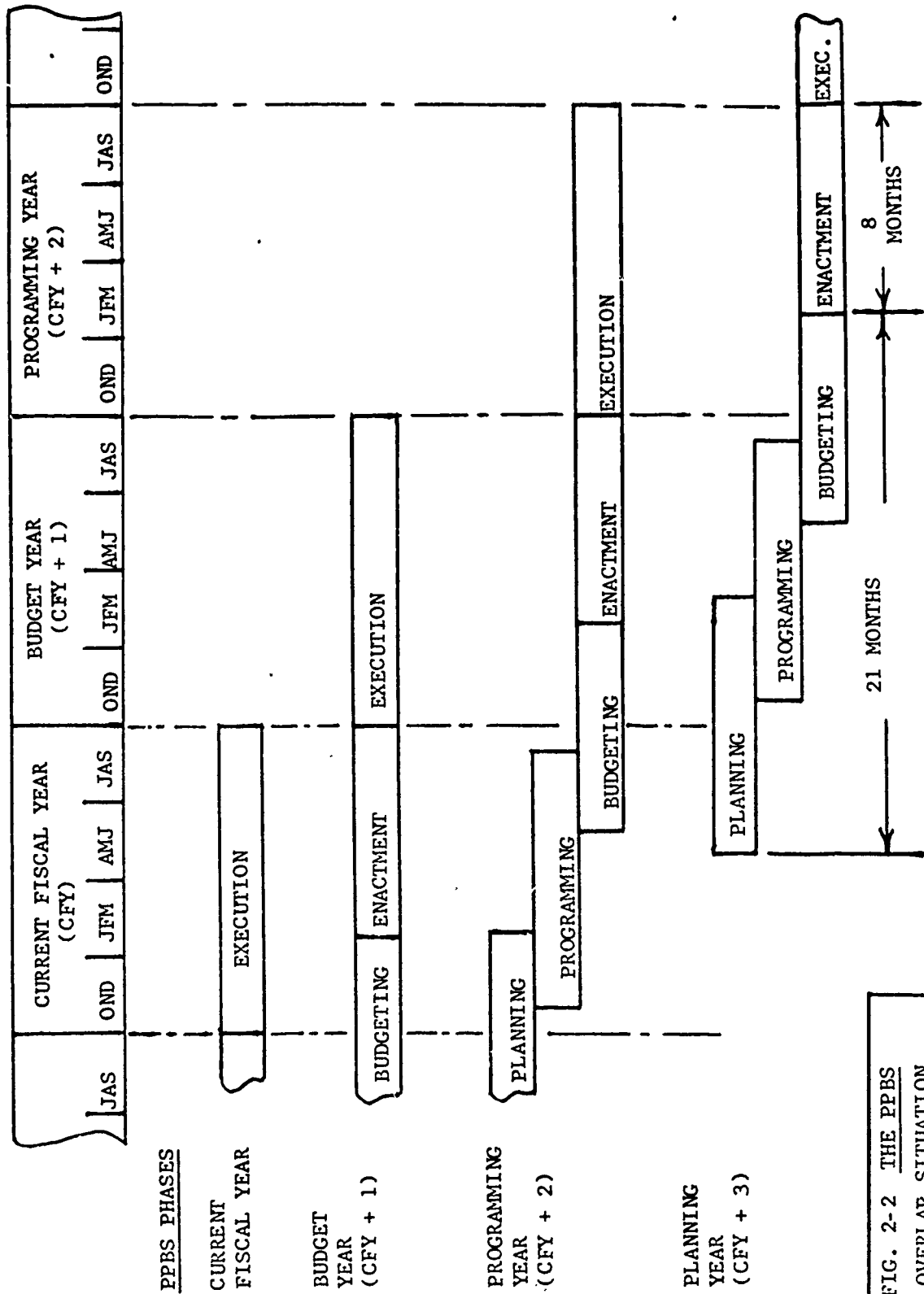
FIG. 2-2 THE PPBS
OVERLAP SITUATION

2-8

SECDEF reviews and makes decisions on individual major defense programs[4]. The need for SECDEF decisions on individual phases of each major program does not always coincide with the PPBS events. In addition, the review of the POM (Program Objectives Memorandum) and budget submittals does not always permit adequate SECDEF review of the progress of each major defense system program. The DCP/DSARC process complements the PPBS by addressing issues related to progress of individual defense system programs and ensures SECDEF reviews related primarily to the individual program schedule rather than the PPBS schedule. This is particularly important for recommended new programs which have not yet made it into the PPBS cycle as an approved program. The DCP (Decision Coordinating Paper) is the document by which the DCP/DSARC process is initiated.

Thus, there are two basic documents through which the Services can make recommendations to the SECDEF for initiation of new major programs, namely the POM and the DCP. Fiscal requirements for a new program can be entered into the Service POM during the Planning and Programming cycle of the PPBS. Even though such a recommended "new-start" does not become an approved SECDEF program by this process, it is still necessary to "line-up" funds prior to SECDEF approval, because of the 21 month delay between planning and budgeting built into the PPBS cycle. The DCP is the document through which the service formally requests a SECDEF decision, through the DSARC, for initiation of a new major system program. SECDEF decisions as a result of the DCP/DSARC process are reflected in the next update of the FYDP in the PPBS cycle.

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[4]References (5), (6) and (17) in the Bibliography describe the DCP/DSARC process in detail.

2.3 System Acquisition Within the Department of the Navy

The basic document which establishes policy for major system acquisition within the Department of Defense (DOD) is DOD Directive 5000.1 (1). Within the Department of the Navy a hierarchy of instructions implement DODD 5000.1, starting with SECNAV (Secretary of the Navy) Instruction 5000.1 (7), then OPNAV (Office of the Chief of Naval Operations) Instruction 5000.42 (8) and finally NAVMAT (Naval Material Command) Instruction 5000.22 (9). Basically, there is an implementing instruction for each major level of authority within the bureaucracy.

Figure 2-3 illustrates, in a simplified form, the structuring of the Department of the Navy for acquisition. The location of Project Management Offices are also indicated for NAVMAT-Level Projects and SYSCOM-Level Projects. Note that, within the department, there are three major levels of authority over NAVMAT projects and four levels over projects at the SYSCOM level. Each level of authority imposes its own procedures and approval cycles for system acquisition prior to soliciting higher-level approval. In addition, each approval level requires considerable coordination with staff offices. In addition to this layering there are further levels of approval up through the Department of Defense (DOD) in reaching the SECDEF, which include the Assistant Secretaries of Defense (ASD's), Director of Defense Research and Engineering (DDR&E), the Defense Systems Acquisition Review Council, associated staffs and advisory groups. So, the importance of a concise, uniform set of decision-making documentation is evident.

At the Secretary of the Navy level DODD 5000.1 is implemented via SECNAV Instruction 5000.1 which establishes policy and management principles for acquisition of systems. At the Chief of Naval Operations (CNO) level,
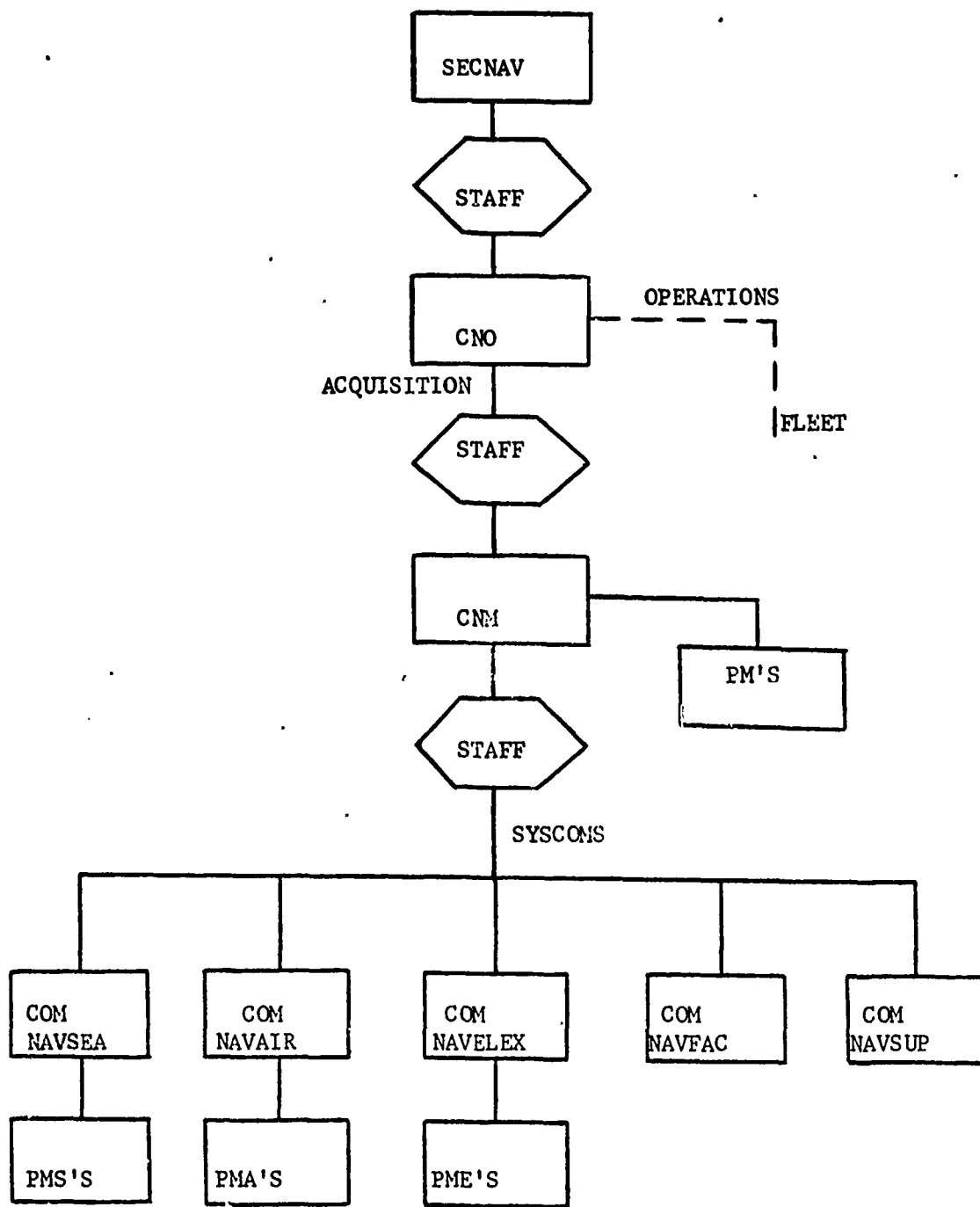
FIGURE 2-3   ACQUISITION CHAIN OF COMMAND

WITHIN DEPARTMENT OF THE NAVY

OPNAV (Office of the Chief of Naval Operations) Instruction 5000.42 entitled "Weapon System Selection and Planning", amplifies the policy set forth in SECNAV Instruction 5000.1 and establishes revised R&D (Research and Development) planning procedures. Then, at the NAVMAT level, NAVMAT Instruction 5000.22, also entitled "Weapon System Selection and Planning", amplifies the guidance given in OPNAV Instruction 5000.42 where necessary and revises R&D planning review procedures within the Naval Material Command.

