AN EXAMPLE SEARCH MISSION

A STEP BY STEP LOOK AT A SEARCH MISSION

LESSON PLAN OUTLINE

MANAGING THE SEARCH FUNCTION

TOPIC: "Example Mission"

SUGGESTED TIME: 60 minutes

OBJECTIVES, A STUDENT WILL BE ABLE TO:

Discuss this particular example mission, and identify the various search phases, and functions that had problems, deficiencies, or omissions that kept it from being successful.

TRAINING AIDS NEEDED:

Example Mission 35mm Slide Series

REFERENCES:

Text, "Search is an Emergency," Chapter 3, Example Mission.

1.0 Discuss the objective for this topic.

✳ 1.1 <u>Emphasize</u>: This example mission was chosen because of its extreme complexities, and the fact that everything that could go wrong, did. The purpose is to help provide an overview of the course, by pointing out "What went wrong." We want to avoid the tradition attitudes and mistakes of the past.

2.0 Show the first six (6) or seven (7) slides describing the general area in which this mission occurred.

3.0 Have the students read the example mission narrative from the student text through page - Example Mission 9.

3.1 As they read, have them make notes about problems, deficiencies, questions they see regarding this mission.

3.2 This should take 15 minutes.

4.0 Discuss the notes made by some of the students.

✳ 4.1 Encourage an atmosphere of open discussion and comment from the class.

5.0 Show the remainder of the slides quickly, using the information provided in the script provided in this section.

6.0 Summarize the mission, using the critique section found on page - Example Mission 11 - of the student text.

7.0 Referring to page - Example Mission 10, discuss the total cost of the mission.

8.0 During the conduct of the course, refer back to some of the deficiencies in this mission for reinforcement.

* 8.1 <u>Emphasize</u>: That you hope similiar problems can be avoided by the learning that is taking place in this course.

Slide
No.

1. Shows the Appalachian Crest from the Cades Cove area. The highest point in the center of the picture is Thunderhead Mountain.

2. A view looking west down the Appalachian Crest from just west of Thunderhead Mountain. The open areas in the center and right center of the picture is Spence Field.

3. Spence Field again in the left center portion of the picture. Angling off the drainages to the right would be the direction to Cades Cove.

4. Cades Cove looking west. The area in the vicinity of the building in the center of the picture is the area typically used for base camp and helicopter operations during SAR missions. Spence Field would be directly to the left of the picture.

5. A closer view of Spence Field. The field itself is between ¼ and ½ mile long, stretched along the ridge top. The shelter where the Martin's were camped would have been located just to the left of the open patch in the lower left corner of the picture, slightly down the drainage from the ridge top.

6. A close-up view of Spence Field itself, looking back toward the east. Typical vegetation includes small trees and shrubs, and brush, interspersed among the open areas.

7. An overall view of Great Smoky Mountains National Park. The red line surrounding the park is the boundary. The dark line running east and west through the center of the park is the Appalachian Trail. The red arrow indicates the location of Spence Field. The yellow arrow indicates the location of Cades Cove, and the white arrow the location of Park Headquarters.

8. A closer view of the western half of the park, again showing the locations of Spence Field, Cades Cove, and Park Headquarters.

9. Shows approximately the action taken on the evening and early morning of Saturday, June 14-15. Hasty search was conducted of the Spence Field area itself (shown in yellow). The Bote Mountain Road (heavy dark line running north of Spence Field) was covered, as was Ledbetter Ridge Trail (dark line running north on the left-hand side of the picture), which goes into Cades Cove from Russell Field. In addition, the Appalachian Trail between Spence Field and Russell Field was covered.

10. Another view of the coverage of Saturday, June 14.

11. On Sunday, June 15, operations were expanded to include the coverage of several additional trails leading both north and south from the Spence Field/Russell Field area. In addition, the Appalachian Trail east of Spence Field was covered, and the major drainages running north of the Spence Field area (shown in red) were searched.

12. On Monday, June 16, drainage and trail searches were expanded, and a heliport and base camp operation was established in the Cades Cove area.

13. The base camp area in Cades Cove, as the search expanded to its maximum proportion, logistics and parking became a serious problem.

14. In addition, it became a difficult situation to keep track of all of the individuals coming and going from the base camp and search areas.

15. Command and coordination center was established in Cades Cove.

16. As weather permitted, helicopters were used extensively to shuttle people from the Cades Cove area to Spence Field.

17. Several different types of helicopters from several different organizations were involved.

18. Military CH-47 Chinooks were used extensively for transporting searchers.

19. Helicopter refueling became a serious problem in Cades Cove, especially during the periods of bad weather.

20. Extensive media coverage began to lead to serious problems of coordination.

21. The numbers of people who eventually showed up for the search effort created serious congestion problems.

22. Traffic control was necessary. (Note the need to put someone with a good image in the traffic control positions).

23. It was necessary to install signs that were explicit and that could not be misinterpreted in various places to direct searchers to the base camp area.

24. Inevitably, many of the searchers, as well as the equipment, that arrived at the scene were not useful, considering the conditions of terrain, vegetation and weather.

25. Briefing and debriefing became a serious problem.

26. Same as previous slide.

27. Generally indicates the total area covered. That area shaded was supposedly searched "intensively."

28. A different view of the area intensively covered (shaded in yellow).

29. In addition to the area intensively covered, trails and drainages (shown by the darker lines) throughout the entire western one-third of the park were intensively searched. Also, the entire north shore of the Fontana Reservoir (bordering along the southern portion of the park) was intensively searched by boat.

30. A different view of the area of the park intensively covered.

31-34. A reason, in our opinion, that Dennis Martin was never found, could be attributed to the overuse of certain resources (such as grid searchers) and the under utilization of other effective resources. For example, a very effective resource, readily available in this part of the country, that was not utilized at all was the local units of the American Search Pig Association. These animals have become highly trained and are very effective in searching for lost people because of their highly developed sense of smell. They may not be quite as mobile as German Shepherd dogs, and occasionally must be assisted over downed timber, etc. As a side benefit, they have been shown to be effective in the additional duty of "rooting" a fireline during fire suppression activities. The only difficulty encountered has been that occasionally one of the animals gets confused when locating the lost victim, and immediately begins putting in a fireline around him or her.

THE PHILOSOPHY AND CONCEPT OF EFFECTIVE SEARCH MANAGEMENT

THE THEORY AND PRINCIPLES OF

LAND SEARCH

Successful Search is Rooted in Strong Fundamentals

SUCCESS	
TACTICS & TECHNIQUES	
STRATEGY	ORGANIZATION
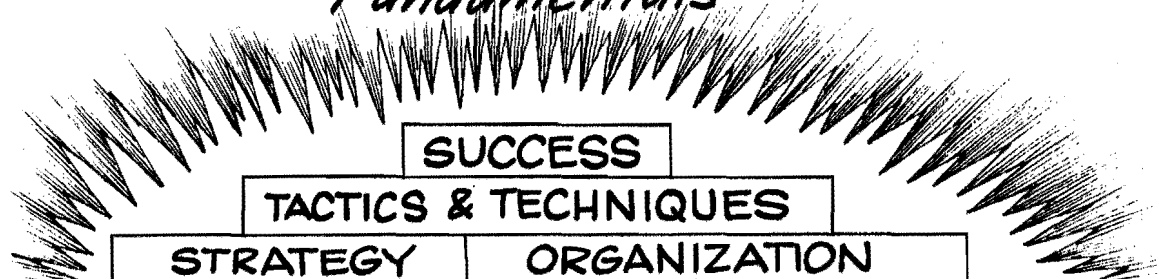
THEORY of SEARCH

LESSON PLAN OUTLINE

MANAGING THE SEARCH FUNCTION

TOPIC: "The Philosophy and Concept of Effective Search Management."

SUGGESTED TIME: 60 minutes

OBJECTIVES, A STUDENT WILL BE ABLE TO:

Discuss the fundamental principles of effective
search management.

Understand the six (6) 'Crucials' of search theory.

Know the ten (10) search management course objectives.

TRAINING AIDS NEEDED:

Overheads – numbers: Overview 1 through 55. (also available
as 35mm slides)

REFERENCES:

Text, "Search is an Emergency," Chapter 2, The Philosophy and
Concept of Effective Search Management.

OVERVIEW ONLY

11

1.0 An overview of Search Management: Theory & Philosophy.

* 1.1 Emphasize: "Search and/or Rescue" (SAR) means the searching for or rescue of any person(s) who becomes lost, injured, or killed while in the out-of-doors, or as a result of a natural or man-caused disaster.
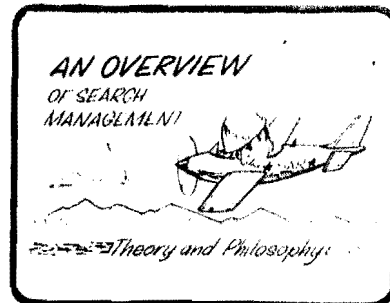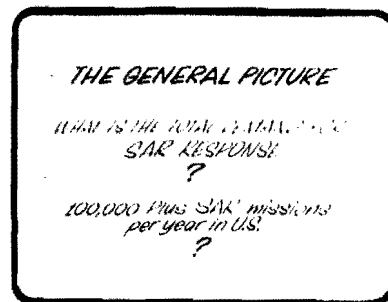
2.0 What is the total demand for SAR response? How many SAR missions are there per year?

2.1 We really do not know. There is a lack of data and a national reporting system. However, the National Association for Search and Rescue (NASAR) is attempting to implement a SAR data reporting system. (Refer to chapter on SAR Statistics).

