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Ronald P. Richter a

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This report describes the Phase I results of the two-stage development of a master plan for the management, operation, and support of the Navy's aviation simulation program for flight training. Phase I describes and analyzes the existing system, and identifies missing elements and areas wherein improvements may be possible. Phase II will involve development of criteria for an optimum simulation plan, the preparation of plans of action and milestones to resolve the problems identified in Phase I, and an update of the Phase I data. The master plan will be a consolidation of the Phase I and Phase II efforts.

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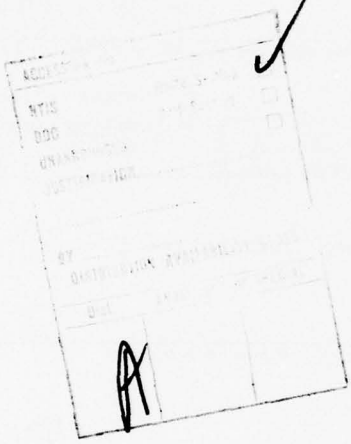
The objectives of the Phase I report are to provide a source document for management information and to present an overview of the planning, programming, and budgeting system for major aviation operator training devices.

The report covers the Navy's R&D program for simulation and the process for establishing operational requirements for major aviation training devices. The planning/programming/budgeting process for simulators and the procurement and production actions required are described in detail. The report documents the system used in the management of operation and support of flight simulators. In addition, extensive background information and detailed program data are provided in the appendices.



Report AIR-413-6MPXY0-1

AVIATION SIMULATION MASTER PLAN

PHASE ONE

Volume I

Neil V. Campbell, Richard H. Davis, Robert E. Duvall,
Ronald P. Richter and Troy E. Todd

INFORMATION SPECTRUM, INC.

1911 Jefferson Davis Highway, Suite 1006
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FINAL REPORT

23 February 1977

Prepared for

Commander, Naval Air Systems Command (AIR-413)
Washington, D.C. 20361

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FOREWORD

This Master Plan for Aviation Simulation -- Phase I is the first part of a two-part effort intended to provide the Naval Air Systems Command's Weapons Training Division with an improved management system for flight simulators. The Phase I objectives are to provide a source document for management information which presents an overview of the planning, programming, budgeting, procurement, operation and support of major aviation training devices. Phase I describes, analyzes, and evaluates the existing system. The evaluation identifies missing elements and possible improvements to the system that will be resolved in Phase II.

The work described in this Phase I report was performed by the Training Analysis Division, Information Spectrum, Inc., Arlington, Virginia, under the direction of Mr. R. H. Davis, for the Department of the Navy under Contract N68335-76-C-3387. This preliminary Report is submitted as Data Item "A002," DD Form 1423, of that contract.

The cooperation of many persons, military and civilian, throughout the Naval Aviation training establishment was an essential factor in collecting and evaluating data during the preparation of this document. Appreciation is expressed for this cooperation.

The report is published in two volumes, Volume I describes the current management system, while Volume II presents the related analysis and evaluation. With this arrangement, it is possible to use the report both as a text describing system operation and as a basis for planned change to current management system operation.

EXECUTIVE SUMMARY

A. Background

In conducting flight training programs, the Navy aim is to maintain or increase combat readiness to the maximum extent possible through the use of simulation in the face of limited budgets and scarce resources, while avoiding actions which would impair combat readiness through excessive use of simulation. Training devices have been integrated into aviation training programs for many years, but, until recently, their role was relatively small in comparison with that of aircraft. More recently, advances in simulation technology and the necessity to reduce costs while conserving energy have increased the demand for the use of simulators in flight training programs. The Navy has a large investment in major aviation training devices. In FY 1976 it reached a level of more than $500 million. In current planning, that level will reach approximately one billion dollars by FY 1984. The management of the device programs has become increasingly complex and important, requiring attention at the highest command levels.

The Naval Air Systems Command is responsible for initiating, at the direction of the Chief of Naval Operations, the programming and budgeting of Navy flight simulators.

NAVAIRSYSCOM also has management responsibility for acquisition and life cycle support of these devices. Facing the rapid growth and very high costs of the flight simulator program, NAVAIRSYSCOM considered it prudent to assure that simulator program management keep pace with the increasing scope of the program and that a long range plan be developed. The Master Plan for Aviation Simulation--Phase I is the first part of a phased effort to develop such a plan.

B. Objectives

The objectives of the Phase I effort are to provide a source document for management information on the aviation simulation program and to provide an insight into the processes involved in entering a major training device into the Planning, Programming and Budgeting System cycle. The immediate use of the Phase I report is as a descriptive text providing useful information on the overall simulation program. The ultimate use of the report is as an input to a planned effort to improve the management system for aviation simulators. As a source document for the management system, this report is to:

- Describe the current management system
- Analyze the system so as to identify authority and responsibility, policy and procedure

- Evaluate the system to identify missing elements or possible improvements to the system.

C. Results

The Phase I effort has produced this document which describes the systems currently in use for aviation simulation management including organizational structures, responsibilities, policies and procedures. Chapter 2 provides a brief description of the Research and Development process as it relates to training devices. Chapter 3 provides information on the initiation, review, analysis and approval of Operational Requirements for simulators. Chapter 4 describes the Planning, Programming and Budgeting System used in the Department of Defense and the Navy. It also describes the procedures involved in programming and budgeting a major training device and its related support. Chapter 5 provides an overview of the procurement, production and acceptance of a training device. Chapter 6 describes the maintenance, material, manpower and facilities management systems involved in the support of training devices, the Quality Assurance and Revalidation Program and the emerging Certification Program. The training device utilization and flight hour substitution programs are also discussed. Supporting information and statistical data are included in appendices.

The existing system structure thus defined and described was then evaluated, and problem areas which detract from system effectiveness were identified. These problems are presented and discussed in Volume II of this report. The scope and impact of these items requiring corrective action are considered sufficient to justify a Phase II follow on effort.

The tasks to be performed in Phase II can be summarized as follows:

- Development of criteria for an optimum simulation plan based on realistic, achievable goals.
- Evaluation of the problem areas identified in Phase I to provide solutions for correcting the problems.
- Development of a plan of action and milestones for correcting the problems.
- Update of data provided in Phase I.
- Consolidation of Phase I and Phase II data into draft Master Plan.
- Preparation of a final report to include final draft Master Plan for Aviation Simulation.

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CHAPTER 1

INTRODUCTION

1.0 Background

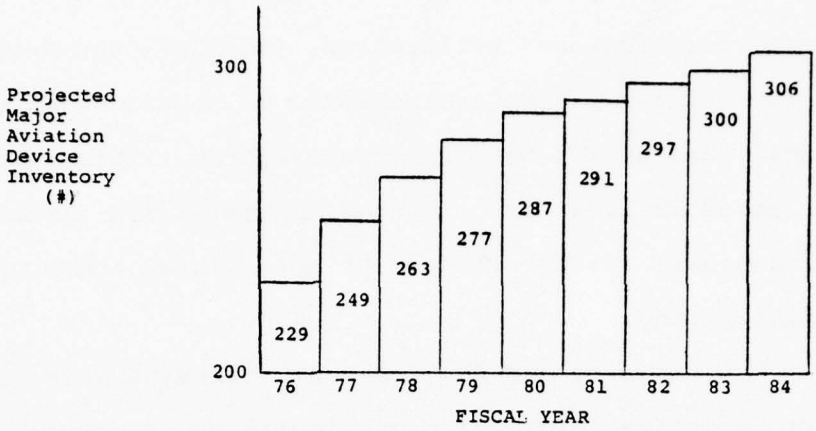
The concept of performing flight training on the ground has evolved from using discussion, book, and aircraft to the use of highly integrated training syllabi including audio/visual training aids and sophisticated simulators. This evolution has been driven by the increasing complexity of aviation weapon systems and the skills and knowledge required to operate them. The increased reliance upon ground training spurred advances in training technology and resulted in simulators becoming supplementary to aircraft in training programs. Training system concepts took form in structured training performed in specialized facilities, utilizing lectures, self-paced learning, computer-aided instruction, sound-slide programs, movies, video-tapes, and a variety of aircraft simulators, some of which were equipped with high fidelty motion systems, visual display systems, and coordinated sound systems. The majority of training was still conducted in the aircraft, however, as it was and still is the best flight training aid.

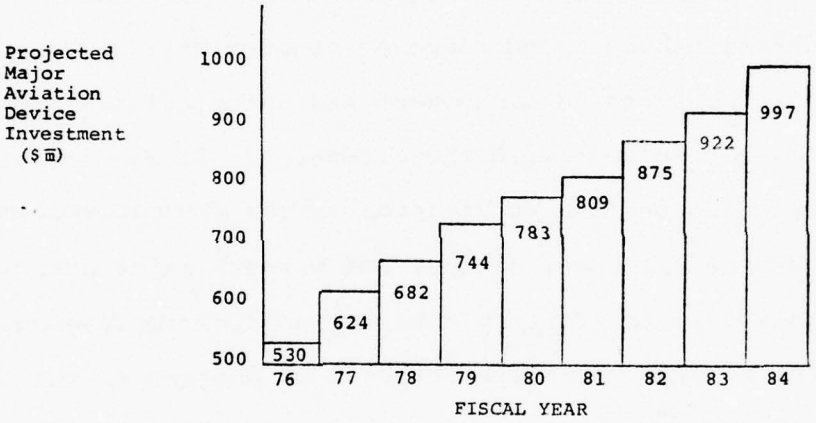
More recently, energy conservation became a major national goal. As a result, new emphasis was placed on

seeking cost-effective alternatives to flight training without degradation in fleet readiness and safety. The potential of flight simulation was immediately recognized and definitive action taken to exploit this potential. Flight simulators were promoted to a status complementary to aircraft for performing flight training, and increased numbers of the more complex training devices were procured. Demands for increased fidelity and realism across the entire spectrum of flight syllabi were raised. Tactical mission simulation was needed as well as the more common familiarization, procedures, and instrument mission simulation. This in turn has changed the emphasis from general purpose trainers to weapon system related trainers in order that directly relatable training flight hour substitution can be realized.

Figure 1-1, derived from CNO/NAVAIR FY77 planning data, graphically displays the projected trends in major aviation simulator procurements. Planning data now available indicates that over the next eight years, the inventory of major aviation training devices will increase by 34%, the acquisition cost will cause investment to rise by 88%, and the average cost of a device to increase by 41%. The present simulator inventory, location, and delivery data are displayed in Appendix B.

Aviation Simulation Trends





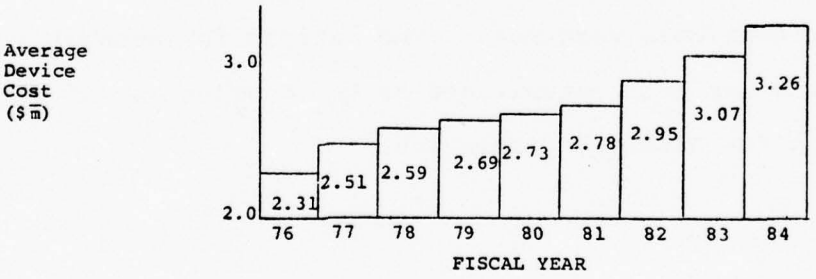


Figure 1-1

The increasing numbers of complex simulators, and the demand for increased utilization, fidelity, and capability of the devices placed an increased maintenance and operational load on the Navy's support system. This load is reflected in areas of personnel, material and fiscal support and has been evident throughout operational and support organizations.

The Congress and the Defense Department have required more extensive information on simulation programs which are increasing in scope and significance. In an era of ever tightening budget and manpower constraints, it became apparent that improved management and information systems were necessary to cope with the situation. It was therefore decided to perform an analysis of the present system used to define, approve, obtain, and support major aviation simulators; to identify areas in need of improvement; and then, to plan the implementation of changes to the system in an evolutionary manner consistent with program priorities and available resources. The vehicle for accomplishing these goals has been established as the development of a Master Plan for Aviation Simulation.

1.1 Guidance

The Naval Air Systems Command's Weapons Training Division (AIR-413) formed a working group comprised of personnel with extensive and recent experience in all facets of naval aviation training and simulation. This group was tasked to perform a detailed examination and analysis of the existing aviation simulation program in the Navy. Emphasis was centered in the areas of program definition, development, procurement and support. The product of this effort is provided in the chapters that follow.

1.2 Method of Analysis

The working group started with an in-depth literature search to examine the documentation of the existing system(s). The team members reviewed regulations, instructions, manuals and other policy documents to identify the various systems currently in effect in aviation simulation management and the organizational structure involved. They conducted interviews with key managerial and administrative personnel associated with simulator programs, including personnel from headquarters, fleet, and field activities. Team members also drew on their own extensive experience in aviation training and simulation. After assembling and analyzing all this information, the team prepared a

description of the existing systems, evaluated the effectiveness of the overall system and its components, and compiled a list of problem areas which currently detract from the effectiveness of this system.

1.3 Findings

The succeeding chapters discuss the findings which are categorized under the headings of:

- Research and Development
- Operational Requirements
- Planning, Programming and Budgeting
- Procurement and Production
- Operations and Support

There is marked overlap in many, if not all, of these chapters as each phase of a simulator's life-cycle impacts on or is impacted by the preceding or succeeding phase. These life cycle phases are displayed in Figure 1-2 which also portrays subject matter overlap. A number of areas were identified in which improvements may be possible. A general conclusion reached was that the flexible and individualized methodologies employed for yesterday's small simulator program will not suffice for today's expanding programs. More structured management and improved information systems appear warranted.

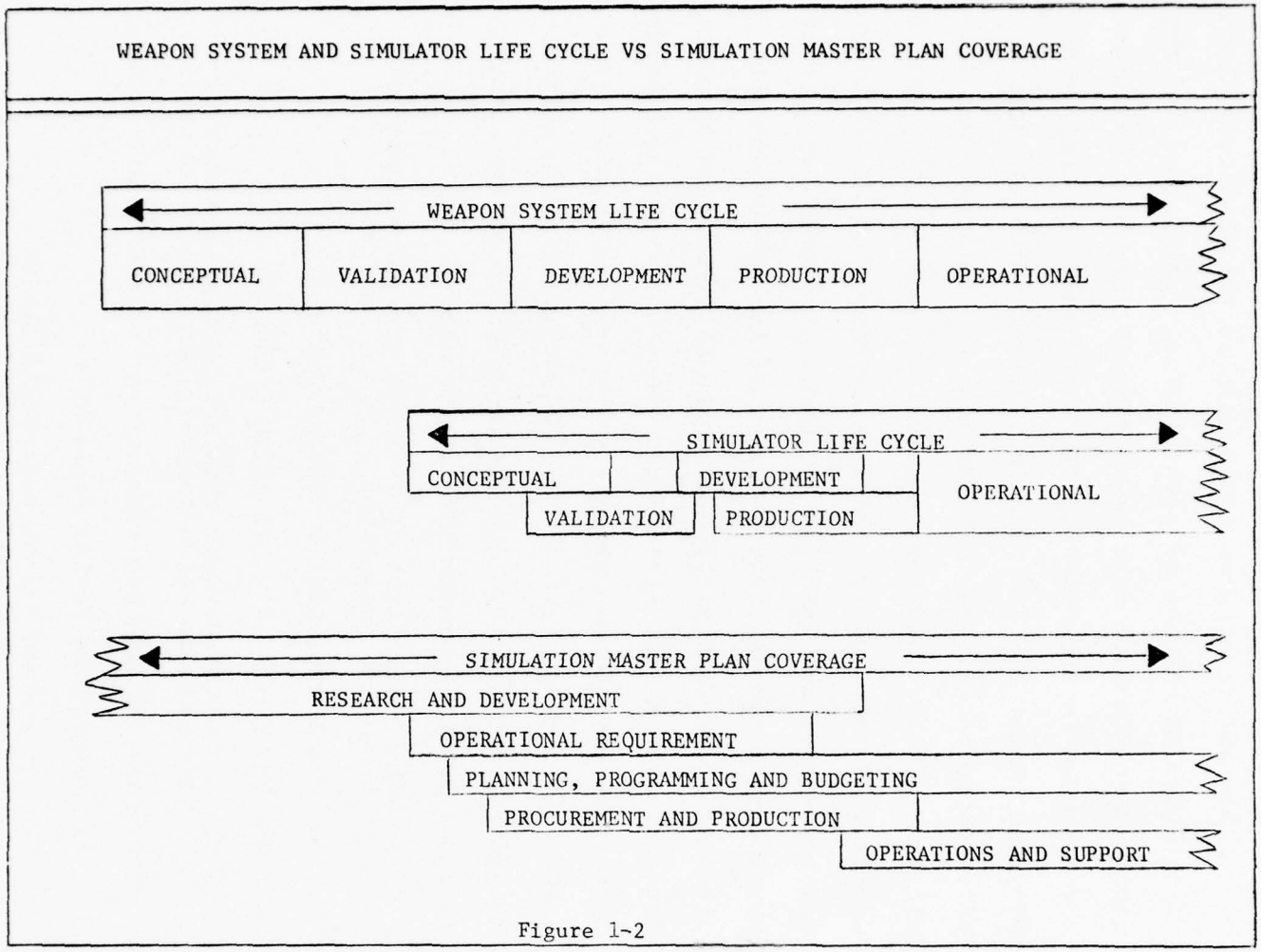

WEAPON SYSTEM AND SIMULATOR LIFE CYCLE VS SIMULATION MASTER PLAN COVERAGE
WEAPON SYSTEM LIFE CYCLE
CONCEPTUAL
VALIDATION
DEVELOPMENT
PRODUCTION
OPERATIONAL
SIMULATOR LIFE CYCLE
CONCEPTUAL
DEVELOPMENT
OPERATIONAL
VALIDATION
PRODUCTION
SIMULATION MASTER PLAN COVERAGE
RESEARCH AND DEVELOPMENT
OPERATIONAL REQUIREMENT
PLANNING, PROGRAMMING AND BUDGETING
PROCUREMENT AND PRODUCTION
OPERATIONS AND SUPPORT

Figure 1-2

A list of references applicable to the subject matter is included at the end of each chapter. Background information and statistical data which support the narrative chapters are included in appendices. The first three appendices display the Master List of Training Devices which is shown in three different display methods in separate appendices for the convenience of various readers. The Master List includes operator training devices which are being used or are programmed to be used for aviation training. Excluded are aviation physiology training devices, other devices which are not directly related to aircrew training programs, and obsolete devices. The Master List should prove helpful as a baseline list which may be used to purify the various current lists used in reporting systems, funding requirements, configuration management, QA&R, etc. A brief description of the information included in the appendices is shown below:

A. The Master List of Training Devices sequentially by device designator

B. The Master List by Weapon System

C. The Master List by Major Claimant

D. A list of devices showing the bureau number of the aircraft to which each training device is configured

E. The funding requirements for trainer modifications

F. Programmed device utilization

G. Programmed flight hour substitution

H. The list of training devices included in the QA&R program

I. The schedule of QA&R inspections

J. The standard QA&R report format

K. Fleet TRADEVMAN requirements and shortfalls

L. A sample NAVAIR economic analysis

M. Special simulator POM exhibits

N. Special simulator budget exhibits

A list of abbreviations and acronyms and a glossary of terms are also included.

CHAPTER 2

RESEARCH AND DEVELOPMENT

2.0 Introduction

This chapter will provide a broad overview of the basic command relationships and operating procedures employed in conduct of research related to training device technology. It is intended to provide only general information pending issuance of a detailed treatment of the Navy device research plan by AIR-340. There will be no attempt to analyze or evaluate the effectiveness of R&D planning or procedures.

2.1 Role of R&D in Training Device Development

Training device technology has evolved over the years from the basic Link Trainer to present day Weapon System Trainers that simulate actual aircraft motion and many other sensations encountered over the full spectrum of weapon system employment. Sophisticated devices to assist in solution of the full range of training problems are a reality today; therefore, R&D in the current time frame is directed toward improvement of device capability and toward more effective employment of devices in training systems.

The more complex devices are expensive and represent the upper bounds of simulation at the current state of

technology. They are difficult to maintain; hence, research is looking for simplicity in design to improve maintainability. Device computer modelling equations are so complicated that programming represents a significant portion, sometimes a major portion, of total device cost; thus, research seeks cost reductions through simplification of program equations. A typical research project may seek solutions to myriad problems; as the project continues, individual solutions are "spun off" for application to ongoing device procurements. Despite widespread and increasing use of training devices, research continues to seek the elusive answer to the question of training transfer.

The Navy is committed to the procurement and use of training devices; research is committed to providing answers concerning the nature of devices to be procured.

2.2 Objectives of R&D in Device Technology

The objectives of device R&D are to ensure that:

(1) An adequate technological base for current device development is available and that it is replenished for future developments, which may be required to answer Navy training needs.

(2) Developments are pursued that will result in de-

vice systems best supporting the training needs of the Navy in preference to developments that are technologically feasible or otherwise attractive but may be of limited value.

(3) Planning of the entire R&D program and adherence to that plan are firm enough to minimize uncertainty in the budgetary process but remain flexible enough to accommodate necessary changes.

(4) Individual projects are planned so that device systems having the desired performance characteristics are available when needed and within the intended cost.

Dr. John Allen, OSD Deputy Director, Research and Advanced Technology, in addressing the Subcommittee on R&D of the Senate Committee on Armed Services in May 1976, stated that there are three major objectives in the development of aviation training devices. These are (1) the development of better pilots and aircrew members, (2) the maintenance and improvement of combat readiness in experienced aircrews and, (3) the reduction of training and operating costs. The overall objective of research must, therefore, be to enable achievement of those device development objectives.

The R&D program is currently focused on three principal questions, in Dr. Allen's words: "(1) How faithfully will technology allow us to simulate the various aspects of a real flight mission? (2) How much fidelity is enough? and

(3) How can we best use such devices in our total training program?" The Navy R&D effort is concentrated primarily on advancement of the technology base to increase device capability while decreasing complexity and attendant difficulty in maintainability. The Navy R&D program includes significant efforts to determine how best to use devices in the total training program, but the major role in solving that problem has been assigned by DOD to the Air Force.

Advanced Development Objective (ADO) 43-08XR1, promulgated by CNO (OP-987), identifies the need to develop training device systems that produce maximum positive transfer of training from the training environment to the operational environment. The systems must be highly reliable and easily maintained and must include evaluative techniques designed to measure student performance and total system effectiveness. The ADO contemplates development of less elaborate but more effective training devices and improvements of materials and design to solve problems in device reliability and maintainability. The Navy's most ambitious device research effort, the Aviation Wide Angle Visual System (AWAVS) is being developed in response to the requirements of ADO43-08XR1.

2.3 R&D Categories

The Navy R&D program, including the training device program, is divided into six categories according to type effort involved. The categories are:

- Research (6.1)
- Exploratory Development (6.2)
- Advanced Development (6.3)
- Engineering Development (6.4)
- Management and Support (6.5)
- Operational Systems Development (6.6)

Category 6.1 is scientific study and experimentation directed toward increasing general knowledge in many scientific fields. By definition, neither category 6.1 nor category 6.6 is directly applicable to training devices. Category 6.5 is effort in support of installations conducting research and development; the 6.5 effort is minimally applicable to training device R&D. Training device research is predominantly conducted in categories 6.2, 6.3 and 6.4 which are described in the following paragraphs.

2.3.1 Category 6.2 (Exploratory Development)

Category 6.2 includes all effort directed toward the solution of broadly defined military problems short of major development projects. This type of effort can vary from

fairly fundamental applied research to quite sophisticated breadboard hardware, study, programming and planning efforts. The dominant characteristic of this category is that it is directed toward developing and evaluating the feasibility and practicability of proposed solutions. The state of the art may be advanced in anticipation of a generalized application (e.g., development of new programming techniques enabling the use of computers for sonar training). Successful 6.2 effort may be developed further in 6.3 (e.g., a 6.2 study of methods to generate high resolution color visual systems will be pursued further in the 6.3 AWAVS project).

2.3.2 Category 6.3 (Advanced Development)

Category 6.3 includes all effort directed toward projects which have progressed to the development of hardware for experimental or operational test. This category represents the development of experimental components and sub-systems, and in some cases, total systems. The objective of the effort is to prove suitability of equipment rather than to develop hardware for service use. AWAVS is the primary example of 6.3 effort. Since AWAVS will consist of an Operational Flight Trainer mounted on a motion base and wide angle visual displays, it might be suitable for further development under 6.4 for service use. However,

AWAVS is not presently projected for 6.4 effort. The AWAVS project is designed to demonstrate the feasibility, capability and training effectiveness of a wide angle visual system with a high resolution target image and to provide a flexible cockpit motion/visual system. These systems will provide an experimental basis for development of future advanced helicopter and fixed wing aircraft simulators.

2.3.3 Category 6.4 (Engineering Development)

Category 6.4 includes development programs in which the item is being engineered for service use but has not yet been approved for procurement or operation. Development effort is concerned with engineering of components and subsystems into operationally suitable items, building from a base of quantitative results achieved in the laboratory. The category further includes the systems engineering of components and sub-systems into operationally useful weapon or support systems. Prototype training devices which support areas of training (e.g., ASW, ECM) or two or more weapon systems fall into this category.

2.4 Command Relationships

The Navy training device R&D program is administered according to policy direction of the Director of Defense

Research and Engineering, with implementing policy direction provided by the Assistant Secretary of the Navy for R&D. The Assistant Secretary (R&D) is the Appropriation Sponsor for research and development. This is a statutory responsibility and is unique among the Assistant Secretaries of the Navy. Such management responsibilities are in general exercised through CNO or CMC. The sponsor point of contact within OPNAV is the Director, Research, Development, Test and Evaluation (OP-098). Training device R&D appropriation matters are assigned to OP-987. The Chief of Naval Development (CND) is responsible for coordinating the Exploratory Development (6.2) program. This responsibility includes translating R&D requirements from operational terms into technical planning guidance, assessing projections of technology within 6.2 areas, appraising overall program balance with respect to the limits imposed by fiscal, scientific, technological, and facility resources, and justifying the program to higher authority. The CND has additional duties as Deputy Chief of Naval Material (Development), MAT-03. Other active roles are played by the Mission Sponsor, Program Sponsor, Principal Development Activity and Program Manager. Their roles are identified in subsequent paragraphs.

2.4.1 Mission Sponsor

OP-099 is the Mission Sponsor for training; the functions for training device R&D are assigned to OP-991. The Mission Sponsor is responsible for developing the overall goals, objectives, rationale, justification and resource requirements for device R&D. The Mission Sponsor also determines the priority ranking of programs under his cognizance and provides guidance for Program Sponsors.

2.4.2 Program Sponsor

OP-05 is Program Sponsor for Air Warfare programs; the functions for training devices are assigned to OP-596. The Program Sponsor is responsible for determining program objectives and for appraising progress, readiness and military worth of a given device research project. OP-596 is the primary spokesman on matters related to requirements for a particular program. In the area of training device R&D, OP-596 determines the suitability of proposed research to meet the training need as defined by OP-991.

It is helpful to distinguish between training needs and requirements in order to understand the roles of OP-991 and OP-596. The term "needs" indicates that the user is interested in a particular training capability; it is non-specific in terms of resources and programs. The term

"requirement" implies a willingness to apply necessary resources to meet the needs expressed in the requirements statement. Thus, OP-991 makes judgements as to need, whereas OP-596 determines requirements for specific R&D efforts to meet stated needs.

2.4.3 Program Manager

The title of Program Manager is used to designate the individual responsible for managing all technical and administrative aspects of device research programs conducted in accordance with approved requirements documents issued by CNO. The Chief of Naval Material (MAT-03) is responsible for the Program Manager functions and generally assigns these functions to NAVAIR. AIR-340 is the Program Manager for category 6.2 and 6.3 research, while AIR-413 is the Program Manager for category 6.4.

Most category 6.2 and 6.3 device research is assigned by AIR-340 to the Naval Training Equipment Center (NTEC). AIR-413 uses a variety of means to accomplish category 6.4 research. Some projects are assigned to NTEC, while others may be contracted to industry directly by NAVAIR.

2.4.4 Principal Development Activity (PDA)

The PDA is the agency assigned by the Chief of Naval Material to undertake the management and technical responsibility for prosecution of the development effort, including timely budgeting for allocation of resources within the approved plan. NAVAIR is normally assigned as PDA for device development, and PDA responsibilities are fulfilled by the Program Manager, AIR-340 or AIR-413.

2.5 Procedures

OPNAVINST 5000.42A establishes procedures for R&D planning and for identifying operational requirements for weapon system acquisition. That directive's guidance applies to all Navy acquisition programs but does not specifically mention training device acquisition or R&D related thereto. Guidance is more detailed for major acquisition programs, allowing officials responsible for training devices to tailor procedures within broad guidelines. NAVMATINST 5000.22 promulgates amplifying guidance.

Device R&D planning is a continuing, iterative process from 6.2 (Exploratory Development) through 6.4 (Engineering Development). Required documentation for category 6.2 differs from that required for 6.3/6.4; therefore planning for categories will be examined separately.

2.5.1 Planning for Exploratory Development (6.2)

The 6.2 program is developed from needs identified in various planning documents including Mission and Resource Sponsor Plans. CNO Policy and Planning Guidance (CPPG) and other guidance provided during the Navy planning and programming process influence the selection of R&D efforts to be included in the program. The plans of OP-099 and OP-05 are particularly relevant to training device R&D. They contain guidance for introduction of new or modernized systems and establish requirement and capability objectives. The plans set forth, as concisely and coherently as possible, the sponsor's perception of the resources necessary to carry out policy guidance. The portion of the sponsor plans relating to training devices is a minor one, but it provides broad guidance on device R&D needs. On the basis of sponsor plans and other guidance, OP-987 prepares the R&D Plan, which contains Science and Technology Objectives (S&TOs) for each of the RDT&E planning categories identified in OPNAVINST 5000.42A. The S&TOs describe, in broad terms, the Navy's needs and problems requiring R&D solutions. Training device R&D needs are addressed in the S&TO for the personnel/medical planning category.

The S&TOs are promulgated to CND/DCNM(D) (MAT-03) who is responsible for coordinating the 6.2 program (NAVMATINST

3910.7B). MAT-03 assigns responsibility for the training device R&D program to AIR-340. In coordination with OP-596, AIR-413 and NTEC, AIR-340 develops the R&D Exploratory Development program for approval by MAT-03.

A Task Area Plan (TAP) is the fundamental document which describes a specific 6.2 task to be undertaken, terminated or continued. It identifies an objective and an approach to achieve that objective within a given time frame with a specific level of support. It relates the objective to operational needs, military user areas, platform applications, technological opportunities and areas of special interest. The TAPs are submitted in the Research and Development Summary (DD Form 1634) and are prepared for each task area of interest. Although TAPs for training device technology generally are prepared by NTEC, their content is normally agreed upon during planning discussions between OP-596, AIR-340 and NTEC prior to official submission. Collectively, the TAPs provide a basis for ensuring that each portion of the Exploratory Development program contributes to the fulfillment of an identified or potential training requirement. The TAPs provide a basis for program review, program decision making, justification to higher authorities, and action on allocation of Exploratory Development resources. Task areas currently being pursued include motion, visual and

sensor simulation. The TAPs approved by MAT-03 and submitted by ASN(R&D) to DDR&E represent the recommended Exploratory Development Program.

2.5.1.1 Implementation of the 6.2 Program

Implementation is accomplished under R&D program element 62757N, training and human engineering technology. AIR-340 is Program Manager, while NTEC is the primary laboratory administering 6.2 projects involving device technology. R&D projects or work units in the program may be accomplished by NTEC or contracted to industry for accomplishment.

Work unit progress, milestones, proposed changes of approach, and problems, if any, are regularly reported to AIR-340 in Program Management Summaries. Similar management information is reported to MAT-03 in semiannual updates of the TAPs. The updated TAPs serve as the basis for justification of program continuation or new initiatives during the annual Program Objectives Memorandum (POM) cycle. Consolidated project information from the TAPs is presented in Program Element Description Summaries for congressional review of the Five Year Defense Program (FYDP).. Because 6.2 effort for training devices has been funded at less than $2 million annually, individual sub-projects neither warrant nor receive high visibility at the congressional level.

As efforts in the 6.2 program progress sufficiently to approach a transition to Advanced Development (6.3) or Engineering Development (6.4), NTEC (in concert with AIR-340, AIR-413 and perhaps the industry contractor) prepares an Advanced System Concept (ASC). The ASC is a concise document describing a proposed technological solution to an operational problem. It may serve as the triggering document for commencement of Advanced/Engineering Development programs.

2.5.2 Planning and Implementation of Advanced/Engineering Development

Advanced Development (6.3) and Engineering Development (6.4) are accomplished under program elements 63720N, education and training; and 64703N, training device prototype development, respectively. An Operational Requirement (OR) is required prior to commencement of 6.3 or 6.4 effort. While CNO (OP-596) normally prepares ORs in response to perceived training needs, ASCs submitted to CNO by MAT-03 may bring about the preparation of ORs. In actuality, the ASC normally is submitted only following informal consensus as to need, technical feasibility and probable funding among OP-991, OP-596, OP-987, AIR-340 and AIR-413. Other Navy laboratories or industry may submit ASCs without prior coordination.

The OR is the basic requirement document for all acquisition programs requiring R&D effort. Content of the OR is covered in Chapter 3. The OR includes estimated funding over a 5 year period as agreed with the Appropriation Sponsor, OP-987. CNO issues the OR to NAVMAT and solicits a Development Proposal (DP). The DP presents a range of alternatives and tradeoffs to achieve the training capability called for in the OR and provides analytical information to aid in selection of a preferred program. The purpose of the DP is to open a dialogue between CNO and NAVMAT as to the nature of the requirement and the most effective technical alternative to meet that requirement. Consequently, there may be several iterations of DP submission/OR clarification before an alternative is selected. Management of DP preparation is provided by either AIR-340 or AIR-413, depending on R&D category; (AIR-340 for 6.3 and AIR-413 for 6.4). Regardless of category, the two NAVAIR Divisions coordinate DP preparation closely in order to achieve their common goals. Content and format of the DP are contained in OPNAVINST 5000.42A. Since the format is designed for major system acquisitions, it is considered essentially as a guide for training device DPs.

The completed DP is forwarded to CNO via MAT-03 for approval. After CNO selects the desired alternative presented

in the DP, a Navy Decision Coordinating Paper (NDCP) is issued. The NDCP includes elements of the OR and DP; when it is issued, the OR and DP cease to exist as control documents. NDCP format is prescribed in OPNAVINST 5000.46. The NDCP approval constitutes authority for NAVMAT to implement the program set forth therein.

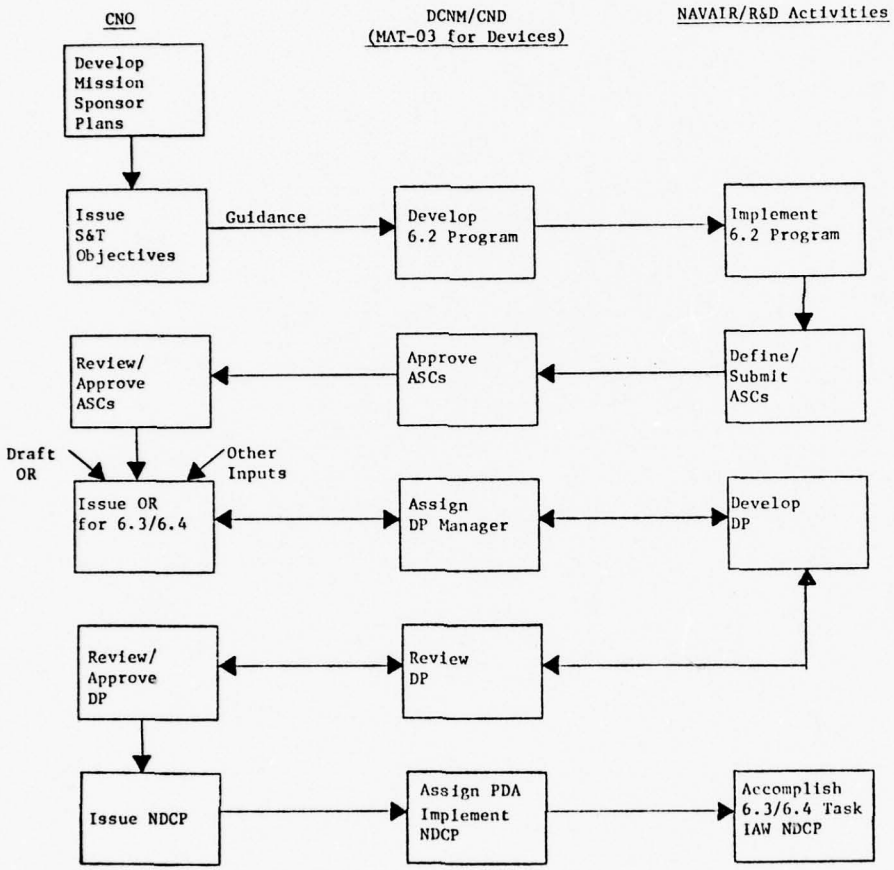
The functions of the ASC, OR, DP and NDCP may be explained in system acquisition terms. Thus, the ASC functions as an unsolicited proposal; the OR is a Request for Proposal (RFP); the DP is the contractor's Proposal; the NDCP is the contract between CNO and NAVMAT. Just as there is considerable negotiation/clarification between release of the RFP and signing of a contract, so is there discussion between issue of the OR and signing of the NDCP.

Since there are various means to satisfy a requirement, the standard ASC/OR/DP/NDCP approach does not necessarily always apply. In some cases, it may be determined that a proposed ASC is a logical extension of ongoing effort in a 6.3 project of AIR-340. Proposed ASC effort would be incorporated in the annual update of an existing NDCP. Approval by CNO of the updated NDCP would then become a contract amendment, and proposed effort could proceed. Similarly, at any stage of OR or DP development, there may be sufficient understanding between CNO/NAVMAT to warrant

drafting of an NDCP in lieu of a separate OR and DP.

When the NDCP is issued, NAVMAT designates a Principal Development Activity (PDA) to manage the program according to NDCP parameters. NAVAIR is normally assigned as PDA and the program is administered by NTEC under NAVAIR direction. Accomplishment of necessary development effort may be in-house at NTEC or under contract to the simulator industry. In the usual case, development effort is divided between NTEC in-house and industry; hardware for 6.3 development is obtained from industry, while test and evaluation is handled at NTEC. Category 6.4 development is predominantly under contract to industry much like device procurement discussed in Chapter 5. Evaluation, however, is usually a Navy effort. Evaluation in terms of training effectiveness is emphasized heavily in addition to evaluation of hardware systems engineering. Figure 2-1, tailored from a similar diagram in NAVMATINST 5000.22, shows a functional diagram of device R&D documentation and review procedures. The procedures shown are generally followed in 6.4 effort but may be shortened as discussed previously for 6.3 effort.

Functional Diagram of R&D Documentation and Procedures



NOTE: Two way flow between boxes represents the informal, iteractive process whereby requirements of the OR are clarified, available alternatives are discussed and resources parameters are agreed.

Figure 2-1

2.6 References

NAVMATINST	3910.7B	Planning Procedures for the Department of the Navy Exploratory Development Program
NAVMATINST	5000.22	Weapon System Selection and Planning
OPNAVINST	5000.42A	Weapon Systems Selection and Planning
OPNAVINST	5000.46	Decision Coordinating Papers (DCPs) Program Memoranda (PMs) and Navy Decision Coordinating Papers (NDCPs), preparation and processing of

CHAPTER 3

OPERATIONAL REQUIREMENTS

3.0 Introduction

This chapter will describe how the Operational Requirements (ORs) for aviation training devices are established. In that approved ORs guide the acquisition process, this chapter will provide a basis for the discussion of acquisition that follows in Chapters 4 and 5. While the sources of ORs for operator training equipment may vary, it is imperative that the process and documentation leading to program approval be similar. This will allow accurate analysis and the selection of alternatives from among competing programs.

The Navy procedures for acquiring major weapon systems are well-documented and familiar. Flight simulators and other training devices, however, are usually not categorized as major systems, and so procedures are used which are not as formal or familiar as those applicable to weapon systems. Therefore, it is important to document the procedures that are actually followed so that they may be known to all and can be analyzed for effectiveness.

3.1 The Operational Requirement (OR)

The Operational Requirement is a brief statement of operational needs or requirements that may be submitted by any fleet activity or Navy command via the chain of command to the cognizant CNO sponsor. OPNAVINST 5000.42A establishes the OR as the basic requirement document for all Navy acquisition programs requiring research and development effort. It sets forth procedures for identifying operational requirements and conducting management reviews during acquisition of major weapon systems.

The instruction defines formal documents to be used in weapon system acquisition, specifically the OR, the Development Proposal (DP), and the Navy Decision Coordinating Paper (NDCP). The DP, formulated by the Naval Material Command, presents alternatives and tradeoffs to achieve a particular range of capabilities cited in the OR. The NDCP defines program issues, the considerations which support the operational need, program objectives, program plans, performance parameters, areas of risk, development alternatives, level of logistic support, and relationship to logistic capabilities.

The OR format presented in OPNAVINST 5000.42A is oriented toward major weapon systems needing significant research and development effort; emphasis is given to defining the enemy threat and the means to overcome it. Additionally, cost

thresholds are established that are considerably above those expected in the acquisition of a training device. The OR format, therefore, had to be modified to provide the appropriate information on training devices. The OPNAV sponsor for training devices, OP-59, issued an interim modified format for "Operational Requirements for Operator Training", in CNO letter serial 596B/122101 of 6 January 1975. This format is illustrated in Figure 3-1.

3.1.1 Sources of the Requirement

Different approaches to simulator acquisition may be taken depending on whether the training requirement is related to a new or to an established weapon system. Where a new weapon system is being designed, developed and produced, then the special requirements for training equipment are developed along with the training curricula. In the weapon system full scale development stage, the following actions are taken:

- Preparation of personnel and training estimates
- Preliminary estimation of skill requirements
- Establishment of personnel and training concepts
- Development of personnel and training plan requirements (to include criteria necessary for training equipment design, procurement, fabrication, use and support).

OPERATIONAL REQUIREMENTS FOR
OPERATOR TRAINING EQUIPMENT

I. Operational Problem
Discuss the deficiency in the present capability and consequences of not satisfying the operational problem.

II. Operational Concept
How is the proposed system to be employed?

III. Capabilities Required
State the performance goals desired for the system to perform its intended mission. Performance characteristics should include specifics with regard to configuration, motion, visual systems. "Trade names" or specific models of existing equipments are not to be submitted.

IV. Operational Employment
State where equipment will be used, related segments of training syllabus, estimate RTS F/H substitution, utilization rate, estimate fleet F/H substitution, detail evaluation program to be initiated upon delivery of the system, specify RFT requirement.

V. Program Alternatives
Describe alternatives investigated. Show comparative advantages/disadvantages of each alternative considered. Provide rationale for selected approach.

Source:
Enclosure (1) to CNO letter serial 596B/122101 of 6 January 1975: Operational Requirements (ORs) for Operator Training Equipment.

Figure 3-1

The OR, however, may be generated by any command. This includes squadrons, wings, FASOTRAGRU activities, type commanders, fleet commanders, OPNAV, or activities in the CNET or Material Command organizations. Initiation of the OR occurs upon recognition of a need. This may occur before or after the associated weapon system becomes operational. Various sources of ORs are discussed in the following paragraphs.

3.1.1.1 Integrated Logistic Support Plan

NAVMATINST 4490.1B directs the Commander, Naval Air Systems Command to establish the necessary procedures to ensure timely availability of the required training material support for all Naval Air Systems Command weapon systems and equipments which are proposed, developed, modified, or procured for operational use. This instruction is implemented by NAVAIRINST 4490.2A which requires the Weapons Training Division (AIR-413) to identify training material requirements.

During the acquisition of an aviation weapon system, the requirement for a training device to support the new weapon system may be identified as a part of the Integrated Logistic Support Plan. SECNAVINST 4000.29A states the policy that the principles of integrated logistic support shall be applied to all acquisitions of Navy and Marine Corps systems and

equipment. A requirement for a training device which is generated at any stage of an ILS program may become an Operational Requirement and may be submitted through the review process.

3.1.1.2 The Instructional Systems Development (ISD) Process

Instructional Systems Development (ISD) is the broad application of the systems approach to training. It is a deliberate and orderly process for planning and developing instructional programs. It ensures that personnel are taught the knowledges, skills, and attitudes necessary for successful job performance. The ISD process is based on a definition of job tasks and a derivation of training objectives. The training program and the media used to support it are designed to achieve these training objectives. Thus, the requirement for an aviation training device is derived from a training requirement to develop operator skills for a weapon system, and the selection and recommendation of a training device is an intermediate product of the ISD effort. The recommendation is submitted to the Naval Air Systems Command and passed to the Chief of Naval Operations either by letter or by using the Operational Requirement format.

3.1.1.3 Navy Training Plans

The Deputy Chief of Naval Operations (Air Warfare) (OP-05) is responsible for determining training requirements for Naval Aviation and for ensuring that Navy Training Plans are prepared to satisfy those requirements. The Navy Training Plan (NTP) is a CNO-approved document that is the official statement of personnel and training requirements to support the introduction and operational use of new systems or equipments. The NTP establishes the total training requirement including training equipment and devices.

The Commander of the Naval Air Systems Command, under tasking by the Chief of Naval Material, performs the identification and determination of manpower and training requirements and the development of Navy Training Plans. CNM reviews the proposed NTPs prepared to support the introduction of a new or revised system or equipment.

Approval of the NTP by the CNO constitutes approval of those training devices incorporated in the NTP. Thus, a Navy Training Plan may serve as the source of an Operational Requirement.

3.1.1.4 Fleet Requests

In implementing and conducting training, fleet commanders-in-chief, air type commanders, and air training

commanders seek to promote improved training program effectiveness. They and the actual users of training equipment, including the Fleet Readiness Squadrons, Training Squadrons, the Fleet Aviation Specialized Operational Training Groups (FASOTRAGRUs), and operational fleet commanders, have an understanding of needs and simulator requirements. They provide operational direction and systematic training evaluation of training devices assigned. They participate in the development, acquisition, and acceptance of major aviation training devices by providing fleet project team representation. In view of the above, Operational Requirements prepared in the field or fleet provide a direct reflection of the needs of the primary users.

3.1.1.5 Directed Development of Draft ORs

The continuing consideration of the requirements for training and for supporting training equipment by the CNO staff may reveal a requirement for an aviation training device. To ensure appropriate planning and coordination by those organizations directly involved, OP-59 might task a Fleet Commander or the Naval Air Systems Command to prepare a draft OR. This OR for operator training equipment would be developed and handled as described in Section 3.1.3, with the originator and intervening reviewing authorities providing as much information as possible to facilitate the

validation process.

The circumstances leading to such a directed OR draft are varied and changing. The direction might result from:

- Anticipated changes in qualitative and quantitative training requirements
- The interservice transfer of operational equipment
- Advances in simulator technology opening up new training capabilities
- Constraints imposed on flying training programs concerning flight hour/simulator hour substitution
- Staff recognition of anticipated changes in fleet operational needs.

In all cases it is important that the OR provide adequate and accurate documentation for the planning, programming, budgeting and acquisition documents that are based upon it.

3.1.2 Responsibilities for Aviation Training Device Requirements

The CNO and the CMC are responsible for identifying operational needs, determining characteristics, and for defining requirements to meet their respective needs (SECNAVINST 5000.1). For the CNO, the Deputy Chief of Naval Operations (Air Warfare), OP-05, is responsible for establishing policy, requirements, and priorities for aviation training

and for programming aviation training resource requirements (OPNAVINST 1500.11G).

OP-59, the Aviation Manpower and Training Division under OP-05, sponsors development, directs evaluation, and controls assignment of aviation training devices to meet the requirements of naval aviation. Statements of requirements from any source are forwarded through command channels to CNO (OP-59) for review by the Aviation Training Device Requirements Branch, OP-596.

The Chief of Naval Material and the Commander, Naval Air Systems Command are responsible for supporting new developments and for the formulation of Navy Training Plans for aviation. They establish detailed procedures to identify Navy and Marine Corps manpower and training requirements associated with the maintenance and operation of new aviation weapon system components and items of support equipment requiring establishment of in-house Navy training and furnish the plans to CNO for approval and promulgation. Each plan identifies training objectives, the number of personnel to be trained, and the resources needed (to include facilities, training equipment, and funds). AIR-413, the Weapons Training Division of the Naval Air Systems Command (NAVAIR) acts as acquisition manager for those training devices designated by the Chief of Naval Material.

OPNAVINST 1551.7A provides for fleet users and others to take part in the introduction of aviation training devices. Fleet commanders in chief, the Chief of Naval Education and Training (CNET), air type commanders, and the Chief, Naval Reserve, provide qualified personnel, as directed, to act in an advisory capacity during development, acquisition, acceptance and introduction of the device. Marine Corps participation is as directed by the Commandant of the Marine Corps. Prospective device user personnel provide guidance to the Acquisition Manager on the operational needs of their commands.

An outline of the command relationships for defining training device requirements is shown in Figure 3-2, Command Relationships for Operational Requirements.

3.1.3 Procedures

When an Operational Requirement has been initiated, it is forwarded to CNO via the chain of command. The intervening commands review the OR to substantiate the requirement and to provide any information that will be helpful in the analysis of the requirement by members of the CNO staff and the Material Command. For example, a squadron originating an OR might not be able to furnish all of the information required by the OR format (Figure 3-1). Reviewing authorities at the wing and

Command Relationships for Operational Requirements

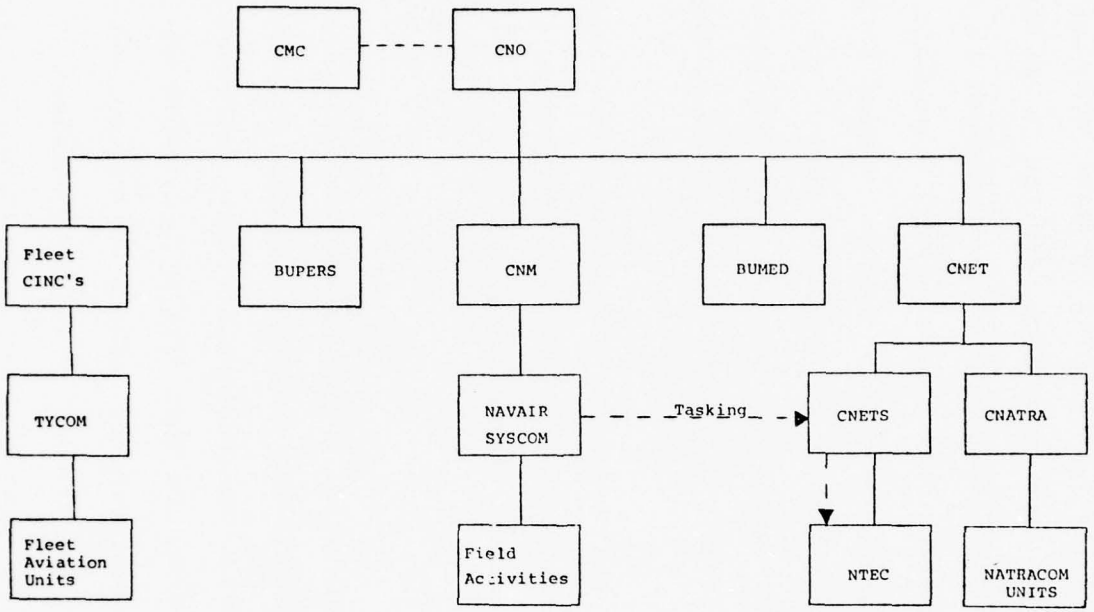


Figure 3-2

type commander level should be able to complete the operational portions (Parts I, II, and IV) and partially complete the technical portions (Parts III and V).

If CNO considers that the OR would meet a valid training requirement, it is sent to NAVAIRSYSCOM for economic and technical analysis and for an assessment of feasibility. NAVAIR, with the assistance of the Naval Training Equipment Center (NTEC), if requested, completes the technical portions of the OR and proposes a solution or alternative solutions of the training requirement to CNO. CNO (OP-59) evaluates the proposal, time and fiscal constraints, the urgency of the requirement, and its relative priority among competing requirements. If an affirmative decision is reached, the Material Command is tasked to conduct a more detailed technical review which further defines the device, the resource requirements and the proposed implementation schedule. The technical review is then submitted to CNO for approval. If CNO approves the review report, direction is promulgated to procure the simulator and to initiate the actions necessary to provide the required support.

This OR approval process is made up of a series of phases which can be categorized as follows:

- OR Generation
- Technical Review

- Requirement Approval
- Program Formulation
- Program Approval

Previous paragraphs have detailed the OR generation phase. The sections that follow will detail the procedures for the remaining phases. A chart depicting the process is shown on Figure 3-3.

3.2 Technical Review

Upon receipt of the OR or other statement of operational need, OP-59 reviews the statement to establish that a valid training requirement exists. An initial OR Review Board composed of personnel from the appropriate branches of OP-59 is convened to confirm the training requirement and to prepare any special guidance for analysis by NAVAIR. The OR is then sent to NAVAIR for technical analysis.

The analysis process for training devices follows the essential points of the procedures outlined for the Development Proposal (DP) described in OPNAVINST 5000.42A. The DP is a formal response to the OR prepared by NAVMAT/NAVAIR for major weapon systems that presents alternatives and tradeoffs to achieve a particular range of capabilities and examines technological and feasibility considerations. While the for-

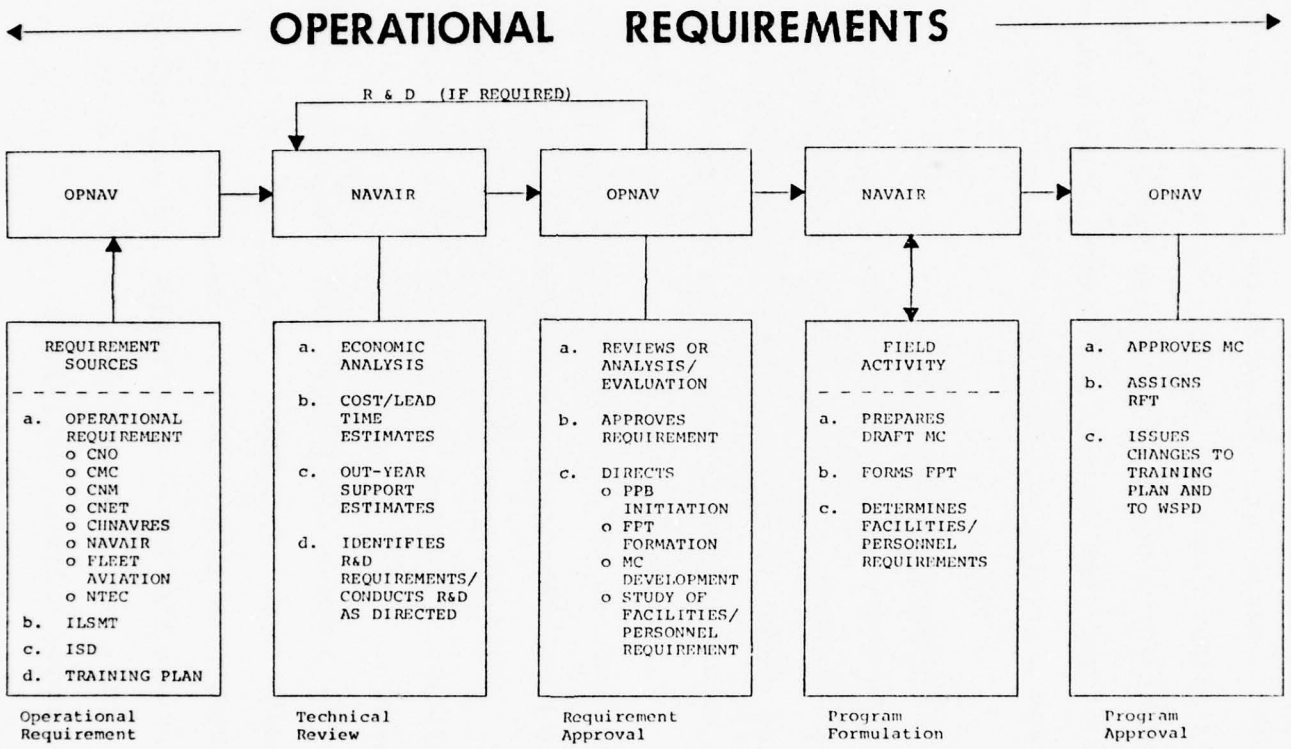


Figure 3-3. Typical Actions for Establishing Aviation Training Device Requirements

mal DP is not presently used for analyzing proposed aviation training devices, it does establish the pattern for analysis. NAVAIR investigates the feasibility of satisfying the requirement, develops cost/lead time estimates, prepares estimates of out-year support requirements, performs a preliminary economic analysis, and identifies R&D requirements.

