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PROCEDURE FOR THE DEVELOPMENT OF NAVAL AVIATION MAINTENANCE OBJECTIVES

by

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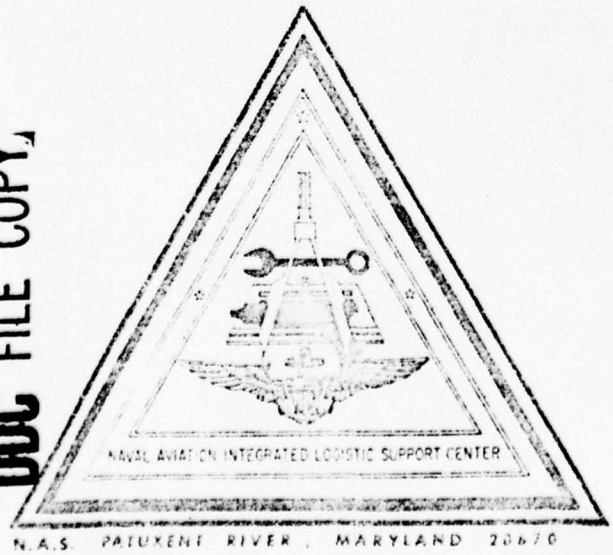

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This document describes a methodology for developing Naval Aviation Maintenance Objectives. These objectives, when accomplished, are intended to provide for an effective aviation maintenance establishment in support of naval aviation and the Chief of Naval Operations' objective of fleet readiness through the 1977-1985 time frame.

Naval aviation maintenance aspirations have often been stated as

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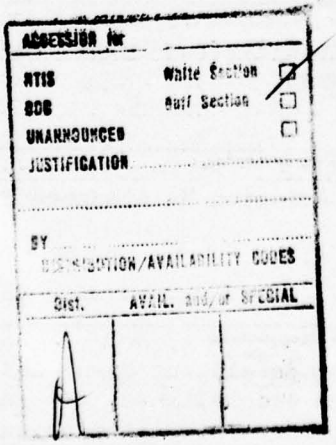
20. Abstract (continued)

oversimplified deceptions; e.g., squadron NORM rates, BCM rates, AIMD throughput, Depot in-process time, etc. The problem with these types of measures is that the focus is on simple maintenance accomplishments rather than how naval aviation maintenance interacts with the larger Navy system of which it is only one part. Maintenance should be primarily attuned to providing an effective wartime naval air fighting force, although the objectives should also ensure as efficient performance as possible during peacetime.

It is intended that the objectives developed meet stringent technical and logical requirements and that the pursuit of their accomplishment be monitored and enforced.

The objectives are intended to serve several purposes, including: providing guidance for naval aviation maintenance establishment activities; forming the basis for the Naval Aviation Maintenance Program (OPNAV Instruction 4790.2 series); providing justification for naval aviation maintenance resource requirements during the DOD planning, programming, and budgeting process; and providing evaluation criteria for current and proposed programs.



EXECUTIVE SUMMARY

This study describes a methodology for developing Naval Aviation Maintenance Objectives. These objectives, when accomplished, should provide for an effective aviation maintenance establishment in support of naval aviation and the Chief of Naval Operations' (CNO's) objective of fleet readiness through the 1977-1985 time frame.

Naval aviation maintenance aspirations have often been stated as oversimplified deceptions; e.g., squadron Not Operationally Ready, Maintenance (NORM) rates, Beyond Capability of Maintenance (BCM) rates, Aircraft Intermediate Maintenance Department (AIMD) throughput, Depot in-process time, etc. These indicators have appeal since they appear simple and quantitative and can afford some measure of past performance. The problem with this type of measure, however, is that the focus is on simple maintenance accomplishments rather than how naval aviation maintenance interacts with the larger Navy system of which it is only one part. The performance of naval aviation maintenance in support of the broader conceptual goals of national defense, deterring war, or ensuring a reasonable probability of success in conflict is the priority measure of maintenance effectiveness. Maintenance, therefore, should be primarily attuned to providing an effective wartime naval air fighting force, although the objectives should also ensure as efficient performance as possible during peacetime. It is within this framework of priorities that Naval Aviation Maintenance Objectives will be developed. It is intended that the objectives developed be promulgated by the CNO as his Naval Aviation Maintenance Objectives.

In order to ascertain the naval aviation maintenance needs relevant to overall naval and national defense goals, use will be made of Joint Strategic Operational Plans (JSOPs), the Naval Aviation Plan (NAP), the Five Year Defense Plan FYDP) and its Extended Planning Annex (EPA), and wartime scenarios as promulgated by the CNO. Inductive reasoning will be used to translate the maintenance requirements associated with the situations described in these sources into a set of Naval Aviation Maintenance Objectives.

It is intended that the objectives developed meet stringent technical and logical requirements and that the pursuit of their accomplishment be monitored and enforced. Meaningful objectives developed in this manner should provide a sense of direction and a framework for the coordination of all the activities of the naval aviation maintenance establishment.

After they are developed, the objectives will be subjected to a validation procedure to ensure their compliance with a general criteria for objectives as suggested by Drucker[1] and Reddin[2]. A verification by various activities (Bureau of Naval Personnel, Naval Facilities Engineering Command, Commander Naval Air Forces, Atlantic/Pacific, etc.) will be used to obtain feedback and recommendations and to assure goal congruence among the various organizations impacted.

The completed objectives are intended to serve several purposes, including: providing guidance for naval aviation maintenance establishment activities; forming the basis for the Naval Aviation Maintenance Program (OPNAV Instruction 4790.2 series); providing justification for naval aviation maintenance resource requirements during the Department of Defense planning, programming, and budgeting process; and providing evaluation criteria for current and proposed programs.

The objectives developed in this manner will be based upon an analytical perception of today's demands and tomorrow's requirements. Since we live in a dynamic world, the actual demands and requirements will continually change. Therefore, the naval aviation maintenance establishment must be constantly aware of the changing world environment and should never cease asking what is the business of naval aviation maintenance and what will it be.

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1 Peter F. Drucker, "Management; Tasks; Responsibilities; Practices" (McGraw Hill, 1974)

2 W. J. Reddin, "Effective Management by Objectives" (McGraw Hill, 1971)

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INTRODUCTION

1.0 PURPOSE

This study was initiated to develop a methodology to identify and list Naval Aviation Maintenance Objectives. These objectives, when accomplished, should provide for an effective aviation maintenance establishment in support of naval aviation and the Chief of Naval Operations' (CNO's) objective of fleet readiness throughout the 1977-1985 time frame. It is intended that the objectives developed be the CNO objectives for naval aviation maintenance.

