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ABSTRACT

The manual is designed for use in preparing for advancement within the Navy Air Controlman rating, which designates a professional air traffic controller, unlike the more specialized center or tower controllers. However, minimum qualifications for the rating include completion of the Federal Aviation Administration (FAA) written examination for air traffic controllers and an FAA medical certificate. Contents of the manual cover flight planning, facility operation, terminal instrument procedures, air traffic control, emergency procedures, carrier air traffic control procedures, and administration. All sections are illustrated with charts and diagrams. Although the emphasis is on Navy procedure and terminology, in many areas there is applicability to civilian procedures. Appendixes include definitions and abbreviations and a selected bibliography of air traffic control instructions. (MDW)

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PREFACE

This Rate Training Manual is one of a series of training manuals prepared especially for the enlisted men of the Navy and Naval Reserve who are studying for advancement in the Air Controlman rating. The manual is based on the professional qualifications for the rates of AC1 and ACC, as set forth in the Manual of Qualifications for Advancement, NAVPERS 18068 (Series).

Combined with the necessary practical experience and a thorough knowledge of the materials contained in Air Controlman 3 & 2, NAVTRA 10367-E, completion of the Nonresident Career Course based on this manual will greatly assist the AC2 and AC1 in preparing for their advancement examinations. This manual should also be valuable as a refresher for the ACC who is studying for advancement to ACCS and the ACCS who is studying for advancement to ACCM.

This training manual was prepared by the Naval Education and Training Program Development Center, Pensacola, Florida, for the Chief of Naval Education and Training. Technical reviews were provided by the Naval Air Technical Training Center, Glynco, Georgia.

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THE UNITED STATES NAVY

GUARDIAN OF OUR COUNTRY

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends: the United States Navy exists to make it so.

WE SERVE WITH HONOR

Tradition, valor, and victory are the Navy's heritage from the past. To these may be added dedication, discipline, and vigilance as the watchwords of the present and the future.

At home or on distant stations we serve with pride, confident in the respect of our country, our shipmates, and our families.

Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

THE FUTURE OF THE NAVY

The Navy will always employ new weapons, new techniques, and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war

Mobility, surprise, dispersal, and offensive power are the keynotes of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past.

Never have our opportunities and our responsibilities been greater.

CONTENTS

CHAPTER 1

AIR CONTROLMAN RATING

This training manual is designed to help you to meet the professional qualifications for advancement to First Class and Chief Air Controlman. The Air Controlman qualifications which are used as a guide in the preparation of this manual are contained in the current revision of the Manual of Qualifications for Advancement, NAVPERS 18068 (Series). Subsequent changes in the qualifications may not be reflected in the information given here.

The remainder of this chapter gives information on the Air Controlman rating, the enlisted rating structure, requirements and procedures for advancement, and references that will help you in preparing for advancement. Information on how to best use Navy Rate Training Manuals is also included. Therefore, it is strongly recommended that you study this chapter carefully before beginning intensive study of the remaining chapters.

ENLISTED RATING STRUCTURE

The present enlisted rating structure includes two types of ratings: general ratings and service ratings.

GENERAL RATINGS are designed to provide paths of advancement and career development. A general rating identifies a broad occupational field of related duties and functions requiring similar aptitudes and qualifications. General ratings provide the primary means used to identify billet requirements and personnel qualifications. Some general ratings include service ratings; others do not. Both Regular Navy and Naval Reserve personnel may hold general ratings.

Subdivisions of certain general ratings are identified as SERVICE RATINGS. These service ratings identify areas of specialization within the scope of a general rating. Service ratings are established in those general ratings in which specialization is essential for efficient utilization of personnel. Although service ratings can exist at any petty officer level, they are most common at the PO3 and PO2 levels. Both Regular Navy and Naval Reserve personnel may hold service ratings.

AC RATING

The Air Controlman rating is a general rating and is included in Navy Occupational Group IX (Aviation). There are no AC service ratings.

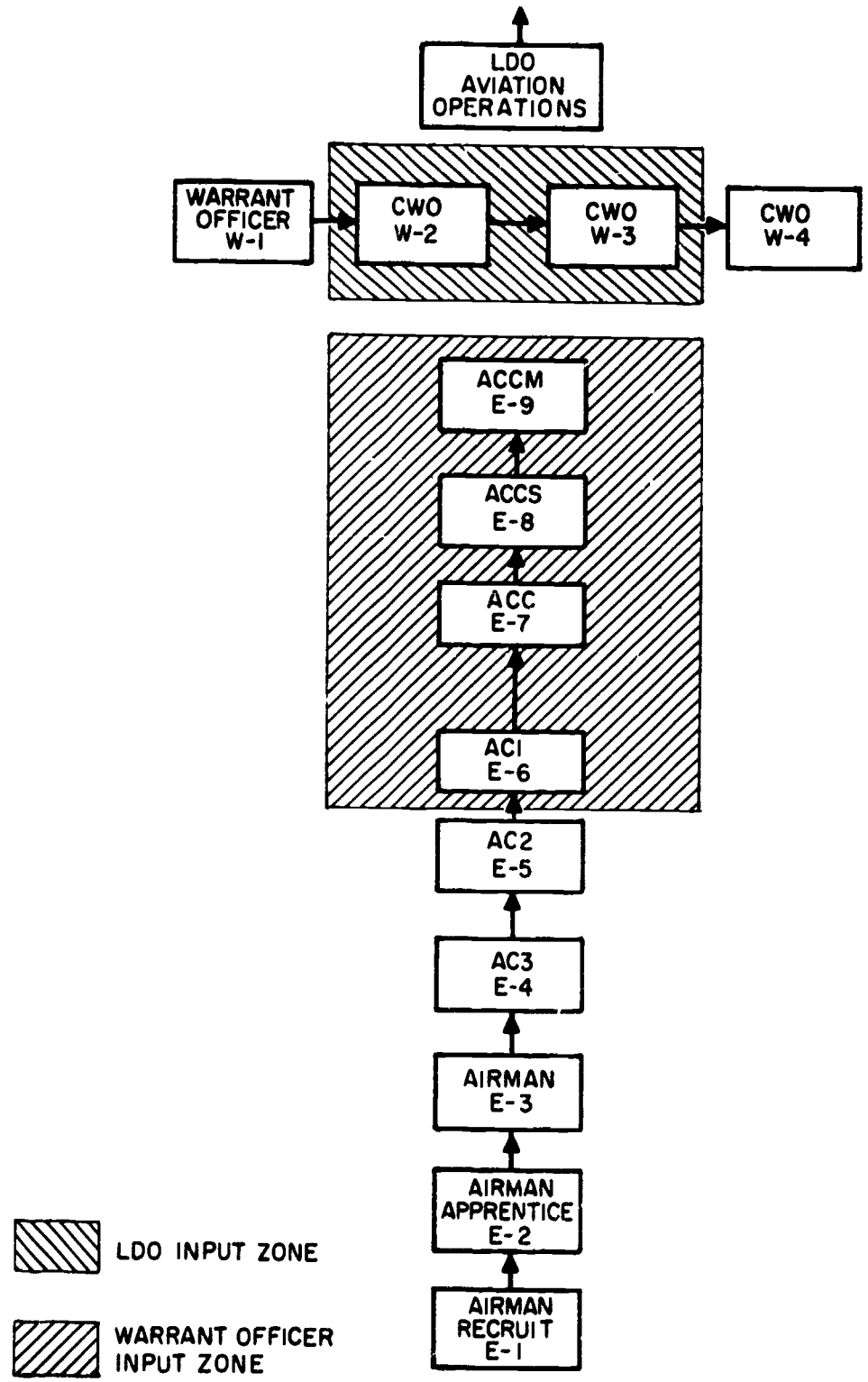
Before an individual can be recommended for any Air Controlman rating, he must possess the following as minimum qualification:

1. A certificate indicating successful completion of the FAA basic airman written examination for air traffic controllers.
2. A Class II FAA medical certificate.

Figure 1-1 illustrates the path of advancement from Recruit to Master Chief Air Controlman, Warrant Officer, and Limited Duty Officer. BUPERS Instruction 1120.18 (Series) provides guidance for submission of application for promotion to Warrant Officer and Limited Duty Officer.

Shaded areas in figure 1-1 indicate career stages from which qualified enlisted men may advance to Warrant Officer (W-1), and selected Commissioned Warrant Officers (W-2 and W-3) may advance to Limited Duty Officer.

Unlike the civilian counterpart, the Navy Air Controlman is not a specialized Center Controller, Tower Controller, or a Flight Service Specialist. The Navy AC is required to be a professional air traffic controller, knowledgeable in all areas of air traffic control and a professional military man who transfers at regular intervals.



AC.1

Figure 1-1.—Paths of advancement.

This point may be accented by a brief description of the types of duty which an Air Controlman may expect to receive or that he may request as follows.

1. Naval air stations

a. AC's assigned to air stations are normally attached to the Air Traffic Control division within the operations department. ACI's and ACC's normally serve as watch supervisors or branch supervisors and normally have several personnel under their supervision performing the various air traffic control duties.

b. The ACI or ACC performs supervisory and ATC functions in control towers, radar air traffic control centers, ground controlled approach units, and flight clearance offices. Tools of the trade include radio, radar, direction finding equipment, teletype, and various forms of direct line telephone equipment.

c. They control air traffic under all types of weather conditions, assist in the administration of the ATC division and ATC function of the naval air station, process flight plans and clearances, keep appropriate records as basis for reports required, and maintain current flight planning and related information.

2. CVA/CVS's

a. Air Controlmen assigned aboard aircraft carriers may be members of the CCA team or the Air Operations crew, both of which comprise the CATCC.

b. AC's perform basically the same type duties aboard ship as described for naval air stations, adapted to the mobility aspect of aircraft carriers and the increased tempo and precision required for aircraft operations at sea.

3. LPH's

a. Air Controlmen are assigned aboard each of the LPH's.

b. They perform communications and air traffic control service, including the use of radar.

4. Instructor billets.

a. AC "A" and "B" schools, and CATCC and GCA "C" operator schools.

The technical assistant to the AC rating control officer in the Bureau of Personnel (BUPERS 2144) is an ACCM. He can provide more or detailed information on the billets described and can be reached by phone or correspondence.

The Naval Enlisted Classifications Codes for the AC rating are as follows:

1. AC-6900 is an Entry Series NEC and is assigned to E-2 and E-3 personnel in training as AC's and who are not designated strikers.

2. AC-6922 identifies a GCA Controller and is assigned to a GCA operator school graduate.

3. AC-6912 identifies a CCA Controller. This code may be assigned to a CATCC school graduate upon recommendation of the commanding officer after qualification as a final controller and one other of the following.

a. Approach Controller.
b. Marshal Controller.
c. Wave-Off/Bolter Controller.
d. Departure Controller.

An AC must be an AC-6922 to be eligible for AC-6912.

4. AC-6911 identifies a CATCC Supervisor. To be assigned AC-6911, an AC must be qualified in all CATCC operator positions (hence be an AC-6912), be able to supervise and direct the operation of the CATCC, and be recommended by the commanding officer.

Air Controlmen who do not fall within the above classifications may be assigned 0000 or a Special Series NEC such as one which designates instructors.

SUPERVISORY SKILLS

As you advance in rating, more of your work becomes a matter of supervision and training others in the performance of the various functions of the air traffic control facility. Your value to the organization will be measured largely in terms of the quality of work of your subordinates. This does not mean that everything can be delegated to subordinates, as there will continue to be tasks and responsibilities that you must take care of yourself. However, you must not take the attitude that it is easier to do the work than to train and supervise someone else.

Supervision is being responsible for and directing the work of others. In supervising your subordinates, you will need to have certain skills and knowledge. A supervisor is a manager; therefore, he should be well versed in the principles of management. The material presented here is for a twofold purpose: First, to acquaint you with the basic principles so that

your first supervisory duties will get off to a good start, and second, to give you a basis from which to build as you progress toward the higher ratings.

The supervisor needs to know and be skilled in the following factors to effectively supervise the men under him

1. Skill in leading.
2. Skill in organizing
3. Knowledge of his work.
4. Knowledge of his responsibilities.
5. Skill in communicating ideas.
6. Skill in instructing.
7. Problem solving

Skill in Leading

Here is where you should excel. Lead the men that you are coaching, do not drive them. Set examples for them to follow. Know them as individuals and handle their problems individually. Reprimand them in private; praise them in public. The men will work for you, and their training will be more easily accomplished and more effective if you can learn to (1) be predictable and consistent in your dealings with them, (2) project to your men the enthusiasm you feel for the work they are doing, and (3) have no fear of your position, you, boss, the people you are supervising, and tough jobs, or honest mistakes.

This is not an all-inclusive list of things that will make you a leader of men overnight. These items are sound, basic principles that, when mixed well with common sense, you will improve your leadership abilities.

Skill in Organizing

Another skill needed in supervision is skill in organizing. Organization is a form of discipline which, if carefully accomplished, can contribute substantially to successful supervision.

An important element of good organization is the delegation of AUTHORITY and RESPONSIBILITY, which must always go together. It has been said that the ideal of sound organization should be to fix responsibility as low in the organization as competence exists to assume the responsibility. Many individuals are reluctant to delegate authority because they fear the possibility of being embarrassed by the acts of their subordinates. These fears are generally an indication of a feeling of insecurity on the part of the supervisor. This insecure feeling can best be overcome by training the subordinates to increase their capacity for accepting responsibility and authority.

Not only do supervisors sometimes fail to delegate authority, but they also frequently fail to delegate properly the work that needs to be done. A supervisor can very readily handicap himself by trying to do more than he needs to do. The result is that he becomes an ineffective supervisor and leader.

Knowledge Required

Successful supervision demands a vast amount of knowledge. The wide variety and complexity of jobs require the supervisor to have considerable technical knowledge. It is inevitable, however, that the supervisor will be given some tasks for which his training and experience are inadequate. In these situations the supervisor must be dependent upon the knowledge and abilities of others, and upon his own leadership.

The supervisor must have a knowledge of the overall objectives of the organization of which he is a part. In addition, he needs to have a clear understanding of the specific part his own group must play in attaining the basic goals. His planning, organization, directing, and, in fact, all problem solving should be done with both the general and specific aims of the organization clearly in mind.

Knowledge of Men as Individuals

Of paramount importance to a successful supervisor is a thorough knowledge of the subordinates as individuals. The supervisor needs to be continuously aware of the fact that individual differences do exist and that they cannot be overlooked.

It is particularly dangerous for a supervisor to fall into the habit of stereotyping people.

Skill in the Communication of Ideas

Another skill which is required of a good supervisor is skill in the communication of ideas. This is essential in giving orders, in the dissemination of information, and in training or teach-

ing. In the Navy, the channels for communication and the lines of authority are the same. These channels should not be bypassed. If one's subordinates are expected to function willingly and cooperatively, they should be given all the information they need or can use.

Skills in Instructing

The actual development of a training program is discussed in a later chapter. The apprentice is depending on you to demonstrate and coach him in the correct procedures and methods to be used. You must develop skill in imparting your knowledge to trainees on how the job is to be done. As the trainee progresses from one work experience to another, you will be guiding and coaching him. To assist you in developing skill in instructing, keep the following in mind:

1. Show your new man how to do the job without showing off or showing him up.
2. Have all the answers you can, admit it when you do not, and get him the correct answer as soon as possible.
3. Learn to be sincerely interested in others.
4. Keep your sense of humor.
5. Be patient.
6. Be sure the trainee understands what the job is and how it is to be done.

Problem Solving

The practical exercise of supervision (or leadership) is largely concerned with problem solving. Every day new problems are encountered; there are difficulties different from any you have ever met. If you can look at these difficulties briefly, and then, almost without pause, see and apply a sound solution, you are fortunate. Indeed, you are exceptional; for most of us must cautiously examine difficult problems and weigh the solutions carefully. Even then, we are subject to serious errors if we overlook some of the details which are not too obvious.

If all of us were to go about solving problems in exactly the same manner, we would necessarily have exactly the same thought processes. Although we do not think alike, all those who are capable of finding proper solutions quickly and easily do have something in common. They follow a fairly well established pattern of thought and action.

Some people practice the pattern instinctively, thereby reaching solid, useful conclusions in what appears to be an amazingly short time. For most of us, this pattern is not one we know instinctively. We learn it only after having paid in concerted effort. We may learn of it in the classroom, on the job, or from books, but it becomes a habit only after the trial and error of repeated application.

TECHNIQUES IN PROBLEM SOLVING. The problem solving process may be divided into six steps. Individual leaders go through these steps either deliberately or automatically.

Preliminary to solving a problem, you must recognize that there is an actual problem to be solved. Then you proceed as follows:

1. Define the problem.
2. Establish objectives. By this is meant what do you want to accomplish.
3. Get the facts. Assemble all the facts pertinent to the problem. Ascertain what personnel, if any, are involved. Review the record. Find out what rules, regulations, and customs apply. Contact the individual concerned for opinions and feelings, as well as facts. Be sure you have the whole story. Perhaps materials or equipment constitute a part of the problem. Methods or operational schedules may also affect the problem.
4. Weigh and decide. After all the facts have been assembled, analyze the problem in light of the facts. Fit the facts together and consider their bearing on each other. Check regulations, policies, and practices. What possible actions are there? What are the possible results of each action? Choose the best action, but do not make sudden or quick conclusions.
5. Take action. First consider the following questions: Should I handle this problem myself? Do I need any help in handling it? Then consider the proper time and place to take the action that appears most likely to solve the problem. Do not depend on someone else to solve the problem.
6. Evaluate the action. In this step, check the results of your action to see if it solved the problem. Never just assume that the problem was solved, as you may find that the action brought about additional problems instead of solving the initial problem. Watch for changes in

output, attitudes, and relationships. If the problem was not solved, you may need to gather more facts and go through the entire problem solving procedure again.

The problem solving technique can be mastered by any individual who is capable of learning. It may seem to take a great deal of time, but eventually it will actually save time. The individual who desires to become a good supervisor should become so skilled in its use that this technique is used automatically when dealing with the problems of supervision.

ADVANCEMENT

By this time, you are probably well aware of the personal advantages of advancement higher pay, greater prestige, more interesting and challenging work, and the satisfaction of getting ahead in your chosen career. By this time, also, you have probably discovered that one of the most enduring rewards of advancement is the training you acquire in the process of preparing for advancement.

The Navy also profits by your advancement. Highly trained personnel are essential to the functioning of the Navy. By advancement, you increase your value to the Navy in two ways: First, you become more valuable as a technical specialist, and thus make far-reaching contributions to the entire Navy; and second, you become more valuable as a person who can supervise, lead, and train others.

Since you are studying for advancement to PO1 or CPO, you are probably already familiar with the requirements and procedures for advancement. However, you may find it helpful to read the following sections. The Navy does not stand still. Things change all the time, and it is possible that some of the requirements have changed since the last time you went up for advancement. Furthermore, you will be responsible for training others for advancement; therefore, you will need to know the requirements in some detail.

HOW TO QUALIFY FOR ADVANCEMENT

To qualify for advancement, a person must:

1. Have a certain amount of time in grade.
2. Complete the required Rate Training Manuals either by demonstrating a knowledge of the material in the manual by passing a locally prepared and administered test or by passing the Nonresident Career Course based on the Rate Training Manual.
3. Demonstrate the ability to perform all the PRACTICAL requirements for advancement by completing applicable portions of the Record of Practical Factors, NAVEDTRA 1414/1.
4. Be recommended by your commanding officer, after the petty officers and officers supervising your work have indicated that they consider you capable of performing the duties of the next higher rate.
5. Demonstrate KNOWLEDGE by passing a written examination on (a) military requirements, and (b) professional qualifications.

Remember that the requirements for advancement can change. Check with your educational services office to be sure that you know the most recent requirements.

When you are training lower rated personnel, it is a good idea to point out that advancement is not automatic. Meeting all the requirements makes a person ELIGIBLE for advancement, but it does not guarantee his advancement. Such factors as the score made on the written examination, length of time in service, performance marks, and quotas for the rating enter into the final determination of who will actually be advanced.

HOW TO PREPARE FOR ADVANCEMENT

What must you do to prepare for advancement? You must study the qualifications for advancement, work on the practical factors, study the required Rate Training Manuals, and study other material that is required. You will need to be familiar with the following:

1. Manual of Qualifications for Advancement, NAVPERS 18068 (Series).
2. Record of Practical Factors, NAVEDTRA 1414/1.
3. Bibliography for Advancement Study, NAVEDTRA 10052 (Series).
4. Applicable Rate Training Manuals and their companion Nonresident Career Courses.

Collectively, these documents make up an integrated training package tied together by the qualifications. The following paragraphs describe these materials and give some information on how each one is related to the others.

"Quals" Manual

The Manual of Qualifications for Advancement, NAVPERS 18068 (Series), gives the minimum requirements for advancement to each rate within each rating. This manual is usually called the "Quals" Manual, and the qualifications themselves are often called "quals." The qualifications are of two general types: (1) military requirements, and (2) professional or technical qualifications. Military requirements apply to all ratings rather than to any one rating alone. Professional qualifications are technical or professional requirements that are directly related to the work of each rating.

Both the military requirements and the professional qualifications are divided into subject matter groups. Then, within each subject matter group, they are divided into PRACTICAL FACTORS and KNOWLEDGE FACTORS.

The qualifications for advancement and a bibliography of study materials are available in your educational services office. The "Quals" Manual is changed more frequently than Rate Training Manuals are revised. By the time you are studying this training manual, the "quals" for your rating may have been changed. Never trust any set of "quals" until you have checked the change number against an UP-TO-DATE copy of the "Quals" Manual.

In training others for advancement, emphasize these three points about the "quals":

1. The "quals" are the MINIMUM requirements for advancement. Personnel who study MORE than the required minimum will have a great advantage when they take the written examinations for advancement.

2. Each "qual" has a designated rate level chief, first class, second class, or third class. You are responsible for meeting all "quals" specified for the rate level to which you are seeking advancement AND all "quals" specified for lower rate levels.

3. The written examinations for advancement will contain questions relating to the practical factors AND to the knowledge factors of BOTH the military requirements and the professional qualifications.

Record of Practical Factors

Before you can take the Navy-wide examination for advancement, there must be an entry in your service record to show that you have qualified in the practical factors of both the military requirements and the professional qualifications. A special form known as the Record of Practical Factors, NAVEDTRA 1414/1 (plus the abbreviation of the appropriate rating), is used to keep a record of your practical factor qualifications. The form lists all practical factors, both military and professional. As you demonstrate your ability to perform each practical factor, appropriate entries are made in the DATE and INITIALS columns.

As a PO1 or CPO, you will often be required to check the practical factor performance of lower rated personnel and to report the results to your supervising officer.

As changes are made periodically to the "Quals" Manual, new forms of NAVEDTRA 1414/1 are provided when necessary. Extra space is allowed on the Record of Practical Factors for entering additional practical factors as they are published in changes to the "Quals" Manual. The Record of Practical Factors also provides space for recording demonstrated proficiency in skills which are within the general scope of the rating but which are not identified as minimum qualifications for advancement. Keep this in mind when you are training and supervising other personnel. If a person demonstrates proficiency in some skill which is not listed in the "quals" but which is within the general scope of the rating, report this fact to the supervising officer so that an appropriate entry can be made in the Record of Practical Factors.

When you are transferred, the Record of Practical Factors should be forwarded with your service record to your next duty station. It is a good idea to check and be sure that this form is actually inserted in your service record before you are transferred. If the form is not in your record, you may be required to start all over again and requalify in practical factors that have

already been checked off. You should also take some responsibility for helping lower rated personnel keep track of their practical factor records when they are transferred.

A second copy of the Record of Practical Factors should be made available to each man in pay grades E-2 through E-8 for his personal record and guidance.

The importance of NAVEDTRA 1414/1 cannot be over emphasized. It serves as a record to indicate to the petty officers and officers supervising your work that you have demonstrated proficiency in the performance of the indicated practical factors and is part of the criteria utilized by your commanding officer when he considers recommending you for advancement. In addition, the proficient demonstration of the applicable practical factors listed on this form can aid you in preparing for the examination for advancement. Remember that the knowledge aspects of the practical factors are covered in the examination for advancement. Certain knowledge is required to demonstrate these practical factors and additional knowledge can be acquired during the demonstration. Knowledge factors pertain to that knowledge which is required to perform a certain job. In other words, the knowledge factors required for a certain rating depend upon the jobs (practical factors) that must be performed by personnel of that rating. Therefore, the knowledge required to proficiently demonstrate these practical factors will definitely aid you in preparing for the examination for advancement.

NAVEDTRA 10052

Bibliography for Advancement Study, NAVEDTRA 10052 (Series), is a very important publication for anyone preparing for advancement. This publication/bibliography lists required and recommended Rate Training Manuals and other reference material to be used by personnel working for advancement. NAVEDTRA 10052 (Series) is revised and issued each year by Naval Training Support Command. Each revised edition is identified by a letter following the NAVEDTRA number; be SURE you have the most recent edition.

The required and recommended references are listed by rate level in NAVEDTRA 10052 (Series). It is important to remember that you are responsible for all references at lower rate levels, as well as those listed for the rate to which you are seeking advancement.

Rate Training Manuals that are marked with an asterisk (*) in NAVEDTRA 10052 (Series) are MANDATORY at the indicated rate levels. A mandatory training manual may be completed by (1) passing the appropriate Nonresident Career Course that is based on the mandatory training manual; (2) passing locally prepared tests based on the information given in the mandatory training manual; or (3) in some cases, successfully completing an appropriate Navy school.

When training personnel for advancement, do not overlook the section of NAVEDTRA 10052 (Series) which lists the required and recommended references relating to the military requirements for advancement. All personnel must complete the mandatory military requirements training manual for the appropriate rate level before they can be eligible to advance. Also, make sure that personnel working for advancement study the references listed as recommended but not mandatory in NAVEDTRA 10052 (Series). It is important to remember that ALL references listed in NAVEDTRA 10052 (Series) may be used as source material for the written examinations, at the appropriate levels.

Rate Training Manuals

There are two general types of Rate Training Manuals. Rate Training Manuals such as this one are prepared for most enlisted rates and ratings, giving information that is directly related to the professional qualifications for advancement. Subject matter manuals give information that applies to more than one rating.

Rate Training Manuals are revised from time to time to bring them up to date technically. The revision of a Rate Training Manual is identified by a letter following the NAVEDTRA number. You can tell whether a Rate Training Manual is the latest edition by checking the NAVEDTRA number (and the letter following the number) in the most recent edition of List of Training Manuals and Nonresident Career Courses, NAVEDTRA 10061 (Series). NAVEDTRA 10061 is actually a catalog that lists current

training manuals and nonresident career courses; you will find this catalog useful in planning your study program.)

Rate Training Manuals are designed for the special purpose of helping naval personnel prepare for advancement. By this time, you have probably developed your own way of studying these manuals. Some of the personnel you train, however, may need guidance in the use of Rate Training Manuals. Although there is no single "best" way to study a training manual, the following suggestions have proved useful for many people.

1. Study the military requirements and the professional qualifications for your rate before you study the training manual, and refer to the "quals" frequently as you study. Remember, you are studying the training manual primarily to meet these "quals."

2. Set up a regular study plan. If possible, schedule your studying for a time of day when you will not have too many interruptions or distractions.

3. Before you begin to study any part of the training manual intensively, get acquainted with the entire manual. Read the preface and the table of contents. Check through the index. Thumb through the manual without any particular plan, looking at the illustrations and reading bits here and there as you see things that interest you.

4. Look at the training manual in more detail, to see how it is organized. Look at the table of contents again. Then, chapter by chapter, read the introduction, the headings, and the subheadings. This will give you a clear picture of the scope and content of the manual.

5. When you have a general idea of what is in the training manual and how it is organized, fill in the details by intensive study. In each study period, try to cover a complete unit—it may be a chapter, a section of a chapter, or a subsection. The amount of material you can cover at one time will vary. If you know the subject well, or if the material is easy, you can cover quite a lot at one time. Difficult or unfamiliar material will require more study time.

6. In studying each unit, write down questions as they occur to you. Many people find it helpful to make a written outline of the unit as they study, or at least to write down the most important ideas.

7. As you study, relate the information in the training manual to the knowledge you already have. When you read about a process, a skill, or a situation, ask yourself some questions. Does this information tie in with past experience? Or is this something new and different? How does this information relate to the qualifications for advancement?

8. When you have finished studying a unit, take time out to see what you have learned. Look back over your notes and questions. Maybe some of your questions have been answered, but perhaps you still have some that are not answered. Without referring to the training manual, write down the main ideas you have learned from studying this unit. Do not just quote the manual. If you cannot give these ideas in your own words, the chances are that you have not really mastered the information.

9. Use Nonresident Career Courses whenever you can. The Nonresident Career Courses are based on Rate Training Manuals or other appropriate texts. As mentioned before, completion of a mandatory Rate Training Manual can be accomplished by passing a Nonresident Career Course based on the training manual. You will probably find it helpful to take other Nonresident Career Courses, as well as those based on mandatory training manuals. Taking a Nonresident Career Course helps you to master the information given in the training manual, and also gives you an idea of how much you have learned.

INCREASED RESPONSIBILITIES

When you assumed the duties of a PO3, you began to accept a certain amount of responsibility for the work of others. With each advancement, you accept an increasing responsibility in military matters and in matters relating to the professional work of your rate. When you advance to PO1 or CPO, you will find a noticeable increase in your responsibilities for leadership, supervision, training, working with others, and keeping up with new developments.

As your responsibilities increase, your ability to communicate clearly and effectively must also increase. The simplest and most direct means of communication is a common language. The basic requirement for effective communication is therefore a knowledge of your own language. Use correct language in speaking and in writing. Remember that the basic purpose of all communication is understanding. To lead, supervise, and train others, you must be able to speak and write in such a way that others can understand exactly what you mean.

Leadership and Supervision

As a PO1 or CPO, you will be regarded as a leader and supervisor. Both officers and enlisted personnel will expect you to translate the general orders given by officers into detailed, practical, on-the-job language that can be understood and followed by relatively inexperienced personnel. In dealing with your juniors, it is up to you to see that they perform their jobs correctly. At the same time, you must be able to explain to officers any important problems or needs of enlisted personnel. In all military and professional matters, your responsibilities will extend both upward and downward.

Along with your increased responsibilities, you will also have increased authority. Officers and petty officers have POSITIONAL authority—that is, their authority over others lies in their positions. If your CO is relieved, for example, he no longer has the degree of authority over you that he had while he was your CO, although he still retains the military authority that all seniors have over subordinates. As a PO1, you will have some degree of positional authority; as a CPO, you will have even more. When exercising your authority, remember that it is positional—it is the rate you have, rather than the person you are, that gives you this authority.

A Petty Officer conscientiously and proudly exercises his authority to carry out the responsibilities he is given. He takes a personal interest in the success of both sides of the chain of command . . . authority and responsibility. For it is true that the Petty Officer who does not seek out and accept responsibility, loses his authority and then the responsibility he thinks he deserves. He must be sure, by his example and by his instruction, that the Petty Officers under him also accept responsibility. In short, he must be the leader his title—Petty Officer—says he is.

For information on the practical application of leadership and supervision, study Military Requirements for Petty Officer 1 & C, NAVPERS 10057 (Series).

Training

As a PO1 or CPO, you will have regular and continuing responsibilities for training others. Even if you are lucky enough to have a group of subordinates who are all highly skilled and well trained, you will find that training is necessary. For example, you will always be responsible for training lower rated personnel for advancement. Also, some of your best workers may be transferred; and inexperienced or poorly trained personnel may be assigned to you. A particular job may call for skills that none of your personnel have. These and similar problems require that you be a training specialist—one who can conduct formal and informal training programs to qualify personnel for advancement, and one who can train individuals and groups in the effective execution of assigned tasks.

In using this training manual, study the information from two points of view. First, what do you yourself need to learn from it? And second, how would you go about teaching this information to others?

Training goes on all the time. Every time a person does a particular piece of work, some learning is taking place. As a supervisor and as a training expert, one of your biggest jobs is to see that your personnel learn the RIGHT things about each job so that they will not form bad work habits. An error that is repeated a few times is well on its way to becoming a bad habit. You will have to learn the difference between oversupervising and not supervising enough. No one can do his best work with a supervisor constantly supervising. On the other hand, you cannot turn an entire job over to an inexperienced person and expect him to do it correctly without any help or supervision.

In training lower rated personnel, emphasize the importance of learning and using correct

terminology. A command of the technical languages of your occupational field (rating) enables you to receive and convey information accurately and to exchange ideas with others. A person who does not understand the precise meaning of terms used in connection with the work of his rating is definitely at a disadvantage when he tries to read official publications relating to his work. He is also at a great disadvantage when he takes the examinations for advancement. To train others in the correct use of technical terms, you will need to be very careful in your own use of words. Use correct terminology and insist that personnel you are supervising use it too.

You will find the Record of Practical Factors, NAVEDTRA 1414 1, a useful guide in planning and carrying out training programs. From this record, you can tell which practical factors have been checked off and which ones have not yet been done. Use this information to plan a training program that will fit the needs of the personnel you are training.

On-the-job training is usually controlled through daily and weekly work assignments. When you are working on a tight schedule, you will generally want to assign each person to the part of the job that you know he can do best. In the long run, however, you will gain more by assigning personnel to a variety of jobs so that each person can acquire broad experience. By giving people a chance to do carefully supervised work in areas in which they are relatively inexperienced, you will increase the range of skills of each person and thus improve the flexibility of your working group.

Working With Others

As you advance to PO1 or CPO, you will find that many of your plans and decisions affect a large number of people, some of whom are not even in your own occupational field (rating). It becomes increasingly important, therefore, for you to understand the duties and the responsibilities of personnel in other ratings. Every petty officer in the Navy is a technical specialist in his own field. Learn as much as you can about the work of others, and plan your own work so that it will fit into the overall mission of the organization.

Keeping Up With New Developments

Practically everything in the Navy—policies, procedures, publications, equipment, systems is subject to change and development. As a PO1 or CPO, you must keep yourself informed about changes and new developments that affect you or your work in any way.

Some changes will be called directly to your attention, but others will be harder to find. Try to develop a special kind of alertness for new information. When you hear about anything new in the Navy, find out whether there is any way in which it might affect the work of your rating. If so, find out more about it.

SOURCES OF INFORMATION

As a PO1 or CPO, you must have an extensive knowledge of the references to consult for accurate, authoritative, up-to-date information on all subjects related to the military and professional requirements for advancement.

Publications mentioned in this chapter are subject to change or revision from time to time—some at regular intervals, others as the need arises. When using any publication that is subject to revision, make sure that you have the latest edition. When using any publication that is kept current by means of changes, be sure you have a copy in which all official changes have been made.

In addition to training manuals and publications, training films furnish a valuable source of supplementary information. Films that may be helpful are listed in the U. S. Navy Film Catalog, NAVAIR 10-1-777.

ADVANCEMENT OPPORTUNITIES FOR PETTY OFFICERS

Making chief is not the end of the line as far as advancement is concerned. Advancement to Senior Chief (E-8), Master Chief (E-9), Warrant Officer, and Commissioned Officer are among the opportunities that are available to qualified petty officers. These special paths of advancement are open to personnel who have demon-

strated outstanding professional ability, the highest order of leadership and military responsibility, and unquestionable moral integrity.

ADVANCEMENT TO SENIOR AND MASTER CHIEF

Chief petty officers may qualify for the advanced grades of Senior and Master Chief. These advanced grades provide for substantial increases in pay, together with increased responsibilities and additional prestige. The requirements for advancement to Senior and Master Chief are subject to change but, in general, include a certain length of time in grade, a certain length of time in the naval service, a recommendation by the commanding officer, and a sufficiently high mark on the Navy-wide examination. The final selection for Senior and Master Chief is made by a regularly convened selection board.

The satisfactory completion of the Non-Resident Career Course titled Military Requirements for Senior and Master Chief Petty Officers, NAVTRA 10115, is required of all personnel advancing to E-8 and E-9.

ADVANCEMENT TO WARRANT AND COMMISSIONED OFFICER

The Warrant Officer program provides opportunity for advancement to warrant rank for E-6 and above enlisted personnel. E-6's, to be eligible, must have passed an E-7 rating exam prior to selection.

The LDO program provides a path of advancement from warrant officer to commissioned officer. LDO's are limited, as are warrants, in their duty, to the broad technical fields associated with their former rating.

If interested in becoming a warrant or commissioned officer, ask your educational services officer for the latest requirements that apply to your particular case.

CHAPTER 2
FLIGHT PLANNING

Except in emergencies and flights of combat necessity wherein conditions do not permit, pilots must insure that all preflight planning required planning required for the prosecution of a safe and properly conducted flight has been accomplished prior to carrying out any type of flight in a naval aircraft.

Inadequate preflight planning has been, in some instances, responsible for aircraft accidents. Safety is not an inherent quality in any profession. It is one quality that is achieved by process and is based largely on acuumulated knowledge and experience. To a greater extent than is generally realized, unfortunate experiences in the air can be avoided by increasing the overall knowledge and familiarity with each phase of flight planning by Air Controlmen and pilots alike. In short, there is no compromise for good, adequate flight planning.

The thoroughness of flight planning by pilots before takeoff can contribute immeasurably to all-around safety, comfort, and success of any flight, and to the task of preventing accidents. To aid in the safety and efficiency of a flight, pilots must rely to a varying extent upon the assistance provided by the Air Controlmen.

FLIGHT CLEARANCE AUTHORITIES

CLEARANCE AUTHORITY AT NAVAL ACTIVITIES

The authority and responsibility for clearance of aircraft flights at naval activities are vested in the following, who must be guided by existing orders and regulations:

1. Commanding general, commanding officer, or officer in charge of:
   a. Naval air stations.
   b. Marine Corps air stations.
   c. Naval auxiliary air stations.
   d. Naval air facilities.
   e. Marine Corps air facilities.
   f. Marine Corps auxiliary air stations.
   g. Auxiliary landing field.
   h. Outlying landing field.
2. Commanding Officers of aircraft carriers.
3. The senior naval aviator/naval flight officer attached to a naval station having aircraft operating facilities.
4. Fleet Air Detachment Commanders, Marine Aircraft Group Commanders, and the Commanding Officers of NARU's may approve flight plans for aircraft under their cognizance based at the naval air activity to which they are assigned. They may delegate authority for clearance of local flights to commanding officers of their units when weather conditions are at or above the IFR minimums specified for IFR clearance of naval aircraft in OPNAV 3710.7 (Series) and are forecast to remain at or above these minimums for the duration of the flight. When weather conditions are below such IFR minimums or are forecast to go below those minimums, and operational commitments dictate, clearance of fleet aircraft rests with the cognizant Commander Fleet Air Detachment. Fleet aircraft are subject to local traffic procedures and tower control. Liaison and coordination must be established with the appropriate ATC agencies to insure orderly flight clearance procedures.

Pilots holding a valid Special Instrument Rating are authorized to approve flight clearance for any flight of a naval aircraft in which they fly as pilot in command or as flight leader of a formation of aircraft. This may not be construed as authorization to clear members of a flight in weather conditions below the minimums for the type instrument rating held by the individual pilots of the flight.

CLEARANCE AUTHORITY OF PILOT IN COMMAND

When not at a naval activity, or when locally furnished flight clearance facilities are not available at the place of filing, or when in-flight deviation from the initial flight clearance is required, the pilot in command of a naval aircraft is authorized to approve as clearance authority the flight plan for his proposed flight or modification thereof. Appropriate air traffic control regulations must be observed and facilities of Flight Service Stations should be utilized.

DELEGATION OF AUTHORITY

The clearance authorities previously stated may delegate clearance authority to Commissioned Officers, Warrant Officers, and Naval Aviation pilots.

Qualified Navy Air Controlmen (E-7 and above) and Marine Corps airfield operations personnel (E-7 and above) may also be delegated this important responsibility by their commanding officers.

GENERAL RESPONSIBILITIES OF CLEARANCE AUTHORITIES

While the actual responsibility for approving flight plans submitted to flight clearance offices normally applies to the operations duty officer, senior AC's working in these offices are in a position to be of great help to the duty officer by checking flight plans for correctness and completeness and bringing any discrepancies to his attention. Knowing your immediate superior's responsibilities is a principle of good leadership, and by actions based on your knowledge of flight clearance procedures you are setting an example for the men who work with and for you.

Flight Clearance Approval Procedures

The clearance authority must insure that all portions of the flight clearance form are complete and that the aircraft is not cleared on a flight that will violate known instructions. The clearing authority should be particularly alert to the following:

1. Pilot in command has signed.
2. The crew is listed on the DD-175. Passengers may be listed on the DD-175 or on a separate passenger manifest.
3. The route of flight section is listed in the proper code to indicate selected navigation fixes.
4. Fuel reserve is sufficient for the flight. Aircraft must carry sufficient usable fuel, considering meteorological factors and mission requirements, to fly from takeoff to destination, or to the approach fix serving destination and thence to an alternate airfield, if one is required, plus 10 percent of planned fuel requirements. The fuel reserve at destination or alternate, if required, cannot be less than that required for 20 minutes of flight. If in-flight refueling is planned, sufficient usable fuel must be carried to fly from takeoff point to the Air Refueling Control Point(s) (ARCP), and thence to a suitable recovery field in the event of an unsuccessful refueling attempt. The fuel reserve at rendezvous point cannot be less than 10 percent. For multiple in-flight refuelings, the aircraft must have the required reserve at each rendezvous point. After the last in-flight refueling is completed, the fuel reserve required for the remainder of the flight is the normal requirement as previously discussed. Any known or expected traffic delays must be considered when computing fuel reserves.
5. Pilot in command holds a valid instrument card if applicable.
6. Check for improper filing into an ADIZ, warning or restricted area, or positive controlled airspace.
7. Alternate airport, if required. An alternate airport is required except for VFR flights or for IFR flights when the weather at the destination is forecast to be equal to or better than 3,000 feet ceiling and 3 miles visibility during the period 1 hour before until 1 hour after the ETA.
8. Insure that the weather briefing has been conducted and that the flight is not in violation of established weather minimums for the type of flight.
9. Insure that stopover procedure is understood by the pilot in command, if applicable.
10. Check for the proper weight and balance

forms, if applicable. Generally speaking and for weight and balance control purposes, NAVAIR Instruction 13060.2 (Series) classifies the majority of attack, fighter, and trainer aircraft as class 1A or 1 B. The majority of cargo and patrol aircraft are class 2. With the exception of aircraft to be ferried, the responsibility for insuring safe loading of class 1A and 1B aircraft is assigned to reporting custodians. The responsibility for safe loading of aircraft to be ferried rests with the activity preparing the aircraft for ferry movement. The pilot in command of a class 2 aircraft certifies by his signature on the DD-175 that the aircraft's weight and center of gravity will be within safe limits at the time of takeoff and remain so for the duration of the flight. Such a pilot will submit a completed weight and balance form (DD-365F) which represents the actual loading of the aircraft with the DD-175 or, by his signature, certify that a completed DD-365F, dated within the previous 3 months and which represents the actual loading of the aircraft, is on file at the aircraft's home base.

It should be emphasized that any modification of a written flight plan should be accomplished only with the concurrence of the pilot in command.

Authorized Airfields

Pilots cannot clear for airfields other than those listed in the current DOD FLIP IFR/VFR Supplement unless such flights are necessary for the accomplishment of a mission assigned by higher authority. The pilot is responsible for insuring that facilities, such as type runway, length, and load bearing capacity are adequate for the type aircraft involved.

All jet aircraft operating in the continental U. S. and engaged in training or itinerant flight are prohibited from landing at or taking off from civil airports, except for those aircraft of units occupying facilities at the airport. Civil airports are those listed in the FLIP Supplements under Directory of Aerodrome as P, FAA, and those airports where the military designation is enclosed in parentheses. Exceptions to this restriction are as follows:

1. Civil airfields on which naval air stations or units of another military service which operate jet aircraft are located.

2. Flights requiring an alternate may use civil airports as alternates when military alternates are not available.

3. When necessary to visit for official business in the area. Written orders are not required.

4. Required flights for procurement, acceptance, modification, test, and delivery of aircraft. This includes ferry flights to permit flexibility in accomplishing the mission.

5. Flights necessary for the accomplishment of unit mission where prior coordination has been effected with the airport authorities involved and where the Type Commander has granted waivers to permit use of the airport involved.

NOTE: These restrictions do not preclude the use of civil airports for the accomplishment of essential approach and low approach training which cannot be accomplished at military airfields.

Helicopters are authorized to land at non-airfield locations such as fields, highways, and parks, with the following provisions:

1. A military requirement exists for such landings.

2. Adequate safeguards are taken to permit safe landing and takeoff operations without hazard to people or property.

3. There are no legal objections to landing at such nonairfield sites.

The above restrictions may be waived by commanding officers when helicopters are dispatched or engaged in rescue operations.

Meteorological and Communication Services

The clearance authority must assure that provisions for satisfactory meteorological services and air/ground and point-to-point communication services are available, to insure safe and positive flight guard, prior to granting clearance. At those activities where weathervision is installed, the provision of satisfactory meteorological service may be accomplished by this means, provided that the following conditions are met:

1. The weathervision briefing is recorded at the transmitting end.

2. The pilot accepts responsibility for completion of the weather form and gives his name and grade to the weather briefing officer providing the briefing.

Flight Jeopardy

The commanding officer of a naval air activity is not authorized to permit naval aircraft departures from the activity under his command when the state of the weather or the condition of the crew or aircraft is such that, in his estimation, it will jeopardize the proposed flight. This restriction does not apply to cases where Commander Fleet Air Detachment, or a pilot holding a valid special instrument rating flying as pilot in command, or as flight leader of a formation of aircraft, has authorized flight clearance for a flight.

Non-Naval Aircraft

Aircraft of other military services and Military Airlift Command aircraft are granted clearance in accordance with their respective instructions. Civil aircraft will be cleared in accordance with FAA regulations.

VFR FLIGHT CLEARANCE REQUIREMENTS

CLEARANCE APPROVAL

The clearance authority must ascertain that the VFR clearance requested is in accordance with the VFR requirements of FAR 91, other governing regulations, and OPNAV 3710.7 (Series).

WEATHER MINIMUMS

Within airspace where FAR 91 is applicable, the cloud clearance and visibility minimums contained therein (illustrated in NAVTRA 10367-E, AC 3 & 2, chapter 3) prevail throughout a naval VFR flight. If more stringent minimums have been established for the point of departure or destination, as noted in the aerodrome remarks section of the DOD FLIP (En Route) IFR Supplement, then the ceiling and visibility must be at or above these minimums in the applicable control zone.

Existing and forecast weather must be such as to permit VFR operations for the duration of the flight. Destination weather must be at least 1,000 feet ceiling and 3 miles visibility, or such higher minimums as noted in the aerodrome remarks section of the DOD FLIP (En Route) IFR Supplement, and forecast to remain at or above these minimums during the period from 1 hour before until 1 hour after ETA.

Exceptions to the preceding paragraph are as follows:

1. Deviations pursuant to FAR 91.107, Special VFR Weather Minimums, are permitted subject to an ATC clearance.

2. Outside of controlled airspace, helicopters may be operated below 1,200 feet above the surface when the visibility is less than 1 mile, if operated at a speed that allows the pilot adequate opportunity to see and avoid other air traffic and maintain obstacle clearance.

Where FAR 91 is not applicable, FLIP Planning Section III, International Flight Rules and Procedures, outlines the general flight rules for operation of military aircraft in such airspace.

Aircraft must be instrument equipped and pilots must be qualified for instrument flight to fly VFR above a ceiling.

Fixed wing aircraft must maintain at least 500 feet above the terrain or surface of the water except when landing or taking off or when the mission of the flight requires otherwise.

Prior approval must be obtained for a simulated instrument approach from the appropriate approach control facility or from the control tower at locations not served by an approach control facility. At an airport with no tower, the associated FSS, if applicable, must be notified.

IFR FLIGHT CLEARANCE REQUIREMENTS

In order to decrease the probability of midair collisions, all Navy/Marine Corps flights in fixed wing aircraft within the conterminous U.S. should, to the maximum extent practicable, be conducted in accordance with IFR procedure. This procedure is not always practicable and pilots should not be required to adhere to it when one or more of the following conditions exist:

1. When compliance would result in derogation of the mission or task.

2. When necessary to avoid severe weather.
3. When dictated by an in-flight emergency.

Pilots of point-to-point helicopter flights should be encouraged to file IFR where feasible and when the aircraft is suitably equipped.

An IFR or combination VFR/IFR flight plan must be filed for all flights of naval aircraft which may reasonably expect to encounter in-flight IFR weather conditions during any portion of the planned route. The VFR portion of the flight must meet the VFR criteria at the time of departure and be forecast to remain so during that period.

CLEARANCE APPROVAL

The clearance authority must ascertain that the clearance requested is in accordance with the IFR requirements of FAR 91, OPNAV 3710.7 (Series), and other governing regulations.

WEATHER

IFR clearance is based on the actual weather at the point of departure at the time of clearance and forecast weather en route, at destination, and at destination alternate during the period 1 hour before until 1 hour after ETA. Existing weather may be used as a basis for clearance when no forecast weather is available and the pilot's analysis of available data indicates satisfactory conditions for the planned route. Clearance cannot be authorized for destinations at which the weather is forecast to be below minimums (depicted in table 2-1) upon arrival, except when one of the following conditions exists:

Table 2-1.—Weather criteria for IFR clearances

Destination		Alternate	
Nonprecision	Precision	Nonprecision	Precision
Published landing minimums	Published landing minimums.*	300 feet ceiling and 1-mile visibility both above published landing minimums; e.g. published minimums are 400 and 1, then weather must be at least 700 and 2.	200 feet ceiling and one-half mile visibility both above landing minimums.**

* Single-piloted aircraft Not less than 200 feet ceiling and one-half mile visibility.

**Single-piloted aircraft and those multipiloted aircraft equipped with only one operative means of two-way communications: Not less than published nonprecision minimums applicable to installed equipment/navaids available.

1. The flight clearance is authorized by the Commanding Officer of an aircraft carrier; Commander Fleet Air Detachment; Marine Aircraft Group Commander; or senior officer in the operational chain of command when it is determined that the flight is required to support an urgent military necessity.

2. An alternate airport is available which is forecast to be equal to or better than 3,000 feet ceiling and 3 miles visibility during the period 1

hour before until 1 hour after ETA at the alternate.

Flights should be planned to circumvent areas of forecast atmospheric icing conditions and thunderstorms when practicable.

Severe Weather Watch Bulletin (WW)

Clearance authorities or pilots who possess clearance authority should not authorize flights through areas for which an Aviation Severe Weather Watch Bulletin (WW) has been issued unless the aircraft performance characteristics permit an en route flight level above existing or developing severe storms, or storm development has not progressed as forecast for the planned route. In the latter case, the following conditions apply:

1. VFR clearance may be authorized if existing and forecast weather for the planned route permits such clearance.
2. IFR clearance may be authorized if the aircraft has radar installed, thus permitting detection and avoidance of isolated thunderstorms.
3. IFR clearance may be authorized in positive control areas if visual meteorological conditions can be maintained thus enabling pilots to detect and avoid isolated thunderstorms.

Exceptions to the above restrictions are flights of operational necessity, emergencies, and flights involving all-weather research projects or weather reconnaissance.

INSTRUMENT FLIGHT RULES

IFR flights of naval aircraft are governed by the rules and procedure in FAR 91. The following conditions are in addition to those established therein.

IFR ALTITUDES

Except when the mission of the flight requires otherwise, naval aircraft operated IFR outside of controlled airspace must maintain at least 1,000 feet above the highest terrain, surface of the water, or obstacle within 22 miles of the intended line of flight. When operated IFR outside of controlled airspace, over designated mountainous terrain as shown in the appropriate DOD FLIP, a naval aircraft must maintain at least 2,000 feet above the highest terrain or obstacle within 22 miles of the intended line of flight.

Naval aircraft operated IFR within controlled airspace cannot be flown at less than the minimum en route altitude or that altitude specified by the agency exercising control over the area concerned.

INSTRUMENT DEPARTURES

If a departure takes place under IFR conditions, takeoff weather minimums must be considered. In addition, an approved standard instrument departure may be applicable.

Takeoff Minimums

No takeoff weather minimums apply to pilots who hold a valid special instrument rating. Takeoff depends on the judgment of the pilot and urgency of the flight.

For pilots who hold a valid standard instrument rating a takeoff minimum of 300 feet ceiling and 1 mile visibility applies. When a radar approach facility with published minimums less than 300 and 1 is available, takeoff may be authorized, provided the weather is at least equal to the precision approach (PAR) minimums for the runway in use but in no case when the weather is less than 200 feet ceiling and one-half mile visibility/2400 feet RVR.

Two-aircraft formation takeoffs for subsequent flight into IFR weather conditions may be authorized, provided the weather is at or above the published circling minimums for the runway/airport in use. In the event a circling approach is not authorized, VFR weather minimums apply.

If available, runway visibility may be used to determine the visibility appropriate to a particular takeoff minimum.

Standard Instrument Departure (SID)

Where available, the use of approved SID's is encouraged for IFR departures. An appropriate SID procedure should be suggested to pilots during preflight planning in order for them to realize the greatest benefit from standardization of instrument departures.

INSTRUMENT APPROACHES AND LANDING MINIMUMS

Approved instrument approach procedures are published in DOD Flight Information Publications (Terminal) or other similar type publications. Landing minimums for precision and surveillance radar approaches are published in DOD Flight Information Publication (IFR Supplement). If available, runway visibility may be used to determine the visibility minimums except that prevailing visibility is used for circling approaches.

Definitions

For the purpose of instrument approach criteria, the Navy defines multipiloted and single-piloted aircraft as stated in the following paragraphs.

SINGLE-PILOTED AIRCRAFT. A single-piloted aircraft is any aircraft that has one set of flight controls or any aircraft configured with two sets of flight controls and being operated by only one pilot, except that tandem cockpit aircraft are considered as single-piloted aircraft regardless of the number of pilots embarked.

MULTIPILOTED AIRCRAFT. A multipiloted aircraft is any aircraft that has two sets of flight controls located side by side in a single cockpit and operated by two pilots. Single-piloted aircraft with side by side seating occupied by the pilot in command and an assisting Naval Flight Officer (NFO) which are configured for and assigned all-weather missions, may operate within the same clearance and approach criteria assigned to multipiloted aircraft provided the assisting crewmember has the equivalent of an instrument rating (in accordance with chapter 12 OPNAV 3710.7 (Series)) in type aircraft and can monitor the pilot's flight instruments, monitor and control communications, and assist the pilot in acquiring the runway visually.

Approach Criteria

SINGLE-PILOTED AIRCRAFT. An instrument approach is not commenced in single-piloted aircraft when the reported weather is below the minimums prescribed in table 2-1 for the type approach being conducted, unless an emergency exists. When a turbojet enroute descent is to be executed, the approach is considered to commence when the aircraft descends below the highest initial penetration altitude established for the high altitude instrument approach procedures for the destination airport. However, once an approach has been commenced, a pilot may, at his discretion, continue the approach to the approved published landing minimums as shown in the appropriate Flight Information Publication for the type approach being conducted.

The absolute minimums for a single-piloted aircraft on a precision approach are: 200 foot ceiling/height above touchdown (HAT) and visibility one-half mile/2,400 feet RVR or published minimums, whichever is higher.

AIRCRAFT IN FORMATION.- Formation flights of more than two aircraft during descent in instrument weather conditions are prohibited except in an emergency.

Formation flights may not commence an instrument approach when the reported weather is less than circling minimums for the runway/airport in use. In the event a circling approach is not authorized, VFR weather minimums apply. Once an approach has been commenced, the leader may, at his discretion, continue the approach in formation to the approved landing minimums as shown in the appropriate FLIP for the type of approach being conducted.

MULTIPILOTED AIRCRAFT, PROPELLOR DRIVEN AND ROTARY WING.- Except in an emergency, instrument approaches in multipiloted type aircraft may not be commenced when the reported weather is below approved published landing minimums unless it has been determined that the aircraft has the capability to

proceed to an alternate airport in the event a missed approach must be executed

MULTIPILOTED AIRCRAFT, JET. Except in an emergency, jet multipiloted aircraft may not commence an approach when the reported weather is below the approved published landing minimums for the type approach being conducted. Once an approach has been commenced, a pilot may, at his discretion, continue the approach to the approved published landing minimums as shown in the appropriate FLIP for the type approach being conducted.

CRITERIA FOR CONTINUING INSTRUMENT APPROACHES TO A LANDING. The published minimum descent altitude, (MDA) or decision height (DH) as applicable, is the lowest altitude to which any aircraft may descend during an instrument approach, unless the pilot has the runway environment (See Appendix 1) in sight and landing can be executed, either straight-in or from a circling approach, whichever is specified in the approach clearance. A missed approach must be immediately executed upon reaching the missed approach point if the runway environment is not in sight of if a safe landing cannot be made. For PAR approaches, the point at which the glide path elevation and minimum altitude or decision height coincide must be used to identify the missed approach point.

On precision radar approaches, the pilot may expect to receive control instructions until over the landing threshold; however, course and glide path information given after DH should be considered advisory in nature.

FINAL APPROACH ABNORMALITIES DURING RADAR APPROACHES. The radar controller will issue instructions to execute a missed approach or climb and maintain a specific altitude and fly a specified course, whenever the completion of a safe approach is questionable because one or more of the following conditions exist:

1. Safe limits for the radar approach are exceeded or radical aircraft deviations from the normal approach path are observed.

2. Position or identification of the aircraft is in doubt.

3. Radar contact is lost or a malfunctioning radar is suspected.

4. Field conditions, conflicting traffic, or other tower observed unsafe conditions, preclude approach completion.

Execution of the missed approach by the pilot is not always necessary for conditions stated in sentences numbered 1, 2, or 3 in the preceding paragraph if the pilot has the runway or approach/runway lights in sight. In these cases, controller phraseology is: (reason) "IF RUNWAY OR APPROACH/RUNWAY LIGHTS NOT IN SIGHT, EXECUTE MISSED APPROACH/(alternative instructions)." The reason might include loss of radar contact, etc.

Execution of the missed approach is MANDATORY for the condition stated in sentence numbered 4 in a preceding paragraph in this section. Controller phraseology should be "EXECUTE MISSED APPROACH (alternative instructions) (reason)." The reason might be traffic on the runway, etc. The controller may issue instructions to climb and maintain a specific altitude and fly a specified heading, giving the reason therefore, instead of the applicable missed approach procedure.

Practice Approaches

These criteria are not intended to preclude single aircraft from executing practice approaches (no landing intended) at a facility when operating in conformance with an appropriate clearance and the weather at the intended final destination, and alternate if required, meet the criteria for an instrument clearance.

SPECIAL MILITARY OPERATIONS

There are numerous military operations that fall into the "special" category: i.e., Air Defense Exercises, All-Weather Low Altitude Routes, Aerial Refueling, etc.

Since any of the aforementioned operations normally requires approval by the FAA, the Air Controlman should be knowledgeable in the steps utilized in obtaining the necessary authorization prior to the conduct of these operations.

Altitude Reservation (ALTRV) Procedures

An Altitude Reservation, hereafter referred to as ALTRV, is authorization by the appropriate FAA facility for airspace utilization under prescribed conditions, normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished.

An ALTRV should be utilized when a number of aircraft must be moved with less than standard IFR separation or when a number of aircraft must operate within prescribed altitudes, timing and/or areas.

Provided the mission can be accomplished without excessive derogation an ALTRV need not be requested. In addition, an ALTRV is NOT authorized for operations that are usually conducted in airspace expressly designated for a special activity.