This hierarchy of directives and instructions may appear, at first glance, to contribute to excessive layering within the Department of the Navy. No doubt, there is layering as is evident from figure 2-3, but the net result of this new hierarchy of instructions is a big simplification (10:3-11, 20) over previous system acquisition procedures. Moreover, the planning and decision-making documents (i.e. the OR, DP, NDCP, DCP) are clearly defined and uniform at all levels within the Navy bureacracy. And, of course, the DCP is the link with higher authority decision-making. While approval is still required at all levels up through the chain-of-command, the consistent set of decision-making documents should improve the vertical communication process.

Each of the three Navy Instructions (i.e. SECNAV Instruction 5000.1, OPNAV Instruction 5000.42 and NAVMAT Instruction 5000.22) is now briefly discussed, with emphasis on program initiation aspects.

    2.3.1 <u>SECNAV Instruction 5000.1/System Acquisition in the Department</u>
           <u>of the Navy</u>

SECNAV Instruction 5000.1 implements DODD 5000.1 and establishes policy, relationships and responsibilities for acquisition of systems within the Department of the Navy. It includes DODD 5000.1 as an enclosure,

cancels twenty-eight existing Navy instructions concerning systems acquisition and identified fifty-six additional related instructions to be reviewed for policy consistency and to be revised and consolidated as appropriate. This review led to promulgation of OPNAV Instruction 5000.42 and NAVMAT Instruction 5000.22, which will be described in sections 2.3.2 and 2.3.3, respectively, and the subsequent cancellation of ten additional instructions. This reduction in number of instructions considerably streamlined the planning and decision-making documentation within the Department of the Navy.

Relative to Program Initiation, SECNAV Instruction 5000.1 assigns responsibility for identifying operational needs, determining characteristics and defining requirements to meet the needs to the Chief of Naval Operations (CNO). The CNO along with the civilian executive assistants are responsible for advising the Secretary of the Navy with respect to decisions relative to initiation of major acquisition programs. The responsibility for the establishment, application, and execution of Program/Project Management within the Department of the Navy is assigned to the Chief of Naval Material (CNM), under the Chief of Naval Operations (CNO). Once the project is chartered and a Project Manager is appointed, the Project manager is responsible for the formulation and execution of plans for system development and production.

The Assistant Secretary of the Navy for Research and Development, ASD (R&D), is responsible for managing the RDT&E appropriation. In OPNAV, the Director, Research and Development (DRDT&E) is responsible via the CNO to the ASN (R&D) for coordinating the Department of the Navy RDT&E program and the Navy portion of Program VI of the Department of Defense Five Year Defense Program (FYDP).

System acquisition programs are initiated either to capitalize upon a technological advancement in the state-of-the-art and/or to respond to user requirements. Once the conceptual effort is far enough along to justify further pursuit, and OSD approval thereof is subsequently required, the program status shall be reviewed by the CNO Executive Board (CEB) (13)[5]. Appropriate recommendations shall be used in establishing the CNO's position on program issues and alternatives. The CNO position shall be reflected in the DCP and forwarded to the Secretary of the Navy.

To assist the Secretary of the Navy in his decision-making process a Department of the Navy Systems Acquisition Review Council (DNSARC) was established (14). The DNSARC provides a formal mechanism by which the Secretary of the Navy will receive the counsel of his principal advisors prior to making decisions concerning initiation or continuation of major weapon system acquisition. The membership of the DNSARC consists of the Secretary of the Navy, the Under Secretary, the Assistant Secretaries, the Chief of Naval Operations (CNO) and the Commandant of the Marine Corps (CMC). The Vice Chief of Naval Operations and the Assistant Commandant may substitute for the CNO and CMC, respectively. In the absence of the Secretary of the Navy, the Under Secretary will chair the DNSARC. The Director, Office of Program Appraisal shall act as Secretary to the Council. The DNSARC not only provides counsel to the Secretary of the Navy prior to making decisions concerning major system programs, but also provides a forum for review of major systems program presentations to be made to the Defense Systems Acquisition Review Council (DSARC), the Secretary of Defense or Deputy Secretary of Defense.

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[5]The CEB is an advisory council to the CNO as defined by OPNAVINST 5420.2J.

The DNSARC process is used to establish the official Department of the Navy position to be taken at the DSARC (or OSD) meeting.

2.3.2 OPNAV Instruction 5000.42/Weapon Systems Selection and Planning

The acquisition policy set forth in SECNAV Instruction 5000.1 along with the establishment of the CNO Policy and Planning Guidance (CPPG)[6] and CNO Program Analysis Memoranda (CPAM)[7] process required a restructuring of the procedures and documentation for material development and acquisition within the Navy. OPNAV Instruction 5000.42 establishes such new procedures and documentation for R&D planning, the generation of operational requirements and for conducting management reviews during system acquisition.

Figure 2-4 illustrates the planning documentation process by which R&D programs are defined. The CNO Policy and Planning Guidance (CPPG) Document interprets the Defense Policy and Planning Guidance Document, the Joint Strategic Objectives Plans (JSOP) and other studies in terms of the Navy's roles and missions in support of National Defense Policy. This provides broad R&D planning guidance for a five-year period consistent with the Five-Year Defense Plan (FYDP) timing. Another CNO document, the Extended Planning Guidance (EPG) interprets the SECDEF's Extended Planning Annex (EPA) in terms of the Navy role and extends the CPPG planning guidance ten years beyond the FYDP (i.e. 15 years into the future). In addition, the

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[6]The CPPG is the CNO's interpretation of the SECDEF's Defense Policy and Planning Guidance (DPPG) as it applies to the Navy, along with the CNO's amplification of this guidance, his goals and priorities.

[7]The CPAM is a decision-making document developed for the CNO by the Systems Analysis Division (OP-96), which provides in-depth analysis of each major mission and support category and alternatives on how to best accomplish the goals of the CPPG.

RESEARCH PROGRAMS

EXPLORATORY DEVELOPMENT PROGRAMS (6.2)

ADVANCED DEVELOPMENT PROGRAMS (6.3)

ENGINEERING DEVELOPMENT PROGRAMS (6.4)

R&D PLAN

- SCIENCE & TECHNOLOGY OBJECTIVES (STO'S)

BROAD NAVY R&D PLANNING GUIDANCE

- OPERATIONAL REQUIREMENTS (OR'S)

CPPG
- NAVY ROLES & MISSIONS
- BROAD PLANNING GUIDANCE

EPG
- EXTENDS PLANNING HORIZON

FORCE & MISSION SPONSOR'S PLANS
- TIME-PHASED
- PLATFORMS
- WEAPON SYSTEMS

DPPG

JSOP

OTHER STUDIES

EPA

JLRSS/JRDOD

FIG. 2-4 NAVY R&D PLANNING PROCESS

2-16

Force and Mission Sponsors in OPNAV generate individual plans for their areas (e.g. Surface, Subsurface and Air Warfare Plan) which are consistent with the CPPG and EPG planning. The Force and Mission Sponsor plans are time-phased according to short, mid and long-range requirements, and forecast platforms and weapon systems (modernizations or new) corresponding to those time frames. Finally, the Joint Long Range Strategic Study (JLRSS) and the Joint Research and Development Objectives Document (JRDOD) provide additional R&D planning objectives.

All of this information is coordinated by the Director of Research, Development, Test and Evaluation (DRDT&E) in OPNAV (OP 098) and forms the basis for development of the Research and Development (R&D) Plan for the Navy. The R&D Plan consists of two parts: (1) Science and Technology Objectives (STO's), and (2) Operational Requirements (OR's). The STO's describe the Navy's needs and problems requiring R&D solutions based on the Navy's role and operational situation 10 to 20 years in the future. The STO's form the basis for definition of Research (6.1) and Exploratory Development (6.2) Programs which are oriented toward development of a technology base and are not yet constrained by particular system applications. The Operational Requirements are the basis for system acquisition requiring R&D in the Advanced Development (6.3) or Engineering Development (6.4) categories.

The basic planning documentation as identified by 5000.42 is the OR (Operational Requirement), the DP (Development Proposal), the NDCP (Navy Decision Coordinating Paper) and the DCP (Decision Coordinating Paper). These documents and the approval procedures form the process by which new programs are started in the Navy. Figure 2-5 illustrates the Program Initiation Process as defined in OPNAVINST 5000.42.

Referring to figure 2-5, the process starts off with the generation of a "Draft OR". There are many ways for such a "Draft OR" to be developed but it is beyond the scope[8] of this report to delve into the details. Suffice it to say here that while OR's can originate entirely within OPNAV, it is not unusual for a Systems Command or fleet activity to propose a "DRAFT OR" to OPNAV. Of course, OPNAV will review the merit of such proposed "Draft OR's" and will only issue a final OR after intensive internal review and rewriting. The main point here is that while suggestions are encouraged from all sources, OPNAV is the single authority that can decide whether a valid operational need exists and whether or not an OR should be issued to initiate the system acquisition process.

Once an OR is issued, the system commands (SYSCOMS) via NAVMAT formally respond with a Development Proposal (DP). The DP presents a range of alternative system concepts, which can possibly meet the operational requirements, and associated tradeoffs. Generation of the DP will normally be an iterative process with informal dialogue between the developing agency and the OPNAV Sponsor. Upon acceptance of the DP by the CNO, guidance is provided to NAVMAT/SYSCOMS on which alternative to pursue. The DP then becomes the basis for a Navy Decision Coordinating Paper (NDCP). The "DRAFT NDCP" is normally prepared by the developing SYSCOM and forwarded via NAVMAT to OPNAV. Again OPNAV conducts an extensive internal review of the NDCP, rewriting as necessary. CNO approval of the NDCP constitutes formal authority to initiate the program (for CNO designated programs) or to pursue further conceptual studies (for major programs requiring higher approval authority). In the latter case in-house Navy funding will be provided to complete the

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[8]Readers interested in details of how an OR is generated are referred to item (11) in the Bibliography.

SECDEF   CNO   CNM/SYSCOMS
_____   _____   _____

                   DRAFT OR
                      ↓
                    CEB
                      ↓
                    OR   REQUESTS
                                          ────────→ DP
                               PROPOSES
                            ←──────────
                  DRAFT NDCP
                      ↓
                    CEB
                      ↓
                   NDCP   AUTHORIZES
                                          ──────────→ CONCEPT
                                                       FORMULATION
                                                       PHASE
                  DRAFT DCP ← PROPOSES ────────────
                  (FOR COMMENTS)
                      ↓
                  CEB/SECNAV

