U.S. Department of Homeland Security

United States Coast Guard

AUXILIARY TRAINING HANDBOOK - AVIATION

"Safe, Proficient, Professional"

ATH 16798.5A
August 2023

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U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

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AUXILIARY TRAINING HANDBOOK – AVIATION – ATH 16798.5A

Subj: AUXILIARY TRAINING HANDBOOK - AVIATION

Ref:
a. *Auxiliary Operations Process Guide: Volume II*, AOPG 16798.32 (series)
b. *Auxiliary Manual,* COMDTINST M16790.1 (series
c. *Coast Guard Air Operations Manual,* COMDTINST M3710.1 (series)
d. *Risk Management (RM),* COMDTINST 3500.3 (series)
e. *Communications Manual*, COMDTINST M2000.3 (series)
f. *Radiotelephone Handbook,* CG TTP – 6-01.1B
g. *Coast Guard Addendum to the United States National Search and Rescue Supplement (NSS) to the International Aeronautical and Maritime Search and Rescue Manual (IAMSAR),* COMDTINST M16130.2 (series)
h. *Coast Guard Standard Operating Procedures, Short-Range Unmanned Aircraft Systems, Flight Operations,* version 3.0.

1. PURPOSE.
   a. This Handbook provides standardized performance objectives and guidance for the purpose of training, qualifying, and certifying auxiliary members for duty on Coast Guard Auxiliary aircraft.
   b. In accordance with (IAW) references (a) through (h), every effort has been made to make this handbook useful and applicable to all aspects of Auxiliary procedures for aviation qualifications and training. In situations where this handbook does not address a specific organizational construct or relationship and the application of a particular provision is unclear, users should seek clarification from Commandant (CG-BSX) through their chain of leadership to clarify the provision in question.

2. ACTION. All Coast Guard unit commanders, commanding officers, officers-in-charge, deputy/assistant commandants, chief of headquarter directorates must comply with the policies contained.

3. AUTHORIZED RELEASE. Internet Release is Authorized.

4. DIRECTIVES AFFECTED.

   a. Auxiliary Aviation Training Manual, COMDTINST M16798.5B, is cancelled.

5. DISCUSSION. This Handbook is to provide guidance to train and qualify members of the Coast Guard Auxiliary as Pilot, Aircrew and Air Observer, and also serves as a policy reference to those members already certified in the above positions.

6. DISCLAIMER. This Handbook is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide operational guidance for Coast Guard Auxiliary personnel and is not intended to nor does it impose legally binding requirements on any party outside the Coast Guard Auxiliary

7. MAJOR CHANGES.

   a. Converted from Manual to Handbook.

   b. Updated Coast Guard office designations, addresses and telephone numbers.

   c. Updated flight rules and regulations.

   d. Removed all references to the legacy Patrol Order Management System (POMS) and replaced with AUXDATA II.

   e. Added a requirement that members who have been in Required Yearly Not Met (REYR) status for a period of five years or more must re-qualify by completing all required tasks for the desired position.

   f. Updated for new technology.

   g. Removed requirements for usage of Pilot/Aircrew Qualification form (ANSC-7015).

   h. Updated and changed currency flight hour and mission requirements from semi-annual to annual.

   i. Added Coast Guard Short-Range Unmanned Aircraft Systems (SR-UAS) program.

8. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS. The Office of Auxiliary and Boating Safety, Commandant (CG-BSX) reviewed this handbook and the general policies contained within and determined that this policy falls under the Department of Homeland Security (DHS) categorical exclusion A3. This handbook will not result in any substantial change to existing environmental conditions or violation of any applicable federal, state, or local laws relating to the protection of the environment. It is the responsibility of the action proponent to evaluate all future specific actions resulting from this policy for compliance with the National Environmental Policy Act (NEPA), other applicable environmental requirements, and the U.S. Coast Guard Environmental Planning Policy, COMDTINST 5090.1 (series).

9. DISTRIBUTION. No paper distribution will be made of this Process Guide. An electronic version will be located on the Office of Auxiliary and Boating Safety (CG-BSX) SharePoint intranet site: https://uscg.sharepoint-mil.us/sites/cg-bsx/cgbsx1/SitePages/Home.aspx and posted on the Chief Director of Auxiliary section of the Coast Guard Auxiliary web site: https://wow.uscgaux.info/content.php?unit=BX-GROUP. All web sites in this guide are the most current available. If the cited web link does not work, then access should be attempted by copying and pasting or typing the web site address into the user's internet browser.

10. RECORDS MANAGEMENT CONSIDERATIONS. Records created as a result of this Handbook, regardless of format or media, must be managed in accordance with the records retention schedules located on the Records Resource Center SharePoint site at: https://uscg.sharepoint-mil.us/sites/cg61/CG611/SitePages/Home.aspx

11. FORMS/ REPORTS. The Coast Guard forms called for in this Handbook are available on the intranet at https://play.apps.appsplatform.us/play/e/default-369ba0d5-02cb-4d2f-94fd-9212cc24b78c/a/449d74ad-9685-44e3-934b-46c72a05e1a2?tenantId=369ba0d5-02cb-4d2f-94fd-9212cc24b78c&source=portal
Coast Guard Auxiliary forms can be found at http://forms.cgaux.org/

/T. P. Glendye/
Captain, U.S. Coast Guard
Chief, Office of Auxiliary and Boating Safety

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CHAPTER 1
Introduction

Introduction

The Auxiliary is an organization of volunteers promoting boating safety and supporting Coast Guard units and missions. The Auxiliary also provides support to state and local agencies and the boating public. The U.S. Coast Guard recognizes and highly respects all Auxiliarist who so generously donate their skills, time, and resources to support the full spectrum of Coast Guard operations and operational support missions. As such, the U.S. Coast Guard takes great pleasure in presenting the Auxiliary Training Handbook – Aviation to the volunteers of the U.S. Coast Guard Auxiliary.

In this Chapter

This chapter contains the following sections:

Section A. Purpose of this Handbook

Introduction

The purpose of this handbook is to describe the Coast Guard Auxiliary Aviation Program and the training requirements for Auxiliary members to participate in the program. Major topics within this handbook include system components, qualifications, certification, currency maintenance, and aviation training specific to Coast Guard Missions.

In this Section

This section contains the following information:

A.1. Procedures

This handbook is not intended to cover every contingency that may be encountered during mission execution or training. Successful operations require the exercise of good safety practices, sound judgment, and common sense at all levels of command.

A.2. Updates and Changes to this Handbook

Proposed changes to this Handbook shall be submitted to the Office of Boating Safety and Auxiliary, Commandant (CG-BSX-12), via the Response Directorate, thru the requesting members Chain of Leadership and Management (COLM). Please submit a formal request email, through your COLM to: CGAUX@uscg.mil, Attn: CG-BSX-12. CG-BSX has ultimate approval authority.

Section B. How to Use this Handbook

Introduction

Each chapter of this Handbook includes its own table of contents and is divided into sections. A glossary, enclosures, and appendices are located at the end of this Handbook.

In this Section

This section contains the following information:

B.1. Chapter Layout

(01) The first page of each chapter includes an *Introduction* and an *In this Chapter.*

(02) The first page of each section includes an *Introduction*, an *In this Section*, as applicable.

(03) In the left column of each page are block titles, which provide a descriptive word or phrase for the corresponding block of text to the right.

B.2. Warnings, Cautions, and Notes

The following definitions apply to "Warnings, Cautions, and Notes" found throughout the Handbook.

WARNING **Operating procedures or techniques that must be carefully followed to avoid personal injury or loss of life.**

CAUTION ! **Operating procedures or techniques that must be carefully followed to avoid equipment damage.**

NOTE **An operating procedure or technique that is essential to emphasize.**

Section C. Program Overview

Introduction

This Handbook provides policy and guidance for training, qualifying, and certifying Auxiliarists in the Aviation Program. It is intended for use by Auxiliary districts, Directors of Auxiliary, and Coast Guard units that administer the Auxiliary training program. This program is based on the program used by the active-duty component of the Coast Guard. To foster mutual understanding and interoperability, active-duty nomenclature and procedures are used to the greatest extent possible. Where the Auxiliary program differs from that used by the active-duty component that is due to the unique needs of civilian volunteers operating non-standard aircraft in the Auxiliary's mission profile.

In this Section

This section contains the following information:

C.1. Definitions

Aviation Training Program refers to the overall process of training, qualifying, certifying, maintaining currency, and using members certified as pilots, co-pilots, air crew, and air observers, to fly Coast Guard missions under orders. A complete list of terms and definitions is found in reference (a).

Flight crew in this handbook refers to crew members assigned to an aircraft under orders, responsible for conducting the mission, independent of their qualification.

Aircrew refers to one of the three certification levels or qualifications.

C.2. Coast Guard Mission

The United States Coast Guard is a multi-mission maritime service and one of the Nation's armed forces. Its mission is to protect the public, the environment and U.S. economic interests in the Nation's ports and waterways, along the coast, on international waters, or in any maritime region as required to support national security.

The Auxiliary's mission is to support the Coast Guard in the performance of its missions. The Auxiliary also supports the states by performing missions on waters under the sole jurisdiction of the states.

C.3. AUXAIR Mission

"Assist the Coast Guard in all areas authorized by the Commandant by performing any Coast Guard function, power, duty, role, or operations authorized by law. It shall be the responsibility of the Coast Guard Auxiliary to provide aircraft which meet all current Federal Aviation Regulations along with trained and qualified crews to accomplish these tasks."

Air Station Commanding Officers have the sole authority to assign auxiliary aircraft to missions. When assigned to duty, Auxiliary aircraft are considered Coast Guard Aircraft, and identify as such with Air Traffic Control. Aircraft owners are reimbursed for fuel expenses and granted a maintenance allowance.

Auxiliary aircraft can offer increased range and, in many cases, can be on station as quickly as active-duty aircraft. They act as a significant force multiplier for the Air Station Commanding Officer. Missions are followed up with a detailed report and photographic imagery.

C.4. Concept of Operations

A **concept of operations** in reference (a) defines the nature and purpose of Auxiliary patrols. The training requirements and performance standards contained in this handbook are designed to prepare Auxiliary flight crewmembers to safely perform the roles described in the concept of operations.

Coast Guard units that train Auxiliarist or issue patrol orders to Auxiliary facilities need to understand both the benefits and limitations of using Auxiliary patrols to help carry out their missions.

Section D. The Training Process

Introduction

The Commandant is required by law to train, examine, and qualify Auxiliary members before assigning them to duty (14 U.S.C. 831). This is necessary to ensure the safety of Auxiliary members, as well as the safety of people who may be assisted by the Auxiliary.

Auxiliary members are afforded protection against liability for property damage or loss, personal injury, disability, or death, and are protected against third-party lawsuits resulting from the performance of their duties while under orders.

This liability protection is effective only when an Auxiliarist is properly qualified and assigned to duty and acting within the scope of assigned duties.

Additionally, training is necessary to ensure that Auxiliarists meet the high standards of the service, and their performance of duty reflects positively on the Coast Guard.

In this Section

This section contains the following information:

D.1. Flight Crew Positions

Auxiliary members may qualify in the following flight crew positions:

- Pilot: Pilots may be qualified as Aircraft Commander (AC), First Pilot (FP) or Co-Pilot (CP) depending on training and flight experience. All may perform as PIC or Second Pilot depending on their qualification, ratings, and the mission requirements.
    1. Pilot Flying (PF): Responsible to control the flight path of the aircraft, including automated systems if engaged. Secondary responsibility to monitor non-flight path associated tasks such as aircraft systems, navigation, radio communication, and the activities of other flight crew members.
    2. Pilot Monitoring (PM): The Pilot Monitoring or Second Pilot is responsible to monitor the flight path of the aircraft, including automated control systems, and execute appropriate backup. Secondary responsibility is to complete non-flight path associated tasks such as aircraft systems, navigation, radio communication, and the activities of other flight crew members.
    3. Pilot Candidate: Certified Air Observer and Aircrew and an FAA licensed airman and licensed airman who has been selected by the DSO-AV to begin pilot training.
- Aircrew: The Auxiliary Aircrew position was created to provide the Auxiliary pilot a capable assistant during all phases of Auxiliary aviation missions and especially during times of high cockpit workload. Aircrew are trained to fulfil all Air Observer duties, while also assisting the Auxiliary pilot with radio communications, weather gathering and recording, navigation in both visual and instrument meteorological conditions, and visual and instrument approaches to airports.
    1. Aircrew Candidate: Certified Air Observer who has been selected by DIRAUX to begin training for the Aircrew qualification.
- Air Observer: Observers are trained in aerial observation techniques, waterway features, shipping, vessel traffic, maritime signals, Coast Guard communications, wind and sea states, oil spills, air & marine navigation, emergency procedures, ditching, egress, maintaining situational awareness and mission planning. Candidates for all flight crew qualifications, including pilot, first train as an Air Observer.

- Air Observer Trainee: Trainees are candidates for the Air Observer position that have been approved by the DSO-AV to begin training. They are not eligible to fly offshore until completion of the swim test nor may they serve as minimum crew for certain missions such as SAR.

D.2. Steps in the Training Process

The training process consists of three parts:

1. Qualification: The process of initial entry into the program, in which the member learns and demonstrates the knowledge and skills required to perform missions that may be assigned.
2. Certification: Formal command verification that an individual has met all requirements and is authorized to perform the flight crew duties at a specific level aboard an Auxiliary aircraft.
3. Currency Maintenance: Tasks which are required to be repeated a certain number of times at regular intervals to maintain currency.

Each of these three parts is discussed in detail in the following chapters. The process is summarized below.

D.3. Training Process Overview

A series of **qualification tasks** defines the knowledge and skills required for each flight crew position. Each task describes a certain job skill and states performance criteria for that skill. For example, a qualification task for the first pilot position is to fly several search patterns. The candidate or trainee completes the task by studying the reference material listed, reviewing the skills with a flight instructor, and then practicing the task. When the trainee demonstrates mastery of the task without guidance, the task is **signed off** by the flight examiner.

The Instructor Pilot/Flight Examiner (IP/FE) is an experienced Auxiliary Aircraft Commander appointed by the Director of Auxiliary (DIRAUX) to verify that the candidate meets the performance standards for qualification. Upon completion of the oral exam and check ride, the IP/FE submits a recommendation to the Director, who then certifies the member. The member is then eligible to be assigned to duty under Auxiliary patrol orders. First Pilots and Aircraft Commanders may sign off individual syllabus line items for Air Observer Trainees and Aircrew Candidates, but an IP/FE must sign the overall syllabus.

The member maintains currency of certification by meeting annual minimum standards. The member must maintain the ability, mobility, and endurance to safely perform any qualification task for which they have been certified.

CHAPTER 2
Qualification

Introduction

This chapter discusses the elements of the trainee process to obtain a competency. It provides an overview of the qualification tasks, qualification process, and the progression of qualifications.

Qualification is the one-time attainment of performance tasks for a specific competency (completion of an aviation syllabus). This is not to be confused with certification, which is outlined in Chapter 3.

In this Chapter

This chapter contains the following information:

Section A. Eligibility and Preparation

Introduction

Aviation is extremely selective and not all Auxiliary members qualify for participation. The qualification requirements of this program have been tailored from the standards used by active-duty aviators. Based on these qualifications, Auxiliarist, who safely and successfully complete the qualification tasks by demonstrating the skill, mobility, and endurance, are considered Qualified and eligible to achieve Certification in the Aviation Program. Candidates for an aviation qualification must be pre-screened by the DSO-AV prior to being accepted for training and must also pass an online exam, aviation medical exam and swim test. An aviation C-school is required of all members and a second is required for pilot candidates.

Members entering this program must be willing to professionally represent the Coast Guard and Coast Guard Auxiliary to the public. This requires attention to appearance and attitude, as well as an extensive knowledge of operational policies and procedures. Auxiliary aviators frequently attend functions at the Air Station and must be familiar with and demonstrate appropriate military protocol. By law, when flying orders, Auxiliary pilots are Coast Guard pilots

In this Section

This section contains the following information:

A.1. Authority

Directors of the Auxiliary (DIRAUX) have the sole authority to issue or revoke Auxiliary aviation qualifications. The Director, in coordination with the cognizant Air Station Commanding Officer, approves all qualifications and enters them in AUXDATA II.

Each person flying as a crewmember on a Coast Guard aircraft shall hold a current certification or be in training for an aviation qualification

A.2. Eligibility

Auxiliary members who meet the requirements listed in Chapter 1, Section A of reference (b), have submitted their Direct Operational Personnel Security Investigation (DO PSI), and have been selected by the DSO-AV are eligible to begin training in the Aviation Program. A favorable determination from a Direct Operational Personnel Security Investigation (DO PSI) is required prior to certification in any aviation qualification. Members must be basically qualified (BQ) before entering the aviation program.

Pilots must possess an FAA airman's certificate in accordance with the applicable Federal Aviation regulations (FARs). The FAA is the authority that licenses all Auxiliary pilots.

A.3. Exam Preparation

Reference (a) and this handbook shall be read and understood prior to taking any aviation written exam.

The aviation qualification exam is open-book and can be taken on-line through the Auxiliary National Test Center. Assistance with training, mentoring and the examination can be obtained through the Assistant District Staff Officer for Aviation Training (ADSO-AVT).

A.4. Medical Clearance for Flight Duty

See reference (a).

A.5. Physical Requirements

All aviation qualified members must be capable of boarding and egressing a small aircraft during normal and emergency conditions, removing life rafts and other survival gear from a ditched aircraft, swimming to the life raft, inflating and boarding a single man life raft in deep water without any assistance. Aviators are required to annually complete emergency ditching and water survival training. The use of a Coast Guard Shallow Water Egress Trainer (SWET) is typically used. Candidates for an aviation qualification must be capable swimmers and comfortable with being upside down (inverted) under water.

Trainees must meet the following standards in completing each qualification task:

- The trainee must successfully perform each task personally, without assistance.
- Each task must be performed safely with confidence.

A.6. Flight Training

After having passed the aviation exam(s), the Trainee, with the recommendation of a First Pilot or Aircraft Commander, requests permission from the DSO-AV to enter the Aviation Program and begin training. The trainee must have completed all Auxiliary Core Training and possess either an FAA Medical certificate (3rd class or higher) or the Flight Crew Medical Screening (ANSC 7042A). Some districts require permission from the Director prior to entering the program.

With permission from the DSO-AV, the Observer Trainee may begin the practical flight portion of the Air Observer syllabus in accordance with District policy. The trainee may only fly on missions that do not require the aircraft to go beyond a safe gliding distance from the shore until the water survival test and egress training have been completed. Minimum crew requirements for Auxiliary Aircraft are defined in reference (a) and summarized in this handbook. Observer trainees shall not be used in lieu of a qualified Air Observer on any mission other than scheduled daylight, routine, non-SAR missions

A.7. Observer Trainee Entry Requirements

Members shall meet the following additional pre-requisites prior to being designated as an Air Observer Trainee:

- Member in BQ or AX status.
- Auxiliary Core Training (AUXCT) Current.
- Pass Aviation Exam A.
- Current FAA 3rd Class Medical or ANSC-7042.
- ICS 100 and 700.
- AUX-17 C-school completed within the past 5-years.
- Recommended by a FP or AC.
- Obtain permission of the DSO-AV to enter the Aviation Program (some districts require DIRAUX approval).

Prior to Flight Training:

- Submit DO PSI package.
- Emergency Egress Training.

- Aviation swim prior to flying beyond gliding distance from shore.
- Water survival and equipment training.

Prior to Certification:

- AUX-17 C-school completed within the past 5-years.
- Completion of the syllabus.

A.8. Aircrew Candidate Entry Requirements

Aircrew Candidates are selected based on the need of the District, Air Station, and their potential to advance to Aircrew. Members shall meet the following pre-requisites prior to being designated as an Aircrew Candidate:

- Certified as Air Observer.
- AUXCT.
- AUX-17 C-school completed within the past 5-years.
- CRM Refresher or AUX-17 within the past 15-months.
- Emergency egress training.
- Swim test.
- Water survival and equipment training.
- FAA Medical certificate (3rd class or higher) or ANSC-7042 Medical Screening current.
- Successfully complete aviation exam B.
- CGAS Air Safety Workshop.
- Submit ANSC-7043 and be designated an Air Crew trainee by DIRAUX (not required if Candidate possesses an FAA Airmen Certificate, private or higher).

A.9. Pilot Candidate Entry Requirements

Members shall meet the following additional pre-requisites prior to being designated as a Pilot Candidate:

- Certified as Air Observer and Aircrew.
- FAA Airmen Certificate, private pilot or higher.
- FAA biennial flight review current.
- Auxiliary Core Training (AUXCT) current.
- Aviation Exam B.
- ICS 200, 210 and 800.
- Emergency Egress Training.
- Aviation swim and water survival.
- AUX-17 in the past 5-years.
- Annual (AIR) CGAS Workshop.
- Annual CRM Refresher.
- All FAA Requirements.
- CFR 61.57(a) – All.
- CFR 61.57(b) – First Pilots.
- CFR 61.57(c) – Aircraft Commanders.
- 200 hours PIC – Co Pilot.
- 500 hours PIC – First Pilot.
- 1000 hours PIC – Aircraft Commander.
- Survival gear training.
- Low pressure/Dynamic Hypoxia Training (AUX-18) – prior to certification.
- Underwater Egress Training (AUX-18) – prior to certification.

Section B. Qualification Process

Introduction

Trainees and Candidates for aviation qualifications are expected to demonstrate significant self-initiative as they train for a qualification and complete the steps. All the necessary information is on-line and easily accessed. While the aviation program does not rely on a formal mentoring system, all qualified crewmembers are expected to provide mentoring and to share their knowledge and experience with junior flight crewmembers, trainees, and candidates.

Flight instructors and flight examiners are qualified to perform formal syllabus instruction. This does not limit other crew positions from providing instruction as prescribed within specific curricula.

In this Section

This section contains the following information:

B.1. Mentors

A primary goal of the USCG Aviation Training Program is to assist members to become qualified and participate in operational missions. The purpose of the training program is to enable members to learn and perform to the high standards prescribed by the US Coast Guard. It must be remembered that many join the Auxiliary to further their aviation skills. It is the mentor's responsibility to guide the member through the training process. The Assistant District Staff Officer for Aviation Training (ADSO-AVT) is responsible to oversee all aviation training within the District.

A mentor is a subject matter expert, a coach, and an advocate. The mentor helps the trainee learn the knowledge and skills required for each qualification task. Planning is a key element of the process. Working with the trainee, the mentor should plan the training program.

The manner by which a task is reviewed will depend on many factors, including the knowledge and skill of the trainee, his/her prior experience and aptitude for the work. The degree of review and training will vary from minimal to extensive. Tasks should be completed multiple times before determining that it is mastered. Some tasks will have environmental or time limits to be met. Every task must be performed independently by the trainee to the standard's specifications.

Line items on the Air Observer Syllabus and Aircrew Syllabus may be signed off by a First Pilot or Aircraft Commander. Line items on the Pilot Syllabus must be signed off by a Flight Examiner. The Flight Examiner must approve the overall Syllabus for any aviation qualification.

B.2. Aviation Qualification

Qualification is the one-time attainment of performance tasks for a specific competency (completion of PQS/Syllabus). An aviation qualification certifies that a pilot or other flight crew member has gained the training and experience necessary to perform the appropriate minimum crew duties required of that qualification. Members holding an aviation qualification are required to maintain their currency requirements. A flight crew member shall continue to hold a qualification even if the requirements to obtain that position are subsequently changed, provided they maintain their currency. However, additional training might be required.

The Director of Auxiliary (DIRAUX) may award an aviation qualification upon completion of all requirements and the appropriate BSX approved syllabus. Aviation qualifications shall be rescinded if the DIRAUX determines that the individual is no longer professionally qualified and revokes the designation, or the individual requests to be permanently removed from flight duty.

Auxiliary aviation qualifications include Co-pilot (CP), First Pilot (FP), Aircraft Commander (AC), Instructor Pilot/Flight Examiner (IP/FE), Air Crew (AIRCREW) and Air Observer (AIROBS).

B.3. Syllabus and Check Rides

Each aviation qualification has an associated Syllabus. The Syllabus includes Instructions, Pre-Requisites, and a Check Ride sheet of specific tasks.