ALTRV's may encompass certain nuclear tests, rocket, missile and drone activities and other special operations as may be authorized by FAA approval procedure.

Mission Planning

Originating units (squadrons, etc.) should assign a project officer for each proposed ALTRV approval request (APREQ). He is responsible for prior coordination with the following:

1. ARTCC in whose area the flight originates to obtain acceptable departure procedures up to the first cruising altitude.
2. Designated controlling agency for approval to transit restricted or warning areas.
3. Designated scheduling unit for approval to use or transit refueling tracks and Oil Burner routes including associated tracks.
4. Appropriate military bases concerning the use of an Intensive Student Jet Training Area (ISJTA).
5. Appropriate FAA Liaison Officer.

Time criteria for the submission of ALTRV APREQs to the Central Altitude Reservation Facility (CARF), Washington, D. C., are contained in ATP 7610.4 (Series), Special Military Operations.

Figure 2-1 illustrates the ALTRV flight plan form that is utilized for planning and submission to CARF. This form is utilized when the reservation request is to be mailed or hand-carried to CARF. Requests that are sent via teletype should follow the format contained in ATP 7610.4 (Series).

CARF Responsibility

ALTRV APREQ's received by CARF via the mail service should be acknowledged by phone or teletype.

Requests received that encompass overseas operations are coordinated by CARF with the appropriate control agencies.

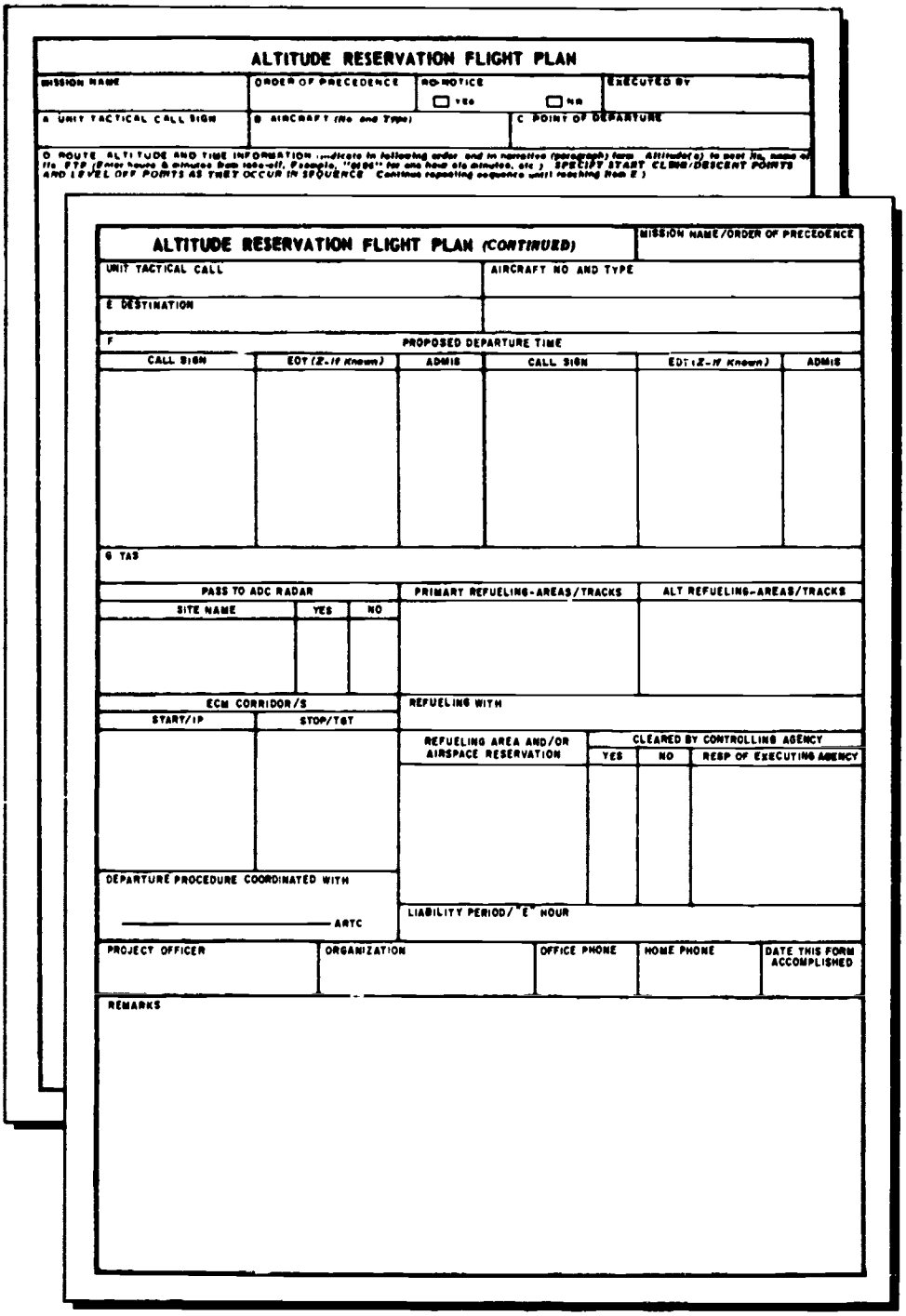
CARF is required to forward ALTRV APVL's (approvals) to all ARTCC's concerned at least 24 hours prior to the proposed departure time (as specified in the ALTRV flight plan), unless a shorter time is coordinated with all ARTCC's concerned.

For airspace that is not under the jurisdiction of CARF coordination with the appropriate ARTCC to obtain approval for ALTRV APREQ's is the responsibility of CARF.

ARTCC Responsibility

ARTCC is responsible for the following:

1. Review all ALTRV APREQ's to insure completeness.
2. Coordinate departure procedures with the appropriate approach control facilities.
3. Insure that the flight has been approved up to the first cruising altitude requested, provided that this altitude will be attained within the originating ARTCC area or the first adjacent ARTCC area.
4. Insure that required separation exists between two or more missions departing within the center of origin area to the altitudes specified in 3 above.
5. Deliver all ALTRV APVL's to the designated project officer in accordance with delivery instructions received from CARF.
6. Notify appropriate approach control facilities of approved ALTRV's which will operate within airspace delegated to approach control.
7. Forward departure times and/or cancellation of ALTRV aircraft to CARF and all



ALTITUDE RESERVATION FLIGHT PLAN

MISSION NAME	ORDER OF PRECEDENCE	NO NOTICE ☐ YES ☐ NO	EXECUTED BY
A UNIT TACTICAL CALL SIGN	B AIRCRAFT (No and Type)	C POINT OF DEPARTURE	

D ROUTE ALTITUDE AND TIME INFORMATION (Indicate in following order and in narrative (paragraph) form. Altitude(s) to post fix, name of fix, FTP (Enter hours & minutes from take-off. Example, "0045" for one hour six minutes, etc.) SPECIFY START CLIMB/DESCENT POINTS AND LEVEL OFF POINTS AS THEY OCCUR IN SEQUENCE. Continue repeating sequence until reaching item E.)

ALTITUDE RESERVATION FLIGHT PLAN (CONTINUED) — MISSION NAME/ORDER OF PRECEDENCE

UNIT TACTICAL CALL	AIRCRAFT NO AND TYPE
E DESTINATION	

F PROPOSED DEPARTURE TIME

CALL SIGN	EOT (Z-H Known)	ADMIS	CALL SIGN	EDT (Z-H Known)	ADMIS

G TAS

PASS TO ADC RADAR			PRIMARY REFUELING-AREAS/TRACKS	ALT REFUELING-AREAS/TRACKS
SITE NAME	YES	NO		

ECM CORRIDOR/S		REFUELING WITH			
START/IP	STOP/TGT	REFUELING AREA AND/OR AIRSPACE RESERVATION	CLEARED BY CONTROLLING AGENCY		
			YES	NO	RESP OF EXECUTING AGENCY

DEPARTURE PROCEDURE COORDINATED WITH _____ ARTC

LIABILITY PERIOD/"E" HOUR

PROJECT OFFICER	ORGANIZATION	OFFICE PHONE	HOME PHONE	DATE THIS FORM ACCOMPLISHED

REMARKS

AC.214

Figure 2-1.—Altitude Reservation Flight Plan.

concerned ARTCC's. Notify the appropriate approach control facilities of cancellations only.

For more detailed information relative to special military operations the reader is urged to consult Special Military Operations, ATP 7610.4 (Series).

FLIGHT PLANNING SECTION

In flight planning, pilots utilize the facilities and space provided in the flight planning section of air operations. Here pilots assemble the necessary information, which is required for a proposed flight, on the flight plan log and the aircraft clearance form (DD Form 175–Military Flight Plan, or DD Form 1801–International Flight Plan).

Flight planning facilities of operations buildings vary in size, depending on the mission of the station and the amount of traffic that they support. Examples of two different missions are major training stations and fleet support stations. The intent is to provide space and facilities sufficient to permit a reasonable number of pilots to concentrate on flight planning problems at the same time without crowding or other unnecessary annoyance during this important phase of every flight.

FLIGHT PLANNING/APPROVAL BRANCH SUPERVISOR

The supervisor is the key to the efficient and effective function of any operation. Flight Planning/Approval may be considered one of the most important functions of the ATC division. Although it does not include what may be considered the more exciting functions of actually controlling air traffic, as do the tower or radar operations, it probably presents the greatest challenge to a supervisor. It is at Flight Planning/Approval that physical contact is made between the users of, and the air controlmen who provide, air traffic control services. Logically, the image or personality of the division, department, and station may be the result of the majority of opinions formed concerning the services received, culminated by this contact.

It is a generally accepted practice to assign the young personnel, new to the Navy, to this branch to begin their development of air traffic control skills. These men have a tendency to try to imitate or take for their own those qualities they admire and respect in those they identify as leaders. If the leaders they respect and admire are skillful, aggressive, and professional air controlmen who create by their interest and action a good attitude toward flight clearance functions, then these new men will develop good attitudes. A supervisor wants his men to be cooperative, to be willing to pitch in when emergencies arise, to have pride in the organization, and to feel they have a stake in it. These cooperative attitudes are a byproduct of a supervisor's dealings with his men.

A supervisor can stimulate interest by helping his men see why their work is needed and how it fits into the whole pattern of air traffic control. He can develop their initiative by encouraging them to join in figuring out ways of making their work easier and better, and by delegating jobs to those who can and should be doing them and occasionally checking and acknowledging the fact that they are done properly. At the same time the supervisor must avoid stifling initiative by oversupervision.

A supervisor will necessarily carry out an orientation program for all new men. But it takes more time and attention to get the younger men off to a good start. This is worth doing because they have many useful years in the Navy ahead of them if they get started right. The new men probably lack confidence and it is up to the supervisor to relieve the tension. Once they have some confidence, are familiar with their surroundings, know their shipmates, and know who is to give them orders, they are able to learn faster. It may be helpful to put them under the wing of a more experienced air controlman to help them adjust and find their way around.

The flight planning/approval branch supervisor's professional qualities are already proven by his attained rate and selection to a supervisor position by his seniors. This combined with good training and management practices will insure the efficient and effective operation of the Flight Planning/Approval Branch.

EQUIPMENT AND LOCATION

The purpose of the flight planning section is to provide a centralized collection of aeronautical information necessary for, and required by, aircrews to prepare flight plans.

The flight planning section should be located, organized, and equipped in conformity with the following standards:

1. It should be located in a convenient position adjacent to the weather office and the flight approval desk. Its location should be clearly indicated by direction indicators to guide transient aircrews.

2. It should be manned by Air Controlmen trained and qualified to maintain flight information publications and associated wall displays. The personnel assigned to this section should be in sufficient numbers to operate the section throughout the normal working hours of the air establishment.

3. It should include adequate accommodation with suitable furnishings for aircrews to thoroughly prepare their flight plans in reasonable comfort. The furnishings should include wall space for the display of required aeronautical information, plotting tables, adequate lighting arrangements, and storage for charts, publications, and forms required by aircrews.

4. Navigation equipment must include plotting instruments, flight computers, and a clock indicating Greenwich Mean Time.

5. Sufficient quantities of flight information publications and related information applicable to the mission of the activity and area of location should be available.

6. NOTAM's decoded to plain language must be maintained up-to-date for ready reference.

7. The following publications are utilized occasionally for reference purposes and should be available in limited quantities where required:

a. Federal Aviation Regulations, Part 91, General Operating and Flight Rules.

b. Airman's Information Manual.

c. International NOTAM's (FAA).

d. International Flight Information Manual.

e. Air Almanac.

f. Foreign Clearance Guide.

g. Language Glossaries.

h. DOD catalog of aeronautical charts and flight information publications.

AERONATUICAL CHARTS AND PUBLICATIONS

One of the flight planning/approval branch supervisor's functions should be to insure that an adequate stock of aeronautical charts and publications is maintained for flight crews and that they are kept current and corrected. All the Navy's aeronautical charts and publications are procured and distributed by the Defense Mapping Agency Hydrographic Center (DMAHC), Washington, D. C.

The Defense Mapping Agency Hydrographic Center is responsible for production or procurement, inventory management, and distribution of navigational and intelligence material to meet the Navy/Marine Corps operational requirements. DMAHC also maintains appropriate liaison with agencies within the Department of Defense, Coast and Geodetic Survey, and other chart producing agencies regarding production, procurement, and distribution matters.

There are two Hydrographic Center Depots which serve as primary stock and distribution points; Clearfield, Utah and Philadelphia, Pa. These depots provide charts and publications for the nine Hydrographic Centers which are at the following locations:

CONUS	OVERSEAS
1. Norfolk, Va.	1. Rodman, Canal Zone
2. Jacksonville, Fla.	2. Cubi Point, P.I.
3. San Diego, Calif.	3. Atsugi, Japan
4. San Pedro, Calif.	4. Honolulu, Hawaii
	5. Naples, Italy

Each hydrographic center has a geographical area of the world for which it is responsible. They stock and issue aeronatuical charts and publications, selected periodicals, air intelligence publications, and Army maps. Additionally, selected nautical chart portfolios and related publications are stocked uncorrected for emergency issue.

The requisitioning of aeronautical material from the DMAHC distribution system is accomplished as described in the DOD Catalog of

Aeronautical Charts and Publications. The purpose of this catalog is to provide a listing of USN/USAF aeronautical charts and publication, DOD Flight Information Publications (FLIP's), and miscellaneous items available to DOD users. This catalog itself is a looseleaf notebook type publication containing several sections, each of which describes certain procedures or charts and publications available. For example, Section II consists of requisitioning and distribution procedure which must be followed and Section III lists the FLIP's available, etc. The catalog is kept current by semiannual publication of new or replacement pages containing changes or additions. There is also a classified DOD Catalog of Aeronautical Charts and Publications of similar construction for ordering classified charts and publications.

That portion of Section II that applies to Navy/Marine Corps requisitioning procedures should be the subject of the supervisor's close attention both in general use and training. This section contains complete information necessary to correctly order needed aeronautical charts and publications, including the source to order from. Figure 2-2 is an example of a completed DD Form 1149, which is the document used for requisitioning charts and publications.

In order to expedite the processing of requisitions, items should be double spaced on the DD Form 1149 and separate requisitions should be submitted for each category of material as follows.

1. Charts.
2. Publications.
3. FLIP's.

All requisitions must be signed by the Commanding Officer or his authorized representative.

The spaces to be filled out on the DD Form 1149 are explained in figure 2-2. The following explanation provides additional background information:

1. In block number 6, requisition number, the first portion of the number should be the unit identification code preceded by the letter N. This is referred to as the activity account number in the catalog. Unit identification codes consist of 2, 3, 4, or 5 numeric or alphabetical characters assigned by the Comptroller of the Navy to identify bureaus, systems commands, ships, aircraft units, shore activities, etc. In machine processing the unit identification codes of less than 5 characters would be preceded by zeros to make a five character field. The DOD Activity Address Directory (DODAAD) provides a code designation and clear text address of each DOD activity that requisitions or receives material. The code in the DODAAD for all Navy activities and certain Marine Corps activities consists of the unit identification code assigned by the Comptroller preceded by the letter N. The second portion of the requisition number indicates the Julian date, which consists of two elements: the last digit of the calendar year and the numerical consecutive date of the calendar year. In the example in firgure 2-2 the year is 1972 and the day is the 228th consecutive day of the year or 15 Aug. The numerical consecutive day of the year may be found on government issue calendars.

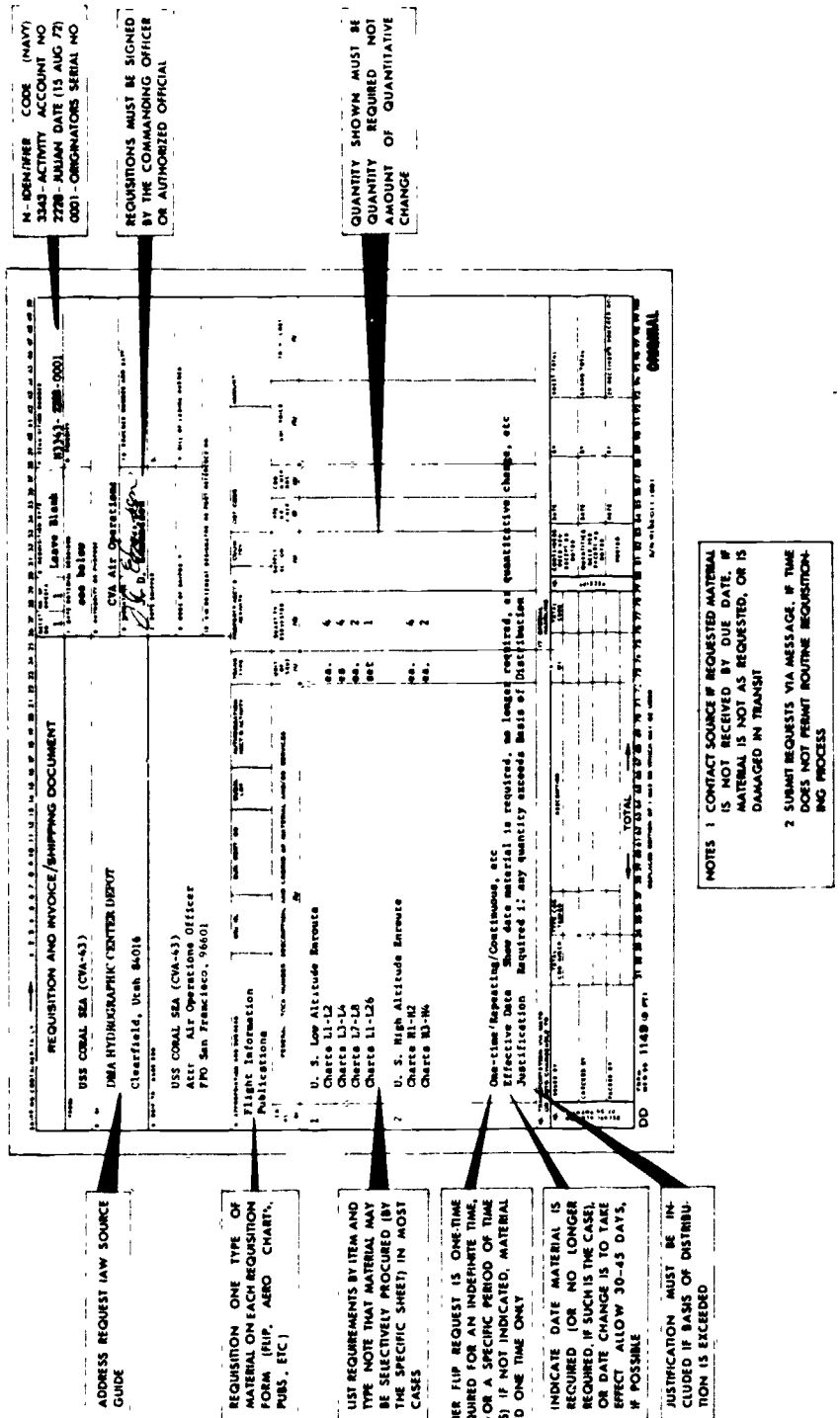
The unit identification code of each Navy activity can be found in NAVCOMPT Manual, Vol. II, or the DODAAD. If neither of these references is available, the activity Comptroller Department may be contacted by telephone.

The last portion of the serial number is the requisitioning activity's request number. This number on each new requisition must increase by at least one digit. A log may be maintained so that as each requisition is prepared, its originator's serial number is assigned and logged to prevent duplication and/or omissions.

2. Block 7 is normally blank unless the material is required prior to/or after the time allowed by the issue priority designator shown in block 8. In the Uniform Material Movement and Issue Priority System, the issue priority designator is determined by a combination of factors which relate the military importance of the requisitioner (Fleet Activity Designator) and the urgency of need designator. The Fleet Activity Designator (FAD) is a Roman numeral (I to V) and is assigned by appropriate authority within the chain of command. The FAD for any activity may be obtained by contacting the Supply Department of that activity. The urgency of need designator (an alphabetical letter) is determined by the requisitioning activity using the guidance and criteria shown in table 2-2.

Table 2-2.—Issue priority designator conversion table

URGENCY OF NEED DESIGNATOR (UND)	FORCE/ACTIVITY DESIGNATOR (FAD)					PRIORITY DELIVERY DATE (PDD)	
	I	II	III	IV	V		
	ISSUE PRIORITY DESIGNATOR (IPD)					CONUS	OVERSEAS
DESIGNATOR A							
Emergency requirements for nonavailable material without which the force/activity concerned is unable to perform assigned missions or tasks.	01	02	03			5 days (120 hr)	7 days (168 hr)
				07	08	8 days	15 days
DESIGNATOR B							
Requirements for nonavailable material which impairs the capability of the force/activity concerned. Missions can be performed, but with decreased operational effectiveness and efficiency.	04	05	06			8 days	15 days
				09	10	20 days	45 days
DESIGNATOR C							
Material requirements needed on a more urgent basis than routine. For example, immediate end use requirements for repair of collateral and administrative support equipment; to meet scheduled deployment; or deficiencies in newly established outfitting or allowance lists.	11	12	13	14	15	20 days	45 days
DESIGNATOR D							
Material requirements for initial outfitting and filling of allowances, scheduled maintenance, routine stock replenishment, repair or maintenance of supply systems stocks.	16	17	18	19	20	30 days	60 days



AC.215

Figure 2-2.—DD Form 1149.

With certain exceptions, these two factors (FAD and UND) will enable the requisitioning activity to determine the issue priority designator (IPD). For example, suppose that you are ordering aeronautical charts; you determine that your FAD is IV, and considering your ship's expected deployment date and the necessity of the charts you determine that the urgency of need designator should be C. By referring to table 2-2 you locate FAD IV, then move down the column directly below the IV until adjacent to the urgency of need designator C. This gives you an IPD of 14. This is the number that you would place on the DD Form 1149 in the priority block.

3. The Commanding Officer or his authorized representative must sign the DD Form 1149 and is required to personally review any urgency of need designator A and validate it. Additionally, an urgency of need designator B must be reviewed and validated by persons designated by the Commanding Officer. The supervisor should insure that control of issue priority designator utilization is exercised in the division and kept realistic before submitting the requisition for an approving signature.

4. FLIP's are distributed in predetermined quantities and to a predetermined list of addresses or automatic distribution. The basis of distribution is in accordance with a table included in Section III of the Catalog of Aeronautical Charts and Publications. When requisitioning FLIP's using the DD Form 1149, if automatic distribution of subsequent issues of the material ordered is not required, then a statement that the request is a one-time request must be included on the form. An annual survey is made by the appropriate DMA distribution control office to establish, confirm, or revise organizational requirements for FLIP's to keep the automatic distribution effective.

Chart Updating Information

Additional updating information on aeronautical charts is provided for DOD users listed in the catalog in two monthly publications. The DOD Aeronautical Chart Updating Manual (CHUM) is published to furnish information on significant chart changes and corrections. Each monthly CHUM supersedes the previous one. The DOD Aeronautical Chart Bulletin is published to inform users of new editions of charts and publications, to furnish information on replacement charts, and to provide notices pertaining to supply. Semiannually a DOD Aeronautical Chart Bulletin Digest is published to list the current edition dates of all charts shown graphically in the catalog. The monthly bulletin is a cumulative system which contains new additions since the last bulletin was published and they should be retained for the six month period preceding publication of the Bulletin Digest. The Bulletin Digest includes the still new or revised information from those previous six bulletins and when the Bulletin Digest is received, the previous six bulletins may be discarded and the process starts again.

To determine if a chart is a current edition, use the following procedure:

1. Check the edition number of the chart against the edition number listed in the latest Bulletin Digest and subsequent monthly bulletins. If the numbers are the same, the chart is current. If the bulletins list a higher edition number the chart is obsolete and should be replaced.

2. Check the CHUM to see if the chart requires modification. Refer to Section II of the latest CHUM for a listing of charts which require additional or updating information. If the chart is listed, refer to Section III of the CHUM for the correction information and apply the changes to the chart.

3. Check Section IV of the CHUM to see if there are any special notices that contain corrective information for the chart.

4. Check NOTAM files and Memorandum for Aviators files for possible navigation notices which may effect the chart.

There is also a classified DOD CHUM of similar construction for use with classified charts.

WALL DISPLAYS

Certain types of information required to be available in flight clearance can be displayed very effectively as a wall display. The amount, extent, and complexity of such displays are dictated by the mission of the particular activ-

ity. However, the following items of information are examples of material which may be made available in flight clearance as wall displays:

1. A general flight planning chart. This chart should be a large one such as the FLIP low altitude planning chart, and have some means of measurement for roughly determining distance of considerable magnitude, for preliminary planning.

2. A local flight planning chart(s) of suitable scale showing VFR ingress and egress corridors.

3. Scaled terrain/obstruction charts which may include overlays depicting current SID courses and their proximity to known hazards.

4. Charts showing details of local special use airspace and training areas, including limits of the local flying area.

5. A wallboard, appropriately marked, upon which to place effective Memoranda for Aviators.

6. NOTAM display. A standardized display board for NOTAM's as prescribed in OPNAV 3721.1 (Series) is designed to accommodate the publication procedure of the Navy/Air Force NOTAM system. This particular area of responsibility of the flight clearance supervisor should receive considerable attention. He must insure availability of sufficiently knowledgeable personnel to maintain a current NOTAM display and to assist pilots in checking the NOTAM information. The NOTAM board must be constantly updated, at least once each hour, and obsolete material must be promptly removed. When a new NOTAM is received, the Summary should be updated immediately. The accuracy of NOTAM's for your particular activity should be verified at least one hour after receipt of the Summary. Since the sole purpose of the NOTAM system is to assist the pilot in safer flight and the information is only of value after it reaches the pilot who is planning a flight, the effectiveness of the entire NOTAM system depends on how well each individual performs the functions assigned.

7. Lighted or other types of display boards to indicate general flying weather conditions are not mandatory. If used, however, such displays must be standardized to show terminal ceiling and visibility conditions indicated by the following color codes:

a. At or better than ceiling and visibility minimum prescribed for flight under VFR. GREEN.

b. Below ceiling and visibility prescribed for flight under VFR but at or above the lowest minimum for an approved instrument approach, including PAR. AMBER.

c. Below the lowest minimum for an approved instrument approach, including PAR.--RED.

USE OF FLIGHT CLEARANCE EQUIPMENT AND SAFETY PRECAUTIONS

Most base operations offices have some type of landline (direct phoneline) equipment for direct voice communications with ARTCC, FSS, etc. All such phone lines are identified by a particular number. Correct procedure to follow if these lines should fail is developed locally by the supervisor. Supervisors must insure that all personnel in the Flight Planning/Approval branch are familiar with such procedures. It is especially important that they know what to do and who to call on the regular telephone in case of a direct line failure.

Teletype machines in base ops will probably require more attention from a supervisor than most other equipment since they are relatively difficult to operate correctly. The supervisor must insure that the operators are properly indoctrinated concerning the proper codes prescribed for the particular types of messages that his office sends. This is especially important with automatic systems since improper coding of a heading to a message may cause the message to be rejected by the computer that routes the message to intended receivers. This would require doing the same job again, which introduces a delay in message delivery. Normally there is a time lapse of at least 30 minutes between the time the pilot of a proposed IFR flight submits his proposed flight plan until he calls departure control for his clearance.

If too many delays are introduced into the processing and submission of the proposal via teletype, the clearance may not be available when the pilot is ready for it. Considering the expense of the aircraft and pilot sitting there

waiting for clearance, when the delay problem is at the Flight Approval office, the necessity for correct and rapid communications should be apparent.

As in any situation, the senior personnel must be continuously safety conscious. They should make periodic inspections of work areas for potentially hazardous situations. Around teletype machines, consider the following precautions or actions:

1. The top cover of the machine should never be opened when anyone is working around it with metal objects such as paperclips, thumb tacks, etc., that might fall into the mechanism. Such objects, if allowed to fall into the machine, could severely damage it or possibly short out an electrical component and cause an electrical fire.

2. If an electrical fire should result, unplug the machine or otherwise disconnect the electrical circuit, such as with a master switch. It may be necessary to use a fire extinguisher. Be sure a CO_2 extinguisher is available in the area and that everyone knows the location.

3. Insure that personnel are properly indoctrinated as to the proper procedure for replacing teletype paper and ribbons since improper installations may jam or damage the machine or in any event delay its return to service.

CHAPTER 3

FACILITY OPERATION

Because of the many advantages of standardization, the Navy has endeavored to apply this principle to air traffic control to the extent possible. Cooperation with the FAA and other military agencies of the DOD to develop a common civil/military system is one example. The Naval Air Training and Operating Standardization (NATOPS) program is another. These standards attempt to provide uniform systems of efficient operation and operational guidance for ATC facilities. Differences between agencies and facilities are recognized, however, and appropriate options to provide the required flexibility is retained. It is the intent of this chapter to discuss those procedures applicable to most naval ATC facilities relative to the operation of the facility which are not included or referred to elsewhere in this training course.

AIR OPERATIONS MANUAL

Local flying rules and instructions are found in regulations issued by the various fleets, forces, naval air stations, and other naval activities where aircraft are based or operated. In accordance with OPNAV 3721.1 (Series), Navy and Marine Corps facilities develop and publish Air Operations Manuals which should include all those subjects that are considered as local administrative or operational procedure. Since this manual establishes local regulations, it is considered as a continuation or supplement to OPNAV 3710.7 (Series) NATOPS General Flight and Operating Instructions Manual which contains the overall standardized general flight and operating instructions for Navy and Marine Corps facilities.

Senior AC's should become involved with their Air Operations Manual. They should make their ideas for improved or more efficient procedures known to the proper individual in the chain of command. The best possible evaluation of such a publication must come from pilots using and the controllers providing the service regulated by this manual.

The following basic outline for an Air Operations Manual should be adhered to as closely as possible considering local conditions and services offered, which could necessitate some variation.

1. General.
   a. General prudential rules.
   b. Hangar and service facilities (including wheel load capacity of runways and parking aprons).
   c. Night lighting facilities.
   d. Hours of operation.
2. Clearance of aircraft.
   a. Instructions for filing flight plans.
   b. Weather minimums.
3. Course rules.
   a. Taxi instructions.
   b. Takeoff instructions.
   c. Landing instructions.
   d. Runway use procedure.
   e. Definition of local flying area.
   f. Acrobatic areas.
   g. Bombing areas.
   h. Local obstructions.
4. Air traffic control.
   a. PAR procedures, if applicable.
   b. Procedures for checking "wheels down and locked."
   c. Emergency procedures.
   d. Procedures for civil operations which infringe upon the control zone and/or airport traffic area, such as crop dusting, sign towing, forest fire fighting, etc.
5. Transient aircraft.
   a. Accommodations available.
   b. Transportation available.
   c. Instructions for clearance of passengers for flights.
   d. Procedures for handling visiting VIP's.

e. Procedures for expeditiously handling the orders of personnel authorized per diem.

f. Customs procedures, hours, and requirements (at stations on foreign soil and where applicable in the U.S.).

g. Procedures for obtaining flight rations.

h. Procedures for obtaining required registered publications necessary for flight.

i. Procedures and facilities for temporary stowage of registered material and weapons.

j. Availability of clothing, shaving articles, etc., for unexpected RON's and Bingo crews.

6. Aircraft crash and rescue.
   a. Crash and rescue bill.
   b. Search and rescue bill.
   c. Salvage bill.
7. Illustrations.
   a. Traffic pattern charts.
   b. Taxi pattern charts.
   c. Prohibited, warning, or restricted area charts.
   d. Target dropping and bombing area charts.
   e. Scaled terrain/obstruction chart.

One copy of each new or revised Air Operations Manual is sent to CNO, DMAHC, COMNAVAIRSYSCOM and the appropriate NARASPO. Distribution to other activities that use local facilities is accomplished as needed.

A complete and current Air Operations Manual is a definite asset to an ATC facility. It enjoys fairly wide distribution and is useful to interested persons unfamiliar with the local activity who intend to use the facility and services offered. Also, it is a useful tool for a facility's indoctrination and training program since it is a collective publication of regulations which affect local flying operations and procedures.

Moreover, if the Air Operations Manual is ignored and allowed to become a dust catcher in the files, it can be a meaningless waste. The Navy has taken steps to prevent this by requiring, through regulation, that a periodic review be conducted to insure that the subject matter is up to date. However, like any regulation, the effectiveness at the local level depends upon the initiative and insight of those regulated.

FACILITY LICENSE

SECNAV Instruction 3770.1 (Series) establishes responsibility and describes the procedures for use of Navy/Marine Corps aviation facilities by other than military aircraft as authorized by the Federal Aviation Act of 1958.

AUTHORITY

The Federal Aviation Act of 1958 states that air navigation facilities owned and operated by the U.S. may be made available for public use under such conditions and to such extent as the head of the department or other agency having jurisdiction thereof deems advisable and may by regulation prescribe.

Navy and Marine Corps aviation facilities are established to support the operation of Navy and Marine Corps aircraft. Equipment, personnel, and material are maintained only at a level necessitated by these requirements. SECNAV has established the policy that, except in the case of a bona fide emergency, Navy and Marine Corps aviation facilities will not be used to support the operation or maintenance of commercial or private aircraft except as follows:

1. Aircraft other than those belonging to the U.S. Government may use Navy and Marine Corps facilities if necessary and if so authorized under the provision of SECNAV 3770.1 (Series), provided that:

   a. They do not interfere with military requirements, and the security of the military operations, facilities, or equipment is not compromised.

   b. No adequate civil airport is available. (An exception to this is flights in connection with official government business.)

   c. Pilots comply with regulations promulgated by the cognizant military agency and the commanding officer of the facility.

   d. Civil aircraft users assume the risk in accordance with the provisions of the Aviation Facility License.

   e. Each aircraft is equipped with two-way radio which provides a capability for voice

communications with the control tower on standard Navy/Marine Corps frequencies.

f. The user, or requesting government, has obtained permission through diplomatic channels from the host country wherein the facility of intended landing is located, if applicable.

2. At joint civil/military facilities, the agreement entered into when establishing the joint use operation may take the place of SECNAV 3770.1 (Series) concerning civil use.

3. At facilities in foreign countries, the provisions of status of forces agreements, treaties of mutual cooperation, or other international agreements must also be considered.

4. Aircraft being produced for a military agency under contract may use Navy facilities for testing and experimental purposes if the contract so provides, or it is determined that it is in the best interest of the government to do so.

5. Aircraft operating under a Military Traffic Management and Terminal Service (MTMTS), Military Airlift Command (MAC), or Navy charter or contract for the movement of DOD passengers or cargo may be authorized to use facilities when required for loading, en route, or terminal stops.

CIVIL USE OF NAVAL FACILITIES

The use of naval facilities by civil aircraft is at the risk of the operator. The Navy assumes no liability or responsibility by reason of the condition of the landing area, taxiways, radio or navaids or other equipment, or for notification of such conditions, or by acts of its agents in connection with the granting of the right to use such facility. Additionally, no responsibility is assumed for the security of or damage to aircraft while on government property.

Operators of civil aircraft using a naval facility are required to comply with the air and ground rules promulgated by the Navy or the commanding officer. Such operators are required to comply with FAA requirements for filing flight plans. When a flight plan is required, it must be filed with the commanding officer or his authorized representative prior to departure. When no flight plan is required, the operator must furnish a list of passengers and crewmembers, the airport of first intended landing, the alternate airport, and the amount of fuel in hours to the flight clearance authority, or the local company official, as appropriate, prior to takeoff.

The applicable weather minimums are those established for a specific airline, if appropriate, or those as published in the Airman's Information Manual, or if none are established, those established by the commanding officer.

The commanding officer may conduct an inspection of the aircraft, its crew and cargo, or passengers as may be required. Compliance with local customs, immigration, agriculture, and public health regulations is the responsibility of the aircraft commander. The commanding officer will inform local officials of the arrival of civil aircraft subject to such regulations and will not authorize takeoff clearance until such regulations have been met.

If a Navy facility has been approved as an alternate airport, radio clearance must be obtained from such facility as soon as the decision is made to use it.

In the case of an emergency landing, the commanding officer will obtain from the pilot of the aircraft a written report of the conditions pertaining to the emergency.

APPLICATION AND APPROVAL OF FACILITY LICENSE

Nonmilitary aviation interests desiring use of a Navy/Marine Corps facility will be required to execute an application for an Aviation Facility License (OPNAV Form 3770-1) and submit a Certificate of Insurance (NAF FAC 7-11011/36) which indicates insurance coverage before approval for use of the facility can be given. The following list contains exceptions to this condition:

1. Aircraft owned or operated by departments or agencies of the U.S. Government.

2. Aircraft owned or operated for noncommercial purposes by agencies of a foreign government, except in the case where the foreign government charges fees for U.S. Government aircraft.

3. Aircraft owned and operated by states, counties, or municipalities of the U.S.

4. Aircraft operated by Navy Marine Corps flying clubs or Aero Clubs of other military services which are operated as instrumentalities of the Federal Government.

The commanding officer has authority to approve or disapprove operations of civil aircraft at his facility. There are conditions which require higher authority approval, in which case commanding officers forward the application and license to such higher authority.

HANDLING PROCEDURES AT THE ATC DIVISION LEVEL

Copies of approved Facility Licenses are normally on file in the ATC division office for reference. It is necessary that division personnel are aware of the aircraft operators authorized to use your facility to avoid unnecessary delays when such operations are impending. The simplest procedure would probably be maintenance of a current list of approved licenses in the tower, radar facility, and flight approval branch.

EMERGENCY PLANS AND SERVICES

Commanding officers of air facilities are required to develop and maintain current operational plans and procedures to insure maximum protection of aircraft and safety of personnel during an emergency situation. Senior AC's will be called upon for advice and assistance when these plans are developed or updated to insure that they are effective and workable from the air traffic control aspect.

Additionally, training of new personnel in this particular function is probably the most difficult to perform since actual conditions requiring the use of these procedures occur infrequently. Consequently, supervisors must conduct drills frequently which simulate emergency conditions to develop the skills and reactions required of controller personnel.

CRASH AND RESCUE SERVICES

NAVMAT Instruction 11320.11 (Series) provides the basic policy and organization for performing the aircraft fire protection and rescue function at Navy and Marine Corps air activities. This instruction is the basic document from which commanding officers promulgate the local crash and rescue bill which should be a part of the facility's Air Operations Manual.

The AC's participation in crash and rescue procedure is mainly one of communication; i.e., notification of impending flight operations to permit positioning of equipment in an alert status and notification of a crash or an impending emergency landing to the appropriate stations on the crash alarm system.

At all times when the runways are in use at a facility, a runway alert will be maintained. The runway alert consists of the appropriate men and equipment strategically located to permit the men to observe the entire runway and respond immediately to an emergency. The purpose of the runway alert is rescue of personnel involved in unannounced emergencies and to observe and report any suspected malfunction of aircraft to the control tower. In the event landings and takeoffs are being conducted simultaneously and both operations cannot be observed from one position, a second runway alert should be provided.

At all times when flight operations are being conducted, a standby alert of the appropriate men and equipment should be maintained in a state of readiness such that they can respond to an emergency from their standby position to the field alert position within 3 minutes. The purpose of the standby alert is to supplement the runway alert and provide additional firefighting capability when necessary.

Additionally, a backup standby alert is maintained when flight operations are being conducted consisting of the appropriate men and equipment from the security forces, ordnance disposal crews, and the station firefighting organization in a state of readiness such that they can respond to an emergency promptly from their normal working spaces. These supporting forces should assume the position of standby alert upon notification of an emergency and await the instructions of the senior firefighter at the scene.

Alert Phases

Local alerts are outlined in the crash and rescue bill promulgated for your station. It may

be desirable for emergency equipment to be alerted on a standby or ready basis through the use of a two-phase or three-phase alert system. A typical three-phase alert might consist of the following.

1. Alert I Indicating an aircraft approaching the airport is in minor difficulty; i.e., feathered prop on a multiengined aircraft, oil leak, etc. Emergency equipment and crews, other than those normally on duty, at the runway, would standby at the crash barn for further instructions.

2. Alert II Indicating the aircraft approaching the airport is in major difficulty; i.e., engine on fire, faulty landing gear, no hydraulic pressure, etc. This would mean that emergency equipment would proceed to a predetermined location (end of runway, etc.) to await development of the potential emergency.

3. Alert III Indicating an aircraft is involved in an accident on or near the airport. The emergency equipment would proceed immediately to the scene of the emergency.

AC's in the tower will usually observe or receive information regarding impending emergencies and will notify the crash and rescue crews and other appropriate personnel on the crash alarm system. If such information is initially received at locations other than the tower, personnel in the tower should be notified immediately to permit timely notification to all concerned. Various systems of notification and communications are required for crash and rescue operations at air facilities; these are discussed in detail in AC 3 & 2, NAVTRA 10367-F.

Crash Drills

Response time seems to be the most important factor to surface when evaluating a reaction to an aircraft emergency other than actual control procedure employed by the air traffic controller. Data on survivable aircraft accidents and fire tests emphasize the urgency of arriving at the accident scene in the shortest possible time. Test and experience data show that occupant escape time can be extended by prompt fire suppression operations. Many items that affect response time are fixed, such as number and type of crash equipment necessary per category of aircraft operation and the number of personnel necessary to adequately man such equipment. However, crew reaction time is one item which may be considered variable and is affected by communications procedures and practices for the alert. The AC has a definite degree of control of the alert. To enhance development of a minimum response time, frequent drills should be conducted to allow tower personnel to actually use the procedure for alerting the crash crew. The following items should be stressed in each drill:

1. Use of the grid maps to pinpoint accident scenes both on and off the airport.

2. Prompt transmission of messages pertaining to a crash and other information available to assist in the location of the accident scene.

3. Prepositioning of crash equipment when the situation permits advance notice that an emergency exists but the aircraft concerned is still en route to the air station. Although the physical positioning is the Crash Captain's responsibility, the tower controller must concern himself with which runway the emergency aircraft will use, the control of other traffic at the air station, both ground and air traffic, and insuring that such other traffic does not hinder the movement of emergency vehicles and equipment.

4. Tower crew efficiency in effecting an alert when word is received from another source that an emergency situation exists or a crash has occurred.

HAZARDOUS CARGO

The crash and rescue bill must contain provisions for notification of the necessary personnel concerning the movement of hazardous cargo. The operations duty officer and the tower will be aware of the movement by aircraft by inclusion of such information in the normal exchange of flight plan information. Particular phraseology and descriptive terms associated with hazardous cargo are contained in Navy SWOP 20-11 entitled Precautionary Measures Involving Aircraft Carrying Hazardous Cargo, and are classified Confidential. Senior AC's must make sure that their men have the necessary security clearance and know and understand these terms.

In the event an aircraft carrying hazardous cargo is involved in an emergency, specific information, in addition to the normal emergency procedure, must be relayed to the crash and rescue crews and explosive ordnance disposal personnel for the protection of all concerned. Specific local directives are established for notification procedure of an accident involving special weapons based on OPNAV Instruction 8110.16 (Series) entitled Nuclear Activities and Nuclear Weapons Incidents.

SCATANA

A plan for the Security Control of Air Traffic and Air Navigation Aids (SCATANA) was prepared jointly by the Department of Defense, the Federal Aviation Administration, and the Federal Communications Commission. The purpose is to establish responsibilities and procedures to provide for the security control of civil and military air traffic and certain Federal and non-Federal air navigation aids during a Defense Emergency/Air Defense Emergency. SCATANA is disseminated in the Navy as OPNAV Instruction 3722.30 (Series).

The North American Air Defense Command (NORAD), based on the requirements of the existing military situation, directs the extent of security control of air traffic and air navigation aids in the area or areas affected in the interest of national security. Full SCATANA procedures may be implemented or, in limited situations, only the Emergency Security Control of Air Traffic (SCAT) rules may be placed in effect. Emergency SCAT rules are contained in FAR 99 and provide for the ready identification and control of all air traffic in the event of a Defense Emergency.

Upon declaration of an Air Defense Emergency, NORAD region commanders notify FAA ARTC centers within their areas of responsibility of the alert and the extent of implementation of the plan. The ARTC centers, in turn, will disseminate the appropriate portions of the alert to civil and military air traffic control facilities under their jurisdiction.

Each civil and military ATC facility must maintain a current SCATANA action form for that facility and execute the instructions thereon at the direction of the ARTCC.

Testing Procedures

To insure that SCATANA actions can be taken expeditiously, tests are conducted at frequent intervals. The tests are originated at the NORAD region level. All Federal facilities responsible for SCATANA actions must participate. The participation and reporting are prescribed on the SCATANA actions form for a particular facility. During such tests, all actions are simulated.

Senior AC's must be familiar with SCATANA and the facility's SCATANA action form to provide for expeditious action and handling of an alert or tests. An internal procedure for dissemination of an alert or test is necessary to insure that those concerned or affected at a facility receive notification and accomplish the required action in minimum times.

LETTERS OF AGREEMENT

Letters of Agreement, after appropriate approval, are official documents describing specific procedures and jurisdiction concerning air traffic mutually agreed upon between ATC facilities. Requirements for issuing Letters of Agreement are varied and in general include the following:

1. Supplement established operational or procedural instructions.
2. Define interfacility coordination requirements concerning control of air traffic.
3. Establish or standardize operating methods.
4. Describe special operating conditions or specific air traffic control procedures.
5. Delegate areas of control jurisdiction and conditions of their use.
6. Describe procedures or minimums that differ from normal standard procedures to satisfy a requirement of a user activity.

DEVELOPMENT

A Letter of Agreement is a jointly executed agreement. However, through coordination of

affected facilities, the responsibility for development and processing of such Letters is determined and assigned to a single facility. Letters of Agreement depicting naval operations are normally prepared by the affected naval facility. Although the responsibility is ultimately the commanding officer's, senior AC's are necessarily involved and frequently responsible for development of the original Letter for approval of higher authority

When developing Letters of Agreement, the following guidelines should be followed.

1. Confine the material in each Letter to a single subject or purpose.

2. Describe the responsibilities and procedures applicable to each facility and organization involved.

3. Attach charts or other visual presentations, when appropriate, to depict the conditions of the agreement.

4. Delegate responsibility for control of IFR traffic by describing the area affected, defining the conditions of use of the area, specifying the details of the control procedures to be used and communications and coordination requirements.

5. Coordinate with other facilities and agencies as appropriate.

APPROVAL

After the necessary coordination with affected facilities and the basic Letter is mutually agreed upon locally, two copies of the proposed Letter are sent to the FAA regional office for review This may not be required where local FAA officials possess authority to approve such documents. In any case, the local FAA officials will normally handle the proposed Letter as far as FAA review and approval are concerned.

After review and approval of the proposed Letter by the FAA, the responsible facility will prepare the Letter in final form including incorporations of instructions as a result of the FAA review. An effective date should be established allowing sufficient time (at least 30 days) after distribution for facilities and controllers affected to become familiar with the conditions of the agreement. Additionally, Letters of Agreement between naval facilities and the FAA must be approved by the Chief of Naval Operations before they are official.

A copy of the formal letter of agreement should be sent to the Chief of Naval Operations for record purposes. Copies of letters of agreement currently in effect and not previously forwarded should also be forwarded for record purposes.

By conducting a periodic review of existing letters of agreement the AC will be able to determine if they are in a current status and conform with current policies and directives.

MEMORANDA OF AGREEMENT

Memoranda of agreement are prepared with FAA at jointly staffed ATC facilities when it is necessary to regulate and standardize the internal operation of a facility. They contain instructions pertaining to administrative or operational practices and procedures, either temporary or permanent.

LOCAL ATC DIRECTIVES

Naval aviation shore facility directives, or, if applicable, joint air station/fleet air command directives, are promulgated when it is necessary to accomplish any of the following:

1. Supplement established local operational or procedural instructions.

2. Establish or standardize local operating methods.

3. Describe special local operating conditions or specific local air traffic control procedures.

Directives are issued for the purpose of insuring that air traffic control personnel and aircraft operators are aware of special local procedures. Examples of proper subjects for directives are:

1. Reduced runway separation criteria for arriving and departing aircraft.

2. Intersection takeoff procedures and requirements.

3. Special military climb procedures.

4. Special military approach procedures.

CONTROLLER CERTIFICATION, RATING, AND PROFICIENCY

Commanding officers of Navy and Marine Corps shore activities operating ATC facilities must insure that only personnel who are certified in accordance with FAR 65 and qualified in accordance with OPNAV 3721.1 (Series) (ATC Facilities Manual) and local facility directives are permitted to control air traffic. Additionally, air traffic controllers under training must be properly supervised by qualified controllers.

FAR 65 established the requirement of possession of basic FAA control tower operators certificate. Then, qualification by operating position is accomplished locally, and when an applicant has qualified for all operating positions at a particular control tower, he is issued a "facility rating."

Surveillance and precision radar controllers, in addition to the basic FAA certification, must be graduates of the GCA controller school and be qualified in accordance with local directives. Commanding officers must insure that an appropriate entry is made in an individual's service record when considered qualified to control aircraft under instrument conditions using surveillance or precision radar.

A facility's training program must necessarily be a continuous operation for the various levels of certification and ratings required. Keeping the number of qualified controllers at the required level is a never-ending problem considering the Navy's duty assignment rotation system. Senior AC's may be directly responsible for the training program itself, and in every case will have definite responsibilities within the various phases of training.

The officers and enlisted crews of the ATC facilities should train at the activity as a team and as such are considered watch standers.

Training of controllers in positions other than those at which they are qualified should be conducted in VFR conditions. Nonqualified controllers in training must be under the direct supervision of a qualified controller when actually engaged in the control of aircraft.

Cross training in as many operating positions as possible is desirable for ATC personnel to provide the flexibility of rotating controllers throughout the air traffic control division.

Information required to qualify controllers at each operating position must be included in local ATC facility operating instructions, except when such information is readily available in other publications. All information required to train and qualify controllers must be kept current and readily available.

Officer and enlisted radar operators must develop and maintain proficiency by controlling at least 5 approaches per week. Where the amount of air traffic limits proficiency, those controllers qualified to control IFR traffic may concurrently count those trainee controlled approaches they actively monitor.

EXAMINERS

CTO examiners are designated by the FAA in sufficient numbers and locations to meet the certification and rating requirements. All FAA tower chiefs, the FAA chief controllers at jointly operated Navy/FAA facilities, and FAA air traffic representatives at military approach control facilities are designated as examiners. The examiners are authorized to conduct the written and practical examinations prescribed by FAR 65.

Where FAA examiners are not sufficient or available to satisfy the needs of a military facility's certification and rating needs, military examiners may be appointed as required and requested by the military agency. This initial request is made to CNO (OP-513) for validation of the requirements. For other than the initial request, a commanding officer may communicate directly with the FAA Regional Office to obtain a Letter of Designation for an individual which signifies the designation of a military examiner by the FAA. CNO (OP-513) must be informed in the latter case. Personnel recommended as military examiners must meet the eligibility qualifications listed in Handbook 7220.1 (Series) for examiners.

MONITORING CONTROLLER PROCEDURE

The FAA has been authorized and requested to report results of in-flight monitoring of air

traffic control procedures employed by Navy/Marine Corps air traffic facility personnel. In reporting the results and making recommendations concerning the procedures checked, the FAA personnel communicate directly with the facility commanding officer or his authorized representative. The report is made by completion of an FAA form entitled ATS Facility Monitor Report. If conditions allow, the FAA personnel may discuss the check informally with the facility personnel.

Senior AC's in supervisory positions should insure that the FAA flight monitor personnel and/or the reports are appropriately received and that the recommendations or comments are taken in the constructive manner in which offered. The discrepancies noted should be reviewed and corrected as feasible. A careful analysis of any derogatory comments should be made and consideration given to recommendations. The supervisor can make good use of the recorder tape in a review of this type and preferably in company with the controllers affected. The proper attitude toward and the use of these reports will assist supervisors in maintaining a high degree of professionalism among controllers.

FAA AIR TRAFFIC REPRESENTATIVES

At certain locations where approach control authority has been delegated to the military, an FAA representative may be assigned on a resident basis. The Navy considers such liaison representation with the FAA important to maintain an efficient and effective operation of Navy approach control service. The responsibilities and authority of such representatives include the following:

1. Conduct continuous inspections to insure that the equipment performance and assigned personnel meet acceptable standards.

2. Suspend approach control authority in the interest of safety considering sufficient numbers and proper certification of facility personnel and operation in accordance with jointly agreed upon control procedure.

3. Recommend changes to improve the scope of service provided, personnel training and certification, and development and utilitization of improved procedures for increased efficiency.

Deficiencies or discrepancies noted by such representatives are normally brought to the attention of the ATC facility officer for correction, except that when the time element involved would jeopardize the safety of flight, 'on-the-spot action may be taken prior to the normal notification procedure.

NAVY APPROACH CONTROL FACILITIES

The Federal Aviation Administration (FAA) has statutory authority and the responsibility for the provision of air traffic control service to promote the safe, orderly, and expeditious flow of air traffic within designated controlled airspace. Accordingly, the authority for the conduct of approach control service rests with the FAA. However, by mutual agreement between the FAA and the cognizant military service, approach control authority may be delegated to the commanding officer of a military aviation activity. This authority is for the primary purpose of providing approach control service for military installations, but may include civil airports located within the designated controlled airspace. When so delegated, approach control authority may be exercised through a tower, mobile or fixed radar facility or a combination thereof, utilizing the standardized procedures prescribed by FAA Terminal Air Traffic Control Handbook 7110.8 (Series). Military air traffic control personnel conducting approach control operations must be qualified and certificated in accordance with the FAA Certification and Rating Handbook 7220.1 (Series).

In the interest of economy, the FAA has been invited to utilize naval radar air traffic control facilities to provide approach control service for certain terminal areas encompassing naval aviation shore activities. When the FAA chooses to exercise this option, such facility is designated a joint USN/FAA facility and approach/departure control is conducted therefrom for all airports within the designated controlled airspace. General guidance regarding the administration and operation of joint USN/FAA facilities is con-

tained in applicable provisions of OPNAVINST 3721.1 (Series).

CRITERIA FOR CATEGORIZING NAVAL AIRFIELDS

In order for airfields to efficiently support aircraft operations it is essential that they be provided navigational aids, landing aids (electronic and visual), communications equipment and services as necessary to control aircraft operating in IFR conditions.

The Chief of Naval Operations is responsible for programming equipment for installation at naval airfields to meet designated mission requirements.

Categories of airfields listed herein are based on equipment installed and services available. The various categories delineate facility IFR operating capability during the times of operation indicated in the FLIP IFR Supplement.

Where reference is made to a standard precision instrument approach procedure it is one that has been authorized in accordance with OPNAVINST 3770.2 (Series), Airspace Procedures Manual

Categories of Airfields

Category A. A naval airfield capable of supporting IFR flight operations and having a standard precision instrument approach procedure authorizing approaches to minima less than 100 feet height above touchdown (HAT) and 1/4 mile visibility or 1200 feet runway visual range (RVR).

Category B. A naval airfield capable of supporting IFR flight operations and having a standard precision instrument approach procedure authorizing approaches to minima less than 200 feet HAT and 1/2 mile visibility or 2400 feet RVR, but not less than 100 feet HAT and 1/4 mile visibility or 1200 feet RVR.

Category C. A naval airfield capable of supporting IFR flight operations and having a standard precision instrument approach procedure authorizing approaches to minima not less than 200 feet HAT and 1/2 mile visibility or 2400 feet RVR.

Category D. All other naval airfields having the capability of supporting IFR flight operations.

Table 3-1 contains a listing of navigational aids, landing aids, communications equipment and services relative to the categories of IFR airfields previously listed.

Requests for additional or improved equipment and/or services to enhance the operational capability of a facility are initiated by submitting a Naval Air Traffic Control, Air Navigation Aids and Landing Systems (NAALS) Operational Capability Improvement Request (OCIR) in accordance with OPNAVINST 3721.5.

FACILITIES FLIGHT CHECK

Safety of flight and effective control of aircraft movements necessitate that the components of air navigation systems be accurate, adequate, and reliable. Various types of navaids are in use, each serving a special purpose in the system of air navigation. Experience has shown that electronic navaids do not always provide accurate information even though ground monitoring equipment indicates normal operation. A physical check of navaids must be conducted to determine the degree of accuracy to insure continued reliable operation.

The FAA, having statutory responsibility for the operations and maintenance of the common system of air navigation and traffic control within controlled airspace, conducts the flight checks of navaids based on jointly agreed standard flight inspection procedures. These procedures are contained in the U.S. Standard Flight Inspection Manual.

AUTHORITY AND RESPONSIBILITY OF FLIGHT INSPECTORS

Standard flight inspection procedures require specially equipped aircraft and specially qualified aircrews. Because of the influence and importance of a flight inspector's position, only the highest caliber personnel are assigned this duty.

Table 3-1.–Equipments and services required

Category	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X	X	X	X				
C	X	X	X	X	X	X	X	X	X	X	X					
D	X	X	X	X	X	X	X	X								

Key to Required Equipments and Services List

A. Crash/rescue equipment
B. Hard surfaced runway with standard runway markings
C. Runway lights
D. Control tower
E. UHF air-ground communications
F. Flight planning facilities (including weather briefing and NOTAM services)
G. Published instrument approach procedure (other than radar)
H. Approach Control Service
I. Air Surveillance Radar (ASR)
J. Precision Approach Radar (PAR)
K. High intensity runway lights (HIRL)
L. Approach lights U.S. std A system (or equivalent as defined in OPNAVINST 3770.2)
M. Runway centerline lights
N. Touchdown zone (TDZ) lights
O. Runway Visual Range (RVR) capability
P. Radar equipped Terminal Area Facility

The authority and responsibilities of a flight inspector include the following:

1. Schedule and conduct flight inspections of navaids and ground communications equipment in accordance with established procedure.
2. Determine the adequacy of the facility to fulfill its required function.
3. Certify the operational status of facilities based on the results of a flight inspection.
4. Coordinate with maintenance personnel in the correction of malfunctions noted.
5. Report the results of the flight inspection to the appropriate authority.
6. Analyze and evaluate the overall performance of all services provided for use in air navigation by a facility.
7. Determine minimum reception altitudes of navaids and communication equipment.
8. Conduct initial and periodic flight inspection of reporting points.

TYPES AND PRIORITY OF FLIGHT INSPECTIONS

Official flight inspections are of five basic types as follows:

1. Site evaluation. To determine the suitability of a proposed site for a permanent installation.
2. Commissioning. A comprehensive flight inspection to determine that the facility will support its operational requirements.
3. Periodic. A regularly scheduled flight inspection to determine that the facility will still meet the standards for a commissioned facility.
4. Special. A flight inspection required by special circumstances to determine facility performance or characteristics.
5. Surveillance. An unscheduled flight inspection of commissioned aids to determine that performance continues to meet applicable standards.