DRAFT DCP ←──── PROPOSES
(FOR COORD)
    ↓
DSARC I
    ↓
FINAL DCP   SECDEF DESIGNATED PROGRAM   IMPLEMENT
                   ──────────────────────────────→   PROGRAM
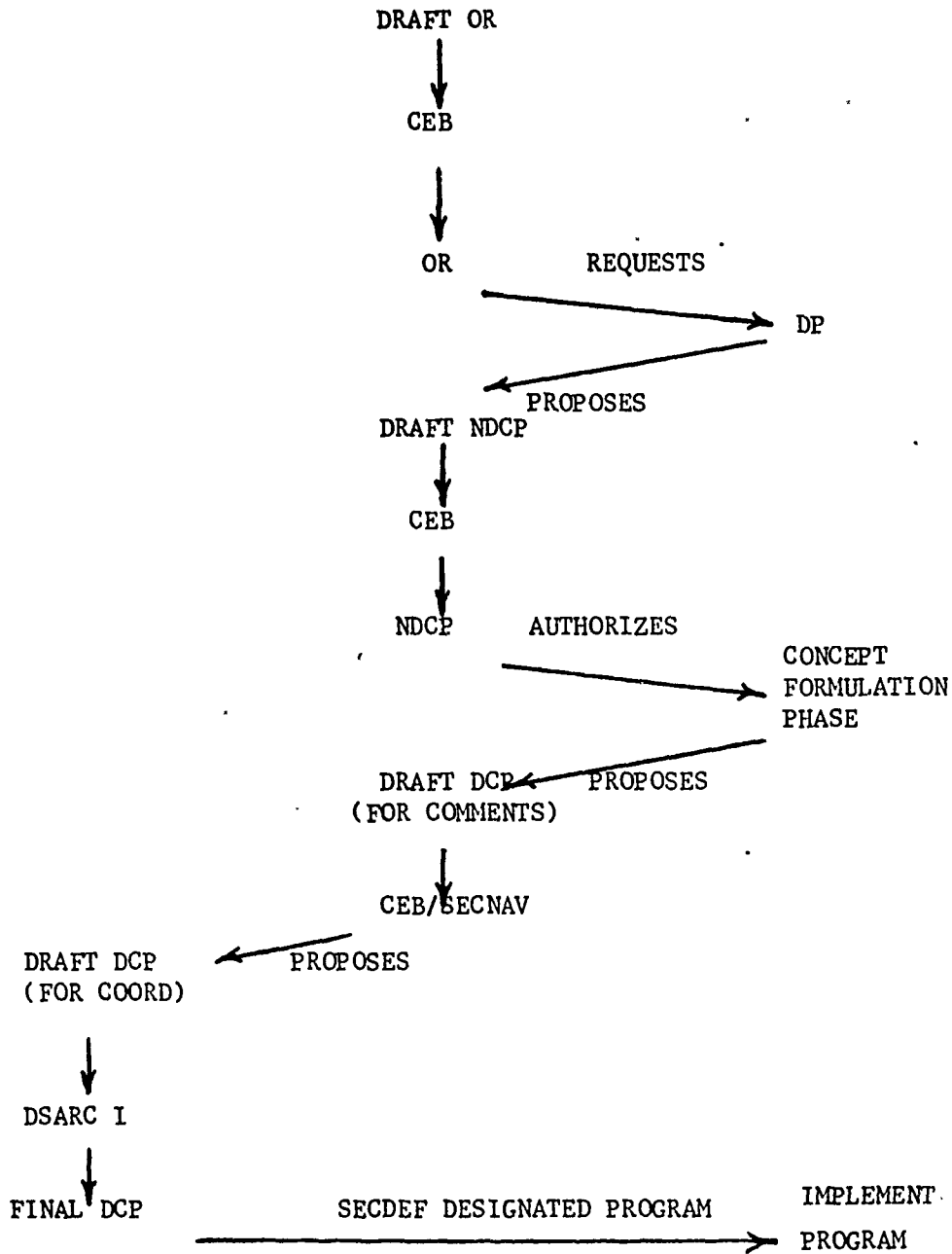
┌───┐
│   FIG. 2-5   THE NAVY PROGRAM   │
│   │
│   INITIATION PROCESS   │
└───┘

2-20

conceptual phase effort leading up to DSARC I. The NDCP then becomes

the basis for a DCP requesting SECDEF approval to initiate the validation

phase of the program. The NDCP and DCP formats are the same. The main

differences are the level of approval needed. Also, normally, for a

major program the NDCP will be slanted toward the Conceptual Phase while

the DCP will be slanted toward the Validation Phase.

There are several levels of program review and approval required

within the Navy depending on the level of authority at which the program was

designated. For instance, major programs will be reviewed at the OPNAV

level by the CNO Executive Board (CEB) and at the SECNAV level by the DNSARC.

Less than major programs (i.e. CNO Designated), will be reviewed by the

acquisition Review Committee (ARC), which is a sub-panel of the CEB.

The DP, NDCP and DCP documentation will be discussed further in section

3 of this report.

2.3.3 NAVMAT Instruction 5000.22/Weapon System Selection and Planning

NAVMAT Instruction 5000.22 amplifies the guidance given in OPNAVINST

5000.42 and establishes revised NAVMAT R&D planning and review procedures.

The policy in 5000.22 states that the Deputy Chief of Naval Material for

Development (CND) will take an active part in the project initiation for

major programs through DSARC I. However, the CND will not impose reporting

requirements more stringent then those already required by higher authority.

The easing of reporting requirements is in line with the disestablishment

of the Naval Material Command Pre-DSARC Review Group (15). This was done

with the intent of minimizing layering and in recognition of the fact

that pre-DSARC Reviews would be held at the SECNAV level with the esta-

blishment of the DNSARC (14). NAVMAT does require, however, that each

Project Manager scheduled for a DSARC presentation provide two copies of that presentation to the Deputy Chief of Naval Material (Plans and Programs). Clarifying information, if needed within NAVMAT, will normally be handled informally except in those instances where the Chief (or Vice Chief) of Naval Material specifically requests a formal presentation.

NAVMATINST 5000.22 provides some further details of the process by which Development Proposals are generated. Upon receipt of an Operational Requirement (OR) requesting a Development Proposal NAVMAT will assign a Principal Development Activity (PDA), normally a SYSCOM, with the responsibility for undertaking the particular development effort. The PDA will assign a Development Proposal Manager (DPM), who is responsible for coordinating and developing the DP. The time allowed to respond with a DP is stated in the NAVMAT requesting letter. This time will vary according to the program[9] - but 60 days turnaround is not unusual. NAVMAT also requires that an Environmental Impact Statement be included as part of the DP.

The remainder of the instruction elaborates on the detailed steps shown in figure 2-5, emphasizing the NAVMAT role in coordinating the DP and expanding the process leading up to the OR. Summarizing the main points, NAVMAT emphasizes the role of the Exploratory Development (6.2) Program in leading to Advanced System Concepts (ASC's) and the logical transitioning of an Exploratory Development Program into Advanced Development. This is one way that an OR can possibly come into being - that is, by evolving technology. The ASC's accumulated from this process are consolidated into a Navy Advanced Concepts (NAC) document which is submitted annually to OPNAV

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[9]For instance, the SSURADS program turnaround time was 60 days, but the SIRCS program turnaround time to develop the DP is about one year.

by the Chief of Naval Development. The actual number of these ASC's selected each year from each SYSCOM's recommendations for transition to Advanced Development is quite small. Usually, recommendations for new programs are driven by Operational Needs as identified by OPNAV rather than evolving from ASC recommendations.

The next two sections describe the detailed activities which must occur during the Concept Formulation Effort leading up to the Program Initiation Decision, showing how the documentation requirements and procedures described in this section are applied.

3. The Concept Formulation Phase

In the author's opinion, Concept Formulation is the most important phase of a major systems program. It is in this phase that operational requirements are transformed into system performance requirements, alternative system concepts are defined, tradeoff analyses are conducted and a preferred system functional baseline starts to take shape. Concurrent with this effort, a Project Manager is selected, the Project Office is organized and staffed, the initial Project Master Plan is developed and, in general, the ground work is laid which sets the course for the remainder of the program. DODD 5000.1 states the following:

> "---Early conceptual effort is normally conducted at
> the discretion of the Military Departments and Defense
> Agencies---. It is critical that the right decisions
> be made during this conceptual effort; wrong deci-
> sions create problems not easily overcome later in
> the program.---" .

A model of the Concept Formulation Phase that will be used for discussion purposes throughout the remainder of this section is provided in Figure 3-1. This model highlights the Concept Formulation portion of the System Acquisition Process, identifying the Key activities and documentation produced during this phase. Leading up to the Concept formulation Phase, as described in section 2, are activities associated with the determination of operational needs and the development of a technology base. These activities certainly contribute to the conceptual effort and could be considered part of it. For instance, DODD 5000.1 states:

> "---Underlying specific Defense System development
> is the need for a strong and usable technology
> base. This base will be maintained by conducting
> research and advanced technology effort independent
> of specific Defense system development.---"

and, SECNAV Instruction 5000.1 states:

>   "---Generally, all effort conducted in connection
>   with the user/producer dialogue --- is considered
>   conceptual effort as the term is used in DODD
>   5000.1.---"

For purposes of this study, the Concept Formulation Phase is consi-
dered to start with the generation of an Operational Requirement (OR)
issued by OPNAV. At this point, the conceptual effort becomes systems-
oriented.

As indicated in figure 3-1, the salient activities that occur during
Concept Formulation are categorized into three broad areas, as follows:
(1) System Definition; (2) Program Definition; and, (3) Contract Defini-
tion. Effort in these three areas proceeds in parallel. The key docu-
mentation outputs associated with these three areas is also indicated
in figure 3-1. The primary purpose of the Concept Formulation effort is
to define alternative system concepts, that satisfy the operational
requirement, for presentation at the DSARC I review. Consequently, the
activities are driven by (and matched to) the requirements for DSARC I.
The Decision Coordinating Paper (DCP), which serves as the basis for
DSARC I, then, is of paramount importance. All other output documentation
generated during the conceptual effort backs up the DCP and provides
detailed information for coordination at the working level. The DCP
itself contains a concise summary of all the essential information of the
program and supports the decision-making process at the SECDEF level.
Two other decision-making documents that are internal to the Department
of the Navy, namely the DP and NDCP, are generated near the beginning
of the Concept Formulation effort. The DP provides the formal response
to the OR issued by OPNAV, and, in essence, requests CNO authorization

CONCEPT FORMULATION PHASE

EXPLORATORY DEVELOPMENT → CONCEPT FORMULATION → DSARC I → BEGIN VALIDATION

SYSTEM DEFINITION
- DERIVE SYSTEM PERFORMANCE REQUIREMENTS
- DEFINE ALTERNATIVE SYSTEM CONCEPTS
- PERFORM TRADEOFF ANALYSES

PROGRAM DEFINITION
- PREPARE DEVEL. & MGM'T. PLANS
- IDENTIFY PRELIMINARY DTC GOALS
- IDENTIFY CRITICAL SUPPORT REQ'TS.
- LINE UP FUNDING IN FYDP
- IDENTIFY ISSUES/PREPARE PROGRAM DECISION DOC.

CONTRACT DEFINITION
- DETERMINE ACQUISITION STRATEGY
- IDENTIFY PROSPECTIVE CONTRACTORS
- PREPARE RFP FOR VALIDATION PHASE
- DETERMINE EVALUATION CRITERIA

INPUTS
- TECHNOLOGY BASE
- OPERATIONAL REQUIREMENT

OUTPUTS

TECHNICAL DOCUMENTATION
- SYSTEM REQ'TS. DOC.
- TRADEOFF STUDIES REPORT
- SYSTEM FUNCTIONAL BASELINE DOC.

