Merced Composite Squadron 147
Mission Observer Course

Capt. Blake R. Kreitzer

SPECIALTY QUALIFICATION TRAINING WORKSHEET

MO - Mission Observer

Name (Last, First, MI)	Type	CAPID	Date Issued

Task Name	Date	Trainer CAPID	Mission Number (Optional)
Mission Observer - Prerequisites			
GES - General Emergency Services			
MS - Mission Scanner			
Commander Approval for Prerequisites			
MO - Commander Approval for Prerequisites			
Mission Observer - Familiarization and Preparatory Training			
Complete **Task O-2010** (Use In-Flight Services)			
Complete **Task O-2013** (Plot a Route on a Sectional Chart)			
Complete Task O-2107 (Prepare for a Trip to a Remote Mission Base)			
Complete **Task P-2007** (Discuss Mission Observer Duties and Responsibilities)			
Complete **Task P-2008** (Discuss the Dangers of Icing)			
Complete **Task P-2009** (Discuss the Dangers of Reduced Visibility Conditions)			
Complete **Task P-2010** (Discuss the Dangers of Wind and Thunderstorms)			
Complete **Task P-2011** (Discuss the Effects of Density Altitude on Aircraft Performance)			
Complete **Task P-2012** (Identify Controlled and Special Use Airspaces on a Sectional)			
Commander Approval for Familiarization and Preparatory Training			
MO - Commander Approval for Familiarization and Preparatory Training			
Mission Observer - Advanced Training			
Complete Basic Communications User Training			
Complete **Task O-2002** (Operate the Aircraft Radios)			
Complete **Task O-2011** (Operate the VOR and DME)			
Complete **Task O-2012** (Operate the GPS)			
Complete **Task O-2108** (Assist in ELT Searches)			
Complete **Task O-2109** (Assist in Planning and Performing a Route Search)			
Complete **Task O-2110** (Assist in Planning and Performing a Parallel Search)			
Complete **Task O-2112** (Assist in Planning and Performing Point Based Searches)			
Complete **Task O-2115** (Assist in Planning and Performing a Creeping Line Search)			
IS100 - IS-100			
IS700 - IS-700			
Mission Observer - Exercise Participation			
Exercise Participation-Mission Observer #2			
Exercise Participation-Mission Observer (Recurring)			
Mission Observer - Continuing Education Examination			
CAPT 117 ES Continuing Education Exam - Part 2			
Aircraft Ground Handling - Required by 30 Sept 2009			
Aircraft Ground Handling			
MO - Mission Observer, MAR 04 OPR/ROUTING - DOS			

NATIONAL HEADQUARTERS CIVIL AIR PATROL

CAP REGULATION 60-1

5 JANUARY 2009

INCLUDES CHANGE 1 (CORRECTED COPY), 2 FEBRUARY 2009

Operations

CAP FLIGHT MANAGEMENT

This regulation prescribes the responsibilities of all Civil Air Patrol (CAP) personnel as applicable to the control and management of CAP flying programs, aircraft, and aircrews. Federal Aviation Administration (FAA) requirements are minimum standards; however, in some instances CAP has established higher standards than FAA minimums. The practices, procedures, and standards prescribed in this regulation are mandatory.

SUMMARY OF CHANGES. The entire regulation is completely revised, to eliminate information duplicated in other CAP regulations and improve readability.

Table of Contents **Page**

Supersedes CAPR 60-1, 20 February 2008. OPR: DO
Distribution: National CAP website. Approved by: CAP/CC

CHAPTER 1 – GENERAL INFORMATION

1-1. Scope. This regulation does not apply to CAP Corporate aircraft flown by CAP-USAF personnel, aircraft released for repair to an approved FBO/aircraft maintenance facility, or other non-CAP member use as approved by CAP-USAF/XO.

1-2. Supplements and Waivers. Supplements to this regulation cannot be issued below the wing level (except Congressional Squadron) and require region commander, NHQ CAP/DO, and CAP-USAF/XO approval. Requests for waivers or supplements must be submitted via chain of command to the region commander and then to NHQ CAP/DO for further distribution.

1-3. Definition of Terms. All terminology is in accordance with FAA 14 CFR Part 1 or Part 61 except as follows:

a. Air Force Assigned Mission (AFAM) – Any CAP flight activity authorized by the Air Force to use an A or B mission symbol (see CAP-USAF 10-2701 for details).

b. CAP Aircraft - Any aircraft (either member owned/furnished or CAP Corporate) used in a CAP flight activity. "CAP Airplane" or "CAP Glider" refers to CAP Aircraft of a certain category.

c. CAP Check Pilot – Qualified to administer a CAP Pilot Flight Evaluation (CAPF 5) to members using CAP aircraft.

d. CAP Corporate Aircraft - Any aircraft owned by and registered to CAP and any aircraft under an exclusive lease to CAP.

e. CAP Corporate Mission – All CAP flight activities that are not Air Force assigned missions.

f. CAP Flight Activity - Any flight activity governed by this regulation.

g. CAP Instructor Pilot – Qualified to give flight instruction and FAA endorsements to other members using CAP aircraft.

h. CAP Instrument Pilot – Qualified to operate as Pilot in Command of CAP aircraft in Visual or Instrument Meteorological Conditions.

i. CAP Solo Pilot – Qualified to solo CAP aircraft. Solo is limited to Gliders or Single Engine Land Airplanes that are not Complex, High Performance (except C182 airplanes), tailwheel, or ski/float equipped.

j. CAP Tow Pilot – Qualified to use a CAP airplane to tow CAP gliders.

k. CAP VFR Pilot – Qualified to operate as Pilot in Command of CAP aircraft in Visual Meteorological Conditions.

l. Current – Meets 14 CFR 61.57 (recent flight experience) for the designated operation.

m. Examiner – Authorized to endorse the CAPF 5 (if a Check Pilot Examiner) or CAPF 91 (if a Mission Check Pilot Examiner) of other pilots for check pilot privileges.

n. Mission Symbol – The code letters and numbers used to denote the type of mission a CAP Flight is released under.

o. MOU – Memorandum of Understanding – an approved agreement with another organization that may define CAP flight activities in support of that agency's mission. They may contain provisions and restrictions that supersede those found in this regulation.

p. National Check Pilot Standardization Course (NCPSC) - This course is required for all CAP check pilots and mission check pilots. NCPSC is an instructor led course for airplane check pilots and an online course for glider check pilots.

q. NHQ CAP/DOV website – The CAP website where materials in support of CAP aviation are located - (http://members.gocivilairpatrol.com/emergency_services/stanevalflight_ops/).

r. OPS Quals – The CAP online database for entering pilot information. Access to OPS Quals is via the e-Services section at www.capnhq.gov.

s. Qualified – Meets all FAR and CAP requirements except 14 CFR 61.57 (recent flight experience).

t. Supervised Mission – A CAP Flight Activity that is under the direct control of a current and qualified incident commander (IC) IAW CAPR 60-3 or counterdrug mission director (CMD) IAW CAPR 60-6.

u. WMIRS – The CAP website used to track mission sorties and all CAP flights – (https://missions.cap.af.mil/wmirs/index.cfm).

v. Written Designation – Includes electronic approval in eServices.

CHAPTER 2 – RULES OF OPERATION

2-1. Basic Rules.

a. CAP aircraft will be used only for official CAP business and not for personal use.

b. Smoking, aerobatic flight, spins (except instruction for a flight instructor certificate), parachuting and dropping of objects (except to save a life) from CAP aircraft are prohibited.

c. Formation flying with CAP aircraft is prohibited.

d. The use of night vision devices by the pilot flying CAP aircraft is prohibited.

e. Only CAP pilots may start, taxi, or otherwise operate CAP aircraft unless the aircraft is released for repairs (see paragraph 1-1). Hand propped starts are prohibited.

f. All CAP airplanes shall carry a working fire extinguisher.

g. All occupants shall wear seat belts and shoulder harnesses (if available) unless such wear interferes with pilot or crew member duties.

h. No more than 8 persons, including crew members, are permitted on any CAP aircraft.

i. For flight beyond gliding distance of land, each occupant will wear an individual flotation life vest. Other requirements apply for flight more than 10 nautical miles from land – consult the NHQ CAP/DOV website for the latest requirements.

j. No charge may be made by any person for any ground or flight training or flight checks accomplished in accordance with this regulation, except examiner fees for issuance of an FAA pilot certificate or rating.

k. Simulated emergency procedures are prohibited during Instrument Meteorological Conditions or at night. Exception: partial panel instrument training and inflight discussion of emergency procedures may be conducted during night VMC conditions.

l. Sterile Cockpit procedures, to include passenger briefings, will be used on all CAP flights. Accepted procedures are specified on the NHQ CAP/DOV website.

m. Use of approved aircraft or operational checklist(s) are mandatory in all CAP aircraft.

n. Minimum flight visibility of 3 statute miles is required for all VFR flights unless the PIC is a current and qualified instrument pilot.

o. The maximum crosswind limit for operating CAP aircraft is that which is stated in the Pilot Operating Handbook (POH) as the maximum demonstrated crosswind velocity or 15 knots if the POH does not specify a limit.

p. Assistance to law enforcement officers using CAP Aircraft is restricted to those missions coordinated and approved through the CAP National Operations Center (NOC).

2-2. Operation Limits.

a. An FAA flight plan must be filed and activated for every flight of a CAP Aircraft beyond 50 nautical miles distance from point of origin. Those flights that are part of a Supervised Mission may be exempted from this requirement by the mission incident commander (IC) or counterdrug mission director (CMD).

b. Only civilian airports in the current FAA Airport/Facility Directory and military airfields (if approved by the military organization supported during a Supervised Mission or by CAP-USAF for all other flights) are authorized for CAP Aircraft. Unlisted civilian airfields may be approved by a wing or higher commander with written permission from the airfield owner/operator. For CAP-USAF approvals, advance notice of 5 days (Corporate aircraft) or 45 days (member owned/furnished aircraft) is required to obtain a Military Airfield approval from the CAP-USAF State Director where that airfield is located.

c. Flight to destinations outside a wing's boundaries requires the authorization of an IC or CMD (during Supervised Missions), wing or higher commander unless permitted under an approved MOU. Flight across an international border requires N/DO approval unless part of an FAA IFR procedure to a US airport.

d. The maximum crew duty day for pilots is 14 hours of official CAP duty. Pilots will not plan to serve as PIC past the end of their crew duty day. Pilots will not flight plan to exceed 8 hours PIC time between periods of crew rest. Pilots must have 10 hours of crew rest between the last official CAP duty and the first official CAP duty in the next duty period. A wing or higher commander may authorize exceeding the 8 hour PIC time limit, provided each flight in excess of the requirements is individually approved and an appropriate risk assessment is made by the commander involved.

e. Sustained flight below an altitude or lateral distance from any object of 1,000 ft during the day or 2,000 ft at night is prohibited except for takeoff and landing or in compliance with ATC procedures (such as IFR flight). At no time will the pilot allow the aircraft to come within 500 feet of terrain or obstructions unless taking off or landing.

f. IFR flights will not depart unless the weather is at or above landing minimums at the departure airport. A wing commander may publish an authorization for different minimums at specific airports if, after review, a safe alternate airport with lower IFR landing minimums is in the immediate area.

g. Night VFR is permitted; however, if the PIC and aircraft are IFR qualified and current then the flight should be conducted under IFR, if practical.

h. Except for flight instruction, only a qualified CAP pilot may handle the controls below 1,000 ft AGL.

i. When taxiing within 10 feet of any obstacle, pilots shall proceed at a pace not to exceed a slow walk until clear. During taxi maintain at least 50 feet behind light single-engine aircraft, 100 feet behind light multi-engine or light jet aircraft, and 500 feet behind helicopters or heavy multi-engine or heavy jet aircraft.

j. Except for glider towing operations within 5 nautical miles of the departure airport, all flights will be planned and flown such that a minimum of one hour of fuel (at normal cruise speed) remains upon landing.

2-3. Passenger Requirements. Passengers and crew members must be current CAP members, CAP employees, AFROTC/AFJROTC cadets (AFROTC/AFJROTC flight orientation program), International Air Cadet Exchange (IACE) cadets and escorts, Emergency Services (ES) or Rescue workers engaged in a Supervised Mission (if approved by the mission approval authority), FAA designated pilot examiners during flight checks, or U.S. government employees/military conducting official duties in conjunction with CAP. Other individuals require advance approval by the CAP NOC, NHQ CAP/DO, or CAP-USAF (5 working days notice requested for approvals).

a. CAP members will wear an appropriate CAP uniform and carry proof of CAP membership. Only occupants of CAP gliders and crew members requested not to wear uniforms by the customer of a CD Mission are exempt from the CAP uniform requirement.

b. All non-CAP members other than Military/Federal employees must execute a CAPF 9, *Release*, and leave the form in a secure location on the ground known to the flight release officer (FRO) or mission IC/CMD.

c. Except for Tow Pilot training, no passengers may be carried in a CAP tow plane that is towing a glider.

d. Only pilots that are qualified as CAP Instructors, Cadet/AFROTC/AFJROTC Orientation Pilots, or SAR/DR or Transport Mission Pilots (during Supervised Missions) may carry CAP cadets as passengers or crew members. At no time may a pilot who is a CAP Cadet carry another CAP Cadet as a passenger or crew member.

e. Aircraft will not carry CAP or AFROTC/AFJROTC cadets on board during the first 10 tach hours following an engine change, major overhaul, or replacement of cylinders/magnetos.

f. CAP has two exemptions granted by the FAA for flying non-CAP passengers. An exemption to 14 CFR 61.113 allows our pilots to obtain reimbursement as a private pilot and an exemption to 14 CFR 91.501 provides a tool for CAP to comply with specific FAA requirements regarding transportation flights. The exemptions are located on the NHQ CAP/DOV website and should be consulted prior to flying non-CAP passengers to ensure any special requirements and restrictions are adhered to.

2-4. Aircraft Requirements.

a. Ultralight, aerolight, hang glider and similar aircraft, rotorcraft, lighter-than-air, experimental, primary category, and home-built aircraft are not authorized for use on any CAP flight activity.

b. Airplanes used for solo, flight training, or flight checks must have an operating two way radio and dual controls (except single seat airplanes).

c. CAP aircraft must have a current FAA airworthiness certificate. Except for ferry permits, the use of a FAA special flight permit is prohibited.

d. Each wing and region shall report all aircraft flying time totals monthly using the NHQ CAP on-line Form 18 Reporting System no later than the 20th day of the following month.

e. A standard CAP Aircraft Information File shall be maintained in all Corporate aircraft. The NHQ CAP/DOV website will be consulted for the latest requirements.

f. The use of member owned/furnished aircraft requires wing or higher commander approval for corporate missions and CAP-USAF Liaison Region or higher approval for AFAMs. A hold harmless agreement (see NHQ CAP/DOV website) must also be executed annually for each member owned/furnished aircraft and be on file with the State Director.

2-5. Flight Release. The FRO is responsible for authorizing a CAP pilot to fly as pilot-in-command in CAP aircraft. The FRO is expected to use his/her best efforts to verify appropriate information prior to giving a flight release, including reliance on information verbally provided by the CAP pilot requesting a flight release. The FRO is not a dispatcher and is not responsible for the actual conduct of the flight. They are responsible for confirming the aircraft safely arrived at its destination if an FAA flight plan is not used (see paragraph 2-5e).

a. A flight release is required for all CAP flight activities.

b. FROs are CAP senior members designated in writing as Flight Release Officers by the Executive Director, region or wing commander, or their designee. FROs must have passed the on-line CAP FRO training course and possess a sound knowledge of the CAP flight management program prior to being appointed as an FRO.

c. FROs may not release a flight on which they are PIC, crew or passenger.

d. Flights may be released on a CAPF 99, *CAP Flight Release Log*, CAPF 104, *Mission Flight Plan/Briefing Form*, or CAPF 84, *Counterdrug Mission Flight Plan/Briefing Form*, (as appropriate). For Supervised Missions the IC or CMD is also considered a FRO and may release any flight related to that mission.

e. All flights released on CAPF 99 require the date, N-number, Mission Symbol, PICs, passengers, estimated flight time and route of flight recorded prior to release. The FRO must be notified of any changes made prior to departure. If an FAA flight plan will not be used, the following additional steps are required:

(1) An estimated landing time must be recorded on CAPF 99 prior to release.

(2) The FRO is responsible for initiating missing aircraft procedures two hours after the estimated landing time if not notified the flight was safely concluded.

f. Flight activities involving multiple flights at the same location and on the same day may be released on CAPF 99 without passenger, flight time and estimated landing time information provided each participating aircraft and PIC combination is identified in advance and that someone on the ground at the activity site tracks aircraft occupants and flight times for reporting back to the FRO at day's end.

g. At the conclusion of all flights, the PIC (or IC/CMD of a Supervised Mission) is responsible for ensuring all flight hours have been recorded in the NHQ CAP WMIRS System.

h. The appropriate Mission Symbol must be used on all flight release documents, logs and entries into WMIRS or other electronic systems. Currently approved Mission Symbols are listed on the latest CAPF 99.

i. A copy of each CAPF 99 will be forwarded to the wing DO and State Director by the 5th of the following month. FROs not releasing any flights during the month will forward a negative report to the wing DO and State Director.

2-6. Re-evaluations and Special Flight Checks. Flying CAP aircraft is a privilege, not a right of membership. Commanders have the responsibility for flying safety and compliance with this regulation.

a. Wing or higher commanders may require re-evaluation of CAP pilots transferring into their respective commands. Also, members wishing to take a CAPF 5 flight evaluation in a wing other than his/her assigned wing must obtain approval from the wing standardization and evaluation (Stan/Eval) officer of the wing to which the member is assigned.

b. Commanders may require any CAP pilot under their command to complete a special flight check. The commander shall designate the CAP check pilot who will administer the flight check. Pending completion of a directed special flight check and any action by the commander as provided in paragraph 2-7 of this section, the individual pilot will be suspended as pilot in command on all flight activities except to train for re-evaluation with a CAP instructor.

2-7. Grounding and Mishaps.

a. Grounding means a member cannot act as pilot in command, crewmember, or passenger in CAP aircraft. In the case of grounding away from home base, the member may be permitted to return to home base as a passenger in a CAP aircraft.

b. Any commander in the chain of command (from squadron to National Commander) of a CAP member, or an IC/CMD during a Supervised Mission, may ground that member for cause.

c. Commanders or IC/CMDs exercising this authority shall notify the affected aircrew member in writing within 7 days of the date grounded, including the reason(s) this action was taken. The written notification must include a statement telling the aircrew member that he/she has the right to seek reconsideration of this action under the provisions of paragraph 2-7f of CAPR 60-1. A copy of this notification will be filed with the region commander and all intermediate commanders within 14 days of the grounding.

d. Any pilot operating a CAP aircraft who is involved in an aircraft mishap (as defined in CAPR 62-2) while on a CAP flight activity is automatically grounded until reinstated to flight status.

e. Once grounded, only a wing or higher commander in the individual's chain of command may reinstate a member to flight status. Commanders may set any condition for reinstatement, including completion of a new CAPF 5, *CAP Pilot Flight Evaluation*.

f. A member may submit a written appeal to his/her region commander if he/she remains grounded after 90 days. Such an appeal may only be filed one time and must be filed within one year of the initial grounding. Upon receipt of the appeal, the region commander will appoint a review board of at least three CAP check pilots to review the appeal. The review board will examine the facts of the case and make a recommendation to the region commander. The region commander will issue a final decision within 60 days of receipt of the appeal. All such decisions are final and not subject to review by filing a complaint under CAPR 123-2.

g. CAP members may be assessed some or all of the damages due to negligent operation or movement of CAP Corporate aircraft. CAPR 62-2 governs the conduct of mishap investigations. Guidance for commanders to use in assessing damages has been published separately.

2-8. Pilot Training.

a. CAP cadets and qualified SAR/DR mission pilots are authorized to use CAP airplanes for flight instruction toward any FAA certificate or rating.

b. All CAP members are authorized to use CAP gliders for flight instruction toward any FAA certificate or rating.

c. CAP senior members that are not current SAR/DR mission pilots must obtain permission to receive flight instruction in CAP airplanes toward FAA certificates or ratings as follows:

(1) Senior members who hold a Private Pilot Airplane Certificate or higher and have been an active CAP member for at least 1 year – Wing commander written permission.

(2) All other senior members – Written permission from the wing commander, region commander and the CAP Executive Director is required and may be granted provided the members lives more than two hours driving time from a commercial training facility.

d. Self conducted proficiency flight guidelines are available for use by all CAP pilots to maintain currency and improve pilot confidence. These recommended guidelines are located on the NHQ CAP/DOV website.

e. Additional mission pilot training flights are authorized under mission pilot proficiency flight profiles located on the NHQ CAP/DOV website. These training flights are Air Force assigned non-reimbursed missions authorized by the State Director, and may be flown only by pilots holding the qualifications stated in the specific profile.

CHAPTER 3 – PILOT QUALIFICATIONS AND REQUIREMENTS

3-1. CAPF 5 Check Ride. A completed CAPF 5 denotes qualification to fly a particular model of CAP aircraft. It consists of ground and flight evaluations, and is valid for 12 calendar months from the date it is completed. CAPFs 5 may contain one or more endorsements for certain types of aircraft operation (instrument, cadet o-ride, instructor, check pilot or other). All pilots except CAP Solo pilots must complete a check ride. To be complete, the following must be accomplished as part of the CAPF 5 check ride:

a. Completion of an Aircraft Questionnaire for the model aircraft flown within 60 days prior to the flight check.

b. Pass the annual CAPF 5 online written examination (power or glider as applicable) within 60 days prior to the flight check.

c. Members must be current in accordance with FAA 14 CFR 61.57(a)(1) to carry passengers in the same category and class as the CAPF 5 aircraft prior to the flight check.

d. Evidence of qualifications (membership card, medical and pilot certificates, log book, questionnaire[s], and on line written exam results) must be presented to the check pilot at the time of the CAPF 5 flight check.

e. For airplanes only, the minimums are 1 hour flight time and 3 takeoffs and landings.

3-2. CAPF 5 Administration.

a. A CAPF 5 flight check may be administered by a CAP check pilot, or it may be administered by a FAA Inspector, FAA designated check airman, FAA designated pilot examiner, or CAP-USAF flight examiner provided the individual administering the flight check completes and signs the CAPF 5 and the CAP specific items are verbally covered by a CAP Check Pilot who also signs the CAPF 5.

b. Written approval is required from a wing or higher commander for a CAP pilot to complete more than two annual CAPF 5 flight checks in a row with the same CAP check pilot.

3-3. Abbreviated CAPF 5 Check Rides. For the purpose of adding additional endorsements or aircraft models in the same category and class, an Abbreviated CAPF 5 may be taken to update those endorsements or models on the current CAPF 5. The Abbreviated CAPF 5 only requires completion of a new Aircraft Questionnaire in the model flown within 60 days prior and such maneuvers as necessary during the flight check for the new endorsement. There is no flight time or landing minimums required for these types of check rides. An Abbreviated CAPF 5 merely updates the last completed annual CAPF 5 and does not result in a new expiration date for any pilot privileges.

3-4. CAPF 5 for Multiple Aircraft Models. A CAPF 5 may also denote qualification to fly other aircraft models in the same category and class as the model used for the CAPF 5 check ride provided the following have been completed:

a. A previous CAPF 5 or Abbreviated CAPF 5 was completed for those aircraft model(s) any time in the past.

b. A new Aircraft Questionnaire for those model(s) is completed within 60 days prior to the CAPF 5.

c. To renew airplane models that are complex or high performance, the check ride model flown must be either a complex or high performance airplane.

d. To renew tailwheel airplanes, the check ride model flown must be a tailwheel airplane.

e. To renew Cessna models equipped with the G1000, the check ride model flown must be Cessna Nav III G1000 equipped.

f. All endorsements given on the CAPF 5 for aircraft operations will apply to all qualifying models.

3-5. Equivalent Make and Models. Certain models of aircraft are considered equivalent to one another. A CAPF 5 in any model grouping below counts as a CAPF 5 for all models listed in the grouping:

- C-172 (all models except 180 hp constant speed, C-R172 or C-172 Nav III G1000)
- C-182 (all models except C-R182 or C-182 Nav III G1000)
- T-41 (145hp, 180hp fixed pitch), C-172 (145,150,160 and 180 hp fixed pitch)
- T-41 (180 hp constant speed), C-172XP, C-172 (180 hp constant speed), C-175
- T-41C/D (210 hp constant speed), C-182 (all except C-182 Nav III G1000 or C-R182)
- C-150, C-152
- C-R182 counts for C-R172 (C-R172 does not court for C-R182)
- C-205, C-206, C-207, U-206
- PA28-140, PA28-160, PA28-161, PA28-180, PA28-181
- PA28R-200, PA28R-201, PA28R-180
- PA28-235, PA28-236
- PA32-300, PA32-301, PA32-260
- Kachina 2150, 2180
- Mooney M20, M21
- T-34A, T-34B
- BE33, BE35
- AA5, AA5A, AA5B
- SGS 2-33, SGS 2-22
- Schleicher K-7, K-13

3-6. Airplane Qualifications. In order to operate certain CAP Airplane models, pilots (other than CAP Solo pilots) must meet one or more of the following requirements:

a. Single Engine Airplane.

(1) High Performance Airplanes – 100 hours total time.

(2) Complex Airplanes – 100 hours total PIC time of which at least 10 hours PIC and 25 takeoffs and landings are in complex airplanes.

(3) Gippsland GA-8 – In addition to High Performance requirements:

(a) Be a qualified SAR/DR mission pilot with an instrument rating and 300 hours of PIC fixed wing aircraft time.

(b) Complete the NHQ CAP/DOV on-line course “GA8 Airvan Familiarization Course”.

(c) Complete the prescribed flight training and receive a check ride recommendation from a GA-8 qualified CAP instructor.

(d) Complete the first CAPF 5 flown in a GA-8 with a CAP check pilot different from the CAP instructor recommending the check ride.

(4) Cessna Nav III G1000 Airplanes – In addition to other requirements:

(a) Complete the CAP Cessna G1000 transition syllabus for VFR operation.

(b) For instrument operating privileges in G1000, complete the CAP Cessna G1000 transition syllabus for Instrument operation. To remain current for instrument privileges in G1000 airplanes, a pilot must take an Instrument Proficiency Check using a G1000 airplane or the pilot must complete three of the approaches required for ongoing FAA Instrument currency in a G1000 airplane.

(c) For flight instructor privileges in G1000, complete the CAP Cessna G1000 transition syllabus for Flight Instructors that is given by a Cessna factory trained instructor.

(d) G1000 check pilots must be Cessna factory trained or have provided a minimum of 15 hours dual instruction in G1000 equipped airplanes.

(5) Tailwheel Airplanes – 25 hours and 50 takeoffs and landings in tailwheel airplanes.

b. Multi-Engine Airplanes – 250 hours total PIC airplane time of which at least 50 hours PIC and 50 takeoffs and landings are in multi-engine airplanes.

3-7. Classification of CAP Pilots. CAP pilots may operate a CAP aircraft according to the classification of their experience and skills as follows:

a. CAP Solo Pilot.

(1) Possess a current student pilot certificate with solo endorsements in accordance with 14 CFR Part 61 from a CAP Instructor Pilot in the make and model aircraft flown.

(2) For gliders, a minimum of 30 dual glider instruction flights prior to solo. Glider encampment/academy students are restricted from completing solo the first time they attend.

(3) For C182 airplanes, 25 (including cross wind, short, soft and simulated engine failure) dual takeoffs & landings with a CAP instructor in C182 airplane prior to solo.

(4) For G1000 equipped airplanes, complete the CAP Cessna G1000 transition syllabus for VFR operation.

b. CAP VFR Pilot. Must be qualified in accordance with FAA regulations to operate the CAP aircraft flown at the private pilot level or higher and satisfactorily complete a CAPF 5 flight check within the previous 12 calendar months.

c. CAP Instrument Pilot. Must be a qualified CAP VFR pilot that is FAA rated to fly Instruments and satisfactorily complete an Instrument endorsement on a CAPF 5 within the previous 12 calendar months. FAA Instrument currency is not required for this endorsement.

d. Cadet and AFROTC/AFJROTC Orientation Pilots.

(1) Current CAP senior member.

(2) CAP VFR Pilot at least 21 years of age (or have a valid FAA CFI certificate).

(3) For powered airplanes have 200 hours PIC time.

(4) For gliders have 100 flights as PIC or be a qualified CFIG.

(5) For AFROTC/AFJROTC Orientation Pilots have 300 hours PIC time and completed the exam for "Orientation Pilot – Powered for ROTC".

(6) For Cadet Orientation Pilots completed the exam for "Orientation Pilot – Powered" if a power pilot and "Orientation Pilot – Glider" if a glider pilot.

(7) Satisfactorily complete a Cadet Orientation Flight endorsement on a CAPF 5 within the preceding 12 calendar months and be designated in writing as an AFROTC/AFJROTC or Cadet Orientation pilot by the Executive Director, region or wing commander, or their designee.

e. CAP Instructor Pilot.

(1) Qualified CAP VFR Pilot in the aircraft model flown if a Corporate CAP aircraft.

(2) Qualified IAW FAA regulations to operate as an Instructor in the CAP aircraft flown.

(3) Satisfactorily complete an Instructor endorsement on a CAPF 5 within the preceding 12 calendar months and designated in writing as a CAP Instructor Pilot by the wing or region commander, Executive Director, or their designee.

f. CAP Check Pilot.

(1) Qualified as a CAP Instructor Pilot in the CAP aircraft flown. The Executive Director or National Commander may waive this requirement to cover unusual circumstances.