Priorities of flight inspections are assigned to provide for an order of accomplishment when such inspections are required for more than one purpose at the same time. Generally speaking, all Special flight inspections are first priority; all Site and Commissioning inspections are second priority; and Periodic and those Special inspections for the purpose of adjusting a navaid that is already within acceptable tolerance are third priority.

FREQUENCY OF RECURRING FLIGHT INSPECTIONS

A schedule of periodic flight inspections is contained in the Flight Inspections Manual specifying the minimum number of inspections required annually and the number of days between inspections. This schedule is the minimum requirement. In some cases it may be necessary to conduct inspections more frequently to assure satisfactory performance.

Generally, the requirements for periodic flight inspections of each individual navaid are satisfied by complete inspection of that aid. However, some navaids such as TACAN and DF lend themselves to a partial inspection on a progressive basis. In this manner, requirements for checking all the required items are satisfied within the specified number of days between inspections.

GENERAL FLIGHT INSPECTION PROCEDURE

Except for periodic flight inspections, the usual procedure to initiate a flight inspection is by a request from appropriate authority. A request for a flight inspection should not be initiated unless all ground equipment is in place, properly adjusted and calibrated, and operating normally. Upon receipt of a request for a flight inspection, authority within the flight inspection organization will notify the facility of the ETA of the flight inspection aircraft. No request or advance notice of arrival is required for a periodic or special flight inspection, but it is often desirable to permit ground personnel to schedule their activities to allow participation in the inspection.

In preparation for the flight inspection, a thorough understanding between ground personnel and the flight inspection team is essential for a successful inspection. In the interest of making an efficient flight inspection, certain preparations are required of ground personnel so as to insure adequate communications, provide for

availability of maintenance personnel, insure that controller personnel are briefed on the altitudes and areas to be flown when in congested areas, etc.

Normally, the flight inspection is technically an operation between the inspection team and maintenance personnel concerning the error of the equipment, etc. However, controller personnel are utilized by the inspection team concerning air traffic control during the inflight inspection; and although the controllers are not evaluated, apparent controller deviations will be noted during inspections of the entire facility.

Where dual equipment is provided, both sets of equipment must meet the same tolerances. On some types of equipment, both sets must be thoroughly checked while for other types a spot check and comparison of operation are sufficient. Details for each type navaid are included in the Flight Inspection Manual section on that particular navaid. Additionally, standby power supplies will be checked on the commissioning inspection only unless there is suspected deterioration while the standby source of power is in use.

Upon completion of the flight inspection, the inspector will discuss the inspection with ground personnel, determine facility status, and prepare the appropriate reports. An informal discussion is usually best to acquaint ground personnel with problems encountered during the flight inspection. This is especially true in the case of DF and radar inspections where the human element is involved. Whenever possible, such discussions should be held directly with the personnel concerned.

The flight inspector will determine the facility status and insure the appropriate ground personnel are advised.

FACILITY STATUS CLASSIFICATION

The facility status classification indicates the general extent of usability as determined from each inspection. The flight inspector will assign one of the classifications as follows:

1. Unrestricted. The facility meets all tolerances and is fully usable within its service volume (specific limits of distances and altitudes).

2. Restricted. The facility meets established tolerances within its service volume except in specific areas which must be clearly defined in the various publications available to users.

3. Unusable. The facility is unsafe, unreliable, and unusable for air navigation.

FLIGHT INSPECTION PROCEDURES FOR CONTROLLERS

No specific tolerances are established for controllers during flight inspections; however, supervisors should insure that experienced controllers are available and are thoroughly familiar with the flight inspection procedures contained in the U. S. Standard Flight Inspection Manual for the particular navaid scheduled for inspection.

Apparent participating controller deviations are normally brought to the supervisor's attention.

For flight inspections of DF aids, controllers must be able to direct the aircraft over the station, report station passage, (within 1½ miles at 1,500 feet) and provide pertinent information relative to the DF service. The inspector determines whether or not the entire system is safe and reliable. If a DF approach has been established for emergency use, the controller must be able to direct the pilot into a position from which a safe landing can be made.

Controllers that participate in flight inspections of ASR and PAR equipment should be experienced personnel and familiar with the flight inspection objectives. They should participate in the initial meetings prior to the flight inspection where scope operation, target interpretation, and other techniques are mutually agreed upon. To determine the usability of the entire system, an evaluation of the controller performance, in addition to checks of the system accuracy, is necessary. It is difficult to determine the exact degree to which equipment or controllers contribute to overall performance. Any tendency of controllers to give erroneous advisories or instructions, or become confused during a simulated emergency, should be noted regardless of how well the equipment works. While it is not feasible to evaluate each controller, several approaches should be made to obtain

an overall viewpoint. Appropriate remarks regarding controller performance are entered on the flight inspection report.

FAA EQUIPMENT CERTIFICATION

A vast, complex system of air traffic control and navigational aid facilities enables large numbers of aircraft to move efficiently and safely within the National Airspace System. This includes FAA, military, and non-Federal facilities designated for use in the National Airspace System.

In addition to the flight inspection procedure discussed earlier, the FAA has established a ground inspection procedure for air traffic control and navigational aid facilities. The actual inspection is made by technical personnel in accordance with appropriate performance standards and tolerances which will assure continual accuracy and reliability of the system. The publication governing ground inspection is entitled U. S. Interagency Ground Inspection Manual. Air Traffic Control and Navigational Aid Facilities. It is promulgated within the Navy as OPNAV Instruction 3721.18. The inspections and technical performance standards prescribed in this manual apply to all military ATC and navaid facilities DESIGNATED for use in the National Airspace System. The required ground inspections are a responsibility of the cognizant maintenance authority for the facility or facilities. Cognizant military authority forwards certification, based upon the maintenance authority's assurance of operation within the prescribed tolerances, to the appropriate FAA operational authority that the facility is functioning properly.

When it has been determined, either by flight check or by ground inspection, that a facility does not meet prescribed technical performance standards or tolerances, the cognizant maintenance technician must notify the air traffic control officer having operational jurisdiction over the facility and provide appropriate technical information on which to base a NOTAM. In addition to military NOTAM action the appropriate FAA authority must be notified and a civil NOTAM will be issued.

Notification of scheduled maintenance shutdowns of military facilities which have been certified for use in the National Airspace System must be submitted to the appropriate ARTCC for concurrence in sufficient time to allow for NOTAM issuance at least 5 hours prior to the shutdown.

AIRFIELD AVAILABILITY

The Navy's policy is that naval airfields must be available for the use of military aircraft to the maximum extent possible, and that the aircraft and crew must be supported to the fullest extent possible within the capabilities of the facility.

Transient military aircraft cannot be prohibited from landing at any naval airfield except when:

1. An emergency situation exists.
2. Construction hazards, etc., render the airfield useless.
3. CNO has authorized prohibition.
4. The airfield is in a caretaker or inactivated status.
5. Due to special operations or activities.

Any restrictions placed upon aircraft operations for safety reasons, such as inspections, public events, etc., must be limited to only that time period during which the hazard actually exists.

Commanding officers of stations located on airfields which are used jointly with civil or other military agencies can only impose restrictions which are applicable to naval facilities under their control.

In local areas containing several naval airfields, the duplication of facilities at each of the airfields to fully accommodate transient aircraft is not required if one of the fields can provide for the needs of transients. However, any restrictions imposed must be approved by CNO.

Commanding officers furnish the Defense Mapping Agency Hydrographic Center with pertinent information concerning the hazards, hours of operation, field condition, etc., for publication in the appropriate DOD FLIP.

Official business only indicates the field is closed to all transient military aircraft except those on official business at, or near, the airfield. Official business is further defined as the neces-

sity for personnel aboard an aircraft to contact personnel, units, or organizations at, or near, the airfield most conveniently located for the service of and in the interest of the Government. This does not provide for use of the airfield by transient military aircraft for the purpose of obtaining clearance, services, or other items attendant to itinerant operations. Official business only restrictions do not apply in case of emergencies or for designation of the airfield as an IFR alternate. Permanent official business only restrictions must be approved by CNO.

Navy commanders cannot permanently restrict any military aircraft from landing at their airfields unless CNO has approved of the restriction. Emergency restrictions of a temporary nature (10 days or less) may be imposed by commanding officers without higher authorization when landing of aircraft at their airfields is considered unsafe.

CHAPTER 4
TERMINAL INSTRUMENT PROCEDURES

To safely satisfy the instrument approach and departure requirements of the present air traffic volume and the ensuing increases, continuing emphasis is placed on establishment, review, and updating such procedures. The Terminal Instrument Procedures (TERP's) handbook, OPNAV 3722.16 (Series), prescribes standardized methods to be used by all personnel charged with the responsibility for the preparation, approval, and promulgation of terminal instrument procedures. This handbook, however, is not a substitute for sound judgment and common sense, and does not relieve personnel so charged from exercising initiative or taking appropriate action in recognizing the capabilities and limitations of navaid equipment and aircraft performance as associated with terminal instrument procedures.

ESTABLISHING APPROACH PROCEDURES

The Navy establishes and approves terminal instrument procedures for airports under its jurisdiction. Navy terminal instrument procedures are official procedures. The FAA should be notified when military procedures are canceled.

RESPONSIBILITY AND JURISDICTION

Commanding officers of Navy and Marine Corps shore installations supporting flight operations must establish terminal procedures that provide instrument approach capability for local and transient flight operations. The procedures must conform to the appropriate provisions of OPNAV's 3722.16 (Series) and 3770.2 (Series). The Defense Mapping Agency Hydrographic Center (DMAHC) is designated as the review and approving authority for all Navy/Marine Corps terminal approach procedures. Where waivers are required, they will be referred to CNO by the DMAHC for approval. All minimums established must be the lowest permissible consistent with mission accomplishment and flight safety.

COORDINATION WITH FAA

During the formulation of approach procedures, coordination must be effected with the ATC activities that provide the associated en route and approach control services. ATC concurrence in the optimum approaches available must be sought. In the event that the existing airspace structure in and around the terminal area is not suitable for optimum procedures, the appropriate Department of the Navy Representative (NAVREP) or a Command Airspace Liaison Officer should be consulted for assistance. NAVREP responsibilities are discussed in detail in OPNAVINST 3770.2 (Series). Planned cancellation of procedures must be coordinated with ATC activities concerned. When practicable, this coordination should be effected well in advance of the planned effective date of cancellation.

TYPES OF PROCEDURES

The various approach procedures and their criteria are as follows:

1. Straight-In—A descent in an approved procedure in which the final approach course alinement and descent gradient permits authorization of straight-in landing minimums.

2. Circling Approach—A descent in an approved procedure to an airport for a circle-to-land maneuver, or which does not meet criteria for authorization of straight-in landing minimums.

3. Precision Approach. A descent in an approved procedure where the navigation facility alinement is normally on the runway centerline, and glide slope information is provided, i.e., PAR.

4. Parallel Approach. A procedure which provides for approaches to parallel runways. A facility employing dual precision radars would qualify for this type approach.

NUMBERING APPROACHES

Terminal instrument procedures should be numbered to be meaningful to the pilot, and to permit ready identification in air traffic control phraseology.

When the angle between the final approach course and the runway centerline meets the straight-in landing criteria, the approach should be numbered to identify the type of facility which provides final approach guidance and the runway with which the final approach course is alined. Examples: VOR RWY 15; TACAN RWY 21.

When military operational requirements necessitate that more than one procedure be published to serve the same runway, using the same navaid, they should be numbered to indicate the difference. Examples: TACAN 1 RWY 18, TACAN 2 RWY 18.

Where the straight-in landing criteria are not met and the procedure is published with circling minimums only, it should be named to identify the type of facility which provides the final approach course guidance. The first procedure formulated for a type of facility should be given the suffix A, even though there may be no intention to formulate additional procedures. If additional procedures are formulated, they should be lettered in sequence. Examples: VOR-A; VOR-B. A revised procedure should retain the original letter suffix.

PROCEDURE DESIGN

The minimum number of approach procedures should be established at a given facility consistent with the mission requirements.

Aircraft performance differences have a direct effect on the airspace and visibility needed to perform certain maneuvers, such as circle to land, turning missed approach, final alinement correction to land, and descent. To compensate for these differences, all fixed wing aircraft are divided into five categories, designated category A through E, based on landing speed and weight characteristics. The approach category characteristics must be considered when determining turning radii, minimums, and obstruction clearance areas for circling and missed approaches. Military aircraft category data is published in FLIP Planning Section 1. Each low altitude procedure should prescribe minimums for category A, B, C, and D aircraft. Each high altitude procedure should prescribe minimums for category C, D, and E aircraft.

Helicopters are normally considered to be approach category A aircraft due to their unique maneuvering capability.

Procedures which would be less restrictive than those set forth for fixed wing aircraft may be formulated utilizing criteria contained in TERPS for application to "Helicopter Only".

Common Information

Units of measurement will be expressed as follows:

1. Bearings, courses, and radials will be expressed in degrees magnetic. Radials will be identified by prefixing the letter "R" to the magnetic bearing FROM the facility.

2. Altitudes in published procedures below the transition level are expressed in feet above mean sea level (MSL). Altitudes above the transition level are expressed as flight levels (FL).

3. Distances will be in nautical miles (NM) and tenths thereof, except when visibilities are referred to, these will be expressed in statute miles and the appropriate fractions thereof. Expression of visibility values in nautical miles is permitted in overseas areas where it coincides with the host nation practice. Runway visual range (RVR) will always be expressed in feet.

Minimum Safe Altitudes

A minimum safe altitude is the minimum altitude which provides at least 1,000 feet of obstacle clearance for emergency use within a specified distance from the navigation facility upon which a procedure is predicated. These altitudes will be rounded to the next higher 100 foot increment. Such altitudes will be identified as minimum sector altitudes or emergency safe altitudes and will be established as follows:

1. A minimum sector altitude should be established which provides 1,000 feet obstruction clearance in a sector of a circle with a 25-mile radius from the facility upon which the procedure is predicated. The sectors should not be less than 90 degrees, and the obstruction clearance should also apply to adjacent sectors and the periphery of the sector within 4 miles of the sector division lines. (See fig. 4-1.) Establishment of minimum safe altitudes is not mandatory in high altitude procedures. These criteria do not apply to radar procedures.

2. Emergency safe altitude is the lowest altitude for emergency use which provides 1,000 feet (2,000 feet over designated mountainous terrain) obstruction clearance within a 100-mile radius of the facility upon which the approach procedure is predicated. Emergency safe altitudes are established at the option of the approving authority and are the responsibility of DMAHC for naval procedures.

Terminal Transition Routing

Terminal transition routings should begin at a navaid or fix by which the en route structure is defined and terminate at the initial approach fix of an approach procedure. Transition routings may be direct from the en route navaid or fix or via another navaid known as a "feeder" facility. Any navaid or fix, including en route structure facilities, used by ATC authorities in connection with the particular approach may be selected as a "feeder" facility. The navaids selected for transition routings must, whenever practicable, be within the frequency range of the instrument approach facility; i.e., VORTAC for TACAN procedures, etc. Coordination of these routings with the appropriate ARTCC must be effected. Changes to such routings that occur between the times the approach procedures are reviewed annually must be reported to DMAHC for the necessary chart revisions.

An instrument approach procedure may have several separate segments; i.e., initial, intermediate, final, and missed approach segments. In addition, an area for circling the airport under visual conditions should be considered. The approach segments begin and end at designated fixes, however, under some circumstances, certain segments may begin at specified points where no fixes are available. The fixes are named to coincide with the associated segment. For example, the intermediate segment begins at the intermediate fix and ends at the final approach fix. (See fig. 4-2.) Only those segments which are required by local conditions need be included in a procedure. In constructing a procedure, the final approach course should be identified first because it is the least flexible and most critical of all the segments. When the final approach has been determined, the other segments should be blended with it to produce an orderly maneuvering pattern which is responsive to the local traffic flow.

Approach and missed approach procedures should be so designed as to avoid the necessity for navaid, SIF code, and frequency changes at altitudes below 2,500 above the ground. Where facilities have the required communications capability, procedures designed primarily for high performance single piloted aircraft, or aircraft without dual radio capability, should be designed to eliminate the need for frequency changes after commencing approach.

Initial Approach Segment

The instrument approach as such commences at the initial approach fix (IAF). In the initial approach the aircraft has departed the en route phase of flight and is maneuvering to enter an intermediate segment. It may not be necessary to designate an initial approach segment, depending upon local conditions, in which case the approach commences at the intermediate fix (IF). An initial approach may be made along an arc, radial, course, heading, radar vector, or a combination thereof. Procedure turns and high altitude teardrop penetrations are initial approach segments. Where holding is required,

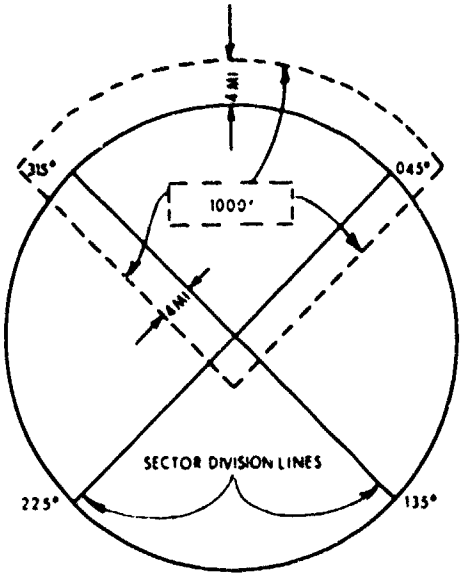


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Figure 4-1.—Minimum sector altitudes.

prior to entering the initial approach segment, the holding fix and the initial approach fix should coincide.

The initial approach segment has no standard length but will be sufficient to permit the altitude change required by the procedure and normally will not exceed 50 miles.

For low altitude procedures the OPTIMUM descent gradient in the initial approach is 250 feet per mile with a MAXIMUM permissible descent of 500 feet per mile.

For high altitude penetrations the OPTIMUM descent gradient is 800 feet per mile with a MAXIMUM permissible descent of 1,000 feet per mile.

Obstacle clearance within this segment is a minimum of 1,000 feet in the primary area (4 miles on each side of the initial approach course) and 500 feet in the secondary area (2 miles on each side of the primary area).

Altitudes established should be rounded to the nearest 100 feet, i.e., 1,949 feet should be shown as 1,900 feet and 1,550 feet as 1,600 feet.

In addition altitudes specified in the initial approach segment must not be lower than any altitude specified for any portion of the intermediate or final approach segment.

Intermediate Approach Segment

This is the segment which blends the initial approach segment into the final approach segment. It is the segment in which aircraft configuration, speed, and positioning adjustments are made for entry into the final approach segment and should be as flat as possible. The intermediate segment begins at the IF or point, and ends at the final approach fix (FAF). This segment may be based on an arc, course, or radial.

The length of the intermediate segment will not be less than 5 miles (except for ILS and radar procedures which are detailed in the TERPS handbook) or more than 15 miles. The OPTIMUM length is 10 miles.

The OPTIMUM descent gradient within this segment should not exceed 150 feet per mile with a MAXIMUM permissible descent of 300 feet per mile.

Circling Approach Area

The circling approach area is the obstacle clearance area which must be considered for aircraft maneuvering to land on a runway which is not alined with the final approach course of the approach procedure.

The size of this area varies with the approach category of the aircraft as shown in table 4-1.

Table 4-1.--Circling approach area radii

Approach Category	Radius (Miles)
A	1.3
B	1.5
C	1.7
D	2.3
E	4.5

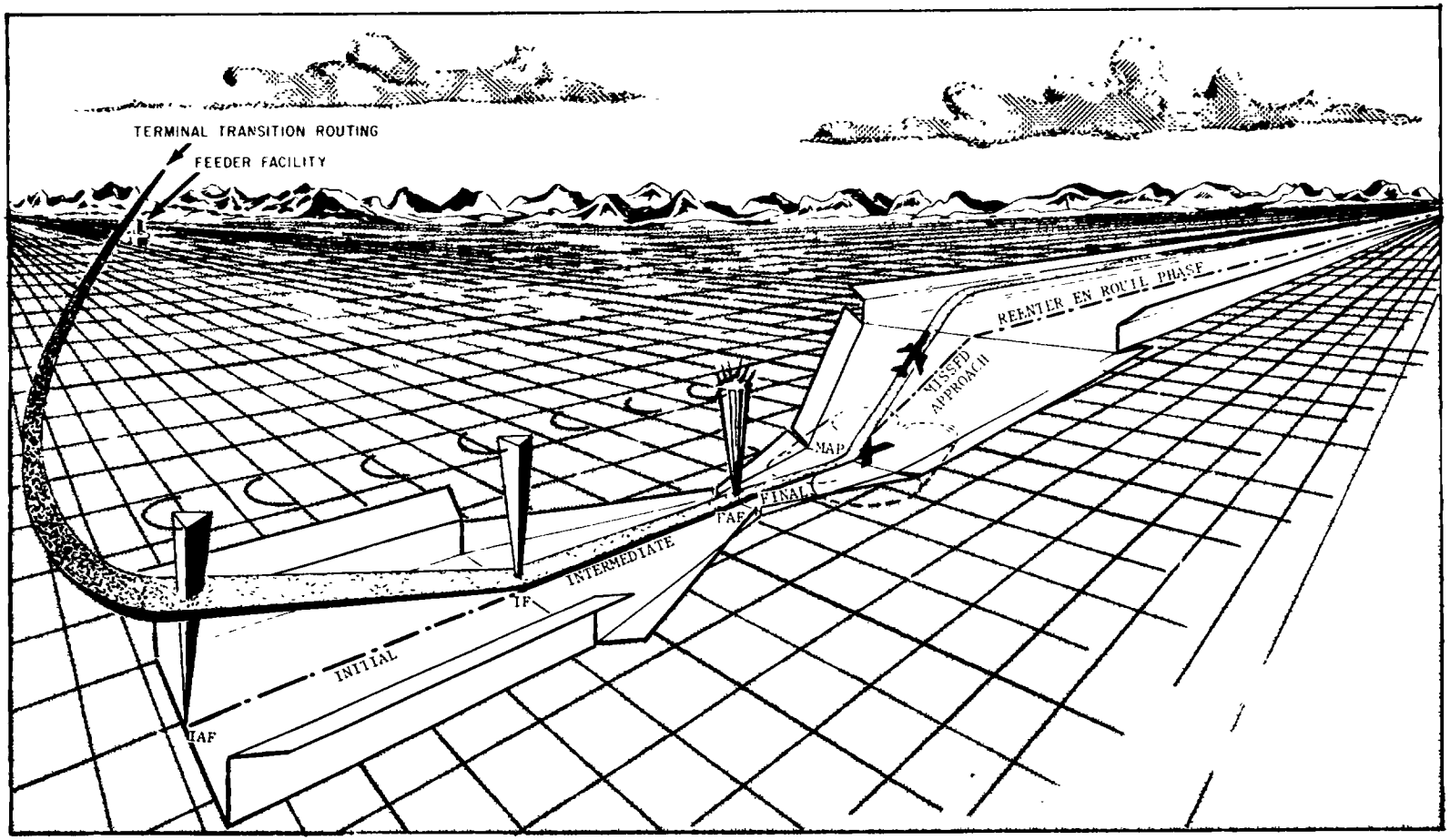

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Figure 4-2.—Approach segments.

To define the limits of the circling area for the appropriate category, draw an arc of suitable radius from the center of the threshold of each usable runway. Join the extremities of the adjacent arcs with lines drawn tangent to the arcs. The area thus enclosed is the circling approach area. (See figure 4-3.)

Obstacle clearance within the circling approach area must be a minimum of 300 feet. The altitude selected may be rounded to the nearest 20 feet.

Final Approach Segment

This is the segment in which alinement and descent for landing are accomplished. The final approach segment considered for obstruction clearance begins at the FAF or point and ends at the runway, airport, or missed approach point, whichever is encountered last. Final approach may be made to a runway for a straight-in landing, or to an airport for a circling approach.

NOTE: Refer to the applicable sections of the TERP's handbook for specific obstruction clearance areas, required obstruction clearance, final approach course alinement and other detailed procedures.

Minimum Descent Altitude (MDA)

The MDA is the lowest altitude to which descent is authorized in procedures not using an electronic glide slope (nonprecision). Aircraft are not authorized to descend below the MDA until the runway environment is in sight, and the aircraft is in a position to descend for a normal landing. The MDA must be expressed in feet above MSL and is determined by adding the required obstruction clearance to the MSL height of the controlling obstruction in the final approach and circling approach areas.

The MDA for a straight-in landing approach must provide at least minimum obstruction clearance of obstructions in the final approach area and meet the requirements for the missed approach transition. Additionally, the MDA for a circling approach must provide minimum obstruction clearance in the circling approach area.

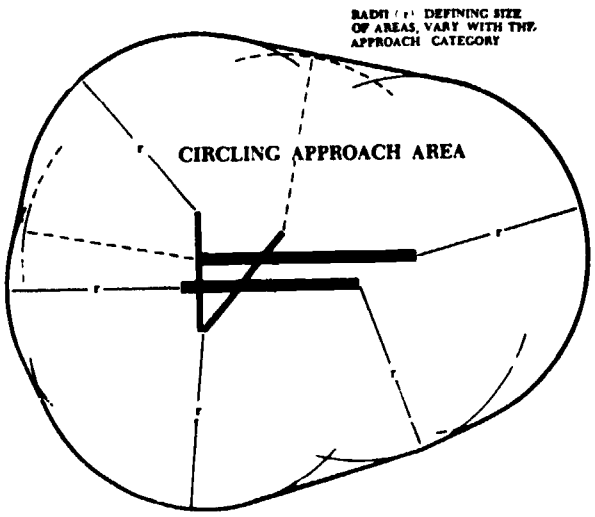

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Figure 4-3.—Construction of circling approach area.

Decision Height (DH)

The decision height applies only where an electronic glide slope provides the reference for descent, as in PAR. The DH is the height, specified in feet above MSL, above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway beginning at the runway threshold) at which a missed approach should be initiated if visual reference has not been established. DH's must be established with respect to the appropriate obstruction clearance requirements.

Missed Approach Segment

A missed approach procedure should be established for each instrument approach procedure. The missed approach should be initiated at the decision height in precision approaches or at a specified missed approach point in nonprecision approaches. The missed approach procedure should be simple, specify an altitude, and whenever practicable, a clearance limit. The missed approach altitude specified in the procedure

should be sufficient to permit holding or en route flight

Whenever practicable, the missed approach course should be a continuation of the final approach course. Turns are permitted, but should be minimized in the interest of safety and simplicity. When a turn of no more than 15 degrees is made, the missed approach is considered straight.

The missed approach point specified in the procedure may be the point of intersection of an electronic glidepath with a decision height or MDA, a navigation facility, a fix, or a specified distance from the final approach fix. Specific criteria for the missed approach point (MAP) are contained in the appropriate sections of the TERP's handbook describing the various types of approaches. The missed approach obstruction clearance area is basically the same for all types of approaches except PAR which has a specific missed approach procedure to fit the situation.

PROCEDURE FLIGHT CHECK

Prior to submission for review and approval, each procedure should be flight checked by local aircraft for safety and operational suitability. When practicable, a separate check by an aircraft of each category for which minimums are included in the procedure should be accomplished.

RADAR PROCEDURE

Radar procedures are similar in design to other type procedures in that an initial, intermediate, final, and missed approach segment may be established. Course guidance in the initial and intermediate segments may be provided by radar or other navaid facilities. Where radar is the primary means of navigation, radar patterns and altitudes must be established, and altitudes must provide the required obstruction clearance for a specified distance either side of the designated pattern course. Where other navaids are used, the appropriate criteria for the particular navaid apply.

Vectoring altitudes may be established by dividing the area within operational radar coverage into sectors based primarily on existing obstructions. This establishes a minimum altitude within a particular sector for use when providing radar vectors. (See fig. 4-4.)

The vectoring chart must be prepared as follows:

1. The center of the chart will represent the antenna site.
2. The chart is divided into sectors as required by the different minimum altitudes. Sectors may be depicted in relationship to bearings from the antenna site, radials from navigational aids, or radar display range marks.
3. Sector boundaries should coincide or be compatible with map overlay or video map data.
4. Minimum vector altitudes assigned should be at least 300 feet above the floor of controlled airspace and compatible with vectoring altitudes established for associated radar instrument approach procedures.

Lost communications procedures must be established for radar approaches which include procedures for the pilot to follow in the event communications are lost with the radar facility. Where practicable, they should include a provision to execute a nonradar approach. If such a provision is not practicable, certain items essential for safe and orderly traffic management should be included such as the route to fly, clearance to a fix, altitude assignment, and the control facility to contact.

Unless otherwise indicated in the approach procedure, a single ceiling, visibility, and decision height approved for precision radar approaches will apply to all aircraft categories. Commanding officers, however, may specify PAR minimums by categories if required by application of TERP's criteria. In such instances a ceiling, visibility, and decision height for each aircraft category must be established.

As a matter of policy, PAR minimums of ceiling 100 feet and visibility 1/4 mile may only be established when the runway concerned is configured with high intensity runway lighting and an approach lighting system. Touchdown zone and centerline lighting are desirable, but not mandatory for the 100 and 1/4 minimums.

Circling minimums should be included in ASR procedures in addition to the straight-in landing minimums unless a straight-in landing ASR approach is available for each runway usable for

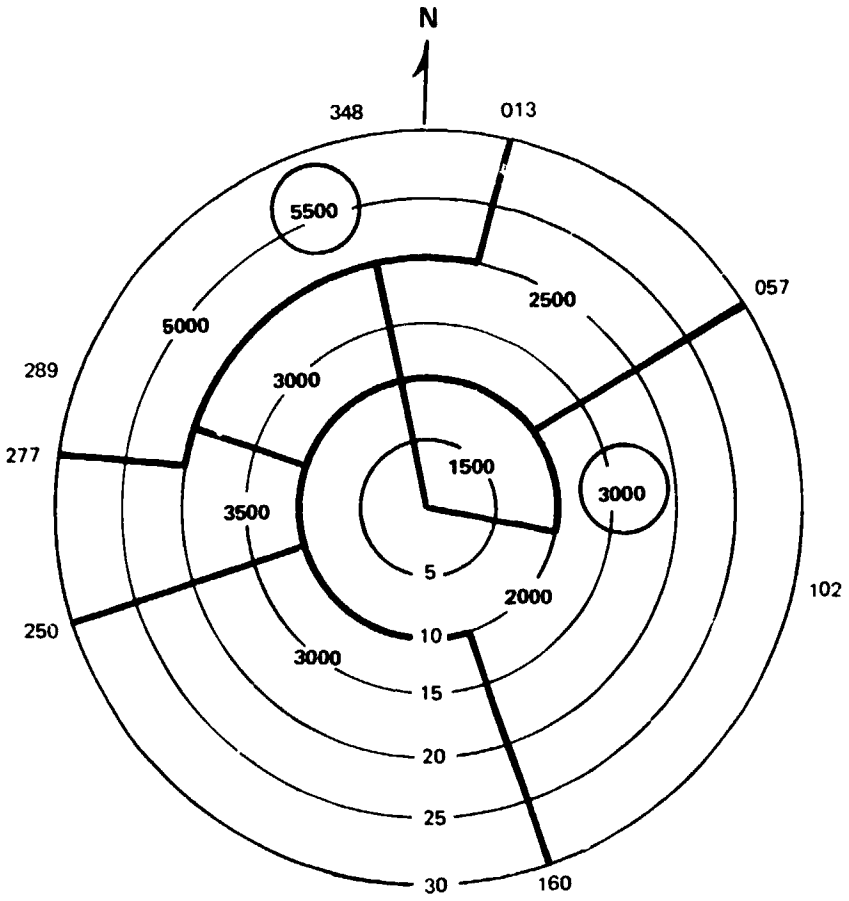

Figure 4-4.—Minimum vectoring altitude chart.

IFR approaches, and provided that definite restrictions do not preclude circling approaches. Examples of such restrictions are limited radar coverage and nonavailability of certain runways during IFR weather conditions. When circling ASR minimums are not to be authorized the submitted procedure should be so annotated.

APPROACH MINIMUMS

As previously stated, established minimums should be the lowest permissible consistent with mission accomplishment and flight safety, with the determining factors being the required obstruction clearance in the final approach segment and possibly the missed approach segment. In general, the straight-in minimums will seldom vary by aircraft category. The primary differences will occur for circling minimums, because the size of the area to be considered for obstruction clearance varies by aircraft category. This may require consideration of different obstructions for different cagegory aircraft.

Additional restrictions are possible by application of the tables of standard minimums contained in the TERP's handbook. These tables specify the lowest minimums which may be prescribed for each type approach approved.

Consideration is given for the various lighting configurations in the standard straight-in minimums table. In addition to the MDA for nonprecision approaches and the DH for precision approaches, a ceiling value must be established for military procedures which, when added to the airport elevation or the touchdown zone elevation, will result in an altitude above MSL that is equal to or greater than the MDA or DH. When determining the ceiling value, consideration must also be given to reportable ceiling values observed by weather service personnel. If a resultant DH is 275 feet above the surface, the ceiling value would necessarily be 300 feet, since ceilings are reported in 100-foot increments through 5,000 feet.

Visibility Minimums

Several factors must necessarily be considered when determining visibility minimums, as follows

1. The distance necessary for the pilot to see the airport or runway and safely descend from the MDA or DH and accomplish a landing.
2. The distance from the final approach fix to runway threshold.
3. The runway centerline and final approach course alinement, etc.

No single factor can determine the required visibility, and the various factors will vary with the different types of approaches and local conditions. The TERP's handbook contains tables of minimum visibilities which must be applied in addition to consideration of requirements of the individual approaches.

Runway visual range (RVR) minimums may be authorized for other than circling approaches at locations where an approved RVR installation is available.

Approved Lighting Systems

At installations where lighting systems are identifiable with standard lighting systems contained in the TERP's handbook, the visibility reduction afforded by such aids may be applied. For each procedure containing straight-in minimums to a specified runway, an indication should be made as to whether or not credit for lighting has been applied or is desired. Because of the variations in lighting systems installed at naval facilities, the DMAHC, as the reviewing authority in coordination with NAVAIRSYSCOM, will ascertain whether or not the lighting installed qualifies for the reduced visibility credit. Application of lighting credit to reduce visibility minimums is not required.

OPNAV REPORT 3722-1

In the interest of maintaining the highest possible standards of flight safety, commanding officers must periodically review terminal approach procedures at their facility and submit an annual report designated OPNAV Report 3722-1. This report is scheduled in various months, depending on the geographical location of the facility. To determine when the report for your particular facility is required, refer to OPNAV 3770.2 (Series). This report is confirmation that currently approved terminal approach procedures are operationally suitable and necessary, and that they conform to the provisions of the TERP's handbook and OPNAV 3770.2 (Series). The report is accomplished by completion of an OPNAV Form 3722/2 for high and low altitude ADF, VOR, or TACAN approaches and an OPNAV Form 3722/2 for PAR and ASR approaches. Requirements for new or revised approach procedures that occur between annual facility reporting dates are handled in this same manner with the exception of the scheduled reporting dates. Senior AC's in the ATC division may be required to initiate this report by physically preparing the appropriate form(s) and insuring compliance with appropriate instructions for the commanding officer's review and approval.

Plan and profile obstruction diagrams of appropriate runway approach areas as defined in TERP's must be forwarded with requests for approval of PAR procedures, unless a current diagram is on file at the DMAHC office. In addition, a diagram or chart showing the location and elevation of terrain and manmade obstructions within the prescribed obstruction clearance areas for each nonprecision and ASR approach, specifying the appropriate circling approach areas, must be included.

Figure 4-5 is an example of an enlarged, simplified plan diagram for a PAR approach to a

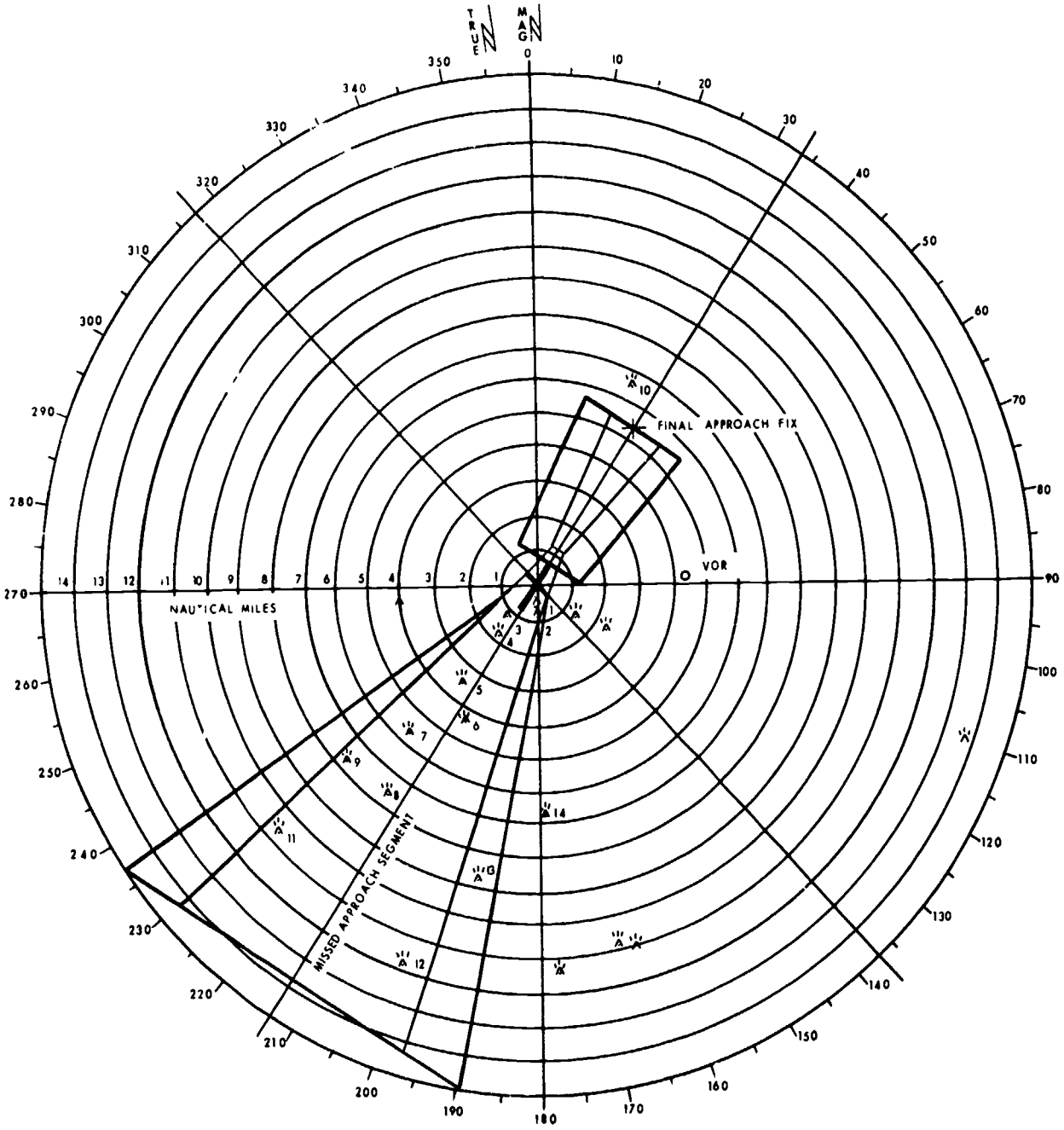

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Figure 4-5.—Plan diagram of a PAR approach.

particular facility. Figure 4-6 is a profile diagram of the same approach as shown in figure 4-5. In this particular case, controlling obstructions and other governing factors allow the transition directly from pattern altitude (initial approach) to final approach. Therefore, no intermediate approach is included. The profile shows obstructions and terrain considered and the PAR final

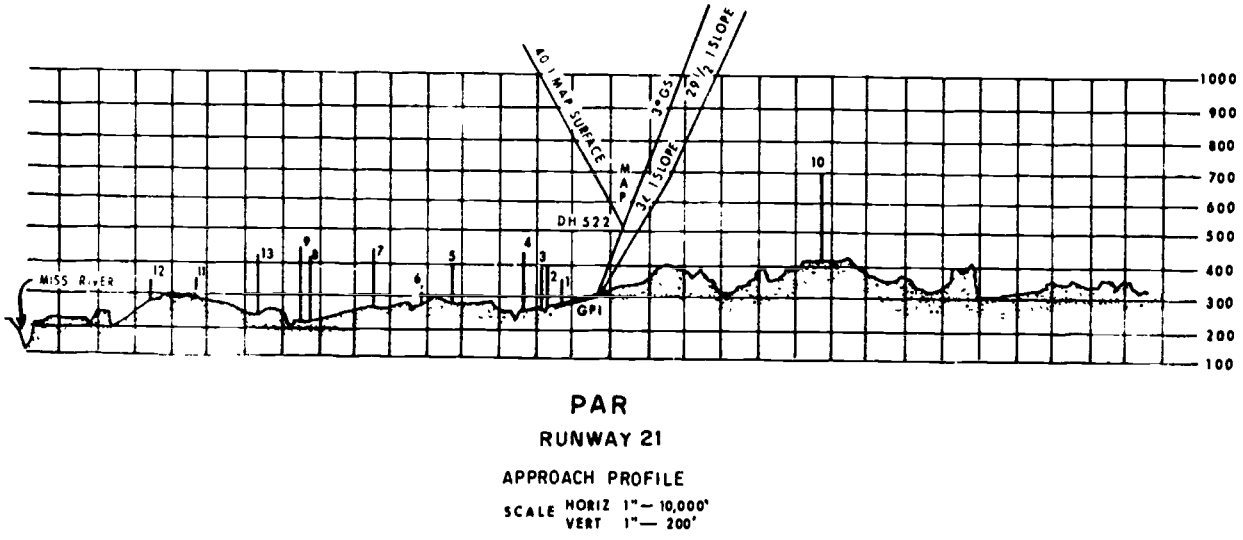

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Figure 4-6.—Profile diagram of a PAR approach.

approach surface slope ratio which will vary with the glide slope angle. In this case the glide slope angle is 3 degrees which requires a 34:1 ratio for the first 10,000 feet and a 29.5:1 ratio for the remaining final approach surface slope. No obstructions may penetrate this final approach surface slope to allow use of this glide slope. Also shown is the missed approach obstruction clearance area and a 40:1 slope ratio of this area on the profile to show that no obstructions penetrate the missed approach surface slope and that the procedure is safe.

All the area sizes, slope ratios, and other technical information necessary to construct this diagram are contained in the TERP's handbook. Much of the information necessary to complete an OPNAV Form 3722/2 can be taken from a diagram of this type.

Figure 4-7 is an example of a plan diagram for a low altitude TACAN approach. Although the profile is not required for a nonprecision approach, it may be considered helpful in determining obstruction clearance requirements, MDA's, missed approach points, etc. Figure 4-8 is an example of a profile diagram of the same approach as shown in figure 4-7. Again the specifications for constructing the diagram are contained in the appropriate section of the TERP's handbook.

Figure 4-9 is an example of a completed OPNAV Form 3722/1 for the approach diagramed in figures 4-7 and 4-8. Keep in mind that when determining the minimums the appropriate table of standard minimums in the TERP's handbook must be considered in addition to required obstruction clearance.

PUBLICATION OF APPROACH PROCEDURES

To satisfy the primary requirement of having a current procedure in graphic form in the possession of the pilot and controller at the time of implementation, procedures should be submitted as far in advance of the implementation date as possible. They should normally be submitted no less than 60 days prior to the desired effective date to allow sufficient time for review and approval and for chart publication and distribution. The effective date will be assigned by the DMAHC and will be calculated to coincide with the publication date of the charted procedure.

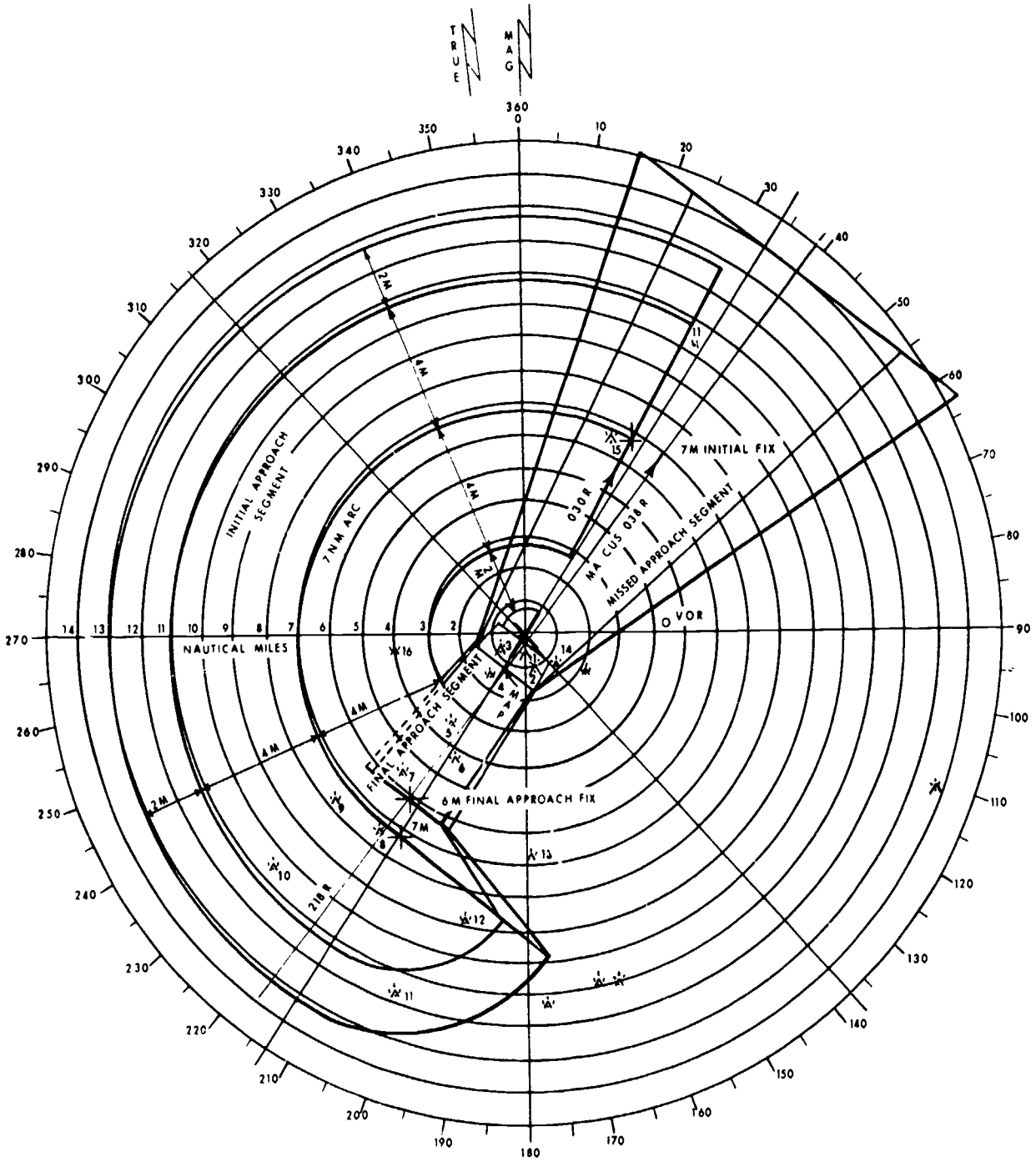

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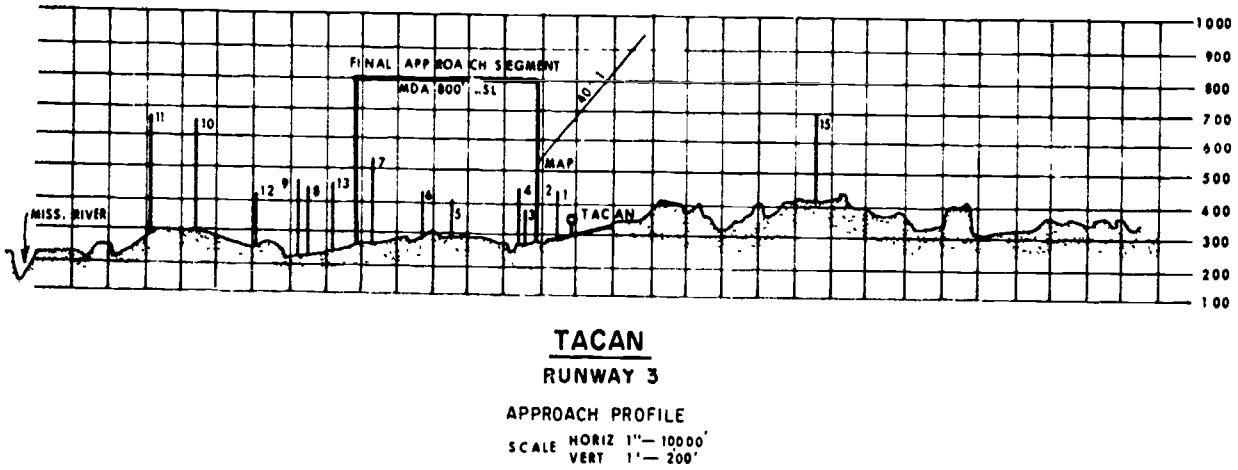
Figure 4-7.—Plan diagram of a TACAN approach.



TACAN
RUNWAY 3
APPROACH PROFILE
SCALE HORIZ 1"— 10000'
VERT 1"— 200'

AC.223

Figure 4-8.—Profile diagram of a TACAN approach.

In order to provide sufficient time to effect removal of an approach procedure from the FLIP system, commanding officers should notify the DMAHC approximately 30 days in advance of the effective date of the cancellation. Advance coordination of cancellations should be effected with the appropriate ARTCC authorities. The cancellation should be promulgated by NOTAM procedures when the next scheduled Terminal FLIP revision date will occur subsequent to the effective date of cancellation.

COMMON CIVIL/MILITARY FORMAT

The TERP's handbook contains the approved criteria for formulating both civil and military instrument procedures requiring a format which includes ample information to satisfy the needs of both agencies.

The standard format normally provides landing minimums for approach categories A through D on low altitude (AL) approach charts, and C through E on high altitude (JAL) approach charts. Any category may be included on either chart when an operational advantage can be achieved. Only those categories of aircraft authorized to use a given procedure will be listed on the approach chart. The term not authorized (NA) is used when a particular category of aircraft is not authorized to use a specific approach. Figure 4-10 is an example of the landing minimum format portion of a low altitude approach chart.

The following is an explanation of terms not considered self-explanatory in figure 4-10:

1. DH (decision height) applies to precision approaches. The DH is the height MSL above the highest runway elevation in the touchdown zone at which a missed approach must be initiated if the required visual reference has not been established.

2. MDA (minimum descent altitude) applies to nonprecision approaches. The MDA is the lowest MSL altitude to which descent is authorized in procedures not using a glide slope until the runway environment is sighted.

3. HAA (height above airport) is for civil use and indicates the height of the MDA above the published airport elevation.

4. HAT (height above touchdown) is for civil use and indicates the height of the DH above the highest runway elevation in the touchdown zone.

5. CEILINGS are values shown in parentheses for military use, and represent the lowest ceiling authorized for an approach. A ceiling is expressed in feet above the published airport

STANDARD INSTRUMENT APPROACH PROCEDURE -HIGH OR LOW ALTITUDE—RNG, ADF, VOR, VORTAC, TACAN, ILS

OPNAV FORM 3722/1 (11-66) ... OPNAV REPORT 3722-1

NAS BEE, TENNESSEE — 322

TACAN — 38 — L

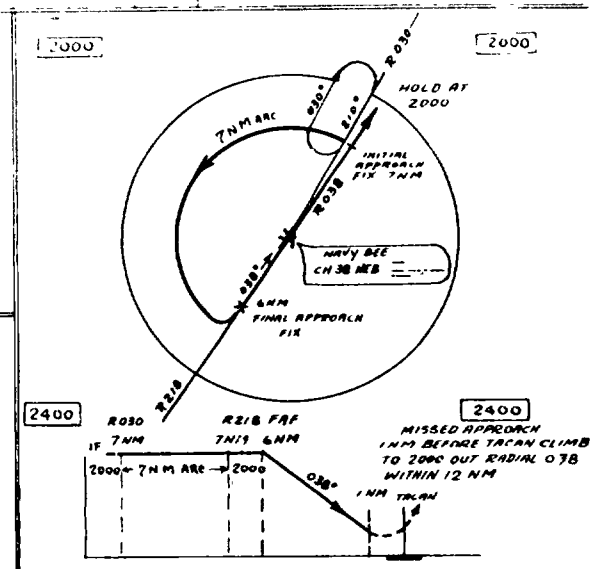
AL TACAN 1 RWY 3
1 February 1973
TACAN - 2
1 April 1969

7 NM R 030

HIRL

038 1.0

Hold NE of the 7NM DME Fix, R 030, 4NM legs.



Depart the initial fix to intercept the 7 NM arc North of Bee TACAN, maintain 2000. Intercept R 218 proceed inbound. Commence descent at 6 NM fix, R 218. If visual contact not established 1.0 NM prior to TACAN, climb to 2000 out R 038 within 12 NM, contact Bee Approach Control for further instructions.

MIN. RVRS

CATEGORIES	A		B		C		D		E	
	MDH	RVR-VIS	MDH	RVR-VIS	MDH	RVR-VIS	MDH	RVR-VIS	MDH	RVR-VIS
STRAIGHT-IN	800	500-1	800	500-1	800	500-1	800	500-1		
CIRCLING	800	500-1	800	500-1	800	500-1 1/2	880	600-2		

CIRCLING CE A THROUGH D HIGH ALTITUDE - THROUGH E

SIGNATURES	TITLE	DATE
Lcdr T.D. Beer USN	CO NAS BEE	2/1/70
D.E. Cook CDR USN	OPERATIONS OFFICER	2/1/70
J. Doe	ASA PODUNK ARTCC	2/10/70
Quentin Smith	FIDO Chief 38th Region	2/20/70

AC.224

Figure 4-9.—Completed OPNAV Form 3722/1.

elevation and is at or above the MDA or DH.

6. VISIBILITY values are expressed as runway visual range (RVR) shown in hundreds of feet. (24 equals 2,400 feet) runway visibility (RV), or prevailing visibility (PV), which are both shown in miles and fractions thereof.

The following terms are peculiar to helicopter procedures and are presented here for clarification:

1. HAL is height above landing area elevation.

2. LANDING AREA refers to the portion of the heliport or airport unway used, or intended to be used, for the landing and takeoff of helicopters.

3. LAB (Landing Area Boundary) is the beginning of the landing area of the heliport or runway.

4. POINT in SPACE APPROACH is an instrument approach procedure to a point in space, identified as a Missed Approach Point, which is not associated with a specific landing area within 2,600 feet of the MAP.

5. TOUCHDOWN ZONE as used in helicopter procedures is identical to the landing area.

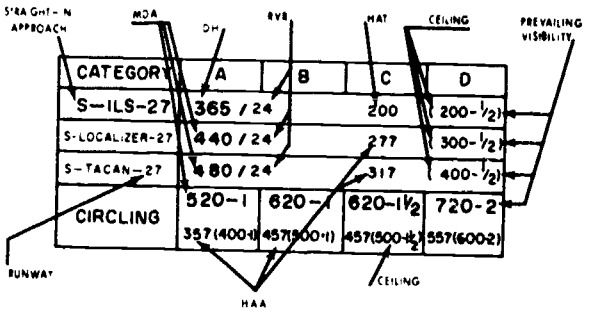
Radar Minimums

Radar minimums are presently published in the FLIP IFR supplement in the aerodrome/facility directory section for the airport concerned. The information provided is basically the same as that provided on approach charts.

STANDARD INSTRUMENT DEPARTURES (SIDs) AND STANDARD TERMINAL ARRIVAL ROUTES (STARs)

Standard Instrument Departures (SIDs) and Terminal Instrument Arrival Routes (STARs) are preplanned IFR ATC clearance procedures preprinted in textual or in graphic and textual form. The use of these valuable aids reduces pilot and controller workload, minimizes the probability of error in the delivery and receipt of clearances, and greatly reduces radio communications.

A Standard Instrument Departure (SID) is an approved procedure that prescribes a route of flight with instructions for safely departing a



AC.225

Figure 4-10.—Low altitude landing minimum format.

runway and climbing to the en route structure. The optimum SID provides for a direct climb on course from an airport to join an airway or route at a fix or facility. Extensive routing and/or maneuvering in the terminal area prior to proceeding on course should be avoided to the extent practicable when developing SID's. (See figure 4-11.)

A Standard Terminal Arrival Route (STAR) is an ATC coded IFR arrival route established for application to arriving IFR aircraft destined for certain airports. (See figure 4-12.)

Use of STARs requires pilot possession of at least the approved textual description. As with any ATC clearance or portion thereof, it is the responsibility of each pilot to accept or refuse an issued STAR. A pilot should notify ATC if he does not wish to use a STAR by placing "NO STAR" in the remarks section of the flight plan or by the least desirable method of verbally stating the same to ATC.

SID's and STAR's may be established for any airport where lengthy, complex and detailed IFR clearances are regularly required to describe routes routinely used by aircraft departing and arriving that airport.