PROGRAM DOCUMENTATION
- PROJECT MASTER PLAN
- POM INPUTS
- DP, NDCP, DCP

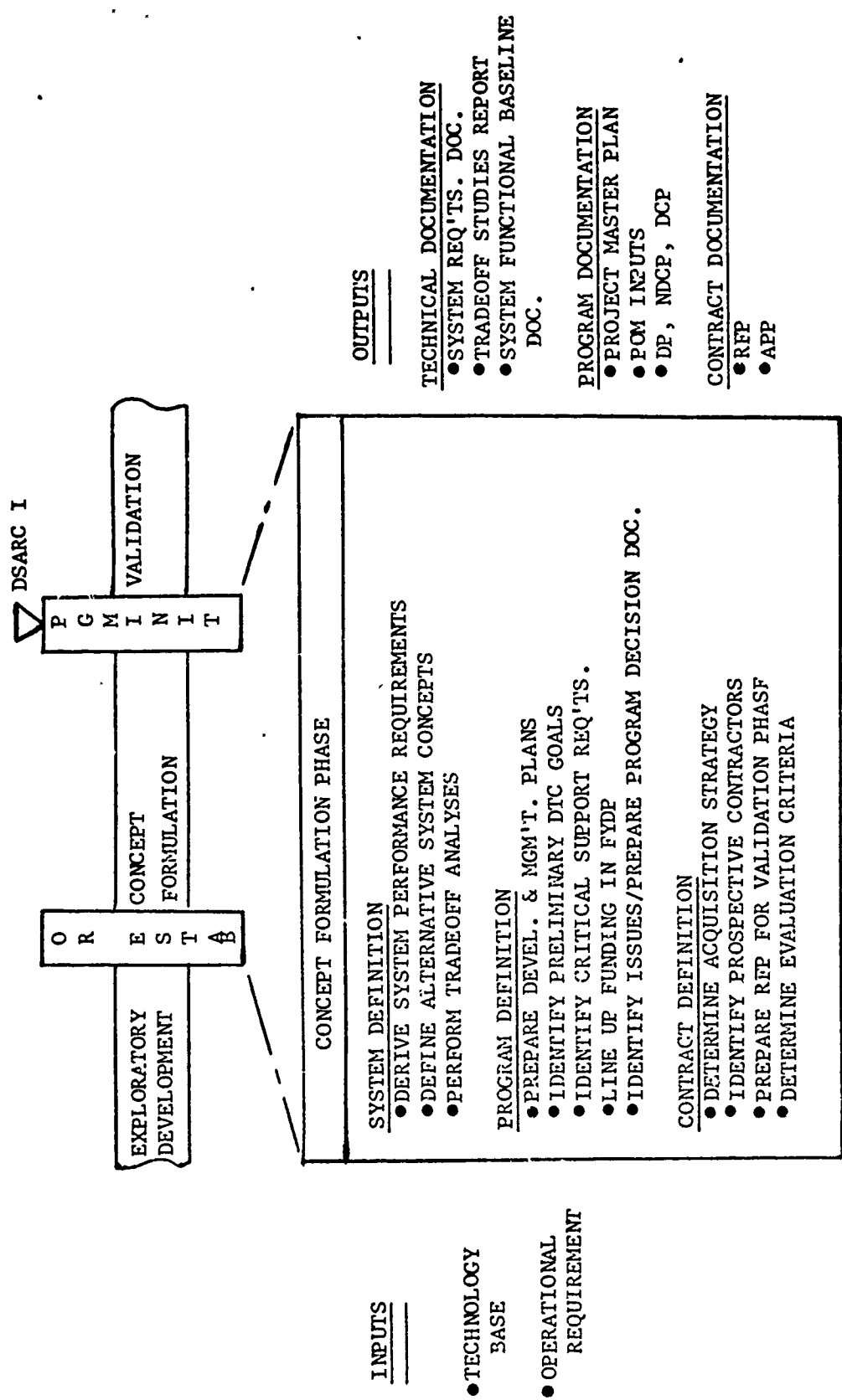**CONTRACT DOCUMENTATION**
- RFP
- APP

FIG 3-1
THE CONCEPT FORMULATION PHASE

and identification of funds to conduct the conceptual effort. This leads
to a Navy Decision Coordinating Paper (NDCP) which formally authorizes
the Concept Formulation effort when signed by the CNO. At this time
the OR may be subsumed by the NDCP.

The remainder of this section describes in more detail the activities
and documentation that occur during the Concept Formulation Phase with
specific attention given to the format and content of the decision-making
documentation produced (i.e. the DP, NDCP and DCP).

3.1 System Definition

As shown in figure 3-2, System Definition is an iterative process.
It starts early in the Conceptual Phase and continues throughout the
program. This is not only necessary to determine the system concept to
start with, but to continually keep track of the system effectiveness with
respect to the current threat, the operational needs and current technology.
Referring to figure 3-2, the process initially starts in response to
the OR issued by OPNAV. An initial assessment of the threat and the
Force and Mission Sponsor's plans leads to a preliminary assessment of
system performance requirements and identification of a broad range of
alternate system concepts to satisfy the operational need. This informa-
tion is used in the preparation of the Development Proposal (DP) response
to the OR and later in the preparation of the NDCP and the initial Project
Master Plan. After the CNO signs out the NDCP, thereby authorizing and
identifying funds for the Concept Formulation Phase, the System Definition
is continued.

First, the threat and mission forecasts are updated. Close contact
is maintained (19) with the Navy intelligence community (i.e. Naval

3-4

FIG. 3-2 THE SYSTEM DEFINITION PROCESS

FORCE & MISSION SPONSOR'S PLANS
THREAT
OR

UPDATE THREAT & MISSION FORCAST

DEFINE SYSTEM PERF. REQ'TS

PREPARE SYSTEM REQ'TS DOC.

TECHNOLOGY
EXISTING & FOREIGN SYSTEMS

DEFINE ALTERNATE SYSTEM CONCEPTS

SIMULATION
HISTOR. DATA

PERFORM EFFECTIVE-NESS STUDIES

IDENTIFY PREFERRED SYSTEM CONCEPT

IDENTIFY RISKS & FALL-BACK POSITIONS

PREPARE SYSTEM FCNL. BASELINE DOC.

PREPARE TRADEOFF STUDIES RPT.

INPUT TO:
DCP
PMP
RFP

INPUTS TO:
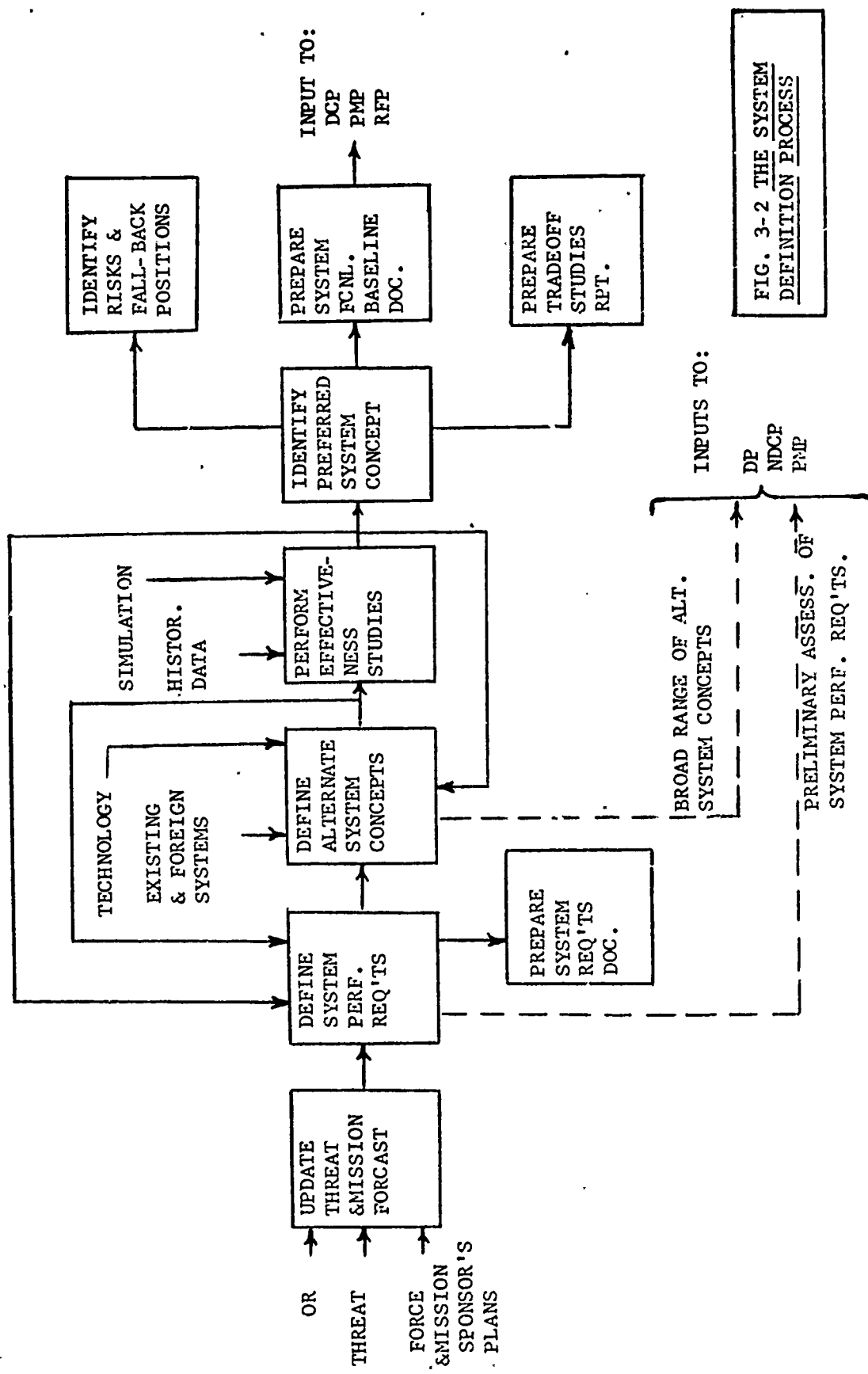DP
NDCP
PMP

BROAD RANGE OF ALT. SYSTEM CONCEPTS

PRELIMINARY ASSESS. OF SYSTEM PERF. REQ'TS.

3-5

Intelligence Command (NIC) and Naval Intelligence Support Center (NISC))
to make certain that validated threat information is being used. Close
liaison is also maintained with the Force and Mission Sponsors (e.g.
Surface Warfare) in OPNAV to coordinate with their time-phased plans
(i.e. short, mid and long-range plans) concerning platforms, weapon
systems and missions. From this updated information the system performance
requirements are derived. Then, alternative system concepts are defined
to meet the derived requirements, taking into account the latest tech-
nology (from both internal Navy R&D programs and Industry IRAD[1] programs),
existing systems and foreign systems. That is, included in the alter-
natives considered are modifications to existing systems and the possible
use of systems from our foreign allies, either already existing or under
development. Only after these alternatives are considered, and found
inadequate, are new-system concepts entertained. In developing alternate
system concepts it is important to consider at this early point (to the
extent practicable) the various engineering disciplines (i.e. Reliability,
Maintainability, Supportability, etc). Also, cost must be considered
as an equal design parameter from the beginning. Note that as system
concepts are defined, another look is taken at the performance require-
ments and refinements are made in an iterative manner. Also, a prelimi-
nary System Requirements Document is generated for coordination within
the project at the working level.

Having identified certain system concepts for consideration, effec-
tiveness criteria are defined and tradeoff analyses are conducted. Here,

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[1]The term "IRAD" refers to Industry "Independent Research and Deve-
lopment" effort.

the use of simulations (either existing or specially developed) can be useful and maximum use is made of historical data on similar systems to determine "lessons learned". After effectiveness analyses are performed, the performance requirements and the alternate system concepts themselves are reexamined and further refined, as necessary. In this iterative manner, tradeoffs are made and a preferred system concept is identified. Critical risk areas are also identified along with fall-back positions. This effort is documented in detail in the Trade-off Studies Reports. The System Requirements Document is firmed up and the preferred system concept is documented in the System Functional Baseline Document. This information then forms the basis for preparing the Decision Coordinating Paper (DCP), the Project Master Plan (PMP) and the Request for Proposal (RFP) for the Validation Phase.