1.1 DEFINITIONS

Because many terms are used interchangeably (such as goals and objectives), definitions and descriptions of terms as used throughout this paper are provided below for the purpose of establishing a common base.

1.1.1 Goals -- General, long-range, qualitative statements of purpose.

1.1.2 Objectives -- Specific, short-range, quantitative expressions of purpose.

1.1.3 Plans -- Procedures, or a sequenced set of procedures, developed to attain objectives.

1.1.4 Maintenance and Logistics -- While the major purpose of this effort is to develop maintenance objectives, one cannot disregard the maintenance impact from other elements of logistics; the two are intimately related. Therefore, the terms "maintenance" and "logistics" are sometimes used apparently interchangeably. What is actually meant by the use of the term "logistics" or "logistic elements" in this paper is the interface or impact logistic elements (e.g., facilities, supply support, packaging, handling, storage, transportation, training, etc.) have on maintenance.

1.2 OBJECTIVE CRITERION

A major consideration in developing objectives is that the primary function of the Navy is to be prepared to perform effectively during conflict; objectives should

thus be developed for a war status, not a peacetime status. If the maintenance business is primarily designed for wartime operation, a stepdown, or supplemental, procedure can be established for peacetime.

The objectives shall be written in such a manner and to such a level that they may be promulgated by the CNO as his Naval Aviation Maintenance Objectives.

1.2.1 Supportive Objectives

All objectives generated during this effort are intended to be supportive of both Navy and Department of Defense (DOD) goals. They should not be developed independently, but should continually be evaluated to ensure congruence with those goals.

1.2.2 Intended Uses

There are several uses for the objectives that are generated. These include providing guidance for naval aviation maintenance establishment activities, forming the basis for the Naval Aviation Maintenance Program (NAMP), providing justification for naval aviation maintenance resource requirements during the DOD programming and budgeting process, and providing evaluation criteria for current and proposed maintenance programs.

The use of objectives as evaluation criteria may require more explanation. The intent is to compare current and proposed maintenance programs against the objectives to see if these programs are supportive of the approved objectives. If a program were not supportive, it should be discarded or modified to be consistent with the Naval Aviation Maintenance Objectives. Similarly, performance measures should be checked for objective congruence. Any measure which tends to motivate maintenance personnel to take actions contrary to the developed objectives is dysfunctional.

1.3 ENVIRONMENT

Conventionally, maintenance has been managed from the bottom up. Decisions of maintenance typically have been delegated to subordinates, with upper levels of management avoiding involvement in most maintenance matters. This pattern is prevalent in both the public and private sectors and appears due to several factors:

a. A sense of personal inadequacy on the part of upper management in managing maintenance.

b. A lack of awareness that maintenance systems inevitably involve trade-offs and compromises and so must be designed with well-defined objectives.

c. A general perception that maintenance, as such, is not "the way to the top."

The result in the Navy has been a general atmosphere of suboptimization where unit performance nearly always takes precedence over system goals and objectives.

1.3.1 Rationale

Since the business of the Navy is to provide an adequate deterrent to war, or failing that to assist in winning the war, it appears reasonable that the business (or goal) of maintenance should be to provide the necessary support to that effort.

In taking such a systems approach to the development of Naval Aviation Maintenance Objectives, it follows that by determining the maintenance requirements to support the above maintenance goal, it will be possible to develop a set of maintenance objectives that will provide reasonable assurance of satisfying this goal. The use of Joint Strategic Operational Plans (JSOPs), the Naval Aviation Plan (NAP), the Five Year Defense Plan (FYDP) and its Extended Planning Annex (EPA), and wartime scenarios has been chosen as the way to develop these objectives, since it provides a way to relate the maintenance directly to operational goals. The use of these sources, as well as extensive experience in the naval aviation maintenance field, should provide the necessary ingredients for a successful development of the desired objectives.

1.4 LIMITATIONS

There are bounds to any study -- the solution space in which this study may operate is defined in the subparagraphs below.

1.4.1 Time Frame

Objectives that are extremely long-range in scope tend to be given inadequate consideration as a result of more immediate pressures. Therefore, in order to provide a reasonable likelihood of accomplishment, the objectives should be developed to cover the period 1977-1985.

1.4.2 Scope

The objectives shall be developed for the arena of naval aviation maintenance only. However, within this limitation, all levels of such maintenance shall be covered.

1.5 ASSUMPTIONS

Some assumptions may have to be made when utilizing the JSOP, NAP, FYDP, scenarios, etc., for developing these objectives. An example of such an assumption may be that the Navy will have Rota, Spain available during a given scenario. In order to provide for modifications of objectives if any of the assumptions prove false, it is necessary that all assumptions be fully documented and be specifically included with the appropriate objective.

1.6 CHANGING OBJECTIVES

Objectives must not be looked upon as "cast in concrete." There are many factors that can affect them and require their being changed. Two of these potential change factors are technology and policy.

1.6.1 Technology

The objectives will be developed using currently available information on the expected technology between 1977 and 1985. Over time, as more information becomes available, it is quite conceivable that some of the objectives will have to be changed. The objectives selected, then, must consider and provide for evolutionary changes in aviation maintenance requirements rather than simply be a specific solution for an anticipated set of conditions.

1.6.2 Policy

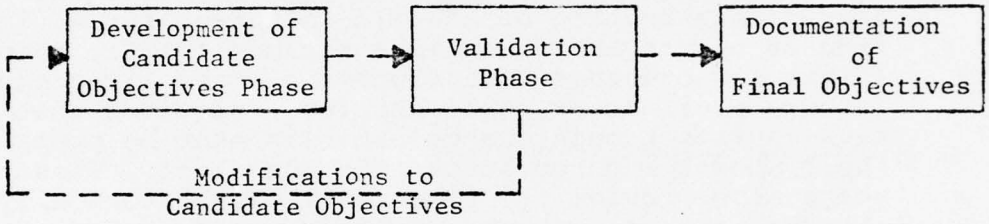
If the national policy relating to a potential threat or enemy were changed and the new enemy or threat were concentrated in a different part of the globe, the objectives would probably have to change.

Another policy change could be initiated by a change in the key considerations in the scenarios for war. Duration, location, concurrency of conflicts, etc., are all possible modifications. Objectives may have to be changed for any one of these "policy" modifications.