3.0 SAR can happen in any hostile environment. Urban areas can become a wilderness during storms and disasters. Wilderness SAR techniques have application to any emergency.
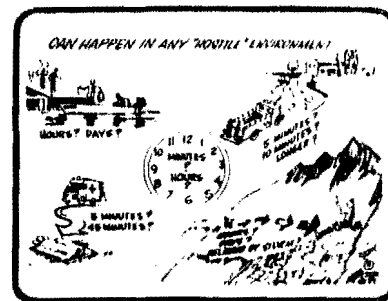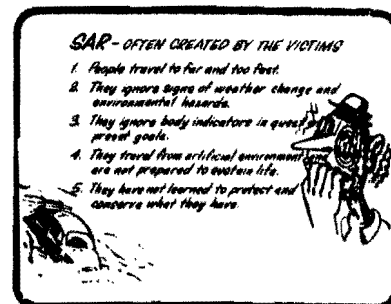
* NOTE: Emphasize that the next five (5) slides are an effort to understand why people have problems in backcountry areas, and why there is a need for SAR services.
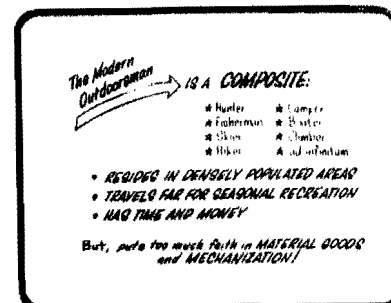
4.0 SAR is often created by the subjects themselves.

4.1 Why? Explain points on Overhead.

5.0 The modern outdoorsman is a composite recreationalist.

5.1 Explain the points on the Overhead.

* 5.2 <u>Emphasize</u>: The average person usually does not do any of these activities well, and seldom takes the time to learn recreational skills.

* <u>NOTE</u>: Explain that as SAR managers we should attempt to know the kinds of people we will be searching for and why they create SAR problems.

6.0 An average subject profile, or "why we will always have SAR!"

6.1 Review points on these two (2) overheads with the class.

* 6.2 <u>Emphasize</u>: This list represents the most common factors causing SAR incidents.

These factors are usually a lack of knowledge, education, and common sense.

This is an attempt to understand subject behavior.

Usually a combination of these factors have caused the incident.

Most situations could have been prevented by common sense.

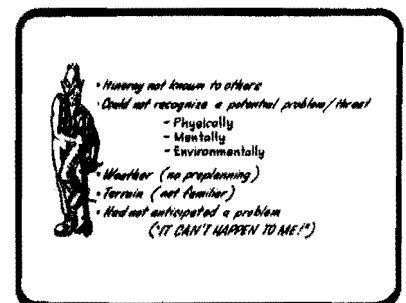7.0 Most wilderness emergencies last between 24-72 hours. TFFS

7.1 This is the average period of time that most people will have to be on their own and self sufficient until help arrives.

7.2 The actions that the subject takes (or does not take) during the first six (6) hours will directly influence his survival time frame.
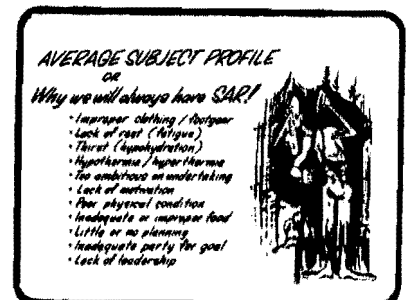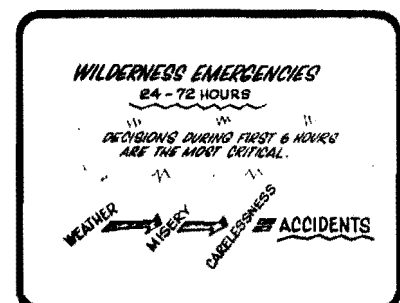
* 7.3 <u>NOTE:</u> Refer to formula. Weather (and the inability to cope with it) causes most situations.

8.0 Search vs. Rescue.

    8.1 Define terms.

* 8.2 <u>Emphasize:</u> This is not a Rescue Course.

    The course will focus on the procedures, techniques, and management of finding lost people.

9.0 <u>Why</u> do we search?

    9.1 The reasons listed on the overhead are all relevant, <u>but</u> the legal aspect is becoming more of a concern.

    9.2 Lead a short discussion on the <u>legal aspect</u>, based on local or regional incidents of lawsuits, or potential lawsuits against the agency in charge of SAR operations.
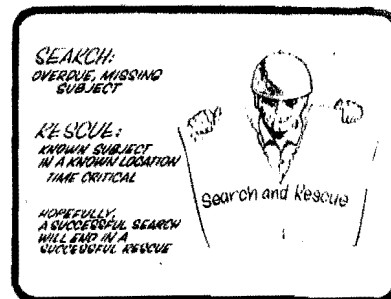
    9.3 To avoid "legal situations" it is important to manage SAR operations effectively and efficiently.
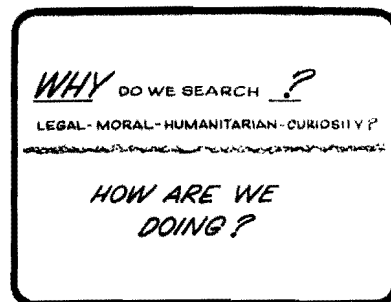
        - This course will help.

10.0 For some SAR operations, the state-of-the-art has progressed to a high level.

* 10.1 <u>Emphasize:</u> That rescue techniques, procedures, equipment are fairly well defined and developed.

14
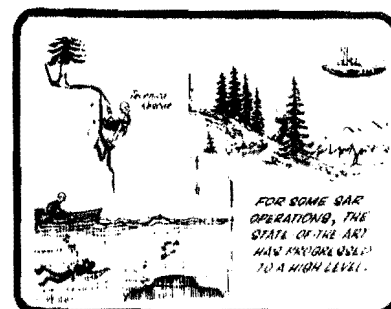
11.0 The state-of-the-art for <u>Land Search</u> is currently behind rescue in development, but there are a lot of new things happening.

11.1 This course, for instance!

12.0 Other titles for this course could be:

12.1 Let's now take a look at the components and concepts of search management.

13.0 Remember, it is the function and not the title.

* 13.1 <u>Emphasize:</u> The most important component of search management is the effective search manager. And it really does not make any difference what he is called as long as he does the job.

14.0 Why is a search manager needed?

14.1 Refer to Overhead. Discuss the points listed.

15.0 The Search Management Workshop: purpose, goals, need.

15.1 Why we are here!

16.0 An effective search manager should be able to:
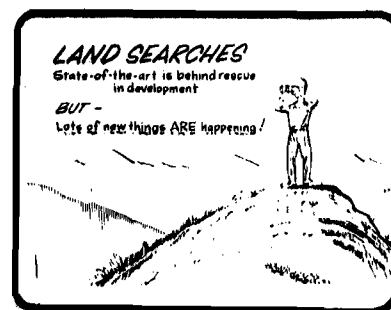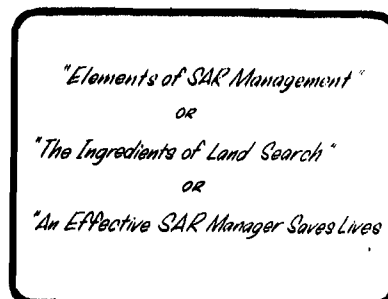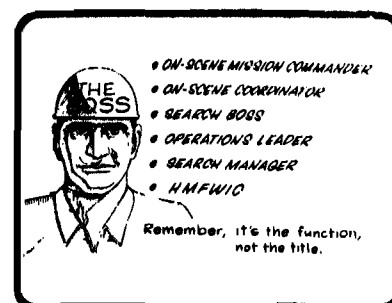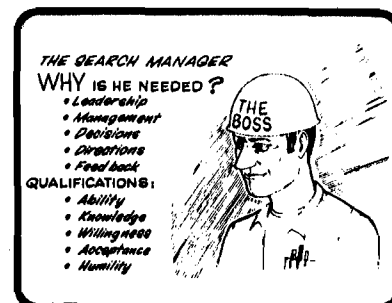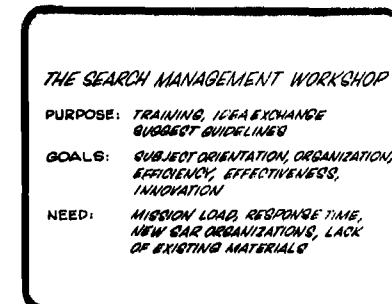
16.1 <u>Discuss</u> points on overhead.

* 16.2 <u>Emphasize</u>: A graduate of this course should be able to perform these functions.

17.0 We hope that your attitude toward SAR Operations is better than this!

18.0 Let's take a look at the components of a search mission.

18.1 Also, an overview of topics to be presented during this course.

19.0 <u>The Preplan</u>.

19.1 Among other ingredients a preplan contains: authorities, RCC's, agreements, communications, training, standards, resources, organization, S.O.P.'s.

* 19.2 <u>Emphasize</u>: Your preplan is your road-map for a successful search effort.

20.0 <u>SAR Resources</u>.

20.1 You must know how to use each resource for maximum utilization, and to be successful (effective).

21.0 <u>The First Notice</u>.

21.1 Components: Planning data - Searching
data - Investigation - In-
terrogation - Clue orienta-
tion - Subject behavior -
Priority - Urgency.

THE FIRST NOTICE
• PLANNING DATA
• SEARCHING DATA
• INVESTIGATION
• INTERROGATION
• CLUE ORIENTATION
• SUBJECT BEHAVIOR
• PRIORITY
• URGENCY

* 21.2 Emphasize: These are all topics to be
presented. You must have
this knowledge before the
phone rings if you are to
develop a successful search
plan.

22.0 Developing a plan.

DEVELOPING A PLAN
1. Where is the subject?
   Case histories, statistics, models,
   deductive reasoning, intuition
2. How can I find the subject?
   PASSIVE - Confinement, perimeter cutting
            attraction, road blocks
   ACTIVE - Trackers, dogs, aircraft, hasty
            teams, grid teams
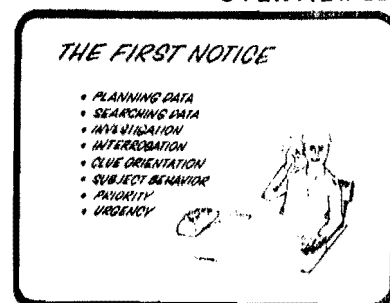
22.1 Where is the subject? (Strategy)

22.2 How can I find the subject? (Tactics)

22.3 NOTE: This is the definition of
strategy and tactics.

* 22.4 Emphasize: These decisions must be
made by the Search Manager
before resources can be com-
mitted to the field.