Members must be authorized by the ADSO-AVT to begin a Syllabus. The ADSO-AVT, working with the Assistant District Staff Officer for Aviation Management (ADSO-AVM) will verify that the Trainee or Candidate has completed the required pre-requisites.

Any First Pilot or Aircraft Commander in the District for which the qualification is sought, may conduct training, and sign off individual tasks on the Air Observer Syllabus checklist. A Flight Examiner must sign off on the Air Observer Trainee at the bottom of the syllabus. The Director may approve qualification from another district, or flight and ground checks from another district, at the Director's discretion. Candidates for any Auxiliary flight crew position, including pilot, must first successfully complete the syllabus for Air Observer.

An Air Observer who completes all the pre-requisites, submits an ANSC-7043 (with the endorsement of the DSO-AV) and receive permission from the Director of Auxiliary (DIRAUX) is designated an Aircrew Candidate and may begin the flight training portion of the Aircrew Syllabus. Any First Pilot or Aircraft Commander in the district for which the qualification is sought, may conduct training, and sign off individual tasks on the syllabus checklist. A Flight Examiner must fly with the Candidate and sign off the Aircrew Syllabus at the bottom of the checklist. The Director may approve qualification from another district or flight and ground checks from another District at the Director's discretion.

A Pilot Candidate may begin flight training with an Instructor Pilot after they have completed the Observer syllabus been certified. A Flight Examiner in the district for which the qualification is sought, may sign off individual tasks on the syllabus checklist and approve the syllabus. The Director may approve qualification from another district or flight and ground checks from another District at the Director's discretion. In addition to maintaining all FAA currency requirements, pilots are required to complete the Auxiliary flight check every 24 months. The flight check is a biennial requirement and expires at the end of the 24th month from the date of the last check. Failure to complete the syllabus to the level being tested shall result in reversion to the highest qualification level satisfactorily completed.

B.4. Completing a Syllabus

The syllabus must be completed to the required performance level prior to the trainee's or candidate's certification in any aviation competency. The trainee or candidate's responses to the syllabus check elements shall be evaluated as either LEVEL, TRAIN to LEVEL or UNSAT. The basic criteria to be used for evaluating candidate performance shall be those of clearly and satisfactorily completing each task with a complete regard for safety.

Signoff of each element shall not be made until the evaluator determines satisfactory completion of the task. Determinations shall be made using the following criteria:

SATISFACTORY – the Air Observer Trainee, Aircrew candidate or Pilot Candidate performed the task with accuracy and a complete regard for safety with only a few minor errors.

- **LEVEL** – The trainee/candidate under evaluation performed at the required performance level (a satisfactory mark). If the trainee/candidate under evaluation identifies errors, self-corrects, and demonstrates the ability to maintain proficiency at the required performance level, a LEVEL mark is appropriate.
- **TRAIN to LEVEL** – An error(s) that required additional training to ensure that the trainee/member under evaluation is able to perform at the required performance level without further instruction (a satisfactory mark). Flight Examiners are encouraged to "Train to Level" during the flight check when appropriate.

UNSAT - the Air Observer Trainee, Aircrew candidate or Pilot Candidate did not perform at the required level and committed critical and/or a number of non-critical errors. This requires an UNSAT mark.

In addition, the trainee/candidate's in-flight CRM performance must be satisfactory.

B.5. Aviation Training

The following training is required:

- **Emergency Egress Training**: Annual training in emergency egress must include at least a lecture on basic principles, use of related equipment, egress principles, and the required pre-flight briefing for the type of aircraft in use.
- **Swim Test:** Before the first flight as an air crewmember in a Coast Guard Auxiliary aircraft operating offshore under orders, and then an as annual requirement, each crewmember must swim 75 yards and then successfully demonstrate entry into a waterborne life raft. Crewmembers may wear an inflated PFD during the swim. Life rafts used in the swim test should be of the same type carried aboard Auxiliary or Coast Guard aircraft.
- **Water Survival:** Before the first flight as an air crewmember in a Coast Guard Auxiliary aircraft operating offshore under orders, and then an as annual requirement, each crewmember must receive instruction in water survival techniques and the use of all survival equipment on board the aircraft. Subject to availability, Auxiliarist may make use of available Coast Guard personnel, equipment, and facilities in meeting the requirements of this paragraph. Auxiliary aviators are encouraged to take part in Shallow Water Egress Training (SWET) when available and provided by the Air Station. Emergency Egress and Water Survival Training is conducted annually at the CGAS Air Station Safety Workshop.
- **Coast Guard Air Station (CGAS) Air Safety Workshop:** All Auxiliary pilots, air crew and observers must annually attend the CGAS Air Safety Workshop that has been approved by the Coast Guard Air Station.
- **Auxiliary Crew Resource Management (AUX-17):** All Auxiliary pilots, air crew, and observers must complete this C-school **prior** to certification in any Auxiliary aviation position. The C-school must then be completed on a recurring basis with an interval not to exceed five calendar years.
- **Spatial Disorientation and Survival (AUX-18):** All Auxiliary pilots must complete this C-school on spatial disorientation and flight physiology prior to certification in any Auxiliary pilot position. Initial attendance is required at the course provided by the FAA Civil Aerospace Medical Institute (CAMI). The C-school must then be completed on a recurring basis with an interval not to exceed five calendar years.

- **CRM Refresher:** Must be completed annually, no later than the end of the 15th month following AUX-17 or subsequent CRM Refresher training. Must be completed by all pilots, air crew, and observers

B.6. Air Observer Qualification

Prior to completing any aviation qualification, all flight crewmembers must first qualify and certify as Air Observer. Air Observer trainees must complete the following to become qualified:

- Auxiliary Crew Resource Management (AUX-17) C-school.
- Current on all BQ (basically Qualified Member) requirements.
- CRM Refresher or AUX-17 C-school within the past 15-months.
- Participate as an Observer Trainee on missions totalling a minimum 10 flight hours and complete such area familiarization as required by the Order Issuing Authority (OIA).
- Successfully complete the BSX approved Air Observer Syllabus and be signed-off by an Auxiliary Flight Examiner.

B.7. Aircrew Qualification

Air Crew Candidates must complete the following to become qualified:

Non-pilot Candidates:

- Successfully complete the BSX approved Air Crew Syllabus. Candidates holding an FAA airman's certificate, private pilot or higher, are considered to have completed the syllabus.
- Minimum 5-hour Air Crew flight training under orders, including licensed pilots.

Pilots holding an FAA Private Pilot or higher Airman's Certificate:

- Successfully complete a minimum of 5 flight hours training as an Air Crew Candidate
- Non-instrument rated pilots must also complete the IFR tasks of the Syllabus with an Aircraft Commander, including:
  i. Low altitude enroute charts
  ii. Terminal Procedure Publications (TPP)
  iii. VOR/DME, LOC, ILS and RNAV approach plates
  iv. Standard Arrivals and Departures (STAR, SID)
  v. Open and close an ICAO instrument flight plan

vi. Back up pilot on instrument approaches (VOR, ILS, RNAV)

vii. Explain and demonstrate use of low altitude enroute charts.

viii. Demonstrate the use of approach plates in flight.

B.8. Co-Pilot Qualification

To be designated a Co-pilot (CP), an aviator must demonstrate proficiency in performing duties required of a Co-pilot. CPs may fly as PIC on standard missions and logistics missions. They may act as a safety pilot if they meet the requirements for the mission.

The member must also demonstrate knowledge in aircraft systems and emergency procedures; communications and security procedures; Federal Aviation Regulations; and this Handbook.

Prior to initial qualification as Co-Pilot (CP), the member shall:

- Complete the BSX approved syllabus for Co-pilot.
- Be certified as Air Observer and Aircrew.
- Have at least 200 hours or total time as PIC, of which at least 12 hours were within the last 6 months.
- Be current for passengers, 14 CFR § 61.57(a).
- Fly on at least two Coast Guard missions not as PIC and complete an area familiarization, as required by the OIA.
- Complete the AUX flight check and be signed off by an Auxiliary Flight Examiner.

B.9. First Pilot Qualification

To be designated a First Pilot (FP), an aviator must demonstrate proficiency in performing First Pilot duties. In addition to those duties assigned to a Co-pilot, First Pilots are authorized to act as PIC on Search and Rescue (SAR) and Rotary Wing Intercept Training (RWAI) missions.

Prior to initial qualification as First Pilot, the member shall:

- Fulfil, to a more advanced degree, all requirements for CP qualification.
- Complete the BSX approved training syllabus for First Pilot, including SAR procedures.
- Have at least 500 hours of total pilot time as PIC.
- Be current for night flight, 14 CFR § 61.57(b).
- Complete the AUX flight check and be signed off by an AUX Flight Examiner.

B.10. Aircraft Commander Qualification

To be designated an Aircraft Commander (AC), an aviator must demonstrate, to a high degree, the ability to exercise judgment, flight discipline and flight crew supervision, including the use of Crew Resource Management principles. The member must also demonstrate knowledge in this handbook, current directives, including unit, district, and Commandant Instructions, pertinent technical data and publications concerning aircraft operations, application of operations and communications plans, and operations over the High Seas.

For initial qualification as Aircraft Commander (AC) the member shall:

- Fulfil, to a more advanced degree, all requirements for FP designation.
- Complete the BSX approved training syllabus for Aircraft Commander, including SAR procedures and instrument procedures.
- Have at least 1000 hours as PIC.
- Be current for instrument procedures, 14 CFR § 61.57(c).
- Complete the AUX flight check and be signed off by an AUX Flight Examiner signed by a Flight Examiner.

B.11. PIC Requirements

To operate aircraft on Coast Guard orders, the PIC must meet the following requirements:

- A minimum of 200 flight hours in an aircraft of the same category (fixed or rotary wing).
- A minimum of 100 flight hours in an aircraft of the same class (single or multi-engine, land/sea, etc.)
- A minimum of 50 flight hours and 25 landings to a full stop in a tail wheel aircraft if the aircraft to be flown is a tail wheel aircraft.
- A minimum of 50 hours in a complex aircraft (retractable gear) if the aircraft to be flown is a complex aircraft as described in the FARs.
- A minimum of 50 flight hours in a gas turbine aircraft if the aircraft to be flown is a gas turbine powered aircraft.
- A minimum of 25 flight hours in a high-performance (over 200 hp) aircraft if the aircraft to be flown is a high-performance aircraft as described in the FARs.
- These hours may be logged concurrently.

B.12. Assignment to Duty

Once qualified and certified by the Director, members are available for assignment to duty. The district aviation scheduler will be informed of their availability and begin scheduling them for missions. The Air Station issues orders to the PIC.

Section C. Completion of the Qualification Syllabus

Introduction

The Air Observer, Aircrew, Pilot, and Instructor Pilot-Flight Examiner Syllabi are posted on the Response Directorate's website. They provide instruction and specific tasks that must be completed during a check ride. The syllabi also provide pre-requisites that must be completed prior to the check ride.

In this Section

This section contains the following information:

C.1. Auxiliary Aviation Syllabus

Specific Syllabus exist for the following qualifications:

- Air Observer
- Aircrew
- Pilot
- Instructor Pilot – Flight Examiner

C.2. Completion of Tasks

The following steps offer a recommended approach to completion of the qualification guide:

1. Mentors should guide and encourage trainees to attend any formal training classes conducted by the district or other qualified flight crewmembers.
2. The Aviation Program requires the Trainee or Candidate to demonstrate significant self-initiative and independent study. Pilots typically provide instruction during training or operational missions.
3. Each district/region is encouraged to conduct formal aviation training that they may develop on their own or by using a Best Practices from other districts.

4. The Trainee or Candidate is expected to demonstrate significant progress with each flight.

When satisfied that the trainee meets the standard of a task, the mentor verifies completion by signing-off the task. If a Trainee is not demonstrating sufficient progress, they will be dropped from the program.

C.3. Additional Requirements

Air Station Commanding Officers and DIRAUX may place additional requirements on flight crewmembers.

C.4. Qualification Timeline

Observer Trainees and Aircrew Candidates are expected to complete the appropriate qualification they are working to achieve within two years of starting the process. A trainee who is unable to make reasonable progress towards this goal is using training resources that might be better used on other trainees. The Observer Trainee process starts upon successfully completion of Aviation Exam A. The Aircrew Candidate process starts when form ANSC-7043 has been approved by DIRAUX.

If the observer trainee is unable to complete within two years, district aviation leadership shall decide whether the member should continue in the program. If the trainee continues in the program, all signs-offs completed over two years prior to the check ride must be redone and so noted on the sign-off sheets.

C.5. Mission Orders

All flight training for task completion, with both mentors and qualification examiners requires Coast Guard reimbursable or non-reimbursable patrol orders prior to flight. It is the responsibility of the PIC to ensure that orders have been requested and issued through AUXDATA II and include the Trainee or Candidate.

Flight training typically occurs as a secondary mission while assigned to a Coast Guard operational mission. Most Air Stations will also issue orders with training as the primary mission.

C.6. Air Station Support

All Coast Guard Air Station Commanding Officers, Executive Officers, Operations Officers, AUXLOs, and FSOs are strongly encouraged to participate in the training process for Auxiliarists to ensure Auxiliary Flight Crews are effective and safe.

Section D. Administration of Qualifications and Training

Introduction

Districts are required to implement a standardized aviation training program and records management process.

In this Section

This section contains the following information:

D.1. District Aviation Training Program

District training programs shall be established to prepare flight crewmembers for initial qualification and to maintain desired skills through recurrent training. The District ADSO-AVT is responsible to oversee aviation training.

D.2. Scheduling of Periodic Training

Periodic training intervals represent the maximum time between events. An event having a 12-month completion interval shall be scheduled within 12 months after its most recent completion. For a calendar year event, a reasonable attempt shall be made to schedule the event one year from its most recent completion. Complete the syllabus flight check and be signed off by the District's Senior Flight Examiner.

D.3. Flight Examinations

Pilots shall coordinate their AUX flight check with the District IP/FE(s).

D.4. Records

The ADSO-AVM will oversee a records management program and maintain district/squadron aviation records.

D.5. Compliance with Training Requirements

All flight crewmembers require thorough training to function as efficient members of a safe and effective flight team. To ensure crewmembers develop and maintain a high standard of proficiency, DSO-AVs of aviation programs, with the assistance of the ADSO-AVT shall ensure completion of training as described in this Chapter. Air Station Commanding Officers may require additional training beyond these minimums if necessary to maintain proficiency.

Personnel shall not be allowed to remain in a training syllabus without satisfactory progress for extended periods. Trainee status shall not be used to allow undesignated individuals to remain on flight orders.

D.6. Failure to meet Pilot Training Requirements

IP/FEs determine the magnitude of the deficiency when deciding whether to remove or change a pilot's qualification. Minor deficiencies, corrected during the same flight and marked as Train to Level do not require a letter or a change in qualification.

District IP/FEs are authorized to fly with that individual to re-evaluate performance to the required level only after a training plan is approved by the District Training Officer (ADSO-AVT).

D.7. Failure to meet Other Flight Crewmember Training Requirements

District Training Officers shall submit a letter report to the DSO-AV and AAC, together with a statement from the flight crewmember concerned, whenever a flight crewmember fails an evaluated event, fails a written examination, or fails to maintain a qualification in accordance with the training requirements of this Chapter. This report must be submitted within 30 days following the end of the period.

Exceptions to this requirement are failures during an upgrade syllabus or lapses due to medical issues. The crewmember shall not fly in the capacity of the qualification for which the member is deficient, pending a decision by the District Aviation Board regarding this status. The DSO-AV may remove the individual from flight orders, allow additional training, or take other action as appropriate.

CHAPTER 3
Certification

Introduction

This chapter explains the certification and recertification for Auxiliarists, and for Auxiliarists who are also members of the Coast Guard and Coast Guard Reserve.

In this Chapter

This chapter contains the following information:

Section A. Certification

Introduction

The Director shall only consider members for certification after they have successfully completed the applicable Syllabus including all pre-requisites, and a check ride by the Flight Examiner. Tasks on the Observer Syllabus may be signed by a First Pilot or Aircraft Commander. Once all tasks have been signed off, the Flight Examiner may conduct an interview of the Observer Trainee in lieu of a flight check. Flight checks shall be conducted for initial Aircrew qualification and all pilot initial and biennial qualifications.

In this Section

This section contains the following information:

A.1. Command Responsibility

Certification is an important command responsibility. This process validates that a member is capable of performing assigned duties safely, effectively, and responsibly, and places great trust and confidence in the member.

In the active-duty component, the unit Commanding Officer approves certification. It is based on personal observation and knowledge of the individual and represents an operational commander's judgment that the individual can safely perform the duties assigned. In this sense, certification is a risk-management decision and is not to be taken lightly.

In the Auxiliary, the district DIRAUX approves certification. In most cases, the Director will have no personal knowledge of the individual being recommended for certification. Certification is primarily an administrative action by the Director. However, it is still an important action and Directors must rely on their Flight Examiners to maintain the integrity of the certification process. (See Chapter 5 for detailed information about IP-FEs.)

A.2. Certification Process

Upon completion of the syllabus and check ride, the IP-FE submits a recommendation for certification to the DIRAUX via the DSO-AV. The recommendation shall include the flight check and any other supporting documents. The ADSO-AVM will assist the DSO-AV and shall verify that all forms are properly and completely filled out, and that all prerequisites and eligibility criteria have been met.

Once the Director approves the certification and makes the appropriate AUXDATA entries, the member is authorized to perform patrol duties under Coast Guard orders.

A.3. Final Certification

Final certification is the official statement (entry in AUXDATA II) of the Director that the member has demonstrated:

- The minimum required knowledge and skill for the position designation as evidenced by the completed Syllabus, flight check, and the positive recommendation by the Flight Examiner.
- The judgment and maturity required to:
  i. Act responsibly.
  ii. Perform assigned duties in the manner prescribed by Coast Guard and Coast Guard Auxiliary directives and regulations.
  iii. Function as a team member.
  iv. Understands and effectively practices CRM.
  v. Interact positively with the public in the execution of Coast Guard Auxiliary duties.
  vi. Understands and practices Operational Security (OPSEC)

A.4. Insignia and Awards

Once certified as Air Observer, an Auxiliarist is authorized to wear the operations program ribbon on the uniform. If the member has already earned the ribbon, then a small bronze star may be added to the ribbon upon certifying for the additional certifications.

Once certified as Aircrew, an Auxiliarist is authorized to wear the Auxiliary Aircrew wing device.

Once certified as Pilot, an Auxiliarist is authorized to wear the Auxiliary Pilot wing device.

Entitlement to wear the ribbon and the certification insignia is permanent, even if the member's certification lapses or the member becomes inactive in this program.

A.5. Removal of Certification

The Director may suspend a member's certification in certain circumstances. Reasons for suspension can include:

- Failure to maintain the ability, mobility, and endurance to safely perform any standard qualification task for which they are certified.
- Dangerous or inappropriate actions or behavior under orders
- Pending mishap investigation

When a member's certification is suspended, it must be done with the intent that the member may regain certification when the problem is fixed and/or corrected. Accordingly, any action to suspend a certification must be accompanied by a plan for corrective action.

Suspension of certification will NOT be used as a punitive measure. It will be invoked only when a member's ability or conduct makes it unsafe or inappropriate to serve under Coast Guard orders.

A members aviation qualification may be permanently removed by DIRAUX if recommended by an Aviator Evaluation Board (AEB).

Refer to reference (b) for the complete policy on suspension of certification.

A.6. Inter-District Transfers

Certification for aviation qualifications is valid only in the district or region in which the certification is issued. A certified Auxiliarist permanently relocating to another district must be certified by the Director in that district prior to being assigned to duty in that district.

A.7. Multiple Residences

Certified members with residences in multiple regions must be certified for all regions in which they desire to fly missions. Standardized training enables Auxiliary flight crews and aircraft are trained to operate across districts, including seasonal relocation and response to emergency events.

Aviators visiting or seasonally residing in other districts may be authorized to fly or crew missions in those districts. The member should contact the appropriate AAC or DSO. A review of qualification documents and a flight check may be required. Approval is up to the Air Station and DIRAUX in the new district. A district inspection of an aircraft facility may be required.

If mobilized for an emergency response in another district, the Air Station and DSO-AV will be responsible to provide any additional instruction prior to receiving orders.

Section B. Active Duty

Introduction

There are Auxiliary members who are also members of the active, reserve, or retired components of the Coast Guard. Auxiliary members who have been certified in the active-duty aviation program have valuable skills that can be used in the Auxiliary.

These members may follow an abbreviated certification process as described below to achieve the position of Auxiliary pilot.

In this Section

This section contains the following information:

B.1. Active Duty Coast Guard Pilots

Active-duty pilots may serve as PIC or Safety Pilot on Auxiliary flights when authorized by the Air Station Commanding Officer. No FAA instrument rating is required for Coast Guard active-duty pilots; however, the active-duty pilot must have a current instrument qualification in accordance with reference (c).

An active-duty fixed wing pilot shall not serve as safety pilot on an Auxiliary helicopter, unless the active-duty pilot holds an FAA instrument-helicopter rating and is current in accordance with applicable FAA regulations.

An active-duty rotary wing pilot shall not serve as safety pilot on an Auxiliary fixed wing aircraft, unless the active-duty pilot holds an FAA instrument-airplane rating and is current in accordance with all applicable FAA regulations.

B.2. Active Duty Flight Crew

Active-duty Coast Guard members may serve as crew and minimum crew on Auxiliary flights

B.3. Active/Reserve Members (non-aviation)

A member of the active duty or reserve component who is not designated a Coast Guard Pilot may join the Auxiliary and qualify for the Aviation Program. They follow the same training and qualification process as Auxiliarists.

Section C. Recertification

Introduction

This section will explain why and how a member may lose their certification and the procedures to recertify.

In this Section

This section contains the following information:

C.1. General

When a member fails to meet annual currency requirements, their certification will lapse, and they will be placed in Required Yearly Requirement Not Met (REYR) status. A member whose certification has lapsed may participate as a designated trainee on an ordered mission.

As a trainee, the member may accumulate the required patrol hours and currency maintenance tasks in order to be recertified. These hours and tasks will not be counted toward the current year currency maintenance requirements.

C.2. Recertification

Members who go into REYR, for whatever reason, are considered as trainees until they correct the problem that placed them in REYR. (e.g., An observer who fails to successfully complete their 5th year AUX-17 will be placed in REYR status, until this requirement is met).

Pilots who are in REYR for a pilot requirement may revert to aircrew as long as they initially certified as aircrew.

Members in REYR status do not automatically revert to certified status in AUXDATA upon completion of the missing tasks or hours. A formal letter must be submitted to the DIRAUX from the ADSO-AVM or DSO-AV stating (1) that the member has completed the missing requirement and (2) request that the member be re-instated.

Members who have been in REYR status for a period of five years or more must re-qualify by completing all required tasks for the desired position.

The ADSO-AVT should periodically review the currency of all flight crewmembers.

C.3. REYR for Annual Requirements

Aviation qualified members have several annual requirements they must fulfil to remain qualified to receive orders. Unless specifically defined differently for a particular currency requirement, annual requirements to remain current are satisfied by completing the requirement during any part of the previous calendar year. For example, the swim is valid until December 31 of the following year. Requirements are tracked in AUXDATA II.

C.4. Downgrading of Pilot Status

When a pilot does not meet the prescribed flight and currency requirements, they revert to the flight status for those qualifications currently met (i.e., an AC who is not current for instrument procedures reverts to first pilot and may only be assigned missions authorized for a FP; a FP or AC who is not current for SAR or night reverts to CP and may only be assigned missions authorized for a CP, etc.). Pilots not meeting any minimum set of pilot currency will revert to aircrew status.

This affects the types of missions that pilots are authorized to fly and is to be monitored by the District Aviation Staff.

Pilots are to report any downgrade to the DSO-AV, AAC and ADSO-AVM. During the initial 12-month period of losing qualification currency, an Auxiliary pilot's former status may be renewed by completing the currency requirements. If the currency requirements are not met within 12 months, a flight check with an authorized Auxiliary Flight Examiner in his/her respective District is required. Should unusual circumstances dictate, a pilot may utilize an Auxiliary Flight Examiner in another District with approval of the Director. The pilot's certification in AUXDATA II will not be affected if the currency is regained within 12 months.