The objectives developed, therefore, must be consistent with current political and geographical considerations but flexible enough to allow modification for future eventualities associated with the potential strategic and tactical goals of naval aviation.

1.7 APPROACH FOR THE ESTABLISHMENT OF AVIATION MAINTENANCE OBJECTIVES

The approach to establish aviation maintenance objectives consists of two distinct phases; (1) Development of Candidate Objectives and (2) Validation. Iteration of these phases may be necessary.



1.7.1 Development of Candidate Objectives Phase

Section 2.0 will describe the process for developing a list of candidate objectives and for utilizing aviation requirements source documents. That section will also discuss the relationship between the candidate objectives and the overall goals of naval aviation maintenance, the Navy, and the DOD.

1.7.2 Validation Phase

Section 3.0 will discuss the validation of the candidate objectives. The Validation Phase will describe the means to identify the final list of aviation maintenance objectives. Once the final objectives have been determined, a check will be made to ensure that the final documentation contains certain basic requirements. Finally, all objectives, assumptions, and supporting information will be documented.

DEVELOPMENT OF CANDIDATE OBJECTIVES

2.0 BASIS FOR DETERMINATION

The development of candidate Naval Aviation Maintenance Objectives will be based upon a determination of what the maintenance needs of naval aviation will be in the 1977-1985 time frame.

The time frame 1977-1985 was chosen because it is expected to be representative of another period of rapid evolutionary changes which will affect most areas within the Navy. Construction of the all-volunteer force, introduction of new technologies in airframes (VTOL), avionics (digital), ordnance (smart weapons), and air-capable ships (strike cruisers or small carriers) requires that the naval aviation maintenance establishment be prepared for their smooth incorporation into the fleet. These eight years also provide the time required, historically, to plan for the recruitment, training, and assignment of required personnel and to allow for the programming, budgeting, planning, and construction of facilities and the production lead times associated with new ship construction and aircraft procurement.

The terms in which naval aviation maintenance aspirations have been stated in the past have usually been oversimplified deceptions; Aircraft Intermediate Maintenance Department (AIMD) throughput, squadron Not Operationally Ready, Maintenance (NORM) rates, Beyond Capability of Maintenance (BCM) rates, etc. Each of these indicators has appeal, since it appears simple and quantitative and can afford some measure of past performance. The trouble with this type of criteria is that the focus is on what maintenance accomplishes in itself rather than how naval aviation maintenance interacts with the system of which it is only one part. The relationship between Naval Aviation Maintenance Objectives and the broader conceptual goals of national defense, deterring war, or ensuring a reasonable probability of success in conflict is the only valid measure of maintenance effectiveness. It is in this framework that Naval Aviation Maintenance Objectives will be developed.

The process of generating Naval Aviation Maintenance Objectives will occur in four steps:

a. Determine the role of naval aviation in potential present-day or near-future conflicts.

b. Develop naval aviation maintenance requirements.

c. Determine candidate objectives.

d. Verify conformance with initial requirements.

This procedure is graphically depicted in figure 1 and described in detail in the following paragraphs.

The resulting Naval Aviation Maintenance Objectives are then subjected to the Objective Validation Phase described in section 3.0.

2.1 DETERMINE THE ROLE OF NAVAL AVIATION

The role of naval aviation as part of the nation's war preparedness can be determined from an evaluation of the NAP, the JSOP, the FYDP and EPA, potential wartime scenarios studied by Navy planning organizations, and other aviation requirements source documents promulgated by the CNO.

The NAP can provide the details of projected naval aviation force levels by aircraft Type/Model/Series (T/M/S) during the time frame of interest. The dates of introduction of new weapons systems and of the retirement or modification of existing weapons systems are contained within this document. This information should be useful as a time base for the implementation of Naval Aviation Maintenance Objectives intended to support evolving weapons systems technology.

The JSOP provides the current planning for joint military actions by the uniformed services which may be required in the near term. Details contained within this document relating to the role of naval aviation should be obtained to ensure the generation of naval aviation objectives that consider the expected performance of naval aviation in time of war.

The FYDP and EPA will provide guidance for relating Naval Aviation Maintenance Objectives to resource and funding limitations and force level constraints.

A range of wartime scenarios studied by various Navy planning activities should be evaluated to develop potential future naval aviation maintenance requirements. These scenarios will provide the Naval Aviation Maintenance Objectives group with an estimation of the type, duration, intensity, etc., of future conflicts which will involve naval aviation and can be used as a guide to the generation of long-range Naval Aviation Maintenance Objectives.