23.0 Applying Resources.
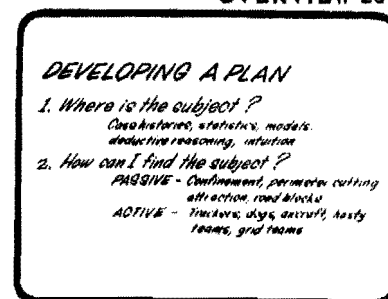
APPLYING RESOURCES
ASK YOURSELF:
• IT IS BETTER TO USE THE
  RESOURCES I HAVE AVAILABLE
  NOW TO KEEP THE AREA FROM
  GETTING BIGGER?
• OR, USE THEM TO TRY TO FIND
  THE SUBJECT?
CLUE FINDERS ~ CLUE SUBJECT FINDERS ~ SUBJECT FINDERS

23.1 Read overhead to class. Stress that
they will be able to answer this ques-
tion better, after they have completed
this course.

24.0 The Initial Attack.

THE INITIAL ATTACK
— HASTY SEARCH
• VISUAL TRACKERS
• DOGS
• AIRCRAFT
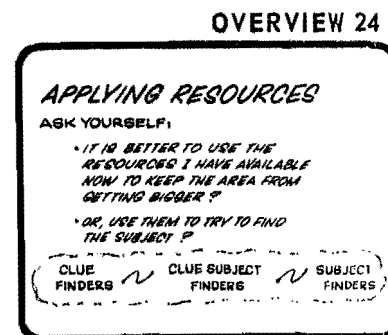
24.1 Which resources should be deployed first?
Second?, Etc.

25.0 <u>POS = POA X POD.</u>

$$P_S = P_A \times P_D$$

25.1 Probability of Success = Probability of
Area X Probability of Detection.

* 25.2 <u>Emphasize:</u> This formula will become
your best SAR Management
Tool, and you will obtain
working knowledge of these
concepts.

THE THEORY AND PRINCIPLES OF
LAND SEARCH
Successful Search is Rooted in Strong
Fundamentals
SUCCESS
TACTICS & TECHNIQUES
STRATEGY | ORGANIZATION
THEORY of SEARCH

26.0 <u>The Theory and Principles of Land Search.</u>

26.1 The course content will concentrate
on these concepts.

SEARCH THEORY IMPLEMENTATION IS THE
REDUNDANCY THAT ACCOUNTS SURVIVE WHEN
SHORT CUTS FAIL !

The crucials:
1. Search is an Emergency
2. Search is a Classic Mystery
3. Search for clues, not the subject
4. Concentrate on aspects that are
5. Know if the subject leaves the Search Area
6. Grid Search as a last resort

27.0 <u>The Crucials of Search Theory.</u>

1. SEARCH is an EMERGENCY

BECAUSE

• THE SUBJECT MAY NEED EMERGENCY CARE
• THE SUBJECT NEEDS PROTECTION FROM SELF
  AND ENVIRONMENT
• TIME AND WEATHER DESTROY CLUES
• AN URGENT RESPONSE LESSENS
  SEARCH DIFFICULTY

27.1 <u>Read</u> the points on the overhead with
the class. <u>Mention</u> that each point
will now be <u>further</u> discussed in
detail.

28.0 <u>Search is an Emergency.</u>

28.1 Read the points on the overhead.

29.0 <u>Search is an Emergency.</u>

1. SEARCH is an EMERGENCY

OFTEN, IT'S HARD TO <u>JUSTIFY</u> <u>URGENCY</u>
BECAUSE ___ % OF LOST PEOPLE,
LEFT ON THEIR OWN,
WOULD SURVIVE.

"Let's wait another hour..."

29.1 Read the overhead.

30.0 <u>Search is an Emergency.</u>

1. SEARCH is an EMERGENCY
A QUICK RESPONSE MEANS:
Putting searchers into the field to minimize
search area size

1 HOUR | 2 HOURS
Search Area
Four Times Larger.

30.1 This overhead demonstrates that the
potential size of the search area
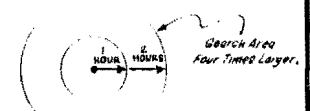
grows larger with each passing hour.
(assuming a mobile subject)

31.0 <u>Search is an Emergency</u>.

31.1 Obviously, the search difficulty is
minimized with a smaller search area.

1. SEARCH is an EMERGENCY

CHANCES OF SUCCESS ARE DIRECTLY
RELATED TO SEARCH AREA SIZE.

EASY   HARD

SO... HOW IS SEARCH AREA DETERMINED ?
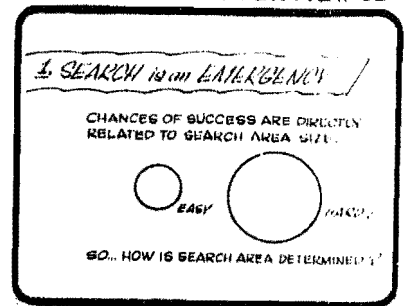
32.0 <u>Search is an Emergency</u>.

OVERVIEW 33

32.1 <u>Refer</u> to the formula on this overhead.
This is the method used to define the
"theoretical search area."

1. SEARCH is an EMERGENCY

SEARCH AREA IS THE POTENTIAL
MAXIMUM DISTANCE TRAVELLED BY
THE SUBJECT.

Point Last   Mobile   Time   =   Search Area
Seen   Subject
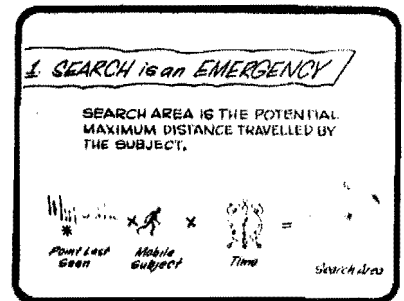
33.0 <u>Search is an Emergency</u>.

OVERVIEW 34

* 33.1 <u>Stress</u>, that this is a tactic that is
seldom considered or used, yet, many
initial tactic resources can be suc-
cessfully used at night.

1. SEARCH is an EMERGENCY

NIGHTTIME GIVES SEARCHERS A
UNIQUE OPPORTUNITY TO CONFINE
THE SUBJECT WHILE HE IS (USUALLY)
IMMOBILE.

OVERVIEW 35

34.0 <u>Search is an Emergency</u>.

1. SEARCH is an EMERGENCY

TO RESPECT THE SEARCH SUBJECT'S
EMERGENCY, YOU MUST:
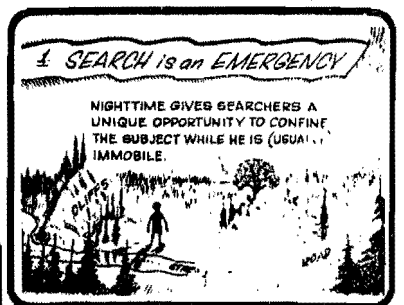
1. RESPOND URGENTLY
2. SEARCH AT NIGHT
3. MOBILIZE AND KEEP SEARCHERS
   IN THE FIELD
4. CREATE AN ATMOSPHERE OF
   POSITIVE URGENCY

34.1 <u>Conclusion</u>, read overhead.
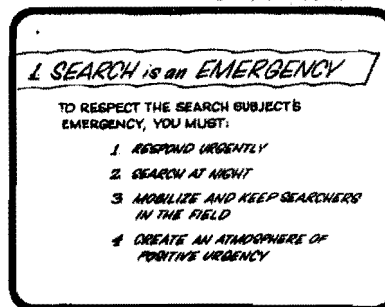
35.0 <u>Search is a Classic Mystery</u>.

OVERVIEW 36

* 35.1 <u>Emphasize:</u>   Finding a lost subject is
like a plot in a Sherlock
Holmes Novel.

A successful search manager
must investigate, interrogate,
assimilate.

2. SEARCH is a CLASSIC MYSTERY

INVESTIGATE / INTERROGATE / ASSIMILATE

1. YOU MUST KNOW WHAT CLUES TO LOOK FOR
2. POSSIBLE DESTINATIONS ASCERTAINED
3. POINTS LAST SEEN IDENTIFIED
4. THE MISSING INCIDENT RECREATED
5. THE SUBJECT MAY RETURN HOME, OR
   SHOW UP AT FRIENDS
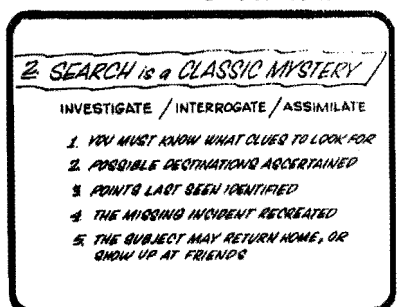
36.0 <u>Search for Clues, not Subjects</u>.

36.1 <u>Read</u> overhead.

37.0 <u>Search for Clues, not Subjects.</u>

37.1 This overhead shows how finding clues
      will lessen the search difficulty.

38.0 <u>Concentrate on Aspects that Are!</u>

38.1 <u>Read</u> overhead.

✱ 38.2 <u>Emphasize</u>: That it is a waste of
                time, energy, effort,
                and money to do other-
                wise.

39.0 <u>Know if the Subject leaves the Search Area.</u>

39.1 <u>Read</u> overhead.

40.0 <u>Know if the Subject leaves the Search Area.</u>

40.1 Assign someone to do the "Bastard Search."

40.2 So that when you find him home in bed -
      you can send someone over to say "you
      Bastard."

41.0 <u>Know if the Subject leaves the Search Area.</u>

41.1 Overhead demonstrates how perimeter cut-
      ting can be used to find clues and elim-
      inate portions of search area.