(2) Satisfactorily complete the National Check Pilot Standardization Course prior to initial appointment and every 4 years thereafter. CAP Check Pilots only qualified in gliders may take the online CAP Glider National Check Pilot Standardization Course.

(3) Satisfactorily complete a Check Pilot endorsement on a CAPF 5 given by a CAP Check Pilot Examiner within the preceding 12 calendar months and designated in writing as a CAP Check Pilot by the wing or region commander, Executive Director, or their designee.

g. CAP Check Pilot Examiner. Qualified as a CAP Check Pilot and designated in writing as a CAP Check Pilot Examiner by the wing or region commander, Executive Director, or their designee.

h. CAP Tow Pilot.

(1) Qualified CAP VFR Pilot at least 21 years of age.

(2) Qualified in accordance with 14 CFR 61.69 to tow Gliders.

(3) Minimum 500 hours PIC time, 250 hours of which is in single engine airplanes.

(4) Satisfactorily completed the CAP/SSF online Tow Pilot Course.

(5) Designated in writing as a CAP Tow Pilot by the wing or region commander, Executive Director, or their designee.

(6) Must have completed 10 tows of gliders within the preceding 12 calendar months. For initial qualification or later re-currency, pilots may accomplish these tows in CAP aircraft under the instruction of another CAP Tow Pilot.

i. CAP SAR/DR Mission Pilot.

(1) Must meet the requirements for SAR/DR mission pilot in accordance with CAPR 60-3.

(2) Must satisfactorily complete a CAPF 91, *CAP Mission Pilot Checkout*, within the preceding 24 calendar months.

j. CAP Mission Check Pilot.

(1) Must be a qualified SAR/DR mission pilot.

(2) Have participated in 25 mission sorties as a SAR/DR mission pilot.

(3) Must satisfactorily complete a CAPF 91 mission check pilot check ride given by a CAP Mission Check Pilot Examiner within the preceding 24 calendar months IAW CAPR 60-3.

(4) Satisfactorily complete the National Check Pilot Standardization Course prior to initial appointment.

(5) Must be designated in writing as a CAP Mission Check Pilot by the wing or region commander, Executive Director, or their designee.

k. CAP Mission Check Pilot Examiner. Qualified as a CAP Mission Check Pilot and designated in writing as a CAP Mission Check Pilot Examiner by the wing or region commander, Executive Director, or their designee.

3-8. Pilot Records.

a. All pilot data must be entered into the CAP OPS Quals system by the member or authorized unit Stan/Eval and validated by the unit commander or designee. Data entered shall include all relevant FAA pilot qualifications, CAPFs 5, aircraft questionnaire(s), commander written designations, and other items needed to establish CAP aircraft operating privileges under this regulation.

b. All CAP pilots must sign a one time copy of the CAP Statement of Understanding, which will be maintained on file with the authorized unit Stan/Eval. The latest copy of this document is located on the NHQ CAP/DOV website.

3-9. Trend Analysis Reporting. This will help CAP target areas that need more emphasis during training. Each wing will report check ride statistics on a semi-annual basis. The January to June period will be reported by 31 July and the July to December period will be reported by 31 January. The report will include:

a. The number of CAPF 5 evaluations administered, the number of failures, and the areas of the CAPF 5 failed.

b. The number of CAPF 5G evaluations administered, the number of failures, and the areas of the CAPF 5G failed.

c. The number of CAPF 91 evaluations administered, the number of failures, and the areas of the CAPF 91 failed.

The report may be e-mailed to dov@capnhq.gov, faxed to 800-555-7902, or entered directly on-line.

NATIONAL HEADQUARTERS CIVIL AIR PATROL

CHANGE 1 (CORRECTED COPY)

CAP REGULATION 60-1

2 FEBRUARY 2009

Operations

CAP FLIGHT MANAGEMENT

CAP Regulation 60-1, 5 January 2009, is changed as follows:

Page-Insert Change.

Remove	**Insert**
11/12	**11/12**

Note: Shaded areas identify new or revised material.

Supersedes CAPR 60-1, Change 1, 30 January 2009. OPR: DO
Distribution: National CAP website. Approved by: CAP/CC

NATIONAL HEADQUARTERS CIVIL AIR PATROL

CAP REGULATION 60-3

17 AUGUST 2009

Operations

CAP EMERGENCY SERVICES TRAINING AND OPERATIONAL MISSIONS

This regulation prescribes concepts, policies, and standards that govern all Civil Air Patrol (CAP) supervisory, ground, and flight personnel in the training, qualification, and execution of CAP operational missions. Practices, procedures, and standards prescribed in this regulation are mandatory and may not be supplemented or changed locally without the prior approval of NHQ CAP/DO. Additional guidance is found in CAPR 60-1, *CAP Flight Management;* CAPR 60-5, *Critical Incident Stress Management*, CAPR 60-6, *CAP Counterdrug Operations*, and other directives governing specific CAP policies. Forward all suggestions for modification and improvement of the program through channels to NHQ CAP/DO. **Note: This regulation is revised in its entirety.**

SUMMARY OF CHANGES.

The entire regulation is completely revised, to eliminate information duplicated in other CAP regulations, improve readability, and incorporate interim change letters. Though significant changes have been incorporated, this regulation is only an interim measure to bridge the gap until CAPR 60-3 and CAPR 60-6 are combined into one regulation that encompasses guidance for all operational missions. This revised regulation is 14 pages shorter than the previous version. To accomplish that, some of the sections from the previous CAPR 60-3 are now posted online on the NHQ CAP/DOS website. We will continue to seek ways to shorten the combined 60-3/60-6 regulation as it is being drafted to follow the standard that was established with the latest revision to CAPR 60-1.

Table of Contents **Page**

Supersedes CAPR 60-3, 26 May 2004. OPR: DO
Distribution: National CAP website Approved by: CAP/CC

CHAPTER 1 – GENERAL INFORMATION

SECTION A – GENERAL POLICIES

1-1. Scope.

a. This regulation provides direction for the Civil Air Patrol (CAP) operational mission training, qualification, and actual mission activities. CAP provides services to conduct search and rescue (SAR), disaster relief (DR), Homeland Security (HLS) and other public assistance missions. Many missions are in support of persons in distress and should be conducted competently, expeditiously, and in a professional manner. Proper training, thoroughness, and timeliness cannot be overemphasized.

b. This regulation outlines the policies and procedures for execution of various CAP operational missions, and establishes a foundation for expansion into joint operations using the incident command system and other management tools. Some unique situations may dictate variations in the procedures contained in this regulation. In these cases common sense and prudent judgment must be used to ensure effective management of CAP resources. Safety must always be a primary concern.

c. When the regulation states that wing commanders can approve various qualifications, it means wing commander or higher. Region commanders and the National Commander (or their designees) can respectively approve these qualifications for the members they supervise on the region and national staff.

1-2. Supplements and Waivers. Supplements to this regulation cannot be issued below the wing level (except Congressional Squadron) and require region commander, NHQ CAP/DO, and CAP-USAF/XO approval. Requests for waivers or supplements must be submitted via chain of command to the CAP and CAP-USAF region commanders and then to NHQ CAP/DO for further consideration.

1-3. Definition of Terms. Below is a list of terminology and general definitions commonly used in emergency services:

a. Air Force Assigned Mission (AFAM) – Any CAP activity authorized by the Air Force to use an "A" or "B" mission symbol. "A" missions are generally considered Air Force reimbursable missions that are funded and provide federal insurance coverage. "B" missions are generally considered Air Force non-reimbursable missions that are normally funded by a federal, state, or local agency, the CAP wing, or individual members and provide federal insurance coverage. "B" missions must have some level of federal interest in order for the mission to be authorized to receive federal insurance coverage. See AFI 10-2701 and CAP-USAFI 10-2701 for additional details.

b. CAP Corporate Mission – All authorized mission activities that are not AFAMs.

c. CATS – CAP Asset Tracking System; the CAP website used to track non-expendable property like computers available in eServices. CATS will be incorporated into the Operational Resource Management System (ORMS) when ORMS is finalized. Also see ORMS.

d. CEMS – Communications Equipment Management System; the CAP website used to track all land mobile radio supplies and equipment, accessible to approved members in eServices. CEMS will be incorporated into the ORMS when ORMS is finalized. Also see ORMS.

e. eServices – the CAP website accessible to all members that serves as the portal for most electronic services for CAP – (https://www.capnhq.gov/CAP.eServices.Web/Default.aspx)

f. Incident Commander (IC); the CAP IC is the member responsible and in command of CAP resources supporting an incident. If CAP is not the lead agency, a CAP member qualified in the IC achievement will serve as the CAP agency representative to the lead agency IC, and ensure that all CAP resources are used in accordance with approved polices and procedures.

g. Memorandum of Understanding (MOU) – an approved agreement with another organization that may define CAP activities in support of that agency's mission. MOUs may contain provisions and restrictions that supersede those found in this regulation. Each wing is encouraged to establish an MOU with their state and local agencies that they routinely support. Additional information on MOUs is available from NHQ CAP/GC.

h. NHQ CAP/DOS website – The CAP website where materials in support of CAP mission operations are located – (http://members.gocivilairpatrol.com/emergency_services/operations_support/index.cfm)

i. National Operations Center (NOC) – The single resource for coordinating mission approval for both Air Force Assigned Missions and CAP corporate missions. Additional information about the NOC is available in paragraph 1-5a.

j. Operations Qualifications (Ops Quals) – Ops Quals is the CAP website used to document all operations related training and qualifications for CAP members and is accessible to all members in eServices

k. Operational Resource Management System (ORMS) – Formerly referred to as CATS and CEMS, ORMS will be the CAP website used to track primary assignment of CAP equipment (including communications), vehicles, and aircraft, accessible to approved members in eServices.

l. Qualified – Meets all CAP requirements for assignment – qualified is defined in greater detail in CAPR 60-1 for pilots.

m. Web Mission Information Reporting System (WMIRS) – the CAP website accessible through eServices to all members as well as externally to customers. It is used to track mission sorties, approval and other critical mission information. Additional information is available in paragraph 1-15. WMIRS can be found on-line at: (https://missions.cap.af.mil/wmirs/index.cfm).

1-4. Priority for Support. As the Auxiliary of the Air Force, CAP priority for employing CAP resources is first, the Air Force, then other DoD departments and agencies, other federal departments and agencies, state civil agencies, and finally, local agencies. That does not prohibit CAP from supporting multiple agencies on the same incident, but CAP must be careful to make sure customers understand CAP's priorities when requesting support.

1-5. Responsibilities. All commanders and members must strictly enforce and comply with the provisions of this regulation. Specific requirements and job descriptions for staff officers at all levels can be found in CAPR 20-1, *Organization of Civil Air Patrol*. Missions are primarily accomplished at the wing level and below. Summaries of key responsibilities at that level are provided below.

a. NOC. The NOC is the single resource for assisting customers in obtaining CAP support, coordinating mission approval and up-channeling reports for both Air Force Assigned Missions and CAP corporate missions.

(1) The responsibilities of the NOC include, but are not limited to the following:

(a) Coordinating with the local region to provide additional resources that are needed from other wings/regions.

(b) Consolidating and up-channeling mission reports through CAP and Air Force channels.

(c) For Air Force missions, the NOC acts as the conduit for mission guidance and approval from the Air Component Commander's staff (1st AF, 11th AF, 13th AF). CAP ICs should be aware that guidance and requests coming through the NOC are actually being made by the Air Force.

(d) For corporate missions, the NOC provides wing/region commanders (the Corporate Officers who will be approving the mission) guidance on the legality of performing the requested mission as well as advice on the best ways for CAP to support the mission request.

(e) Provide regions/wings/customers initial feedback on if/how CAP can provide support for various missions.

(2) AFAM guidance.

(a) The NOC is directly involved in coordinating all types of missions except SAR missions. Air Force Rescue Coordination Center (AFRCC) missions are tasked/worked directly between AFRCC and the wing involved. This includes requesting resources from other wings. The NOC does not usually get involved in SAR missions unless AFRCC requests NOC assistance or the wing/region requests NOC assistance.

(b) A verbal request for CAP assistance from a customer can be acted on initially in an emergency, but all requests for CAP support must be submitted in writing via surface mail, e-mail (preferred) or fax.

(c) To ensure CAP's ability to support mission requests or to meet potential wing/region additional resource requirements, it is always best for commanders or ICs to give the NOC as much advance notice as possible even if they are not sure CAP will be tasked or if additional resources will be needed.

(3) General information.

(a) The NOC normally operates from 7 AM to 5 PM Central Time, Monday – Friday (except federal holidays.)

(b) The NOC expands its hours to meet customer and CAP requirements during major contingencies.

(c) A duty officer can be reached 24/7 by calling 888-211-1812, Ext 300 at any time in case of emergency.

(d) The NOC e-mail address is opscenter@capnhq.gov and the fax number is 800-555-7902. E-mails or Faxes submitted to the NOC during non-duty hours for emergency requests should be followed up with a phone call to make sure the NOC has received it.

b. Wing. Wing commanders and their designees must ensure all CAP resources are used in an effective, safe, and efficient manner to support all authorized CAP operational missions. Each wing must:

(1) Maintain a current Wing alert roster and resource report in WMIRS.

(a) This will be updated at least annually or as directed by the National Operations Center, and should be reissued as major changes occur. All CAP personnel designated as Wing Alert Officers (WAO) to accept missions on the wing's WMIRS alert roster must be qualified ICs. WAOs will be tracked in Ops Quals as a specialty qualification.

(b) Alert roster updates will automatically be sent from WMIRS to AFNORTH (including AFRCC) and other national organizations as specified by agreements.

(c) It is imperative that contact information and status of operational mission qualified personnel and resources are updated in a timely manner to assist in personnel notification and response. Additional guidance for alerting procedures can be found on the NHQ CAP/DOS website.

(2) Coordinate with state and local officials for training and equipment, and establish integrated plans and exercises that will satisfy state requirements.

(a) Sample operations and exercise plans are available from the National Operations Center to assist commanders in establishing joint training and operational plans with military units.

(b) Plans for support to other state and local agencies/organizations should be incorporated into a wing level memorandum of understanding or other approved agreement.

(c) Ensure all commitments can be met and correct any prior deficiencies that are known. Do not over-obligate the wing. Review historical data to establish trends and be able to justify the wing's requirements for support. Maintain regular contact with all involved parties so that Civil Air Patrol remains on agencies' active checklists. Develop and test procedures for relaying required and pertinent operational information to the appropriate controlling agency.

(d) Ensure compliance with applicable regulatory guidance when working missions in support of, or in cooperation with, other agencies.

(3) Mission requirements and activities must be coordinated with other CAP staff (Director of Logistics, Director of Communications, Finance Officer, etc.).

(a) Appropriate staff officers must maintain records containing the status of vehicles, aircraft, radios, and other emergency equipment available for operational missions in WMIRS, ORMS, CEMS and other applicable local databases when necessary.

(b) Ensure proper documentation and retention of records for emergency services mission activities. Electronic storage of mission documentation is acceptable including readable scans of original documentation and storage of logs in local mission databases, Electronic records must be backed up in accordance with CAPR 10-2, *Files Maintenance and Records Disposition*. Electronic records within WMIRS do not need to be stored locally. Though electronic storage is authorized, this is not intended to authorize purely electronic flight or other mission release.

(4) Ensure adequate initial, upgrade, and currency training activities are conducted to maintain the qualification and proficiency of emergency services mission personnel, and the results are properly documented.

(a) Maintain electronic or paper records on individual CAP personnel documenting:

1 Accomplishment of qualification training required by this regulation.

2 Current specialty qualification status.

3 CAPFs 112 and/or 113 may be used to document training tasks completed. These forms are provided as a convenience are not mandatory.

4 CAPF 114, *CAP ES Qualification Record*, should be used to maintain hard copy emergency services personnel records. This is not required if electronic records are kept.

(b) Wings may opt to only maintain records documenting those members that are currently qualified.

(c) Though paper records of all members' emergency services qualifications are not required, Wings must have appropriate electronic access to qualification data when needed if not entirely stored within the National Headquarters Ops Quals system.

(d) Pilot files are still required to be kept in accordance with CAPR 60-1.

(e) All qualifications must be reflected in Ops Quals for a member to be considered qualified.

(f) It is not necessary to maintain paper or electronic Specialty Qualification Training Records (SQTR) once qualifications are approved in Ops Quals on-line. Members are encouraged to still maintain complete records of SQTRs and external training as many task requirements and courses overlap specialties and without proper documentation the member may need to re-demonstrate tasks when working towards other qualifications.

(5) Develop and provide an IC kit to all wing ICs. Periodic updates will be provided, but it is the responsibility of each IC to ensure the currency of this kit. This kit should contain required regulations, manuals, maps, forms, checklists, resource directives, etc., normally needed to conduct any operational mission. A downloadable electronic IC kit or CD-Rom of resources is acceptable; electronic resources must be reviewed and certified as current at least annually.

c. Units. Each unit must:

(1) Ensure individuals satisfy all applicable requirements before approving a member's SQTR, and maintain all documentation required for issuance either on paper or electronically. Documentation should be kept in a CAPF 114, if not stored electronically.

(2) Ensure individuals satisfy all applicable requirements before recommending issuance or renewal of a CAPF 101, *Specialty Qualification Card*, and maintain all documentation for issuance either on paper or electronically. Documentation should be kept in a CAPF 114, if not stored electronically.

(3) In coordination with the Wing emergency services staff, ensure adequate coordination with local agencies for training, joint exercises, etc.

(4) Coordinate with local agencies for training, equipment, joint exercises, plans, etc. Ensure all commitments can be met. Do not over-obligate your unit.

(5) Track the status of all SQTR cardholders within the unit.

(6) Maintain a unit alert roster and resource lists, and designate Unit Alert Officers (UAO) to coordinate mission support for the unit. This will be updated at least annually or as directed by the chain of command, and should be reissued as major changes occur. All personnel assigned as UAOs must be General Emergency Services (GES) qualified senior members. UAOs will be tracked in Ops Quals as a specialty qualification.

d. Individual Members. Individual CAP members participating in operational missions must:

(1) Maintain proficiency in and documentation of their specialty qualifications.

(2) Provide information concerning their qualifications, availability, and readiness to their unit commander (or designee).

(3) Maintain individual equipment readiness and availability to support operational mission requests.

1-6. Wing Recognition. Each calendar year, HQ CAP-USAF/CC presents awards within each region for the wings with the best search and rescue, disaster relief, counterdrug, and homeland security programs as outlined in CAP-USAF Instruction 10-2701, *Civil Air Patrol Operations and Training*. The winning wings permanently retain these awards. Selection of the wings receiving these awards is accomplished by the respective CAP-USAF liaison region commander based upon the following:

a. Results of required evaluations.

b. Quality and quantity of training activities during the year.

c. Performance during actual missions.

d. Cooperation between the CAP wing and state and local agencies.

1-7. Training. Commanders must ensure that an adequate upgrade, currency, and standardization program is maintained to provide qualified and proficient personnel to conduct operational missions. A continuous training program fostering training at all operational levels must be conducted to ensure that all personnel thoroughly understand and apply the policies in this regulation. Training programs will clearly define responsibilities, stressing the knowledge of the capabilities and limitations of equipment and personnel. A comprehensive annual operations training plan will be developed for each wing, and will be submitted to the CAP Liaison Region via WMIRS by 31 July for the following fiscal year. This training plan must be the basis for all Air Force funded training for the next fiscal year, and should be based on the funding levels of the current year. Training plans should address wings needs for air, ground, and incident staff training. Commanders will need to be sure that all staff inputs are reflected in the plan, critical priorities are funded appropriately, and unfunded initiatives are identified should additional funding come available.

1-8. Information Releases. Information that is releasable to the public on CAP missions should be given promptly to news media representatives. All CAP ICs and information officers will coordinate press releases with the agency being supported (AFNORTH, AFRCC, FEMA, etc.) in advance. The NOC can assist with this. Press releases for all AFAMs must also be coordinated with NHQ CAP/PA with support from the NOC to ensure the appropriate Air Force agency provides approval prior to release. In addition to keeping the public informed, releasing certain information could lead to public assistance in reporting data that may assist in search or other CAP missions. Mission information will be safeguarded IAW CAPR 60-3 para 1-34 and 1-35, and DoD Guidance. Additional information on the role and responsibilities of the public information officer can be found in CAPR 190-1, *Civil Air Patrol Public Affairs Program*, and the Mission Base Staff Task Guide.

1-9. Mission Funding and Reimbursement. CAP members and units may be reimbursed for designated expenses incurred during Air Force-assigned missions. Other federal, state, and local agencies or organizations may provide reimbursement for other missions according to prearranged agreements. Review CAPR 173-3, *Payment for Civil Air Patrol Support*, for current reimbursement policies and procedures.

SECTION B - MISSION COMMITMENT POLICIES

1-10. General. The determination to commit CAP resources during adverse conditions is a difficult decision. A calculated risk in the use of these forces may be justified during hazardous missions involving people in distress. The NHQ CAP/DOS website provides some information on risk analysis that can be used in making the decision to commit to a mission or not. CAP ICs should rely upon the judgment of the on-scene commander if unable to be there personally. Before an IC commits CAP resources, known capabilities of personnel and equipment and the urgency of the situation must be weighed carefully against the chance of mission success. Prior planning and knowledge of the limited capabilities of resources is essential to doing this.

a. Upon locating persons in distress, all personnel must assume that immediate assistance is necessary and act accordingly. The condition of these persons cannot be determined accurately through aerial observation alone.

b. CAP resources may be deployed whenever they can be effectively used. They should not interfere with other activities being conducted to assist any person or property in distress.

c. It is possible to use all suitable and readily available CAP resources, whether corporate or member-owned/furnished, to ensure the most efficient and timely response to missions. The use of some privately owned resources is permitted if approved in advance. CAP regulations 173-3, 77-1, and 900-5 should be referred to in order to determine if the resource must be approved in advance, and who the approval authority is.

d. Only qualified CAP members, qualified members of other agencies with which CAP has an approved memorandum of understanding, and CAP mission trainees under the supervision of a qualified person may participate in CAP operational missions. There will be at a minimum a 1-to-3 ratio of supervisors to trainees when trainees are utilized.

e. Use of qualified CAP cadets is encouraged as much as possible on appropriate missions. Cadets should be trained in the various functions of mission operations and support as permitted. Cadets qualify no differently than adult members in emergency services qualifications, and can be properly utilized in age-appropriate scenarios. Additional guidance for employing cadets on missions can be found on the NHQ CAP/DOS website.

f. Basic policies of CAP directives remain in effect while acting under a joint agreement such as with the Salvation Army or a state emergency response agency.

1-11. Operational Risk Management. The determination to employ CAP resources is a serious one, and should be made carefully, with all personnel fully aware of the associated risks. All CAP members will apply the appropriate level of Operational Risk Management (ORM) and risk mitigation techniques to all events. Additional training and information on ORM is available on the NHQ Safety website.

1-12. Organizing Resources. The IC will organize the personnel and equipment under his/her control for maximum efficiency and economy of operations. Resource utilization and allocation are critical functions of the mission staff; only properly qualified personnel or supervised trainees may be utilized, and the supplies, equipment, vehicles and aircraft they need must be capable and available to meet mission requirements. Analyze the objective and the prevailing conditions and make prudent decisions concerning the suitability of air and/or ground resources. The final decision to use CAP resources remains within CAP at all times. The CAP IC exercises full authority over all CAP personnel for matters pertaining to the mission; the CAP IC is often not the overall IC, and often serves as an agency representative in the incident command structure. The CAP IC must exercise prudent judgment in prosecuting missions. A thorough assessment of all risks associated with the mission must be accomplished and appropriate controls put in place to ensure safe operations. More information is available on the NHQ CAP/DOS website to assist with risk assessments, and organizing resources.

1-13. Common Responsibilities of all CAP Mission Personnel. There are certain common responsibilities or instructions associated with an incident assignment that everyone should follow. Following these simple guidelines will make your job easier and result in a more effective operation. Checklists, forms and training materials are provided on the NHQ CAP/DOS website, and evaluation guides are provided in CAP-USAFI 10-2701.

1-14. Managing the Mission. ICs are expected to support many types of missions utilizing a variety of resources. This requires significant training and experience. CAP ICs not only represent CAP, but also take on a variety of responsibilities for customer agencies and organizations. In general, CAP ICs are expected to make prudent decisions to safely execute mission assignments with available resources, to properly document objectives and work completed, to request additional support when necessary, and guide mission operations from start to finish. Detailed guidelines for how CAP ICs are expected to manage and support missions can be found on the NHQ CAP/DOS website.

1-15. Web Mission Information Reporting System (WMIRS). The IC is responsible for the accuracy and quality of the information in WMIRS. The IC may delegate WMIRS data entry as necessary but this delegation in no way releases the IC from the responsibility of ensuring data in WMIRS is current and correct.

a. The IC is responsible for ensuring all necessary WMIRS entries are completed and mission approvals are received prior to the launch of any sortie.

(1) All sorties for 1st AF, 11th AF and 13th AF missions must be approved in advance.

(2) An air sortie is one takeoff to one full stop landing. Additional sorties can be approved by the designated approval authorities for the mission on short notice for unexpected events. Additional information is also available on the NHQ CAP/DOS website.

(3) Ground sorties are generally considered to be from when a team is released until they return.

b. After the crew is released for their approved sortie, the IC will ensure sortie departure times are entered into WMIRS as soon as that information is received by mission base personnel.

c. Upon sortie completion, the IC will ensure sortie duration, effectiveness, and any requested photos are entered into WMIRS. This information will be entered without delay. Photos will be marked in accordance with the needs of Air Force and the customer, but will contain, at the very least, a detailed description of the target, the latitude/longitude of the target, and the direction toward which the photo was taken. Contact the NOC for clarification if needed.

d. Sorties which divert and thereby incur an extra sortie must have their new sortie entered into WMIRS prior to departure.

e. If circumstances prevent the IC from ensuring all required data is entered into WMIRS in a timely manner, the IC will immediately contact the NOC for assistance.

1-16. Air Operations.

a. Air search operations are broken into two phases, the preliminary search and the concentrated search.

(1) A preliminary search is accomplished during the early part of a mission when it is desirable to cover rapidly all of the territory in which the objective might be located. Aircraft should be dispatched as quickly and safely as possible. Initial route searches should cover the likely route of flight, with emphasis on high mountain peaks, frozen lakes, and areas of severe weather at the time the objective was lost. Properly trained and equipped aircrews can accomplish a preliminary search at night.

(2) If the objective is not located during the preliminary search, it is then necessary to conduct a concentrated search of the most probable areas. Determination of the concentrated search area requires careful analysis of all available information, including the flight plan, weather, terrain, pilot habits, etc.

b. Air operations in support of disasters must be conducted as necessary to accomplish damage assessment, transport of equipment and supplies, monitoring of overall operations, etc., in accordance with requests of the overall IC.

c. Airborne reconnaissance and delivery of imagery to varied customers is a critical function of CAP aircrews. Though it is not required that all images taken be uploaded into WMIRS on all missions, aircrews must upload photos as required in the mission and sortie authorization to WMIRS in a timely manner in the format desired. AFNORTH's current requirements for mission photos and imagery can be found on the NHQ CAP/DOS website.

d. The air operations branch director is responsible for ensuring the safety of all air operations. Aircraft and aircrew capabilities and limitations must be carefully reviewed to verify their suitability for mission assignments prior to release.

(1) Aircraft equipment must be appropriate for the mission (DF, night or IFR equipped, VHF FM communications, etc.).

(2) Composition of the aircrew will vary in number and qualifications depending upon the assignment. A typical aircrew is made up of a mission pilot, mission observer, and mission scanner. Some missions may require a mission scanner or observer to also be a qualified airborne photographer, ADIS operator, or ARCHER operator. Even for purely relocation or transportation sorties it is recommended that aircraft be released with a mission observer, mission scanner, or a second mission pilot. Pilots only qualified as Transport Mission Pilots (TMP) are only allowed to fly certain sorties on authorized ES missions, and additional details of the below restrictions can be found in CAPR 60-1. TMPs can only:

(a) Transport Emergency Services qualified CAP members required for an authorized mission.

(b) Ferry aircraft required for an authorized ES mission.

(c) Fly "high bird" communications sorties on an authorized ES mission.

(d) Current and qualified FAA private pilots may transport parts and equipment owned by CAP or a CAP member to a mission base or staging area.

(e) Current and qualified FAA commercial pilots may transport parts and equipment not owned by CAP.

(3) Aircrews will not self-dispatch; they must be properly released, even remotely via phone or other means if necessary, and noted appropriately on a CAPF 104, *Mission Flight Plan/Briefing Form*; 107, *Flight Operations Log*; and other mission documents, as appropriate. Signatures are not required on the CAPF 104, but the CAPF 104 must note who briefed and released the crew accordingly.

(4) CAPR 60-1 and CAPR 66-1, *Civil Air Patrol Aircraft Maintenance Management*, apply to all air operations.

1-17. Ground Operations. Ground teams may be used in virtually all phases of a mission. Ground operations are governed by state and local laws as well as by CAP regulations and policies.

a. Missions are frequently initiated during periods of adverse weather or other inopportune moments when air operations may be precluded or limited, for example, immediately following a storm or in the middle of the night. Ground teams can often be dispatched to gather information, search suspected high probability areas, search for missing persons, locate ELT transmissions, verify airborne sightings, etc.

b. The ground branch director is responsible for ensuring the safety of all ground operations. Team capabilities and limitations must be carefully reviewed to verify their suitability for mission assignments.

(1) Team vehicles and equipment must be appropriate for the mission (VHF direction finding [DF], VHF FM communications, first aid/rescue equipment, etc.).