3.2 Contract Definition

The contract Definition activity occurs in parallel with the System Definition Process. In fact, the Concept Formulation Phase itself may involve contractors. There are some programs[2] that may contract out the entire Concept Formulation effort while others may perform it entirely in-house. However, this depends on the particular situation, the complexity of the program, availability of in-house talent, the preferences of the Program Manager, availability of funding and many other considerations.

The purpose of this section is to discuss some Contract Definition

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[2] For example, the SSURADS Program intends to conduct Concept Formulation in-house; whereas, the SIRCS Program is contracting out the entire effort.

activities that must occur as part of the Concept Formulation Phase in order to prepare for the Validation Phase. Of course, there may still be some support contractor involvement, providing assistance in such areas as computer modeling, effectiveness analyses, report preparation and similar things. These support contractors, however, would not be involved in the competition for the system being procured.

Early in the Conceptual Phase a briefing for Industry would normally be held. The purpose of such a briefing would be to alert Industry to the existence of the program, define problem areas that need solution and provide tentative program planning information. Benefits to both the government and the contractors can result. For instance, contractors may obtain information helpful for their annual business planning, proposal planning and IRAD project definition efforts. The government can benefit by lining up potential bidders (thus establishing a competitive base) and by spinoffs from IRAD efforts which may be useful to the program.

Another primary activity would be the definition of the acquisition strategy for the Validation Phase. While some preliminary work can be done in this area, it is necessarily dependent on the outcome of the System Definition Process and the funding situation. For instance, if the preferred system concept has a high degree of risk, it may be desirable to procure complete system prototypes for evaluation during the Validation Phase. If there are only a few specific isolated risk areas, perhaps only subsystems can be prototyped and evaluated during Validation. Evaluation and source selection criteria must be defined. Ideally, a competitive base of at least two contractors is desirable for Validation - but this will largely depend on available funding. The riskiness of the

approach will also affect the type of contract used for validation. Inputs from the Program Definition effort are also required. Such things as schedules, milestones, Government Furnished Equipment, quantities, development and operational testing, logistics support requirements and Design-to-Cost goals must be included in the contract considerations.

All of the above mentioned items will be incorporated into the Request for Proposal (RFP). An Advanced Procurement Plan (APP) must also be prepared for the program in accordance with Armed Services Procurement Regulation (ASPR) 1-2101.

3.3 Program Definition

The Program Definition effort proceeds in parallel with and complements the System Definition effort and the Contract Definition effort. The main activities involved here are associated with obtaining funding, the decision-making process, and detailed planning information for organizing and coordinating all aspects of the program. The vehicle for getting into the budget cycle is the Program Objectives Memorandum (POM). This was discussed in section 2.1. The detailed planning information is developed in the Project Master Plan (PMP), which is a viable document (16), and will be continually updated and/or expanded as the program progresses. Included as part of the PMP will be the Work Breakdown Structure (WBS), organizational relationships, detailed task statements and schedules, funding requirements, the development plan, the management plan and the Test and Evaluation Master Plan (20), (21). Preliminary DTC goals and critical support requirements must also be identified as early as practicable. The decision-making documentation (i.e. the DP, NDCP, DCP) is of most interest in this study and is discussed further in

sections 3.3.1 through 3.3.3. This documentation leads up to DSARC I and the Program Initiation decision, which is discussed further in section 4.

3.3.1 The Development Proposal (DP)

The Development Proposal is a summary document limited to 20 pages. It presents a range of alternatives and tradeoffs for OPNAV consideration in response to the OR. It is intended to create dialogue between NAVMAT/ SYSCOMS and the OPNAV OR Sponsor to help converge on mutually agreeable recommendations for the Concept Formulation phase of the program.

It is important to emphasize the 20 page limitation, as it points out the decision-making role of the document. Of course, many volumes of detailed backup information may exist and may be provided to OPNAV on request. After OPNAV approval, the DP serves as a basis for the preparation of the Navy Decision Coordinating Paper (NDCP). The NDCP is discussed in section 3.3.2.

Details of the format and content of the DP are given in OPNAV Instruction 5000.42. A sample outline of the DP taken from OPNAVINST 5000.42 is included as Appendix B of this report for the reader's convenience.

3.3.2 The Navy Decision Coordinating Paper (NDCP)

The NDCP is a document which supports and promulgates the CNO decision to initiate the Concept Formulation phase of a major systems program in response to the DP. The NDCP document defines program issues, the considerations which support the operational need, program objectives, program plans, performance parameters, areas of risk and development alternatives (8). Format and processing procedures within OPNAV for the NDCP are

similar to those used for the DCP, which will be discussed in section

3.3.3. The main difference between the NDCP and DCP is that the NDCP

only applies[3] to the Conceptual Phase for a major program. The Concept

Formulation effort then is authorized, funded and reviewed entirely

within OPNAV. When the conceptual effort has advanced far enough to

consider transition to a Validation Phase; a DCP is prepared. The NDCP

serves as the basis for the preparation of the DCP.

3.3.3 The Decision Coordinating Paper (DCP)

The DCP supports the DSARC I review and the SECDEF decision-making

process. The DCP for Validation identifies the major program issues,

reestablishes the Operational need, presents a range of alternative approa-

ches (including modification of existing systems, use of foreign systems

and development of new-systems.), identifies risk areas and a detailed

plan (with fallback positions) for eliminating the risks, provides per-

formance requirements and the detailed planning for the Validation Phase

(including schedule, milestones). Program thresholds for performance, cost

and schedule are established in the DCP. The DCP, when approved, then

authorizes execution of the program within the threshold limits. It

becomes the contract between the Secretary of Defense (SECDEF) and the

Navy. Any violation of the thresholds requires review and approval at

the SECDEF level.

A check list of the key areas that must be addressed in the Program

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[3]For CNO-Designated programs, of course, the NDCP could authorize
Validation or Full-Scale Development phases of the program.

Initiation DCP is provided in the Navy Programming Manual. For the convenience of the reader, a copy is included as Appendix C to this report.

The DCP is limited to 20 pages plus resource annexes for each alternative considered. A suggested outline for the DCP is provided in the Navy Programming Manual. Again, for the convenience of the readers, a copy is included as Appendix D to this report.

The information in Appendices C and D should be useful to anyone preparing a DCP.

4. The Program Initiation Decision

The Concept Formulation effort culminates in the preparation of a Program Initiation Decision Coordinating Paper (DCP 1) and a DSARC I review by which a SECDEF decision is requested on proceeding into the Validation Phase of the program. The Program Initiation DCP is the principal document which serves as the basis for the DSARC I review and the SECDEF decision-making process. The DSARC serves as an advisory body which makes recommendations to the SECDEF that are considered in the formulation of his decisions on major system acquisitions. SECDEF approval of (DCP 1) constitutes the formal Program Initiation decision. The DCP, with the thresholds (i.e. for cost, schedule and performance) established therein, becomes the "contract" between the SECDEF and the Developing DOD Component[1]. The approved DCP, then, establishes the limits of authority delegated to the cognizant DOD Component in the conduct of the Validation Phase of the program.

The remainder of this section describes the detailed events leading up to the Program Initiation decision by the SECDEF. The initial draft version of the proposed DCP 1 is prepared by the Navy after agreement on the outline by the cognizant OSD Staff Office. The OSD Staff Office (for Program Initiation this is ODDR&E) then has the responsibility for coordinating the initial draft DCP within OSD and for collecting the comments of each DSARC Principal and Advisor, and from these comments preparing an acceptable "for-comments" draft DCP. The "for-comments" draft DCP is then distributed to interested offices in OSD and to the Department of the Navy. Based on comments received, the DDR&E coordinator will update the DCP as

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[1] The term DOD Component refers to the Military Departments and Defense Agencies.

necessary to become the "for-coordination" draft DCP, which identifies the issues surfaced during the "for-comments" cycle. The "for-coordination" draft DCP then becomes the basis for the DSARC I review.

To illustrate this process further, as well as the level of intra-Navy staff coordination and approvals required, figure 4-1 is provided. Figure 4-1 is a time line of events leading up to the formal Program Initiation decision. Note that because of the large amount of staff coordination required, the process of preparing for DSARC I·must start at least 120 days prior to the scheduled time. The key people involved in this coordination process are the OPNAV Program Sponsor/Coordinator, the NAVMAT Program Coordinator and the SYSCOM-level Program Manager, if one has been appointed. However, at this stage of the program it is quite likely that a Program Manager has not yet been appointed. In such a case the person directing the conceptual effort would most likely be the program representative for the SYSCOM. Most of the coordination within OPNAV and OSD would normally be handled by the OPNAV Program Sponsor/Coordinator with the support and participation of the NAVMAT and SYSCOM-level managers.

About 130 days prior to DSARC I, informal liaison is conducted between the OPNAV Program Sponsor and DDR&E concerning the status of the program conceptual effort and the DSARC I timing. Part of this liaison includes proposing an outline for the Initial Draft DCP. Referring to figure 4-1, at approximately 120 days prior to DSARC I (i.e. -120 days in fig 4-1) a request is made through the ASN (R&D) to DDR&E for scheduling a DSARC I meeting. At about the same time written approval of the Initial Draft DCP outline is obtained from DDR&E, with identification of the issues and alternatives to be considered. Then, at about -115 days the OPNAV Program Sponsor requests supporting analysis of issues and alternatives from OP-96

4-2

SCHEDULE
DSARC I/DCP
OUTLINE APPROV.

REQUEST OP 098
REVIEW T&E PLAN/
INDEP. COST
ANAL (OP 96D)

SCHEDULE
SUBSEQUENT
EVENTS

PRE-CEB
REVIEW/INITIAL
DRAFT DCP
(INTRA-NAVY)