20
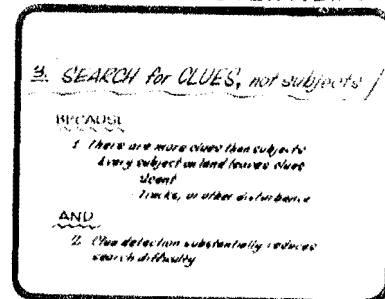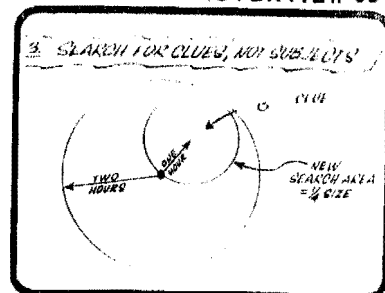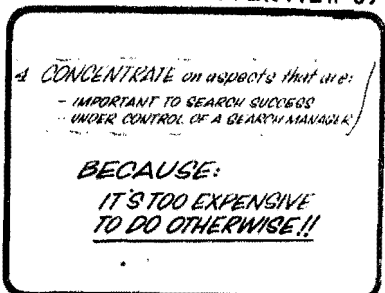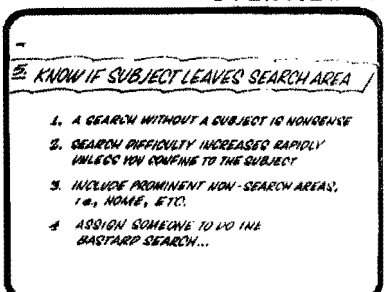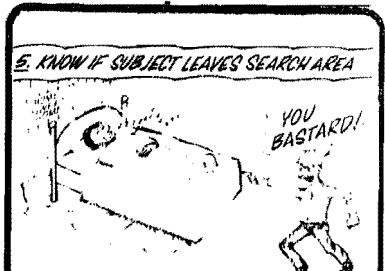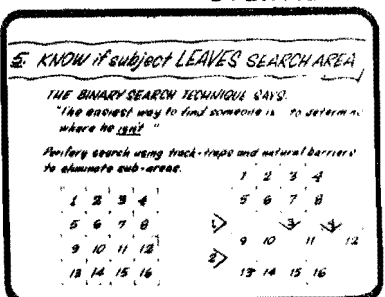
42.0 <u>Grid Search as a Last Resort.</u>

42.1 Graph on overhead shows that grid search
      may not be necessary if you: respond
      quickly, confine, search at night, and
      look for clues.

✱ 42.2 <u>Emphasize</u>: Other search tactics should
                    be used first, and these
                    will be presented.

■■■: We will now highlite the rest of the
      course topics.

43.0 <u>The Organization.</u>

43.1 Think functions, and <u>not</u> people. Use
      the best person for <u>the</u> job!

✱ 43.2 <u>Emphasize</u>: A good organization plan will
                    help you with: base adminis-
                    tration, briefing/debriefing,
                    relatives, press, political,
                    criminal, replacing personnel,
                    and documentation.

44.0 <u>The Organization.</u>

44.1 <u>Read</u> overhead with class - this quote sums
      up very simply that effective search organ-
      ization is needed.

45.0 <u>Executing the Plan.</u>

✱

45.1 Again, <u>Emphasize</u>, that strategy and tactics
      (and this formula) is the "guts" of the course.
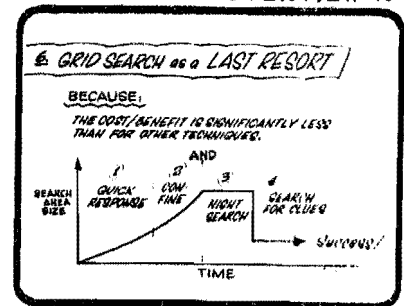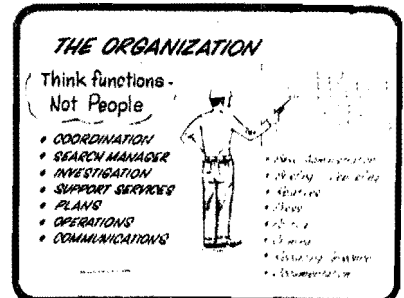
21
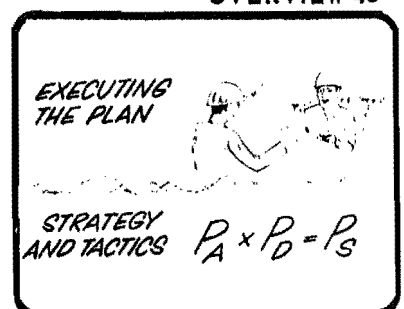
46.0 Subject Contact/Evacuation.

* 46.1 Emphasize: This is where a search becomes a rescue. These topics are discussed later in the course.
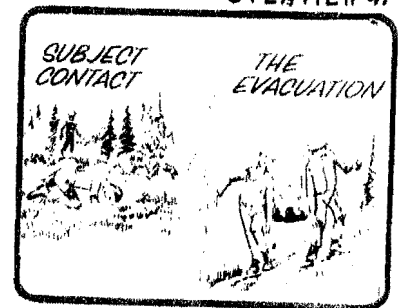
47.0 Suspending the Mission/Post Mission.

* 47.1 Emphasize: A good search manager should be able to smoothly and effectively demobilize and satisfy all after actions necessary.

48.0 Post Mission.

48.1 Emphasizes the need to document.
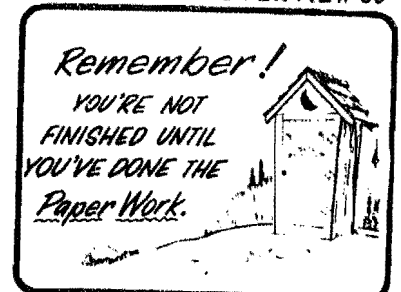
49.0 Barriers to Progress.

49.1 We hope that no one present is guilty of these!
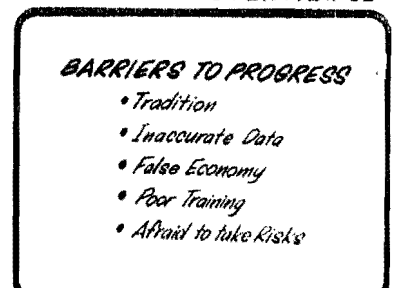
50.0 How can You make a Difference?

50.1 Read overhead.
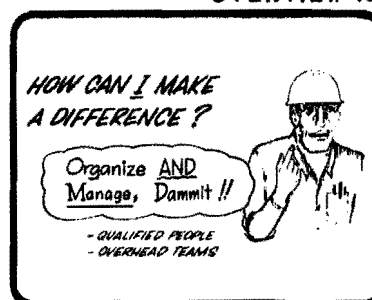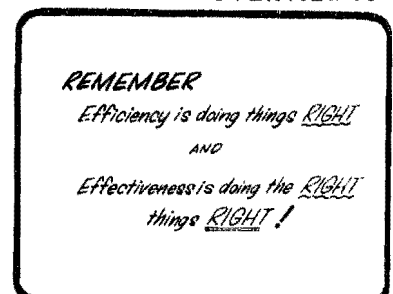
51.0 Efficiency is doing things Right.

51.1 These are traits of a good SAR Manager.

104

52.0 Strategy and Tactics, New Things Are Happening.

52.1 A search manager must stay current.
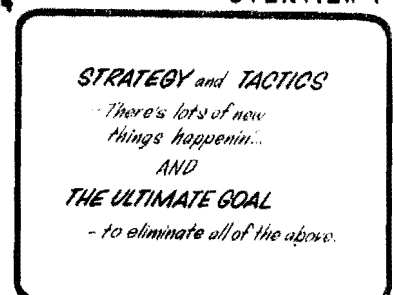
53.0 <u>PSAR Motto.</u>

53.1 PSAR: Preventive SAR Education.

53.2 A SAR manager can (should?) promote education.

54.0 <u>Search Course Objectives.</u>

54.1 <u>Read</u> and <u>Discuss</u> the objectives with the class.

FIRST NOTICE

THE FIRST NOTICE

- PLANNING DATA
- SEARCHING DATA
- INVESTIGATION
- INTERROGATION
- CLUE ORIENTATION
- SUBJECT BEHAVIOR
- PRIORITY
- URGENCY
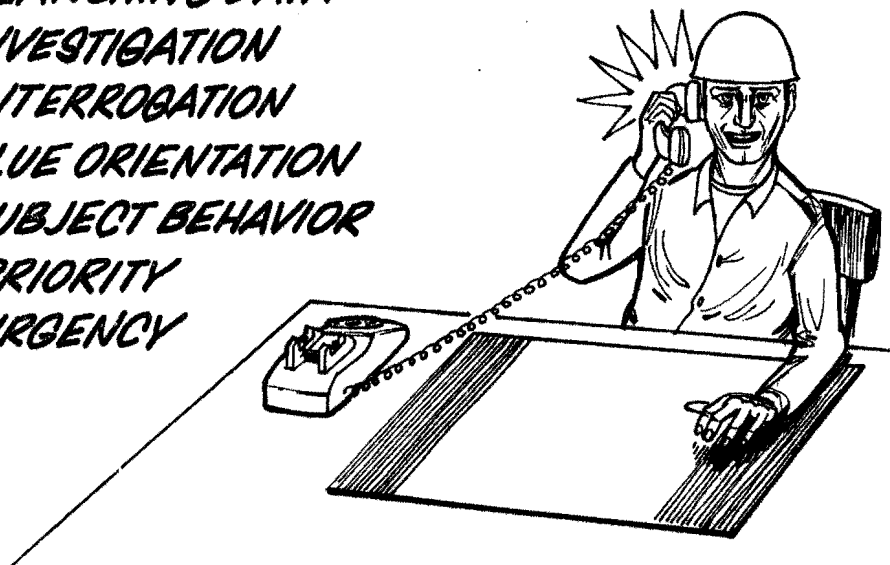
MANAGING THE SEARCH FUNCTION

TOPIC: "First Notice"

SUGGESTED TIME: 30 minutes.

OBJECTIVES: A STUDENT WILL BE ABLE TO;

> Identify the various ways by which the responsible agency is notified of a potential SAR problem.

> Create a Lost Person Questionnaire Form that is relevant to the local responsible agency's needs.

> Discuss the critical decision making processes relevant to the information gathered during the First Notice phase.

> Understand that a continuous investigation process begins with the First Notice.

TRAINING AIDS NEEDED: ABANDONMENT

> Lost Person Questionnaire/Check List.