(2) Team training and experience must be appropriate for the mission (proficiency in DF use, ground rescue knowledge, concentrated area search procedures, missing person search, etc.). Ground Team Members – Level 1 should be prepared to conduct ground team operations within their limits of training up to 72 hours. Ground Team Members – Level 2 should be prepared to conduct ground team operations within their limits of training for up to 48 hours. Ground Team Members – Level 3 should be prepared to conduct ground team operations within their limits of training for up to 24 hours.

(a) A ground team may only conduct operations within the limits of training of its lowest qualified member. A member qualified at one level, and having supervised trainee status for a higher level may be used operationally at the higher level if the trainee is properly equipped and supervised.

(b) Team assignments must be carefully matched with team member qualifications before releasing a ground team on a sortie.

(3) Composition of the ground team, urban DF team, or Community Emergency Response Team (CERT) will vary depending upon the assignment. Ground teams will not be released without a qualified ground team leader and at least three qualified ground team members or supervised trainees. Urban DF teams will not be released with less than two personnel and CERTs will not be dispatched with less than three personnel. There is not a separate qualification for members and leaders on Urban Direction Finding Teams and CERTs, but one member will be placed in charge. All ground operations must still meet the requirements for cadet protection and vehicle usage. Ground resources will not self-dispatch; they must be properly released, even remotely via phone or other means if necessary, and noted appropriately on mission documents. Signatures are not required on the CAPF 109, *Ground Team Clearance*, but the CAPF 109 must note who briefed and released the crew accordingly.

(4) Teams in the field should establish communications with the base of operations (directly or through a relay) at regular intervals.

(5) Ground teams should document interviews/interrogations conducted in the field using the CAPF 106, *Ground Interrogation Form*.

(6) Only members qualified in accordance with CAPR 77-1, *Operation and Maintenance of Civil Air Patrol Vehicles*, may operate CAP vehicles. All personnel operating vehicles will have a valid state driver's license and will operate all vehicles in accordance with applicable state and local laws.

c. Ground teams must follow proper procedures upon locating a search objective.

(1) Assess and secure the scene.

(2) Render aid to survivors and prepare survivors for evacuation.

(3) Do not disturb anything at the site except as necessary to render aid to survivors.

(4) Verify the identity of the aircraft, person, etc.

(5) Advise the IC of the situation and request appropriate authorities be notified.

(6) Retain aircraft or other resources in the area until certain they are not needed.

Note: Additional information is available in the Ground & Urban Direction Finding Team Task Guide.

1-18. Mission Assistance. Once a CAP IC is appointed, there should be no hesitation to request, through the controlling agency, any additional assistance needed.

a. In many instances, a mission will occur on or near the border of another CAP wing possessing the capability to give assistance. In these cases, the best course of action may be for the additional resources to come from an adjacent wing and use groups, divisions, branches, unified command and area command as needed for span-of-control and supervision of resources within the operational area. The NOC will work with the IC and the local CAP region to make sure all mission resource requirements are met. The NOC will coordinate approval from the designated mission approval authority to use resources from other regions/wings.

b. In some instances where a mission involves several wings (states), it may be more effective for the controlling agency to designate an overall IC, with assistants representing other participating wings, or to consider employing unified command or area command.

c. CAP may be working a mission with non-CAP agencies and, in fact, may not be the lead agency.

d. All CAP personnel, regardless of unit or rank, will give the IC complete support and cooperation. ICs are assigned based on their experience.

(1) There are a limited number of Level 1 ICs across the country. These personnel are normally the most experienced and can be utilized on all events.

(2) There are several subordinate levels of ICs. These personnel can be utilized to coordinate CAP's common missions like electronic searches for distress beacons, ramp checks, etc. at the lowest levels, to complex searches and local disaster response missions. They are not disqualified from coordinating other missions, but their experience must be considered before assigning them.

(3) ICs must recognize when incident complexity or scope approach the limits of their experience level, and request assistance from, or transfer command to, a more experienced IC in a timely manner.

e. Only the designated CAP IC or the IC's designee will coordinate with the controlling agency. Unless relieved by the appointing authority, the designated IC will make the final decision on all matters pertaining to CAP participation in the mission.

f. In order to maximize CAP's capabilities, wing and region commanders should establish "Joint Agreements of Cooperation" between their wings and bordering regions. Formalized agreements of cooperation and assistance will reduce duplication of effort, enabling missions to be performed promptly and efficiently. These agreements do not change the responsibilities of the NOC and coordinating agencies to approve sorties and resource usage on missions, and does not automatically authorize the use of pre-arranged assets. However, it can significantly decrease the time required to arrange for support and should be considered.

1-19. Imminently Serious Missions (C911). The wing commander or designee cannot authorize an AFAM. The C911 program permits CAP wing commanders to launch aircraft or disperse ground teams on actual missions using a corporate mission number with the understanding that there is limited insurance coverage (members are not provided FTCA and FECA coverage). In order to activate a C911 mission, a responsible state or local government official must request CAP assistance. Imminently Serious Missions will only be used to save lives, relieve human suffering, or mitigate great property damage. CAP members participating in C911 missions must be mission qualified in accordance with this regulation. Mission procedures are as follows:

a. Only the wing commander or the commander's designee may authorize a C911 mission as a corporate mission for a wing. In the absence of the wing commander, the vice commander, the director of operations, or director of emergency services may exercise this authority.

b. The NOC must be informed ASAP for all C911 missions.

c. Whenever a C911 mission is activated, the wing (and the NOC once notified) will make every effort to have responsible authorities obtain an actual AFAM number from AFNORTH, AFRCC or other appropriate Air Force authority in order to improve the insurance coverage provided to our members.

d. The IC must track the assets committed to the C911 mission. C911 missions are funded by the wing or the customer agency within funding limits agreed to in advance; national funds are not available for corporate missions of this nature. Mission funding should be sought from the state or local requesting official under an approved MOU or other agreement to avoid depleting the wing's accounts.

1-20. CAP Assistance in Transporting Specialty Teams. If a state or other local agency requests CAP assistance in transporting special SAR or DR assets like canine search teams or man trackers, they should make the request to AFRCC (SAR missions) or the NOC (DR missions). In some limited situations, CAP-USAF liaison regions may be able to authorize Air Force-assigned reimbursed training missions if sufficient training funds are available, or non-reimbursed missions if funds are not available. In addition, the wing commander could authorize a wing-funded or unfunded corporate mission. FAA rules do not allow customer reimbursement for transportation missions flown as corporate missions.

1-21. Mission Records. Wing commanders will ensure that records pertaining to each authorized mission are filed at wing headquarters. These records must be kept in a CAPF 115, *Emergency Services Mission Folder*, or electronically (scanned copies to document proper release signatures and such) and will include at least the ICS 201 or full Incident Action Plan; IC's log; mission flight plans; personnel, vehicle, and aircraft registers; all CAP and wing forms used; sortie logs; interview/interrogations forms; message log; copies of news releases; reports to the controlling agency (CAPF 122, SITREPs, etc.); and any related information that may be needed in answering future inquiries relating to the mission. Detailed guidance for the use and retention of CAP and ICS forms and other mission documentation is available on the NHQ CAP/DOS website. Records must be maintained at least 4 years after the mission is closed or suspended except where they are involved in actual or potential litigation and then they will be retained until that issue is resolved. Mission records kept in WMIRS do not need to be kept separately in either paper or electronic format. However, any mission records not contained in WMIRS must be kept in either paper or electronic format and be available for inspection. No mission records will be released outside CAP without prior written approval of NHQ CAP/GC and HQ CAP-USAF/JA. See paragraph 1-5b(3) for additional information.

1-22. Patient Transfer and Medical Evacuation. The CAP will not normally be used for routine patient transfers or medical evacuations; however, CAP may be used to transport persons seriously ill, injured, or in distress to locations where facilities are suitable, or when other suitable modes of patient transportation (commercial or public) are not readily available in an emergency. Prior to dispatching an aircraft or vehicle on this type of mission, the AFRCC or other controlling agency will obtain the best medical evaluation to determine the need for assistance. This is not to be interpreted to mean that decisions of medical authorities are final in deciding whether a mission will be performed. This type of mission is normally categorized as a rescue mission, with authorization obtained through the AFRCC. If the requested activity cannot be accomplished as an Air Force-Assigned Mission, prior approval as a CAP corporate mission must be obtained as stated in CAPR 60-1. In order for this to be flown as a corporate mission in support of organizations like Angel Flight or the Air Care Alliance, the following is required:

a. The CAP pilot would have to pay for all of the mission expenses. Ideally the pilot would have a commercial rating, but it is not required.

b. The patient would need to have a written statement from his or her doctor clearly indicating it is safe for the patient to travel via a small unpressurized aircraft.

c. The patient or the patient's legal guardian would need to sign a CAPF 9, *Release (For Non CAP Members)*, (or other HQ CAP approved) release.

d. The mission would need to be entered into WMIRS including attached copies of the doctor's statement and CAPF 9 (see above). Ideally, this would be done several days in advance of the requested mission.

e. The NOC will review all documentation provided and then alert the wing commander or his/her designee that the mission is ready for approval in WMIRS.

1-23. Assistance to Law Enforcement Officials. CAP units and members engaged in CAP activities may provide passive assistance to law enforcement officers and agencies, subject to the restrictions outlined in AFI 10-2701. CAP members may not be deputized nor may they take an active part in arrest or detention activities and have no authority to restrict persons by means of force, actual or implied.

a. CAP assistance to law enforcement agencies that may lead to criminal prosecution is restricted to patrol, reconnaissance, and reporting only. Requests for such assistance, unless of an emergency nature, must be approved in advance by the wing and region commanders and coordinated with NHQ CAP/DO. All CAP flight activities will be in accordance with CAPR 60-1.

b. Assistance may also be a by-product of the normal conduct of a CAP mission. In some instances, such as during an airborne search, CAP members may observe suspicious activities and as concerned citizens, should report those observations to proper authorities.

c. When requested by the proper law enforcement authority, CAP members may provide crash site surveillance and/or crowd control duties during an emergency/disaster situation. When on such a mission, the senior CAP member present will ensure the above restrictions are understood and will contact the nearest law enforcement officer if assistance is required.

1-24. Legal Issues of CAP Operational Missions. Title 10, USC § 9442 identifies CAP as an auxiliary of the Air Force when carrying out a mission assigned by the Secretary of the Air Force. This happens when CAP provides services to any department or agency in any branch of the Federal government, including the Air Force. CAP is deemed to be an instrumentality of the United States while carrying out missions assigned by the Secretary. This provides both legal benefits and restrictions on what members can do on AFAMs. There are certain legal issues and principles of which CAP members should be aware to protect themselves and the Corporation from legal liability. While it is impossible to have specific rules which will be valid in all the states and territories, several general principles of law can decrease the risk of individual and corporate liability. The legal officer of each wing should review state laws and suggest ways to avoid legal liability arising out of CAP activities.

a. Liability Protection. CAP members acting within the scope of their duties on CAP operational missions will be afforded liability protection by the United States Government under the Federal Torts Claims Act (FTCA) while serving on Air Force-Assigned Missions or by CAP's liability insurance policies (within policy limits) while on other CAP corporate missions (refer to CAPR 900-5, *The CAP Insurance/Benefits Program*).

b. Worker's Compensation Protection. CAP members 18 years of age and older are eligible for Federal Employees' Compensation Act (FECA) benefits if injured or killed while serving on an Air Force-Assigned Mission. Travel to and from such mission activity is also covered as long as there is a "causal relationship" between the injury/death and the AFAM activity. In addition, some states provide state worker's compensation benefits for CAP members injured or killed while serving on state operational missions (refer to CAPR 900-5, *The CAP Insurance/Benefits Program*).

c. Entry or Seizure of Private Property During Missions. As a general rule, CAP members are subject to well-known rules that prohibit trespass or seizure of private property. While entry upon private property may be justified if such an act is for the purpose of saving life, every effort should be made to obtain the controlling agency's approval and property owner's consent. Entry and activities on private property during training missions must always be arranged in advance with the owner. Under no circumstances may a CAP member seize property or engage in searches beyond that noted above.

d. Distress Beacons. Distress beacons are frequently tracked to a locked vehicle, boat, aircraft, or building. CAP mission personnel should contact the IC who will contact the controlling agency (e.g., AFRCC) for further instructions. If entry is required, the owner/operator or local law enforcement officials must arrange access or CAP will not be able to silence the beacon. CAP members WILL NOT enter private property and should not do anything that could cause harm or damage to the distress beacon or other property. If the beacon cannot be silenced, the IC should contact the controlling agency and plan to withdraw CAP resources.

e. Staging or Pre-Positioning Resources. CAP units often want to move or stage resources to best meet the needs of impending missions like hurricane support. Pre-positioning assets in advance are often warranted; however, until a mission has been approved by the Air Force, insurance protection is available only as a corporate mission. Additionally, local personnel need to be aware that just because you want to support your community, the primary resources of your community may not need or want your help and you can't force it upon them. State agencies that require your resources to be pre-positioned should fund this movement just as FEMA or AFNORTH generally does when they request pre-positioning of CAP resources for a mission.

f. First Aid and Emergency Medical Care. CAP is not an emergency medical care or paramedic organization and should not advertise itself as such. CAP will not be the primary provider of medical support on missions or training events though qualified personnel can be used to support such activities. The only type of medical aid that should be administered by CAP personnel or by any other person at CAP's request is reasonable treatment deemed necessary to save a life or prevent human suffering. This treatment must be executed by a person qualified to attempt such medical care within their skill level. When first aid or higher medical training is required for qualification in a particular specialty, the expectation is that the qualification course includes both knowledge and practical skills training; first aid courses taken on-line only are not acceptable; though members are not considered employees when supporting operations, courses are expected to meet the *National Guidelines for First Aid in Occupational Settings* available at http://www.ngfatos.net/ or ASTM F 2171-02, *Standard Guide for Defining the Performance of First Aid Providers in Occupational Settings.* CAP medical personnel are not provided supplemental malpractice insurance coverage, and any care provided is at the members own risk. Though medical supplies and equipment are not normally provided to responders, any reasonable supplies used on training or actual missions may be submitted for reimbursement as long as sufficient justification is provided.

g. CAP Emergency Vehicles. The policies and procedures regarding the use of CAP vehicles are detailed in CAPR 77-1. In general, CAP limits or prohibits the use of lights and sirens, and though some vehicle identification may be authorized, it does not give members permission to exceed posted speed limits or break any other federal, state, or local traffic laws.

1-25. Withdrawal of CAP Resources and Closing/Suspending the Mission. Once CAP resources have been committed to a mission controlled by another agency, they will not be withdrawn except upon authorization of the controlling agency or the decision of the CAP IC. CAP ICs must have reasonable justification and use proper tact when withdrawing their resources. Notification will be given to the controlling agency prior to withdrawal. For SAR missions all reasonable actions will be taken to locate the search objective, determine the status, and effect rescue or recovery of survivors or victims. The decision to conduct extended operations will be based upon the probability of finding survivors. After all reasonable probability of locating survivors has been exhausted, extended operations become uneconomical and unwarranted.

a. When the CAP operates under an AFRCC mission number for either an aircraft or a non-aircraft search and the objective is located, the AFRCC will close the mission at the completion of rescue/recovery or when continued use of the federalized resource would be of no value. When the objective cannot be located, AFRCC will work with the IC to determine if it makes sense to continue the mission. If a decision is made not to continue, AFRCC will classify the mission as follows:

(1) For aircraft, the mission will be suspended.

(2) For non-aircraft, the mission will be closed as "Remains Missing."

(3) For a distress beacon, the mission will be closed as "Ceased."

b. If AFRCC does not concur with a CAP IC's recommendation to suspend a mission, the SAR mission will continue until additional circumstances arise which justify another recommendation to suspend the mission.

c. Missions will not be closed until all CAP resources have returned to their home bases or other points of origin, until another mission number has been assigned or personnel are officially released from the mission.

1-26. Prevention of Fatigue. ICs will ensure that personnel performing operational mission activities, particularly flight operations, have had sufficient rest to enable them to safely complete the proposed assignment. CAP mission managers and flight crews should refer to CAPR 60-1 for flight time and duty limitations. Other CAP personnel will make a conscientious effort to avoid or reduce fatigue by

a. periodic separation from duty station;

b. periodic light refreshments of moderate amounts of hot foods, soup, fruit juice, etc.;

c. avoidance of excessive smoking;

d. periodic sleep prior to sorties; and

e. refraining from alcohol within 8 hours of reporting for the mission.

1-27. Criteria for SAVE Credit. A SAVE is the preservation of a human life as a result of actions taken by emergency services (ES) forces. The determination as to whether or not a SAVE is made rests with the controlling agency (for example: AFRCC for SAR missions) based on the recommendation of the appropriate IC or participating emergency services element. In the case of a medical evacuation, the attending physician must attest to the SAVE. Normally, a SAVE will be credited to the element of the ES force making the recovery; however, a search force including incident staff and other aircrews and teams involved may be credited with a SAVE if it locates the SAR objective and directs the retrieval force to a successful recovery.

1-28. Criteria for FIND Credit. A FIND is awarded by the wing commander or higher commander (or a subordinate commander if authority is delegated by the wing commander) to any CAP member of the wing, and is classified as distress or non-distress. A distress FIND is defined as one involving downed aircraft or persons in distress. Normally a definite search objective must have been assigned, located, and positively identified. All other finds will be classified as non-distress, e.g., location of distress beacons accidentally activated. Credit towards FIND ribbons is normally given to the aircrew and/or ground team that located the objective; however, a search force including incident staff and other aircrews and teams involved may be credited with a FIND. More specific guidance for issuance of find ribbons can be found in CAPR 39-3, *Award of CAP Medals, Ribbons, and Certificates*.

1-29. Resource Protection. CAP units located in high crime areas or units involved in the location and identification of persons connected with illegal activities may face the possibility of aircraft and equipment sabotage. Unit commanders must determine local needs for security precautions and establish procedures that are appropriate for their particular location.

1-30. Prohibited Equipment. CAP is often offered equipment that is not appropriate to our mission or is not reasonable for our personnel to use because of the training time required for personnel to remain proficient.

a. Restrictions for the use of night vision devices by CAP personnel during any flight operations can be found in CAPR 60-1. Representatives of other agencies may use their own equipment. CAP ground resources may use night vision devices in support of SAR/DR operations while on foot or as passengers in vehicles. Use of night vision devices by drivers during motor vehicle operations is prohibited.

b. Firearms are prohibited for use or to be carried by CAP personnel during any emergency services operations unless required by state law. More specific guidance on CAP's firearms policy can be found in CAPR 900-3, *Firearms - Assistance to Law Enforcement Officials*.

1-31. Technical or Specialized Operations. CAP often recruits personnel with specialized training or expertise that can be useful on emergency services missions. Though the training required to specialize in these areas is often too cost prohibitive or risky for most personnel to undertake, CAP can still utilize these resources.

a. Members wishing to utilize the training they have earned must have prior permission to do so from NHQ CAP/DO, with written endorsement by the wing and/or region commander. The request must state the limitations proposed for use and how they propose to mitigate risk. If approved by the Air Force for use on an Air Force mission, these members will receive FTCA and FECA coverage just like any other member. Any additional liability coverage required to exercise these privileges is at the expense of the member. CAP personnel choosing to train to be useful in technical areas do so at their own risk. Background training and documentation will be kept at the wing or higher unit for each person given permission for these specialized operations.

b. Any special equipment or resources required for these personnel to exercise their privileges are furnished at the member's own expense and risk.

c. The following technical or specialized operations are considered acceptable but still require prior written approval:

(1) Technical (Rope) Rescue or Mountain Rescue

(2) Canine Search and Rescue

(3) Mounted Search and Rescue

(4) Urban Search and Rescue

Additional areas will be reviewed on a case-by-case basis. Questions on other areas should be addressed to the NHQ CAP/DO.

d. Wing and region commanders should review the current letters of permission on file at least annually and coordinate revisions as necessary. New wing and region commanders should review the current letters of permission as soon as is feasible after accepting command. Commanders can contact NHQ CAP/DO to request copies of letters on file if necessary.

1-32. Critical Incident Stress. CAP personnel involved in operational missions can often be exposed to stressful situations.

a. Each region will establish at least one Critical Incident Stress Team (CIST) as outlined in CAPR 60-5.

b. Wings should establish contact with local emergency response organizations before a mission requiring support arises to determine the availability of trained support personnel that can assist them. It may be necessary for some wings to establish their own CIST as outlined in CAPR 60-5.

c. ICs requiring critical incident stress support for their personnel should coordinate with their wing or region commander. If a local resource cannot be found, then contact the CAP NOC Duty Officer to request support.

d. More specific guidance for the CAP CISM program can be found in CAPR 60-5.

1-33. National Incident Management System (NIMS) Compliance. CAP is committed to being NIMS compliant like all other response agencies across the United States. Training and other NIMS requirements are posted on the NHQ CAP/DOS website.

1-34. Sensitive and Classified Programs. CAP does not traditionally conduct or support classified missions itself, but it does support sensitive missions regularly, and some mission results support classified missions and customer needs. Members need to be familiar with the classification definitions and their associated access and requirements when assigned these missions. Guidance for these programs is available on the NHQ CAP/DOS website.

1-35. Operational Security (OPSEC). OPSEC is the basis for the protection of information that regardless of the designation, the loss or compromise of sensitive information could pose a threat to the operations or missions of the agency designating the information to be sensitive. All CAP members must complete *OPSEC Awareness Training* and sign the non-disclosure agreement in order to become or remain emergency services qualified. Additional information is available on the NHQ CAP/DOS website including how to complete and document OPSEC Awareness training.

1-36. Standardization of Advanced Technology and Communications Assets. All of CAP's advanced technology equipment (ARCHER, ADIS, etc.) and communications equipment must be standardized to be able to maximize its use on missions across the country. In order to maintain this standardization the following must be adhered to:

a. CAP members will NOT alter, separate, or use for purposes other than as intended any advanced technology and communications equipment, or deviate from approved installation or maintenance procedures in any way. This includes both hardware and software.

b. Only fully qualified operators who have successfully completed standardized training are allowed to operate or install/uninstall any equipment. Trainees must be properly supervised by qualified operators.

c. Recommendations for upgrades/changes to any advanced technology or communications equipment must be submitted through the chain of command to NHQ CAP/DO for proper coordination with staff agencies.

d. Technical support is available from the National Technology Center (NTC) for all advanced technology and communications assets. The NTC is available during normal duty hours at (866) 600-2071. For emergency support after normal duty hours, contact the NOC Duty Officer.

CHAPTER 2 – OPERATIONAL SPECIALTY RATINGS/PERFORMANCE STANDARDS

2-1. General. This chapter defines authorized CAP operational specialty ratings, qualification and training requirements, and minimum performance standards.

a. A CAPF 101, *Specialty Qualification Card*, or equivalent will not be issued to a member until the requirements specified in this regulation have been satisfied.

b. The training/qualification requirements of this chapter are the minimum required. Training should not stop with initial qualification since professional performance demands continuous training. Examples of continuation training programs available are: the AFRCC National SAR School Inland SAR Coordination Course; Federal Emergency Management Agency (FEMA) Emergency Management Institute (EMI) independent study courses; CAP and Air Force training missions; National Association for Search And Rescue (NASAR) classes and training programs conducted by various state or local government agencies; etc. CAP will not track all of the possible courses taken in Operations Qualifications; only those courses required for CAP emergency services specialty qualifications will be tracked.

c. Persons attaining a qualified status under this regulation who will be using CAP communications frequencies must be certified in accordance with CAPR 100-1, *Communications*. Trainees do not need this certification when using these frequencies under the direction of a properly certified communicator.

d. Events creditable toward training, qualification, and currency include both Air Force and CAP Corporate training activities. For all events that are expected to be reimbursed with Air Force training funds, the wing commander or designee, must approve the activity in advance using WMIRS.

e. Waivers of the specialty qualification training requirements specified in paragraph 2-3 must be requested in accordance with paragraph 1-2 of this regulation, be based on equivalent training received from other agencies and substantiated by appropriate documentation, and must be coordinated with CAP-USAF prior to approval. NHQ CAP/DO must approve all such waivers. Broad waivers for known equivalent training will be posted on the NHQ CAP/DOS website.

2-2. Documenting Specialty Qualifications. Authorization for CAP members to perform in an emergency services specialty is limited to personnel who have successfully completed the required training and satisfactorily demonstrated their ability to meet the performance standards for the particular specialty rating.

a. Personnel are authorized to train for the specialty rating qualifications listed in paragraph 2-3 by their unit commander (including approved emergency services school directors) in Operations Qualifications except IC, CISM, ARCHER and NOC Augmentee qualifications. Training to qualify in a specialty is expected to be completed within 2 years from the time the member is authorized to begin familiarization and preparatory training in Operations Qualification on a Specialty Qualification Training Record (SQTR). Members not completing training requirements within two years should expect to re-demonstrate expired portions of their training. All training must be certified as complete by a qualified evaluator, and members cannot certify their own training. Qualified evaluators must meet the requirements established in sub-paragraphs 1 or 2 below:

(1) Evaluators who are current and qualified supervisors as outlined on the NHQ CAP/DOS website must complete the current emergency services Skills Evaluator Training (SET) also outlined on the NHQ CAP/DOS website. SET will be reflected on the CAPF 101 with "NO EXPIRE". The member must also have held the specialty achievement qualification in which they are to evaluate for at least one year. Exceptions to the one year requirement can be approved by the wing commander or their designees in cases where the member's professional background meets the experience criteria. Evaluators must also be approved by their unit commander, group commander (if applicable) and wing commander or their designees to serve in each specialty they are authorized to evaluate. Commanders or their designees can limit or change what specialty qualifications a member is allowed to evaluate in Ops Quals at any time at their discretion. The "all" default authority for an evaluator being submitted for approval would allow them to evaluate in any area that they themselves have been current and qualified in for at least a year. Personnel currently SET qualified when this regulation is released will be qualified under the default authority noted above unless changed by a commander or their designee. If a commander or designee chooses to limit new specialties a member can evaluate rather than using the "all" default, then the commander will have to approve each individual specialty as it is added. Directors of wing, region, or national emergency services schools approved by NHQ CAP/DO can assign temporary SET approval to staff personnel as necessary for their specific events. NHQ CAP/DO will coordinate approval of these school directors with NHQ CAP/IT.

(2) Mission check pilots as outlined in CAPR 60-1 for the mission pilot, transport mission pilot, mission observer and mission scanner specialty qualifications.

Note: Certain tasks and the associated training are expected to be provided by external agencies. For example NIMS and First Aid training will normally be provided by another agency.

b. Trainees can still participate in training or actual missions as allowed on their CAPF 101 if working under qualified supervisors as outlined on the NHQ CAP/DOS website. If the supervisor does not meet the requirements of paragraph 2-2a, the trainee WILL NOT receive credit for training towards qualification. This is not meant to prevent experienced people, members or not, from teaching and educating members, only that formal task completion must be certified by qualified evaluators to receive credit.

c. A current CAPF 101 from Ops Quals reflecting the member's trainee status should be retained and used for continued participation in a trainee status pending the validation and approval of a new CAPF 101 showing addition of the appropriate specialty rating qualification.

d. The CAPF 101 identifies specialties or functions in which CAP members are authorized to participate during operational missions as trainees or fully qualified staff. The wing commander or his or her designee(s) (except for the General ES Rating) approves the initial CAPF 101 to personnel who satisfactorily complete all training and evaluation requirements specified for the requested specialty rating listed in this chapter. A CAPF 101 with the General ES rating will be approved by the unit commander or his or her designee(s) upon completion of the requirements for the specialty. Copies of documentation are no longer required to be kept at the wing level except in special circumstances (see paragraph 1-5b(4)). Specialty ratings on the CAPF 101 generally remain valid through the last day of the 36th month from the date issued. Authority to approve the initial CAPF 101 in each specialty above General ES may not be delegated below the group level. Delegation of this function must be coordinated with NHQ CAP/DO and NHQ CAP/IT to be sure changes are reflected properly in Ops Quals for the wing. Subsequent CAPFs 101 will be approved at the unit level

unless the wing commander limits this action via an approved supplement to this regulation. Once final approval for a CAPF 101 is granted in Ops Quals, it is considered valid, and the member, unit commander or other designated staff officers can print the CAPF 101. It is recommended that the member or units laminate the printed 101 card for extended use by the member. There are certain exceptions to the above policies listed below:

(1) CAPFs 101 for level 1 ICs must be approved at the region level or higher, by the commander or the commander's designee. CAPFs 101 for all other IC levels must be approved at the wing level or higher, by the commander or the commander's designee. It is not necessary for formal review boards to be held to determine if a member should be qualified in any IC level, but commanders should exercise discretion and reasonable judgment in assigning these qualifications as they require great trust and levy great responsibility on the members being designated as ICs.

(2) Approved directors of wing, region, or national emergency services schools can issue CAPFs 101 for all specialties except IC, CISM, ARCHER or NOC Augmentees. Tasks may be entered when training is provided by an authorized instructor. Approved directors may issue CAPFs 101 for IC, CISM or ARCHER Operator when granted authority by the appropriate wing or region commander, their designees, or NHQ CAP/DO in advance. NHQ CAP/DO will coordinate approval of these school directors receiving appropriate access to Ops Quals to enter qualification data.

(3) Only NHQ CAP/DO or designees will issue CAPFs 101 for the CISM, ARCHER or NOC Augmentee specialties, or designate personnel in a trainee status pending full qualification.

e. Only personnel holding a valid CAPF 101 (or authorized on equivalent computer rosters noted below) containing the applicable specialty rating(s) may be assigned to perform duties on CAP operational missions. Properly documented individuals in training for a specialty rating may only perform mission duties under the supervision of fully qualified personnel.