INITIAL
DRAFT DCP
TO DDR&E

CEB
REVIEW

REQUEST
OP 96
SUPPORT

OP 96
ANALYSES

DAYS TO
DSARC I ⟶

INITIAL
DRAFT DCP
TO DDR&E

DDR&E ISSUES
"FOR COMMENTS"
DRAFT DCP

DNSARC
REVIEW/
DN POSITION
ESTABLISHED

DDR&E ISSUES
"FOR COORD."
DRAFT DCP

NAVY COMMENTS
ON " FOR COORD."
DRAFT
DCP

DSARC I

-120   -110   -100   -90   -80   -70

-60   -50   -40   -30   -20   -10   0

DAYS TO DSARC I ⟶

SERIES OF
BRIEFINGS

PRE-DSARC
BRIEFINGS

DSARC I

DSARC RECOMMENDATIONS
RPT/INDEPENDENT
T&E RPT
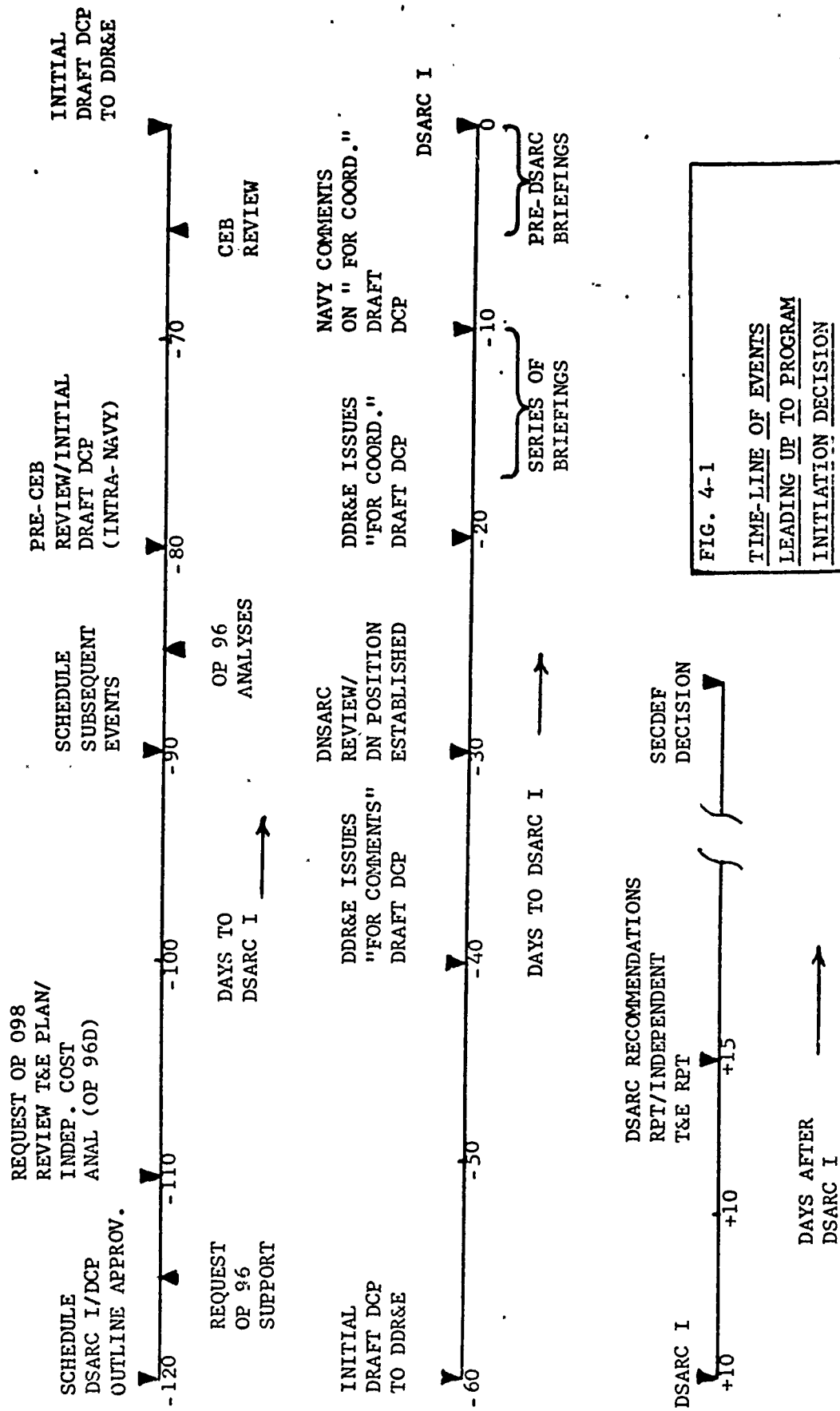
SECDEF
DECISION

+10   +15

DAYS AFTER
DSARC I ⟶

FIG. 4-1

TIME-LINE OF EVENTS
LEADING UP TO PROGRAM
INITIATION DECISION

4-3

(Systems Analysis Division). At the same time the Project Manager (if one exists, otherwise the SYSCOM Program Director) is coordinating assistance from other NAVMAT elements as needed. Also, OP-098 is requested to review the Test and Evaluation Planning and a request is made for an independent parametric cost analysis from OP-96D (Navy Cost Analysis Group) at about -110 days.

At approximately -90 days, the OPNAV Program Sponsor arranges the scheduling of all subsequent reviews up to DSARC I. This includes scheduling of a PRE-CEB review at approximately -80 days, the CEB meeting at -65 days, the SECNAV DNSARC review at -30 days and SECNAV level review of the DSARC presentation at -10 workdays. The Navy completes the Initial Draft DCP and distributes it internally to get "in-house" comments on issues and alternatives. This occurs at approximately -80 days, about the same time as the PRE-CEB review. About 5 days prior to this the OP-96 analyses evaluating the issues and alternatives, as well as the independent cost analyses are provided to the OPNAV Program Sponsor/Coordinator. This information along with the Initial Draft DCP will be the basis for the PRE-CEB meeting. Following guidance from the PRE-CEB meeting and after incorporating results from the OP-96 analyses as appropriate, the Initial Draft DCP is updated and serves as the basis for presentation to the CEB at about -65 days. At this time the CNO/CEB position on issues is established and the Navy Initial Draft DCP is forwarded to DDR&E at -60 days (i.e. 60 days prior to DSARC).

At this point the cognizant OSD office (i.e. DDR&E) is responsible for review and coordination of the Initial Draft DCP with all interested OSD offices. The DDR&E staff will then modify the Initial Draft DCP as appropriate to include OSD comments. The resulting document is then

distributed as a "for comment" Draft DCP to the interested offices, including the Navy. This occurs at about -40 days in figure 4-1. Comments are due back to DDR&E within 15 days.

The "for-comment" Draft DCP is distributed within OPNAV and the comments collected by the Program Sponsor. Then the program is reviewed by the CNO and the CNO Executive Board (CEB) to update the CNO/CEB position on the current issues. This is followed by a SECNAV level review via the DNSARC (Dept. of the Navy Systems Acquisition Review Council) review at -30 days. The DNSARC review establishes the Department of the Navy (DN) position on the proposed program. The DN position on the "for-comment" Draft DCP is forwarded to the DDR&E coordinator.

The DDR&E coordinator will modify the "for-comment" Draft DCP, as appropriate, based on comments received. This leads to the preparation of a "for-coordination" Draft DCP, which must be available for review by the DSARC Principals and the Secretary of the Navy by at least 10 days before the scheduled DSARC review. The "for-coordination" Draft DCP is normally distributed by -20 days. Again, the DN updates its position relative to the issues and alternatives identified in the Draft DCP and returns comments to DDR&E by -10 days. A series of briefings also occur at this time in preparation for the upcoming DSARC I review. For instance, the CEB reviews the planned DSARC presentation at -15 days. The OPNAV Program Sponsor, assisted by the Project Manager, briefs the DDR&E (T&E) at -12 days and the DSARC presentation is reviewed by the ASN (R&D) at - 11 days. At -5 days the Program Sponsor/Coordinator and Program Manager provide OSD Staff briefings as required in final preparation for DSARC I. Within OSD, during the 10 days before the scheduled DSARC review, the DDR&E coordinator is responsible for ensuring that copies of the "for-coordination" draft

DCP get to the DSARC Principles and Advisors. Also, the Chairman of the
Cost Analysis Improvement Group (CAIG) is responsible for getting infor-
mation on their evaluation of the Service cost estimates to the DSARC
Principals by -5 days. And, the Deputy Director DDR&E (T&E) is responsible
for getting his Test and Evaluation Report to the DSARC Principals by at
least -2 days.

After the DSARC I is completed, the DSARC chairman (i.e. DDR&E) must
provide the DSARC's recommendations to the SECDEF within 15 days. These
recommendations will include a clear and objective statement of all issues
and a proposed action memorandum for SECDEF signature reflecting the
DSARC recommendations. Any dissenting views must also be included in the
report. A copy of the report is sent to the Secretary of the Navy for
information and comment before forwarding to the Secretary of Defense.
The DDR&E (T&E) will also prepare an independent report for the SECDEF,
assessing the Test and Evaluation situation. This report will be attached
to the DSARC Chairman's report.

Once the SECDEF decision is made to initiate the new program, the
DCP will be revised as necessary by the DDR&E staff to reflect the SECDEF's
decision. The resulting approved DCP will be issued within 30 days after
the SECDEF decision is made. The SECDEF decision will be reflected in the
next update of the FYDP.

5. Discussion of Potential Problem Areas

Section 2 has provided an overview of the System Acquisition Process within the Department of Defense, with special emphasis on procedures, approval cycles, and documentation requirements within the Department of the Navy. Then, section 3 provided a detailed description of some of the key activities that occur during the Concept Formulation Phase with emphasis on the key decision-making documentation requirements (i.e. DP, NDCP and DCP). And, section 4 provided a detailed account of the events leading up to the Program Initiation decision by the SECDEF, highlighting the DCP coordination at all levels in preparation for DSARC I.

This section now identifies some potential pitfalls that the Program Manager may encounter along the way to the Program Initiation decision. Specifically, potential problem areas are discussed as they relate to the following four areas: (1) Organizational Size and Complexity, (2) Funding Considerations, (3) Concept Formulation Authorization and Funding, (4) Preparation for DSARC I.

5.1 Organization Size and Complexity

System acquisition within the Department of Defense is characterized by centralized policy-making, with authorization and direction of major programs at critical phases (i.e., management by exception), and decentralized operation (i.e., the implementation of major programs by lower-level managers within approved thresholds for cost, performance and schedule). Underlying decentralized operation is the concept of the Program Manager, with sufficient authority to accomplish approved program objectives. Some feeling for the complexity of the Acquisition System within the Department of Defense and the Department of the Navy is given

in section 2 of this report, with directives identified for procedures

and approval cycles at each level of the bureacracy.'

To the author, the organizational layers and the complexity of the

"system" are staggering--yet, the management framework for effective

communication and decision-making does appear to exist. At least, one

can determine how the "system" is supposed to work. This is largely due

to the Planning, Programming and Budgeting System (PPBS) and the DCP/

DSARC Process, which are central to the "system" and provide for order

in the midst of chaos. The Program Manager must attune himself to the

"system". Operating within the system will be difficult enough;

attempting to operate outside of the system will assure failure. Because

of the size and complexity of the Defense organization there are bound

to be problems resulting from communication difficulties and layering

effects. These problems can be especially difficult for one trying

to initiate a new program.

It appears that the communication process is one-way, that is, down

the chain of command. This is typical of a directive-oriented manage-

ment approach. The implication in the "top-down only" communication

is that new programs can only be started by the initiative of the

highest echelons. Indeed, this is one way that programs can be started

(e.g., programs of highest priority and/or national urgency). In fact,

this is the easy way to start a new program (i.e., by direction). The

author believes, however, that it is not the intent of the "system" to

limit new starts in this manner. The author believes that higher

echelons do want and need recommendations from lower levels of management

(who are closer to the problem) and expect communication up through

the correct channels to provide such recommendations. Unfortunately, the system complexity and organizational layers tend to breed pockets of resistance or "bureacratic bottlenecks" at various levels, which cause the communication process to break down. There are just two many funnels to go through. Often, these "bottlenecks" will filter out or completely misinterpret the information given to them and, consequently, the information never gets to the higher levels. Unfortunately, the Program Manager may not immediately realize that the communication process has broken down. This is especially critical for new program initiatives where short time delays may mean missing the budget cycle for at least another year. It is therefore important that the Program Manager establish and maintain good working relations at all levels in the hierarchy. He must be astute enough to recognize potential "bottlenecks" early and determine alternative communication paths, if necessary, to avoid delays.

5.2 Funding Considerations

Breaking into the budget cycle is a potential pitfall that will plague every Program Manager. The time delays inherent in the Planning, Programming and Budgeting System were discussed in section 2.1 of this report. The Program Manager must get his funding requirements into the PPBS cycle at least 29 months prior to the time actually needed. Failure to do this can result in delaying the program for a year or more. Hence, the Program Manager must develop a good working relation with the Budget people and must make sure that he is responsive to their timing requirements for budget formulation.