C.5. Request to Downgrade Certification

A member who is unable to or does not wish to maintain certification as a pilot may downgrade to the aircrew level by meeting the currency requirements for crewmember. The member shall notify DIRAUX in writing, of their desire to downgrade. The member may continue to wear the Auxiliary pilot insignia, in accordance with Chapter 3, Section A, paragraph A.4., even though no longer certified at the pilot level.

CHAPTER 4
Currency Maintenance

Introduction

This chapter describes the requirements for currency maintenance. Initial certification is the demonstration of the minimum knowledge and skills necessary to perform the associated competency. Proficiency is developed after initial certification. The purpose of currency is to build and maintain proficiency.

In this Chapter

This chapter contains the following information:

Section A. All Air Qualifications

Introduction

This section discusses the minimum currency requirements for maintaining certifications.

In this Section

This section contains the following information:

A.1. General

Aviation currency requirements consist of a set of tasks that must be performed annually, biennially, and every 5-years. Requirements include both those specified by the Coast Guard and the Federal Aviation Administration (FAA).

A.2. Failure to Maintain Currency

When an Auxiliary pilot, air crew, or observer does not meet the prescribed hours or other qualifying Auxiliary activities for currency requirements, they revert to the qualification status for those currency requirements currently met (i.e., an AC who is not IFR-current reverts to First Pilot, FP or AC who is not current for SAR reverts to CP, etc.). Pilots not meeting any minimum set of pilot currency requirements will revert to Air Crew status, and Air Crew will revert to Air Observer status. Members who do not maintain the currency requirements for Air Observer revert to Trainee are not authorized to fly as minimum flight crew.

During the initial 12-month period of losing qualification currency, an Auxiliary flight crew member's former status may be renewed by completing the qualification currency requirements. If the qualification currency requirements are not met within 12 months, a flight check with an authorized Auxiliary FE in his/her respective District is required after the member meets all other qualification currency requirements. Should unusual circumstances dictate, a pilot may utilize an Auxiliary FE in another District with approval of the Director. IP/FEs are encouraged to randomly monitor and verify qualifications and observe the conduct of operational missions and performance.

A.3. Currency Maintenance Cycle

All flight crew members have annual currency tasks, medicals and many FAA requirements are biennial, and C-schools are required every 5-years. Pilots require a biennial check ride with an IP/FE.

The annual currency cycle begins on 01 January of the year following initial certification. Currency requirements must be met by 31 December of each year.

For example, if a member is certified as an air observer on 15 July 2022, that member's first currency year begins on 01 January 2023, and the member must meet all annual currency requirements by the end of 2023 (31 December 2023).

Annual currency requirements must be met during the first full calendar year after certification. Credit will not be given to hours or tasks completed in the partial year of initial certification. Failure to meet currency requirements in any year of the cycle will cause a member's certification to lapse. See Chapter 3, Section C for procedures to recertify.

The semi-annual periods are 01 January through 30 June and 01 July through 31 December."

A.4. Currency Tasks

To maintain currency, all flight crewmembers must complete the following requirements:

Annually

- CGAS Air Safety Workshop
- Aviation Swim Test
- Emergency Egress Training
- CRM Refresher

Biennially

- FAA medical certificate (3rd class or higher) or ANSC-7042A

60-Month

- AUX-17

A.5. CRM Training

In accordance with reference (d), there are two CRM training requirements: Initial and Refresher training. Initial training is required once at the beginning of the member's career (before obtaining ANY Aviation Certifications). Refresher training is required annually.

CRM Initial - AUX-17 (course # 510570). Also, must be completed every 5-years.

CRM Refresher - Must complete Refresher training annually, no later than the end of the 15th month, following CRM Initial or subsequent CRM Refresher training. This training will be developed by the Coast Guard Aviation Training Center, Mobile, and published annually (normally no later than 01 January of each year). It will be designed to be delivered at the squadron/Air Station level and requires a nationally certified CRM Instructor or a current DFSO that has competed the AUX-14 (Flight Safety) course within the previous two years. Only nationally certified CRM Instructors may provide the CRM Refresher virtually.

A.6. Air Station Flight Safety Workshop

The annual Air Station Flight Safety Workshop is required of all members holding an aviation qualification. The training must be approved by the Air Station leadership and is best conducted live at the Air Station. With Air Station approval, the training may be conducted virtually.

At a minimum, the workshop shall include the following:

- Air Operations workshop
- CRM Refresher
- Aeromedical facts for pilots and flight crew
- Emergency egress training
- Selected excerpts from the FARs and the Aeronautical Information Manual pertinent to Auxiliary aviation

Section B. Additional Requirements for Pilots

Introduction

This section discusses the additional currency requirements for maintaining pilot and IP-FE certifications.

In this Section

This section contains the following information:

B.1. All Pilots

Additionally, Pilots must maintain FAA currency at all times:

- FAA Airman's Certificate (private pilot of higher)
- FAA Medical (3rd class or higher)
- 61.57(a) - CP, FP, AC
- 61.57(b) – FP, AC
- 61.57(c) – AC

Annual Requirements:

- 24-hours as PIC
- 12-flight hours under orders
- 6-missions

Biennial Requirements:

The AUX flight check is a biennial requirement. The certification expires at the end of the 24th month from the date of the last check. Only a current Auxiliary FE or qualified Coast Guard AC, designated in writing by the Air Station Commanding Officer, may give the Auxiliary flight check. This check should be scheduled so that it falls in the alternate year from the FAA required biennial flight review.

- FAA Biennial Flight Review
- AUX Flight Check (done in opposite year as FAA)

60 Month Requirements:

- AUX-18

B.2. Instructor Pilot – Flight Examiner

Additionally, IP-FEs must:

Annual Requirement:

- 3 – Instructional flights or Flight Exams
- If a CFI or CFII was held on initial certification, it is to be maintained.

Section C. Documentation

Introduction

This section discusses the documentation of currency requirements.

In this Section

This section contains the following information:

C.1. Records and Tracking

District Aviation Staffs are responsible to keep records of all aviation currency tasks. Documentation of attendance for training, when required, is entered into AUXDATA II. Accordingly, if the member fails to attend a Required Workshop (REWK) by the designated deadline specified, that member will become unable to receive patrol orders and listed as REWK until the training has been documented as received. If Required Yearly Requirement (REYR) training is not completed by 31 December, the member is placed in REYR status. Specific waivers are possible via Directors on a case-by-case basis.

C.2. AUXDATA II

Aviation currency tasks are typically tracked and maintained by the Assistant District Staff Officer for Aviation Management (ADSO-AVM). Coast Guard currency requirements, including aircraft, shall be uploaded, and tracked in AUXDATA II. The ADSO-AVM shall work with the District IS Officer to ensure those records are properly recorded in AUXDATA II.

Pilot FAA currency is also tracked by the ADSO-AVM but is not stored in AUXDATA II. This information is tracked by the District Aviation Staff.

CHAPTER 5
Instructor Pilot / Flight Examiner

Introduction

This chapter describes the role and responsibility of the Instructor Pilot and Flight Examiner (IP-FE), the IP-FE qualification process, and their role in the aviation qualification process.

In this Chapter

This chapter contains the following information:

Section A. What is an Instructor Pilot / Flight Examiner

Introduction

The highest pilot appointment in the Aviation Program is that of the Instructor Pilot / Flight Examiner (IP-FE). IP-FEs are outstanding Aircraft Commanders having strong operational backgrounds, exceptional instructor abilities, effective interpersonal skills, and impeccable integrity. This section will discuss the role and requirements of an IP-FE.

In this Section

This section contains the following information:

A.1. IP-FE

IP-FEs are recommended by the District Aviation Board (see reference (a), in conjunction with Air Station Leadership, and appointed by DIRAUX. On an on-going basis, IP-FEs performance should be thoroughly evaluated by the District Aviation Board, the Air Station and DIRAUX. Dismissal of members in the position of IP-FE is at DIRAUX discretion.

Responsibilities Include:

- Conduct oral and/or flight checks for Air Observer Trainees.
- Conduct oral and flight checks to Aircrew candidates.
- Conduct oral and flight checks to Pilot Candidates (including upgrades).
- Conduct biennial AUX flight checks for pilots.
- Conduct Instructional flights for any flight crewmember, including Observers and Aircrew.
- Ensure the standards of the Auxiliary Aviation Program are maintained.
- Report to the District Aviation Board any unsatisfactory performance observed on the part of any certified flight crewmember.

Notify the District Aviation Board in writing, through the DSO-AV, when a certified flight crewmember demonstrates unsatisfactory performance for reasons of incompetence, questionable qualification, or physical inability to perform mission requirements.

A.2. Syllabus Instruction

Instructor Pilots and Flight Examiners are qualified to perform formal syllabus instruction. This does not limit other crew positions from providing instruction as prescribed within specific curricula. All qualified/certified crewmembers are expected to provide mentoring and to share their knowledge and experience with junior flight crewmembers. IP/FEs are authorized to conduct the AUX initial and biennial flight checks and to train-to-level candidates.

A.3. Active Duty/Reserve

Air Station Commanding Officers are encouraged to participate in the Auxiliary Flight Examiner program by recommending their active duty/reserve Pilots to occasionally fly as Aircraft Commander or second pilot on Auxiliary missions.

Air Station Commanding Officers may authorize active duty/reserve to fly Auxiliary aircraft and to serve as the Flight Examiner for Auxiliary flight check rides.

A.4. General IP-FE Requirements

All IP-FEs must be Aircraft Commanders with a minimum of 1300 hours as PIC. It is highly desired that IP-FEs possess a CFII or CFI. Air Station leadership, working with the District Director, shall determine if additional IP-FEs are required. If a need is identified, Air Station Leadership must approve the candidate before any training or Syllabus instruction is provided. The candidate shall complete the IP-FE Syllabus and be signed off by the District's Senior IP-FE.

All IP-FEs shall maintain their certification as Aircraft Commander, maintain all currency requirements for that qualification, and additionally complete a minimum of 3 instructional flights and/or flight exams annually.

The IP-FE should possess the following characteristics and experience:

- Superior judgement
- Patience, tact, understanding and a desire to instruct others.
- Thoroughly familiar with aircraft systems and equipment, normal and emergency procedures, and aircraft performance under all conditions of flight. Due to the diversity of aircraft in the Auxiliary fleet, it is incumbent upon each instructor to become familiar with the specifics of the aircraft in which training will be conducted.
- Thoroughly familiar with reference (a), this handbook and any District and/or Air Station Standard Operating Procedures.
- Thoroughly familiar with the AOR and all missions conducted for the Air Station.
- Sufficient experience to ensure the desired standard of knowledge, judgement, and proficiency.
- Highly experienced aviator to ensure that the standards expected from the Auxiliary Aviation Program are maintained.
- Possess a current CFII or CFI. The Director may certify an IP-FE that does not possess either certification if no one else is available in the District. IP-FEs that do not possess either certification are strongly encouraged to pursue them.

Section B. Selection and Qualification Process

Introduction

This section will discuss the selection process and training requirements for IP-FE.

In this Section

This section contains the following information:

B.1. Selection

Air Station and District Aviation Leadership, and the DIRAUX working in conjunction, determine the need for an additional IP-FE. The Air Station shall approve the candidate. Upon successful completion of the CG-BSX approved IP-FE Syllabus, the appointment will be made by the Director (DIRAUX). The appointment term for an IP-FE will indefinite, depending on currency and performance.

B.2. Qualification Process

To become an Instructor Pilot - Flight Examiner (IP-FE) in the Aviation Program the following requirements shall be met:

- Air Station and DIRAUX agree there is a District need for an additional IP-FE.
- Candidate must possess the required characteristics and experience to be an effective instructor and flight examiner.
- Candidate shall possess a thorough understanding of aircraft systems and equipment, normal, and emergency procedures and aircraft performance under all aspects of flight.
- Be a currently certified Aircraft Commander at least six months and current for all requirements.
- Complete the ground and flight check portions of the BSX approved IP-FE Syllabus and be signed-off by the District's Senior IP-FE
- Approved by Air Station Leadership and certified by DIRAUX.

B.3. New District Program

District's starting up a new Aviation Program that do not have a certified IP-FE may use an IP-FE from another District, until an IP-FE is certified in the District. Additionally, the Air Station Commanding Officer may authorize active-duty Aircraft Commanders to function an IP-FE for the squadron.

B.4. Final Certification

Upon successful completion of the IP-FE Syllabus:

- The District's Senior Flight Examiner will notify the DSO-AV in writing of the IP-FE's successful completion.
- The DSO-AV will forward this recommendation along with his/her endorsement and supporting documentation to the DIRAUX.
- DIRAUX will send a letter of appointment to the new IP-FE and enter the certification in AUXDATA.
- DSO-AV will notify the Chief IP-FE of the Auxiliary (BC-RAL).

Section C. Aviation Qualification Process

Introduction

This section will discuss the qualification process from the IP-FE perspective.

In this Section

This section contains the following information:

C.1. General

Auxiliary pilots, with support from the ADSO-AVT, provide training to observer trainees and candidates for higher qualifications. Much of the flight training occurs on operational missions. When the trainee or candidate has completed the training process, the member under examination contacts the IP-FE and requests a flight exam to complete the qualification process. Each member must demonstrate all required tasks specified in the syllabus and demonstrate appropriate CRM.

C.2. Qualification Process

A Flight Examiner (IP-FE) is required for oral examinations and flight check rides for air observers, aircrew, and all pilot qualifications, including the Aux biennial check.

IP-FEs are encouraged to Train to Level during a flight check, if appropriate.

Upon completion of these tasks the IP-FE will complete the flight check form and forward to the DSO-AV. The ADSO-AVM shall forward any supporting documentation to the DSO-AV.

Members that fail to perform the required tasks at the prescribed level, or fail to Train to Level, should be informed immediately and the flight check terminated.

Section D. Flight Instruction and Flight Examination

Introduction

This section will discuss the qualification session requirements for QE's.

In this Section

This section contains the following information:

D.1. General

Check flights will only be performed under orders.

IP-FEs are expected to be dressed in a proper uniform and to set a good example. Trainees, Candidates and Pilots under Examination will be in proper uniform. IP-FEs are expected to always maintain a professional attitude. Avoid inappropriate language and do not get involved in debates/arguments with other IP-FEs, the Aviator under Examination.

No initial check flight shall be given to a candidate until they have successfully completed all other required tasks and are current for all requirements. The ADSO-AVM tracks qualification and currency requirements.

The Auxiliary IP-FE has two roles, Instructor Pilot (IP) and Flight Examiner (FE).

D.2. Task Interpretation

The IP-FE is to use good judgment on whether the candidate has demonstrated the desired level of expertise, considering that safety is paramount. Any question about interpretation of the Syllabus check list line items should be raised to the Chief IP-FE of the Auxiliary or the DVC-RA.

The IP-FE should note on the check ride form what the weather conditions were at the time of the check ride. The IP-FE should also note the category, class and type of aircraft that was used for the check ride.

D.3. Instructional Flights

One of the roles of the IP-FE is to provide flight instruction, to air observers, aircrew, and pilots. While most air observer trainees are mentored and trained by a first pilot or aircraft commander, a mission with an IP-FE provides an opportunity for additional training. The primary objective of the Flight Instructor is to ensure the squadron is properly trained in Coast Guard flight rules, regulations, and procedures.

Instructor Pilots are specially qualified aircraft commanders who have been selected by the Director of Auxiliary to perform special duties as trainers of candidates for Auxiliary aviation qualifications.

Flight Instructor responsibilities include:

- Demonstrate superior judgement, patience, tact, understanding, professionalism, and a desire to instruct others.
- The primary goal during the instruction phase is to “train-up” the member, not to pass judgement.
- Perform Syllabus ground and flight instruction.
- Instructional flights should be conducted under orders.
- Instructor Pilots shall have received formal military, auxiliary or civilian training in methods of instruction.
- If the Instructor Pilot is required to manipulate or guard the controls for the primary mission, then the Instructor Pilot shall be the PIC.
- Instruction should focus on Coast Guard mission requirements, such as SAR procedures, flying SAR patterns with precision, circling a target at low altitude (maintain altitude, airspeed, recognize impending accelerated stall, etc.), leading a Coast Guard flight crew,
- Flight Instructors shall practice, observe, and reinforce CRM at all times.

D.4. Flight Examinations

The second role of the IP-FE is to conduct flight examinations for air observers, aircrew, and pilots. Once an air observer trainee's syllabus is completed, the IP-FE shall conduct an oral examination. At their discretion, the IP-FE may require a flight check. All candidates for aircrew and pilot, and "pilots under examination" for the biennial AUX flight check require an in-flight examination.

Flight Examiners are specially qualified aircraft commanders who have been selected by the Director of Auxiliary to perform special duties as examiners of candidates for Auxiliary aviation qualifications.

Flight Examiner responsibilities include:

- Conduct Syllabus ground and flight checks.
- Conduct biennial AUX flight checks for certified pilots.
- Ensure that the AUXAIR Program is held to the highest standards.
- Use the flight check as an opportunity to "Train to Level" when appropriate.

D.5. Emergency Procedures

The Pilot Syllabus requires pilots to be evaluated on their response to emergency situations. It states, "any simulated emergencies must be conducted at an altitude that permits normal recovery and normal continuation of flight."

Should the Flight Examiner decide to feather the propeller or shutdown the engine in flight, it must be conducted in accordance with the following criteria:

- Day, VMC only.
- In the vicinity of a suitable airport with crash equipment immediately available.
- The entire feathered propeller/secured engine evolution shall be conducted at or above 6,000 feet AGL.

D.6. Syllabus Definitions

The syllabi used in the Auxiliary Aviation Program mirror those used in active duty. The following definitions are important to understand.

- **Critical Error** - An error that could jeopardize the flight or the successful completion of the task. This shall be cause for withholding a satisfactory completion of the task(s).
- **Non-Critical Error** - An error that causes no danger to the flight of mission completion, but which detracts measurably from the successful performance of the task. If a number of these occur, they shall be cause for withholding a satisfactory completion of the task(s).
- **Minor Error** - An error that detracts from perfection but which in no way jeopardizes the flight or successful performance of the task. This shall be graded as satisfactory.
- **LEVEL** - The Pilot or Candidate under Evaluation performed at the required performance level (a satisfactory mark). If the Pilot under Evaluation identifies errors, self-corrects, and demonstrates the ability to maintain proficiency at the required performance level, a LEVEL mark is appropriate.
- **TRAIN to LEVEL** - An error(s) that required additional training, during the flight check, to ensure that the Pilot or candidate under evaluation is able to perform at the required performance level without further instruction (a satisfactory mark).
- **UNSAT** - The Pilot or Candidate under evaluation did not perform at the required level and committed critical and/or a number of non-critical errors.

D.7. Syllabus Sign-off

The IP-FE that signs off the syllabus for a candidate at a given qualification level (air observer, aircrew, co-pilot, first pilot, or aircraft commander) will then complete the syllabus check list. These are forwarded to the DSO-AV with a copy to the district senior flight examiner within 5 working days. Copies should be kept at each level before forwarding. The member keeps the syllabus with the signed tasks and formal sign-off.

Upon successful completion of the IP-FE Syllabus:

- The Flight Examiner will notify the DSO-AV in writing of the member's successful completion.
- The DSO-AV will forward this recommendation along with his/her endorsement and supporting documentation to the DIRAUX.
- DIRAUX will approve the qualification and enter the certification in AUXDATA II.

Section E. Complaints and Disputes

Introduction

This section describes the process for a member who disputes an IP-FEs decision.

In this Section

This section contains the following information:

E.1. General

All complaints or disputes concerning the IP-FE process, mission, or an IP-FE must be submitted in writing to the District Aviation Board, through the DSO-AV.

E.2. Failures

If an aviation trainee or candidate fails a scheduled IP-FE check ride or oral exam, the member should have the reason explained to them with an emphasis on corrective action required. Recommendations for areas where improvement is necessary should be given. This same information should also be given to the ADSO-AVT. Also, the IP-FE should send a report of the failure to the District Aviation Board (DAB).

CHAPTER 6
Flight Standardization Team

Introduction

The Flight Standardization Team is comprised of senior Auxiliary aviation leaders along with the Office of Auxiliary and Boating Safety, Commandant (CG-BSX). This team discusses and proposes changes to aviation policy, rules, and regulations.

In this Chapter

This chapter contains the following information:

Section A. Flight Standardization Team

Introduction

This section describes the composition and responsibilities of the Flight Standardization Team, also known as the Flight Stan Team.

In this Section

This section contains the following information:

A.1. Overview

The Flight Stan Team was established by the Chief Director of Auxiliary to review existing practices and to solicit input from the field concerning the Auxiliary Air Operations Program. All members are nominated by the DIR-R and CG-BSX and are appointed by the Chief Director.

A.2. Mission

The mission of the USCG Auxiliary Flight Standardization Team is to promote safety, standardization, effectiveness and "best practices" for all aspects of Auxiliary Air Operations.

A.3. Objectives

- Periodically review the Auxiliary Flight Crew Training Program including proposed changes received from the field.
- Review Auxiliary aviation mishap reports and determine system wide interventions to reduce risk as appropriate.
- Suggest content for the Annual Air Operations Workshop when required.
- Identify the need for program enhancements (i.e., Flight Rules, PPE, Training, Qualification Requirements, Currency Requirements, Program Effectiveness, etc.) and make recommendations as appropriate.
- Review reference (a) as needed and make recommendations for policy changes.
- Identify "Best Practices" from the field and promulgate to the aviation community as appropriate.
- Recommend additional training for the air operations program as needed.

- Review new procedures and mandates of the Coast Guard Air Operations Program and determine if and how these apply to Auxiliary Operations.
- Other assignments as needed.

A.4. Team Members

The Flight Standardization Team normally consists of the following members:

- Director Response Directorate (DIR-R)
- Division Chief - Air Operations (DVC-RA)
- Branch Chief - Flight Standards (BC-RAF) (Chair)
- Branch Chief - Aviation Training (BC-RAT)
- COMDT (CG-BSX-12) Air Operations or designee
- National Aviation Staff Members as required

CHAPTER 7
Observer and Aircrew Duties

Introduction

The flight crew training system consists of several components at various levels in the Auxiliary and the Coast Guard. This chapter describes the roles and responsibilities of each of these components.

In this Chapter

This chapter contains the following sections:

Section A. Air Observer

Introduction

This section specifies the responsibility, duties and required skills of an Air Observer.

In this Section

This section contains the following information:

A.1. Observer Duties

An Air Observer is a flight crew member whose duties include aerial reconnaissance, observation and taking photographic imagery. During search and rescue missions the observer is the primary flight crew member performing the visual search.

The observer's role in the many multi-mission profiles is looking for targets, both specific and non-specific, while keeping alert for incidental discovery such as an oil leak or disabled boat. They must then communicate with the pilot, as well as the Coast Guard unit guarding the working frequency and/or the Auxiliary unit providing assistance, to relay this information. Without this ability to communicate information, a search mission is of marginal value. The communication must be accurate, professional, concise, and clear.

A.2. Observer Skills

Observers generally perform observation and communication duties aboard Auxiliary aircraft facilities. They also participate in mission planning and are a critical part of the team supporting a mission. Observers are trained in and pass written and practical tests in:

- Coast Guard communication (connecting and using marine radio, emergency radio, intercom).
- Nautical and aeronautical chart reading and navigation.
- Local area familiarization.
- Emergency egress from aircraft and water survival.
- Elements of observer technique, recognition of vessels and persons on the water, distress situations, SAR response, types of missions, and related activities.
- Emergency Procedures
- Risk Management and CRM

A.3. Position and Flight Status Reporting

Position and flight status (usually "flight ops normal") reports are made in accordance with reference (e). Current policy is every 15 minutes for helicopters and single-engine aircraft and every 30 minutes for multi-engine fixed-wing aircraft. This transmission should include:

- Coast Guard unit called.
- Aircraft call sign.
- Flight status - "flight ops normal" when operations are normal.
    i. When circling a fuel spill, that information would be given in place of the "flight ops normal".
    ii. When flying a search pattern, the search leg being flown, or number of legs completed would be given.
- Aircraft position (to the nearest minute of latitude/longitude or with reference to a known landmark).
- Heading.