REFERENCES:

> Text, "Search is an Emergency," Chapter 7, First Notice

WILDERNESS SEARCH AND RESCUE, 1980, Tim Setnicka

1.0 Discuss the objectives for this topic.

2.0 How does the report (First Notice) come in?

    2.1 Overdue report by relatives or friends.

    2.2 Report by member of party.

    2.3 You can discover:

        a. abandoned vehicle.
        b. registration system.
        c. deserted camp or equipment.

    2.4 Distress signals.

    2.5 Emergency Locator Transmitter.

    2.6 Other Clues.

3.0 Initial contact with the reporting party.

    3.1 Proper Attitude.

        a. Calm, Professional, Inquisitive, Concern,
           Willingness to help.

    3.2 <u>Obtain</u>

        a. Name, Call back number, Location.

    3.3 Talk to the reporting party personally.

    3.4 Remember, Search is an Emergency.

4.0 Initial Information.

✳ NOTE: Refer students to the Lost Person Question-
         naire, page, First Notice 7.

   Emphasize: It is better to get more than enough
              information now rather than to have   LEGAL IMPLICATIONS
              to go back and dig it up later.
              Saves valuable time in the long run.

   4.1 Missing how long?   (LPQ) IN HANDBOOK

   4.2 Activity.

   4.3 Equipment.

   4.4 Number of Persons missing?

   4.5 Age.

   4.6 Sex.

   4.7 Physical condition.

   4.8 Experience/ability.

   4.9 General area of search.

   4.10 Terrain.

   4.11 Weather.

5.0 Evaluation of the Problem.

5.1 Evaluate the initial information.

    a. Circumstantial.
    b. Second hand.
    c. Eyewitness.

5.2 Evaluate the source of information.

5.3 Consider the facts.

5.4 Consider the probabilities.

5.5 Consider the possibilities.

5.6 Combine the information objectively.

6.0 Getting more information.

6.1 Appoint an Information Officer.

6.2 Protect scent articles.   *PLS & CLUE, SCENT ARTICLES*

7.0 Summary

* Emphasize: "Regardless of how improbable or unfounded the report appears at the time, a compelling firehouse response is essential until SAR personnel have arrived on the scene and determined the accuracy of the information."

    - Tim J. Setnicka, WILDERNESS SEARCH AND RESCUE, 1980

7.1 Important considerations: Get all the information necessary to determine:

a. If there is a problem.
b. How serious is it or could it get.
c. Where is it.
d. Who is involved.
e. How did it happen.
f. When did it happen.

USE LPQ

7.2 Get all the information necessary to make decision about what to do now.

WITNESS = CLUE
HOLD ONTO IT

1. MODERN SEARCH
2. RESOURCES
3. HANDBOOK

DETERMINING THE SEARCH URGENCY

The combination of urgency factors will help determine not only _how quickly_ to respond, but the _level_ of response.

Some kind of response should always happen _immediately._

SEARCH IS AN EMERGENCY – even if it is no more than stepping up the planning for the increased potential for a more serious problem.

LESSON PLAN OUTLINE

MANAGING THE SEARCH FUNCTION

TOPIC: "Determining the Search Urgency."

SUGGESTED TIME: 30 minutes.

OBJECTIVES: A STUDENT WILL BE ABLE TO:

Identify the factors involved in determining the urgency
of the search situation.

Describe how these factors help to determine the relative
search priority and level of response.

TRAINING AIDS NEEDED:

Overheads – numbers: Priorities/Urgency 1,2,3,4, and 5

REFERENCES:

Text, "Search is an Emergency," Chapter 10, Determining
    the Search Urgency.

WILDERNESS SEARCH AND RESCUE, 1980, Tim Setnicka.

1.0 Discuss the objectives for this topic,

2.0 FACTORS AFFECTING URGENCY

USE POCKET BOOK ON EXAMPLE MISSION

2.1 The following factors directly influence the well-being of the subject.

- Subject profile
- Weather profile
- EQUIPMENT AVAILABLE TO SUBJECT
- Subject's experience
- Terrain hazards

26 PRIORITIES/URGENCY 1

FACTORS AFFECTING URGENCY
• SUBJECT PROFILE
• WEATHER PROFILE
• EQUIPMENT POSSESSED BY SUBJECT
• SUBJECT EXPERIENCE
• TERRAIN HAZARDS
• HISTORY OF INCIDENTS IN AREA
• TIME
• "POLITICAL" SENSITIVITY

2.2 The following factors have no direct influence on the subject, but do influence the decision-making process concerning the urgency of the situation,

a. History of Incidents in Area - the frequency of past incidents in the area and their outcomes can be a key in decision-making.
b. Time - the time elapsed from the moment the subject actually "went missing" is important in two respects:

   . time frame for survival
   . effect of time on clues

c. "Political" Sensitivity - the combination of all external influences will affect decision-making. Among these influences are:

   - VIP involved?
   - Interest of politicians
   - Pressure from relatives
   - Pressure from media; publicity

27 PRIORITIES/URGENCY 2

RELATIVE URGENCY
- THE LOWER THE FACTORS, THE MORE URGENT THE SITUATION

Subject Profile	Factor
AGE	
• Very young	1
• Very old	
• Other	2-3
MEDICAL CONDITION	
• Known or suspected injured, ill	1-2
• Healthy	3
• Known or fatality	3
NUMBER OF SUBJECTS	
• One alone	1
• More than one (unless separation expected)	2-3

3.0 The Urgency Chart

✱ NOTE: Refer the students to the chart on page Determining Urgency - 2.

✱ Emphasize: That the numbers are Relative. The totals may be used as a guide.

28 PRIORITIES/URGENCY 3

Weather Profile
• EXISTING HAZARDOUS 1
• PREDICTED HAZARDOUS (8 hrs or less) 1-2
• PREDICTED HAZARDOUS (more than 8 hrs) 2
• NO HAZARDOUS WEATHER PREDICTED 3

Equipment Profile
• INADEQUATE FOR ENVIRONMENT 1
• QUESTIONABLE FOR ENVIRONMENT 1-2
• ADEQUATE FOR ENVIRONMENT 3

3.1 The key is to get all these facts on paper, in front of you, so you can put the situation in perspective.

3.2 In addition, generally speaking, the more serious the previous incidents were, the more time that elapsed since the subject "went missing," and the more "politically" sensitive - the greater the urgency becomes.

Subject Experience Profile
- *NOT EXPERIENCED, DOESN'T KNOW AREA*
- *NOT EXPERIENCED, KNOWS AREA*
- *EXPERIENCED, NOT FAMILIAR W/ AREA*
- *EXPERIENCED, KNOWS AREA*

Terrain / Hazards Profile
- *KNOWN HAZARDOUS TERRAIN, ONLY*
- *FEW, OR NO HAZARDS*

History of Incidents this area
- *MAJOR INCIDENTS OCCURRING*

TIME and POLITICAL SENSITIVITY

4.0 SUBJECT CONDITION ASSUMPTIONS

4.1 Usually, after assessing all the initial information obtained, the search boss makes an assumption as to the condition of the subject, in terms of his or her MOBILITY (ability to travel) and RESPONSIVENESS (ability and desire to respond to calls, etc.). Four possibilities exist:

P.31

a. Mobile/responsive
b. Immobile/responsive
c. MOBILE/UNRESPONSIVE
d. Immobile/Unresponsive

} CONFINEMENT !

4.2 The assumption made about the subject's condition should help dictate the type of immediate searching action (tactics) to be taken.

5.0 SUMMARY

* Emphasize: The combination of the factors affecting urgency will help determine not only <u>how quickly</u> to respond, but the <u>nature</u> and <u>level</u> of response, as well. Some kind of response should always happen immediately - <u>even if it is only an increase in planning</u> for the higher potential that the problem will become more serious. Remember: SEARCH IS AN EMERGENCY.

The combination of urgency factors will help determine not only how quickly to respond, but the level of response.
Some kind of response should always happen immediately.
SEARCH IS AN EMERGENCY - even if it is no more than stepping up the planning for the increased potential for a more serious problem.

5.1 Effect of the combination of urgency factors <u>along with the subject condition assumptions</u> should help search manager in assessing response alternatives.

✱ Emphasize: "The relative urgency of a reported
situation should be established -
if it is not immediately apparent -
during the first notice and inter-
view phase. Despite the need for a
constant firehouse response to all
reports of complications of any kind,
some latitude for flexibility exists
and should be exercised."

- Tim J. Setnicka, WILDERNESS SEARCH
AND RESCUE, 1980

CALLOUT PROCEDURES

CALL OUT INFORMATION

☆ Situation description
  i.e., WHO, WHAT, WHEN, WHERE
☆ Special skills needed
☆ Who (what other units) are responding
☆ Number of persons (and/or teams) required
☆ Current weather forcast
  ROAD, FLYING CONDITIONS

MANAGING THE SEARCH FUNCTION

TOPIC: "Callout Procedures"

SUGGESTED TIME: 30 minutes

OBJECTIVES, A STUDENT WILL BE ABLE TO:

Describe the information that needs to be provided
to the resources that are being called to provide
assistance.

Understand the importance of providing this information.

TRAINING AIDS NEEDED:

Overheads – numbers: Callout 1, 2, 3.

REFERENCES:

Text, "Search is an Emergency," Chaper 18, Callout Procedures.

WILDERNESS SEARCH AND RESCUE, 1980, Tim Setnicka.

1.0 Discuss the objectives for this topic.

(EARLY) ALERT [CALL DEBS]

2.0 INFORMATION TO PROVIDE TO RESOURCES WHEN YOU CALL: 115

CALL OUT INFORMATION

☆ Situation description
    IE., WHO, WHAT, WHEN, WHERE

☆ Special skills needed

☆ Who (what other units) are responding

☆ Number of persons (and/or teams) required

☆ Current weather forecast
    ROAD, FLYING CONDITIONS

2.1 When requesting assistance from outside resources, you must provide them with certain information. Information may vary with the specialty of each resource, but generally will include:

    a. Description of the situation (who, what, when, where, how).
    b. Special skills needed from them.
    c. Who (what other units(are responding.
    d. Number of persons (and/or teams) required. Request that they call you back and confirm numbers actually responding before they depart.
    e. Current weather and forecast at the search area.