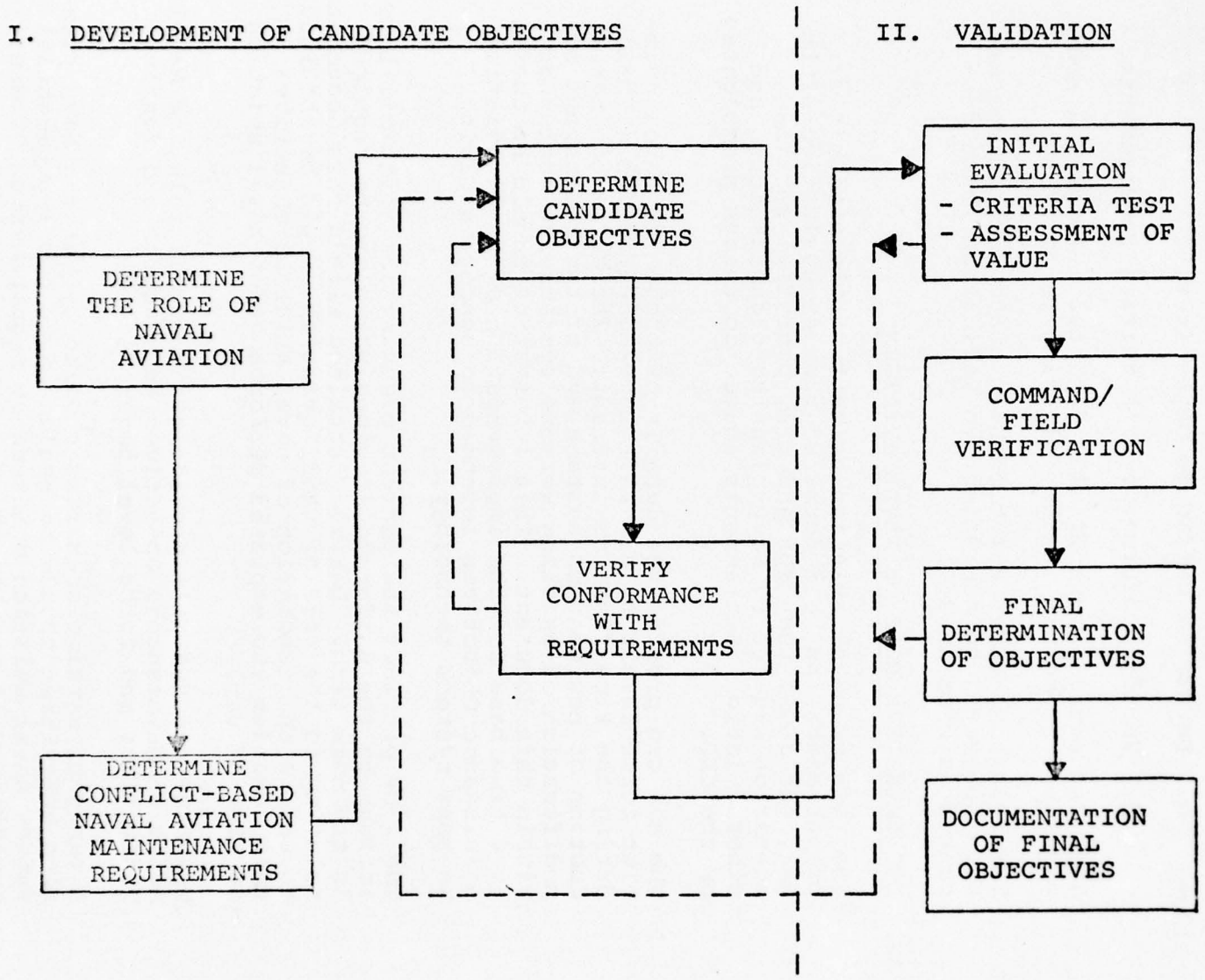

I. DEVELOPMENT OF CANDIDATE OBJECTIVES
II. VALIDATION
DETERMINE THE ROLE OF NAVAL AVIATION
DETERMINE CONFLICT-BASED NAVAL AVIATION MAINTENANCE REQUIREMENTS
DETERMINE CANDIDATE OBJECTIVES
VERIFY CONFORMANCE WITH REQUIREMENTS
INITIAL EVALUATION
- CRITERIA TEST
- ASSESSMENT OF VALUE
COMMAND/ FIELD VERIFICATION
FINAL DETERMINATION OF OBJECTIVES
DOCUMENTATION OF FINAL OBJECTIVES

FIGURE 1

2.1.1 Compile Data Relevant to the Role of Naval Aviation

Relevant data includes such items as the time frame, amount of forewarning, geographical location, duration and intensity of potential conflicts and the weapons systems expected to be available to naval aviation.

This data is more clearly defined below:

a. Time Frame -- The time frame in which potential conflicts may occur provides guidance for the establishment of target completion dates for Naval Aviation Maintenance Objectives whose completion is required to support evolving weapons systems technology or to compensate for geopolitical shifts.

b. Forewarning -- The amount of anticipated warning will govern the degree of peacetime readiness which must be maintained and the mobilization capability which must be available. The shorter the anticipated warning, the higher the required level of peacetime readiness must be, but the smaller the requirements may be for immediate mobilization.

c. Geographical Location -- The location of a conflict in terms of its distance from CONUS and the location and distance from local landmasses, both friendly and hostile, influence such factors as:

(1) Types of weapons systems to be used.

(2) Weapons systems inventory requirements.

(3) Spares requirements/transportation.

(4) Availability of support facilities.

d. Duration and Intensity -- The duration and intensity of a potential conflict create a strong influence upon the types of maintenance which can or should be accomplished.

The duration of a conflict determines the contribution which maintenance of the fighting forces will have upon the outcome of that conflict. Short conflicts may be over prior to the return to service of those weapons systems which malfunction at the commencement of the hostilities. This situation reduces the immediate requirements for maintenance resources. Longer conflicts require the establishment of maintenance systems which will sustain whatever level of intensity the conflict is expected to require.

The intensity of operations and expected attrition, coupled with the conflict's potential duration, indicate the size and depth of the maintenance establishment required.

e. Types of Weapons to be Utilized -- The mix and quantity of weapons systems to be used in any specific conflict influence the type of maintenance establishment required to support that conflict. A diversity of weapons systems may produce one strategy for their support while the use of a relatively few different types of weapons could produce another.

The various documents and other sources of information used to gather the background data for the role of naval aviation in current and future potential conflicts will either contain specific information relating to the use of naval aviation or will provide enough related data such that, in coordination with appropriate Naval Air Systems Command (NAVAIR) organizations, an intelligent estimate of the demands to be placed upon naval aviation can be made.

2.1.2 Contribution of Naval Aviation Maintenance

Each of the relevant data elements of a conflict will also impact the requirements for naval aviation maintenance. The trade-offs among resource allocations for test and support equipment, supply support, personnel and training, technical data, facilities, transportation and handling, and maintenance are all directly related to the requirements which conflict imposes on naval aviation.

2.2 DEVELOPING CONFLICT-BASED NAVAL AVIATION MAINTENANCE REQUIREMENTS

Each of the logistic elements related to naval aviation maintenance will be compared with the characteristics of each potential conflict to develop a mix of the elements of naval aviation maintenance which will best provide for a successful outcome.

The approaches taken to solve specific naval aviation maintenance problems in each conflict shall consider available resources but should not be bounded by current naval aviation maintenance concepts, policy, or organizational structure. Details of the perceived naval aviation maintenance problems and potential solutions shall be documented for each conflict. The documentation of the analysis process used will be determined by the team performing the analysis, but it must be consistent for all the analyses performed.

The results of the analysis performed for each conflict will be a set of requirements which must be satisfied for the successful performance of all required aviation maintenance for that particular conflict, making the most effective usage of available resources.

These requirements for each conflict can be visualized as a matrix, with the logistic elements impacting maintenance listed vertically and the potential conflict under consideration oriented horizontally as shown in figure 2.

The statement of requirements generated should not be tied to specific solutions for their attainment. For example, requirements for supplies should be stated in terms of volumes and weights, rates of delivery, and other similar considerations developed from the particular types of supplies that conflict requires. Statements of potential solutions to requirements, such as "by airlift," shall not be included. This approach provides complete flexibility during the generation of objectives and should allow the unfettered development of solutions to the aggregate requirements for the range of conflicts being considered.