Time is given in the 24-hour clock and each digit is said separately. Times given by aircraft in informal radio traffic are expressed in minutes after the hour with the hour not given unless necessary (e.g., "*minute two four*").

A.4. Equipment Familiarity

The observer should be familiar with all of the equipment required for operation. This includes, but is not limited to:

- Operating the marine radio.
- Operating the intercom (setting sensitivity and volume).
- Operating electronic navigation equipment.
- Using and locating all safety equipment (rafts, PFDs, first aid kits).
- Operating emergency radios.
- Using harnesses and seat belts.
- Opening and securing all doors and hatches, as directed by the pilot.

Section B. Aircrew

Introduction

This section specifies the responsibility and the required skills of an Aircrew qualified members. The aircrew qualification is intended to provide the Auxiliary pilot with a highly skilled crewmember who can assist in all phases of any mission. This is especially important during times of high cockpit workload. Air crew-qualified Auxiliarists should be able to fulfill all of the duties of an Auxiliary observer plus many of the non-flying skills required of a pilot. Well trained Auxiliary air crew are able to fulfill all Auxiliary observer duties, while also assisting the Auxiliary pilot with radio communications, weather gathering and recording, navigation in both visual and instrument meteorological conditions, and visual and instrument approaches to airports.

In this Section

This section contains the following information:

B.1. Aircrew Duties

In addition to the duties performed by the Air Observer, Aircrew qualified members also:

- Provide mission brief to the flight crew.
- Discuss pertinent MOTAMS, including TFRs.
- Provide weather briefing to the crew.
- Assist the pilot perform the pre-flight inspection.
- Assist pilot perform the checklists during flight.
- File flight plans.
- Contact ground control.
- Communicate with ATC.
- Assist pilot with instrument procedures, load procedures into the aircraft NAV system, etc.
- Use and program the VOR/DME/ILS systems.
- Operate the aircraft Nav system.
- Provide altitude, airspeed and heading information to pilot during approaches.
- Select fuel tanks, etc.
- Monitor the ADS-B system.
- Use electronic flight planning apps, transfer the flight plan to the NAV system, monitor the flight and traffic, etc.
- Operate the autopilot, under direction of the PIC.
- Develop search pattern parameters, load into the NAV system.
- Set the transponder.
- Calculate/verify fuel reserve requirements.
- Crew RWAI missions conducted in daylight and VMC.

B.2. Aircrew Skills

Aircrew shall have the following, but not limited to, skills:

Locate, read, and understand the following instruments:

- Altimeter
- Heading indicator
- Magnetic compass
- Attitude indicator
- Airspeed indicator
- Tachometer
- Oil pressure indicator
- Oil temperature indicator
- Ammeter
- Fuel gauges
- Fuel pressure
- Landing gear indicator lights
- ADS-B
- Transponder

Operate and program the following systems:

- NAV system
- COMM system
- Autopilot

Specific skills are specified in the Auxiliary Aircrew Syllabus.

B.3. COMMS

Communication procedures used for ATC differ from those used for Coast Guard communications; aircrew must know both. Not only should aircrew know what the communications procedures are, but also how to find the proper frequencies to use and the correct terminology for operation. Aircraft specific communications include:

- Clearance delivery
- Ground control
- Tower
- Departure and approach control
- Air Route Traffic Control Center (ARTCC)
- Automated Flight Service Station (AFSS)
- Unicom

The function of the intercom is to enable the crew to communicate with each other via headsets. Intercoms are designed to isolate various crew positions upon selection thereby creating intercom groups of the pilot alone, crew alone, pilot and co-pilot alone, and all.

B.4. Navigation

In addition to what the observer has been taught to read and understand regarding sectionals and terminal charts, air crew should be able to:

- Interpret the chart legend.
- Find frequencies of interest.
- Define special use airspace.
- Plot a course using sectional charts.
- Do time and distance calculations.
- Identify on the sectional and be familiar with the various types of airspace such as:
    i. Class A, B, C, D, E, and G Military Operating Areas
    ii. (MOAs)
    iii. Restricted Areas
    iv. Air Defense Identification Zones (ADIZ)
    v. Prohibited Areas
    vi. Temporary Flight restrictions (TFRs)
- Use low altitude enroute charts and approach plates in addition to the sectional charts.

Back up the pilot in all phases of flight in regard to heading, altitude, and communications frequencies.

Instruments used for navigation include, but are not limited to:

- Very High Frequency Omni Range (VOR)
- Automatic Direction Finder (ADF)
- Global Positioning System (GPS)
- Instrument Landing System (ILS)
- Distance Measuring Equipment (DME)

Air crew should learn each system's use, the capabilities of each system, and how to use those systems located in the aircraft. Air crew should also be able to read the latitude and longitude from the GPS and other available sources such as VHF marine radios and portable devices with flight applications.

Charts and approach plates:

- VFR Sectional chart.
- Low altitude enroute chart.
- Terminal Procedure Publication (TPP).
- VOR/DME, LOC, ILS and RNAV approach plates.
- Standard Arrival and Departures (STAR, SID).
- Interpret approach plate symbology.

B.5. Transponder

Transponders are used to transmit a signal that identifies a specific aircraft to ATC. Air crew should understand how to turn the transponder on and off, what is meant by "SQUAWK IDENT", and how to perform the action along with knowing how to select a code. Air crew should know the following available settings:

- OFF
- STANDBY
- ON
- ALTITUDE
- TEST

For visual flight rules (VFR) operations, code 1200 is normally used, unless a different code is assigned to the aircraft by an air traffic controller. Air crew should also be familiar with the following emergency codes and when to use them:

- 7500 (hijack code)
- 7600 (failure of radio communications)
- 7700 (emergency)

It is important to prevent accidental selection of one of these codes when moving from one code setting to another.

B.6. Weather

Aircrew must be able to use and interpret:

- Automatic Terminal Information Service (ATIS)
- Automated Weather Observation Service (AWOS)
- Automated Surface Observation Service (ASOS)
- Automated Flight Service Station (AFSS)
- Aviation Weather Report (METAR)
- Terminal Area Forecasts (TAF)
- Wind and Temperature Forecast Aloft (FB)
- Notice to Airmen (NOTAMS)
- Airman's Meteorological Information (AIRMET)
- Significant Meteorological Information (SIGMET)
- NOAA
- AFSS Services

Obtain an aviation weather briefing before all flights. Acceptable sources of weather data include government-sanctioned aviation weather services and dedicated aviation weather subscription services. If a weather briefing cannot be obtained prior to departure and the weather conditions are at or above the minimums required for departure, the flight may proceed. The PIC shall contact an appropriate facility for weather information as soon as practicable after take-off.

Before an IFR flight, obtain and record a comprehensive weather briefing. This weather briefing shall include all items (applicable to the route of flight) contained in a Standard Briefing as defined in the Aeronautical Information Manual (AIM). Retain IFR flight planning weather information for 90 days.

Be aware of departure, enroute, alternate airport, approach and landing minimums for the planned route and possible contingencies.

B.7. NOAA

Marine weather as received on the weather frequencies of most marine radios is useful in obtaining an overall weather picture. Important information includes sea conditions, the presence of fog, the presence and movement of thunderstorms, and forecast surface winds for the over water areas. This information is neither current nor complete enough to satisfy all of the requirements of aviation. Marine weather does not include ceilings (the lowest layer of broken or overcast layer of clouds), visibility, or the temperature/dew point spread. The air crew should listen to the transcribed NOAA marine weather and pass on to the pilot any significant information, which could affect the mission.

B.8. AFSS Services

Area aviation weather reports are broadcast by FAA flight service stations (FSS) on the VOR or VOR tactical air navigation system (VORTAC) stations which have voice capability. Some navigation/communication transceivers have controls which cut out the reception of voice transmissions from the VOR/VORTACs. Be sure that the controls are set to receive the voice information when listening on navigation frequencies. Each FSS is assigned the geographical name of their location followed by the word "radio" for their radio call sign. Most FSSs are able to transmit and receive through a number of remote sites. Each of these remote sites has been assigned a discreet frequency, which is listed on the aeronautical chart. The FSS can also be contacted on VOR/VORTACs equipped for transmitting and receiving on the frequencies listed on the sectional chart. When listening on a VOR/VORTAC, always advise the FSS which VOR/VORTAC is being used, e.g., "Miami Radio, this is Coast Guard 8123 listening on the White Lake VORTAC, over".

B.9. ATIS

Many of the more active airports have an ATIS, which is continually broadcast on a published frequency for the particular airport. In addition to the current weather, information concerning the active runways, special frequencies, and any hazards that exist or special procedures in use are broadcast. The broadcast is identified by a letter, which is changed each time the information is updated.

ATIS includes: the airport or facility name, a phonetic letter code, time of the latest weather observation in UTC, weather information consisting of wind direction and velocity, obstructions to vision, sky condition, temperature, dew point, altimeter setting, density altitude advisory if appropriate; and other pertinent remarks, including runway in use. If it exists, the weather observation includes remarks of lightning, cumulonimbus, and towering cumulus clouds.

ATIS may include laser illumination events, instrument or visual approaches in use, departure runways, taxiway closures, new or temporary changes to runway length, runway conditions and codes, and other information or advisories.

The recording is given a letter designation (e.g., Delta), from the ICAO alphabet. When contacting the local ATC unit (ground, tower, approach, etc.) the latest ATIS identification needs to be communicated (e.g., Miami Approach, this is Coast Guard 8123, two three miles SW with Delta).

B.10. Checklists

Aircrew should be familiar with checklists for the following checklists and procedures:

- Preflight
- Engine Start
- Pre-Taxi
- Taxi
- Engine Run-Up
- Takeoff
- After Takeoff
- Cruise
- Approach
- Landing
- Securing
- Emergency Procedures

Pilots and flight crew members shall perform checklist using the **challenge and response** method.

Flight crew members must understand and practice immediate actions to be taken in emergencies. These actions should be confirmed by using the applicable checklist.

B.11. Equipment Familiarity

Although equipment on each Auxiliary aircraft may differ in its specific configuration, the concept of operation will be similar. While an Auxiliarist may be pilot or air crew certified, the individual may not be familiar with the operational characteristics of the various knobs and switches in a particular aircraft. **Any flight crewmember must be checked out by the pilot of the aircraft prior to operating any of the equipment in the aircraft and then only as requested by the pilot.**

CHAPTER 8
Techniques of Aerial Observation

Introduction

This chapter describes techniques of observation employed by Auxiliary flight crewmembers.

In this Chapter

This chapter contains the following sections:

Section A. Aerial Observation

Introduction

Aerial observation is one of the key elements of an effective aviation mission. This chapter describes procedures and best practices.

In this Section

This section contains the following information:

A.1. Observers

For SAR and patrol activities, the payload for the search aircraft is the observer, (whether rated as pilot, observer, or air crew). While the pilot is a contributor to the observations, the PIC's main task is to safely control and navigate the aircraft. The effectiveness of the search or patrol team can be no greater than the effectiveness of the observers.

All crew members, including the pilot, scan a search area assigned to them. Pilots should consider utilizing equipment available to lessen the workload of navigating the aircraft, such as aircraft trim and autopilot.

A.2. Training and Experience

Effective and efficient observation requires training and experience. Air observer scanning techniques must be accomplished in a systematic way to assure a high degree of coverage of the search or patrol area. Air observers must know what to look for. Objects look different from the air than they do from the surface. Moreover, if a crash or sinking is involved, the objects of the search will usually appear quite different from the original subject of the search. In addition, once the search object or suspected search object has been sighted, the air observer must know how to maintain surveillance of the object while communicating its relative position to the pilot so that the aircraft can be maneuvered into the most advantageous position.

These scan techniques, while challenging at first, can easily be accomplished after sufficient practice. Scan techniques should be practiced whenever possible, especially while performing other missions such as routine patrols.

A.3. Training Sorties

Crews can create training exercises to develop an "eye" for objects on the water. These training sorties should be properly coordinated with appropriate surface crews and assets. They provide excellent practice for air and surface crews. They also help the crews' practice and develop effective search scan techniques and help to build confidence in their ability to successfully execute these searches. The following are some sorties to consider for training

A.4. Training Examples

Oscar Search - In this exercise, participants request a real search pattern from a local SAR mission coordinator (SMC) using different methods for the practice area to be searched. Create an "Oscar", a human-like dummy, in grey/blue or blue jean colored clothing, stuffed with Styrofoam and weighted around its waist with a 10- to 20-pound anchor. In coordination with an Auxiliary vessel, an orange personal flotation device (PFD) is placed on Oscar, then Oscar is deposited in the water within the search area. The recovery vessel normally stands off ½ to 1 nautical mile, but within visual range of Oscar, in case someone tries to "rescue" it. The aircraft crew then uses search scan techniques to find Oscar. Once found, the surface vessel is directed to the recovery point. When the crew establishes the visual cues for finding Oscar with the orange PFD, the exercise may be repeated with the PFD removed.

Vectoring to a Lost Vessel - This exercise involves using a Coast Guard or Auxiliary unit with direction finding (DF) capability to direct an Auxiliary aircraft to a "disoriented" or lost vessel. The exercise starts with the DF station requesting a "short count" from the "disoriented" vessel. The station then passes to the aircraft an estimated heading based on the bearing from the station to the vessel. The aircraft then flies over the station outbound on that heading or takes a position from the station on the same bearing as the target vessel. The aircraft then gives a short count to the station while on that heading and applies corrections as directed by the station. Since range is unknown in this situation, the aircraft must fly along the bearing searching for the target vessel.

Signal Mirror Recognition and Tracking - The recovery vessel may use a rescue mirror to "flash" the aircraft while the aircraft is searching. Crews observing the flash direct the pilot to the scene. This exercise is effective for learning to recognize the characteristics of a flashing rescue mirror.

Search and Rescue Exercise (SAREX) – This represents one of the best training opportunities for flight crews. Multiple aircraft fly precise search patterns to locate a distressed vessel, a person-in the-water (PIW), and then vector an Auxiliary surface vessel to the PIW location. A life and training Oscar are used to simulate the vessel and PIW. Only one aircraft

at a time should be operating in the search area, others may be in a holding pattern and others on the ground in a B2 status.

Section B. Search Assignments

Introduction

The PIC is usually provided with instructions on the assigned search pattern to be flown from the SMC or On-Scene Commander (OSC). If not, the PIC should work with the crew to determine a pattern including leg directions and track spacing. Based upon the pattern selected, the visibility from the aircraft, and the number of observers aboard, specific relative sectors should have been assigned to each observer prior to the start of the mission as discussed in this section.

In this Section

This section contains the following information:

B.1. Seating

In two-place aircraft, the seats may be tandem (one behind the other) or side-by- side. For tandem seating, the air observer should be assigned to cover both sides alternately. In a side-by-side, two-place aircraft, the pilot scans outside the left side of the aircraft as well as ahead looking for other aircraft. The observer in the right seat is assigned to scan ahead and right of the aircraft. (see Figure 8-1)

B.2. Two-Place Aircraft

Many four-place aircraft are operated with two or three persons onboard. When only two persons are onboard, coverage is the same as for a two-place, side-by-side aircraft. When three persons are onboard, the observer in the rear seat should be assigned the position behind the pilot. The rear seat observer search sector should cover as much of the left side of the aircraft as possible. In high-wing aircraft, this may be a sector approaching 180 degrees in arc. In low-wing aircraft, the air observer in the rear seat may only be able to effectively search behind the wing. If the piloting duties are to be shifted between occupants of the two front seats, loading of the aircraft should be planned to permit the rear seat observer to cover either side by shifting seat position. (see Figure 8-2)

B.3. Four-Place Aircraft

When all four seats are utilized, the observer in the right rear seat covers the right side of the aircraft from abeam to full aft. The right front seat observer will cover the sector forward of the wing. Observers should coordinate the exact overlap depending on the geometry of the aircraft. Some overlap of coverage between the front and rear seat observers can be beneficial in the search. (see Figure 8-3).

B.4. Cabin Class Aircraft

For aircraft facilities with greater than four observation positions, sectors should be assigned depending upon each position's viewing angle. The sectors may overlap, but this is not objectionable since it will improve the probability of detection (POD).

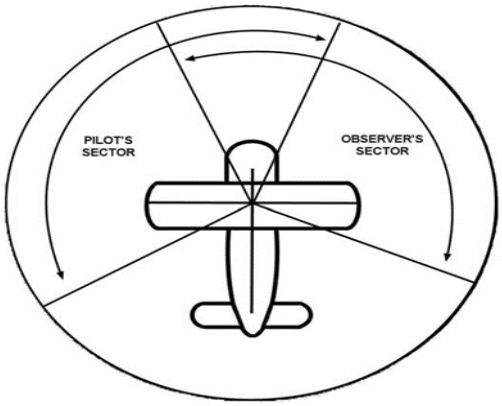


Figure 8-1
Observation Sectors with Two-Person Crew

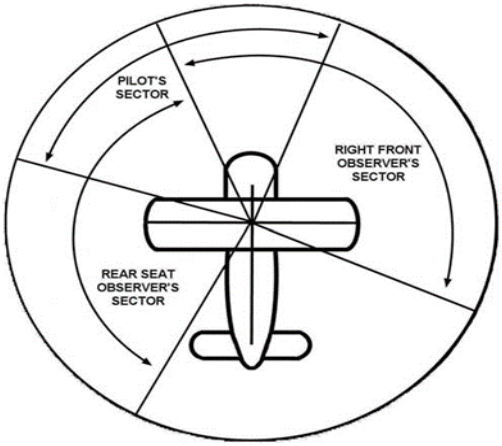


Figure 8-2
Observation Sectors with Three-Person Crew

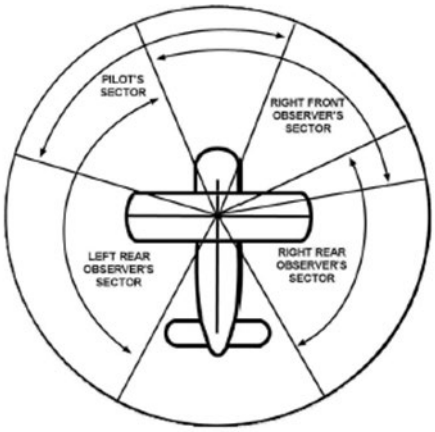


Figure 8-3
Observation Sectors with Four-Person Crew

Section C. Scanning Procedures

Introduction

To properly scan an area, the following must be considered for greatest success: aircraft obstructions, aircraft speed, type of binoculars, altitude, contrast, motivation, scan degree, procedure, and repeat scans

In this Section

This section contains the following information:

C.1. Aircraft Obstructions

Although aircraft are excellent search platforms, most small civilian aircraft have some obstructions that limit scanning sectors. This varies with the design of the aircraft and the observer's position. Generally, obstructions are more severe in low- wing aircraft than in high-wing aircraft. The PIC should evaluate the aircraft and inform observers of the limitations and how best to compensate for them.

C.2. Aircraft Speed

The speed of the aircraft affects the efficiency of observers by reducing the time in which they can scan a given sector. In searching, the slower the speed of the aircraft, the greater the probability of visual detection.

C.3. Binoculars

Binoculars rapidly bring on eye fatigue in aircraft and may cause nausea. Binoculars should be used only to confirm sightings made by the naked eye. Gyro- stabilized binoculars are preferred and may be checked out or borrowed at some air stations.

C.4. Altitude

When searching at low altitudes, the area closest to the aircraft (where detection probabilities are highest) will be passed quite rapidly. The rapidity with which this area will pass is dependent upon the masking caused by the design of the aircraft and by the speed of the aircraft. Low-wing aircraft present a particular problem in this regard. For a moderate speed low-wing aircraft with considerable masking, it may be necessary for rear seat observers to scan only the area in view behind the wing to obtain maximum effectiveness.

C.5. Contrast

Most searches by Auxiliary aircraft facilities will involve search over water. Often, over water searches will provide little or no contrast between sea and sky. Under these conditions, observers' eyes may focus short of the surface without the knowledge of the observer, and thus compromise the thoroughness of the search. To minimize this phenomenon, observers should occasionally focus their eyes on some specific items on the surface such as whitecaps or debris. If none is visible the eyes should be focused periodically on some part of the aircraft such as the wing tips. A short "focusing" period of a second or so will overcome this problem and scanning can be resumed.

C.6. Motivation

Motivation is a highly important factor that can affect the performance of a search crew. During the early stages of a search, motivation is typically high. After fatigue sets in and hope of locating survivors begins to fade, maintaining a high level of motivation typically becomes a concern. To maximize the effectiveness of an extended search, every effort must be made to maintain a high degree of motivation.

C.7. Scan Degree

Although the human eye sees over a wide angle, it focuses sharply only over an angle of about 10 degrees. This means that the detection of a hard-to-see target will usually occur within about 5 degrees of the central position point for the eye. In general, the eye must be looking right at an object to really see it. Moreover, the scan of the eye must be stopped for effective sharp vision. For these reasons, observers should scan their assigned sectors with discrete eye movements. Each movement should be about 3 to 4 degrees. The rate of movement should be two or three shifts per second. Using this technique, one scan across a 90-degree sector will take 10 to 15 seconds.

C.8. Procedure

The search of an assigned sector should start close to the aircraft and sequentially move outward from the aircraft in units of 3 to 4 degrees after each horizontal scan. Consecutive scans should be in opposite directions. That is, start the first scan from left to right, move up, make the second scan from right to left, move up another 3 to 4 degrees and scan back from left to right again. Continue this sequence to the horizon, or to the limit of meteorological visibility, or to a predetermined upper limit.

The observer's visual search scan should not extend out beyond the track space of the search pattern. If the track space is ½ nautical mile, the observation should not exceed ½ nautical mile. A useful tool to measure the search scan distance is to mark that distance by altitude with a thin grease pencil line on the window the observation is being made from. A useful tool or reference can be constructed from estimates of horizontal ground distance from the aircraft to various check points while flying at search altitudes.

C.9. Repeat Scans

For the pilot and front seat observer, scanning should be repeated again by returning the eyes for sequential sweeps starting close to the aircraft. This technique helps compensate for the changes in view caused by the forward motion of the aircraft and insures optimum coverage of the close-in area. When flying at low altitudes searching for small objects (such as a life raft or person in water), rear seat observers should employ a similar technique. In such cases, both front and rear seat observers should limit their outward scanning. When searching for persons in the water, this limit should be set at about half the track spacing for the aircraft at an altitude of 500 feet.

For example, for persons in the water, using ¼-nautical mile track spacing, the limit should be $^{1}/_{8}$ nautical mile or approximately 250 yards. For life rafts, the limit should be 2.5 nautical miles or less, and for boats under 60 feet in length, 10 nautical miles or less, even though the horizon may be over 25 nautical miles distant for an aircraft at 500 feet altitude. Thus, for small objects, even under optimum conditions, no search should be made above 10 degrees below the horizon and for rafts, no more than 2 degrees below the horizon. For boats up to 60 feet, the scan will extend virtually to the horizon. If the meteorological visibility is less than optimum, these distances should be further reduced.

Section D. Surface Vessel Recognition

Introduction

This section briefly describes the importance of vessel identification and provides a number of pictorials to aid in vessel recognition. This section presents a cursory introduction to vessel recognition. Flight crewmembers are encouraged to study the types of vessels in their AOR.

In this Section

This section contains the following information:

D.1. Surface Vessel Identification

Knowledge of various vessel types and configurations is important. To provide accurate reporting, it is critical that the vessel be identified and described properly by the reporting aircraft. Most Auxiliarists acquire a working knowledge of the plan view of various surface craft through public education courses, member training, and experience on the local waters. Surface vessels are identified by type, overall length (OAL), width (beam), number of masts, location of superstructure, number of engines, types of engines, etc.

D.2. Recreational Sailing Vessels

Sailboats may be under sail or powered by a combustion engine' Recreational sailboats range from 10' to over 100' and may be single-masted or multi-masted.

Figure 8-4
Sailing Vessel - Dinghy

Figure 8-5
Sailing Vessel - Catamaran

Figure 8-6
Sailing Vessel - Sloop

Figure 8-7
Sailing Vessel - Ketch

Figure 8-8
Sailing Vessel – Yawl

Figure 8-9
Sailing Vessel – Schooner

D.3. Recreational Power Vessels

Recreational power boats can range from a small 10’ outboard to a motor yacht well over 100’ in length. Engines vary from gasoline outboards to large gasoline or diesel inboards.