      . Road conditions
      . Flying conditions

116

CALL OUT INFORMATION

☆ Terrain description
☆ Elevation range
☆ Personal equipment needed
☆ Group or specialized equipment needed
☆ Map quad
☆ Meeting place
    SIGNS MARKERS ROUTE SUGGESTED

    f. Terrain description.
    g. Elevation range.
    h. Personal equipment needed by searchers.
    i. Group or specialized equipment needed.
    j. Communications procedures; frequencies, etc.
    k. Map quads being used.
    l. Meeting place.

      . Signs
      . Markers
      . Route suggested

117

CALL OUT INFORMATION

☆ Whom to report to
☆ Callback number
☆ Calloff procedures
    • LICENSE NUMBERS, VEHICLE DESCRIPTIONS
    • CHECK-IN PERIODICALLY WHILE ENROUTE
    • PUBLIC RADIO
    • THEIR OWN COMMUNICATIONS SYSTEM

    m. Who to report to upon arrival at the search area.
    n. Callback number.
    o. Call off procedures (in case subject is found while they are enroute).

      . License numbers, vehicle descriptions
      . Check-in periodically while enroute
      . Public radio
      . Their own communication system

PREPARED
EQUIPMENT
SHOW PACK

3.0 Summary

★ Emphasize: Providing the alerted resources with organized and operationally significant information at the time they are called out will reduce difficulties, unpreparedness and misunderstandings that could diminish efficiency.

144

SEARCH & RESCUE RESOURCES

SAR RESOURCES

- WHO
- HOW
- WHERE
- CAPABILITIES
- SPECIALTIES
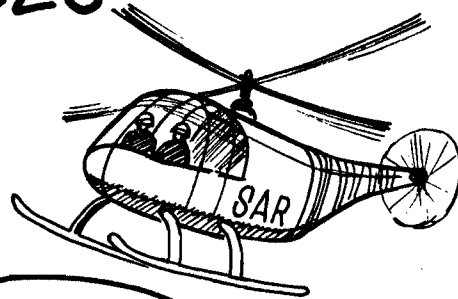
You must know how to use each resource for maximum utilization.
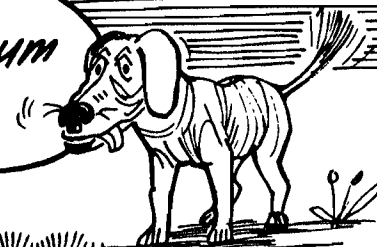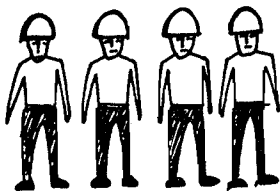
LESSON PLAN OUTLINE

MANAGING THE SEARCH FUNCTION

TOPIC: "SAR Resources"

SUGGESTED TIME: 60 minutes.

OBJECTIVES: A STUDENT WILL BE ABLE TO:

> Identify the basic types of search and rescue resources, and discuss their function, limitations, and possible locations.

> Understand the importance of identifying and cataloging SAR resources as an important part of the preplanning process.

TRAINING AIDS NEEDED:

> SAR Resource 35mm slide series, if available.

> NOTE: Instructor should develop his own slide series that is relevant to his geographic area.

REFERENCES:

> Text, "Search is an Emergency," Chapter 5, SAR Resources

WILDERNESS SEARCH AND RESCUE, 1980, Tim Setnicka

1.0 Discuss the objectives for this topic.

2.0 LOCATED IN THE PREPLAN - Your SAR resource list and
    locater is the "heart" of your preplan. The directory
    of SAR resources must be "manufactured" by you and
    will be a changing document.

    2..1 SAR resources can be categorized in a variety
         of different ways, such as:

         a. By the type of strategy or tactic capabilities
             of the unit, or unit members.
         b. By the type of SAR environment, and the special
             techniques needed for each.

             1. Air Search.
             2. Water/River Search.
             3. Technical Rock.
             4. Snow/Ice
             5. Restricted Land Search.
             6. Open Land.
             7. Desert Search.
             8. Specialized Search - Cave.

         c. List human resources by:

             1. Name.
             2. Phone numbers.
             3. Experience of capability.
             4. Availability.

         d. List resources by generic type, i.e., Aircraft,
             dogs, scuba, Mt. rescue, etc.

      � NOTE: Refer the class to the "Example Format" by
                Jon Gunson at the end of this chapter, and
                the paper on the "Search and Rescue Aids
                Concept" for ideas.

3.0 RESOURCE EVALUATION - You must ask six basic questions to
    evaluate a resource's usefulness in an operation for a
    given mission.

    3.1 Availability?

         a. Are they ready to respond?
         b. Are there any special requesting procedures
             or conditions?

3.2 Response time after notification?

  a. A measured response?
  b. An emergency response? (It is important to remember that search area size is time dependent).
  c. Are the resources on hand or immediately available? If not, what is the time lag?

3.3 Capabilities

  a. Can the resource really perform the task quickly, safely, efficiently?

3.4 Limitations

  a. Are they in "shape" mentally, physically?
  b. How proficient or effective is the resource?
  c. Special considerations - language, radios.
  d. Competition - ego?
  e. Will they work with and for you?
  f. Special considerations - communications.

3.5 Qualifications

  a. Is the resource really qualified as shown by training, past performances, and work record?

3.6 Back-up Resources

  a. More than one plan necessitates more than one resource source.

4.0 Some Resource Types

* NOTE: If you have a slide series, lead a discussion on resources using them. Otherwise, lead a discussion as follows:

4.1 Aircraft

  a. Military

    1. Air Force Rescue Coordination Center (AFRCC), Scott AFB, Illinois.

40

They have the total responsibility of in-
land search and rescue coordination, and
the responsibility for the dispatch of
available military units of Army, Navy,
Marine Corps., Air Force and, in some
cases, the Coast Guard.

2. Two basic types of assistance available.

Military Assistance to Safety and Traffic
(MAST) for rescue of injured subject and
other civilian medical emergencies. In-
cludes the transportation of injured per-
sons from point to point.

The search for and rescue of civilians -
includes the transportation of search
personnel, and other logistical needs.

b. Non-Military

1. Private and government contractees such
as for the U.S. Forest Service, National
Park Service, etc. You should have prior
rental agreement and check the F.A.A.
regulations.

c. Psuedo-Military

1. Civil Air Patrol - organized as a non-
profit, volunteer civil corporation
chartered by Congress and governed by
a National Board. The C.A.P. was es-
tablished as a volunteer civilian aux-
iliary of the U.S. Air Force. Through
agreements, the C.A.P. assists with
search activities.

4.2 Multi-skilled Groups (Volunteer and Professional)

a. Mountain Rescue Association (M.R.A.)

Volunteer organizations usually skilled in
such disciplines as high angle rock, snow,
and ice search and rescue, avalanche search
and rescue, mountaineering, E.L.T. work, etc.

b. Explorer Search and Rescue (ESAR)

Part of the national scouting program with
people from 14-17 years old who are competent
in SAR operations in wilderness areas.

c. Reserve Military Units

May be available if prior agreements have
been made. Includes such units as aero-
rescue squadrons capable of para-rescue.

d. National Guard

Again, depending on mission and jurisdiction,
National Guard may be available for assistance.

e. Volunteer Nordic Patrol

Specializing in cross-country ski search and
rescue, these groups are affiliated directly
with a ski area and/or through the local
county sheriff.

f. National Ski Patrol

Specializing in downhill ski search and rescue
as well as avalanche work. These chapters are
organized directly in the downhill ski area
they are to be associated with. N.S.P.Shead-
quarters is located in Denver to provide policy
statements and guidelines.

g. Local Mountaineering - Outdoor Organizations

Can easily provide person-power for large
searches. Include college hiking clubs, com-
munity groups, etc.

h. Dog Units

Should decide on which of the two basic types
are needed, air scenting or bloodhounds. Dog
units include Colorado Canine Search Group,
Northwest Bloodhounds, American Rescue Dog
Association, W.O.O.F., Search and Rescue Dog
Association, etc. The air scent trained dogs
are especially useful because they can search
for both living and deceased subjects up to
several weeks after being lost. This ability
also makes them useful in avalanche SAR
problems.

i. Horse-Equestrian Units

Generally organized as a part of Sheriff
Reserve Units. Additional help may be ob-
tained from land managing agencies who have
pack stock as well as trained packers and
horsepersons.

j. National Jeep Patrol

Organized groups of four-wheel drive vehicles,
with drivers trained in search and rescue.

k. Tracking

A highly specialized, individual skill.
Local groups may have individual members
who specialize in this skill. The largest
federal agency involved in this activity is
the U.S. Border Patrol and assistance may
be obtained by contacting their office
direct.

1. S.C.U.B.A.

Local sheriff's offices usually have trained
deputies in SCUBA diving or local reserve
deputies. Local federal land managing agencies
such as U.S. Army Corps of Engineers, Bureau
of Reclamations, National Park Service or
U.S. Forest Service may have personnel trained
in this activity.

m. Assisting Agencies

A broad category often overlooked which com-
prises the local county sheriff's offices,
highway patrol, city police, and adjacent
state and local land managing agencies such
as State Forest Service and National Park
Service. In most situations the local
sheriff has jurisdiction and responsibility
for managing the search function.

Some federal lands fall into four broad areas
of legal jurisdiction.

1. Exclusive - Federal law supercedes all
    state authority - executive, judicial,
    and legislative. The Federal govern-
    ment may, however, choose to utilize
    certain state statutes such as vehicle
    codes, health and safety, etc. In
    federal areas state officials have no
    power or authority unless they are
    sworn Federal officers as well.

2. Concurrent - Here the State and Federal
    government occupy an area jointly, each
    having certain rights and law enforce-
    ment authority.

3. Partial - State government grants certain
    authority to the Federal government,
    This type of jurisdiction usually re-
    lates to matters of taxation.

4. Proprietary Jurisdiction - The Federal
    government has the right to perform
    certain functions and enforce certain
    laws without interference from the
    state.