2.3 NAVAL AVIATION MAINTENANCE OBJECTIVES DETERMINATION

When first examined together, the aviation maintenance requirements generated by different conflicts may appear discordant and antagonistic. This is to be expected when considering the diverse conflicts upon which they are based.

The determination of candidate Naval Aviation Maintenance Objectives requires the integration of the individual conflict-based naval aviation maintenance requirements, the resources and technology which will be available in that time frame, and the relative ranking of each conflict's importance. This is basically an inductive process and no special analytical techniques can be cited.

2.3.1 Subjects of Naval Aviation Maintenance Objectives

Naval Aviation Maintenance Objectives shall be generated for each of the elements of logistics which impact maintenance. The resulting objectives will cover a broad range of subjects not all of which will be the direct responsibility of the naval aviation maintenance establishment. These objectives shall be structured such that the appropriate organizations which should be primarily responsible for their implementation can be established by the CNO.

POTENTIAL CONFLICT / LOGISTIC ELEMENT	1	2	3
SUPPLY SUPPORT	QTY & TYPE OF: 1) Airframe Components 2) Avionics Piece Parts 3) Avionics SRAs 4) Engine Components 5) etc.	etc.	etc.
TRANSPORTATION AND HANDLING	1) Range of Volumes 2) Range of Weights 3) Packaging & Handling Constraints 4) Rate of Delivery 5) etc.	etc.	....
etc.	....	....	....

FIGURE 2

Examples of the types of objectives to be prepared and the considerations required in their generation are detailed below:

a. Support Equipment Objectives

(1) Requirements at each echelon of maintenance

(2) Standardization

(3) Suitability

(4) Support requirements

(5) Cost-effectiveness

b. Supply Support Objectives

(1) Types and quantities

(2) Level of repair

(3) Provisioning factors

(4) Pipeline times

(5) Test and acceptance procedures

(6) Stock levels and risk of stockout

(7) Procurement cycles

c. Personnel and Training Objectives

(1) Quantity and skill levels

(2) Human factors

(3) Personnel attrition

(4) Personnel effectiveness

(5) Time-phasing of initial and replenishment training

(6) Lead time required

d. Publications/Technical Data Objectives

(1) Operating and maintenance procedures

(2) Complexity

(3) Compatibility with levels of use

(4) Personnel skill levels

e. Facilities Objectives

(1) Spare, volume, capitol equipment, and utilities requirements

(2) Environmental requirements

(3) Construction lead time

f. Storage, Transportation, and Handling Objectives

(1) Prime equipment, test and support equipment, spares, personnel, and data

(2) Transportation and handling environment

(3) Temporary and long-term storage facilities and environment

(4) Modes of transportation

(5) Distances

(6) Containers and packaging requirements

g. Funding Objectives

(1) Overall requirements

(2) Time-phasing of funding requirements

(3) Alternatives for reduced funding levels

h. Management Information Systems

(1) Appropriate data for each echelon of maintenance

(2) Optimum updating intervals

(3) Manageable data base

(4) Minimum data collection demands upon maintenance personnel.

2.3.2 Supportive Information

The inductive nature of the reasoning process employed requires that sufficient detail be documented to permit other interested individuals to follow the line of reasoning used during the generation of objectives. A standard format should be established by the Naval Aviation Maintenance Objectives Development Group for such documentation.

The following information and supporting rationale associated with each candidate Naval Aviation Maintenance Objective must be provided:

a. Statement of objective

b. Particular conflict-based requirements it is intended to satisfy

c. Relationship to other conflict-based requirements

d. Technology dependence

e. Time frame of interest

f. Funding/resource requirements implications

g. Sensitivity to changes in underlying assumptions.

2.4 VERIFICATION OF CONFORMANCE WITH REQUIREMENTS

The candidate Naval Aviation Maintenance Objectives which arise at this stage have evolved from the individual requirements of a range of conflicts being consolidated and aggregated. These objectives will not be "pure" in that they may not be relatable directly to a specific requirement in a specific conflict. Each objective represents, instead, a partial solution to many requirements.

It is possible that the integration of such widely varying requirements may result in one or more valid conflict requirements being overlooked or underemphasized. In order to avoid this circumstance, each candidate objective must be re-examined to establish which conflict requirements its implementation will and will not satisfy. The determination that a given requirement is not fully satisfied will result in the generation of a new objective or modification of an existing one. Conversely, it is necessary to ensure that the intent of a candidate objective does not extend beyond the requirements of the set of conflicts upon which it is based.

VALIDATION PHASE

3.0 PURPOSE

The purpose of this phase is to arrive at the final list of objectives. The candidate objectives, which were previously generated during the Development of Candidate Objectives Phase, will be further evaluated during this phase. As shown in figure 1 (page 8), the validation will be accomplished in three steps: (1) Initial Evaluation, (2) Command/Field Level Verification, and (3) Final Determination of Objectives.

The Initial Evaluation will consist of two separate processes, Criteria Test and Assessment of Value. The Criteria Test will ensure that each objective satisfies certain general characteristics of objectives. The Assessment of Value will assess the worth of each objective and will ensure that accomplishment of the objective is in fact desirable.

During step two of the Validation Phase, Command/Field Level Verification, the objectives will be presented to various affected activities to obtain feedback and recommendations and to assure goal congruence among the various organizations impacted. Comments obtained will be analyzed during the Final Determination of Objectives step and a decision will be made on any modifications to, or deletions of, the objectives. If the objectives are modified during these steps, they must be re-examined by comparing the results with the requirements previously generated during Phase I, the Candidate Objective Determination.

The Validation Phase will be followed by a documentation of the selected objectives. This documentation will consist of a statement of each developed objective, with its rationale.

3.1 INITIAL EVALUATION

Each candidate objective must be evaluated based on the objective criteria requirements given below. It may be necessary to modify some objectives in order to satisfy these criteria requirements. Then, based on the Assessment of Value, a judgment will be made on whether the objective will be retained or deleted from the proposed list that will be submitted to Command/Field Level Verification.