POLICY FOR ESTABLISHMENT

Commanding officers of Navy/Marine Corps facilities are responsible for determining the need for SID and/or STAR procedures at their respective activities. Consideration will be given to transient as well as local types of operations

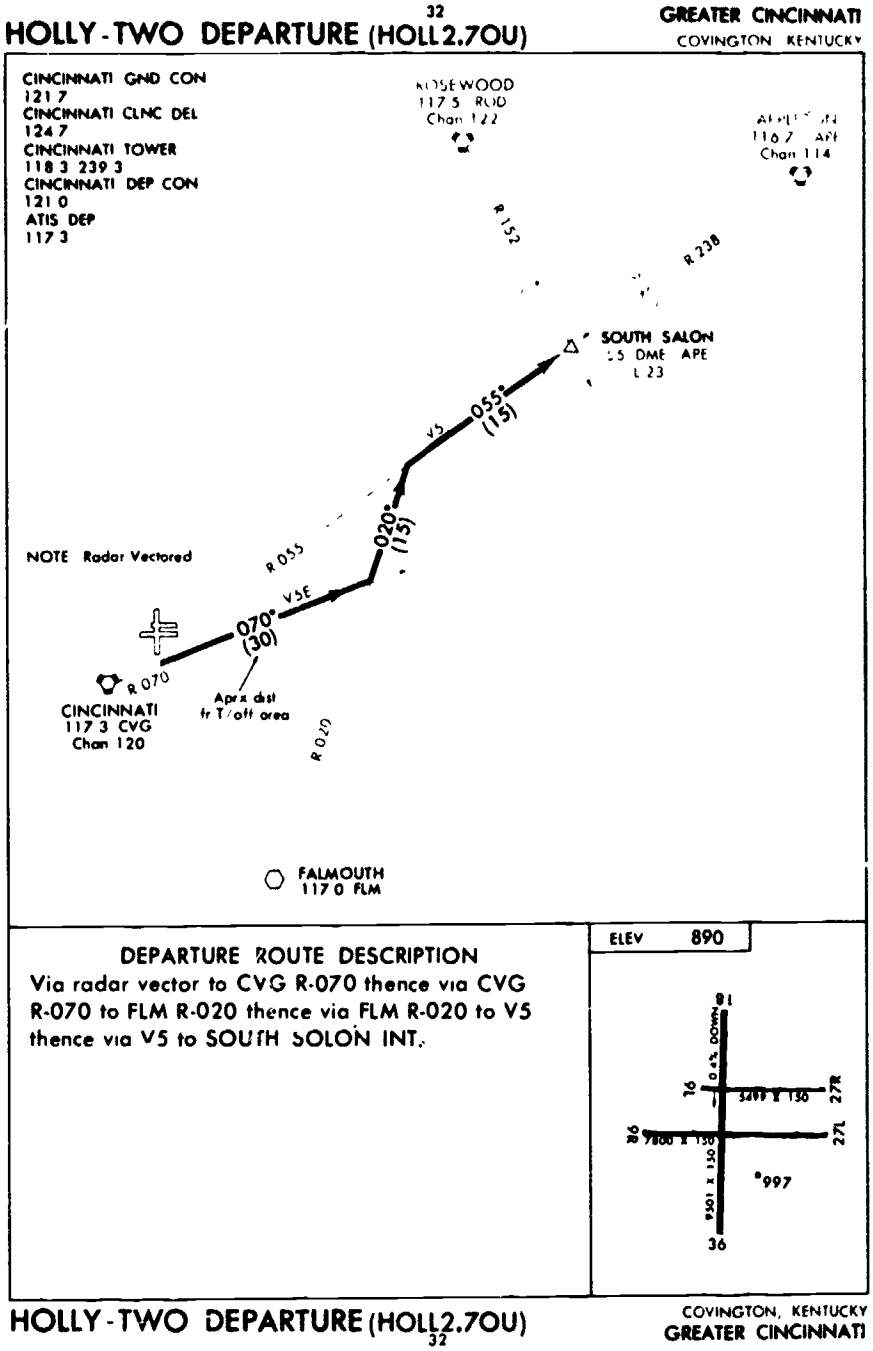


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Figure 4-11.—Standard Instrument Departure (SID).

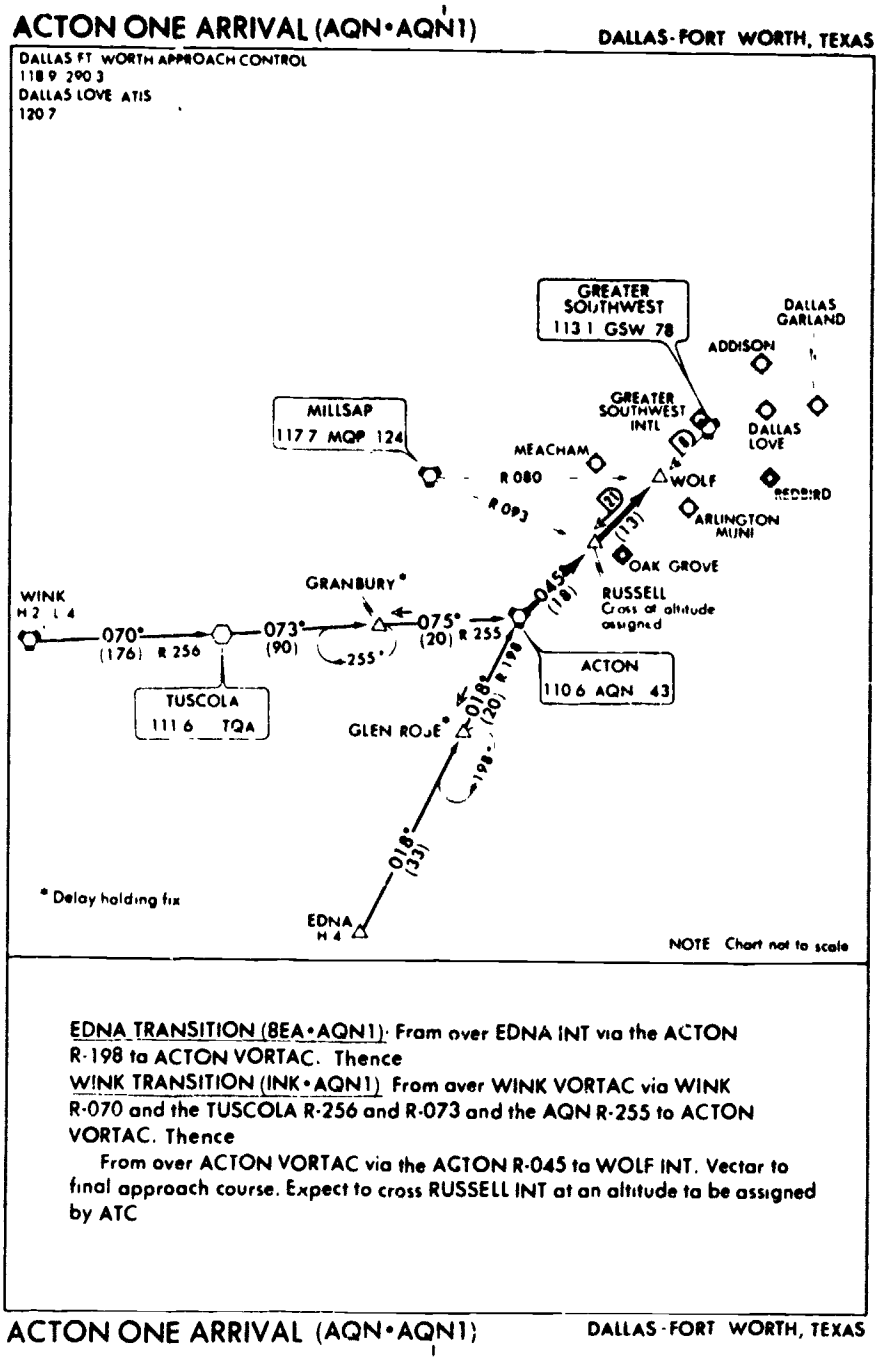

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Figure 4-12.—Standard terminal arrival route (STAR).

when determining the need and in formulating these procedures.

Commanding officers of Navy Marine Corps aviation shore facilities located within the contiguous U.S., Alaska, and Hawaii should request the appropriate FAA regional Air Traffic Division to assist in the development and/or revision of SID's and/or STARs for their activity. During the development or revision, coordination with local ATC authority and nearby civil or military airports must be effected. In obtaining desired routings, airspace limitations may create local coordination problems. In such instances, the appropriate NAVRFP should be contacted for assistance.

At facilities where the FAA does not provide air traffic service, such as overseas, SID's STARs may be established or revised as prescribed for CONUS except that FAA functions are not applicable. Commanding officers are responsible for formulation of SID's and/or STARs in coordination with the local ATC authories of the host government.

After coordination of new or revised SID's/STARs has been completed, they should be forwarded to DMAHC for review in conformance with OPNAV 3770.2 (Series), and for approval, publication, and distribution in required quantities. A sketch of each SID or STAR should be submitted together with necessary textual information, delineating the appropriate ATC clearance to be charted.

The SID sketch should depict actual flight paths from the runway(s) to the SID clearance limit, including transitions, to permit accurate climb gradient computation.

SID chart quantities desired for station usage should be made known to the DMAHC. Requests should be based on an estimated six months requirement. STARs will be published in appropriate FLIPS in accordance with DOD criteria.

During local coordination, a mutually agreeable effective date for new or revised SID's should be decided upon. This date normally should be a minimum of 45 days after date of submission to DMAHC to allow for review, approval, publication, and distribution.

Senior AC's occupying the position in the chain of command which performs the physical function of air traffic control may be in the most ideal position to recognize the need for establishing, revising, or canceling SID/STAR procedures at their facility. Where the need is recognized, they should initiate action at the division level by presenting all the applicable facts and figures which would sustain the proposed procedure or action and the advantages possible.

SID DEVELOPMENT PROCEDURE

SID's may be implemented at any airport where terrain or other obstructions require specific departure restrictions. In addition, SID's may be established at any airport where they would be advantageous to air traffic control or pilots. The number of SID's implemented at a given facility should be kept to a minimum consistent with operational needs and the departure routes most frequently used.

SID's should be designated as either high altitude or low altitude, according to the route structure in which the SID is intended to terminate. If high and low altitude SID's are identical, they may be combined to be designated as high/low altitude SID's. The appropriate designation - high, low, or high/low - should be indicated on each SID pamphlet.

When developing SID's, the following guidelines should be considered:

1. SID's may commence at the end of a runway, or basic departure routing procedures for each particular runway may be included as part of a basic SID.

2. Radar vectors may be included in lieu of a route based on a navaid.

3. Routing should be the most direct and simplest possible.

4. The number of navaids used should be the minimum number possible.

5. Crossing altitudes/FL's should be kept to a minimum, based on radials of the same navaid, and may or may not be specified altitudes/FL's. If crossing altitudes/FL's are specified, they should be developed with consideration of the capabilities of the lowest performing type aircraft that would use the SID.

6. Noise abatement requirements should be considered.

7. SID's should terminate at an airway, radial, route, or fix.

8. SID's may have more than one transition from a common point.

9. More than one SID may have the same identical transition.

10. The description of the SID and transition, if appropriate, on the SID chart should be worded so that it can be easily understood.

The obstruction clearance criteria and more detailed data for SID's are contained in the TERPS manual and OPNAVINST 3770.2 (Series).

Minimum rate of climb information must be provided on published SID's which require a rate of climb greater than 150 feet per mile to obtain the required obstruction clearance. A rate of climb in excess of 300 feet per mile is not authorized.

Hazards, such as towers, buildings, terrain elevation, etc., which create a hazard to safety of flight in the event the departure procedure were not executed precisely, must be shown on the SID chart in their exact location to present a true relationship.

Revisions or changes refer to items in the ATC clearance such as courses, altitudes, fixes, navaids, etc. Not included would be radio-frequency changes or chart detail other than the ATC clearance, or items involving flight safety such as climb gradients, etc.

If a SID is developed for specific types of aircraft, the adjective phrase to indicate this may be printed on the chart, such as Jet. If the SID is applicable to all types of aircraft, no specific description is necessary.

STAR DEVELOPMENT PROCEDURE

When developing STARs the following guidelines should be considered:

1. A STAR or STAR transition will commence at any appropriate fix, e.g., navigational aid intersection, DME fix. The fix should be no further from the destination airport than necessary for the efficient control of air traffic.

2. A STAR must terminate at a standard instrument approach procedure initial approach fix or a fix from which radar vectors will be applied. This STAR termination fix should be clearly defined to the pilot. It is emphasized that a STAR is a procedure conceived to simplify a complex arrival route to a terminal and is not to be utilized or designed as an extension of the published standard instrument approach procedure.

3. A STAR may serve more than one instrument approach procedure or more than one airport with a terminal area.

4. A STAR may have one or more transitions. A transition may be used with more than one STAR; however, two transitions on the same STAR should not originate at the same fix.

5. Keep routes simple.

6. Use as few navigational aids and fixes as possible.

7. Use same type navigational aids when possible.

8. Radar vectors may be used in lieu of routes determined by other approved means, provided adequate nonradar navigation routes are specified in the event of communications failure.

9. Confine STAR routes, including transitions, if applicable, to a single ARTCC area to the degree practicable.

10. Assure compliance with obstacle clearance requirements by application of enroute criteria.

11. The insertion of ATC altitudes within STAR procedures is no longer acceptable. Present STAR procedures that include altitude restrictions may continue to be used until such time as revisions become necessary. Appropriate IFR MEA, MOCA, and MCA information must be determined. The MEA, MOCA, and MCA information will be used by the agency in graphic depictions of the STAR procedures.

12. The insertion of airspeeds within STAR procedures is no longer acceptable. However, to provide pilot flexibility, the textual description of the STAR may describe the point at which the aircraft can normally expect to receive descent below 10,000 MSL, thereby alerting the pilot to reduce aircraft speed in sufficient time to accommodate the descent.

13. Word textual portions in language easily understandable and adaptable to graphic portrayal.

14. Do not use LF or VOR navigational aids for TACAN procedures.

15. Do not include requirements of a nonstandard nature; e.g., transponder and frequency requirements that will change based upon variable conditions or circumstances.

16. Do not include required items of an ATC clearance in notes appended to the text or to be displayed on the graphic portion of a procedure. Use notes only to contain items of an informational nature, e.g., services to be provided in conjunction with use of the procedure.

NAMING AND NUMBERING

Name and number SIDs and STARs as follows:

1. Name each SID and STAR to correspond with a navigational aid or fix where the route terminates or commences, respectively; or, if not practicable, a prominent well known geographical landmark along the route of flight. Do not use identical or similar sounding names for more than one SID or STAR in the same geographical area. A SID or STAR name should not be used to describe more than one route.

2. Number each original SID and STAR procedure "ONE"; e.g., Kent One Departure, Stewart One Arrival. Number subsequent revisions chronologically; e.g., Kent Two Departure, Stewart Two Arrival, etc. Do not use numbers above nine; i.e., the ninth revision (the tenth version) will again use the number "ONE."

3. Renumber a SID or STAR if any of its transitions are revised. Do not renumber a SID or STAR if any of its transitions are canceled.

4. Change an original name only when it is no longer appropriate.

5. Name each SID and STAR transition to correspond to the fix where it terminates or commences, respectively.

6. SID's and STAR's are ordinarily developed for common use by all users. If intended for use only by certain categories of aircraft, or by aircraft operating in the high altitude or area navigation route structures, identify such procedures by placing the contraction(s) "Hi" or "Copter" "RNAV" immediately preceding the word "departure" or "arrival" in the procedure name; e.g., "Johnson One Hi Departure," "Johnson One Hi RNAV Departure," "River Three RNAV Arrival," etc. The contraction "RNAV," when applicable, will always immediately precede the words "arrival" or "departure."

OPNAV REPORT 3722-2

An annual review of SID's to determine their consistency with operational needs and any revisions, additions, or deletions required must be made by commanding officers of Navy and Marine Corps facilities, and the result of this review is submitted to the DMAHC office.

The annual reporting date for individual facilities is determined by the geographical location of the facility. To determine when the report for your facility is required, refer to the schedule contained in OPNAV 3770.2 (Series). This report is designated OPNAV Report 3722-2.

HOLDING PATTERN CRITERIA

The criteria for holding pattern airspace are contained in FAA Handbook 7130.3 and provide for separation of aircraft. However, when determining minimum holding attitudes based on required obstruction clearance, this same airspace area, with slight modification, is used.

APPLICATION TO THE ATC SYSTEM

Sufficient holding airspace areas should be planned and established to meet IFR traffic requirements within a facility's area of jurisdiction. Holding airspace area dimensions were developed to permit the following: Use of all types of en route navaids, reduction of holding airspace when optimum direction of entry is made, compatibility between patterns flown by reference to time and those flown by reference to DME, and selection/application of tailor-made airspace by furnishing several pattern sizes.

Holding pattern airspace areas should be pictorially displayed including captions to explain their use. Displays should be near appropriate controller positions and should be so constructed as to facilitate the maximum possible amount of traffic situations to preclude the requirements for controllers to determine holding airspace on the spot.

Good facility planning minimizes the need for unplanned holding at the control position

Unusual circumstances may require occasional unplanned holding, therefore, each control position should be analyzed according to altitude controlled and holding speeds normally encountered. When an analysis has been made, appropriate template sizes can be selected and captioned.

HOLDING PATTERN COMPONENTS

Efficient and economical use of airspace required standardization of aircraft holding procedures. All the variable factors such as navaid systems error, wind, aircraft speed, etc., which affect aircraft during holding maneuvers, were considered and incorporated into the holding pattern airspace criteria. Procedures were developed to accommodate the performance capabilities of pertinent civil and military aircraft.

The following basic components were developed as standard for the purpose of determining holding pattern airspace.

1. Outbound leg. The length of the outbound leg is based on time or distance. Standard time values are 1 minute for altitudes from minimum holding through 14,000 and 1½ minutes above 14,000. Distance value of an outbound leg is not standard but must be established at a distance appropriate to the holding situation and in conformance with the tables for determining the DME leg lengths of holding patterns in Handbook 7130.3.

2. Maximum holding airspeed. Basic speed groups with compatible holding maneuvers were adopted. Aircraft are provided protected airspace based on the maximum holding airspeed. (See table 4-2.)

3. Angle of bank. Pilot procedure for entry and holding pattern turns is based on the result of pilot actions to establish and maintain a 30-degree angle of bank. To compensate for varying pilot technique, instrument precession, etc., the initial criteria used in determining the holding pattern area was 25 degrees angle of bank.

AIRSPACE DETERMINATION

The actual determination of airspace to be considered has been made relatively easy by establishment of a system of templates which allows selection of an appropriate template based on a aircraft's holding speed and altitude and the holding fix distance from the primary navaids. These templates are numbered 1 through 31, and each one is related to one or more even numbered altitudes/FL's. The templates were developed at a scale of 1:500,000 which is the same as the Sectional Chart scale for easy application. A partial listing of speed group, fix distance, altitude/FL, and template number relationships is shown in table 4-3. Holding levels through 50,000 are provided at even 2,000-foot intervals. Holding at odd levels above 2,000 is based on the next higher even altitude/FL pattern.

DME APPLICATION

When establishing a DME holding fix, the difference between fix-to-navaid distance and slant range distance must be considered. Such differences can be significant within 45 miles of the navaid. Figure 4-13 shows a comparison of an 11-mile DME (slant range) fix and the actual fix-to-navaid distance and points out the required comparison when plotting airspace to be protected. For simplification, differences of 1/4 mile below 14,000 and 1/2 mile at and above 14,000 may be disregarded.

Additionally, the no-course signal zone associated with TACAN and VOR navaids must be kept in mind when establishing DME holding fixes.

A graph included as an appendix to Handbook 7130.3 has been established for the purpose of determining both fix-to-navaid and slant range distance and whether a particular fix falls within the no-course-signal zone.

By use of DME as a holding fix, the holding may be accomplished either toward or away from the primary navaid. When holding toward the navaid, the fix end of the holding pattern airspace may lie within the no-course-signal zone, provided that normal pattern entry is from a direction other than through the no-course-signal zone. When holding away from the navaid,

Table 4-2.–Maximum holding airspeeds

a.	Propeller-driven (including turboprop)		
	(1) MHA through 30,000 feet	175K	IAS
b.	Civil turbojet		
	(1) MHA through 6,000 feet	200K	IAS
	(2) Above 6,000 feet through 14,000 feet	210K	IAS
	(3) Above 14,000 feet	230K	IAS
c.	Military turbojet		
	(1) All - except aircraft listed below in (2), (3), (4), and (5)	230K	IAS
	(2) F-84F, F-100[2], F-102, F-104[2], F-106, T-38, F-4, F-11, A-5	265K	IAS
	(3) F-4[3]	280K	IAS
	(4) F-100[2], F/RF-101, F-104[2], F-105, F-111, F-5, B-58	310K	IAS
	(5) T-37	175K	IAS

[1] Flown by reference to DME.
[2] Holding speed depends upon weight and drag configuration.
[3] Only USAF F-4 aircraft.

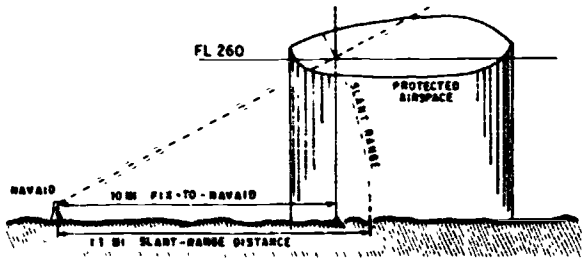

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Figure 4-13.–Fix-to-navaid distance and slant range distance.

no part of the holding pattern airspace may lie within the no-course-signal zone. (See fig. 4-14.)

To substantiate the reasoning of the preceding paragraph, imagine an aircraft holding in each situation pictured in figure 4-14. When holding away from the navaid, at the completion of the outbound leg of the holding pattern, the pilot must turn to proceed inbound to the holding fix on a specified radial. Since no bearing (radial) information is available in the no-course-signal zone, the complete pattern must be one in which bearing information is available. Compare this to holding toward the navaid. When the pilot reaches the holding fix, which must be outside the no-course-signal zone, he will turn to proceed outbound on a heading to parallel the inbound course. Positive course guidance is not necessary for proper execution of this portion of the holding pattern. Therefore, a portion o is type holding pattern airspace area may fall within the no-course-signal zone.

OPTIONAL REDUCTION AREAS

Figure 4-15(A) is an example of template No. 9. Depicted are the fix end and outbound end reduction areas shown by dotted lines. For more efficient use of available airspace, these reduction areas may not have to be considered when providing protected airspace if certain conditions exist.

Table 4-3.—Pattern selection chart

175 Knots IAS

0-14.9 n.mi.				15-29.9 n.mi.				30 n.mi. and Over			
Alt.	No.	Alt.	No.	Alt.	No.	Alt.	No.	Alt.	No.	Alt.	No.
2	1	18	8	2	1	18	9	2	2	18	10
4	1	20	8	4	2	20	9	4	3	20	10
6	2	22	9	6	3	22	10	6	4	22	11
8	3	24	10	8	4	24	11	8	5	24	12
10	4	26	11	10	5	26	12	10	6	26	13
12	5	28	12	12	6	28	13	12	7	28	14
14	6	30	13	14	7	30	14	14	8	30	15
16	7			16	8			16	9		
200-230 Knots IAS											
2	3	28	18	2	4	28	19	2	5	28	20
4	4	30	19	4	5	30	20	4	6	30	21
6	5	32	20	6	6	32	21	6	7	32	22
8	6	34	21	8	7	34	22	8	8	34	23
10	7	36	22	10	8	36	23	10	9	36	24
12	7	38	23	12	8	38	24	12	9	38	25
14	8	40	24	14	9	40	25	14	10	40	26
16	12	42	25	16	13	42	26	16	14	42	27
18	13	44	26	18	14	44	27	18	15	44	28
20	14	46	27	20	15	46	28	20	16	46	29
22	15	48	28	22	16	48	29	22	17	48	30
24	16	50	28	24	17	50	29	24	18	50	30
26	17			26	18			26	19		

For example, the fix end reduction area may not have to be included if entry into the holding pattern is made from a direction that lies within the crosshatched area depicted in figure 4-15(B) as the area of entry. Additionally, a table has been established and is included as an appendix to Handbook 7130.3 which shows the various DME holding pattern leg lengths which may be used and the outbound end reduction areas which must be included for a particular fix-to-navaid versus template number situation. This table must be referred to when establishing a DME holding pattern and the associated protected airspace.

APPLICATION OF HOLDING AIRSPACE FOR OBSTRUCTION CLEARANCE REQUIREMENTS

When determining minimum holding altitudes, the appropriate template selected for use in determining the holding pattern airspace area to be protected is also the primary area to be considered for obstruction clearance. In addition, a secondary area 2 miles wide surrounds the perimeter of the primary area and must be considered. Required obstruction clearance is contained in the TERP's handbook.

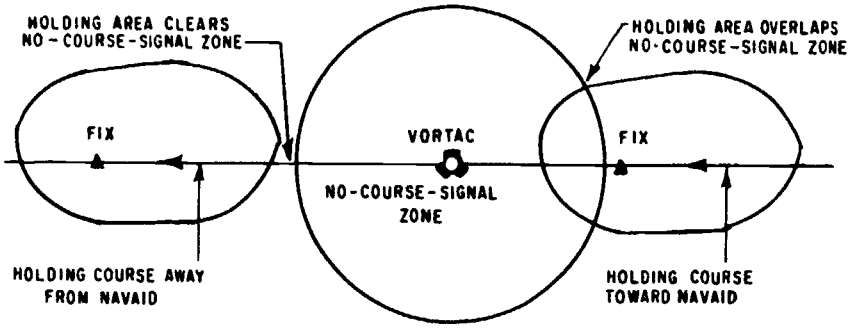

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Figure 4-14.—DME holding.

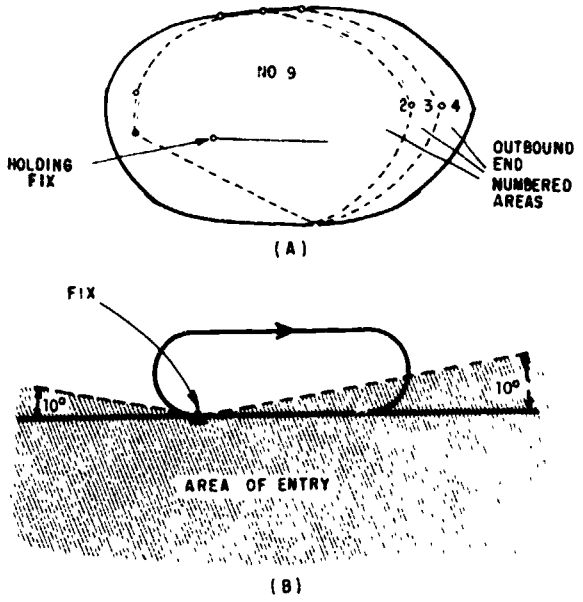

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Figure 4-15.—(A) Holding pattern template;
(B) area of entry.

CHAPTER 5
AIR TRAFFIC CONTROL

Naval shore activities which perform air traffic control functions use the procedures published in the Terminal Air Traffic Control Handbook 7110.8 (Series). This publication contains common civil/military air traffic control procedures agreed upon by the Department of Defense and the Federal Aviation Administration. In areas where a common procedure was not feasible, special military procedures were specified in the handbook and so marked to indicate applicability. Additionally, the provisions of OPNAV Instructions 3710.7 (Series) and 3721.1 (Series) apply to naval ATC facilities.

AIRPORT TRAFFIC CONTROL

All aircraft movement on the airport movement area and within the airport traffic area is normally governed by positive control requiring specific clearances from the control tower. Exceptions to this occur where preventive control has been authorized at facilities.

It is imperative that supervisors remain abreast of current regulations and procedures which govern the control of air traffic. As a general rule the AC 3 or 2 has received a reasonable amount of formal training and on-the-job training to control traffic with an acceptable degree of efficiency; however, due to the many and varied situations encountered in air traffic control, supervisors must remain alert to assist and coordinate all facets of the various control positions.

The following paragraphs in this section concern areas of interest normally encountered by senior AC's as supervisors. For more detailed study of basic airport traffic control, refer to the applicable section of the Terminal ATC Handbook 7110.8 (Series) or Air Controlman 3 & 2, NAVTRA 10367-E.

LOCAL AIR TRAFFIC OPERATIONS

A continuous review of local VFR traffic operations is necessary to insure that traffic patterns and arrival and departure corridors are established to provide maximum avoidance of populated areas and established airways or routes. For a smooth operation, adequate coordination and cooperation must be maintained with adjacent airfields and the appropriate FAA authorities.

Airport information contained in the various publications and training programs must be sufficient to allow pilots and air traffic control personnel to become thoroughly familiar with the regulations concerning the facility.

Formation Takeoffs and Landings

A formation is a flight of more than one aircraft operating by prior arrangement as a single aircraft with regard to altitude, navigation and position reporting, and where responsibility for separation between aircraft within the flight rests with the pilots in that flight.

Formation flying is authorized only for those units and types of aircraft for which a valid requirement exists. Appropriate commanders must insure issuance of and adherence to specific instructions and standard operating procedures for all aspects of formation flying since it is contrary to the procedures prescribed in TATC Handbook 7110.8 (Series).

Two-plane section takeoffs for aircraft of similar performance may be authorized for units and types of aircraft whose military missions require such for essential pilot training. Maximum lateral separation should be maintained with the leading aircraft on the downwind side, where applicable, during formation takeoffs.

When a landing interval will result in two or more aircraft on the runway at the same time, staggered landings on alternate sides of the runway should be made. When crosswind conditions dictate, or when centerline landings are preferred, the landing interval would be the same as that for aircraft operating independently.

Crash and Firefighting Equipment

Firefighting, crash, rescue, and ambulance equipment at air activities must be alerted and in an efficient operating condition while flight operations are in progress. During such operations, appropriate equipment should be stationed at strategic locations on the field. In the event an emergency is anticipated, the various types of equipment should be relocated, depending upon their particular mission, to the best possible position in relation to the anticipated scene of the emergency.

Although ATC personnel are not responsible for the placement of such equipment, collaboration and coordination is necessary with the Crash Captain and his assistants to provide for the best possible response to an emergency on the airport movement area.

More detailed information concerning crash and firefighting equipment and procedures useful to a supervisor may be found in NAVTRA 10367-F AC 3 & 2.

Control Tower Nonvisibility Areas

Where portions of the airport surface or traffic pattern are not visible from the tower, supervisory personnel must insure that such information is given appropriate dissemination to those concerned. A description of such areas should be developed, both for printed and oral use, of sufficient detail to insure understanding of the discretionary use of such areas and the reasons therefor.

Intersection Takeoffs

At facilities where intersection takeoffs are authorized, supervisory personnel must insure that appropriate distance information is available to controllers concerning the amount of usable runway available beyond an intersection. An airport diagram showing such information should be constructed and made available to controllers.

Controllers must issue the measured usable runway remaining unless otherwise provided in local directives. At fields where intersection takeoffs are a routine operation, issuance of measured usable runway remaining information may be omitted if appropriate directives are promulgated to insure that pilots and controllers are aware of the procedures being used.

The pilot still retains the perogative to use the full runway length, provided he informs the tower of his intentions. It is also the pilots responsibility to determine that sufficient runway length is available to permit a safe takeoff under existing conditions.

IFR PROCEDURE FOR AIR TRAFFIC CONTROL

In addition to the equipment and navigational aids (listed in chapter 3 of this manual) required for a naval air station to effectively support aircraft operations during IFR conditions, a major part of the overall capability must depend upon the ability of controllers to expeditiously apply separation criteria to the control of IFR traffic.

The term approach control includes this application and encompasses both arriving and departing aircraft. Local policies, agreements, training programs, and mission requirements definitely have an effect on controller procedure at a particular facility. The procedures listed herein are considered applicable to facilities in general.

IFR CLEARANCE

A clearance is defined as authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. An IFR clearance, then, is authorization as described above to operate in accordance with the instrument flight

rules. An IFR clearance is normally issued by an ARTCC in whose area an IFR flight originates. However, at approach control locations, the initial/final portion of the clearance may be a mutually agreed departure/arrival clearance that meets separation requirements of the ARTCC and the terminal facility. Under certain conditions, such as a proposed flight to be conducted entirely within the terminal facility's area of responsibility, the terminal facility will issue the IFR clearance. Such procedures, as with the procedures for the issuance of short range clearances, are established and published locally in the appropriate format usually Letters of Agreement.

An IFR clearance can be very simple or quite complicated, depending on traffic conditions and operations authorized by the clearance. Each clearance will contain all or part of the following items, as appropriate, in the order listed.

1. Aircraft identification.
2. Clearance limit or approach clearance.
3. Route of flight.
4. Altitude data in the order flown.
5. Departure procedure or SID.
6. Holding instructions.
7. Any special information.
8. Frequency and beacon code information.

Route or Altitude Amendments

When the route of flight in a previously issued IFR clearance requires amending, one of the following methods must be used.

1. State which portion of the route is being amended and then state the amendment. EXAMPLE: CHANGE VICTOR TWENTY TWO TO READ VICTOR TWO TWENTY. (Only route in the clearance.)

2. State the amendment to the route and then state that the rest of the route is unchanged. EXAMPLE: CHANGE J TEN TO READ J TWENTY, REST OF ROUTE UNCHANGED.

3. Reissue the entire route, including the amended portion in the appropriate place.

When a route or altitude in a previously issued clearance is amended, all applicable altitude restrictions must be restated or state that the restrictions are cancelled.

Composite Flight Plan

The clearance limit for an IFR proposal planning IFR operations for the initial part of the flight and VFR operations for the latter part would be the fix at which the IFR portion ends.

A proposal planning VFR for the initial part of the flight and IFR for the latter part of the flight is treated as a VFR departure. IFR clearance would be issued when the pilot requests it, approaching the fix where he proposed to start IFR operations. The remainder of the flight would simply be treated as any other IFR flight.

ALTRV Clearances

Flights that are to be conducted utilizing Altitude Reservation (ALTRV) procedures will be issued clearance as follows. EXAMPLE: VIA APPROVED ALTITUDE RESERVATION (mission name) FLIGHT PLAN.

An ALTRV normally includes the departure, climb, cruise, and arrival phases of flight up to and including holding pattern or point/time at which ATC provides separation between aircraft.

More detailed information concerning ALTRV procedures was discussed in chapter 2 of this manual.

COORDINATION BETWEEN FACILITIES

For efficient operation, constant coordination is necessary between ATC facilities. The content and the scope of information exchanged between facilities differ, depending upon the type of ATC service provided.

IFR flight progress data is forwarded from controller to controller within and between Centers and terminal facilities when operating in an en route capacity, as aircraft progress along a route. Such information is normally forwarded at least 15 minutes before the aircraft concerned is estimated to enter a receiving facility's area.

The times specified in this section may be

reduced when covered by a Letter of Agreement/Facility Directive or increased if operationally necessary because of manual data processing or nonradar operations.

Whichever time applies, the information forwarded is as follows:

1. Aircraft identification.
2. Type of aircraft and appropriate equipment suffix.
3. Assigned altitude/FL and ETA over the last reporting point/fix in the transferring facility's area or assumed departure time when the departure point is the last point/fix in the transferring facility's area.
4. Altitude/FL at which the aircraft will enter the receiving facility's area if other than the assigned altitude.
5. True airspeed.
6. Point of departure.
7. Route of flight remaining.
8. Destination airport and clearance limit if other than the destination airport.
9. ETA at destination airport if other than military or scheduled air carrier aircraft.
10. FL requested by the pilot of a turbojet aircraft, if assigned FL differs from the requested FL (within a facility only).
11. Longitudinal separation being used between aircraft at the same altitude, if it results in the aircraft having less than 10 minutes separation at the facility's boundaries.

The position report over the last reporting point in the transferring facility's area should be forwarded to the receiving facility if any of the following conditions exists:

1. The time differs by more than 3 minutes from the estimate previously forwarded.
2. It is requested by the receiving facility.
3. It is agreed to, between facilities, as a routine operation.

When necessary to revise information already forwarded, the revised information is forwarded as required except that revision to the ETA over the last fix in the transferring facility's area is required only if it differs by more than 3 minutes from the estimate already given.

Centers forward the following information to approach control facilities before transfer of control jurisdiction.

NOTE: Transfer points are usually specified in a Letter of Agreement.

1. Aircraft identification.
2. Type of aircraft and appropriate equipment suffix.
3. ETA or actual time, and proposed or actual altitude at the clearance limit. The ETA need not be given if the arrival information is being forwarded during a radar handoff.
4. EAC issued the aircraft.
5. Time, fix, or altitude when control responsibility is transferred to the approach control facility.

Approach control facilities must keep ARTCC's currently advised of the following information:

1. The particular approach that may be expected, where two or more instrument approach procedures are published or the fact that radar vectors to the traffic pattern will be used.
2. Highest altitude in use by the approach control facility at the holding fix.
3. Average time interval between successive approaches.
4. Arrival time of aircraft over the holding fix or a statement or other indication that acknowledges control responsibility if already received.
5. Revised EAC if different by 10 minutes or more from that issued by the ARTCC. (The ARTCC may issue EAC's to arrivals; however, this operation is usually covered in a Letter of Agreement.)
6. Missed approaches if they affect the ARTCC's area of operation.
7. Information relating to an unreported/overdue aircraft.

The facility providing IFR service to the terminal area must forward the following information to nonapproach control towers soon enough to allow adjustment of the traffic flow, or to FSS's soon enough to allow provision of airport advisory service (the specific time requirement is usually covered in a Letter of Agreement).

1. Aircraft identification.
2. Type of aircraft.
3. ETA and proposed altitude over the fix.
4. Type of instrument approach procedure the aircraft will execute.

Nonapproach control towers must forward the following information to the ARTCC or approach control as appropriate:

1. When an arriving aircraft is sighted and, in the tower controller's judgment, a landing can be completed.
2. Actual time of arrival.
3. Pilot report of cancellation of the IFR flight plan.
4. Information related to missed approach aircraft or overdue/unreported aircraft.
5. Runway in use.

DEPARTURE PROCEDURE

Departure control is an approach control function responsible for insuring separation between departures. Departure control may suggest a takeoff direction other than that which may normally have been used so as to expedite the handling of departures. At times it is preferred to offer a pilot a runway that will require the fewest turns after takeoff to place his aircraft on the filed course or selected departure route as quickly as possible. At some locations a runway use program may be in effect which pays particular attention to noise abatement programs and will route departures away from congested areas.

IFR Clearance for Departing Aircraft

The departure clearance is issued before takeoff and should include the following items as applicable:

1. Clearance limit. This should be the destination airport when practicable even though it may be outside of controlled airspace. Where authorized and prescribed, short range clearances may be used which would necessarily specify some fix other than the destination as the clearance limit.
2. Route of flight. When assigning a route of flight, an aircraft should be cleared via established airways, route structures, d navaids established for the altitude stratum which the operation is to be conducted outes through uncontrolled airspace should oe included only when requested by the pilot.

When any part of an airway or route requested is unusable because of navaid status, aircraft should be cleared via one of the following alternative routes:

a. A route published in the AIM and depicted on U.S. Government charts. The word SUBSTITUTE should be used immediately preceding the alternative route in issuing such a clearance.

b. A route defined by specifying navaid radials or courses.

c. A route defined as direct to or between navaids.

To effect transition within or between route structures, aircraft should be cleared via one or more of the following methods, based on VOR, VORTAC, or TACAN navaids (unless use of other navaids is essential to aircraft operation or ATC efficiency):

a. The aircraft should be vectored to or from the radials or courses of the airway or route assigned.

b. A SID should be assigned.

c. Aircraft may be cleared to climb via radials or courses of the airways or jet route assigned.

d. Aircraft may be cleared via direct to or between the navaids forming the airway or route assigned.

e. Aircraft may be cleared to climb on specified radials or courses of navaids.

If the aircraft will operate in an area adjacent to restricted airspace, the following action is required:

a. For joint-use restricted airspace, coordinate as necessary with the facility designated as controlling facility or using agency and obtain permission for the aircraft to transit the airspace. If permission is not obtained, clear the aircraft so that it avoids the restricted airspace.

b. For prohibited or nonjoint-use restricted airspace, clear the aircraft so that it avoids the airspace unless the pilot informs you that he has obtained permission from the using agency to operate in the airspace or the using agency informs you that they have given the pilot permission to operate in the airspace, or unless the aircraft is on an approved altitude reservation flight plan.

NOTE: Mission project officers are responsible for obtaining approval for ALTRV operations within restricted airspace. (Refer to chapter 2 of this manual).

Except when a pilot requests a detailed clearance or when military operations are conducted in an altitude reservation; operations are conducted above FL 600, or operations requiring special handling are conducted an abbreviated departure clearance may be issued if its use reduces verbiage and the following conditions are met:

a. The route of flight filed with ATC has not been changed by the pilot or operations officer prior to departure.

b. The terminal facility is provided sufficient information about the route of flight to exercise its control responsibility.

c. Destination airport information is relayed between facilities concerned, prior to departure.

d. The assigned en route altitude is stated in the clearance.

The destination airport is not stated in the abbreviated departure clearance. When a specific SID, including a transition, is filed by the pilot, it is considered as part of the route of flight.

When no changes are required to the filed SID or route the phrase CLEARED AS FILED may be stated. A SID may be assigned by the controller if appropriate and any additional instructions or information necessary may be included along with the en route altitude.

When a filed SID or route will require minor revisions the same procedures apply except that the necessary revisions must be specified. EXAMPLE: CLEARED AS FILED EXCEPT CHANGE DEPARTURE TO READ DUTCH ONE DEPARTURE, MAINTAIN FLIGHT LEVEL THREE FIVE ZERO.

In a nonradar environment, one, two, or more fixes as necessary to identify the initial route of flight must be specified.

3. Altitude. When assigning altitudes for an en route operation, aircraft should be cleared at altitudes or flight levels appropriate to the direction of flight. These altitudes/FL's are contained in FAR's and in AC 3 & 2, NAVTRA 10367-E. When traffic, meteorological conditions, or aircraft operational limitations prevent assignment of altitudes/FL's appropriate to the direction of flight, any cardinal altitude or flight level below FL 290, or any odd cardinal FL at or above 290, may be assigned without regard to direction of flight as follows:

a. For traffic conditions, this action may be taken only if one of the following conditions exists

(1) The aircraft will remain within the facility's area and prior approval is obtained from other affected positions or sectors or the operations have been covered in a Facility Directive.

(2) The aircraft will proceed beyond the facility's area and specific operations and procedures permitting random altitude assignments are covered in a Letter of Agreement between the appropriate facilities.

(3) Military aircraft are operating on random routes and prior approval is obtained from the facility concerned.

b. For meteorological conditions, this action may be taken only if the controller obtains prior approval from other affected positions or sectors within the facility and, if necessary, from the adjacent facility concerned.

c. For aircraft operational limitations, this action may be taken only if the pilot informs the controller that the available appropriate altitude exceeds the operational limitations of his aircraft and only after prior approval is obtained from other affected positions or sectors within the facility and, if necessary, from the adjacent facility.

Consideration must be given to the atmospheric pressure and the lowest usable flight level when assigning FL's. (See table 5-1.)

Table 5-1.—Lowest usable FL

Altimeter setting	Lowest usable flight level
29.92 or higher	180
29.91 to 28.92	190
28.91 to 27.92	200

If practicable, the pilot should be informed when to expect climb or descent clearance or to request altitude change from another facility.

Aircraft must be cleared at an altitude at or above minimum en route altitude (MEA) or minimum crossing altitude (MCA) for any part of an airway or route within the originating facility's area and the first part of the airway or route into an adjacent facility's area except where one of the following applies

a. An aircraft may be cleared below the MEA but not below the minimum obstruction clearance altitude (MOCA) if the altitude assigned is at least 300 feet above the floor of controlled airspace and further provided that the following conditions are met.

(1) Nonradar procedures are used only within 22 miles of a VOR, VORTAC, or [illegible]

(2) Radar procedures are used only when definite operational benefits will be realized and the aircraft is vectored, and lost communications procedures are issued.

b. An aircraft may be cleared to operate on jet routes below the MEA (but not below the prescribed minimum safe altitude) or above the maximum authorized altitude if, in either case, radar service is provided.

NOTE. Minimum en route and maximum authorized altitudes for certain jet route segments have been established above the floor of the jet route structure due to limitations on navigational signal coverage.

c. Where a higher altitude is required because of an MEA (and no MCA is specified), an aircraft must be cleared to begin climb to the new MEA immediately after passing the fix beyond which the new MEA applies.

d. Where MEA's have not been established, aircraft may be cleared at or above the minimum safe altitude prescribed in FAR

When issuing an altitude or FL to be maintained en route, one of the following procedures should be used in the order of preference listed.

a. The altitude filed by the pilot should be assigned.

b. An altitude within the highest route stratum filed by the pilot and as near as possible to the altitude filed should be assigned.

c. An altitude as near as possible to the highest route stratum filed by the pilot should be assigned, and the pilot should be informed when or at what point he can expect clearance to an altitude within the stratum he requested. In this case the expected altitude should be as near as possible to that filed by the pilot originally.

EXAMPLE: MAINTAIN FL230, EXPECT FURTHER CLEARANCE TO FL 350 AT THE 35 MILE DME FIX.

4. SID routes. A SID may be assigned to aircraft whenever appropriate; if for any reason a pilot does not wish to utilize a SID issued in an ATC clearance or any other SID published for that location, he is expected to advise ATC. If it is necessary to assign a crossing altitude which differs from the SID altitude, the changed altitude should be repeated to the pilot for emphasis. Some SID's do not include altitudes in the design, in which case the appropriate altitude to be maintained must be inserted in the proper place in the SID assignment.

5. Nonstandard departure routes. For departures from airports that provide airport traffic control service, the direction of takeoff, the direction of turn after takeoff, or the initial heading to be flown after takeoff may be specified. At airports without airport traffic control service the initial heading to be flown after takeoff may be specified when considered necessary. In such cases, the specification can only be made after the direction of takeoff and/or direction of turn after takeoff has been determined by coordination with the pilot.

6. Departing USN IFR flights must read back ATC clearances that differ from the filed flight plan.

7. Frequency and beacon code changes. Departing IFR military turbojet aircraft (except cargo and transport type) should be instructed to change to departure control frequency before takeoff.

If the local control position in the tower has override capability on the departure frequency, instruction to change to departure control frequency is included in the takeoff clearance. This allows the local controller to communicate with the aircraft if necessary on the departure control frequency. If the local controller does not have override capability, the same procedure is used; however, the pilot must be instructed to monitor guard channel to provide for communications with the local controller if necessary.

If the appropriate mode/code and departure control frequency have not been previously

assigned, these items are included in the takeoff clearance.

Caution must be exercised so as not to require radiofrequency or beacon changes for turbojet aircraft before the aircraft reaches 2,500 feet above the surface.

Coordination With the Receiving Facility

If the departure point is less than 15 minutes flying time from the transferring facility's boundary, coordination with the receiving facility must be accomplished before takeoff of a departing aircraft. Facilities needing earlier coordination may enter into agreement to establish this coordination. However, when agreements establish mandatory radar handoff procedures, coordination need only be effected in a timely manner prior to transfer of control.

The actual departure time must be forwarded to the receiving facility for departures that require advance coordination unless an assumed departure time is agreed upon and that time is within 3 minutes of the actual departure time.

Radar Departures

Departure control utilizing radar will clear aircraft out of terminal areas using standard instrument departures via radio navigation aids whenever possible, to reduce the amount of necessary coordination between facilities. Radar departures may be provided to expedite departures and to establish them on course by the most direct route. Radar departures may overlie but should not be restricted to the standard departure routes for radar or lost communications backup.

If a departure is to be vectored immediately after takeoff, the initial heading to be flown must be issued before takeoff. Additionally, it may be necessary to instruct the pilot to squawk low if a beacon reply is required immediately after takeoff.

Departing IFR aircraft may be vectored before reaching minimum vectoring altitude, provided that they are within 40 miles of the antenna site and a minimum of 3 miles separation is maintained from prominent obstructions shown on the radarscope. If the takeoff path is less than 3 miles from such obstructions, the vectors provided must increase the separation to 3 miles.

HOLDING PROCEDURE

Holding is a predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance. A holding fix is used as a reference point in establishing and maintaining the position of the aircraft while holding. Most generally used holding patterns are charted on en route high/low and area aeronautical charts.

Holding Instructions

General holding instructions include the following items:

1. Direction of holding from the fix.
2. Name or description of the holding fix.
3. Radial, course, bearing, airway, or jet route on which the aircraft is to hold.
4. Outbound leg length in miles if DME or RNAV is to be used.
5. Direction of holding pattern turns, if left turns are to be made.

Detailed holding instructions consist of the same items as general holding instructions, and in addition the outbound leg length in minutes or miles and the direction of holding pattern turns are always specified.

Delay Anticipated

If a delay is anticipated requiring an aircraft to be held and the holding pattern is not charted, the following items as appropriate must be issued at least 5 minutes before the aircraft is estimated to reach the clearance limit:

1. General holding instructions.
2. Detailed holding instructions if the pilot requests or the controller deems it necessary.
3. The time at which the pilot can expect to receive approach clearance (EAC) or further clearance (EFC).

If a delay is anticipated and the holding pattern is charted, the following items must be issued at least 5 minutes before the aircraft is estimated to reach the clearance limit:

1. Direction the pilot is to hold.
2. EAC or EFC.

NOTE: The direction issued must correspond to that charted unless another holding pattern is required for ATC purposes in which case it would be treated the same as any noncharted holding procedure.

Delay Not Anticipated

If it becomes apparent that an aircraft will not be delayed at a clearance limit and clearance beyond the clearance limit is required, the following action is required:

1. For departing or en route aircraft—clearance beyond the clearance limit must be issued at least 5 minutes before the aircraft reaches the clearance limit.
2. For arriving aircraft—clearance beyond the clearance limit must be issued before the aircraft reaches the clearance limit.

Clearance Beyond the Holding Fix

When issuing clearance beyond the holding fix, the following items should be included:

1. A clearance limit or approach clearance.
2. Route of flight. This should include complete details of the route (airway, course, heading, arc, or vector) to be used. The phrase VIA LAST ROUTING CLEARED may be used only when the most recently issued routing beyond the holding fix can be reinstated and verbiage will be reduced.

Lengthy Delay

If it is determined that an aircraft intending to land within a facility's area of responsibility would be delayed more than 1 hour, the EAC or EFC should be issued as soon as practicable after such aircraft enter the facility's area and the aircraft operator or military equivalent notified.

Holding Patterns and NavAids

The holding pattern airspace is determined as described in chapter 4 of this manual. By requiring the pilot to keep his aircraft within the specified airspace and other aircraft out of the same airspace, separation is maintained.

Holding points are normally navaids; however, a location that the pilot can determine by visual reference or a visual holding point may be used. In such cases, the controller must determine that the pilot is familiar with the visual holding point.

When holding is accomplished by using unmonitored navaids as the holding fix, separation must be provided for any other aircraft that may occupy the course which the holding aircraft will follow in the event the holding aircraft does not receive signals from the unmonitored navaid.

ARRIVAL PROCEDURE

The initial clearance issued IFR aircraft will include, whenever practicable, the destination airport as the clearance limit. However, an ARTCC may clear an aircraft to a fix short of its destination airport and normally amends an existing destination airport clearance limit to a fix short of destination for the purpose of transfer of control responsibility of an en route aircraft to a terminal facility. In such cases, if no delay is anticipated, clearance beyond such clearance limit must be issued to arriving aircraft before the aircraft reaches the clearance limit. Transfer of radio communications and control responsibility must be accomplished soon enough to allow the receiving facility to issue further clearance before the aircraft reaches the clearance limit. Specific requirements for transfer of control of arriving aircraft are usually stated in a Letter of Agreement.

At nonapproach control locations the ARTCC retains control of arrivals until they have landed, canceled IFR, or until they are no longer a factor in provision of IFR service. At approach control locations the center normally clears all arriving IFR traffic to the appropriate holding point, and in some cases includes holding instructions and the expect-approach-clearance times in such clearance. The number of aircraft to be released to approach control by the center is determined by a joint center/approach control Letter of Agreement.

Advance Approach Information

When an aircraft intends to land at an airport where approach control service is provided and

two or more instrument approach procedures are published, the facility controlling the aircraft immediately before entry into the approach control area should inform the pilot of the type of approach to expect or that he will be vectored to the traffic pattern. This information may be omitted if airport terminal information service (ATIS) is provided by the airport or if the visibility is 3 miles or better and the ceiling is at or above the highest initial approach altitude established for any low altitude instrument approach procedures for the airport.

Approach Control

Approach control is responsible for controlling all instrument flight operating within its area of responsibility. Approach control may serve one or more airports, and control is exercised primarily by direct pilot/controller communications.

Approach control facilities must provide arriving aircraft with approach information on initial radio contact or as soon as possible thereafter. The approach information consists of the following:

1. Approach clearance or type of approach to be expected if two or more approaches are published and the clearance limit does not indicate which will be used.
2. Runway in use.
3. Surface wind.
4. Ceiling and visibility if the ceiling at the airport of intended landing is reported below 1,000 feet or below the highest circling minimum, whichever is greater, or the visibility is reported less than 3 miles. When such conditions exist, any known changes classified as special weather observations must also be transmitted as soon as the volume of traffic, controller workload, and communications frequency congestion permits.
5. Altimeter setting.

Specific items of approach information do not have to be reissued if the pilot indicates he has already received them via ATIS or the ARTCC.

Approach control service is provided at terminal facilities for the purpose of maintaining an orderly flow of arriving traffic without interruptions of continuity while expediting departures. The order in which arrivals are positioned while awaiting approach clearance or while on approach is termed the approach sequence. Many factors affect an approach sequence. The ARTCC has a considerable effect on the sequence by the altitude/FL assigned to aircraft released to approach control. The most desirable result is to prevent delays to arriving aircraft.

The time lapse between aircraft on approach or between expect-approach-clearance times issued is termed the approach interval. Again many factors affect the interval such as type of aircraft, type of approach, weather conditions, etc. Probably the most influential factor concerning the approach interval is the length of the approach procedure and the separation required between aircraft on approach. If only one aircraft may be on approach at one time, then the interval is the average time it takes to complete the approach. For two different approaches to the same runway, or possibly one approach, it is possible to have more than one aircraft in certain segments of approach at the same time provided appropriate separation is maintained.

Timed approaches appear to allow the shortest time interval under manual or nonradar type approach control procedure. Timed approaches are seldom used by naval facilities due to the wide variety of aircraft operational characteristics involved at such facilities. Timed approaches are most effective when used with aircraft of similar operating characteristics such as speed. If all conditions are perfect, it is possible to have an interaval of 2 minutes between aircraft using timed approach procedures.

Each approach control operation maintains its operational identity, in that, it is adapted to a particular local traffic situation. However, it can be said that the desired results of approach control's concern with arriving aircraft are as follows:

1. Maintenance of an approach sequence that avoids gaps and unnecessary delays between approaches.
2. Use of the minimum possible approach interval, consistent with the appropriate separation required.

At nonapproach control locations, a subsequent arriving aircraft can only be cleared for an

approach after one of the following conditions exists:

1. The preceding aircraft has landed or canceled IFR.

2. The preceding aircraft is visible to the tower controller at that location and, in his judgment, landing can be completed.

Nonradar Approaches

The order of priority of issuance of approach clearance is normally established on the basis that the first aircraft estimated over the fix from which approaches are commenced will be the first to receive an approach clearance, followed by other aircraft in the order of their estimated or actual times of arrival over the fixes. If visual contact with the ground is made before the approach is completed, it is required that the complete approach procedure be followed unless ATC has authorized a contact approach or the pilot cancels his IFR flight plan.

To require an aircraft to execute a particular instrument approach procedure, the controller must specify in the approach clearance the name of the approach as published on the approach chart.

If landing will be made on a runway other than that alined with the direction of instrument approach, instructions to circle to the runway in use must be included in the approach clearance.

When adherence to an altitude as published on the approach chart is required for separation from other aircraft, the altitude must be specified in the approach clearance.

If it is determined that a pilot is unfamiliar with an approach procedure, a complete description of the approach must be included in the approach clearance.

Clearance for a high altitude penetration may be issued in conjunction with a clearance for approach, a vector to a final approach course, or to a fix or altitude from which a clearance for an approach can be given when no delay is anticipated.

A military en route descent for turbojet aircraft may be authorized provided that only normal vectoring delays are anticipated. It may be used in a nonradar environment; however, radar capability should exist which will permit the aircraft to be vectored to the final approach course of a published high altitude instrument approach procedure or PAR/ASR approach. The type of final approach to be conducted must be mutually understood by the pilot and controller before the en route descent is begun. Prior to issuance of an en route descent clearance below the highest initial penetration altitude established for any high altitude instrument approach procedure for the destination airport, the current weather conditions at the destination airport must be transmitted when any of the following conditions prevail:

1. The ceiling is below 1,000 feet.

2. The ceiling is below the highest circling minimum.

3. The visibility is below 3 miles.

To avoid requiring an aircraft to fly at low altitude for an excessive distance, descent clearance should be issued at a point determined by adding 10 to the first two digits of the flight level; for example, FL 370; 37 plus 10 equals 47 miles.

A turbojet en route descent should not be terminated without the consent of the pilot except as required by a radar failure or an emergency situation. It remains the pilot's prerogative to elect to conduct a published high altitude penetration instead of an en route descent.

Clearance for a contact approach may be issued only if the following conditions are met:

1. The pilot requested it.

2. The reported ground visibility is at least 1 statute mile for all aircraft except civil air carriers which must have 1/2 statute mile. Approved separation must be applied between aircraft authorized to conduct a contact approach and other IFR and special VFR aircraft. When applying vertical separation, a fixed altitude should not be assigned; clear the aircraft at an altitude which is at least 1,000 feet below any other IFR traffic but not below the minimum safe altitude. An alternative clearance should be issued when weather conditions are such that a contact approach may be impracticable.

Radar Approach Control

In a radar environment, arriving aircraft may be cleared to an outer fix most appropriate to the route being flown with vertical separation

and if required, given holding instructions. When radar handoffs are effected between the ARTCC and approach control, or between two approach control facilities, aircraft are cleared to the airport or to a fix so located that the handoff will be completed prior to the time the aircraft reaches the fix. When radar handoffs are utilized, successive arriving flights may be handed off to approach control with radar separation in lieu of vertical separation, provided that such procedures are previously agreed upon between the facilities concerned and the following conditions are met

1. The first aircraft communicates with the receiving facility before a second aircraft, cleared to or over the same fix, is told to communicate with the receiving facility. This need not be applied if the first aircraft is cleared to the airport.

2. The first aircraft communicates with the receiving facility before it reaches the clearance limit fix.

3. The receiving facility does not delay or hold the first aircraft at the fix to or over which a second aircraft is cleared.

Radar vectors and altitudes/FL's will be assigned as required for spacing and separating aircraft. Aircraft will normally be informed when it is necessary to vector through the final approach course for spacing or other reasons. In the event the controller is unable to so inform the pilot, he is not expected to turn inbound on the final approach course unless approach clearance has been issued (such as for ILS, VOR, TACAN final approach).

Approach clearance will normally be issued with the final vector for interception of the final approach course, and the vector will be such as to enable the pilot to establish his aircraft on the final approach course prior to reaching the approach fix. This approach clearance would not be issued in the case of an ASR or PAR approach.

In addition to the foregoing conditions, if terrain or traffic does not permit unrestricted descent to the lowest published altitude specified in the approach procedure for which cleared, the controller must either defer issuance of approach clearance until there are no restrictions, or issue altitude restrictions with the approach clearance specifying when or at what point unrestricted descent can be made. Except for ASR/PAR, the pilot would have to be instructed to contact the tower or monitor a certain frequency until completion of the approach.

APPROACH SEPARATION RESPONSIBILITY. When approaches are not monitored by the PAR controller the radar approach controller must maintain radar separation until visual separation can be provided by the tower controller. The tower controller may provide radar separation within an area designated for his use if this responsibility has been delegated to him in a Letter of Agreement or Facility Directive.

When monitoring instrument approaches, the PAR controller must provide IFR separation between aircraft on approach from the final approach fix to the airport until visual separation is provided by the tower controller.

When timed approaches are being conducted, the radar controller must maintain radar separation until the aircraft is observed to have passed the final approach fix inbound and is within 5 miles of the runway on final approach course or until visual separation can be provided by the tower controller.

VISUAL APPROACH. In a radar environment, ATC may descend an aircraft operating in accordance with an IFR clearance to the minimum vectoring altitude, vector it to the airport traffic pattern, and issue clearance for a visual approach. This may be done whenever the reported ceiling is at least 500 feet above the minimum vectoring altitude and the visibility is 3 miles or more.

With a visual approach, the pilot may deviate from the prescribed instrument approach procedures and proceed to the airport visually, maintaining VFR conditions at all times. This procedure affords a more expeditious service to arriving aircraft and precludes unnecessary vectoring to the final approach course of a published instrument approach.

Radar separation must be provided from any preceding IFR aircraft until visual separation can be provided. The radar controller must continue flight following and traffic information until the pilot is instructed to contact the tower. The point at which an aircraft cleared for a visual approach is instructed to contact the tower will

vary, depending on the runway in use, weather, etc., and it is determined by prior coordination between the tower and approach control. Ordinarily, the changeover occurs at least 5 miles from the runway. Changeover points should be far enough from the airport so that the tower controller can properly establish a landing sequence but not at a distance which may derogate the provision of radar traffic information.