3.2.1 Technical Feasibility

In order to determine whether the OR can be satisfied in its entirety, a broad review of existing technology and ongoing effort is made by NAVAIR. Those desired capabilities which cannot presently be provided are identified and explored. This entails the examination of both ongoing Navy procurement and R&D actions to ascertain if the state-of-the-art is being or has been extended to the requisite level in appropriate areas. If it is found that such is not the case, similar exploration of ongoing projects of the other armed forces is undertaken.

If it appears feasible to meet the objectives of the requirement completely, CNO is so advised. If it does not appear feasible, then alternatives are suggested. These alternatives may include the use of a part-task trainer, provision for a later add-on to the simulator, the use of other training media, or proposing a device delivery date which would permit development of the needed capability.

Areas which justify an R&D effort are identified for inclusion in a succeeding year's program in accordance with priorities assigned. Submission of these individual projects for CNO/OSD approval and funding is accomplished on an annual basis in accordance with normal PPBS procedures for R&D.

3.2.2 Cost and Lead Time Estimates

After the alternatives have been defined and the preferred solutions to the OR selected, cost and lead time estimates are made for those alternatives. The estimates are based on such considerations as relative complexity of the proposed device, production lead times being experienced in similar projects, technical risk, and major milestones of the related weapon system. These lead times range from a year for well defined, simple devices such as a cockpit procedures trainer (CPT) to 3 - 4 years for a complex weapon system trainer (WST).

3.2.3 NAVAIR Economic Analysis

DoD Instruction 7041.3 establishes the policy that an economic analysis is required for proposals which involve a choice or trade-off between two or more options even when one of the options is to maintain the status quo. SECNAVINST 7000.14B implements the DoD policy and further states that

economic analysis will be used as an aid to management decision-making at all organizational levels within the Department of the Navy. In the analysis of training devices, a program combining flying hours and simulator hours is the alternative to a program of flying hours only. Within the Naval Air Systems Command, the Weapons Training Divison (AIR-413) carries out the economic analysis of a proposed OR after developing the estimates of costs, lead time, and support requirements. That analysis focuses on costs and benefits that would result from the proposed device acquisition

The NAVAIR analysis calculates annual benefits and costs over the useful life of the proposed device and then reduces these to current value for calculation of net benefits (benefits minus costs). Those costs and benefits which cannot be translated into monetary terms are separately described and assessed. The costing methodology and a general outline for the economic analysis currently performed by AIR-413 are shown in Appendix L.

Upon completion of the feasibility evaluation, cost and lead time estimates, and economic analysis, AIR-413 provides a recommendation to CNO concerning the OR. This recommendation, with the completed OR and the results of the analysis effort are considered the equivalent of a preliminary Development Proposal.

If research and development efforts are required, AIR-340F also prepares an estimate of the R&D requirements for the project. The R&D estimate is submitted to OP-59 as a part of the NAVAIR OR recommendation input.

3.3 Requirement Approval

OP-59 convenes a second OR review board to consider NAVAIR's technical analysis and recommendation. OP-596 (Aviation Training Device Requirements) chairs the Board; members include representatives of OP-591 (Undergraduate Flight Training), OP-592 (Aviation Technical Training), OP-593 (Tactical Air Training), and OP-594 (Air ASW Training), as appropriate. The board reviews, analyzes, and evaluates the total impact of the proposed development and provides its own recommendation for CNO Program Sponsor approval.

CNO approval of the requirement for an aviation training device is expressed by letter or message to NAVAIR with information copies to the commands that participated in the OR development process. In simulator acquisition, this letter or message plays a similar role to that which approval of the Development Proposal (DP) plays in major weapon system acquisition by providing decision makers and staff personnel with essential program information and the authority to proceed. The letter also directs the Naval Air Systems Command to:

- Initiate planning, programming and budgeting system (PPBS) actions using the best planning data available
- Ensure full consideration of fleet readiness requirements during development and acquisition of the device
- Direct the development of the Military Characteristics document to describe how the training device will meet a training need
- Undertake a study of facility and personnel requirements related to operation and maintenance of the device after acquisition
- Conduct required research and development (R&D) actions.

3.4 Program Formulation

After CNO validates the requirement and approves the proposed development, NAVAIR is responsible for initiating PPBS action and formulating a program to support the development effort. Program formulation requires development of Military Characteristics, refinement of the facility, personnel, and other resource requirements, and initiating R&D effort, if required. Typically, many of these actions are delegated to field activities. The field activities forward the results of their efforts to AIR-413 where the details of the program are assembled and submitted to CNO for approval along with the Military Characteristics.

3.4.1 Fleet Project Team

In order to ensure that fleet readiness requirements are fully considered during development and acquisition of the training device, a Fleet Project Team (FPT) is formed. OPNAVINST 1551.7A defines the responsibilities and establishes the procedures for FPTs. The members are officers and senior enlisted personnel qualified in the specific weapon system and in training device operation and maintenance. They assist the development and acquisition activity and provide advice on operational training matters during the extended period of development, acquisition, acceptance and introduction of the training device. One of the key responsibilities of the FPT is assisting in the preparation of the Military Characteristics.

3.4.2 The Military Characteristics Document (MC)

NAVAIRSYSCOM normally delegates the responsibility for preparation of the MC to the Naval Training Equipment Center (NTEC). The MC document is the instrument which translates the preliminary development proposal into a functional description of a device. It describes the device purpose and capability in such detail as to avoid any ambiguity. The MC is developed after a training analysis has determined the specific behavioral objectives and the device characteristics that will achieve those objectives in the most efficient and cost-effective manner. When approved, the MC document becomes

the basis of the specification used in procurement. It defines the scope of the project and becomes the guideline for program planning. AIR-413 reviews MCs and forwards them to CNO (OP-59) for approval.

The principal features of the MC are shown in Figure 3-4, Military Characteristics Document.

3.4.3 Refinement of Resource Requirements

Upon request of NAVAIR, the Naval Training Equipment Center establishes direct liaison with major claimants to ensure timely identification of detailed facility, personnel, and other resource requirements. Estimates of these requirements are reviewed at NTEC, incorporated into the NTEC planning process, and forwarded to NAVAIR for inclusion in plans.

3.4.4 Refining Cost and Lead-Time Estimates

The MC development process and the more accurate determination of resource requirements make additional information available which allows the preparation of more accurate cost and lead-time estimates. The previous estimates are refined and provided to NAVAIR by field activities for use in the project plan and the PPBS process described in Chapter 4.

MILITARY CHARACTERISTICS

Section

I SUMMARY
- A. Purpose of the Device
- B. Operational Situation
- C. Origin of Requirement

II TRAINING ANALYSIS
- A. Training Situation Analysis
- B. Training Objectives
- C. Training Requisites
- D. Rationale

III DEVICE DESCRIPTION
- A. Functional Characteristics
- B. Constraints
- C. Availability and Utilization
- D. Reliability
- E. Maintainability

IV DEVICE SUPPORT
- A. Maintenance Plan
- B. Publications
- C. Personnel
- D. Training
- E. Supply Support
- F. Contractor Technical Support

V EVALUATION PLAN

Figure 3-4

3.4.5 Research and Development Efforts

The review of the proposed development effort may reveal the need for additional R&D effort. If so, AIR-413 coordinates the requirements with AIR-340 to ensure that the required effort is proceeding on schedule to meet program milestones.

3.5 Program Approval

CNO (OP-59) takes final action in the Operational Requirements process. Included in the approval process are the following actions:

- Approval of the Military Characteristics
- Approval of the device development program
- Establishment of a target Ready-for-Training (RFT) date
- Directs necessary changes to the Navy Training Plan (NTP)
- Directs necessary changes to the Weapon System Planning Document (WSPD).

Upon completion of these actions, the emphasis shifts to procurement planning and to PPBS actions.

3.6 References

OPNAVINST	1500.8H	Preparation and Implementation of Navy Training Plans (NTPs) in Support of Hardware and Non-hardware Oriented Developments
OPNAVINST	1500.11G	Naval Aviation Training Program Policies, Responsibilities and Procedures
OPNAVINST	1500.44	Responsibilities for Development of Training Requirements and Training Plans
OPNAVINST	1551.7A	Fleet Participation in Development, Acquisition, and Acceptance of Major Aviation Operational Training Devices
SECNAVINST	4000.29A	Development of Integrated Logistic Support for Systems/ Equipments
OPNAVINST	4100.3A	Department of the Navy Integrated Logistic Support (ILS) System
NAVMATINST	4490.1B	Availability of Equipment for Training Purposes
NAVAIRINST	4490.2A	Procedures to Ensure Availability of Equipment for Training Purposes
SECNAVINST	5000.1	System Acquisition in the Department of the Navy
OPNAVINST	5000.42A	Weapon Systems Selection and Planning
SECNAVINST	7000.14B	Economic Analysis and Program Evaluation for Navy Resource Management
DODINST	7041.3	Economic Analysis and Program Evaluation for Resource Management

3.6 References (Continued)

Department of the Navy Chief of Naval Operations	Letter Ser 596B/ 122101 of 6 Jan 1975	Operational Requirements (ORs) for Operator Training Equipment
Department of the Navy	NAVEDTRA 106A	Interservice Procedures for Instructional Systems Development

CHAPTER 4

PLANNING, PROGRAMMING AND BUDGETING

4.0 Introduction

This chapter will describe the Department of Defense Planning, Programming and Budgeting System (PPBS) and the Navy Planning, Programming and Budgeting System to provide a background for any reader who may not be familiar with the total PPBS process. It will also provide an understanding of the sequence of events involved in the process and the timing of those events. More detailed information will then be presented concerning the procedures for programming and budgeting a major training device and its related support. An analysis will be made of the present system to determine problem areas.

4.1 The Department of Defense Planning, Programming and Budgeting System

The Department of Defense Planning, Programming, and Budgeting System (PPBS) is an integrated process for the establishment, maintenance, and revision of the DOD Five Year Defense Program and Budget. Some knowledge of the DOD system is basic to the problem of understanding the Navy PPBS system.

4.1.1 Background

The Defense Reorganization Act of 1958 gave the Secretary of Defense (SECDEF), under the policy guidance and direction of the President and the National Security Council, two distinct lines of authority. A direct line of command was established through the Joint Chiefs of Staff to the Unified and Specified commands. A line for administrative control of the military departments and for management of support of military forces was established through the Secretaries of the Military Departments. Through the command line of authority, the SECDEF issues decisions regarding threat appraisal, strategy, and forces. Through the administrative or management line of authority, he issues decisions regarding the program goals to support the forces and the budgeting of annual funds to support those programs. The process through which these decisions and resultant actions are integrated is the DOD Planning, Programming and Budgeting System (PPBS). The basic guidance for this system is provided in DOD Instruction 7045.7 of 29 October 1969 which was promulgated to the naval establishment as an enclosure to SECNAV Instruction 5000.16D of 8 January 1970.

4.1.2 Concept

The planning, programming and budgeting process can be summarized briefly. Planning consists of appraising the threat, developing a strategy to meet the threat and determining the force levels required to support the strategy. Programming consists of the processes required to develop programs to provide, over a period of time, the weapons systems, manpower and support to attain the force levels required within the resource limits imposed. Budgeting consists of the processes through which funds are annually allocated to procure the men and materials required to carry out the programs. Implicit in the process are the development of objectives, the conduct of special studies, and research and development of weapons system and their procurement and support. All of the resources of the Department of Defense are drawn upon to formulate its plans, programs and budgets.

4.1.3 Planning, Programming and Budgeting Cycle

The DOD PPBS operates on an 18-month cycle. However, the system is recycled annually and an overlap results. This means simultaneously budgeting for one year, programming for the following year, and planning for the succeeding years. The cycle involves a number of basic steps, the

timing of which is promulgated by SECDEF annually in the Program/Budget Review Schedule. The cycle starting in May 1976 (Fiscal Year 79 Budget) is shown in Figure 4-1. Following the enactment phase in Congress, the budget execution phase is carried out within the Department of Defense and its components. A chart showing a series of PPBS cycles including the transition period and the way in which the cycles overlap is shown in Figure 4-2.

4.1.4 Planning, Programming and Budgeting System Products

There are two principal products of the Planning, Programming and Budgeting System: the Five Year Defense Program and the Department of Defense Budget.

4.1.4.1 Five Year Defense Program (FYDP)

The FYDP is the summary of the approved Five Year programs of all Department of Defense components, (military departments plus the defense agencies). The FYDP projects force requirements for eight years and manpower and cost data (associated with approved programs) for five years. It is the official program of the Department of Defense. It is updated on the basis of SECDEF decisions as changes occur. In accordance with the PPBS, regular updates are made in October and January each year.

SEQUENCE OF PPBS EVENTS

SEQUENCE	EVENT	DATES
1	JCS submit Joint Strategic Objectives Plan (JSOP) Vol. I (Strategy) to SECDEF.	May 1976
2	SECDEF issues Defense Guidance, formerly called Defense Policy and Planning Guidance (DPPG).	Sep 1976
3	SECDEF issues Material Support Planning Guidance (draft Logistics Guidance).	Sep 1976
4	JCS submit JSOP Vol. II (Forces) to SECDEF. Based on JSOP Vol. I and Defense Policy and Planning Guidance. Not fiscally constrained. (Requirements are identified and objective forces are recommended.)	Dec 1976
5	SECDEF issues Planning and Programming Guidance Memorandum (PPGM) (Modification to DPPG Strategy, if appropriate; Fiscal Guidance; and Guidance for Program Objective Memoranda/Joint Force Memorandum Preparation).	Feb 1977
6	JCS submit Joint Force Memorandum (JFM) to SECDEF. Force and resource recommendations, rationale, risk assessments. The JFM is fiscally constrained consistent with Fiscal Guidance contained in the PPGM.	May 1977
7	Military Departments/Defense Agencies submit Program Objectives Memoranda (POM) to SECDEF. Forces and resource recommendations with rationale and risk assessment. The POM is fiscally constrained consistent with Fiscal Guidance contained in the PPGM.	May 1977
8	SECDEF issues Program Decisions. Reclamas to these decisions submitted by Departments/Agencies; then final decisions are issued.	Jul/Aug 1977
9	Departments/Agencies submit budget estimates for budget year.	Oct 1977
10	SECDEF issues Program/Budget Decisions.	Oct/Dec 1977
11	SECDEF submits proposed DOD Budget to OMB.	Dec 1977
12	OMB combines all federal agency submissions into National Budget and submits to President for review and approval.	Dec 1977
13	President submits National Budget to Congress for authorization and appropriation of funds.	Jan 1978

Figure 4-1

OVERLAP OF PPBS CYCLES

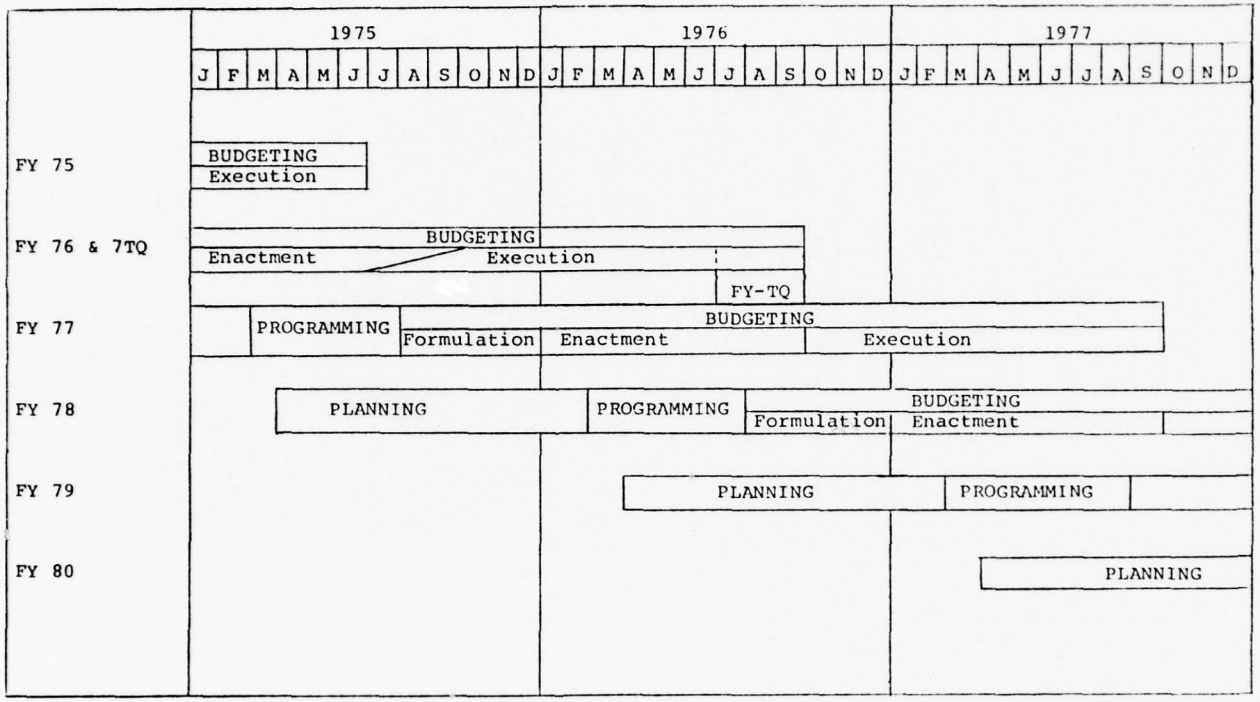


Figure 4-2

4.1.4.2 Budget

The annual budgets of the defense components are developed each year during the period July to October on the basis of the forces and programs set forth under the first program year of the FYDP. While derived from the FYDP, budgets are expressed in greater refinement and detail than FYDP programs. The Defense portion of the President's Budget is based on SECDEF decisions regarding the separate budgets submitted by the defense components.

4.1.5 Summary

The procedures within the PPBS can be stated in a few words: Strategy is developed in consideration of the threat and policy. Force objectives are developed to support the strategy. Programs are developed to provide ships, aircraft, weapon systems and manpower over a period of time, with due consideration of the total cost to the nation. Lastly, funds are budgeted in such a manner as to obtain the forces and weapon system within the resources that the Congress provides.

4.2 Department of the Navy Planning, Programming and Budgeting System

In order to participate in the DOD Planning, Programming and Budgeting System, the Navy must have a process which generates the required inputs to the DOD system. This process must include procedures for assigning responsibility and for providing all the necessary information, displaying data and providing forums for internal Navy analysis and decision, for reviewing decisions, for arranging data in required formats and submitting to the Office of the Secretary of Defense (OSD). The Department of the Navy Programming Manual (OPNAV 90P-1D) is the basic reference document for this process.

4.2.1 Planning Procedures Overview

The basic purpose of the planning process is to assess the world situation at prescribed future time periods, determine technical capabilities required, plan a military strategy to counter threats to the national security and to state force objectives to satisfy the national strategy. This is accomplished within the Defense Department through the Joint Strategic Planning System (JSPS). The Navy supports the JSPS with its own planning organization which provides Navy planning documents and inputs to the JSPS.

The planning process addresses issues which are somewhat beyond the scope of this work. Therefore, this section provides only this very brief overview of the planning process and will focus on the programming and budgeting processes. A more comprehensive description of the planning process may be found in Chapter II of the Department of the Navy Programming Manual (OPNAV 90P-1D).

4.2.2 Programming Procedures Overview

The basic purpose of the programming process is to translate approved concepts and objectives into a definitive structure expressed in terms of time-phased resource requirements including personnel, money and material. This is accomplished through systematic approval procedures which provide cost analysis and comparisons of force levels and supporting programs in terms of money and manpower. Estimated costs are projected five years into the future, and forces are projected for an additional three years. Current decisions are based on, and displayed in terms of, their impact on the future. The principal product of this process is the Program Objectives Memorandum (POM). The POM is the document in which the Navy recommends and describes its total program objectives and resource requirements, (fiscally constrained), to the Secretary of Defense.

4.2.2.1 Concept

The programming phase officially commences with the promulgation of the Defense Planning and Programming Guidance Memorandum (PPGM) which furnishes program and fiscal guidance in February or early March. However, internal Navy action is initiated much earlier, typically during the previous July or August. Preliminary procedural guidance may be promulgated even earlier by CNO, (normally OP-90). Subordinate echelons, (e.g., NAVAIR, CNET, etc.), prepare cost estimates, back-up and justification data so that OPNAV staff and sponsors will have sufficient information to conduct preliminary POM development efforts during the October through December period. The previous POM is analyzed and issue papers are drafted, if required, to highlight potential program imbalances, potential resource savings, alternative methods for mission/program accomplishment, unfunded systems or functions or perhaps reassessment of threat. By the time that the Planning Phase ends and the Programming Phase officially begins, the tentative programs have been thoroughly analyzed, cost trade-offs have been identified, tentative fiscal constraints have been applied, CNO priorities have been considered and the programs are ready for high level review and decision within the Navy. After internal Navy review and SECNAV approval,

the POM is forwarded to the Office of the Secretary of Defense (OSD) in May for review, modification and approval. Final decision by SECDEF ends the programming phase.

4.2.2.2 Procedures

Following receipt of the Defense Guidance, formerly called Defense Policy and Planning Guidance (DPPG), in September, CNO Policy and Planning Guidance (CPPG) is issued in October. The CPPG will outline and amplify the strategy contained in the Defense Guidance as it relates to naval forces, provide force planning guidance for the POM, identify CNO's high priority programs and incorporate extended planning guidance. It presents CNO's objectives for the future and lays out ground rules for the development of more detailed alternative ways of meeting these objectives. The October update of the Five Year Defense Program (FYDP) provides a baseline from which tentative programming actions can proceed. Resource Allocation Displays (RADs) are computerized printouts which provide a matrix of the Navy's FYDP resources under dual mission and resource sponsorship. RAD I apportions the Navy's October FYDP resources among sponsors. The CPPG, October FYDP update and RAD I provide the policy guidance and fiscal base for preliminary, tentative POM planning and for the CNO Program Analysis Memorandum (CPAM) process. The CPAM

process furnishes a method through which alternative methods of achieving objectives can be evaluated. The OPNAV Systems Analysis Division (OP-96), in conjunction with Mission, Program and Resource Sponsors, prepares Strategic Forces; Sea Control Forces; Projection Forces; Command, Control and Communications and Intelligence; General Support and Logistic and Shore Command; Fleet Support and Mobility; and Manpower and Training CPAM's and the Summary CPAM. CPAM's concentrate on broad policy issues and on the statement of mission requirements which must be resolved. Each CPAM identifies the major issues requiring a decision plus the alternatives available for consideration. Sponsors review CPAM's to ensure the completeness and accuracy of the alternatives and to ensure that the impact of the alternatives on the Navy's capability to carry out its total mission is adequately presented. CPAM's are presented to the Program Development Review Committee (PDRC) and to the CNO Executive Board (CEB) and Secretariat in January and February. The PDRC is a flag-level committee, chaired by OP-90, which includes OP-96, 92, 009, 095B, 09B, 940, 098B, 01C, 02B, 32, 04B, 50, 60B, 099B, MAT-01, an OPA and a USMC representative. The CEB is the highest level flag board. The Vice Chief of Naval Operations is designated Chairman of the CEB by OPNAVINST 5420.2 but the Chief of

Naval Operations usually chairs the meetings. The Director, Navy Program Planning, OP-090 is designated Vice-Chairman and he is responsible for presenting the CPAMs. Permanent members include OP-09B, 094, 095, 098, 099, 01, 02, 03, 04, 05, 06, and CHNAVMAT. The Assistant Commandant of the Marine Corps is a member whenever USMC interest are involved. After Program/Budget Decision adjustments are made and the FYDP is updated in January, RAD II is issued to revise the resource baseline. Following SECDEF's Planning and Programming Guidance Memorandum (PPGM) and fiscal guidance, combinations of policy options from the previous CPAMs, constrained by fiscal guidance, are aggregated for CNO decision in the Summary CPAM I, upon which further program development can proceed. CNO Program and Fiscal Guidance I (CPFG I) documents the CNO's policy decisions and fiscal controls derived from Summary CPAM I and forms the basis for the preparation of Sponsor Program Proposals (SPPs). Resource Sponsors develop SPPs for presentation to the Program Development Review Committee (PDRC) in March. Each SPP must reflect previous CNO decisions and must balance within assigned fiscal controls. The PDRC will act as a decision forum in the review process of the SPPs. In late March, major unresolved issues remaining from the PDRC reviews, together with a summary of major PDRC decisions,

will be presented to the CNO for resolution or approval during the Summary CPAM II CEB. The final phase of POM development commences with the promulgation of CNO Program and Fiscal Guidance II (CPFG II) which documents the CNO's Summary CPAM II decisions and displays all resources and their distribution by sponsor. An iterative process of final adjustments involving program tradeoffs, additional sponsor recommendations on prioritization and emphasis, required recosting of programs, appropriation control adjustments and "fact-of-life" adjustments follows. During this phase, Resource Sponsors coordinate inputs from Mission Sponsors. The Director of Navy Program Planning (OP-090) reviews the final recommended program for budget, fiscal and production feasibility with Appropriation Sponsors. Significant unresolved conflicts, if any, among sponsors are referred by OP-090 to the CEB for resolution as major issues in late April. Following CNO decisions and appropriate review in the Secretariat, final SECNAV POM decisions are made and the POM is submitted to SECDEF. The staff of the Secretary of Defense reviews the POMs and drafts a Program Decision Memorandum (PDM) to each service. After Navy requests for reconsideration are received and any major issues are presented by SECNAV, SECDEF makes the final decisions and issues the Amended Program Decision Memorandum

(APDM). The PDM/APDM is the SECDEF's approval of the Navy program. The POM, as amended by SECDEF, is reflected in the FYDP and becomes the base program for the development of the budget.

4.2.3 Budgeting Procedures Overview

The basic purpose of the budget process is to express, justify, obtain and expend the financial requirements necessary to support the approved Navy and Marine Corps forces and programs. Through the budget process, the planning and programming decisions are translated into annual funding requirements. The budget process is divided into three phases, formulation, enactment and execution. The formulation phase consists of the submission, analysis, review, modification and approval of cost estimates at all echelons of the Navy Department and with review, amendment and final approval by the Secretary of Defense, the Office of Management and Budget and the President. The enactment phase, frequently called the justification phase, consists of presenting the budget and justifying it to Congress for the authorization of programs and the appropriation of funds. The execution phase consists of the apportionment allocation, obligation, and expenditure of Congressionally appropriated funds. This section will focus on the formulation phase of the budgeting process.

4.2.3.1 Concept

The budgeting phase officially commences when the Assistant Secretary of Defense (Comptroller) issues a call for budget estimates in August, based on budget policy issued by the President, budget guidance issued by the Office of Management and Budget and program decisions made by the Secretary of Defense. However, internal Navy action is initiated much earlier. During mid-June, a budget call is issued by the Comptroller of the Navy (NAVCOMPT). Subordinate echelons will have already prepared estimates within anticipated budget ceilings and submitted these estimates to major claimants. Major claimants apply fiscal guidance and submit total budget estimates to NAVCOMPT in response to the budget call. The NAVCOMPT Office of Budget and Reports conducts informal hearing to insure that budget estimates are in agreement with the POM and SECDEF guidance, contain current and valid costs and pricing, conform to legal requirements and are feasible and balanced. After completion of these hearings and the NAVCOMPT, CNO/CMC and SECNAV reviews which follow, the Navy Budget is submitted to the Office of the Secretary of Defense (OSD) in late September for review. Normally, OSD and Office of Management and Budget (OMB) analysts conduct a joint review of the military budget submissions. After this review and the

Program/Budget Decision process, which follows, SECDEF makes the final decisions and submits the Defense Department Budget to the Office of Management and Budget. OMB and Presidential revisions to the budget can be made prior to the submission of the budget to Congress. The President presents the budget to Congress in January, concluding the budget formulation phase. Following Congressional action, the President signs the Authorization and Appropriation Bills, concluding the enactment phase. The execution phase then starts and continues until the expiration of the appropriations.

4.2.3.2 Procedures

Reasonably accurate estimates of the amount of money that will be allowed in the budget are available in the Navy Department and are furnished to activities required to make budget submissions prior to the annual budget call made by the Comptroller of the Navy (NAVCOMPT). Budget estimates are initiated at the lowest level activity possessing a cost-estimating capability, as designated by the Major Claimant. The designated activity generates cost estimates based on known and anticipated requirements using formats prescribed by the Major Claimant. Each activity determines its estimated budget requirements within the

constrained funding level and also indicates unfunded requirements as applicable. These budget submissions include justification data and impact statements for unfunded requirements. They are submitted through the chain of command to the Major Claimant. NAVCOMPT issues a call in June for budget estimates to CNO, CMC, CHNAVMAT, Offices, Bureaus, Systems Commands, Fleet Commands, and other commands reporting directly to CNO. This budget call states the required relationship of the budget to the POM, to decision documents and to SECDEF guidance specifying budget limits. The Major Claimants review the budget estimates of subordinate activities, apply the budget limits and modify estimates as required and then submit a consolidated budget submission to NAVCOMPT. The NAVCOMPT Office of Budget and Reports (NCB) then conducts informal hearings to insure that budget estimates are in agreement with the POM and SECDEF guidance, contain current and valid costs and pricing, are balanced and financially feasible and conform to legal requirements. This review entails a detailed analysis of the budget estimates, including procurement lists, production schedules, lead times, status of funds and other pertinent data. Following this review, NCB prepares a recommended revision of the budget estimates ("Mark-up"). NAVCOMPT, CNO and CMC representatives attempt to resolve differences following

the "Mark-up". Within the Navy, the resolution of the difference is coordinated by the Director, Navy Program Planning; within the Marine Corps by the Fiscal Director. Unresolved differences are submitted to CNO/CMC, then to SECNAV, if necessary, for decision. The decisions of the Secretary are final insofar as the Department of the Navy is concerned and are communicated to all headquarters echelons concerned with budget preparation. Each interested service revises and resubmits its portion of the departmental budget submission on the basis of the foregoing agreements and decisions. NAVCOMPT assembles the complete budget for submission to OSD. The budget is then reviewed in OSD. Normally, the analysts of OSD conduct a joint review with analysts from the Office of Management and Budget (OMB). OMB analysts have the authority to submit separate decisions if they do not agree with the OSD decisions. Witnesses from the Navy appear at hearings to justify the budget estimates. As a result of this review, OSD staff recommendations for budget revisions are made and tentative Program/Budget Decisions are issued to the Navy by SECDEF. SECNAV is afforded the opportunity to appeal each PBD with which he does not agree by submitting a position paper or reclama. Tentative PBD's which are not appealed automatically become final. After SECDEF receives

and considers each reclama/position paper, he promulgates final Program/Budget Decisions. The Navy then revises and resubmits the budget schedules for inclusion in the President's Budget and reflects the results of these decisions in the January update of the FYDP. The presentation of the budget to Congress by the President in January concludes the budget formulation phase and starts the enactment phase. Following the signing by the President of the Authorization and Appropriation Bills, the enactment phase is concluded and the execution phase begins.

When appropriation bills are passed into law, they are binding on the amount of money the Navy can obligate and, within their broad purposes, what can be purchased. The apportionment process, exercised through the Office of Management and Budget (OMB), reflects presidential control and can restrict the rate or purpose of obligations. The apportionment process is designed to prevent spending money in excess of that appropriated by law. Funds are made available on a quarterly, annual or other periodic basis. Apportionments within the Navy are made on the basis of hearings conducted by NAVCOMPT and OSD/OMB at which apportionment requests submitted by Major Claimants are considered. This process also serves the important function of updating the budget which was submitted to OSD more than a year previously.

Following the establishment of the rate of obligation by SECDEF, NAVCOMPT allocates funds to responsible officials in the Department of the Navy. These allocations are usually divided into suballocations, allotments and suballotments or are included in operating budgets to make the funds available for commitment, obligation and expenditure. A commitment is a reservation of funds, based upon currently directed use of funds, leading to obligations. An obligation is a liability, e.g., a firm contract for goods or services. An expenditure is payment of the obligation. Allocations, commitments, obligations and expenditures are carefully controlled to avoid over-spending. A mid-year review of operating accounts is held each year to identify any variations from spending plans and direct corrective action is necessary. This may result in a revised financial plan for the remainder of the fiscal year.

To meet changing needs and emergency requirements there are various provisions which prescribe methods for transferring, reprogramming or obtaining additional funds. These provisions are described in the Department of the Navy Programming Manual (OPNAV 90P-1D). Additional information on the budget process may be found in Volume 7 of the Navy Comptroller Manual (NAVSO P-1000).

4.3 Planning, Programming and Budgeting for Major Training Devices

As noted in Chapter 3, the preliminary effort in the acquisition of a major training device consists of the identification of the operational requirement, the analysis and evaluation of the training problem and of the cost, lead-time, technical feasibility and resource requirements. When the requirement is validated and the training device approved, programming action is initiated by CNO (OP-59). CNO directs the Chief of Naval Material (CHNAVMAT) to include the device in the Program Objectives Memorandum (POM). This requires an estimation of the resource requirements involved in the procurement, installation, operation and support of the devices; cost and lead-time estimates and a cost effectiveness analysis. CHNAVMAT assigns the task to the Commander, Naval Air System Command, who delegates the action to the appropriate functional group in NAVAIR. Ultimately, the responsibility is assigned to the Weapons Training Division (AIR-413) for the detailed preparation of the submission.

AIR-413 procedures are similar for programming of all devices. Those procured in support of a weapons system in the development stage or in production will be coordinated with the Project Manager (PMA) or Project Coordinator (APC).

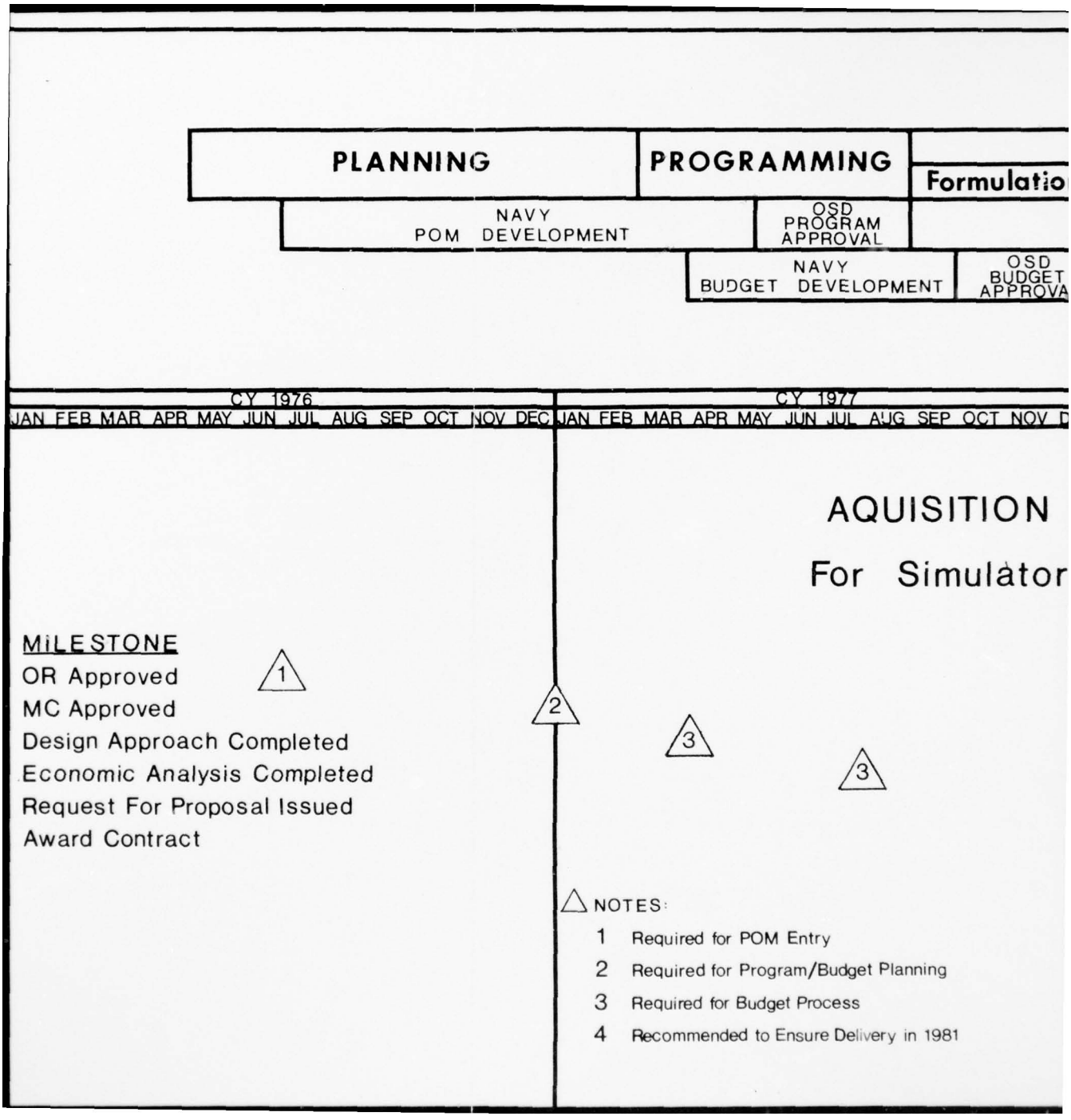
Occasionally, a programmed device is deferred by higher authority. This may require rapid action to enter the device in the subsequent year's POM or budget, depending on the time-frame of the decision. Also, a high priority may be assigned to a particular weapon system or device which necessitates late entry into the POM or budget, or performing a reprogramming action. Although extraordinary efforts must be expended when these exceptions to the orderly programming/budgeting process occur, the general principles remain the same and AIR-413 retains the responsibility for detailed preparation of submissions.

Figure 4-3 shows the DOD/Navy PPBS cycle with the milestones required for orderly acquisition of a major training device. The long lead times involved are readily apparent.

4.3.1 Procedures for Each Appropriation

The programming and budgeting procedures are somewhat different for each of the appropriations. The procedures which follow have therefore been segregated by appropriation as follows:

- Aircraft Procurement, Navy (APN)
- Military Construction, Navy (MCON)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AQUISITION
For Simulator
MILESTONE
OR Approved
MC Approved
Design Approach Completed
Economic Analysis Completed
Request For Proposal Issued
Award Contract
1
2
3
3
NOTES:
1 Required for POM Entry
2 Required for Program/Budget Planning
3 Required for Budget Process
4 Recommended to Ensure Delivery in 1981

AD-A037 803 INFORMATION SPECTRUM INC ARLINGTON VA F/G 1/2
AVIATION SIMULATION MASTER PLAN, PHASE I. VOLUME I.(U)
FEB 77 N V CAMPBELL, R H DAVIS, R E DUVALL N68335-76-C-3387
UNCLASSIFIED 1268-1 NAVAIR-AIR-413-6MPXYO-1 NL

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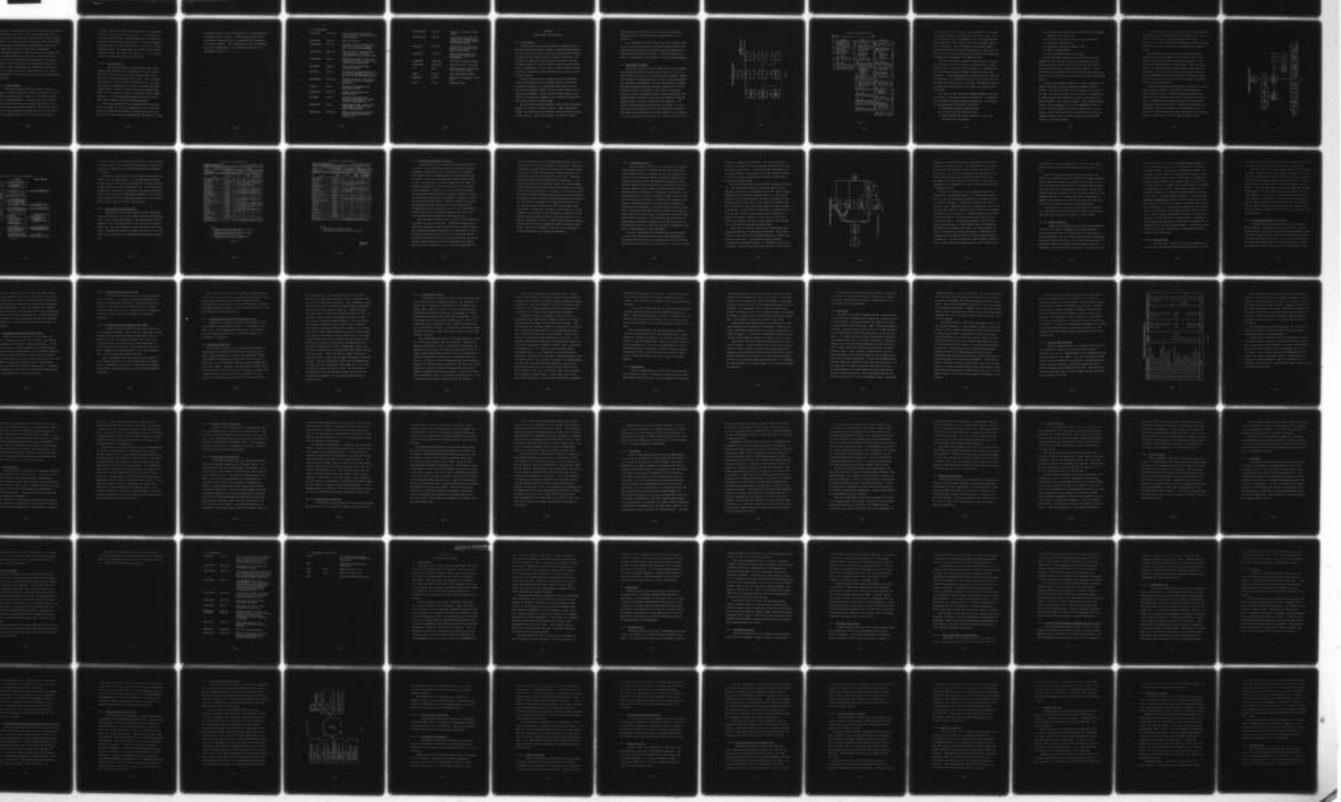

	Formulation	Enactment	Execution
RAM VAL			
ELOPMENT	OSD BUDGET APPROVAL	CONGRESSIONAL ACTION	

	CY 1978	CY 1979
L AUG SEP OCT NOV DEC	JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC	JAN FEB MAR APR MAY JUN JUL AUG SE

QUISITION MILESTONES

r Simulator Delivery in 1981

ACTION
OPNAV
OPNAV
Acquisition
NAVAIR
Acquisition
Acquisition

3

4

4

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elivery in 1981

3

Execution

CY 1979

N FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

ACTION
OPNAV
OPNAV
Acquisition Manager
NAVAIR
Acquisition Manager
Acquisition Manager

- Military Personnel, Navy (MPN)
- Operation and Maintenance, Navy (O&MN)

The programming and budgeting process for operation and support is conducted in a somewhat different manner which will be described in section 4.3.3.

4.3.1.1 Aircraft Procurement, Navy

When a requirement for a POM submission for a major training device is received in AIR-413, the division is charged with determining the lead time and providing cost estimates for the device procurement including test equipment, support equipment, special tools, initial spares, publications, and documentation, provisioning documentation, maintenance and operator training, modifications, installation and interim support. AIR-413 must also estimate total program cost for the POM years, review how the device will be integrated into the weapon system training program and provide an estimate of the training, readiness and cost benefits such as flight hour substitution that will accrue. These benefit estimates are based on the information submitted during the OR submission, validation, and approval process. AIR-413 normally assigns the responsibility for drafting proposed military characteristics to a designated field activity. Other field activities or contractors may

also be utilized to assist in determining lead time, resource requirements and cost information. After cost estimates are made, a cost-benefit analysis is conducted.

The specific data and format requirements for POM submissions change periodically, however, basic requirements consist of cost estimates identified to a specific program, along with backup material, (e.g., a summary of the program, justification, and, if applicable, flight hour substitution and cost amortization data). Additional supporting information such as cost-benefit analysis may also be required.

For a device in support of a weapons system in the development or production stage, the POM submission will be coordinated by AIR-413 with the Project Manager or Project Coordinator, as appropriate. For a device in support of a weapons system that is no longer in production, AIR-413 has complete POM responsibility. The special POM exhibits for simulators that are required at the present time are shown in Appendix M. The POM submission is forwarded through the NAVAIR POM process with AIR-413 serving as the spokesman for all training items. Meanwhile, advance copies of the simulator exhibits are transmitted to OP-59 for Program Sponsor coordination by OP-596. The OPNAV Program Sponsor for aviation training device procurement programs is the Deputy Chief of Naval Operations (Air Warfare), OP-05.

Program adjustments are made as directed in NAVAIR, OPNAV, the Navy Secretariat or OSD.

After program approval, when the budget call is received, updated cost estimates and backup material are submitted in budget format to the Comptroller of the Navy via the NAVAIR budget process. OP-59 and appropriate field activities are kept informed of the progress of the program. The special simulator budget exhibits currently required are shown in Appendix N. AIR-413 serves as a witness at budget hearings for all training items.

4.3.1.2 Military Contruction, Navy

When the requirement for a POM submission for a major training device is received in AIR-413, the cognizant Weapons Branch must ensure that facility requirements are identified and programmed. The Branch normally notifies the Shore Facilities Planning Branch (AIR-4106) of a requirement to house a simulator. AIR-4106 adds the requirement to the "Simulator Deliveries/Facility Building Occupancy Date List" and notifies the cognizant Major Claimant with copies to all concerned commands and activities. An initial evaluation is made of the most efficient method of meeting the requirement and a cost estimate is made based upon the projected space and utilities requirements. This preliminary cost

estimate is used in the NAVAIR POM submission so that total program cost may be displayed for the information of reviewing authorities. The actual programming process is initiated at the air station level and is conducted in the programming process of the Major Claimant of the user activity. This process is described in OPNAV Instruction 11010.1. This formal, lengthy process insures that alternative methods are considered so that the facility requirement is satisfied in the most efficient and cost-effective manner. Facility Program Objectives are developed through the user's chain of command so that the multitude of facility projects in the Major Claimant's total program are evaluated and prioritized in accordance with his requirements and desires. Since NAVAIR is not a party to the programming of the facility, it is possible that inconsistencies can arise between the programming of the facility and the programming of the training device it is designed to house. In recent years, the coordination between the major claimants, NAVAIR and OPNAV has improved considerably, which has helped keep the facility and device procurement programs in concert. The OPNAV sponsor for the facilities program is the Deputy Chief of Naval Operations (Logistics), OP-04. The Naval Facilities Engineering Command serves a technical staff function for OP-04 in the programming process. AIR-413

ensures that all program adjustments are coordinated with OP-04, OP-51, OP-59, NAVFAC and the major claimants. Program adjustments are made as directed by the Major Claimant, OPNAV, the Navy Secretariat and OSD.

After program approval, when the budget call is received, updated cost estimates and backup material are submitted in budget format by the Major Claimant to the Comptroller of the Navy.

4.3.1.3 Military Personnel, Navy

When the requirement for a POM submission for a major training device is received, AIR-413 must ensure that military personnel requirements are identified and programmed. The cognizant Major Claimant and all concerned commands and activities are notified of the requirement. An initial evaluation of the quantity and paygrade of personnel is made and priced. This preliminary estimate is used in the NAVAIR POM submission so that total program cost may be displayed for the information of reviewing authorities. OP-59 is informed of the personnel requirement so that an addition may be made to the Navy Resources Model (NARM) and so that sponsor coordination can be effected in OPNAV. A manpower requirements determination for the training device is performed by the Naval Training Equipment Center (NTEC). This effort is analogous to the manpower

requirements determination for the weapon system which is performed by the Naval Aviation Integrated Logistic Support Center (NAILSC). The Manpower Requirements Report for the device is submitted by NTEC to CNO with copies to all concerned commands and activities. The report is used as the basis for programming billets and MPN costs. Civilian personnel requirements are included in the O&MN programming process. OP-05 serves as the OPNAV Program Sponsor but the Deputy Chief of Naval Operations (Manpower), OP-01, is the Appropriation Sponsor and Resource Sponsor. Program adjustments are made as directed by OPNAV, the Navy Secretariat and OSD.

After program approval, the appropriate major claimants are notified of the approved manpower adjustment and, when the budget call is received, updated cost estimates and backup material are submitted to NAVCOMPT in O&MN budget format by the Major Claimant as part of his O&MN budget submission. The actual Military Personnel (MPN) Budget is a separate document which is prepared and submitted to NAVCOMPT by the Chief of Naval Personnel. However, all personnel billets and costs must be displayed in the O&MN budgets submitted by the Major Claimants.

4.3.1.4 Operations and Maintenance, Navy

The Operations and Maintenance, Navy (O&MN) program for a simulator consists of many elements programmed and budgeted through several different channels. Some O&MN funds may be required by NAVAIR in the acquisition process and some for follow-on support. Other O&MN funds must be programmed by the user activity and by the Naval Education and Training Command for support after delivery. Other O&MN is required by the Systems Commands for replenishment spares for follow-on support. O&MN funds are also used for civilian personnel costs as well as navy and contractor maintenance costs and spare parts. Occasionally, some minor facilities requirements also may be funded by O&MN.

In the initial programming action for a device in AIR-413, O&MN estimates are made, in large part, to determine and display total program cost for the benefit of reviewing authorities. However, AIR-413 must determine whether any O&MN funds will be required in the POM year so that the requirement can be programmed by NAVAIR or the appropriate command.

The first consideration is to estimate NAVAIR O&MN costs, if any, required for the procurement and installation of the device. Then, for program cost display purposes, the O&MN costs of the personnel billets required for

operation and maintenance of the device are estimated. In addition, estimates for O&MN for facilities, if applicable, and for the O&MN support costs that will be incurred by the Chief of Naval Education and Training (CNET), other systems commands and the user commands in the program years are solicited from the claimants and included in the backup data of the NAVAIR POM submission in order to show total program cost.

Each major claimant whose funding requirements will be affected by the addition of the device must submit estimated O&MN requirements in his individual POM submission for the year in which funding will be required to ensure that sufficient funds will be programmed. Program adjustments are made as directed by OPNAV, the Navy Secretariat or OSD. The OPNAV sponsor for the O&MN program is the Deputy Chief of Naval Operations (Logistics) OP-04.

After program approval, when the budget call is received, updated cost estimates and backup material for the NAVAIR O&MN costs are submitted in budget format to the Comptroller of the Navy via the NAVAIR budget process. Each major claimant submits budget estimates each year for the O&MN funding requirements for which he is responsible. Under the present system, the responsibility for programming and budgeting for operation and support of training

devices is split among several claimants. Additional information concerning operation and support is included in the following section.

4.3.2 Procedures for Programming and Budgeting of Support

The previous sections have discussed the programming actions required to initiate the acquisition of a training device and budget for its procurement. Under the authority delegated by COMNAVAIRSYSCOM, the Acquisition Manager is responsible for the total procurement program, including the requisite logistic support. An Integrated Logistic Support (ILS) plan is developed during the acquisition process. Starting in the planning phase, an iterative analysis of logistic support requirements is conducted which is refined as the program progresses. This analysis results in a logistic support plan which is frequently updated and is validated during the interim support period. When a training device is assigned Cognizance Symbol "20", the responsibility for its integrated logistic support program is assigned to the Naval Training Equipment Center (NTEC). The responsibility for developing the ILS plan is normally delegated to NTEC even if NTEC is not the Acquisition Manager. The ILS program provides the basis for the programming and budgeting of support. Maintenance policy,

personnel, training, support and test equipment, facilities, supply support and contractor support services are among the elements of the ILS program. Personnel and facilities have been discussed previously. Initial training, support equipment, test equipment and interim support including contractor support services are normally acquired as part of the procurement process. The modification program, maintenance and supply support, engineering and technical support, publications updating, retraining of personnel and a few other continuing areas remain. The Naval Air Systems Command is currently engaged in efforts to improve the support system for aviation training devices by developing a new system for support which consolidates responsibilities, more closely parallels weapons system support and is more responsive to the users. This section will describe the programming and budgeting for the support system that has been in operation for some time and then discuss the changes which have recently been implemented and those changes which are planned for the future.

4.3.2.1 Modifications

The Naval Air Systems Command (NAVAIR) is responsible for funding of simulator modifications except for logistic support modifications (i.e., reliability and

maintainability changes). Simulator modifications are funded by the APN appropriation. AIR-413 coordinates with the various functional groups in NAVAIR to insure that all modification requirements are identified. AIR-413 prepares cost estimates and submits trainer modification requirements in the NAVAIR POM submission and in the NAVAIR APN Budget Submission. The APN funding requirements for trainer modifications by weapon system for FY 1977 through FY 1982 are shown in Appendix E.

Logistic support modifications are funded in the O&MN appropriation by the Chief of Naval Education and Training (CNET). The Naval Training Equipment Center is responsible for logistic support modifications and forwards requirements to CNET via the Chief of Naval Education and Training Support. CNET includes these requirements in his annual POM submission and in his O&MN budget submission.

4.3.2.2 Other O&MN Support

In addition to logistic support modifications, the Chief of Naval Education and Training (CNET) is responsible for the bulk of O&MN funded support of simulators including engineering and technical support, organizational and intermediate level maintenance repair parts, depot level maintenance, retraining of personnel, updating of

publications, reinstallation costs and the Quality Assurance and Revalidation Program. The Naval Training Equipment Center and the Chief of Naval Education and Training Support determine the extent of these O&MN requirements and provide the requirements to CNET who includes them in his annual POM submission and in his O&MN budget submissions.