3.1.1 Criteria Requirements for Objectives

Criteria requirements serve to clearly identify the characteristics of valid objectives. Several of the criteria requirements overlap somewhat; however, these requirements should aid in detecting some of the more obvious shortcomings of the candidate objectives. The following is a list of the criteria requirements for analyzing objectives[1,2]:

a. Measurable (Quantitative) -- A good objective must be measurable, for without this, its achievement cannot be established. It should allow for the measurement of progress and the determination of objective achievement. The ability to measure performance and results against the overall goal(s) must be taken into consideration in analyzing the measurability of the objective. Information should be present to enable measuring performance and, furthermore, it should be available early enough to permit any changes necessary to achieve the desired results.

b. Specific -- The objective must be specific rather than general, so that what is being accomplished and what is being measured are unambiguous. It should be amenable to the assignment of responsibility and accountability. The objective should be bounded such that it is clear what the objective is and what it is not. It should state what is and what is not to be included.

> NOTE: The determination of very specific objectives carries with it the potential disadvantage of reducing the range of operation for subordinate managers. Each time objectives are stated more specifically, there will be less room for maintenance managers to operate and to accomodate the flow of new ideas from any particular part of the aviation maintenance organization.

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[1]Peter F. Drucker, "Management; Tasks; Responsibilities; Practices" (McGraw Hill, 1974)

[2]W. J. Reddin, "Effective Management by Objectives" (McGraw Hill, 1971)

c. Results-Centered -- The objectives should focus on results or output rather than activities or input; that is, on what is to be achieved rather than simply what is to be done.

d. Realistic and Attainable -- The objective should be realistic and attainable in relation to available or potentially available resources.

e. Time-Related -- The time frame for achieving the objective (i.e., milestones, deadlines) should be included in the objective. The objective should be time-bounded, with clear time limits for completion.

f. Flexible -- Objectives are not commands; they are commitments. They do not determine the future, but are means of mobilizing resources and energies for the making of the future. The objectives should not be so restrictive as to preclude attainment through more than one approach.

3.1.2 Assessment of Value

Once it has been determined that the candidate objectives satisfy the requirements of the Criteria Test, several screening questions should be posed to assess the value of those candidate objectives. The term "Assessment of Value" implies a process to determine such items as the desirability, effectiveness, worth, and impact of the objectives. It should be noted that negative answers to the screening questions do not automatically eliminate any of the candidate objectives. Many of these screening questions, in actuality, were designed to ensure that those determining the objectives are aware of all the consequences and ramifications associated with each objective. It is still up to the judgment of the evaluator to weigh this information and decide whether the objective should be retained as is, modified, or deleted.

The screening questions are as follows:

a. Will the achievement of this objective assist in achieving the overall goals of naval aviation maintenance (does it track back to those goals)?

b. If the objective has been modified to meet the criteria requirements, does its final form maintain its original intent?

c. Does all real and applicable data (i.e., economics, manpower) show the desirability of accomplishing this objective?

d. Is this objective effective in achieving its desired results? Is it efficient?

e. If the accomplishment of this objective affects the accomplishment of other objectives, is the effect beneficial instead of detrimental? (If the objectives blend unfavorably with each other and can not be rewritten, it may require that the more important objective be given a higher priority to minimize the detrimental effect brought about by accomplishing the less important objective. As a last resort, it may be necessary to delete the less important objective).

3.2 COMMAND/FIELD LEVEL VERIFICATION

The purposes of the activity visits are to discuss the Naval Aviation Maintenance Objectives in terms of their derivation, specific requirements, and planned usage. These discussions should provide detailed comments and recommendations for each of the objectives. Secondly, the discussions with activities which will be directly involved in accomplishing the objectives will smooth the way for future implementation by providing for negotiations and assuring harmonious objectives.

3.2.1 Discussions of Objectives

Discussions with the various activities should include a debrief into the background and philosophy of the Naval Aviation Maintenance Objectives. Each objective applicable to the activity should be discussed in detail. An objectives team member should be prepared to explain all facets of the objectives and to provide the rationale for their determination. Comments and recommendations obtained during the discussions should be recorded in order to be analyzed during the Final Determination of Objectives step.

3.2.2 Activities to be Contacted

Paramount in the selection of activities to be contacted is the assurance that each objective be reviewed at the proper organizational level and by personnel knowledgeable in the topic of the objective. As an example, objectives written at the top management level should be reviewed by activities such as NAVAIR, the Bureau of Naval Personnel (BUPERS), the Chief of Naval Material (NAVMAT), and the Office of the Chief of Naval Operations (OPNAV). Likewise, objectives pertaining to personnel matters should be discussed with activities, or people within an activity, who are involved in personnel management such as BUPERS or applicable

sections of NAVAIR. Maintenance people should be consulted on personnel objectives only in relationship to how maintenance is affected by these objectives. To discuss personnel policy, contact must be made with those people involved in personnel management. For objectives involving facilities, contact should be made with activities such as the Naval Facilities Engineering Command (NAVFAC) or the Naval Sea Systems Command (NAVSEA). Similarly, activities such as the Commander Naval Air Forces, Atlantic/Pacific (COMNAVAIRLANT/PAC), the Naval Air Rework Facilities (NARFs), the Aviation Supply Office (ASO), Organizational/Intermediate activities, the Naval Air Systems Command Representative, Atlantic/Pacific (NAVAIRSYSCOMREPLANT/PAC), and the Naval Aviation Integrated Logistic Support Center (NAILSC) should be contacted as required.

3.3 FINAL DETERMINATION OF OBJECTIVES

Those objectives that met the Criteria Test and passed the Assessment of Value checks are the objectives that will be formally submitted to the command/field level activities. Those objectives favorably assessed should be final objectives. The more complex decision occurs when a proposed objective is received unfavorably by the activities or the activities recommend objectives which were not originally developed by the objectives committee. In either case, it will be necessary to return to the Development of Candidate Objectives Phase to evaluate and consider the activities' inputs. If existing objectives are modified or additional objectives are developed as a result of the activities' inputs, the Validation Phase must be repeated for those new objectives. This process is repeated until the final list of objectives has met all qualifications of validation.

3.4 DOCUMENTATION

The purposes of documentation are to describe in detail the final objectives and to provide the rationale used in determining the objectives. Certain minimum requirements to be contained in the final documentation package will be discussed in the following paragraphs. It is not the intent of this discussion to prescribe the exact format for documentation, but rather to highlight some of the factors to be considered.

3.4.1 Objective Statement

The Objective Statement should be a complete description of the objective and the time frame for its achievement.