5.3 Concept Formulation Authorization and Funding

A prerequisite for starting the Concept Formulation Phase of a
program is the issuance of an Operational Requirement (OR) by OPNAV.
This in itself can be a source of some controversy and can lead to a
"chicken-egg" situation. Normally, an OR is generated by the user
(OPNAV) in response to a definite operational need . The NAVMAT/SYSCOMS
respond to the OR with a Development Proposal (DP) which draws on
the existing technology base and identifies a broad range of system
alternatives which address the operational need. There is another
school of thought, however, which advocates evolving technology as the
primary motivation for establishment of an OR. In this school of thought,
emphasis is placed on the role of Exploratory Development in leading
to Advanced System Concepts (ASC's)[1] and the logical transitioning of
an Exploratory Development Program into Advanced Development (after all,
an OR is needed to "keep the work going"). No doubt, outputs from the
Exploratory Development Program are important in establishing the tech-
nology base to support new system concepts - but, one must be careful
that these outputs do not become "solutions looking for a problem".
This potential controversy over the OR can create adversary relationships
in the NAVMAT/SYSCOM/Laboratory organizations and can lead to blocked
communication channels (as mentioned in section 5.1). The SYSCOM Program
Manager must develop good working relations with the laboratories, NAVMAT,
and OPNAV and must help resolve potential controversies before they
become too serious.

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[1]The author's experience has led him to understand that the ASC's
are used primarily in the planning process to identify possible new
starts for 1 to 5 years subsequent to the budget year.

Related to the above discussion of the OR and to the earlier discussion of layering (see section 5.1), is the Development Proposal (DP) requirements. Different offices in the SYSCOMS, NAVMAT and OPNAV have different ideas of what constitutes an acceptable DP. The instructions are quite clear (see section 3.3.1) that the DP is a 20-page summary document which responds to the OR and establishes dialogue with OPNAV to authorize Concept Formulation. Yet, there are offices that insist the DP should be many volumes and, in essence, should include the detailed work that is being proposed for Concept Formulation work. Again, a "chicken-egg" situation and adversarial relationships can develop. That is, "you can't get funding to do Concept Formulation because you haven't done Concept Formulation". The author believes this kind of "bureaucratic bottleneck" is a throw-back to the old way (i.e., the GOR, TSOR, PTA, ADO, SOR, TDP methodology) and shows a lack of understanding (or acceptance) of the new (OR, DP, NDCP, DCP) methodology by some pockets of resistance to change. A similar argument to the above holds for the NDCP, which is OPNAV's response to the DP authorizing and identifying funds for the Concept Formulation Phase. Again, the Program Manager must be aware of these potential pitfalls and adapt accordingly. Common sense must be used in tailoring the directives for the OR, DP and NDCP to the particular program situation. Once again, the working relation with the people at all levels (i.e., in the laboratories, SYSCOMS, NAVMAT and OPNAV) is all-important in preventing potential problems from occurring.

4. Preparation for DSARC I

The whole Concept Formulation effort is slanted towards preparation for DSARC I. The primary document generated for this purpose is the DCP. Actually, the DP, NDCP and DCP are all basically the same format but address different aspects of the program. The NDCP forms the basis for the DCP. The Program Manager must make sure that adequate backup for the DCP was prepared during Concept Formulation (i.e. make sure the homework was properly done). This backup includes identification of all reasonable alternatives (including foreign systems and modifications to existing systems) with tradeoff analyses to show why a particular alternative was selected or discarded. It also includes detailed plans for validation including identification of risk areas and plans for risk elimination with fallback positions. Preliminary Design-to-Cost and Life-Cycle-Cost goals must be developed and critical support requirements must be identified. Section 3 identifies in more detail the main activities and outputs that must occur during Concept Formulation. The above items are called out for special attention by the Program Manager in preparing for DSARC I.

While the Program Manager must make sure his homework is done during Concept Formulation, he must be careful not to make the DCP thresholds too tight. He will have to live with them. The thresholds should be challenging-- but achievable, and should be resonable enough to provide the Program Manager the flexibility needed to "manage his program" without constant intervention from the SECDEF level.

Section 4 shows a time-line of events leading up to DSARC I. The Program Manager must coordinate with the OPNAV Sponsor/Coordinator and NAVMAT Coordinator at each step of the way and make sure that the

outputs from Concept Formulation are ready to support each review along the way. Of special importance is the series of briefings for the Office of the Secretary of the Navy (OSN), DDR&E Staff, DSARC Principals' Staff and DSARC Support Groups immediately prior to the Scheduled DSARC meeting. These briefings can help make the DSARC I go more smoothly. Inadequate coordination and/or briefings along the way can lead to problems at the DSARC meeting.

6. Conclusions and Recommendations

This Individual Study Project has served its primary purpose of allowing the author to probe deeper into the Acquisition Management System within the Department of the Navy, with particular emphasis on procedures, approval cycles and documentation requirements leading up to the Program Initiation decision for a major systems program. Some attention was given to how one breaks into the budget cycle. Detailed activities that should normally occur during the Concept Formulation Phase as well as the key documentation outputs were identified. Finally, some potential problem areas that might occur en route to the Program Initiation decision were identified and discussed.

The salient conclusions and recommendations from the study are as follows:

1. The DOD/Navy organization and Acquisition System is extremely complex. This leads to potential problem areas due to layering effects and communication breakdowns. It is mandatory that anyone concerned with initiation of a new program develop good working relations with the laboratories, Syscoms, NAVMAT and OPNAV at all levels if they are to be effective. It is the informal organization which will get the work done and through which communication problems can be resolved before they become too serious.

2. The Planning, Programming and Budgeting System (PPBS) and the DCP/DSARC Process are central to the DOD/Navy Acquisition System. It is mandatory that anyone concerned

with initiation of a new program learn the
"system", as one must operate within it if he
is to be effective.

3. Breaking into the budget cycle can be especially
difficult for a new program. The PPBS cycle has
a built-in delay of about 21 months between the input
to the planning cycle and the submission of the
President's Budget to Congress. One must be attuned
to the timing of the PPBS cycles and the Service
Budget Department's call for budget inputs. New
program funding requirements should be submitted in
the POM at least 29 months before the money is actually
needed for obligation.

4. The Concept Formulation Phase established a System
Functional Baseline, identifies critical risk areas
and develops the detailed information for DSARC I.
Alternatives considered must include foreign systems
and modifications to existing systems as well as new
systems. The primary decision-making output document
is the DCP. All other information provides backup for
the DCP. One must make certain that all the "homework"
for DSARC I is done during Concept Formulation.

5. The DCP Thresholds will determine the degree of freedom
within which one can manage the program. Therefore,
care must be taken not to make the thresholds too
tight or too unreasonable. Consequently, the DCP
thresholds should be challenging but attainable.

6. A series of high-level briefings is required prior
   to DSARC I, within the Navy and to the DSARC Princi-
   pal's Staff. These briefings can be very helpful
   for the communication process and if properly
   done can lay the groundwork for a smooth DSARC I
   meeting. Therefore, one should adequately prepare
   for and develop a strategy for these briefings.

APPENDIX A

NAVY RESEARCH AND EXPLORATORY

DEVELOPMENT PROGRAMS

This appendix describes the Navy Research and Exploratory

Development program structures. The information was taken from

references (12: C-5 to C-7) and (3: 2-27).

Navy Research (6.1) programs are grouped into two program elements in the five-year defense plan. Program Element 61152N applies to In-House Laboratory Independent Research and Program Element 61153N entitled Defense Research Sciences has fourteen sub-elements. These are summarized as follows:

Program Element		Description
61152N		In-House Laboratory Independent Research
61153N		Defense Research Sciences
	-11	General Physics
	-12	Nuclear Physics
	-13	Chemistry
	-14	Mathematics
	-21	Electronics
	-22	Materials
	-23	Mechanics
	-24	Energy Conversion
	-31	Oceanography
	-32	Terrestial Sciences
	-33	Atmospheric Sciences
	-34	Astronomy and Astrophysics
	-41	Biological and Medical Sciences
	-42	Behavioral and Social Sciences

Navy Exploratory Development (6.2) programs are grouped into nineteen Program Elements in the Five-Year Defense Plan, as summarized below.

Program Element	Description (Technology Areas)
62711N	Undersea Target Surveillance
62712N	Surface/Aero Space Target Surveillance
62721N	Command & Control
62331N	Missile Propulsion
62332N	Strike Warfare Weaponry
62633N	Undersea Warfare Weaponry
62734N	Countermeasures
62241N	Aircraft
62542N	Nuclear Propulsion
62543N	Ships, Subs and Boats
62758N	Biomedical Technology
62759N	Ocean and Atmospheric Support Technology
62760N	Logistics Technology
62761N	Materials
62762N	Electronic Devices
62763N	Human Resources
62764N	Chemical/Biological Defense Technology
62765N	Energy and Environmental Protection
62766N	Laboratory Independent Exploratory Devel.

APPENDIX B

DEVELOPMENT PROPOSAL (DP) CONTENTS

This appendix is a copy of enclosure (3) to OPNAVINST 5000.42. It is reproduced here for convenient reference.

SECTION IV

DEVELOPMENT PROPOSAL (DP) CONTENTS

PROGRAM TITLE

I. Background

State need extracted from the Operational Requirement (OR). Expand if appropriate. State need in positive terms. Do not state deficiencies in current operations, tactics, or systems. Indicate need in appropriate time frame. Use simple, terse, concise language. Do not use verbose "boiler-plate" descriptions.

II. Issues

Initiate conceptual, advanced or engineering development.

Point-out other key issues (joint programs, costs, schedules, Congressional impact or actions, changes in threat, etc.)

III. Requirement and Program Objectives

State how recommended alternative(s) and/or objective(s) satisfy(ies) the operational need.

IV. Program Alternatives

Describe alternative approaches investigated. Indicate relevant, previous test results. Show comparative advantages/disadvantages of each significant or reasonable alternative considered. Describe logistic support approaches, identifying significant impact on personnel skill levels and numbers. Provide rationale for selected proposed approach.

V. Effectiveness and Cost Comparison of Alternatives

Indicate as applicable: Estimated development cost and cost-time profile; estimated unit cost of production model (design-to-cost); estimated development/production schedules; indicate risks of failure with respect to performance, military value, cost and schedule; relation to Hi/Lo mix and expected utilization in fleet modernization and future ship and aircraft classes/types/models; estimated degree of relative improvement over existing systems.

VI. <u>Risks</u>

List and explain critical performance tests
during development. Cite uncertainties to be
resolved, including relative performance risk,
cost, and schedule risks.

VII. <u>Other Factors</u>

Indicate other factors which might be important
to the effective introduction of this system, i.e.,
logistics, training, support, environmental impact.

Indicate other on-going or proposed related
programs and the interface of this proposal to
other programs. Include Navy, Joint Service, Army,
and Air Force programs/projects.

VIII. <u>The Development Plan(s) Achievement Milestones
and Thresholds</u>

Indicate RDT&E milestone schedule and recommend
category (6.3, 6.4, or production). Critical logistics
milestones (manual, test equipment verification, and
test leading to approval for service use) shall be
included, if available.

IX. <u>Approval</u>

Each DP will contain an approval/disapproval
page(s) which will conform as near as practical to
a DCP approval/disapproval page(s) form.

Enclosure (3)

APPENDIX C

CONTENT GUIDELINES FOR PROGRAM INITIATION DCP

This appendix is a direct copy of pages NE-15 and NE-16 (i.e. TAB D to Appendix NE) of the Navy Programming Manual (3). The information is reproduced here for ease of reference.