If an arriving aircraft is not following a preceding arriving aircraft sequenced by approach control, it may be cleared for a visual approach when the following conditions exist:

1. The pilot of the aircraft concerned reports sighting the airport.

2. The tower controller is informed of the aircraft's position.

If the aircraft concerned is following a preceding arriving IFR or VFR aircraft sequenced by approach control, it may be cleared for a visual approach when the following exist:

1. The pilot of the succeeding aircraft reports sighting the preceding aircraft.

2. The tower controller is informed of the succeeding aircraft's position in the approach sequence.

3. The pilot of the succeeding aircraft is instructed to follow the preceding aircraft.

Aircraft may be vectored simultaneously to the traffic pattern for visual approaches to more than one runway or to the traffic pattern for visual approaches to one runway while aircraft are conducting a different type instrument approach to another runway provided that the applicable preceding conditional provisions for issuance of a visual approach clearance are adhered to and radar separation is maintained between IFR aircraft until at least one of the following conditions is met:

1. If parallel runways separated by less than 3,500 feet are in use, the pilot must have reported sighting the preceding IFR aircraft making an approach to the other runway and all aircraft involved must be informed that other arriving aircraft are using the other runway.

2. If parallel runways separated by 3,500 feet or more, or converging runways are in use, all aircraft involved must be informed that other arriving aircraft are using the other runway.

RADAR APPROACHES. Prescribed or approved radar instrument approach procedures may be provided to any aircraft upon request and may be offered to aircraft in distress, regardless of weather conditions, or to expedite traffic.

The following information must be issued to aircraft that propose to conduct a radar approach:

1. Altimeter setting.

2. Ceiling and visibility if the ceiling is reported below 1,000 feet or below the highest circling minimum, whichever is greater, or if the visibility is less than 3 miles. When such conditions exist, all known changes which are classified as special weather observations must be transmitted as soon as the volume of traffic, controller workload, and communications frequency congestion permit.

3. Pertinent information on known field conditions if they are considered necessary to the safe operation of the aircraft concerned.

NOTE: Issuance of the altimeter setting, ceiling, visibility and airport conditions need not be made if the pilot states the appropriate ATIS code or says he has received it from another source.

Except for any known special weather observations, the aforementioned items may be omitted after the first approach if repeated approaches are made.

4. Lost communications procedures. When weather reports indicate an aircraft will likely encounter IFR weather conditions during the approach, lost communications instructions are issued as soon as possible after establishing radar identification and radio communications (this may be omitted after the first approach when successive approaches are made and the instructions remain the same). Advise the pilot that if radio communications are lost for a specified time interval (not more than 1 minute) on vector to final approach, 15 seconds on a surveillance final approach, or 5 seconds on a precision final approach, one of the following actions should be taken:

a. Attempt contact on a secondary or tower frequency.

b. Proceed in accordance with VFR if possible.

c. Proceed with an approved nonradar approach.

d. Execute the specific lost communications procedure for the radar approach being used.

The pilot is responsible for determining the adequacy of lost communications procedures with respect to aircraft performance, equipment capability, or reported weather conditions. If a pilot should state that he cannot accept a lost communications procedure due to weather conditions or other reasons, the controller should request the pilot's intentions and take appropriate action.

If an aircraft on a radar approach proposes to execute a low approach or touch-and-go landing, climbout instructions including a specific heading and altitude must be issued before the aircraft commences final descent. If an aircraft is making a series of approaches, this type of instruction may be omitted after the first approach, provided that no change exists.

The pilot should be advised to perform landing check while the aircraft is on the downwind leg and in time to complete it before turning base leg. If an incomplete pattern is used, this instruction must be issued prior to handoff to the final controller for a precision approach or prior to beginning descent on a surveillance approach.

The following should be accomplished before the aircraft on a radar approach commences final descent:

1. Inform the pilot of the position of the aircraft at least once.

2. Inform the pilot of the type of approach (ASR or PAR), the runway to which the approach will be made, and, if appropriate, the airport.

3. Request the pilot to report wheels down unless he has previously reported it.

4. Missed approach instructions should be issued according to the specific missed approach procedure approved for the radar approach in use.

A clearance must be obtained from the tower and relayed to the pilot for an aircraft on a radar approach to make a landing, touch-and-go, or low approach. Surface wind must be included with clearances for landing or touch-and-go. If such clearances are not received, the pilot should be informed and then issued instructions for an alternate course of action.

When directed by the control tower, instructions to execute a missed approach must be issued to the pilot of an aircraft on a radar approach. In such cases, or when the pilot initiates a missed approach, the missed approach should be monitored by the radar controller and advisories issued. Instructions that could be interpreted as a continuation of the approach must be avoided.

The pilot of an aircraft conducting a radar approach should be instructed to take over visually, execute the missed approach, or climb and maintain a specified altitude and fly a specified course, whenever the completion of a safe approach is questionable because one or more of the following conditions exists:

1. Safety limits are exceeded or radical target deviations are observed.

2. Position or identification of the aircraft is in doubt.

3. Radar contact is lost or a malfunctioning radar is suspected.

4. Field conditions or traffic preclude approach completion.

If radar contact is lost during an approach and the aircraft has not started on final approach, the aircraft should be cleared to an appropriate navaid for an instrument approach.

On a surveillance approach the controller provides navigational guidance in azimuth only. The pilot is furnished headings to fly to aline his aircraft with the extended centerline of the landing runway. Since the radar information used for a surveillance approach is considerably less precise than that used for a precision approach, the accuracy of the approach will not be as great and higher minimums will apply.

Guidance in elevation is not possible on a surveillance approach, but the pilot is given advance notice of where descent will begin, the straight-in minimum altitude/MDA for the approach, and instructions to begin descent when the aircraft reaches the descent point. Unless a descent restriction exists for the approach, the pilot is instructed to descend to minimum altitude/MDA at that point. If a restriction to the descent does exist, the prescribed restriction must be applied and the pilot is told to maintain a certain altitude until he is observed to have

passed the altitude limiting point, after which he is instructed to descend to minimum altitude/MDA.

If recommended altitudes on final approach are requested by the pilot, they should be given down to the last mile which is at or above the published minimum altitude/MDA. The recommended altitudes are determined locally. For example, with a gradient of 300 feet per mile, add this value for each mile to the airport elevation and round it out to the nearest 100 feet.

The minimum altitude/MDA published for the approach procedure is applicable in determining the point at which recommended altitudes will be discontinued. For example, if the published MDA is 1,290 feet at an airport with an elevation of 970 feet MSL, altitude information is not given for the last mile because the recommended altitude of 1,270 feet would be below the MDA of 1,290 feet (300 plus 970 equals 1,270). Course guidance and the distance from the runway or touchdown (if using the azimuth portion of PAR) should be furnished the pilot each mile while the aircraft is on final approach. The pilot should be informed when his aircraft is on course and frequently informed when any deviation from the desired course is observed.

When IFR conditions exist at the airport to which the approach is being made, the pilot of the aircraft on the approach should be instructed to report sighting the runway, approach/runway lights, or the airport as appropriate. Surveillance approach guidance may be discontinued and the pilot instructed to take over visually when requested by the pilot or when one of the following occurs.

1. During IFR conditions, when the pilot reports sighting the runway, approach/runway lights, or the airport.

2. During VFR conditions, when the aircraft is at the missed approach point (MAP) or 1 mile from the landing threshold, whichever is greater. If the approach is being conducted to no specific runway at a secondary airport, approach guidance may be discontinued when the aircraft is at the MAP, 1 mile from the airport, or at a preestablished point beyond which radar or communications coverage ceases to exist, whichever is greater.

Approach guidance should be discontinued and the pilot instructed to execute a missed approach, if neither the runway or runway/approach lights, nor the airport has been sighted, when one of the following conditions exists:

1. For an approach to a primary airport, if the aircraft is at the MAP or 1 mile from the landing threshold, whichever is greater.

2. For an approach to a secondary airport, if the aircraft is at the MAP, 1 mile from the airport, or at a preestablished point beyond which radar or communications coverage ceases to exist, whichever is greater.

On a precision approach the controller provides highly accurate navigational guidance in azimuth and elevation to the pilot. Pilots are given headings to direct them to, and keep their aircraft alined with, the extended centerline of the landing runway. The pilot must be informed when his aircraft is approaching the glidepath, normally 10 to 30 seconds before the glidepath is intercepted, and when to begin descent. The published decision height (DH) will be given if the pilot requests it. Glidepath and course guidance information is issued to keep the aircraft on, or to inform the pilot of any deviation from, the course and glidepath.

Trend information may be issued as required to indicate target position with respect to the azimuth and elevation cursors and to describe target movement as appropriate. The trend information may be modified by the terms RAPIDLY or SLOWLY as appropriate. The pilot must be informed of his aircraft's distance from touchdown at least once each mile on final approach. The pilot must be informed when his aircraft reaches the published decision height, when it is passing over the approach lights, and over the landing threshold. When over the landing threshold the pilot should be informed of his position with respect to any deviation from the centerline.

If the elevation portion of the PAR equipment should fail during a precision approach, the controller should discontinue PAR instructions and instruct the pilot to take over visually or, if unable, to execute a missed approach. If a surveillance approach is established for the same runway the pilot may be informed that he can be provided with such an approach. In such cases, the azimuth portion of the PAR equip-

ment is used to determine the centerline, which requires that the distance issued be from touchdown. The controller should insure that the pilot is aware of the distance information difference. If the elevation portion of the PAR equipment is inoperative before starting a precision approach, this procedure may be used as normal ASR approach procedure.

PAR approaches may be conducted when the ASR portion of the equipment is unusable, provided that a nonradar instrument approach will position the aircraft over a navaid or DME fix within the precision radar coverage, or an adjacent radar facility can provide a direct radar handoff to the PAR final controller.

Below Minimum Weather Conditions

The official weather report is the naval weather service report and the RVR or RVV report as applicable. Weather minimums are those published for a particular approach on the DOD FLIP terminal instrument approach procedures as amended by NOTAM's. When various minimums are published for different category aircraft and a doubt exists as to which is applicable, the higher minimum applies.

CRITERIA FOR MULTI-PILOTED AIRCRAFT.—After reported weather is below published landing minima for the approach to be conducted, an approach must not be commenced in propeller driven or rotary wing multi-piloted aircraft unless the aircraft has the capability to proceed to a suitable alternate in the event of a missed approach.

An approach must not be commenced in a multipiloted fixed wing turbojet aircraft if the reported weather is below minima for the approach to be conducted. Once an approach has been commenced, a pilot may, at his discretion, continue the approach to the approved published landing minimums.

CRITERIA FOR SINGLE-PILOTED AIRCRAFT.—An instrument approach must not be commenced in a single-piloted aircraft if the reported weather is below published minima for the type approach being conducted. When a turbojet en route descent is to be executed, the approach is considered to commence when the aircraft descends below the highest initial penetration altitude established for the high altitude instrument approach procedures for the destination airport. Once an approach has been commenced, a pilot may, at his discretion, continue the approach to the approved published landing minimums.

However, absolute minima for a single-piloted aircraft executing a precision approach are 200 feet ceiling/height above touchdown (HAT) and visibility one-half statute mile/2400 feet RVR or published minima, whichever is higher.

If the pilot of an arriving aircraft reports the weather conditions are below his landing minimums, a controller should take the following action:

1. Issue appropriate instructions to the aircraft to hold or proceed to another airport.
2. Adjust, as necessary, the position in the landing sequence of any other aircraft desiring to make approaches, and issue approach clearances accordingly.

Approach Monitoring

PAR equipment should be used to monitor approaches when the following conditions exists:

1. Whenever the reported weather is below basic VFR minimums.
2. When the navaid final approach course from the final approach fix to the runway coincides with the PAR final approach course.
3. When the final approach fix is within PAR coverage.

When approaches are being monitored, pilots of arriving aircraft should be informed of the frequency on which advisories will be transmitted if it will not be the same as the communications frequency used for the approach.

When issuing advisories, pilots should be informed when their aircraft are passing final approach fix. At that point the pilot may be instructed to report sighting the approach lights or the runway. The pilot should be advised if his aircraft is well left or right of course; and if conducting a nonprecision approach, he should be advised when well above or below the glidepath. If repeated advisories are issued and the aircraft is still proceeding outside the prescribed safety limits, the pilot should be advised to proceed visually or, if unable, to climb to a specified altitude and/or turn to a specific heading. Advisories may be terminated and the

pilot concerned so informed when the pilot reports sighting the approach lights or the runway, or a point where the glidepath intercepts 200 feet elevation, whichever is nearer the landing threshold.

Practice Instrument Approaches

When requests for practice instrument approaches are received, controllers should take steps to determine the type of approach and how it will terminate, such as a touch-and-go, the missed approach maneuver, or a landing.

When an aircraft on an IFR flight plan requests practice approaches, handle these operations as a series of full IFR approaches. Whenever procedures require application of IFR separation to VFR aircraft not on an IFR flight plan, the controller is responsible for providing separation when he authorizes the practice instrument approach.

Instruct VFR aircraft desiring to conduct practice instrument approaches to maintain VFR conditions.

Advise aircraft conducting practice instrument approaches to contact the tower at the final approach fix, unless local facility directives or letters of agreement dictate that this be accomplished prior to this point, and to make position reports as required.

Controllers should insure that neither VFR nor IFR practice instrument approaches disrupt the normal flow of arriving or departing traffic.

Frequency and Beacon Changes During Approaches

When military turbojet (except cargo and transport type) or A-1 type aircraft will conduct an instrument approach wholly or in part in IFR weather conditions or at night, an approach controller should take the following action:

1. Avoid radiofrequency and radar beacon changes to the maximum extent that communications capabilities and traffic conditions will permit. However, when changes are required, use the following procedures:

a. Instructions should be given early enough to allow the change before the aircraft reaches the approach fix or handoff point.

b. Frequency changes must be kept to a minimum below 2,500 feet above the surface and should be avoided during the time an aircraft is making a turn.

2. When the traffic volume requires, coordinate with the ARTCC and request that a frequency other than the one used by aircraft making approaches be used in transferring control of aircraft to the approach control facility.

3. A frequency common to both the GCA and approach control should be used for an approach, if practicable, to minimize frequency changes.

4. When GCA is not able to communicate on a common frequency, a change to the GCA frequency may be authorized.

5. When a nonradar approach will be made, the pilot of the aircraft may be instructed to change to the tower frequency in the following instances:

a. The reported ceiling is at or above 1,500 feet and visibility is 5 statute miles or more.

b. The pilot reports that he is able to proceed by visual reference to the surface.

6. Radar beacon changes should be avoided after an aircraft begins a penetration/approach.

7. In the event of a missed approach, a frequency or beacon change should not be required before the aircraft reaches the missed approach altitude, MEA, or the minimum vectoring altitude.

Single Frequency Approaches

Where single frequency approach (SFA) procedures for single piloted turbojet aircraft on an IFR flight plan are contained in a Letter of Agreement, radiofrequency changes may not be required after the aircraft begins the penetration/approach, or after initial contact during an en route descent, until a landing or low approach has been completed, except under the following conditions:

1. During daylight hours while the aircraft is in VFR conditions.
2. On pilot request.
3. When the pilot cancels his IFR flight plan.
4. In an emergency situation.

Minimum Fuel

If a USAF, FAA, or USN jet aircraft declares a state of MINIMUM FUEL, a controller should inform any facility or controller to whom

control jurisdiction is or will be passed of the minimum fuel situation. Facilities and/or controllers concerned must be alert for any occurrence which might delay the aircraft en route

Use of the term MINIMUM FUEL indicates recognition by the pilot that his fuel supply has reached a state such that, upon reaching destination, he cannot accept any undue delay. This is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur.

If at any time the remaining usable fuel supply suggests the need for traffic priority to insure a safe landing, the pilot should declare an emergency and report fuel remaining in minutes.

Both minimum fuel advisories and emergency fuel state must be reported each time control is transferred to a new controller.

As with any emergency situation, common sense and good judgment will determine the extent of special handling to be given.

CHAPTER 6

EMERGENCY PROCEDURES

Emergency procedures cannot always be prescribed for every situation which might be considered an emergency because of the infinite variety of possible situations. As a rule of thumb, an emergency includes any situation which places an aircraft in danger, uncertainty, alert, lost or distress. When it is believed that an emergency exists or is imminent, an air traffic controller must select and pursue a course of action which appears to be most appropriate under the existing circumstances The decision as to what type of assistance is needed is based on requests and information received from the pilot, because he is authorized by FAR 91 to determine his course of action.

EMERGENCY ASSISTANCE

Maximum assistance must be provided aircraft in distress. This includes services of available radar facilities, military, FAA, and FCC DF facilities, and emergency services that may be available at or from these facilities.

If a controller is communicating with an aircraft in distress, he is the one who should handle the emergency and coordinate and direct the activities of assisting facilities. This responsibility should be transferred to another controller or facility only when it is determined that better handling of the emergency will result.

Information received about aircraft in distress should be forwarded in detail to the center in whose area the emergency exists, even VFR traffic. Logically this would mean en route traffic, not local traffic around your station. You may have to coordinate the efforts to assist any aircraft believed in distress either between facilities or between the aircraft and a facility.

Should your facility receive a request for information concerning an ALNOT from the tie-in FSS, a thorough search of the records is necessary to determine whether the aircraft has contacted or landed at your facility. No one can say which little piece of information may be the missing link or a key to the location of a downed aircraft.

A course of action determined appropriate for an emergency situation must be implemented as soon as enough information has been obtained to act upon. What is considered a minimum amount of information will naturally vary according to the situation; however, the following may be considered as a minimum for an in-flight emergency:

1. Aircraft identification and type.
2. Weather, as reported by the pilot.
3. Nature of emergency.
4. Aircraft altitude/FL.
5. Pilot's desires.
6. Fuel remaining, in terms of time.

After initiating emergency assistance procedure, and if the nature of the situation allows, the following information is desirable and may be obtained from the pilot as necessary and as time permits:

1. Pilot capability for IFR flight.
2. Time and place of last known position.
3. Heading since last known position.
4. Airspeed.
5. Point of departure and destination.
6. Navaid equipment capability.
7. Navaid signals being received.
8. Visible lanumarks.
9. Aircraft color.
10. Number of people on board.
11. Emergency equipment on board.

When providing emergency assistance, it may be best to keep the aircraft on the initial contact frequency. Even though 121.5 and 243.0 MHz are available as emergency frequencies, their use is not mandatory. A frequency change for an aircraft in distress should be made only if there is a valid reason.

Aircraft orientation is of primary importance to the pilot of an aircraft that is lost or uncertain of his position. The initial phase of assistance to pilots in such situations will probably be some method of locating the aircraft such as radar, radar beacon, DF, navaids, landmarks, or sighting by other aircraft.

When considered necessary, and provided that the weather permits, a controller could recommend that the pilot maintain or increase altitude to improve communications, radar, or DF reception.

OVERDUE AIRCRAFT

An IFR aircraft is considered overdue when neither communications nor radar contact can be established with it and 30 minutes have passed after its ETA over a specified reporting point or clearance limit.

An aircraft on a combination VFR/IFR or air filed IFR flight plan is considered overdue when 30 minutes have passed since the pilot requested IFR clearance and neither communications nor radar contact can be established with it.

A VFR aircraft is considered overdue when communications cannot be established and it fails to arrive 30 minutes (15 minutes for jets) after its ETA. For SAR purposes, these aircraft are treated the same as IFR aircraft.

EMERGENCY SITUATIONS

An emergency situation may be considered to exist, and the center should be notified immediately, when any of the following conditions exist:

1. An emergency is declared by either the pilot, facility personnel, or officials responsible for the operation of the aircraft.
2. Reports indicate that an aircraft has made a forced landing, is about to do so, or its operating efficiency is impaired to the extent that a forced landing will be necessary.
3. Reports indicate that the crew has abandoned or ditched the aircraft or is about to do so.
4. An emergency radar beacon (SIF) response is received on radar.
5. Intercept or escort aircraft services are required.
6. The need for ground rescue appears likely.
7. A left or right turn triangular pattern is observed on radar.

INFORMATION FORWARDED TO ARTCC

When an aircraft is considered to be overdue or in an emergency status, ARTCC must be alerted and forwarded the following information, as available:

1. Flight plan including the color of the aircraft if known.
2. Time of last transmission received, by whom, and the frequency used.
3. Last position report and how it was determined.
4. Action taken by the reporting facility and the proposed action.
5. Number of persons on board.
6. Fuel status.
7. Facility working the aircraft and the frequency being used.
8. Last known position, estimated present position, and maximum range of flight of the aircraft based on the remaining fuel on board and the airspeed.
9. Position of other aircraft near the distress aircraft's route of flight when requested.
10. Other information the controller deems pertinent.

Position Plots

The facility working the distress aircraft should plot the flight path of the aircraft on a chart, including position reports, predicted positions, possible range of flight, and any other pertinent information. The assistance of other aircraft known to be operating near the distress aircraft may be solicited. This information should also be forwarded to ARTCC.

RADIO COMMUNICATIONS FAILURE

Communications failure action should be considered for both an aircraft and a facility. In case of the latter, most Navy facilities have backup or emergency radio equipment plus standby or auxiliary power supplies. This system does not eliminate the possibility of a facility communications failure but reduces it to improbable. However each facility should develop an internal plan to follow in the event part or parts of the backup system do not function as designed. The AC1 or Chief may be involved in the planning or actual construction of a plan of action to reestablish communications with aircraft under control of a facility if such an emergency should arise.

Aircraft communications failures with modern, reliable equipment are uncommon, but since it is a possibility, advanced planning and training is necessary to effectively handle such a situation should it arise. When an aircraft experiences two-way communications failure, air traffic control is based on anticipated pilot actions. Pilot procedures and recommended practices are set forth in FAR's, the Airman's Information Manual, and pertinent military instructions. For information, FAR 91.127, "IFR Operations; Two-way Communications Failure" is quoted as follows.

1. Unless otherwise authorized by ATC, each pilot who has two-way radio communications failure when operating under IFR shall comply with the rules of FAR 91.127.

2. VFR conditions. If the failure occurs in VFR conditions, or if VFR conditions are encountered after the failure, each pilot shall continue the flight under VFR and land as soon as practicable.

3. IFR conditions. If the failure occurs in IFR conditions, or if the provisions of the preceding paragraph cannot be complied with, each pilot shall continue the flight according to the following:

a. Route.

(1) By the route assigned in the last ATC clearance received;

(2) If being radar vectored, by the direct route from the point of radio failure to the fix, route, or airway specified in the vector clearance;

(3) In the absence of an assigned route, by the route that ATC has advised may be expected in a further clearance; or

(4) In the absence of an assigned route or a route that ATC has advised may be expected in a further clearance, by the route filed in the flight plan.

b. Altitude. At the highest of the following altitudes or flight levels:

(1) The altitude or flight level assigned in the last ATC clearance received;

(2) The minimum altitude (converted to minimum flight level if appropriate) for IFR operations; or

(3) The altitude or flight level ATC has advised may be expected in a further clearance.

c. Leave holding fix. If holding instructions have been received, leave the holding fix at the expect-further-clearance time received, or, if an expected-approach-clearance time has been received, leave the holding fix in order to arrive over the fix from which the approach begins as close as possible to the expected approach clearance time.

d. Descent. Begin descent from the en route altitude or flight level upon reaching the fix from which the approach begins, but not before

(1) The expect-approach-clearance time (if received); or

(2) If no expect-approach-clearance time has been received, the estimated time of arrival, shown on the flight plan, as amended with ATC.

CONTROL ACTION

Although SAR is not limited to aircraft incidents the restrictive nature of this training manual limits this discussion to subject matter concerning air traffic control. AC's by virtue of their job of keeping track of each aircraft operation may be the first to suspect an emergency situation. In nearly every instance, a timely alert to the appropriate SAR facility or organization is an essential contribution to a successful mission.

Each ship or station has its own crash and rescue bill which the AC1 or Chief may be involved in drafting, updating, or revising. This

bill is a collection from various publications of the necessary information and action required locally. This bill is included as part of the local Air Operations Manual and is the guideline to be followed by AC's in the command during an actual incident on or near the station and in training junior or new personnel.

Flight Service Stations serve as the central points for collecting and disseminating information on overdue or missing aircraft which are not on an IFR flight plan.

Centers serve as the central points for collecting information, for coordinating with SAR, and for conducting a communications search by distributing any necessary ALNOT's concerning:

1. Overdue or missing IFR aircraft.

2. IFR aircraft in an emergency situation occurring in their respective areas.

3. Overdue or missing aircraft which have been authorized to operate in accordance with special VFR.

4. Aircraft on a combination VFR/IFR or an air-filed IFR flight plan and 30 minutes have passed since the pilot requested IFR clearance and neither communications nor radar contact can be established with it.

For more information on action taken by the appropriate facility for overdue or missing aircraft, refer to AC 3 & 2, NAVTRA 10367-E, chapter 4.

Traffic Restrictions

Unless radar separation is used, when an IFR aircraft is unreported, the facility responsible must restrict or suspend other IFR traffic for 30 minutes after whichever of the following times is applicable.

1. The time at which approach clearance was delivered to the pilot.

2. The expected approach clearance time delivered to the pilot.

3. The arrival time over the navaid serving the destination airport.

4. The current estimate either the control facility's or the pilot's, whichever is later, at:

(1) The appropriate en route navaid(s) or fix(es), and

(2) The navaid serving the destination airport.

Lighting Requirements

The runway lights, approach lights, and all other required airport lighting systems must be operated for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or until 30 minutes after its fuel supply is estimated to be exhausted.

Traffic Resumption

After the 30 minute traffic suspension period has expired, normal air traffic control may be resumed if the operators or pilots of other aircraft concerned agree.

Communications Failure

The following action, as appropriate, may be taken if two-way radio communications is lost with an aircraft:

1. Broadcast clearances through any available means of communications including the voice feature of navaids.

2. Attempt to reestablish communication by requesting the pilot of the aircraft to use his transponder or make turns to acknowledge clearances and answer questions. Consider the following possibilities using the transponder:

a. Request the pilot to reply Mode A/3 IDENT.

b. Request the pilot to reply on code 7600 or if already on code 7600 the appropriate stratum code.

c. Request the pilot change to STANDBY for a sufficient length of time for the controller to be sure that the lack of target is the result of the requested action.

3. Broadcast a clearance for the aircraft to proceed to its filed alternate airport at the MEA, if the aircraft operator concurs.

VFR AIRCRAFT IN WEATHER DIFFICULTY

If the pilot of a VFR aircraft should request assistance when he is about to encounter IFR weather conditions, he should be instructed to contact the appropriate facility responsible for

the area concerned. If your facility is not the control facility and the pilot advises he is unable to contact the control facility, you may be required to relay information and clearances necessary to assist the VFR aircraft.

At radar facilities, if VFR traffic requests radar assistance when encountering or about to encounter IFR weather conditions, the controller should first determine if the pilot is capable and qualified for IFR flight. If the pilot is qualified for IFR, he should be requested to file an IFR flight plan after which a clearance may be issued after coordination with the necessary facility. If it is determined that the pilot is not qualified or capable of IFR flight, then the following actions as appropriate should be taken:

1. Inform the pilot of airports where VFR conditions are reported, provide other available pertinent weather information, and determine if the pilot will elect to conduct VFR flight to such an airport.

2. If the pilot does not elect to proceed to an airport as described in the preceding paragraph, radar assistance should be provided if the pilot declares an emergency or if the controller can determine the exact nature of the radar service the pilot desires.

3. If the aircraft has already encountered IFR conditions, the pilot should be informed of the minimum safe altitude. If the aircraft is below the minimum safe altitude and sufficiently accurate position information has been received or radar identification is established, a heading may be furnished on which to climb to reach minimum safe altitude.

Assistance Techniques

When providing radar assistance to a pilot not qualified to operate in IFR conditions, the following techniques should be used to the extent possible:

1. Avoid radio frequency changes except when necessary to provide a clear communications channel.

2. Turns should be made when the aircraft is in VFR conditions so it will be in a position to fly a straight course when in IFR conditions.

3. The pilot should be instructed to lower the landing gear and slow the aircraft to approach speed while in VFR conditions.

4. Requiring a climb or descent while in a turn and in IFR conditions should be avoided.

5. Abrupt maneuvers should be avoided.

6. Vector such aircraft to VFR weather conditions if possible.

LOCATOR BEACON SIGNALS

Some aircraft and/or occupants carry locator beacons of various types which are independently powered devices emitting a distinctive tone for homing purposes on 121.5 and/or 243.0 MHz. Several types of signals are produced by these beacons such as a beep beep, or a warbling or steady tone. The latest Navy equipment provides for two-way radio communication. Since the emergency signal from a locator beacon may only be heard for a short period of time, quick action is essential.

When a locator beacon signal is heard or reported the following steps are recommended:

1. Attempt to obtain a bearing on the signal.
2. Notify the DF net control.
3. Forward bearings and any other pertinent information to the DF net control.

DIRECTION FINDER SERVICE

Providing practice DF steers or approaches to aircraft that are operating normally and in accordance with VFR might be considered a relatively simple matter. The only real action required is to provide the necessary headings for the pilot to comply with to accomplish the desired operation. On the other hand, an emergency situation or IFR operation can complicate the procedure somewhat requiring the controller to provide information to insure proper terrain clearance, proper position relative to controlled airspace, and possibly a complete instrument approach plus coordination with other facilities and separation from other traffic.

To assist controllers, certain guidelines may be established to identify the steps necessary when providing DF service to an aircraft in emergency as follows:

1. It should be determined if the aircraft concerned is on a flight plan, whether it is in VFR or IFR weather conditions, the amount of fuel remaining, its altitude/FL, and heading.

2. If it is determined that the aircraft is not on an IFR flight plan and is in VFR weather conditions, the pilot should be advised to remain in VFR conditions.

3. If it is determined that the aircraft is operating in IFR weather conditions, the pilot should be informed of the minimum safe altitude and the controller must coordinate with the appropriate control facility for the purpose of separation from other IFR traffic and flight progress information if the aircraft in distress is operating in accordance with an IFR clearance.

4. The DF net control should be alerted if the pilot declares an emergency or is lost, even though the aircraft may be radar identified (unless the aircraft is sighted visually). This will provide for capability of cross checks and continued assistance under almost any conditions such as radar failure or loss of radar target due to altitude, etc.

Generally speaking, a DF net's area of coverage would be an ARTCC's area of responsibility (flight advisory area) with the ARTCC as net control. However, the ARTCC may designate any DF station as DF net control and if a center's area includes two DF nets, a control station for each would be designated. When alerted by a station of an emergency which may require DF assistance, the center or net control, as appropriate, can further alert those DF stations within the network which may be required to assist. The DF station having primary responsibility for radio communications with the distress aircraft would be considered the primary station and all other DF stations on the net remain silent on the frequency in use. Whenever possible, radar identification of the distressed aircraft should be accomplished. All courses received from the DF stations are plotted on a plotting board to establish a fix. A minimum of two DF courses are required to form or establish a fix. However, one station can determine a no-wind position of the aircraft by the time or distance method of determining position in relation to a DF station expressed in terms of miles or minutes from the station. For more detailed information on operation and procedure for direction finding, refer to NAVTRA 10367-E, AC 3 & 2, chapter 5.

Under emergency conditions where a standard instrument approach cannot be executed, an instrument approach based on DF guidance may be provided. DF approaches are established at some facilities for this purpose in the same manner as TACAN and radar approaches. These procedures are described in the TERP's handbook. Generally a teardrop type approach is used for low altitude operations and a triangle type approach for high altitude operations. Both types consist of an outbound leg, turn(s), and an inbound leg with an angular difference of 45° from the reciprocal of the outbound course. The triangle type procedure includes a base leg before turn to final. Both lost communications procedure and missed approach procedure instructions must be issued to the pilot of an aircraft being provided a DF approach. Generally, the approach criteria for DF approaches is the same as that for ADF approach procedures. The minimums established must provide obstruction clearance in the final approach area and the circling approach area per category of aircraft. Since DF navigation is based on communications, MAXIMUM intervals between contacts for a published DF approach have been specified, as follows: while the aircraft is en route to the station prior to initial approach, 60 seconds; from initial approach fix to within an estimated 30 seconds from final station passage or missed approach point, 15 seconds; when 30 seconds or less from final station passage or missed approach point, 5 seconds.

EMERGENCY AIRPORT RECOMMENDATION

A controller handling an aircraft in distress may decide to recommend an emergency airport to the pilot. Such a decision may be reached after several essential conditions are considered, as follows: remaining fuel in relation to the distance to the recommended airport; the existing weather conditions, both en route and at the recommended airport; airport condition, such as runway length and weight capacity; navaid status; type of aircraft and pilot qualifications versus actual operation necessary

to get to and land at the recommended airport; and radar vectoring, DF guidance, or homing capability to the emergency airport recommended.

When such a recommendation is made and accepted by the pilot of the distressed aircraft, every conceivable means of guidance to the emergency airport must be considered and used if necessary, including radar, DF, following another aircraft, pilotage by landmarks, or compass heading.

SEARCH AND RESCUE

Search and Rescue (SAR) is defined as the employment of available personnel and facilities in rendering aid to persons and property in distress. The development of the SAR concept as a planned undertaking is of fairly recent origin, although the recognition of the moral obligation to assist persons in distress dates back to ancient times. The rescue of military personnel is an integral and important part of military operations. The armed forces have traditionally accepted, to the extent practicable, a moral or humanitarian obligation to aid nonmilitary persons and property in distress. This has been further implemented by the National SAR Plan as outlined in the National Search and Rescue Manual, (NWP 37-A).

The National SAR Plan assigns search and rescue as follows:

1. To the military agencies—Conducting physical search and rescue operations.

2. To the FAA—

a. Providing emergency service to aircraft in distress.

b. Assuring that SAR procedures will be initiated if an aircraft becomes overdue or unreported. This is accomplished through the ATC system for IFR aircraft and the VFR flight plan service provided by Flight Service Stations for VFR aircraft.

c. Attempting to locate overdue or unreported aircraft by INREQ and ALNOT communications search.

d. Cooperating in the physical search by making all possible facilities available for use of the searching agencies.

Under the National Search and Rescue Plan the facilities of all these agencies, as well as those of the Navy, are integrated into a single SAR network to provide maximum efficiency and economy in the prosecution of any SAR mission. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for coordination of search and rescue for the Inland Region. In order to carry out this responsibility, the Air Force and Coast Guard have established Rescue Coordination Centers to direct search and rescue activities within their regions. This service is available to all persons and property in distress, both civilian and military. Normally, for aircraft incidents, information will be passed to the Rescue Coordination Centers through the appropriate Air Route Traffic Control Center.

DEVELOPMENT OF SAR

The rescue of personnel in distress has become an integral and important part of naval operations. The primary objective of SAR is to save the lives of personnel in distress. It applies principally, but is not restricted to, the rescue of personnel of the Armed Forces of the United States and its allies. Successful SAR operations not only have a beneficial effect on the morale of fighting forces when a life is saved, but also aid in preserving the strength of the Armed Forces by retrieving its highly trained personnel.

The present-day concept of SAR is an outgrowth of the Air Sea Rescue Plan inaugurated by the U.S. Coast Guard in 1939. The plan became subject to expansion and additional development as a result of the U.S. Navy's role in World War II. The Navy, then engaged in operations extending over vast areas of the earth's water surface, found it necessary to develop standardized procedures for the search and rescue of its own downed air personnel and survivors of ships damaged or sunk by enemy action.

To accomplish the SAR mission, suitable surface ships and aircraft were periodically placed under the tactical command of a rescue task group commander in the area of operations. Submarines were also detailed to these missions as requested by the tactical commander. As the war progressed and the magnitude of naval operations increased, these SAR missions as-

sumed greater importance. It became apparent that the employment of specially trained and equipped units specifically assigned to SAR duties could relieve other units of these operations which interfered with their primary missions. This procedure, when instituted, resulted in greater effectiveness on the part of all units in the performance of their respective duties.

When reports of survivors' experiences were studied, it also became apparent that additional survival equipment was needed, particularly equipment which permitted survivors themselves to assist the searchers. As a result, such items as the self-inflating liferaft, the emergency signal mirror, emergency radio transmitters, and various pyrotechnic distress signals were developed.

INTERAGENCY COORDINATION

In time of peace, it is incumbent upon the U.S. Navy to take full advantage of the SAR techniques developed and facilities operated by the U.S. Coast Guard. The reason for this is that the U.S. Coast Guard is charged with the development, establishment, maintenance, and operation of aids to maritime navigation and rescue facilities which promote safety on and over the high seas and waters subject to the jurisdiction of the United States. The Coast Guard, under its responsibilities, may render aid to persons and protect and save property at any time at any place where its facilities and personnel are available.

As a result, operational commands of the U. S. Navy may delegate to the Coast Guard such SAR functions as duties of the SAR Commander and other functions that may be jointly agreed upon by the respective commands. However, before these functions are given to the Coast Guard, full consideration must be given to the adequacy of Coast Guard facilities and other responsibilities imposed upon that service by laws. In addition to using Coast Guard SAR facilities, naval commands cooperate fully, when requested, in assisting the Coast Guard in the execution of its functions. Navy commands also keep Coast Guard commands in the area of their operations informed in detail on their SAR requirements and provide logistic assistance as requested by Coast Guard SAR operations. The extent of this assistance is governed by existing instructions and the availability of facilities and equipment.

In wartime, the Coast Guard operates as a specialized service within the naval establishment, and its responsibilities for SAR are subject to orders of the Secretary of the Navy.

The Aerospace Rescue and Recovery Service, as Executive Agent for the Air Force, exercises the SAR coordination function within the Inland Region.

This rescue service has the responsibility for integrating existing agencies possessing a SAR capability and their facilities, in accordance with existing agreements, into a basic cooperative network for rendering assistance to military and nonmilitary persons and property in distress.

The Army maintains a SAR capability during the conduct of land operations for its forces. SAR facilities are primarily provided by aviation units based at Army installations.

Because the Army maintains no organizational rescue units, Army SAR facilities for operational use under the National SAR Plan are made available as required on a noninterference basis with the primary Army mission.

Army helicopters and light aircraft have an effective capability for assistance to SAR operations.

The Federal Aviation Administration (FAA) of the Federal Government has broad statutory responsibility in the field of air safety. In addition, the FAA has air traffic control and communications facilities available for SAR purposes. AC 3 & 2, NAVTRA 10367-E, chapter 4, outlines facilities and procedures used by FAA in connection with SAR. Other federal agencies, such as the Federal Communications Commission (FCC), cooperate in SAR operations.

COMMAND AND ORGANIZATION

COMMAND PROVIDES THE AUTHORITY for the control of forces and facilities attached to SAR, while ORGANIZATION PROVIDES THE MEANS—the personnel, techniques, and procedures necessary to carry out the mission. Command authority for a designated area or region is usually vested in one person, the SAR Coordinator. It is his responsibility to provide

the organization and insure that it functions efficiently. This is achieved through the formation of the Rescue Coordination Center (RCC) and the training of assigned personnel in all operational aspects of SAR.

Authority and Responsibility of the SAR Coordinator

Responsibility for SAR is divided into several classifications, each containing certain definite assignments for SAR. Thus, commands to whom the primary responsibility has been assigned have greater duties to perform than do commands which have been assigned secondary support or informational responsibility. In spite of the division of SAR responsibility among commands, all hands possess a basic responsibility to take part in SAR operations, at any time, with or without prior direction.

Any commander responsible for SAR may designate a SAR Coordinator for his area of responsibility. In making that designation the command should be guided by the availability of facilities, the nature of SAR operations normal to the area or sphere of action, and any special qualifications of the officers under consideration.

The person directing a specific SAR mission is known as the SAR Mission Coordinator.

In general, the duties of the SAR Coordinator involve establishing operationally efficient RCC's, staffed with competently trained men and actively linked with other centers in neighboring areas or services. He must be prepared to provide all-out assistance in SAR missions, to assume tactical responsibility, to control surface and air unity in any SAR operation under his direction, and to direct or coordinate rescue operations.

The SAR Coordinator has operational control of all primary facilities assigned to him for SAR purposes. Submarines, whether primary or secondary SAR facilities, remain under the operational control of submarine force commanders. Commands exercising operational control, or higher authority, may assign secondary facilities to the SAR Coordinator for operational control for a specific incident. He coordinates the activity of all units participating in SAR incidents within the area of his responsibility, effecting coordination of all other units with those under his operational control. Coordination is to be exercised through the normal chain of command. Rescue commanders of forces afloat coordinate SAR activities incidental to the operation of these forces, regardless of the area of operation, unless other plans are mutually agreed upon by the commander of the forces afloat and the command with primary SAR responsibility in the area of operations.

At times it may be necessary for the SAR Mission Coordinator to designate an on-scene commander. An on-scene commander controls SAR operations at the scene of a distress incident when control of the mission cannot be exercised effectively by the SAR Mission Coordinator. This loss of effective control may be due to the distance between the Rescue Coordination Center (RCC) and the scene of the incident, or due to communications difficulties. The commander of the first unit at the scene to be in communication with the craft in distress, with other SAR forces, or with the RCC, assumes on-scene command until an on-scene commander has been designated by the appropriate SAR Mission Coordinator.

To provide continuity of command, any officer who is senior to the on-scene commander and who arrives subsequently is not to take over command of operations unless ordered to do so by the SAR Mission Coordinator, or unless the senior officer present decides that a change of command is essential, and so informs the SAR Mission Coordinator.

If the on-scene commander is airborne, he retains control of the mission until relieved, either by the Mission Coordinator or by mutual agreement with an adequately equipped surface craft. The SAR Mission Coordinator must be informed accordingly.

Formal designation of an on-scene commander or any change in that designation is promulgated by the SAR Mission Coordinator to all concerned.

Rescue Coordination Center (RCC)

The RCC is the heart of SAR operations. It is the place from which SAR operations are controlled and where reports of operations are received and evaluated. The primary aim of all

efforts in the RCC is to conclude all rescue missions successfully and promptly. The RCC's are established by the SAR Coordinator.

RCC's may be based ashore or afloat. Where practicable, they should be located in or near an operation or information center. The RCC afloat is normally located in Air Operations. Ashore, it may be located in or adjacent to a command or information post. Wherever it is located, the RCC should have ready access to a control room, surface and air plots, communications facilities, navigational aids, direction-finding facilities, and meteorological services.

It is the responsibility of the RCC to perform the following:

1. Receive and evaluate all reports of distress.
2. Direct or coordinate the search for and rescue of survivors, keeping all interested commands and operating agencies (including the survivor's parent ship or base) fully informed, as appropriate.
3. Plot positions of all distress incidents and the tracks of all assisting aircraft.
4. Keep informed of weather, sea conditions, and other factors affecting rescue.
5. Undertake arrangements necessary for the return of rescued personnel to their ship or base.
6. Maintain a status board showing all primary rescue facilities.
7. Maintain information on secondary facilities available.
8. Guard assigned radio communications circuits.

An RCC is a primary SAR facility suitably staffed by supervisory personnel and equipped for coordinating and controlling SAR operations. RCC's vary with the physical location and the regional level on which they are operated, but all should have the common element of centralized communication and coordination. RCC's should be staffed with RCC controllers capable of acting as SAR Mission Coordinators.

SAR facilities available to RCC's are classified as primary and secondary.

PRIMARY facilities may include the following:

1. Specially equipped air and surface craft maintained in constant readiness for full-time SAR duties.
2. Other craft, including submarines, specifically assigned to SAR.
3. Ground units specially equipped and maintained in constant readiness.
4. Meteorological forecasting and advisory services.

SECONDARY facilities may include the following:

1. Local military land-based aircraft and surface craft.
2. Other aircraft suitable for SAR missions.
3. Any military facility.
4. Merchant ships, private vessels, and civilian aircraft.
5. Other means available to local authorities.

Full information concerning any significant change in the status or location of primary facilities established for and used by SAR agencies should be given widest possible dissemination by the SAR Coordinator, the SAR Mission Coordinator, or the agency concerned.

AUTOMATED MERCHANT VESSEL REPORT SYSTEM

The Automated Merchant Vessel Report System (AMVER) is an international maritime mutual assistance program. It provides important aid to the development and coordination of search and rescue efforts in the off-shore ocean areas of the world during marine and aviation emergencies. Merchant ships of all nations are encouraged to voluntarily send sailing and position reports during offshore passages to the AMVER Center in New York through cooperating radio stations made available by participating countries. Information from these and meteorological reports is entered into the AMVER electronic computer which generates and maintains dead reckoning positions for the participating ships. Characteristics of ships which are valuable for determining search and rescue capability are also stored in the computer. Information concerning predicted locations and characteristics of ships plotted near the scene of an actual or potential emergency is made available to recognized SAR agencies of any nation or person in actual or potential distress for use during an emergency. Predicted positions and identification of ships are disclosed only for reasons related to maritime safety.

Surface Pictures

The basic service provided by the AMVER Center for use during emergencies is the Surface Picture (SURPIC). A SURPIC is a list of ships with SAR characteristics predicted by the computer to be within a specified geographical region at a specified time, present or future. SURPIC's are useful to aircraft commanders during an alert or emergency situation by assisting in making contingency plans in case the situation should deteriorate rapidly into a distress and a ditching become imminent.

Network of Precautionary Trackline SURPIC's in the Pacific Region

Because of the special nature of the long overwater flights in the Pacific and Indian Oceans and the associated lack or remoteness of regular SAR facilities, special services have been provided to aviation for many years by several countries. Positions of ships participating in weather reporting schemes were used to predict future locations and this information was provided to flight briefing officers by the cognizant civil aviation authority. In the United States Pacific Maritime region this service was called SAR Plan ALFA. The AMVER system has replaced Plan ALFA and has begun providing additional precautionary trackline SURPIC's to rescue centers and international flight service stations throughout the north and south central Pacific for major international flight routes. Additional routes will be added as the AMVER plot is developed in the more remote areas.

The precautionary trackline SURPIC's are predicted for a future mean time and distributed to briefing points by governmental communications networks. Copies of the SURPIC's are normally made available by the briefing station for inclusion in the preflight briefing kit. The aircraft commander can easily calculate the approximate position of ships of interest for the time estimated abeam and place the information on the navigation chart.

COMPUTERIZED SAR SEARCH PLANNING

Another valuable aid available to SAR coordinators is the Fleet Numerical Weather Central (FLENUMWEACEN) located at Monterey, California and under the jurisdiction of the Naval Weather Service Command.

This facility utilizes a computer program which solves the search planning problem for open ocean situations, and provides a computer generated output consisting of a datum position, probable error of position and search radius for both simple and complex problems.

The solution generated by the computer is based upon certain data which is fed into the computer, some of which must be supplied by the SAR coordinator. The remaining data is supplied by the Naval Weather Service, such as sea current and surface wind.

The computer is available 24 hours a day and once the FLENUMWEACEN has received the input information from the SAR coordinator, the computer output data should be available within one-half hour.

CHAPTER 7

CARRIER AIR TRAFFIC CONTROL PROCEDURES

As defined by naval regulations, the Operations Officer of an aircraft carrier is responsible for the control of airborne aircraft operating from the carrier except those assigned to other authority. The primary facility through which the Operations Officer exercises his authority and responsibility for safe and effective control of airborne aircraft is the Carrier Air Traffic Control Center (CATCC). The Air Operations Officer is responsible to the Operations Officer for all matters pertaining to flight operations and for the proper functioning of the CATCC. The CATCC is responsible for the status keeping of all carrier air operations and control of all airborne aircraft under the Operations Officer's cognizance except for the following:

1. The Air Officer is responsible for visual control of aircraft operating in the carrier control zone. He is the clearing authority for the carrier control zone.

2. The Landing Signal Officer is responsible for visual control of arriving aircraft immediately prior to landing.

3. The CIC Officer is responsible for mission control of aircraft assigned to him.

CVA/CVS instrument procedures are necessarily different from those applicable ashore. The basic necessity for safe and efficient procedures may be even more prevalent aboard carriers. The conditions which affect CVA/CVS instrument procedures are of a different nature since the carrier is a mobile airfield normally operating in areas where obstruction clearance presents little if any problem. This discussion is limited in content concerning the overall picture of CATCC. The CVA/CVS NATOPS Manual should be referred to for a more detailed study of the subject matter.

CVA/CVS INSTRUMENT PROCEDURES

The instrument procedures utilized in CVA/CVS type operations include arrival, marshal, approach, missed approach/bolter/waveoff, and departure procedure.

ARRIVAL PROCEDURES

On entering the carrier control area (50 mile radius for CVA, 25 for CVS/LPH), inbound flights are normally turned over to marshal control for further clearance to the marshal pattern. Aircraft which were unable to check in with Strike, Mission, or Marshal Control due to communications difficulties should proceed inbound to the emergency marshal at the briefed holding altitude.

Carrier Terminal Information Service (CTIS) if available, should be broadcast continuously during flight operations and should contain the following minimal information:

1. Ship's voice call
2. Broadcast identification (Alpha, Bravo, etc).
3. Type recovery/approach.
4. Altimeter setting and weather.
5. Expected Marshal radial.
6. Miscellaneous data affecting recovery/launch.

The flight leader should provide the Marshal Controller with certain items of information which include:

1. Position.
2. Altitude.
3. Low fuel state in flight.
4. Total number of aircraft in flight (line up).

5. Type of ACLS approach requested.
6. Receipt of CTIS broadcast.
7. Other pertinent information such as navaid status, hung ordnance, weather, etc., which may affect the recovery.

The Marshal Controller should provide the flight with the following information:

1. Marshal instructions.
2. Steer to marshal (if required).
3. Type of recovery/approach (if not received on CTIS).
4. Expected approach time (EAT).
5. Altimeter setting and weather (if not received on CTIS).
6. Time check.
7. Expected final bearing.
8. Additional information such as divert field/fuel data, etc.

MARSHAL PROCEDURE

A common question asked by trainees is "Why the word MARSHAL?" This is a good question. Apparently reference is being made to one of the many meanings of the word, which is "to arrange objects or people in order." Compared to approach procedure ashore, a marshal fix would be the same as the initial approach fix.

A primary TACAN marshal fix is normally established on a predetermined radial at a distance appropriate for the type aircraft, i.e., jet, prop, or helo. The radial is established with reference to the base recovery course (BRC). The BRC is the ship's magnetic heading for recovery of aircraft.

Jet Aircraft

For jet aircraft, the primary TACAN marshal fix is normally on the 180 degree radial relative to the expected final bearing (see Appendix I) at a distance of 15 miles plus 1 mile for every 1,000 feet of altitude. Base altitude will be assigned but not lower than 5,000 feet in any case.

Turboprop Aircraft

For turboprop aircraft, the primary TACAN marshal fix is either the 180 degree radial at a distance of 15 miles plus 1 mile for every 1,000 feet of altitude or the 135 degree radial at a distance of 7 miles plus 1 mile for every 1,000 feet of altitude. Base altitude will be as assigned but not lower than 5,000 feet for jets or 1,500 feet for props.

Prop Aircraft

The primary TACAN marshal point for prop aircraft is the 180 degree radial relative to the expected final bearing (FB) at a distance of 10 miles plus 1 mile for every 1,000 feet of altitude.

It should be noted that this marshaling point cannot be utilized when jet approaches are being conducted.

There are two secondary TACAN marshals (ALPHA and BRAVO); these are located on the 135/225 degree radials (respectively) relative to the expected FB at a distance of 7 miles plus 1 mile for every 1,000 feet of altitude. Base altitude for props will not be lower than 1 500 feet.

Helicopters

The primary TACAN marshal fix for helicopters is the 100 degree radial relative to the FB at a distance of 1 mile for every 500 feet of altitude commencing at 1,000 feet and 5 miles.

Emergency Marshal

Emergency marshal fixes may be established on radials at 30 degree intervals, clockwise from the primary marshal radial.

Overhead Marshal

In the event of TACAN failure, geographical considerations, or operational circumstances, overhead marshal may be utilized.

In the event an aircraft or flight cannot reach the assigned marshal point in time to make an assigned approach time due to mission, fuel state, or ordnance load, an en route radar approach may be used to place the flight in the proper approach sequence. Positive radar control is required for all en route descents.

Marshal Pattern and Altitude

Unless otherwise specified in the operations order or instructions issued by marshal control, the marshal pattern should be a 6-minute racetrack pattern. The inbound leg should pass over the marshal fix. Direction of turn for each pattern is depicted on the respective approach chart.

Every effort should be made to anticipate weather conditions and provide marshaling in visual conditions if practical. Aircraft below an overcast cloud layer should not be required to climb into the overcast to comply with marshal altitude limits if approach control can maintain the interval and sequence from the lower altitude. Aircraft above an overcast cloud layer should be assigned altitudes above the overcast and retained in formation where possible.

Formation flights should be limited to a maximum of four aircraft at any one assigned altitude. Under IFR weather conditions, a section of two aircraft is the maximum number authorized in any one flight and hence at the same marshal altitude.

Fixed-wing aircraft are normally assigned marshal altitudes which provide 1,000 feet vertical separation. A CVS using a secondary marshal fix should assign thousand foot altitudes (1,000, 2,000, etc.) at the primary marshal fix and thousand-plus-500 (1,500, 2,500, etc.) at the secondary marshal fix.

Helicopters are assigned altitudes at marshal which provide 500 feet vertical separation.

APPROACH PROCEDURE

Approach procedures described and depicted herein are primarily for single carrier operations. However, with slight modifications they can be used for multicarrier operations; letdown under reduced navigation and control, using a plane guard destroyer's navaids; and during EMCON conditions.

Figure 7-1 depicts the various symbols utilized on the approach charts which are contained herein.

Figures 7-2 through 7-9 are examples of approaches designed for use on carriers regardless of weather conditions. Each ship should utilize the standard approaches so that pilots who transition to other ships will encounter minimum changes in operating procedures.

Each pilot adjusts his holding pattern to depart the marshal fix at the assigned expected approach time. Early or late departures from the marshal fix must be reported to approach control so that adjustment in the interval can be made for safe separation.

Changes in radio communications frequencies and IFF codes should not be required of the pilot after platform (5,000 feet) except under emergency conditions.

Letdown/Penetration

Jet aircraft descend at 250 knots and 4,000 feet per minute until platform is reached. At platform the descent is shallowed to 2,000 feet per minute. They should arrive at the 10-mile gate at 1,200 feet and 250 knots. The pilot will commence transition of his aircraft to landing configuration at the 10-mile gate unless directed otherwise by CCA.

Propeller aircraft descend at 140 knots and 1,000 feet per minute from the marshal fix to arrive at the 6-mile gate at 1,200 feet.

Turboprop aircraft, when in jet marshal, must conform to jet procedures. When in prop marshal, they should conform to prop procedures but must transition to the landing configuration prior to the 6-mile gate, unless otherwise directed by CCA.

Helicopters descend at 90 knots and 500 feet per minute from the marshal fix to arrive at the 3-mile gate at 500 feet crossing the 135 degree radial at not less than 900 feet.