3.4.2 Rationale Statement

The Objective Statement should be supplemented with a Rationale Statement with provides additional information concerning the purpose or reason for each objective, the underlying assumptions, and a further explanation of the intent of the objective. Some specific recommendations for inclusion into the Rationale Statement are as follows:

a. Assumptions -- As previously stated, assumptions made when utilizing conflicts for developing the objectives should be documented along with the appropriate objective.

b. Measurement System -- In some instances, it may be unclear as to the exact Measurement System to be utilized. As an example, it may be impossible to track the resolution of AIMD BCM items at the NARF because the NARF's maintenance data collection system is not compatible with 3-M reporting utilized at the Organizational and Intermediate levels. Therefore, it might be necessary to utilize a special report produced locally at the NARF to determine resolution of the BCM items. If any contents of the Measurement System are ambiguous, then the Rationale Statement should discuss the Measurement System in sufficient detail to clearly identify each facet.

c. Impact on Other Objectives -- If, during the Validation Phase, it was determined that accomplishment of one objective affected the accomplishment of other objectives, then this should be described in the Rationale Statement. Additionally, the more important objective should be identified so as to prevent a detrimental effect on the more important objective, caused by blindly accomplishing one objective of lesser importance.

d. Additional Information -- Any other information which is not readily available or apparent and which impacts on the successful accomplishment of the objectives should also be addressed in the Rationale Statement.

APPENDIX A

SAMPLE OBJECTIVE DETERMINATION

1.0 SAMPLE OBJECTIVE DETERMINATION

To illustrate the procedure which should be used, the following paragraphs briefly describe the sample development of a Naval Aviation Maintenance Objective. Each step in its development is keyed to the appropriate paragraph in the Charter for the Development of Naval Aviation Maintenance Objectives.

2.0 DETERMINE THE ROLE OF NAVAL AVIATION (Charter paragraph 2.1)

All sources of information providing current and projected requirements for naval aviation maintenance should be investigated. The complete range of potential conflicts bearing upon naval aviation maintenance will be compiled from source documents such as the Joint Strategic Operational Plan (JSOP), the Naval Aviation Plan (NAP), the Five Year Defense Plan (FYDP) and its Extended Planning Annex (EPA), and other sources approved by the Chief of Naval Operations (CNO).

3.0 COMPILE RELEVANT DATA (Charter paragraph 2.2)

Relevant data for each of the potential conflicts and situations shall be identified. The range of required relevant data (i.e., time frame, forewarning, geographical location, duration and intensity, and weapons systems) is then determined. The relative importance of each situation should then be established based upon CNO guidance.

3.1 EXAMPLE DATA

The following hypothetical situation is representative of a composite conflict determined from the range of potential conflicts to which naval aviation forces could be required to respond. The data presented is hypothesized to be the result of the integration of the various naval aviation requirements found in the JSOP, NAP, FYDP, EPA, etc. For the purposes of this example, the following conditions have been hypothesized:

a. Time frame -- early 1980's.

b. Geographical location -- third-world nation crisis in Africa remote from CONUS and current forward bases.

c. Forewarning -- 12 hours.

d. Duration and Intensity -- two weeks, maximum flying-hour schedule of missions.

e. Weapons systems -- full range of conventional ordnance (excluding nuclear weapons).

In the early 1980's time frame, a high potential for the initiation of international conflict by third-world nations is hypothesized to exist. Normally abrasive relations between traditional enemies have been exacerbated by famine, natural disasters, racial and tribal differences. It is in this geopolitical environment that the naval aviation maintenance establishment must support fleet operations in remote areas with minimum alert.

The short forewarning and relatively remote location indicate that the resources required to provide necessary naval aviation maintenance must be present with the operating forces. It is further hypothesized that the trend of loss of foreign base rights has continued and that the operating forces will not have ready access to facilities and supply support now available at forward bases.

Transportation and handling facilities will be sorely taxed just to provide the most urgently needed material. The broad spectrum of weapons to be used creates the requirement to maintain large numbers of sophisticated avionics equipment. A relatively high frequency of failure may be expected under the hypothesized operational conditions.

4.0 DEVELOP NAVAL AVIATION MAINTENANCE REQUIREMENTS (Charter paragraph 2.2)

The preceding hypothesized conflict and the associated requirements laid upon naval aviation provide the foundation for an overview of the total range of naval aviation maintenance requirements. Sufficient data should be compiled to permit the accumulation of requirements for each of the logistic elements which impact maintenance. For this example, only one such logistic element shall be analyzed; maintenance personnel and training requirements. A generalized statement of the requirement might be expressed as follows:

> Proficient and Experienced Maintenance Personnel Will be Required to Fill All Maintenance Billets in Deployed Units.

5.0 DEVELOP NAVAL AVIATION MAINTENANCE OBJECTIVES (Charter paragraph 2.3)

From the preceding general requirement, utilizing maintenance experience and logic flow, specific objectives may be developed. Example objectives derived from the generalized requirement could be as follows:

A) BY JANUARY 1980, ALL AVIATION SHIPS WILL DEPLOY WITH FULLY-QUALIFIED 100% MANNING OF GROUP IX MAINTENANCE BILLETS IN PAY-GRADES E-4 AND ABOVE.

B) ASSIGNED MAINTENANCE PERSONNEL IN PAY-GRADES E-4 AND ABOVE SHALL BE MADE AVAILABLE TO PERFORM WEAPONS SYSTEM MAINTENANCE WHEN REQUIRED.

These Naval Aviation Maintenance Objectives can be tracked back to overall Navy goals and can be further broken down to more specific objectives for other levels of management as shown in figure A-1.

6.0 INTERRELATIONSHIPS AMONG OBJECTIVES

The location of the example Naval Aviation Maintenance Objectives in figure A-1 (shown in quotes) depicts them as being supportive of higher-level operational requirements and interrelated, as well as dependent upon, the accomplishment of other actions not directly within the realm of naval aviation maintenance (e.g., Bureau of Naval Personnel (BUPERS) recruiting policies). Deploying with 100% manning of Group IX maintenance billets in paygrades E-4 and above (Objective A) provides the potential aboard ship to effectively accomplish required maintenance, thus helping to provide more "up" aircraft which in turn improves operational readiness. This potential can only be realized if these personnel are indeed available to perform that required maintenance when it is required (Objective B).