Figure 8-10
Center Console w/ Outboards

Figure 8-11
Recreational Vessel - 48' Motor Yacht

Figure 8-12
Recreational Vessel - 70' Motor Yacht

D.4. Commercial Fishing Vessels

Commercial fishing vessels vary in size, shape, and the manner in which they fish. They include trawlers, purse seiners, trap setters, long liners, dredgers, etc.

Figure 8-13
Fishing Vessel - Trawler

Figure 8-14
Fishing Vessel - Purse Seiner

Figure 8-15
Fishing Vessel - Lobster Boat

D.5. Merchant Vessels

The size, shape, and location of the superstructure on merchant ships depend on the functions of the ship. Merchant ships typically have a weather deck, deck houses, superstructures, cranes, hatches, and other types of machinery.

Figure 8-16
Commercial Vessel - Great lakes Freighter

Figure 8-17
Commercial Vessel - Oceangoing Container Ship

Section E. Sea State Evaluations

Introduction

This section briefly describes the two factors for determining sea state. They are:

- Wind direction and velocity
- Wave height

In this Section

This section contains the following information:

E.1. Wind Direction and Velocity

The simplest method of estimating wind direction and velocity is to examine wind streaks on the water. These appear as long streaks up and down wind. Whitecaps fall forward with the wind, but are overrun by the waves, thus producing the illusion that the foam is sliding backwards. Wind direction may be determined utilizing this information along with observations of the direction of the streaks. Wind velocity can be accurately estimated by noting the appearance of white caps, foam, and wind streaks.

E.2. Fetch

Area over the ocean or lake surface over which wind blows in a constant direction, without obstruction, generating waves.

E.3. Wave Height

Waves are a result of the water's motion, gravitational forces, and the wind. The most common waves are created by the wind. Waves created by gravitational forces are called tidal waves. Tsunamis are waves caused by underwater disturbances, such as earthquakes.

The size of waves created by the wind depends on the fetch and wind velocity and how long the wind has been blowing. The Beaufort Wind Scale is used to estimate wave height.

CHAPTER 9
Communications

Introduction

Communication and navigation skills are required for those Auxiliarists qualifying as pilots, air observers, or air crew. These skills must be initially learned, but unless practiced on a regular basis, it is unlikely that a sufficient skill level will be retained to remain comfortable and effective in the current mission environment.

When on a mission, it is important to know what other units, surface vessels, helicopters, etc., are involved, and the altitudes, separation requirements, and communications protocol. It is also important to know what information may be conveyed on these open frequencies and what should be reported on a landline or post mission in writing.

This chapter describes the communication/navigation requirements and equipment necessary for effectively operating in the aviation mission environment.

In this Chapter

This chapter contains the following sections:

Section A. Radio Procedures

Introduction

This section describes the proper procedures to follow when transmitting information via radio communications.

In this Section

This section contains the following information:

A.1. Before Transmitting

Before transmitting:

- THINK – Plan what you are going to say. Brevity is important.
- PREPARE –
  i. Know where you are.
  ii. Know the frequency you are listening on. Anticipate questions you may be asked to answer.
- LISTEN – Be sure that no one else is using the frequency.

A.2. Aviation Phraseology

There are certain procedures and phraseologies that are specific to air operations. Observers and air crew should practice aviation communications until they become second nature. Practice not only improves communications, but also tends to overcome shyness or “mic fright”.

A.3. Call Signs

All Coast Guard Auxiliary aircraft are assigned a unique call sign (see Chapter 9 in reference (a)) and shall use that call sign when operating under orders (e.g., CG8123). This is verbally transmitted as "*Coast Guard 8123*".

Coast Guard Auxiliary aircraft shall use the RESCUE call sign (e.g., "Rescue 8123") when communicating with air traffic control and are authorized to squawk transponder code 1277 on search and rescue missions when operating VFR to, from, or within a designated search area. At SAR case conclusion, or when not actively engaged in support of a SAR mission, the RESCUE call sign and 1277 code should not be used.

A.4. Tactical Call Signs

Coast Guard Auxiliary aircraft may be assigned tactical call signs (e.g., "Viper 7") for a specific mission (ex. law enforcement support) by the Air Station, Sector, or the On-Scene Commander (OSC).

If so assigned, a record of the designated tactical calls will be kept by the air station and referenced to the actual facilities in use

A.5. Coast Guard Calls

The following are examples of typical radio calls from an aircraft: (in this example the aircraft civil registration is "N123AB", and its FAA call sign for civilian flights would be: "123AB").

When operating under orders and contacting Coast Guard or Auxiliary facilities on VHF-FM, the Auxiliary aircraft shall always identify itself using its Coast Guard assigned number as "Coast Guard 8xxx" with 8 denoting the aircraft as an Auxiliary facility, the first "x" is a number 1 through 5 denoting the aircraft as single, multi engine, turbine, or helicopter, and the final "xx" is a number identifying the specific aircraft. Using the example that the Coast Guard assigned number is "C8278" the call would be "Coast Guard 8278".

The station identifier of the station called should be repeated 2 to 3 times on the initial call.

> *"Coast Guard Sector Charleston, Coast Guard Sector Charleston, this is Coast Guard 8278, Over."*

After communication is established, it is not required to repeat the station identifier of the station called.

> *"Charleston, this is Coast Guard 8278, what is your message? Over."*

A.6. ATC Calls

When initiating calls on aeronautical frequencies, there are differences in phraseology and procedures from those of general aviation communications. When flying under orders, an Auxiliary aircraft is considered to be a Coast Guard aircraft.

"Miami Ground, this is Coast Guard 8278"

Upon initial contact with ATC, e.g., ground control at the departing airport, it may be helpful to also identify the type of aircraft.

"Miami Ground, this is Coast Guard 8278, a Piper Aztec"

When engaged in actual SAR operations, the prefix RESCUE may be added to the call sign.

"Republic Tower, this is Coast Guard Rescue 8278"

A.7. ATC Designations

The following are aeronautical station designations:

- ARTCC: "Jacksonville Center"
- Approach control: "Boston Approach"
- Airport tower: "Selfridge Tower"
- Airport ground control: "Miami Ground"
- Pre-taxi clearance control: "Kennedy Clearance"
- FSSs: "Portland Radio"
- Enroute flight advisory service: "San Diego Flight Watch"

A.8. Additional Reporting Procedures

Time is given in the 24-hour clock and each digit is said separately.

Times given by aircraft in informal radio traffic are expressed in minutes after the hour with the hour itself not given unless necessary.

0825 – *"zero eight two five" or "minute two five"*

Altitudes are reported with separate digits for the thousands, plus hundreds, if appropriate.

4500 ft – *"four thousand five hundred"; or 10,000 ft – "one zero thousand"*

Three digits are used when reporting heading or direction.

050 degrees – *"heading zero five zero"*

Speed is reported in knots.

120 knots – *"one two zero knots"*

When the aircraft is "handed off" from one air traffic controller to another, always include altitude when making the initial contact.

"Detroit Approach, this is Coast Guard 8278 at seven thousand."

A.9. Good Communication Practice

Listening is key to successful communications. Ensure the radio volume and squelch are properly set. Ensure one crewmember is tasked with continually listening for communications and not only when "ops normal" messages are due.

The microphone button should be used properly. Press to talk and hold the microphone key for a half-second before speaking. The microphone should be spoken into directly at a distance of about 1 inch from the lips. Engine and wind noise may cover most of the message if proper technique is not used. Shouting into the microphone will result in distortion of the signal.

When working a case with other assets and having difficulty maintaining guard because of radio reception, it may be possible to temporarily use other units as relays until better communications can be established.

A.10. Coast Guard Radiotelephone Handbook

Reference (f) provides general, unclassified radiotelephone tactics, techniques, and procedures (TTP) for U.S. Coast Guard (USCG) use.

The maritime public might not understand strict military procedures, so you might have to use international radiotelephone procedures when communicating with non-military vessels or aircraft.

A.11. DSC

Digital Selective Calling" (DSC) is a non-voice, digital signaling format used to send distress and routine messages from one boat to other nearby stations. DSC calls are transmitted and received on Marine Channel 70, and for this reason Channel 70 is not to be used for voice communications. DSC Marine Band radios can receive basic digital messages. However, they cannot respond to those messages, and they cannot use any of DSC's automated functions unless they are programmed with a unique Maritime Mobile Service Identity (MMSI) number. Only after the MMSI number has been programmed will the radio be able to participate fully in DSC.

Most DSC distress messages will include position information of the distressed vessel to help direct rescue resources. Basic DSC messages can be received by Auxiliary aircraft equipped with a DSC Marine Band radio. DSC radios installed on Auxiliary aircraft are not authorized be programmed with an MMSI number.

A.12. COMSEC and OPSEC

It is important for the flight crew to keep in mind that generally air/ground communications will occur on "open channels" and may be monitored by any person with a scanner, receiver, or transceiver.

Communications Security (COMSEC) and Operational Security (OPSEC) should always be considered as communications are being composed to ensure that sensitive information is not inadvertently disclosed by the transmissions. Unless the mission profile includes provisions to the contrary, or a request is received from a Coast Guard unit, the following precautions should be taken when planning transmissions on "open channels":

- The positions of Coast Guard or Auxiliary vessels should not be disclosed.
- Activities of law enforcement vessels or aircraft should not be disclosed.
- Locations of military vessels should not be disclosed.
- Reports of suspicious activity might better be reported after landing unless notification is urgent.

Examples of when these reports are part of the mission profile or are otherwise permissible are:

- While on ice reconnaissance patrols, Auxiliary aircraft might be requested to relay the location of the ice breakers.
- During exercise support missions, the locations of military vessels may be requested.
- During regular missions, a Coast Guard unit may request that the flight crew report the location of one of its assets.

During training missions, prior agreement may have been reached to direct vessels to the "aid" of a Coast Guard or Auxiliary vessel.

CHAPTER 10
Search and Rescue Procedures

Introduction

Auxiliary aircraft may be called out by Coast Guard unit commanders for SAR missions or diverted from other missions for emergency SAR. These sorties may be conducted in conjunction with other aircraft or surface vessels. This chapter describes the Auxiliary flight crew support and facility use in carrying out the SAR mission.

The primary source of SAR procedures and terminology is contained in, reference g. Flight crewmembers are required to be familiar with the information contained in this reference.

This chapter provides supplemental information for Auxiliary flight crews and aircraft use in carrying out the SAR mission.

In this Chapter

This chapter contains the following sections:

Section A. SAR Administration

Introduction

This section describes SAR administration within the Auxiliary Aviation Program

In this Section

This section contains the following information:

A.1. Auxiliary Aircraft in SAR

The relatively slow speed of the typical Auxiliary aircraft facility ideally suits it for searches for small vessels or debris and persons in the water. The fuel usage permits such aircraft facilities to search a given area with less fuel consumption than Coast Guard aircraft. The use of Auxiliary aircraft facilities for selected search missions also conserves Coast Guard units for more hazardous or specialized missions which are not suitable for Auxiliary aircraft such as medical evacuation from ships or air delivery of de-watering pumps.

Studies by the Coast Guard show that 86% of the cases to which the Coast Guard responded occurred within 3 nautical miles of shore and that 95% of the cases occurred within 10 nautical miles of shore. Thus, the single-engine Auxiliary aircraft facility which is limited to 50 nautical miles from shore (unescorted) for its operations is in a position to provide support for a major portion of the Coast Guard's SAR mission requirements.

The typical Auxiliary aircraft facility is fixed wing and is not capable of rescues at sea, a duty for which helicopters or surface vessels are far more suited. The fixed- wing Auxiliary aircraft facility is used primarily as a means of locating a source of distress, reporting it to the proper Sector, Group, Station, RCC, or SMC, and then guiding surface craft or rotary-wing aircraft to the scene. The typical Auxiliary aircraft is primarily an observation and communications platform, a role that fits its capabilities.

A.2. Limitations

Although the aircraft facility is an extremely effective and versatile element of the Auxiliary, there are several limitations that must be understood and must be considered when assigning missions to aircraft. These limitations may be regulatory in nature, may involve issues of crew safety or performance, or may result from the nature or type of facility in use.

Limitations of a particular aircraft and its crew should also be evaluated prior to starting a mission. Missions with difficult conditions should be assigned to more experienced, proficient, and current flight crews. Aircraft equipped with GPS should be used for complex SAR activities. These decisions are the responsibility of the OIA. They should be kept informed by the cognizant Auxiliary Air Operations Staff Officer, generally an ADSO-AAC (Auxiliary Aviation Coordinator).

A.3. FARs

Even during SAR operations, all applicable FAR are adhered to, unless specifically exempted. For example, Auxiliary aircraft under the command of an aircraft commander or first pilot, while on an actual SAR sortie, are provided an exemption to FAR 91.119 (specifying minimum safe altitudes and clearances) by a special memorandum of understanding between the Coast Guard and the FAA.

In order to fall under the exemption, pilots are trained in low-level flight and maneuvering. This exemption applies only to SAR and even then, is not a blanket authorization for low-level flight on SAR cases but is intended to enable improved search assistance when necessary.

It is the pilot's responsibility to advise the SMC of any effect that these regulations may have on the mission. The PIC should never accept any mission that unnecessarily endangers his crew, himself, his aircraft, or anyone on the ground. It is the responsibility of the PIC, along with the crew, to continuously analyze and manage risk as the flight environment and mission change, especially before accepting a SAR assignment.

A.4. Fuel Endurance

Endurance on-scene is often a limitation. Light aircraft often do not have sufficient fuel capacity to stay on station as long as surface vessels. Most light aircraft carry fuel for at least three hours of flight with reserve. However, some Auxiliary aircraft may have flight time endurance of as much as eight hours. In the case of safety multi-mission patrols, a significant portion of the fuel may have been consumed before diversion to a SAR case or while searching. When this situation exists, the aircraft may not be able to loiter awaiting the arrival of surface assistance and may have to return to an airfield for refueling if time allows.

Section B. Initial Procedures

Introduction

This section describes the initial procedures Auxiliary flight crew teams should take when carrying out SAR missions.

In this Section

This section contains the following information:

B.1. Mission Assignment

A Coast Guard air station or other designated call-out authority will provide SAR assignments to Auxiliary aircraft facilities. In order to become qualified as a first pilot or aircraft commander, the Auxiliary pilot must have demonstrated proficiency in search patterns and other SAR operations. An Auxiliary flight check including SAR procedures is required of first pilots and aircraft commanders every two years.

B.2. Compliance with Direction

The directions of the SMC or the OSC should be followed provided they do not pose a hazard to the aircraft or crew. If the PIC is unwilling or unable to comply with them, the SMC must be immediately notified of that decision.

B.3. Local Knowledge

In many instances, Auxiliary pilots have accumulated local knowledge concerning patterns and geographical features which may affect the success of a search. This knowledge, plus the capabilities of the aircraft should be used to make recommendations to the Operational Commander.

B.4. Mission Planning

A search request may allow time for a ground briefing, which will clearly provide the best mechanism for mission planning and organization. The crew may, however, be asked to initiate a SAR case after becoming airborne, perhaps even while engaged in another type of mission. In this case, several considerations must be evaluated by the PIC before accepting the mission.

B.5. Flight Conditions

The pilot must be aware of and evaluate the following flight conditions:

- Time aloft
- Fuel remaining
- Forecast weather
- Crew fatigue

Depending on these conditions or other circumstances, the pilot may decline the mission, may accept the mission, or may indicate that he will first have to refuel and then proceed.

B.6. Flight Route

The flight route is important. Non-pilots requesting an Auxiliary aircraft response may not fully understand details of controlled airspace

B.7. Clarification of Instructions

When instructions are received that are not completely understood, clarification should be requested.

B.8. Operating in Controlled Airspace

When operating in or near controlled airspace, ATC should be notified that an operation is in progress. They should be informed of the search and the area expected to be covered. ATC may request a transponder squawk of 1277, which is the general SAR code. When on an actual, ordered SAR, the Auxiliary aircraft call sign used for ATC communications may be "Coast Guard RESCUE (call sign)."

B.9. Crew Briefing

Ample time should be allowed before takeoff for the crew briefing. The briefing is especially important for SAR prosecution, since, to the extent known, the briefing should cover details of the search and target along with standard briefing information. This briefing should cover items such as:

- Review of the Risk Assessment Matrix.
- Area of operation.
- Pilot/crew responsibilities including the specifically assigned areas for each crewmember to search.
- Emergency procedures including ditching.
- Forced landing and emergency egress procedures.

- Emergency equipment usage.
- CRM issues.

The search aspect of the brief should include the CSP, the type of search pattern to fly, and a full description of what to look for. Other pertinent information includes details, such as:

- Search pattern type
- Track length (if applicable)
- Sweep width
- Creep direction (major and minor axis)
- Corner points if applicable
- Number of legs to fly End point
- Track space
- First turn direction Orientation (true or magnetic)
- Altitudes to be flown at various points in the search.
- Communication frequencies to be used and call signs of units to be contacted. It is important to know what other units, surface vessels, helicopters, etc., are involved, and the altitudes, separation requirements, and communications protocol.
- Location of other units involved in the search and traffic.

Section C. Types of Distress

Introduction

A distressed vessel may involve a large vessel still afloat but in need of assistance. Large vessels are good visual and radar targets and often are able to provide an accurate fix by radio. A drifting, disabled vessel is more difficult to detect than one underway since its wake may not be visible. Small surface vessels may prove difficult to detect by either visual or electronic means especially under adverse conditions. Search aircraft in many instances have flown directly overhead small vessels without making visual contact

In this Section

This section contains the following information:

C.1. Surface Vessel Distress

If a distressed vessel has foundered before the arrival of rescue units, the most probable objects to look for will be lifeboats, rafts, debris, oil, and personnel in the water. Lifeboats may vary in size from 12 to 50 or more feet in length and be of any color. Rafts may also be of any color and are found in a variety of sizes and shapes ranging from 4 feet in diameter and box shaped to 20 feet in diameter and circular

C.2. Debris

Initially, the scene of the disaster may be marked by debris and perhaps an oil slick. The debris will be found downwind of the oil slick, and boats and rafts are typically downwind of the debris since they are more affected by wind unless provided with drogues. Persons in the water are usually found in the area of the debris. Floating objects should be carefully examined for any evidence of persons clinging to those objects. Upwind areas should not be ignored since, if the vessel was abandoned some time before sinking, lifeboats, rafts, and personnel may have propelled themselves upwind of the point of foundering. Search units should search both upwind and downwind of the oil and debris area

C.3. Small Craft	Small craft, such as yachts and fishing vessels, usually carry only small dinghies. Some have only balsa or pneumatic rafts, while others have only life jackets. Dinghies may be any color.
C.4. Distress Signals	Lifeboats from large vessels are normally equipped with ample pyrotechnic visual distress signals (VDS) and if more than one boat is launched, they can expect to be grouped or tied together, making sighting easier. Boats and rafts from small craft usually have a limited supply of VDSs, frequently no more than the minimum required by law
C.5. Aircraft Distress	Aircraft distress searches take place over land or water areas.
C.6. Downed Aircraft over Land	If the search for a downed aircraft is partially over land areas, observers should be briefed to look for broken or scarred trees, bits of shiny metal beneath the trees, burned out areas which look fresh, and parachutes or visual ground signals which may have been set out by survivors. Although there is an altitude exemption for executing SAR cases, pilots should adhere to FAA altitude restrictions unless there is a specific reason to do otherwise, especially on searches over land. The PIC and crew must remain consistently cognizant of situational awareness and high obstructions
C.7. Downed Aircraft over Water	In a search over water for survivors of an aircraft accident, observers should be briefed to look for scattered wreckage, such as oxygen bottles, floorboards, pieces of debris, partial or whole rafts, or seat cushions. In some cases, there may be nothing other than an oil slick.

Section D. Visual Surface to Air Signals

Introduction

Communication between an assisting Auxiliary aircraft and surface units is necessary if the aircraft giving assistance is to be effective. The communication may be with the target vessel, an assisting surface vessel, or both. The communication may consist of simple aircraft and surface maneuvers, surface manual signals, radio, or a combination of techniques. Regardless of the methods used, the aircraft will be of little value if some sort of workable communications between the surface vessel and the aircraft cannot be established. In the case of a surface vessel being assisted, the personnel onboard may have little or no knowledge of how to communicate with the aircraft. Therefore, considerable ingenuity and patience on the part of the flight crew may be necessary to establish a degree of effective communication.

In this Section

This section contains the following information:

D.1. Surface to Air Signals

Very often, only visual methods will be available for communications with vessels on the surface. This is particularly true during a patrol or search where the surface vessel is attempting to pass the message that it needs assistance. Flight crews should be alert to a variety of possible signals from the people on the surface to help in this identification, including:

- Body signals where one of the crewmembers of the unit in need of assistance faces in the direction of the aircraft and raises and lowers his arms or possibly just waves wildly.
- Use of a circle and square signal on a hoist, or a black square and black circle on a flag with an orange background. (see Figure 10-1)

D.2. Signal Flags

Signal flags are another effective method of signaling to an assisting aircraft.

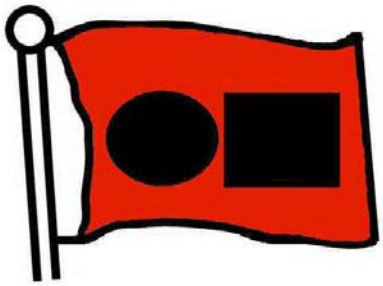


Figure 10-1
Visual Distress Signal for Surface Vessels

D.3. Signal Fires or Smoke

Signal fires or smoke coming from a surface vessel may be from burning oil or oily rags in a can and can be detected from a considerable distance.

D.4. Pyrotechnic Signals

Pyrotechnics include flares and meteors from the surface as well as smoke. (see Figure 10-2) Pyrotechnic signals are used as both day and night visual aids along with handheld or floating smoke signals, used in daytime. These emit a large volume of bright orange smoke that remains visible for several minutes. Under high wind conditions, the smoke will dissipate rapidly making the signal less effective. Handheld flares, although better at night, may also be used as daytime signals. Coast Guard- or SOLAS-approved marine-type flares are much brighter than the old fuse type and are therefore much more visible from an aircraft.

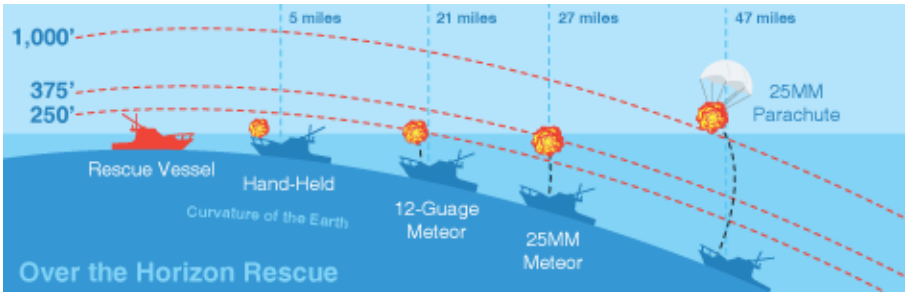


Figure 10-2
Visual Distress Flares for Surface Vessels

D.5. Dye Markers

Dye markers appear on the water and may be any color. (see Figure 10-3)

Figure 10-3
Sea Dye Marker

D.6. Signal Mirrors

Signal mirrors produce a highly visible flash during daylight hours.

D.7. Air-to Surface Signals

Another need for visual communication may arise when the aircraft has the need to direct a surface vessel. This may occur when the aircraft is attempting to guide a surface vessel away from danger or towards another vessel to assist.

To initiate a request for assistance, the surface vessel is circled at least once. Additional circling may be necessary to obtain the attention of the surface crew. This can be verified when members of the surface crew are observed to be watching the maneuvers of the aircraft.

After circling the vessel at least once, the aircraft is flown across (perpendicular to) the vessel's projected course while opening and retarding the throttle, rocking the wings, or cycling the propeller pitch. Next, the aircraft is flown outbound in the direction that the surface vessel is to take. If the surface vessel does not respond, the procedure should be repeated.