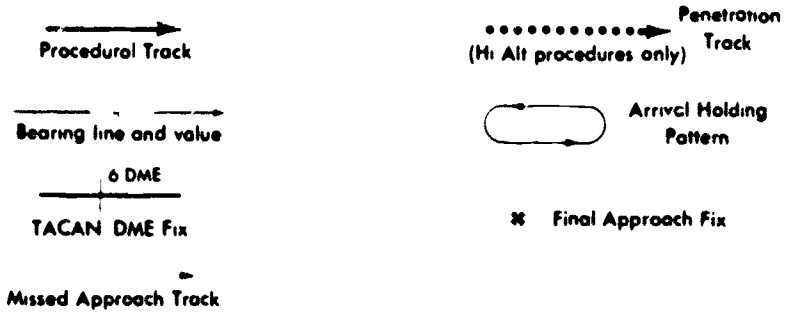
Correction to Final Bearing

If conditions were always stable during carrier operations, then there would be no reason to alter the ship's heading once a base recovery course had been decided upon. In the case of the CVA jet letdown/penetration, the final bearing would be the same as the reciprocal of the marshal radial if no changes occur. But often the variable elements exercise their option to change, such as a wind shift, frontal passage resulting in variable wind, proximity to land masses, etc., which require a change to the BRC

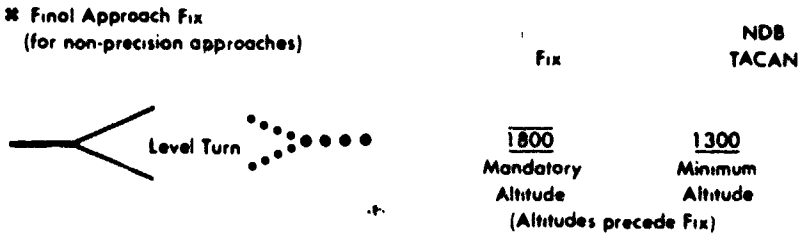
LEGEND

AIRCRAFT CARRIER INSTRUMENT APPROACH PROCEDURE CHARTS

PLANVIEW SYMBOLS



PROFILE



GENERAL INFORMATION & ABBREVIATIONS

All distances in nautical miles (except Visibility Data which is in statute miles)

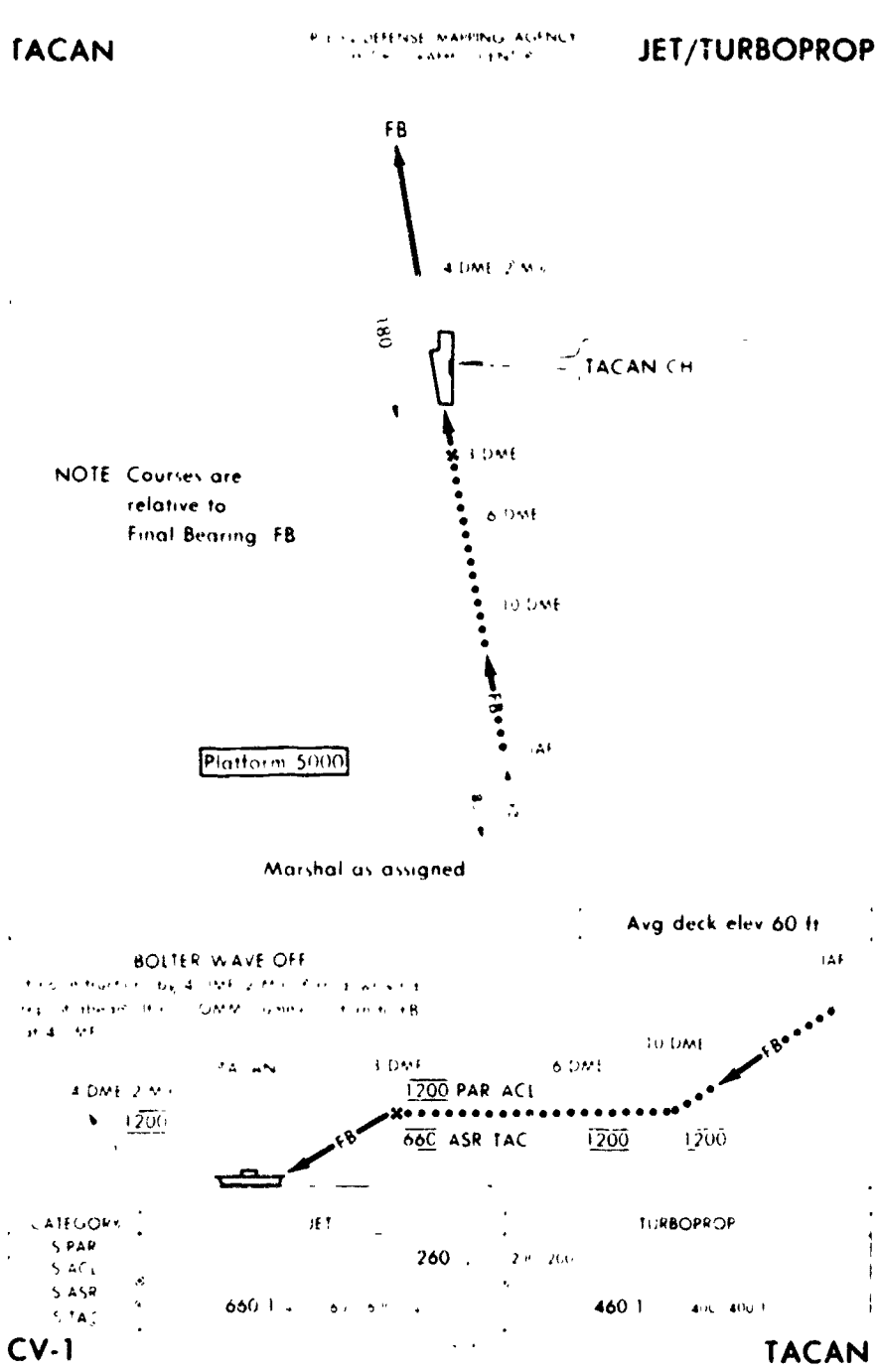
Elevations in feet above MSL

All radials bearings are magnetic

ACL	Automatic Carrier Landing System (ACLS): Modes IA, II and III only.
ASR	Air Surveillance Radar
BRC	Base Recovery Course (Mag hdg of ship)
CH	Channel
DH	Decision Height (for precision approaches only, i.e., PAR, ACL)
DME	Distance Measuring Equipment
FAF	Final Approach Fix
FB	Final Bearing
IAF	Initial Approach Fix
MDA	Minimum Descent Altitude (for non-precision approaches only, i.e., ASR, TACAN, NDB)
MSL	Mean Sea Level
NDB	Non-directional Radio Beacon
PAR	Precision Radar Approach
TAC	TACAN

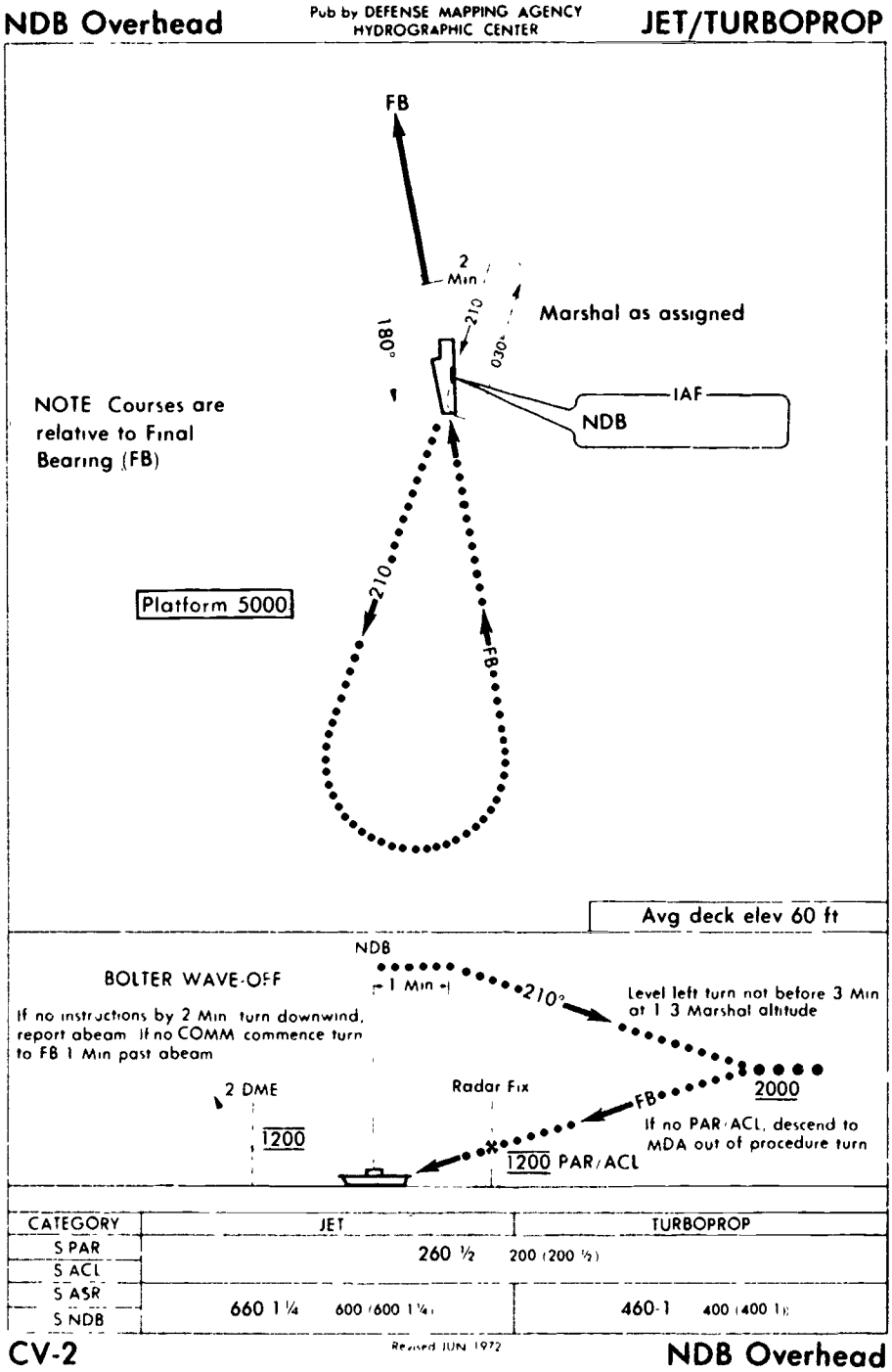
AC.231

Figure 7-1.—Carrier instrument approach procedures legend chart.



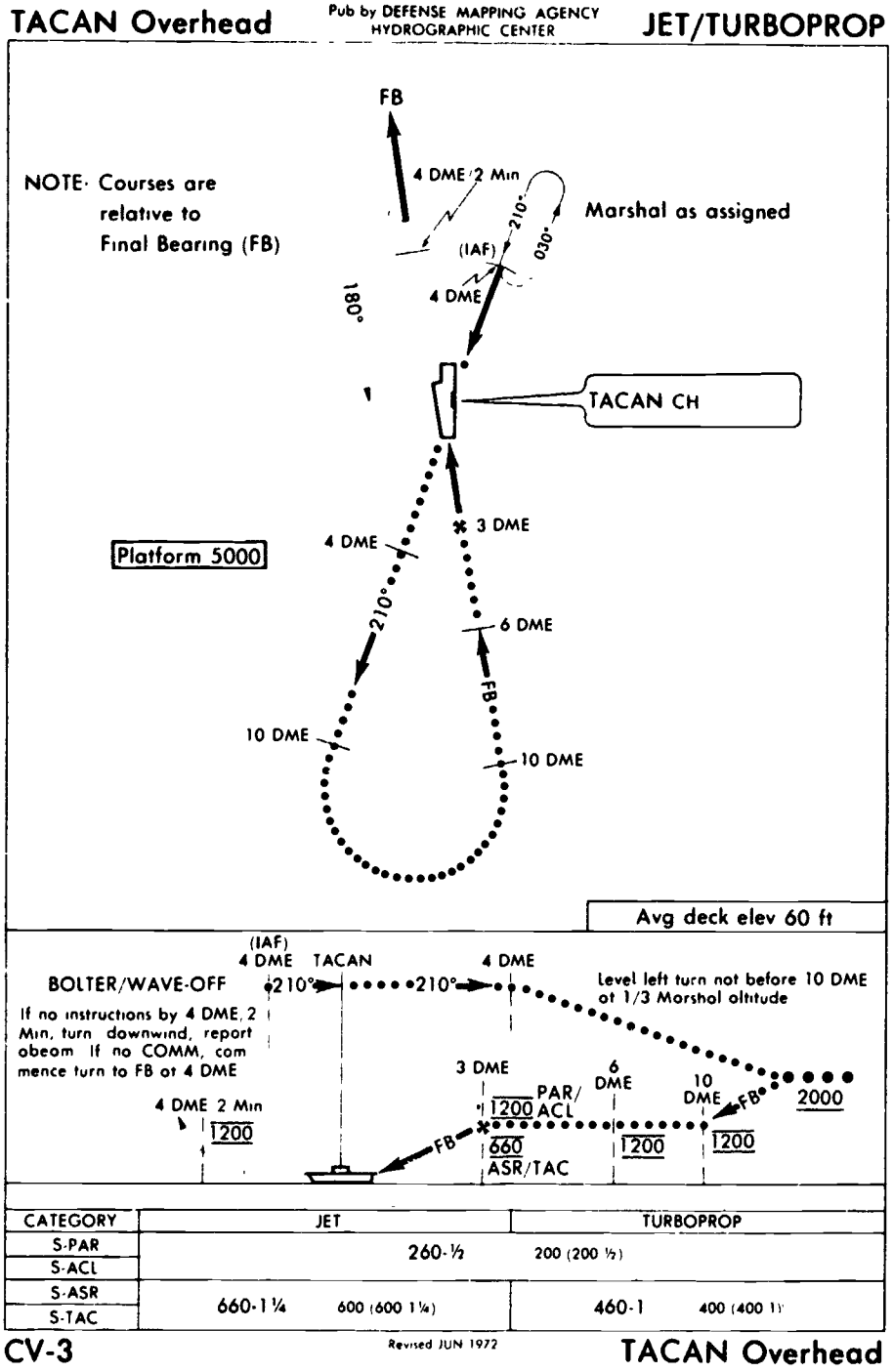
AC.232

Figure 7-2.—TACAN approach chart (jet and turboprop).



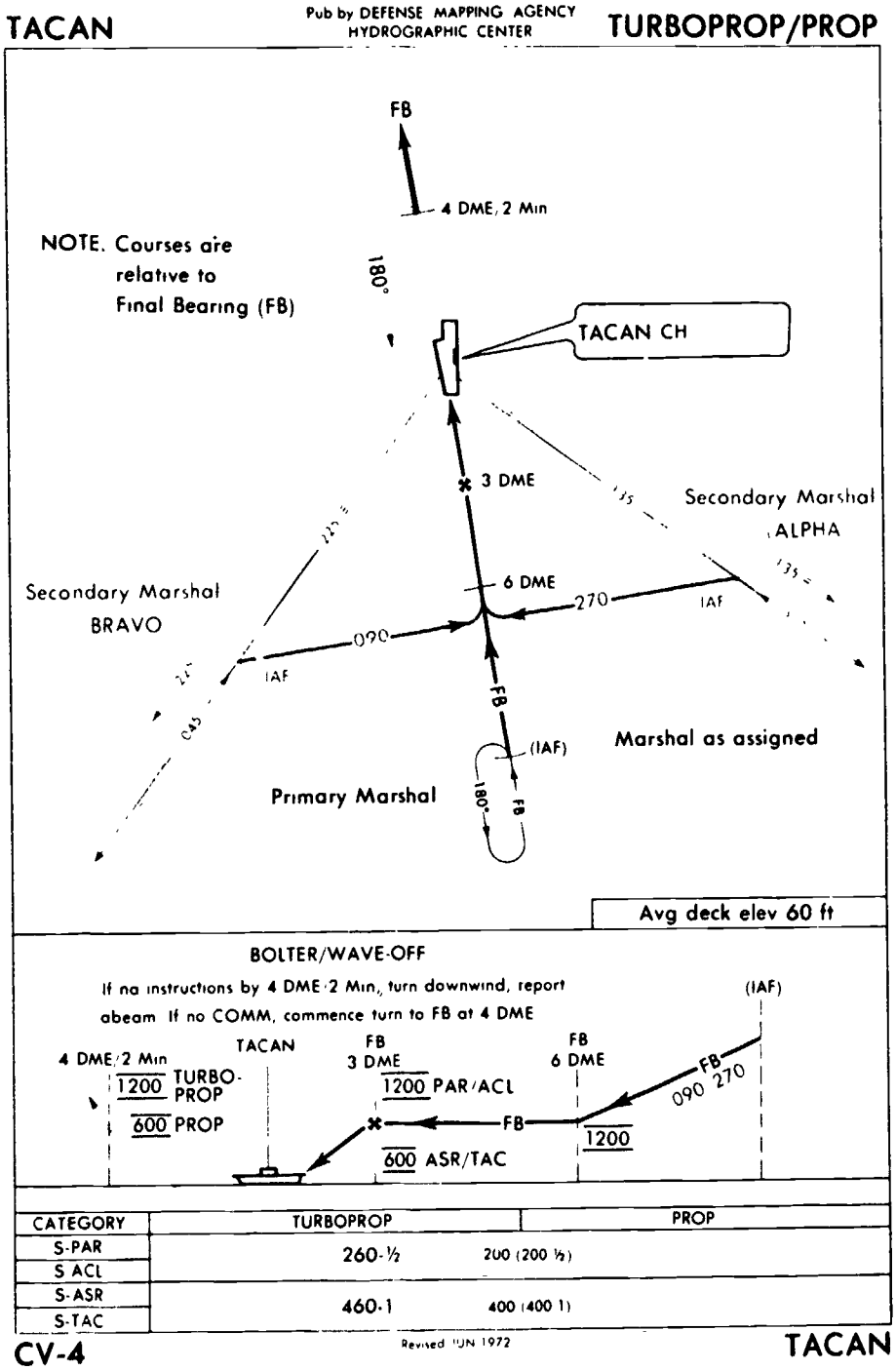
AC.233

Figure 7-3.—NDB overhead approach chart (jet and turboprop).



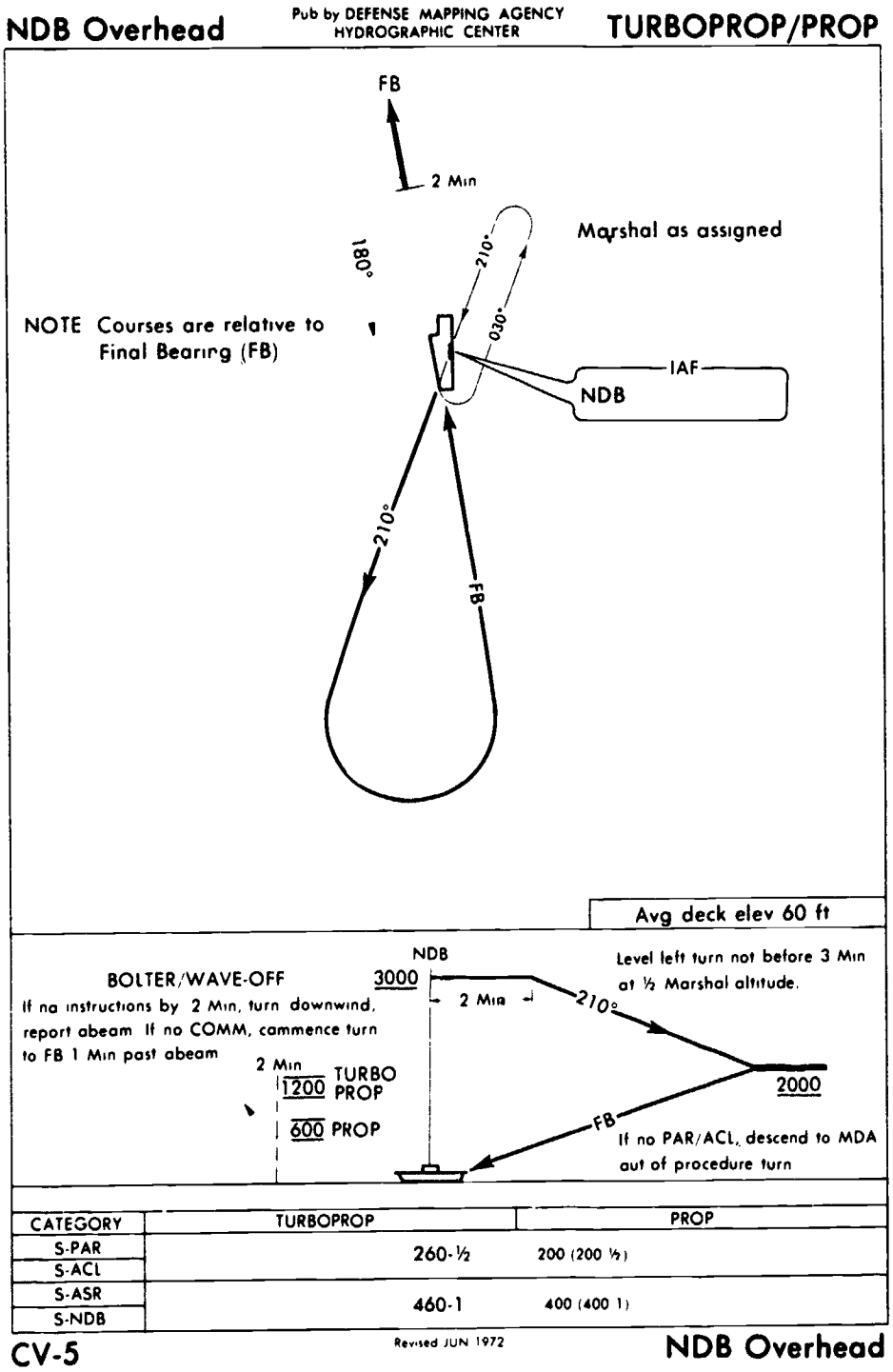
AC.234

Figure 7-4.—TACAN overhead approach chart (jet and turboprop).



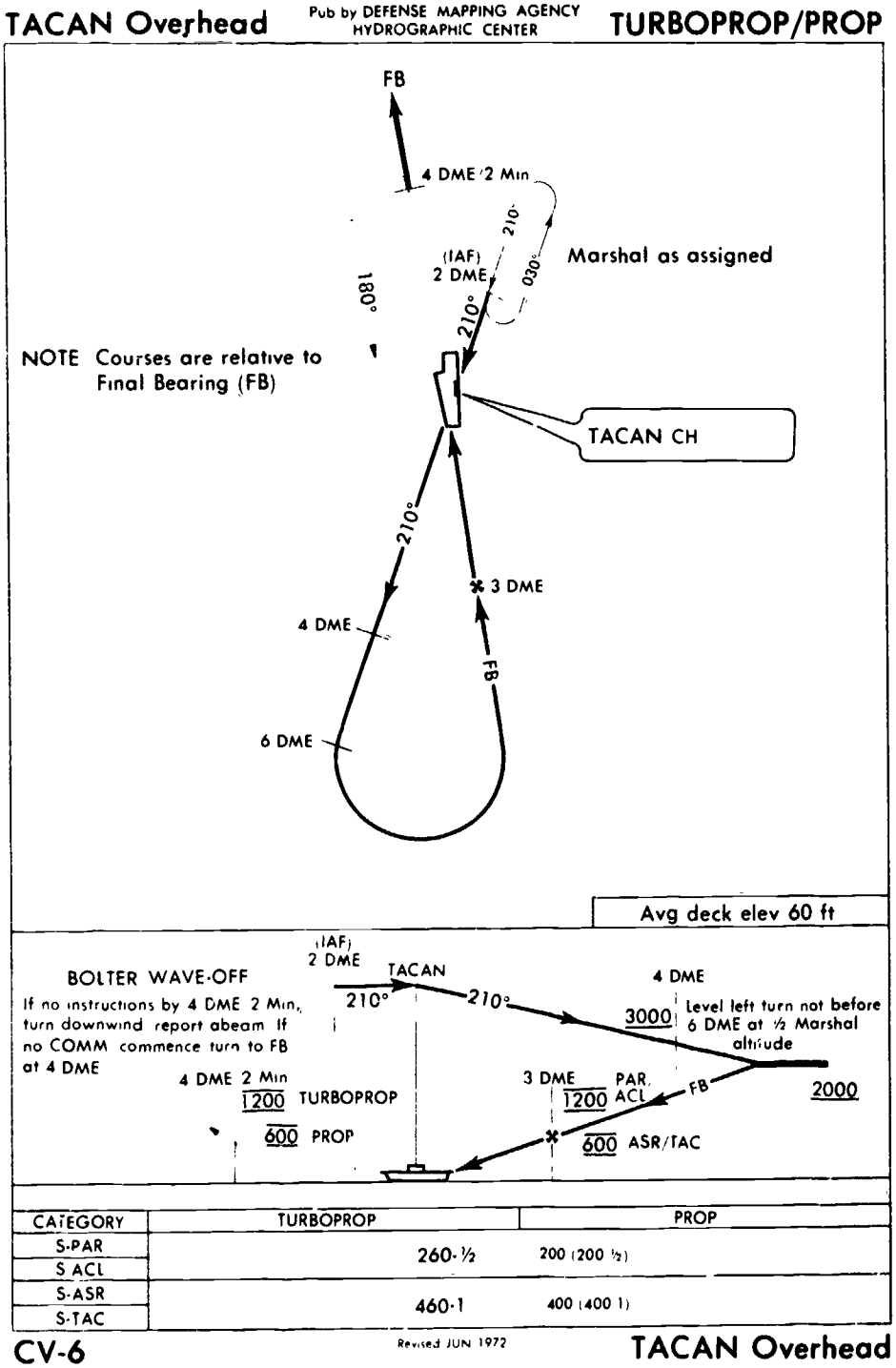
AC.235

Figure 7-5.—TACAN approach chart (prop and turboprop).



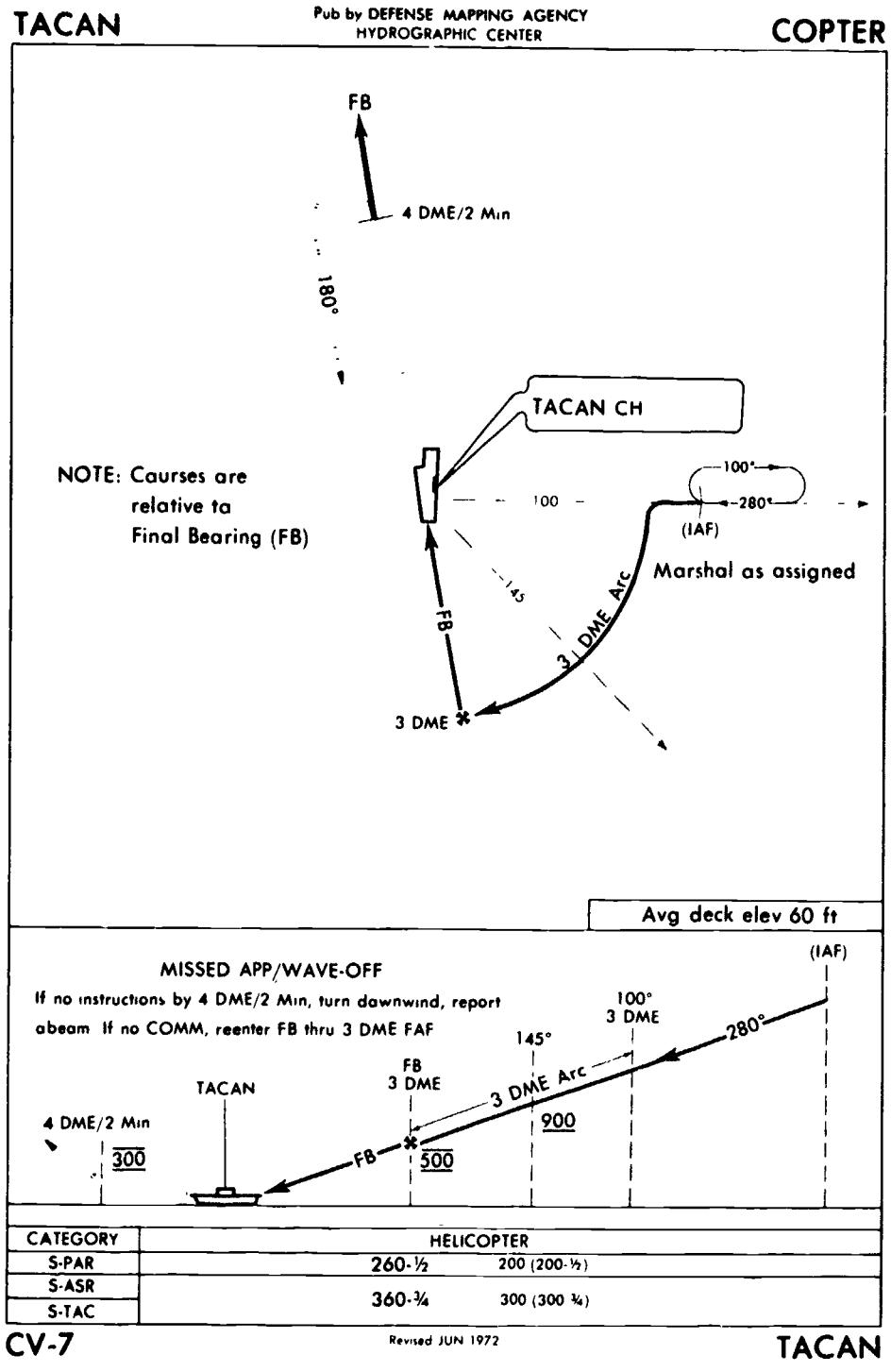
AC.236

Figure 7-6.–NDB overhead approach chart (prop and turboprop).



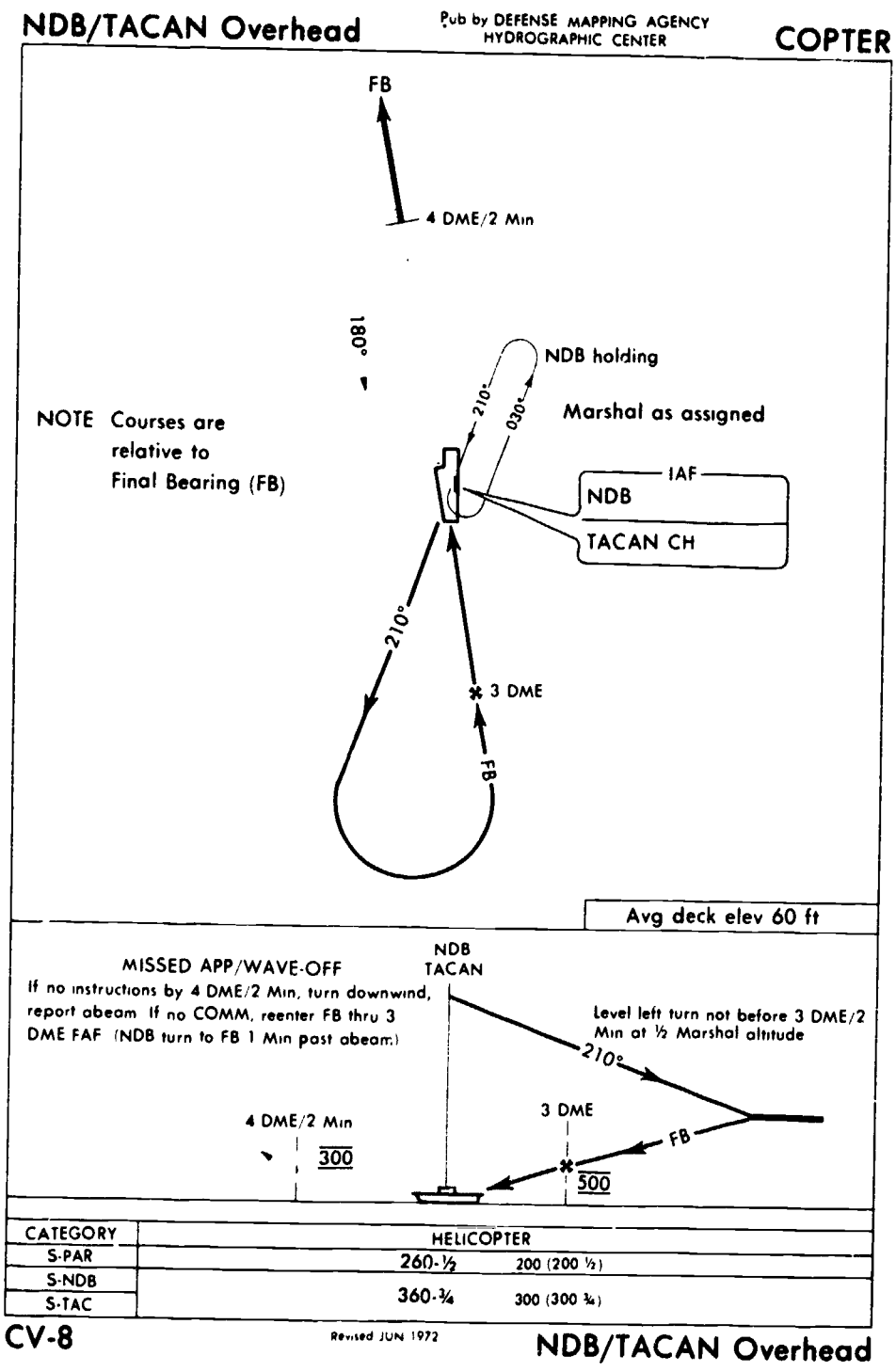
AC.237

Figure 7-7.—TACAN overhead approach chart (prop and turboprop).



AC.238

Figure 7-8.—TACAN approach chart (helicopter).



AC.239

Figure 7-9.—TACAN/NDB approach chart (helicopter).

upon which CATCC has based the recovery approach procedure. If aircraft are already in the letdown/penetration or are in the holding pattern at marshal fix when the change occurs, then a change to the final bearing is required. When this happens the pilots concerned must be informed of the situation and corrections must be made to intercept the new final bearing.

Jet or turboprop aircraft on TACAN/RADAR approaches initiate correction from the marshal radial to the final bearing at 20 miles. If the final bearing is within 10 degrees of the reciprocal of the marshal radial, a gradual correction is made. If the difference is more than 10 degrees, the pilot will make a 30-degree turn to intercept the final bearing. If the aircraft is not established on the final bearing at 12 miles, then the pilot will fly the 12-mile arc until intercepting the final bearing.

Prop and turboprop aircraft on a TACAN/RADAR approach would correct from the marshal radial to the final bearing with a 45-degree correction turn from the inbound heading in the holding pattern when departing marshal. This heading would be held until the final bearing is reached or, if the 6-mile arc is reached first, then the 6-mile arc would be flown until intercepting the final bearing.

Aircraft commencing approach from the overhead TACAN/ADF marshal experiencing a decrease in the final bearing, should fly 90 degrees of penetration turn and arc to the new FB.

When the new final bearing increases, the aircraft should fly the standard penetration turn and continue to intercept it prior to reaching the 10-mile gate.

Nonprecision Final Approach

When precision approach radar or suitable visual landing aids are not available, aircraft on final approach will continue descent to 600 feet after passing the 6-mile gate. The final controller will provide sufficient information to the pilot for him to maintain an accurate azimuth and altitude until reaching nonprecision minimums.

Precision Final Approach

Jet and turboprop aircraft pass through the 6-mile gate at 1,200 feet and 150 knots in a landing configuration. The altitude of 1,200 feet is maintained at approach speed until intercepting the glidepath (approximately 3 miles) unless otherwise directed by the final controller.

Propeller aircraft pass through the 3-mile gate at 1,200 feet in a landing configuration and maintain 1,200 feet until intercepting the glidepath at 2¾ miles or until otherwise directed by the final controller.

Helicopters pass through the 3-mile gate at 500 feet in a landing configuration and maintain 500 feet until interception of the glidepath or until otherwise directed by the final controller.

When precision radar is available, precision final approach procedures should be used for all Case III (IFR letdown and approach) recoveries. CCA will furnish glidepath and azimuth control until the aircraft on approach reaches shipboard PAR minimums or until the LSO takes control.

ACLS Final Approach

The letdown/penetration portion of an Automatic Carrier Landing System (ACLS) approach is the same as previously described to a point 4 to 6 miles from the ship on final at an altitude of 1,200 feet.

If a mode 1A approach (automatic to minimums and manual takeover to touchdown) is to be conducted, the following will transpire:

1. At 4 to 6 miles on final, the pilot should receive a landing check discrete signal to indicate positive data link communications between the aircraft and the ship.

2. The SPN42 controller should acquire the aircraft between 3.5 and 5 miles and initiate lockon.

3. When the pilot has the aircraft in the proper attitude and engages the autopilot, he will report COUPLED to the controller.

4. The pilot should report receiving command control signals via data link by reporting COMMAND CONTROL to the controller.

5. The pilot should be given a voice warning, as the aircraft approaches within 1 mile, that he is approaching minimums.

6. At one-half mile, the pilot will be informed by the controller, ONE-HALF MILE, AT MINIMUMS, UNCOUPLING NOW. The pilot resumes control of the aircraft and continues the approach.

7. If the pilot reports MEATBALL earlier than one-half mile, the controller should downgrade the approach to mode II (manual approach using the ILS type instrument (needles) in the aircraft) and transmit UNCOUPLING NOW.

If a mode II approach is to be conducted, the following should transpire:

1. At 4 to 6 miles on final, the pilot should receive the landing check discrete signal to indicate positive data link communications between the aircraft and the ship.

2. The SPN42 controller should acquire the aircraft between 3.5 and 5 miles and initiate lockon.

3. After lockon, if the instruments in the cockpit are functioning properly, the pilot will report NEEDLES and fly the approach manually by reference to the instruments.

4. The pilot should receive a warning from the controller that his aircraft is at 1 mile and approaching mode II minimums.

5. At one-half mile the pilot should be informed by the controller that his aircraft is at one-half mile and passing through mode II minimums. The pilot should acquire the MEATBALL and complete the approach.

Approach Minimums

The commanding officer establishes approach minimums for his ship which reflect significant changes in operational capabilities, such as may be occasioned by decreased/increased proficiency of the CATCC or embarked air wing/group. However, absolute minimums are established as follows:

1. PAR, Mode IA and II–200 and 1/2.
2. Nonprecision approaches:
   a. Jet–600 and 1¼.
   b. Prop/turboprop–400 and 1.
   c. Helo–300 and ¾.

When a suitable BINGO field is available, aircraft may not commence an approach when the reported weather is below the minimums as previously described unless it has been determined that the aircraft has enough fuel to proceed to the BINGO field in the event of a missed approach.

MISSED APPROACH/WAVEOFF/BOLTER

In the event of a missed approach, waveoff, or bolter, jet and turboprop aircraft climb straight ahead on the extended final bearing to a minimum of 1,200 feet and wait for instructions from the waveoff/bolter controller. Helicopters climb straight ahead on the extended final bearing to 300 feet and await instructions.

If instructions are not received prior to reaching 4 miles or 2 minutes ahead of the ship, the pilot will attempt to make contact with the ship, giving identification and position. If instructions are still not received, the pilot will assume communications failure and execute a turn downwind, reporting DOWNWIND ABEAM. If he still has no radio contact, the pilot will proceed downwind; and if in a fixed-wing aircraft, he will commence a turn to final at 4 miles DME. If in a helicopter, the pilot will reenter through the 3-mile gate.

ACLS equipped aircraft should be alert for data link displays and/or control.

In the event the deck becomes fouled or an excessive number of aircraft bolter or are waved off, the CCA officer will issue DELTA via the controllers to all aircraft. The following actions should be initiated:

1. Aircraft in holding. They should continue to hold and await assignment of a new expected approach time. Pilots should acknowledge receipt of DELTA.

2. Aircraft on approach above platform. They should level off at the next lower odd altitude and hold on the inbound bearing at a range in miles equal to 1 mile for each thousand feet of actual altitude plus 15 miles for jets 7 miles for props, and 5 miles for helicopters. The holding pattern should be the same as the original marshal holding pattern. Pilots should acknowledge receipt of DELTA, repeating distance and altitude. Pilots experiencing radio failure after receiving DELTA would depart the holding fix 6 minutes after the time of receipt of DELTA.

3. Aircraft on approach below platform. They should continue a normal approach and await specific instructions prior to dumping fuel.

4. A new expected approach time should be

assigned as soon as possible by approach control with a minimum of 6 minutes delay before continuing descent. If a pilot should experience radio failure prior to receiving a new expected approach time, he would depart the holding fix 6 minutes after receiving DELTA. He will then take a 30-degree cut to the right to intercept a track 10 degrees to the right of the inbound bearing and continue inbound to the ship.

DEPARTURE PROCEDURE

Departure procedures are based upon the assignment of TACAN radials for the purpose of providing lateral separation. The minimum standard separation of departure radials under IFR weather conditions is 20 degrees.

The assignment of departure radials is normally dependent on the following:

1. Mission of the aircraft.
2. Number of carriers in the formation.
3. Topographical features in the area.
4. Those radials reserved for emergencies, letdowns, or propeller aircraft and helicopter holding.

Direct routing should be utilized as much as possible in order to lessen delay time in the execution of departures.

CARRIER AIR TRAFFIC CONTROL

Existing weather in the ship's control area and control zone is the most prominent factor affecting the degree of control necessary. The type of control to be employed during departure and recovery operations is determined by the Air Operations Officer unless specified by higher authority. In periods of reduced ceiling and/or visibility, electronic air traffic control techniques must be utilized to provide separation and maximum safety.

CONTROL CRITERIA

The degree of control exercised by CATCC is described as close control, advisory control, or monitor control.

Close control is defined as a form of air traffic control in which the controlling agency has radar and radio contact with the aircraft being controlled. Published approach or departure procedures are complied with or specific assignments regarding heading and altitude are issued by the controller. Vertical separation is provided by requiring pilots to maintain assigned altitudes or flight levels while lateral or longitudinal separation is provided by the controller. Speed changes may be directed by the controller.

Close control is utilized when the following conditions exist:

1. Ceilings of 1,000 feet or less for fixed-wing operations or 500 feet or less for helicopters.
2. Flight visibility of 3 miles or less for fixed-wing operations or 1 mile or less for helicopters.
3. Whenever flight operations are conducted between one-half hour after sunset and one-half hour before sunrise, except as modified by the Officer in Tactical Command (OTC) or the commanding officer.
4. During mandatory letdown in thunderstorm areas.
5. In any other situation where supervisory personnel can anticipate weather phenomena that might cause difficulty to pilots.

Advisory control is a form of air traffic control in that the controlling agency maintains radio and radar contact with aircraft under its cognizance and provides traffic advisories. Traffic separation is the responsibility of the pilot making use of the assistance provided by the agency. Advisory control must be utilized when the traffic density in an operating area requires a higher degree of control for safety of flight than required under the see-and-be-seen method. Advisory control is normally limited to VFR weather conditions and is recommended for all operations in or adjacent to oceanic control areas or routes.

Monitor control is the monitoring of radar and radio channels for emergency transmissions. Monitor control must be utilized only when aircraft are operating in VFR weather conditions outside of controlled airspace and the responsibility for separation from other traffic can be safely assumed by the pilot.

SEPARATION CRITERIA

The following criteria are provided as guidance for Carrier Air Traffic Controllers in the

control of aircraft under instrument conditions. Either lateral or vertical separation will be provided. These restrictions do not apply to launch and recovery operations or tactical maneuvers.

1. Lateral separation.

a. Aircraft operating within 50 miles of the monitoring antenna at least 3 miles.

b. Aircraft operating at more than 50 miles from the monitoring antenna at least 5 miles.

2. Vertical separation.

a. Aircraft operating at altitudes up to and including FL 290 must be separated by 1,000 feet except that 500 feet may be permitted for propeller driven aircraft when required.

b. Aircraft operating at altitudes above FL 290 must be separated by 2,000 feet. Note: Carrier based aircraft must fly flight levels at and above 18,000 feet MSL unless regional air control procedures dictate otherwise.

c. Helicopters must be separated by 500 feet.

APPROACH CRITERIA

The Air Operations Officer determines the type of approach and the required degree of control considering weather in the approach area as follows:

1. Case I, visual descent/approach. This approach may be utilized when it can be anticipated that flights will not encounter instrument weather conditions at any time during the descent, break, and final approach. A ceiling of 3,000 feet and 5 miles visibility within the carrier control zone is required for CVA's to utilize Case I procedures. The pilot retains full responsibility for proper navigation and separation from other aircraft. The pilot should be advised of the expected Charlie time and changed to tower control after reporting sighting the ship.

2. Case II, controlled descent/visual approach. This procedure should be utilized during daylight hours when weather conditions are such that flights may encounter instrument conditions during the descent, but visual consitions of at least 1,000 feet ceiling and 5 miles visibility must exist at the ship. Close control must be utilized until the pilot reports the ship in sight. The maximum number of jet aircraft in the pattern is limited to 6. During Case II recoveries, CATCC must be fully manned and prepared to assume control of a Case III recovery in the event weather conditions deteriorate below Case II minimums, which are ceiling 1,000 feet and visibility 5 miles.

3. Case III, controlled descent/approach. This procedure should be utilized whenever existing weather at the ship is below Case II minimums and during all flight operations between one-half hour after sunset and one-half hour before sunrise, except as modified by the OTC or commanding officer.

ARRIVAL PROCEDURES

Case I Procedure

Essential information is issued to the flight leader and updated if necessary. When the flight leader reports the ship in sight, the center should switch the flight to tower control.

Case II Procedure

The CATCC will control the descent until VFR weather conditions are reached. Approaches/penetrations in actual instrument conditions by formation flights of more than two aircraft are not authorized. Flight leaders should squawk normal and follow reporting procedures for Case III until the flight has broken into the clear beneath the clouds and has the ship in sight. The flight leader will then be switched to tower control and proceed as in Case I.

Case III Procedure

CATCC controls the descent and approach. This type of recovery should only be made by single aircraft except in those cases where an aircraft with inoperative radio or navigational equipment is brought down on the wing of another aircraft. Formation penetrations/approaches by dissimilar aircraft should not be attempted except in extreme circumstances where no safer options are available to effect recovery. Directing a recovery in adverse weather conditions where alternate airports are not

available demands the utmost proficiency, mutual confidence, and cooperation between pilot and controller. Marshal controllers must insure that pilots under their control have all the appropriate information necessary for a successful approach prior to commencing approach. This includes the following:

1. Expected approach time.
2. Altimeter setting.
3. Final control frequency.
4. Type of approach/outbound bearing (overhead approaches only).
5. Final bearing.
6. Time check.
7. Ceiling, visibility, and deck conditions.
8. Divert field/data.

NOTE: Assigned outbound bearing must be updated during recovery to maintain a minimum of 20 degrees clockwise from the reciprocal of the final bearing.

The Marshal controller will hand off the aircraft to the approach controller as they depart the marshal fix. Unless weather or operating circumstances dictate otherwise, aircraft departing the same marshal fix are normally separated by 1 minute. Expected approach time adjustments may be made for greater separation as necessitated by varying models and numbers of aircraft, type of approach, bolter, and wave-off traffic.

Positive radar identification should be accomplished by the receiving controller prior to transfer of control. Control may be transferred only after the receiving controller has notified the transferring controller that positive radar contact exists. Approach controllers maintain control until handoff to the final controller is accomplished. Changes in radiofrequencies and IFF code must be made no lower than platform altitude except under emergency conditions.

When precision approach radar is available, precision final approach procedures are used by CATCC for Case III arrivals. In such cases, CCA furnishes glideslope and azimuth information and controls the aircraft until it reaches PAR minimums or the LSO takes over. When precision approach radar or suitable visual landing aids are not available, aircraft on final approach will continue descent to 600 feet after passing the 6-mile gate. The final controller will provide sufficient information to the pilot for him to maintain an accurate azimuth and altitude until reaching nonprecision minimums.

DEPARTURE PROCEDURE

Primary responsibility for adherence to the assigned departure rests with the pilot; however, advisory control is normally exercised with a shift to close control if weather conditions require, upon request, or when the assigned departure is not being adhered to. After launch, CATCC takes the following action:

1. Record flight data as required on status boards.
2. Insure that communications and positive track are established to the extent possible under existing EMCON conditions.
3. Request navaid checks as necessary.
4. Maintain advisory control of departing point to point flights until pilots shift to en route frequencies and of other aircraft until control is accepted by CIC or another controlling agency.
5. Before releasing aircraft to another controlling agency, CATCC should give each pilot or flight leader any pertinent information such as changes in PIM or mission.
6. When transferring control to CIC, include the range and bearing of the aircraft being transferred and insure that CIC acknowledges assumption of control.
7. File flight plans as necessary.

Aircraft are normally launched on the departure frequency which is monitored by the tower. Condition aircraft (conditions I through IV) represent various states of aircraft readiness concerning response time when ordered to launch. Condition I is the minimum possible and IV is the maximum allowable. They are determined by appropriate authority, depending upon the tactical situation as it exists initially and as it changes. CAP (combat air patrol, the ships defense) aircraft will be launched on a frequency designated by CIC and monitored by the tower.

Single-frequency departures are highly desirable and should be utilized whenever possible. Where single-frequency departures are not possible, single-piloted aircraft should not be required to change radiofrequency or IFF codes after launch until the aircraft are at least 2,500 feet

above the surface and in a climbing, wings level attitude. Single-piloted aircraft that are assigned operating altitudes below 2,500 feet should not be required to change frequencies or IFF codes until a level attitude and cruise configuration have been attained.

Position reports that pilots will be required to make to departure control will vary depending upon the weather, state of training, EMCON, and type of operation being conducted. The following reports are considered as minimum during IFR/night operations:

1. Airborne.
2. Arcing.
3. Established outbound (on assigned radial).
4. On top, with altitude.
5. Kilo (mandatory).
6. Popeye, with altitude.

NOTE: When in IFR conditions, Popeye will be a mandatory report for single aircraft upon reaching assigned departure altitude, or at FL 180 for jets and turboprops (7,000 feet for props). This report will alert the Departure Controller that further instructions are required.

The degree of control exercised by CATCC concerning departures again depends upon existing weather conditions and is described similarly to arrivals.

1. Case I departure is VFR from takeoff through rendezvous.

a. On CVA's all fixed-wing aircraft proceed directly to a point at least 7 miles from the carrier at an altitude of 300-500 feet, and remain clear of the control zone. Rendezvous will be in accordance with ship/air wing/air group doctrine.

b. On CVS's all fixed-wing aircraft proceed 1 minute on the launch course, then execute a 40-degree right turn, remaining at or below 300 feet until at least 5 miles from the carrier, then proceed to their assigned areas.

2. Case II, VFR departure from the ship with a controlled climbout required.

Visual conditions at the ship may exist down to ceiling and visibility of 1,000 feet and 5 miles. Launch must be on departure control frequency.

a. CVA's. All fixed-wing aircraft will proceed straight ahead and maintain an altitude of 300-500 feet until 5 miles from the carrier, then commence climbing to maintain VFR until outbound on assigned radial. Jet aircraft must fly a 10 mile arc; turboprops will utilize the 7 mile arc; and propeller aircraft the 5 mile arc.

(1) Jet rendezvous will be accomplished between 20 and 50 miles from the carrier. Propeller aircraft rendezvous between 10 and 50 miles. The rendezvous may be accomplished below or above cloud layers, at the flight leader's discretion, but will be on the left side of the assigned departure radial. The air wings/groups will normally prescribe their own VFR rendezvous doctrines.

(2) For jet and turboprop aircraft, the first aircraft of each flight will report Popeye to departure control passing 18,000 feet if not ON TOP. Unless operational necessity dictates otherwise, the departure controller will then direct pilots to climb and maintain the following altitudes in each sector or on the departure radial:

(a) First aircraft–FL 220.
(b) Second aircraft–FL 210.
(c) Third aircraft–FL 200.
(d) Fourth aircraft–FL 190.

(3) For propeller aircraft, the first aircraft of each flight will report to departure control passing 7,000 feet if not ON TOP. Unless operational necessity dictates otherwise, the departure controller will then direct pilots to climb and maintain the following altitudes in each sector or on the departure radial:

(a) First aircraft–10,000 feet.
(b) Second aircraft–9,000 feet.
(c) Third aircraft–8,000 feet.
(d) Fourth aircraft–7,000 feet.

If the aircraft are still "popeye" when the assigned altitude is reached, pilots will establish holding on the outbound radial between 20 and 30 miles and conserve fuel.

(4) After the aircraft previously described in (2) and (3) report that they are established in holding, departure controllers should issue clearance to proceed on the assigned mission if operationally required, or to continue holding until other returning flights have been recovered. When the returning flights have been recovered, the holding aircraft will be vectored under close control to their prebriefed marshal fix for recovery.

b. CVS's. A minimum departure interval of 30 seconds is utilized between aircraft. After

takeoff, propeller aircraft climb straight ahead to an altitude of 300 feet until 5 miles out. Then they climb at 130 KIAS on the 5-mile arc until intercepting the departure radial and continue climb to assigned altitude. When pilots report KILO, the departure controller should execute a radar handoff to the CIC tactical controller. Mission unable aircraft will enter holding at the prebriefed departure fix and await instructions. Within the control area, aircraft will maintain the assigned departure altitude while outbound to the assigned area. CVS's operating jet, turboprop, and propeller aircraft would follow the same procedure as CVA for Case II departures under these conditions.

3. Case III, IFR at the carrier and a controlled climb required.

Case III departures are compatible with Case III approaches. This departure should be utilized whenever the existing weather at the ship is below Case II departure minimums and during all night operations except as modified by the OTC or CO. Launch will be controlled on departure control frequency.

It should be noted that if conditions at scheduled launch time such as a change in BRC, air space restrictions, etc., will cause conflicts in departing traffic patterns, procedures for departing aircraft should be modified as necessary to provide adequate separation.

a. CVA's. A minimum departure interval of 30 seconds is utilized between elements (section or single aircraft) when instrument conditions exist. Jet aircraft climb straight ahead at 325 KIAS until 7 miles from the carrier. They then fly the 10-mile arc, climbing to intercept the assigned departure radial. Turboprop aircraft climb straight ahead at 165 KIAS to intercept the 7-mile arc and maintain an altitude of 1,000 feet until intercepting the assigned departure radial. Propeller aircraft climb straight ahead to 800 feet and fly the 5-mile arc maintaining 800 feet until intercepting the assigned departure radial. Jet and turboprop rendezvous will be accomplished between 20 and 50 miles. Propeller aircraft rendezvous between 20 and 50 miles. If unable to reach ON TOP, aircraft will proceed as in Case II.

b. CVS's. Propeller aircraft departures under Case III are the same as for Case II except that the aircraft will climb straight ahead to 500 feet using a minimum interval of 1 minute at departure. Jet and turboprop aircraft departures are the same as for CVA Case III.

Helicopter Departures

Case I. Helicopters should clear the control zone as directed by the tower. When departing for operations within the control zone, e.g., plane guard, they should remain under control of the tower or other designated controlling agency until clear of launching and recovering aircraft.

Case II and III. Whenever possible, helicopters should remain beneath the clouds. If unable to do so, they should proceed individually to prebriefed departure fixes. After takeoff, they should climb straight ahead to an altitude of 300 feet at 90 KIAS to intercept and fly the 3-mile arc to the assigned departure radial. The climb to departure altitude should be commenced upon reaching the departure radial.

Plane guard helicopters fly the 1-mile arc to intercept the plane guard pattern, remaining beneath the clouds. If unable to remain beneath the clouds, the plane guard helicopter should transition from the plane guard pattern to the helo marshal (fig. 7-8) under positive control of CATCC.

Helicopters proceeding to the screen should be switched to the tactical controller upon reporting KILO. If unable to perform the assigned mission, they should hold at the departure fix and await further instructions. When helicopters are assigned a search area toward the stern of the ship, they should be kept under close control by the departure controller until they clear the final approach sector and then be given to CIC via radar handoff. Helicopters should never be vectored across the bow when fixed-wing aircraft are being launched or recovered.

TANKER OPERATIONS

Tanker aircraft are assigned duties in support of the recovery of aircraft. Normally, a tanker that has just been launched will become the duty tanker for the recovery that follows immediately, provided that the tanker's store is

operational. Those tankers which are known to have a good store and sufficient fuel to meet receiver requirements display a flashing green light.

A specific existing agency, for example departure control, is designated as tanker control and will have the responsibility of monitoring the following:

1. Tanker give-away fuel.
2. Tanker location.
3. Location and fuel requirements of the low state aircraft.
4. Coordination of the tanker and receiver rendezvous.

Duty Tanker Procedures

After launch, the oncoming tanker will switch to tanker control for assignment. All tanker packages should be checked as soon as possible after launch. When it has been determined that the new tanker store is operational, tanker control should be advised immediately.

The duty tanker should maintain a left-hand pattern within 5 miles of the ship. Altitude assignment and pattern orientation will be as set forth by the ship's doctrine; however, minimum pattern altitude for daylight operations will be 1,500 feet, and 2,500 feet at night. When the last jet has been recovered, the duty tanker will climb to the pre-briefed altitude and switch to the assigned control frequency.

During IFR conditions, day and night, the duty tanker pattern will be assigned by tanker control. It will be at least 1,000 feet above the overcast or VFR between layers, but not less than 2,500 feet MSL. The tanker pilot should advise tanker control of the best position to conduct emergency tanking. Close radar control will be provided for tanker penetrations through overcasts. Tanker control will assist in positioning the tanker near a potential receiver and keep the tanker informed of the low-state aircraft's position.

RENDEZVOUS PROCEDURE.—During VFR weather conditions (day and night), the duty tanker will HAWK (closely monitor) a particular aircraft that is a potential receiver. The tanker pilot is advised which aircraft is to be HAWKED, and he should take up a 2 o'clock position relative to the low state aircraft as it bolters or waves off. The low state aircraft is directed to rendezvous with the tanker, and the tanker will be switched to the low state aircraft's frequency at the appropriate time. The tanker pilot will report to tanker control when the receiver is engaged and taking on fuel, when the refueling has been completed, and the amount of fuel transferred. The minimum altitude for rendezvous is 1,500 feet during daylight and 2,500 feet for night operations.

When IFR weather conditions exist, tanker control will coordinate the tanker and receiver rendezvous.

DUTY TANKER PATTERN.—The tanker pattern is established as a racetrack pattern around the ship in VFR weather conditions. The downwind turn should be initiated as soon as the receiver is taking on fuel. The tanker should remain within 10 miles of the ship unless special circumstances exist. The downwind leg should be 3 to 5 miles abeam and tanking should be completed prior to reaching a point 6 miles astern to allow for pattern entry. If tanking is done above an overcast the distance astern is increased to allow for normal descent and CCA pickup.

DIVERSION OF AIRCRAFT

The Air Operations Officer or the Air Officer is normally responsible for making the recommendation to the commanding officer when and which aircraft should and should not be diverted in the interest of safety of flight. The Air Operations Officer determines the condition of the navigation, communications, and lighting facilities of the divert field prior to the first night or IFR recovery.

The following factors should be considered when anticipating a diversion:

1. Aircraft fuel state.
2. Bearing and distance of field.
3. Weather at Bingo field, current and forecast.
4. Suitability of field for type of aircraft.
5. Navigational assistance available.
6. Aircraft mechanical condition.
7. Ordnance restrictions.
8. Condition of carrier deck.

9. Availability of tankers.
10. Pilot performance.

CATCC and CIC must be alerted when an aircraft is approaching diversion state and they should be prepared to take control of the aircraft as soon as it is given a divert signal. When it is determined to divert an aircraft, the pilot will be given the name of the field, the magnetic heading, and distance to the field. A readback of diverting instructions from the pilot or flight leader is mandatory. The controller must advise the pilot to check gear/hook up prior to switching frequency. When appropriate, the pilot of the diverting aircraft is instructed to shift to a particular frequency for positive control while en route to the diversionary field. When positive communications have been established, additional items of information such as latest en route and field weather, altimeter setting, and position from which the diversion is being initiated are provided to the pilot.

If operating outside an ADIZ boundary, the CIC controller will provide the pilot with the necessary ADIZ information The appropriate GCI site must be advised of the diverted aircraft's departure point, ADIZ penetration point, time of penetration, altitude, ETE, destination, and any additional information that may be pertinent to safety of flight. CIC will maintain a radar plot and radio monitor all diverting aircraft as long as possible and retain responsibility for the aircraft until positive radar handoff to GCI/ARTCC or other appropriate agency is accomplished.

Under IFR weather conditions, the pilot of a diverting aircraft must be instructed to shift to the appropriate FAA or other controlling agency frequency after the additional divert information has been issued. Once communications have been established with this controlling agency, the flight plan particulars should be furnished (by the pilot) including ADIZ penetration information for relay to a GCI site. If communications cannot be established, as is often the case, the pilot should file the flight plan information on the GCI common frequency.

The Air Operations Officer must insure that a divert flight plan is transmitted to the appropriate divert airfield, and similar information to the pertinent air defense system agency should an ADIZ penetration be involved. This is normally done on ship to shore radio circuits from the air operations office. The pilot should insure that an arrival time is filed and sent to the ship immediately upon landing. The Air Operations Officer is responsible for receipt of an arrival report on the diverted aircraft.

Squadron or Unit Commanders and the Air Operations Officer are jointly responsible for insuring that aircraft performance data pertinent to diversion of aircraft is available to and understood by personnel engaged in the control of aircraft.

CARRIER EMERGENCY PROCEDURE

From a control standpoint, carrier aircraft emergencies fall into three broad categories; i.e., communications failures, navaid failures, or other aircraft systems failures. The nature of some emergencies requires priority and/or diversionary measures. The ultimate resolution of these emergencies involves a command decision, based upon the type of emergency and weather conditions in the recovery area. It is imperative that CATCC collect every pertinent detail that might aid in the evaluation of an emergency and keep the command and other interested agencies properly informed.

Initial control responsibility for aircraft emergencies rests with the agency exercising control of the aircraft when the emergency occurs. Aircraft in a state of emergency within visual range of the ship will normally be controlled by the Air Officer. Outside the visual range of the ship, aircraft in an emergency will be controlled by either CIC or CATCC. Aircraft in an emergency situation should not be directed to change radio frequencies if satisfactory communications are established.

COMMUNICATIONS OR NAVAID FAILURE DURING AN APPROACH

Control of air traffic in the vicinity of a carrier, as well as ashore, during an emergency is based on anticipated pilot action. Therefore, the AC aboard ship must be alert for the following procedures a pilot may execute in the event an

aircraft on approach experiences navaid or communications failure:

1. Aircraft alone.

a. If navigational equipment is available, lone aircraft will continue approach.

b. If all communications and navigational equipment is lost, the pilot will proceed as follows:

(1) The pilot may elect to continue the approach by dead reckoning. Having made this decision, he will continue DR until 2 minutes past his expected ramp time, and climb on the final bearing to VFR conditions, then fly the appropriate triangular pattern for lost communications, squawk emergency, and conserve fuel. If below the overcast, the pilot may elect to fly a search pattern to locate the ship.

(2) If the pilot elects to discontinue the approach, he will climb on final bearing heading to VFR conditions and expeditiously join up on the tanker or other available aircraft. If unable to join on another aircraft the pilot will fly two left-hand triangles, conserving fuel. Depending upon weather at the divert field and fuel state, the pilot may elect to proceed directly to the divert field after having climbed out on the final bearing heading.

(3) Helicopters may continue descent to 300 feet, proceed by DR until 2 minutes past individual expected ramp time, and then fly the appropriate triangular patterns for lost communications, squawk emergency, and conserve fuel.

ACLS equipped aircraft should be alert for data link displays and/or control. CCA final controllers will transmit Mode I information to suitably equipped aircraft approximately 10 seconds after establishing lockon, provided the aircraft has not passed glidepath interception point. Mode II information will be transmitted to suitably equipped aircraft that have passed glidepath interception point.