The added burden of a squadron coming aboard ship currently results in the requirement that the squadron provide TAD personnel to assist the ship's cadre in the performance of administrative and personnel support (housekeeping) functions. The determination of appropriate collateral duties for skilled Group IX personnel such that the ships's basic needs are met and yet the men are available to the squadrons to perform weapons system maintenance when that maintenance is required can be the nucleus for additional objectives. The achievement

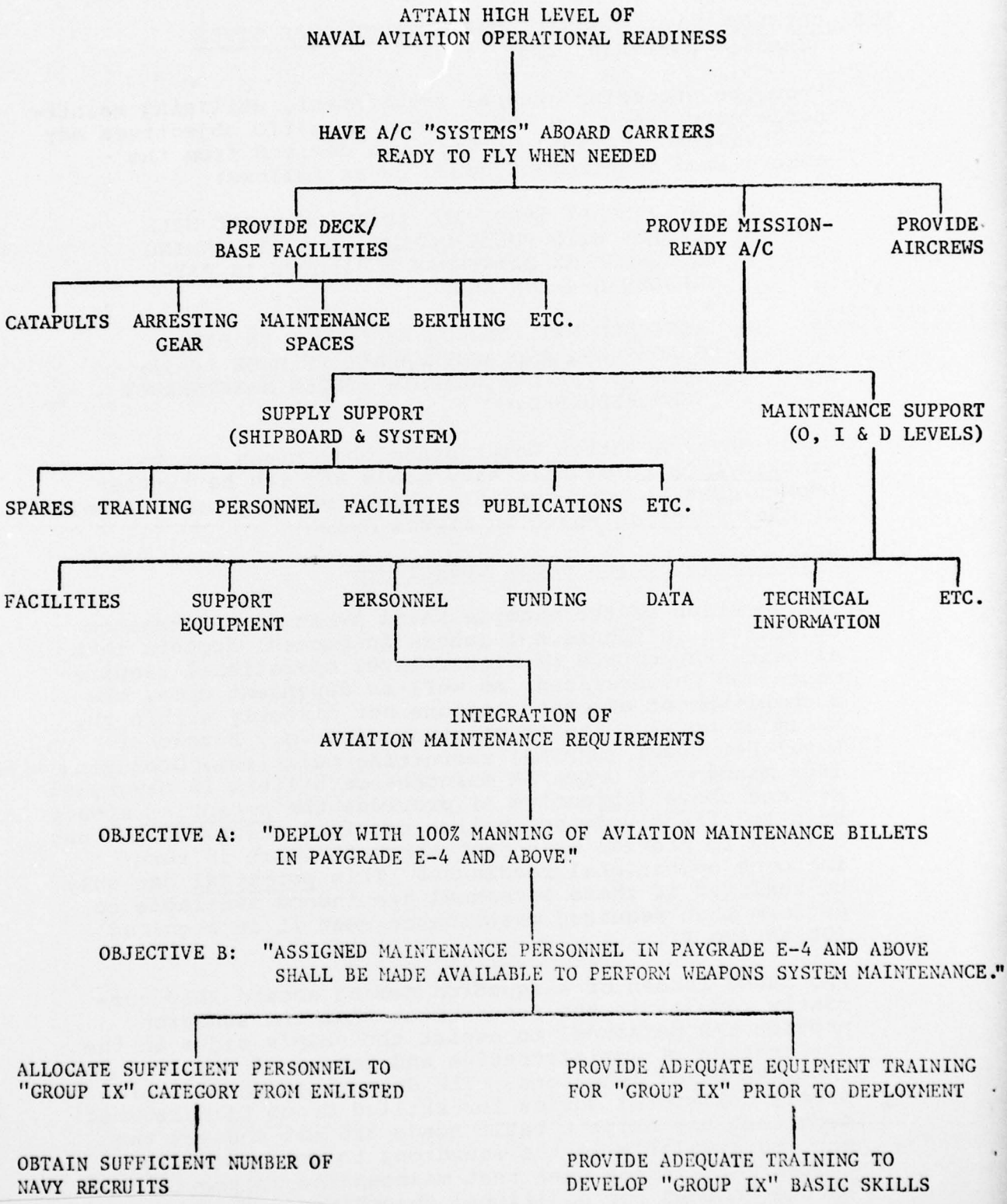
ATTAIN HIGH LEVEL OF
NAVAL AVIATION OPERATIONAL READINESS
HAVE A/C "SYSTEMS" ABOARD CARRIERS
READY TO FLY WHEN NEEDED
PROVIDE DECK/
BASE FACILITIES
PROVIDE MISSION-
READY A/C
PROVIDE
AIRCREWS
CATAPULTS
ARRESTING
GEAR
MAINTENANCE
SPACES
BERTHING
ETC.
SUPPLY SUPPORT
(SHIPBOARD & SYSTEM)
MAINTENANCE SUPPORT
(O, I & D LEVELS)
SPARES
TRAINING
PERSONNEL
FACILITIES
PUBLICATIONS
ETC.
FACILITIES
SUPPORT
EQUIPMENT
PERSONNEL
FUNDING
DATA
TECHNICAL
INFORMATION
ETC.
INTEGRATION OF
AVIATION MAINTENANCE REQUIREMENTS
OBJECTIVE A: "DEPLOY WITH 100% MANNING OF AVIATION MAINTENANCE BILLETS
IN PAYGRADE E-4 AND ABOVE"
OBJECTIVE B: "ASSIGNED MAINTENANCE PERSONNEL IN PAYGRADE E-4 AND ABOVE
SHALL BE MADE AVAILABLE TO PERFORM WEAPONS SYSTEM MAINTENANCE."
ALLOCATE SUFFICIENT PERSONNEL TO
"GROUP IX" CATEGORY FROM ENLISTED
OBTAIN SUFFICIENT NUMBER OF
NAVY RECRUITS
PROVIDE ADEQUATE EQUIPMENT TRAINING
FOR "GROUP IX" PRIOR TO DEPLOYMENT
PROVIDE ADEQUATE TRAINING TO
DEVELOP "GROUP IX" BASIC SKILLS

FIGURE A-1

of sample objectives A and B would require integration of the goals and objectives of BUPERS, the host aircraft carrier, and naval aviation maintenance. BUPERS should be contacted during the development of this type of objective to re-evaluate its recruitment and retention policies and the manner in which it allocates billets to the ships and aircraft squadrons. The manning document for the host aircraft carriers might need to be adjusted as well as the ship's policies with regard to the collateral duties to which squadron personnel can be assigned. The squadrons themselves could wish to reconsider a reallocation of the range, depth, and concentration of particular skills in personnel assigned.