The surface vessel should also be observed for signals indicating that it cannot or will not accept the directions. Be alert for other signals such as a wave-off or the surface-to-air signal for "negative".

Another possible signal for a vessel to indicate "no" when underway might be to swing the bow of the vessel left and right in the manner of the aircraft maneuver of "negative". Obviously, if the surface vessel displays no reaction or response to repeated signal attempts, this should be accepted as tacit refusal of the directions, and other available means of obtaining the desired action should be pursued.

When a surface vessel does accept the directions, it will often be signalled by picking up the desired heading. As the aircraft will be traveling at a much higher speed, it can circle back to the vessel periodically and pass close by while flying in the direction of the desired course. This technique can be used to verify the correct course is being followed and/or for indicating corrections in the course for the surface vessel. When the target seems to be in visual range of the assisting vessel, the aircraft then circles the target to serve as reference to the surface vessel. This same technique can be used to steer a vessel around an unseen hazard. The aircraft should circle at waypoints until the vessel arrives, then indicate the new course.

If the conditions change during the operation freeing the vessel from danger, or other reasons develop such that the aircraft no longer desires the surface vessel to follow the course indicated, the aircraft should be flown close astern of the surface vessel at low altitude while changing the engine sound (by throttle or prop control) or rocking the wings until the vessel indicates understanding of the cancellation. The aircraft is then free to break contact.

D.8. Aircraft Acknowledgement Signals

The aircraft acknowledgment signals shown in Figure 10-4 are used to respond to the visual body signals. These signals are straightforward and simple in their application. The signals used for "message received and understood," "affirmative", and "negative" should be performed smoothly and slowly. Care must be taken in making the signal for "negative" to avoid a skid at slow speed, which could develop into a violent stall. The signal can be performed as a series of shallow turns rather than "yawing" the aircraft, thereby avoiding the skid danger.

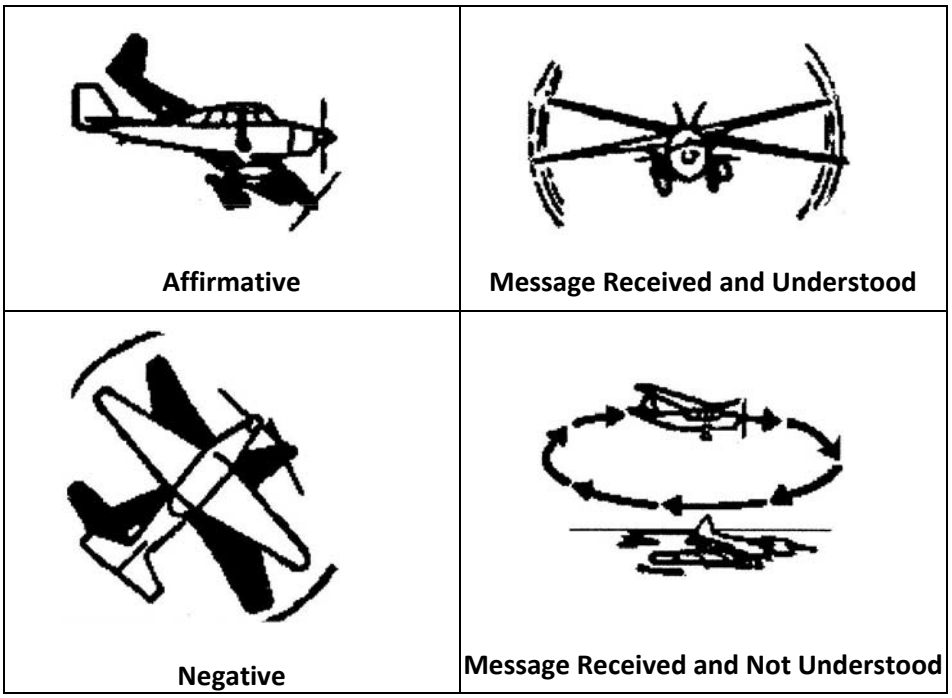


Figure 10-4
Aircraft Acknowledgement Signals

D.9. Ground Emergency Signals

There are recognized emergency communication symbols designed to be used by survivors ashore to impart information to aircraft. These are international symbols and can be found in various publications. Caution should be exercised because the accepted symbols were reduced in l981 by international agreement from eighteen to five. Some publications may still carry the out-of-date symbols. The new ground- to-air symbols are shown in Figure 10-5.

These signals may be made using fabric strips, wood, stones, or any material contrasting with the background surface. They may also be marked out in snow or on the ground or in sand. Pilots receiving such signals should acknowledge them by rocking the wings of the aircraft. (see Figure 10-4).

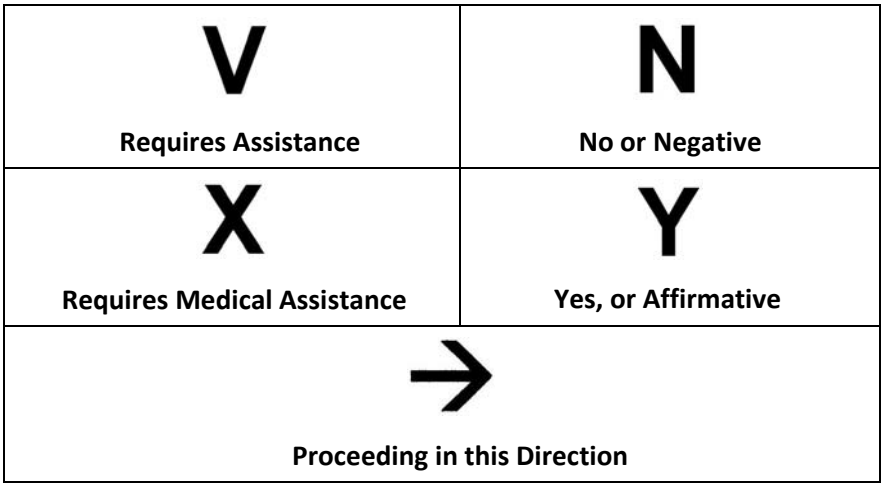


Figure 10-5
Ground Emergency Signals

D.10. Body Movement Signals

Positive identification of an Auxiliary vessel may be important when providing directions to a disabled vessel or distress location. Coast Guard vessels are easily identified by their distinctive hull markings. Auxiliary vessels, for the most part, resemble other private vessels. From the air, identifying marks such as ensigns, patrol board names, and numbers may not be easily seen. The uniforms and PFDs worn by Auxiliarists may be helpful for identification and the flashing amber and red "public service vessel" light may help.

If radio communications have been established, vessel identification can be confirmed by having the Auxiliary vessel turn in a tight circle. The circular wake is readily identified from the air.

Auxiliary vessels are encouraged to display a special Surface-to-Air Recognition Banner. (see Figure 16-7) This banner consists of a black capital "A" in block lettering on an International Orange background. The banner is normally displayed on the deck or top of the pilothouse with the base of the "A" facing the stern. The sign is approximately a 36-inch square. This banner is used to identify Auxiliary vessels on patrol from the air.

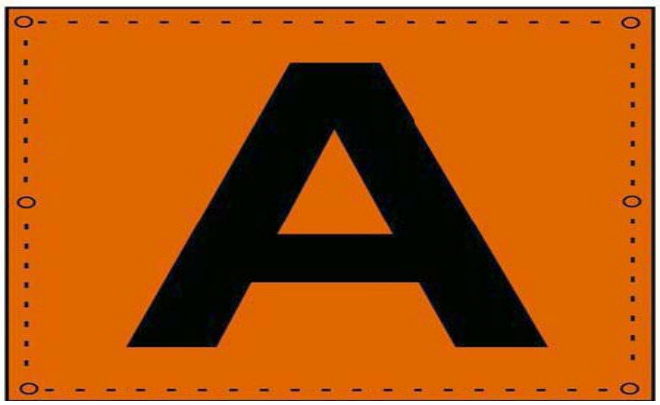


Figure 10-6
Surface to Air Recognition Banner

Section E. Electronic Aids

Introduction

In many cases the aircraft will identify the general vicinity of the distressed vessel/person by use of electronic means, such as:

- ELT
- EPIRB/PLB
- Portable two-way radio

In this Section

This section contains the following information:

E.1. Emergency Radios

Emergency radio sets consist of transmitters or transceivers. The ELT, with which Auxiliary aviators are familiar, is also marketed in a marine version designated as an EPIRB.

Survivors may use balloons and box kites for raising antennas of emergency radio sets. These may indicate the presence of a life raft but can be a hazard to search aircraft. Be alert for such hazards.

E.2. Class B EPIRB

Cass B EPIRBs transmit a continuous warbling signal on 121.500 MHz and 243.000 MHz and are usually manually deployed. These are the same frequencies used by the ELT in an aircraft. Class B EPIRBs are being phased out of service and no longer monitored by the satellite system.

Figure 10-7
Class B EPIRB

E.3. Category I and II EPIRBs

Currently manufactured EPIRBs, Category 1 and 2, transmit on 406.000 MHz and 121.500 MHz. Each Category 1 and 2 EPIRB has a serial number which is recorded when the purchasers send in their registration cards and identifies the vessel on which it is located. When the Category 1 or 2 EPIRB is activated, the serial number is transmitted as a data burst on 406.000 MHz to a satellite which relays the information and location of the transmitter to ground stations.

Most of the newer EPIRBS are also equipped with a built-in GPS. A continuous signal on 121.500 MHz is also transmitted for tracking by direction finding equipment. Marine environment EPIRBs are designed to float and to transmit their signal while in the water.

Category I EPIRBs automatically deploy from a sinking vessel, while category II EPIRBs must be manually deployed.

Figure 10-8
Category II EPIRB

E.4. PLBs

Personal Locator Beacons (PLBs) function like an EPIRB but are carried by a person. Most of these are manually deployed.

Figure 10-9
Personal Locator Beacon (PLB)

Section F. Search Patterns

Introduction

Primary search patterns for use in SAR operations by Auxiliary aircraft fall into the following groups:

- Track Line Pattern (T)
- Parallel Track Pattern (P)
- Creeping Line Pattern (CS)
- Square Pattern (S)
- Sector Pattern (V)
- Contour Search (O)

Search patterns are further differentiated by whether individual or formation search is employed, whether an "Air-Surface Team" is used, or by the position of the entry and departure points of the search in the case of the track line.

See Section G of this chapter for definitions of the search pattern terminology. The examples below are primarily described in single-unit (S) search terms.

In this Section

This section contains the following information:

F.1. Track Line Pattern

The single unit track line (TS) pattern (see Figure 10-10) is generally used where an aircraft or vessel is reported missing, and the intended route of the missing craft is the only search lead and rapid coverage of the search object's proposed track is obtainable. A route search is usually the first physical search action taken since it is assumed that the distressed craft is on, or adjacent to its proposed route and that it will be easily discernible, or that there will be survivors capable of signaling when they hear or sight search aircraft. The track crawl consists of rapid and reasonably thorough coverage of the missing target's proposed route and of the immediately adjacent areas.

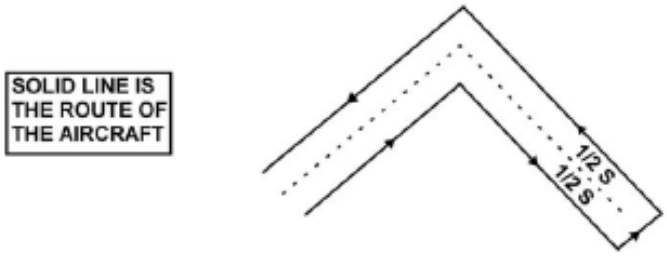


Figure 10-10
Track Line Search Pattern

F.2. Parallel Search Pattern

The single-unit parallel search (PS) pattern (Figure 10-11) is normally used when there is a large uncertainty in the survivor's location, requiring a large area to be searched with uniform coverage. Information concerning the target is limited by knowledge of the approximate area, and there is equal probability that the target is located anywhere in this area. This pattern is best adapted to rectangular or square areas.

The search legs are parallel to the long sides of the rectangle (if square pattern, "long side" is the major axis). The first leg starts at the CSP and runs parallel to the long side of the rectangle/square. Successive legs are maintained parallel to each other and at a distance of one-track space (TS) apart. Remember, the CSP is always ½ the track space inside the search box from each of the 2 sides forming the corner.

To determine how "long" a search leg is, use the following: search leg length (i.e., length is 10 nautical miles, TS is 1 nautical mile, search leg is 9 nautical miles long).

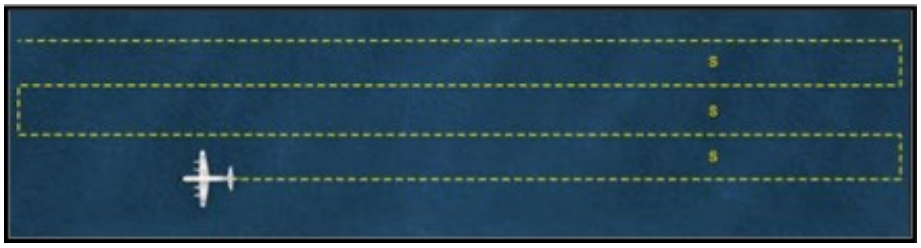


Figure 10-11
Parallel Search Pattern

F.3. Creeping Line Pattern

The single-unit creeping line (CS) pattern (see Figure 10-12) differs from the parallel search pattern only in that the search legs are parallel to the short axis of a rectangular area. They are generally selected when rapid advancement of successive search legs along a given track is desired. The most probable area is covered first. A CS is used when there is a higher probability the search object is at one end of the search area. This pattern is often chosen when information concerning the target is limited to an area between two points where the distress position may be on either side of the original track due to navigational error or drift. Like a PS, a CS still provides uniform coverage of the area. The search begins at one end of the search area and works in the same direction as the target's drift.

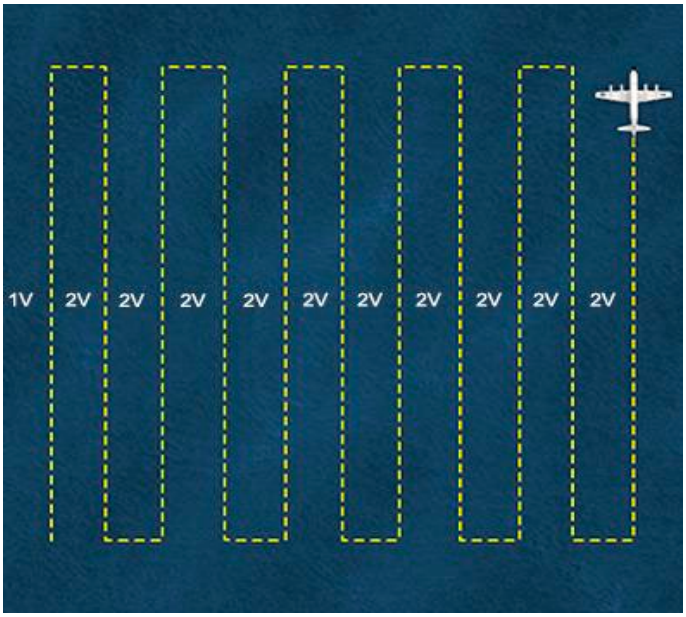


Figure 10-12
Creeping Line Search Pattern

F.4. Creeping Line Coordinated Pattern

With creeping line coordinated (CSC) pattern (see Figure 10-13), an aircraft and a surface vessel work together in a coordinated search. This will normally result in more accurate navigation and coverage within the search area. This coordinated search consists of the aircraft flying the creeping line pattern, flying tracks at right angles to the course of the surface search asset, while the boat is using a track line pattern.

The length of the aircraft leg is laid out so that the advance of the aircraft equals that of the surface vessel, thus the aircraft passes over the boat on each leg.

The speeds of the vessel and the aircraft must be coordinated to fit the speed limitations of both units. The aircraft should always remain within 10 nautical miles of the surface search asset.

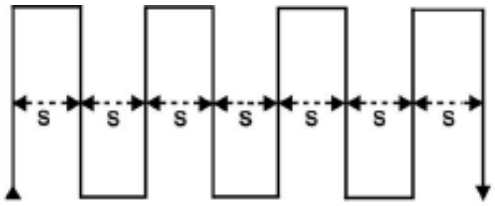


Figure 10-13
Creeping Line Coordinated Search Pattern

F.5. Expanding Square Pattern

The expanding square (SS) pattern (see Figure 10-14) is used for concentrated search of a small area where the last known position (LKP) of survivors is known within close limits and the area to be searched is not extensive. In an SS pattern, the first two legs are 1 track spacing long, legs 3 and 4 are 2 track spacings long, etc.

If an error in position is expected or if the target is moving, then the SS pattern may be modified to an expanding rectangle with long legs running in the direction of the probable movement of the target. This may occur in situations where bailout occurred; where aircraft are about to ditch; or ship, life rafts, or survivors in PFDs may be drifting or proceeding very slowly from the datum point.

A disadvantage of the use of this pattern for aircraft is that it calls for 90-degree turns, particularly when close to the datum. This may hamper the flight crew's field of vision while the aircraft is in a banked altitude. A better search pattern for an aircraft might be the sector search.

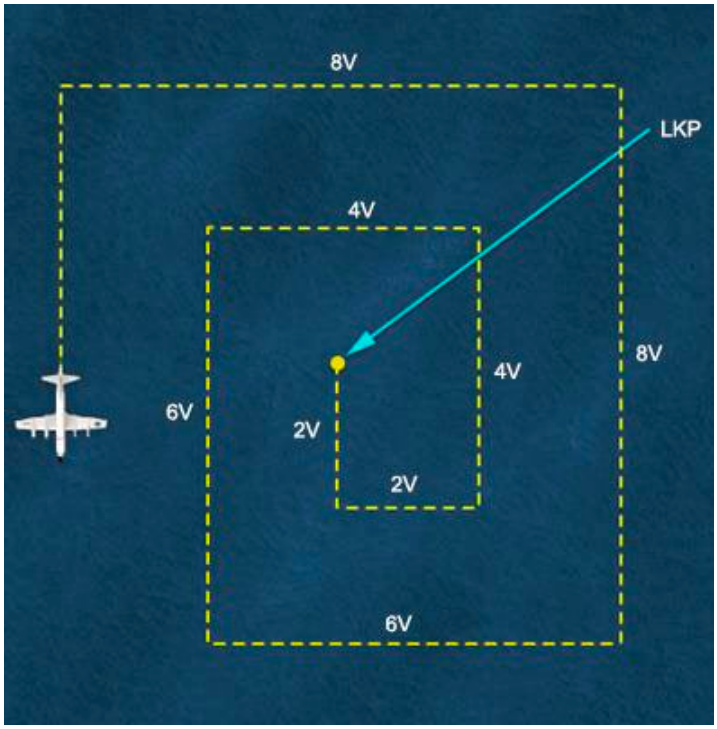


Figure 10-14
Expanding Square Search Pattern

F.6. Sector Search

The sector search (VS) pattern (see Figure 10-16) is performed so that the LKP of the search object is overflown during each leg of the pattern. It is used when the position of distress is known within close limits and the area to be searched is not extensive. It is simple to execute, provides for navigational accuracy, and is flexible. The track spacing is small near the center point of the search and larger at the extremities, resulting in an increased POD near the center of the search area, the most likely position of the distress. To determine the time required for a sector search pattern, refer to Figure 10-15.

Due to aircraft speed, leg lengths in a sector search are typically at least 1 nautical mile.

Time in minutes per leg at 90 knots using 60 degrees between legs							
		3-NM Pattern			5-NM Pattern		
Leg #	Heading	Distance	Time	Turn Time	Distance	Time	Turn Time
1	360	2.5	1:40	:40	4.5	3:00	:40
2	120	2.0	1:20	:40	4.0	2:40	:40
3-4	240	5.0	3 :20	:40	9.0	6:00	:40
5	360	2.0	1:20	:40	4.0	2:40	:40
6-7	120	5.0	3:20	:40	9.0	6:00	:40
8	240	2.0	1:20	:40	4.0	2:40	:40
9	360	2.5	1:40	:40	4.5	3:00	:40

Figure 10-15
Sector Search Pattern Time Chart

The search unit passes through the datum many times, each time increasing the chance of finding the search object (see Figure 10-16) If a drifting datum marker has been deployed, the datum point for the search may be re-oriented as the aircraft passes over the datum marker. This adjusts the search area for the drift of the target.

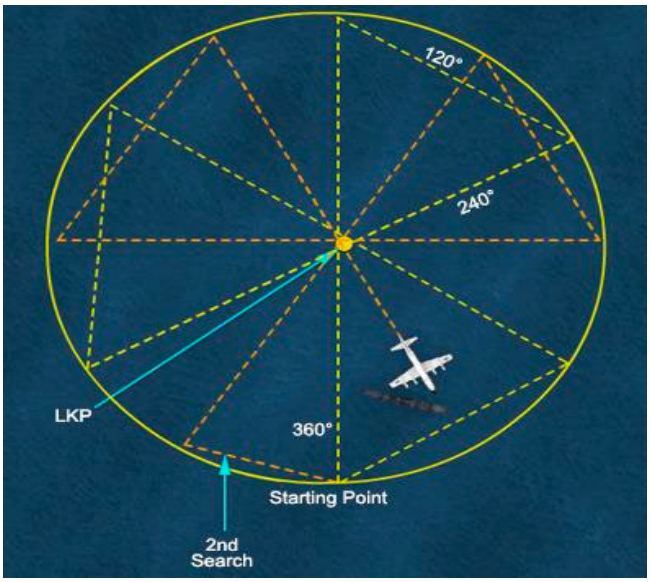


Figure 10-16
Sector Search Pattern

GPS should be used to mark the datum coordinates. The first leg is generally in the direction of the datum drift. All turns are 120 degrees to the right. All legs are equal to the search radius. In the sector search, it is imperative that the rules of turning point advancement be applied (see Figure 10-17). The turn must be started early in order to intercept the proper cross leg. At 90 knots, start each turn 0.5 nautical mile before the end of the leg and complete the turn 0.5 nautical mile into the next leg.

EXAMPLE: 3-nautical mile radius at 90 knots:

1st leg - heading 360 degrees for 2.5 nautical miles (start turn at 2.5 nautical mile)

2nd leg - heading 120 degrees for 2.0 nautical miles (turning point time adjusted at each end)

3rd leg - heading 240 degrees for 2.5 nautical miles (this brings you back to the datum)

Complete the pattern with 6 more legs.

Speed (knots)	Start Turn At (NM) Prior to Leg End
90	0.50
100	0.55
110	0.60
120	0.65

Figure 10-17
Turn Point Advancement

If after completion of a VS search, the target object has not been found, one method of increasing the detection probability is as follows:

After the first search is completed, start a second search with the first outbound leg from datum offset by 30 degrees from the initial heading in the first search.

For example: If the first search started with the first outbound leg on a 090-degree heading the first outbound leg of the second search would be on a 120-degree heading.

F.7. Layered Search

There may be occasions where more than one aircraft is searching in the same area at a different altitude. The Auxiliary aircraft may be working with a Coast Guard aircraft above or below their assigned search altitude. In these cases, it is imperative that assigned altitude be maintained within the search area. If a target is sighted that requires investigation, any descent must be coordinated with the other aircraft. Advise leaving an assigned altitude and advise upon return to the assigned altitude. Likewise, when ready to depart the search area, the pilot must coordinate the departure routes and altitudes.

F.8. ELT/EPIRB

The Coast Guard is often tasked to search for emergency beacons transmitting in coastal areas. The source may be an EPIRB or an ELT. Auxiliary aircraft are not usually equipped with the sophisticated equipment used for these searches. However, a method exists whereby they can search for VHF transmissions using the standard aircraft radio receivers. These signals are usually transmitted on 121.500 MHz.

F.9. Build and Fade Detection

The build and fade method may be used to estimate, by means of audio signal strength, the position of a transmission. Flying a sequence of tracks (see Figure 10-18), while monitoring 121.500 MHz, allows the crew to home in on the source. The estimate is made by noting the trend of the signal strength. As the aircraft approaches the source, the signal gets louder and fades as the aircraft flies away.