(1) A current CAP membership card must accompany a current specialty qualification card. Commanders may recall a specialty qualification card from CAP members assigned within their command for violation of CAP directives.

(2) If the unit, wing, region, or National Commander has documented reason to believe that the member is not properly qualified, the specialty(s) in question will be suspended in Ops Quals until resolved and that member will not be allowed to participate in operational mission activities in the questioned specialty until qualifications have been verified. Subordinate unit commanders should notify their next higher echelon to be sure that key personnel are aware of actions being taken.

(3) Computerized rosters using data from Ops Quals may be used in lieu of a CAPF 101 for validation of currency.

f. Authorization for experienced personnel to train for the IC specialty rating is approved by a wing or higher commander or their designees. The wing or higher commander or their designees will renew the IC specialty rating.

g. National Incident Management System (NIMS) training must be provided by appropriately trained and qualified instructors in accordance with established Department of Homeland Security policies and objectives when training is not completed on-line. Instructor requirements can be found on the NHQ CAP/DOS website.

2-3. Specialty Rating Requirements and Performance Standards. For each specialty rating, SQTRs have been developed to train and qualify members in stages. The most current versions of the task guides for all specialties are found on the NHQ CAP/DOS website.

a. First, prerequisites must be completed prior to initiating training requirements.

b. Once trainees have met the prerequisites, they will be required to complete familiarization and preparatory training for the specialty before serving in that position on actual or training missions under supervision. Familiarization and preparatory training is the minimum set of tasks that the member must master prior to acting as a supervised trainee on practice or actual missions. These tasks represent those skills that will keep the member safe and allow the member to function under supervision without jeopardizing the mission. This requirement avoids placing personnel not ready to perform certain jobs or those who work for them at risk.

c. Finally, after completing familiarization and preparatory training, supervised trainees must complete advanced training and participate satisfactorily in two missions before a CAPF 101 is approved and a member is considered "Qualified." Advanced training covers the remainder of the tasks required for specialty qualification. On actual missions, it is expected that these tasks could be accomplished by the trainee's supervisor or other fully trained members if they became critical. These tasks do not have to be completed in a mission setting though. It is acceptable for these tasks to be accomplished with similar familiarization and preparatory tasks during routine unit training or in a formal school like the National Emergency Services Academy. Prior approval and additional risk mitigation measures will be required by the mission approval authority in order for these personnel to participate in a mission. Because all trainees are properly supervised at all times, trainees are allowed to learn these "on the job." These two "missions" do not have to be on different mission numbers, be AFAMs, or be completed after all other advanced training is complete, but personnel must have completed all familiarization and preparatory training in order to receive credit for these sorties. These sorties must be complete sorties and/or operating periods where the member participates in all aspects of their assigned mission specialty. It is possible to participate in more than one specialty on a given mission or day.

d. All personnel will conduct training using the standardized National task guides. Evaluators must ensure that trainees satisfactorily pass all requirements of a task contained in the task guide before certifying completion for the SQTR. Recommended changes to task guides for all specialties will be submitted through the chain of command to the region commander. If the region commander concurs with the proposed change, he/she will forward the recommendation to NHQ CAP/DO for national coordination and to be considered for approval.

e. General Emergency Services (GES). To participate in emergency services training or operations, personnel must be current traditional members (not patrons, cadet sponsors, AEMs, or legislative members) having completed level one and cadet protection training (senior members) or achievement one (cadets). Individuals in temporary membership are not eligible for liability coverage under the FECA or FTCA. Individuals in temporary membership status are eligible to accomplish academic training activities, but are not authorized to observe mission base training and operations due to liability issues. In addition, they may not participate in any flight activities (including flight line activities) or ground, urban direction finding team, or CERT field activities. Other than these, there are no prerequisite requirements for GES. The General Emergency Services specialty rating is required of all individuals qualifying in emergency services and will be completed prior to commencing training for any other specialty. This training authorizes members to attend missions, observe activities and perform administrative and general operations support tasks under the direction of qualified staff personnel, essentially as a license to learn. Successful completion of the current CAPT 116, *General Emergency*

Services Questionnaire and *OPSEC Training*, qualifies the member in the General Emergency Services Specialty Rating. To remain current in the GES specialty all current holders will complete new CAPTs 116 and *OPSEC Training* within 180 days of issuance of new examinations. Personnel can complete the latest CAPT 116 exam on-line at: https://tests.cap.af.mil/ops/tests/default.cfm?grp=dos, and OPSEC Training at: https://tests.cap.af.mil/opsec.

f. The following are the approved emergency services specialty qualifications above the GES level. The requirements to train or qualify in the below specialties can be found on the appropriate SQTRs in Ops Quals, and additional information can be found in the appropriate task guide or in other training materials available on-line on the NHQ CAP/DOS website:

- Aerial Digital Imaging System Operator (ADIS). See notes 2 and 3.
- Airborne Photographer (AP). See See notes 2 and 3.
- Air Operations Branch Director (AOBD).
- ARCHER Operator (ARCHOPR). See note 1.
- ARCHER Trac Technician (ARCHTRK). See note 1.
- ARCHER Ground Station Operator (ARCHGSO). See notes 1 and 4.
- ARCHER Field Spectrometer Operator (ARCHSPEC) See note 1.
- Communications Unit Leader (CUL) – Any Level. See note 4.
- Community Emergency Response Team (CERT). See note 4.
- Cost Unit Leader (FCUL). See note 4.
- Critical Incident Stress Management (CISM) – Any Level. See note 1.
- Finance/Administration Section Chief (FASC).
- Flight Line Marshaller (FLM).
- Flight Line Supervisor (FLS).
- Ground Branch Director (GBD).
- Ground Team Leader (GTL) – Any Level. See note 4.
- Ground Team Member (GTM) – Any Level. See note 4.
- Highbird Radio Operator (HRO). See note 4.
- Incident Commander (IC) – Any Level. See note 4.
- Liaison Officer (LO)
- Logistics Section Chief (LSC).
- Mission Chaplain (MC).
- Mission Information Technology (MIT). See note 4.
- Mission Observer (MO).
- Mission Radio Operator (MRO) – Any Level. See note 4 below.
- Mission Safety Officer (MSO).
- Mission Scanner (MS).
- Mission Staff Assistant (MSA).
- Mountain Flying Certification (MFC). See note 3.
- NOC Augmentee (NOCAUG). See note 1.

- Operations Section Chief (OSC).
- Planning Section Chief (PSC).
- Public Information Officer (PIO) – Any Level. See notes 4 and 5.
- Resources Unit Leader (RUL). See note 4.
- Search and Rescue/Disaster Relief Mission Pilot (MP).
- Situation Unit Leader (SUL). See note 4.
- Transport Mission Pilot (TMP).
- Unit Alert Officer (UAO)
- Urban Direction Finding Team (UDF). See note 4.
- Water Survival (WS). See note 3.
- Wing Alert Officer (WAO)

Note 1: The CISM, ARCHER and NOC Augmentee specialties can only be entered or updated in Ops Quals by NHQ personnel at this time.

Note 2: Personnel current and qualified as an ADIS Operator are automatically qualified as an AP. Personnel that are considered current and qualified Airborne Photographers are NOT automatically qualified as ADIS Operators, but they have already completed many of the tasks that are required for qualification.

Note 3: Training for Airborne Photographers, ADIS Operators, Mountain Flying Certification, and Water Survival has been available, but has not been consistently recorded in Ops Quals. Wing commanders (or higher) or their designees will need to determine who of their current personnel meet the published requirements, and authorize these qualifications in Ops Quals.

Note 4: New training programs and levels in certain specialties are currently in development. In order to allow enough time for proper testing and fielding of new curricula and to avoid delaying the release of this regulation, these new specialties were included in the regulation even though CAP is not ready to implement all of these specialties at this time. As these new or revised specialties are implemented, transition guidance including grandfathering, equivalency, and currency procedures will be posted on the NHQ CAP/DOS website and personnel will be notified via the chain of command.

Note 5: The specialty qualification of Information Officer is initially being changed in name only to coincide with NIMS guidance to Public Information Officer (PIO). All personnel holding the current specialty or in training for the specialty will automatically have this designation changed in Ops Quals. Transition guidance will be provided as levels are added.

g. There are some duty positions that CAP does not have specific specialty qualifications identified. Any CAP IC can appoint any GES qualified member to fill these gaps in order to meet the needs of the mission, but must use good judgment to select personnel who have the appropriate training and backgrounds to be able to successfully complete their assignment.

2-4. Renewal of Specialty Qualification.

a. Most specialty qualifications generally expire 3 years from the date the qualification was attained. Exceptions are listed in table 2-1. Wings will develop plans to ensure that the majority of their qualified members will not expire at the same time.

Table 2-1. Specialty Qualification Expiration Exceptions

Specialty Exceptions	Reason for Exception
General Emergency Services	Specialty expires 180 days after a new CAPT 116 is issued if the member does not successfully complete the new CAPT 116 or the member has not completed OPSEC training by 1 April 2008. The member's electronic CAPF 101 will note "NO EXPIRE" as long as the member has completed the current CAPT 116 and OPSEC.
Transport Mission Pilot	Specialty expires when the member's CAP pilot status lapses, is suspended or is revoked, or if the member's GES specialty expires. The member's electronic CAPF 101 will note "NO EXPIRE" as long as he/she is GES qualified and remains a current CAP pilot.
SAR/DR Mission Pilot	Specialty expires if CAP pilot status lapses, is suspended or is revoked, or the pilot's CAPF 91 lapses. The expiration date on the CAPF 101 is set to two years from the current CAPF 91.
Critical Incident Stress Management – Any Level	Specialties expire if the member's GES specialty expires or when the member is removed from a CAP CISM Team. The member's electronic CAPF 101 will note "NO EXPIRE" as long as the member remains current.
CERT	Specialty expires if the member's GES specialty expires. The member's electronic CAPF 101 will note "NO EXPIRE" as long as the member remains current.
ARCHER Operator	Specialty expires if the member's GES specialty expires or if the member's operator status is revoked. The member's electronic CAPF 101 will note "NO EXPIRE" as long as the member remains current.
NOC Augmentee	Specialty expires if the member's GES specialty expires or is removed by NHQ. The member's electronic CAPF 101 will note "NO EXPIRE" as long as the member remains current.
All Specialties	Members failing to complete CAPT 117, OPSEC or NIMS Training as required will not be allowed to renew a qualification until the appropriate requirements are met.

b. To renew an expiring specialty qualification, the member must:

(1) Be a current CAP member.

(2) Be evaluated on at least one mission (actual or training) every 3 years by a qualified evaluator as outlined in paragraph 2-2a in each specialty (or equivalent higher specialty) for which renewal is requested. A matrix of equivalent specialties is available on the NHQ CAP/DOS website.

(a) During the evaluation, candidates will be required to demonstrate their ability to perform and/or evaluate annotated tasks on the SQTR required to qualify in that specialty. Not all tasks are required to be demonstrated; generally only advanced level tasks are required to be re-demonstrated. Most formal courses do not have to be re-accomplished though some are recommended like first aid training.

(b) This evaluation does not have to be completed on an Air Force approved training mission, and courses that must be re-accomplished need not be completed at the same time as the evaluation.

(c) The evaluation is meant to be a practical check of a member's currency and proficiency to serve in a specialty on a mission.

(d) CAPF 91, *CAP Mission Pilot Checkout*, check rides will be considered equivalent to this evaluation for all aircrew positions for mission pilots. A separate evaluation is not required.

(3) Have satisfactorily completed applicable parts (see paragraph 2-3e) of the current CAPT 116, *General Emergency Services Questionnaire*.

(4) Have satisfactorily completed the current CAPT 117, *Emergency Services Continuing Education Examinations*. CAPT 117 is conducted in three parts: one for aircrew members and flight line personnel; one for ground and urban direction finding teams; and one for mission base staff.

(5) Have satisfactorily completed current OPSEC Training.

(6) Have satisfactorily completed current NIMS training as applicable.

c. Members should periodically review their electronic records in Ops Quals to be sure they will complete requirements to remain qualified in a specialty.

d. The wing commander (or higher commander) or their designee will renew the IC specialty rating. Since the wing commander is required to review documentation to renew these specialties, members must be prepared to send the required documentation to the wing commander in a timely manner prior to the expiration of these rating(s).

2-5. Re-qualification Procedures for Expired Specialties.

a. Individuals previously qualified in various specialty qualification areas may re-qualify without re-accomplishing all initial training requirements. These personnel must demonstrate proficiency in the specialty to re-earn their expired qualification by:

(1) Accomplishing any tasks not previously completed on the current SQTR,

(2) Being evaluated by a qualified supervisor on at least one mission (training or actual) in each specialty (or equivalent specialty as outlined on the NHQ CAP/DOS website), and

(3) Satisfactorily completing applicable parts of the current CAPTs 116, 117, OPSEC Training, and NIMS Training.

b. The wing commander or his or her designee will approve re-qualifications.

2-6. Transfers From Other Wings. Specialty qualification ratings issued in one wing or region will normally be transferred to another wing (or region) without the need for the member to re-accomplish the entire initial training program for various specialty ratings.

a. The transferring member must contact the new wing (or higher unit) and provide copies of his or her emergency services records to the member's unit of assignment. Electronic records will automatically be transferred once a member's transfer request is processed by national headquarters. When a member transfers to a new wing he or she may have to accomplish additional training to remain qualified based on approved supplements to this regulation in the new wing.

b. Wing commanders must establish procedures to provide familiarization training regarding state/local procedures including local hazards for transferring members.

c. Personnel requesting transfer of IC qualification may be required to demonstrate proficiency through participation in emergency services missions under the supervision of a qualified IC from the new wing (or higher unit). IC qualifications will not directly transfer from one wing to another. The new wing or higher unit commander or designee must approve the transfer before it will be reflected in Ops Quals.

2-7. Documentation. The individual member is responsible to maintain copies of documentation of their qualifications. Members will likely need more than old 101 cards to prove completion of training, especially when requirements change and some grandfathering of qualifications may not be allowed in the future.

CHAPTER 3 – AIR FORCE-ASSIGNED TRAINING/EVALUATION MISSIONS

3-1. General. This chapter outlines responsibilities and procedures for planning and conducting Air Force-assigned training and evaluation missions. State and local missions will be conducted in accordance with current CAP regulations and state or local MOUs and operating agreements.

3-2. Responsibilities.

a. CAP-USAF liaison personnel are responsible for monitoring these missions. Liaison personnel may cancel, suspend, or alter the missions as necessary in the interest of safety, but will normally recommend changes to avoid this well in advance.

b. The CAP wing/region commander coordinates requested dates for Air Force-assigned training/evaluation missions with the respective wing's state director (SD).

c. The CAP region commander monitors each wing's training program and coordinates region-wide training activities. Region commanders review the results of Air Force-required evaluations within their region and ensure necessary actions are taken to correct any deficiencies identified.

3-3. Air Force-assigned Reimbursable Training and Evaluation Missions.

a. The goal of Air Force reimbursable training missions and the evaluation program is to assist CAP in developing and maintaining effective, efficient, and safe mission operations. Operational evaluations provide the Air Force and CAP with information concerning capabilities and limitations of each wing in the performance of CAP operational missions. Wing training missions are also used to identify and strengthen areas requiring additional emphasis and training.

b. Training missions should be designed to improve the wing's ability to perform mission commitments identified in approved agreements and MOUs. The responsible wing coordinates participation of state and local emergency services agencies. At the request of the wing/region commander, wing liaison personnel may assist in coordinating state and local agency involvement in training/evaluation activities.

c. Training funds and missions can be used to fund CAPF 5, *CAP Pilot Flight Evaluation-Airplane*, and CAPF 91, *CAP Mission Pilot Checkout*, checkrides as well as other proficiency training for emergency services qualified personnel and trainees. A full mission staff is not required, but proper overhead staffing should be provided to maintain a safe operating environment for all participants:

(1) For checkrides and other approved flying clinics, a properly documented flight release officer or IC must release all flights.

(2) For all other Air Force approved training, the proper staffing will be approved and agreed to during the planning of the mission, prior to commencing operations. Some training missions do not require a full complement of mission staff.

d. Air Force-assigned training missions are planned to accomplish specific training requirements. The specific training objectives must be reviewed and approved by the CAP-USAF SD through the WMIRS training mission request process. CAP-USAF may utilize CAP personnel as trusted agents or expert advisors on monitored training missions, and fund that support on invitational orders in accordance with current CAP-USAF policy.

e. Air Force-required evaluations are administered under the control of the CAP-USAF liaison region. Wing liaison personnel and other active duty or reserve Air Force personnel may assist liaison region personnel in forming the Air Force evaluation team. CAP personnel may be used as trusted agents on evaluation missions in order to provide a fair and independent evaluation, and also prevent any appearance of impropriety on a wing's evaluation.

f. During Air Force-required evaluation missions, training of operational mission personnel may only be conducted when not detrimental to accomplishment of the evaluation.

3-4. Air Force-assigned Non-Reimbursable Training Missions for CAP Resources. Air Force-assigned non-reimbursable training missions should be designed to provide training to improve the wing's ability to perform mission commitments identified in approved agreements and memorandums of understanding. These missions are intended to permit a wing to conduct additional training activities beyond those authorized for Air Force reimbursement, while still providing FTCA and FECA coverage. Non-reimbursable training missions will be planned to accomplish specific training requirements. Specific training objectives must be reviewed and approved by the wing commander prior to requesting mission authorization.

3-5. Scheduling and Requesting Air Force-assigned Training or Evaluation Missions.

a. General. Subject to availability of funds and other necessary resources, each wing and region is authorized the following evaluation and training missions during the federal fiscal year:

(1) Evaluations are required biennially. These evaluations may be combined into one evaluation and may be accomplished as part of a multi-wing evaluation.

(2) Optional (wing/region commanders will prioritize available training funds to meet the wing/region's most critical training requirements):

(a) Emergency Services and other Operations training missions; this training is expected to prepare members to meet AFAM requirements and earn emergency services specialty qualifications; any training for tasks required to become qualified may be included in this category. For example, communications user training for personnel that will operate radio equipment on missions would be acceptable as well as water survival training for aircrew members in coastal states, or first aid training for ground teams. A full mission staff to provide selective task training is generally not required but certain staffing or other safety requirements may be required by the mission approval authorities.

(b) Administrative/training missions in support of Subordinate Unit Inspections (SUI) as prescribed by CAPR 123-3, *CAP Compliance Assessment Program,*

(c) National Check Pilot Standardization Courses

(d) Mountain flying Clinics and Mountain Fury Courses

(e) ARCHER Training by NHQ approved instructors

(f) Administrative/training missions in support of SET training

(g) Flight clinics or training flights where training supports any Air Force-Assigned Mission conducted under an approved training syllabus (See CAPR 60-1). Training cannot lead to a higher airman rating or certificate

(h) CAPF 5 and 91 checkrides for personnel eligible to fly AFAMs. Only one CAPF 5 and one CAPF 91 is normally funded for mission pilots and trainees annually. Multiple checkrides may be reimbursed as funds are available. Initial CAPF 5 checkrides and checkrides conducted to reinstate a pilot following a mishap may not be funded with Air Force training funds, but wings may choose to fund them with corporate funds. Wing commanders are responsible for establishing policy and specifying which wing members receive reimbursed checkrides. Priority should be placed on checkrides in the following order: mission check pilots, SAR/DR mission pilots, check pilots, instructor pilots, transport mission pilots, and then cadet orientation pilots.

b. Required Evaluation Scheduling. The responsible CAP-USAF liaison region will schedule each wing for one evaluation at least every other year (may be combined). The liaison region commander will coordinate with the respective CAP-USAF SD and CAP wing commander to establish firm dates. Required evaluation dates will be selected well in advance to permit proper coordination of region events.

c. Air Force-Assigned Training and Evaluation Mission Requesting Procedures. For required evaluations the liaison region commander will coordinate with the wing commander to establish an appropriate date(s) for the evaluation. For evaluations, and training missions the wing/region commander or designee will plan and estimate the cost of the mission and, in each case will input the mission request into WMIRS.

(1) The CAP wing/region commander or designee prepares a WMIRS mission request to include a detailed training scenario. Once approved by the wing or region commander, the request is automatically forwarded to the CAP-USAF SD. After approval by the SD, the request is forwarded to the CAP-USAF liaison region. The WMIRS mission request should be provided to the CAP-USAF liaison region as soon as feasible prior to the activity date to allow the liaison region to find staff to attend and support the training as necessary. WMIRS training mission requests must be available in WMIRS for the state director's approval at least three weeks in advance of the mission start date. Waiver authority rests with the CAP-USAF liaison region director of operations or commander, and requires concurrence of the CAP wing commander and the CAP-USAF SD. Training scenarios and requests should contain at the least the following:

(a) List in sentence form the achievable objectives of the training mission.

(b) Give detailed information on how the training scenario will support and enhance the wing's ability to perform these missions.

(c) Attach an example of any specific mission tasking that will be assigned. (Example – details of a specific photo mission assignment for the aircrew to photograph).

(d) List unique training areas such as water survival training, soft field landings and take offs, or tactical communications – provide specific details.

(e) List the approximate number of members expected to attend the training, and resources required for the training.

(f) List in sentence form, what safety areas will be emphasized in the training.

(g) If classroom (non-flying) training will be conducted – provide detailed listing of training and what areas will be emphasized.

(h) List approximately how many total ground and air sorties will be conducted by this training mission, and if any member owned or furnished equipment will be utilized.

(i) Provide the following areas if needed:

1 If non-CAP personnel will participate in the training mission, list their name, connection to CAP's missions, and purpose at the training mission.

2 For multi-wing training missions, list the wings that will participate. If each wing participating will fund its own training, then a separate mission number will need to be assigned for each wing. Note: the "duplicate mission" function in WMIRS may be utilized to avoid having to retype the same information for multiple wings.

3 If you request reimbursement of expenses for a guest instructor, list instructor's name, arrival date, expected RON costs and costs of any other additional expenses.

4 If you expect personnel to remain overnight for training, training will require commercial travel, or meals will be provided on site, and you plan to request reimbursement costs for any CAP personnel attending, outline expected costs and expenses and provide adequate justification.

5 If the training required has known miscellaneous costs for things like printing or copies, first aid training instructor or other course fees, equipment rental or other necessary supplies to make training successful, and you plan to request reimbursement, outline expected costs and expenses and provide adequate justification.

(2) If approved, the CAP-USAF liaison region will authorize the mission in WMIRS.

(3) WMIRS will not allow users to claim expenditures in excess of the funds requested and approved by the CAP-USAF liaison region. Should the mission go over budget, the wing may be responsible for the additional expense and/or will need to shift funds from other areas of the wing's appropriated training budget to cover the additional expenses. CAP-USAF liaison regions must approve any budget increases requested.

3-6. Monthly Missions. Some routine missions following established plans like mission pilot proficiency flying are approved on a monthly basis for eligible members. By the 5th calendar day of each month, CAP wing commanders, or their designees, will provide their SD with an updated list of CAP pilots who are current and qualified to act as PIC of missions flown in AFAM status. The SD will provide mission approval through WMIRS in conjunction with the wing's monthly PIC list. It is the responsibility of the CAP wing to ensure that pilots on the list are current and qualified. Detailed mission directives are also available in WMIRS.

3-7. Air Force Reimbursement. Reimbursement procedures will be in accordance with CAPR 173-3.

3-8. Mission Reports.

a. Air Force evaluation team members use CAP-USAFI 10-2701, attachment 7, as a guide during required evaluations and optional training missions. Results of required evaluations are documented and sent to the respective CAP wing commander and to HQ CAP-USAF/XO. Wing commanders must review their copy of required evaluation reports and forward corrective actions for all items rated less than satisfactory (or "no" on a yes/no question) to the CAP region commander, with a copy to the CAP-USAF liaison region. The wing commander must forward these responses not later than 30 days following receipt of the report from the Air Force evaluation team.

b. Optional training mission reports are prepared by the CAP-USAF SD or his/her designee and provided to the CAP wing commander. The CAP-USAF SD maintains a file copy. At the discretion of CAP-USAF state director, mission results are reported using a simple narrative of activities and findings. The wing commander is not required to answer this report unless specifically requested by HQ CAP-USAF/XO or by the CAP-USAF liaison region office.

O-2010
USE IN-FLIGHT SERVICES

CONDITIONS

You are a Mission Observer trainee and must discuss and use in-flight services.

OBJECTIVES

Discuss and use in-flight services.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how to obtain in-flight services is very helpful. Observers may use in-flight services in order to reduce pilot workload, and being able to get this information may be very useful during emergencies.

2. *Flight Service Stations*. Provide assistance for preflight and in-flight briefings, scheduled and unscheduled weather broadcasts, and weather advisories. Selected FSSs provide transcribed weather briefings. Enroute weather information can be obtained from the Enroute Flight Advisory Service ("Flight Watch") by tuning 122.0 MHz into the radio and calling “Flight Watch.” It mainly provides actual weather and thunderstorms along your route. Additionally, Flight Watch is the focal point for rapid receipt and dissemination of pilot reports (PIREP'S). Other flight service frequencies are indicated on the sectional charts.

3. *Scheduled Weather Broadcasts*. All flight service stations having voice facilities on radio ranges (VOR) or radio beacons (NDB) broadcast weather reports and Notice to Airmen information at 15 minutes past each hour from reporting points within approximately 150 miles of the broadcast station.

4. *Automatic Terminal Information Service (ATIS).* At many airports, the FAA dedicates one or more transmitters and frequencies to continuous taped broadcasts of weather observations, special instructions, and NOTAMS that relate to the airport or nearby navigational facilities. Broadcast weather information is about *actual* observations for the smaller, terminal area, *not* forecasts. ATIS information is updated *hourly*, but may be updated sooner if the weather, special instructions or NOTAMs change significantly. Usually, you must listen to ATIS recordings on the communication radio (the frequency for the ATIS transmission is found on the sectional chart near the airport’s name, or in a table on the reverse side of the sectional title panel).
A typical ATIS transmission may sound like this: "Atlanta Hartsfield Airport, arrival information 'November'. 2350 Zulu weather -- measured ceiling 800 overcast, 1 1/2 miles in fog and haze. Temperature 61 degrees, dew point 60 degrees, wind calm, altimeter 29.80. ILS approaches in progress to Runways 8 Left and 9 Right. Landing runways 8 Left and 9 Right. Atlanta VOR out of service. Taxiway Mike closed between taxiways Delta and Sierra. Read back all ‘hold short' instructions. Advise controller on initial contact you have information 'November'."

5. *Hazardous In-Flight Weather Advisory Service (HIWAS).* You can also receive advisories of hazardous weather on many VORs. As the HIWAS name implies, this information relates only to hazardous weather such as tornadoes, thunderstorms, or high winds. Navaids having HIWAS broadcast capability are annotated on the sectional chart. When receiving a hazardous weather report, ATC or FSS facilities initiate the taped HIWAS transmissions, and ATC then directs all aircraft to monitor HIWAS.

6. *Automated Weather Observation System (AWOS).* At many airports, the FAA has installed Automated Weather Observation Systems. Each system consists of sensors, a computer-generated voice capability, and a transmitter. Information provided by AWOS varies depending upon the complexity of the sensors installed. Airports having AWOS are indicated on sectional charts by the letters AWOS adjacent to the airport name.

7. *Automated Surface Observation System (ASOS).* The primary surface weather observing system in the U.S., the FAA has installed hundreds of ASOS. Each system consists of sensors, a computer-generated voice capability, and a transmitter. Information provided by ASOS varies depending upon the complexity of the sensors installed. ASOS can be heard by telephone, and so is very useful in flight planning. Information includes: wind speed, direction and gusts; visibility and cloud height; temperature and dew point; altimeter setting and density altitude.

8. *Pilot Weather Report (PIREP).* FAA stations are required to solicit and collect PIREPs whenever ceilings are at or below 5,000 feet above the terrain, visibility is at or less than 5 miles, or thunderstorms, icing, wind shear, or turbulence is either reported or forecast. These are extremely useful reports, and all pilots are encouraged to volunteer reports of cloud tops, upper cloud layers, thunderstorms, ice, turbulence, strong winds, and other significant flight condition information. PIREP's are normally given to Flight Watch. They are then included at the beginning of scheduled weather broadcasts by FAA stations within 150 nautical miles of the area affected by potentially hazardous weather. Pilots are advised of these reports during preflight briefings by FAA and national weather service stations, and by air/ground contacts with FAA stations. PIREP's can help you avoid bad weather and warn you to be ready for potential hazards.

Additional Information

This task may be performed in conjunction with tasks O-2000, O-2001, O-2002. More detailed information on this topic is available in Chapter 4 and Attachment 2 of the MART.

Evaluation Preparation

Setup: Provide the student access to a telephone and an aircraft radio.

Brief Student: You are an Observer trainee asked to use in-flight services.

Evaluation

Performance measures	Results	
1. Demonstrate and discuss how to use the following in-flight services:		
a. Flight Service Stations and scheduled weather broadcasts.	P	F
b. Obtain an ATIS report.	P	F
c. HIWAS.	P	F
d. Obtain an AWOS and/or ASOS report.	P	F
e. Give a PIREP report (may be simulated).	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2013
PLOT A ROUTE ON A SECTIONAL CHART

CONDITIONS

You are an Observer trainee and must plot a simple route on a sectional chart.

OBJECTIVES

Plot a course on a sectional chart, select checkpoints along a route, and calculate how long it will take to fly the route.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how to plot a route on a sectional chart is essential in order to assist the pilot, and help maintain situational awareness.

2. Plot the course. To determine a heading, locate the departure and destination points on the chart and lay the edge of a special protractor, or *plotter*, along a line connecting the two points. Use a marker to trace the route. Read the true course for this leg by sliding the plotter left or right until the center point, or grommet, sits on top of a line of longitude. When the course is more to the north or south, you can measure it by centering the grommet on a parallel of latitude, then reading the course from the inner scale that's closer to the grommet.

