National Emergency Services Academy, CIVIL AIR PATROL
Mission Aircrew School Flight Syllabus

FLIGHT #1: SCANNER TRAINING FLIGHT

Objective: To practice scanner techniques.
Duration: 1.5 hours or less

SCENARIO

A large storm has passed through the area. The storm followed a long week of soaking rain which may have caused isolated flooding. Several tornadoes were spotted throughout central Indiana in conjunction with isolated high straight line winds. Damage is widespread, and the Governor of Indiana has declared a statewide disaster. Federal declaration is expected within 48 hours. In the meantime, Indiana Department of Emergency Management has asked the CAP to conduct a preliminary assessment of damage, paying special attention to lines of communication for additional disaster response. Of additional concern are impending danger areas such as dams. High-tension power lines should also be inspected to return electrical service to the most customers in the quickest period of time. Some areas have neither telephone nor electrical service. Search for and report any stranded citizens. Storms are known to damage airplanes and set off their ELTs. AFRCC has reported sporadic reports of ELT hits, but nothing is confirmed. No aircraft are reported missing. Listen for and locate ELTs as necessary.

PRE-FLIGHT BRIEFING

1) Complete a thorough pre-flight briefing using the appropriate section of the flight guide. During this flight, the mission pilot candidate will ride in the back seat. The observer track student will ride in the right front seat. The instructor will:
2) Discuss how the scanner watches for other aircraft during departure, cruise, and approach.
3) Have the trainee discuss the scanner's duties during:
   a) Departure
   b) Enroute
   c) Approach and landing
4) Discuss purpose of the flight:
   a) How objects on the ground look from the air at different heights and speeds, including:
      i) Angular displacement and aircraft motion effects on surface coverage (fixation area)
      ii) Difference between scanning range and search visibility ranges
   b) Common obstacles to flight (e.g., towers and guy wires, buildings, power lines).
   c) Scanning techniques:
      i) Use of diagonal and vertical scanning patterns from both sides of the aircraft
      ii) Identification of visual clues
   d) Search effectiveness factors:
      i) Position of the sun (time of day)
      ii) Atmospheric conditions (haze, dust, water vapor, bright sun)
      iii) Clouds and shadows
      iv) Terrain and ground cover
      v) Condition of the scanner (fatigue, illness)
      vi) Aircraft height above ground
      vii) Aircraft speed
5) Cleanliness of windows
6) Use of binoculars
   a) Use of sectional and maps to identify positions and objects on the ground.

b) How to locate people and vehicles on the ground.
c) How various factors affect your ability to locate and identify people on the ground (e.g., victim's position & clothing, terrain).
d) Emergency signals that may be used by victims:
    i) Fire and/or smoke
    ii) Signal mirrors
    iii) Panels on the ground
    iv) Messages on the ground
    v) Light signals (primarily nighttime)
e) How to communicate with victims on the ground (e.g., drops, aircraft movements, and radio)
f) Factors affecting probability of detection (use POD chart on the 104):
    i) Meteorological, search, and scanning visibility
    ii) Type of terrain
    iii) Ground track of the aircraft
    iv) Search track (scanning range and ground track)
    v) Track spacing
    vi) Possibility and probability areas
    vii) Search altitude and speed

7) Initiate a 104.
8) Give the trainee a clipboard, a sectional chart, and a map. Discuss the differences in detail between the sectional and the map. With assistance, the trainee will follow the route and locate major land features on both the sectional chart and the map. *Just as importantly, the trainee will see <u>what is not shown</u> on the sectional chart and map.* Discuss using GPS coordinates to locate points on the chart and map; also discuss use of VOR radials for locating a point on the sectional.
9) Aircraft passenger and safety briefing:
    a) Demonstrate use of safety belts and harnesses
    b) Identify emergency exits
10) Aircraft survival equipment:
    a) Locate the ELT and its antenna, discuss manual activation
    b) Demonstrate use of all radios
    c) Go through contents of the survival kit

PROCEED TO TRAINING TARGETS

See your flight-specific sheet for training targets. On longer sections of the route cruise at 2000 AGL at 100 KIAS. *During the flight, the trainee should spend most of the time looking outside the airplane*. Enroute to the first target, fly at cruise speed 90-100 KIAS. Upon reaching a suitable point in the city, do a circling climb to 2000' AGL and then point out the differences (especially in the size of people and cars). Proceed to first target and establish 1000' AGL at 90-100 kts.

Demonstrate how aircraft speed affects search effectiveness. Demonstrate a steep turn around the target. Also, let the trainee experiment with the binoculars. Monitor the trainee for signs of fatigue and/or airsickness. If the trainee is not experienced to flying, try to keep the sortie duration short. Discuss what to do to prevent or mitigate the effects of airsickness and vertigo. *During the flight, the trainee will spend most of the time looking outside the airplane and then associating major landmarks with what appears on the sectional chart*. Discuss what to look for during a route search. Circle a tower at 2000' AGL and point out the guy wires, markings, and lights. Discuss hazards to flight.

Have have the trainee locate a major landmark on both the sectional and the map. Let the trainee draw a sketch of the landmark and its surroundings with sufficient detail to direct a ground team to the dam. Whenever possible, point out objects on the ground which resemble search visual clues, such as:

- Light colored or shiny objects
- Smoke and fire
- Blackened areas
- Local discoloration of foliage
- Fresh bare earth
- Breaks in cultivated field patterns
- Water and snow
- Tracks and signals
- Birds and animals

RETURN TO COLUMBUS (BAK)

1) On the return flight, point out landmarks and terrain features.
2) Monitor for an ELT (practice beacon) and demonstrate/discuss DF procedures.
3) Discuss the approach and landing phases of flight. The intent is to familiarize the trainee with how an aircraft approaches an airport. Discuss the fact that many aircraft accidents occur within 5-10 miles of the airport, and show the trainee where one would look when near an airport during a search. Demonstrate sterile cockpit procedures.
4) Grease the landing.

DEBRIEFING

1) Answer any questions.
2) Go over notes and the drawing. Critique the map as if you were a ground team leader being sent to the target. Have the trainee complete the 104, including transferring the clipboard drawing onto the CAP Form 104.
3) Ask the trainee some questions on the information contained on their sectional chart. Encourage the trainee to become thoroughly familiar with the sectional.
4) Complete the CAPF-104.
5) Annotate and sign the trainee's specialty qualification training record.
6) Give the trainee a copy of the ground-to-air signals handout to keep. Emphasize that the next flight requires knowledge of the signals.
7) Give the trainee an old sectional chart to keep. Show the trainee how to use a sectional, including the legends. Emphasize that the next flight requires use of the sectional.