The major claimant of the user activity is responsible for the O&MN funding of military and civilian personnel required for the operation and maintenance of the device, utilities, facility maintenance and operating costs and supplies. These requirements are determined through the chain of command of the user and included in the annual POM submission of the major claimant and in his O&MN budget submissions.

4.3.2.3 Spares Support

The Naval Training Equipment Center (NTEC) is designated Technical Manager of spares and repair parts for Cog "20" training devices. However, the budget responsibility for replenishment of stock has been split between the Naval Electronics Systems Command (NAVELEX) and the Naval Supply Systems Command (NAVSUP). NTEC works closely with the Program Support Inventory Control Point (PSICP) and with NAVELEX and NAVSUP to ensure adequate supply

support. Trainer-peculiar repairable parts are investment items funded by the OPN appropriation. In coordination with NTEC and the PSICP, NAVELEX programs and budgets for these OPN replenishment requirements. The replenishment of consumable parts is the responsibility of the Naval Supply Systems Command. In coordination with NTEC and the PSICP, NAVSUP programs and budgets the O&MN funds for the replenishment of these Navy Stock Account items.

4.3.2.4 New Procedures

One revision which has already been made to the support system changes the assignment as Program Support Inventory Control Point for all trainer-peculiar repair parts to the Aviation Supply Office (ASO). ASO is already the PSICP for aircraft-common repairable parts. The consolidation of responsibility at ASO is designed to improve supply support. Another revision which has already been made is the assignment of Naval Air Rework Facility (NARF), Pensacola, as the designated overhaul point for in-house depot level repairs for some training equipment.

Additional changes that are contemplated for the near future includes the shift of responsibility for repairable stock from NAVELEX OPN funding to NAVAIR APN funding and the shift of O&MN funding responsibility for repair of these

repairable items and for replenishment of trainer-peculiar consumable parts to NAVAIR. These changes will further consolidate responsibility for management and budgeting for trainer-support. Other changes that are contemplated for future improvement of the support system will be addressed in Chapter 6.

4.4 References

OPNAVINST	1500.11G	Naval Aviation Training Program Policies, Responsibilities and Procedures
OPNAVINST	4100.3A	DON ILS System
SECNAVINST	5000.13	Glossary of Terms used in the Areas of Financial, Support and Installation Management
SECNAVINST	5000.16D	Policy, Roles & Responsibilities within the DOD for Implementation of the DOD PPBS
SECNAVINST	5000.18	Glossary of Terms used in the Areas of Financial, Supply and Installation Management
OPNAVINST	5420.2J	Chief of Naval Operations Executive Board
CNETINST	7000.2	Procedures and Responsibilities for the Development and Submission of the CNET/OPN and POM
SECNAVINST	7000.14B	Economic Analysis and Program Evaluation for Navy Resource Management
DODINST	7045.7	Planning, Programming and Budgeting System
SECNAVINST	7045.9A	MILCON Authorization and Appropriation
CNETINST	7100.2	Process for Documenting Resources Required to Support Training Requirements
NAVMATINST	7100.4	Programming/Budget Policy for Requirements received from other Organizations
BUPERSINST	7100.25A	Budget Formulation and Execution for O&M Appropriation, Guidance for

NAVCOMPTINST	7100.45	Five Year Defense Program (FYDP)
NAVCOMPTINST	7102.1C	Instructions for the Preparation of Appropriation Budget Submissions (Budget Submissions Manual)
OPNAVINST	7110.4A	Instructions for the Preparation of Appropriation Budget Submission
OPNAVINST	11010.1F	Shore Installations and Facilities Planning and Programming
OPNAVINST	11010.20C	Facilities Projects Manual
NAVFACINST	11010.44B	Shore Facilities Planning
JCS	Pub-1	DOD Dictionary of Military and Associated Terms
OPNAV	90-P-1D	Navy Programming Manual
NAVEDTRA	10792C	Financial Management in the Navy
NAVSO	P-1000	NAVCOMPT Manual

CHAPTER 5

PROCUREMENT AND PRODUCTION

5.0 Introduction

Training devices have long played an important role in military training programs; however, advancing technology in the art of simulation has created an ever increasing demand for employment of devices in all training evolutions. New plateaus in simulation fidelity give illusions of reality unmatched except in the real world of weapon systems operations. Substitution, in the form of using training devices instead of aircraft, is an established fact in many areas of flight training.

Training devices are an integral part of the weapon systems Integrated Logistics Support package but because devices are themselves a significant cost element in the total system support package, they are often broken out for separate procurement. Major training devices must be provided a full logistics support suite containing support elements quite like the weapon system.

The Naval Air Systems Command is the primary Acquisition Manager for aviation training devices. When requested by NAVAIR, the Naval Training Equipment Center serves as Acquisition Manager. Those two agencies, in concert, effect

essentially all procurements of major aviation training devices within the organizational framework depicted in Figure 5-1.

The complexity of major devices and their support suite demands intensive planning in the procurement process which begins with initiation of a weapon system development program which the device will support. This corresponds to a DSARC I or Milestone I as defined in the Navy Program Manual.

5.1 Procurement Planning

Device procurement planning commences during the weapon system Program Validation Phase (See Figures 1-2 and 5-2) which lasts for a period of approximately 19 months. During this period all preparations for a weapon system procurement are completed in accordance with the provisions of Standard Integrated Support Management System (SISMS) and/or AR-30A. Training devices are treated as an aircraft Integrated Logistics Support component within a training/personnel ILS element which covers all maintenance and operator training, training media, and their associated ILS elements. The overall planning process is displayed in Figure 5-2. Preliminary ILS planning factors are developed and included in the weapon system acquisition Project Manager's (PM) updated Decision Coordinating Paper (DCP) for the review of the Chief

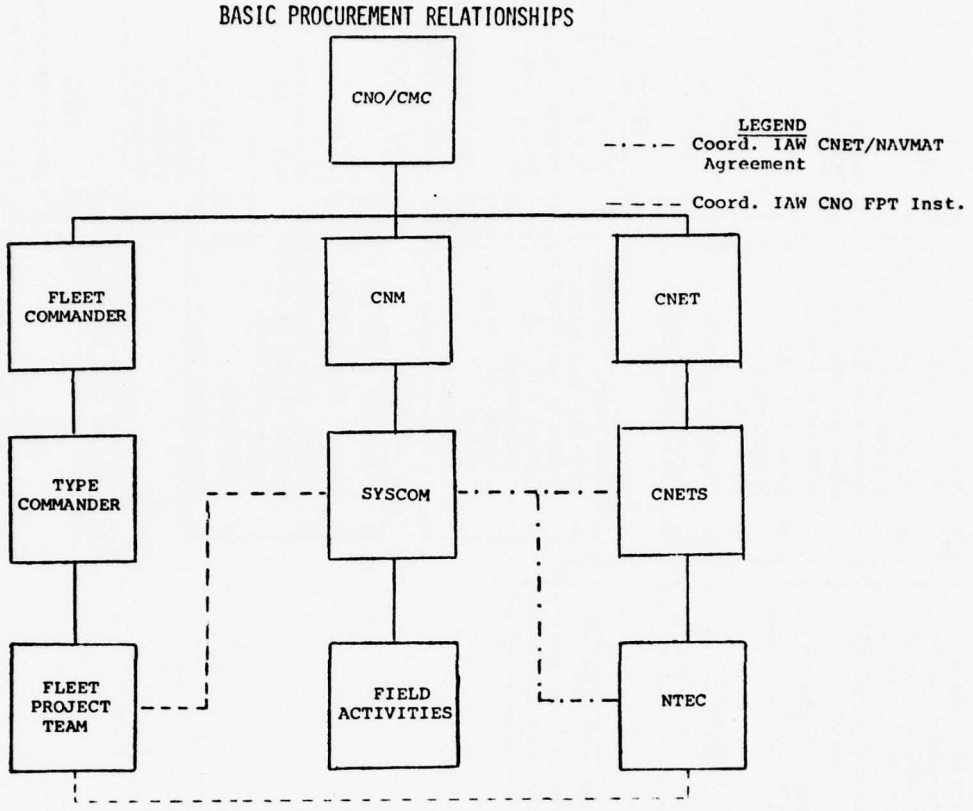
BASIC PROCUREMENT RELATIONSHIPS
CNO/CMC
LEGEND
Coord. IAW CNET/NAVMAT Agreement
Coord. IAW CNO FPT Inst.
FLEET COMMANDER
CNM
CNET
TYPE COMMANDER
SYSCOM
CNETS
FLEET PROJECT TEAM
FIELD ACTIVITIES
NTEC

Figure 5-1

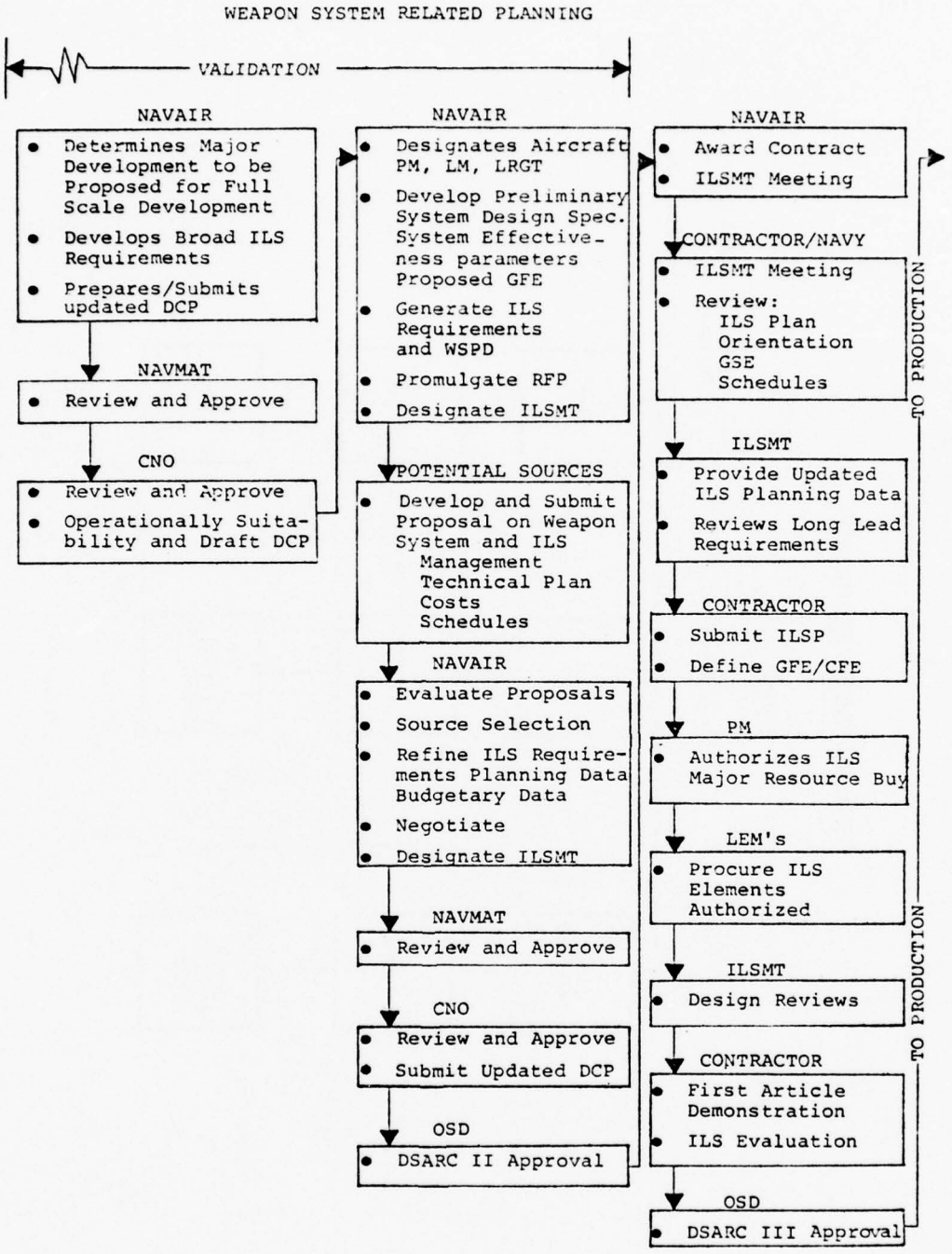
WEAPON SYSTEM RELATED PLANNING
VALIDATION
NAVAIR
Determines Major Development to be Proposed for Full Scale Development
Develops Broad ILS Requirements
Prepares/Submits updated DCP
NAVMAT
Review and Approve
CNO
Review and Approve
Operationally Suitability and Draft DCP
NAVAIR
Designates Aircraft PM, LM, LRGT
Develop Preliminary System Design Spec. System Effectiveness parameters Proposed GFE
Generate ILS Requirements and WSPD
Promulgate RFP
Designate ILSMT
POTENTIAL SOURCES
Develop and Submit Proposal on Weapon System and ILS Management Technical Plan Costs Schedules
NAVAIR
Evaluate Proposals
Source Selection
Refine ILS Requirements Planning Data Budgetary Data
Negotiate
Designate ILSMT
NAVMAT
Review and Approve
CNO
Review and Approve
Submit Updated DCP
OSD
DSARC II Approval
NAVAIR
Award Contract
ILSMT Meeting
CONTRACTOR/NAVY
ILSMT Meeting
Review: ILS Plan Orientation GSE Schedules
ILSMT
Provide Updated ILS Planning Data
Reviews Long Lead Requirements
CONTRACTOR
Submit ILSP
Define GFE/CFE
PM
Authorizes ILS Major Resource Buy
LEM's
Procure ILS Elements Authorized
ILSMT
Design Reviews
CONTRACTOR
First Article Demonstration
ILS Evaluation
OSD
DSARC III Approval
TO PRODUCTION
TO PRODUCTION

Figure 5-2

of Naval Material and the CNO. Upon approval of the weapon system operational suitability and Draft DCP by CNO, a Logistics Manager (LM) is designated and a Logistics Requirements Generation Team (LRGT) is formed from NAVAIR and its field activities. ILS requirements, preliminary design specifications and budgetary estimates are refined and provided to the PM for incorporation in planning and budgetary documents and the Request for Proposal (RFP).

The Draft ILS Plan and Weapon System Planning Document are forwarded to the CNO for review and approval. Subsequent to this action, the RFP is released to industry and an ILS Evaluation Team is formed, largely from the LRGT personnel. Incoming proposals are evaluated by the team and the resultant ILS evaluation forwarded to the SSEB (Source Selection Evaluation Board) by the LM. The SSEB then selects a weapon system contractor on the basis of all Evaluation Team inputs.

The Training LEM (Logistics Element Manager) considers all facets of training during his evaluation. In addition to the proposed aviation simulation device(s), his evaluation includes such additional elements as:

- Maintenance Trainer specifications
- Part Task Trainer specifications
- Weapon System and Trainer factory training for operation and maintenance

- Personnel requirements for weapon system and trainer operation and maintenance
- Training Navy operational evaluation personnel
- Classroom training media
- Government Furnished Property (GFP)
- Facility requirements
- All associated schedules and costs.

During the SSEB deliberations, the LEM refines and expands the planning data detail for subsequent contract negotiations and outlines parallel internal Navy actions required in order that schedules may be achieved. These actions involve acquisition of long lead GFP, assignment of priorities, and allocation of personnel, material and funding assets.

During negotiations subsequent to source selection, the ILSMT (Integrated Logistics Support Management Team) is formed. This team is comprised of personnel who served on the LRGT and other projected user and support organizations. It also includes representatives of CNO, CNETS (Chief of Naval Education and Training Support), ASO (Aviation Supply Office), Type Commander staffs, NAVAIRSYSCOMREPS, NAILSC (Naval Aviation Integrated Logistics Support Center), and others. This team will provide recommendations on the procurement method, provide technical advice and review and comment on program progress.

In the event that it is decided to procure the simulator separately, or a training requirement arises later in an aircraft's life cycle, a similar planning cycle ensues. It differs in that procurement and production decisions are made within the Navy on the basis of established cost threshold levels.

The following sections, while somewhat repetitious, describe the discrete planning actions which take place during a separate first unit simulator procurement. The formal actions described are essentially a detailed treatment of the tasks performed by the Training LEM mentioned previously. The separate simulator procurement planning process commences during the preparation of the MC document, which is the vehicle for defining and formalizing approval of the training requirement.

Planning for separate procurement of a device is a team effort involving NAVAIR, CNO, Naval Training Equipment Center (NTEC), fleet or training command representatives comprising FPT and other activities as shown in Figure 5-3. Flow of communications among participants is maintained throughout all planning efforts. Weapon system planning or operational data is available to all participants and its impact on training and the possible requirement for training devices is discussed in early phases of weapon system

PROCUREMENT/PRODUCTION RELATIONSHIPS

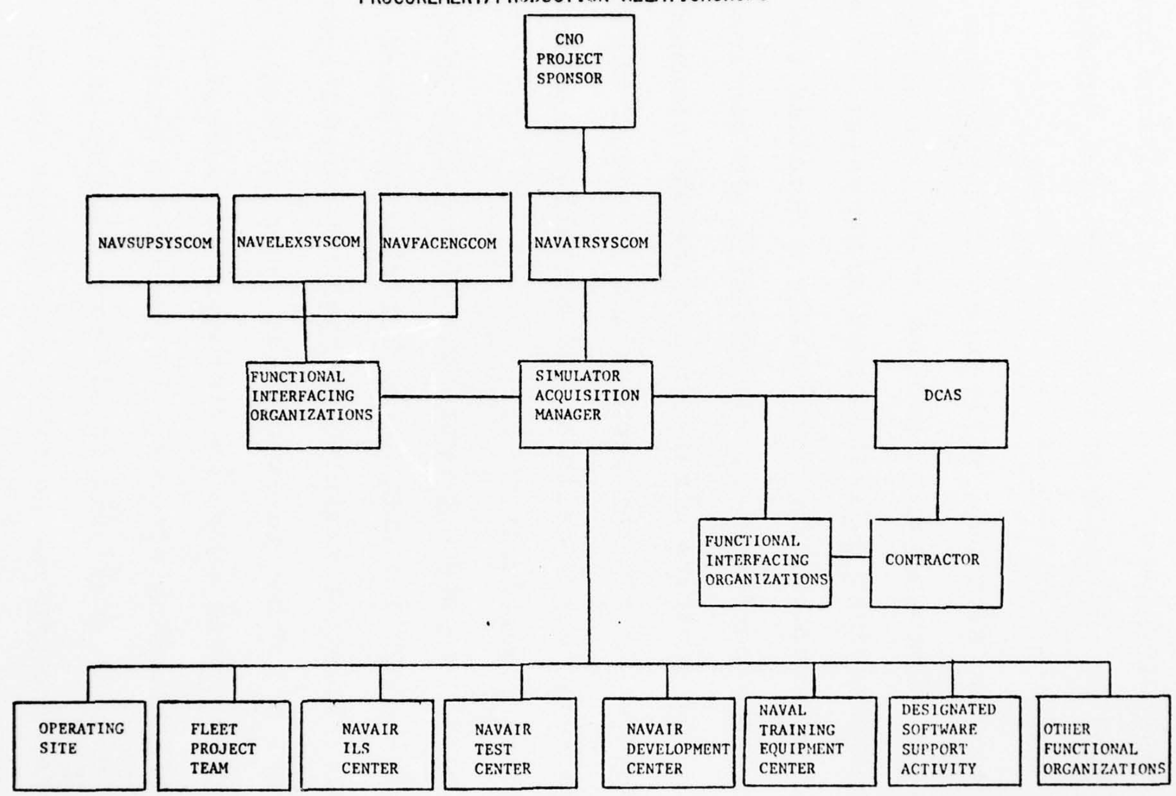

Figure 5-3

development. NAVAIR assists the CNO in preparation of the weapon system Navy Training Plan (NTP) and keeps NTEC and the FPT informed. FPT command representatives participate in formulation of the NTP, but quite often NTEC and FPT members do not. The completed NTP is made available to all device procurement planning team members and is updated and refined during subsequent Training Plan Conferences and Integrated Logistics Support Management Team meetings during the weapon system acquisition process.

The planning lead is assumed by the command designated as Acquisition Manager, either NAVAIR or NTEC. Initial efforts displayed in Figure 5-4 are conducted during this planning period. These do not commit the government to a procurement but do require a high level of effort. When it appears reasonably certain that simulator procurement will be directed and funds will be forthcoming, the effort increases many fold with development of a Design Approach (DA) as detailed planning takes form under leadership of the designated AM.

5.1.1 Design Approach (DA)

Preparation of a DA is the first step in procurement planning. The acquisition team previously formed by the AM to participate in the MC preparation included persons skilled

PROCUREMENT/PRODUCTION/DELIVERY TASK SEQUENCE FLOW NETWORK

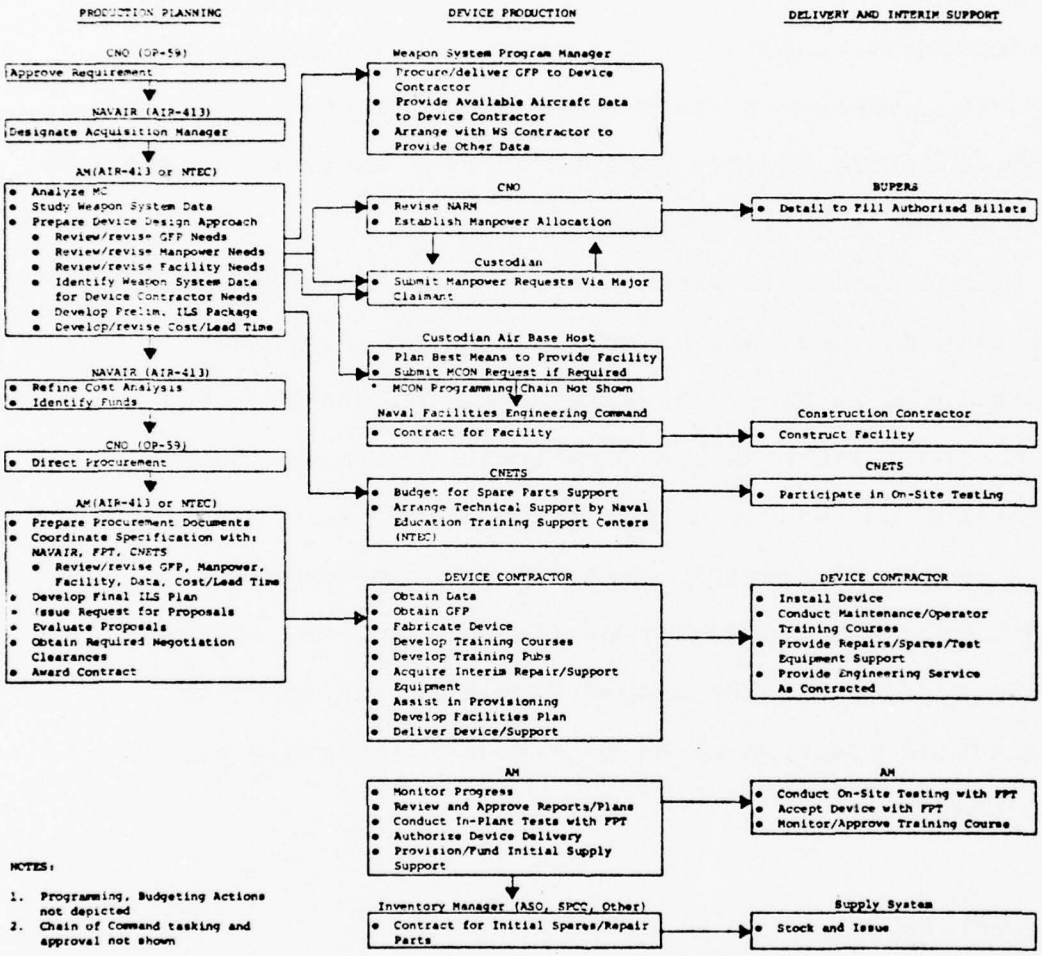

Figure 5-4

in fields of training, engineering, logistics, human factors, and contracting. The same skills and usually the same individuals are employed in varying degrees during development of the DA.

The DA is a preliminary look at feasible approaches to produce the training device. It includes device system layout, material and data descriptions, and outlines elements of the Integrated Logistics Support Plan. The finished DA document is essentially a preliminary procurement specification, and is utilized in developing production cost and lead time estimates, defining data requirements, and identifying what aircraft parts and GFP will be required.

5.1.2 Procurement Planning Schedule

Completion of the Design Approach allows reasonably accurate estimates of the time frames involved in succeeding steps in the procurement process. The Procurement Planning Schedule (PPS) identifies steps in the process to contract award and, from that schedule, device lead times are promulgated. Representative PPSs are shown in Figure 5-5 for projects above and below cost thresholds discussed in paragraph 5.2.

Illustration of Procurement Actions

PROCUREMENT PLANNING SCHEDULE AND STATUS REPORT
6820-NTEC-3930/28 TEMPORARY (10/72)

REFER TO: NAVMATEQUIPCOMMINST 3930.6 SERIES

TASK DATA

1. TASK NO.	PREV NO	2. TASK/DEVICE NOMENCLATURE	3. DEVICE NO.
2000	--	F-1000 Weapon System Trainer	2F000

4. ESTIMATED TASK VALUE $	5. COGNIZANT PE NAME	6. COGNIZANT CN NAME	7. LOGISTIC SPT COORD NAME
$4,000,000	R. Jones	B. Smith	T. Riley

TASK SCHEDULE

DATE MILESTONES		PLANNED SCHEDULE	CURRENT STATUS	FORECAST DELAY SCHEDULE	* ☐ COORDINATED ☐ "GET WELL" ☐ "BEST EFFORT" SCHEDULE
M. C. OUT OR APPROVED	D-Day	D+00			
TAAD, CDD, TCR ISSUED		D+26 wks	- Design Approach Forward C/LT Est.		
SYNOPSIS ISSUED		D+26	- Bid List Available, Expect No		
SYNOPSIS EVALUATED		D+27	Additional Response		
SPECIFICATION COMPLETE		D+44			
RAN OR APP ISSUED		D+32	- RAN to ASN (I&L) for Exception		
RAN OR APP APPROVED		D+34	to Fixed Price, Formal Bid		
PACKAGE OUT OF ENG (POE)	1.	D+48	- Specification, TPR, PEP, Schedule		
PACKAGE IN PROCUREMENT (PI)	2.	D+48			
RFP OUT		D+50			
QUOTATIONS IN(QI)	3.	D+55	- Audit Required - Minimum of		
TECH EVALUATION IN PROCUREMENT (TE)	4.	D+60	30 Days		
SSAC PRESENTATION		D+61	- Source Selection Advisory Council		
PRE NEG OUT		D+62	- NAVAIR Approves In-House. NTEC		
CNM APPROVAL		D+64	Must Submit to CNM		
NEG COMPLETE		D+68	- One Week for Each Acceptable		
POST CLEARANCE OUT		D+69	Bidder		
POST CLEARANCE APPROVED		D+71			
CHINFO		D+72			
CONTRACT AWARD (CA)	5.	D+72			
CONTRACT DELIVERY (1ST UNIT)	6.		30 Months After Award is Normal		

Notes:

1. Procurement of first article device, new weapon systems. Competitive procurement.
2. Procurement value over $2m to illustrate added administrative processing by NTEC.
3. Times shown are minimum - achievable only if thorough advance planning accomplished.

Figure 5-5

Illustration of Procurement Actions

PROCUREMENT PLANNING SCHEDULE AND STATUS REPORT
6KD-NTSC-3930/28 TEMPORARY (10/72)

REFER TO: NAVTRAEQUIPCENINST 3930.6 SERIES

TASK DATA

1. TASK NO.	REV NO.	2. TASK/DEVICE NOMENCLATURE	3. DEVICE NO.
3000	--	A4M Operational Flight Trainer	2F108

4. ESTIMATED TASK VALUE $	5. COGNIZANT PE NAME	6. COGNIZANT CN NAME	7. LOGISTIC SPT COORD NAME
$2,300,000	R. Jones	B. Smith	T. Riley

TASK SCHEDULE

DATE MILESTONES		PLANNED SCHEDULE	CURRENT STATUS	FORECAST DELAY SCHEDULE	* COORDINATED ☐ "GET WELL" ☐ "BEST EFFORT" SCHEDULE
M, C, OUT OR APPROVED		1/2/74			
TAAD, CDD, TCR ISSUED		D+00			
SYNOPSIS ISSUED		D+01 wks	- Advertises Intent to Procure		
SYNOPSIS EVALUATED		-	From Sole Source		
SPECIFICATION COMPLETE		D+ 04			
RAN OR APP ISSUED		D+05	- Local Approval of Sole Source		
RAN OR APP APPROVED		D+05	Exception		
PACKAGE OUT OF ENG (POE)	1.	D+10			
PACKAGE IN PROCUREMENT (PI)	2.	D+10			
RFP OUT		D+11			
QUOTATIONS IN(QI)	3.	D+14	- Audit May Be Waived (But Not Likely)		
TECH EVALUATION IN PROCUREMENT (TE)	4.	D+19			
SSAC PRESENTATION		D+20			
PRE NEG OUT		D+21			
CNM APPROVAL		D+23			
NEG COMPLETE		D+24			
POST CLEARANCE OUT		D+25			
POST CLEARANCE APPROVED		D+27			
CHINFO		D+28			
CONTRACT AWARD (CA)	5.	D+28			
CONTRACT DELIVERY (1ST UNIT)	6.		- 18 Months	From CA is Normal	

Notes:

1. Reprocurement on Sole Source Basis.
2. Times Shown are Minimum; 9 Months is More Normal.

Figure 5-5
Continued

5.1.3 Government Furnished Property

Requirements for government furnished property (GFP) in earlier, less sophisticated device procurements did not represent a substantial part of the total device system. Most weapon system instrumentation and data displays were simulated. Even now, an Operational Flight Trainer (OFT) or the flight portion of a Weapon System Trainer (WST) is a product of simulation, rather than actual aircraft operational equipment. However, the use of on-board computers and integrated display systems in modern aircraft is necessitating greater reliance on operational equipment in tactical system training devices. Tactical systems' circuitry and functions can be simulated, but such simulation is accomplished through sacrifices in time, cost, reliability, and the creation of separate configuration control tasks which increase future operating and support costs.

Long leadtimes involved require that GFP requirements be identified as early as possible. NAVAIRINST 4200.5A lists candidate equipments to be considered in procurement actions. The Acquisition Manager identifies the requirement for GFP to the weapon system PM or directly to the Weapon System Engineering Support Center for incorporation into an overall weapon system Government Furnished Equipment List (GFEL). These lists are distributed to the offices responsible for

buying individually listed equipments/components which in-turn procure and have GFE delivered as required. Similarly, arrangements whereby the device contractor may obtain necessary technical data from the weapon system contractor are made by the device AM through the aircraft PM. Technical data required for device production is voluminous. It includes information on the design, operation and maintenance of the weapon system and all supportive hardware or software which will be simulated by or utilized in the training device. No feasible degree of design planning by the AM can identify all necessary data; therefore, contractual agreements stipulate that the device contractor will obtain data directly from the aircraft prime contractor or other source where data may reside, as required. Channels to obtain data are established by the aircraft Project Manager on request of the AM. Lack of quality flight performance data has resulted in inadequate simulation fidelity in many devices despite aircraft and device contractors' attempts to achieve maximum cooperation. Efforts are underway to correct this discrepancy utilizing both Navy and contractor expertise.

5.1.4 Procurement Methods

The procurement method is the decision of the weapon system Project Manager. Training devices may be procured through contract with the weapon system prime contractor as part of the weapon system support package or broken out for separate contracting with the simulation industry. Those procured from the prime contractor as a portion of the overall ILS package can be further subcontracted by the prime contractor on a sole-source or competitive procurement. The prime contractor is tasked to perform a "make or buy" analysis which details the plan for providing all maintenance and operator training equipment, training parts and services required by the contract. It includes specifications, schedules, and managerial/administrative procedures necessary to provide the "made" and "bought" deliverables consistent with weapon system schedules. The government may participate in subcontractor proposal evaluations to ensure that training requirements will be met and that sources are selected on the basis of "advantageous to the government".

The most common methods of contracting for simulators with the prime contractor include full consolidation with the weapon system contract for simultaneous aircraft/trainer negotiations and calling out the simulator in an option clause

within the weapon system contract. The option clause is preferred as weapon system procurements need not be delayed by trainer negotiations. It also provides the benefit of reducing simulator contracting time to the absolute minimum as the option can be exercised in a matter of days after satisfactory negotiations.

The basic methodologies utilized are displayed in Figure 5-6. The method for procuring simulators broken out for separate contracting is determined by the AM. ASPR dictates competition as the desired method; however, a sole source contract may be effected under stringent rules when it can be shown clearly that only a single source can produce the desired product in the time frame required to meet training requirements. Single source contracting is advantageous in terms of time to enter into contract and availability of material and data. However, if time is not the driving factor and material and data can be obtained, cost savings can be achieved by competitive contracting.

ASPR, part 2, section 3 deals with circumstances permitting negotiation of procurement contracts. The general rule prescribes that all procurements should be competitive, formally advertised. ASPR describes some seventeen circumstances in which exception to the general rule may be justified. Contracting officers who use one of the excepted

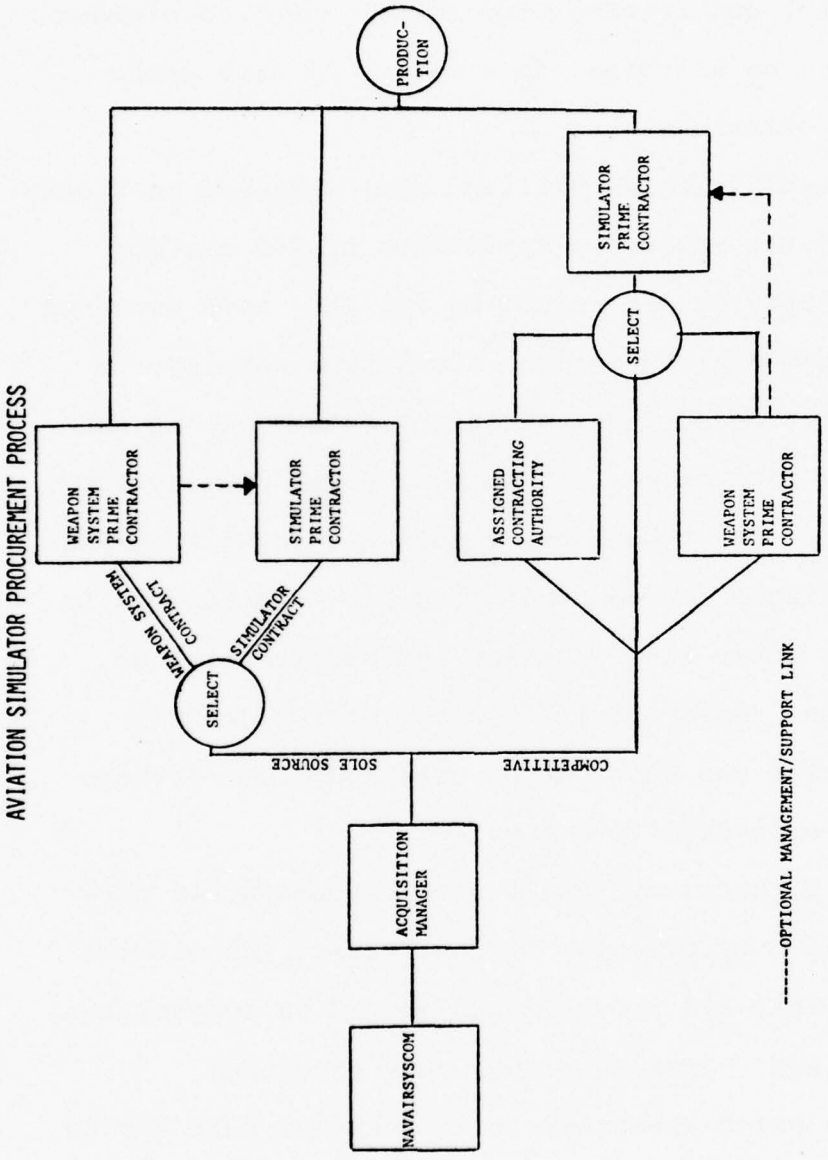
AVIATION SIMULATOR PROCUREMENT PROCESS
PRODUC-
TION
SIMULATOR
PRIME
CONTRACTOR
SELECT
WEAPON
SYSTEM
PRIME
CONTRACTOR
SIMULATOR
PRIME
CONTRACTOR
ASSIGNED
CONTRACTING
AUTHORITY
WEAPON
SYSTEM
PRIME
CONTRACTOR
WEAPON SYSTEM
CONTRACT
SIMULATOR
CONTRACT
SELECT
SOLE SOURCE
COMPETITIVE
ACQUISITION
MANAGER
NAVAIRSYSCOM
-----OPTIONAL MANAGEMENT/SUPPORT LINK

Figure 5-6

procurement methods must prepare justification in a Determination and Findings (D&F). The ASPR, Para 3-301, states that the D&F "are documents which justify the use of the authority to (i) enter into contracts by negotiation, (ii) make advance payment under negotiated contracts, (iii), determine the type of contract to be used, or (iv) waive a requirement for submission of cost or pricing data and certification thereof".

Material to justify use of an exception authority is submitted by technical personnel to a contracting officer who will make the appropriate finding as a statement of fact or reasoned judgement. Authority to award a sole source contract, under ASPR exception 10, is frequently used. Thus, the fact that specific technical data is required to produce a device and that the data is available only to one contractor would support a finding that only one contractor can produce the device. Determination based on that finding, among other findings, is the statement that the proposed contract is for property for which it is impracticable to obtain competition by formal advertising. Therefore, the contract could be awarded under the sole source authority, exception 10. Formats for D&F are shown in ASPR, Appendix J. Major training device procurements are of such nature that

an exception is almost always used; therefore, most major device procurements entail preparation and approval of a D&F.

ASPR 3-302 specifies command levels of approval for each of the numbered exception authorities. Some exceptions may be approved locally by a contracting authority, while the Assistant Secretary of Navy for Installations and Logistics (ASN-I&L) must approve other exceptions. Among those locally approved exceptions is the previously described sole source exception. If required, the D&F is forwarded to SECNAV with a Request for Authority to Negotiate (RAN) and lead time for contract award extended accordingly.

As a general rule, most new procurements are handled in a competitive environment, while follow-on or reprocurement contracts are usually awarded to a sole source.

5.1.4.1 Source Selection

Acquisition Managers maintain continuing awareness of simulation industry capability in various aspects of training device design and fabrication. On that basis, a tentative bidders list is readily available for consideration during the planning process. Even though the government is reasonably certain that the potential bidders have been identified, ASPR requires that a synopsis (intent to solicit

contract bids) be issued in the Commerce Business Daily in order to broaden competition and to preclude an inference of "preselection". Synopsis of a production category procurement does not solicit responses from bidders but simply announces that a procurement is to be made. No responses being expected, Request for Proposals (RFP) will be issued to contractors on the bidders list and on request to synopsis respondees not on the list. An adequate bidders list is often not available for research and development contracts. In that case, a "sources sought" synopsis is issued in the Commerce Business Daily wherein industry sources with necessary expertise are asked to respond. Responses from sources whose capability is in question may require further investigation. The Defense Contract Administration Service (DCAS) may be asked to perform personnel, resource, and facility surveys. The AM may require a demonstration of capability; the prospective bidder may be called upon to demonstrate an operating system or sub-system hardware. In any event, capabilities are usually discernible in subsequent Technical Proposal (TP) submissions.

5.1.4.2 Contract Type

Contract type, fixed price or cost reimbursement, is tentatively determined during the planning phase, but the

contract type is a contracting officer decision which may not be finally determined until negotiations are completed.

Contract type is decided primarily on the basis of risk involved. There is always some degree of technical risk because new procurements of major training devices are "first of a kind" and invaribly push the state of the art in simulation, but not to the extent that research effort is required. Cost risk causes more uncertainty than does on-time production or cost of data/materials to be bought from aircraft vendors. As a result, a Fixed Price Incentive (FPI) is a frequent contract vehicle for initial device procurements. Some contracting officers prefer the FPI in follow-on procurements because some contractors will submit high firm fixed price offers to allow for lack of production costing experience.

5.1.5 Procurement Document Preparation

Having completed preliminary planning, developed a Design Approach, initiated action to provide GFP, and reviewed industry capabilities, the Acquisition Manager's team is ready to proceed with preparation of documents necessary to enter contracting agreements. Preparation of these documents requires expenditure of considerable manpower effort; therefore, all issues relating to device requirements and

funding availability are resolved prior to commencement of document preparation.

Document preparation is a skilled team effort requiring, normally, a six month period to complete in case of a new procurement where adequate time for preliminary planning has been allotted. Time frames are subject to considerable variation, depending on available manpower, priority, device complexity and procurement method.

Major documents required are a specification, Technical Proposal Requirements, Proposal Evaluation Plan and a Contract Data Requirements List (CDRL). These documents are described briefly in succeeding paragraphs.

5.1.5.1 Specification

The specification is primarily an engineering description of manufacturing processes, materials, required design features, and support requirements. Device performance capability to meet the Military Characteristics is specified, as is the previously mentioned GFEL. The specification is the base for device testing and ultimate acceptance of all deliverables as adequate to meet training objectives.

After the Acquisition Manager (AM) has completed the draft detailed specification, it is forwarded to the Fleet Project Team (FPT) for review, after which the AM will call a specification review meeting with appropriate operational and technical managers. During the meeting, all changes, omissions or additions are discussed and resulting decisions incorporated in the final specification. If NTEC is the AM, the specification is then forwarded to NAVAIR for approval. Resolving the MC to a detailed specification requires from 4 to 6 months.

5.1.5.2 Technical Proposal Requirements (TPR)

The TPR is an integral part of the Request for Proposal. Its primary function is to specify required content and format for offerors' technical proposals. It specifies the outline of each proposal volume, identifies detailed requirements for information to be provided, requires the offeror to declare any intent to deviate from specifications, and identifies critical grading areas and their relative order of importance and other items of information necessary to provide for proposal comparability. Proposals will be evaluated on the basis of a contractor being responsive to the government's stated requirements.

5.1.5.3 Proposal Evaluation Plan (PEP)

The PEP is for AM internal use in evaluating proposals received. It is based on the TPR and establishes criteria for grading the proposals. Weighting factors are applied to various portions of the TPR (i.e., Technical Approach, Time, Cost, etc.) in order to rank the proposals in order of quality from the standpoint of government priorities.

5.1.5.4 Contract Data Requirements Lists (CDRL)

NAVMAT Instruction 4000.15A establishes the Navy data management program. That directive, among other things, requires that Acquisition Managers appoint Data Review Boards to review and approve purchase of all data items. DOD approved Data Item Descriptions (DID) applicable to training devices are included in DOD Authorized Data List, TD-3. NAVAIR policy and guidelines for the procurement of data are contained in NAVAIRINST 4200.14A.

Data requirements are tailored for each training device. When approved by the Data Review Boards, selected DIDs are compiled on a DD-1423, Contract Data Requirements Lists (CDRL), and become a part of contract performance requirements.

CDRLs include all reports to be submitted and prescribe format, content, and delivery schedule for each report. Data items usually procured with training devices include: Training Device Design Reports, Facilities Reports, Operator/ Maintenance Training Courses, Interim Repair Parts Lists, and Math Model and Programming Reports.

5.1.6 Planning Completion/Procurement Request (PR)

Compilation of completed procurement documents represents the end of procurement planning. A Procurement Request (PR), citing appropriate funding data, is forwarded with procurement documents to a Contracting Officer for execution of a contract.

5.2 Procurement Execution

The process of entering into contractual agreements is lengthy when the normally prescribed procedures of ASPR apply. Method and type of contract and individual contracting officer's application of safeguards vary to such an extent that it is difficult to make any general observation as to time frames. Dependent upon the device complexity and type of contract, time can vary from one week for exercising a weapon system contract option for a simulator to nine months for a separate procurement of a very complex device

on a FPI contract. Navy Procurement Directives (NPD), section 1-403, prescribe monetary limits of contract authority for Navy contracting officers. When procurement value exceeds those limits, business clearances must be obtained from Chief of Naval Material (MAT-04). NAVAIR business clearance limit is 10\bar{m}$, while NTEC is limited to 2\bar{m}$. Inflation in recent years has increased the cost of major devices and associated support elements to such an extent that NAVAIR's contract limit of 10\bar{m}$ is often exceeded. Most separate simulator procurements, however, fall under that limit, which permits NAVAIR to exercise internal approval authority and thereby reduce administrative lead times. A major device can rarely be bought for less than the 2\bar{m}$ NTEC limit; therefore, NTEC must get NAVMAT approval of business clearance, both before commencement, and on completion of negotiations, requiring additional administrative processing time. Figure 5-5 shows a sample Procurement Planning Schedule (PPS) used by NTEC in scheduling required actions. Time is annotated in weeks and is representative of best effort for competitive procurement of a first article device costing in excess of 2\bar{m}$. The PPS indicates approximately five and one half months from delivery of procurement documents to the contracting officer until contract award.

5.2.1 Solicitation of Bids

A contracting specialist works closely with the acquisition team during the planning process. The synopsis is issued well in advance of completion of procurement documents. ASPR, Part 21, section 1, details regulations for procurement planning and describes circumstances in which an Advance Procurement Plan (APP) must be prepared. If the procurement is for research and development, an APP is required when cost exceeds $2\overline{m}$. Most training devices fall into a production category. In that case, procurement costs of $5\overline{m}$ in one year or $15\overline{m}$ over several years requires submission of an APP.

Navy procurement directives encourage submission of the APP at the time program funds are requested. Because of changing requirements, fiscal and manpower constraints and examination of trade-offs during the planning/programming cycle, device procurement planning is often insufficient to allow APP submission concurrently with program funding requests. At times, late APP submissions may delay issue of a Request for Proposal pending approval of the APP, but, where possible, the APP is submitted and approved in the early stages of Acquisition Manager planning. Requests for Authority to Negotiate (RAN), as described in paragraph 5.1.4, are also submitted during the planning phase if required.

Preparation of Request for Proposals (RFP) is begun prior to completion of procurement documents, but cannot be completed until receipt of specifications, technical proposal requirements, CDRL, and schedule. The RFP is issued to contractors on the bidders lists and to other contractors who so request on the basis of the synopsis announcement.

Proposals received in response to RFP are sent to Defense Contract Audit Agency (DCAA) for audit concurrently with proposal evaluation by the Acquisition Manager. The DCAA ensures that costing methods are reasonable and correct, that contractor capabilities are as represented, and otherwise evaluates the veracity of the proposal. ASPR, part 8, section 3, delineates rules governing use of audits. Contracting officers are encouraged to seek advisory audits for fixed price proposals in excess of $100K. Audit is mandatory for proposals on other contract types exceeding $250K. Contracting officers are authorized to waive audits when sufficient information is available to assess proposals without formal audit. For instance, a proposal for reprocurement from the same contractor who furnished the first article device may contain the same rate structures, manhour estimates, material cost, etc., as did the first article proposal. The contracting officer might, in that case, waive audit. Full justification for waiver would be included in subsequent

requests for business clearance and, if justification were not considered sufficient, business clearance might be denied. Contracting officers employ audit waiver provisions sparingly.

In many cases, DCAA audit is the controlling time factor because proposal evaluation can be completed before the audit. DCAA normally requires a minimum of 30 days for audit but may require as much as 90 days as a result of multiple audits being required in one DCAA area during a given time span.

Acquisition Managers (AM) appoint advisory boards to assist the contracting officer in source selection. Board membership includes top managers in fields of engineering, logistics, law, and operations. Results of proposal evaluation are presented to the board for assistance or advice regarding technical acceptance. Unless Technical Proposal Requirements (TPR) clearly stipulate the contrary, price is the determining factor in selecting among acceptable bidders.

5.2.2 Negotiations

Prior to commencement of negotiations a pre-negotiation business clearance is prepared in accordance with Navy Procurement Directives (NPD). The pre-negotiation clearance

request spells out the rationale used in selecting contractors with whom negotiations will be conducted. Conversely, reasons for not negotiating with other bidders is explained. Negotiation objectives for each contractor proposal are delineated. If procurement cost is above the contracting officer's clearance limit, the clearance request is forwarded to NAVMAT for approval and further negotiation held in abeyance. This normally entails a minimum of two weeks.

Negotiations are conducted with all bidders whose Technical Proposals are evaluated as acceptable. There may be other bidders whose proposals are not clearly acceptable in a technical sense. In such cases, negotiation discussion will include clarification of technical factors as well as price.

Negotiation for major devices requires about one week for each bidder. After negotiations are closed and all technical and pricing issues resolved, the contracting officer prepares a post-negotiation business clearance under circumstances described in paragraph 5.2 which describes success (or lack of) in meeting negotiation objectives. If required, the post-negotiation clearance request is forwarded to NAVMAT for approval.

On approval of post-negotiation clearance, a contract is awarded to the successful bidder according to criteria (technical excellence and/or price) established in the Technical Proposal Requirements.

5.3 Production

Contracts for aviation training devices are predicated on the contractor beginning work immediately following award of the contract. Delivery schedules are written in terms of Months After Award of Contract (MAC). Delivery schedules for major training devices range from 18 to 36 MAC depending on the complexity of the device and urgency of the requirement. If a number of devices are being procured, the units are normally delivered at six month intervals. Production schedules can and have been compressed with the realization that in many cases such reduced production time increases contract costs. Until recently, training funds were not made available to the AM until DSARC III when weapon system production release was granted. It has been determined that earlier funding is required if the first training site is to be ready when the weapon system is delivered to the user. The development of the total media plan from Instructional System Development studies is now performed utilizing R&D funding during the Full Scale Development Phase. Production

funds provided as a result of DSARC II, for pilot production and long lead time ILS items, are being made available for procuring simulators identified and approved as ISD requirements. This adds approximately one year to the time allowed for simulator procurement. Whether or not this will be adequate cannot be determined at this time, but planning factors indicate that for this weapon system (F-18), even this lead time is marginal.

Simulation industry contractor performance varies as in all fields of industry. Every attempt is made to write contracts in such a manner that required contractor performance is explicitly defined. Regardless of contract language, some contractors will deliver the minimum, adhering to the letter of the contract, while others consistently provide all services which are implicit in contractual requirements. In the final analysis, quality of contractor performance depends on their individual competence and integrity. Government assistance and monitoring are often necessary to attain satisfactory contractual performance. In the event that the AM cannot resolve a contractual issue with the contractor, a Product Oriented Survey may be conducted in accordance with the provisions of ASPR, Section XIV, part 2, paragraph 14.202b, to clarify the contractual requirement for all parties.

Contractors are required to provide only those goods and services specified in the contract. If a need for additional goods or services arises, further contract agreements must be reached. In addition to the basic training device and peripheral equipment, simulator contracts call for contractor delivery of numerous reports, plans, and drawings. The contractor also is required to participate in conferences scheduled at intervals throughout the production cycle. A listing of supplies/services normally included in training device contracts is shown in Figure 5-7. The listing also shows typical costs associated with each deliverable item.

5.3.1 Contract Administration

Contract administration is a responsibility shared by the Acquisition Manager and a Contract Administration Officer (CAO) who is a representative of the Defense Contract Administration Service (DCAS). The administration services include in-plant inspection of materials, manufacturing processes, quality assurance, functional testings and other tasks as delineated in NAVMATINST 4330.29A. ASPR delineates specific functions which the procurement contracting officer must delegate to the CAO.

REPRESENTATIVE CONTRACT DELIVERABLE SCHEDULE

ITEM	SUPPLIES/SERVICES	QUANTITY	TARGET COST $	TARGET PROFIT $	TARGET PRICE $
0001	Technical Data (CDRL, DD 1423)	Lot	322,000	38,000	360,000
0002	First Article Trainer	1	1,455,000	167,500	1,622,500
0003	Trainer, Unit #2	1	617,000	67,000	684,000
0004	Trainer, Unit #3	1	562,000	60,000	622,000
0005	Mock-Up Model and Presentation	1	950	100	1,050
0006	Post-Award Orientation Conference	1	950	100	1,050
0007	Design Review Conference	2	2,300	270	2,570
0008	Progress Review Conference	7	1,030	120	1,150
0009	Repair GFP	Lot			Max 50,000
0010	Maint./Operator Training Course	3 Courses	80,000	9,600	89,600
0011	Contract Field Services	24 Man/Mo.	84,000	10,000	94,000
0012	Interim Repair Parts	3 Sets			Max 90,000
0013	Support Equipment	Lot			Max 40,000
0014	Initial System Stock	Lot			Max (Not Funded)
0015	Reliability Program	Lot	22,500	2,700	25,200
0016	Reliability Test	Lot	28,000	3,400	31,400
0017	Maintainability Program	Lot	18,000	2,200	20,200
0018	Maintainability Demonstration	Lot	4,300	500	4,800
0019	Provisioning Conference	Lot	2,400	300	2,700
	TOTAL		3,200,430	361,790	3,742,220

Figure 5-7

The CAO negotiates prices with the device contractor for materials, repair parts and support equipment to be furnished as interim support on delivery of the device. When Government Furnished Property (GFP) is supplied, the CAO is the receiving officer and verifies condition on delivery to the device contractor. In the event GFP requires repair as a result of being received in a nonoperational condition, the CAO verifies extent of repair required and negotiates the price.

The CAO monitors production progress and, upon verification of progress in accordance with agreed milestones, authorizes periodic progress payments.

Capabilities of the CAO or his representatives to perform the foregoing functions vary with each contract; therefore, the degree of participation in contract administration by the Acquisition Manager (AM) is determined on a case by case basis. In all cases, the AM is provided periodic reports by the device contractor which, in conjunction with verifying or backup reports by the CAO, allow the AM to determine the necessity for changing the level of supervision of contract performance.

5.3.2 Conferences

Major device contracts specify the number and general nature of conferences to be held during device production. In procurement of a new, complex training device, conferences normally are scheduled on a quarterly basis and are keyed to submission of a deliverable product, (e.g., a design review conference might be scheduled on receipt of a preliminary Trainer Design Report). Location of conferences may be at the contractor's or AM's facility. During advance production stages, it is considered more advantageous to meet in-plant where some device hardware operation may be observed.

The device contractor is required to prepare reports of all conferences and submit the report to the AM for approval.

5.3.2.1 Post-Award Orientation Conference

The Post-Award Orientation Conference is generally held within one month following contract award. Its purpose is to clarify contract requirements and resolve potential areas of misunderstanding. Conference discussions are primarily of interest to the AM team, device contractor personnel and the Contract Administration Officer (CAO). Attendance may also include the FPT and representatives of the weapon system PM and the AM's senior command, (e.g., CNM, CNET/CNETS).

Administrative procedures are discussed as are relationships and responsibilities of all participating agencies, (AM, FPT, CAO). Particular emphasis is placed upon the authority and method for effecting contract changes. It is mandatory that it be understood that this authority is vested only in the procurement contracting officer (NAVAIRINST 4200.7A). The device contractor is advised to avoid accepting change suggestions by acquisition team members or the FPT as contractually binding. The role of the CAO is clarified and the administrative functions to be performed and authority delegated to the CAO are agreed upon.