3. Distance. To determine the distance you're going to travel, lay the plotter on the route and read the distance using the scale that's printed on the plotter's straight edge: one edge measures nautical miles and the other statute miles.

4. Flight time. To determine the time it will take to fly between any two points, divide the distance (in nm) by the proposed airspeed (in knots).

5. Checkpoints. There are a number of ways you can add information to your chart that will help during the flight. Tick marks along the course line at specific intervals will help you keep track of your position during flight (situational awareness). Some individuals prefer five- or ten-nautical mile (nm) intervals for tick marks, while others prefer two- or four-nm intervals. Four-nautical mile spacing works well for aircraft that operate at approximately 120 knots. Since the 120-knot airplane travels 2 nm every minute, each 4 nm tick mark represents approximately two minutes of flight time. On the left side of the course line you have more tick marks, at five-nm intervals, but measured backward from the destination. In flight, these continuously indicate distance remaining to the destination, and you can easily translate that into the time left to your destination.

The next step in preparing the chart is to identify *checkpoints* along the course; you can use these to check your position on- or off-course, and the timing along the leg. Prominent features that will be easily seen from the air make the best checkpoints, and many like to circle them or highlight them with a marker in advance. You should select easy (large) targets such as tall towers, cities and towns, major roads and railroads, and significant topological features such as lakes and rivers. Try not to select checkpoints that are too close together. During a mission, checkpoint spacing will be controlled by the search altitude and weather conditions and visibility at the time of the flight.

Additional Information

More detailed information on this topic is available in Chapter 8 of the MART.

Evaluation Preparation

Setup: Provide the student with a sectional chart and a plotter. Give the student two points on the chart.

Brief Student: You are an Observer trainee asked to plot a course, select checkpoints along the route, and calculate time in flight.

Evaluation

Performance measures	Results	
Given a sectional chart, a plotter, and two points on the chart (e.g., two airports):		
1. Plot a course between the two points.	P	F
2. Select checkpoints along the route. Discuss the reason you selected the checkpoints.	P	F
3. Calculate the time it will take an aircraft (120 knots with no wind) to fly the route.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2107

PREPARE FOR A TRIP TO A REMOTE MISSION BASE

CONDITIONS

You are a Mission Observer trainee and must prepare for a trip to a remote mission base.

OBJECTIVES

Prepare for a trip to a remote mission base, acting as mission commander. Assist in performing pre-trip planning and inspections, preflight tasks and briefings, filling out a CAP flight plan, and after-landing tasks.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, the ability to prepare for a trip to a remote mission base is essential.

2. *Before you leave*. The urgency of events, coupled with a hasty call-out, may leave you and other crewmembers feeling rushed as you prepare to leave for a mission. This is where a good pre-mission checklist comes in handy. As a minimum, check the crew (and yourself) for the following:

A. Proper uniforms (CAPM 39-1) and credentials
   1) CAP Membership
   2) CAP Motor Vehicle Operator
   3) ROA
   4) 101/101T (note experience and tasks to be accomplished)
   5) Ensure the pilot has necessary credentials (e.g., license, medical, and photo ID)

B. Check personal equipment
   1) Clothing sufficient and suitable for the entire trip
   2) Personal supplies (civilian clothing, headset, charts, maps, plotter, log, checklists, fluids and snacks)
   3) Personal survival equipment (in addition to the aircraft kit) suitable for the entire trip
   4) Sufficient money for the trip (credit cards, some cash or traveler's checks, and coin)
   5) Cell phone (including spare battery and charger)

C. Check aircraft equipment
   1) Current aeronautical charts for the entire trip, and gridded charts for the mission area
   2) Maps for the mission area (e.g., road atlas, county maps, topo maps), plus clipboard and markers
   3) Tie-downs, chocks, Pitot tube cover and engine plugs, fuel tester, sick sacks, and cleaning gear
   4) Survival kit (fits trip and mission area terrain), headsets, flashlight, binoculars and multitool

D. Ensure the pilot reviews the Aircraft Logs
   1) Note the date and the starting Tach and Hobbs times to ensure you won't exceed:
      a) Mid-cycle oil change (40-60 hours, not to exceed four months)
      b) 100-hour/Annual
      c) 24-month checks (Transponder, Pitot-Static system, Altimeter and ELT/battery replacement date
      d) 30-day VOR check for IFR flight and AD compliance list.
   2) Check the status of the Carbon Monoxide Detector and Fire Extinguisher
   3) Pilot reviews the Discrepancy Log and makes sure the aircraft is airworthy and mission ready

E. Pilot obtains FAA Weather Briefing and CAP Flight Release
   1) Perform Weight & Balance (reflecting weights for the crew, special equipment and baggage)
      a) Include fuel assumptions (fuel burn, winds, power setting, distance, and fuel stop)
      b) Ensure fuel reserve (land with one hour's fuel, computed at normal cruise)
   2) Verify within flight time and duty limitations (CAPR 60-1, Chapter 2)
   3) Obtain FAA briefing (ask for FDC and Local NOTAMs and SUA status) and file FAA Flight Plan

a) Enter 'CPF XXXX' in the Aircraft Identification section
b) Put the 'N' and 'Cap Flight' numbers in the Remarks section

4) Assist in filling out an "Inbound" CAPF 104 or 84 (leave copy for FRO)
5) Pilot briefs the crew on the fuel management plan (assumptions, refueling stops, and reserve), Local and FDC NOTAMs, and SUA status
6) Review "IMSAFE" and pilot obtains a CAP Flight Release
7) Pilot requests Flight Following

F. Pilot preflight
1) Ensure proper entries in the Flight Log (e.g., mission number & symbol, crew & FRO names)
2) Check starting Tach and Hobbs times to ensure you won't exceed limits (e.g., oil change)
3) Review the Discrepancy Log and make sure the aircraft is airworthy and mission ready
4) While preflighting, verify any outstanding discrepancies. If new discrepancies discovered, log them and ensure the aircraft is still airworthy and mission ready. [Be extra thorough on unfamiliar aircraft.]
5) Verify load is per your Weight & Balance (baggage, survival kit, extra equipment and luggage)
6) Double-check aeronautical charts, maps and gridded charts (also clipboard and markers)
7) Ensure required aids onboard (Flight Guide, distress and air-to-ground signals, fuel tester, tools)
8) Windshield and windows clean, and chocks, tie-downs, Pitot tube covers and engine plugs stowed
9) Right Window holding screw removed (video imaging mission) and stored
10) Check and test special equipment (cameras, camcorder, slow-scan, repeater), including spare batteries
11) Parking area clear of obstacles (arrange for a wing-walker if one will be needed to clear obstacles)
12) Perform passenger briefing and review emergency egress procedure
13) Review taxi plan/diagram and brief crew assignments for taxi, takeoff and departure
14) Remind crew that most midair collisions occur in or near the traffic pattern
15) Enter settings into GPS (e.g., destination or flight plan)
16) Organize the cockpit

G. Startup and Taxi
1) Pilot briefs checklist method to be used (e.g., challenge-response)
2) Seat belts at all times; shoulder harness at or below 1000' AGL
3) Double-check Intercom, Audio Panel and Comm Radio settings
4) Rotating Beacon Switch ON and pilot signals marshaller before starting engine; lean for taxi
5) Ensure DF and FM Radio are operable and set properly (FM radio check if first flight)
6) Select initial VOR radial(s) and GPS setting
7) Obtain ATIS and Clearance (read back all clearances and hold-short instructions)
8) Pilot computes crosswind and verify within Crosswind Limitation
9) Verify 3 statute miles visibility (VFR in Class G - unless PIC is current IFR)
10) If IFR, verify weather at or above landing minimums and date of last VOR check
11) Begin sterile cockpit
12) Pilot signals marshaller before taxiing; checks brakes at beginning of roll
13) Pilot taxis no faster than a slow walk when within 10 feet of obstacles
a) Maintains at least 50' behind light single-engine aircraft
b) Maintains at least 100' behind small multi-engine and jet aircraft
c) Maintains at least 500' behind heavies and taxiing helicopters

H. Takeoff, Climb and Departure
1) Pilot double-checks assigned departure heading and altitude
2) Pilot leans engine for full power (> 3000' DA)
3) Look for landing traffic before taking the active runway
4) Keep lights on within 10 miles of the airport and when birds reported nearby
5) Begin Observer Log with takeoff (time and Hobbs) and report "Wheels Up"
6) Pilot uses shallow S-turns and lifts wing before turns during climbing to check for traffic
7) Keep shoulder harnesses buckled (never remove at or below 1000' AGL)
8) Keep crew apprised of conflicting aircraft and obstacle positions

9) Keep checklists close at hand and open to Emergency Procedures

I Enroute
1) Maintain situational awareness
2) Pilot leans engine for economy cruise
3) Ensure pilot updates fuel assumptions and sets altimeter to closest source at least hourly

J Approach, Descent and Landing
1) Pilot plans approach and descent (remembers fuel mixture and cooling)
2) Double-checks radio and navigational settings
3) Obtain ATIS/AWOS and contact approach control
4) Review taxi plan/diagram and brief crew assignments for approach, landing and taxi
5) Remind crew that most midair collisions occur in or near the traffic pattern, especially on final
6) Begin sterile cockpit
7) Turn lights on within 10 miles of the airport
8) Pilot double-checks assigned approach heading and altitude
9) Pilot uses shallow S-turns and lifts wing before turns during descent to check for traffic
10) Read back all clearances and hold-short instructions
11) Log (time and Hobbs) and report "Wheels Down"

3. *Arrival at mission base*

A. Park and Secure Aircraft
1) Look for marshallers, follow taxi plan, pilot signals marshaller that ignition is OFF
2) Double-check Master Switch OFF
3) Fuel Selector Switch to Right or Left (refueling)
4) Avionics/control Lock and Pitot tube covers/engine plugs installed
5) Pilot completes the Flight Log and enters squawks in Discrepancy Log
6) Chocks and Tie-downs installed and Parking Brake OFF
7) Remove trash and personal supplies/equipment
8) Lock the windows, doors and baggage compartment
9) Check oil and arrange for refueling
10) Clean leading edges, windshield, and windows
11) Replenish cleaning kit

B. Check in with Flight Line Supervisor and Safety Officer
C. Close FAA Flight Plan, call FRO
D. Sign personnel and aircraft into the mission (Administration)
E. Assist in completing and submitting 'Inbound 104' (keep a copy)
F. Report any special equipment to Logistics (cameras, camcorder, slow-scan, repeater)
G. Inquire about fuel billing, lodging, transportation and meals
H. Note time to report for duty and ask for sortie assignment (get briefing packet)

The mission staff will probably show you around mission base and inform you of transportation, lodging and meal arrangements. They will also tell you when to report for duty, normally by telling you when the general briefing will be held.

Additional Information

More detailed information and figures on this topic are available in Chapter 13 and Attachment 2 of the MART.

Practice

Setup: Give the student an assignment to go to a remote mission base. The base should be located on a large (unfamiliar) airport in controlled airspace -- Class B, if practical. The student should have access to mission materials and a CAPF 104.

The student will assist in planning a simulated a trip to a remote mission base. All tasks that can be performed will not be simulated.

The trainer should play the role of the mission pilot, particularly for performing inspections and giving briefings and instructions to the observer trainee. The observer will be given preflight and pilot briefings.

For this simulated sortie, watch for:

1) Thorough knowledge of documents and equipment required for an extended stay at a remote base.

2) Assists pilot in completion of the CAP flight plan.

3) Assists pilot with accurate and thorough planning for the trip.

4) Proper actions upon arrival at mission base.

Evaluation Preparation

Setup: Give the student an assignment to go to a remote mission base. The base should be located on a large (unfamiliar) airport in controlled airspace -- Class B, if practical. The student should have access to mission materials and a CAPF 104.

The student will assist in planning a simulated a trip to a remote mission base. All tasks that can be performed will not be simulated.

The trainer should play the role of the mission pilot, particularly for performing inspections and giving briefings and instructions to the observer trainee. The observer will be given preflight and pilot briefings.

Brief Student: You are a Mission Observer trainee asked to prepare for a trip to a remote mission base.

Evaluation

Performance measures	Results	
1. Check for proper uniform, credentials and equipment.	P	F
2. State the flight time and duty limitations per CAPR 60-1.	P	F
3. Assist in checking the aircraft:		
a. Check for required equipment on board (e.g., tie downs, survival kit, cleaning gear).	P	F
b. Clean windows, as necessary.	P	F
4. Assist in filling out a CAP flight plan.	P	F
5. Receive a briefing from the mission pilot:		
a. Fuel assumptions and fuel stop.	P	F
b. Airspace restrictions, NOTAMS, and destination airport diagrams.	P	F
6. Upon (simulated) arrival at mission base:		

a. Secure the aircraft and arrange for refueling. P F

b. Sign yourself and the aircraft into the mission. P F

c. Assist in completing your "Inbound" CAPF 104. P F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2007

DISCUSS MISSION OBSERVER DUTIES AND RESPONSIBILITIES

CONDITIONS

You are a Mission Observer trainee and must discuss observer duties and responsibilities.

OBJECTIVES

Discuss Observer duties and responsibilities.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, understanding your duties and responsibilities is essential. The mission observer has a key role in CAP missions, and has expanded duties that mainly pertain to assisting the mission pilot. This assistance may be in the planning phase, handling radio communications, assisting in navigation, and crew management (i.e., mission commander). The proficient observer makes it possible for the pilot to perform his duties with a greater degree of accuracy and safety by assuming these aspects of the workload.

2. The Observer's primary role while actually in a search area is that of scanner.

3. General duties and responsibilities include:

   a. Depending on conditions, you may report with the mission pilot for briefing. Wear appropriate clothes for a mission.
   b. Assist in planning the mission. The observer may act as mission commander for the sortie.
   c. Assist in avoiding collisions and obstacles during taxiing.
   d. Assist in setting up and operating aircraft and CAP radios.
   e. Assist in setting up and operating aircraft navigational equipment (e.g., VORs and GPS).
   f. Assist enforcing the sterile cockpit rules.
   g. Maintain situational awareness at all times.
   h. Assist in monitoring fuel status.
   i. Monitor the electronic search devices aboard the aircraft and advise the pilot when making course corrections in response to ELT signals.
   j. Keep mission base and/or high bird appraised of status.
   k. Coordinate scanner assignments and ensure proper breaks for the scanners (including yourself). Monitor crew for fatigue and dehydration (ensure the crew drinks plenty of fluids).
   l. Maintain a chronological flight log of all observations of note, including precise locations, sketches and any other noteworthy information.
   m. Depending on conditions, report with the mission pilot for debriefing immediately upon return to mission base. The applicable portions on the reverse of CAPF 104 should be completed prior to debrief.
   n. Keep track of assigned supplies and equipment.

4. Once team members have been briefed on the mission and accomplished the necessary planning, observers determine that all necessary equipment is aboard the airplane. Checklists help ensure that all essential equipment is included, and vary according to geographic location, climate, and terrain of the search area. Items on the observer's checklist should include CAP membership and specialty qualification cards, current charts and maps of the search area, flashlights, notebook and pencils, binoculars, and survival gear (prohibited items, such as firearms, should be listed too, to ensure none is included). A camera may be included to assist in describing the location and condition of the search objective or survivors. Unnecessary items or personal belongings

should be left behind. The mission observer also assists the pilot in ensuring that all equipment aboard the search aircraft is properly stowed. An unsecured item can injure the crew or damage the aircraft in turbulence.

5. Once airborne, the observer provides navigation and communication assistance, allowing the pilot to precisely fly the aircraft with a greater degree of safety. The observer also assists in enforcing "sterile cockpit" rules when necessary. In flight, particularly the transit phase, the observer maintains situational awareness in order to help ensure crew safety.

6. The mission observer divides and assigns scanning responsibilities during her mission observer briefing, and ensures each scanner performs their assigned duty during flight. She monitors the duration of scanner activity, and enables the scanners to rest in order to minimize fatigue.

7. Observer Log. The observer must become proficient in using an in-flight navigational log. A complete chronological log should be maintained from take-off until landing, and should include all events and sightings. Skill in maintaining the log requires training and experience. Remember, *proficiency and confidence are gained through practice and application.* It is important to log the geographical location of the search aircraft at the time of all events and sightings (as a habit, always log the Hobbs time each time you make a report or record an event or sighting). This information is the basis of CAP Form 104, which is passed back to the incident commander and general staff after the debriefing and becomes a part of the total information that is the basis for his subsequent actions and reports. Good logs give the staff a better picture of how the mission is progressing. If sketches or maps are made to compliment a sighting, note this and attach them to the log. The log and all maps and sketches will be attached to the CAPF 104.

Additional Information

More detailed information on this topic is available in CAPR 60-1 and in Chapter 1 of the Mission Aircrew Reference Text (MART).

Evaluation Preparation

Setup: Provide the student with a current copy of CAPR 60-1 and the MART.

Brief Student: You are an Observer trainee asked about your duties and responsibilities, and to discuss the Observer's job and log.

Evaluation

Performance measures	Results	
1. State the primary role of the observer, particularly when in the search area.	P	F
2. Discuss general duties and responsibilities.	P	F
3. Discuss pre-flight duties and responsibilities.	P	F
4. Discuss in-flight duties and responsibilities.	P	F
5. Discuss post-flight duties and responsibilities.	P	F
6. Discuss what should be entered into the observer log.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2008
DISCUSS THE DANGERS OF ICING

CONDITIONS

You are a Mission Observer trainee and must discuss how icing occurs and associated dangers.

OBJECTIVES

Discuss how airframe and carburetor icing occur and their affects on aircraft performance.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how icing forms and affects the aircraft is essential.

2. *Frost*. When the ground cools at night, the temperature of the air immediately adjacent to the ground is frequently lowered to the saturation point, causing condensation. This condensation takes place directly upon objects on the ground as dew if the temperature is above freezing, or as frost if the temperature is below freezing. Dew is of no importance to aircraft, but frost can be deadly. Normally we think of frost as unimportant - it forms on cars or other cold surfaces overnight, soon melting after the sun rises. However, frost on an airplane disturbs the airflow enough to reduce the lift and efficiency of aerodynamic surfaces. An airplane *may* be able to fly with frost on its wings, but, even with the airflow over the wings only slightly disrupted, controllability can become unpredictable. *Frost should always be removed before flight*. Some precautions should be taken if frost is expected, such as placing the aircraft in a hanger (even a T-hanger).

3. *Airframe icing*. There are only two fundamental requisites for ice formation on an aircraft in flight: first the aircraft must be flying through visible water in the form of rain or cloud droplet, and second, when the liquid water droplets strike, their temperature or the temperature of the airfoil surface, must be 32º F. or below. Ice increases drag and decreases lift: an ice deposit of as little as one-half inch on the leading edge of a wing can reduce lift by about 50%, increase drag by an equal percentage, and thus greatly increase the stall speed. Ice deposits also increase weight (on a typical C172 a quarter-inch coating of ice can add up to 150 lbs., a half-inch can add 300 lbs., and an inch of clear ice can add 600 lbs.). Additionally, propeller efficiency is decreased.

Sorties should never be flown in regions of possible icing. As altitude increases, temperature decreases at a fairly uniform rate of 2° Celsius or 3.6° Fahrenheit for each 1000 feet. This rate of temperature change is known as the *lapse rate*. At some altitude, the air temperature reaches the freezing temperature of water, and that altitude is known as the *freezing level*. You can estimate the freezing level prior to flight by using simple mathematics. For example, if the airport elevation is 1,000 feet and the temperature at ground level is 12° Celsius, the freezing level would be at approximately 6,000 feet above ground level (AGL) or 7,000 feet above mean sea level (MSL). Since the lapse rate is 2° per thousand feet, it would take 6,000 feet of altitude to go from 12° Celsius to 0°, the freezing temperature of water. The same technique works for Fahrenheit, but you use 3.6° for the lapse rate. Don't forget to include the airport elevation in your computations -- altimeters are normally set to display MSL rather than AGL altitude. [This method yields a very approximate value for the freezing level. You are encouraged to leave a wide margin for error above and below this altitude if you must fly through visible moisture during a search.]

4. *Carburetor icing*. Unlike aircraft structural icing, carburetor ice can form on a warm day in moist air. In the winter when temperatures are below 40º F. the air is usually too cold to contain enough moisture for carburetor ice to form. In the summer when temperatures are above 85º F. there is too much heat for ice to form. So, airplanes are most vulnerable to carburetor icing when operated in high humidity or visible moisture with

temperatures between 45º and 85º F. It's most likely to become a problem when the aircraft is operated at low power settings, such as in descents and approaches to landings.

5. Taxiing in snow and ice can be dangerous. The pilot should never attempt to taxi through snow banks, and should be very deliberate and careful while taxiing on snow or ice. Run-ups should be conducted in an area free of snow or ice, if possible. The observer (and scanner) must assist the pilot in these conditions, and be especially watchful for runway and taxiway boundaries and other obstacles that may be obscured by snow or ice.

Additional Information

More detailed information on this topic is available in Chapter 6 of the MART.

Evaluation Preparation

Setup: None.

Brief Student: You are an Observer trainee asked to discuss icing.

Evaluation

Performance measures	Results	
1. Discuss the following concerning icing:		
a. Freezing level.	P	F
b. How airframe frost and icing affects aircraft performance.	P	F
c. How carburetor icing affects aircraft performance.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2009

DISCUSS THE DANGERS OF REDUCED VISIBILITY CONDITIONS

CONDITIONS

You are a Mission Observer trainee and must discuss the causes and dangers of reduced visibility.

OBJECTIVES

Discuss the causes and dangers of reduced visibility and their effect on search operations.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, basic knowledge of how reduced visibility conditions affect search operations.

2. Reduced visibility conditions. One of the most common hazardous weather problems is loss of visibility. This can happen either suddenly or very insidiously, depriving the pilot of his ability to see and avoid other aircraft, and reducing or depriving him altogether of his ability to control the aircraft, unless he has had training and is proficient in instrument flying. In reduced visibility, the crew's ability to see rising terrain and to avoid towers, power transmission lines, and other man-made obstacles is diminished. Visibility may be reduced by many conditions including clouds, rain, snow, fog, haze, smoke, blowing dust, sand, and snow. A similar condition called “white out” can occur where there has been snowfall.

Fog, especially dense fog, can make it extremely difficult, if not impossible, to see landing runways or areas. The crew should be alert for a potential problem with fog whenever the air is relatively still, the temperature and dew point are within several degrees, and the temperature is expected to drop further, as around sunset and shortly after sunrise. This is often a factor in delaying the first sorties of the day.

Haze, a fine, smoke-like dust causes lack of transparency in the air. It's most often caused when still air prevents normal atmospheric mixing, allowing the particles to persist, instead of the wind's dispersing them. Like fog, it is most likely to occur when the air is still. When haze and smoke are present, the best measure a flight crew can take to minimize risk of such an encounter is to get a thorough weather briefing before flying, and update the briefing by radio with *Flight Watch* as required.

3. Effects. According to FAA regulations, under almost all circumstances flight using visual flight rules can only be conducted with at least three miles of visibility. If clouds cover more than one-half the sky, the cloud bases must be no lower than 1,000 feet above the terrain. In addition, search aircraft must usually remain at least 500 feet below the cloud deck.

Each member of the aircrew must be vigilant during all phases of the flight when visibility is less than perfect. Crew resource management requires that each member of the crew be assigned an area to search during the takeoff, transit and approach-to-landing phases of the flight in order to help the pilot "see and avoid" obstacles and other aircraft. The aircrew must also characterize visibility in the search area so as to establish the proper scanning range: search visibility may be different than expected, and your search pattern may have to be adjusted accordingly. Be sure to cover this during your debriefing.

Additional Information

More detailed information on this topic is available in Chapter 6 of the MART and Attachment 2 of the MART.

Evaluation Preparation

Setup: None.

Brief Student: You are an Observer trainee asked to discuss reduced visibility conditions and their affect on search operations.

Evaluation

Performance measures	Results
1. Discuss the following concerning reduced visibility conditions:	
a. Reduced visibility conditions.	P F
b. Basic reduced visibility minimums.	P F
c. Effects on search operations.	P F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2010

DISCUSS THE DANGERS OF WIND AND THUNDERSTORMS

CONDITIONS

You are a Mission Observer trainee and must discuss effects and dangers of wind and thunderstorms.

OBJECTIVES

Discuss effects and dangers of wind and thunderstorms.

TRAINING AND EVALUATION

Training Outline

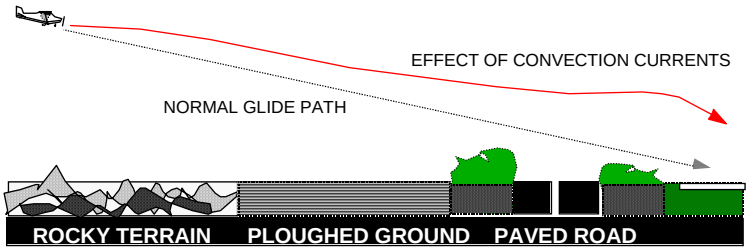
1. As a Mission Observer trainee, knowing the effects and dangers of winds and thunderstorms is essential.

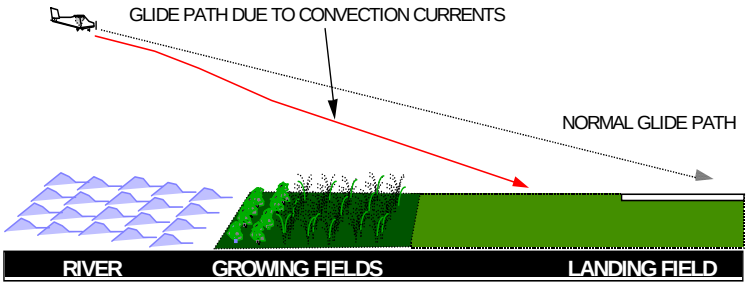
2. Winds around pressure systems. Certain wind patterns can be associated with areas of high and low pressure: air flows from an area of high pressure to an area of low pressure. In the Northern Hemisphere during this flow the air is deflected to the right because of the rotation of the earth. Therefore, as the air leaves the high-pressure area, it is deflected to produce a clockwise circulation. As the air flows toward a low-pressure area, it is deflected to produce a counterclockwise flow around the low-pressure area.

Another important aspect is air moving out of a high-pressure area depletes the quantity of air. Therefore, highs are areas of descending air. Descending air favors dissipation of cloudiness; hence the association that high pressure usually portends good weather. By similar reasoning, when air converges into a low-pressure area, it cannot go outward against the pressure gradient, nor can it go downward into the ground; it must go upward. Rising air is conducive to cloudiness and precipitation; thus the general association low pressure — bad weather.

3. Convection currents. Certain kinds of surfaces are more effective than others at heating the air directly above them. Plowed ground, sand, rocks, and barren land give off a great deal of heat, whereas water and vegetation tend to absorb and retain heat. The uneven heating of the air causes small local circulation called "convection currents", which are similar to the general circulation just described. Convection currents cause the bumpiness experienced by aircrews flying at low altitudes in warmer weather. On a low flight over varying surfaces, the crew will encounter updrafts over pavement or barren places and down drafts over vegetation or water. Ordinarily this can be avoided by flight at higher altitudes, so aircrews may need to climb periodically to take a break from the rough air at search altitudes.

Convection currents also cause difficulty in making landings, since they affect the rate of descent. The figures below show what happens to an aircraft on a landing approach over two different terrain types. The pilot must constantly correct for these affects during the final approach to the airport.





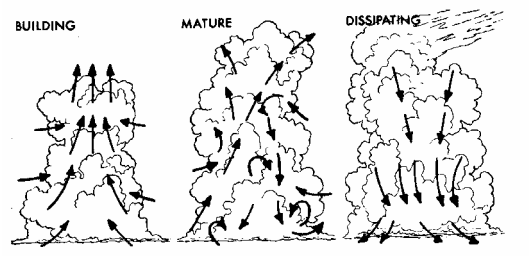
4. Cold and warm fronts. Certain characteristics of frontal activities will affect search effectiveness (primarily visibility and turbulence). For the aircrew, these factors must be considered during mission planning.

Characteristics of a cold, unstable air mass are:
Cumulus and cumulonimbus clouds
Unlimited ceilings (except during precipitation)
Excellent visibility (except during precipitation)
Unstable air resulting in pronounced turbulence in lower levels (because of convention currents)
Occasional local thunderstorms or showers - hail sleet, snow flurries

Characteristics of a warm, stable air mass are:
Stratus and stratocumulus clouds
Generally low ceilings
Poor visibility (fog, haze, smoke, and dust held in lower levels)
Smooth, stable air with little or no turbulence
Slow steady precipitation or drizzle

5. Windshear. Windshear is best described as a change in wind direction and/or speed within a very short distance in the atmosphere. Under certain conditions, the atmosphere is capable of producing some dramatic shears very close to the ground; for example, wind direction changes of 180º and speed changes of 50 knots or more within 200 ft. of the ground have been observed. This, however, is unusual. Turbulence may or may not exist in wind shear conditions. If the surface wind under the front is strong and gusty there will be some turbulence associated with wind shear.

6. Thunderstorms. A thunderstorm is any storm accompanied by thunder and lighting. It usually includes some form of precipitation, and can cause trouble for aircraft in many forms: turbulence, icing, poor visibility, hail, wind shear, microbursts, lightning, and, in severe cases, tornadoes. No thunderstorm should ever be taken lightly. During the cumulus stage, vertical growth occurs so quickly that climbing over the developing thunderstorm is not possible. Flight beneath a thunderstorm, especially in the mature stage, is considered very foolish, due to the violent down drafts and turbulence beneath them. Flight around them may be a possibility, but can still be dangerous. Even though the aircraft may be in clear air, it may encounter hail, lightning, or turbulence a significant distance from the storm's core. *Thunderstorms should be avoided by at least 20 miles laterally*. The safest alternative, when confronted by thunderstorms, is to land, tie the aircraft down, and wait for the storms to dissipate or move on.