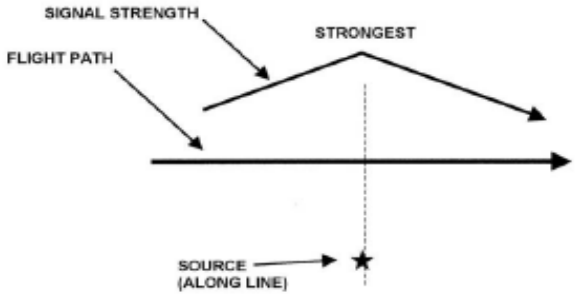


Figure 10-18
Build and Fade Detection

The following steps should be followed for ELT/EPIRB searches when using the build and fade method (see Figure 10-19)**:**

- When the ELT/EPIRB signal is heard, the receiver volume should be set as low as possible to detect the fade more quickly. Adjust the squelch control to just before the cutoff point. Once adjusted, DO NOT MODIFY THE SETTINGS. Note your position.
- If the signal is so strong that you cannot detect build or fade, try shifting to 121.550 or 121.450 MHz.

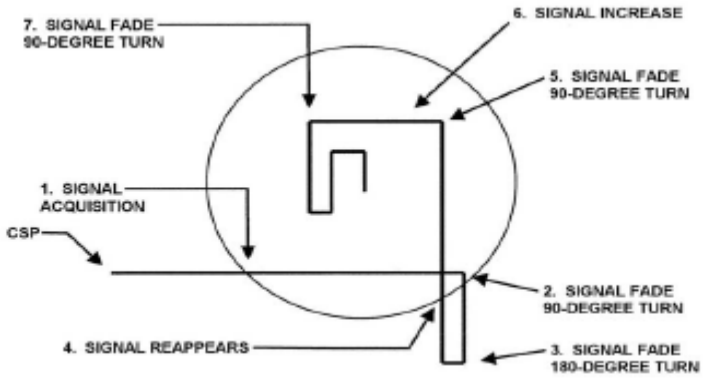


Figure 10-19
Build and Fade Search

Section G. Search Pattern Terminology

Introduction

This section provides search pattern terminology.

In this Section

This section contains the following information:

G.1. First Letter

The first letter represents the search pattern type as follows:

- T – Track Line
- P - Parallel
- C - Creeping Line
- S - Square
- V - Sector
- B - Barrier

G.2. Second Letter

The second letter represents the number of search units in the same search area as follows:

- S - Single-Unit
- M – Multi Unit

G.3. Third Letter

The third letter represents amplifying/supplementary information as follows:

- R – Radar or Return Search
- C – Coordinated or Circle Search
- A – Arc
- S – Spiral
- N – Non-Return Search
- D – Drift Compensated

EXAMPLE: A “PSR” search would be a parallel search, using one unit, controlled by radar or with a return leg.

G.4. Terminology

The flight crew must be familiar with the type of directions that will be given by the Coast Guard radio operator and be able to plot a commence search point (CSP) and corner points on a sectional and on VFR terminal area charts. Terms such as center point or central point may be used; bearings may be given in true or magnetic degrees. The assigned crew should write down the following:

- CSP
- Radius
- First turn
- Orientation
- Track space
- Numbers of legs
- Direction of creep
- Minor and major axis
- Type of search pattern

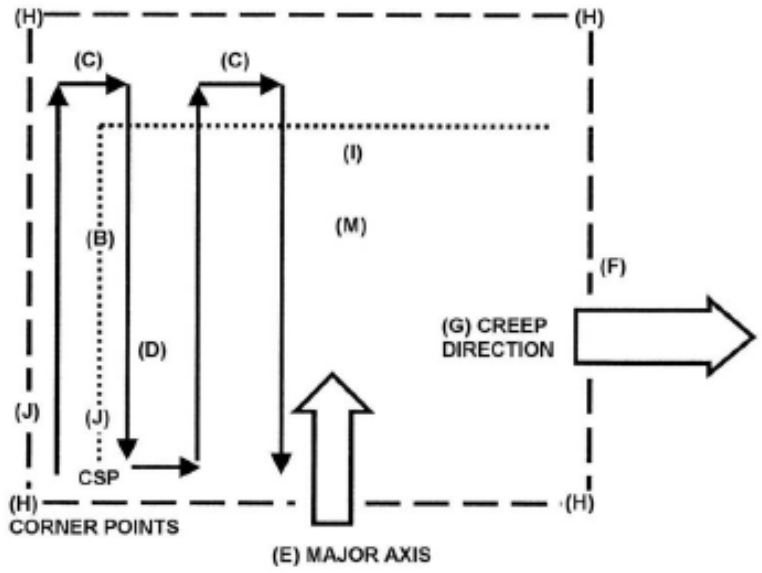
Some job aids may be available to assist with plotting and recording of details. These are examples of possible information received from the call-out authority in order to begin the SAR sortie.

G.5. Search Pattern Terms

Search pattern terms are found in Table 19-7. Several of these terms are shown in usage in Figure 19-17.

Letter	Term	Meaning
A	Commence Search Point (CSP)	Starting point of pattern
B	Search Leg	Long leg of any pattern
C	Cross Leg	Connecting leg
D	Track Spacing	Distance between two parallel legs
E	Major Axis	Longest leg of search pattern
F	Minor Axis	Shortest leg of search pattern
G	Creep Direction	Minor axis direction of movement
H	Corner Points	Defines the search area
I	Datum	Most probable location of target (corrected)
J	Sweep Width (w)	Distance on both sides of the SRU
K	Ground Speed	Speed across the ground
L	Probability of Detection (POD)	The probability that a target will be found
M	Center Point	Reference defining the center of the search area

Figure 10-20
Search Pattern Terms



CSP – Where the search commences

Solid Line – Aircraft track, both search legs and cross legs

Dotted Line – Search area

Figure 10-21
Search Pattern Terms

G.6. Creeping Line Radio Terminology

Creeping line terms, which may be received on the radio, are explained in Figure 10-22.

Term	Meaning
Length	Total direct distance to be covered from commence search point (CSP)
Width	Long legs of the box = oriented on Minor axis = size of search legs
Major Axis	Cross legs = short legs = size of the TS
Minor Axis	Direction/(opp direction) of search legs, length, "how the pattern is aligned"
Creep Direction	Corresponds with major axis
Number of Legs	May be plotted for clarity; should correspond with TS, length, and major axis

Figure 10-22
Creeping Line Radio Terminology

G.7. Parallel Search Radio Terminology

Parallel search terms heard on the radio are explained in Figure 10-23.

Term	Meaning
Length	Long legs/sides of the box = oriented on Major axis = size/length of search legs
Width	For airborne execution (does not apply)
Major Axis	Long sides/search legs
Minor Axis	Cross legs = short legs = size of the TS
Creep Direction	Corresponds with minor axis
Number of Legs	May be plotted for clarity; should correspond with TS, width, and minor axis

Figure 10-23
Parallel Search Radio Terminology

Section H. Search Visibility

Introduction

This section describes the various factors of search visibility.

In this Section

This section contains the following information:

H.1. Maximum Detection Range

Maximum detection range is the distance at which an object can be seen and recognized from the height above ground or water at which the aircraft is flying. This is a critical factor in determining the characteristics of the search pattern as it limits the sweep width of the pattern. The maximum detection range is always less than the meteorological visibility. The sweep width (W) is usually selected to be considerably less than twice the search visibility in order to increase the probability of detecting the search target. (see Figure 10-24)

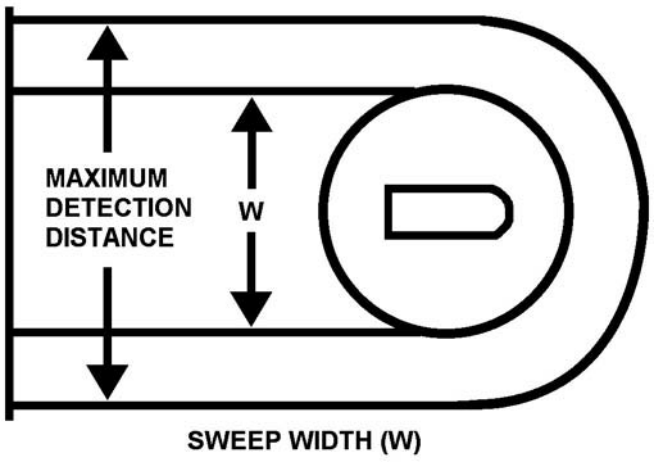


Figure 10-24
Sweep Width

H.2. Altitude

Depending on the search object, altitude should be appropriate to the mission. (see Figure 10-25) There are always trade-offs between higher and lower altitudes in searches. Higher altitudes provide a greater margin of safety and potentially greater detection distance, but they may compromise search effectiveness when attempting to locate smaller objects. Smaller targets, such as persons in the water, will remain difficult to detect regardless of the altitude, although they may be easier to detect at lower altitudes. Lower altitudes require the pilot to be trained and current in the low-level flight regimen.

Search Target	Terrain	Altitude AGL
Person, Cars, Light Aircraft Crashes	Moderate	500
Trucks, Large Aircraft	Moderate	500-1000
Person, 1 Person Rafts, Surfboards, Light Aircraft Crashes	Water or Flat	500
Small to Medium Sized Boats, Life Rafts, Trucks, Aircraft	Water or Flat	1000-3000
Distress Signals	Night - all	1500-2000

Figure 10-25
Recommended Visual Search Altitudes

H.3. Low Pass Verification

The chance of detecting a person in the water by air search is quite low. Obviously, a low pass for verification in the event a person or debris is sighted in the water might be in order. However, it is more prudent to take a latitude/longitude position and report the position to surface vessels. Risk-reward factors, generally speaking, are not favorable for small fixed-wing aircraft. As Auxiliary aviators we do not want to jeopardize our crew or aircraft and become part of the problem, rather than assisting in the solving of a SAR case.

Keep in mind that low altitude flights increase the risk factor and may be in violation of FAA regulations.

H.4. Sweep Width Variances

It is evident that the sweep width can vary for the same situation depending on the POD that is desired. For Auxiliary application, the SMC may provide a detailed calculation such as that shown in reference (g).

For simplicity, sweep widths based upon a single sweep POD can be used. When the meteorological visibility is from 3 to 5 nautical miles, the sweep widths given in Figure 10-26 should be reduced by two-thirds for large objects and one-half for small objects. In addition, the sweep widths must be reduced by 30 to 50% for small objects when the winds are in the 20- to 25-knot range and for large objects when the wind is in the 30- to 35- knot range.

The chance for detection of small targets decreases when the wind is above 25 knots and for detection of boats when the wind is above 35 knots. Winds above 35 knots create considerable turbulence at search altitudes causing rapid crew fatigue and generally make operations by light aircraft difficult. The turbulence associated with high wind velocities is generally less when operating over open water offshore.

Sweep width estimates for daylight detection aids are given in Figure 10-26.

Device	Estimated Sweep Width (NM)	SRU Type
Red/orange balloon	0.5	Air or surface
Orange flight suit	0.5	Air
Red hand flare (500 candlepower)	0.5	Air or surface
Day/night flare	0.5	Air or surface
Red pen gun flare	0.75	Air or surface
Red reflective paulin	2.0	Air or surface
Tracer bullets	2.0	Air or surface
Green dye marker*	2.0	Air
Red/orange flag (waving) (3 ft X 3 ft)	2.5	Air or surface
Sun signal mirror	5.0	Air or surface
White parachute	5.0	Air or surface
Red meteor (star) or parachute flare (10,000 candlepower)*	6.0	Air or surface
*Greatly reduced in heavy seas.		

Figure 10-26
Visual Sweep Width Estimates for Daylight Detection

Reduce sweep width by one-half when meteorological visibility is less than 10 nautical miles or when surface wind is above 25 knots.

H.5. Aircraft Search Speed

Figure 10-27 provides values to calculate the sweep width correction based on search aircraft speed.

Select the aircraft's indicated airspeed, shown across the top of the table then read down the column to the search object line. This value is the correction to be applied to the uncorrected sweep width factor.

EXAMPLE: Airspeed is 120 knots, object raft – 1- to 4-man, correction factor is 0.9.

Uncorrected Sweep Width X 0.9 factor = correction to 90% of nominal sweep width value

Search Object	Aircraft Speed (Knots)			
	60	90	120	140
Person in Water	1.5	1.0	0.8	0.7
Raft – 1 to 4 Man	1.3	1.0	0.9	0.8
Raft – 6 to 25 Man	1.2	1.0	0.9	0.8
Power boat – 0 to 24 ft.	1.2	1.0	0.9	0.8
Power boat – 25 to 40 ft	1.1	1.0	0.9	0.9
Power boat – 40 to 65 ft	1.1	1.0	0.9	0.9
Power boat – 65 to 90 ft	1.1	1.0	1.0	0.9
Sailboat –1 to 26 ft	1.2	1.0	0.9	0.9
Sailboat – 26 to 52 ft	1.1	1.0	0.9	0.9
Sailboat – 52 to 90 ft	1.1	1.0	1.0	0.9
Ship > 90 ft	1.1	1.0	1.0	0.9

Figure 10-27
Aircraft Speed Correction Table for Sweep Width

H.6. Circling on Station

The following figures describe various orbiting patterns.

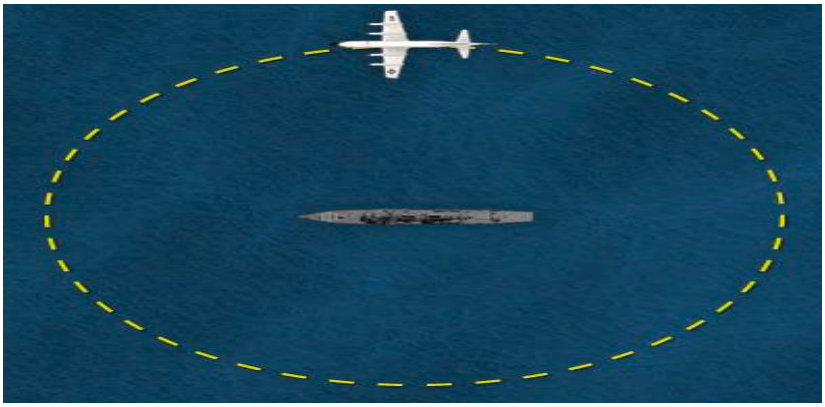


Figure 10-28
Orbital Flight Pattern

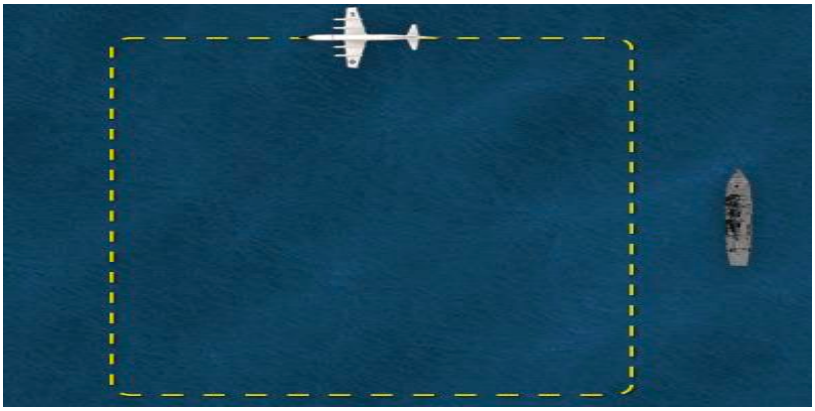


Figure 10-29
Racetrack Flight Pattern

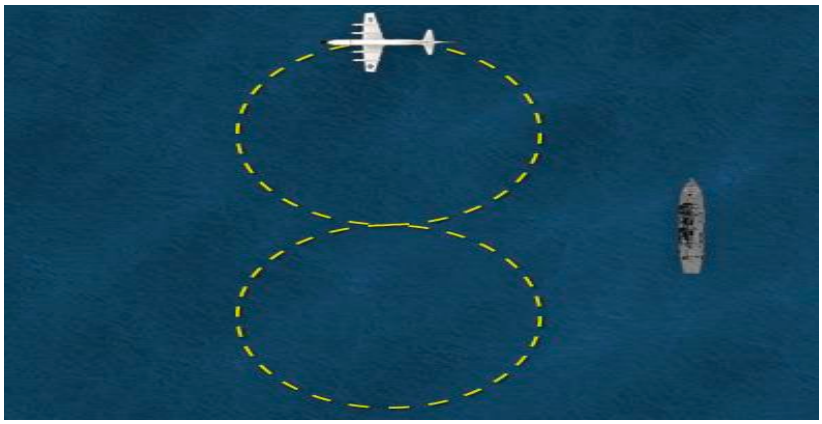


Figure 10-30
Figure Eight Flight Pattern

Section I. Flying a Search Pattern

Introduction

This section provides a brief description of factors involved in flying search patterns.

In this Section

This section contains the following information:

I.1. Maneuvering

When flying search patterns, precise maneuvering of the aircraft is desired. Unless nearby surface references are available or accurate electronic-assisted navigation can be used, precise search patterns should be maintained through accurately timed turns and straight-track legs to ensure effective searches. To simplify the accomplishment of accurate turns, it is recommended that all turns during pattern flights (except with precise visual or electronic fixes) be standard rate turns (i.e., 3 degrees per second) as shown by the turn and bank indicator or turn coordinator. (see Figure 10-31 and Figure 10-32).

I.2. Cross Winds

The effects of cross winds must be taken into consideration for all elements of the search.

I.3. Lag Rate

The differing lag rates of GPS receivers should be kept in mind. The crew should be briefed on how to interpret these units.

I.4. Airspeed

The search process is easier when flying at airspeeds that are easy to handle mathematically. For example, at 90 knots an aircraft will cover 1.5 nautical miles per minute on a straight leg and will cover 0.5 nautical mile in a 90-degree turn. (see Figure 10-32)

I.5. Leg Length and Turn Point Advancement

Pilots should be aware of the effect of turns on the desired leg length in search patterns. When turning, the path covered in the turn radius must be taken into account when calculating the leg length desired, and the time calculated to the turning point must be advanced accordingly.

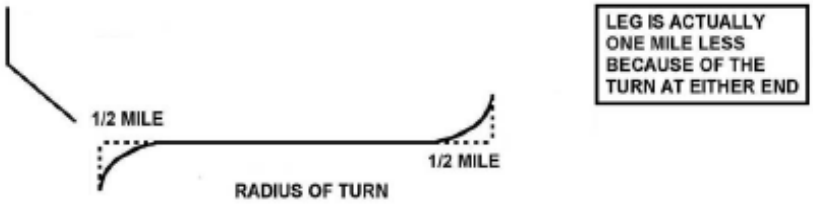


Figure 10-31
Radius of Turn

Distance	Speed (Knots)					
NM	70	80	90	100	110	120
0.5	0:26	0:22	0:20	0:18	0:16	0:15
1	0:51	0:45	0:40	0:36	0:33	0:30
2	1:42	1:30	1:20	1:12	1:05	1:00
3	2:34	2:15	2:00	1:48	1:37	1:30
4	3:25	3:00	2:40	2:24	2:11	2:00
5	4:17	3:45	3:20	3:00	2:43	2:30
6	5:08	4:30	4:00	3:36	3:16	3:00
7	6:00	5:15	4:40	4:12	3:48	3:30
8	6:51	6:00	5:20	4:48	4:22	4:00
9	7:43	6:45	6:00	5:24	4:54	4:30
10	8:34	7:30	6:40	6:00	5:27	5:00

Figure 10-32
Speed Table for Advancement of Turn Calculation

Section J. Multi-Aircraft Use

Introduction

This section describes multi-aircraft use pre-briefings and the responsibility of the On-Scene Commander (OSC).

In this Section

This section contains the following information:

J.1. Pre-Brief

When multi-aircraft searches are anticipated, it is important to thoroughly pre-brief the mission so that all pilots understand:

- If an OSC has been assigned and who it is.
- The frequencies to be used for air-to-air, air-to-surface, and by the controlling unit or SMC. The primary and secondary frequencies should be known by all concerned.
- The exact boundaries of the assigned search areas.
- The altitude to use while in the assigned area. (This should be a different altitude from aircraft in the same and adjoining search areas to provide proper separation.) Adherence to assigned altitudes in a multi-aircraft search is vital to maintaining safe operations. Any required deviation from assigned altitude must be immediately reported to the OSC and/or SMC.
- The altitude to use enroute to and from the assigned search area. This will normally be above the altitudes being used by the aircraft within the search area

J.2. On-Scene Commander

If an OSC has been assigned, it is the responsibility of the participating aircraft to maintain communications with the OSC and report all significant sightings. The OSC should be informed when searches in any area are near completion so that additional search areas can be assigned, or other instructions given. It is the responsibility of the participating aircraft to comply with instructions given by the OSC unless the aircraft is unable to do so because of fuel, weather, or safety related issues or regulatory prohibition. Any inability to comply with instructions given by the OSC must be immediately and clearly communicated to the OSC.

Section K. Identification Pass

Introduction

This section describes the requirements for flying an identification pass.

In this Section

This section contains the following information:

K.1. Planning the Pass

When a low pass is required to identify a vessel, it must be done in such a way as to not cause concern to the persons on the vessel, and to maintain a margin of safety for the flight crew (see Figure 10-33). The flight crew should be briefed prior to the pass on what to look for and what to do in the event of an emergency.

K.2. Low-Level Flight

Low-level flight is inherently dangerous. As an implicit part of the Auxiliary Aviation Program policy, Auxiliary pilots should not operate in this regime unless qualified and current, and then only under orders for an actual SAR case. To do otherwise is not only dangerous but may expose the Auxiliary pilot to FAA certificate action. Auxiliary pilots, therefore, do not normally operate below 500 feet AGL for any purpose other than takeoff and landing, unless otherwise specified in reference b.

K.3. Pass Route

The letdown for the pass should be made some distance from the vessel and the altitude stabilized prior to passing the vessel. The pass should be made parallel to the vessel or across its stern at sufficient distance that the persons onboard do not feel threatened by the pass. It is preferable to have the vessel on the starboard side of the aircraft so the observer can make the necessary observations. The pilot's primary responsibility during the pass is to fly the aircraft. The pilot should not fly any lower or closer than is absolutely necessary to note the features needed for identification and should avoid passing directly over the vessel. Repeated passes should also be avoided.

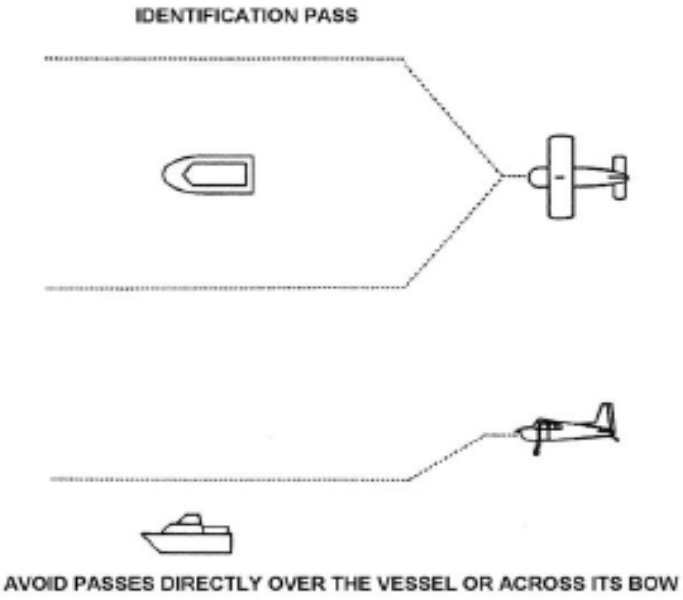


Figure 10-33
Identification Pass

K.4. Airspeed

The approach and pass should be made at a safe airspeed with the aircraft configured well above slow flight (minimum controllable airspeed) yet slow enough to assure confirmation of a sighting. At the minimum airspeed of an Auxiliary aircraft, the pass will occur quickly and thus only a cursory observation can be made. There is no need to endanger the aircraft and its crew and no practical advantage by flying too low and slow.

CHAPTER 11
Emergency Landings, Ditching and Survival

Introduction

This chapter describes the requirements and training for Auxiliary flight crew when conducting offshore operations, emergency landings, and survival at sea and on land. The different types of emergency landings are defined as follows:

Forced landing - an immediate landing, on or off an airport, necessitated by the inability to continue further flight. A typical example of which is an airplane forced down by engine failure.