Aircraft equipped with an operating ARA-63 should conform to the NATOPS Lost Communications procedures utilizing the ARA-63 and TACAN during the recovery phase to intercept the final approach course and glideslope. Under conditions of intermittent or erroneous TACAN azimuth information, a 12 NM arc should be flown at 3,000 feet altitude. Final bearing will be indicated by the centering of the azimuth needle. When approach to the final bearing is indicated, an immediate turn and landing transition should be completed in the expected direction of the final approach course determined during the arc. Azimuth tracking on the inbound ARA-63 radial to the glideslope (approx 8 NM) and constant glideslope to meatball acquisition can be flown.

Extreme care must be exercised by controllers and pilots using the above procedure. The controller must insure positive aircraft identification prior to lockon. The pilot should cross check his approach with other available instruments (DME, altimeter, etc.).

2. Aircraft in company. An aircraft with navigation and/or communications failure in the company of an escort aircraft with navigation and communication equipment in working order will be handled as a single aircraft in the recovery procedure. The escort aircraft as flight leader will visually communicate with the distressed aircraft.

The distressed aircraft will assume a position on the starboard wing of the lead aircraft. Transition to landing configuration should be made clear of clouds, either above or below the overcast as desired. The pilot should advise the controller when this transition will take place.

When the lead aircraft has the Optical Landing System (OLS) in sight, he will visually communicate a lead change and break off to the left.

The distressed aircraft will continue a visual approach to landing. The escort aircraft will parallel the final bearing course and maintain a position so as to be easily acquired and be rejoined by the distressed aircraft in the event of a bolter or waveoff. Unless otherwise directed, the escort aircraft will repeat the above procedures until the distressed aircraft is recovered, and then continue normal procedures for his own recovery.

LOST COMMUNICATIONS DURING AN INSTRUMENT DEPARTURE

If communications are lost during an instrument departure, the pilot should squawk modes I and III (7600). If under VFR conditions when communications are lost, the pilot should remain VFR and return to the ship.

In the event that TACAN DME is lost as well as communications, and UHF ADF or TACAN azimuth is operable the pilot should follow the following procedure

Continue with prebriefed departure, utilize DR procedures to maintain the appropriate arc until reaching assigned departure radial. Proceed to approximately 50 miles (props/helo 30 miles), reverse course, proceed inbound and enter overhead holding in accordance with the ADF Approach Chart using the prebriefed expected final bearing for proper holding orientation. Conserve, monitor auxiliary receiver, and be alert for join-up. If not joined by an escort aircraft, commence an ADF approach at EEAT. Use prebriefed expected final bearing to determine outbound and inbound tracks.

CVA Procedures

Jet and turboprop continue climb out on assigned departure radial to the assigned emergency altitude, unless a different altitude assignment from CATCC has been acknowledged, or until reaching 50 miles (props 30 miles). Commence nonstandard left hand holding between 40-50 miles (props 25-30 miles); climbing or descending to emergency altitude if necessary. After 30 minutes, proceed inbound to the distance prescribed for emergency marshal and arc in the shortest direction to emergency marshal. Continue holding to commence approach at assigned EEAT.

CVS Procedures

Continue climbout to assigned emergency altitude and distance on the assigned departure radial, unless a different altitude assignment by CATCC has been acknowledged, and enter holding for a prebriefed time based on launch cycle. Then proceed to emergency marshal by climbing or descending in holding to emergency marshal altitude and arc in the shortest direction to emergency marshal radial. Commence approach at assigned EEAT.

EMERGENCY FOLLOWING NIGHT/IFR LAUNCH

Should an aircraft have an emergency following a night/IFR departure and require an immediate landing, the departure controller should provide vectors until the final controller has acquired the aircraft on radar Every effort should be made to retain the aircraft on the departure frequency until it is safely aboard. Pri-Fly and the LSO must be advised immediately of the emergency and the control frequency.

When feasible, aircraft with emergencies which do not require immediate recovery should continue the departure until cleared into the marshal pattern.

BASIC PROCEDURES

Controllers must be familiar with and alert for conditions and pilot actions which indicate communication or navigation failures. Basic control procedures which may be performed, depending upon the situation, include the following:

1. Attempt to establish communications with and control of the aircraft.
2. Vector the aircraft as appropriate.
3. If unable to communicate with the aircraft in difficulty, attempt the following:
   a. Identify it on radar and maintain a track.
   b. Vector available aircraft to join up if practicable.
   c. Alert the CATCC watch officer and Pri-Fly.
   d. Broadcast instructions and essential information in the blind.

SAFETY

The following section concerning safety is included in this chapter as this subject should be uppermost in the thoughts of all hands due to the close association that controllers have with the vast amounts of electrical and electronic

equipment located within the CCA control room.

Safety is definitely one of the most important areas of responsibility with which supervisors must concern themselves. Recognizing the potentially hazardous conditions associated with electrical and electronic equipment, knowing how to prevent such conditions or what to do if confronted with them, and imparting this awareness to personnel for whom responsible, are major responsibilities of all senior AC's.

The safety program may necessarily be a general one; i.e., it must extend to every facet of an operation and apply equally at all levels. Safety is everyone's responsibility. Unsafe conditions must be reported to appropriate authority, other personnel must be warned when endangered, any injury or evidence of impaired health must be reported, and in the event of an emergency or some hazardous condition, reasonable caution must be exercised appropriate to the situation.

One approach to the safety program may be to insure that personnel are aware of the hazards that exist and the precautions that must be taken or observed. For example: indoctrinate them that a 60-hertz alternating current passed through a man's body from hand to hand or from hand to foot, with gradually increasing current, causes a perceptible shock at one milliampere, voluntary control of muscles becomes impossible at 10 milliamperes, and one second or more at 100 milliamperes or over generally proves fatal. The following precautions should be observed:

1. Lock and tag switches open before anyone works on a circuit.
2. Never bridge a fuse.
3. Consider all circuits alive until proven otherwise.
4. When someone is working on high-voltage equipment, make sure that another person is present that is capable of rendering assistance or first aid in an emergency.
5. Do not energize equipment if there is evidence of water leakage.
6. Make certain that all ground connections to electrical equipment are inspected and cleaned periodically and that they are not painted or greased.
7. If use of CO_2 is necessary to extinguish an electrical fire, consider the danger of suffocation from prolonged exposure in confined spaces.
8. Rope off and place danger signs in hazardous areas.

Indoctrinate personnel that electromagnetic radiation, depending upon the intensity, can produce harmful biological effects in humans, cause spark ignition of volatile combustibles, or actuate electroexplosive devices contained in aircraft ordnance systems. The following precautions should be observed:

1. Minimize the hazard by increasing the distance between the energy source and the item to be protected or by reducing the power output of the radiation at its source.
2. Park aircraft employing high-power radar so that the beam is directed away from working areas, fueling operations, and ordnance loading.
3. Post warning signs at the limits of hazardous areas subject to entry by personnel.

Indoctrinate personnel that all solvents will dissolve the natural skin oils and may cause skin irritation or burns and they are toxic causing an inhalation hazard to exist. The following precautions should be observed:

1. Avoid prolonged or frequently repeated contact with skin.
2. Wear rubber gloves when using solvents.
3. Work in a well-ventilated area or wear a protective mask.

Indoctrinate personnel that carbon monoxide, a normal byproduct of all combustion engines, is a colorless, odorless, and tasteless gas which is extremely hazardous. When inhaled by an individual, it inactivates and absorbs the blood hemoglobin, which in a very short time causes unconsciousness and possibly death. Never allow anyone to work on or around a combustion type engine such as power units of emergency generator systems without adequate ventilation.

The safety program may not lend itself to any well-defined system which should be followed and practiced in all situations but it must be brought to everyone's attention frequently as a reminder. Any infraction of accepted safe procedure should be corrected and dealt with accordingly.

CHAPTER 8
ADMINISTRATION

There are many definitions of administration. Each one is probably perfectly valid and incorporates the concept of getting things done through planning, supervision, direction, and coordination of human activity. Using this concept as a basis, administration may be thought of as a means by which the ATC/OC division accomplishes its mission.

The basic objective of administration is very broad; namely, effective management. Its major operational objectives include the following:

1. To obtain the best qualified people for the work to be done and to insure that the best use is made of their capacities in the organization.
2. To establish policies and working conditions that will develop and maintain the best work interest, satisfaction, and performance.
3. To assure value for value in expenditure of funds and quality of performance commensurate with cost.

It is immediately apparent that administration is not a specialized field, but is a responsibility and function of every supervisor.

When a supervisor is given a task, he first should determine the objectives of the task. He should then organize his personnel and material by assigning and coordinating such specific duties and functions as are necessary to reach the objective. Finally he should administer the organization by providing leadership, direction, coordination, and control to guide the organization toward the accomplishment of the objective. This would indicate, then, that organization is the machinery of administration.

ORGANIZATION

Organization is the means by which management plans, directs, coordinates, and controls operations and activities. It is the division of work into logical groupings of functions and the establishment of channels of authority, communications, and control between the personnel assigned to the various functional groupings.

Our fast moving world with its scientific and technological advances and the role of our nation in international affairs have thrust upon the United States tremendous responsibilities and challenges. The organization of the Department of Defense is the method by which the efforts of military and civilian personnel are systematically coordinated to shoulder the responsibilities and meet these challenges.

Senior AC's deal not only with other divisions and departments within their own activity, but also with various commands and offices of the Department of the Navy.

For a review of the organization of the DOD and Department of the Navy down through the operating forces level, refer to Military Requirements for Petty Officer 1 & C, NAVTRA 10057 (Series).

ACTIVITY ORGANIZATION

The Chief of Naval Operations is responsible for the organization of shore activities under his command. He exercises this responsibility, in part, by providing organizational standards and guides.

OPNAV Instruction 5451.55 (Series) establishes policy, procedure, standards and terminology for aeronautical shore activities in the command line of the Chief of Naval Operations.

The formal organization structure of an activity is determined by the functions to be performed, the personnel available to perform them, available material resources, and the management policies and philosophies of the management command and higher levels of authority.

Each activity will maintain an organization manual, in current status, in accordance with the standard organization guide. This manual can be a valuable tool to senior AC's in determining lines of authority and responsibility, and for assistance in indoctrinating new personnel.

The top level of organization is the activity commanding officer, variously titled Commander, Commanding Officer, Officer in Charge, etc. The following nomenclature in descending order are the components of naval air station organization at the lower levels:

1. Department.
2. Division.
3. Branch.
4. Section.
5. Unit.
6. Subunit.

AC's are normally assigned to the Air Operations Department of a naval air station. Figure 8-1 is a structural chart of an Air Operations Department.

A listing of the duties and services provided by the Operations Department and the various divisions that normally comprise it are listed to acquaint the AC with the relationship of all divisions.

THE AIR OPERATIONS DEPARTMENT

This department operates the airfield and provides services to support operations of the activity, tenant and transiting aircraft; provides fire fighting functions - both structural and fire and rescue; provides air traffic control; operates air terminal, schedules administrative and proficiency flights; repairs and maintains station ground electronic equipment; stores, maintains, and issues assigned ordnance and munitions; operates firing ranges (if separate Weapons Department is not established); performs organizational maintenance on assigned aircraft and line-servicing functions for transiting aircraft; provides organizational (prepositional) maintenance support equipment and organizational maintenance facilities for supported activities where a separate Aircraft Maintenance Department is not established.

Administrative Division

This division provides administrative services to the department, including: Receipt and distribution of mail, procurement of office supplies and equipment; preparation of administrative and financial reports; civilian and enlisted personnel actions, provides typing and stenographic services; maintains departmental files and financial records; performs required administrative tasks related to technical training of department personnel.

Air Traffic Control Division

This division operates the surveillance and precision radar systems; operates the control tower and issues flight clearances; controls all phases of military flight operations within the vicinity of the activity; coordinates air traffic control matters.

Flight Support Division

This division operates air terminal facilities; schedules administrative and proficiency flights; operates radar bomb-scoring equipment; operates and maintains service craft; aerial target and gunnery ranges, and aircraft arresting gear; performs search and rescue services.

Ground Electronics Maintenance Division

This division inspects, repairs, and maintains ground elements of communications equipment, navigational aids, ground electronics, mobile communications, radar, and meteorological equipment.

Operations Maintenance Division

This division performs organizational maintenance for assigned aircraft and aircraft support equipment; performs line servicing functions for transient aircraft; provides nonorganizational (prepositioned) maintenance equipment and organization maintenance facilities for tenant activities when separate Aircraft Maintenance Department (AMD) is not established.

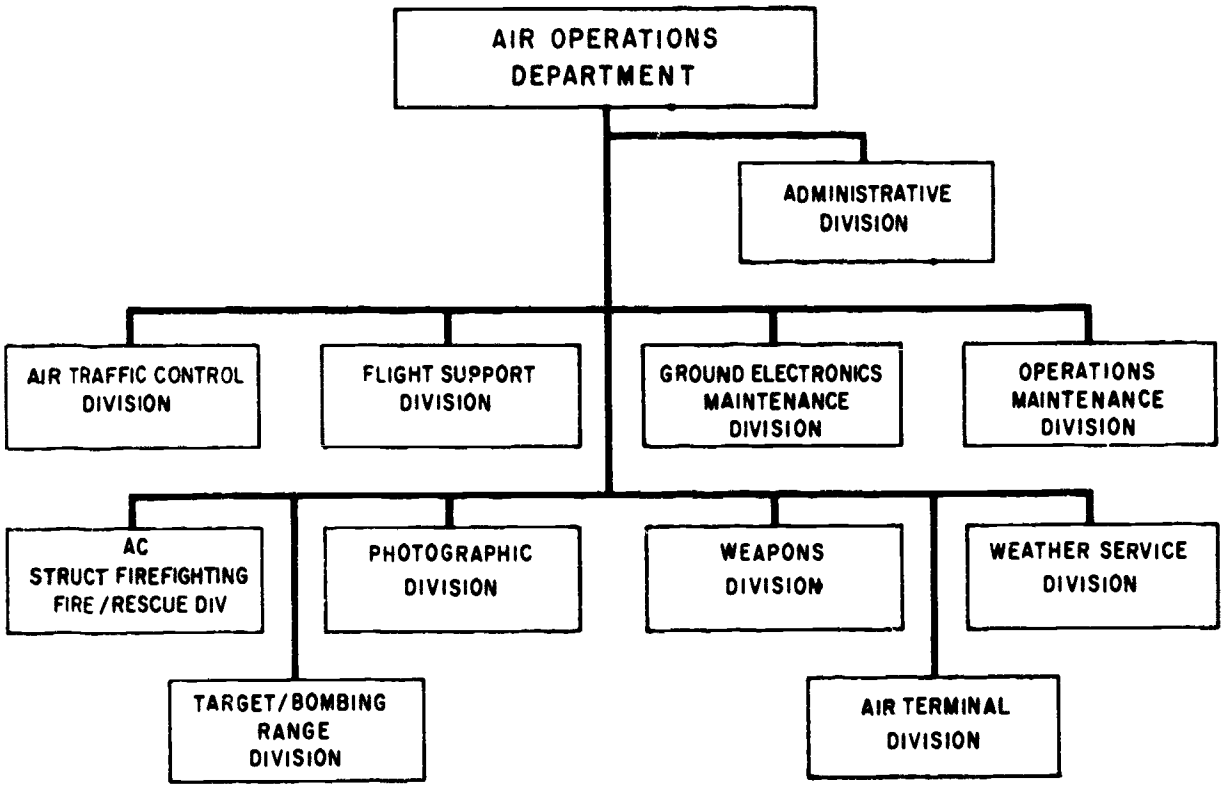


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Figure 8-1.—Structural chart of an Air Operations Department.

Photographic Division

This division provides photographic services, including aerial, ground, still/or motion picture photography; operates the photographic laboratory; performs special photographic services in connection with air crashes, fires, investigations, and technical or service information. This function may be deleted when a Fleet Photo Lab is available.

Weapons Division

This division initiates procurement of and receives stores; maintains and issues authorized ordnance, ammunition and explosives; operates small arms firing ranges. A separate Weapons Department is prescribed at aeronautical activities where weapons functions meet the criteria set forth in OPNAV Instruction 5451.55 (Series).

Weather Services Division

This division collects, plots, analyzes, and disseminates weather data and provides local weather information and forecasts. Naval Weather Service Environmental Detachments are located at Naval Air Stations and other activities to provide specific local support service. They

are organized under Officers-in-Charge who report to designated FLEWEACEN/ FLEWEAFAC, and are composed of trained meteorological personnel.

Aircraft/Structural Fire Fighting/ Fire and Rescue Division

This division provides fire protection for the activity, including structural fire fighting and aircraft fire fighting, and rescue services; investigates causes of fires; conducts programs of fire prevention and fire safety; operates and maintains the arresting gear when it is not feasible to assign this function to the Flight Support Division.

Target/Bombing Range Division

This division supervises, maintains, and operates all aerial targets and bombing ranges within the Activity Weapons Training complex; coordinates the use and assignment of the various ranges among Fleet units; prepares and disseminates target/range operational data.

Air Terminal Division

This division provides air traffic services required for Military Airlift Command, logistic aircraft, and Commercial Airlines, including mail, passenger and cargo onload/offload; manifesting documentation and load planning; schedule coordination.

Optional Functions

At aeronautical shore activities, structural and aircraft fire fighting and rescue functions will be assigned to the Air Operations Department.

An Air Terminal Division and/or Aerial Target and Range Division may be established whenever these functions are a primary task of the activity.

An Operations Maintenance Division under the Air Operations Department should be established to perform organizational maintenance on all assigned aircraft and line servicing functions for transiting aircraft. A separate Aircraft Maintenance Department may be established when an activity is authorized to perform intermediate aircraft maintenance. When an activity performs only limited organizational maintenance (i.e., line servicing), an Operations Maintenance Branch may be established under the Flight Support Division, in lieu of a separate division.

A separate Weapons Department is prescribed at aeronautical activities where weapons functions meet the criteria set forth in OPNAV Instruction 5451.55 (Series).

Figure 8-2 is an example of an OC division organizational chart aboard ship. Although shipboard organization is not described in the Organization Guide, this chart indicates the chain of command applicable to AC's aboard ship at the division level.

Every individual appointed as head of a component of organization (department, division, branch, section, etc.) is inherently responsible for the effective and efficient performance of that portion of the activity's work assigned to his component. He is also responsible for compliance with applicable directives from higher authority; leadership, training, safety, and supervision of subordinate personnel; and proper use, care, and custody of equipment, facilities, and materials provided.

ATC DIVISION FUNCTIONS AND RESPONSIBILITIES

The ATC facility is composed of the personnel and equipment used to provide air traffic control services at a naval aviation shore facility.

The ATC facility includes the personnel and equipment associated with the operation of the following: control tower, approach control, radar, flight planning/approval, navigation aids, lighting, and other visual aids to landing.

The officer and enlisted billet structure of the ATC facility is determined by CNO. Billet titles will depend on the ATC facility size, functional responsibilities, and configuration.

BILLET DESCRIPTIONS

The following billet descriptions pertain to the administration and operation of the ATC facility.

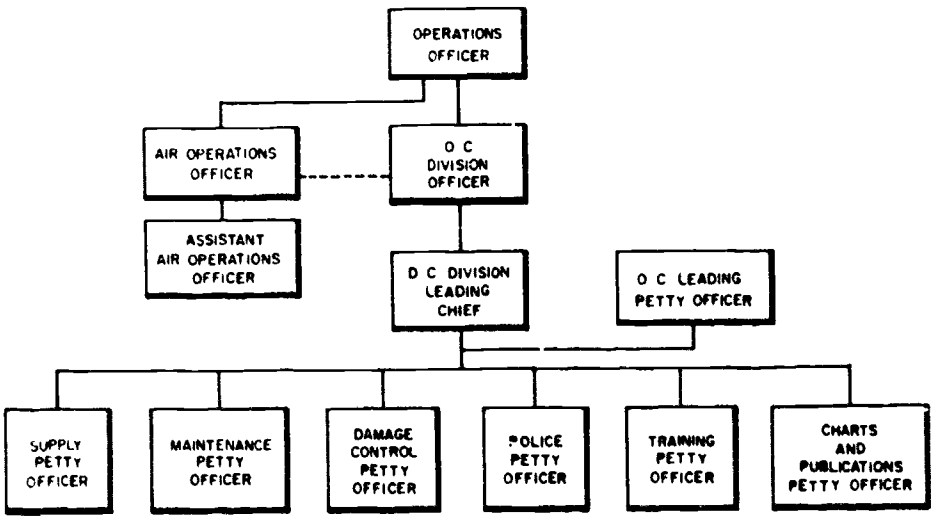

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Figure 8-2.—OC division organization.

ATC Facility Officer

The ATC facility officer is assigned by the Chief of Naval Personnel to the air operations department as the ATC division officer. He must be a graduate of the formal Air Traffic Control Officer (ATCO) or GCA controllers' course and possess a minimum qualification of basic FAA certification (AC Form 8060-37, Airman written examination report). His responsibilities include the following:

1. Administration and operation of the ATC facility.
2. Insuring the proper coordination and control of the movement of all air traffic within the ATC facility area of control.
3. Liaison with NAVREPS FAA representatives, local base officials, and representatives of other agencies, commands or services on air traffic control and airspace matters.
4. Establishment of standard operating procedures for the activity in accordance with applicable military directives and FAA rules and regulations pertaining to air traffic control.
5. Represent the commanding officer in the investigation of accidents and infractions of regulations with which the ATC facility is concerned.
6. Determine the operational acceptability of all ATC electronic and communication equipment and coordinate through the ground electronics maintenance officer the maintenance support necessary to assure continuous operation.
7. Insure training, supervision and assignment of all ATC personnel including ATC facility duty officers.
8. Determine the qualification of all ATC personnel and recommend qualification/certification to the commanding officer/FAA as appropriate.

Assistant ATC Facility Officer

The assistant ATC facility officer will be assigned to the station air operations department as part of the ATC division to assist the ATC facility officer in the coordination and control of the movement of all air traffic. He is the next senior officer of the ATC facility who is a graduate of the ATCO or GCA controllers' course, and as a minimum qualification must have a basic FAA certification. This normally will be a concurrent assignment to one of the branch officers. His responsibilities include the following:

1. Training and supervision of ATC personnel to insure standardization of ATC operations.
2. Supervision of all administrative matters pertaining to the ATC facility.
3. Act as the ATC facility officer in his absence.

ATC Facility Duty Officer

An ATC facility duty officer must be available at all times the facility is in operation. He must be a graduate of the ATCO or GCA controller's course, possess the minimum qualification of basic FAA certification, and will be designated as qualified by the commanding officer based on the recommendation of the ATC facility officer. The ATC facility duty officer must be on duty at the facility whenever operations are being conducted during instrument conditions prescribed for that facility. If not directly monitoring instrument operations, he must be available to all operating positions through a direct inter-communication system. The duty officer must be available to man the ATC facility within 15 minutes after being alerted of pending operations under instrument conditions. His duties while on watch include:

1. Responsibility for the overall operation of the ATC facility.
2. Active supervision of personnel on watch, including military and administrative matters.
3. Keeping cognizant parties informed of all emergencies and unusual situations concerning the control of aircraft.
4. Consulting with the operations duty officer to provide technical assistance in flight clearance and ATC procedures.

Flight Planning/Approval Branch Officer

The flight planning/approval branch officer will assist the ATC facility officer in all matters pertaining to flight planning and approval. His responsibilities include the following:

1. Training and supervision of assigned personnel.
2. Procurement and maintenance of required publications, charts and supplies.
3. Maintenance of flight planning facilities.

Flight Planning/Approval Supervisor

The flight planning/approval supervisor is responsible to the ATC facility duty officer for supervising the performance of personnel standing duty in the flight planning/approval branch of the air traffic control facility. His responsibilities include the following:

1. Assisting the operations duty officer in carrying out flight plan approval functions and providing technical knowledge when required.
2. Supervising the posting and dissemination of NOTAMs.
3. Insuring that adequate aeronautical charts, publications and flight planning materials are available to aircrews.
4. Assisting air crews in the planning and proper filing of flight plans.
5. Supervision of the processing and transmitting of flight plans.

Base Operations Dispatcher

Duties of the base operations dispatcher include:

1. Receiving, processing, posting and transmitting of flight plans.
2. Coordination with other air traffic control agencies and flight service stations regarding flight plans and air traffic control clearances.
3. Assisting the operations duty officer regarding the handling of incoming and outgoing communications, aircraft flight guard and initiating overdue actions.

Control Tower Branch Officer

The control tower branch officer must be a graduate of the ATCO or GCA controllers' course and possess a minimum qualification of basic FAA certification. His responsibilities include the following:

1. Assisting the ATC facility officer in all matters pertaining to operation of the control tower.
2. Coordinating and controlling of the movement of air traffic in the airport traffic area and on the airport.
3. Training, proficiency and supervision of control tower personnel.

4. Accepting of control tower and communications equipment for operational use.
5. Recommending qualified tower personnel for certification.

Local Controller

The duties of the local controller are:
1. Maintaining continual surveillance of the control zone, airport traffic area and movement area.
2. Formulating and issuing clearances and control instructions to provide separation between aircraft and between aircraft and vehicles operating under the jurisdiction of the tower.
3. Effecting coordination with appropriate positions of operation and other facilities.
4. Providing flight assistance service to aircraft.
5. Operating airport lighting systems and visual aids to landing.
6. Notifying cognizant SAR agencies and crash equipment operators of aircraft in distress.

Ground Controller

The duties of ground controller are:
1. Exercising general surveillance of the airport movement area.
2. Formulating and issuing ground movement clearances to aircraft and vehicles operating on the airport.
3. Transmitting current weather and field conditions to departing aircraft as required by FAA Handbook 7110.8.
4. Operating direction finding (DF) equipment when assigned.
5. Obtaining, issuing, posting and/or relaying air traffic control clearances or advisories when required.
6. Operating the clearance delivery position when required.

Flight Data Position

The duties of the controller operating the flight data position are:
1. Performing landline functions.
2. Posting and relaying aircraft movement information.
3. Operating navigational aid monitors.
4. Maintaining logs and records.
5. Operating alarm systems.
6. Coordinating aircraft movement information with associated facilities and agencies.

Coordinator

The duties of the coordinator are:
1. Coordinating with the terminal radar facility on arrival sequencing and departure release.
2. Coordinating and directing the activities of designated positions of operation.

Radar Branch Officer

The radar branch officer must be a graduate of the ATCO or GCA controller's course and possess a minimum qualification of basic FAA certification. His responsibilities include the following:
1. Assisting the ATC facility officer in all matters pertaining to radar air traffic control.
2. Training, proficiency and supervision of ATC personnel engaged in radar control of air traffic to ensure standardization and safety of ATC operations.
3. Coordinating and controlling of air traffic under radar control.
4. Accepting of radar and communications equipment for operational use.
5. Recommending qualified radar control personnel for certification.

Watch Supervisor

Each ATC Facility will have a watch supervisor on duty at the facility at all times the facility is in operation. He will normally be the senior enlisted (or civilian, where appropriate) air traffic controller on duty. He shall be qualified in all positions of the facility and be specifically designated by the commanding officer. His duties while on watch include the following:
1. Responsibility for the overall efficiency of the air traffic control services provided by the facility.
2. Directly monitor or operate the position involved with the most critical or complex air traffic control situation.

3. Supervision of all in-rate and OJT of assigned personnel.

4. Provide technical assistance to the ATC Facility Duty Officer upon request

Approach Controller

The Approach Controller shall possess a Facility Rating. His general duties, in addition to such supplementary duties as may be assigned, are as follows:

1. Coordinate and control the movement of all instrument traffic within the ATC Facility area of responsibility.

2. Issue air traffic control clearances and advisory information to aircraft under approach control jurisdiction.

3. When radar approach control is utilized, maintain radar surveillance of assigned area and provide radar assistance to air traffic as required.

4. Determine the interval to be used between successive approaches, taking into consideration all aspects of the air traffic control situation, including weather, runway in use, reliability of navaids and other approach aids, reliability and adequacy of communications, types of aircraft under control, runway acceptance rate, and any other factors which may affect operations.

5. Provide assistance and priority of services to aircraft in emergency situations.

6. Utilize any or all other operating positions necessary to assist in the control of air traffic.

Assistant Approach Controller

In order to provide the maximum flexibility of operations, the ATC Facility Officer is authorized to modify the duties of this position as the local situations dictate. His general duties are as follows:

1. Assist the Approach Controller in the control and coordination of instrument air traffic within the ATC facility area of responsibility.

2. Collect and post flight data for the Approach Controller.

3. Assist the other positions of operation in the facility as required.

Surveillance Controller

Where required, this position may be divided into arrival controller and departure controller positions. His general duties are as follows:

1. Accept control of aircraft from the approach control and assume responsibility for the proper identification, control, and separation of the aircraft until they have reached surveillance minimums or control responsibilities are transferred to the final controller or another facility as applicable.

2. Provide radar vectors to arriving and departing aircraft to insure safe and expeditious movement of air traffic.

3. When required: monitor instrument approaches made on other facility navaids and advise pilots of deviation from normal approach paths.

4. Provide radar assistance to aircraft in emergency situations.

Final Controller

His general duties are as follows:

1. Provide range, azimuth, and elevation data to assist the pilot in low visibility approach to the instrument runway in use.

2. When required, monitor approaches made on other facility navaids to runways served with precision radar and advise pilots of any deviation from normal approach paths.

NOTE: Personnel performing controller functions, except for controllers in training, must be facility rated and/or qualified for the assigned position of operation and function.

In addition, radar controllers (including radar approach control) must be graduates of the GCA Controller's Course.

Flight Data Position

The duties of the controller operating the flight data position are as follows:

1. Receiving and relaying aircraft movement information through various communications media.

2. Preparing flight progress strips and transferring these strips to the proper position of operation.

Coordinator

The duties of coordinator are as follows:

1. Coordinating and regulating the flow of traffic between operating positions of the facility.

2. Coordinating with the control tower on arrival sequencing and departure release.

3. Coordinating and directing the activities of designated positions of operation in radar approach control.

THE NAVY DIRECTIVES SYSTEM

The Navy Directives System, which provides a uniform plan for issuing and maintaining directives, was placed in effect 1 July 1952. The basic system has been retained since that date; however, improved procedures to increase its usefulness have been incorporated.

When directed by the Chief of Naval Operations or the Chief of the cognizant bureau or systems command, commands in the operating forces and activities in the Shore Establishment will install the system following the standards set forth in SECNAV Instruction 5215.1 (Series), the Navy Directives System. The most significant benefits derived from this System are as follows:

1. The Navy-wide use enables each activity which receives directives to:

a. Effectively group the directives on any specific subject and relate directives on the same subject with other materials.

b. Have an easy method for filing directives and describing them as references.

c. Differentiate between directives of a continuing nature and those of brief duration.

d. Obtain copies of instructions to replace lost or damaged copies, or obtain complete sets of instructions upon reactivation or commissioning.

e. Determine periodically by use of checklists the current status and the completeness of its set of directives.

f. Determine by the use of subject indexes what directives are in effect on a subject.

2. Each naval activity which issues directives is able to:

a. Reduce the number of directives in effect by systematically consolidating instructions which cover the same subject, by eliminating instructions which duplicate, overlap, or conflict, and by promptly canceling obsolete directives.

b. Improve the adequacy and coverage of instructions and identify gaps in policy and procedures so that directives can be issued to cover necessary subjects.

c. Eliminate duplicate writing, printing, and distributing operations.

d. Insure that recipients are sent only those directives which pertain to their operations.

e. Improve general administration by using a uniform system which includes reference aids for recipients of directives.

Directive

A directive is an Instruction or Notice that prescribes or establishes policy, organization, conduct, methods, or procedures; requires action or sets forth information essential to the effective administration or operation of activities concerned; or contains authority or information that must be promulgated formally.

Instruction

An Instruction is a directive containing authority or information having continuing reference value or requiring continuing action. It remains in effect until superseded or otherwise canceled by the originator or higher authority.

Notice

A Notice is a directive of a one-time or brief nature with self-canceling provision that has the same force and effect as an instruction. Usually it remains in effect for less than 6 months, but is not permitted to remain in effect for longer than 1 year.

Alphabetical Subject Indexes

The Navy Directives System, Consolidated Subject Index, consisting of unclassified instructions originating in various bureaus and offices and promulgated by the Navy Publications and

Printing Service, is issued on 30 June. (Quarterly supplements are also issued.) This Index is to assist addressees in identifying departmentally originated instructions on any desired subject. Each current edition provides an alphabetical guide to the subject matter of all unclassified instructions by components of the Navy Department.

Directives issued by components of the Navy Department are addressed to many different distribution lists. Therefore, no specific activity receives all the instructions included in this Index. However, since originators determine distribution on a need-to-know basis, each activity receives or should receive instructions on subjects with which it is concerned. An activity may determine whether it is an addressee on a particular instruction by referring to the current Navy Directives System, Consolidated Check List.

Numerical Checklists

The Consolidated Check List is prepared annually on 30 June and should be retained for use in conjunction with subsequent quarterly supplements. These numerical checklists are issued to only those units and facilities listed in Part 1 and Part 2 of the Standard Navy Distribution List (SNDL) in checking their master sets of instructions. Checklists cannot be used by activities not on the SNDL and cannot be used by activities not maintaining the master set of directive binders for the cognizant command.

Standard Navy Distribution List

The Standard Navy Distribution List is published to provide for the proper addressing and distribution of mail to all activities of the Naval Establishment, and to provide a condensed procedure for permitting circular distribution of correspondence.

The Standard Navy Distribution List is published in two parts. Part 1 is a Confidential, nonregistered publication entitled Standard Navy Distribution List (Operating Forces of the Navy and Unified Commands). Part 2 of the SNDL contains the Catalog of Naval Shore Activities. This part (nonregistered and unclassified) contains the official list of shore activities of the Naval Establishment. The term "shore activities of the Naval Establishment" includes activities of the Shore Establishment and shore activities assigned to the Operating Forces.

FILING AND DISPOSITION OF RECORDS

The main objective of any filing system is to insure ready location of any correspondence with a minimum amount of effort and loss of time. As a leading petty officer of an ATC/OC division, the AC1 or Chief may be responsible for establishing and/or maintaining an adequate filing system for the division.

Details of file arrangement within any activity depend upon the mission of the activity and on the volume of official correspondence generated or received. There is no limit to the possible expansion under the Navy subject classification system, yet the system is equally adaptable to the needs of small offices. Files of the components of the Navy Department, for instance, occupy hundreds of cabinets; those of a division office may be kept in one or two cabinets. Yet the same general headings are used for both. The difference lies in the number of subdivisions under each major group.

Navy Filing System

The Navy filing system (used by the entire Navy) is the Standard Subject Classification System for the filing of records, correspondence, and other documents. This system is set forth in SECNAV Instruction 5211.3 (Series).

The standard subject classification numbers (outlined in SECNAV Instruction 5211.3 (Series)) used in the Navy for filing all correspondence and directives consist of 13 major subject groups. Each of these major subject groups is designated by a 4- or 5-digit numeric code. These major subject groups are as follows:

1000 Series . . . . . Military Personnel
2000 Series . . . . . Communications
3000 Series . . . . . Operations and Readiness
4000 Series . . . . . Logistics
5000 Series . . . . . General Administration and Management

6000 Series . . . . . Medicine and Surgery
7000 Series . . . . . Financial Management
8000 Series . . . . . Ordnance Material
9000 Series . . . . . Ships Design and Ships Material
10000 Series . . . . . General Material
11000 Series . . . . . Facilities and Activities Ashore
12000 Series . . . . . Civilian Personnel
13000 Series . . . . . Aeronautical Material

Small activities may adapt this system to their needs by preparing file folders for a minimum number of major subjects and arranging material within these folders according to the classification number assigned. Files may be expanded by adding more file folders as required. The file numbers originally assigned to the records remain pertinent and need not be changed. This makes expansion logical and easy. Large activities may adapt this filing system to their needs by preparing folders not only for the major subject groups but also for the primary and secondary groups.

The 13 major subject groups are subdivided into primary, secondary, and sometimes tertiary breakdowns. Primary subjects are designated by the last three digits of the major subject group numeric code. For example, the major subject of General Administration and Management, coded 5000, is subdivided into primary groups as follows:

5000 . . . . . General Administration and Management
5200 . . . . . Management Improvement
5300 . . . . . Personnel
5400 . . . . . Organization, Function, Status, etc.

Primary subjects are subdivided into secondary subjects by the last two digits of the numeric code. Tertiary breaks are indicated by the final digit. For example:

5200 Management Improvement
  5210 Office Methods and Records Management
    5211 Files and Records Systems

Additional information pertaining to classifying and filing correspondence and other documents by subjects may be found in SECNAV Instruction 5211.3 (Series).

Establishment and Maintenance of Files

The following are factors contributing to the establishment of an efficient filing system:

1. Organization of a correct system.
2. Setting up correct file subjects in folders.
3. Correct classification of all incoming and outgoing correspondence.
4. Modification of the system as required.
5. Thorough indoctrination of personnel maintaining the file.

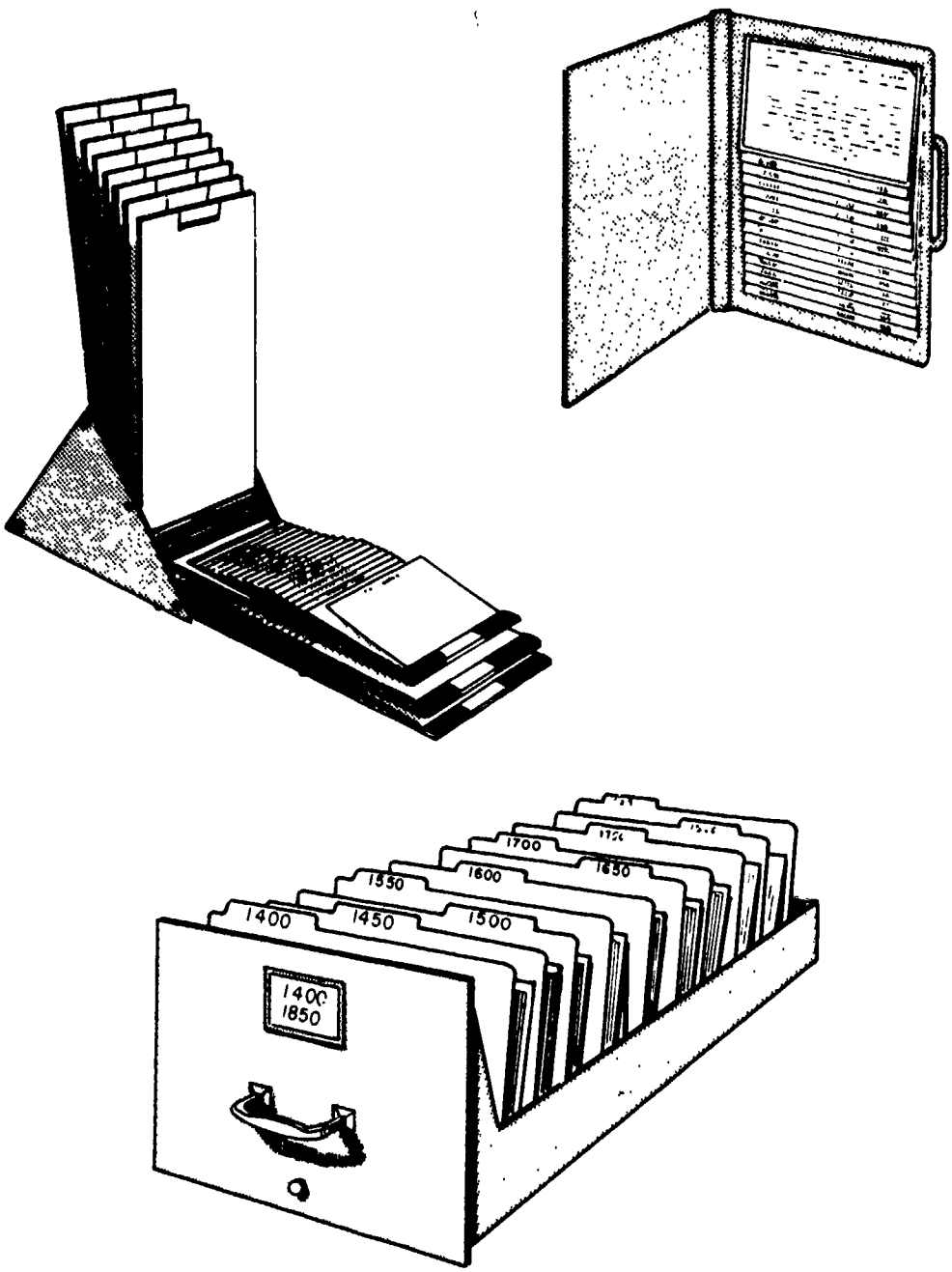
With a filing system correctly established, it is possible for anyone with a general knowledge of the Navy filing system to locate a particular piece of correspondence speedily and conveniently.

Filing equipment will vary depending upon needs of the division. Some of the most common are visible files and file drawer cabinets. The visible files are those in which cards, sheets, or strips of paper are arranged so that the margins can all be seen at one. These are frequently used to file AC data cards, for instance. The file drawer cabinet is used extensively for general filing purposes. It uses standard size filing folders with tabs for printing subject classification numbers to provide for visual sighting and easy location. (See fig. 8-3.)

How important are the records of the division's files? Important enough that Congress has passed laws governing their disposition and fixing penalties for their unauthorized destruction.

Though sometimes monotonous, all tasks connected with files, including their disposition, must be taken seriously. Decisions whether to save or not to save cannot be avoided by simply saving everything. Sooner or later, filing cabinets become overfull and something has to be done. The key to the filing is to be able to tell what should be held in the files and for how long, and what should, or must, be destroyed or transferred for preservation.

Basic Government legislation covering records disposal defines Government records essentially as follows: All documentalry material, including books, papers, maps, and photographs, made or received by an agency of the U.S. Government in connection with the transaction of public business and appropriate for preservation.



AC.242

Figure 8-3.—Visible files and file drawers.

Navy Regulations defines Navy records as "Copies of all official correspondence sent and the originals of all official correspondence received, and such other correspondence as will or may become the subject of future reference or action." Additionally, official correspondence is defined as "All recorded communications sent or received by a person in the Naval Establish-

ment in the execution of the duties of his office." Nonrecord material, then, may be defined as any material which serves no documentary or record purpose or, in other words, it is material that just is not worth keeping except for a limited time.

It is quite possible that very little of the material in the division office files would be classified as official records. It is not always possible to draw a distinct line between record and nonrecord material and apply a hard and fast rule. The disposition of the majority of records that the ATC/OC division would keep are referenced in official instructions.

The following is a partial listing of logs and records common to air traffic control. The complete Navy system of records disposal is found in SECNAV Instruction 5212.5 (Series).

1. Traffic control records relating to the internal control of air and space traffic and records relating to the supervision of clearance and other traffic control records -retain for 6 months.

2. Operations logs accumulated by the operations department of flight activities including control tower records - retain for 6 months.

3. Daily flight logs of visiting aircraft—retain for 6 months after date of last entry or after log is filled.

4. Aircraft clearance and arrival reports (progress strips) - retain for 3 months.

5. Flight plans (DD-175) and weather forms (DD-175-1) -retain for 3 months. (OPNAV 3710.7 (Series).)

6. Completed flight schedules retain for 3 months.

NOTE: By agreement between FAA and DOD, military flight plans filed directly with FAA FSS's will be retained by them for 15 days and then forwarded to the home station indicated on the flight plan. Flight plans forwarded to naval shore installations by FSS's are retained in the operation department files for a period of 3 months after which they may be destroyed.

6. Correspondence, copies of reports, and other records relating to the internal operation and administration of air and space traffic - retain for 2 years.

7. Weight and balance clearance form (DD-365F)—retain originals 3 months.

These records are considered temporary and should be destroyed after the prescribed retention period.

There are two ways that records which have outlived their current value may be disposed of: (1) local destruction, or (2) transfer for later destruction or, if records are permanent, for preservation. To insure that handling of records is consistent and is not left to chance one officer is usually assigned the duty of coordinating all records disposal aboard an activity, either ship or station. This officer would then take charge of the physical disposition of all official records that have been designated for either transfer or destruction. Most unclassified material in the division files would not require transfer but is of the type that may be destroyed in the office. Classified items must be destroyed by burning in accordance with current security regulations. At sea, unclassified records as well as those classified should be burned.

The General Services Administration is responsible for general procedures, both for disposal of Federal Government records and for reproduction of them. Seventeen Federal Records Centers have been established at locations conveniently accessible to the various districts and ocean areas. The Administration Office, Navy Department, is the Navy's liaison with Federal Records Centers.

PERSONNEL TRAINING

The object of a training program is to increase the usefulness of an individual to the organization and to provide a climate and career incentives that will retain high caliber personnel. The many complex functions of controlling aircraft operations may be successfully accomplished only by integrated action of several individuals working together as a team. With these two facts in mind, it would be safe to say that training programs must provide for both individual and group training.

In this section it is intended to present some of the administrative aspects of the division training program; i.e., scheduling, recording accomplished training, and reporting to higher authority.

First, the ship or station will have a training program in effect as directed by higher authority. It normally consists of nonprofessional subject matter; that is to say, subject matter such as military duties and responsibilities or moral attributes not technically required within the AC rating. The Educational Services Officer, through the chain of command, will normally instruct the division training petty officer concerning subject material and required application to division personnel.

The training petty officer will normally establish and maintain the training program from the professional standpoint, for the division. The desired effect is to increase the individual's value to the division and retain high caliber personnel. Therefore, training must be directed toward qualifying air traffic controllers to maintain the desired level of controller personnel and to help individuals qualify and advance as rapidly as time requirements and their willingness and ability to accept more responsibility will allow.

It is obvious that one man working alone cannot set up and execute an entire training program. The training PO, therefore, must select instructors from within the division to assist him. The ideal situation would be to have several qualified instructors in each watch section to maintain the formal instruction situation. However, the ideal never seems to exist. This places another large requirement upon the training PO. He must locate and train, if necessary, qualified instructors. This might be considered the most important link in the chain of events over which the training PO has control. If the instructors are not interested, motivated, and well trained, chances are that the subject material will not reach the trainee because of one of various possible reasons. Therefore, the time spent in that particular training situation may be wasted, or if there is a complete lack of interest or necessity for the material concerned, the instructor may "gundeck" the local record with a net result of production of useless paperwork. This may not be apparent immediately, but it usually stands out when evaluated in terms of the following questions:

1. How many personnel made rates last time?
2. How smooth is the operation of the local facility when the weather is bad and traffic heavy?
3. What is the general attitude or morale of the division personnel?

Some of the problems the training PO must consider when compiling a training schedule are availability of people, an appropriate place where formal training can be accomplished, and the applicability to the various rates.

The schedule must be flexible since most ATC/OC personnel are watch standers with variable working hours. If at all possible, the training should be conducted during the watch when traffic will permit. There will be times, however, when watch standers will be required to attend training sessions even though they are off duty. The schedule should be simply stated and easy to follow. The general scheduled times for training will depend almost entirely upon the type of watch bill the division is working. The actual time of training is usually left to the discretion of the section leader within a specific time frame to allow optimum management practice.

Most facilities have a ready room available for formal training purpose use. If such a room is not readily available, then the training PO will have to make other arrangements for appropriate space. This may not seem very important; however, it has been proven over and over that the trainee will learn faster and retain more if the physical environment provides reasonable trainee comfort. If it is necessary to schedule and conduct training, then it should be necessary to consider every possible asset to effective presentation of the program.

The basis for applicability of each part of the training program to the various ratings should be the Record of Practical Factors, NAVPERS 1414/1 (AC). Few people realize the importance of practical factors to the individual. The basic decision factors for what will be taught in the service schools, what will be published in the Rate Training Manuals such as this one, and what will be covered by the fleetwide rating exams are covered in the Record of Practical Factors. If, then, the 1414/1 (AC) is thoroughly reviewed and used as a basis for determining the subjects to be taught in a formal training program, it would be logical that a trainee could receive considerable assistance in advancement and increase his value to the Navy by undergoing such training.

Keeping records of training is necessary as a reference for each individual concerned and for preparing reports of training accomplished. A training report for the division is accomplished in accordance with local directives, so that it blends into a department training report. A department training officer should be available for assistance with this report if needed. Various forms have been devised for recording training within a division; however, some use no form but merely handwritten reports. Figure 8-4 is an example of one facility's form for recording training within the section to submit to the training PO and reference for recording training received on an individual's training record. A record of training for each individual should be kept in the division files. One handy and personal way to accomplish this is to keep a folder for each man for record purposes and personal use. This individual training record should contain a record of practical factors, a record of all formal training received, and other local qualifications such as designation of PAR IFR controller. Figure 8-5 is an example of an individual training folder and contents. This type recordkeeping allows the training PO to hand over the folder to the individual upon transfer so that he can show it to the new training PO at the next duty station and continue the process indefinitely.

Job Rotation

The practice of rotating men though the various phases of their rating is recognized as beneficial to the men and hence the Navy. A plan of rotation may be worked out covering several months by each section. The rotation schedule should show relief of mess cooks and compartment cleaners where necessary. This advance notice of such assignment and knowledge of what he will do when he returns to the division may help combat the feeling of many young men that they have been abandoned or eliminate the common belief that it is punishment for the individual concerned. By use of a rotation schedule the training PO can help the individual progress in knowledge and application of his acquired knowledge as he advances. Additionally, with periodic rotation, an individual is presented with challenges of new jobs and phases of the rating, and he is less likely to become disinterested and dissatisfied with his job and consequently the Navy.

Testing

The overall effectiveness of a training program will be indicated by the proficiency with which trainees perform their various tasks, by the demonstration of their understanding of the subject matter, and by the results returned from the rating exams. However, testing should not be overlooked as an important teaching tool and as a short term evaluation of the program progresses.

The most difficult thing about testing is the job of compiling a test containing valid and thought-provoking questions. Since this job must be performed by the instructor, it may be one of the reasons that this method of teaching and evaluating is overlooked in many instances. A well-prepared test can generate lively discussion, instill a competitive spirit in the trainees, and provide them with a sense of accomplishment if they do well or an indication of areas where additional study is needed if they do poorly.

RESOURCES MANAGEMENT

Resources management systems are a series of systems designed to promote better management throughout the DOD by providing managers with improved means of obtaining and controlling resources required to accomplish missions.

Within the Department of the Navy, planning and programing are major functions of the Office of CNO and Headquarters, U.S.M.C. It is through the proper execution of these functions that the effort of the entire Navy Department is initially guided and subsequently controlled.

Navy programs are in general developed along a well ordered and clearly defined pattern. Requirements are identified, validated, and planned; plans are translated into programs; and programs are translated into budget requests which, upon approval, provide the dollars to produce the men, equipment, and facilities needed to satisfy requirements.

Budgeting is usually decentralized at large activities; that is, those composed of a number

AIR OPERATIONS TRAINING RECORD

DIVISION ATC

DATE TRAINING HELD 0 MAY 1973 TYPE (circle one) MILITARY (PROFESSIONAL)

BRANCH TOWER

INSTRUCTOR'S NAME MILLER, D. AC 3 DM

LESSON NAME, UNIT, NUMBER DRIFT & DRIFT CORRECTIONS 1 AF 2

NAME	
1 HARRIS, G.F.	25
2 LANG, W.R.	26
3 MCREYNOLDS, J.W.	27
4 HAGGERTY, W.A.	28
5 PURDOM, B.A.	29
6 CHAPMAN, D.R.	30
7	31
8	32
9	33
10	34
11	35
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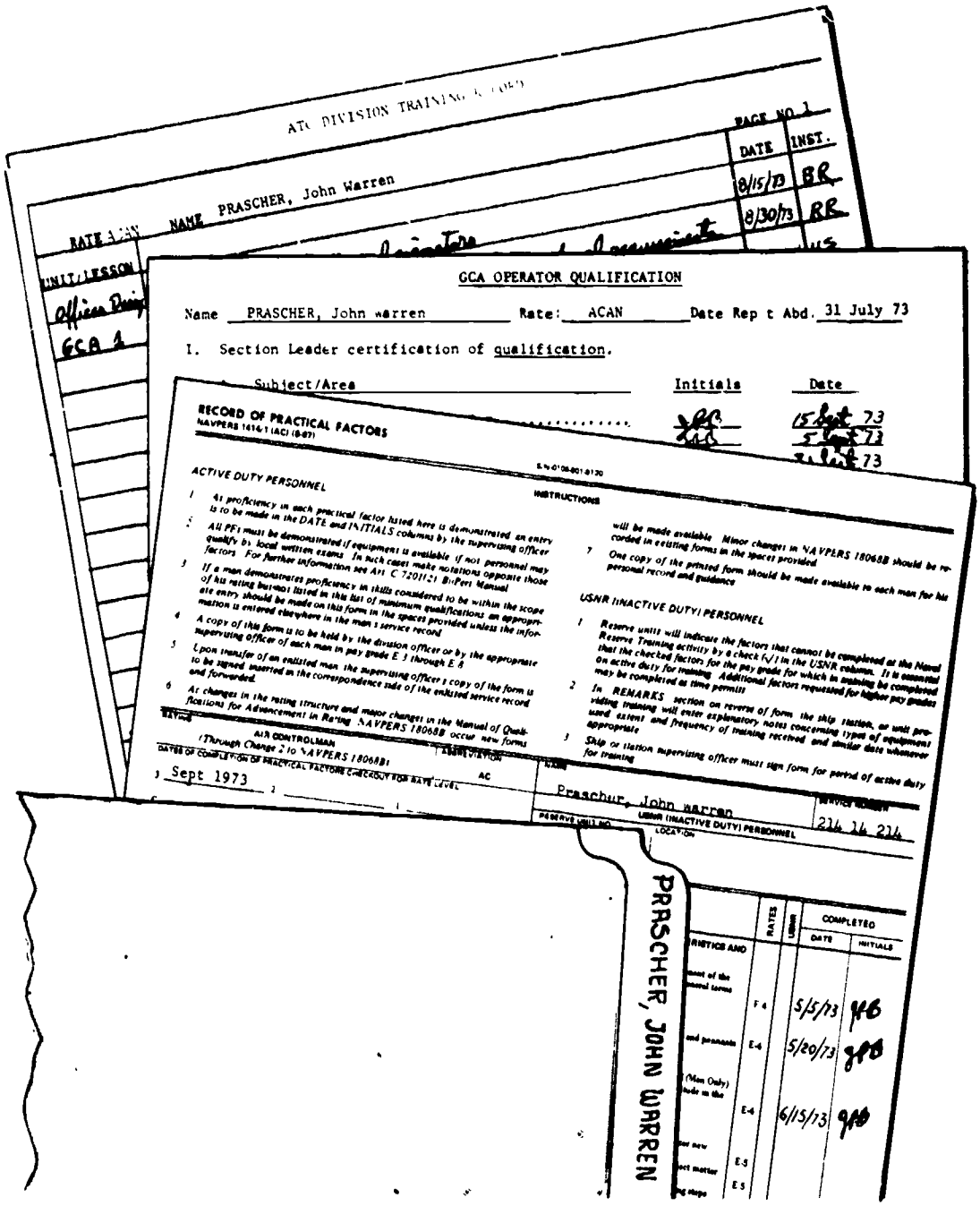
REMARKS

AC.243

Figure 8-4.—Section training record.



AC.244

Figure 8-5.—Individual training record.

of departments. At such an activity, the commanding officer normally issues a budget call for the various activity components to develop their operating budget estimates and supporting data. In the budget call he communicates policy decisions, assumptions, and instructions based on guidance he has received through command channels, together with his projection of local program and workload objectives.

In preparing his budget, each department head translates the planning information into appropriate budget elements for each division or function under his management. He then assigns a realistic dollar estimate to each with the total representing his department's estimate. Completed departmental estimates are usually forwarded first to the activity comptroller for analysis and review by his staff. The comptroller then presents them to the commanding officer and offers such recommendations as he considers necessary. Senior AC's may be called upon to furnish a realistic estimate of division needs which the department will use in formulating the departmental estimate.

The operating budget prepared by the activity sets forth the annual plan of operations. It is the commanding officer's estimate of the total resources required throughout the year for performance of the activity's mission. The budget as approved by proper authority sets forth the actual resources available, and it is against these amounts that performance and expenditures are evaluated.

Operating target amounts will be approved by the commanding officer and allocated to individual departments. These amounts should not be exceeded by the target holders unless proper authorization has been made by the commanding officer.

Fund authorizations are administratively controlled through the issuance of job orders. All labor and materials charges are identified by job order. The job order is the means by which expenditures are accumulated for cost analysis and for charge to the proper appropriation. Current accounting directives require that the cost of military labor be included in the budget estimates and execution.

Budget holders are required to make a monthly report of military services. Therefore, some method of timekeeping must be implemented locally to allow accumulation of the figures necessary for the report. One such method used frequently is the exception method; that is, only the exception to normal is reported. The basic premise for such a system is that a predetermined normal job order number is assigned to military labor, timekeeping is accomplished daily, and a weekly report of exception data is made.

Each department should designate timekeepers and coordinators as necessary for accurate daily recording. The coordinator would be the division level petty officer assigned this task. The normal would be a 40-hour week. The coordinator would record absences of 1 hour or more, including TAD, leave, etc., and report them as an exception. Then the department could, with the current hourly rate of pay, compute the cost of military services, compare the actual cost against the approved budget, and use current data for future estimates.

Collateral Equipment Requirements

Collateral equipment in this section refers to furniture, furnishings, appliances, and equipment which an ATC division makes use of in the assigned working spaces. Senior AC's must necessarily concern themselves with the required amount and condition of collateral equipment used by their division. Availability and good condition of proper furniture and equipment are factors contributing to proper attitude and morale of junior personnel.

As stated previously, funds are requested based on future needs and requirements. Each station has local instructions which outline procedures for submitting requirements for collateral equipment. This is accomplished at the department level to the station comptroller at various times during the fiscal year. Senior AC's are in a position to recognize the need for future requirements and replacement of aging equipment. These needs must be made known to the division officer for coordination with the department head so that the requirements can be included in the latters report of equipment requirements. Again, conditions change due to the period of time between request and receipt of funds; hence requirements may not always be filled as planned. These requirements are not

automatically carried over into the next reporting period but must be restated.

The comptroller's office maintains records on all accountable equipment aboard an air station. At certain intervals, inventories are conducted to keep the records of the equipment current. If equipment is broken or lost, the department head and division officer in whose spaces the equipment was located must initiate survey action to determine cause and recommend requisitioning action required by the results.

Requisitioning

The Navy has already purchased most of the material and supplies needed by activities. The procedure for requisitioning supplies may vary between stations. Most large air stations have a storekeeper assigned to the operations department or one individual trained by the supply department for the actual completing of the standard requisition, DD form 1348. A relatively new concept of providing office and general supplies is the SERVMART system. These SERVMART's resemble a private self-service store. The petty officer responsible for maintaining supplies determines what is needed, obtains the approval from the officer within the department authorized to approve such expenditures by obtaining a signed DD form 1348 for an amount not to exceed the total cost of the supplies needed. The supplies may then be picked up at the SERVMART and the actual amount of purchase recorded on the DD form 1348. The various copies of the form are distributed to the necessary individuals so that the amount of the purchase can be charged against the funds allocated to the department and the station.