43

4.3 Equipment and Supplies

a. Oversnow Vehicle - Private clubs and organizations can be utilized. Also, national snowmobile organizations can provide information about local groups as well as snowmobiling information.

Large oversnow vehicles may be rented or borrowed from public utilities commissions, Federal land management agencies (U.S. Forest, Park Services, local sheriff), as well as local ski areas. Prior rental or mutual aid agreements suggested.

4.4 Weather Information

Flight Service Stations, Air Traffic Control Centers, radio and T.V. news, F.A.A. centers, and military bases all can provide weather information especially if you have a local office "Upstream" to check on current as well as predicted weather.

4.5 Food - Housing

Aside from local vendors, State and Federal wildfire fighting organizations may provide field kitchens and base camp accomodations if needed. Other sources include the American Red Cross, The Salvation Army, Military or National Guard Units, local Civic or Church groups, and organized SAR Commissary Units.

5.0 Special Resources.

* 5.1 NOTE: Refer the students to page, SAR Resources 9.

* 5.2 Lead a discussion on the special resources listed:

a. Attraction devices.

b. Dogs - SAR dogs

44

c. Equestrian Units

d. Interrogators

e. Mine Detectors

f. Noise Sensitive Equipment

g. Prophets, diviners and seers

h. Photo - Interpretation

i. Scuba Search

j. Sniffers - (Mechanical)

k. Trackers

l. Thermister Detectors

m. Witchers

6.0 Summary

✳ Emphasize: "Meeting and Greeting all the resources
in the preplan, while not a written re-
quirement, is a fundamental task for the
SAR manager. A letter or phone call often
substitutes for a personal visit. Knowing
who the other person or group is, what it
can do, and how it operates often means
the difference between successfully putting
these resources into play or not."

- Tim J. Setnicka, WILDERNESS SEARCH AND
RESCUE, 1980

CLUE ORIENTATION

SOME SEARCH AND INFORMATION
THEORY DEFINITIONS APPROPRIATE
TO OUR PRINCIPLES ARE:

VICTIM

SIGNAL
GENERATOR

SEARCH
AREA

CLUE

MESSAGE

MEDIUM

SEARCHERS

RECEIVERS
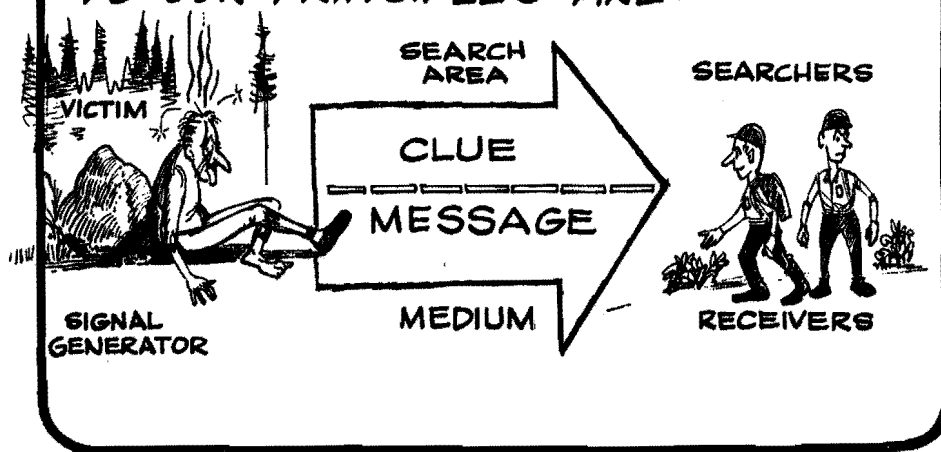
MANAGING THE SEARCH FUNCTION

TOPIC: "Clue Orientation"

SUGGESTED TIME: 30-45 minutes.

OBJECTIVES, A STUDENT WILL BE ABLE TO:

Describe the function of clue detection as it relates to search theory.

Identify the four categories of clues.

Discuss the use of signcutting as a major factor in reducing a probable search area.

Identify the major information categories that are crucial to effective search planning.

TRAINING AIDS NEEDED:

Overheads - numbers: Clue Orientation 1-12.

REFERENCES:

Text, "Search is an Emergency," Chapter 14, Clue Orientation.

WILDERNESS SEARCH AND RESCUE, 1980, Tim Setnicka.

MOUNTAIN SEARCH FOR THE LOST VICTIM, 1973, Dennis Kelley.

1.0 Discuss the objectives for this topic.

⭐ Emphasize: Clue Seeking

Not only the searching for a subject, but
the larger problem of defining character-
istics and behavior (clues).

POA = Prior Knowledge + Subjective Analysis
+ "Intelligence."

2.0 Introduce the term "clue seeking."

2.1 According to the dictionary, a clue is a fact, an
object, information, or some type of evidence
that helps to solve a mystery or problem. Re-
ferring again to Webster, we find that to "seek"
is to try and find, to trace or search for, to
track down. Put the two together (clue seeking)
and you have the essence of solving the classic
mystery: --- finding the lost person. The pur-
pose of clue seeking (gathering all the facts
and information possible) is to assist us in our
reasoning of the problem and its ultimate solu-
tion: --- (finding the lost person). It is im-
portant that we devise a method by which we can
uncover clues that are relevant to a particular
situation. Significant clues may provide the
basis for major in-field tactics and actions.

⭐ Emphasize: Clues evaluated through hindsight
can be thrown in the "Wait till
next time" department, but this
isn't enough. Search is a special
task with life or death consequences.
We must be able to account for
our actions.

- Jeff Doran

3.0 GENERAL PRINCIPLES OF CLUE SEEKING

a. Clue seeking is an on-going process that starts
with preplanning, continues through a mission
and doesn't end until the critique is over.
b. Good clue seeking is a learned skill, and must
be practiced to develop a sense of what is mini-
mum information to work with.
c. Avoid forming opinions and then gathering infor-
mation to support that opinion.

GENERAL PRINCIPLES
1 Assemble a complete profile
  - LET IT OFFER DIRECTION BUT
  -- DON'T FORM EARLY OPINIONS AND
     COLLECT INFO TO JUSTIFY/SUPPORT YOU
2 Clue seeking is an on-going process
  - DOESN'T STOP UNTIL VICTIM IS FOUND
3 KNOW - minimum planning/search data
     that is required
4 NEVER - minimize the value of a clue
5 No one person can adequately gather the facts

111

d. Don't immediately form an opinion about the value of a clue.
e. Gather information from everyone, as no one person can adequately gather all the facts.
f. Assemble a complete profile of the missing subject and the situation and let it offer direction.

4.0 The modern approach to search is clue oriented. In the past, search efforts were directed entirely toward the lost subject and as a result, overlooked a multitude of clues that were available to point the way. Today, search theory is dependent on clue detection, and is comprised of five basic elements.

a. The subject or clue generator.
b. The clues or messages.
c. The search area.
d. The searcher or clue seeker.
e. Time as it relates to a sequence in events.

5.0 Search Theory is Dependent on Clue Detection.

5.1 Lost subjects are signal generators.

a. They leave clues, prolific clue (signal) generators.
b. There are usually more clues than subjects.
c. The subject is the ultimate clue.

14 CLUE ORIENTATION 1

SOME SEARCH AND INFORMATION THEORY DEFINITIONS APPROPRIATE TO OUR PRINCIPLES ARE:

VICTIM   SEARCH AREA   SEARCHER
CLUE MESSAGE
SIGNAL GENERATOR   MEDIUM   RECEIVERS

15 CLUE ORIENTATION 2

FORTUNATELY, ONLY THE MOST CAUTIOUS VICTIM CAN PREVENT HIMSELF FROM BECOMING A PROLIFIC SIGNAL GENERATOR

FOOT PRINTS   CANDY WRAPPER   WITNESS

6.0 Trained Searchers are clue receivers.
UNTRAINED " ARE " DESTROYERS

6.1 They are best qualified to recognize and act upon clues.

6.2 Through team work they interpret the message.

16 CLUE ORIENTATION 3

SEARCHERS ARE BEST QUALIFIED TO RECOGNIZE AND ACT UPON CLUES

NON-SEARCHER   CLUES   SEARCHER

7.0 The search area is the medium.

7.1 The search area must contain clues.

7.2 Some clues are nearly as good as the subject.

7.3 No clues, generally - no subject.

SOME CLUES ARE NEARLY AS GOOD AS THE VICTIM

8.0 There are four (4) categories of search clues which searchers should be aware of:

THERE ARE FOUR CATEGORIES OF SEARCH MEDIA OF WHICH SEARCHERS SHOULD BE AWARE:

PHYSICAL RECORDED PEOPLE EVENTS
Foot Print   Summit Log   Witness   Flashing light

8.1 Physical

1. Footprints
2. Candy wrappers

8.2 Recorded

1. Summit log
2. trail register

8.3 People

1. Witness
2. Persons contacted in the search area

8.4 Event

1. Flashing light
2. Whistle

9.0 Clue Detection Resources

CLUE FINDER

- TRACKING DOG
- VISUAL TRACKER
- INVESTIGATION TEAM
- DIRECTION FINDING (DF) EQUIPMENT

9.1 Clue Finders

a. tracking dog
b. visual tracker
c. investigation team
d. direction finding (DF) equipment.