Additional Information

More detailed information on this topic is available in Chapter 6 of the MART.

Evaluation Preparation

Setup: None.

Brief Student: You are an Observer trainee asked to discuss the dangers of winds and thunderstorms.

Evaluation

Performance measures	Results	
1. Discuss the effects of convection currents, particularly during landing.	P	F
2. Discuss wind patterns around high- and low-pressure areas.	P	F
3. Discuss the characteristics of cold and warm fronts.	P	F
4. Discuss the dangers of windshear.	P	F
5. Discuss the dangers of thunderstorms.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2011

DISCUSS THE EFFECTS OF DENSITY ALTITUDE ON AIRCRAFT PERFORMANCE

CONDITIONS

You are a Mission Observer trainee and must discuss how density altitude affects aircraft performance.

OBJECTIVES

Describe the factors that are used to determine density altitude, and discuss the effect of high density altitude on aircraft performance and strategies to deal with high density altitudes during search operations.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how density altitude affects aircraft performance is very helpful.

2. *Atmospheric pressure*. Pressure at a given point is a measure of the weight of the column of air above that point. As altitude increases, pressure diminishes as the weight of the air column decreases. This decrease in pressure has a pronounced effect on flight. The aircraft's altimeter is sensitive to these changes in pressure, and displays this pressure as altitude. When the altimeter is set to the current reported altimeter setting it indicates the aircraft's height above mean sea level (MSL). [If a local altimeter setting is unavailable, pilots usually set the altimeter to indicate the airport's MSL elevation.]

Changes in pressure are registered in inches of mercury: the *standard* sea-level pressure is 29.92 inches at a *standard* temperature of 15º C (59º F). If CAP aircraft always operated at standard conditions, the altimeter would always be accurate. An aircraft with an indicated (on the altimeter) altitude of 5,000' MSL will really be 5000' above the ground (AGL). However, these standard conditions rarely exist because the density of the atmosphere is always changing as altitude and temperature changes. [The third factor - humidity - also effects density, but the effect is smaller and its very hard to determine.]

3. *Pressure altitude*. Pressure altitude is an altitude measured from the point at which an atmospheric pressure of 29.92 inches of mercury is found. A good rule of thumb is that a 1,000' change of altitude results in a 1-inch (mercury) change on a barometer. Another way to determine pressure altitude is to enter 29.92 into the altimeter's window and read the resulting altitude indication.

4. *Density altitude*. When pressure altitude is corrected for non-standard temperature, *density altitude* can be determined.

5. *Effects*. The combined effects of high altitude and temperature (high density altitude) can have a significant effect on performance of aircraft engines, wings, propellers, and the pilot and crew. If all missions were conducted on cool, low humidity days along the Gulf coast there would be no concern with air density and its implications on flight safety. Obviously, this isn't the case. In fact, these conditions have often been primary factors in aircraft accidents, and may result in loss of the search aircraft, unless you pay careful attention.

The most noticeable effect of a decrease in pressure (increase in density altitude) due to an altitude increase becomes evident during takeoff, climb, and landing. An airplane that requires a 1,000' run for takeoff at a sea-level airport will require a run almost twice as long at an airport that is approximately 5,000' above sea level. The purpose of the takeoff run is to gain enough speed to generate lift from the passage of air over the wings. If the air is thin, more speed is required to obtain enough lift for takeoff- hence, a longer ground run. It is also true that the engine is less efficient in thin air, and the thrust of the propeller is less effective. The rate of climb is also slower at the higher elevation, requiring a greater distance to gain the altitude to clear any obstructions. In landing, the difference is not so noticeable except that the plane has greater groundspeed when it touches the ground.

6. *Strategies*. The mission staff can make a number of decisions to help minimize the effects of high density altitude operations and thus maximize flight safety. If aircraft having turbo-charged or super-charged engines are available, the incident commander may assign their crews that part of the search over the high terrain. Supercharging or turbocharging regains some of the engine performance lost with the decrease in air density, but cannot improve upon that lost from the wings or propeller.

Incident commanders may schedule flights to avoid searching areas of high elevation during the hottest times of the day. This is a tradeoff though, in that the best sun angles for good visibility often coincide with the hot times of the day. The incident commander may also elect to limit crew size to minimize airplane total weight. Instead of dispatching a four-seat aircraft with a pilot, observer, and two scanners aboard, he may elect to send a pilot, observer and single scanner only. Again, this represents a tradeoff, where some search capability is sacrificed for a higher margin of safety.

The pilot may decide to takeoff on a mission with only the fuel required for that mission and the required reserve, rather than departing with full fuel tanks. Each crewmember can help by leaving all *nonessential* equipment or personal possessions behind. In areas of high density altitude, airplane performance can be improved significantly by simply leaving nonessential, excess weight behind.

To help remember these conditions and their effects, an observer should remember the four "H's." *Higher Humidity, Heat, or Height all result in reduced aircraft performance*. Available engine power is reduced, climb capability is reduced, and takeoff and landing distances are increased.

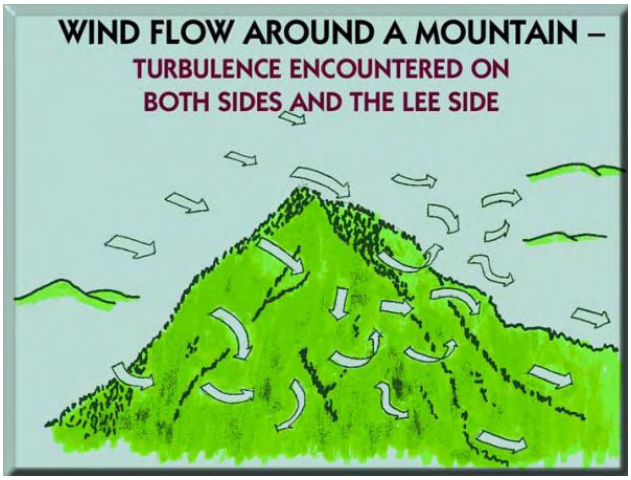
7. *Mountainous terrain*. Aircrews flying the mountains must complete a course such as *Mountain Fury*.

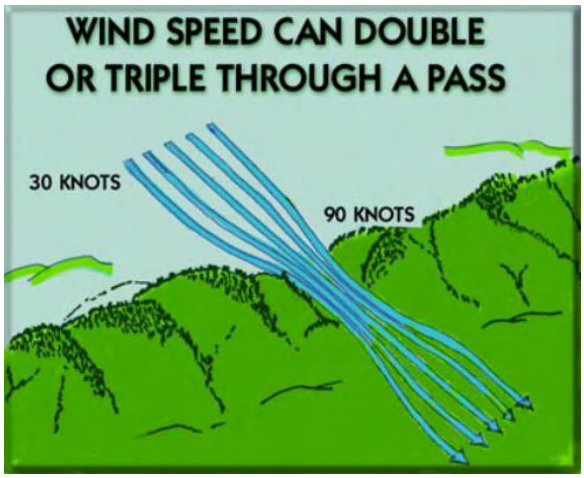
When flying in mountainous areas it is recommended that flights be planned for early morning or late afternoon because heavy turbulence is often encountered in the afternoon, especially during summer. In addition, flying at the coolest part of the day reduces density altitude. Attempt to fly with as little weight as possible, but don't sacrifice fuel; in the event of adverse weather, the additional reserve could be a lifesaver.

Study sectionals for altitudes required over the route and for obvious checkpoints. Prominent peaks make excellent checkpoints, as do rivers and passes. Be aware that mountain ranges have many peaks that may look the same to the untrained eye, so continually crosscheck your position with other landmarks and radio aids if possible. Also, the minimum altitude at which many radio aids are usable will be higher in the mountains. For that reason, low-frequency navigation, such as ADF, LORAN, or GPS tend to work best in the mountains.

A weather check is essential for mountain flying. Ask specifically about winds aloft even when the weather is good. Expect winds above 10,000 feet to be prevailing westerlies in the mountain states. If winds aloft at your proposed altitude are above 30 knots, do not fly. Winds will be of much greater velocity in passes, and it will be more turbulent as well. Do not fly closer than necessary to terrain such as cliffs or rugged areas. Dangerous turbulence may be expected, especially when there are high winds (see figures, below).

Crews must be constantly careful that a search never takes them over terrain that rises faster than the airplane can climb. Narrow valleys or canyons that have rising floors must be avoided, unless the aircraft can be flown from the end of higher elevation to the lower end, or the pilot is *certain* that the aircraft can climb faster than the terrain rises. Careful chart study by the crew prior to flight will help identify this dangerous terrain.





Additional Information

More detailed information on this topic is available in Chapter 7 of the MART.

Evaluation Preparation

Setup: Provide the student with charts and/or a flight computer to compute density altitude.

Brief Student: You are an Observer trainee asked to calculate density altitude and discuss its effects.

Evaluation

Performance measures	Results	
1. Discuss atmospheric pressure, pressure altitude and density altitude.	P	F
2. Obtain the local altimeter setting and enter it into an aircraft altimeter.	P	F
3. Discuss how high density altitude degrades aircraft performance.	P	F
4. Discuss strategies to deal with high density altitude on search operations.	P	F
5. Discuss mountainous terrain precautions and strategies.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

P-2012

IDENTIFY CONTROLLED AND SPECIAL USE AIRSPACES ON A SECTIONAL

CONDITIONS

You are a Mission Observer trainee and must identify controlled and special use airspaces on a sectional chart.

OBJECTIVES

Identify controlled and special use airspaces on a sectional chart and discuss operations in or near each.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, being able to identify and discuss operations near controlled airports and special use airspaces is essential.

2. Controlled airports. The most stringent requirements normally are associated with flight in airspace immediately surrounding a major airport due to the high density of operations conducted there. Observers must be alert for required communication when it appears a search will be conducted within 40 miles of a major airport or within 5 miles of any airport having an operating control tower: these are color coded *blue* on sectional charts. Major airports in this context are generally near major metropolitan areas and appear at or near the center of concentric blue-, magenta-, or gray-colored circles. Also, crew resource management and the "sterile cockpit" environment are essential in or near these busy airports in order to "see and avoid" obstacles and other aircraft.

3. Special Use Airspace. Although not a class of airspace, the FAA has designated some airspace as "special use" airspace. The FAA has specifically created special use airspace for use by the military, although the FAA retains control. Active special use airspace can become a navigational obstacle to search aircraft and uncontrolled objects (e.g., missiles) within the airspace can present a serious threat to the safety of CAP aircraft and personnel. Special use airspace normally appears on sectional charts as irregularly shaped areas outlined by *either blue or magenta hatched lines*. It is also identified by either a name, such as Tyndall E MOA, or an alphanumerical identifier like R-4404A. Hours of use and vertical limits of special use airspace areas, as well as the FAA facility controlling each area, are printed in one of the margins of the sectional chart. If the CAP crew has any doubt about entering special use airspace, it should contact the appropriate air traffic control facility first to check the status of the area in question.

Prohibited Areas contain airspace within which the flight of aircraft is prohibited for national security or other reasons. An example is the airspace around the White House.

An “R” prefix to a five-letter identifier indicates a *Restricted Area*. The Army may be conducting artillery firing within this airspace, or military aircraft may be practicing actual air-to-surface bombing, gunnery, or munitions testing. Shells, bombs, and bullets, as well as the dirt and fragments they throw into the air on ground impact, present a severe hazard to any aircraft that might come in their path. The restricted area’s boundaries are always printed in *blue*.

Within the boundaries of a *Military Operations Area* (MOA) the military may be conducting high-speed jet combat training or practicing air-to-ground weapons attack, without objects actually being released from the aircraft. MOA boundaries and their names are always printed in *magenta* on the sectional chart. Civilian aircraft operating under VFR are *not* prohibited from entering an active MOA, and may do so at any time without any coordination whatsoever (although this is considered foolish by many pilots). As stated earlier,

since the FAA retains control of the airspace, it is prudent to contact the controlling air traffic facility before continuing a search into any MOA. Military aircraft, often flying at very low altitudes and at high speeds, are usually not in radar or radio contact with the air traffic controller (nor can they see or hear you). A controller can only provide positive separation to civilian IFR aircraft from the MOA boundary, *not* from the military aircraft itself. This may force significant maneuvering off your intended course.

4. Military Training Routes. Although not classified by the FAA as special use airspace, military training routes (MTRs) are for military low-altitude high-speed training. MTRs are identified by one of two designations, depending upon the flight rules under which the military operates when working within that airspace. *Instrument Routes* (IR) and *Visual Routes* (VR) are identified on sectional aeronautical charts by medium-weight solid gray lines with an alphanumeric designation. 4-digit numbers identify MTRs flown at or below 1500 feet AGL; 3-digit numbers identify those flown above 1500 feet AGL.

Only route centerlines are printed on sectional charts, but each route includes a specified lateral distance to either side of the printed centerline and a specific altitude "block". Route widths vary, but can be determined for any individual route by requesting Department of Defense *Flight Information Publication AP-1B* at the Flight Service Station.

The letters *IR* (e.g., IR-120) indicate that military aircraft operate in that route according to IFR clearances issued by air traffic control. Other non-military VFR aircraft may enter the lateral or vertical boundaries of an active IR route without prior coordination, while aircraft operating IFR are kept out by air traffic control. Just as in the case of a MOA, air traffic control may not have radar and radio contact with the military aircraft using the route. Therefore, it is necessary to provide separation between other IFR aircraft and the route airspace regardless of where the military aircraft may be located along the route. This may force either a route or altitude change. You can request the status of IR routes from the controlling air traffic facility.

The letters *VR* (e.g., VR-1102) indicate that the military operates under VFR when operating within the lateral and vertical limits of that airspace. The see-and-avoid concept applies to *all* civilian and military aircraft operating there, and all crew members must be vigilant in visual lookout when within or near a VR training route. Many military missions go to and from visual training routes' start and exit points on IFR clearances, and the prudent crew can inquire about the status of the route with air traffic control when operating through or near a VR training route.

You can determine *scheduled* military activity for restricted areas, MOAs, and military training routes by checking *Notices to Airmen* (NOTAMS) at the Flight Service Station. However, checking with the air traffic control facilities is preferable, since it will reveal *actual*, "real time" activity versus *scheduled* activity. When flying through any special use airspace or training route, crewmembers should be alert and cautious at all times, because incorrect or incomplete coordination between the military and the FAA is the rule rather than the exception.

Additional Information

More detailed information on this topic and examples are available in Chapter 8 of the MART.

Evaluation Preparation

Setup: Provide the student a sectional chart(s) containing controlled airports and all forms of special use airspaces.

Brief Student: You are an Observer trainee asked to identify (sectional) and discuss operations near controlled airports and special use airspaces.

Evaluation

Performance measures	Results	
1. Identify (sectional) and discuss operations in and near, and identify on a sectional chart:		
a. Controlled airport.	P	F
b. Prohibited airspace.	P	F
c. Restricted airspace.	P	F
d. Military Operating Area.	P	F
e. Military Training Routes.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2002

DEMONSTRATE OPERATION OF THE AIRCRAFT RADIOS

CONDITIONS

You are a Mission Observer trainee and must demonstrate how to operate the aircraft communications radios and the CAP VHF FM radio.

OBJECTIVES

Demonstrate and discuss the use of the aircraft communications radios and the CAP VHF FM radio.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how to set up and use the aircraft radios is essential. This enables the observer to assist the pilot during times of heavy workloads, and to communicate effectively with mission base and ground units.

The aircraft radio is the primary means of communication in aviation. To effectively use the radio, mission pilots and observers must be knowledgeable not only of *how* to communicate, but *when* communication is required during CAP missions. Observers may operate the aircraft communications radios in order to reduce pilot workload, and they use the FM radio to communicate with ground units.

Some aviation frequencies are designed for air-to-air communications and may be used by CAP aircraft (or any other general aviation aircraft). 123.1 MHz is the official SAR frequency. 122.75 and 122.85 MHz are air-to-air communications frequencies (and for use by private airports not open to the general public). 122.90 MHz is the Multicom frequency; it *can* be used for search and rescue, *but* is also used for other activities of a temporary, seasonal or emergency nature (note, however, that it is also used by airports without a tower, FSS or UNICOM). Follow your communications plan, if applicable, and don't abuse these frequencies. Look at the sectional to see if 122.90 MHz is used by nearby airports, and always listen before you transmit.

2. *Aviation communications radios*. To establish radio communications (a KX 155 is shown), first tune the communications radio to the frequency used by the clearance or ground station. Almost all general-aviation aircraft transmitters and receivers operate in the VHF frequency range 118.0 MHz to 136.975 MHz. Civil Air Patrol aircraft normally have 720-channel radios, and the desired frequency is selected by rotating the frequency select knobs until that frequency appears in the light-emitting diode display, liquid crystal display, or other digital frequency readout or window.

The 720-channel radios are normally tuned in increments of 50 kilocycles (e.g., 119.75 or 120.00). They can be tuned in increments of 25 kilocycles (e.g., 119.775) pulling out on the tuning knob, but the last digit of the frequency will not be shown in the display (e.g., 119.775 will be displayed as 119.77). [Sometimes, for brevity, air traffic controllers assign such frequencies as "one-one nine point seven seven," meaning 119.775, not 119.770. The operator cannot physically tune the radio to 119.770, and this may be confusing.]

Before transmitting, first *listen* to the selected frequency. An untimely transmission can "step on" another transmission from either another airplane or ground facility, so that *all* the transmissions are garbled. Many pilots have been violated for not complying with instructions that, it was later determined, had been blocked or "stepped on" by another transmission. Next, mentally prepare your message so that the transmission flows naturally without unnecessary pauses and breaks (remember "Who, Where and What"). You may even find it helpful to jot down what you want to say before beginning the transmission. When you first begin using the radio, you may find abbreviated notes to be a convenient means of collecting thoughts with the proper terminology. As your experience level grows, you may find it no longer necessary to prepare using written notes.

Stuck mike

Occasionally, the transmit button on aircraft radio microphones gets stuck in the transmit position, resulting in a condition commonly referred to as a "stuck mike." This allows comments and conversation to be unintentionally broadcast. Worse yet, it also has the effect of blocking all other transmissions on that frequency, effectively making the frequency useless for communication by anyone within range of the offending radio. You may suspect a stuck mike when, for no apparent reason, you do not receive replies to your transmissions, especially when more than one frequency has been involved. You may notice that the 'T' (transmit symbol) is constantly displayed on your communications radio and, in the case of the PMA7000MS audio panel, the transmit (TX) light in the lower right-hand corner is on continuously. You may notice a different sound quality to the background silence of the intercom versus the noise heard when the microphone is keyed but no one is talking. Often the problem can be corrected by momentarily re-keying the microphone. If receiver operation is restored, a sticking microphone button is quite likely the problem.

3. *Callsigns*. CAP aircraft have been authorized to use FAA callsigns, just like the major airlines and commuter air carriers. This helps differentiate us from civil aircraft, air taxis, and many other commercial aircraft. Our FAA authorized callsign is "Cap Flight XX XX," where the numbers are those assigned to each Wing's aircraft. *The numbers are stated in 'group' form*. For example, the C172 assigned to Amarillo, Texas is numbered 4239, where 42 is the prefix identifying it as a Texas Wing aircraft. The callsign is thus pronounced "Cap Flight Forty-Two Thirty-Nine." It is important to use the group form of pronunciation because FAA air traffic controllers expect it of us. [NOTE: There are a few exceptions to this rule, such as when you perform certain counter drug operations. In these rare cases you may be directed to use the aircraft 'N' number as your callsign.]

The initial transmission to a station starts with the name of the station you're calling (e.g., Amarillo Ground), followed by your aircraft callsign. You almost always identify yourself using your aircraft's CAP flight designation. Once you've identified the facility and yourself, state your position (e.g., "at the ramp") and then make your request.

[NOTE: CAP aircraft should use the word "Rescue" in their callsign when priority handling is *critical*. From the example above, this would be "Cap Flight Forty-Two Thirty-Nine Rescue." DO NOT abuse the use of this code; it should only be used when you are on a critical mission *and* you need priority handling. NEVER use the word "rescue" during training or drills.]

4. *CAP VHF FM radio*. CAP has authorization to use special frequencies in order to communicate with government agencies and to our own ground forces. For this purpose CAP aircraft have a VHF FM radio that is separate from the aviation comm radios. This radio is dedicated to air-to-ground communications, and is normally operated by the observer or scanner. Several of the frequencies programmed into the radio are frequencies assigned to CAP by the U.S. Air Force, and are used to communicate with CAP bases and ground teams. Others are programmed at the direction of the Wing Communications Officer (e.g., mutual aid, fire, police, park service, forest service, and department of public service); these frequencies almost always require

prior permission from the controlling agency before use. [CAP is replacing the older Yaesu and NAT NPX radios with the TDFM-136 (below), which will be discussed here.]

The TDFM-136 is a P25-compliant airborne transceiver capable of operating in the 136 MHz to 174 MHz range (digital or analog) in 2.5 KHz increments. It can have up to 200 operator-accessible memory positions, each capable of storing a receive frequency, a transmit frequency, a separate tone for each receive and transmit frequency, an alphanumeric identifier for each channel, and coded squelch information for each channel. Data can be entered via the 12-button keypad but is normally downloaded from a PC. Operating frequencies, alphanumeric identifiers and other related data are presented on a 96-character, four-line LED matrix display. It is capable of feedback encryption.

National will enter the first four main frequencies (Primary, Secondary, Ground Tactical and Air-to-Ground) and the wing communications officers will enter the rest. Guard 1 will be preset to the Air-to-Ground and Guard 2 to the Primary frequency. Therefore, all you will just have to know is how to *use* the radio.
The radio also has a scan function that can scan any or all of the main channels stored in the preset scan lists; scan lists, if enabled, are set by the wing communications officer.

As shown in the figure, the radio simultaneously displays two frequencies. The upper line is the Main (MN) frequency and the lower is the Guard (GD) frequency. Normally, you will be set up to transmit and receive on the Main and be able to receive the Guard frequency. This feature allows mission base to contact you at any time (via Guard), no matter what frequency you are using (Main).

Controls and normal settings:

a. The knob above the MN/GD switch is the power switch and controls volume for Main. The knob above the G1/G2 switch is the volume control for Guard.
b. The "Squelch" pushbutton is not used (automatic squelch). Don't push it.
c. The MN/GD toggle switch selects the frequency on which you will transmit *and* receive. It is normally set to MN.
d. The G1/G2 toggle switch selects the Guard frequency you are *monitoring* (G1 = Air-to Ground and G2 = Primary). It is normally set to G1.
e. The HI/LO toggle switch selects transmitter power (10 watts or 1 watt). It is normally set to HI.

Keypad operation:

a. Pressing and holding "4" (Scroll Memory Down) will let you scroll down through the programmed memories (it wraps around). Upon reaching the desired entry, release the button. "6" (Scroll Memory Up) lets you scroll up. [Note: scroll speed increases the longer you hold the buttons.]
b. Pressing "5" (Scan) lets you select a scan list to scan, and to start or stop the scan. Once the scan list you want is displayed press # ENTER to start the scan or press * ESC to stop the scan. [Note: this function must be enabled by the wing communications officer for it to work.}

c. Pressing and holding "2" (Display - Brighter) will increase display brightness; "8" (Display - Dimmer) decreases brightness.

When you get in the aircraft and power up the radio it should be set to MN, G1 and HI. Use pushbutton 4 or 6 to select the assigned Main frequency (normally Air-to-Ground), and "004 Air/Grd 149.5375" will be displayed on the upper line. The second line should display the Guard 1 frequency (in this case, the same as Main).

As another example, lets say you are working with the U.S. Forest Service and have their frequency on Main. Mission base, noting that you have not called in your "Operations Normal" report, calls you using the G1 frequency. You will hear mission base over Guard (its set to G1), regardless of what is coming over the Main frequency. You simply take the MN/GD switch to GD and answer "Ops Normal," and then return the switch to MN and carry on with the mission.

5. *Required FM radio reports*. As a minimum, the aircrew must report the following to mission base:
a. Radio check (initial flight of the day)
b. Take off time ("wheels up")
c. Time entering a search area
d. Time exiting a search area
e. Landing time ("wheels down")
f. Operations normal ("Ops Normal"), at intervals briefed by mission staff

Additional Information

More detailed information on this topic is available in Chapter 4 and Attachment 2 of the MART.

Evaluation Preparation

Setup: Provide the student access to aircraft radios.

Brief Student: You are a Mission Observer trainee asked to set up and use the aircraft radios.

NOTE: The performance measures are designed for the KX 155 and the TDFM-136; adjust as necessary for your aircraft.

Evaluation

Performance measures	Results	
1. Set up and use the aircraft communications radio:		
a. Power, volume and squelch controls.	P	F
b. 50 and 25 kilocycles frequency adjustments.	P	F
c. Set in primary and standby frequencies, and switch between them (flip-flop).	P	F
d. Discuss proper use of CAP callsigns, including when to use "rescue".	P	F
e. Discuss stuck mike indications and strategies.	P	F
2. Set up and use the CAP VHF FM radio:		
a. Power, volume and squelch controls.	P	F

b. Select assigned frequencies (main and guard channels). P F

c. Keypad controls (scroll and scan). P F

d. Give required mission FM radio reports (may be simulated). P F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2011
OPERATE THE VOR AND DME

CONDITIONS

You are an Observer trainee and must use the VOR and DME for navigation and position determination.

OBJECTIVES

Demonstrate how to use the VOR and DME for navigation and position determination.

TRAINING AND EVALUATION

Training Outline

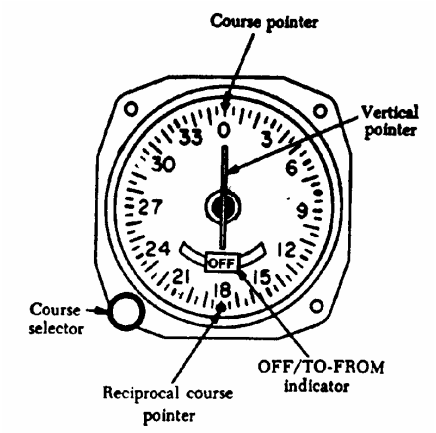
1. As a Mission Observer trainee, knowing how to use navaids and their limitations is essential for situational awareness. The Very High Frequency Omnidirectional Range (VOR) radio navigation system and Distance Measuring Equipment (DME) allows the aircraft to be flown to a desired location, such as a search pattern entry point, with precision and economy. Once in the search or assessment area, these navaids allow the pilot to fly the assigned area fairly accurately. From the mission staff's viewpoint, proper use of these navaids assures them that the assigned area was actually flown -- the only variables left to accommodate are search effectiveness and the inherent limitations of scanning.

One drawback is that setting up and manipulating the VORs and DME may distract the pilot (and observer) from looking outside of the aircraft. The great majority of CAP missions are performed in VFR conditions, and the CAP aircrew must not forget the importance of looking where you're going. The best way to avoid this trap is to become and continue to be very familiar with the operation of the GPS. Training and practice (along with checklists or aids) allows each crewmember to set or adjust instruments with minimum fuss and bother, thus allowing them to return their gaze outside the aircraft where it belongs. All members of the aircrew should be continuously aware of this trap.

Additionally, it is important that observers use this equipment to help the pilot maintain situational awareness. *The observer should always know the aircraft's position on the sectional chart*, and the VOR/DME enables him or her to do so with good accuracy.

2. *ADF*. The Automatic Direction Finder is used to receive radio guidance from stations such as four-course ranges, radio beacons, and commercial broadcast facilities. The automatic direction finder indicates the direction of the station being received shown in relation to the heading of the aircraft: thus, the ADF can be helpful in maintaining situational awareness. The ADF is the least accurate of all the navigational instruments.

3. *VOR*. The Very High Frequency Omnidirectional Range (VOR) radio navigation system transmits 360 directional radio beams or *radials* that, if visible, would resemble the spokes radiating from the hub of a bicycle wheel. Each station is aligned to magnetic north so that the 000 radial points from the station to magnetic north. Every other radial is identified by the magnetic direction to which it points *from* the station, allowing the pilot to navigate directly to or from the station by tracking along the proper radial. The VOR is an accurate and reliable navigational system, and is the current basis for all instrument flight in the U.S. To help light plane pilots plan and chose routings, the FAA has developed the Victor airway system, a “highway” system in the sky that uses specific courses to and from selected VORs. When tracing the route of a missing aircraft, search airplanes may initially fly the same route as the missing plane, so it is very important you know the proper procedures for tracking VOR radials.



The figure above shows a VOR indicator and the components that give the information needed to navigate, including a vertical pointer, OFF/TO-FROM flag or window, and a course-select knob. The vertical pointer, also called a course deviation indicator (CDI), is a vertically mounted needle that swings left or right showing the airplane's location in relation to the course selected beneath the course pointer. The OFF/TO-FROM indicator shows whether the course selected will take the airplane to or from the station. When it shows “OFF”, the receiver is either not turned on or it’s not receiving signals on the selected frequency. The course selector knob is used to select the desired course to fly either toward or away from the station.

Flying to the VOR station is simple. Find the station’s frequency and its Morse code audio identifier using the sectional chart. Next, tune the receiver to the correct frequency and identify the station by listening to its Morse code (if you can’t positively identify the station, you should not use it for navigation). After identifying the station, slowly turn the course selector knob until the TO-FROM indicator shows TO and the CDI needle is centered. If you look at the course that's selected beneath the course pointer at the top of the indicator, you’ll see the course that will take you directly to the station. The pilot turns the aircraft to match the airplane's heading with that course and corrects for any known winds by adding or subtracting a drift correction factor. The pilot keeps the CDI centered by using very small heading corrections and flies the aircraft directly to the station. When the aircraft passes over the station, the TO-FROM indicator will flip from TO to FROM.