5.3.2.2 Mock-Up Review

The Mock-Up Review Conference is generally scheduled about three months after contract award. Its purpose is to review the contractor's proposed trainer configuration. Attendance includes the AM team, FPT and, often, representatives of the CNO (OP-596) and PM. NAVAIR (AIR-413) is always represented, either with the AM team or as the Material Command funding sponsor. Attendance is generally the same for all subsequent conferences.

The contractor is required to describe the simulator's physical appearance, accessability for operation and maintenance, and functional capabilities for providing requisite

training. Because trainee stations are expected to be replicas of operational equipment, simple face plate mock-up is authorized. The instructor station, being original design, is required to be a 3-dimensional mock-up. The mock-up is nonfunctional but must feature detailed representation of simulated displays, controls and control settings, labels, indicator colors, and knobology.

The mock-up review often results in many recommendations for change in configuration. Those agreed to be within contract scope (merely a more desirable approach requiring no cost increase) are accepted at the meeting. Other change recommendations which are not in scope or questionable are discussed but not resolved at the meeting. All recommendations will be documented in the minutes of the meeting and submitted to the contracting officer, with cost data for resolution. Changes that would affect device capability, as approved in the MC, must be approved by CNO (OP-596). Otherwise, the funding sponsor may authorize the contracting officer to issue necessary contract change orders. The foregoing procedure relating to changes applies to all subsequent meetings or other occasions where government personnel may contact the device contractor.

5.3.2.3 Progress Review Conferences

Progress Review Conferences are normally held quarterly, beginning about 7 months after contract award. One or more of the conferences will include a review of the design. The conferees discuss contract status, contractor performance, and resolution of problem areas. The Integrated Logistic Support Plan is reviewed and revised as required during an early progress review meeting.

5.3.2.4 Design Review Conferences

Design Review Conferences are held periodically to review the proposed design prior to "design-freeze". The "design-freeze" date may be predicated on acceptance of a final Trainer Design Report or specified in terms of months after contract award. In any case the design freeze normally is set about midway through the production cycle. As an example, for a device to be produced in twenty-four months, a preliminary Trainer Design Report would be submitted about seven MAC. On review of the report by the AM, preliminary design review would be conducted in connection with the first Progress Review Conference about eight MAC. Design changes mutually agreed would be reflected in the final Trainer Design Report. Final design would then be discussed, final Design Report accepted and design frozen at

a Design Review Conference about twelve MAC. Well written contracts will contain a specific provision to the effect that government acceptance of the design report does not relieve the contractor of responsibility to provide a workable device as described in the detailed specification upon which acceptance will be based.

An important consideration in design is device configuration. Aviation training devices generally are configured to a specific aircraft bureau number. The contractor is required to obtain all data necessary to design the device, incorporating all features of the specified aircraft. He must continue to update data throughout life of the contract and to incorporate all changes, at no additional cost, up to trainer design-freeze date. After design-freeze, the contractor continues data update and submits Trainer Change Proposals (TCPs) when an aircraft change is also applicable to the trainer. Incorporation of changes after design-freeze are the subject of separate contractual agreements. A TCP Summary Report is submitted after the Interim Support Period for use in establishing the device configuration baseline.

5.3.2.5 Provisioning Conference

Provisioning is the process of determining the range and quantity of items required to support and maintain the

training device for an initial period of service. Provisioning includes the identification of items of supply, the establishment of data for cataloging, technical manual and allowance table preparation, and the preparation of instructions to ensure delivery of necessary support items with the simulator.

The Provisioning Conference is held about four months prior to device delivery following receipt by the AM of an acceptable contractor-proposed Provisioning Parts List (PPL). Attendees, in addition to contractor support specialists, include AM, Aviation Supply Office (ASO), and Naval Electronics Systems Command representatives. The purpose of the conference is to establish requirements for long term spares/repair parts support. The PPL is used to determine Allowance Parts Lists (APL) for device custodians and to determine ISS (Initial Supply System Stock) levels. Both are based on the simulator maintenance plan, projected operational utilization, and material reliability estimates. The APL reflects the quantities of material resources which must be positioned on-site to support the simulator for a ninety-day period, while the ISS is set at quantities adequate for support until the Navy Support Date.

A basic input to the provisioning process is the maintenance plan, which identifies the repairable items and delineates their levels of removal and repair. The contractor will have proposed a recommended source coding for all parts/spares which the provisioning team will utilize in assigning uniform Source, Maintenance and Recoverability codes. These are used to identify the source of spares, repair parts, and items of support equipment and the levels of maintenance authorized to maintain, repair, overhaul or survey them.

As certain items of material are either in National or Navy supply system general stocks, or provisioned in sufficient depth for the simulator's weapon system, normally only trainer peculiar items are provisioned. The fact that there will be usage of these common items necessitates notification of the Inventory Control Point (ICP) in order that system stocks can be augmented if necessary. It is also necessary to establish the simulator custodian as a bonafide requisitioning authority so the ICPs will honor the custodian's requests for material. This is accomplished by either having ICP representatives at the provisioning conference or having the PSICP advise them via a Supply Support Notification. Stock augmentation will take place as a result of this notification or through increased usage when the simulator is operational.

Allowance lists may contain all categories: trainer-peculiar, aircraft-common, or general supply stock. All of these items will be initially procured with AM funds. Replenishment and repair of these items will be paid for using operating funds budgeted for this purpose by the custodian, ICP, or technical manager as appropriate.

5.3.3 Facilities

Early in the planning stages, facility requirements are analyzed by the AM with the assistance of the prospective custodian and the host station command. The broad requirements are then reviewed in accordance with the provisions of OPNAVINST 11010.1F to determine if the additional tasks being levied upon the commander of the station who will receive the device can be performed using existing facilities. If it is determined that existing facilities are not adequate, the Commanding Officer of the station scheduled to receive the simulator, in conjunction with the Naval Facilities Engineering Field Division (EFD), will prepare the documentation prescribed in NAVFACINST 11010.32C to include a requirement in the Navy Construction Program. This documentation is forwarded for comment through superiors in the chain of command to the CNO for review, approval, and submission to higher authority for final approval. The Naval

Facilities Engineering Command (NAVFAC), serving as technical advisor to the CNO, will ensure that standards and criteria are realistic and in consonance with user requirements, and that the proposed project is consistent with the existing station master plan.

OPNAVINST 11010.20C details guidelines, procedures and authorities for obtaining construction project approval. Projects costing in excess of $75,000 are classed as Military Construction (MCON), and those costing less are classed as Minor Construction (O&MN). MCON funding requests follow normal budgetary routing to the Congress for approval unless the projects qualify as Emergency Construction by reason of urgency or economy as defined in OPNAVINST 11010.20C. Emergency Construction projects may be approved at levels lower than Congress. Those costing in excess of $300,000 require approval by the Assistant Secretary of Defense (Installations and Logistics), notification of appropriate Congressional Committees, and reprogramming approval by the Office of Management and Budget. Emergency MCON costing between $100,000 and $300,000 may be approved by the Assistant Secretary of Defense (Installation and Logistics) and those less than $100,000 by the Assistant Secretary of Navy (Installations and Logistics). Minor Construction projects may be approved by the Major Claimant and funded from Real Property Maintenance and Repair O&MN funds.

When the military construction plan is approved and funds have been identified for the project, NAVFAC, which is responsible for accomplishing the construction, will designate a contracting office. This is normally the EFD, who will contract for the prescribed facility and ensure that it is constructed consistent with plans, specifications, and site activation milestones. The base Public Works Officer, whose responsibility it will be to maintain the facility when accepted by the government, often takes part in the in-process construction inspection. He will generally be designated the Resident Officer in Charge of Construction for "Minor Construction" projects costing $25K or less.

As part of the device contractual requirements, the contractor provides a Facilities Requirements Document (FRD) which includes a description of the facilities required to house the simulator. The FRD also describes all associated interfacing support and test equipment and spares, as well as provisions for adequate training and maintenance space. It contains information on dimensions, utility requirements, and environmental control features.

The FRD is evaluated by the user and support and technical organizations, and changes are made to the previously defined facility plans to provide for accomplishment of operational and support functions within the constraints of

established government standards. Considerations normally include habitability, briefing/debriefing spaces, accessibility, storage/maintenance areas, etc. The changes made as a result of the FRD review are normally minor and have little impact on cost, (e.g., an interior separating wall may need to be moved, extra electrical outlets may be required or some such incidental modification).

The Beneficial Occupancy Date (BOD) is a time when the government may occupy the facility even though it may not be fully complete. Simulator installation may be accomplished at this time, normally two to three months prior to the site activation date. The entire process may require up to four years, of which half is devoted to pre-construction planning and contracting and half to construction.

5.4 Testing and Acceptance

During device production the contractor is required to develop test procedures adequate to demonstrate acceptable compliance with each requirement of the specification. The test procedures are submitted to the AM in a Trainer Test Procedures Report about four months prior to completion of device production. After the procedures are approved by the AM, they are used in all subsequent testing to determine device acceptability.

5.4.1 In-Plant Testing

Prior to formal government testing, the contractor performs complete functional tests in accordance with the approved Test Procedures Report. The tests are witnessed and certified by the Contract Administration Officer (CAO). Any deficiencies found are corrected, after which the CAO notifies the AM that the device is ready for government in-plant testing.

The contract specifies the time allowed the AM for in-plant and final testing on-site. Time varies with device complexity from one to six weeks in-plant, with less time on-site because of less comprehensive testing. Testing time allowed excludes any time required by the contractor to correct deficiencies found during testing.

The government inspection team, which includes the FPT, conducts all tests in the Test Procedures Report and may perform any other tests deemed necessary to establish readiness of the device for delivery. In addition, tests for fidelity of simulation are conducted by test pilots and engineering personnel from the Naval Air Test Center (NATC). This testing was prompted by increasing complaints that "the device doesn't fly like the airplane". In FY-76, NAVAIR tasked NATC to participate in testing the fidelity of simulators. (NATC participation in the procurement planning

process is also being definitized.) NATC testing extends beyond the subjective judgement of FPT pilots to objective engineering measurements of stick forces, roll rates and other aircraft performance characteristics. This type of analytic testing is extremely important if flight time/simulator time trade-offs are to be successfully accomplished. On completion of testing and correction of discrepancies, the AM authorizes shipment to the installation site.

5.4.2 On-Site Testing

While government acceptance of a simulator may take place at a contractor's plant, the contractor normally makes delivery to the designated location and installs the device in facilities provided by the government. The contractor then performs prescribed tests from the Trainer Test Procedures to assure facility/device installation compatibility and ensure no transit damage. Contractor testing is witnessed by a representative of the AM, normally a Field Engineering Representative (FER) from a Naval Education and Training Support Center (NETSC). If testing is satisfactory, the FER notifies the AM that the device is ready for final acceptance testing.

The government inspection team, again including the FPT, performs abbreviated tests from the Trainer Test Procedures. On-site testing is primarily to ascertain that the device continues to perform as it did prior to shipment.

Reliability testing commences immediately following successful completion of on-site testing, including contractor correction of any deficiencies. Reliability testing is in accordance with a previously approved Trainer Reliability Test and Demonstration Plan.

5.4.3 Acceptance

If on-site and reliability testing are satisfactory, the device is accepted by a representative of the AM by signing a DD-250. There are occasions when testing reveals discrepancies that cannot be corrected immediately. If those discrepancies do not unduly degrade device training capability, the FPT will recommend acceptance pending correction of discrepancies. A plan for correction of discrepancies is agreed between the AM and the contractor and, with concurrence of the FPT, the Type Commander may recommend device acceptance. Discrepancies are corrected during the Interim Support Period.

5.5 Interim Support Period

The Interim Support Period commences immediately on acceptance of the device and normally continues for a period of one year. During this period the device is used for training of Navy personnel, but maintenance and support of the device remains the responsbility of the contractor. Maintenance is performed by the contractor or Navy personnel under guidance of contractor support personnel.

About five months into the Interim Support Period, the contractor conducts a Maintainability Demonstration in accordance with a previously approved Maintainability Program. The demonstration lasts about two months. Responsibility for correction of maintainability deficiencies rests with the device contractor.

5.5.1 Personnel Support

At the conclusion of a formal classroom training period, Navy personnel will phase into complete simulator support responsibility. This involves a period of On-the-Job Training (OJT), during which the Navy personnel learn the tasks from Contractor Engineering and Technical Services (CETS) Representatives. They subsequently assume the preventive maintenance tasks, followed by transition to the corrective maintenance tasks, including troubleshooting.

The CETS Representatives continue to function in the maintenance role on an as-requested basis and Navy manning level estimates are validated. Similar phasing techniques are utilized for operator personnel.

5.5.2 Material Support

The parts listed in the Interim Repair Parts List (IRPL), which was developed during the production phase, are delivered prior to, and utilized during the interim support period to maintain the simulator. In the event the parts are not adequate to the task, the contractor provides or repairs parts as necessary. Usage data from this period is utilized to refine provisioning data for subsequent Navy parts provisioning action. During this period, the determination is made as to whether or not the supportability and maintainability of the simulator is consistent with the specification and contractor projections. Validation of the various software deliverables, such as computer programs, publications, engineering drawings, and so forth, is also performed.

Any discrepancies which arise during this period which can be shown to be departures from specification requirements are resolved by the contractor under the "inherent defects" clause of the contract.

When all government/contractor disputes have been reconciled and corrective action completed, final payment is made to the contractor, and the device is accepted into the Navy inventory for operation and support.

5.6 References

OPNAVINST	1551.7A	Fleet Participation in Development, Acquisition and Acceptance of Major Aviation Operational Training Devices
NAVMATINST	4000.15A	Department of the Navy Data Management Program
NAVAIRINST	4200.5A	Policy and Procedures Governing the Determination of GFE versus CFE in the Procurement of Naval Air Systems Command Material
NAVAIRINST	4200.7A	Correspondence and Oral Communication with Contractors, Contractors' Representatives, and Field Contract Administrators concerning NAVAIR Contractual Matters
NAVAIRINST	4200.14A	Procurement of Data and Specific Acquisition of Unlimited Right in Technical Data
NAVMATINST	4330.29A	Department of Defense Plant Cognizance Program
SECNAVINST	5000.1	System Acquisition in the Department of the Navy
CNETINST/ NAVMATINST	5450.8/ 5450.28	Additional Duty Functions of CONTEC to CNM and Relationships between NTEC and System Commanders, Project Managers and Others
OPNAVINST	11010.1F	Shore Installations and Facilities Planning and Programming
OPNAVINST	11010.20C	Facility Projects Manual
NAVFACINST	11010.32C	Military Construction Program Projects; preparation of supporting documents for

5.6 References (Continued)

AR-30A		ILS Program Requirements for Aeronautical Systems and Equipment
ASPR		Armed Forces Procurement Directives
DOD	TD-3	Authorized Data List
NTEC	422-1	Authorized Data List
NPD		Navy Procurement Directives

CHAPTER 6

OPERATIONS AND SUPPORT

6.0 Introduction

A decision to buy a new weapon system commits the Navy to support the system over its lifetime. The cost of this support may, for major systems, exceed the original acquisition cost. This observation is also valid for aviation simulators. The utilization of simulators to substitute for flight time and to maintain aircrew readiness at a high level, coupled with the ever increasing support costs, makes it imperative that an effective management system be employed in the operation and support of aviation training devices.

Aviation training devices are assigned to training agencies for operation and maintenance. Navy simulators used in support of Fleet Readiness Squadrons and operational Fleet squadrons are assigned to an Air Type Commander, under a Fleet Commander in Chief. The responsibility is assigned in turn to a Fleet Aviation Specialized Operational Training Group (FASOTRAGRU) which assigns custody to subordinate detachments located at fleet Naval Air Stations. Training Command simulators are assigned to the Chief of Naval Air Training under the Chief of Naval Education and Training. The responsibility is assigned in turn to a COMTRAWING and

to a Naval Air Station, as custodian. Naval Air Reserve simulators are assigned to the Chief of Naval Reserve who assigns custody to a Naval Air Reserve Unit (NARU) or Naval Air Station. Marine Corps aviation training devices are assigned under CMC to a Commander, Marine Corps Air Bases. He in turn assigns responsibility to a Marine Corps Air Station and to a Marine Corps Training Support Center as reporting custodian. Additional responsibilities for providing maintenance and material support for these simulators are assigned to the Naval Material Command and the Naval Education and Training Command.

Operation and support of simulators have been conducted using procedures that are different from those used in the support of aircraft. The Naval Training Equipment Center and the Naval Education and Training Support Command have been assigned responsibilities for simulator support that, for a weapons system, are assigned to the Naval Air Systems Command and to Fleet Commanders. In addition, the readiness reporting system for weapon systems has not been fully implemented for training devices. Some problem areas in the present support system have been identified which are in the process of being corrected.

The shortcomings of the simulator support program are being remedied on an evolutionary, task by task basis as

contrasted with a complete restructuring of the support system. Emphasis is being placed on incorporating system changes which have proven effective for aircraft support. Certain of these changes were mentioned in the previous sections of this report. The following sections portray the existing system employed in operating and supporting aviation simulators. Where applicable, note is made of changes that are contemplated or being implemented.

6.1 Maintenance

Training device effectiveness can be seriously degraded by lack of efficient preventive and corrective maintenance. In recognition of the vital role of training devices in readiness, OPNAVINST 4790.2A directs that all features of the Naval Aviation Maintenance Program (NAMP) be applied to maintenance of all Cog "20" training devices assigned to Navy and Marine Corps activities in order to ensure that maintenance of training devices and aircraft is administered in the same manner.

6.1.1 Responsibility

The Chief of Naval Operations establishes policy for control and execution of training device maintenance programs. The Chief of Naval Material and Commander, Naval Air

Systems Command are responsible for technical direction and support of device maintenance activities.

Fleet Type Commanders, Chief of Naval Air Training (CNATRA), Commanders, Marine Corps Air Bases, and the Chief of Naval Reserve are responsible for implementation of maintenance programs by device custodians within their respective commands. Most major aviation training devices are in the custody of Fleet Aviation Specialized Operational Training Groups (FASOTRAGRU), Marine Corps Training Support Centers (TSC), Naval Air Stations assigned to CNATRA, and Naval Air Reserve Units. The device custodians are responsible for the administration and execution of maintenance programs for devices in their custody.

The Chief of Naval Education and Training Support (CNETS) provides technical assistance and limited maintenance services to device custodians through the Naval Education and Training Support Centers (NETSC) and Naval Training Equipment Center (NTEC). CNETS funds device custodians for purchase of consumable spares/repair parts and for logistic spport modifications and rework.

6.1.2 Maintenance Concept

Major training devices are system acquisitions which must be provided complete logistic support in accordance

with OPNAVINST 4100.3A and NAVMATINST 4000.20B. Acquisition Managers are charged with development of a maintenance concept which serves as the cornerstone for all remaining elements of the Integrated Logistic Support Plan. In its entirety, the support plan is designed so that the system can be operated satisfactorily in the prescribed environment, for a specified period and, once failed, can be restored to service within a reasonable time.

Although support plans must be individually tailored to the device, Acquisition Managers generally prescribe maintenance concepts with a view toward maintainability at the lowest feasible maintenance level. Stringent design requirements demand ease of access for maintenance and predominantly modular replacement of failed components. Reliability/maintainability features, integral test systems, and Planned Maintenance Systems (PMS) are designed to allow the training device to remain on site without resort to rework throughout the design life of the device.

6.1.3 Maintenance Personnel

Training devices are maintained at the organizational and intermediate level by Navy TRADEVMEN and/or civil service employees. Depot level maintenance is performed primarily under contract to civilian industry; however,

recent NAVAIR action has been taken to develop an in-house capability for performance of depot maintenance of device peculiar repairables at Naval Air Rework Facilities.

In accordance with CNO letter serial 852P59 of 7 Sep 1972, personnel manning levels for each device are developed by NTEC, and reviewed by CNO and the device custodian. Maintenance personnel requirements are stated for both Navy enlisted personnel and civil service employees because of differing availability factors which apply to the two personnel categories. Performance of military duties by military personnel accounts in large part for the difference in availability factors between military and civilian maintenance personnel. The factor for military personnel is .80; the factor for civilians is .83. Personnel allowances are established by CNO in response to requests submitted by device custodians through the appropriate chain of command.

Navy devices at East Coast activites, Reserve units and Training Command activities are maintained predominantly by TRADEVMEN. West Coast activities employ both TRADEVMEN and civil service employees, while the Marine Corps utilizes civil service employees exclusively.

6.1.3.1 Field Engineering Representatives

The NETSCs employ engineers who assist the custodian's maintenance personnel with problems that cannot be

resolved within available personnel and material resources. The function of Field Engineering Representatives (FER), as stated in the NETSC's mission statement, is "to provide assistance in the installation, specialized maintenance, logistic support and modification of training support material." Whenever practical, one or more FERs are assigned continuously at major device complexes to provide day-to-day advice and assistance with maintenance problems.

The FER assists in obtaining materials and improving documentation. He also participates in installation planning, monitors site preparation, conducts formal or on-the-job training when requested, coordinates rework requirements and arranges for contracting of device/component rework or overhaul. The FER occasionally incorporates minor device modifications. Long term association with training device maintenance programs and support organizations often enables the FER to obtain needed materials and services not readily available to custodian personnel.

6.1.4 Provision of Maintenance Capability for New Devices

Device procurement agents, normally NAVAIR or NTEC, provide all elements necessary to attain a Navy maintenance capability when contracting for a new training device. The Integrated Logistic Support Plan requires the contractor to

develop a maintenance plan, training courses, support equipment lists and repair parts lists. The contractor is further required to deliver training courses and equipment to the device custodian on delivery of the training device. In order to assure attainment of requisite maintenance expertise, contractor engineering personnel remain on-site throughout the Interim Support Period.

6.1.4.1 Maintenance Plan

The contractor-proposed, Navy-approved Maintenance Plan is accompanied by all technical publications, maintenance drawings and maintenance requirement cards necessary to accomplish organizational and intermediate maintenance. The Maintenance Plan distinguishes repair actions which can be accomplished locally as opposed to repairs to be done at depot level. The Plan also details corrective actions (e.g., check/test and component replacement) considered to be within the capability of local maintenance personnel. Maintenance plans are generally prepared in three parts. Part I summarizes those maintenance functions to be accomplished at the three levels, organizational, intermediate, and depot. Part II is a breakout of repairable items including Source, Maintenance and Recoverability (SM&R) codes assigned in accordance with NAVSUPINST 4423.14A and NAVAIRINST 4423.3.

The SM&R codes prescribe levels at which repair is to be accomplished for each item. Part III lists maintenance actions to be accomplished at each level and the support and test equipment required to perform those actions.

6.1.4.2 Training

TRADEVMEN are provided general training in the maintenance of training devices at Navy Class A and B schools, on-the-job training and through self-study. They generally receive additional training from a contractor, either at the plant or on-site after delivery, on new training devices and/or specific equipment included in new devices.

The device contractor is required to develop and submit training course outlines to the Acquisition Manager (AM) about six months before device delivery. The general nature of material to be covered (specified in NTEC Bulletin 40-1A) includes instruction in operation, trouble-shooting, fault-isolation, maintenance, and repair. The contractor also prepares textbooks, handout materials and other training aids for use during course presentation. All training course materials are retained by the device custodian for future training of additional maintenance personnel.

Operator/maintenance training courses are conducted as soon after device acceptance as practical. Course duration is normally about 16 weeks for maintenance personnel. During that period, the device is used for normal training and operator/maintenance training courses are conducted on a not-to-interfere basis.

Alternative means to provide initial training are sometimes employed after the first device is operational. When an additional device is procured for use at a new location, it may be cost effective to have Education Specialists or Field Engineering Representatives from the Naval Education and Training Support Centers conduct the training. This is especially effective for general training devices installed at many separate locations. Course materials from the first article procurement and NETSC personnel who are thoroughly familiar with device operation and maintenance are utilized to conduct this training rather than using contractor personnel.

A second alternative still under evaluation is an individualized instructional system entitled Technical Hands-on Training Systems (THOTS). This system is an authorized Data Item described in NTEC Bulletin 422-1. THOTS leads the student through learning and trouble-shooting problems in a logical manner through maximum use

of maintenance documentation. THOTS packets are prepared by the device contractor, if prescribed, and may be used in lieu of contractor-conducted training courses.

Custodians conduct continuing training but, because of personnel turnover or other reasons, may need retraining from time to time. The NETSCs conduct annual surveys to identify needed training and provide assistance in the form of training course planning, course design and course material development. Both the NETSCs and NTEC conduct some retraining courses, but contractor services may also be utilized if necessary.

6.1.4.3 Contractor Engineering and Technical Services (CETS)

Contractor Engineering and Technical Services (CETS) are provided to maintain the device and to train maintenance personnel during the Interim Support Period. Device and separately negotiated CETS contracts specify qualifications of the CETS representative. He is normally expected to be an engineering graduate totally familiar with the device design and fully qualified to operate and maintain the device. He must be capable of individual and unassisted effort in performance assessment, troubleshooting, and modification of the device. The CETS representative provides On-the-Job Training (OJT) to Navy technicians. He

encourages maximum participation of technicians in maintenance tasks to prepare them to provide complete maintenance of the device on completion of the Interim Support Period. In concert with custodian personnel and Field Engineering Representatives, the CETS representative validates documentation, updates drawings/publications as required, and assures availability of computer programs/tapes.

6.1.5 Normal Operating Procedures

Training devices are operated on flexible schedules as required to accommodate the student load. Major devices, particularly the Weapon Systems Trainers and Operational Flight Trainers, are usually scheduled for operation in two 8-hour shifts, five days a week. A third shift is set aside for trainer maintenance. Maintenance personnel must be available during operating shifts to perform unscheduled maintenance. Their function is to keep the trainer operating or to return it to operation as soon as possible following breakdown. Corrective actions normally consist of fault isolation, and removal and replacement of faulty components. Repair of components usually is performed during the scheduled maintenance shift. Maintenance actions included in the Planned Maintenance System (PMS) also are performed during that shift in order not to interrupt ongoing training utilization.

6.1.6 Normal Maintenance Procedures

Training device maintenance is conducted in accordance with the Naval Aviation Maintenance Program (NAMP) promulgated by OPNAVINST 4790.2A. Although device maintenance had previously been phased into the Maintenance and Material Management System (3-M), the complete provisions of 3-M were not totally adopted for training devices until 1 May 1976 when OPNAVINST 4790.2A was revised.

Device upkeep is a coordinated effort involving custodian personnel, FERs from the supporting NETSC and the Navy supply system. The coordinated maintenance equation in terms of men, money and material is shown in Figure 6-1. Each custodian tailors his organization and operating/maintenance procedures according to the number and talents of personnel assigned and the types of training devices to be maintained. As a result, custodian organizations and methods differ widely in order to achieve maximum effectiveness. Most custodians utilize work center concepts, where commonality of devices or components allow, but it is still often necessary to assign a maintenance crew to an individual device. The depth of maintenance performed also varies as a function of support and test equipment provided with the various devices. While all custodians perform organizational level maintenance and intermediate level work to

The Maintenance Equation

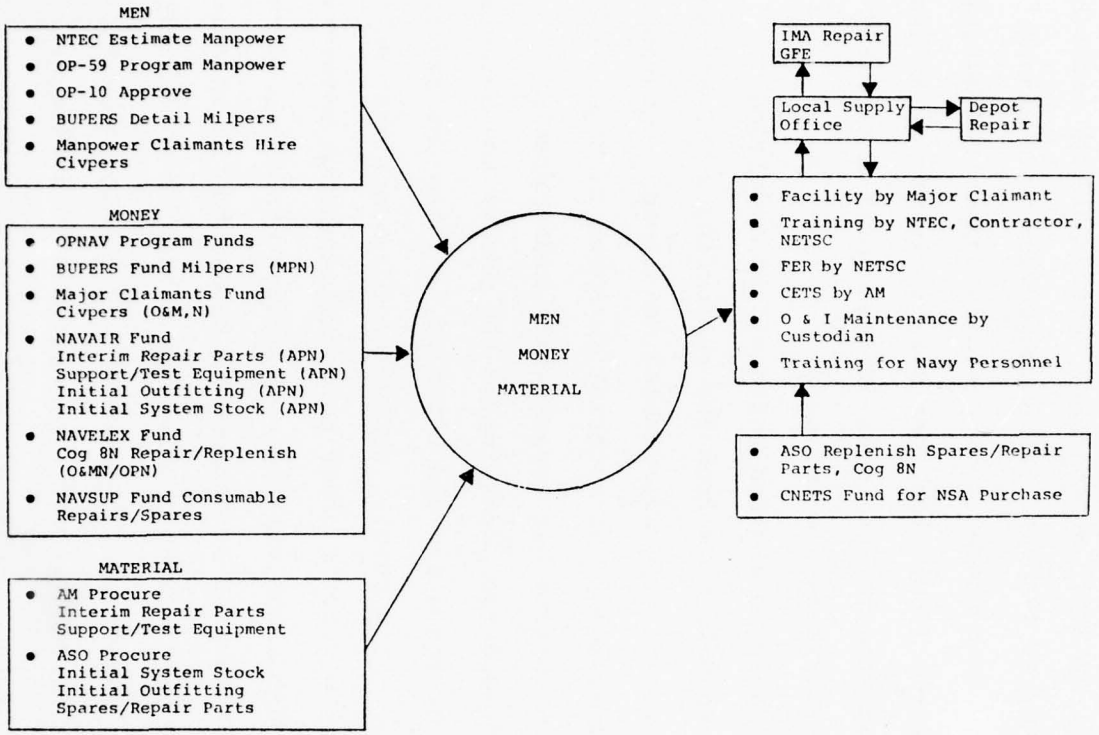

Figure 6-1

the extent practical, some perform maintenance actions which could be classed as depot level (e.g., electronic component repair).

The three levels of maintenance are defined in OPNAVINST 4790.2A and NAVMATINST 4700.4B. The definitions (which are summarized in succeeding paragraphs) are interpreted for training devices in NTECINST 4700.4.

6.1.6.1 Organizational Maintenance

Organizational maintenance consists of inspecting, servicing, lubrication, adjustment and replacement of parts, minor assemblies, and sub-assemblies. The device custodian has full responsibility for performing these tasks.

6.1.6.2 Intermediate Maintenance

Intermediate maintenance consists of calibration, repair or replacement of damaged or unserviceable parts, components or assemblies and emergency manufacture of unavailable parts.

Responsibility for intermediate maintenance is assigned to the custodian or designated maintenance activities directly supporting device custodians. Except for some preliminary experiments, there are no activities, other

than device custodians, designated to perform intermediate maintenance on equipment peculiar to training devices. As a consequence, custodian maintenance personnel perform intermediate maintenance to the extent possible with available test or bench facilities and personnel expertise. In the absence of required support equipment or personnel expertise, some intermediate level work is imposed on activities designated for depot maintenance. Aircraft common equipment is repaired by the host Air Station's Aircraft Intermediate Maintenance Activity (AIMA).

NTECINST 4700.4 recognizes that performance of intermediate maintenance is required of custodian personnel. That fact is also acknowledged in development of the Maintenance Plan and subsequent positioning of support and test equipment. Further, custodians are provided necessary technical data (i.e., engineering drawings, repair specifications) and training to enable performance of intermediate maintenance actions.

6.1.6.3 Depot Maintenance

Depot maintenance is performed on material requiring major overhaul or a complete rebuilding of parts, assemblies or sub-assemblies. It includes the manufacture of parts, modifications and reclamation. Depot maintenance

of training device equipments is performed under contract to civilian firms or by a Naval Air Rework Facility, whichever may be most advantageous. Designation of depot activities is a responsibility of NAVAIR Project Managers; however, this responsibility is delegated to training device Acquisition Managers when procuring training devices that are to be accepted in the Cognizance Symbol "2O" inventory.

6.1.7 Consumable Spares/Repair Parts

The range and depth of consumable spares/repair parts is determined through the provisioning process. Custodians are authorized consumable spares/repair parts necessary to perform both organizational and intermediate maintenance. Replenishment of custodian stock is accomplished through the requisitioning procedures of the local supply activity.

6.1.8 Repairable Items

Supply, repair and disposition of repairable items are governed by provisions of NAVMATINST 4400.14A. That directive applies to both categories of repairable items in training devices, i.e., aircraft common equipment (Cognizance Symbol "2R") and device peculiar repairable items (Cognizance Symbol "8N").

Repairable components are designated during development of the Maintenance Plan and subsequent provisioning process. Source, Maintenance and Recoverability (SM&R) coding, in accordance with NAVSUPINST 4423.14A, designates levels at which repairs may be accomplished. If items are repairable at organizational or intermediate levels, device custodians are provided documentation and support equipment necessary to accomplish repairs. If items are to be repaired at depot level, the Acquisition Manager determines and outfits the Designated Overhaul Point (DOP) accordingly.

Aviation Supply Office (ASO) promulgates a Master Repairables Item List (MRIL) to all training device custodians and associated supply activities. The MRIL contains level of repair codes and disposition instructions for the information of both maintenance and supply activities.

6.1.8.1 Training Device Peculiar Repairables

Repairable components unique to the training device are designated Cognizance Symbol "8N" and are controlled by the Aviation Supply Office (ASO). Cog "8N" repairables are repaired by custodian maintenance personnel to the extent possible and as authorized by the MRIL. If Cog "8N" repairables are not designated for repair by custodian personnel, they are turned in to a local supply

activity for disposition in accordance with the MRIL. Depot repair of Cog "8N" items is controlled by ASO which has continuing contract agreements with Designated Overhaul Points (DOP). Repairable items may be shipped directly to a DOP, contractor or Navy activity or, in the event of adequate replacement stock, shipped to an ASO collection point for future repair.

6.1.8.2 Aircraft Common Equipment

Aircraft common equipment may be furnished to the device contractor as Government Furnished Equipment (GFE) or acquired by the device contractor (Contractor Acquired Operational Equipment, (CAOE)).

Custodians have no repair capability for either GFE or CAOE; therefore, when repairs are required, the equipment is returned to the supply system for induction into the local Aircraft Intermediate Maintenance Activity (AIMA) or DOP, as appropriate. In this case, the training device must compete with operating aircraft for repair and parts priority. This frequently results in increased trainer down time.

Custodian personnel have indicated that repair or replacement of GFE is the greatest single contributing factor to reduced capability in trainers. Review of various

reports tends to affirm that the situation exists Navywide. In an effort to alleviate the device GFE/CAOE problem, the Commander Patrol Wings, U.S. Atlantic Fleet has established the policy that training devices have priority for components common to the aircraft and trainer, and the Commander, Naval Air Force, U.S. Atlantic Fleet issued a directive in June 1976 temporarily giving device custodians the highest priority among activities using Force Activity Designator III (FAD III). This gives custodians priority over all activities except deployed aircraft squadrons or those within 60 days of deployment.

6.1.9 Rework and Overhaul

With passage of time, training device systems deteriorate and some rework may be required. While minor training devices (e.g., projectors, etc.) may be reworked or overhauled according to schedules coordinated by the user and NETSC, major training devices, such as Operational Flight Trainers, are not scheduled for periodic rework or overhaul. Maintenance philosophy adopted by Naval Training Equipment Center contends that properly administered maintenance programs preclude the requirement for major overhaul. Device sub-systems, such as a motion base, may be reworked when operating experience so dictates.

Sub-systems may also be reworked incident to incorporation of logistic or trainer characteristics modifications. Most rework action is accomplished under management control of the FER division of the NETSC. Extensive rework activity is most often accomplished under contract with the simulator industry.

6.1.10 CASREPT Reporting

Training equipment malfunctions which significantly impair fleet training capability are reported to higher authority as a Casualty Report (CASREPT). OPNAVINST 10171.4A lists those training devices that must be reported in the CASREPT system.

CASREPTs are sent for action to the cognizant NETSC. The proper course of action is determined after assessment by a FER. The FER may effect corrective action or arrange for assistance by local contractors. If material is a problem, full resources of the NETSC are applied to expedite deliveries from the supply source. It is often necessary to contract for services with the device contractor.

CASREPT reports receive attention at all levels and all concerned commands mobilize to expedite remedial action. When the device is returned to operational status, the action

is reported via a Casualty Correction Report (CASCOR). The record on casualty correction is excellent.

6.2 Material and Support

Initial Navy material support for major aviation simulators commences at the end of the Interim Support Period. Initial stocks of repair parts and spares are positioned in quantities consistent with provisioning conference decisions. These stocks consist of both expense and investment items.

Expense material is defined in SECNAVINST 7040.6A as that which "is consumed in use either upon issue or shortly thereafter" and also "assemblies, spares and repair parts which, although repairable, (a) are not centrally managed recoverable items, and (b) are not designated as repairable for the reason that repair of unserviceable quantities of the items are not considered by the central inventory manager in requirements determinations." Investment material includes (a) major end items, (b) other end items which are centrally managed and reported on an individual basis, (c) items having a unit value of $1,000 or more. Generally, investment items are repairable at a depot level maintenance activity.

Material support is provided through normal Navy supply channels. Expense items are provided to the device

custodians from general supply stock, and investment items from the appropriate Inventory Control Point (ICP) stocks. Usage of expense items results in a charge against the O&MN operating funds provided the custodian, while investment items are provided, on an exchange basis, at no charge. Initial investment spares are funded by NAVAIR. Depot level repair as well as replenishment of investment items have been funded by NAVELEX in the past. It is planned to shift this funding responsibility to NAVAIR also and shift Program Support Inventory Control Point (PSICP) responsibility from SPCC to ASO.

Computer peripheral equipment support such as reader/printer maintenance is provided under commercial repair contracts executed by CNET. Device custodians may utilize supply assets not specifically bought or stocked for simulators after appropriate ICP Supply Support Agreements mentioned in paragraph 5.3.2.5 are executed.

6.2.1 Initial Stock

The range of items considered for initial supply stocking totals approximately 50,000 per major simulator. Not all items are procured as some of these are standard stock or aircraft common. It is expected that stock levels for those items not provisioned, which have been established

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AVIATION SIMULATION MASTER PLAN, PHASE I. VOLUME I.(U)
FEB 77 N V CAMPBELL, R H DAVIS, R E DUVALL N68335-76-C-3387
UNCLASSIFIED 1268-1 NAVAIR-AIR-413-6MPXYO-1 NL

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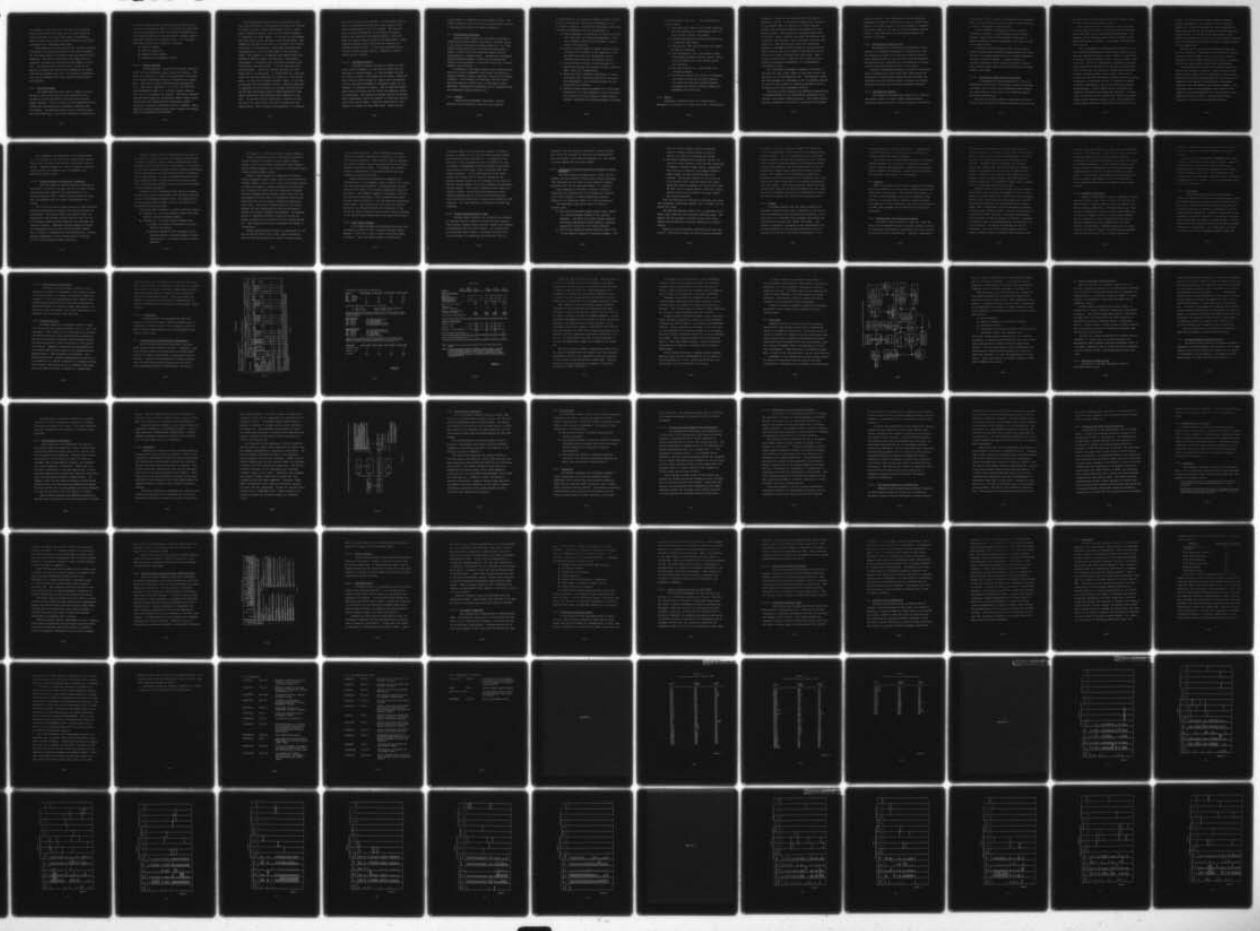

for support of many end items, can absorb the increased usage resulting from the operation of a small number of training devices, and that normal supply replenishment, based on usage, will result in proper stocking levels being established in a reasonably short time.

Items which are trainer peculiar are initially procured with NAVAIR APN funds and provided to the device custodian and the supply system in accordance with provisioning determinations. The initial outfitting or allowance for the custodian is based on an estimated 90 day support requirement. The supply system initial stock is based on the quantity of spares and repair parts expected to be needed from the Navy Support Date until full support responsibilities can be assumed by the supply system through routine replenishment.

6.2.2 Continuing Stock

The system which has been used to support training devices in the recent past is in the process of being revised to be more consistent with established aircraft support systems. This is a result of Navy command structure changes and increasing device inventory, complexity and utilization. The previous system, based on achieving maximum self-sufficiency in the device custodian's organization,

no longer appears viable and modifications are being instituted on an evolutionary basis. The actions now being taken include reassignment of PSICP and funding responsibilities with attendant changes to the maintenance concepts, material cognizance symbols, and allowance lists. It is expected that these actions will provide for improved:

- material support
- material usage data
- technical data feedback
- budgeting and management control

6.2.2.1 Expense Material

Expense material utilized by the device custodian falls into two categories, repair parts and supplies. That which is installed in a device when performing a preventive or corrective maintenance action is classified as a repair part. That which is used in performance of maintenance (i.e., hand tools, lubricants, rags, etc.) and administrative/housekeeping tasks (i.e., pencils, paper, cleaning gear, etc.) is classified as supplies. The device custodian receives O&MN funding for maintenance support (repair parts) through the CNET organization and operational support (supplies) through his operational chain of command. These items are ordered through normal supply channels and charged against the appropriate O&MN budget.

The funds obligated by the user are credited to the Navy Stock Fund which is administered by NAVSUP and utilized to replenish stocks through reprocurement action. Repair parts, classed as expense items, can be either consumable or designated for local repair. If an item is unserviceable and local repair is not feasible, it may be discarded. Consumables do not have to be turned in to supply when replacement parts are requisitioned. Repairable consumables are distinguished by a control code added to the cognizance symbol. For example, in accordance with NAVSUP Manual and SECNAVINST 7040.6A, symbol "1R" denotes an aeronautical photographic, or meteorological consumable or expense type item costing less than $1,000. It can be discarded when non-serviceable. Code "1RD" denotes the same type item except that it is repairable. It should also cost less than $1,000 but has been designated for repair at a level below depot. If this item is beyond economic repair, it can also be discarded and a replacement ordered. Material usage data is submitted by the custodian and recorded at both the ICP and the MSOD (Maintenance Support Office Department) from supply requisition and maintenance data submitted by the user. In the event that no usage data is reported to the ICP over a two year period, the item is purged from the supply system. When a change is incorporated in a simulator

that makes existing stock obsolete, a Design Change Notice (DCN) is promulgated advising that spares stocks either require modification or will be replaced. Mod kits and initial spares procurements are considered investment material and therefore are funded by NAVAIR. Costs for labor and expense items of material for maintenance or modification performed below depot level are expenses and therefore funded by CNET. In the event the modification involves aircraft common material, operational command funding may be utilized.

6.2.2.2 Investment Material

Investment material utilized in support of simulators by the custodian is classified as either trainer-peculiar or aircraft-common. An unserviceable unit must be turned in before a replacement may be issued. Unserviceable items are then screened at a depot level maintenance activity and either discarded if economical repair is not feasible, or inducted for repair. The ICP monitors system stock levels and usage data to ensure that adequate stocks are maintained. The appropriate NAVMAT activity is advised when replenishment levels are reached in order that procurement action can be taken. Repair of repairables is also funded by a SYSCOM utilizing O&MN funds. Repair may be

accomplished at a commercial or Navy depot activity. The Master Repairable Item List (MRIL) indicates which activity is designated to perform the depot maintenance.

6.3 Configuration Management

Aviation weapon systems are continually modified to remedy deficiencies, improve performance, increase safety, or to improve reliability and maintainability. All these changes create the need for configuration management, a system to record and report approved changes that are incorporated in a weapon system. Configuration management assists program managers in achieving and maintaining required item performance, operational efficiency, logistic support, and readiness.

In addition to the weapon system itself, modifications often also affect components, spare parts, publications, computer software, support equipment, training and training equipment. Many elements of integrated logistic support may be affected by a modification to the weapon system. Therefore, configuration management must be compatible with the Integrated Logistic Support Plan.

6.3.1 Concept

Configuration management identifies, controls, accounts for and audits the functional and physical

characteristics of all designated material items developed, produced, operated and supported by components of the Department of Defense. Configuration Management objectives, described in NAVMATINST 4130.1A, are designed to:

- Assist management in achieving, at the lowest total life cycle cost, the required performance, a realistic schedule, operational efficiency, logistic support and readiness
- Allow the maximum degree of design and development latitude, yet introduce, at the appropriate time, the degree and depth of configuration control necessary for production and logistic support
- Attain maximum efficiency in the management of engineering changes with respect to their necessity, cost, timing and implementation
- Obtain the optimum degree of uniformity in policy, procedures, data, forms and reports for configuration management at all interfaces within DOD and between DOD and industry
- Establish Configuration Management as a fundamental responsibility of DOD components in the acquisition and logistic life cycle support of those weapons systems, subsystems and related equipment designated

as Configuration Items (CI). This responsibility ensures that:

(1) specifications, drawings and related technical data are adequate for configuration needs and meeet overall program requirements

(2) verified configuration technical documentation is available when needed

(3) configuration item standardization and compatibility are maintained

(4) total performance, cost, and schedule impact of engineering change proposals (ECPs), deviations and waivers are known at the time of their approval

(5) ECPs are processed in a timely manner and evaluated promptly

(6) the current configuration status of configuration items is known and pertinent physical and functional interfaces between systems, equipments and related computer programs are documented and controlled.

6.3.2 Policy

Department of Defense policy for Configuration Management is published in a joint regulation, "Configuration

Management," which has been promulgated to the Navy by NAVMATINST 4130.1A. This regulation states that configuration management shall be applied to all major defense systems, other designated systems and selected end item/prime equipment. This application includes systems such as aircraft, ships, missiles, electronic installations and facilities; and equipment, such as vehicles, artillery and radar sets. The selection of items to be included is basically a management decision based on the government's need to control the item's inherent characteristics or to control that item's interface with other items. When a decision is made that an item such as a training device requires configuration management, it is designated a Configuration Item.

The configuration management process is tailored to the quantity, size, scope, stage of life cycle, nature and complexity of the Configuration Item. Configuration management requirements are applicable to all CIs whether procured by contract from industry or through an agreement with an in-house Navy or other government activity.

The Chief of Naval Material has delegated responsibility to COMNAVAIRSYSCOM for the configuration management of all material items under NAVAIR cognizance. This responsibility has been assigned to the Director, Configuration Management

Office (AIR-01A6). The responsibility for Configuration Management of specific configuration items is further delegated to the system manager or project manager or coordinator of that item; in the case of aviation training devices, AIR-413. The focal point for configuration matters in AIR-413 is AIR-4135.

6.3.3 Configuration Identification

The objective of establishing configuration identification for equipments designated as configuration items is to maintain records of the approved technical description, beginning with its initial acquisition configuration and continuing with documentation and recording of incorporation of approved changes during its life cycle.

Cognizant NAVAIRSYSCOM managers involved in the management of configuration items ensure that requirements for maintenance of configuration identification integrity are achieved during all program actions including new procurement contracts and item follow-on procurement contracts.

6.3.4 Configuration Control

The purpose of Configuration Control is to identify the overall impact of weapon system change proposals, deviations and waivers and to assure systematic evaluation,

coordination, timely approval or disapproval and incorporation of approved changes following formal establishment of an item's configuration identification.

Project managers, coordinators and all affected functional divisions, including weapon system training managers, participate in the systematic evaluation of change proposals to assure assessment of the impact of the total weapon system.

Engineering Change Proposals (ECPs) include weapon system hardware and/or software changes proposed for incorporation in a weapon system and/or its related equipments including training equipment. Change proposals, as initially submitted, can be weapon system ECPs, Trainer ECPs, software ECPs, Rapid Action Minor Engineering Changes (RAMEC), and others.

6.3.4.1 Engineering Change Proposal Processing

An engineering change proposal (ECP) can be the documentation with which a contractor proposes an engineering change, and it can be the documentation which defines the total scope of an ECP prior to or following approval for change incorporation.

Requests for solicited ECPs are prepared by the cognizant Officer-in-Charge of design engineering in AIR-05 and

are coordinated with the respective Project Manager (PMA) or Aircraft Project Coordinator (APC).

Unsolicited ECPs can be submitted by any Navy field activity, and are prepared in accordance with MIL-STD-480. Unsolicited ECPs are not accepted from contractors. Any component of the fleet may submit ECPs to NAVAIR via the appropriate chain of command in accordance with OPNAVINST 4790.2 series.

ECPs are submitted to NAVAIRSYSCOM (AIR-01A64) who in turn records and distributes copies within NAVAIR no later than the following working day after receipt. Concurrently the Naval Training Equipment Center (N-415) receives a copy of the ECP. The ECP is subjected to engineering and software evaluation to determine training device applicability, cost and lead time and becomes an agenda item at the NTEC Training Equipment Change Control Board (TECCB) and is entered into the NTEC configuration status accounting system. If approved at the TECCB, the ECP is forwarded to NAVAIR (AIR-4135) and becomes a part of the AIR-413 preliminary review package. Initial NAVAIR review, evaluation and decisions are made by the appropriate PMA/PC or, if applicable, the AIR-05 project manager shall contact the appropriate AIR-04 logistics manager for the item affected to enable prompt preliminary evaluation of the merits of the

change. If the engineering change proposal indicates trainer applicability, the cognizant AIR-413 training manager will review the proposal for initial approval or disapproval and monitor the progress of the NTEC technical review process. If the ECP is not acceptable it will either be disapproved in writing or an ECP revision requested from the originator within seven (7) days of NAVAIR receipt of the original ECP.

When the ECP is found to be acceptable by this preliminary evaluation, the PMA/PC or AIR-05 Division Director concerned, when no PMA/PC exists, will issue a Decision Memorandum to all managers who must take action to prepare the ECP for Change Control Board (CCB) consideration.

Detailed processing of the ECP is begun in AIR-04 as soon as the decision is received. Actual receipt of the formal Decision Memo itself is subsequent to this action. Detailed ECP processing establishes the AIR-04 position in summarizing the impact and requirements of milestone schedules, cost and fundings, and logistics support. The cognizant AIR-413 training manager also summarizes the impact of change implementation and incorporation in the respective training devices. This position is then forwarded to AIR-05 prior to scheduled CCB date.

AIR-05 initiates a detailed engineering review which is a continuation of AIR-04 staffing. Once the total weapon system impact has been documented, a CCB change request is prepared. Copies of the change request are forwarded to all concerned managers where impact is noted on the change request. When completed, the ECP is returned to AIR-05 for final review and signature.

The AIR-01A64 CCB secretariat logs in the change request package and assigns a CCB agenda number to the request. Reproduced hard copies of the ECP are forwarded to all voting CCB members and technical areas affected.

Upon receipt of the completed Change Control Board change request package, the cognizant managers, coordinators and/or division directors conduct pre-CCB meetings (Mini-Boards). These mini-boards are normally held within five days of the scheduled Change Control Board. The purpose of the mini-board is to resolve funding, schedule and production/retrofit problems and to signify concurrence with the ECP package by signing the request form.

Each ECP is considered by the CCB as scheduled by the Decision Memorandum. If the ECP is approved, action agencies indicated in the implementation schedule are thereby directed by the CCB chairman to implement the ECP

in accordance with the approved schedule and the formal Technical Directive which is subsequently published.

If any voting member of the CCB casts a "No" vote, the ECP is disapproved and a letter of ECP disapproval is written advising the ECP originator of that fact.

6.3.4.2 Rapid Action Minor Engineering Changes

The Rapid Action Minor Engineering Change (RAMEC) program, promulgated by NAVAIRINST 5215.10, is designed to provide expeditious action on minor engineering changes. A RAMEC often affects aviation maintenance trainers and occasionally has applicability to operator trainers. Automatic Test Equipment (ATE) and all ATE supported avionics and associated PGSE Test Program Sets are excluded from this program.

Operating activities, naval air rework facilities and cognizant field activities initiate processing of a RAMEC by prototyping one item in accordance with OPNAVINST 4790.2A (Vol. II, Chapter 7) and if successful, initiating a message-type technical directive to be further processed by the sponsoring controlling custodian. This custodian will determine need for verification and direct accomplishment of the proposed RAMEC prior to affecting coordination with other affected controlling custodians and final submission to NAVAIR.

Upon completion of coordination, the proposed RAMEC will be presented to the appropriate NAVAIR change control board within 30 days of the receipt of the final draft in NAVAIR. Approved changes are issued as numbered technical directives and are accounted for in accordance with NAVAIRINST 13050.3 series.

6.3.4.3 Trainer Software Configuration Management

With the advent of digital computer technology in simulators, the ability has been achieved to change trainer configuration and capability by modifications to the computer programs alone. Weapon system hardware and software configuations must be managed simultaneously as a system.

The F-14 was the first weapon system for which dedicated software configuration management for training devices was established. The Pacific Missile Test Center (PMTC) was designated as the Software Support Activity (SSA) for the F-14A Weapon System including automatic test equipment and operator trainers. Comparable software support activites and management plans for other aircraft weapon systems vary in degree of implementation and effectiveness. Trainer software management is being accomplished by individual AIR-413 training managers where applicable.