TAB-D

Program-Initiation DCP/PM.

1. A program-initiation DCP or PM should demonstrate that:

   a. The system satisfies a real military need better than feasible alternative systems, is worth its cost, and if of sufficient priority to warrant funding within overall fiscal constraints.

   b. Mission Profile(s) and performance envelope(s) are defined adequately and based upon sound military, technical, logistics, 1/ and economic objectives.

   c. Preliminary total life cycle cost and schedule estimates are realistic and acceptable.

   d. All significant military, technical, and business risks have been identified and resolution actions are well planned, sound, and acceptable.

   e. The management approach, program plan and overall acquisition strategy are sound.

   f. Cost, schedule, and characteristics thresholds are well-defined, provide flexibility for accomplishing appropriate trade-offs before full-scale development starts, and will cause significant problems to surface for management attention.

   g. The environmental impact is minimized and acceptable.

   h. A broad general plan for integrated logistics support has been accomplished with any special problems noted therein.   1/

2. The general organization of the DCP or PM should successively:

   a. Identify the threat and cite appropriate analytic sources.

   b. Describe and substantiate the operational need.

   c. Describe broad performance objectives and substantiate that these proposed objectives correspond well to the operational need.

   d. Summarize the expected effectiveness and costs of alternatives, plus principal determining factors, and compare the alternatives with the proposed program.

   e. Identify critical questions and areas of risk to be resolved by test and evaluation.

   f. Present the plan for executing the first program phase including schedules and milestones. State objectives and principal consideration. Provide for:

      (1) Resolution of issues,

      (2) Investigation of appropriate risk areas through test and evaluation.

      (3) Contingency (fall-back) actions.

g. Propose cost (including design-to-cost), schedule, and performance thresholds for the program first phase.

h. Outline the planned overall acquisition strategy.

i. Describe the management structure and planned management system. Assign responsibilities as explicitly and unambiguously as practical.

3. In creating a proposed DCP or PM outline, consider both:

a. Whether material referenced in a section will have been presented in an earlier section, i.e., the sequence in which relevant material should be presented and read.

b. The practicality of assigning sections to individuals for preparation and correction with short deadlines.

4. Avoid overcommitment. The purpose of a post-initiation phase is to assure that the proposed program is the optimal program to enter into full-scale development. A strong prejudice in favor of a particular problem solution based upon inadequate investigation is most undesirable.

APPENDIX D

OUTLINE FOR PREPARATION OF A DCP

This appendix is a copy of pages NE-10 through NE-14 (i.e. Tab

C to Appendix NE) of the Navy Programming Manual (3). The material is

reproduced here for ease of reference.

TAB-C

NE-54
DCP/PM General Outline.

DCP #
ODDR&E Action Officer
Service Action Officer
Date .

DEVELOPMENT CONCEPT PAPER
PROGRAM TITLE

I. **Background.**

- What is the program.

- Briefly why the program is needed.

II. **Issues.**

- Basic issue of the DCP: initiation, proceed to fullscale development or production.

- Other key issues within the Service or DOD (costs, schedule, impact of Congressional or other actions, change in threat, etc.)

III. **Requirement and Program Objectives.**

- The threat.

- The need.

- Objectives which satisfy the operational need.

IV. **Program Alternatives** .

- Present systems.

- Modification of present systems.

- Foreign systems.

- New systems.

V. **Effectiveness and Cost Comparison of Alternatives.**

- Summarize in tabular form the key elements of the solution alternatives.

- Extent to which the several alternatives will solve the problem.

- Define and explain the effectiveness measure, i.e., what criteria will be used to determine the effectiveness of the system.

- Summary of effectiveness and cost of each system alternative considered.

VI. **Risks.**

- What major parts of each system alternative remain to be developed.

- What risks exist at the component or technology level.

NE-10.

Change #19

VI. Risks. (Cont'd)

° For each risk identify the impact on system performance if the component or technology advance falls short of expectation.

° Characterize the degree of risk in terms of the technical achievement, operational and logistics implications, cost 1/ and schedule.

° State pertinent available data and delineate the data requirements.

° Confidence or lack thereof in the latest cost estimates to complete.

° Summarize in a few sentences the overall risks; technological and economic.

VII. Test and Evaluation

° Critical questions and areas of risk to be or remaining to be resolved by test.

° Developmental Test and Evaluation. Summarize results of developmental testing to date and plans for additional testing. Identify testing agency, location of tests, and dates of tests.

° Operational Test and Evaluation. Summarize results of operational testing to date and plans for additional testing. Identify testing agency, location of tests, and dates of tests. Indicate the degree to which the item tested is representative of the expected production item.

° System Characteristics. Show performance objectives and demonstrated performance to date. Indicate whether performance demonstrated by developmental or operational testing.

VIII. Other Factors.

What other factors are important to the effective fielding of this military system; e.g., logistics considerations, special training, 1/ new schools, increased personnel skills, new maintenance facilities, or special test facilities and equipment? The probable impact of the system on the environment are assessed in this section.

IX. The Development Plan(s) Achievement Milestones and Thresholds.

Program Development Plan, show for each relevant option:

° Program.

° Major Program Elements.

° Fiscal Summary related to the Elements.

° Action Responsibilities.

° Achievement Milestones.

° Threshold Events.

°· Developmental and Operational Test and Evaluation.

1/ Change #19   NE-11

Figure 1.   **Program Development Plan(s) Milestones.**

| A.   Program

     Short Title
     of Project | B.   Major Program
     Elements

1._____

2._____

N._____ | C.   Fiscal Summary

FY   FY   FY   FY

Total_____ |

D. Action Responsibility	E. Pacing Milestones

Action Responsibility columns: Direct | Supporting | Contract

E. Pacing Milestones
1._____
_____
_____ → F. Threshold Events

2._____
_____
_____ → G. Operational T&E

N._____

X.   Resource Annex.

      The DCP text in citing the resource annex, a sample of which is
shown on next page, should state explicitly what costs for each
alternative are not now in the FYDP. Additionally, cost estimates
should indicate the base FY dollars used and approved rate of
escalation.

XI.   Overall Evaluation of Options.

      ° Assess costs and benefits.

      ° Alternative appraisal.

      ° Basis for action decision.

XII.   Management.

      ° Management method and organization.

      ° Extent of authority provided manager.

      ° Dependence of manager on external support.

      ° Reporting and validating procedure.

XIII.   Security.

      ° Identify which parts of the program, process, capability, and
element are classified as well as those elements which are
unclassified.

      ° Identify how the classification of the several elements change
with the different time periods of development and deployment.

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XIV. Next DCP.

  • State when this DCP should be revised and why.

XV. Recommendations.

  • If SECDEF action is or may be warranted in the next month or two,
    state exactly what he should decide and why, which option for
    what reasons.

  • State when the next decision after the above is expected.

  • State what information not now available will be needed to make
    the next decision.

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APPROPRIATION SUMMARY
FYDP/PROPOSED
COST ($000) AND QUANTITY (UNITS) 1/ 3/

DCP No. _____
Date _____

DCP Title _____
PE Number(s) _____

Appropriation 2/	All Prior Years	Current Year	Budget Year	BY+1	BY+2	BY+3	BY+4	BY+5	BY+6	All Years Beyond BY+6 Total
Development										
RDT&E Cost										
Quantity										
Procurement										
SCN Cost										
Quantity										
APN Cost										
Quantity										
WPN Cost										
Quantity										
OPN Cost										
Quantity										
PMC Cost										
Quantity										
Operating										
MPN/RPN										
O&M,N										
O&M,NR										
MPMC/RPMC										
O&M,MC										
O&M,MCR										
Construction										
MILCON										
MILCON (R)										
TOTAL										

1/ Last Fiscal Year of Planned Procurement, BY+ The funding data required is often not available when a DCP/PM is originally prepared. However, it is important that such figures as are available be shown at its earliest opportunity so that the long-range impact of the total program may be assumed.

2/ Appropriation categories inapplicable should not be included.

3/ Cost estimates should reflect a stated FY dollar base with approved escalation rates.

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Bibliography

1. Department of Defense Directive DODD 5000.1, "Acquisition of Major Defense Systems". December 22, 1975.

2. "The Department of Defense Program of Research, Development, Test and Evaluation, FY75". Statement by Dr. Malcolm R. Currie, Director of Defense Research and Engineering, before the Committee on Appropriations of the United States 94th Congress, First Session on 20 February 1975.

3. "Department of the Navy Programming Manual". OPNAV 90P-1D.

4. Nason, Mary Ann E., "The Navy Programming Process: The Program Objective Memorandum (POM)". Study Project Report, PMC 75-1. Defense Systems Management School, Ft. Belvoir, Virginia. May 1975.

5. Department of Defense Directive DODD 5000.2, "The Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC)". January 21, 1975.

6. Department of Defense Directive DODD 5000.26, "Defense Systems Acquisition Review Council (DSARC)". January 21, 1975.

7. Secretary of the Navy Instruction SECNAVINST 5000.1, "System Acquisition in the Department of the Navy". March 13, 1972.

8. Office of the Chief of Naval Operations Instruction OPNAVINST 5000.42, "Weapon Systems Selection and Planning". June 1, 1974.

9. Naval Material Command Instruction NAVMATINST 5000.22, "Weapon System Selection and Planning". January 14, 1975.

10. Hettinger, Louis P. "The Navy Operational Requirement, A Viable Document for the Program Manager". Study Project Report, PMC 75-2. Defense Systems Management School, Ft. Belvoir, Virginia. November, 1975.

11. Doege, Arthur G., "Application of OPNAV Instruction 5000.42 to Fleet Generated Statements of Operational Need". Study Project Report, PMC 75-2. Defense Systems Management School, Ft. Belvoir, Virginia. October, 1975.

12. "Department of the Navy RDT&E Management Guide". NAVSO P-2457 (Rev. 1-75). January 1, 1975.

13. .Office of the Chief of Naval Operations Instruction OPNAVINST 5420.2J, "Chief of Naval Operations Executive Board". November 10, 1973.

14. Secretary of the Navy Instruction SECNAVINST 5420.172, "Establishment of the Department of the Navy Systems Acquisition Review Council (DNSARC)". May 2, 1973.

15. Naval Material Command Instruction NAVMATINST 5000.18A, "Headquarters Naval Material Command Participation Relative to Defense Systems Acquisition Review Council (DSARC)". March 12, 1974.

16. Naval Material Command Instruction NAVMATINST 5200.11B, "Project Master Plan". July 22, 1974.

17. Cullin, William H., "DODD 5000.1 and the Program Manager". PMC 76-1 Handbook I, Overview of Systems Acquisition Mangement. Defense Systems Management School, Ft. Belvoir, Virginia.

18. "Fiscal and Life Cycles of Defense Systems". General Dynamics, Pomona Division. Second Edition. March, 1975.

19. Office of the Chief of Naval Operations Instruction OPNAVINST 3811.1, "Threat Support to Weapons Systems Selection and Planning". September 8, 1975.

20. Office of the Chief of Naval Operations Instruction OPNAVINST 3960.8, "Test and Evaluation Master Plan". January 22, 1973.

21. Naval Material Command Instruction NAVMATINST 3960.6, "Planning and Implementation of Tests and Evaluation of New Weapon Systems". August 24, 1973.

22. O'Shaughnessy, R. J., "An overview of the Budget Process". PMC Handbook II, Financial Management. Defense Systems Management School, Fort Belvoir, Virginia.