Of course every need cannot be satisfied by the SERVMART system. When the requirement exists, a properly completed DD form 1348 must be submitted through the supply department so that they can order what is required. In order to procure exactly what is needed when requisitioning supplies, the correct Federal stock number is required.

Plant Property Accounting

Plant property is all Navy-owned and Navy-controlled real and personal property of a capital nature located in the Naval Shore Establishment.

Plant property is divided into four classes: Class 1 (land); Class 2 (buildings and improvements); Class 3 (equipment, other than industrial plant equipment); and Class 4 (industrial plant equipment). It is around these classes of property that the inventory control system for plant property is built.

The inventory control system for plant property is designed to provide controls essential for compliance with statutory and DOD requirements concerning Government property. It provides for Navy-wide collecting, compiling, recording and reporting of plant property information. The system meets the objective of furnishing factual information on capital equipment to both financial and technical management. By requiring a reconciliation with funds expended for plant property, the system also insures that all such property in the Navy is accounted for.

The fiscal officer at each activity is charged with the establishment and maintenance of plant property account records. He must institute local procedures to insure compliance with directives and instructions issued by higher authority.

Department heads at each activity are responsible for plant property under their custody. In addition they must assist the fiscal officer in obtaining technical descriptions of plant property; affixing identification plates and decals on the property; determining the estimated life of property; reporting acquisitions, dispositions, transfers, and surveys of plant property; and conducting physical inventories.

FORMS, RECORDS, AND REPORTS

The Navy Stock List of Forms and Publications, NAVSUP 2002, contains a complete numerical listing of all available naval forms and publications distributed by the Navy and stocked for issue.

NOTE: There are a few exceptions to the above statement such as Aeronautical Charts and Publications discussed earlier in this manual.

Section I of the stock list is a general introduction in the use of the publication. Instructions for the breakdown of the columnar headings as they appear in the stock list,

requisitioning instructions, etc., which if carefully studied should help determine the correct procedure for ordering the necessary forms and publications required for administrative functions.

The remaining sections of the stock list contain forms and publications which have been categorized on the basis of departmental sponsorship and/or functional usage. For example, section II contains forms used by the Navy. In section II can be found the NAVTRA Form 1414/1, AC Record of Practical Factors, and OPNAV Forms 3722/1 and /2 used when submitting OPNAV Report 3722-1. Section VIII, parts C & D, contains aeronautical manual and letter publications such as technical manuals for specific radar equipment. AC's may be interested in the operator's section of these manuals.

All training and instructional-type publications and training aids are contained in section XIV. Included within this section are rate training manuals, correspondence courses, training pubs, etc.

The Naval Training Support Command located at Pensacola, Florida is responsible for this most important phase of training.

Aviators Flight Logbook

The Aviators Flight Logbook currently in use is OPNAV Form 3760-31. This book is bound with a navy blue cover. Each naval aviator, naval aviation pilot, naval student pilot, and naval flight officer possesses a currently maintained Aviators Flight Logbook. Possession of such a logbook by other personnel on duty involving flying is neither required nor prohibited. Each duly issued Aviators Flight Logbook is considered to be the personal property of the individual who is currently, or in the past was, required to possess it.

AC's aboard ship assigned to the Air Operations branch of the OC division may be required to assist the ship's pilots in keeping their logbooks current. Instructions for coding the flight to indicate classification of flights are included in the front part of each logbook. Additional information may be found in the current OPNAV Instruction 3710.7.

Manpower Authorizations

With the evolution of the Resources Management System (RMS), it is essential that each command have cognizance of all resources required to perform its mission.

The terms "Allowance" and "Complement" which were previously used as expressions of naval military manpower are no longer in use. "Allowance" has been changed to "Billets Authorized" and "Complement" to "Organizational Manning."

BILLETS AUTHORIZED.–This term refers to billets approved by the CNO for current operating conditions and may, depending on the mission of the activity, represent full organizational manning or some level of conditional manning.

ORGANIZATIONAL MANNING.–This term refers to the delineation by individual billets of the minimum quantitative and qualitative officer and enlisted needs essential to performance of the mission and required operational capabilities prescribed for a fully ready unit.

CONDITIONAL MANNING.–This term refers to any reduction, quantitatively or qualitatively, from organizational manning. As expressed in individual manpower authorizations, conditional manning will reflect two specific limiting conditions:

1. Billets which are required for organizational manning but which will not be authorized under conditional manning.

2. Specific associated functions which will be reduced or deleted in conjunction with the reduction in authorized manpower.

MILITARY MANPOWER CLAIMANT.–Defined as a command, bureau, or office in the administrative chain of command assigned responsibility by the CNO for management of military manpower requirements of assigned activities.

Commanding officers are responsible for keeping their military manpower claimants informed regarding the manpower situation and for insuring that the number of billets, including skills, paygrades, and special qualifications, reflected in manpower authorizations are the minimum military requirements necessary to support the mission, tasks and functions of the command.

In order to insure optimum manpower utilization, each commanding officer should periodically review and evaluate his manpower authorization, including mobilization requirements and, when appropriate, recommend changes to his military manpower claimant via the chain of command as outlined in OPNAV Instruction 1001.6 (Series).

All requests for changes to manpower authorizations will be submitted on the Manpower Authorization Request (OPNAV Form 1000/4A). (See fig. 8-6.)

Change requests should be submitted a minimum of 10 months prior to the effective date of the desired change. This lead time is required to permit sufficient time for review at the various echelons of the chain of command, for adequate consideration by the Chief of Naval Operations, and for orderly response by personnel distribution authorities.

Senior AC's should periodically review that portion applicable to the ATC facility for possibly better utilization of manpower and when necessary initiate action for changes to the Manpower Authorizations.

In reviewing Manpower Authorizations, it is of the utmost importance that the need for increases or reductions be considered and also that reviewers insure that the skills reflected in the Manpower Authorizations are valid.

More detailed information relative to Manpower Authorizations can be found in OPNAV Instruction 1000.16 (Series).

Enlisted Distribution and Verification Report

The Enlisted Distribution and Verification Report, BUPERS Report 1080-14, is a report common to the activity and the distributional authority. It is a basic decision document which is used by the distributor to determine the activity's enlisted personnel status and requirements. The report is normally held in the activity personnel office. Senior AC's should review this monthly report periodically to insure that all the information contained on the report is correct. If an error is found, it should be brought to the attention of personnel so that they can initiate change action. The report is a machine printed report that contains a considerable amount of information about individuals in the division. For a breakdown on the code system used in the report, refer to chapter 6 of the Naval Manpower Information System Manual, NAVPERS 15642.

Figure 8-7 is an example of BUPERS Report 1080-14, showing a partial listing of Air Controlmen at an air station.

Enlisted Duty Preferences Form

All personnel must submit an Enlisted Duty Preferences Form (EDP), (NAVPERS 1306/63) as illustrated in figure 8-8.

This form is to be completed 10 months prior to the prospective rotation date (PRD) or expiration of active obligated service (EAOS), whichever is sooner and when preferences change.

The EPD Forms are utilized by the Chief of Naval Personnel for the orderly and efficient detailing of naval personnel. They are most important to the individual in that they are the only information furnished to the Air Controlman detail officer concerning the individual's duty choices and other pertinent assignment data.

The EDP Form should be filled out by the individual concerned. Senior AC's must assist their men since they may be unfamiliar with the various schools available or may want information about a particular duty station to determine their choices.

The Enlisted Transfer Manual (TransMan), NAVPERS 15909 (Series) contains detailed information regarding the completion and submission of the Enlisted Duty Preferences Form. Further information may be obtained from your Enlisted Personnel Office.

Air Traffic Activity Report

Commanding officers of shore activities operating ATC facilities are required to submit an Air Traffic Activity Report semiannually as of 30 June and 31 December. This report is assigned the report symbol 3721-13. The report is accomplished by completing OPNAV Form 3721/12 shown in figure 8-9. Air traffic activity at satellite airfields (OLF and ALF) is reported by the parent activity.

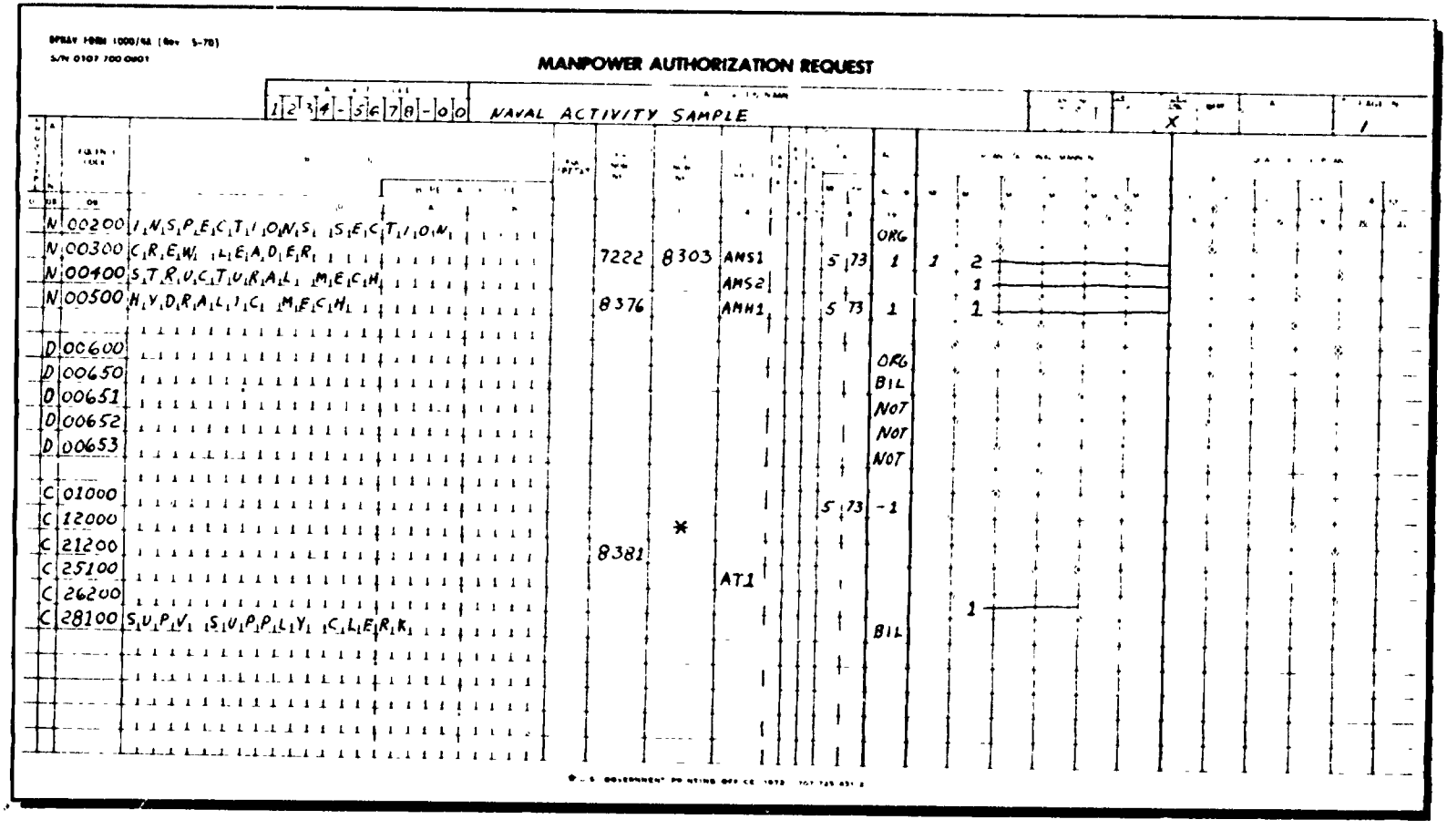
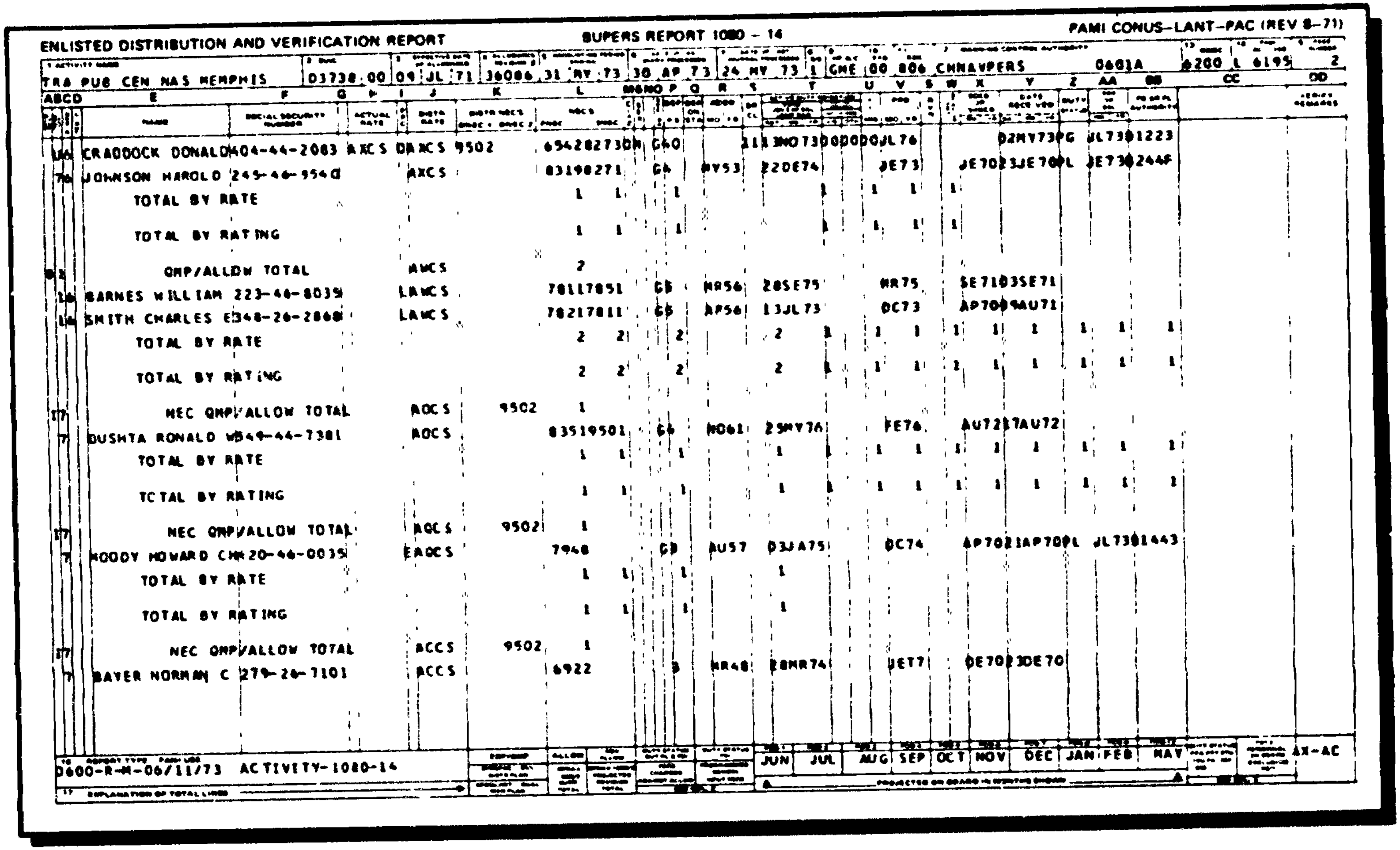


Figure 8-6.—Manpower Authorization Request.

AC.245


ENLISTED DISTRIBUTION AND VERIFICATION REPORT
BUPERS REPORT 1080 – 14
PAMI CONUS–LANT–PAC (REV 8–71)

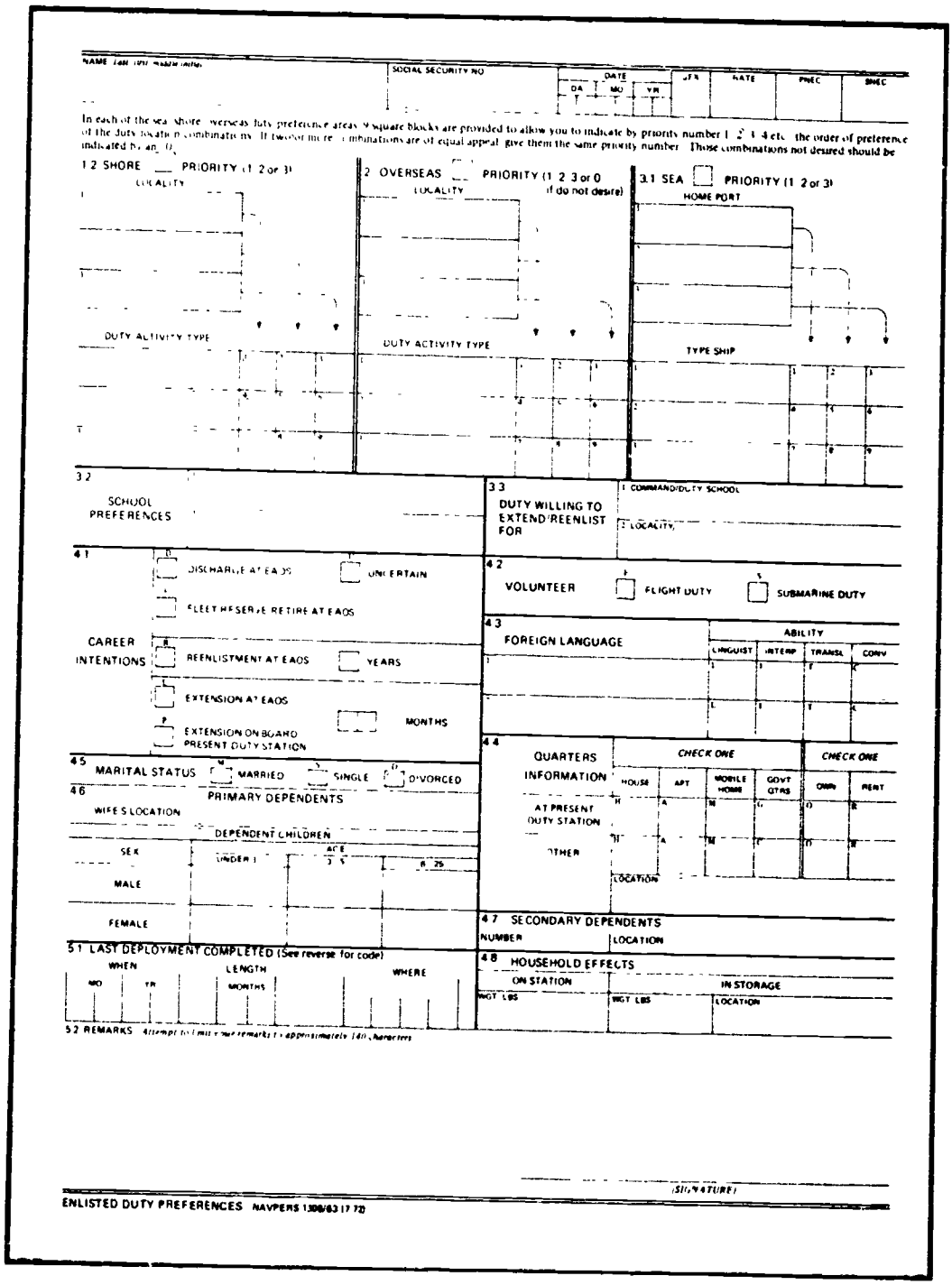
TRA PUB CEN NAS MEMPHIS 03738.00 09 JL 71 36006 31 MY 73 30 AP 73 24 MY 73 1 GNE 00 806 CHNAVPERS 0601A 6200 L 6195 2

CRADDOCK DONALD D 404-44-2083 AXCS DAXCS 9502 65428273 GO 11 3 NO 73 00 00 JL 76 02MY73 JL731223
JOHNSON HAROLD 245-46-9540 AXCS 83198271 G6 NY53 22DE74 JE73 JE7023JE70 JE730244
TOTAL BY RATE
TOTAL BY RATING
OMP/ALLOW TOTAL AMCS 2
BARNES WILLIAM 223-46-8035 LAMCS 78117851 G5 NR56 28SE75 NR75 SE7103SE71
SMITH CHARLES E 348-26-2868 LAMCS 78217811 G5 AP56 13JL73 OC73 AP7009AU71
TOTAL BY RATE
TOTAL BY RATING
NEC OMP/ALLOW TOTAL AOCS 9502 1
DUSHTA RONALD W 549-44-7381 AOCS 83519501 G6 NO61 25MY76 FE76 AU7217AU72
TOTAL BY RATE
TOTAL BY RATING
NEC OMP/ALLOW TOTAL AOCS 9502 1
MOODY HOWARD C 420-46-0035 EAOCS 7948 G9 AU57 03JA75 OC74 AP7021AP70 JL731443
TOTAL BY RATE
TOTAL BY RATING
NEC OMP/ALLOW TOTAL ACCS 9502 1
BAYER NORMAN C 279-26-7101 ACCS 6922 NR48 28MR74 JE77 DE7023DE70

0600-R-M-06/11/73 ACTIVITY-1080-14
JUN JUL AUG SEP OCT NOV DEC JAN FEB MAY
AX-AC

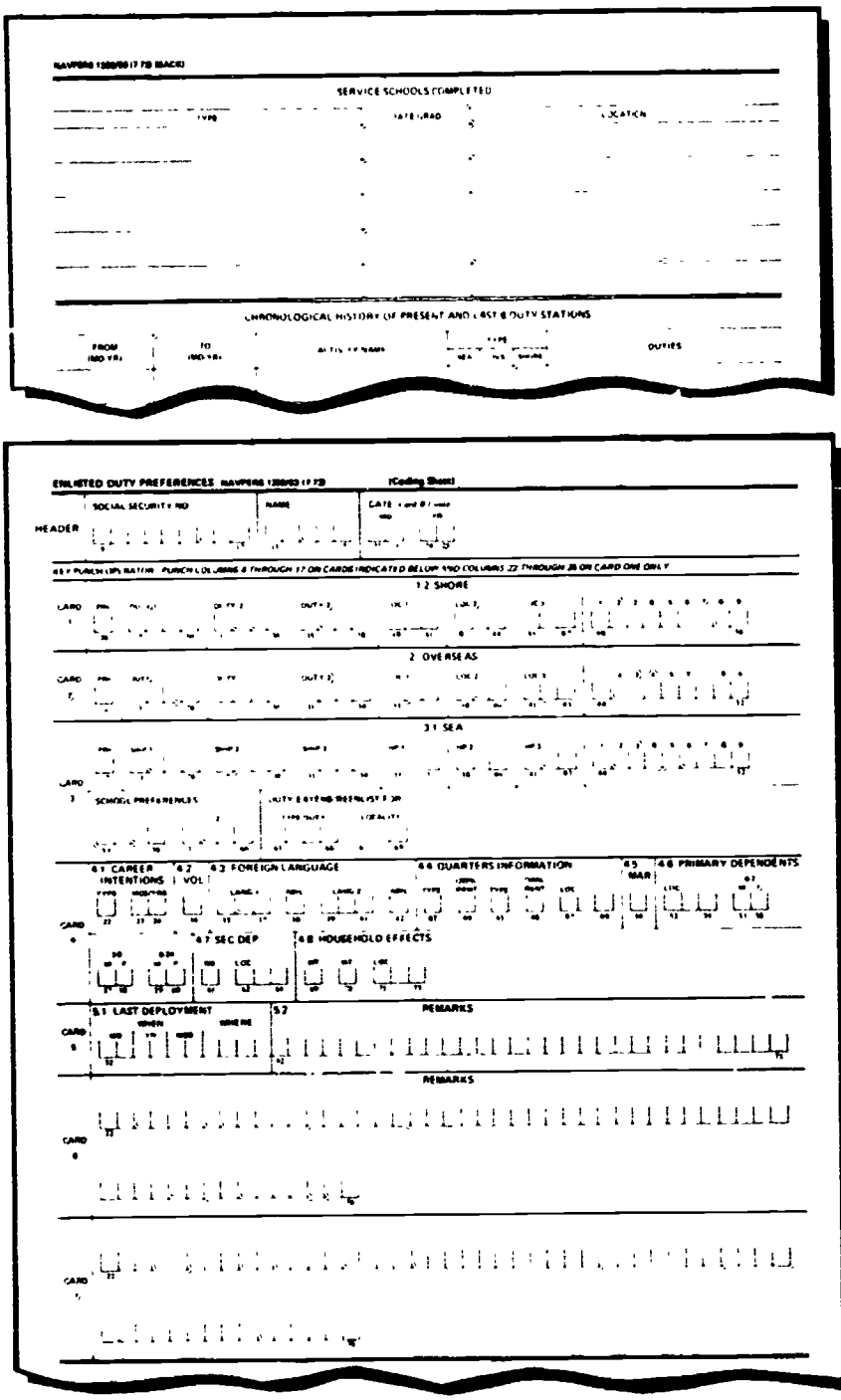
AC.248

Figure 8-7.—Enlisted Distribution and Verification Report.



AC.247

Figure 8-8.—Enlisted Duty Preferences Form.



AC.247

Figure 8-8.—Enlisted Duty Preferences Form—Continued.

AIR TRAFFIC ACTIVITY REPORT
OPNAV FORM 3721/12 (6-70) (See Reverse Side For Instructions) REPORT SYMBOL OPNAV 3721-15

TO CHIEF OF NAVAL OPERATIONS
NAVY DEPARTMENT
WASHINGTON, D C 20350

1 REPORT PERIOD: January-June 1973

2 NAME OF ACTIVITY SUBMITTING REPORT: NAS MIRAMAR

3 LOCATION IDENTIFIER: NKX

4 NAME OF AIRFIELD THIS REPORT: MITSCHER FIELD

5 AIRCRAFT OPERATIONS	MILITARY		CIVIL		TOTAL
	NAVY/ MARINE CORPS	OTHER MILITARY	AIR CARRIER	GENERAL AVIATION	
IFR	12,117	656	35		12,808
VFR	25,613	10,151		23	35,787
TOTAL	37,730	10,807	35	23	48,595
6 RADAR APPROACHES					

7 ACLS APPROACHES	MODE I	MODE IA	MODE II	MODE III	TOTAL
		751	520	130	2201

8 REMARKS

APPROVED BY (Name, Title, and Signature)
B.G. WHEEL, LCDR, USN
BY DIRECTION, ATC FACILITY OFFICER, NAS MIRAMAR B.G. Wheel

COPY TO
FEDERAL AVIATION ADMINISTRATION
INFORMATION AND STATISTICS DIVISION
OFFICE OF MANAGEMENT SYSTEMS
WASHINGTON, D.C 20590

Figure 8-9.—OPNAV Form 3721/12.

AC.248

Various uses of the information required by this report, such as budgetary, statistical, or trend information, are made by both CNO and FAA. Therefore a copy of the report is sent to FAA. Each facility must keep records of aircraft operations religiously to insure accurate data for the report. The instructions for completing OPNAV Form 3721/12 are included on the back of the form. The instructions include the following definitions of terms for the purpose of this report and standardization of recordkeeping.

1. Aircraft Operations. Count aircraft operations as follows:

a. Count an arrival or departure as one operation.

b. Count aircraft touch and go landings as two operations.

c. Count an approach followed by a waveoff as two operations, e.g., field carrier landing practice or practice instrument approaches to minimum descent altitude or decision height.

d. Count each aircraft which transits the control area of jurisdiction and is provided ATC services as one operation.

e. Count aircraft operating in a formation as a single aircraft except when the formation breaks up into smaller formations or single aircraft. When this occurs, count each additional formation or single aircraft as a separate aircraft operation.

2. Instrument flight rules operations. An IFR operation is the handling by an ATC facility of the arrival or departure of an aircraft operating in accordance with instrument flight rules or the provision of IFR separation from other aircraft. Instrument operations must be counted whenever aircraft are provided IFR separation regardless of the existing weather conditions or the type of flight plans.

3. Visual flight rules operations. A VFR operation is an aircraft operation conducted in accordance with visual rules, except when the aircraft is being provided IFR separation from other aircraft.

4. Radar approaches. Any surveillance or precision radar approach to a landing, missed approach, or waveoff. Each approach executed must be counted, regardless of the flight rules under which the aircraft is operating or the existing weather conditions.

5. Automatic carrier landing system approaches. Activities with ACLS capability must report approaches and the mode of approach utilized in the appropriate spaces on the form.

NAALS Program

Naval Air Traffic Control, Air Navigation Aids and Landing Systems (NAALS) program is the subject of OPNAV Instruction 3721.5 (Series). The purpose of the instruction, and hence of the program, is to promulgate policy and guidance for planning, programming and implementation of ATC, navaid, and landing system equipment at Navy and Marine Corps aviation activities ashore and afloat.

It is necessary for operating commands to continually review their NAALS operational capability to identify needed improvements. The need for an improved operational capability at an activity may be identified by any command responsible for supporting aircraft operations, by the Chief of Naval Material (CNM), by CNO, or may be imposed by FAA regulations. The need may stem from a technical deficiency in the installed equipment or from an operational deficiency that limits or derogates the operational capability of the ATC facility to support the mission and tasks assigned the aviation activity. The relief of these deficiencies may require additional or substitute equipment or the development of new equipment. Further, a need for an improved capability may arise from prospective rulemaking by the FAA which requires advanced planning at the Navy Department level.

Two formats are established as enclosures to OPNAV Instruction 3721.5 (Series), titled NAALS Operational Capability Improvement Request (OCIR) and Master Implementation Plan (MIP). The OCIR, which is a typewritten format, delineates the deficiency, required operational capability, solution, and relative priority, in that order, that is submitted as a request for improved operational capability. The MIP is the responsibility of CNM which shows the operational requirements and programed equipments for the entire Navy and is revised semiannually for use by CNO. OCIR's having sufficient justification and not involving research and

development may be reflected as revisions to the MIP, thereby becoming part of the implementation cycle. This determination is made by CNO; however, in many instances that office depends upon feeder information from the aviation activities--hence the personnel who man and operate them.

Commanding officers of aviation activities ashore and afloat must review the NAALS operational capability of their respective activities on a continuing basis. Whenever a NAALS deficiency is identified pursuant to this review, a NAALS OCIR is completed and submitted to CNO (OP-53).

Frequency Usage Report

The radiofrequency spectrum has become increasingly congested as a result of the development of electromagnetic equipment and an increasing international requirement for radiofrequencies.

Frequency utilization data is the most valuable evidence to justify retention and to manage existing frequency resources. The Military Communications-Electronics Board, Joint Chiefs of Staff, has directed that frequency usage information be provided by the military services for inclusion in a Joint Radio Frequency Management Program.

U.S. Navy and Marine Corps activities and ships utilizing radiofrequencies for communications purposes must prepare a Frequency Usage Report, OPNAV Report 2400-1.

The Communications Department normally prepares this report. However, senior AC's are frequently called upon to assist in its preparation by providing an accurate estimate of frequency usage for air traffic control at the facility. Complete information on this report is found in OPNAV Instruction 2400.7 (Series) and JANAP 195, plus information on how to get new frequencies or delete old ones when required. This report is classified Confidential.

Figure 8-10 is an example of a Frequency Usage Report.

NAVY CORRESPONDENCE

The Navy Correspondence Manual, SECNAV Instruction 5216.5 (Series), prescribes policies and outlines procedures for the preparation of correspondence in the Department of the Navy. These policies and procedures are followed unless prescribed otherwise by the Secretary of the Navy or by his authority.

The selection of the proper communication for use in transmitting information is of special importance in Navy operations. Listed below are some of the types of correspondence and their uses:

1. Naval Letter. The naval letter is used by all activities of the Department of the Navy as a formal means of intranaval communication. It may be used also in addressing other agencies, either governmental or nongovernmental, which are familiar with the style (See fig. 8-11.)

2. Joint Letter. When officials of two or more activities need to issue a letter concerning a particular subject of common interest to the activities, a joint letter is prepared. It may be directed to one addressee, or to two or more addresses identified separately or as a group. (See fig. 8-12).

3. Speedletter. A speedletter is a form of naval correspondence used for urgent communication which does not require electrical transmission. It is not used for directives. The primary purpose of the speedletter is to call attention to the communication, so that it will be handled as promptly as possible by the recipient. (See fig. 8-13.)

4. Memorandum. A memorandum is a form of naval correspondence used for informal communications within and between headquarters components of the Navy Department, between fleet and force commanders and units of command under their justification, and within a field activity. It may be directed to one or more addressees.

The naval letter is perhaps the most formal type of correspondence used by the Navy, but this does not mean that its content cannot be simple. Avoid long sentences and long words where short sentences and short words convey the same meaning. Each paragraph should contain one complete thought expressed in logical sequence. Tables, diagrams, and sketches should be included as enclosures if necessary to add to the clarity of the letter.

OPNAVINST 2400.7C

FREQUENCY USAGE REPORT
OPNAV FORM 2400/4 (1-66) S/N 0107-706-9092
Adhere to Instructions in OPNAVINST 2400.7C

CONFIDENTIAL- MODIFIED HANDLING AUTHORIZED *(When filled in)*
DATA IS MACHINE PROCESSED

OPNAV REPORT 2400-1

1 ACTIVITY CODE OR DESIG.	2 NAV DIST OR AREA	3 & 4. NAME OF REPORTING ACTIVITY OR SHIP	4 CALL SIGN	5 REPORTING PERIOD
DD XXX	LANT	USS NEVERSAIL C/O FPO, NY	NXYZ	0673

6 FREQUENCY	7 K	7 M	8 DESIGNATOR	9 EMISSION	10 TRANSMIT MRS	11 GUARD MRS	12 AUTHORITY
2030	X		A02	0.1A1	10		
2030	X		A02	1.24F1	10		
2030	X		A02	3A7J	10		
2030	X		E01	1.24F1	20		CNO ltr ser 01234 of 1 Jan 73
2030	X		TEMP	3A3J	50		CNO ltr ser 05678 of 15 Jan 73
2030	X		UNK	1.08F1	15		COMDESRON 21 OPORD 501
2030	X		UNK	6A3	12		CNO msg 010101Z Jun 73
2050	X		D26.02	1.24F1	5		
2060	X		A03	3A3J	100		
2500	X		UNK	6A3	10		CINCLANTFLT OPORD 37-72
2700	X		A01.01	0.1A1	30		
29,999.9	X		A03	6A3	30		
30,000	X		E03	1.24F1	25		
30.1		X	E06.01	3A3J	40		
30.1		X	E06.12	3A3J	50		
30.1		X	T14	3A3J	16		CNO ltr ser 5678 of 1 Feb 73
225.0		X	D08	6A3			
225.0		X	D10	6A3			
225.0		X	D26.01	3A3J			
225.0		X	D27.01	1.24F1			
225.0		X	TEMP	6A3			FAPUS 010203Z Jan 73

NOTE: This is a sample page and contains unclassified information.

CONFIDENTIAL MODIFIED HANDLING AUTHORIZED *(When filled in)*

TITLE, RANK, SIGNATURE
CDR John DOE, USN, Commanding Officer

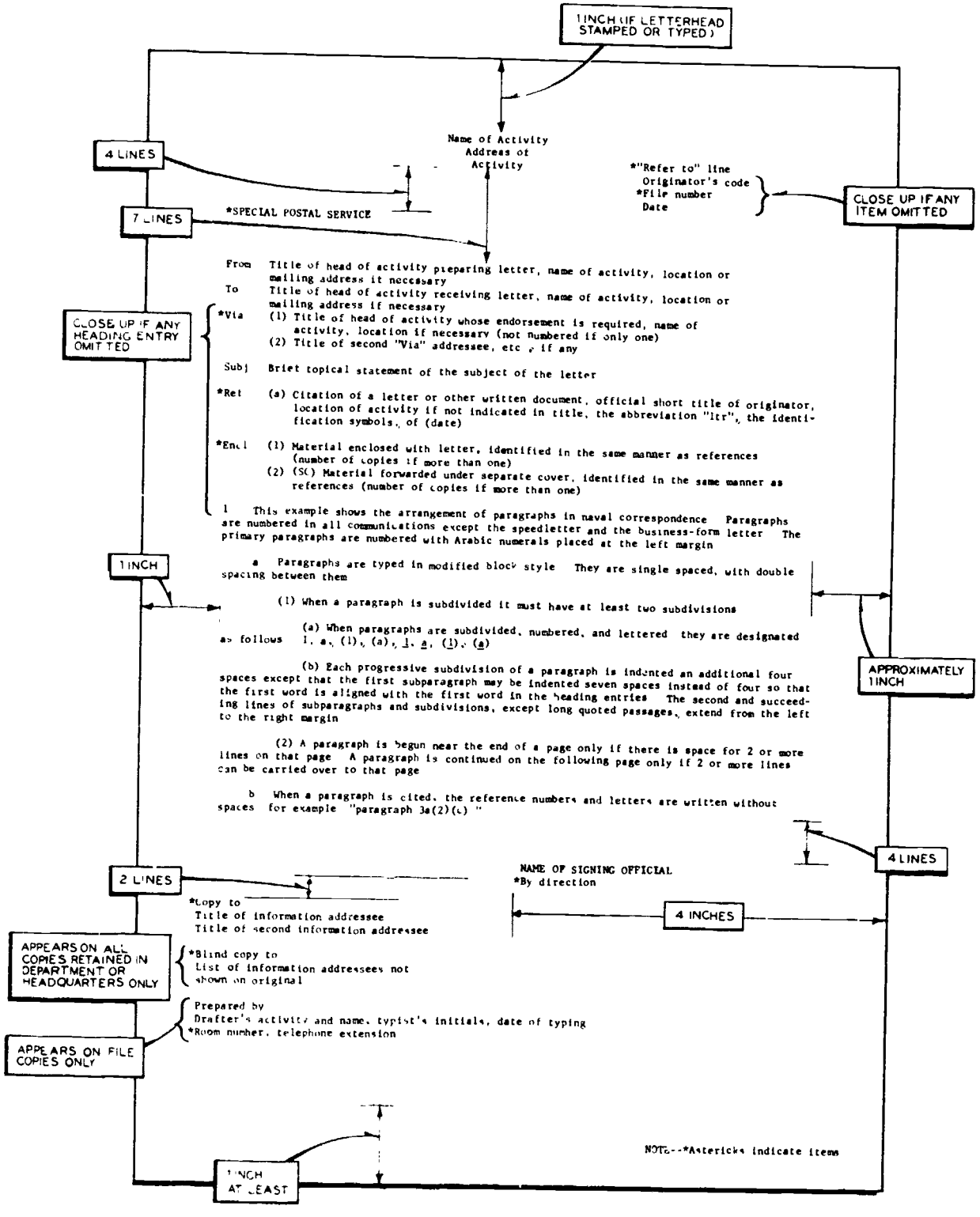
PAGE 1 OF 1

Enclosure (2)

A 22147

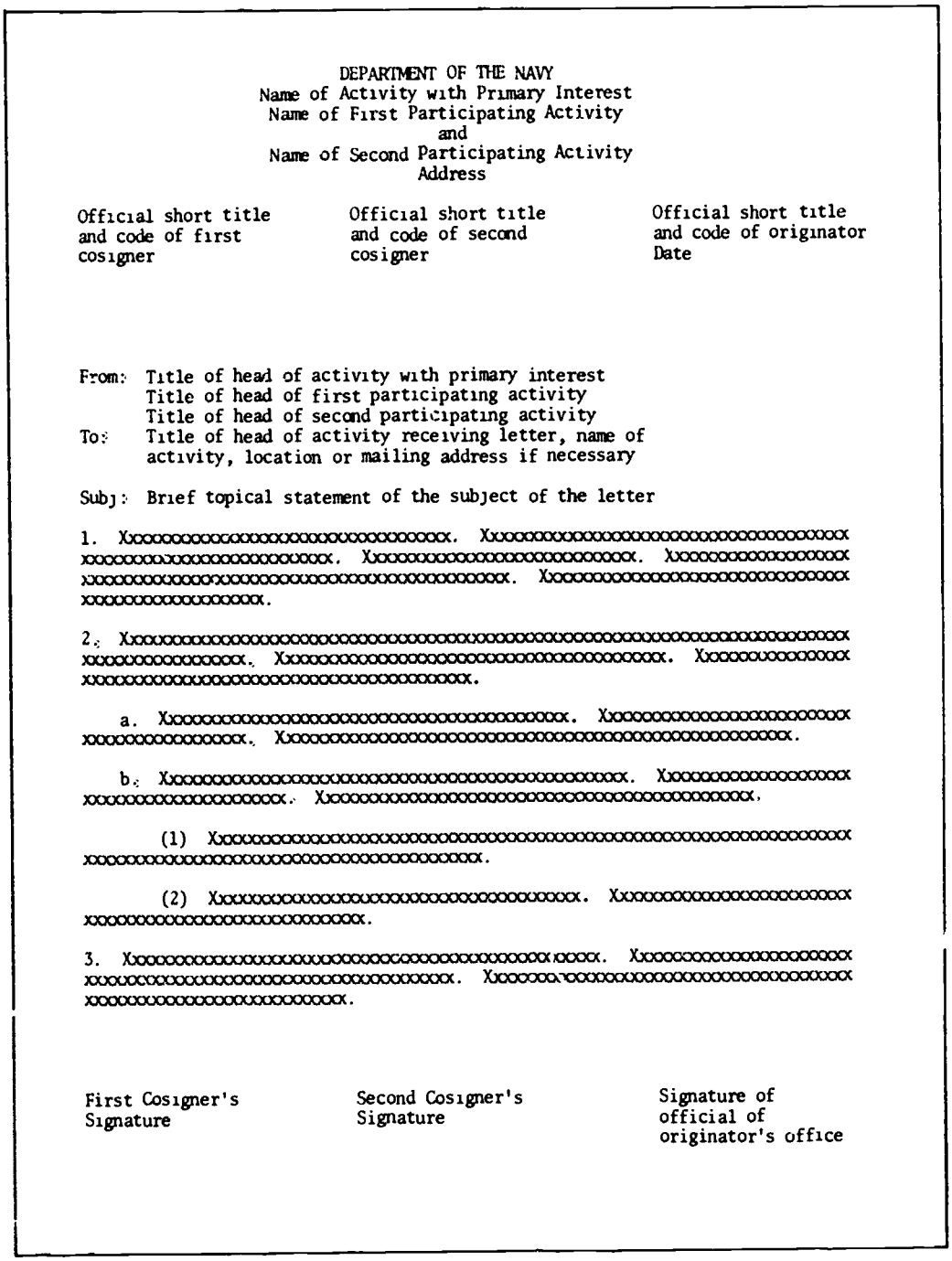
AC.249

Figure 8-10.—Frequency Usage Report form.



AC.250

Figure 8-11.—Naval letter.



DEPARTMENT OF THE NAVY
Name of Activity with Primary Interest
Name of First Participating Activity
and
Name of Second Participating Activity
Address

Official short title and code of first cosigner | Official short title and code of second cosigner | Official short title and code of originator
Date

From: Title of head of activity with primary interest
Title of head of first participating activity
Title of head of second participating activity
To: Title of head of activity receiving letter, name of activity, location or mailing address if necessary

Subj: Brief topical statement of the subject of the letter

1. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxx.

2. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

a. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

b. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

(1) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

(2) Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

3. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx. Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.

First Cosigner's Signature | Second Cosigner's Signature | Signature of official of originator's office

AC.251

Figure 8-12.--Joint naval letter.

NAVEXOS-4181

USE FOR URGENT LETTERS ONLY

NAVAL SPEEDLETTER

DO NOT CLEAR THROUGH COMMUNICATION OFFICE

(One box must be checked)

☐ REGULAR MAIL ☐ SPECIAL DELIVERY

☐ AIR MAIL ☐ REGISTERED MAIL

CLASSIFICATION
*Appropriate designation
*Downgrading and declassification notation

IN REPLY REFER TO
Originator's code
*File number
*Serial number

DATE

TO: Title of head of activity, name of activity, mailing address of activity

NAVAL SPEEDLETTER—
Permits dispatch or informal language
May be sent (1) with enclosures, (2) in a window envelope (size 8½" x 3⅞"), if contents are not classified as confidential or higher, (3) to both naval and nonnaval activities
Is packaged 500 sheets of white or of one color yellow, pink, or green

(Fold)

*Subj: Brief topical statement of the subject of the speedletter *(Classification symbol)

*Ref: (a) Identification of referenced document

*(Classification symbol) XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXX.

*(Classification symbol) XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX. XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXX.

NAME OF SIGNING OFFICIAL

*Encl:
(1) Description of material enclosed with speedletter
(2) (SC) Description of material forwarded under separate cover

*Automatic time-phased downgrading and declassification notation

COPY TO
*Title of information addressee
*Title of second information addressee

ADDRESS: Title of head of activity, name of activity, mailing address of activity

←SENDER'S MAILING ADDRESS
Address reply as shown at left or reply hereon and return in window envelope (size 8½" x 3⅞"), if not classified as confidential or higher.

CLASSIFICATION
*Appropriate designation

Figure 8-13.—Naval speedletter.

AC.252

Figure 8-14 is an example of a smooth naval letter.

SECURITY

The security of the United States in general, and of naval operations in particular, depends in part upon the success attained in the safeguarding of classified information. It is of paramount importance that all who engage in administering security preserve a balanced and commonsense outlook toward the subject. The ideal to be sought is the indoctrination of all personnel to the point that they automatically exercise proper discretion in the discharge of their duties and do not think of information security as something separate and apart from other things. In this way, security of classified information becomes a natural element of every task and not an additionally imposed burden. The attainment of the desired objective requires sound direction from competent authority and full alertness and cooperation on the part of all subordinates.

Limitations of Security

Security is a means not an end. Rules which govern security do not guarantee protection, and they do not attempt to meet every conceivable situation. The law of diminishing returns limits the control measures that can be employed profitably, but it is possible to obtain a satisfactory degree of security with a minimum of sacrifice in operating efficiency.

Security Principle

The Department of Defense is employing a security formula which is simple in principle. It is based on the premise of circulation control; i.e., the control of dissemination of classified information. Therefore, knowledge or possession of classified information is permitted only to persons whose official duties require such access in the interest of promoting national security and only if they have been determined to be trustworthy.

As a senior petty officer you may expect to be assigned duties in the management of classified material as well as developing and supervising educational programs dealing with proper security procedures. Both of these duties are extremely important within any unit. In these sections we will discuss the various aspects of these duties that you should be cognizant of.

Security Classification Management

Local management of classified material will be assigned by the Commanding Officer/Officer-in-Charge of the organization. The duties of the designated individual will cover all the aspects of the proper stowage, handling and destruction of classified material under his cognizance. He will be responsible for keeping of accurate records from receipt to destruction of classified material.

For complete information of duties as well as guidance in performance of assigned managerial duties reference should be made to OPNAV Inst. 5510.1 (Series) and DOD Regulation 5200.1 (Series).

Security Education

The preceding references provide detailed guidance for commanding officers in the area of security orientation, education, and training.

Senior petty officers should become familiar with the requirements of this vital program and insure that subordinate personnel are properly indoctrinated.

The security education program must include all personnel entrusted with classified information regardless of their position, rank, or grade. The commanding officer will design the program to fit the particular requirements of the different groups of personnel who have access to classified information.

The security education program should be designed to insure the following:

1. Advise personnel of the need for protecting classified information and the adverse effects to the national security resulting from compromise.

2. Indoctrinate personnel fully in the principles, criteria, and procedures for the classification, downgrading, declassification and marking of classified material. Note: This will be discussed

Code AOT
12 May 1973

From: Commanding Officer, Naval Air Station, Memphis, Millington, Tennessee 38054
To: Department of the Navy Representative, Southern Region

Subj: Proposed private use airport, 72-SO-110-NRA; comments concerning

Ref: (a) NAVREP ltr Ser: 201 dtd 9 May 1972

1. The location of the proposed private use airport as shown in enclosure (1) of reference (a) is within the Naval Air Station Memphis Airport Traffic Area and is considered to be extremely detrimental to safety of flight for aircraft operating from Navy Memphis. The proposed airport location is 2.5 nautical miles from the approach end of runway 3, NAS Memphis' primary all weather runway. NAS Memphis averages 6000 operations per month, a large percentage of which are high speed jet aircraft. The NAS Memphis GCA pattern to runway 3, with 900 approaches, monthly, crosses directly over the proposed airport at 700 feet. Additionally all departures both radar and VFR from runway 21 pass in close vicinity to the proposed airport location.

2. In view of the above, construction of an airport in the proposed location is unacceptable.

J. E HORAN, JR.
By direction

AC.253

Figure 8-14.—Smooth naval letter.

further in this chapter.

3. Insure that personnel are familiar with the specific security requirements of their particular assignments.

4. Inform personnel of the techniques employed by foreign intelligence activities in attempting to obtain classified information and their responsibility for reporting such attempts.

5. Advise personnel of the hazards involved and the strict prohibition against discussing classified information over the telephone or in such manner as to be intercepted by unauthorized persons.

6. Insure that personnel are aware of the disciplinary actions that may result from violations of the security regulations

Positive programs should be established to provide periodic security training in the above mentioned areas for personnel having continued access to classified information.

Classification

Classification is the determination that official information requires, in the interests of national security, a specific degree of protection against unauthorized disclosure, coupled with a designation signifying that such a determination has been made.

The authority for making original classification determinations are restricted solely to those officials specifically designated in writing as outlined in DOD Regulation 5200.1 (Series).

CLASSIFICATION CATEGORIES.–Official information or material which requires protection against unauthorized disclosure in the interests of national security is classified in one of three categories, namely Top Secret, Secret, or Confidential, depending upon the degree of its significance to the national security. Note: The categories of classification are detailed in chapter 14 of AC 3 & 2, NAVTRA 10367-E.

CLASSIFICATION CRITERIA.–A determination to classify should be made only when one or more of the following considerations are present and the unauthorized disclosure of the information could reasonably be expected to cause a degree of harm to the national security:

1. The information provides the United States, in comparison with other nations, with a scientific, engineering, technical, operational, intelligence, strategic or tactical advantage directly related to the national security.

2. Disclosure of the information would weaken the position of the United States in the discussion, avoidance or peaceful resolution of potential or existing international differences which could otherwise generate a military threat to the United States or its mutual security arrangements, create or increase international tensions contrary to the national security of the United States, result in a disruption in foreign relations, or lead to hostile political or military action against the United States or its allies, thereby adversely affecting the national security.

3. Disclosure of the information would weaken the ability of the United States to wage war or defend itself successfully, limit the effectiveness of the armed forces, or make the United States vulnerable to attack.

4. There is sound reason to believe that other nations do not know that the United States has, or is capable of obtaining, certain information or material which is important to the national security of the United States vis-a-vis those nations.

5. There is sound reason to believe that knowledge of the information would: (a) provide a foreign nation with an insight into the war potential or the war or defense plans or posture of the United States; (b) allow a foreign nation to develop, improve or refine a similar item of war potential; (c) provide a foreign nation with a base upon which to develop effective countermeasures; (d) weaken or nullify the effectiveness of a defense or military plan, operation, project or activity which is vital to the national security.

To achieve maximum benefits from a security education program, the program must cover a variety of security facets as well as being geared to cover a wide cross-section of personnel. It should commence with the indoctrination of new personnel and include periodic refresher training for those personnel who are continually handling classified material. Portions of the program should also cover foreign travel by persons having had access to classified material and the proper debriefing of personnel who are terminating or transferring.

The preceding areas of security training mentioned actually comprise only the minimum training that should be covered. Additions to these should be made by organizations as their particular missions warrant.

APPENDIX I

DEFINITIONS AND ABBREVIATIONS

AL. -Approach and Landing (Chart).

APPROACH SEQUENCE.-The order in which aircraft are positioned while awaiting approach clearance or while on approach.

CONTROLLING OBSTRUCTION.-The highest obstruction relative to a prescribed geometric plane within a specific area.

DECISION HEIGHT (DH). -The height, specified in MSL, above the highest runway elevation in the touchdown zone at which a missed approach must be initiated if the required visual reference has not been established. This term is used only in procedures where an electronic glide slope provides the reference for descent, as in ILS or PAR.

FAC. - Final approach course.

FAF. - Final approach fix.

FB.-Final bearing. The magnetic bearing assigned by CATCC for final approach. It is an extension of the landing area centerline.

FLIGHT INSPECTION. -In-flight investigation and certification of certain operational performance characteristics of electronic and visual navigation facilities by an authorized inspector in conformance with the U.S. Standard Flight Inspection Manual, NAVAIR 16-1-520.

GPI. -Ground point of intercept. A point on the runway centerline at which it is assumed that a straight line extension of the glide slope intercepts the runway surface.

HAA. -Height above airport. Indicates the height of the MDA above the published airport elevation. This is published in conjunction with circling minimums. (Civilian only.)

HAT.-Height above touchdown. Indicates the height of the DH or MDA above the highest elevation in the touchdown zone. This is published in conjunction with straight-in minimums. (Civilian only.)

IAC. - Initial approach course.

IAF -Initial approach fix.

IC.-Intermediate course.

IF.-Intermediate fix.

JAL.-High altitude approach and landing (Chart).

KILO REPORT.-A pilot coded report indicating aircraft mission readiness.

LOCKON. -A verbal report from the final controller when SPN-10/42 radar acquires the aircraft and commences tracking. Mode I/II equipped aircraft should receive ACL READY/LOCKON discrete light.

MAP.-Missed approach point. A point specified in the approach procedure which may be the point of intersection of an electronic glidepath with a decision height or MDA, a navigation facility, a fix, or a specified distance from the final approach fix, at which a pilot on approach will commence missed approach procedure if visual requirements for a landing do not exist.

MDA.-Minimum descent altitude. The lowest altitude to which descent can be authorized in procedures not using a glide slope. Aircraft are not authorized todescend below the MDA until the runway environment is in sight, and the aircraft is in a position to descend for a normal landing.

MHA. -Minimum holding altitude.

OBSTRUCTION.-An existing object, object of natural growth, or terrain at a fixed geographical location, with reference to which vertical clearance is or must be provided during flight operation.

OBSTRUCTION CLEARANCE.-The vertical distance between the lowest authorized flight altitude and a prescribed plane within a specific area.

PENETRATION.-That portion of a published high altitude instrument approach procedure which prescribes a descent path from the fix on which the procedure is based to a fix or altitude from which an approach to the airport is made.

PLATFORM. A point 5,000 feet in the approach pattern at which all jet and turboprop aircraft will decrease their rate of descent to not more than 2,000 feet per minute, continuing letdown to the 10-mile gate. (Carriers only.)

PRECIPITOUS TERRAIN. Terrain characterized by steep or abrupt slopes.

RUNWAY ENVIRONMENT. The runway threshold or approved lighting aids or other markings identifiable with the runway.

SEGMENT. The basic functional division on an instrument approach procedure. The segment is oriented with respect to the course to be flown, i.e., intermediate, initial, or final approach segment.

STAR. Standard Terminal Arrival Route. A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

TRANSITIONAL LEVEL. The flight level below which heights are expressed in feet MSL and are based on approved station altimeter settings.

TDZ. Touchdown zone. The first 3,000 feet or runway beginning at the runway threshold.

TDZ ELEVATION. The highest elevation in the TDZ.

TERMINAL AREA FACILITY. A facility providing air traffic control service for arriving and departing IFR aircraft and, on occasion, tower en route control service.

TOWER EN ROUTE CONTROL SERVICE. Departure, en route, and arrival control service provided to IFR aircraft by one or more terminal area facilities.

APPENDIX II

SELECTED AIR TRAFFIC CONTROL INSTRUCTIONS

SELECTED ATC INSTRUCTIONS (LISTED IN NUMERICAL SEQUENCE)

Number	Source	Title
1700.6	SECNAV	Participation of Navy and Marine Corps Personnel in Sport Parachute Training, Competitive and Exhibition Parachute Jumping
TM2000-15/3	MCM	Administrative and Logistics Manual for Marine Air Traffic Control Units (MATCU)
2112.2	OPNAV	U.S. Navy Notices to Airmen (NOTAMS)
2400.10	OPNAV	Use of VHF for Aeronautical Communications
3140.45	OPNAV	Flight Forecast and Briefing Authorization for Weather Forecasting
3500.8	MCO	Aviation Training and Maintenance Manual
3500.10	MCO	Air Traffic Controller Training and Qualifications Requirements
3710.2	OPNAV	Foreign Clearance Procedures for U.S. Naval Aircraft
3710.7	OPNAV	NATOPS General Flight and Operating Instructions Manual
3710.31	OPNAV	Operational Procedures for Aircraft Carrying Dangerous Materials as Cargo
3721.1	OPNAV	Air Traffic Control Facilities Manual
3721.1	NAVAIR	Flight Inspection of Naval Shore-Based Air Navigational Aids, Approach Systems and Air/Ground Communications Facilities
3721.5	OPNAV	Naval Air Traffic Control and Air Navigation Aids and Landing Systems (NAALS) Program
3721.18	OPNAV	U.S. Interagency Ground Inspection Manual, Air Traffic Control and Navigational Aids Facilities
3722.5	OPNAV	Identification and Security Control of Military Aircraft
3722.8	OPNAV	Federal Aviation Administration Flight Service Interphone Communications Systems Procedure

Number	Source	Title
3722.16	OPNAV	U.S. Standard for Terminal Instrument Procedures (TERPS)
3722.30	OPNAV	Security Control of Air Traffic and Air Navigation Aids (SCATANA)
3750.6	OPNAV	Navy Aircraft Accident. Incident and Ground Accident Reporting Procedures
3750.14	OPNAV	Naval Aviation Safety Policy
3750.16	OPNAV	Implementation of Sec 702: Federal Aviation Act of 1958 –CAB/FAA Participation in a Military Aircraft Accident Investigation
3750.20	OPNAV	Near Midair Collision; reporting of
3760.1	OPNAV	Alleged Flying Violations: Reporting and Investigation of
3770.1	SECNAV	Use of Naval Aviation Facilities by Civil Aircraft
3770.2	OPNAV	Airspace Procedures Manual: promulgation of
4630.10	OPNAV	Responsibilities and Policies for Movement of Traffic on Other than MATS Scheduled Aircraft
4700.9	NAVELEX	MATCU Logistics Support Program
5300.3	MCO	Fleet Marine Force Personnel Assistance Program
5604.1	OCEANAV	Procedures for Requisitioning Material from the Naval Oceanographic Distribution System
11019.1	BUWEPS	Aircraft Noise Abatement Program
16-1-520	NAVAIR	U.S. Standard Flight Inspection Manual
50-1D-1	NAVAIR	Federal Meteorological Handbook #1
	NATOPS	CVA/CVS Manual
FAA Handbook 7110.8		Terminal Air Traffic Control
FAA Handbook 7110.9		En Route Air Traffic Control
FAA Handbook 7110.10		Flight Services
FAA Handbook 7130.3		Holding Pattern Criteria
FAA Handbook 7210.3		Facility Management
FAA Handbook 7220.1		Air Traffic Control Certification Procedures
FAA Handbook 7400.2		Procedures for Handling Airspace Matters

Number	Source	Title
FAA Handbook 7610.4		Special Military Operations
FAR Part 1		Definitions and Abbreviations
FAR Part 65		Certification: Airman other than Flight Crewman
FAR Part 67		Medical Standards and Certification
FAR Part 71		Designation of Federal Airways, Controlled Airspace and Reporting Points
FAR Part 73		Special Use Airspace
FAR Part 75		Establishment of Jet Routes
FAR Part 77		Objects Affecting Navigable Airspace
FAR Part 91		General Operating and Flight Rules
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FAR Part 95		IFR Altitudes
FAR Part 97		Standard Instrument Approach Procedures
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