To fly away from a station, tune and identify the VOR, then slowly rotate the course select knob until the CDI is centered with a FROM indication in the window. Look at the selected course, again normally at the top of the indicator, to determine the outbound course. The pilot turns the aircraft to that heading, corrects for wind drift, and keeps the CDI needle in the center to fly directly away from the station.

VORs can be used to determine a position in relation to a selected station. Rotate the course select knob slowly until the CDI is centered with a FROM indication, and look beneath the reciprocal course pointer for the radial. You can draw that radial as a line of position from the station's symbol on the sectional chart. Each VOR station on the chart has a surrounding compass ring already oriented towards magnetic north. Therefore, it isn’t necessary to correct for magnetic variation. The use of the printed compass circle surrounding the station on the chart eliminates the need for using the plotter's protractor as well. Use any straight edge to draw the radial by connecting the station symbol with a pencil line through the appropriate radial along the circle. The radial drawn on the chart shows direction, but does not indicate distance from the station. But, you can get an accurate position “fix” by repeating the procedure with another VOR.

[Note: In order to use a VOR for instrument flight, the receiver must be functionally checked every thirty days (or prior to any instrument flight). This check must be performed by an instrument rated pilot and logged in the aircraft's flight logbook.]

4. *DME*. Finding bearing or direction to a station solves only one piece of the navigation puzzle: knowing the distance to the station is the final piece to the puzzle that allows fliers to navigate more precisely. You can use crossing position lines from two radio stations to obtain your distance from the stations, but an easier method is provided by Distance Measuring Equipment. DME continuously measures the distance of the aircraft from a DME ground unit that is usually co-located with the VOR transmitter (then called a VORTAC). The system consists of a ground-based receiver/transmitter combination called a transponder, and an airborne component called an interrogator. The interrogator emits a pulse or signal, which is received by the ground-based transponder. The transponder then transmits a reply signal to the interrogator. The aircraft's DME equipment measures the elapsed time between the transmission of the interrogator's signal and the reception of the transponder's reply and converts that time measurement into a distance. This measurement is the actual, straight-line distance from the ground unit to the aircraft, and is called *slant range*. This distance is continuously displayed, typically in miles and tenths of miles, on a dial or digital indicator on the instrument panel. When DME is used in combination with VOR, you can tell at a glance the direction and distance to a tuned station.

DME measures straight-line distance, or slant range, so *there is always an altitude component within the displayed distance*. If you fly toward a station at an altitude of 6,000 feet over the station elevation, the DME will never read zero. It will continuously decrease until it stops at one mile. That mile represents the aircraft's altitude above the station. The distance readout will then begin to increase on the other side of the station. Under most circumstances the altitude component of slant range can be ignored, but when reporting position using DME, especially to air traffic controllers, it is customary to report distances in "DME", not nautical miles, e.g., "Holly Springs 099° radial at 76 DME." [Some DME equipment can also compute and display the actual ground speed of the aircraft, provided that the aircraft is flying *directly* to or from the ground station. In all other circumstances, the ground speed information is not accurate and should be ignored.]

Additional Information

The GPS is covered in Task O-2012, and may be performed concurrently with this task. More detailed information on this topic and examples are available in Chapter 8 of the MART.

Evaluation Preparation

Setup: Provide the student access to an aircraft or simulator.

Brief Student: You are an Observer trainee asked to determine aircraft position with the VOR and DME.

Evaluation

Performance measures	Results	
1. Use (or discuss) the ADF to determine approximate position.	P	F
2. Determine aircraft position with the VOR, and discuss how to use the VOR to fly to/from a station. Also determine position by cross-radials.	P	F
3. Determine aircraft position with the DME, and discuss the limitations of DME.	P	F
4. Discuss the limitations of each navaid.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2012
OPERATE THE GLOBAL POSITIONING SYSTEM

CONDITIONS

You are an Observer trainee and must use the GPS for navigation and position determination.

OBJECTIVES

Demonstrate how to use the GPS for navigation and position determination.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how to use the GPS and its limitations is essential. The Global Positioning System (GPS) allows the aircraft to be flown to a desired location, such as a search pattern entry point, with precision and economy. Once in the search or assessment area, the GPS allows the pilot to fly the assigned area precisely and thoroughly. From the mission staff's viewpoint, proper use of the GPS assures them that the assigned area was actually flown -- the only variables left to accommodate are search effectiveness and the inherent limitations of scanning.

One drawback is that setting up and manipulating the GPS may distract the pilot (and observer) from looking outside of the aircraft. The great majority of CAP missions are performed in VFR conditions, and the CAP aircrew must not forget the importance of looking where you're going. The best way to avoid this trap is to become and continue to be very familiar with the operation of the GPS. Training and practice (along with checklists or aids) allows each crewmember to set or adjust instruments with minimum fuss and bother, thus allowing them to return their gaze outside the aircraft where it belongs. All members of the aircrew should be continuously aware of this trap.

Additionally, it is important that observers use this equipment to help the pilot maintain situational awareness. *The observer should always know the aircraft's position on the sectional chart,* and the GPS enables him or her to do so with great accuracy.

2. The Global Positioning System relies on a chain of 24 satellite transmitters in polar orbits about the earth. The speed and direction of each satellite, as well as each satellite's altitude is precisely maintained so that each satellite remains in a highly accurate and predictable path over the earth's surface at all times. The GPS receiver in the aircraft processes signals transmitted by these satellites and triangulates the receiver's position, which the user again can read directly in latitude and longitude coordinates from a digital display. The system is substantially more accurate than LORAN, VOR, DME, or ADF and has several advantages.

Because the transmitters are satellite (not ground) based, and the signals are essentially transmitted *downward,* system accuracy is not significantly degraded in mountainous terrain. Additionally, the system is not normally vulnerable to interference from weather or electrical storms. Receivers can typically process as many as twelve received signals simultaneously, and can automatically deselect any satellite whose signal doesn't meet specific reception parameters. The system can function with reasonable accuracy using as few as three received signals.

3. To a new operator, the GPS is complex and can initially increase the user's workload. Pilots and observers *must read the operating manual or instructions* and become thoroughly familiar with GPS operation before flight, so that operating the GPS *will not become a distraction* from more important tasks. Also, many manufacturers have CD simulators (e.g., U.S. Aviation Technologies' Apollo GX55; www.upsat.com) that allow individuals to practice use of the GPS on a computer.

4. CAP is standardizing the fleet with the Apollo GX55 (below). Even if your aircraft has a different GPS, the basic functions are the same.

All GPS units display bearing and distance to waypoints (i.e., airports, VORs, intersections, and user waypoints); position can also be determined by displaying current lat/long coordinates. For emergency use, all GPS units have a feature that allows you quickly and easily display bearing and distance to the nearest airports or VORs (often a list of the ten nearest facilities).

The GPS displays altitude, ground speed, estimated time to the waypoint (ETE), and ground track. GPS databases also contain extensive information about selected waypoints (e.g., an airport) such as runway length and alignment, lighting, approaches, frequencies, and even FBO details such as the availability of 100LL fuel and hours of operation.

The GPS receiver also allows pilots to:

<u>Fly directly to any position</u>
The ability to fly directly to any position (e.g., an airport, navaid, intersection, or user waypoint) saves time and fuel. This reduces transit time, thus allowing more of the crew's allowed duty day to be spent in the search area. Any of these positions can be entered as the destination through a simple procedure. Additionally, all GPS have a "Nearest Airport" and "Nearest VOR" function, where you can easily display a list of the nearest airports or VORs and then select it as your destination. Positions can also be grouped into flight plans.
Once the destination is entered into the GPS, the heading and the ground track can be monitored. *By matching the heading and ground track (or keeping the CDI centered), you are automatically compensating for wind and thus flying the shortest possible route to your destination.*

<u>Fly between any two points</u>
The ability to fly directly between any two points greatly improves search effectiveness. These points, usually defined by latitude and longitude (lat/long), can be flown in either of two ways:

a. The points can be entered into the GPS as user-defined waypoints. The waypoints can then be recalled in the same manner as you would display an airport or navaid, or they can be entered into a flight plan.
b. The pilot can fly between the points by observing the current lat/long display (i.e., a real-time readout of latitude and longitude).

5. Two factors have reduced search effectiveness in the past: drifting off course due to shifts in wind direction, and drifting off course because of the lack of adequate boundaries (e.g., cross-radials or visible landmarks). Now any search pattern can be flown precisely without relying on cross-radials or ground references. The crew and the mission staff know that a route or area has been covered thoroughly. Also, GPS allows the crew to remain within assigned boundaries, which greatly improves safety when more than one aircraft is in the search area at the same time.

NOTE: The Apollo GX55 has a "moving map," which greatly enhances situational awareness. It shows aeronautical and ground features in (scalable) detail, and also displays special use airspace. Another feature, added to the unit for CAP use, is the SAR MAP mode. This feature allows you to select, define and fly directly to a CAP grid, and to superimpose a search pattern on the grid (e.g., parallel, creeping line or expanding square). The SAR features will be covered in another task guide.

Additional Information

The VOR/DME is covered in task O-2011, and may be performed concurrently with this task. More detailed information on this topic and examples are available in Chapter 8 and Attachment 2 of the MART.

Evaluation Preparation

Setup: Provide the student access to an aircraft or a GPS simulator.

Brief Student: You are an Observer trainee asked to determine aircraft position with the GPS.

Evaluation

Performance measures	Results	
1. Using the operator's manual, discuss the operation of the GPS.	P	F
2. Using the operator's manual, display information provided by the GPS:		
a. Altitude.	P	F
b. Ground speed.	P	F
c. Heading to waypoint and current heading.	P	F
d. Track over ground (ground track).	P	F
e. Estimated time to the waypoint (ETE).	P	F
3. Using the operator's manual, determine current position using:		
a. Bearing and distance to waypoints.	P	F
b. Present position (lat/long coordinates).	P	F
c. Moving map display (if applicable).	P	F
4. Using the operator's manual, enter a destination waypoint:		
a. Airport.	P	F
b. VOR.	P	F
c. User-defined (lat/long coordinates).	P	F
5. Using the operator's manual, display "nearest airport" and "nearest VOR."	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2108
PERFORM ELT SEARCHES

CONDITIONS

You are a Mission Observer trainee and must perform ELT searches.

OBJECTIVES

Assist the mission pilot in locating an Emergency Locator Transmitter (practice beacon) using the homing and wing null ELT search methods. Discuss the aural and metered search methods, and reflection and interference.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, knowing how to plan for and locate an Emergency Locator Transmitter (ELT) is essential. There are several methods that can be used, the most common of which are the homing and wing null methods. You should also be familiar the aural and metered search method, and how reflections and signal interference can affect the search.

2. *Homing* is an electronic search method that uses the Direction Finder (DF) to track the ELT signal to its source. Tune the direction finder (DF) to the ELT operating frequency; the pilot will fly the aircraft to the transmitter. ELT's may transmit on either 121.5 MHz VHF, 243.0 MHz UHF, or both frequencies simultaneously. These emergency frequencies are *usually* the ones monitored during a search, but homing procedures can be used on any radio frequency to which *both* a transmitter and DF receiver can be tuned.

a. L-Tronics DF Unit. First you have to determine the direction to the ELT. When you fly directly toward a signal, the left/right DF needle remains centered. However, when you head directly *away* from the signal, the needle also centers. A simple, quick maneuver is used to determine if you are going toward or away from the signal. Starting with the left/right needle centered, the pilot turns the aircraft in either direction so that the needle moves away from center. If he turns left, and the needle deflects to the right, the ELT is in front. If the pilot turns back to the right to center the needle, and then maintains the needle in the center, you will eventually fly to the ELT. If, in the verification turn, the pilot turns left and the needle swings to the extreme left, then the ELT is behind you. Continue the left turn until the needle returns to the center. You are now heading toward the ELT, and as long as the pilot maintains the needle in the center, you will fly to the ELT.

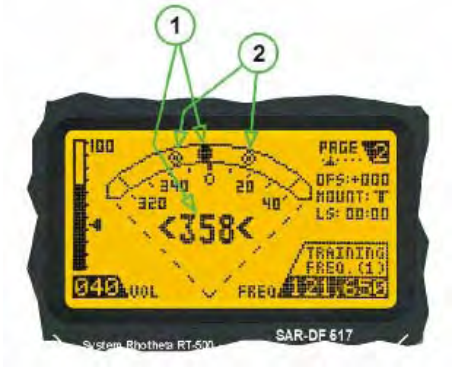
Flying toward the ELT, maintaining the needle in the center of the indicator *is* the actual homing process. If the needle starts to drift left of center, steer slightly left to bring the needle back to the center. If it starts to drift right, turn slightly back to the right. Once you have completed the direction-verification turn, you will not need large steering corrections to keep the needle in the center.

When passing over the ELT or transmission source, the left/right needle will indicate a *strong* crossover pattern. The needle will make a distinct left-to-right or right-to-left movement and then return to the center. This crossover movement is *not* a mere fluctuation; the needle swings fully, from one side of the indicator to the other and then returns to the center.

During homing you may encounter situations where the needle *suddenly* drifts to one side then returns to center. If the heading has been steady, and the needle previously centered, such a fluctuation may have been caused by a signal from a second transmitter. Another aircraft nearby can also cause momentary needle fluctuations that you might not hear, but the needle in the DF will react to it. Signal reflections from objects or high terrain can also cause needle fluctuations at low altitudes in mountainous terrain or near metropolitan areas.

b. Becker SAR-DF 517. Just like when using the L-Tronics DF, you will need to determine the bearing to the target. With the Becker DF, you will essentially follow the directions on pages of the display.

Page 1: 360°bearing



Page 2: expanded ±45°

Page 3: bearing text

1) Relative Bearing value. It is very important to realize that this is a relative bearing that is relative to the nose of the aircraft, NOT the heading to be flown.

2) Spread Maximum deviation of un-averaged bearing. Good bearing results even with a spread of 45°as a result of the averaging procedure. Note: as you approach near the ELT and the signal becomes very strong, the spread will narrow.

3) Receive level Field strength. Page 1 shows approximately 50%, Page 2 shows approx. 75%

4) Squelch level Squelch level must be above the noise level without a received signal.

5) Offset Corrects for antenna alignment (adjusted in the edit-menu).

6) Mounting Page 1 shows a BOTTOM mounted antenna. Page 3 shows TOP mounted.

7) LS: ---:--- Internal timer (LS meaning last signal) indicating the time since the last signal was received, displayed in min /sec

How do I read the above displays?
- Page 1 indicates that the target is 2 degrees to the right, so the observer would tell the pilot to turn 2 degrees right to center the ball at the top of the display.
- Page 2 indicates that the target is 2 degrees to the left, so the observer tells the pilot to turn two degrees to the left to center the ball at the top of the display.
- Page 3 indicates that the target is 6 degrees to the right, so the observer tells the pilot to turn 6 degrees to right (there is no ball displayed on this page).

How do you know when you are over the target?
- The “ball” will swing to the 180 degree position on PAGE 1 just after you pass over the target.

- When you are exactly over the target you may notice a “cone of influence” similar to passing over a VOR during which the signal may be lost momentarily before it swings to 180 degrees.

3. *Wing null*. The wing null (or wing shadow) method is based on the assumption that the metal skin of the search aircraft’s wing and fuselage will block incoming ELT signals from the receiving antenna during steep-banked turns.

Due to the length of the description of this search method and the number of figures, refer to the "Wing Shadow method (wing null)" section of the Mission Aircrew Reference Text (MART) for details.

4. The *aural* (or hearing) search technique is based on an assumption that an ELT's area of apparent equal signal strength is circular.

Please refer to the "Aural (or hearing) search" section of the MART for details.

5. To employ the *metered* search method, the observer uses a signal strength meter to monitor the ELT signal. Once the aircraft enters the search area, the observer plots two positions of equal meter strength.

Please refer to the "Metered search" section of the MART for details.

6. Signal reflection and interference. Radio signals reflect off terrain and manmade objects, and this can be a problem for search and rescue teams. In an electronic search, it is vitally important to know if the equipment is reacting to reflected signals and what you can do to overcome the problem.

Please refer to the "Signal Reflection and Interference" section of the MART.

Additional Information

Using the DF is covered in Task O-2005 (Operate the Aircraft DF), and may be performed concurrently with this task. More detailed information and figures on this topic are available in Chapter 10 and Attachment 2 of the MART and the user’s manual for the Becker SAR-DF 517..

Practice

Setup: The student needs access to an aircraft with an operable DF, a sectional and or a map of the practice area. Place a practice beacon in a suitable location for each type (method) of DF search. [Note: If you normally operate in or near congested airspace, you should conduct some of these practice sorties under ATC control inside the congested airspace.]

The mission pilot should let the observer perform as much of the search duties as is practical. Where possible, have the student direct the pilot (particularly for headings) by interpreting DF signals.

As a minimum, the student should practice the homing and wing null search methods. Demonstration of the aural and metered search methods is desirable, but they may be simulated. [Note: It is highly desirable to have a ground crew available during practice. The observer can then lead the ground crew to the area where the practice beacon is located and let the ground crew find the beacon.]

The student should start out searching for a practice beacon located in an open area where the signal will not be reflected. At first, the practice beacon's location should be clearly marked (e.g., using an adjacent signal panel or wreckage simulations) so the student can see the results of his efforts.

After the student has successfully demonstrated basic proficiency, place the practice beacon in an open area but do not mark its location. Have the student locate the beacon and tell you its approximate location. This

provides a good simulation of a night search. After the student has demonstrated proficiency, practice at least one DF (using the homing and wing null methods) at night.

After the student has mastered the basic ELT search methods, place a practice beacon in locations where the signal is weakened or reflected (e.g., inside a hanger, along a metal fence, or near a power transmission line).

Evaluation Preparation

Setup: Provide the student with an aircraft and pilot, a sectional and/or map of the local area. Place a practice beacon in a suitable location for each type of ELT search.

Brief Student: You are a Mission Observer trainee asked to perform ELT searches.

Evaluation

Performance measures	Results	
1. Locate a practice beacon using the following search methods:		
a. Homing to a non-reflected signal.	P	F
b. Homing to a non-reflected signal at night (combine with 1.d, if possible).	P	F
c. Homing to a reflected signal.	P	F
d. Wing null to a non-reflected signal (one during the day and one at night).	P	F
2. Locate a practice beacon using the following search methods (may be simulated):		
a. Aural.	P	F
b. Signal.	P	F
3. Discuss night and IFR searches, with particular emphasis on the hazards and precautions.	P	F
4. Discuss signal reflection and interference.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2109

ASSIST IN PLANNING AND PERFORMING A ROUTE SEARCH

CONDITIONS

You are a Mission Observer trainee and must assist a Mission Pilot in planning and performing a route search.

OBJECTIVES

Assist a Mission Pilot in planning and performing a route search.

TRAINING AND EVALUATION

Training Outline

1. As a Mission Observer trainee, the ability to assist the Mission Pilot in planning and performing a route search pattern is essential. The observer learns to plan the search pattern in order to better assist the mission pilot and to more effectively direct scanners.

2. General. Because of the accuracy and reliability of the present Global Positioning System and GPS receivers, CAP aircrews are now able to navigate and fly search patterns with unprecedented effectiveness and ease. The GPS has become the primary instrument for CAP air missions, and it is vital that observers know how to setup and use the GPS. However, observers must also be familiar with the other navigational instruments onboard CAP aircraft: these instruments complement the GPS and serve as backups in case of GPS receiver problems.

The observer (as mission commander) must be aware of how many scanners will be on board in order to assign which side of the aircraft they should scan. *Planning and executing a search pattern with only one scanner on board is quite different from one where you have two scanners.* Likewise, having an observer and two scanners on board will allow the observer to spend more time assisting the pilot without seriously decreasing search effectiveness.

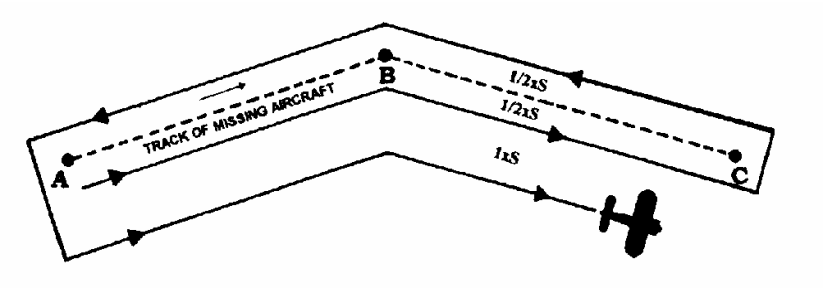
When you are planning and flying search patterns, always perform a *stupid check* -- as in "Hey! Wait a minute. This is stupid." Use this to see if your headings, waypoint positions, lat/long coordinates and distances look sensible. At a minimum, perform this check after you finish planning, when you start your pattern, and periodically thereafter. For example, you've just entered a set of lat/long coordinates into the GPS and turned to the heading shown on the GPS. You know the coordinates represent a lake southwest of your position, so check the heading indicator to see you're actually traveling in a southwesterly direction. Or, you know the lake is approximately 25 miles away; check the distance indicated on the GPS! You'd be surprised how many mistakes this method will catch.

Pre-planning (plotting) your search pattern results in the most effective search. Pre-planning sets the details of the sortie in your mind and makes entering your data (correctly) into the GPS much easier. This allows the pilot and observer to concentrate on their primary task by minimizing navaid setup time and reducing confusion. Worksheets can be used (see the *Flight Guide*, MART Attachment 2) to pre-plan your search patterns, but they are just one method.

3. Route search pattern. The route (track line) search pattern is normally used when an aircraft has disappeared without a trace. This search pattern is based on the assumption that the missing aircraft has crashed or made a forced landing on or near its intended track (route). It is assumed that detection may be aided by survivor signals or by electronic means. The track line pattern is also used for night searches (in suitable

weather). A search aircraft using the track line pattern flies a rapid and reasonably thorough coverage on either side of the missing aircraft's intended track.

4. Search altitude for the track line pattern usually ranges from 1000 feet above ground level (AGL) to 2000 feet AGL for day searches, while night searches range 2000 to 3000 feet AGL (either depending upon light conditions and visibility). Lat/long coordinates for turns are determined and then entered into the GPS as waypoints, which may then be compiled into a flight plan.



The search crew begins by flying parallel to the missing aircraft's intended course line, using the track spacing (labeled “S”) determined by the incident commander or planning section chief. On the first pass, recommended spacing may be one-half that to be flown on successive passes. Flying one-half “S” track spacing in the area where the search objective is most likely to be found can increase search coverage.

5. You may use a worksheet to draw the route and to log coordinates and distinctive features. As a backup, note applicable VOR radials and cross-radials. The GX55 has a function called "parallel track offset" that is very handy for route searches. This function allows you to create a parallel course that is offset to the left or right (up to 20 nm) of your current flight plan. This function can also be useful on when you wish to search a 'corridor' of airspace.

Additional Information

Search patterns are covered in tasks O-2109 thru O-2115 and may be combined in any fashion. More detailed information and figures on this topic are available in Chapter 11 of the MART.

Practice

Setup: Give the student a route search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee.

A search target should be positioned in the search area, if possible.

Brief the pilot. The pilot should fly the route over a sufficient length (out and back) to allow the student time to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000’ to 2,000’ AGL, 100 knots, and one mile track spacing is recommended.

Depending on the level of proficiency of the student, one or more of these tasks may be practiced simultaneously:

Planning. All mission sorties must be thoroughly planned: this ensures the pilot and crew can accomplish the sortie objectives safely and precisely. Treat each sortie as if it were an actual mission. Each time the student practices a sortie all required paperwork should be completed as part of the drill. The student should sign herself into the mission, ensure that the pilot signs in the aircraft, receive her assignment from you (the briefing

officer), plan the sortie, and assist the pilot in completing the flight plan and preliminary mission data portions of the CAPF 104.

The pilot should review the weight and balance, fuel assumptions, and information entered onto the CAPF 104 with the student.

Preflight and pilot briefings. Ensure the student receives pilot safety and mission briefings from the pilot. The student will perform safety assignments as directed (e.g., collision avoidance during taxi and in flight).

Equipment. To the extent possible, the student should operate the communications and navigation equipment. The student should set up and enter information into the equipment (especially the GPS) prior to taxi. [Where necessary for training, the trainer should assist the student in setting up navigation equipment (particularly the GPS) in flight.]

Initial training. Depending on the proficiency and skills of the student, the trainer may need to demonstrate all aspects of a route search. This gives the student time to absorb the information and work on such skills as setting up, entering data, and using the navigational equipment.

For each practice sortie, watch for:

1) Proper setup and use of the navigational equipment, particularly the GPS. Ensure that the student does not change any navigational or communications equipment setting without the knowledge of the PIC.

2) Proper ATC and CAP FM communications technique and terminology. Initially, have the student tell the pilot and/or trainer what she intends to say *before* she transmits.

3) Proper and attentive collision avoidance practices during the critical phases of flight.

4) Safety. The student should spend most of her time looking outside the aircraft (see and avoid) when enroute to the search area, and most of her time acting as a scanner while in the search area. Initially, the student will spend too much time with her eyes inside the aircraft (e.g., manipulating the GPS) until she is comfortable and proficient with the equipment. Get the student into the habit of *not looking inside the aircraft for more than five seconds at a time* to manipulate communications and navigational equipment.

5) Accurate situational awareness at all times.

Evaluation Preparation

Setup: Give the student a route search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee during the planning and flying stages.

A search target should be positioned in the search area, if possible.

Brief the pilot. The pilot should fly the pattern long enough to allow the student time to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000’ to 2,000’ AGL, 100 knots, and one mile track spacing is recommended.

Run the sortie as it would be during an actual mission. Have the student sign in, sign in the aircraft, and complete all required paperwork. Brief the sortie as if you were the Briefing Officer during a mission.

Brief Student: You are a Mission Observer trainee asked to assist a Mission Pilot in planning and performing a route search.

Evaluation

Performance measures	Results	
1. Sign into the mission.	P	F
2. Receive a sortie briefing, asking questions as necessary.	P	F
3. Assist in planning a route search from Point A to B and back. Include:		
a. Position coordinates for the route (lat/long and VOR radials/cross-radials).	P	F
b. Altitude restrictions, obstacles and other hazards (e.g., MTRs and SUAs).	P	F
c. Scanner assignments (discuss as necessary).	P	F
4. Assist in filling out the flight plan and preliminary mission data on the CAPF 104.	P	F
5. Receive pilot safety and mission briefings, asking questions as necessary.	P	F
6. Demonstrate and discuss safety during each critical phase of the flight. In particular, demonstrate collision avoidance and enforce sterile cockpit rules.	P	F
7. Demonstrate proper ATC communications, as applicable.	P	F
8. Setup the CAP FM radio and perform all required radio reports (may be simulated).	P	F
9. Assist in a route search. Demonstrate:		
a. Proper use of navaids (GPS as primary; VOR as backup).	P	F
b. Proper use of radios (ATC as required, and CAP FM radio reports).	P	F
c. Proper scanner assignment (may be simulated).	P	F
d. Ability to spot the search target (if applicable).	P	F
10. Ensure the aircraft is secured at the end of the sortie (ready for next sortie).	P	F
11. Assist in filling out the remainder of the CAPF 104 and debrief the sortie.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2110

ASSIST IN PLANNING AND PERFORMING A PARALLEL TRACK SEARCH

CONDITIONS

You are a Mission Observer trainee and must assist a Mission Pilot in planning and performing a parallel track search.

OBJECTIVES

Assist a Mission Pilot in planning and performing a parallel track search.

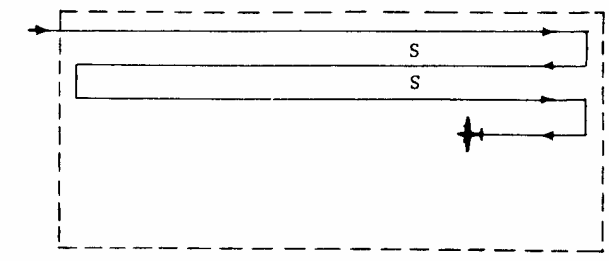
TRAINING AND EVALUATION

Training Outline

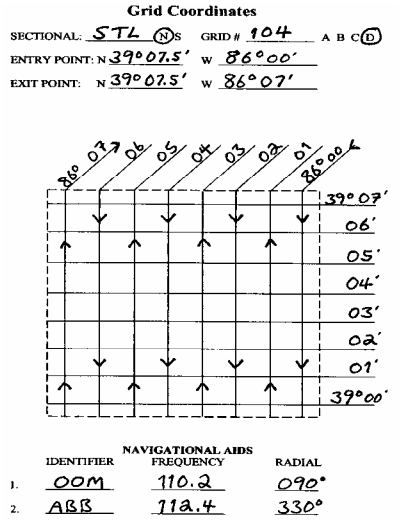
1. As a Mission Observer trainee, the ability to assist the Mission Pilot in planning and performing a parallel track search pattern is essential. The observer learns to plan the search pattern in order to better assist the mission pilot and to more effectively direct scanners.

2. Parallel track search pattern. The parallel track (sweep) search pattern is normally used when one or more of the following conditions exist: a) the search area is large and fairly level, b) only the approximate location of the target is known, or c) uniform coverage is desired. This type of search is used to search a grid.

3. The aircraft proceeds to a corner of the search area and flies at the assigned altitude, sweeping the area maintaining parallel tracks. The first track is at a distance equal to one-half (1/2) track spacing (S) from the side of the area.