Precautionary landing - a premeditated landing, on or off an airport, when further flight is possible but inadvisable. Examples of conditions that may call for a precautionary landing include deteriorating weather, being lost, fuel shortage, and gradually developing engine trouble.

Ditching - a forced or precautionary landing on water

In this Chapter

This chapter contains the following sections:

Section A. Beach Landings

Introduction

This section describes general considerations and procedures for beach landings.

In this Section

This section contains the following information:

A.1. Considerations

Beach landings should only be attempted as an emergency measure. The fact that the aircraft can make it to the beach may not prevent consideration of a water ditching. The beach may be crowded with bathers or rock jetties and adequate landing space may not be available.

A.2. Landing Procedure

If a beach landing must be made, select an area that is clear of debris and land on the area of sand nearest the water to take advantage of the firmness of the wet sand. Use a soft field landing technique and touch down lightly at minimum airspeed but avoid a stall. Keep the yoke back on touch down whether in tricycle or conventional gear aircraft. Keep in mind that if one wheel is on the hard pack and the other is in the surf (or on the soft sand), control may be lost, and the aircraft may flip. When landing with a retractable gear aircraft, it may be advisable to keep the gear up.

Section B. Ditching

Introduction

This section describes procedures to follow when it becomes necessary to ditch the aircraft.

In this Section

This section contains the following information:

B.1. Required Actions

Flight crews should check their specific aircraft flight manuals for ditching information on the make and model of aircraft they are operating. If it becomes necessary to ditch in the water, the following actions should be taken:

- Broadcast distress information on appropriate frequencies.
- If time permits, review ditching, brace positions, and evacuation procedures with the crew.
- Secure or jettison any loose gear that could be hazardous on impact.
- The inflatable raft must be readily accessible and, if possible, held securely by a crewmember.
- Secure the canopy or door(s) in the open position to prevent jamming upon impact.
- If in a retractable gear aircraft, do not extend the landing gear.
- Execute the ditching maneuvers in accordance with the aircraft flight manual.

B.2. Seas less than One Foot

If seas are less than one foot, with no visible white caps, approach into the wind. Use flaps as necessary to reduce landing speed. Make a soft field landing. Use power, if available, to reduce landing speed and give greater control. Land at as slow a speed as possible, but DO NOT STALL.

B.3. Seas greater than One Foot

If the seas are greater than one foot, approach cross-swell (parallel to the wave crests of the major swell). Approach to take advantage of any head wind component while avoiding landing directly into the face of a swell. As the size of swells increases, the landing heading must increasingly parallel the swell, accepting crosswind components. (see Figure 11-1).

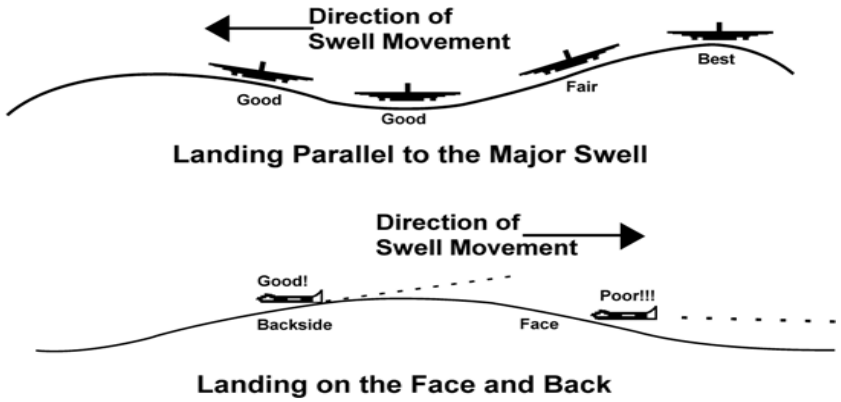


Figure 11-1
Ditching the Aircraft

B.4. Egress Route

The egress route should be planned in advance. A common theme that runs through all Coast Guard mishaps involving successful underwater egress is that survivors had an escape plan before the accident occurred. Regardless of seat location, always know where to go in an emergency, how to get there, and what the likely obstacles are.

B.5. Situational Awareness

Maintaining orientation within the aircraft is certainly the most important action that can be taken after ditching. Next to panic, disorientation is the biggest problem in accomplishing a successful egress. It should be remembered that by remaining strapped securely in the seat, orientation will be familiar although the aircraft may be upside down in the water. What is normally to the right is still to the right, and what is normally to the left is still to the left. Keep feet on the deck of the aircraft in order to remain oriented. Exit the aircraft promptly with survival gear.

B.6. Exit the Ditched Aircraft

With all aircraft, there is a possibility that it will invert when it comes to rest in the water. During impact, crewmembers may become disoriented and not realize that the aircraft has inverted. All crewmembers should be trained to assume that the aircraft is in an inverted position and that it will be dark, so they will not be able to see. Most people are at least slightly positively buoyant. This means that, even if the aircraft is inverted, positive buoyancy will keep crewmembers in their seats when restraints are released. It is vital that at least one hand is always holding on to the aircraft (a reference point) in order to remain oriented. As soon as practical, exit the aircraft using a hand-over-hand method, one hand always in contact with the aircraft. Take along the raft and survival gear. All personal survival gear should be stowed in each crewmember's inflatable vest so that it comes out of the aircraft with the crewmember.

WARNING

DO NOT inflate the life vest (PFD) until clear of the aircraft.

B.7. Account for all Personnel

The aircraft should not be expected to float. Move away from the aircraft. Fuel, oil, or other hazardous materials (HAZMAT) could be floating on the water after the ditching. If possible, crew members should move upwind of the aircraft to prevent exposure to HAZMAT.

B.8. Outside the Ditched Aircraft

Keep calm; remember that a person will usually float. Since most people are at least slightly buoyant, they will float even higher in the relatively dense salt water of the sea than in fresh water. After swimming well clear of the aircraft, the PFD should be inflated. Pull the lanyard to inflate the life vest, but if the inflation system does not work, remember to use the manual oral inflation tubes of the life vest. When wearing an inflated life vest, it is easier to swim on your back. If also wearing exposure suits, their natural buoyancy will help to keep the survivors afloat until they inflate their vests. Once this stage has been reached, efforts should be made to find the life raft and get aboard. Do not remove shoes or clothing. Survivors should restrict their energy output to necessary tasks and restrict swimming to reaching the raft. A member of the crew should have taken the precaution of fastening the raft to their life vest by a lanyard before exiting the aircraft to prevent its loss in a stiff breeze.

Section C. Survival at Sea

Introduction

Specific personal and aircraft equipment are provided on Auxiliary flights for assistance in survival. It is important to learn, understand, and follow proper procedures for survival at sea.

In this Section

This section contains the following information:

C.1. PFDs

Pneumatic life preservers are safe, comfortable, easy to wear, and do not require inflation for fitting and adjusting. They are designed to provide sufficient buoyancy to support downed flight crew after they bail out or ditch into the water. These preservers are rapid inflation style with an auxiliary oral inflation device. Accessory survival items may or may not be attached, depending upon the type of preserver. If not attached, survival items should be carried in the pockets of the flight suits or in survival vests. All survival equipment should be attached to personnel or the raft with a lanyard.

It is imperative that all crewmembers be familiar with the donning, fitting, care, and operation of the preserver that is used in the aircraft. Once aboard a raft, the preserver should be kept inflated in case the raft capsizes or is deflated.

C.2. Life Raft

A carbon dioxide cylinder inflates the raft when the lanyard is pulled. There is a valve for oral inflation that closes automatically by spring pressure when it is not held open. Handles or straps are provided as aids for boarding the raft.

The best way to board a life raft is to grasp the boarding strap and kick the feet vigorously while pulling elbows and life preserver over the raft tube, then grasp the boarding strap on the other side and roll into the raft. For the one-person raft, it is better to board over the small end than the side to lessen the possibility of the raft capsizing. Thrust your body over the small end of the raft face down, and then roll over to a face-up position. Extreme care should be taken by personnel boarding the raft to ensure that no sharp objects puncture the fabric of the life raft. A sea anchor is attached to the raft by a line. Deploy the sea anchor to stabilize the raft and to minimize your drift from the location of the ditching.

The life raft normally available to Auxiliary flight crews typically contains little survival equipment and no water or rations. During the annual training sessions, the raft should be inflated, and the crews should be made aware of what equipment is included and how to use it. It is essential that all of the signaling and survival equipment be attached to either each crewmember or the raft. Be constantly alert to the danger of puncturing the raft with sharp objects.

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If multiple rafts are used, they should be tied together. This creates a larger target that is more likely to be spotted by searching units.

C.3. Signaling

Signaling devices that are either carried on the person or in the life raft may be the only equipment that can be used to affect a quick rescue. All personnel should be trained in their use.

C.4. PLBs

Auxiliary flight crewmembers are required to carry a PLB in their PFD.

Personal Locator Beacons (PLBs) transmit on a standard frequency of 406 MHz. When activated the beacon sends out a distress signal and location. Once received by the satellite, the distress location is passed to the appropriate rescue coordination center (RCC), which deploys suitable rescue forces. After the crew are settled in the raft, the PLB or other rescue radio should be turned on and remain on until rescue units arrive.

PLB's also transmit a homing signal on 121.5 MHz to help rescue services pinpoint the beacon's location.

C.5. Signal Mirror

Next to the PLB, the signaling mirror is the most valuable signaling device available. Since it does not rely on batteries or pyrotechnics, it is also the most reliable. The military-issue mirror has a grid in the center of the rear face. Look through the hole in the center of the rear of the mirror and sight the object on which to direct the sun "flash." Do not look at the sun. Swivel the mirror until the grid around the hole lights up. This will indicate that the "flash" or solar reflection is directed toward the target. Use the signaling mirror to continually sweep the horizon. A flash from a signaling mirror can be seen more than 5 nautical miles away.

Mirrors without aiming grids (or any other highly reflective object) may also be used for signaling. To aim a mirror without a grid, hold two fingers so as to form a "V" at arm's length. Position the "V" so that the target is between two fingers. Position the mirror such that the sun reflects on the "V" fingers and flash the sun across them. This will direct the reflection of the sun toward the target.

C.6. Pyrotechnics

Pyrotechnic flares are not authorized for Auxiliary aircraft unless otherwise required by the FARS. Auxiliary aircraft specified in 14 CFR Part 91.501 and conducting overwater operations as specified in 14 CFR Part 91.509 are still required to carry one day/night pyrotechnic signaling device for each life raft.

C.7. eVDSD Strobe

Auxiliary aircraft shall carry at least one Coast Guard-approved electronic Visual Distress Signaling Device (eVDSD) on the aircraft. Air crew members shall store the eVDSD(s) in a position so that it may be removed without air crew members leaving their flight station(s). The air crew member physically closest to the eVDSD position shall ensure it is taken in the event of an aircraft evacuation.

eVDSDs that have been accepted as meeting the RTCM 13200.0 standard may be carried to meet regulatory requirements for nighttime distress signals per 33 CFR 175.130.

The eVDSD replaces the nighttime portion of the pyrotechnic. The dye marker or sea rescue device, as required air crewmember survival equipment, replaces the day portion of the pyrotechnic.

C.8. Dye Marker

Dye markers create a large florescent green cloud in the water around the survivor or raft and greatly enhances sightings from aircraft. The use of a dye marker must be planned as it takes approximately three minutes for the dye to fully spread, and its effect lasts only 15 to 20 minutes depending on sea conditions. It is activated by opening the packet and moving it back and forth under water next to the raft to disperse the dye.

A surface marking device such as a SEE/RESCUE®[1] device is a superior alternative to a dye marker. The SEE/RESCUE® device is a long buoyant plastic banner, which when unrolled, floats on the surface. It is very easy to see and does not disperse from the action of the sea.

C.9. Personal Strobe

The pocket strobe should be used only at night and when aircraft or vessels are seen or heard. The batteries on the pocket strobe have a limited effective life of about 10 hours. For best visibility, the strobe should be positioned as high as possible.

C.10. Whistle

Over the water, the sound of a whistle can be heard for a much greater distance than voice alone. Using the whistle also requires less effort and can be sustained for a longer period than can shouting.

C.11. Space Blanket

The orange side of any space blanket, typically provided in the survival pack, should be spread to enhance visibility when search units are seen or heard.

C.12. Exposure to Sun, Wind and Salt Water

Exposure to sun, wind, and salt water should be reduced to the extent possible. Even in the tropics, all clothing should be saved and worn as a cover to protect you from the rays of the sun

C.13. Hypothermia

Hypothermia is a danger even in relatively mild weather. In cold weather, survivors should huddle together under the raft cover, wearing dry clothing if possible. Use space blankets to retain body heat and to break the cooling effect of the wind. Try to keep the raft dry. Even when in the water, swimming is generally not recommended. The loss of body heat during swimming is considerably greater than remaining in the huddle position floating in a PFD.

Keep all clothing on including shoes or flight boots, since clothing helps to contain body heat. It is important to keep heads out of the water, as it is one of the areas of a person's body through which considerable heat can be lost. If a hat is available, it should be worn. Consider including some very large plastic garbage bags in the survival kit. If in the water, step into the bag and pull it up around the legs and torso. The bag will trap a boundary layer of water near the body. This will serve as another insulating barrier and will reduce heat loss to the open water.

C.14. Shark Defense

Shark attacks are rare, but there are certain things that may be done to minimize the probability of attracting sharks and to defend yourself should they appear. The best situation is to be in a raft. Keep all hands and feet inside the raft.

If floating in a life vest, make slow even movements. Jerky irregular movements attract sharks. If flying over waters frequented by sharks, include a very large plastic garbage bag in the survival kit. If not in a raft, open the bag and float inside (this can also help to keep warm). Scoop water into the bag so that it fills to its expanded shape. A small-inflated ring such as a large bicycle inner tube is ideal to hold the upper rim of the bag. The purpose of this arrangement is to retain body fluids which attract sharks and present a large object with no projections to the shark.

If sharks do appear, attempt to continually face the nearest shark. If the shark attempts an attack, yell or blow a whistle. Wearing gloves or with hand wrapped, strike the shark soundly on its snout from the top. Sharks close their eyes as they attack, so if the shark attacks, attempt to move to one side.

C.15. Psychology

A person's worst enemy can be his/her own mind. Any tendency to give up even in the face of seemingly overwhelming odds against survival must be avoided. The shock created by an actual casualty, the immersion in cold and often rough water, and the realization of facing a true life-or-death situation increases psychological stress and impairs judgment.

Unless each crewmember gathers not only their resources, but also their wits and maintains a positive attitude no matter how desperate the situation may seem, chances of survival will be substantially decreased. Each person's chance of survival can be affected by the attitude or perspective of the other survivors. Keep in mind that a maximum rescue effort is being made, but everyone must do their part to remain rational and be ready to signal when the time is right.

C.16. Rescue by Helicopter

If in a raft, it will be necessary to abandon the raft and move away from it. Attempt to fill the raft with water and partially deflate it. Coast Guard helicopter pilots are trained to avoid floating objects, such as life rafts, due to the possibility of blowing the object into the rotor disk. As the helicopter approaches, down wash from the rotor will cause a wall of spray to be generated. Faces should be turned away from the aircraft whenever practical. When the basket is lowered, do not touch it until it contacts the water. There is considerable static electricity generated by the helicopter and prematurely touching the basket could cause a debilitating electrical shock.

After boarding the basket, signal when ready for hoisting with a "thumbs up" motion. Keep hands and feet inside the basket while being hoisted. Wait until the basket is brought completely inside the helicopter before attempting to exit the basket. A sudden movement in attempting to assist the hoisting crew could throw everyone off balance and jeopardize the whole evolution.

Section D. Survival on Land

Introduction

Land survival situations, though rare, may occur. Equipment usage and procedures for survival on land should be studied.

In this Section

This section contains the following information:

D.1. Primary Actions

When forced to land ashore, evacuate the aircraft immediately and take along all the signalling equipment. Move upwind of the accident site to remain clear of fumes and other HAZMAT. Stay away from the aircraft until the engines have cooled and spilled gas has evaporated.

D.2. Injuries

Check injuries give first aid and make any injured survivors comfortable. Be careful in removing anyone from a crashed aircraft; they may have incurred back injuries or fractures.

D.3. Signals

Prepare signals that can be recognized from the air. Check to ensure that your aircraft's emergency locator transmitter (ELT) has been activated. If it was not activated by the crash landing, it may be possible to activate it manually. Round-up all resources, including signalling devices that could be set off when it is apparent that help is near. Keep calm and prepare to wait for help to arrive.

D.4. Changing Location

It is usually best to stay at the crash site as the crashed aircraft is usually easier to locate than an individual. If circumstances are such that crewmembers must move away from the crash site, be sure to leave a note with the date and time and explain the intended route and destination.

D.5. Loss of Body Heat and Hypothermia

Loss of body heat and hypothermia can be minimized using layered clothing. After the potential for a post-crash fire has passed, the fuselage of the aircraft can be used for protection from the elements. The space blanket can be used as a windbreaker, as shelter, or wrapped around the body to contain body heat. It is important to remain as dry as practicable. Wet clothing accelerates heat loss.

D.6. Starting a Fire

The matches from the waterproof match case may be used to start a fire. If any fuel is left in the tanks, it may be used, with caution, to help start a fire. Shredding small branches from dead trees or bushes can create dry kindling. Although the outside of a branch may be wet from rain or other precipitation, the interior of a dead branch is usually dry. The fire also provides a signal for search units. Keep a supply of green branches handy. If search units are heard in the area, these can be put on the fire to increase the smoke output. Be careful not to smother the fire in the process. Rubber, oil, or plastic from the aircraft may also be used to create a smoky fire.

Section E. Survival Training

Introduction

Survival skills and training should be practiced regularly.

In this Section

This section contains the following information:

E.1. Survival Training

All Auxiliary pilots, air crew, and observers are required to participate in emergency egress and water survival training, annually. It is also recommended that Auxiliary flight crews obtain first aid and CPR training.

E.2. AUX-18

All Auxiliary pilots must attend a course on spatial disorientation and flight physiology on an initial and recurring basis. Initial attendance is required at the C-school provided by the FAA Civil Aerospace Medical Institute (CAMI) prior to certification in any Auxiliary pilot position. It must then be taken either at CAMI or at a commercially provided, Auxiliary-approved vendor on a recurring basis with an interval not to exceed five calendar years

Develop an understanding of the physiological dangers of flight and techniques to counter them. Spatial disorientation is discussed in detail and then experienced in a flight simulator. Techniques are developed to mitigate the risk. Cold weather survival skills are developed in a cold weather simulator. Hypoxia is discussed, experienced in a high attitude chamber and techniques are developed to recognize the onset and mitigate the risk. Significant time is spent in a deep-water pool developing water survival skills.

Topics covered include:

- Flight Physiology
- Spatial Disorientation
- Flight Simulator
- Emergency egress

- Water survival skills (significant time in the pool)
- Cold weather survival skills
- Cold room
- Smoke chamber
- High altitude chamber
- Experience hypoxia

E.3. Equipment Familiarity

Emergency egress and water survival training should be developed on a local level to match the conditions unique to the aircraft being flown and to the expected operating environment. Flight crew members should be thoroughly familiar with the equipment they possess for survival. Outdated CO_2 cartridges may be used to inflate life vests during training. Entering the water with the vest deflated, then inflating the vest after coming to the surface can be done as part of a survival training exercise.

E.4. Training at the Air Station

All Coast Guard air stations hold wet drills and survival training which may be available to Auxiliary flight crews with prior arrangement. Other training assistance may be provided to the Auxiliary by Coast Guard air stations. Use of the Shallow Water Egress Trainer (SWET) is strongly encouraged.

E.5. PIC Responsibility

It is the responsibility of the PIC of each Auxiliary aircraft facility to ensure that all crew members are trained in the emergency and egress procedures for the aircraft being operated. This requirement is in addition to the general annual training and should be a part of each pre-flight brief.

CHAPTER 12
Short-Range Unmanned Aircraft System (SR - UAS)

Introduction

This chapter introduces prospective members to Coast Guard Auxiliary participation in the Coast Guard Short-Range Unmanned Aircraft Systems (SR-UAS) program a usage policy, and qualification process

In this Chapter

This chapter contains the following sections:

Section A. UAS Program Overview

Introduction

The Office of Aviation Forces' (CG-711) Unmanned Aircraft Systems Division (CG-7114) has established a Short-Range Unmanned Aircraft Systems (SR-UAS) Flight Operations Standard Operating Procedures (SOP). This SOP designates that Auxiliary members are authorized to qualify as a Short-Range Unmanned Aircraft System Remote Pilot (UAS-SRRP).

In this Section

This section contains the following information:

A.1. Applicability

Auxiliary members interested in the UAS program should work with their COLM to their DIRAUX office to obtain more information from the CG-7114 SharePoint page at: https://uscg.sharepoint-mil.us/sites/cg711/UAS/SRUAS/SitePages/Home.aspx

A.2. Auxiliary Participation

The only current opportunities that may be available for Auxiliary members, are those **co-located or closely located** to a Designated SR-UAS unit and **purely based on unit needs**. A map of current SR-UAS units can be found on CG-7114 SharePoint page in previous paragraph.

A.3. Acceptance in Program

Requests for appointment as Short-Range Unmanned Aircraft System Remote Pilot Candidate shall be made to the District Staff Officer for Aviation (DSO-AV).

The SR-UAS unit must have a need for Auxiliary support and the Candidate/Trainee will be interviewed by both the DSO-AV and the Coast Guard Unit leadership.

A.4. Prerequisites

Prior to requesting appointment as Short-Range Unmanned Aircraft System Remote Pilot Candidate, the member shall have completed the following:

- ICS-100, ICS -200, ICS-210 (or ICS-300), and ICS-800
- Auxiliary member in AP, BQ, or AX status
- Current for Auxiliary Core Training (AUXCT)
- Submit their DO PSI Security Investigation
- Pass the FAA Part 107 knowledge test and obtain a Remote Pilot Certificate.
- Current for Risk Management training

A.5. FAA Remote Pilot Certificate

Auxiliary UAS Pilots require an FAA Part 107 Remote Pilot certificate. This requires the successful completion of an FAA administered written exam.

Section B. Auxiliary Qualifications and Training

Introduction

Coast Guard Auxiliarists may qualify and train as an Auxiliary Short-Range Unmanned Aircraft Systems Remote Pilot (UAS-SRRP) in accordance with the most current version of reference (h).

In this Section

This section contains the following information:

B.1. UAS-SRRP Qualification

In order to become a Remote Pilot, Auxiliarist must meet all the requirements in accordance with reference (h).

B.2. Qualification Documentation

Upon completion of the training requirements in reference (h), Auxiliarist members will be designated in writing by the SR-UAS unit Commanding Officer. A copy of the designation letter will be kept on file by both the SR-UAS Platform Manager and the Auxiliarist members Remote Pilot's unit. It is the responsibility of the Auxiliary member to send a copy of this designation letter to their DIRAUX for entry into AUXDATA II. **The qualification code in AUXDATA II will be AUXUAS-SRRP.**

B.3. Recurrent Training

Upon successful completion of initial designation training, SR-UAS Remote Pilots (UAS-SRRP) will be responsible to conduct proficiency training in accordance with reference (h) to maintain their designation.

APPENDIX A
Glossary

Appendix B in reference (a) contains a list of terms that may be useful when reading this Handbook.

APPENDIX B
Acronyms

Appendix C in reference (a) contains a list of terms that may be useful when reading this Handbook.

APPENDIX C
Links to Documents

Air Ops Mission Report

ANSC 7042 Flight Crew Medical Screening

ANSC 7043 Air Crew Application Form

ANSC 7059 Auxiliary Training Request

Auxiliary Air Observer Syllabus

Auxiliary Aircrew Syllabus

Auxiliary Instructor Pilot - Flight Examiner Syllabus

Auxiliary Pilot Syllabus

Aviation Exam A & B

Auxiliary Manual

Auxiliary Operations Process Guide

C-School Schedule

Aviation Best Practices

BSX Policy Letters

Coast Guard Auxiliary Uniforms

e-AVIATRS

Flight Suits and Outerwear

ICAO Flight Plan

ICAO Flight Plan Tips

Manuals and Documents for Air Operations

PPE Best Practices

Risk Management and GAR 2.0