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Manual

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## CHAPTER 8. INLAND SAR OPERATIONS

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### 800 GENERAL

A. SAR operational considerations unique to the inland environment are discussed in this chapter. Considerations common to inland and maritime regions are discussed throughout this manual. Inland SAR incidents usually involve missing light aircraft or lost persons.

B. For light aircraft crashes, the best available summary data indicates:

1. Approximately three-fourths of all crashes occur within 5 miles either side of a proposed course.
2. Inclement weather is a factor in over 70 percent of crashes.
3. Mountainous terrain is a factor in approximately 40 percent of crashes.
4. If weather deteriorates, most pilots continue on track and descend to maintain visual conditions.

C. Lost-person SAR is the second most common inland search mission. Several studies indicate that behavior of lost persons may not be consistent from one geographic area to another, and that some persons, particularly small children, may become frightened of searchers and actually try to hide.

### 810 AIRCRAFT SEARCHES

Aircraft searches overland differ from maritime searching in that diverse and often changing terrain usually makes location of search objects more difficult. Repeated searches of an area are almost always necessary to attain an Acceptable Cumulative Probability of Detection. Hazards from obstacles, both natural and man-made, and turbulence in mountainous areas may make flying more dangerous.

#### 811 Grid Searches

To promote uniformity, and to maximize effectiveness of SRUs, the Civil Air Patrol (CAP) has established a complete nationwide system of sequentially numbered square search grids. These grids are 15 minutes of latitude by 15 minutes of longitude. Complete information is found in CAP *Emergency Services Manual* (CAPM 50-15).

#### 812 Inland Probability of Detection Tables

A. The following inland POD tables are used by the CAP and the Air Force. These tables are the best information currently available. They represent the subjective assessment that a crash location is more difficult to see in heavy terrain. They also are based on the assumption that the search object is relatively small, such as a light aircraft crash site.

B. **Single Search POD.** PODs in Table 8-1 should be adjusted for each search object and for conditions encountered in each individual search area.

C. **Cumulative POD.** POD will increase if the same area is searched more than once. Table 8-2 allows for calculation of cumulative POD. The table is entered with cumulative POD to date and the POD of the latest search. The intersection of two PODs is the new cumulative POD.

D. Factors to consider when estimating POD are:

1. Ability to maintain optimum altitude and airspeed.
2. Meteorological visibility and weather conditions.
3. Nature of terrain.

**TABLE 8-1. Inland Probability of Detection: Single Search**

Open, Flat Terrain					Moderate Tree Cover (or Hilly)					Heavy Tree Cover (or Very Hilly)				
Search Alt.	Search Visibility				Search Alt.	Search Visibility				Search Alt.	Search Visibility			
Track Spacing	1 mi	2 mi	3 mi	4 mi	Track Spacing	1 mi	2 mi	3 mi	4 mi	Track Spacing	1 mi	2 mi	3 mi	4 mi
500 ft					500 ft					500 ft				
.5 mi	35%	60%	75%	75%	.5 mi	20%	35%	50%	50%	.5 mi	10%	20%	30%	30%
1.0 mi	20	35	50	50	1.0 mi	10	20	30	30	1.0 mi	5	10	15	15
1.5 mi	15	25	35	40	1.5 mi	5	15	20	20	1.5 mi	5	5	10	10
2.0 mi	10	20	30	30	2.0 mi	5	10	15	15	2.0 mi	5	5	10	10
700 ft					700 ft					700 ft				
.5 mi	40%	60%	75%	80%	.5 mi	20%	35%	50%	55%	.5 mi	10%	20%	30%	35%
1.0 mi	20	35	50	55	1.0 mi	10	20	30	35	1.0 mi	5	10	15	20
1.5 mi	15	25	40	40	1.5 mi	10	15	20	25	1.5 mi	5	5	10	10
2.0 mi	10	20	30	35	2.0 mi	5	10	15	20	2.0 mi	5	5	10	10
1,000 ft					1,000 ft					1,000 ft				
.5 mi	40%	65%	80%	85%	.5 mi	25%	40%	55%	60%	.5 mi	15%	20%	30%	35%
1.0 mi	25	40	55	60	1.0 mi	15	20	30	35	1.0 mi	5	10	15	20
1.5 mi	15	30	40	45	1.5 mi	10	15	20	25	1.5 mi	5	10	10	15
2.0 mi	15	20	30	35	2.0 mi	5	10	15	20	2.0 mi	5	5	10	10

1 pass, reef area

POD, first pass

**TABLE 8-2. Inland Probability of Detection: Cumulative**

Previous or Cumulative POD	Cumulative POD Chart									
5-10%	15									
11-20%	20	25								
21-30%	30	35	45	POD, after second pass						
31-40%	40	45	50	3rd	60					
41-50%	50	55	60	4th	65	70				
51-60%	60	65	65	5th	70	75	80			
61-70%	70	70	75	6th	80	80	85	90		
71-80%	80	80	80	7th	85	85	90	90	95	
over 80%	85	85	90	8th	90	90	95	95	95	95 +
	5-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	80% +	
	POD This Search									
	probability each pass									
	probability each pass									