Software support activity responsibility includes the full range of support functions for software configuration accounting, analysis, design, change implementation, documentation, tape verification and distribution. In addition, the SSA will respond to trouble reports, evaluate engineering change proposals and interface with activities responsible for trainer hardware. As the most advanced system of software management that currently exists for training equipment, the procedures relating to the F-14 will be described in the following paragraphs.

Changes to F-14A operational tapes and/or the weapon system are processed in accordance with procedures outlined in the F-14A Software Management Plan. The applicability of these weapon system changes to the F-14A trainers are identified during the process.

There are three categories of trainer software changes.

- Category TA: a trainer software change which also requires a trainer hardware change
- Category TB: a trainer software change which
  (1) affects functional configuration of performance of the trainer
  (2) requires changes to user documents such as operator manuals, training manuals or maintenance manuals. A TB does not affect trainer hardware.

- Category TC: all other trainer software changes.

Trainer configuration can be affected by changes to trainer hardware or software (trainer unique change), changes to the F-14A airborne operational tapes (weapon system software change), or by changes to the weapon system (weapon system hardware change).

Trainer unique changes are submitted to the Naval Training Equipment Center (NTEC) which in turn provides the software support activity with a copy of the change request to enable the impact on trainer software to be evaluated. For a Category TA change, NTEC will generate a hardware Training Equipment Change Proposal (TECP) while the Software Support Activity (SSA) is concurrently staffing and generating the trainer software engineering change proposal (ECP). The trainer hardware TECP and the trainer software ECP are consolidated by NTEC and forwarded to AIR-413 for review, evaluation and approval. An approved change is returned by AIR-413 to NTEC and the SSA for design, evaluation and verification of the integrated mod kit. Upon completion and final acceptance the change is incorporated.

Weapon system software changes are distributed to the SSA and NTEC by AIR-413 for trainer impact evaluation. When the SSA has determined the trainer software impact,

it is forwarded to NTEC. NTEC consolidates the change impact and technical approach and forwards it to AIR-413 for review and approval. When approved, AIR-413 forwards the trainer software impact evaluation to the SSA Software Control Review Board (SCRB). If approved, the software change is incorporated in accordance with the plan and schedule approved by the SCRB.

Weapon system change proposals are submitted to AIR-01A64 who in turn forwards a copy to AIR-413 for evaluation of trainer applicability. AIR-413 provides the SSA and NTEC with copies of the change proposal for concurrent evaluation. The combined response is returned to AIR-413 for review and concurrence. AIR-413 submits the trainer software impact evaluation to the SSA Software Configuration Review Board. Upon approval by this board, the software evaluation is forwarded to NAVAIR for inclusion in the AIR-04 ECP impact evaluation review prior to being presented to the NAVAIR Change Control Board for review and decision.

6.3.5 Field Change Requests

Field Change Requests are originated by device field custodians on NTEC form 4720 "Training Equipment Change Request." Form 4720 is sent to NTEC as the formal means of request. The field change request is technically

reviewed by NTEC and if preliminary approval is reached, becomes an agenda item for NTEC Training Equipment Change Control Board (TECCB) deliberation. If approved by the TECCB and if the incorporation cost is $5,000.00 or less, the change is implemented by NTEC and funded from AIR-413 dollars sent to NTEC under a Basic Continuing Task (BCT) funding agreement. If the TECCB approved field change request has a total cost in excess of $5,000.00, the approved change request must be forwarded to the cognizant AIR-413 training manager for further approval and subsequent AIR-413 funding. Only trainer characteristics changes are funded by NAVAIR. Reliability/maintainability change requests submitted by the field receive administrative action through the TECCB and if approved are funded by CNETS resources. All field changes are tracked by the NTEC CSA subsystem.

6.3.6 Trainer Change Proposals (TCPs)

Trainer change proposals are solicited from industry by cognizant AIR-413 managers to update training devices. TCPs normally include trainer peculiar changes, and multiple unincorporated ECPs and field changes. As a result TCPs are considered major changes. Following receipt of the change package, as prepared by the contractor, AIR-413

personnel with the technical assistance of NTEC engineers will review the proposal for approval and implementation. TCPs are tracked in the NTEC CSA subsystem in a like manner to weapon system ECPs and field changes.

6.3.7 Configuration Status Accounting of Operator Training Equipment

The Naval Training Equipment Center (NTEC) (N-415), Orlando, Florida provides a Configuration Status Accounting (CSA) Subsystem for all Naval Aviation Operator Training Equipment (OTE) in the Cognizance Symbol "20" inventory.

This subsystem is designed to provide a system of techniques and procedures for the recording and reporting of all data required to manage proposed and approved changes to all Cognizance Symbol "20" training equipment.

The subsystem is made up of three (3) files of relevant data:

- The Training Equipment Change Control Board (TECCB) file records proposed changes to the training equipment. The TECCB file output reports identify outstanding management actions required, including appropriate indices for file cross reference.
- The Training Equipment Change Directive (TECD) file records approved changes to training equipment. The

TECD file output reports identify management actions required including status reports as actions are taken to incorporate the changes

- The Weapon System/Training Equipment (WS/TE) file records training equipment which has been designated to support a specific weapon system. Appropriate data relating to baseline relationships between a weapon system and the training equipment are recorded. The primary function of the WS/TE file is to provide cross reference between the weapon system and training equipment for sorting the TECCB and TECD files by weapon system. WS/TE file output reports provide cross reference to weapon system and training equipment.

This CSA subsystem was designed to interface with other NTEC management information systems, the 3-M system, and the NAVAIR CSA system.

The NTEC CSA Subsystem Master File is comprised of the TECCB, TECD, WS/TE and the interfaces described above. The Master File was designed to provide routine file output reports and flexible data retrieval capability for special reports.

Operator training equipment items which have been procured by NAVAIR and are under the direct program management

of AIR-413, not in the Cognizance Symbol "20" Inventory, receive CSA management within AIR-413 by each Weapon System Training Manager. This is accomplished by the individual manager manually recording the configuration of the trainer. Prime contractor published summaries of Engineering Change Proposal (ECP Summaries) are sometimes used as an initial indication of Weapon System ECPs having trainer applicability. ECP summaries for in-production aircraft are published by the prime contractor on a quarterly basis with content and format prescribed in the Contract Data Requirements List (CDRL). Data Item Description (DID) UDI-E-21351 (Summary ECP) contains the detailed elements for this input. AIR-4134 is responsible for AIR-413 coordination of matters pertaining to trainer data inclusion in respective CDRL.

6.3.8 Summary

It becomes apparent that the NAVAIR Configuration Management program requires many interfaces, at all levels, involving substantial data recording and accounting, all of which must be in accordance with mandated instructions for quantitative and qualitative content and format. This process of systematic management of and accountability for the configuration of Naval weapons systems and training equipment must be given significant consideration in all

program management actions and decisions. Comprehensive records and reports of relevant data are required on a consistent basis and regular schedule.

The objectives of configuration management - to assist program managers, at all levels, in achieving and maintaining required item performance, operational efficiency, logistic support and readiness - demand this consideration and attention if the goal is to be attained.

6.4 Manpower

OPNAV Instruction 4490.2B states as policy that availability of equipment for training has a higher priority than operational installations. Availability of personnel to man that training equipment must also be afforded a high priority, as training device complexes require personnel with expertise in many operational and technical disciplines in order that equipment may be effectively utilized and maintained.

6.4.1 Determination of Staffing Requirements

CNO letter, serial 852P59 of 7 Sep 1976, tasks the Naval Training Equipment Center to develop staffing criteria and delineate total manpower requirements for major training devices procured for NAVAIRSYSCOM. Personnel requirements

are required to be submitted to CNO at three stages of trainer procurement, an interim report within 90 days after contract award, a final report six months prior to device delivery and a validation report one year after device delivery. CNETSINST 5450.9A implements the CNO task request and expands NTEC tasking to include development of manpower requirements for all devices, air/surface/sub-surface. Because of the need for early determination of manpower needs for budget purposes, the CNETS directive requires submission of a precontract report during preparation of the Military Characteristics (MC).

OPNAVINST 5300.3A explicitly points out that manpower requirements surfaced during the budget year can be satisfied only through compensatory reductions in other programs. Billets within authorized Navy end strength are allocated among approved programs when the Program Objective Memorandum (POM) is approved by CNO and subsequently subsumed by the Five Year Defense Program. CNO maintains no pool of unallocated billets; therefore, realignment of personnel within programs or from one program to another is necessary if personnel needs not programmed during the POM cycle are to be satisfied. If urgency of need does not justify realignment of billets within Major Claimant assets or between programs, mission assignments which generated the

personnel requirements must be delayed pending orderly programming in the POM cycle. There are, of course, some new mission assignments that not only justify personnel realignment but also justify appeals to Congress for overall end strength adjustment. In the ordinary situation, the mission sponsor is responsible for satisfying the unprogrammed personnel needs by realigning mission category assets. By identifying requirements during the POM cycle, prior to current year budget, an end strength increase can be considered rather than realignment within mission category.

6.4.2 Personnel Disciplines

Complex training devices contain instructor stations, operator stations, and student stations and each must be manned during a training problem involving exercise of all device training capabilities. Training devices are often used for instruction in partial mission tasks rather than to exercise a complete crew in a total mission problem. That is particularly true of Weapon System Trainers at training complexes not fully supported by Part Task Trainers. Nevertheless, manpower requirements are calculated on the basis of manning instructor/operator/student stations for exercise of total training capability.

Additionally, maintenance personnel must be available to correct discrepancies that may interrupt the training operation.

Personnel in the Navy Group IX TRADEVMAN (TD) rating perform most operation and maintenance tasks in support of training devices. The TD is trained in electronics, electromechanical applications, hydraulics, and computer hardware/software, inter alia. He is maintenance man, operator, part-time instructor, material control specialist and administrator of records. In an era of specialization, the TD is a generalist.

6.4.2.1 Instructors

Requirements for instructors are included in staffing documents delineating total manpower support needs. The staffing documents identify pilots for flight instruction, naval flight officers for tactical instruction and enlisted specialists to instruct in operation of aircrew sensor/tactical equipments. Normally, instructors are not assigned to the device custodian, as is the case for other personnel necessary to support training devices. Instead, each activity that conducts training in the device provides instructors as appropriate. It is CNO policy to assign instructors to the Fleet Readiness Squadron (FRS) when

devices are collocated with the FRS. Otherwise, instructors are assigned to the device custodian or to an operational command located at the station. While device instructor tasks are considered in developing manpower authorization documents, device instructor billets are not always discretely identified or discriminated from the more general instructor billet authorization. Most flight instructors are qualified to instruct in the training device as well as the aircraft which permits rotation of instructors, keeps them current in the aircraft and knowledgeable in flight training emphasis and techniques.

6.4.2.2 Supervisors

Enlisted supervisors are identifed to provide first line supervision of device operation and maintenance. It is desirable that supervisors be qualified both to operate and maintain devices under their cognizance. Supervisors of large training complexes are normally TDs at the E-9/E-8 level; an E-7 may be assigned to supervise smaller complexes.

6.4.2.3 Device Operators

Enlisted device operators are required for each operator position. They are required to be skilled in operation of the weapon system being simulated in order to

realistically set device operating conditions. These personnel often perform additional duty as instructors and maintenance men. Typically, operators are TRADEVMEN at the E-5/E-4 level.

6.4.2.4 Maintenance Personnel

Custodian maintenance men are responsible for all organizational and intermediate level repairs. Personnel must be available to perform normal tasks during a daily maintenance shift, and also for the 8 to 16 hour operating periods. Safety standards which require a minimum of two persons to perform on-line repairs add to total personnel requirements. Typically, assigned maintenance personnel are TDs at the E-6/E-5 level, except in the case of large maintenance organizations which also have apprentices at the E-4/E-3 level.

6.4.2.5 Material Control

Material control personnel are responsible for ordering, storing and issuing required material. They must be skilled in supply system operation. Normally, material control personnel are in the Aviation Storekeeper (AK) or Storekeeper (SK) rating. In small organizations it may be necessary for a TD to perform this additional duty.

6.4.2.6 Administration and Records

Personnel must be assigned to administer the Maintenance and Material Management (3-M) System and maintain other records. The number of personnel required is computed at 5% of the operator/maintenance manning level. Record-keeping personnel are in the Aviation Maintenance Administrativeman (AZ) rating in large organizations, but TDs may be utilized when the size of the organization, or workload, does not justify a man full time.

6.4.3 Staffing Criteria

Personnel needs are calculated for both an eight hour and sixteen hour operating period, for 5, 6, and 7 day work-weeks. This calculation is based upon all instructor and operator positions being manned during the operating periods and maintenance personnel being available during the operating period, as well as during an 8 hour maintenance period. Manpower calculations are also based upon the training device being located in an isolated training complex where no other personnel are available. This method provides for a discrete determination of billets to be transferred if a device is moved to an isolated location. These factors, which often result in manpower needs being overstated when the device is placed in a complex where

staffing exists, are considered by the CNO when final manpower authorizations are developed. As maintenance organizations operate on a work center pool concept where possible, assigned personnel support a group of device types that simulate the same weapon system. This also reduces the proposed "isolated location" personnel requirements and requires consideration in arriving at final manpower authorizations.

6.4.3.1 Coordination

Manpower needs are coordinated by NTEC with prospective device custodians, CNETS and NAVAIR prior to submission of formal reports. As an example, Figure 6-2 shows staffing tables prepared for the S3A Weapon System Trainer, Device 2F92.

6.4.4 Procedures to Provide Personnel Requirements

Major training devices are delivered to the user about two years after award of contract. Personnel to man those devices should be on board about six months before delivery in order to participate in prescribed training programs. Personnel requirements are initially surfaced about 42 months before device delivery and are firmly established/approved about 24 months prior to delivery.

STAFFING TABLE

FUNCTION: TRAINING DEVICES FOR S3A WEAPON SYSTEM

SUBFUNCTION: Device No. 2F92 OFT/WST

SUBFUNCTION/SUBDIVISION: Instruction, Operation, Maintenance, Management and Support

BILLET TITLE	QUALITATIVE REQUIREMENTS					QUANTITATIVE PERSONNEL REQUIREMENTS 5 Day Week								QUANTITATIVE PERSONNEL REQUIREMENTS 6 Day Week				QUANTITATIVE PERSONNEL REQUIREMENTS 7 Day Week			
	OFFICER		CIVIL SERVICE	ENL.		1-8 Hr Training Shift				2-8 Hr Training Shift				2-8 Hr Training Shift				2-8 Hr Training Shift			
	Desi	Grd.	NOBC	Rate	NEC	Inst	Oper	Main	Mgmt/Adm Support	Inst	Oper	Main	Mgmt/Adm Support	Inst	Oper	Main	Mgmt/Adm Support	Inst	Oper	Main	Mgmt/Adm Support
(1)	(2)	(3)	(4)	(5)	(6)																
Operator/Maint Flt.			G/S 5/7	TD3	7523		.75	.25			1.50	.50			1.87	1.13			2.32	1.65	
Operator/Maint Tac.			G/S 5/7	TD3	7523		.75	1.25			1.50	1.50			1.88	2.12			2.33	2.67	
Maint/Oper Flt.			G/S 7/9	TD2	7523		.50	1.50			1.00	2.00			1.25	2.75			1.55	3.45	
Maint/Oper Tac.			G/S 7/9	TD2	7523		.50	1.50			1.00	2.00			1.25	2.75			1.55	3.45	
Maint/Shift Supv.			G/S 9/10	TD1	7523			3.00				4.00				4.00	1.00			4.25	1.75
PO in Charge/Trnr. Supv.			G/S 11	TDC	7523				1.00				1.00				1.00				1.00
Material Control/Records			G/S 5	AK					1.00				1.00				1.00				1.00
Instructor (Officer)																					
Pilot (Flt.)	1310	LT				2.0				3.0				4.0				5.0			
TACCO (Tactics)	1320	LT				2.0				3.0				4.0				5.0			
Instructor (Enlisted)																					
Sensor Operator				AW1	7811	2.0				3.0				4.0				5.0			
Support Staffing (Enlisted)																					
1-8 hr = 12, 2-8 hr = 17, 2-8 hr 6 days = 22, 2-8 hr 7 days = 27																					
Total Instructor Staffing																					
Officer: 1-8 hr = 4, 2-8 hr = 6, 2-8 hr 6 days = 8, 2-8 hr 7 days = 10																					
Enlisted: 1-8 hr = 2, 2-8 hr = 3, 2-8 hr 6 days = 4, 2-8 hr 7 days = 5																					
Totals						6.0	2.5	7.5	2.00	9.0	5.00	10.0	2.00	12.0	6.25	12.75	3.00	15.0	7.75	15.5	3.75

Duties Performed: Provide and maintain a training capability for the Trainer. Perform necessary maintenance and modifications; instruct and operate the device; prepare required reports and maintain logs; provide for the acquisition of repair parts; maintain liaison with user activities; provide supervision and training for assigned personnel; perform other tasks as required in fulfillment of training mission.

Figure 6-2

2F92 Personnel Requirements by Rate/Rating

Support		1-8 hr 5 days	2-8 hr 5 days	2-8 hr 6 days	2-8 hr 7 days
TDC	GS-11	1	1	1	1
TD1	GS-9/10	3	4	5	6
TD2	GS-7/9	4	6	8	10
TD3	GS-5/7	3	5	7	9
AK/TD2	GS-5	1	1	1	1
		12	17	22	27

Admin Crew work normal 8 hrs. per day, 5 day week.

1 - TDC - GS-11 CPO in Charge - Trainer Supervisor
1 - AK/TD2 - GS-5 Supply - Records, etc.

Maintenance/Operator Crew works shift work with a crew assigned to each operating shift plus a maintenance shift each day. Each shift to consist of the following:

Operating Shift

TD1 - GS-9/10	Maint/Operator/Supervisor
TD2 - GS-7/9	Flt. Maint/Operator
TD2 - GS-7/9	Tac Maint/Operator
TD3 - GS-5/7	Flt. Operator/Maint Trainee
TD3 - GS-5/7	Tac Operator/Maint Trainee

Maintenance Shift

TD1 - GS-9/10	Tac Maintenance/Supervisor
TD1 - GS-9/10	Flt. Maintenance/Supervisor
TD2 - GS-7/9	Tac Maintenance
TD2 - GS-7/9	Flt. Maintenance
TD3 - GS-5/7	Maintenance Trainee

Each shift will perform required record keeping, on job training and material functions, however, all procurement of parts and liaison with using activities will of necessity be the duty of the Admin. Crew.

Instructor	1-8 hr 5 days	2-8 hr 5 days	2-8 hr 6 days	2-8 hr 7 days
Officer - Pilot	2	3	4	5
Officer - NFO	2	3	4	5
Enlisted -	2	3	4	5
	6	9	12	15

Figure 6-2
Continued

Device 2F92

Position	Basic Position	Non Avail Factor	5 day 8 hours	X	5 day 16 hours	6 day 16 hours	7 day 16 hours
Support Requirements							
Operators	2	x 1.25 =	2.5	x 2 =	5.0	+25% 6.25 +24% =	7.75
Maintenancemen for Operating Shift	2	x 1.25 =	2.5	x 2 =	5.0	+25% 6.25 +24% =	7.75
Maintenancemen for Maintenance Shift	4	x 1.25 =	5.0	x 1 =	5.0	+25% 6.25 +24% =	7.75
Oper. and Maint. Total			10.0		15.0	18.75	23.25
Supervisor = 5% Oper. and Maint.			.5		.75	.93	1.17
Material Control/Records = 10% Oper. and Maint.			1.0		1.5	1.87	2.32
Total Support Requirements "S"			12.00		17.00	22.00	27.00
Instructor Requirements							
Officer - Pilot	1	x 1.25 =	2	x 2 =	3	+25% 4 +24% =	5
Officer - NFO	1	x 1.25 =	2	x 2 =	3	+25% 4 +24% =	5
Enlisged - (Sensor Operator)	1	x 1.25 =	2	x 2 =	3	+25% 4 +24% =	5
Total Instructor Requirements "I"			6		9	12	15
Total Staffing Requirements "S" + "I"			18		26	34	42

NOTE: Instructor billets have been rounded off to the next highest whole number.

NOTES: Only the personnel required for direct trainer staffing is included. A 20% non-available factor is considered to cover leave, liberty, training and normal military duties. This is computed by dividing by .80 or multiplying by 1.25. To compute civilian billets multiply basic requirement by 1.198 vice 1.25 for military or multiply military requirements by .96.

Figure 6-2
Continued

OPNAVINST 5300.3A establishes policy, assigns responsibilities for determination and programming of personnel requirements for new systems, and emphasizes the importance of timely action to ensure that such requirements are presented in the Planning, Programming, Budgeting cycle. CNO (OP-05) is the Program Sponsor for aviation training devices and is responsible for programming personnel needs.

NTEC submits its initial manpower report following completion of the device Military Characteristics (MC). The report is sent to OP-597 with copies to OP-596, OP-100, the device custodian and other interested commands. Initial personnel requirements are preliminary in nature, determined generally from experience with similar devices. OP-59 determines quantitative manpower requirements from alternatives presented in the NTEC report based on projected device location and CNO standards for projected utilization of the device. The requirements thus derived are programmed in the Navy Resources Model (NARM) and included in the annual POM.

CNO (OP-10) reviews manpower implications from an overall Navy end strength basis and ensures that total manpower requirements and costs are addressed in decision processes at such forums as the CNO Executive Board (CEB). Requirements for civilian personnel are reviewed in continuing liaison with OP-90P and OP-92P.

At appropriate decision points in the programming/ budgeting cycle, Major Manpower Claimants are provided guidance concerning anticipated end strength gains or losses, fiscal constraints and necessary program compensation in order that adjustments can be made accordingly.

Manpower requirements are updated by NTEC via an Interim Report submitted 90 days after awarding a device contract and a Final Report six months prior to device delivery. (The Interim Report is keyed to budget submission for the year in which personnel must be on board.)

Guided by Major Claimant direction, device custodians submit necessary requests for change in military Manpower Authorization (OPNAV 1000/4), in accordance with OPNAVINST 1000.16C. Letter requests for increases in civilian ceiling are submitted via the Major Claimant chain of command. The Chief of Naval Personnel budgets for Military Personnel, Navy (MPN). Major Claimants display military personnel costs in their O&MN budget exhibits. Civilian personnel requirements are budgeted in cognizant Major Claimants' O&MN budgets.

OP-10 reaches decisions on manpower change requests based on Major Claimant recommendations and on advice of the Program Sponsor, OP-59. OP-90P and OP-92P are consulted where civilian positions are involved.

If change requests are approved, OP-10 issues a revised Manpower Authorization, OPNAV 1000/2, for military personnel, or a letter approving increases in civilian personnel ceilings. The OPNAV 1000/2 is the authority for Chief of Naval Personnel to provide requisite military personnel. The approval letter is authority for Major Claimants to hire requisite civilian personnel.

Figure 6-3 shows the manpower identification/programming/detail cycle, beginning with identification of a training need.

6.5 Facilities

Simulator facilities are classed as real property whether built with Military Construction or O&MN funds, the point of departure being price. Facilities costing in excess of $75,000 are classed as Military Construction and those costing less are O&MN Minor Construction projects. Simulators which are bought with their own enclosure, such as a trailer or geodesic dome, are referred to as "turn-key" procurements. These enclosures are classed as equipment, or part of the training device, and are not facilities.

Subsequent to the determination by the Resident Officer in Charge of Construction that the facility has been constructed in accordance with the NAVFAC Field Engineering

Flow of Actions to Provide Training Device Manning

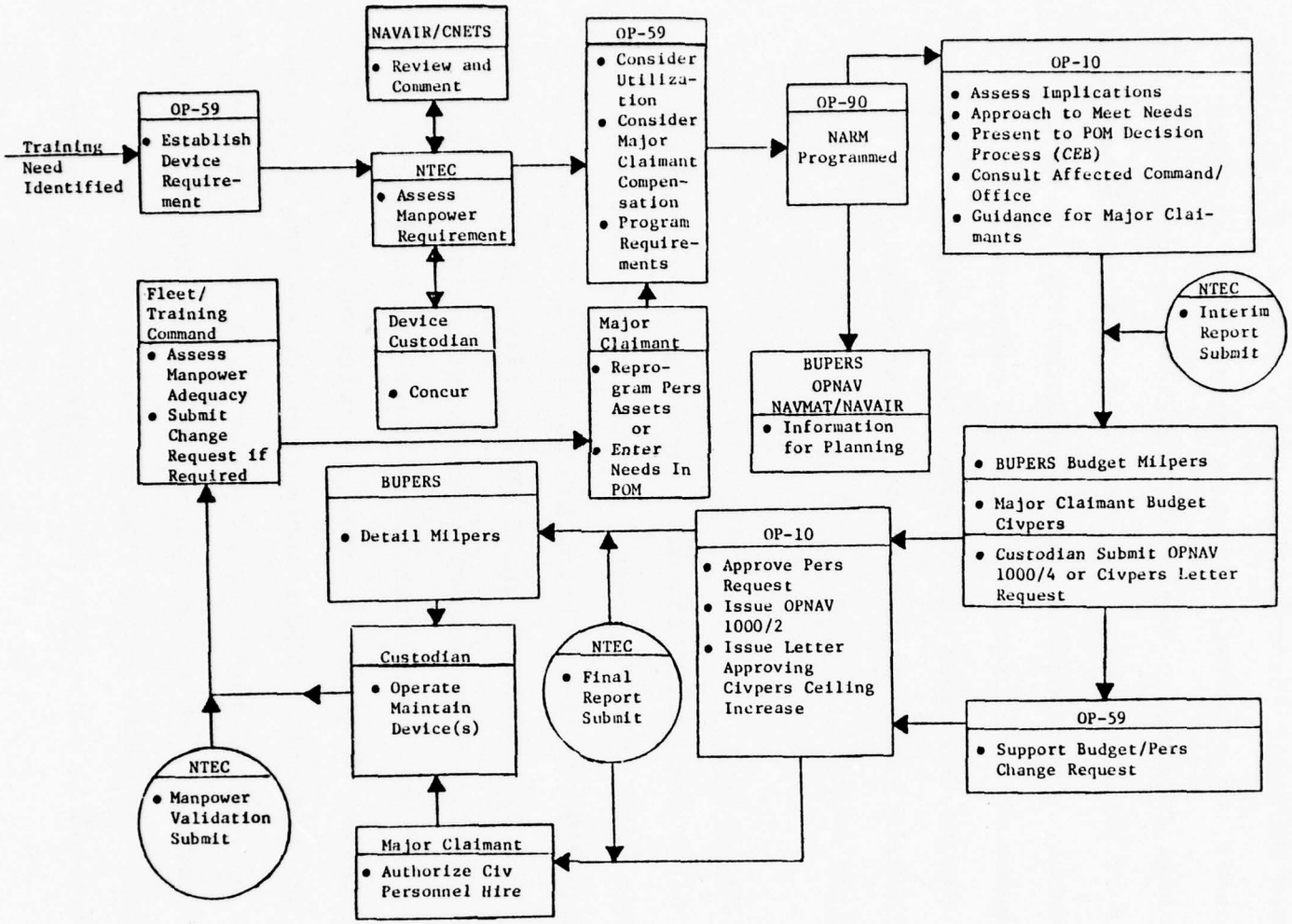

Figure 6-3

Division contract specifications, the building is turned over to the Station Commander. It is then the Station Commander's responsibility to maintain this building and installed utility networks throughout its useful life.

When occupied by the training activity, appropriate host-tenant agreements are executed which specify the responsibilities of both parties. These agreements vary; however, it generally evolves that the host is responsible for accomplishing and funding for those items more effectively handled on a consolidated basis for all base facilities such as:

- utility systems
- material condition of building and grounds
- janitorial services
- furnishing the building with plant account material (furniture, safes, file cabinets, etc.)

The tenant, besides being responsible for all installed equipments, is generally held responsible for those routine tasks requiring daily attention such as cleaning and security. Facility improvements, such as additional air conditioning or modifications necessary for installing additional equipment, are also the responsibility of the tenant. These improvements are normally funded by either CNET or NAVMAT organizations.

6.6 Quality Assurance and Revalidation

Quality assurance is the goal in specification of military standards for materials and manufacturing processes; it is the goal of reliability/maintainability programs and demonstrations; it is the goal sought by conduct of regular material and workmanship inspections throughout device production cycles.

Defense Contract Administration Service (DCAS) is responsible for quality assurance inspections during device production. The Defense Supply Agency Manual, DSAM 8200.1, provides policy and instructions for DCAS inspectors in performing the Quality Assurance Program in contractor plants. Product quality is among the many features checked during acceptance testing by the Acquisition Manager (AM) and the Fleet Project Team.

Delivery of a device manufactured to stringent quality standards is a first step; the Quality Assurance and Revalidation (QA&R) Program required by OPNAVINST 5220.9 is a necessary additional step to assure that quality performance of training devices is maintained during their life cycle.

6.6.1 Objective of QA&R Program

Objectives of the QA&R Program are stated in OPNAVINST 5220.9 series:

"The QA&R Program shall provide for a planned and systematic pattern of actions necessary to provide adequate confidence that training devices are continuing to perform as outlined in the original acceptance test, acceptance test criteria and authorized revisions thereto. . . . . Revalidation should assure continuing operation at the level of the prescribed technical criteria throughout the life cycle of each training device." Other objectives of the program are: to forecast requirements for overhaul and/or modernization; provide feedback data for improvement of logistics support; to improve maintenance and support techniques and procedures; to maintain a training device status record; to uphold the material reliability and integrity of training devices; and to improve safety of operations.

Detailed implementing directives have established a QA&R Program designed to meet all CNO objectives.

6.6.2 Program Management Responsibilities

The Chief of Naval Education and Training (CNET) is responsible for establishment and maintenance of the QA&R Program, both for his subordinate commands and in support of fleet/shore Training Agencies. For purposes of the QA&R Program, CNO identified Training Agencies as:

Commander in Chief, U.S. Atlantic Fleet, Commander in Chief, U.S. Pacific Fleet, Chiefs of Naval Surface and Air Reserves, Chief, Bureau of Medicine and Surgery, and Commandant of the Marine Corps.

The Training Agencies are responsible for participation in prosecuting an effective QA&R Program, budgeting for and providing senior inspectors and establishing inspection team qualification criteria and inspection schedules.

CNETINST 5220.1 tasked Chief of Naval Education and Training Support (CNETS) to manage the QA&R Program. CNETS is further tasked as follows:

a. Establish, implement and administer the QA&R Program

b. Budget for and provide resources and technical personnel required for implementation and operation of the QA&R Program

c. Coordinate an annual program review with the Training Agencies.

CNETSINST 5220.1 assigns active roles to the Naval Education and Training Support Centers (NETSC) and Naval Training Equipment Center (NTEC). Their roles will become evident as operating procedures of the QA&R Program are chronicled in the following sections.

6.6.3 Training Devices Included in QA&R Program

The goal is to bring all complex devices which are vital to training activities under QA&R Program. Initially, all devices subject to utilization reporting in accordance with OPNAVINST 10171.4A were included. Other devices have since been included on the basis of problem history, recommendations of training agents and personnel safety consideration. Inclusion of all devices valued in excess of $500,000 has been considered; however, time and manpower constraints do not permit. A listing of devices currently included in the program is shown in Appendix H.

6.6.4 QA&R Inspection Team

The QA&R inspection is a joint effort of the cognizant Training Agency, CNETS and the device custodian. The QA&R team consists of a representative of the Training Agency, who serves as the Senior Inspector, and a representative from the cognizant CNETS Field Activity (normally a NETSC) who serves as Chief Technical Advisor. In addition to the QA&R Inspection Team, the services of custodian operating and technical personnel, as well as those of the assigned Field Engineering Representative (FER), are required for operational and procedural tests.

Training Agencies have been authorized to delegate selection of Senior Inspectors to subordinate commands (not below the echelon four level). The Senior Inspector cannot be selected by the custodian of the device being inspected.

6.6.5 QA&R Inspection Scheduling

QA&R inspections are scheduled on the basis of utilization since last inspection, safety, trends in preventive and corrective maintenance, future service life, and availability for inspection. Training devices which have potential for hazarding the health or safety of trainees, such as physiological trainers, are scheduled for annual inspection, if practical. Where there are multiple installations of the same type device, a representative number may be selected for inspection when device usage and maintenance indicate a common history. For example, there are four identical devices located at NAS Corpus Christi; the 1976 inspection schedule promulgated by Chief of Naval Air Training permits the Senior Inspector to select one or more of the four devices at random.

Special QA&R inspections are sometimes conducted on devices being transferred or after reinstallation following

rework. Special inspections may also be performed on devices prior to extensive modification or prior to shipment to a contractor as Government Furnished Property.

Training agencies generally assign responsibility for inspection scheduling to subordinate commands. Fleet Air Type Commanders (COMNAVAIRLANT, COMNAVAIRPAC), CNAVRES, COMCABS, and CNATRA coordinate inspection schedules with the cognizant NETSC prior to promulgation.

6.6.6 Procedures

NTEC has been tasked to deliver suitable QA&R Test Criteria with all new device procurements. NTEC is also coordinating development of QA&R Test Criteria based upon the initial device performance standards and acceptance criteria for other devices presently in inventory. Test Criteria have been completed for some devices considered most vital to the training programs they support. Other devices are still being inspected according to the basic Performance Test Procedures (with minor modifications for approved changes) originally used in device acceptance testing.

The device custodian is responsible for preparing the device for inspection on the scheduled date and making operator and technical personnel available to assist the

QA&R Inspection Team. The Senior Inspector directs the inspection effort and is responsible for submission of the inspection report. The standard report format shown in Appendix J provides an insight into the areas included in the inspection. The Inspection Team conducts all tests and inspections necessary to ascertain with confidence the material condition of the device and its suitability to fulfill its training role.

On completion of the inspection, the Chief Technical Advisor prepares a report which identifies all defects and the command responsible for correction of each defect. The Senior Inspector forwards the report to the cognizant Training Agency via the device custodian. Copies are provided to CNETS, NTEC and the cognizant NETSC for correction of defects for which they may be responsible. The device custodian indicates in his endorsement the corrective action(s) taken or to be taken. Thereafter, the custodian must submit an update report every 60 days until his assigned actions have been completed. Similarly, CNETS, NETSC and NTEC must report status of corrective actions for which they are responsible. Figure 6-4, derived from a similar chart in CNETSINST 5220.1, shows routing of the inspection report and follow-up reports of corrective action.

Quality Assurance and Revalidation Program for Cognizance Symbol "20" Training Devices

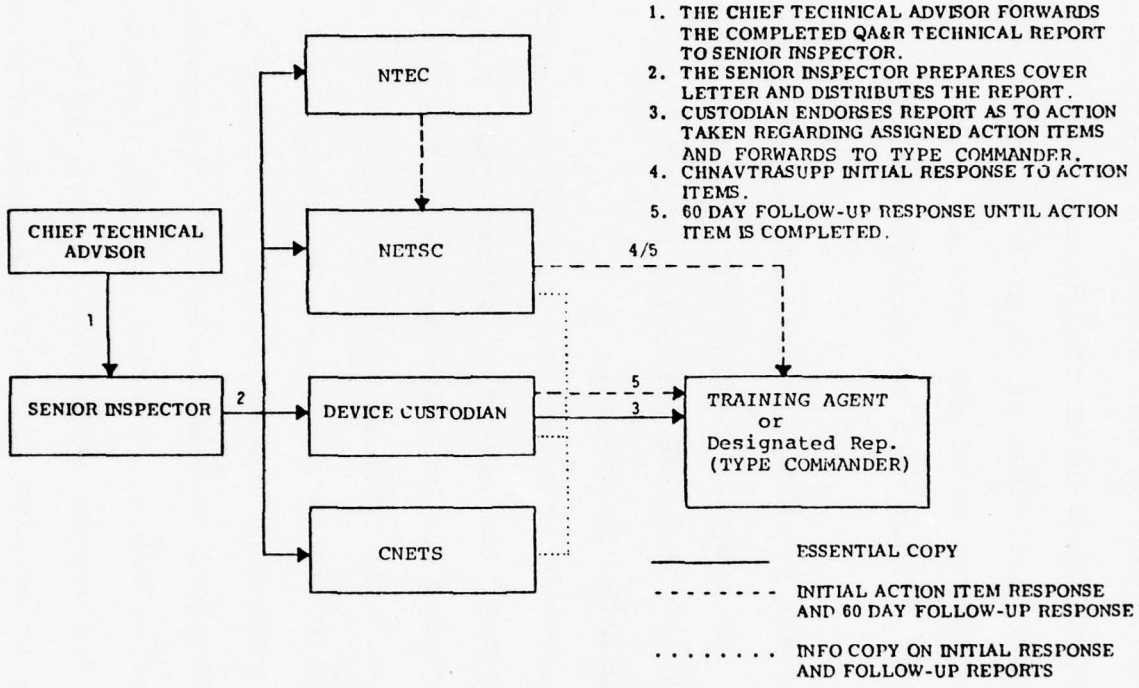

Figure 6-4

6.6.7 QA&R Automated Reporting

As the principal technical advisor to CNETS, NTEC maintains an automated data system to record and track all actions accomplished under the QA&R Program. The system uses computer facilities at Naval Training Center, Orlando. Since there are no terminals at other locations, all data input/report readout must be accomplished by the NTEC QA&R Manager.

The system provides a quarterly master listing of devices in the program, most recent and next scheduled inspection, and location/custodian of all devices in the program, as shown in Appendix I.

The system also maintains, by cognizant NETSC or training agency, the status of action items resulting from QA&R inspections and provides due dates for any outstanding action items. The readout includes actions due over a forthcoming two-month period, action items completed during the preceding two-months and delinquent action items. For items assigned to NTEC for action, the system is accurate and valuable. However, because input data from the NETSCs and device custodians are not always complete, the reports concerning action items assigned to those activities may sometimes be inaccurate.

6.7 Certification

The continuing success of Navy flight training programs integrating the use of aircraft and aviation training devices requires that a system of periodic functional evaluations of the devices be implemented. The purpose of the evaluations is to ensure that:

- The devices continue to perform satisfactorily (Quality Assurance)
- The devices continue to meet the prescribed technical acceptance criteria against which they (and modifications thereto) were originally validated (Revalidation)
- The devices are capable of providing effective training in the maneuvers/procedures/functions for which they were procured (Certification).

6.7.1 Background

The material readiness and performance aspects of device evaluations are covered by OPNAVINST 5220.9B. NAVMATINST 4130.1 defines Navy configuration management objectives for aircraft weapon systems and their related items, including training devices. The remaining evaluation program needed, that covering the certification of the training capabilities of flight simulators, is only now

being formalized. The approaches being taken in certification program development are discussed in the following paragraphs.

6.7.1.1 Congressional Requirements for Certification

The Congressional committees that considered the FY 1976 and FY 1977 appropriation bills urged the military services to increase the use of flight simulators in training programs and to certify the training devices. The Senate Appropriation Committee report on the Department of Defense Appropriation Bill, 1977, stated that, "... the Department of Defense should ... (c) integrate flight simulators into the training programs through the establishment of formal requirements and standards for the certification of flight training devices; and (d) award credit for simulator time in a manner similar to the recording of actual flight time on pilot records."

This interest is based in part on the current DOD expenditure of about $4 billion annually on fuel, of which half is used for aircraft flying hours. Significant fuel savings can be anticipated while maintaining crew combat readiness through the increased use of flight simulators that are certified as providing effective instruction.

6.7.1.2 Department of Defense Research Programs

In response to the direction provided by Congress, the Department of Defense has placed emphasis on research relating to the best ways to use flight simulators to develop and maintain aircrew proficiency and to increase combat readiness. Such research requires extensive studies involving controlled experiments on the transfer of training in simulators to proficiency in aircraft operation.

The military services integrate the use of simulators into flight training programs during the design of the syllabus for each course. Through a systematic "instructional system development" process, the tasks the trainee will perform in an operational unit are identified and translated into training objectives. The best method(s) and media for achieving these objectives are determined. Certain flight skills can be learned effectively through the use of simulators or a combination of instruction in simulators with in-flight instruction in the aircraft. The total training program then represents the optimum use of all instructional methods, including instruction in flight simulators and other training devices.

The course syllabi of flight training programs are reviewed continually for improvements, economies, and for confirmation that course objectives are being achieved.

The performance and capabilities of graduates are evaluated. As more capable flight simulators become available, training courses are restructured to take advantage of the new capabilities.

To ensure that simulators are used effectively, periodic evaluations are conducted to confirm that they are maintained, supported, and modified as required to derive maximum training value from them. Initial acceptance tests on the devices ensure that new equipment meets the design and performance specifications of the procurement contract. Periodically thereafter, the Navy performs Quality Assurance and Revalidation (QA&R) tests to verify that the training equipment continues to perform as designed and that it conforms to technical acceptance criteria and to modifications made on the aircraft that affect the simulated characteristics. The need exists, however, to extend the evaluation process to cover the use of the devices in an integrated program providing training of the desired quality--Certification.

6.7.1.3 Navy Actions Related to Certification

OPNAVINST 5220.9B established the Quality Assurance and Revalidation Program to provide for a planned and systematic pattern of action necessary to provide adequate

confidence that training devices are continuing to perform as prescribed by the original acceptance test criteria as amended by authorized revisions. The QA&R determinations on material condition and performance make up the essential first element in the evaluation of training devices. The development of a certification program will complete the evaluation by assessing the training value and capability of the devices. An OPNAV Instruction establishing a certification program complementing the QA&R program is currently under development.

A Navy policy that can be considered to be related to certification is set forth in OPNAVINST 3710.7H. Paragraph 1061 of that instruction addresses flying time substitution. More than 20 appropriately configured and instrumented flight simulators were examined to determine whether training time in the simulator could be substituted for a portion of the total annual minimum flying time requirements. As a result, Naval aviators who have access to the listed simulators are directed to use them "as practicable" in maintaining their basic flying skills. Aviators can substitute up to 50 hours of the total annual minimum flying time requirement (100 hours) with 50 hours of simulator time. This approval for substituting simulator time for

flying time constructively represents a certification to the effect that training in the simulator achieves general flight training objectives.

6.7.2 Developing the Basis for Certification

Certification is the determination that a training device is capable of providing effective training in the discipline for which it was acquired. This determination is made after a careful evaluation of the capability of the device to satisfy the training objectives of the syllabus in which the device is integrated. The evaluation, however, may place more or less stress on any of several bases for approval. One approach focuses on the fidelity of the simulation and the extent to which the device represents the operational equipment it replicates in form and function. A second approach emphasizes the achievement of training goals through the identification of tasks, the derivation of criterion objectives, and a listing of minimum operable subsystems for each mission phase. The Federal Aviation Administration follows a broad approach to aircraft simulator evaluation and approval which involves the application of general simulator operational evaluation procedures--standards and criteria--and the specification of performance

characteristics for the simulator. The Navy's certification process, clearly, will draw on all of the interrelated bases.

6.8 Training Device Utilization

Flight simulators and other training devices have always played a major role in integrated programs of training naval aviation personnel. Simulators have historically been used in formal training programs such as Undergraduate Pilot Training and Fleet Readiness Squadrons. Improved simulator technology, fiscal and other resource constraints, and the success of the airline industry's simulator programs have led to a significant increase in the scope of simulator utilization in the Navy.

6.8.1 Background

Added emphasis was placed on the use of simulation, when, in 1973 the General Accounting Office (GAO) published a report on military flight training which stated that "the Department of Defense should:

> Put a higher priority on developing improved simulation which can replace maximum amounts of flight training.
>
> Insure that development and use of adequate simulators are integral parts of acquisition or modification programs for sophisticated aircraft.

> Use simulators as much as possible to reach and maintain desired proficiency, including the establishment of simulator grading methods which will provide a more accurate evaluation of pilot proficiency."

In July of 1973, an Office of Management and Budget (OMB) staff study recommended increased emphasis on flight simulation and effectiveness of simulation as a means of decreasing aircraft operating and procurement costs. As a result of these actions, DOD, in September 1973, formed a study group composed of OMB, OSD, Navy, Air Force, and Army personnel to evaluate the potential of flight simulation and recommend greater use of simulation where appropriate. From that time to the present, significant emphasis has been placed at all levels of government on the use of simulation. The Navy has taken a number of actions to increase simulator utilization and to provide improved management of simulation programs.

6.8.2 Policy

Central management of the simulation program for naval aviation is focused under the Deputy Chief of Naval Operations (Air Warfare) in the cffice of the Director, Aviation Training and Manpower Requirements (OP-59). Specifically, the Head of Aviation Training Device Requirements (OP-596) has been assigned the responsibility for policy

matters that affect all facets of the aviation simulation program including those dealing with the utilization of flight simulators and major training devices.

The Navy policy on use of flight simulation has been stated in clear terms, "The Navy goal is to minimize training flight hours through use of simulation without degrading pilot proficiency or readiness." CNO message 261557Z of August 1975 restated that a target standard of 4000 hours per year utilization is in effect for weapon system trainers and operational flight trainers. Personnel manning and logistic support will be planned to support the 4000 hour standard. In addition, the flying hour program is being and will continue to be reduced consistent with planned full utilization of flight simulation.

6.8.3 Procedures

As indicated above, OP-59 sets planning standards for training device utilization and promulgates those planned utilization standards to the training agencies. Simulator utilization programs are thus directed from OPNAV staff, (CMC staff in the case of Marine Corps programs). The cognizant commander informs CNO (or CMC) when he considers a planning standard to be infeasible and recommends a program adjustment. Utilization programs are

adjusted as required by OP-59 and entered in appropriate planning documents. The adjusted programs are returned to the training agencies and also forwarded to AIR-413 where they are entered into documentation used for POM and Budget exhibits. Utilization programs of major aviation training devices are shown in Appendix F.

Actual device utilization depends on many factors such as trainer availability, mission essential equipment readiness, training requirements, manning levels, etc. OPNAVINST 10171.4 series established a reporting system for training devices to display utilization and other pertinent data. The reporting system was designed to provide sufficient data to enable management authorities to analyze availability and utilization patterns and trends.

The manual reporting system previously used to provide monthly reports to NTEC has been replaced by a computerized system, the Training Device Statistical Data System (TDSD). Although TDSD is a maintenance (3-M) reporting system, it provides sufficient data inputs to meet the reporting requirements of OPNAVINST 10171.4 series.

Monthly printout reports, (NTEC Report 10171-4), display actual device availability and utilization and other pertinent data by individual device and provide a convenient source of management information to all levels of command.

These reports are now generated from TDSD inputs which are provided to NTEC by tape monthly from the Maintenance Support Office Department (MSOD).

A copy of the format of this report, including explanations of the data entries, is shown in Figure 6-5. The TDSD system and a proposed follow-on system are described in the following paragraphs.

6.8.4 Training Device Statistical Data (TDSD) Reporting

TDSD is a system segment of the Naval Maintenance and Material Management (3-M) system designed to relate the effect of maintenance actions to device readiness and availability for utilization. For this reason, it has been included in the Utilization section instead of the Maintenance section of this document. All major training devices are subject to TDSD reporting in accordance with OPNAVINST 4790.2A and the detailed reporting procedures set forth in NTECINST 5442.1. Device custodians are responsible for data collection, submission of data to the appropriate local data services unit and for analysis of resultant TDSD reports. The TDSD reports are also provided for management information on device inventory, readiness status and utilization to reporting custodians, controlling custodians,

TRAINING DEVICE UTILIZATION AND APPLICATION REPORT

DEVICE NUMBER	DEVICE SERIAL NUMBER	DEVICE NAME	DEVICE LOCATION	TRAINING HOURS STANDARD	TRAINING HOURS SCHEDULED	HOURS OPERATIONALLY READY	HOURS DEVICE USED FOR TRAINING	% OF TNG HRS STANDARD ACCOMPLISHED	% OF SCHEDULED HRS ACCOMPLISHED	INDIVIDUAL TNG MAN-HOURS	MAN-HRS CREW/TEAM TRAINING	SCHED TNG LOST DUE TO STUDENT NO SHOW/ CANCELLATION	SCHED TNG LOST DUE TO MAINTENANCE	SCHED TNG LOST DUE TO	TOTAL HRS UTIL PAST 12 MO.	AVG HRS UTIL PER MO. PAST 12 MO.	AVG % TNG HRS STD PAST 12 MO.	AVG % SCHED TNG PAST 12 MO.	HRS IN COUPLED MODE	TOTAL HOURS MAINTENANCE	TOTAL MAN-HOURS SCHED MAINTENANCE	TOTAL MAN-HOURS UNSCHED MAINTENANCE
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	U	V	W	X	Y	Z_1	Z_2

REPORT SYMBOL OPNAV 10171-5A

TRAINING DEVICE UTILIZATION AND APPLICATION REPORT

This report is forwarded as specified in OPNAVINST 10171.4B. It contains a special computer printout of utilization and maintenance data on training devices held by commands subordinate to the addressee or on devices identified as within the area of interest of the addressee. The following explanations are provided to assist in interpreting the headings and data of each column in this report.

Column	Title and Definition
A	Device Number: Device designator as to training category and major function.
B	Device Serial Number: Self-explanatory.
C	Device Name: Self-explanatory.
D	Device Location: Geographical locations of device during reporting period.
E	Training Hours Standard: Standard hours per month are established by Chief of Naval Operations or Commandant of the Marine Corps.
F	Training Hours Scheduled: Hours the device was scheduled to fulfill training equipment.
G	Hours Device Operationally Ready: This number is defined as the number of hours in the reporting period that the device was operationally ready.
H	Hours Device was Used for Training: Total hours the device was used for student training.
I	Percentage of Training Hours Standard Accomplished: Column H divided by Column E.
J	Percent of Utilization Based on Training Hours Scheduled: Column H divided by Column F.
K	Individual Training Manhours: Total manhours of individual student training conducted on the device.
L	Manhours of Crew/Team Training: Total manhours of crew/team training conducted on the device.
M	Student No Show/Cancellation: Total hours of scheduled training lost due to student no show or cancellation
N	Maintenance: Total hours of scheduled training lost due to maintenance
O	Scheduled Training Lost Due to: The code letters indicate the predominate reason for lost scheduled training. (P) No Shows, (Q) cancellations, (R) Maintenance, (S) External equipment not available or not operationally ready, (T) Qualified Instructor/Operator personnel not available, (U) Miscellaneous, i.e., utilities modification or other reasons.
P	Total Hours Utilized Past 12 Months: Obtained by adding Column H for the past 12 months. This figure includes hours from current month's report.
U	Average Hours Utilization Per Month for Past 12 Months: Column P *divided by 12.*
V	Average Percent of Training Hours Standard Accomplished Past 12 Months: Column U divided by Column E.
W	Average Percent of Utilization: Based on training hours scheduled during the past 12 months
X	Coupled: Hours the device was coupled to another device for training purposes.
Y	Total Hours of Maintenance for Current Month: Self-explanatory.
Z_1	Total Manhours of Scheduled Maintenance for Current Month: Self-explanatory.
Z_2	Total Manhours of Unscheduled Maintenance for Current Month: Self-explanatory.

Figure 6-5

NTEC and, upon request, to all command echelon through the Maintenance Support Office Department (MSOD).

6.8.4.1 Device Inventory

Major training devices in the reporting custodian's inventory, from date of receipt to date of transfer, must be reported under TDSD. A Training Device Master List is prepared monthly by the local data services unit which shows custodian inventory by serial number and lists all inventory transactions during the month.

6.8.4.2 Readiness Status

A training device is considered to be operationally ready unless reported otherwise. It is reported operationally ready under TDSD as long as it can perform some reportable utilization. If the device cannot perform any reportable utilization for a period in excess of 30 minutes, it is reported in a Not Operationally Ready (NOR) status and the reason therefor is entered on the TDSD reporting source document, (TDSD card, OPNAV Form 4790/17).

Although the device may be operationally ready, its performance capability may be degraded because of maintenance or material deficiencies. In that case, the device is reported in a Reduced Material Condition (RMC). Again,

the cause, (e.g., scheduled maintenance, not fully equipped, etc.) is recorded on the TDSD card. The cause of RMC or NOR condition is identified in TDSD by work unit codes (WUC) which isolate discrepancies to the lowest repairable malfunctioning item. If more than one malfunction is causing the RMC/NOR condition, only the most significant is reported. WUC Manuals are not available for all devices, which makes it necessary to use the limited WUCs published in NTECINST 5442.1. These codes isolate malfunctions only to the failed sub-system; however, further fault isolation is possible through the Maintenance Data Reporting (MDR) system. (MDR is another segment of the 3-M system which collects all maintenance data, whether or not device utilization is affected.)

Detailed readiness reports are provided daily and summarized monthly. These reports show duration of all NOR/RMC status, including reasons for each period of NOR/RMC.

6.8.4.3 Utilization Reporting

Any training use of devices must be reported under TDSD. By definition, there can be no utilization when the device is in a NOR condition; however, utilization and RMC can be reported simultaneously. Training devices are in such great demand by fleet users that the devices are often

used for some training purpose regardless of material condition. Quite often, corrective or preventive maintenance is accomplished while a training exercise is in progress. Users tailor the training exercise to accomodate the material condition of the device.

Utilization data collected under TDSD includes:

- Utilization purpose
- Elapsed utilization hours
- Trainee manhours
- Reason for non-utilization, if applicable
- Total number and type of students trained
- Instructor/operator manhours

The TDSD system includes daily detailed reports and monthly summaries. Both reports contain essentially all data collected. A third utilization report, containing less detail, is combined with readiness information for ease of assessing the impact of readiness condition on utilization.

6.8.5 Proposed New Reporting System

A new maintenance data reporting system for naval aviation, the Sub-system Capability Impact Report (SCIR) system, has been programmed for implementation in 1978. This system is designed to provide data on weapon systems but will

also be used for aviation training devices. Some essential data elements which are not currently reported in the TDSD system will be reported in the SCIR system, but not all essential elements will be reported. Hence, some elements of the TDSD system will be required even after SCIR is implemented. Used in conjunction with the essential elements of TDSD, the SCIR system should provide a significantly improved basis for simulator utilization management as well as maintenance and material management. Some features of the SCIR system which will be valuable in improving the analysis of simulator utilization are discussed in the succeeding paragraphs.

6.8.5.1 Mission Essential Sub-system List (MESL)

SCIR requires development of MESLs for training devices, as is presently required for aircraft. The MESLs will enable device custodians to define more objectively the extent of mission degradation caused by equipment malfunctions. MESLs are not used in conjunction with TDSD; therefore, decisions regarding RMC are presently based on subjective judgements by custodian maintenance supervisors; if scheduled training exercises are not affected by device equipment malfunctions, the maintenance supervisor can reasonably judge the device to be operationally ready rather

than RMC. SCIR replaces the vaguely defined "Operationally Ready" term with the term "Full Mission Capability" (FMC) and requires that all equipment on the MESLs be operable in order to report the device status as FMC. Other condition identifiers used to qualify RMC are obtained from an operable equipment/training mission task matrix.

6.8.5.2 Availability versus Utilization

Training devices may be utilized for some kinds of training exercises for most of their scheduled operating periods, regardless of reduced material condition. High utilization may erroneously be equated to high availability unless quality of utilization purpose is scrutinized. SCIR will highlight utilization quality by revealing reduced availability for performance of total mission tasks. That is, low FMC readily equates to reduced utilization quality.