4. You may use a worksheet to draw the route and to log coordinates and distinctive features. As a backup, note applicable VOR radials and cross-radials. You can use this to enter the latitudes and longitudes that define the entry point and bound the grid, or to generate a flight plan.



5. In the worksheet example, you will be searching STL Grid #104-D, which is a quarter-grid measuring 7.5' x 7.5'. Plot the grid's coordinates and draw the pattern starting at the entry point (northeast corner); include track spacing (one nm) and the direction of the legs (north/south). You will enter the entry point coordinates as a waypoint (N 39º 07´ W 86º 00´; northeast corner). As you fly to the entry point, the pilot should set up at search altitude and speed about 3-5 miles out (this ensures a stabilized entry so that you can begin searching immediately).

Also, always enter relevant VOR cross-radials onto your worksheet and use them as a backup and to verify important positions.

6. All the data you need set up this search pattern in the GX55 is on the worksheet:
   - Type of Grid and Sectional (US grid, STL).
   - Type of pattern (Parallel Line).
   - Grid 104D2, where '2' indicates entering the northeast corner of D quadrant. *
   - Spacing (1 nm).
   - Direction of Travel (N/S).

   * The GX-55 identifies the corners of quadrants by numbers: 1 = enter the NW corner; 2 = NE corner; 3 = SE corner; and 4 = SW corner. In our example you would enter "104D*2*."

   Note: If you wish, record this data separately (e.g., a list or table) to make it even easier to enter into the GX-55. The example, above, has the data listed in the sequence that you enter into the GX-55.

Additional Information

Search patterns are covered in tasks O-2109 thru O-2115 and may be combined in any fashion. More detailed information and figures on this topic are available in Chapter 11 of the MART.

Practice

Setup: Give the student a parallel (one-quarter grid) search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee.

Brief the pilot. The pilot should fly the pattern long enough to allow the student time to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000’ to 2,000’ AGL, 90 knots, and one mile track spacing is recommended.

Depending on the level of proficiency of the student, one or more of these tasks may be practiced simultaneously:

Planning. All mission sorties must be thoroughly planned: this ensures the pilot and crew can accomplish the sortie objectives safely and precisely. Treat each sortie as if it were an actual mission. Each time the student practices a sortie all required paperwork should be completed as part of the drill. The student should sign herself into the mission, ensure that the pilot signs in the aircraft, receive her assignment from you (the briefing officer), plan the sortie, and assist the pilot in completing the flight plan and preliminary mission data portions of the CAPF 104.

The pilot should review the weight and balance, fuel assumptions, and information entered onto the CAPF 104 with the student.

Preflight and pilot briefings. Ensure the student receives pilot safety and mission briefings from the pilot. The student will perform safety assignments as directed (e.g., collision avoidance during taxi and in flight).

Equipment. To the extent possible, the student should operate the communications and navigation equipment. The student should set up and enter information into the equipment (especially the GPS) prior to taxi. [Where necessary for training, the trainer should assist the student in setting up navigation equipment (particularly the GPS) in flight.]

Initial training. Depending on the proficiency and skills of the student, the trainer may need to demonstrate all aspects of a parallel track (grid) search. This gives the student time to absorb the information and work on such skills as setting up, entering data, and using the navigational equipment.

For each practice sortie, watch for:

1) Proper setup and use of the navigational equipment, particularly the GPS. Ensure that the student does not change any navigational or communications equipment setting without the knowledge of the PIC.

2) Proper ATC and CAP FM communications technique and terminology. Initially, have the student tell the pilot and/or trainer what she intends to say *before* she transmits.

3) Proper and attentive collision avoidance practices during the critical phases of flight.

4) Safety. The student should spend most of her time looking outside the aircraft (see and avoid) when enroute to the search area, and most of her time acting as a scanner while in the search area. Initially, the student will spend too much time with her eyes inside the aircraft (e.g., manipulating the GPS) until she is comfortable and proficient with the equipment. Get the student into the habit of *not looking inside the aircraft for more than five seconds at a time* to manipulate communications and navigational equipment.

5) Accurate situational awareness at all times.

Evaluation Preparation

Setup: Give the student a parallel track (one-quarter-grid) search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. Brief the pilot on the task, if necessary. A qualified Mission Pilot should be available to assist the trainee during the planning and flying stages.

A search target should be positioned in the search area, if possible.

The pilot will enter and fly the grid long enough to allow the student to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000’ AGL, 90 knots, and one mile track spacing is recommended.

Run the sortie as it would be during an actual mission. Have the student sign in, sign in the aircraft, and complete all required paperwork. Brief the sortie as if you were the Briefing Officer during a mission.

Brief Student: You are a Mission Observer trainee asked to assist a Mission Pilot in planning and performing a parallel track (one-quarter grid) search.

Evaluation

Performance measures	Results	
1. Sign into the mission.	P	F
2. Receive a sortie briefing, asking questions as necessary.	P	F
3. Assist in planning a one-quarter grid search. Include:		
a. Estimated time enroute, time in the search area, and fuel requirements.	P	F
b. Position coordinates for the entry and exit points (lat/long & VOR radials/cross-radials).	P	F
c. Position coordinates for the legs (lat/long and VOR radials/cross-radials).	P	F
d. Altitude restrictions, obstacles and other hazards (e.g., MTRs and SUAs).	P	F
e. Discuss observer/scanner assignments for all possible combinations.	P	F
4. Assist in filling out the flight plan and preliminary mission data on the CAPF 104.	P	F
5. Receive pilot safety and mission briefings, asking questions as necessary.	P	F
6. Demonstrate and discuss safety during each critical phase of the flight. In particular, demonstrate collision avoidance and enforce sterile cockpit rules.	P	F
7. Demonstrate proper ATC communications.	P	F
8. Setup the CAP FM radio and perform all required radio reports (may be simulated).	P	F
9. Perform the grid search. Demonstrate:		
a. Proper use of navaids (GPS as primary; VOR as backup).	P	F
b. Proper use of radios (ATC as required, and CAP FM radio reports).	P	F
c. Proper scanner assignment (may be simulated).	P	F
d. Ability to spot the search target (if applicable).	P	F
10. Demonstrate proper attention to fuel management.	P	F
11. Ensure the aircraft is secured at the end of the sortie (ready for next sortie).	P	F
12. Assist in filling out the remainder of the CAPF 104 and debrief the sortie.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2112

ASSIST IN PLANNING AND PERFORMING A POINT-BASED SEARCH

CONDITIONS

You are a Mission Observer trainee and must assist a Mission Pilot in planning and performing a point-based search.

OBJECTIVES

Assist a Mission Pilot in planning and performing a point-based search (expanding square or sector).

TRAINING AND EVALUATION

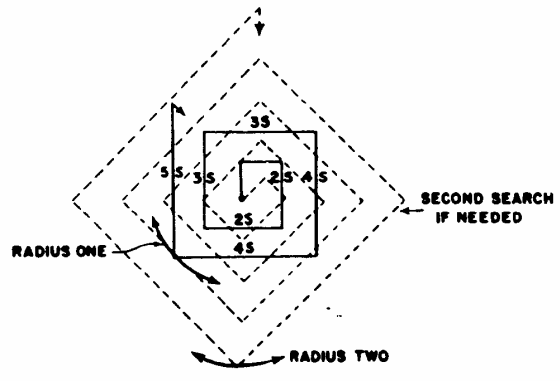
Training Outline

1. As a Mission Observer trainee, the ability to assist the Mission Pilot in planning and performing a point-based search pattern is essential. The observer learns to plan the search pattern in order to better assist the mission pilot and to more effectively direct scanners.

Point-based searches are organized around a point on the ground. These patterns are used when the approximate location of the target is known and are not intended to cover large areas. Examples are the expanding square, sector and circle search patterns.

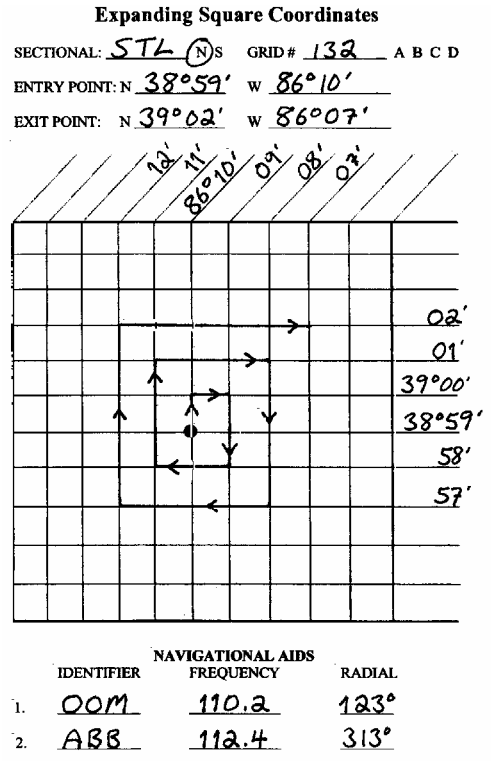
2. Expanding Square search pattern. The expanding square search pattern is used when the search area is small (normally, areas less than 20 miles square), and the position of the survivors is known within close limits. This pattern begins at an initially reported position and expands outward in concentric squares. If error is expected in locating the reported position, or if the target were moving, the square pattern may be modified to an expanding rectangle with the longer legs running in the direction of the target's reported, or probable, movement.

If the results of the first square search of an area are negative, the search unit can use the same pattern to cover the area more thoroughly. The second search of the area should begin at the same point as the first search; however, the first leg of the second search is flown diagonally to the first leg of the first search. Consequently, the entire second search diagonally overlays the first one. The bold, unbroken line in the figure illustrates the first search, while the dashed line represents the second search. Track spacing indicated in the figure is "cumulative," showing the total width of the search pattern at a given point on that leg. Actual distance on a given leg from the preceding leg on the same side of the pattern is still only one "S," the value determined by the incident commander or planning section chief.



3. The GPS is used because this pattern requires precise navigation and is affected by wind drift. Even using the GPS, it is helpful for the pilot to orient the expanding square pattern along the cardinal headings to reduce confusion during turns. [Or, you can enter the pattern as a flight plan and it will direct your turns.]

4. You may use a worksheet to draw the pattern and to log coordinates and distinctive features. As a backup, note applicable VOR radials and cross-radials.



5. Fill the worksheet with the lat/longs that describe the expanding square. Starting at the entry point (e.g., a 483´ AGL tower), draw the square by going one mile north, then one mile east, then two miles south, and so on. You set it up this way because it is best to fly the square by first flying due north and then making all subsequent turns to the right; right turns are used because they allow the observer and scanner(s) to see the ground during the turns. You use cardinal headings because they are easiest for the pilot to fly. Length and width of the pattern may be modified to suit the requirements and conditions of the individual search.

Enter the lat/long of the starting point (N 38º 59´ W 86º 10´) into the GPS and save it as a waypoint. As you fly to the entry point, the pilot should set up at search altitude and speed about 3-5 miles out (this ensures a stabilized entry so that you can begin searching immediately). The pilot should fly the pattern using the heading indicator and continuously displayed latitude and longitude on the GPS.

Note: If the aircraft doesn't have an operable GPS the first leg should be flown directly into or directly with the wind. Every other leg will thus be affected by the wind in a relatively consistent manner.

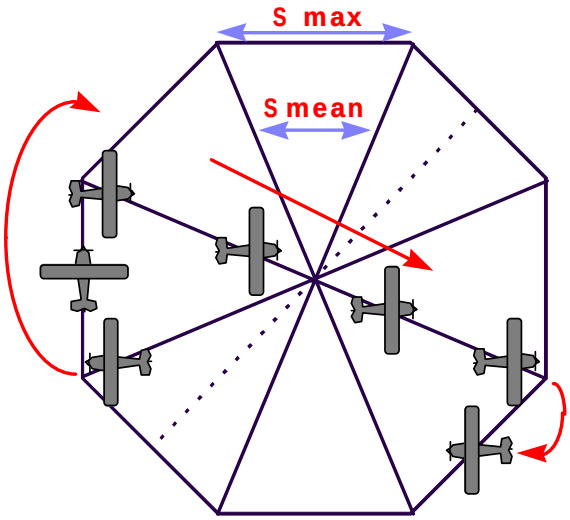
6. In the GX55, the expanding square will radiate from a starting waypoint according to the spacing between lines and at an angle selected by you. All the data you need set up this search pattern in the GX55 is on the worksheet:

- Type of Grid and Sectional (US grid, STL).
- Type of pattern (Expanding Square).
- Starting Waypoint (483´ AGL tower, N 38º 59´ W 86º 10´).

- Spacing (1 nm).
- Direction of Travel (due north, 000º).

  * 9.9 nm is the longest leg length you can select on the GX-55.

7. Sector search pattern. A sector search pattern is also best planned on the ground, as it involves multiple headings and precise leg lengths. The pilot will fly over the suspected location and out far enough to make a turn, fly a leg that is equal to the maximum track spacing, and then turn back to fly over the point again. This continues until the point has been crossed from all the angles.



This search pattern provides concentrated coverage near the center of the search area and provides the opportunity to view the suspected area from many angles (this minimizes terrain and lighting problems).

8. Circle search pattern. A circle search pattern may be used when you have a prominent ground reference. The pilot executes a series of 'turns around a point' (circles of uniform distance from a ground reference point). Once the first circle is flown, the pilot moves outward by the desired track spacing and repeats the maneuver. This pattern is usually only used to cover a very small area, which is dependent upon search visibility (the pilot must be able to see the ground reference). Its benefit is that you only need to be able to locate and see the ground reference point, and no prior planning is needed. However, the pilot must constantly correct for the wind.

Additional Information

Search patterns are covered in tasks O-2109 thru O-2115 and may be combined in any fashion. More detailed information and figures on this topic are available in Chapter 11 of the MART.

Practice

Setup: Give the student an expanding square or sector search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee.

Brief the pilot. The pilot should fly the pattern long enough to allow the student time to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000' to 2,000' AGL, 90 knots, and one mile track spacing is recommended.

Depending on the level of proficiency of the student, one or more of these tasks may be practiced simultaneously:

Planning. All mission sorties must be thoroughly planned: this ensures the pilot and crew can accomplish the sortie objectives safely and precisely. Treat each sortie as if it were an actual mission. Each time the student practices a sortie all required paperwork should be completed as part of the drill. The student should sign herself into the mission, ensure that the pilot signs in the aircraft, receive her assignment from you (the briefing officer), plan the sortie, and assist the pilot in completing the flight plan and preliminary mission data portions of the CAPF 104.

The pilot should review the weight and balance, fuel assumptions, and information entered onto the CAPF 104 with the student.

Preflight and pilot briefings. Ensure the student receives pilot safety and mission briefings from the pilot. The student will perform safety assignments as directed (e.g., collision avoidance during taxi and in flight).

Equipment. To the extent possible, the student should operate the communications and navigation equipment. The student should set up and enter information into the equipment (especially the GPS) prior to taxi. [Where necessary for training, the trainer should assist the student in setting up navigation equipment (particularly the GPS) in flight.]

Initial training. Depending on the proficiency and skills of the student, the trainer may need to demonstrate all aspects of a point-based search. This gives the student time to absorb the information and work on such skills as setting up, entering data, and using the navigational equipment.

For each practice sortie, watch for:

1) Proper setup and use of the navigational equipment, particularly the GPS. Ensure that the student does not change any navigational or communications equipment setting without the knowledge of the PIC.

2) Proper ATC and CAP FM communications technique and terminology. Initially, have the student tell the pilot and/or trainer what she intends to say *before* she transmits.

3) Proper and attentive collision avoidance practices during the critical phases of flight.

4) Safety. The student should spend most of her time looking outside the aircraft (see and avoid) when enroute to the search area, and most of her time acting as a scanner while in the search area. Initially, the student will spend too much time with her eyes inside the aircraft (e.g., manipulating the GPS) until she is comfortable and proficient with the equipment. Get the student into the habit of *not looking inside the aircraft for more than five seconds at a time* to manipulate communications and navigational equipment.

5) Accurate situational awareness at all times.

Evaluation Preparation

Setup: Give the student an expanding square or sector search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee during the planning and flying stages.

A search target should be positioned in the search area, if possible.

The pilot will enter and fly the pattern long enough to allow the student to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000’ AGL, 90 knots, three mile legs, and one mile track spacing is recommended.

Run the sortie as it would be during an actual mission. Have the student sign in, sign in the aircraft, and complete all required paperwork. Brief the sortie as if you were the Briefing Officer during a mission.

Brief Student: You are a Mission Observer trainee asked to assist a Mission Pilot in planning and performing a point-based search.

Evaluation

Performance measures	Results	
1. Sign into the mission.	P	F
2. Receive a sortie briefing, asking questions as necessary.	P	F
3. Assist in planning a point-based search (expanding square or sector). Include:		
a. Estimated time enroute, time in the search area, and fuel requirements.		
b. Position coordinates for the entry and exit points (lat/long & VOR radials/cross-radials).	P	F
c. Position coordinates for the legs (lat/long and VOR radials/cross-radials).	P	F
d. Altitude restrictions, obstacles and other hazards (e.g., MTRs and SUAs).	P	F
e. Discuss observer/scanner assignments for all possible combinations.	P	F
4. Assist in filling out the flight plan and preliminary mission data on the CAPF 104.	P	F
5. Receive pilot safety and mission briefings, asking questions as necessary.	P	F
6. Demonstrate and discuss safety during each critical phase of the flight. In particular, demonstrate collision avoidance and enforce sterile cockpit rules.	P	F
7. Demonstrate proper ATC communications.	P	F
8. Setup the CAP FM radio and perform all required radio reports (may be simulated).	P	F
9. Perform the point-based search (expanding square or sector). Demonstrate:		
a. Proper use of navaids (GPS as primary; VOR as backup).	P	F
b. Proper use of radios (ATC as required, and CAP FM radio reports).	P	F
c. Proper scanner assignment (may be simulated).	P	F
d. Ability to spot the search target (if applicable).	P	F
10. Demonstrate proper attention to fuel management.	P	F
11. Ensure the aircraft is secured at the end of the sortie (ready for next sortie).	P	F
12. Assist in filling out the remainder of the CAPF 104 and debrief the sortie.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.

O-2115

ASSIST IN PLANNING AND PERFORMING A CREEPING LINE SEARCH

CONDITIONS

You are a Mission Observer trainee and must assist a Mission Pilot in planning and performing a creeping line search.

OBJECTIVES

Assist a Mission Pilot in planning and performing a creeping line search.

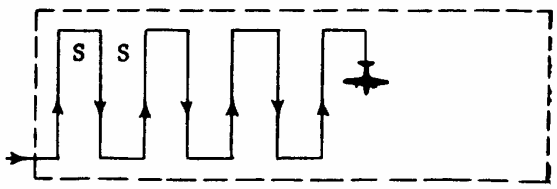
TRAINING AND EVALUATION

Training Outline

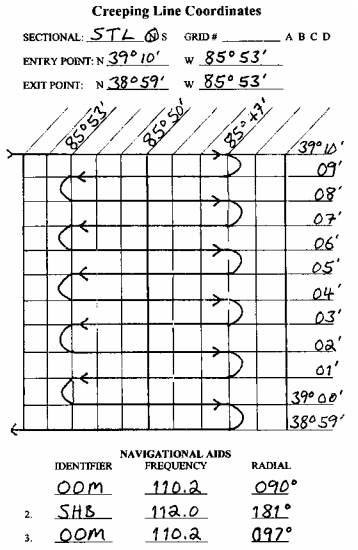
1. As a Mission Observer trainee, the ability to assist the Mission Pilot in planning and performing a creeping line search pattern is essential. The observer learns to plan the search pattern in order to better assist the mission pilot and to more effectively direct scanners.

2. Creeping line search pattern. The creeping line search pattern is similar to the parallel patterns. The parallel pattern search legs are aligned with the major, or longer, axis of the rectangular search areas, whereas the search legs of the creeping line pattern are aligned with the minor or shorter axis of rectangular search areas. The creeping line pattern is used when: a) the search area is narrow, long, and fairly level, b) the probable location of the target is thought to be on either side of the search track within two points, or c) there is a need for immediate coverage of one end of the search area.

3. The creeping line is a succession of search legs along a line. The starting point is located one-half search track spacing inside the corner of the search area.

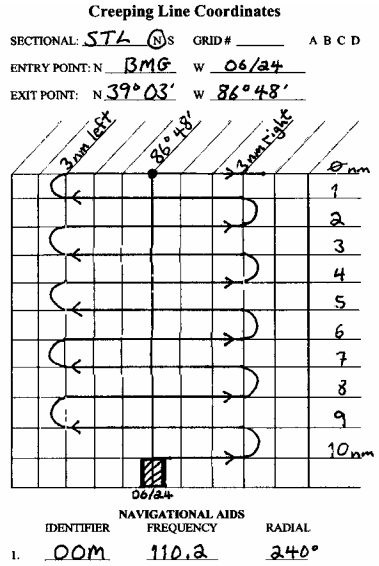


4. You may use a worksheet to draw the pattern and to log coordinates and distinctive features. As a backup, note applicable VOR radials and cross-radials. [Note: You may also create a flight plan for the pattern.]



5. In the worksheet example (above), assume you will be searching along a highway between two towns. Draw the pattern starting at the entry point; include track spacing (one nm) and make each leg extend three nm east and west of the highway. You will enter the entry point coordinates as a waypoint (N 39º 10´ W 85º 53´). As you fly to the entry point, the pilot should set up at search altitude and speed about 3-5 miles out (this ensures a stabilized entry so that you can begin searching immediately). The pilot should fly the pattern using the GPS' continuous lat/long display. In this example, the pilot will initially fly a constant latitude line of N 39º 10´ until you reach W 85º 47´ where she will turn right 180º and stabilize on a constant latitude line of N 39º 09´; repeat this process until the search is completed.

If the route is along a cardinal heading such as the highway example above, then the pilot will simply fly the creeping line using continuously displayed latitude and longitude. However, when the route is not a straight line aligned with a cardinal heading, another method may be used.



Assume that the aircraft will be flying a creeping line for ten miles southwest along an (imaginary) extended runway centerline (06/24 at BMG), and it is desired to fly three miles to either side of the extended runway centerline with one-mile track spacing. Draw the pattern starting at the entry point (Runway 06, BMG); include track spacing (one nm) and make each leg extend three miles either side of the extended centerline. In the right column enter the distance from the waypoint for each leg, starting at ten miles and counting down. Enter the

exit point's lat/long (N 39º 03´ W 86º 48´; ten miles southwest of the end of runway 06) in the GPS as a waypoint.

Enter the airport (BMG) as a destination and the pilot will fly to it. Select the waypoint you created as your new destination.

When the pilot flies over the end of Runway 06, zero (reset) the CDI display on the GPS. This sets up a *route* in the GPS that represents a direct line between the entry (end of runway 06) and exit points. The GPS should show ten miles to the destination, and the CDI will be centered.

The pilot will use the distance to the destination to establish and maintain one-mile track spacing; she will monitor the CDI deviation indication to indicate when you have gone three miles to either side of the line.

The pilot begins his first turn, for example to the right. By maintaining the distance from the destination constant (e.g., ten miles) the aircraft will be flying *almost* perpendicular to the extended runway centerline. Watch the CDI, which will begin showing that the aircraft is deviating from the intended route to the right. When the aircraft has deviated by almost three miles (the length of your right leg) the pilot will begin a turn to the left. The turn will be completed so that the aircraft will now be flying in the opposite direction at a distance of nine miles from the destination (the one-mile track spacing).

Now watch the CDI begin to return to center while maintaining a constant nine-mile distance from the destination. The pilot will continue as the CDI begins to deviate to the left, and the next turn (to the right) will begin as you approach a three-mile deviation. Continue this pattern until you have completed your search.

Note: By using this technique you will actually be flying arcs instead of the usual squared (rectangular) legs. This is of little concern since the purpose is to cover the entire search area in a methodical manner.

This method is very handy when you are assigned a creeping line while airborne. It's easy to plan, set up and perform once you have mastered the technique.

You can also fly this pattern to search along a Victor airway. You can perform a similar pattern using the DME; it will be like flying a series of DME arcs.

This method can also be used along a winding river or a road, but the pilot or observer must plan a line that roughly bisects the winding route and then vary the length of the legs as conditions warrant on the ground below.

6. In the GX55, the creeping line is similar to the parallel line pattern, but the starting point is a selected waypoint rather than a grid. The pattern will straddle the center of your flight plan. All the data you need set up this search pattern in the GX55 is on the worksheet:

- Type of Grid and Sectional (US grid, STL).
- Type of pattern (Creeping Line).
- Starting Waypoint (the airport, BMG).
- Spacing (1 nm).
- Direction of Travel (the runway heading, 060º).
- Leg Length (3 nm *).
- Start Side (Right).

* 9.9 nm is the longest leg length you can select on the GX-55.

Additional Information

Search patterns are covered in tasks O-2109 thru O-2115 and may be combined in any fashion. More detailed information and figures on this topic are available in Chapter 11 of the MART.

Practice

Setup: Give the student an expanding square search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee.

Brief the pilot. The pilot should fly the pattern long enough to allow the student time to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000' to 2,000' AGL, 90 knots, three mile legs, and one mile track spacing is recommended.

Depending on the level of proficiency of the student, one or more of these tasks may be practiced simultaneously:

Planning. All mission sorties must be thoroughly planned: this ensures the pilot and crew can accomplish the sortie objectives safely and precisely. Treat each sortie as if it were an actual mission. Each time the student practices a sortie all required paperwork should be completed as part of the drill. The student should sign herself into the mission, ensure that the pilot signs in the aircraft, receive her assignment from you (the briefing officer), plan the sortie, and assist the pilot in completing the flight plan and preliminary mission data portions of the CAPF 104.

The pilot should review the weight and balance, fuel assumptions, and information entered onto the CAPF 104 with the student.

Preflight and pilot briefings. Ensure the student receives pilot safety and mission briefings from the pilot. The student will perform safety assignments as directed (e.g., collision avoidance during taxi and in flight).

Equipment. To the extent possible, the student should operate the communications and navigation equipment. The student should set up and enter information into the equipment (especially the GPS) prior to taxi. [Where necessary for training, the trainer should assist the student in setting up navigation equipment (particularly the GPS) in flight.]

Initial training. Depending on the proficiency and skills of the student, the trainer may need to demonstrate all aspects of a creeping line search. This gives the student time to absorb the information and work on such skills as setting up, entering data, and using the navigational equipment.

For each practice sortie, watch for:

1) Proper setup and use of the navigational equipment, particularly the GPS. Ensure that the student does not change any navigational or communications equipment setting without the knowledge of the PIC.

2) Proper ATC and CAP FM communications technique and terminology. Initially, have the student tell the pilot and/or trainer what she intends to say *before* she transmits.

3) Proper and attentive collision avoidance practices during the critical phases of flight.

4) Safety. The student should spend most of her time looking outside the aircraft (see and avoid) when enroute to the search area, and most of her time acting as a scanner while in the search area. Initially, the student will spend too much time with her eyes inside the aircraft (e.g., manipulating the GPS) until she is comfortable and

proficient with the equipment. Get the student into the habit of *not looking inside the aircraft for more than five seconds at a time* to manipulate communications and navigational equipment.

5) Accurate situational awareness at all times.

Evaluation Preparation

Setup: Give the student a creeping line search to plan and perform. The student should have a sectional chart, plotter, and worksheets as needed. A qualified Mission Pilot should be available to assist the trainee during the planning and flying stages.

A search target should be positioned in the search area, if possible.

The pilot will enter and fly the pattern long enough to allow the student to demonstrate proficiency in all aspects of the search. Search altitude, airspeed and track spacing should be selected to match terrain and conditions: 1,000' AGL, 90 knots, three mile legs, and one mile track spacing is recommended.

Run the sortie as it would be during an actual mission. Have the student sign in, sign in the aircraft, and complete all required paperwork. Brief the sortie as if you were the Briefing Officer during a mission.

Brief Student: You are a Mission Observer trainee asked to assist a Mission Pilot in planning and performing a creeping line search.

Evaluation

Performance measures	Results	
1. Sign into the mission.	P	F
2. Receive a sortie briefing, asking questions as necessary.	P	F
3. Assist in planning a creeping line search. Include:		
a. Estimated time enroute, time in the search area, and fuel requirements.	P	F
b. Position coordinates for the entry and exit points (lat/long & VOR radials/cross-radials).	P	F
c. Position coordinates for the legs (lat/long and VOR radials/cross-radials).	P	F
d. Altitude restrictions, obstacles and other hazards (e.g., MTRs and SUAs).	P	F
e. Discuss observer/scanner assignments for all possible combinations.	P	F
4. Assist in filling out the flight plan and preliminary mission data on the CAPF 104.	P	F
5. Receive pilot safety and mission briefings, asking questions as necessary.	P	F
6. Demonstrate and discuss safety during each critical phase of the flight. In particular, demonstrate collision avoidance and enforce sterile cockpit rules.	P	F
7. Demonstrate proper ATC communications.	P	F
8. Setup the CAP FM radio and perform all required radio reports (may be simulated).	P	F
9. Perform the creeping line search. Demonstrate:		
a. Proper use of navaids (GPS as primary; VOR as backup).	P	F

b. Proper use of radios (ATC as required, and CAP FM radio reports).	P	F
c. Proper scanner assignment (may be simulated).	P	F
d. Ability to spot the search target (if applicable).	P	F
10. Demonstrate proper attention to fuel management.	P	F
11. Ensure the aircraft is secured at the end of the sortie (ready for next sortie).	P	F
12. Assist in filling out the remainder of the CAPF 104 and debrief the sortie.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.