6.8.5.3 Sub-System Readiness Impact

TDSD reports only the most significant malfunction when multiple discrepancies exist. The most significant discrepancy is generally considered to be the one requiring the longest time to correct. This single malfunction reporting concept can easily conceal discrepancies that may well have a greater impact on readiness than the reported

discrepancy. As an example, assume discrepancies A and B would both place the device in a NOR status. Discrepancy A requires 8 hours to correct while B can be corrected in 2 hours. Only A is listed as the reason for NOR status; therefore B never is reported as a cause of NOR status. Assume further that A is a discrepancy which seldom occurs while B malfunctions are frequent but are usually shadowed by longer duration malfunctions. Discrepancy B may never be highlighted for increased maintenance attention even though it may actually be a greater contributor to degraded readiness than discrepancy A or other similar discrepancies. SCIR removes the shadowing effect by requiring that all existing malfunctions be reported. SCIR reports will show the percentage of time that each discrepancy was a cause of reduced readiness.

6.9 Training Device Substitution

Although simulators have been an integral part of aviation training programs for many years, the concept of specifying a distinct number of flight hours to be replaced by a certain number of simulator hours is relatively new. The combination of improved simulator technology, fiscal and other resource constraints, airline industry experience, and pressures to provide improved management information

resulted in a need to identify flight hours replaced by simulator hours. In the case of formal training programs such as Undergraduate Pilot Training (UPT) and Fleet Readiness Squadrons (FRS), extensive historical data was available, the simulator syllabi and flight syllabi could be analyzed, training effectiveness studies could be conducted and reasonably valid projections could be made. In the case of operational squadrons, the problem was much more difficult. First, the flight hours are split between operational missions and training missions. Although it may be assumed that training benefits are achieved on operational missions, no direct relationship exists because of the wide variation of operational requirements that may be involved. Second, the use of simulators in operational squadrons is a relatively new concept without an extensive background of experience and data. Further, the nature of operational squadron employment does not lend itself to the use of a training syllabus with specific training events accomplished on a regular schedule. This inhibits the implementation of an integrated aircraft and simulator syllabus. This last point is further complicated by the fact that operational squadrons deploy aboard ships or to bases that do not have simulators.

6.9.1 Background

In 1968, the Navy initiated a series of actions which resulted in the quantitative identification of flight hours reductions that could be implemented. During the 1968-1973 period, a number of improved simulators were added to the inventory and the flying hours in Fleet Readiness Squadron syllabi were significantly reduced. In 1973, a GAO report and an OMB study added further impetus to these efforts to achieve flight hour substitution and the need to document the simulator hours and flying hours involved. Later in 1973, an OSD study group was formed which recommended a DOD goal of a twenty-five percent reduction in flying hours by 1981. The Chief of Naval Operations directed a thorough examination of the simulation program to determine an optimum method for increasing substitution and to investigate the feasibility and impact of increased substitution. During the examination, the major categories of the Navy flying hour program were analyzed to determine the amount of flight activity in each category, the mission areas within each category that were suitable for substitution, the capability of the various simulators and the degree of substitution that might be feasible in each category. As a result of this review, the following substitution goals were

tentatively assigned to aid in further planning, analysis and projection:

Category	Flight Hour Reduction %
Undergraduate Pilot Training	40%
Fleet Readiness Squadrons	40%
Fleet TACAIR Squadrons	15%
Fleet ASW Squadrons	15%
Fleet Support Squadrons	10%
Reserve Squadrons	25%
Proficiency Flying	50%

In the case of UPT and FRS programs, the training agents and the CNO staff reviewed all formal training programs and approved the flight and simulator syllabi and the resultant flight hour substitution values. In the case of operational fleet squadrons, the requirements listed in the Training and Readiness Manuals and the Naval Air Training and Operating Procedures Standardization (NATOPS) program were reviewed, the capabilities of existing simulators were evaluated, the fleet flying hour program was reviewed, and substitution criteria were established. Because of significant differences in mission area, readiness requirements, deployment schedules and simulator capabilities, a wide variation was noted in the applicability of substitution

criteria. The vast scope of analysis effort required to determine quantitative substitution data for the many types of fleet squadrons and the various training devices would necessitate a large number of experts working for an extended period of time. In order to establish a substitution program in a timely manner and to start building a data base for future analysis, an arbitrary substitution ratio was established on a trial basis. The fleet squadron ratio was set at two hours of simulator time to replace one hour of flight time using specified training devices which were designated suitable for substitution.

6.9.2 Policy

In 1974, the Secretary of Defense endorsed the DOD Study Group recommendation that the services should attempt to reduce flying hours twenty-five percent by 1981 through simulator substitution. This twenty-five percent reduction is considered a goal. The Navy policy established by the Chief of Naval Operations is that simulators will be used wherever possible to substitute for flight time provided that this substitution can be accomplished without any degradation of readiness or safety.

Substitution values for formal aviation training programs are determined by the CNO based on the approved

simulator and flight syllabi for the particular training program. Substitution values for operational fleet squadrons are presently determined by the CNO on a trial basis of a two-to-one substitution ratio. This ratio is based on the simulator hours available to fleet squadrons in specifically designated training devices. Fleet flying hour substitution is measured from a Mission Ready flying hour standard derived from the appropriate Training and Readiness Manual. For example, if thirty hours per month per crew were required for mission readiness in a fleet F-4J squadron and ten hours per crew per month were available in appropriate mission areas in the 2F88 F4J WST, these ten simulator hours would be substituted for five hours of flight time and the flying hour program would be reduced to twenty-five hours per month per crew.

In view of the CNO policy, care must be exercised in the assignment of substitution hours to ensure that actual flight hour requirements are not reduced to a level which would result in decreased readiness or reduced safety of operations.

6.9.3 Procedures

During the CNO-directed efforts to determine the feasibility and impact of substitution, the type and amount

of simulator time that might be authorized for substitution and the categories of the flying hour program that would be affected, specific procedures were developed and implemented.

CNO (OP-59) reviews and approves all simulator and flight syllabi for formal Navy aviation training programs. During this review, the aircraft hours required to complete the integrated syllabus are compared with the aircraft hours that would be required if no simulators were available. The difference is identified as the substitution value for that particular syllabus. Utilization and substitution values for each device are multiplied by the student throughput and the totals are passed to NAVAIRSYSCOM. Marine Corps training squadron utilization and substitution totals are provided to NAVAIRSYSCOM by CMC. AIR-413 enters these totals in the computer program which is used to generate the NAVAIR POM and Budget exhibits.

For fleet squadrons, OP-59 determines the amount of simulator time, by device, that will be available to each fleet aircraft community. Substitution values are evaluated for impact on the flying hour program in conjunction with OP-51 and the totals for each device are entered into the appropriate planning documents and passed to NAVAIR. OP-51 uses these substitution totals in the fleet flying hour O&MN program and AIR-413 also enters them in the NAVAIR

computer program used for the POM and Budget exhibits. CMC provides utilization and substitution data for Marine Corps fleet squadron programs to AIR-413.

Substitution values as presently authorized are shown in Appendix G for fiscal years 1977 through 1982.

6.10 References

OPNAVINST	1000.16C	Manpower Authorizations and Policies and Procedures; regarding changes to
OPNAVINST	3710.7H	NATOPS, General Flight and Operating Instructions Manual; promulgation of
NAVMATINST	4000.20B	Integrated Logistic Support Planning Policy
NAVMATINST	4000.38	Acquisition Management Standard Integrated Support Management System
OPNAVINST	4100.3A	Department of the Navy Integrated Logistic Support
NAVAIRINST	4130.1	Naval Air Systems Command Management Manual
NAVMATINST	4130.1A	Configuration Management
NAVAIRINST	4370.1A	Delayed Delivery or Performance, Extension of Delivery or Performance Schedules, and Initiation of Contract Termination.
NAVMATINST	4400.14A	Navy Repairables Manual
NAVAIRINST	4423.3	Joint Service Uniform Source, Maintenance and Recoverability (SMR) Codes
NAVSUPINST	4423.11A	Policy, Principles and Administrative Actions Governing the Provisioning of End Items
NAVSUPINST	4423.14A	Naval Material Command Uniform Source, Maintenance and Recoverability (SM&R) Codes

6.10 References (Continued)

NAVMATINST	4490.1B	Availability of Equipment for Training Purposes
OPNAVINST	4490.2B	Availability of Equipment for Training Purposes
NTECINST	4700.4A	Levels of Training Equipment Maintenance
NAVMATINST	4700.4B	Navy Policy Governing Levels of Equipment Maintenance
OPNAVINST	4790.2A	The Naval Aviation Maintenance Program
NAVAIRINST	5215.10	Policy, Procedures and Responsibilities for Processing Rapid Action Minor Engineering Changes (RAMEC)
CNETINST	5220.1	Quality Assurance and Revalidation Program for Cognizance Symbol 20 Training Devices
CNETSINST	5220.1	Quality Assurance and Revalidation Program for Cognizance Symbol 20 Training Devices
OPNAVINST	5220.9B	Quality Assurance and Revalidation of Training Devices
OPNAVINST	5300.3A	Development and Review of Manpower Requirements for New Ships, Programs, Systems and Hardware
NTECINST	5442.1	Training Device Statistical Data System (TDSD)
SECNAVINST	7040.6A	Definitions of Expenses and Investment Costs
OPNAVINST	10171.4B	Major Training Device Utilization and Application Reporting System

6.10 References (Continued)

NAVAIRINST	13050.3	Procedures for Implementing and Maintaining the Technical Directive Status Accounting (TDSA) System
DSAM	8200.1	Defense Supply Agency Manual
MIL-S-480 series		Configuration Control Engineering Changes, Deviations and Waivers
NAVTRADEV	P-530-2	Training Equipment Guide

Appendix A

Appendix A

Training Device Listing by Sequential Number

DEVICE NO.	WEAPON SYSTEM	DEVICE TYPE
1A22	GEN	PTT
1D23	GEN	PTT
2B10	GEN	IT(H)
2B10A	GEN	IT(H)
2B13	GEN	IT(ME)
2B13A	GEN	IT(ME)
2B18	GEN	IT(H)
2B21	T28	IT
2B37	T34C	FIT
2C15	A7A	CPT
2C15A	A7E	CPT
2C17	F4J	CPT
2C18	RA5C	CPT
2C20A	E2C	CPT
2C30	F4B	CPT
2C38A	F14A	CPT
2C41	P3C	CPT
2C42	T34C	CPT
2C43A	CH46	CPT
2C44A	SH3	CPT
2C45	P3A	CPT
2C45A	P3A	CPT
2C47	EA6B	CPT
2C49	S3A	CPT
2D2	GEN	EW RANGE
2E4	GEN	ECM OPR
2E6	ACMS	PTT
2F29A	KA3B	OFT
2F43	C118B	OFT
2F43A	C118B	OFT
2F55H	F4B	WST
2F55J	F4J	WST
2F62A	A4C	WST
2F64	SH3A	WST
2F64A	SH3D	WST
2F64B	SH3D	WST
2F64C	SH3H	WST
2F65	E2B	WST
2F67	A6A	WST
2F67B	A6A	WST
2F67C	A6A	WST
2F69D	P3B	WST

Appendix A

Training Device Listing by Sequential Number

DEVICE NO.	WEAPON SYSTEM	DEVICE TYPE
2F71T	SP2H	TT
2F72	F8D	WST
2F72A	F8H	WST
2F72B	F8J	WST
2F73	KC130F	OFT
2F76	A4E	WST
2F76A	A4E	WST
2F76B	A4E	WST
2F78	RA5C	WST
2F84	A7A	WST
2F84B	A7E	WST
2F87F	P3C	OFT
2F87T	P3C	TT
2F88	F4J	WST
2F90	TA4J	OFT
2F90/2B35	TA4J	VIS
2F92	S3A	WST
2F92A	S3A	WST
2F95/2B34A	F14A	OFT/VIS
2F99	AV8A	OFT
2F101	T2C	OFT
2F103	A7E	NCLT
2F106	SH2F	WST
2F107	KC130F	OFT
2F108	A4M	OFT
2F110	E2C	OFT
2F111	A7E	WST
2F112	F14A	WST
2F114	A6E	WST
2F117	CH46E	OFT
2F119	EA6B	WST
2F120	CH53E	OFT
2F122	A6E	NCLT
2F129	T44A	OFT
2H107	CH53	PTT
14B31	P3	PTT
14B31A	P3	PTT
14B31B	P3	PTT
14B40	P3C	PTT
14B44	P3C	PTT
14B49	S3A	PTT
14B50	S3A	TT
14E10/1A	SH3	PTT
14E10/2A	SH3	PTT

Appendix A

Training Device Listing by Sequential Number

DEVICE NO.	WEAPON SYSTEM	DEVICE TYPE
14E10/3A	SH3	PTT
14E10/4	SH3	PTT
14E10/5A	SH3	PTT
14E10/5B	SH3	PTT
14H4	SH3	PTT
15A19	GEN	TT
15C4C	F4B	PTT
15C4D	F4B	PTT
15C4E	F4J	PTT
15C9A	F14A	PTT
15E16	GEN	PTT
15E18	GEN	ECM TT
15E22	EA6B	PTT
15E22A	EA6B	PTT
15E34	EA6B	ECM
15F5	E2B	TT
15F8	E2C	PTT
15G13	GEN	CATCC
15G19	GEN	GCA OLT
15H12	RF4B	TT
20D16	CH53	PTT

Appendix B

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 19, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
KA3B	2F29A	OFT	2046	ALAM	R									
A4C	2F62A	WST	2071	ATLA	R									
A4E	2F76	WST	2091	NORVA	LANT									
	2F76A	WST	2052(F)	LEM	PAC									
	2F76B	WST	2070	NORIS	PAC									
TA4F	2C36	CVT	1	CH PT	MC									
TA4J	2F90	OFT	2116	KING	CNET									
	2F90	OFT	2117	MIR	PAC									
	2F90	OFT	2118	KING	CNET									
	2F90	OFT	2120	PNCLA	CNET									
	2F90	OFT	2121	CHAS	CNET									
	2F90	OFT	2123	MRDN	CNET									
	2F90	OFT	2124	MRDN	CNET									
	2F90	OFT	2125	CHAS	CNET									
	2F90	OFT	2126	OCNA	LANT									
	2F90/2B35	VIS	1	CHAS	CNET									
	2F90/2B35	VIS	2	MRDN	CNET									
A4M	2F108	OFT	1	YUMA	MC									
	2F108	OFT	2	ELTOR	MC									
RA5C	2C18	CPT	1	K WEST	LANT									
	2F78	WST	2087	K WEST	LANT									
A6A	2F67	WST	2094	CH PT	MC									
	2F67B	WST	2110	OCNA	LANT	DOWNGRADE TO CPT 10/76								
	2F67C	WST	2111	WILD	PAC	DOWNGRADE TO CPT 10/76								
	2F67B	CPT	2110	OCNA	LANT									
	2F67C	CPT	2111	WILD	PAC									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
A6E	2F114	WST		WHID	PAC		DEL 1/78							
	2F114	WST		OCNA	LANT	DEL 8/77								
	2F122	NCLT		WHID	PAC			DEL 11/78						
	2F122	NCLT		OCNA	LANT			DEL 9/79						
EA6B	2C47	CPT	2098	WHID	PAC									
	2F119	WST	1	WHID	PAC		DEL 4/78							
	15E22	PTT	1	WHID	PAC									
	15E22A	PTT	1	WHID	PAC									
	15E22A	PTT		CH PT	MC			DEL 11/78						
	15E34	ECM	1	WHID	PAC									
A7A	2C15	CPT	1	PT HUGU	R									
	2C15	CPT	2	ALAM	R									
	2F84	WST	2112	CECIL	LANT	1/77	TRANS TO	RES-ATLA						
	2F84	WST	2113	LEM	PAC									
	2F84	WST	2112	ATLA	R	DEL 1/77								FM CECIL
A7E	2C15A	CPT	1	CECIL	LANT									
	2C15A	CPT	2	LEM	PAC									
	2F84B	WST	2114	CECIL	LANT									
	2F84B	WST	2115	LEM	PAC									
	2F103	NCLT	1	LEM	PAC									
	2F103	NCLT	2	CECIL	LANT									
	2F111	WST	1	LEM	PAC									
	2F111	WST	2	CECIL	LANT									
A18		WST W/VIS		CECIL	LANT								DEL 5/84	
		WST W/VIS		LEM	PAC						DEL 7/82			
ACMS	2E6	PTT		OCNA	LANT		DEL 11/77							
AV8A	2F99	OFT	2122	CH PT	MC									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
AV8B		CPT		YUMA	MC						DEL 12/81			
		CPT		CH PT	MC								DEL 12/83	
		WST W/VIS		CH PT	MC								DEL 12/83	
		WST		YUMA	MC						DEL 12/81			
		VIS-WST		YUMA	MC						DEL 8/82			
C118B	2F43	OFT	104	BARB PT	PAC		BEING TRANSFERRED TO RESERVES							
	2F43A	OFT	102	GLENV	R									
KC130F	2F73	OFT	2074	ELTOR	MC	UNDERGOING MOD TO CCT (DEVICE 2C48)								
	2C48	CPT	2074	SANTA A	MC	DEL 7/77								
	2F107	OFT W/VIS	1	ELTOR	MC									
E2B	2E65	WST	2096	MIR	PAC			CONV TO	PTT 10/78					
	15F5	TT	1	MIR	PAC									
	2E65	PTT	2096(T)	MIR	PAC									
E2C	2C20A	CPT	1	NORVA	LANT									
	2C20A	CPT		MIR	PAC		DEL 10/77							
	2F110	OFT		MIR	PAC		DEL 10/77							
	2F110	OFT		NORVA	LANT	DEL 7/77								
	15F8	PTT		MIR	PAC				DEL 10/79					
	15F8	PTT	1	NORVA	LANT									
F4B	2C30	CPT	1	WASH	R									
	2C30	CPT	2	YUMA	MC									
	2C30	CPT	3	DALLAS	R									
	2C30	CPT	4	ORLANDO	CNET									
	2F55H	WST	2088	DALLAS	R									
	2F55H	WST	2089	ELTOR	MC									
	15C4C	PTT	2	WASH	R									
	15C4C	PTT	3	DALLAS	R									
	15C4C	PTT	4	ELTOR	MC									
	15C4D	PTT	1	PNCLA	CNET									
	15C4D	PTT	2	PNCLA	CNET									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
F4B	15C4D	PTT	3	PNCLA	CNET									
	15C4D	PTT	5	PNCLA	CNET									
	15C4G	PTT	4	DALLAS	R									STORAGE
RF4B	15H12	TT	1	ELTOR	MC									
F4J	2C17	CPT	1	ORLANDO	CNET									
	2C17	CPT	2	YUMA	MC									
	2C17	CPT	3	MIR	PAC									
	2C17	CPT	4	OCNA	LANT									
	2C17	CPT	6	KANE	MC									
	2C17	CPT	7	BEAU	MC									
	2F55J	WST	2043	BEAU	MC									
	2F55J	WST	2075	KANE	MC									
	2F88	WST	1	MIR	PAC				10/79	TRANS TO	BEAU-MC			
	2F88	WST	1	BEAU	MC				DEL 10/79					
	2F88	WST	2	OCNA	LANT									
	2F88	WST	3	YUMA	MC									
	15C4E	PTT	1	MIR	PAC									
	15C4E	PTT	2	OCNA	LANT									
	15C4E	PTT	3	BEAU	MC									
	15C4E	PTT	4	IWAK	MC									
	15C4E	PTT	5	ORLANDO	CNET									STORAGE
	15C4E	PTT	6	MIR	PAC									
	15C4E	PTT	7	YUMA	MC									
	15C4E	PTT	8	KANE	MC									
F8D	2F72	WST	2073(F)	WASH	R									
	2F72A	WST	2058	DALLAS	R									
F8J	2F72B	WST	2057	MIR	PAC									

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TRAINING DEVICE LISTING BY WEAPON SYSTEM — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
F14A	2C38A	CPT	1	OCNA	LANT	10/76	TRANS TO	PAC-MIR						
	2C38A	CPT	1	MIR	PAC	DEL 10/76								FROM OCNA
	2F95/2B34A	OFT/VIS	1/2	MIR	PAC									
	2F95/2B34A	OFT/VIS	3/1	OCNA	LANT									
	2F95/2B34A	OFT/VIS	2/	MIR	PAC									
	2F95/2B34A	OFT/VIS	4/	MIR	PAC	DEL 9/77								
	2F112	WST		MIR	PAC			DEL 11/78						
	2F112	WST		OCNA	LANT		DEL 12/77							
	15C9A	PTT	1	MIR	PAC									
	15C9A	PTT	2	MIR	PAC									
	15C9A	PTT	3	OCNA	LANT									
	15C9A	PTT	4	OCNA	LANT	DEL 9/77								
F18		WST		BEAU	MC							DEL 6/83		
		WST/VIS		MIR	PAC						DEL 3/82			
		WST		MIR	PAC					DEL 3/81				
CH46	2C43	CPT	1	NEWRIV	MC									
	2C43A	CPT	2097	ELTOP	MC							MOD FROM	2F75A	
	2F117	OFT		SANTA A	MC			DEL 4/79						
	2F117	OFT		NEW RIV	MC	DEL 7/77								
	2F117	OFT/VIS		NEW RIV	MC				DEL 10/79					
CH53	2H107	PTT	1	NORVA	LANT									
	20D16	PTT	1	NORVA	LANT									
CH53E	2F120	OFT		NEW RIV	MC			DEL 11/78						
HSX(L)		WST		NORVA	LANT								DEL 12/83	
		WST		NORVA	LANT							DEL 12/82		
		WST		NORIS	PAC								DEL 12/83	
	VIS	VIS/WST		NORVA	LANT								DEL 12/83	
H1	2B24	IT		WHIT	CNET		DEL 4/78							
TH1L	2C26	CFT	1	WHIT	CNET									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
TH57	2C25	CPT	2	MILIT	CNET									
P3	14B31	PTT	1	HOFF	PAC									
	14B31A	PTT	1	WILL G	R									
	14B31A	PTT	1	JAX	LANT									
	14B31A	PTT	2	WILL G	R									
	14B31B	PTT	4	HOFF	PAC									
	14B31B	PTT	5	DTRT	R									
	14B31B	PTT	6	HOFF	PAC									
	14B31B	PTT	7	JAX	LANT									
P3A	2C45	CPT	2092	JAX	LANT									
	2C45A	CPT	2093	HOFF	PAC									
P3B	2F69D	WST	2103	BRUNS	LANT			TO USNR 9/79						
	2F69D	WST	2104	HOFF	PAC									
	2F69D	WST	2105	JAX	LANT				TO USNR 9/80					
	2F69D	WST	2106	BARB PT	PAC									
P3C	2C41	CPT		JAX	LANT	DEL 6/77								
	2C41	CPT		HOFF	PAC	DEL 8/77								
	2F69D	WST W/VIS		BARB PT	PAC						DEL 10/81			
	2F87T	TT	7632-1	JAX	LANT	DEL 1/78						SHIP TO BRUNS.		
	2F87T	TT	7632-2	JAX	LANT									
	2F87T	TT	7632-3	JAX	LANT	DEL 1/78						RET TO JAX AFTER MOD.		
	2F87T	TT	4	HOFF	PAC									
	2F87A	TT	1	HOFF	PAC									
	2F87F	OFT W/VIS	1	JAX	LANT									
	2F87F	OFT W/VIS	2	HOFF	PAC									
	2F87F	OFT W/VIS	3	HOFF	PAC									
	2F87F	OFT W/VIS	4	JAX	LANT									
	2F87F	OFT		BRUNS	LANT			DEL 6/79						
	14B40	PTT	1	JAX	LANT									
	14B40	PTT	2	HOFF	PAC									
	14B44	PTT	1	BRUNS	LANT									
	14B44	PTT	2	HOFF	PAC									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
P3C	14B44	PTT	3	JAX	LANT									
	14B44	PTT	4	BARB PT	PAC									
	14B44	PTT		WILL G	R			DEL 1/79						
	14B44	PTT		GLEN V	R			DEL 3/79						
SH2F	2F106	WST W/VIS	1	NORVA	LANT									
	2F106	WST W/VIS	2	NORIS	PAC									
SP2H	2F71T	TT	2086	MEM	R									
SH3	2C44A	CPT	1	JAX	LANT								TO PAC FY81	
	2C44A	CPT		NORIS	PAC								MODED PAC 2F64B	
	14H4	PTT		JAX	LANT		DEL 3/78							
	14H4	PTT	1	NORIS	PAC		DEL 12/77							
	14E10/1A	PTT	1	NAVUSC	LANT									
	14E10/1A	PTT	2	NARU	LANT									
	14E10/1A	PTT	3	NAS	LANT									
	14E10/1A	PTT	4	NAVUSC	LANT									
	14E10/2A	PTT		NORIS	PAC	DEL 7/77								
	14E10/3A	PTT	1	NORIS	PAC									
	14E10/3A	PTT	2	JAX	LANT									
	14E10/4	PTT	1	NARU	LANT									
	14E10/4	PTT	2	NARU	LANT									
	14E10/4	PTT	3	NAVUSC	LANT									
	14E10/5A	PTT	1	WILL G	R									
	14E10/5A	PTT	2	NORIS	PAC									
	14E10/5A	PTT	3	NORIS	PAC									
	14E10/5B	PTT	1	JAX	LANT									
	14E10/5B	PTT	2	JAX	LANT									
	14E10/5B	PTT	3	JAX	LANT									
	14E10/5B	PTT	4	JAX	LANT									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								COMMENTS
						77	78	79	80	81	82	83	84	
SH3A	2C44	CPT	2077	NORVA	LANT		DEL 10/78							
	2F64	WST	2077	NORVA	LANT	MODIFIED	10/77							
	2F64A	WST	2099	IMF B	PAC									
	14B36	PTT	1	JAX	LANT									
SH3D	2F64B	WST	2100	JAX	LANT									
	2F64B	WST	2101	IMF B	PAC									
SH3H	2F64C	WST	2099	JAX	LANT									
S3A	2F92	WST W/VIS	1	NORIS	PAC									
	2F92	WST W/VIS	2	CECIL	LANT									
	2F92A	WST		CECIL	LANT	DEL 6/77								
	2F92A	WST		NORIS	PAC	DEL 11/76								
	2F92A	WST		NORIS	PAC	DEL 1/77								
	14B49	PTT	1	NORIS	PAC									
	14B50	TT		CECIL	LANT	DEL 3/77								
	2C49	CPT		NORIS	PAC	DEL 1/77								
T2C	2F101	OFT	1	CHAS	CNET									
	2F101	OFT	2	MRDN	CNET									
	2F101	OFT	3	CHAS	CNET									
	2F101	OFT	4	PNCLA	CNET									
	2F101	OFT	5	MRDN	CNET									
	2F101	OFT	6	KING	CNET									
	2F101	OFT	7	KING	CNET									
T28	2B21	IT	1	WHIT	CNET									
	2B21	IT	2	WHIT	CNET									
	2B21	IT	3	CORP	CNET									
	2B21	IT	4	CORP	CNET									
	2B21	IT	5	WHIT	CNET									
	2B21	IT	6	WHIT	CNET									
	2B21	IT	7	WHIT	CNET									
	2B21	IT	8	MEM	CNET									
	2B21	IT	9	MEM	CNET									

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCA-TION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
T34C	2B37	FIT		WHIT	CNET			DEL 2/79						DEL ONE
	2B37	FIT		WHIT	CNET									EVERY 2MO
	2B37	FIT		WHIT	CNET									LAST FIVE
	2B37	FIT		WHIT	CNET									MOS, 1/MO
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET									
	2B37	FIT		WHIT	CNET					DEL 1/81				
	2C42	CPT		WHIT	CNET	DEL 3/77								
	2C42	CPT		WHIT	CNET									
	2C42	CPT		WHIT	CNET									
	2C42	CPT		WHIT	CNET			DEL 10/78						
T44A	2F129	OFT		CORP	CNET		DEL 2/78							DEL ONE
	2F129	OFT		CORP	CNET									EVERY 2MO
	2F129	OFT		CORP	CNET									
	2F129	OFT		CORP	CNET			DEL 10/78						
GENERAL	1A22	PTT	1	CORP	CNET									
	1D23	PTT	1	PNCLA	CNET									
	2D2	EWRANGE	1	FALLON	PAC									
	2D2	EWRANGE	2	JAX	LANT									
	2E6	ECM OPR	5024	APO NY	LANT									
	2B10	IT(H)	1	ALAM	R									
	2B10	IT(H)	2	SEATTLE	R									
	2B10A	IT(H)	1	NORVA	MC									
	2B10A	IT(H)	2	NORIS	MC									
	2B10A	IT(H)	3	PUTE	MC									
	2B13	IT(HE)	3	CORP	CNET									
	2B13A	IT(HE)	1	CORP	CNET									

Appendix B

APPENDIX B

TRAINING DEVICE LISTING BY WEAPON SYSTEM

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
GENERAL	2B13A	IT(HE)	2	CORP	CNET									
	2B13A	IT(HE)	3	CORP	CNET									
	2B13A	IT(HE)	4	CORP	CNET									
	2B13A	IT(HE)	5	CORP	CNET									
	2B13A	IT(HE)	6	CORP	CNET									
	2B13A	IT(HE)	7	CORP	CNET									
	2B13A	IT(HE)	8	CORP	CNET									
	2B13A	IT(HE)	9	CORP	CNET									
	2B13A	IT(HE)	10	CORP	CNET									
	2B13A	IT(HE)	11	CORP	CNET									
	2B13A	IT(HE)	12	CORP	CNET									
	2B13A	IT(HE)	13	CORP	CNET									
	2B13A	IT(HE)	14	CORP	CNET									
	2B13A	IT(HE)	15	DIRT	R									
	2B13A	IT(HE)	16	FT BEL	R									
	2B13A	IT(HE)	17	ATLA	R									
	2B13A	IT(HE)	18	NORVA	R									
	2B13A	IT(HE)	19	ALAH	R									
	2B13A	IT(HE)	20	WILL G	R									
	2B18	IT(H)	1	WHIT	CNET									
	2B18	IT(H)	2	WHIT	CNET									
	2B18	IT(H)	3	WHIT	CNET									
	2B18	IT(H)	4	WHIT	CNET									
	2B18	IT(H)	5	WHIT	CNET									
	15A19	TT	1	CH PT	MC									
	15A19	TT	2	29 PALMS	MC									
	15A19	TT	3	EL TORO	MC									
	15A19	TT	4	BEAU	MC									
	15A19	TT	5	FUTE	MC									
	15E16	PTT	1	HOFF	PAC									
	15E18	ECM TT	1	PNCLA	CNET									
	15E18	PTT	2	NORIS	PAC									
	15G13	CATCC	3001	MEM	CNET									
	15G19	CCA OLT	1	MEM	CNET									

Appendix C

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRLANT As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
A4E	2F76	WST	2091	NORVA										
TA4J	2F90	OFT	2126	OCNA										
RA5C	2C18	CPT	1	K WEST										
	2F78	WST	2087	K WEST										
A6A	2F67B	WST	2110	OCNA		DOWNGRADE	TO CPT 10/76							
A6E	2F114	WST		OCNA		DEL 8/77								
	2F122	NCLT		OCNA				DEL 9/79						
A7A	2C15	CPT	1	CECIL										
	2F84	WST	2112	CECIL		1/77	TRANS TO RES-ATLA							
A7E	2C15A	CPT	1	CECIL										
	2F84B	WST	2114	CECIL										
	2F103	NCLT	2	CECIL										
	2F111	WST	2	CECIL										
A18		WST W/VIS		CECIL									DEL 5/84	
ACHS	2E6			OCNA			DEL 11/77							
E2C	2C20A	CPT	1	NORVA										
	2F110	OFT		NORVA		DEL 7/77								
	15F8	PTT	1	NORVA										
F4J	2C17	CPT	4	OCNA										
	2F88	WST	2	OCNA										
	15C4E	PTT	2	OCNA										
F14A	2F95/2B34A	OFT/VIS	3/1	OCNA										
	2F112	WST		OCNA			DEL 12/77							
	15C9A	PTT	3	OCNA										
	15C9A	PTT	4	OCNA		DEL 9/77								

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRLANT

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
CH53	2H107	PTT	1	NORVA										
	20D16	PTT	1	NORVA										
HSX(L)		WST		NORVA									DEL 12/83	
		WST		NORVA								DEL 12/82		
		VIS/WST		NORVA									DEL 12/83	
P3	14B31A	PTT	1	JAX										
	14B31B	PTT	7	JAX										
P3A	2C45	CPT	2092	JAX										
P3B	2F69D	WST	2103	BRUNS				TO USNR 9/79						
	2F69D	WST	2105	JAX					TO USNR 9/80					
P3C	2C41	CPT		JAX		DEL 6/77								
	2F87T	TT	7632-1	JAX		DEL 1/78								
	2F87T	TT	7632-2	JAX										
	2F87T	TT	7632-3	JAX		DEL 1/78								
	2F87F	OFT	1	JAX										
	2F87F	OFT	4	JAX										
	2F87F	OFT		BRUNS				DEL 6/79						
	14B40	PTT	1	JAX										
	14B44	PTT	1	BRUNS										
	14B44	PTT	3	JAX										
SH2F	2F106	WST	1	NORVA										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRLANT As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
SH3	2C44A	CPT	1	JAX									TO PAC FY81	
	14H4	PTT		JAX			DEL 3/78							
	14E10/1A	PTT	1	NAVUSC										
	14E10/1A	PTT	2	NARU										
	14E10/1A	PTT	3	NAS										
	14E10/1A	PTT	4	NAVUSC										
	14E10/3A	PTT	2	JAX										
	14E10/4	PTT	1	NARU										
	14E10/4	PTT	2	NARU										
	14E10/4	PTT	3	NAVUSC										
	14E10/5B	PTT	1	JAX										
	14E10/5B	PTT	2	JAX										
	14E10/5B	PTT	3	JAX										
	14E10/5B	PTT	4	JAX										
SH3A	2F64	WST	2077	NORVA		MODIFIED	10/77							
	14B36	PTT	1	JAX										
SH3D	2F64B	WST	2100	JAX										
SH3H	2F64C	WST	2099	JAX										
S3A	2F92	WST	2	CECIL										
	2F92A	WST		CECIL		DEL 6/77								
	14B50	TT		CECIL		DEL 3/77								
GENERAL	2D2	EWRANGE	2	JAX										
	2E4	ECM OPR	5024	APO NY										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRPAC

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
A4E	2F76A	WST	2052(F)	LEM										
	2F76B	WST	2070	NORIS										
TA4J	2F90	OFT	2117	MIR										
A6A	2F67C	WST	2111	WHID		DOWNGRADE	TO CPT 10/76							
A6E	2F114	WST		WHID			DEL 1/78							
	2F122	NCLT		WHID				DEL 11/78						
EA6B	2C47	CPT	2098	WHID										
	2F119	WST	1	WHID			DEL 4/78							
	15E22	PTT	1	WHID										
	15E22A	PTT	1	WHID										
	15E34	ECM	1	WHID										
A7A	2F84	WST	2113	LEM										FM CECIL
A7E	2C15A	CPT	2	LEM										
	2F84B	WST	2115	LEM										
	2F103	NCLT	1	LEM										
	2F111	WST	1	LEM										
A18		WST W/VIS		LEM							DEL 7/82			
C118B	2F43	OFT	104	BARB PT			BEING TRANSFERRED TO RESERVES							
E2B	2F65	WST	2096	MIR				CONV TO	PTT 10/78					
	2F65	PTT	2096(T)	MIR										
	15F5	PTT	1	MIR										
E2C	2C20A	CPT		MIR			DEL 10/77							
	2F110	OFT		MIR			DEL 10/77							
	15F8	PTT		MIR					DEL 10/79					

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRPAC As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
F4J	2C17	CPT	3	MIR										
	2F88	WST	1	MIR					10/79	TRANS TO NAVAIRSYSCOM				
	15C4E	PTT	1	MIR										
	15C4E	PTT	6	MIR										
F8J	2F72B	WST	2057	MIR										
F14A	2C38A	CPT		MIR		DEL 10/76								FROM OCNA
F14A	2C38A	CPT		MIR		DEL 10/76								FROM OCNA
F14A	2F95/2B34A	OFT/VIS	1/2	MIR										
	2F95/2B34A	OFT/VIS	2/	MIR										
	2F95/2B34A	OFT/VIS	4/	MIR		DEL 9/77								
	2F112	WST		MIR				DEL 11/78						
	15C9A	PTT	1	MIR										
	15C9A	PTT	2	MIR										
F18		WST/VIS		MIR							DEL 3/82			
USX(L)		WST		NORIS									DEL 12/83	
P3	14B31	PTT	1	HOFF										
	14B31B	PTT	4	HOFF										
	14B31B	PTT	6	HOFF										
P3A	2C45A	CPT	2093	HOFF										
P3B	2F69D	WST	2104	HOFF										
	2F69D	WST	2106	BARB PT										
P3C	2C41	CPT		HOFF		DEL 8/77								
	2F69D	WST W/VIS		BARB PT							DEL 10/81			
	2F87T	TT	4	HOFF										
	2F87A	TT	1	HOFF										
	2F87F	OFT	2	HOFF										
	2F87F	OFT	3	HOFF										
	14B40	PTT	2	HOFF										
	14B44	PTT	2	HOFF										
	14B44	PTT	4	BARB PT										

AD-A037 803 INFORMATION SPECTRUM INC ARLINGTON VA F/G 1/2
AVIATION SIMULATION MASTER PLAN, PHASE I. VOLUME I.(U)
FEB 77 N V CAMPBELL, R H DAVIS, R E DUVALL N68335-76-C-3387
UNCLASSIFIED 1268-1 NAVAIR-AIR-413-6MPXYO-1 NL

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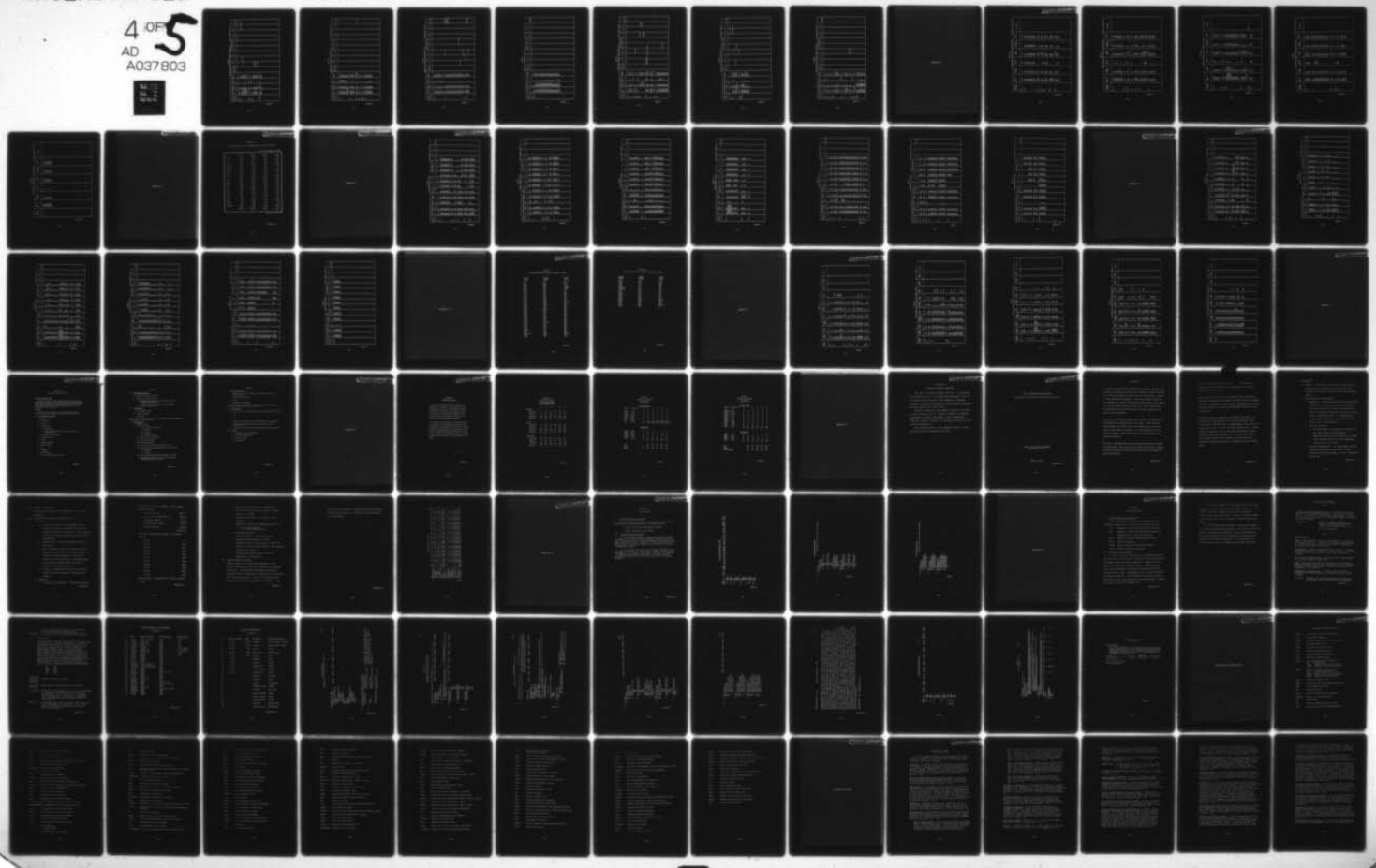

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - COMNAVAIRPAC As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
SH2F	2F106	WST	2	NORIS										
SH3	2C44A	CPT		NORIS									MODED PAC	2F64B
	14H4	PTT		NORIS			DEL 12/77							
	14E10/2A	PTT		NORIS		DEL 7/77								
	14E10/3A	PTT	1	NORIS										
	14E10/5A	PTT	2	NORIS										
	14E10/5A	PTT	3	NORIS										
SH3A	2F64A	WST	2099	IHP B										
SH3D	2F64B	WST	2101	IHP B										
S3A	2F92	WST	1	NORIS										
	2F92A	WST		NORIS		DEL 11/76								
	2F92A	WST		NORIS		DEL 1/77								
	14B49	PTT	1	NORIS										
	2C49	CPT		NORIS		DEL 1/77								
GENERAL	2D2	EW RANGE	1	FALLON										
	13E16	PTT	1	MOFF										
	13E18	PTT	2	NORIS										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - CNET

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
TA4J	2F90	OFT	2116	KING										
	2F90	OFT	2118	KING										
	2F90	OFT	2120	PNCLA										
	2F90	OFT	2121	CHAS										
	2F90	OFT	2123	HRDN										
	2F90	OFT	2124	HRDN										
	2F90	OFT	2125	CHAS										
	2F90/2B35	VIS	1	CHAS										
	2F90/2B35	VIS	2	HRDN										
F4B	15C4D	PTT	1	PNCLA										
	15C4D	PTT	2	PNCLA										
	15C4D	PTT	3	PNCLA										
	15C4D	PTT	5	PNCLA										
F4J	2C17	CPT	1	ORLANDO										
	15C4E	PTT	5	ORLANDO										STORAGE
H1	2B24	IT		WHIT										
TH1L	2C26	CFT	1	WHIT										
TH57	2C25	CFT	2	WHIT										
T2C	2F101	OFT	1	CHAS										
	2F101	OFT	2	HRDN										
	2F101	OFT	3	CHAS										
	2F101	OFT	4	PNCLA										
	2F101	OFT	5	HRDN										
	2F101	OFT	6	KING										
	2F101	OFT	7	KING										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - CNET

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
T28	2B21	IT	1	WHIT										
	2B21	IT	2	WHIT										
	2B21	IT	3	CORP										
	2B21	IT	4	CORP										
	2B21	IT	5	WHIT										
	2B21	IT	6	WHIT										
	2B21	IT	7	WHIT										
	2B21	IT	8	HEM										
	2B21	IT	9	HEM										
T34C	2B37	FIT		WHIT				DEL 7/79						DEL ONE
	2B37	FIT		WHIT										EVERY 2MO
	2B37	FIT		WHIT										LAST FIVE
	2B37	FIT		WHIT										MOS, 1/MO
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT										
	2B37	FIT		WHIT						DEL 1/81				
	2C42	CPT		WHIT		DEL 3/77								
	2C42	CPT		WHIT										
	2C42	CPT		WHIT										
	2C42	CPT		WHIT				DEL 10/78						
T44A	2F129	OFT		CORP			DEL 2/78							
	2F129	OFT		CORP										DEL ONE
	2F129	OFT		CORP										EVERY 2MO
	2F129	OFT		CORP				DEL 10/78						

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - CNET

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
GENERAL	1A22	PTT	1	CORP										
	1D23	PTT	1	PNCLA										
	2B13	IT(ME)	3	CORP										
	2B13A	IT(ME)	1	CORP										
	2B13A	IT(ME)	2	CORP										
	2B13A	IT(ME)	3	CORP										
	2B13A	IT(ME)	4	CORP										
	2B13A	IT(ME)	5	CORP										
	2B13A	IT(ME)	6	CORP										
	2B13A	IT(ME)	7	CORP										
	2B13A	IT(ME)	8	CORP										
	2B13A	IT(ME)	9	CORP										
	2B13A	IT(ME)	10	CORP										
	2B13A	IT(ME)	11	CORP										
	2B13A	IT(ME)	12	CORP										
	2B13A	IT(ME)	13	CORP										
	2B13A	IT(ME)	14	CORP										
	2B18	IT(H)	1	WHIT										
	2B18	IT(H)	2	WHIT										
	2B18	IT(H)	3	WHIT										
	2B18	IT(H)	4	WHIT										
	2B18	IT(H)	5	WHIT										
	15E18	ECM TT	1	PNCLA										
	15G13	CATCC	3001	MEM										
	15G19	GCA OLT	1	MEM										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - USMC

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
TA4F	2C36	CDT	1	CH PT										
A4M	2F108	OFT	1	YUMA										
	2F108	OFT	2	EL TOR										
A6A	2F67	WST	2094	CH PT										
EA6B	15E22A	PTT		CH PT				DEL 11/78						
AV8A	2F99	OFT	2122	CH PT										
AV8B		CPT		YUMA							DEL 12/81			
		CPT		CH PT									DEL 12/81	
		WST W/VIS		CH PT									DEL 12/81	
		WST		YUMA							DEL 12/81			
		VIS-WST		YUMA							DEL 8/82			
KC130F	2C48	CPT	2074	SANTA A		DEL 7/77								
	2F73	OFT	2074	EL TOR		UNDERGOING MOD TO CPT (DEVICE 2C48)								
	2F107	OFT	1	EL TOR										
F4B	2C30	CPT	2	YUMA										
	2F55H	WST	2089	EL TOR										
	15C4C	PTT	4	EL TOR										
RF4B	15H12	TT	1	EL TOR										
F4J	2C17	CPT	2	YUMA										
	2C17	CPT	6	KANE										
	2C17	CPT	7	BEAU										
	2F55J	WST	2043	BEAU										
	2F55J	WST	2075	KANE										
	2F88	WST	1	BEAU					DEL 10/79					
	2F88	WST	3	YUMA										
	15C4E	PTT	3	BEAU										
	15C4E	PTT	4	IWAK										
	15C4E	PTT	7	YUMA										
	15C4E	PTT	8	KANE										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - USMC As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
F18		WST		BEAU								DEL 6/83		
CH46	2C43	CPT	1	NEW RIV										
	2C43A	CPT	2097	EL TOR								MOD FROM 2F75A		
	2F117	OFT		SANTA A				DEL 4/79						
	2F117	OFT		NEW RIV		DEL 7/77								
	2F117/VIS	OFT/VIS		NEW RIV					DEL 10/79					
CH53E	2F120	OFT		NEW RIV				DEL 11/78						
GENERAL	2B10A	IT(H)	1	NORVA										
	2B10A	IT(H)	2	NORIS										
	2B10A	IT(H)	3	FUTE										
	15A19	TT	1	CH PT										
	15A19	TT	2	29 PALMS										
	15A19	TT	3	EL TOR										
	15A19	TT	4	BEAU										
	15A19	TT	5	FUTE										

APPENDIX C

TRAINING DEVICE LISTING BY MAJOR CLAIMANT - USNR/USMCR

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
KA3B	2F29A	OFT	2046	ALAM										
A4C	2F62A	WST	2071	ATLA										
A7A	2C15	CPT	2	ALAM										
C118B	2F43A	OFT	102	GLEN V										
F4B	2C30	CPT	1	WASH										
	2C30	CPT	3	DALLAS										
	2C30	CPT	4	ORLANDO										
	15C4C	PTT	2	WASH										
	15C4C	PTT	3	DALLAS										
F8D	2F72	WST	2073(F)	WASH										
F8H	2F72A	WST	2058	DALLAS										
P3	14B31A	PTT	1	WILL G										
	14B31B	PTT	2	WILL G										
	14B31B	PTT	5	DIRT										
P3C	14B44	PTT		WILL G				DEL 1/79						
	14B44	PTT		GLEN V				DEL 3/79						
SP2H	2F71T	TT	2086	MEM										
SH3	14E10/5A	PTT	1	WILL G										
GENERAL	2B10	IT(H)	1	ALAM										
	2B10	IT(H)	2	SEATTLE										
	2B13A	IT(ME)	15	DIRT										
	2B13A	IT(ME)	16	FT BEL										
	2B13A	IT(ME)	17	ATLA										
	2B13A	IT(ME)	18	NORVA										
	2B13A	IT(ME)	19	ALAM										
	2B13A	IT(ME)	20	WILL G										

Appendix D

APPENDIX D

CONFIGURATION BUREAU NUMBER BY WEAPON SYSTEM AS OF: 10 December 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	BUREAU NO.	COMMENTS
KA3B	2F29A	OFT	2046	ALAM	R	138953	
TA4J	2F90	OFT	2116	KING	CNET	156891	
	2F90	OFT	2117	MIR	PAC	156891	
	2F90	OFT	2118	KING	CNET	156891	
	2F90	OFT	2120	PNCLA	CNET	156891	
	2F90	OFT	2121	CHAS	CNET	156891	
	2F90	OFT	2123	MRDN	CNET	156891	
	2F90	OFT	2124	MRDN	CNET	156891	
	2F90	OFT	2125	CHAS	CNET	156891	
	2F90	OFT	2126	OCNA	LANT	156891	
A4M	2F108	OFT	1	YUMA	MC	158426	
	2F108	OFT	2	ELTOR	MC	158426	
RA5C	2C18	CPT	1	K WEST	LANT	151728	
	2F78	WST	2087	K WEST	LANT	151728	
A6A	2F67	WST	2094	CH PT	MC	155720	
	2F67B	WST	2110	OCNA	LANT	155720	
	2F67C	WST	2111	WHID	PAC	155721	
EA6B	2F119	WST	1	WHID	PAC	159908	
	15E22	PTT	1	WHID	PAC	156483	
	15E22A	PTT	1	WHID	PAC	159908	
A7A	2C15	CPT	1	PT MUGU	R	154418	
	2C15	CPT	2	ALAM	R	154418	
	2F84	WST	2112	CECIL	LANT	154418	
	2F84	WST	2113	LEM	PAC	154418	

APPENDIX D

CONFIGURATION BUREAU NUMBER BY WEAPON SYSTEM AS OF: 10 December 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	BUREAU NO.	COMMENTS
A7E	2C15A	CPT	1	CECIL	LANT	156801	
	2C15A	CPT	2	LEM	PAC	156801	
	2F84B	WST	2114	CECIL	LANT	158002	
	2F84B	WST	2115	LEM	PAC	158002	
	2F103	NCLT	1	LEM	PAC	156804	
	2F103	NCLT	2	CECIL	LANT	156804	
	2F111	WST	1	LEM	PAC	158819	
	2F111	WST	2	CECIL	LANT	158681	
AV8A	2F99	OFT	2122	CH PT	MC	158395	
KC130F	2F73	OFT	2074	EL TOR	MC	148249	
	2F107	OFT	1	EL TOR	MC	148249	
E2B	2F65	WST	2096	MIR	PAC	152489	
	15F5	TT	1	MIR	PAC	152489	
E2C	2C20A	CPT	1	NORVA	LANT	158638	
	2F110	OFT		MIR	PAC	160007	
	2F110	OFT		NORVA	LANT	160007	
F4B	2C30	CPT	1	WASH	R	153070	
	2C30	CPT	2	YUMA	MC	153070	
	2C30	CPT	3	DALLAS	R	153070	
	2C30	CPT	4	ORLANDO	CNET	153070	
	2F55H	WST	2088	DALLAS	R	153070	
	2F55H	WST	2089	EL TOR	MC	153070	
F4J	2C17	CPT	1	ORLANDO	CNET	155529	
	2C17	CPT	2	YUMA	MC	155529	
	2C17	CPT	3	MIR	PAC	155785	
	2C17	CPT	4	OCNA	LANT	155529	
	2C17	CPT	6	KANE	MC	155529	
	2C17	CPT	7	BEAU	MC	155529	

APPENDIX D

CONFIGURATION BUREAU NUMBER BY WEAPON SYSTEM AS OF: 10 December 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	BUREAU NO.	COMMENTS
F4J	2F55J	WST	2043	BEAU	MC	155786	
	2F55J	WST	2075	KANE	MC	155786	
	2F88	WST	1	MIR	PAC	155529	
	2F88	WST	2	OCNA	LANT	155529	
	2F88	WST	3	YUMA	MC	155529	
F8D	2F72A	WST	2058	DALLAS	R	147067	
F8J	2F72B	WST	2057	MIR	PAC	149170	
F14A	2C38A	CPT	1	OCNA	LANT	159588	
	2F95/2B34A	OFT/VIS	1/2	MIR	PAC	159421	
	2F95/2B34A	OFT/VIS	3/1	OCNA	LANT	159588	
	2F95/2B34A	OFT/VIS	2/	MIR	PAC	159421	
	2F95/2B34A	OFT/VIS	4/	MIR	PAC	159588	
	2F112	WST		MIR	PAC	159825	
	2F112	WST		OCNA	LANT	159825	
	15C9A	PTT	1	MIR	PAC	159024	
	15C9A	PTT	2	MIR	PAC	159024	
	15C9A	PTT	3	OCNA	LANT	159024	
	15C9A	PTT	4	OCNA	LANT	159024	
CH46	2C43	CPT	1	NEW RIV	MC	155304	
	2C43A	CPT	2097	EL TOR	MC	155304	
	2F117	OFT		SANTA A	MC	155304	
	2F117	OFT		NEW RIV	MC	155304	
	2F117/VIS	OFT/VIS		NEW RIV	MC	155304	
CH53E	2F120	OFT		NEW RIV	MC		A/C #5
P3A	2C45	CPT	2092	JAX	LANT	148889	
	2C45A	CPT	2093	MOFF	PAC	150494	

APPENDIX D

CONFIGURATION BUREAU NUMBER BY WEAPON SYSTEM AS OF: 10 December 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	BUREAU NO.	COMMENTS
P3B	2F69D	WST	2103	BRUNS	LANT	152140	
	2F69D	WST	2104	MOFF	PAC	152140	
	2F69D	WST	2105	JAX	LANT	152140	
	2F69D	WST	2106	BARB PT	PAC	152140	
P3C	2C41	CPT		JAX	LANT	158913	
	2C41	CPT		MOFF	PAC	158913	
	2F87T	TT	7632-1	JAX	LANT	159503	
	2F87T	TT	7632-2	JAX	LANT	159503	
	2F87T	TT	7632-3	JAX	LANT	159503	
	2F87T	TT	4	MOFF	PAC	156516	
	2F87A	TT	1	MOFF	PAC	159503	
	2F87F	OFT	1	JAX	LANT	158913	
	2F87F	OFT	2	MOFF	PAC	158913	
	2F87F	OFT	3	MOFF	PAC	158913	
	2F87F	OFT	4	JAX	LANT	158913	
	2F87F	OFT		BRUNS	LANT	158913	
	14B40	PTT	1	JAX	LANT	156510	
	14B40	PTT	2	MOFF	PAC	156510	
SH2F	2F106	WST	1	NORVA	LANT	149770	
	2F106	WST	2	NORIS	PAC	149770	
SH3A	2F64A	WST	2099	IMP B	PAC	152104	
SH3D	2F64B	WST	2100	JAX	LANT	152690	
	2F64B	WST	2101	IMP B	PAC	152693	
S3A	2F92	WST	1	NORIS	PAC	158861	
	2F92	WST	2	CECIL	LANT	158861	
	2F92A	WST		CECIL	LANT	159396	
	2F92A	WST		NORIS	PAC	159396	
	2F92A	WST		NORIS	PAC	159396	

APPENDIX D

CONFIGURATION BUREAU NUMBER BY WEAPON SYSTEM AS OF: 10 December 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	BUREAU NO.	COMMENTS
T2C	2F101	OFT	1	CHAS	CNET	158333	
	2F101	OFT	2	MRDN	CNET	158333	
	2F101	OFT	3	CHAS	CNET	158333	
	2F101	OFT	4	PNCLA	CNET	158333	
	2F101	OFT	5	MRDN	CNET	158333	
	2F101	OFT	6	KING	CNET	158333	
	2F101	OFT	7	KING	CNET	158333	

Appendix E

Appendix E

FUNDING REQUIREMENTS FOR MODIFICATIONS BY WEAPON SYSTEM

As of: November 15, 1976

	FY 79	FY 80	FY 81	FY 82
A-4M	.365	.200	.200	.200
A-6	8.980	8.176	1.300	2.104
A-7	5.929	2.600	2.000	2.000
AV-8A	.200	.200	.200	.200
KC-130F	.800	.700	.600	.600
EA-6B	1.724	1.400	1.200	1.200
E-2B	.700	.700	.600	.500
E-2C	3.800	1.200	1.100	1.000
F-4	8.038	4.250	3.950	2.650
F-14A	4.000	4.400	4.000	3.400
CH-46	1.480	1.400	1.000	1.000
CH-53	.600	.700	.600	.900
P-3	8.572	6.600	5.400	5.400
SH-2	.800	.600	.600	.600
SH-3	6.084	1.300	1.100	1.100
S-3A	3.100	3.300	2.900	3.100
T-2C	.500	.500	.500	.500
T-34C	.600	1.300	1.250	1.600
TA-4J	.500	.500	.500	.500
GENERAL	3.017	2.000	1.900	1.500
	59.780	42.026	30.900	30.054

DOLLARS IN MILLIONS

Appendix F

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
A4C	2F62A	WST	2071	ATLA	R	416	348							
TA4J	2F90	OFT	2116	KING	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2117	MIR	PAC	1245	1271	1277	1228	1248	1248			
	2F90	OFT	2118	KING	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2120	PNCLA	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2121	CHAS	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2123	MRDN	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2124	MRDN	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2125	CHAS	CNET	5192	6085	6542	6688	6688	6688			
	2F90	OFT	2126	OCNA	LANT	1245	1271	1277	1228	1248	1248			
A4M	2F108	OFT	1	YUMA	MC	1404	1404	1404	1404	1404	1404			
	2F108	OFT	2	ELTOR	MC	1698	1698	1404	1698	1698	1698			
RA5C	2C18	CPT	1	KWEST	LANT	1000	1000	1000						
	2F78	WST	2087	KWEST	LANT	2000	2000	2000						
A6A	2F67	WST	2094	CH PT	MC	836	745	759	684	694	694			
	2F67B	WST	2110	OCNA	LANT	2474	2625							
	2F67C	WST	2111	WHID	PAC	2757	2625							
	2F67B	CPT	2110	OCNA	LANT			1800	1800	1800	1800			
	2F67C	CPT	2111	WHID	PAC			1800	1800	1800	1800			
A6E	2F114	WST		WHID	PAC			4000	4000	4000	4000			
	2F114	WST		OCNA	LANT		3000	4000	4000	4000	4000			
	2F122	NCLT		WHID	PAC			3600	4000	4000	4000			
	2F122	NCLT		OCNA	LANT				3000	3000	3000			
EA6B	2C47	CPT	2098	WHID	PAC	2000	2000	2000	2000	2000	2000			
	2F119	WST	1	WHID	PAC			4000	4000	4000	4000			
	15E22	PTT	1	WHID	PAC	3600	3600	3600	3600	3600	3600			
	15E22A	PTT	1	WHID	PAC	3600	3600	3600	3600	3600	3600			
	15E22A	PTT		CH PT	MC			2063	2063	2063	2063			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
A7A	2F84	WST	2113	LEH	PAC	1000	1000	1000	1000	1000	1000			
	2F84	WST	2112	ATLA	R	700	700	700	1032	1032	1032			
A7E	2C15A	CPT	1	CECIL	LANT	1800	1800	1800	1800	1800	1800			
	2C15A	CPT	2	LEH	PAC	1800	1800	1800	1800	1800	1800			
	2F84B	WST	2114	CECIL	LANT	4000	4000	4000	4000	4000	4000			
	2F84B	WST	2115	LEH	PAC	4000	4000	4000	4000	4000	4000			
	2F103	NCLT	1	LEH	PAC	2510	2510	2510	2510	2510	2510			
	2F103	NCLT	2	CECIL	LANT	2000	2000	2000	2000	2000	2000			
	2F111	WST	1	LEH	PAC	4000	4000	4000	4000	4000	4000			
	2F111	WST	2	CECIL	LANT	4000	4000	4000	4000	4000	4000			
ACMS	2E6	PTT		OCNA	LANT		4000	4000	4000	4000	4000			
AV8A	2F99	OFT	2122	CH PT	MC	1298	924	924	924	693	693			
KC130F	2F107	OFT	1	ELTOR	MC	2888	3850	3850	3850	3850	3850			
E2B	2F65	WST	2096	NIR	PAC	4000	2000							
	15F5	TT	1	NIR	PAC	4000	4000	4000	4000	4000	4000			
	2F65	PTT	2096(T)	NIR	PAC			4000	4000	4000	4000			
E2C	2C20A	CPT	1	NORVA	LANT	2000	2000	2000	2000	2000	2000			
	2C20A	CPT		NIR	PAC	500	2000	2000	2000	2000	2000			
	2F110	OFT		NIR	PAC		2000	4000	4000	4000	4000			
	2F110	OFT		NORVA	LANT	1800	4000	4000	4000	4000	4000			
	15F8	PTT		NIR	PAC					4000	4000			
	15F8	PTT	1	NORVA	LANT	4000	4000	4000	4000	4000	4000			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	77	78	79	80	81	82	83	84	COMMENTS
F4B	2C30	CPT	1	WASH	R	360	360	360	360	360	360			
	2C30	CPT	2	YUMA	MC	481	481	481	481	481	481			
	2C30	CPT	3	DALLAS	R	360	360	360	360	360	360			
	2C30	CPT	4	ATLA	R	360	360	360	360	360	360			
	2F55H	WST	2088	DALLAS	R	1500	1500	1500	1500	1500	1500			
	2F55H	WST	2089	ELTOR	MC	1089	1089	1089	1089	1089	1089			
	15C4C	PTT	2	WASH	R	144	420	420	420	420	420			
	15C4C	PTT	3	DALLAS	R	144	420	420	420	420	420			
	15C4C	PTT	4	ELTOR	MC	578	578	578	578	578	578			
RF4B	15H12	TT	1	ELTOR	MC	495	495	495	495	495	495			
F4J	2C17	CPT	2	YUMA	MC	481	481	481	481	481	481			
	2C17	CPT	3	MIR	PAC	2000	2000	2000	2000	2000	2000			
	2C17	CPT	4	OCNA	LANT	2000	2000	2000	2000	2000	2000			
	2C17	CPT	6	KANE	MC	481	481	481	481	481	481			
	2C17	CPT	7	BEAU	MC	481	481	481	481	481	481			
	2F55J	WST	2043	BEAU	MC	1089	1089	1089						
	2F55J	WST	2075	KANE	MC	1089	1089	1089	1089	1089	1089			
	2F88	WST	1	MIR	PAC	3000	3000	3000						
	2F88	WST	1	BEAU	MC				3400	3400	3400			
	2F88	WST	2	OCNA	LANT	3120	3120	3120	3120	3120	3120			
	2F88	WST	3	YUMA	MC	3400	3400	3400	3400	3400	3400			
	15C4E	PTT	1	MIR	PAC	1500	1500	1500	1102	1102	1102			
	15C4E	PTT	2	OCNA	LANT	3000	3000	3000	2000	2000	2000			
	15C4E	PTT	3	BEAU	MC	578	578	578	578	578	578			
	15C4E	PTT	4	IWAK	MC	578	578	578	578	578	578			
	15C4E	PTT	6	MIR	PAC	1500	1500	1500	1102	1102	1102			
	15C4E	PTT	7	YUMA	MC	578	578	578	578	578	578			
	15C4E	PTT	8	KANE	MC	578	578	578	578	578	578			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	77	78	79	80	81	82	83	84	COMMENTS
F14A	2C38A	CPT		MIR	PAC	2000	2000	2000	2000	2000	2000			
	2F95/2B34A	OFT/VIS	1/2	MIR	PAC	2000	2000	2000	2000	2000	2000			
	2F95/2B34A	OFT/VIS	3/1	OCNA	LANT	4000	2000	4000	4000	4000	4000			
	2F95/2B34A	OFT/VIS	2/	MIR	PAC	2000	2000	2000	4000	4000	4000			
	2F95/2B34A	OFT/VIS	4/	MIR	PAC		2000	4000	4000	4000	4000			
	2F112	WST		MIR	PAC			1350	4000	4000	4000			
	2F112	WST		OCNA	LANT			3500	4000	4000	4000			
	15C9A	PTT	1	MIR	PAC	4000	2000	4000	4000	4000	4000			
	15C9A	PTT	2	MIR	PAC	4000	2000	4000	4000	4000	4000			
	15C9A	PTT	3	OCNA	LANT	4000	2000	4000	4000	4000	4000			
	15C9A	PTT	4	OCNA	LANT		2000	4000	4000	4000	4000			
CH46	2C43	CPT	1	NEW RIV	MC	336	555	564	560	564	564			
	2C43A	CPT	2097	ELTOR	MC	336	555	564	560	564	564			
	2F117	OFT		SANTA A	MC				3960	3960	3960			
	2F117	OFT		NEW RIV	MC	3865	3960	3960	3960	3960	3960			
CH53E	2F120	OFT		NEW RIV	MC			3369	3584	3675	3705			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
H1	2B24	IT		WHIT	CNET			3000	3000	3000	3000			
P3A	2C45	CPT	2092	JAX	LANT	500	2000	2000	2000	2000	2000			
	2C45A	CPT	2093	MOFF	PAC	500	2000	2000	2000	2000	2000			
P3B	2F69D	WST	2103	BRUNS	LANT	6700	6700	6700	6700	6700	6700			
	2F69D	WST	2104	MOFF	PAC	7300	7300	7300	7300	7300	7300			
	2F69D	WST	2105	JAX	LANT	6700	6700	6700	6700	6700	6700			
	2F69D	WST	2106	BARB PT	PAC	7300	7300	7300	7300	7300	7300			
P3C	2C41	CPT		JAX	LANT		2000	2000	2000	2000	2000			
	2C41	CPT		MOFF	PAC		2000	2000	2000	2000	2000			
	2F87T	TT	7632-1	JAX	LANT		4000	4000	4000	4000	4000			
	2F87T	TT	7632-2	JAX	LANT	4000	4000	4000	4000	4000	4000			
	2F87T	TT	7632-3	JAX	LANT		4000	4000	4000	4000	4000			
	2F87T	TT	4	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	2F87A	TT	1	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	2F87F	OFT	1	JAX	LANT	4000	4000	4000	4000	4000	4000			
	2F87F	OFT	2	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	2F87F	OFT	3	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	2F87F	OFT	4	JAX	LANT	4000	4000	4000	4000	4000	4000			
	2F87F	OFT		BRUNS	LANT				4000	4000	4000			
	14B40	PTT	1	JAX	LANT	4000	4000	4000	4000	4000	4000			
	14B40	PTT	2	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	14B44	PTT	1	BRUNS	LANT	4000	4000	4000	4000	4000	4000			
	14B44	PTT	2	MOFF	PAC	4000	4000	4000	4000	4000	4000			
	14B44	PTT	3	JAX	LANT	4000	4000	4000	4000	4000	4000			
	14B44	PTT	4	BARB PT	PAC	4000	4000	4000	4000	4000	4000			
SH2F	2F106	WST	1	NORVA	LANT	6800	2000	6800	6800	6800	6800			
	2F106	WST	2	NORIS	PAC	7100	2000	7100	7100	7100	7100			
SH3	2C44A	CPT	1	JAX	LANT	2055	2055	2055	2055	2055	2055			
	2C44A	CPT		NORIS	PAC						2000			
	14H4	PTT		JAX	LANT		4000	4000	4000	4000	4000			
	14H4	PTT		NORIS	PAC		4000	4000	4000	4000	4000			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
SH3A	2C44	CPT	2077	NORVA	LANT			2000	2000	2000	2000			
	2F64A	WST	2099	IMP B	PAC	2000	2000	2000	2000	-	-			
SH3D	2F64B	WST	2100	JAX	LANT	6384	6384	6384	6384	6384	6384			
	2F64B	WST	2101	IMP B	PAC	2000	2000	2000	2000	2000	-			
SH3H	2F64C	WST	2099	JAX	LANT	-	-	-	-	2000	4000			
S3A	2F92	WST	1	NORIS	PAC	8000	8000	8000	8000	8000	8000			
	2F92	WST	2	CECIL	LANT	5650	5650	5650	5650	5650	5650			
	2F92A	WST		CECIL	LANT		5650	5650	5650	5650	5650			
	2F92A	WST		NORIS	PAC	8000	8000	8000	8000	8000	8000			
	2F92A	WST		NORIS	PAC	8000	8000	8000	8000	8000	8000			
	14B49	PTT	1	NORIS	PAC	4000	4000	4000	4000	4000	4000			
	14B50	TT		CECIL	LANT		4000	4000	4000	4000	4000			
	2C49	CPT		NORIS	PAC		4800	4800	4800	4800	4800			
T2C	2F101	OFT	1	CHAS	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	2	MRDN	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	3	CHAS	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	4	PNCLA	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	5	MRDN	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	6	KING	CNET	3000	3000	3000	3000	3000	3000			
	2F101	OFT	7	KING	CNET	3000	3000	3000	3000	3000	3000			
T34C	2B37	FIT		WHIT	CNET			3000	3000	3000	3000			
	2B37	FIT		WHIT	CNET			3000	3000	3000	3000			
	2B37	FIT		WHIT	CNET			3000	3000	3000	3000			
	2B37	FIT		WHIT	CNET			3000	3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			
	2B37	FIT		WHIT	CNET				3000	3000	3000			

APPENDIX F

PROGRAMMED DEVICE UTILIZATION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
T34C	2B37	FIT		WHIT	CNET					3000	3000			
	2B37	FIT		WHIT	CNET					3000	3000			
	2B37	FIT		WHIT	CNET					3000	3000			
	2B37	FIT		WHIT	CNET						3000			
	2C42	CPT		WHIT	CNET		3000	3000	3000	3000	3000			
	2C42	CPT		WHIT	CNET		3000	3000	3000	3000	3000			
	2C42	CPT		WHIT	CNET		3000	3000	3000	3000	3000			
	2C42	CPT		WHIT	CNET		3000	3000	3000	3000	3000			
T44A	2F129	OFT		CORP	CNET		3000	3000	3000	3000	3000			
	2F129	OFT		CORP	CNET		3000	3000	3000	3000	3000			
	2F129	OFT		CORP	CNET			3000	3000	3000	3000			
	2F129	OFT		CORP	CNET			3000	3000	3000	3000			
GENERAL	1D23	PTT	1	PNCLA	CNET	38430	40160	41890	40580	40580	40580			
	2B18	IT(H)	1	WHIT	CNET	3000	3000	3000	3000	3000	3000			
	2B18	IT(H)	2	WHIT	CNET	3000	3000	3000	3000	3000	3000			
	2B18	IT(H)	3	WHIT	CNET	3000	3000	3000	3000	3000	3000			
	2B18	IT(H)	4	WHIT	CNET	3000	3000	3000	3000	3000	3000			
	2B18	IT(H)	5	WHIT	CNET	3000	3000	3000	3000	3000	3000			
	15G19	GCA OLT	1	MEM	CNET	984	984	984	984	984	984			

Appendix G

APPENDIX G

FLIGHT HOUR SUBSTITUTION — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
TA4J	2F90	OFT	2116	KING	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2117	MIR	PAC	623	636	636	614	624	624			
	2F90	OFT	2118	KING	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2120	PNCLA	CNET	5015	4058	4363	4457	4457	4557			
	2F90	OFT	2121	CHAS	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2123	HRDN	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2124	HRDN	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2125	CHAS	CNET	5015	4058	4363	4457	4457	4457			
	2F90	OFT	2126	OCNA	LANT	623	636	636	614	624	624			
A4M	2F108	OFT	1	YUMA	MC	305	227	192	288	296	296			
	2F108	OFT	2	EL TOR	MC	386	386	386	386	386	386			
RA5C	2F78	WST	2087	K WEST	LANT	778	997	801						
A6A	2F67	WST	2094	CH PT	MC	0	0	0	0	0	0			
	2F67B	WST	2110	OCNA	LANT	2289	2675	10/78 DOWNGRADE TO CPT						
	2F67C	WST	2111	WHID	PAC	2646	2675	10/78 DOWNGRADE TO CPT						
A6E	2F114	WST		WHID	PAC			3266	3266	3266	3266			
	2F114	WST		OCNA	LANT			3266	3266	3266	3266			
	2F122	NCLT		WHID	PAC			1163	1542	1542	1542			
	2F122	NCLT		OCNA	LANT				1158	1158	1158			
EA6B	2F119	WST	1	WHID	PAC			2010	2022	2059	2059			
	15E22	PTT	1	WHID	PAC	1020	1020	545	585	660	660			
	15E22A	PTT	1	WHID	PAC	640	640	685	735	828	828			
	15E22A	PTT		CH PT	MC			675	675	675	675			
A7A	2F84	WST	2112	ATLA	R	175	175	175	248	248	248			
	2F84	WST	2113	LEM	PAC	1357	1344	175	248	248	248			

APPENDIX G

FLIGHT HOUR SUBSTITUTION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT				PROJECTION (FY)					COMMENTS
						77	78	79	80	81	82	83	84	
A7E	2F84B	WST	2114	CECIL	LANT	1700	1683	1683	1683	1683	1683			
	2F84B	WST	2115	LEM	PAC	1700	1683	1683	1683	1683	1683			
	2F103	NCLT	1	LEM	PAC	552	525	539	527	527	527			
	2F103	NCLT	2	CECIL	LANT	439	418	428	420	420	420			
	2F111	WST	1	LEM	PAC	5381	5326	5148	5203	5203	5203			
	2F111	WST	2	CECIL	LANT	5381	5326	5148	5203	5203	5203			
ACMS	2E6	PTT		OCNA	LANT		1442	1442	1442	1442	1442			
AV8A	2F99	OFT	2122	CH PT	MC	329	245	245	245	214	214			
KC130F	2F107	OFT	1	EL TOR	MC	1125	1500	1500	1500	1500	1500			
E2B	2F65	WST	2096	HIR	PAC	1834	1089	10/78 CONV TO PTT						
	2F65	PTT	2096(T)	HIR	PAC			220	220	220	200			
	15F5	TT	1	HIR	PAC	336	344	344	230	154	108			
E2C	2F110	OFT		HIR	PAC		1484	2423	2423	2423	2423			
	2F110	OFT		NORVA	LANT	1441	2960	2423	2423	2423	2423			
	15F8	PTT		HIR	PAC				356	534	534			
	15F8	PTT	1	NORVA	LANT	594	594	594	594	594	594			
F4B	2F55H	WST	2088	DALLAS	R	0	0	0	0	0	0			
	2F55H	WST	2089	EL TOR	MC	0	0	0	0	0	0			
	15C4C	PTT	2	WASH	R	0	0	0	0	0	0			
	15C4C	PTT	3	DALLAS	R	0	0	0	0	0	0			
	15C4C	PTT	4	EL TOR	MC	0	0	0	0	0	0			
RF4B	15H12	TT	1	EL TOR	MC	77	77	90	104	113	113			

APPENDIX G

FLIGHT HOUR SUBSTITUTION — As of November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
F4J	2F55J	WST	2043	BEAU	MC	0	0	0	0	0	0			
	2F55J	WST	2075	KANE	MC	0	0	0	0	0	0			
	2F88	WST	1	MIR	PAC	2288	2109	1940	10/79 TRANS TO BEAU		MC			
	2F88	WST	1	BEAU	MC				1700	1700	1700			
	2F88	WST	2	OCNA	LANT	2382	2196	2020	2375	2375	2375			
	2F88	WST	3	YUMA	MC	897	828	736	828	920	920			
	15C4E	FTT	1	MIR	PAC	0	0	0	0	0	0			
	15C4E	FTT	2	OCNA	LANT	0	0	0	0	0	0			
	15C4E	FTT	3	BEAU	MC	0	0	0	0	0	0			
	15C4E	FTT	4	IWAK	MC	0	0	0	0	0	0			
	15C4E	FTT	6	MIR	PAC	0	0	0	0	0	0			
	15C4E	FTT	7	YUMA	MC	0	0	0	0	0	0			
	15C4E	FTT	8	KANE	MC	0	0	0	0	0	0			
F14A	2F95/2B34A	OFT/VIS	1/2	MIR	PAC	1840	2163	1629	1367	1441	1410			
	2F95/2B34A	OFT/VIS	3/1	OCNA	LANT	3680	2163	3248	2733	2883	2821			
	2F95/2B34A	OFT/VIS	2/	MIR	PAC	1840	2163	1629	2733	2883	2821			
	2F95/2B34A	OFT/VIS	4/	MIR	PAC		2163	3248	2733	2883	2821			
	2F112	WST		MIR	PAC	0	0	372	1751	1766	1757			
	2F112	WST		OCNA	LANT	0	0	967	1751	1766	1757			
	15C9A	FTT	1	MIR	PAC	528	438	499	458	573	489			
	15C9A	FTT	2	MIR	PAC	528	438	499	458	573	489			
	15C9A	FTT	3	OCNA	LANT	528	438	499	458	573	489			
	15C9A	FTT	4	OCNA	LANT		438	499	458	573	489			
CH46	2F117	OFT		SANTA A	MC				1815	1815	1815			
	2F117	OFT		NEW RIV	MC	884	1527	1488	1815	1815	1815			
CH53E	2F120	OFT		NEW RIV	MC			807	853	877	877			
P3B	2F69D	WST	2103	BRUNS	LANT	2442	2136	1948	1858	1694	1052			
	2F69D	WST	2104	MOFF	PAC	2667	2332	2127	2029	1849	1149			
	2F69D	WST	2105	JAX	LANT	2442	2136	1948	1858	1694	1052			
	2F69D	WST	2106	BARB PT	PAC	2667	2332	2127	2029	1849	1149			

APPENDIX G

FLIGHT HOUR SUBSTITUTION — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								COMMENTS
						77	78	79	80	81	82	83	84	
P3C	2F87T	TT	7632-1	JAX	LANT		738	745	783	899	1066			
	2F87T	TT	7632-2	JAX	LANT	1031	738	745	783	899	1066			
	2F87T	TT	7632-3	JAX	LANT		738	745	783	899	1066			
	2F87T	TT	4	MOFF	PAC	1031	738	745	783	899	1066			
	2F87A	TT	1	MOFF	PAC	1031	738	745	783	899	1066			
	2F87F	OFT	1	JAX	LANT	1458	1414	1332	1154	1383	1488			
	2F87F	OFT	2	MOFF	PAC	1458	1414	1332	1154	1383	1488			
	2F87F	OFT	3	MOFF	PAC	1458	1414	1332	1154	1383	1488			
	2F87F	OFT	4	JAX	LANT	1458	1414	1332	1154	1383	1488			
	2F87F	OFT		BRUNS	LANT				1154	1383	1488			
	14B40	PTT	1	JAX	LANT	0	0	0	0	0	0			
	14B40	PTT	2	MOFF	PAC	0	0	0	0	0	0			
	14B44	PTT	1	BRUNS	LANT	0	0	0	0	0	0			
	14B44	PTT	2	MOFF	PAC	0	0	0	0	0	0			
	14B44	PTT	3	JAX	LANT	0	0	0	0	0	0			
	14B44	PTT	4	BARB PT	PAC	0	0	0	0	0	0			
	14B44	PTT		WILL C	R	0	0	0	0	0	0			
	14B44	PTT		GLEN V	R	0	0	0	0	0	0			
SH2F	2F106	WST	1	NORVA	LANT	1772	1500	1736	1736	1736	1736			
	2F106	WST	2	NORIS	PAC	1852	1500	1814	1814	1814	1814			
SH3	14H4	PTT		JAX	LANT		0	0	0	0	0			
	14H4	PTT		NORIS	PAC		0	0	0	0	0			
SH3A	2F64A	WST	2099	TMP B	PAC	499	538	538	538					
SH3D	2F64B	WST	2100	JAX	LANT	1591	1714	1714	1714	802	802			
	2F64B	WST	2101	TMP B	PAC	499	538	538	538	252				
SH3H	2F64C	WST	2099	JAX	LANT					252	504			

APPENDIX G

FLIGHT HOUR SUBSTITUTION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCA-TION	MAJOR CLAIMANT	PROJECTION (FY) 77	78	79	80	81	82	83	84	COMMENTS
S3	2F92	WST	1	NORIS	PAC	2309	2585	2353	2374	2387	2387			
	2F92	WST	2	CECIL	LANT	1625	1822	1658	1674	1682	1682			
	2F92A	WST		CECIL	LANT		1822	1658	1674	1682	1682			
	2F92A	WST		NORIS	PAC	2309	2585	2353	2374	2387	2387			
	2F92A	WST		NORIS	PAC	2309	2585	2353	2374	2387	2387			
	14B49	FTT	1	NORIS	PAC	0	0	0	0	0	0			
	14B50	FTT		CECIL	LANT	0	0	0	0	0	0			
T2C	2F101	OFT	1	CHAS	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	2	HRDN	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	3	CHAS	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	4	PNCLA	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	5	HRDN	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	6	KING	CNET	2545	2262	2345	2374	2374	2374			
	2F101	OFT	7	KING	CNET	2545	2262	2345	2374	2374	2374			
T34C	2B37	FIT		WHIT	CNET			3579	2865	2047	2047			
	2B37	FIT		WHIT	CNET			3579	2865	2047	2047			
	2B37	FIT		WHIT	CNET			3579	2865	2047	2047			
	2B37	FIT		WHIT	CNET			3579	2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET				2865	2047	2047			
	2B37	FIT		WHIT	CNET					2047	2047			
	2B37	FIT		WHIT	CNET					2047	2047			
	2B37	FIT		WHIT	CNET					2047	2047			
	2B37	FIT		WHIT	CNET					2047	2047			
T44A	2F129	OFT		CORP	CNET		1899	1785	1854	1854	1854			
	2F129	OFT		CORP	CNET		1899	1785	1854	1854	1854			
	2F129	OFT		CORP	CNET			1785	1854	1854	1854			
	2F129	OFT		CORP	CNET			1785	1854	1854	1854			

APPENDIX G

FLIGHT HOUR SUBSTITUTION

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NO.	DEVICE TYPE	SERIAL NO.	LOCATION	MAJOR CLAIMANT	PROJECTION (FY)								
						77	78	79	80	81	82	83	84	COMMENTS
GENERAL	1D23	PTT	1	PNCLA	CNET	17289	18040	18819	18227	18227	18227			
	2B18	IT(H)	1	WHIT	CNET	1800	1800	1800	1800	1800	1800			
	2B18	IT(H)	2	WHIT	CNET	1800	1800	1800	1800	1800	1800			
	2B18	IT(H)	3	WHIT	CNET	1800	1800	1800	1800	1800	1800			
	2B18	IT(H)	4	WHIT	CNET	1800	1800	1800	1800	1800	1800			
	2B18	IT(H)	5	WHIT	CNET	1800	1800	1800	1800	1800	1800			
	15G19	GCA OLT	1	MEM	CNET	0	0	0	0	0	0			

Appendix H

APPENDIX H

QA&R TRAINING DEVICE LISTING BY SEQUENTIAL NUMBER

DEVICE NUMBER	WEAPON SYSTEM	DEVICE TYPE
1A22	GEN	PTT
1D23	GEN	PTT
2B10	GEN	IT(H)
2B10A	GEN	IT(H)
2B13	GEN	IT(ME)
2B13A	GEN	IT(ME)
2B18	GEN	IT(H)
2B21	T28	IT
2C15	A7A	CPT
2C15A	A7E	CPT
2C17	F4J	CPT
2C18	RA5C	CPT
2C20A	E2C	CPT
2C30	F4B	CPT
2C38A	F14A	CPT
2C43A	CH46	CPT
2D2	GEN	EWRANGE
2F29A	KA3B	OFT
2F43	C118B	OFT
2F55H	F4B	WST
2F62A	A4C	WST
2F64A	SH3A	WST
2F64B	SH3D	WST
2F65	E2B	WST
2F67	A6A	WST
2F67B	A6A	WST
2F67C	A6A	WST
2F69D	P3B	WST
2F71T	SP2H	TT
2F72	F8D	WST
2F72A	F8H	WST
2F72B	F8J	WST
2F73	KC130F	OFT
2F76A	A4E	WST
2F76B	A4E	WST
2F78	RA5C	WST
2F84	A7A	WST
2F84B	A7E	WST
2F87T	P3C	TT
2F88	F4J	WST
2F90	TA4J	OFT
2F95/2B34A	F14A	OFT/VIS
2F99	AV8A	OFT
2F101	T2C	OFT

APPENDIX H

QA&R TRAINING DEVICE LISTING BY SEQUENTIAL NUMBER

DEVICE NUMBER	WEAPON SYSTEM	DEVICE TYPE
2F103	A7E	NCLT
2F106	SH2F	WST
14B31	P3	PTT
14B40	P3C	PTT
14B44	P3C	PTT
14E10/3A	SH3	PTT
14E10/5A	SH3	PTT
14E10/5B	SH3	PTT
14H4	SH3	PTT
15A19	GEN	TT
15C4C	F4B	PTT
15C4D	F4B	PTT
15C4E	F4J	PTT
15C9A	F14A	PTT
15E16	GEN	PTT
15E18	GEN	ECM TT
15E22	EA6B	PTT
15F8	E2C	PTT
15G13	GEN	CATCC
15G19	GEN	GCA OLT
15H12	RF4B	TT

Appendix I

APPENDIX I

QUALITY ASSURANCE, REVALIDATION AND CERTIFICATION SCHEDULE As of: November 30, 1976

WEAPON SYSTEM	DEVICE NUMBER	DEVICE TYPE	DEVICE SERIAL NUMBER	LOCATION	MAJOR CLAIMANT	LAST QA&R	NEXT QA&R	CERT MO/YR	OVHL MO/YR	REMARKS
RA3B	2F29A	OFT	2046	ALAM	R	2/76				
A4C	2F62A	WST	2071	ATLA	R	4/76				
TA4J	2F90	OFT	2116	KING	CNET	8/75	11/76			
	2F90	OFT	2117	MIR	PAC	8/75	11/76			
	2F90	OFT	2118	KING	CNET	8/75				
	2F90	OFT	2120	PHCLA	CNET	1/76				
	2F90	OFT	2121	CHAS	CNET	8/75	8/76			
	2F90	OFT	2123	HRDN	CNET	10/75	9/76			
	2F90	OFT	2124	HRDN	CNET	10/75	9/76			
	2F90/2B35	OFT/VIS	2125/1	CHAS	CNET	8/75	8/76			
	2F90	OFT	2126	OCNA	LANT	5/76				
RA5C	2C18	CPT	0001	K WEST	LANT	7/75				
	2F78	WST	2087	K WEST	LANT	7/75				
A6A	2F67	WST	2094	CH PT	NC	5/76				
	2F67B	WST	2110	OCNA	LANT	3/76				
EA6B	15E22	PIT	0001	WHID	PAC	5/76				
A7A	2C15	CPT	0001	PT HUGU	R	9/75				
	2F84	WST	2112	CECIL	LANT	11/75				
	2F84	WST	2113	LEM	PAC	5/76				
A7E	2C15A	CPT	0001	CECIL	LANT	9/75				
	2C15A	CPT	0002	LEM	PAC	10/75	10/76			
	2F84B	WST	2114	CECIL	LANT	11/75				
	2F84B	WST	2115	LEM	PAC					
	2F103	MCLT	0001	LEM	PAC	7/75	6/76			
	2F103	MCLT	0002	CECIL	LANT					
A4BA	2F99	OFT	2122	CH PT	NC					
C118B	2F43	OFT	0104	BARB PT	PAC	1/76				
	2F43A	OFT	0102	GLEN V	R	9/75				

APPENDIX I

QUALITY ASSURANCE, REVALIDATION AND CERTIFICATION SCHEDULE — As of: 30 November 1976

WEAPON SYSTEM	DEVICE NUMBER	DEVICE TYPE	DEVICE SERIAL NUMBER	LOCATION	MAJOR CLAIMANT	LAST QA&R	NEXT QA&R	CERT MO/YR	OVHL MO/YR	REMARKS
KC130F	2F73	OFT	2074	EL TOR	MC					
E2B	2F65	WST	2096	MIR	PAC	5/76				
E2C	2C20A	CPT	0001	NORVA	LANT	10/75				
	15F8	PTT	0001	NORVA	LANT					
F4B	2C30	CPT	0001	WASH	R	12/75				
	2C30	CPT	0002	YUMA	MC					
	2C30	CPT	0003	DALLAS	R	10/75	10/76			
	2C30	CPT	0004	ATLA	R	8/75				
	2F55H	WST	2088	DALLAS	R	11/75	10/76			
	2F55H	WST	2089	EL TOR	MC	2/74	7/76			
	15C4C	PTT	0002	WASH	R	4/76				
	15C4C	PTT	0003	DALLAS	R					
	15C4C	PTT	0004	EL TOR	MC	11/75	11/76			
	15C4D	PTT	0001	PNCLA	CNET					
	15C4D	PTT	0002	PNCLA	CNET	2/76				
	15C4D	PTT	0003	PNCLA	CNET	2/76	4/76			
	15C4D	PTT	0005	PNCLA	CNET					
RF4B	15H12	TT	0001	EL TOR	MC					
F4J	2C17	CPT	0001	ORLANDO	CNET					
	2C17	CPT	0002	YUMA	MC					
	2C17	CPT	0003	MIR	PAC	7/75	8/76			
	2C17	CPT	0004	OCNA	LANT	3/76				
	2C17	CPT	0006	KANE	MC	5/76				
	2C17	CPT	0007	BEAU	MC	11/75	11/76			
	2F55J	WST	2043	BEAU	MC	2/76				
	2F55J	WST	2075	KANE	MC					
	2F88	WST	0001	MIR	PAC					
	2F88	WST	0002	OCNA	LANT	7/76				
	2F88	WST	0003	YUMA	MC					
	15C4E	PTT	0001	MIR	PAC	10/75	10/76			
	15C4E	PTT	0002	OCNA	LANT	3/76				
	15C4E	PTT	0003	BEAU	MC	11/75	11/76			

APPENDIX I

QUALITY ASSURANCE, REVALIDATION AND CERTIFICATION SCHEDULE

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NUMBER	DEVICE TYPE	DEVICE SERIAL NUMBER	LOCATION	MAJOR CLAIMANT	LAST QA&R	NEXT QA&R	CERT MO/YR	OVHL MO/YR	REMARKS
F4J	15C4E	PTT	0004	IWAK	MC	3/76				
	15C4E	PTT	0006	MIR	PAC	1/76				
	15C4E	PTT	0007	YUMA	MC	5/76				
	15C4E	PTT	0008	KANE	MC	5/76				
F8D	2F72	WST	2073(F)	WASH	R	12/73				
F8H	2F72A	WST	2058	DALLAS	R	4/75				
F8J	2F72B	WST	2057	MIR	PAC	4/75				
F14A	2C38A	CPT	0001	MIR	PAC					
	2F95/2B34A	OFT/VIS	0001/2	MIR	PAC	12/75	12/76			
	2F95/2B34A	OFT/VIS	0002/	MIR	PAC					
	2F95/2B34A	OFT/VIS	0003/1	OCNA	LANT	6/76				
	15C9A	PTT	0001	MIR	PAC	4/75	4/76			
	15C9A	PTT	0002	MIR	PAC	1/76				
	15C9A	PTT	0003	OCNA	LANT	6/76				
CH46	2C43A	CPT	2097	EL TOR	MC	4/76				
P3	14B31	PTT	0001	MOFF	PAC					
P3B	2F69D	WST	2103	BRUNS	LANT	9/75	9/76			
	2F69D	WST	2104	MOFF	PAC					
	2F69D	WST	2105	JAX	LANT	10/75	11/76			
	2F69D	WST	2106	BARB PT	PAC					
P3C	2F87(T)	TT	0001	JAX	LANT	6/76				
	2F87(T)	TT	0002	JAX	LANT	6/76				
	2F87(T)	TT	0004	MOFF	PAC	4/76	10/76			
	2F87A(T)	TT	0001	MOFF	PAC	5/76				
	14B40	PTT	0001	JAX	LANT					
	14B40	PTT	0002	MOFF	PAC	6/76				

APPENDIX I

QUALITY ASSURANCE, REVALIDATION AND CERTIFICATION SCHEDULE — As of: November 30, 1976

WEAPON SYSTEM	DEVICE NUMBER	DEVICE TYPE	DEVICE SERIAL NUMBER	LOCATION	MAJOR CLAIMANT	LAST QA&R	NEXT QA&R	CERT MO/YR	OVHL MO/YR	REMARKS
P3C	14B44	PTT	0001	BRUNS	LANT	6/75	9/76			
	14B44	PTT	0002	MOFF	PAC	12/75	12/76			
	14B44	PTT	0003	JAX	LANT	10/74	8/76			
	14B44	PTT	0004	BARB PT	PAC	6/76				
SH2F	2F106	WST/VIS	0001	NORVA	LANT					
	2F106	WST/VIS	0002	NORIS	PAC					
SH3	14H4	TT	0001	NORIS	PAC	4/76				
SH3A	2F64A	WST	2099	IMF B	PAC	11/75	11/76			
SH3D	2F64B	WST	2100	JAX	LANT	10/75				
	2F64B	WST	2101	IMF B	PAC	8/75	8/76			
SP2H	2F71	TT	2086	MEM	R	1/76				
S3A	2F92	WST/VIS	0001	NORIS	PAC					
	2F92	WST/VIS	0002	CECIL	LANT	2/76	12/76			
	14B49	PTT	0001	NORIS	PAC	6/76				
T2C	2F101	OFT	0001	CHAS	CNET	7/75	9/76			
	2F101	OFT	0002	NRDN	CNET	11/75	12/76			
	2F101	OFT	0003	CHAS	CNET					
	2F101	OFT	0004	PNCLA	CNET					
	2F101	OFT	0005	NRDN	CNET					
	2F101	OFT	0006	KINGS	CNET					
	2F101	OFT	0007	KINGS	CNET					
T28	2B21	IT	0001	WHIT	CNET	7/76				
	2B21	IT	0002	WHIT	CNET	7/76				
	2B21	IT	0003	CORP	CNET	6/76				
	2B21	IT	0004	CORP	CNET	6/76				
	2B21	IT	0005	WHIT	CNET	7/76				

APPENDIX I

QUALITY ASSURANCE, REVALIDATION AND CERTIFICATION SCHEDULE

As of: November 30, 1976

WEAPON SYSTEM	DEVICE NUMBER	DEVICE TYPE	DEVICE SERIAL NUMBER	LOCATION	MAJOR CLAIMANT	LAST QA&R	NEXT QA&R	CERT MO/YR	OVHL MO/YR	REMARKS
GENERAL	1A22	PTT	0001	CORP	CNET	5/76				
	1D23	PTT	0001	PNCLA	CNET	3/76				
	2B10	IT(H)	0001	ALAM	R	6/75				
	2B10A	IT(H)	0003	FUTE	HC	2/76				
	2B13A	IT(HE)	0001	CORP	CNET	4/76				
	2B13A	IT(HE)	0005	CORP	CNET	4/76				
	2B13A	IT(HE)	0008	CORP	CNET	4/76				
	2B13A	IT(HE)	0010	CORP	CNET	4/76				
	2B13A	IT(HE)	0015	DTRT	R	7/75				
	2B13A	IT(HE)	0018	NORVA	R	4/76				
	2B18	IT(H)	0001	WHIT	CNET					
	2B18	IT(H)	0002	WHIT	CNET					
	2B18	IT(H)	0003	WHIT	CNET	2/76				
	2B18	IT(H)	0004	WHIT	CNET	2/76				
	2B18	IT(H)	0005	WHIT	CNET	2/76				
	15E16	ECM OPR	0001	MOFF	PAC	12/75	12/76			
	15E18	ECM TAC	0001	PNCLA	CNET	11/75				
	15E18	PTT	0002	NORIS	PAC	2/76				
	15A19	TAOC T	0001	CH PT	HC	5/76				
	15A19	TAOC T	0002	29 PALMS	HC					
	15A19	TAOC T	0003	EL TOR	HC	6/76	10/76			
	15A19	TAOC T	0004	BEAU	HC	11/75	11/76			
	15A19	TAOC T	0005	FUTE	HC	2/76				
	15G13	CATCC	3001	MEM	CNET					
	15G19	GCA OLT	0001	MEM	CNET					
	2D2	EW COMP	0001	FALLON	PAC	11/75	11/76			
	2D2	EW COMP	0002	JAX	LANT	6/75	8/76			

Appendix J

APPENDIX J

STANDARD QA&R REPORT FORMAT

EXECUTIVE SUMMARY SHEET

Executive Summary should include simulator designation and nomenclature, locations, user, type of training accomplished and certification information. Also an abstract of the inspection report should be included highlighting significant items. Activities that are required to take action based on action item assignments should be listed.

FOREWORD

Rationale of inspection citing authorizing instructions. Signatures of Senior Inspector and Chief Technical Advisor.

I. LOGISTIC SUPPORT REVIEW

- a. Parts
- b. Publications
- c. Training
- d. Modification
  - (1) Maintenance
  - (2) Approved Configuration or Training Capability Modification
- e. Maintainability/Reliability
- f. Computer Software
- g. Rework
- h. Support Equipment
- i. Safety Hazards
- j. 3M
- k. Personnel
- l. EMI Problems
- m. Life Cycle Support Plan Review

II. OPERATIONAL EVALUATION

a. Operational Testing Procedure

b. Comments of Testing Official

(1) Statements pertaining to Fidelity of Operation vs Operational Equipment

(2) Statement concerning ability of the simulator to meet training needs.

III. SYSTEMS TEST

a. Test criteria used

b. Tests performed

c. Exceptions

NOTE: Where a system fails to meet test criteria a full explanation of difficulty will be provided.

IV. CONFIGURATION

a. PreNSD Inspection

(1) Verify Inventory Check List

(a) Hardware

(b) Software

(c) Support Equipment

(2) Verify System Performance

(3) Open Contract Items

b. Regular QA&R Inspection

(1) List latest main trainer program in use

(2) List Logistic changes installed since last review

(a) Hardware

(b) Software

(3) List training characteristics changes installed

(4) List changes installed in operational equipment (GFE/CAOE) since last review.

V. PRODUCT IMPROVEMENTS

a. Identification of configuration or training capabilities changes required.

b. Justification/Rationale

c. Impact

d. References (NATOPS/OPS)

NOTE: All action items listed in this section will be assigned as delineated in paragraph 6a(4) of enclosure (1).

VI. CERTIFICATION

a. Certification was accomplished using the following guidelines.

(1)

(2)

(3)

b. Listing of systems which were not certified (if applicable)

c. Reason for non-certification of system or simulator (if applicable)

d. Signature of Certification Officer and Certification Advisor.

VII. GENERAL

a. Maintenance activities comments

b. User activities comments

c. List of attendees

d. Miscellaneous

Appendix K

APPENDIX K

TRADEVMAN REQUIREMENTS

1. CNO (OP-59) memorandum to OP-01 of 9 January 1976 summarized the existing and projected shortfall of TDs to support device operation. The memorandum stated that the TD shortfall was so great that curtailed operation of some training devices had become necessary. OP-59 further indicated that consideration should be given to expansion of the civilian substitution program.

2. Information on the following pages was taken from the above mentioned OP-59 memorandum. The information shows a shortfall of 542 authorized TD billets in FY77 to operate and maintain aviation training devices provided for fleet training. Data documenting the TD shortfall in the flight training command is not available but informal information indicates that TD shortfall in the training command is not severe.

APPENDIX K

TRADEVMAN REQUIREMENTS

TD REQUIREMENTS SUMMARY

	76	77	78	79	80	81
ATLANTIC						
Requirement	515	515	515	515	515	515
Increase	0	46	40	60	56	56
Authorized	318	312	322	342	322	322
Shortfall	197	249	233	233	249	249
PACIFIC						
Requirement	489	489	489	489	489	489
Increase	0	82	72	88	114	114
Authorized	216	278	394	394	394	394
Shortfall	273	293	167	183	209	209
FLEET TOTAL						
Requirement	1004	1004	1004	1004	1004	1004
Increase	0	128	112	148	170	170
Authorized	534	590	716	736	716	716
Shortfall	470	542	400	416	458	458

APPENDIX K

TRADEVMAN REQUIREMENTS

FASOTRAGRULANT

NEW REQUIREMENTS

DEVICE	PERS/DEVICE	76	77	78	79	80	81
2C41	3.0	0	1	1	1	1	1
14B50	6.47	0	1	1	1	1	1
2B34	3.75	0	1	1	1	1	1
2F130	12.00	0	0	0	1	1	1
2F114	22.00	0	1	1	1	1	1
2F110	16.00	0	1	1	1	1	1
2F95	10.08	0	1	1	1	1	1
15C9	10.08	0	1	1	1	1	1
2F112	21.57	0	0	0	1	1	1
2E6	22.0	0	0	0	0	1	1
2D2	Varies	0	1(4)	1(15)	1(22)	1(22)	1(22)
		0	75	86	127	149	149

COMPENSATION

14B30	3.75	0	1	1	1	1	1
2F66	17.00	0	0	1	1	1	1
2F69D	20.00	0	0	0	1	1	1
2F67B	10.80	0	1	1	1	1	1
2C15/A	2.07	0	1	1	1	1	1
2F84/B	10.06	0	1	1	1	1	1
2C18	2.07	0	0	0	0	1	1
2F78	24.43	0	0	0	0	1	1
		0	27	44	64	90	90

NET		48	42	63	59	59
TD	0	46	40	60	56	56
AK/AZ	0	2	2	3	3	3
ADMIN	0	5	4	6	6	6
TOTAL	0	53	46	69	65	65

APPENDIX K

TRADEVMAN REQUIREMENTS

FASOTRAGRUPAC

NEW REQUIREMENTS

DEVICE	PERS/DEVICE	76	77	78	79	80	81
2C41	3.0	0	1	1	1	1	1
2CXX(S-3A)	3.0	0	1	1	1	1	1
2F92	(17.25)	0	1	1	1	1	1
2B34(S-3)	3.75	0	1	2	2	2	2
2F106	14.38	0	1	1	1	1	1
2F130	12.0	0	0	0	0	1	1
2F11A	22.0	0	1	1	1	1	1
2F122	11.5	0	0	0	1	1	1
2F67C	6.0	0	0	1	1	1	1
2F119	20.0	0	0	1	1	1	1
2C20A	4.32	0	1	1	1	1	1
2F110	16.00	0	1	1	1	1	1
15F8	14.38	0	0	0	0	1	1
2F65	10.78	0	0	0	1	1	1
2C38	2.15	0	1	1	1	1	1
2F112	21.57	0	0	0	1	1	1
		0	86	116	159	186	186

COMPENSATION

14B25	3.75	0	0	1	1	1	1
2F66	17.0	0	0	1	1	1	1
2F67C	10.8	0	0	1	1	1	1
2F84	10.06	0	0	0	1	1	1
2F65	15.81	0	0	0	1	1	1
2F72B	8.74	0	0	1	1	1	1
		0	0	40	66	66	66

NET	+86	+76	+93	+120	+120
TD	82	72	88	114	114
AK/AZ	4	4	5	6	6
ADMIN	8	8	9	12	12
TOTAL BILLETS	94	84	102	132	132

Appendix K

Appendix L

APPENDIX L

ECONOMIC ANALYSIS PROCEDURES

The Naval Air Systems Command (AIR-413), in performing the technical review of an Operational Requirement (OR) for an aviation training device, also conducts an economic analysis illustrating the impact of the proposed procurement over the useful life of the device.

General guidance for the economic analysis is provided in DOD Instruction 7041.3, "Economic Analysis of Proposed Department of Defense Investments," and in SECNAVINST 7000.14B, "Economic Analysis and Program Evaluation for Navy Resource Management."

The following pages in this appendix present a representative analysis conducted by AIR-413.

COST EFFECTIVENESS ANALYSIS

Procurement to Provide EA-6B Aircrew Training

NAVAL AIR SYSTEMS COMMAND
Washington, D.C.

July 8, 1976

Appendix L

FOREWORD

In order to simplify the information gathering process, the following analysis considers only changes in costs and benefits from the status quo that would be incurred as a result of the proposed procurement. Costs and benefits which do not change as a result of the procurement have no net effect on the cost-effectiveness of the item. Most importantly this allows more time to be spent on actual analysis and less on data gathering.

A lack of long-range planning data forces a restriction of the analysis to approximately ten years. While similar requirements with their costs and benefits will most certainly exist after ten years, it is not possible at this time to continue the present type of analysis beyond the period indicated.

All cost increases that are anticipated have been included and described. When they exist, costs which may be induced in other programs by the proposed project are included as associated costs.

Appendix L

Costs and benefits which are not easily reduceable to monetary terms are described and assessed in a separate section in the analysis.

Annual benefits and costs are displayed over the economic life of the proposed procurement and then reduced to present value for calculation of net benefits (benefits minus costs). Discount factors are taken from SECNAVINST 7000.14B, dated 18 June 1975.

Primary sources of costs are (1) capital investment, (2) modifications and updates, (3) civilian personnel O&MN, (4) military personnel O&M, (5) nonpersonnel O&M (utilities, repair parts, etc), and (6) military construction. Primary sources of benefits are (1) fuel and maintenance savings through flight hour reduction, (2) extension of aircraft life through flight hour reduction, (3) accident loss reduction through substitution of similar hours for flying hours.

I. REQUIREMENT

A. General. The proposed procurement is required to provide media for EA-6B aircrew training in EW tactics on the updated EA-6B aircraft configuration ICAP II.

B. Specification of Requirement

1. Capability. The media selected must provide the capability of providing 40 hours of specified initial training to 70 ECMO's annually and 20 hours of specified refresher training to 60 aircrews (3 ECMO's/aircrew). No capability currently exists to provide the required training on the ICAP II configuration.

2. Location and Date

a. The procurement is required and planned for the USMC station at Cherry Point.

b. Operating capability is required by FY 1980. This requires funding and full production (service use) in FY 1979.

3. Source of Requirement. The requirement for the training capability was specified in Navy Decision Coordinating Paper, No. XXX, originated by PMA 234.

II. PROPOSED PROCUREMENT

Procure system similar to 15E22A PTT in ICAP II configuration.

III. BENEFIT/COST ANALYSIS (See also Fig. 1)

A. Costs:

1. Capital Investment - An estimated $7.0\bar{M}$ is required to procure a simulator to meet the specified training requirements. This estimate is based on current industry costs for similar procurements.

2. Mods/Updates - Annual requirements based on experience.

3. O&M - Additional military personnel will be required during FY 80 - FY 83 while EXCAP training is being phased out and ICAP II training is being phased in. Increased spare parts support (Nonpers O&M) will also be required during this period.

4. Milcon - An additional room at the training facility will be required to house the new trainer.

B. Benefits:

1. Flight Hour Substitution - Expendables/Maint:

Appendix L

Aircraft Cost/Flt hr (source: Navy Program Factors Manual)

POL Cost/Flt hr	$419.77
Organ & Inter Maint/Flt Hr	264.70
Component Rework	543.49
Replenishment Spares	320.48
Engine Overhaul	55.07
	$1,603.51

Flt Hour Substitution (Source: TD Budget Exhibit)

FY 79	0
FY 80	1000
FY 81	2000
FY 82	3000
FY 83	3000
FY 84	3000
FY 85	3000
FY 86	3000
FY 87	3000
FY 88	3000
FY 89	3000

Cost Savings = (Cost/Flt hr) x (Flt Hr Substitution)

Appendix L

2. Flight Hour Substitution - Depreciation

Aircraft Acquisition Cost (Source: Budget Exhibit) $12,580M

Operational Service Life (Source: WSPD) 20 years

Depreciation Savings = (Depreciation/A/C) x (# of AC) x $\frac{\text{(Flt Hr Sub)}}{\text{(Flt Hrs + Flt Hrs Sub)}}$

3. Accident Reduction

Actual Flt Hours - 1972-1974 (Source: Aviation Safety Report): 314,022

Estimated Dollar Loss/Accidents - 1972-1974 (Source: Aviation Safety Report) $475,250,000

Loss/Flt Hr = $1,514

Accident Reduction Savings = (Flt Hr. Reduction) x (Loss/Flt Hr.)

IV. OTHER FACTORS CONSIDERED

Several factors were considered important in the decision analysis but were not reduceable to monetary quantities. The proposed procruement provides EW training which is impossible to conduct in the aircraft for two primary reasons. First, no EW ranges exist which have sufficient capability for training in the

real-world environment. Second, shipboard EW defense training would require a prohibitively costly major at-sea exercise.

PROCURE EA-6B TACTICS I CAP II TRAINER

COSTS:	FY79	FY80	FY81	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89	TOTAL	B/C RATIO
Capital Investment	7.0M												
MODS/UPDATES		.3M	.3M	.3M	.3M	5.0M	.3M	.3M	5.0M	.3M	.3M	7.0M	
O&M - CIVPERS												3.4M	
O&M - MILPERS		.01M	.02M	.02M	.01M							.06M	
O&M - NONPERS			.05M	.05M	.05M							.15M	
MILCON	.2M											.2M	
TOTAL	7.2M	.31M	.37M	.37M	.36M	5.0M	.3M	.3M	5.0M	.3M	.3M	10.81M	
PRESENT VALUE	6.869M	.269M	.292M	.265M	.235M	2.960M	.161M	.147M	2.225M	.122M	.110M	13.655M	
BENEFITS:													
FLT Hr Substitution - Expendables/ Maintenance		1.603M	3.206M	4.809M	4.809M	4.809M	4.809M	4.809M	4.809M	4.809M	4.809M	43.281M	
FLT HR Substitution - Depreciation		1.455M	2.707M	3.901M	3.901M	3.901M	3.901M	3.901M	3.901M	3.901M	3.901M	35.370M	
Accident Reduction		1.514M	3.028M	4.542M	4.542M	4.542M	4.542M	4.542M	4.542M	4.542M	4.542M	40.878M	
TOTAL		4.572M	8.941M	13.252M	13.252M	13.252M	13.252M	13.252M	13.252M	13.252M	13.52M	119.529M	
Present Value		3.964M	7.046M	9.502M	8.640M	7.845M	7.130M	6.480M	5.897M	5.367M	4.877M	66.748M	
NET BENEFITS	(6.869M)	3.695M	6.754M	9.237M	8.405M	4.885M	6.969M	6.333M	3.672M	5.245M	4.767M	53.093M	4.888

Appendix M

APPENDIX M

POM EXHIBITS

I. POM Exhibit Requirements

Current directives require the submission of the following special POM exhibits for training devices:

Flight Simulator Procurement Program

Flight Training Device Detail

II. Submission Requirements

A. The Flight Simulator Procurement Program exhibit is prepared by AIR-413 and forwarded to OPNAV as backup data in support of the Program Objectives Memorandum (POM). This exhibit provides a summary of funding requirements by weapon system and fiscal year for the proposed simulator procurement program.

B. The Flight Training Device Detail exhibit is also prepared by AIR-413 and forwarded to OPNAV as backup data in support of the POM. This exhibit displays the planned utilization and substitution hours, aircraft inventory and flying hours for the proposed simulator procurement program

FLIGHT SIMULATOR PROCUREMENT PROGRAM

Weapon System	Type	P-1 Line Item	Prior Years		FY - CY		FY - BY		FY-BY+1		FY-BY+2		FY-BY+3		FY-BY+4		Cost to Complete		Total Cost	
			Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt	Qty	Amt
A-4M	Mods																			
	Spares																			
	TOTAL																			
TA-4J	Mods																			
	Spares																			
	TOTAL																			
A-6E	WST																			
	NCLT																			
	NCLT																			
	Mods																			
	Spares																			
	Total																			
EA-6B	WST																			
	PTT																			
	Mods																			
	Spares																			
	TOTAL																			
A-7	Mods																			
	TOTAL																			
AV-8A	Mods																			
	Spares																			
	TOTAL																			
AV-8B	WST																			
	CPT																			
	TOTAL																			

FLIGHT TRAINING DEVICE DETAIL

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
5. B. Utilization							
(1) Transition							
(a) A/C Inventory							
(b) Flying Hours							
(c) A/C Util. (Fly Hr/A/C)							
(d) Training Device Hours							
OFT							
PTT							
WST							
(e) Est. A/C Flying Hours Replaced by Device Hours							
OFT							
PTT							
WST							
(Total)							
(f) Ratio - Training Device Hours to Flying Hours (F/B+E) Pilot Training Load							
(g) Ratio - Total Pilots Transitioned to A/C Inventory							
(2) Combat Unit							
(a) A/C Inventory							
(b) Flying Hours							
(c) A/C Util. (Fly Hr/A/C)							
(d) Training Device Hours							
OFT							
PTT							
WST							
(e) Est. A/C Flying Hours Replaced by Device Hours							
OFT							
PTT							
WST							
(Total)							
(f) Ratio - Training Device Hours to Flying Hours (F/B+E)							

FLIGHT TRAINING DEVICE DETAIL

			FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
5.B.	(3)	Proficiency:							
		(a) A/C Inventory							
		(b) Flying Hours							
		(c) Training Device Hours							
		(d) Est. A/C Flying Hours Replaced by Device Hours							
		(e) Ratio - Device Hours to Flying Hours (D/B+D)							
	(4)	Other							
		(a) A/C Inventory							
		(b) Flying Hours							
		(c) Training Device Hours							
		(d) Est. A/C Flying Hours Replaced by Device Hours							
		(e) Ratio - Device Hours to Flying Hours (D/B+D)							
	(5)	Undergraduate Flight:							
		(a) A/C Inventory (UE)							
		(b) Flying Hours							
		(c) Training Device Hours							
		(d) Est. A/C Flying Hours Replaced by Device Hours							
		(e) Ratio - Device Hours to Flying Hours (C/B+C)							
		(f) Average Student Load							
		(g) Ratio - Average Student Load to A/C Inventory (F/A)							

Appendix N

APPENDIX N

BUDGET EXHIBITS

I. Budget Exhibit Requirements

Current directives require the submission of the following special budget exhibits for training devices:

ST-1	Component Flight Training Device Overview
ST-2	Component Flight Training Device Summary by Weapon System or Major Device Type
ST-3	Component Flight Training Device Detail
ST-3A	Device Description
P-33A	Flight Simulator Procurement Program
P-33B	Flight Simulator Data Sheet

II. Submission Requirements

A. ST-1, 2, 3 and 3A exhibits are prepared by AIR-413 and forwarded as backup data in support of NAVAIR APN budget estimates with each budget submission. Exhibit ST-1 displays the total Navy simulator program. Exhibits ST-2, ST-3 and ST-3A display information by weapon system and by major device type. Explanatory notes, a major simulator procurement overview, and a military construction requirement overview are also included in the backup book. Samples are shown on pages L-2 through L-10.

Appendix N

B. The P-33A exhibit is also prepared by AIR-413 and forwarded as backup data with each budget submission. This exhibit provides a summary of procurement funding by weapon system and fiscal year. The data is further identified to type of device and funding for modifications and spares.

C. The P-33B exhibit provides a detailed description of a training device being procured, its funding profile and additional supporting information. The P-33B exhibit is also prepared by AIR-413 and forwarded as backup data in support of APN budget estimates. It is required to be submitted only with the Congressional budget submission.

LINE ITEM EXPLANATION

ST-2

Initial Aircraft Acquisition Cost: The cumulative average flyaway cost for the total program. Flyaway cost is the cost of an aircraft off the assembly line ready to fly with the exception of fuel and oil. No support, RDT&E or Milcon costs are included.

$$\text{Flyaway Cost} = \frac{\text{Airframe + Change allowance Engine + electronics and armament + GFE + non-recurring costs}}{\text{No. units procured}}$$

ST-3

Resource Data:

RDT&E - Not normally utilized in procurement of simulators and training devices. Simulation technology and components are centralized within industry that have the capability to deliver specified first article.

Procurement - Aircraft Procurement Navy funding. Includes: initial procurement of hardware, software, factory training, training parts, engineering changes, trainer peculiar changes.

OPN - Other Procurement Navy funding includes replenishment of repairable supply system stock.

O&MN - Non-Personnel funds include repair of repairables, simulation/device installation, reliability/maintainability changes, calibration of support equipment, replacement of consumables and utilities.

MILPERS Cost and Man-Years - Includes total personnel on allowance list and dedicated to operating/maintaining the simulator.

5.A(1)(a) Includes POL, Organizational and Intermediate Maintenance Costs, Engine Overhaul, Component

Rework, Replenishment Spares and Direct MPN for fleet readiness squadrons only.

5.A(2)(a) Sum of O&M $ + OPN $ + Milpers across FY-s

5.A(2)(c) Delivery year for earliest device in category

5.B Utilization:

Training device utilization has been calculated from a standard of 16 hrs/day, 4000 hrs/yr. A review of utilization for each major training device in the aviation inventory for FY-75 and 76 indicates a degradation factor for the devices being Not Operationally Ready (NOR) or Not Operationally Ready Supply (NORS) must be applied when that NOR/NORS occurs in excess of the planned 8 hours/day maintenance cycle. In sum, true availability of a device for training must take into account average unavailability due to unscheduled maintenance and excess down time due to trainer modifications. As appropriate, the following decrements have been applied to Navy standard utilization (4000 hrs/yr):

WST	600
OFT	500
PTT	400
CPT	200
IT	700

5.B(1)(a)
5.B(2)(a) Average aircraft inventory
5.B(3)(a)
5.B(4)(a)

5.B(1)(c) Expressed as average monthly utilization
5.B(2)(c)

5.B(1)(d) WST hours are displayed if (1) Device is designed to operate as an independent unit with WST capability, or (2) if the device is operated in an integrated or coupled mode. Remaining hours (of 4000 norm) are displayed as OFT or PTT function.

5.B(1)(g) Transition pilot training load is defined as the pilot throughput for that fiscal year. This line entry has no relationship to training device utilization.

MAJOR SIMULATION PROCUREMENT

OVERVIEW

FY	A/C	Device Number	Device Type	Device Cost
76	S-3A	2F92 w/visual	WST	7.6
TQ	P-3C	2C41 (2)	CPT	1.3
TQ	T-34C	2C42 (4)	CPT	1.0
TQ	T-44A	2F129 (2)	OFT	3.0
77	A-6E	2F122	NCLT	4.5
77	EA-6B	15E22A	PTT	3.9 (USMC)
77	P-3C	14B44 (2)	PTT	12.6 (USNR)
77	T-44A	2F129 (2)	OFT	2.370
77	TH-1	2B24	OFT	3.0
77	H-53	2F120	OFT	4.0
78	A-6E	2F122	NCLT	
78	E-2C	15F8	PTT	
78	P-3C	2F87F	OFT	
78	S-3A	2C49	CPT	
78	T-34C	(T4) devices	FIT	
78	CH-46E	2F117 w/visual	OFT	
78	CH-46E	Visual for 2F117	OFT	
79	F-18	XXXX	WST	
80	P-3C	XXXX	WST	
80	AV-8B	XXXX	WST w/o vis	
80	AV-8B	XXXX	CPT	
80	F-18	XXXX	WST	
80	A-18	XXXX	WST	
81	SH-3H	XXXX (2)	WST	
81	SH-3H	XXXX	CPT	
81	HSX(L)	XXXX	WST w/o vis	
81	AV-8B	XXXX	Visual for WST	
81	F-18	XXXX	WST	
82	HSX(L)	XXXX (2)	WST	
82	HSX(L)	XXXX	Visual for WST	
82	AV-8B	XXXX	WST	
82	AV-8B	XXXX	CPT	
82	F-18	XXXX	WST	

Appendix N

MILITARY CONSTRUCTION

OVERVIEW

FY	Project Number	Cost	Location	Training Devices
76	P-207	$ 3.229	Miramar	2F110, 2C20A, 2F112
76	P-204	1.693	Oceana	2F112,2F95, 15C9A
76	P-716	.557	Cecil	2F92A
76	P-298	.898	New River	2F120,2F117
77	P-206	1.300	Oceana	2E6
78	P-122		Moffett	2C41
78	P-502		Oceana	2F122
78	P-106		Brunswick	2F87F
78	P-732		Cherry Point	15E22A
78	P-144		Santa Ana	2F117
80			Miramar	F18 WST
80			Miramar	15F8
80			Yuma	AV-8B WST
81			Barbers Point	2F69D
81			Miramar	F-18 WST
82			North Island	2C44
82			North Island	2F130
82			Jacksonville	2F130
82			Norfolk	HSX(L) WST
82			Cherry Point	AV-8B WST

DoD Component
Component Training Device Overview

ST-1

1. Resource Overview

Funding: $(M)	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
By Appropriation:							
RDT&E							
Memorandum Entry:							
Investment							
Operating							
Procurement							
O&M							
MILCON							
MILPERS							
Memorandum Entry:							
Investment							
Operating							
Total							

2. Utilization Overview By Function

A/C Hours/Training Device Hours

Transition	Flying Hours	(Identify the source documents used to supply the information in this section, and the criteria (codes) used to segregate the data by function.)
	Training Device Hours	
Combat	Flying Hours	
	Training Device Hours	
Undergraduate	Flying Hours	
	Training Device Hours	

DoD Component

Component Training Device Summary By
Weapon System or Major Device Type

1. Weapon System or Major Device Type Nomenclature: _____

2. Aircraft Data: (as appropriate)

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
A. Inventory							
B. Utilization							
(1) Hours/Year							
(2) Hrs/Aircraft/Year							

C. Cost
(1) Cost/Flying Hour ($)_____ (2) Fuel Consumption/Hr (gals)_____
(3) Initial Aircraft Acquisition Cost_____ (4) Year Delivered (IOC)_____
(5) Expected Life_____

3. Training Devices Data:

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
A. Inventory by Device(s) Category							
CPT							
OFT							
PTT							
WST							
B. Utilization by Device Category (Hours/Year)							
CPT							
OFT							
PTT							
WST							
C. Current Year Cost by Device Category (Cost/Device Hour)							
CPT							
OFT							
PTT							
WST							

DoD Component
Component Training Device (Flight) Detail

1. Aircraft Nomenclature_____ 2. Device(s) Nomenclature_____

3. Simulator(s)/Device(s) Description: (Include characteristics such as visual, degress of motion, substitution rate, etc. of each device type if more than one is to be included on this Exhibit. Also identify major equipment contractors.)

4. Resource Data:

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
RDT&E (Qty/$M)							
Procurement (Qty/$M)							
O&M ($M)							
Memorandum Entries:							
Non-Personnel ($M)							
Civilian ($M)							
Civilian Manyears							
MILCON ($M) (Support these entries with a list of projects and their locations.)							
MILPERS ($M) (Include only those personnel directly related to training, operations, and maintenance of the device.)							
Memorandum Entry:							
Officer & Enlisted Manyears							
Total ($M)							
Simulator(s)/Device(s) Inventory							
Gains							
Losses							
Net							

5. Operational Data:
A. Costs
(1) Aircraft--
(a) Total Cost/Flying Hour_____
(b) Fuel Consumption/Hour_____

(2) Training Device--
(a) Cost/Device(s) Hour_____
(b) Initial Device Acquisition Cost_____
(c) Year Delivered_____
(d) Design Life_____

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
5. B. Utilization							
(1) Transition							
(a) A/C Inventory							
(b) Flying Hours							
(c) A/C Util. (Fly Hr/A/C)							
(d) Training Device Hours							
OFT							
PTT							
WST							
(e) Est. A/C Flying Hours Replaced by Device Hours							
OFT							
PTT							
WST							
(Total)							
(f) Ratio - Training Device Hours to Flying Hours (F/B+E) Pilot Training Load							
(g) Ratio - Total Pilots Transitioned to A/C Inventory							
(2) Combat Unit							
(a) A/C Inventory							
(b) Flying Hours							
(c) A/C Util. (Fly Hr/A/C)							
(d) Training Device Hours							
OFT							
PTT							
WST							
(e) Est. A/C Flying Hours Replaced by Device Hours							
OFT							
PTT							
WST							
(Total)							
(f) Ratio - Training Device Hours to Flying Hours (F/B+E)							

	FY-PY	FY-CY	FY-BY	FY-BY+1	FY-BY+2	FY-BY+3	FY-BY+4
5. B. (3) Proficiency:							
(a) A/C Inventory							
(b) Flying Hours							
(c) Training Device Hours							
(d) Est. A/C Flying Hours Replaced by Device Hours							
(e) Ratio - Device Hours to Flying Hours (D/B+D)							
(4) Other							
(a) A/C Inventory							
(b) Flying Hours							
(c) Training Device Hours							
(d) Est. A/C Flying Hours Replaced by Device Hours							
(e) Ratio - Device Hours to Flying Hours (D/B+D)							
(5) Undergraduate Flight:							
(a) A/C Inventory (UE)							
(b) Flying Hours							
(c) Training Device Hours							
(d) Est. A/C Flying Hours Replaced by Device Hours							
(e) Ratio - Device Hours to Flying Hours (C/B+C)							
(f) Average Student Load							
(g) Ratio - Average Student Load to A/C Inventory (F/A)							

Weapon System: A-7 Device Category: PTT

Device 2F103 Night carrier landing trainer provides training for A7 pilots in initial night carrier qualification and allows experienced pilots to maintain night carrier landing proficiency. Device simulates the A7E cockpit and incorporates a three degree-of-freedom motion system and visual reference system to achieve the realism required for this type training. All flight controls, engine controls, instrumentation, communication and navigation equipment required to produce the night operational characteristics of the A7E are closely simulated. Non-functional equipment and systems are included as replicas to complete the cockpit environment. Through special lenses and closed circuit TV, the trainee is provided with a 40 degree horizontal and 30 degree vertical color view of either the CVA-42 or CVA-61 carrier class deck lighting and fresnel lens optical landing system (FLOLS). The A7 heads-up display is simulated to provide the pilot with carrier landing symbology. The training exercise can be monitored and controlled from an instructors station. The instructor can vary the degree of difficulty for each exercise through selection of either or both carrier and aircraft environmental parameters. Carrier speed and heading, wind speed and direction, visibility, ceiling and horizontal intensity are all variable at the instructors option. To further complicate the training exercise, the instructor can introduce up to 14 operational malfunctions during the training mission. The instructor can freeze the problem at any point to discuss or emphasize a particular training situation.

CONTRACTOR: LTV AEROSPACE CORP.

FLIGHT SIMULATOR PROCUREMENT PROGRAM

P-33A

Weapon System	Type	P-1 Line Item	Prior Years Qty	Prior Years Amt	FY - CY Qty	FY - CY Amt	FY - BY Qty	FY - BY Amt	FY-BY+1 Qty	FY-BY+1 Amt	FY-BY+2 Qty	FY-BY+2 Amt	FY-BY+3 Qty	FY-BY+3 Amt	FY-BY+4 Qty	FY-BY+4 Amt	Cost to Complete Qty	Cost to Complete Amt	Total Cost Qty	Total Cost Amt
A-4M	Mods																			
	Spares																			
	TOTAL																			
TA-4J	Mods																			
	Spares																			
	TOTAL																			
A-6E	WST																			
	NCLT																			
	NCLT																			
	Mods																			
	Mods																			
	Spares																			
	TOTAL																			
EA-6B	WST																			
	PTT																			
	Mods																			
	Spares																			
	TOTAL																			
A-7	Mods																			
	TOTAL																			
AV-8A	Mods																			
	Spares																			
	TOTAL																			
AV-8B	WST																			
	CPT																			
	TOTAL																			

NAVY

FLIGHT SIMULATOR DATA SHEET
FY 1977

P-33B

SIMULATOR MODEL: INSTRUMENT TRAINER (IT)

AIRCRAFT SYSTEM SUPPORTED: TH-1L

DESCRIPTION OF SIMULATOR

DEVICE 2B24 SIMULATOR SYSTEM CONSISTS OF A COMPLEX OF FOUR SIMULATED COCKPITS DRIVEN BY A SINGLE DIGITAL COMPUTER SYSTEM. EACH COCKPIT IS MOUNTED ON A FIVE-DEGREE-OF-FREEDOM MOTION BASE. A CENTRAL INSTRUCTOR STATION IS PROVIDED FROM WHICH TRAINEE PERFORMANCE IN ALL FOUR COCKPITS CAN BE CONTROLLED AND MONITORED. EACH OF THE FOUR TRAINEE STATIONS IN EACH SIMULATOR COMPLEX CONSISTS OF THE FOLLOWING MAJOR GROUPS OF EQUIPMENTS:

- A COCKPIT SHELL, INCLUDING SUPPORTING STRUCTURE, WINDSHIELD, WINDOWS, DOORS, AND COCKPIT VENTILATION SYSTEM.
- COCKPIT EQUIPMENT, INSTRUMENTS, CONTROLS, SEATS, AND FURNISHINGS.
- CONTROL LOADING SYSTEM.
- ENVIRONMENTAL EFFECTS EQUIPMENT, INCLUDING A COCKPIT MOTION SYSTEM AND SOUND SIMULATION EQUIPMENT.
- PROBLEM CONTROL PANEL AND TRAINEE INFORMATION DISPLAY PANEL.

DEVELOPMENT STATUS

THIS INSTRUMENT TRAINER HAS BEEN DEVELOPED AND PROCURED BY THE ARMY IN SUPPORT OF THEIR PILOT TRAINING PROGRAM. MINOR CHANGES WILL BE MADE TO PROVIDE A SIMULATOR THAT WILL MEET THE NAVY TRAINING REQUIREMENTS.

FUNDING DATA (DOLLARS IN MILLIONS)	FY-75	FY-76	FY-TQ	FY-77	FY-78	FY-79	FY-80	FY-81
QUANTITY	0	0	0	1	0	0	0	0
RDT & E	0	0	0	0	0	0	0	0
APN PROCUREMENT	0	0	0	3.0	0	0	0	0
APN SUPPORT	0	0	0	0	0	0	0	0
MILCON	0	.487	0	0	0	0	0	0
TOTAL	0	.487	0	3.0	0	0	0	0

FLIGHT SIMULATOR DATA SHEET
FY 1977 (CONT'D)

BASIS FOR REQUEST

THE 2B24 DEVICE IS NEEDED TO SUPPLEMENT UNDERGRADUATE PILOT TRAINING ON 2B18 HELO BASIC INSTRUMENT TRAINERS. THIS INSTRUMENT TRAINING WILL ENHANCE FLIGHT SAFETY BY MAKING AVAILABLE MORE TRAINER INSTRUMENT TIME IN A CURRENT AIRCRAFT CONFIGURED TRAINER. THE USE OF 2B24 IS PROJECTED TO SAVE OVER 6200 AIRCRAFT FLIGHT HOURS, AND THUS REDUCE AIRCRAFT COSTS AND CUT FUEL CONSUMPTION BY APPROXIMATELY 496,000 GALLONS PER YEAR.

CONTRACT DATA	CONTRACTOR	PLANNED/ACTUAL AWARD DATE	TYPE OF CONTRACT
BUDGET YEAR (FY-77)	SINGER	9/75 (ARMY)	FPI
PRIOR YEAR STATUS (FY-TQ) NAP			
COST HISTORY COMPARISON: NAP			

Appendix N

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

ACMS - Air Combat Manuevering Simulator

AM - Acquisition Manager

APDM - Amended Program Decision Memorandum

APL - Allowance Parts List

APN - Aircraft Procurement, Navy

APP - Advanced Procurement Plan

ARC - Acquisition Review Committee

ASC - Advanced System Concept

ASD( ) - Assistant Secretary of Defense
(C) Comptroller
(I&L) Installations and Logistics
(M&RA) Manpower and Reserve Affairs

ASN( ) - Assistant Secretary of the Navy
(FM) Financial Management
(I&L) Installations and Logistics
(M&RA) Manpower and Reserve Affairs
(R&D) Research and Development

ASO - Aviation Supply Office

ASPR - Armed Services Procurement Regulations

ASW - Anti-Submarine Warfare

BA - Budget Activity

BIS - Board of Inspection and Survey

BUPERS - Bureau of Naval Personnel

BY - Budget Year

CAO - Contract Administration Officer

CCB - Change Control Board (NAVAIRSYSCOM)

CDRL - Contract Data Requirements List

CEB - CNO Executive Board

CER - Cost Estimating Relationships

CETS - Contractor Engineering and Technical Services

CFA - Cognizant Field Activity

CHNAVMAT - Chief of Naval Material

CI - Configuration Item

CM - Configuration Management

CNATRA - Chief of Naval Air Training

CNET - Chief of Naval Education and Training

CNETS - Chief of Naval Education and Training Support

CND - Chief of Naval Development

CNM - Chief of Naval Material

CNO - Chief of Naval Operations

CMC - Commandant of the Marine Corps

COMNAVAIRLANT - Commander Naval Air Forces, Atlantic

COMNAVAIRPAC - Commander Naval Air Forces, Pacific

CPAM - CNO Program Analysis Memorandum

CPFG - CNO Program and Fiscal Guidance

CPPG - CNO Policy and Planning Guidance

CPT - Cockpit Procedures Trainer

CSA - Configuration Status Accounting

CY - Two Meanings:
Calendar Year
Current Year

D&F - Determination and Findings

DA - Design Approach

DCAA - Defense Contract Audit Agency

DCAS - Defense Contract Administration Service

DCN - Design Change Notice

DCNO - Deputy Chief of Naval Operations

DCP - Decision Coordinating Paper (formerly Development Concept Paper)

DDR&E - Director, Defense Research and Engineering

DEPSECDEF - Deputy Secretary of Defense

DID - Data Item Description

DMSO - Director, Major Staff Office

DNFYP - Department of the Navy Five-Year Program

DNPP - Director, Navy Program Planning

DOD - Department of Defense

DODINST - Department of Defense Instruction

DON - Department of the Navy

DONPIC - Department of the Navy Program Information Center

DNPPG - Department of the Navy Planning and Programming Guidance

DP - Development Proposal

DPPG - Defense Policy and Planning Guidance

DSARC - Defense Systems Acquisition Review Council

ECP - Engineering Change Proposal

EFD - Engineering Field Division

FASOTRAGRU - Fleet Aviation Specialized Training Group

FER - Field Engineering Representative

FPI - Fixed Price Incentive

FRS - Fleet Readiness Squadron

FPT - Fleet Project Team

FRD - Facilities Requirements Document

FY - Fiscal Year

FYDP - Five-Year Defense Program

GAO - General Accounting Office

GFE - Government Furnished Equipment

GFP - Government Furnished Property

GSE - Ground Support Equipment

ICP - Inventory Control Point

ILS - Integrated Logistic Support

ILSMT - ILS Management Team

IP - Issue Paper

IRPL - Interim Repair Parts List

ISD - Instructional Systems Development

ISS - Initial Supply System Stock

JCS - Joint Chiefs of Staff

JFM - Joint Force Memorandum

JSOP - Joint Strategic Objectives Plan

JSPS - Joint Strategic Planning System

K - Thousand

LCC - Life Cycle Costing

LEM - Logistic Element Manager

LM - Logistics Manager

LRGT - Logistics Requirements Generation Team

$\overline{m}$ - Million

MAC - Months After Award of Contract

MARCOR - Marine Corps

MARP - Manpower Allocation/Requirements Plan

MC - Military Characteristics

MCON - Military Construction, Navy

MCON (R) - Military Construction, Navy (Reserve)

MCP - Mission Concept Paper

MPMC - Military Personnel, Marine Corps

MPN - Military Personnel, Navy

MSOD - Maintenance Support Office Department

MSPG - Material Support Planning Guidance

MT - Mission Trainer

3-M - Maintenance and Material Management System

NADEC - Navy Decision Center

NAILSC - Naval Aviation Integrated Logistic Support Center

NAMP - Naval Aviation Maintenance Program

NARM - Navy Resources Model

NATC - Naval Air Test Center

NAVAIR - Naval Air Systems Command

NAVCOMPT - Comptroller of the Navy

NAVELEX - Naval Electronics Systems Command

NAVFAC - Naval Engineering Facilities Command

NAVSUP - Naval Supply Systems Command

NCB - Director of Budget and Reports, NAVCOMPT

NCLT - Night Carrier Landing Trainer

NCIS - Navy Cost Information System

NDCP - Navy Decision Coordinating Paper

NETSC - Naval Education and Training Support Center

NPD - Navy Procurement Directives

NSD - Navy Support Date

NTEC - Naval Training Equipment Center

NTP - Navy Training Plan

OASD - Office, Assistant Secretary of Defense

O&MMC - Operations and Maintenance, Marine Corps

O&MMCR - Operations and Maintenance, Marine Corps, Reserve

O&MN - Operations and Maintenance, Navy

O&MNR - Operations and Maintenance, Navy, Reserve

OCMM - Office of Civilian Manpower Management

OFT - Operational Flight Trainer

OMB - Office of Management and Budget

OPEVAL - Operational Evaluation

OPN - Other Procurement, Navy

OPNAV - Office of the Chief of Naval Operations

OPTEVFOR - Operational Test and Evaluation Forces

OR - Operational Requirement
Operationally Ready

OSD - Office of the Secretary of Defense

OSIP - Operational Safety Improvement Program

PAM - Program Analysis Memorandum

PBD - Program Budget Decision

PC - Program Coordinator

PDA - Principal Development Activity

PDM - Program Decision Memorandum

PDRC - Program Development Review Committee

PDP - Proposed Development Plans

PE - Program Element

PEP - Proposal Evaluation Plan

PM - Project Manager

PMA - Project Manager, Air

PMS - Planned Maintenance Systems

POM - Program Objectives Memorandum

PPBS - Planning, Programming and Budgeting System

PPGM - Planning and Programming Guidance Memorandum

PPL - Parts Provisioning List

PPS - Procurement Planning Schedule

PR - Procurement Request

PSICP - Product Support Inventory Control Point

PTT - Part Task Trainer

PY - Prior Year

QA&R - Quality Assurance and Revalidation

RAD - Resource Allocation Display

R&D - Research and Development

RDT&E,N - Research, Development, Test and Evaluation, Navy

RAMEC - Rapid Action Minor Engineering Change

RFI - Ready For Issue

RFP - Request For Proposal

SAC - Senate Appropriations Committee

SAR - Selected Acquisition Report

SASC - Senate Armed Services Committee

SECDEF - Secretary of Defense

SECNAV - Secretary of the Navy

SISMS - Standard Integrated Support Management System

SM&R - Source, Maintenance and Recoverability

SNAP - Summary Department of Navy Approved Program

SPCC - Ships Parts Control Center

SPP - Sponsor Program Proposals

SSA - Software Support Activity

SSEB - Source Selection Evaluation Board

T&E - Test and Evaluation

TACAIR - Tactical Air Forces

TAP - Task Area Plan

TCP - Trainer Change Proposal

TDSD - Training Device Statistical Data

TECD - Training Equipment Change Directive

TECCB - Training Equipment Change Control Board (NTEC)

THOTS - Technical Hands-On Training System

TOA - Total Obligational Authority

TP - Technical Proposal

TPOM - Tentative Program Objectives Memorandum

TPR - Technical Proposal Requirements

TSC - Training Support Center

TT - Tactics Trainer

UIC - Unit Identifier Code

VCNO - Vice Chief of Naval Operations

WPN - Weapons Procurement, Navy

WSPD - Weapon System Planning Document

WS/TE - Weapon System/Training Equipment

WST - Weapon System Trainer

GLOSSARY OF TERMS

GLOSSARY OF TERMS

The publications/directives used to define the following terms are listed at the end of this appendix. The letter (A through L) found at the end of each definition identifies the source document.

Allotment - An authorization granted within and pursuant to an allocation for the purpose of incurring commitments, obligations, and expenditures in the accomplishment of an approved budget. Therefore, an allotment is a subdivision of an appropriation which provides the funding authority for an official to accomplish a specific function or mission. (E)

Amended Program Decision Memorandum (APDM) - A document which provides final program decisions after SECDEF has reviewed Service reclamas to PDM and Service Secretary's discussion of major issues involved. (E)

Apportionment - A determination by the Office of Management and Budget as to the amount of obligations which may be incurred during a specified period under an appropriation, contract authorization, other statutory authorizations, or a combination thereof. An apportionment may relate either to all obligations to be incurred during the specified period within an appropriation account or to obligations to be incurred for an activity, function, project, object or combination thereof. (E)

Appraisal - Impartial analysis of information, at each responsible management and control level, from which the effectiveness and efficiency of the total process can be measured and preventive/corrective action determined. (E)

Appropriation - An appropriation is an annual authorization by an Act of Congress to incur obligations for specified purposes and to make payments out of the Treasury. Appropriations are subdivided into budget activities, sub-heads, programs, projects, etc. (E)

Annual Appropriation - Also known as one-year appropriations. This appropriation is generally used for current administrative, maintenance, and operational programs, including the procurement of items classified as "expense." These appropriations are available for

obligation for one fiscal year and for expenditures for two additional years. This additional two year period for expenditure may be extended by Congress. At the end of the three year period of availability, or such other period as approved by Congress, any unexpended balance in an annual appropriation is transferred to the designated successor or "M" account. (E)

Continuing Appropriation - Also known as no-year appropriations. These appropriations provide funds for completing long-range projects, and the funds appropriated remain available for obligation and expenditure until the projects are completed and/or the funds are expended. Normally established for construction and procurement of investment items. (E)

Multi-Year Appropriation - An appropriation which is available for incurring obligations for a definite period in excess of one fiscal year; i.e., for two or more years. (E)

Appropriation Sponsor - An Appropriation Sponsor is a DCNO or DMSO who is responsible for supervisory control over an appropriation. Resource application must satisfy the Mission Sponsor's goal and objectives and support the force levels and program objectives of the Function and Program Sponsor. (E)

Approved Programs - Resources or data reflected in the latest DNFYP as modified by subsequent Program Change Decisions (PCDs), Program/Budget Decisions (PBDs), other Secretary of Defense decisions, or below-threshold changes approved by the head of a DOD component. (E)

Acquisition Manager - A key individual who has been assigned the overall responsibility for acquisition of a weapons system. Definition herein refers to the command responsible for procurement of training devices and planning for integrated support of those devices. NAVAIR 413 is the primary Acquisition Manager, but may delegate the role to NTEC. (L)

Base Fiscal Year - That fiscal year arrived at by adding one to the current calendar year. (F)

Budget - A planned program for a fiscal period in terms of (a) estimated costs, obligations, and expenditures, (b)

source of funds for financing, including reimbursements anticipated, and other resources to be applied, and (c) history and workload data on the projected programs and activities. (E)

Budgeting - The process of translating approved resource requirements (Manpower & Material) i to time-phased financial requirements. (E)

Budget Year - (1) The current fiscal year plus one. (E)
(2) The fiscal year which is the subject of new budget estimates. (B)

Casualty Correction Report (CASCOR) - Follow-up to a CASREP to indicate previously failed equipment has been returned to service. (L)

Casualty Report (CASREP) - Report of equipment failure severe enough to put the the equipment out of operation. (L)

CNO Executive Board (CEB) - A board, chaired by the VCNO, composed of the senior flag-officer advisors to the Chief of Naval Operations, designed to assist the CNO by providing advice on strategy, policy and programs and assisting in the analysis of decision alternatives. (L)

CNO Policy and Planning Guidance (CPPG) - Transmits the essence of the SECDEF's policy and planning guidance as it applies to the Navy, along with the CNO's amplification of this guidance, his goals and priorities. (L)

CNO Program Analysis Memoranda (CPAM) - Provides in-depth analysis of each major mission and support category and alternatives as to how best to accomplish the goals of the CPPG. It is structured for decision-making. (L)

Cockpit Familiarization Trainer (CFT) - A trainer incorporating a facsimile of the flight stations of a specific aircraft. It is primarily for the use of pilots, other flight officers, flight engineers transitioning to a new type aircraft and for refresher training for experienced personnel. The device will normally be used to prepare trainees for entry into an Operational Flight Trainer or into the aircraft. It will be used to facilitate the learning of the location of the various controls, instruments, switches, and lights in the cockpit and to learn repetitive tasks such as checklists, and normal and

emergency operating procedures. The trainer may also be used in the classroom for a teaching aid. The controls, switches, and instruments are not activated for response to trainee inputs. All annunciator lights are operable from the instructor's panel for demonstration purposes. (L)

Cockpit Procedures Trainer (CPT) - A trainer used to aid in transitioning aircrewmen to a designated aircraft; to provide cockpit familiarization and training in systems procedures of normal, alternate, and emergency types. Applicable aircraft instruments and other indicators are activated to respond appropriately to trainee control inputs; exact dynamic simulation of all functions is not required. (L)

Cognizance Symbol - Alphabetical or alphabetical-numerical codes prefixed to Navy stock numbers to identify and designate the bureau, office, or supply demand control point that exercises supply management over specified categories of material. (K)

Commitment - A firm administrative reservation of funds, based upon firm procurement directives, orders, requisitions, authorizations to issue travel orders, or requests which authorize the recipient to create obligations without further recourse to the official responsible for certifying the availability of funds. The act of entering into a commitment is usually the first step in the process of spending available funds. The effect of entering into a commitment and the recording of that commitment on the records of the allotment is to reserve funds for future obligations. A commitment is subject to cancellation by the approving authority to the extent that it is not already obligated. (E)

Configuration Control - The systematic evaluation, coordination, approval or disapproval, and implementation of all approved changes in the configuration of a configuration item after formal establishment of its configuration identification. (K)

Configuration Control Board - A board composed of representatives from program/project functional areas such as engineering, configuration management, procurement, production, test and logistic support, training activities and using/supporting organizations. This board approves or disapproves proposed engineering changes with each member

recording his organization's official position. The program/project manager is normally the board chairman and makes the final decision on all changes unless otherwise directed by command policy. The board issues a directive/ request to implement its decision. (L)

Configuration Identification - The current approved or conditionally approved technical documentation for a configuration item as set forth in specifications, drawings and associated lists, and documents referenced therein. (K)

Configuration Item - An aggregation of hardware/software, or any of its discrete portions, that satisfies an end use function and is designated by the Government for configuration management. CI's may vary widely in complexity, size, and type--from an aircraft, electronic, or ship system to a test meter or round of ammunition. During development and initial production, CI's are only those specification items that are referenced directly in a contract (or an equivalent in-house agreement). During the operation and maintenance period, any repairable item designated for separate procurement is a configuration item. (K)

Configuration Management - A discipline applying technical and administrative direction and surveillance to (1) identify and document the functional and physical characteristics of a configuration item, (2) control changes to those characteristics, and (3) record and report change processing and implementation status. (K)

Configuration Status Accounting - The recording and reporting of the information needed to manage configuration effectively, including a listing of the approved configuration identification, the status of proposed changes to configuration, and the implementation status of approved changes (K).

Contracting Officer - A designated official who is authorized to enter into contracts for supplies or services on behalf of the Government and in the name of the United States of America, by formal advertising, by negotiation, or by coordinated or interdepartmental procurement and when authorized, to administer such contracts in accordance with ASPR. (L)

Cost/Effectiveness Analysis - A method for examining alternative means of accomplishing a desired military objective/

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mission for the purpose of selecting weapons and forces which will provide the greatest military effectiveness for the cost. (E)

Current Dollars - The cost of a weapon system or service expressed in terms of dollars as existing today based upon an anticipated economic escalation. (E)

Defense Policy and Planning Guidance (DPPG) - Establishes the preliminary strategic framework for the planning, programming and budgeting phases of the PPBS. (E)

Department of the Navy Five Year Program (DNFYP) - The Navy's official programming document commonly referred to as the Blue Streak. This publication consists of volumes or booklets and displays the Navy's portion of the Five Year Defense Program (FYDP). SECDEF approved forces, manpower, and financial data are given for each Navy Program Element for the current budget and program years. (E)

Department of the Navy Planning and Programming Guidance (DNPPG) - Transmits Secretary of the Navy planning and programming guidance to the Department of the Navy at the appropriate times in the PPBS process. (E)

Design to Cost - Designing and developing a weapon system to a prescribed acquisition plan, operating and support cost. (E)

Decision Coordinating Paper (DCP) - A document prepared by the Director of Defense Research and Engineering (DDR&E) and coordinated with key DOD officials providing a summary management document for Secretary of Defense decisions on important development and engineering modification programs. The document serves as a source of primary information and rationale and for updating the FYDP. Formerly called Development Concept Paper. (F)

DOD Planning/Programming/Budgeting System (PPBS) - An integrated system for the establishment, maintenance and revision of the FYDP and the DOD budget. (F)

Economic Analysis - A systematic approach to a given problem, designed to assist the manager in solving a problem of choice. The full problem is investigated; objectives and alternatives are searched out and compared in the light of their benefits and costs through the use of an appropriate analytical framework. (I)

Economic Life - The period of time over which the benefits to be gained from a system may reasonably be expected to the Navy. (I)

Engineering Change Proposal - A term that includes both a proposed engineering change and the documentation by which the change is described and suggested. (K)

Execution - The operation of carrying out a program as contained in the approved budget. (E)

Field Engineering Representative(s) - Engineers employed by the NETSC to provide technical and material support to device custodians. (L)

Five Year Defense Program (FYDP) - The official program which summarizes the Secretary of Defense approved plans and programs for the Department of Defense. The FYDP is published at least once annually. The FYDP is also represented by a computer data base which is updated regularly to reflect decisions. (F)

Function Sponsor - The DCNO/DMSO designated as responsible for the preparation, substantiation, and justification of a Navy position on the level, composition and related direct support for a force, platform or support area. The Function Sponsor receives guidance from the Mission Sponsor relative to mission related requirements. (E)

Integrated Logistic Support - A composite of the elements necessary to assure the effective and economical support of a system or equipment at all levels of maintenance for its programmed life cycle. ILS is both a means to an end and an end in itself. It is combined planning, management, and execution process for obtaining both a supportable item and the required item support. It encompasses logistics in the broad sense, e.g., money, manpower, and materials. It concerns the relationship of these basic commodities with each other and with the established time frame or schedule for their acquisition and application toward the creation and maintenance of a military capability. (K)

Inventory Control Point - An organizational unit or activity within a DOD supply system that is assigned the primary responsibility for the material management of a group of items either for a particular service or for the DOD as a whole. Material inventory management includes cataloging

direction, requirements computation, procurement direction, distribution management, disposal direction, and generally rebuild direction. (K)

Issue Paper - Issue Papers may be written to focus attention on program imbalances or unfunded systems or functions, potential resource savings, alternative methods for mission/program accomplishment or reassessment of threat. (L)

Joint Force Memorandum (JFM) - A document prepared annually by the JCS and submitted to the Secretary of Defense which provides recommendations on the joint force program within the fiscal guidance issued by the Secretary of Defense. (F)

Joint Strategic Objectives Plan (JSOP) - A document prepared annually which provides the advice of the Joint Chiefs of Staff to the President and the Secretary of Defense on the military strategy and force objectives for attaining the national security objective of the United States. In addition to recommendations on major forces, it includes the rationale supporting the forces and assessment of risks associated therewith, costs and manpower estimates, and other supporting data. (E)

Life Cycle Cost - The total cost to the government for the development, acquisition, operation and logistic support of a system or set of forces over a defined life span. (E)

Major Claimant - An office, bureau or command designated as an administering office under the O&MN and O&MNR appropriations in NAVCOMPT Manual, par 02201-9 and who receives a major claimant operating budget directly from the Chief of Naval Operations (Fiscal Management Division)(OP-92). (L)

Military Characteristics - A document that identifies the source of the training requirement, provides an analysis of the training situation, identifies and recommends instructional media, sets forth the Integrated Logistic Support requirements, and provides an evaluation/introduction/validation plan. It is prepared in close coordination with the Fleet Project Team. (L)

Mission Sponsor - The CMC, A DCNO or a Director of a Major Staff office (DSMO) who is responsible for developing the overall goals, objectives, rationale, justification, and resource requirements, for a specified mission area. (E)

Naval Education and Training Support Center(s) - Refers to subordinates of Chief of Naval Education and Training Support (CNETS) located in Norfolk, San Diego and Pensacola. The NETSC mission includes technical support to device custodians. (K)

Navy Program Factors - A confidential publication which lists the Program Factors used in estimating the resource requirements (material; personnel; dollars) for various force levels. The Program Factors are used when rapid approximations are needed and are utilized as inputs to the Navy Cost Model. (E)

New Obligational Authority (NOA) - Authority becoming newly available for a given year, provided by current and prior actions of the Congress, enabling Federal Agencies to obligate the government to pay out money. (E)

Objective - A goal, expressed as that portion of "what," "when," and "where," of a requirement which is reasonably feasible of attainment within the expected availability of the resources of men, money, and technological capability. (E)

Obligation - The amount of an order placed, contract awarded, service received, or other transaction which legally reserves a specified amount of an appropriation or fund for expenditure. (E)

Operational Flight Trainer (OFT) - A trainer which dynamically simulates the flight characteristics of the designated aircraft to train pilots in cockpit procedures, instrument flight procedures, emergency procedures, communications and navigation procedures, and limited mission execution. (L)

Operational Requirement (OR) - A concise statement of operational needs. The OR is the basic requirement document for all Navy acquisition programs requiring R&D effort. (L)

Part-Task Trainer (PTT) - A device which permits selected aspects of a task to be practiced independently of other elements of the task. Its purpose is to provide economical training on certain elements requiring special practice which are not dependent upon the total equipment. (L)

Plan - The required actions or capabilities needed to accomplish a mission. (E)

Planning and Programming Guidance Memorandum (PPGM) - Annual guidance issued by the Secretary of Defense which provides the guidelines that must be observed by the JCS, the Military Departments, and Defense Agencies, in the formulation of force structures and Five-Year Defense Programs, and by the Secretary of Defense staff in reviewing proposed programs. (E)

Program - Two definitions

(1) A combination of program elements designed to express the accomplishment of a definite objective or plan which is specified as to the time-phasing of what is to be done and the means proposed for its accomplishment. Programs are aggregations of program elements, and, in turn, aggregate to the total FYDP. (F)

(2) A plan or scheme of action designed for the accomplishment of a definitive objective which is specific as to the time-phasing of the work to be done and the means proposed for its accomplishment, particularly in quantitative terms, with respect to manpower, material, and facilities requirements. This program provides a basis for budgeting. (B)

Program/Budget Decision (PBD) - A Secretary of Defense decision in prescribed format authorizing changes to a submitted budget estimate and the FYDP. (F)

Program Coordination Group - A group composed of representatives from participating activities to assist the Program Coordinator in formulating and coordinating those aspects of the programs under their cognizance. The Program Coordinator shall be Chairman, ex-officio. It will include the appropriate NMC Project Manager, or his representative, as appropriate, or other NMC representative, as designated by CNM. (E)

Program Coordinator - The individual within OPNAV who is responsible to a Program Sponsor for the formulation and administration of a program. (E)

Program Cost - The estimate of Total Obligational Authority (TOA) required. (F)

Program Decision Memorandum (PDM) - A document which provides decisions of the Secretary of Defense on POMs and the JFM. (F)

Program Development Review Committee (PDRC) - A flag-level committee, chaired by the Director, General Planning and Programming Division (OP-90), which reviews each major step of the POM development process. (L)

Program Factor - A rate which is used in planning in relation to a program measure (by multiplication) to derive another program measure or cost. Generally the factor is a ratio derived from past experience data. For example, a rate of consumption of fuel multiplied by flying hours programmed equals fuel consumption programmed. The rate is derived from past data, e.g., fuel consumed divided by flying hours means quantity of fuel consumed per hour. (B)

Program Objectives Memorandum (POM) - A memorandum in prescribed format submitted to the Secretary of Defense by the Secretary of a Military Department or the Director of a Defense Agency which recommends the total resource requirements within the parameters of the published Secretary of Defense fiscal guidance. (F)

Program Sponsor - A DCNO or a DMSO who, by organization charter, is responsible for determining program objectives, time phased support requirements, and for appraising progress, readiness, and military worth for a given weapon system, function, or task in support of the goals and objectives of the appropriate Mission Sponsor. In selected instances, the Program Sponsor may also be a Function Sponsor. The Program Sponsor will be the primary Navy spokesman on matters related to the requirements for and development/ procurement progress of the particular program. (E)

Program Support Inventory Control Point - The Naval Material Command activity that has supply management responsibility for peculiar repair parts for the end item being provisioned and is responsible for assuring that the applicable inventory managers have accepted support for all items under their cognizance. (K)

Program Year - A fiscal year in the Five Year Defense Program that ends not earlier than the second year beyond the current calendar year. Thus, during calendar year 1971, the first program year is FY 1973. (F)

Programming (DOD Programming System) - The process of translating planned military force requirements into time-phased manpower and material resource requirements. (E)

Programming Cost - Cost data for making program decisions. Programming costs are based on sets of factors which will provide consistent cost data under the same or similar circumstances, and which are directly related to the explicit elements of the program decision. (F)

Project - A planned undertaking having a finite beginning and ending, involving definition, development, production, and logistic support of a major weapon or weapon support system or systems. A project may be the whole or part of a program. Within the NMC, a Designated Project is a project which, because of its importance or critical nature, has been selected for intensified project management. (E)

Project Management - Management of a project, using organizational or procedural alignments, which will permit varying degrees of intensified direction. This may apply to management of a complete system or any portion thereof, and it may include all phases of development, production, and distribution, or be limited to a single phase, e.g., development. (C)

Project Manager - The individual within the NMC, Bureaus, and Offices responsible, within well-defined boundaries of time, resources, and performance requirements, for executing an approved project. (E)

Ready-for-Training (RFT) - The condition in which all elements (including the training device, logistics support, maintenance support, training syllabus and lesson plans, and instructors) are certified by the Cognizant Commander as being available for training, and the performance of the training device conforms with the requirements of the approved military characteristics. (L)

Reclama - A formal appeal in the DOD decision-making process through which an issue that has been disapproved (in whole or part) may be resubmitted for further consideration. (E)

Requirement - Two definitions

(1) The need or demand for personnel, equipment, facilities, other resources, or services, by specific quantities for specific periods of time or at a specified time. (E)

(2) For use in budgeting, item requirements should be screened as to individual priority and approved in the light of total available budget resources. (B)

Selected Acquisition Report (SAR) - A report prepared for the Secretary of Defense which summarizes current estimates of technical, schedule, and cost performance in comparison with the original plans and current program. (G)

Simulator - Training hardware that is designed specifically for training purposes to simulate operational equipment/system or portions thereof, and which simulates the operational environment in a training situation. When operated, it becomes a dynamic model of the appearance and performance of selected aspects of the operational equipment/system. May be designed for part task, full task, sub-team, team, multi-team training or combinations thereof. (L)

Specified Command - A command which has a broad continuing mission and which is established and so designated by the President through the Secretary of Defense with the advice and assistance of the Joint Chiefs of Staff. It normally is composed of forces from but one Service. (A)

Sponsor - There are several types of sponsorship roles in the Navy. The following definitions of different types of sponsors in the PPBS arena are shown here for ease of identification and comparison. The term "Function Sponsor" defined below replaced the previously used terms "Platform Sponsor," "Force/Function Sponsor" and "Navy-Wide Support Sponsor" effective with the initiation of POM-78 development. (E)

Appropriation Sponsor - An Appropriation Sponsor is a DCNO or DMSO who is responsible for supervisory control over an appropriation. Resource application must satisfy the Mission Sponsor's goals and objectives and support the force levels and program objectives of the Function and Program Sponsor. (E)

Function Sponsor - A Function Sponsor is the DCNO/DMSO designated as responsible for the preparation, substantiation, and justification of a Navy position on the level, composition and related direct support for a force, platform or support area. The Function Sponsor receives guidance from the Mission Sponsor relative to mission related requirements. (E)

Mission Sponsor - A Mission Sponsor is a DCNO or a Director of a Major Staff Office (DSMO) who is responsible for developing the overall goals, objectives, rationale, justification and resource requirements for a specified mission area. (E)

Program Sponsor - A Program Sponsor is a DCNO or a DSMO who, by organization charter, is responsible for determining program objectives, time phased support requirements, and for appraising progress, readiness, and military worth for a given weapon system, function, or task in support of the goals and objectives of the appropriate Mission Sponsor. In selected instances, the Program Sponsor may also be a Function Sponsor. The Program Sponsor will be the primary Navy spokesman on matters related to the requirement for and development/procurement progress of the particular program. (E)

Sponsor Program Proposals (SPP) - Program proposals formulated and presented by Resource Sponsors based upon the major policy decisions and priorities developed in the CPAM phase, and upon CNO decisions and fiscal guidance promulgated in CNO Program and Fiscal Guidance I (CPFG). (L)

Systems Analysis - "Tracing out some of the consequences of alternative weapons or actions and exhibiting these consequences to decision makers." (R.N. McKEAN)

Tactics Trainer (TT) - A part task trainer which is designed to provide training to aircrewmen in phases of tactical missions, including communications and navigation. Tactics trainers of this type provide system familiarization, development of operator skills, operating techniques, and team coordination of a specific aircraft simulated when employed in a tactical mission. (L)

Total Obligational Authority (TOA) - TOA is the total amount of funds available for programming in a given year, regardless of the year the funds are appropriated, obligated or expended. TOA includes new obligational authority, unprogrammed or reprogrammed obligational authority from prior years, reimbursements not used for replacement of inventory in kind, advance funding for programs to be financed in the future, and unobligated balances transferred from other appropriations. (E)

Training Aid - Any item which is developed and/or procured with the primary intent that it shall assist in training and the process of learning. (L)

Training Device - Consists of hardware and software which have been designed or modified exclusively for training purposes, involving, to some degree, simulation or stimulation of some type in its construction or operation, with the required methodological and evaluation techniques to train, refresh, or expose personnel, or groups of personnel as an entity to a measured level of performance proficiency. (L)

Training Device Reporting Custodian - The naval activity that has custody of aviation equipment and is responsible for organizational maintenance of that equipment. Wherever the term is used in this report, the Reporting Custodian is the activity having custody of Cognizance Symbol "20" training equipment. (K)

Training Equipment - Any equipment, including ground instructional aircraft, required to support aviation instructional programs, except:

(1) Program aircraft and support equipment directly associated therewith.

(2) Classroom and laboratory furniture, supplies of a consumable nature, and such items as lesson guides and courses of study. (L)

Unified Command - A command with a broad continuing mission under a single commander, and composed of significant assigned components of two or more Services, and which is established and so designated by the President, through the Secretary of Defense with the advice and assistance of the Joint Chiefs of Staff, or, when so authorized by the Joint Chiefs of Staff, by a commander of an existing unified command established by the President. (A)

Weapons System Trainer (WST) - A trainer which provides a synthetic flight and tactics environment in which pilots and flight crews learn, develop and improve the techniques associated with their individual tasks in a specific type aircraft, and operate as a team in the execution of simulated missions, such as anti-submarine warfare search, radar intercept, attack, etc. The trainer is an electro-mechanical system simulating the aircraft flight and engine characteristics and systems operation, and providing appropriate instrument indications resulting from operation of controls in the cockpit and flight crew compartments. The device includes an instructor station for establishing problem parameters, introducing malfunctions, and monitoring and recording trainee performance. (L)

Source Documents for Glossary

A. Dictionary of United States Military Terms of Joint Usage (JD), The Joint Chiefs of Staff, JCS Pub. 1, 3 January 1972.

B. Glossary of Terms Used in the Areas of Financial, Supply and Installation Management, DOD Instruction 5000.8, 15 June 1961 (SECNAV Instruction 5000.13).

C. Review of Management of the Department of the Navy, Vol. 1, NAVEXOS P-2426B, 15 December 1962.

D. Automatic Data Processing Glossary, Executive Office of the President, Bureau of the Budget, December 1962.

E. Department of the Navy Programming Manual, OPNAV 90P-1D, 5 June 1971.

F. DOD Review and Approval of Changes to the FYDP, DOD Directive 7045.7, 29 October 1969 (SECNAV Instruction 5000.16D).

G. Selected Acquisition Reports (SAR), DOD Instruction 7000.3, 13 September 1971.

H. Cost Growth Definition, DEPSECDEF memo of 26 November 1969.

I. Economic Analysis of Proposed Department of Defense Investments, DOD Instruction 7041.3 of 18 October 1972 (SECNAV Instruction 7000.14A).

J. U.S. Navy Regulations, 1973.

K. The Naval Aviation Maintenance Program (NAMP), OPNAV Instruction 4790.2A, Vol. II, Appendix C.

L Original Definition.