113
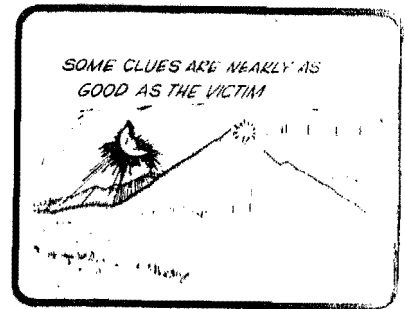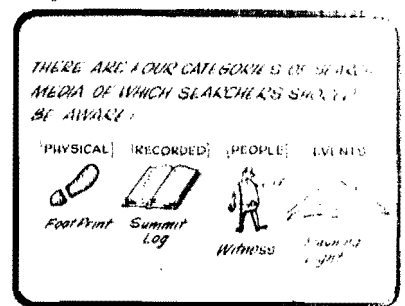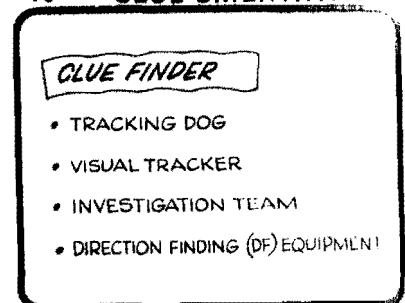
9.2 Clue/Subject Finders

a. search dogs
b. hasty team (clue aware)
c. D.F. equipment
d. grid teams (clue aware)

9.3 Subject Finders

a. grid searchers
b. helicopters

WHAT TO DO WITH A CLUE — FLAGGING TAPE

10.0 Signcutting, (Binary search) is an effective search tactic.

10.1 The easiest way to find someone is to know where they aren't.

a. Eliminates vast portions of search area.

10.2 The search area circumference is more easily searched than the area itself.

a. Selective sampling is efficient.

10.3 The resource effectiveness of signcutting is vastly greater than gridding.

a. It utilizes fewer resources.

20 CLUE ORIENTATION 7

CLUE / SUBJECT FINDERS
- SEARCH DOGS
- HASTY TEAMS (CLUE AWARE)
- D F EQUIPMENT
- GRID TEAMS (CLUE AWARE)

21 CLUE ORIENTATION

SUBJECT FINDERS
- GRID SEARCHERS
- HELICOPTERS

23 CLUE ORIENTATION 10

SIGN CUTTING (Binary Search) is an effective search tactic

"THE EASIEST WAY TO FIND SOMEONE IS TO KNOW WHERE THEY AREN'T."

24 CLUE ORIENTATION 11

SIGN CUTTING IS IN, OTHERS ARE OUT:

GRID   SIGN CUTTING

25 CLUE ORIENTATION 12

BY ELIMINATION, VAST PORTIONS OF SEARCH AREA CAN BE NEARLY IGNORED.

11.0 SUMMARY

11.1 Search theory is dependent on clue detection.

    a. Search for clues instead of subjects.

11.2 Four categories of clues.

    a. physical
    b. recorded
    c. people
    d. event

11.3 Clue Detection Resources

    a. Clue Finders
    b. Clue/Subject Finders
    c. Subject Finders

11.4 Assemble a Complete Profile

    a. Clue seeking is an on-going process.

11.5 Signcutting is an Effective Search Tactic

    a. The easiest way to find someone is to know where they aren't.

⭐ NOTE: Refer the students to the narrative beginning on page, Clue 7 entitled "Guidelines for Gathering Clue Information." Stress that they should become familiar with the information.

LOST SUBJECT BEHAVIOR

MANAGING THE SEARCH FUNCTION

TOPIC: "Lost Person Behavior"

SUGGESTED TIME: 60 minutes. (90 minutes if you use the problems).

OBJECTIVES: A STUDENT WILL BE ABLE TO:

Determine that all facts may be important in predicting
lost subject behavior.

Relate the significance of historical behavior data of
lost persons in the particular geographic region that
a search is being conducted.

Identify those lost subject behavior factors which
must be used in overall search strategy.

Describe the need for data collection and its use in
determining the most likely area to search.

TRAINING AIDS NEEDED:

None

REFERENCES:

Text, "Search is an Emergency," Chapter 11, Lost Person
Behavior.

ANALYSIS OF LOST PERSON BEHAVIOR, 1976: William G. Syrotuck

A STATISTICAL ANALYSIS OF LOST PERSONS IN WILDERNESS AREAS, No. 2, 1973:
William G. Syrotuck.

MOUNTAIN SEARCH FOR THE LOST VICTIM, 1973: Dennis Kelley.

Handout: "STATISTICAL ANALYSIS OF LOST PERSONS AND REPORTS," June 1978:
Al Krevtzer (update on Syrotuck's work).

Handout: "HOW TO ESTIMATE HIKING TIME:" Gordon Waddell.

Handout: "GUIDELINES FOR INFORMATION GATHERING:" Jeff Doran.

1.0 Discuss the objectives for this topic:

✱ Emphasize: By analyzing the behavior of past lost persons in similiar situations, you might be able to "predict" what the subject you are now looking for might do, where he might go, or where he might be.

This concept is a search planning tool, dealing with generalities, and not absolutes.

2.0 GENERAL ASPECTS OF LOST PERSON BEHAVIOR --- Basic to any effective search is a profile of the individual that is being sought. A complete list of all information related to that individual specifically.

Example: The F.B.I.'s ten most wanted list

a. Physical description in great detail.
b. Point last seen.
c. Activities most likely to engage in, interests, hobbies, etc.
d. M.O. - Method of Operation when committing a crime.
e. Personality traits - aggressive, loner, dispondent, dangerous, etc.

All this information will help in some way to track down one of these criminals. Lost person incidents actually present the same problems confronting law enforcement officers in criminal investigation.

3.0 FACTORS THAT ARE SPECIFIC TO LOST PERSON BEHAVIOR ---Those that could effect search strategy.

3.1 BIOLOGICAL CYCLES: This relatively new area of medical research is not fully understood but has implications of being a significant factor. Biological cycles of the body determine whether any person is in a "high" of being efficient and being able to cope or in a "low" characterized by bumbling and lethargy. Generally those experiencing a "low" are not prone to effective self help. By contrast, those people experiencing a "high" may well perceive their predicament as a challenge and continue their efforts in all aspects of survival.

3.2 GENERAL STATE OF HEALTH: Recent illness, poor physical condition, chronic disease, poor nutrition and lack of sleep can all impair a subject's ability to cope with unusual situations,

especially physical stress. Fatigue usually sets
in early and if the individual pushes onward, ex-
haustion will soon follow. The result is impaired
physical and mental capabilities with the possi-
bility of difficult detection by searchers in the
area. Trip leaders often precipitate problems of
this nature when they become ill just before an
outing and go anyway. General health may give
some indicator as to the subject's capabilities.

3.3 PAST EXPERIENCES: Previous experiences with chal-
lenging situations, strange environments or iso-
lation will improve anyones ability to deal with
the problems brought on by injury, disorienta-
tion, or being lost. Studies reveal that those
individuals who push out and expand their comfort
zones (the sphere of everyday activities that a
person feels comfortable with) more readily adapt
to adverse situations and may prove to be less of
a liability. People who rarely do or try anything
new are likely to be more helpless and more of a
survival risk.

3.4 PHYSIOLOGICAL EFFECTS OF THE ENVIRONMENT: Heat,
cold, altitude and precipitation can all have ad-
verse effects on the body and brain causing dif-
ficulty in problem-solving ability. Hypothermia
(the lowering of the body core temperature) is
still known to be the leading cause of death and
accidents in the outdoors. During the advanced
stages of both heat and cold exposure, individuals
become irrational and beyond the ability for self
help. Altitude drastically effects exhaustion
rates and can be a major factor in unacclimatized
persons. Precipitation can cause an individual
to seek shelter and thus pose a problem with
detectability, as well as an increased risk of
hypothermia.

4.0 There are many things that a lost person might do that
will affect both the search strategy and their own
survivability. An awareness of these points may well
prove crucial in revamping a search plan at regular
intervals.

4.1 The ability of the subject to either build or
seek shelter and get a fire started. Does the
subject have the knowledge, skills, and/or re-
sources to do these things? Campsites or fire
circles will provide clues as the search pro-

gresses. Fires are also an extremely good signal
of distress, while shelters in general, are good
camouflages.

4.2   Discarding equipment or clothing is very typical of
individuals in the latter stages of hypothermia or
exhaustion. Although these items provide clues to
the subject's whereabouts, they also point to a
deteriorating condition with regard to the subject's
ability to cope with the environment or situation.

4.3   Often times an individual will develop an over-
whelming sense of abandonment which results in a
"do nothing attitude." They simply refuse to
believe that anyone is out looking for them and
as a result do not call or make signals of any
kind. Some have gone so far as to ignore heli-
copters flying right overhead.

4.4   Whether or not a subject will be detectable is
tremendously important to search planning. Vi-
sual detectability is generally thought of as
being observable at fifty feet. The lost hunter
who is dressed in bright clothing and able to
respond is a great contrast to the young child
who has been instructed not to speak or respond
to strangers, and is dressed in dark clothing.
Perhaps the child is huddled inside a log or stump
to stay warm and dry. Despondents or mentally
handicapped individuals can also present very
difficult problems in detectability.

4.5   Travel aids provide avenues of little resistance
for subjects and sometimes will be used extensively.
Travel aids are pathways, old railroad beds, aban-
don roads, game trails, streams, clearcuts, power-
line right-of-ways or any area that provides a sense
of direction and a path of little resistance. It
is important to note that not all subjects will use
travel aids even though they are available. For
some reason, some prefer not to use them in their
particular situations.

4.6   Weather and visibility play an important role in
determining potential activities of a lost subject.
Impending bad weather is obviously a threat to
life, but perhaps a more immediate concern to the
search manager is the fact that it may force the

subject to stop and seek shelter. This has its
positive affect as well as negative. If the
subject is no longer mobile, SAR resources may
have a chance for confinement. Visibility can
have the same effect, i.e., darkness or extreme
foggy conditions can immobilize the subject. If
the subject does move under these conditions,
it will most likely be random wandering that could
further complicate the search effort. Attractions
such as roads or lights at night would not be
effective.

5.0 <u>MENTAL IMPACT ON THE LOST PERSON</u> --- The human animal
is social in nature with habits that develop into
everyday routine.

Those who dwell in population centers or adjacent areas
are dependent upon technology and modern conveniences
for the necessities of life. It appears that this de-
pendency is increasing at a rapid rate. Is it any won-
der that when separated from people, material pos-
sessions, or familiar reference points, many become very
confused and disoriented, or at the very least, frightened.

5.1 Exactly how a person will react under stress when
isolated and alone is unknown. In an attempt to
better predict a subject's actions, it is neces-
sary to examine past accounts of subject behavior
during actual search missions. After analyzing
these missions, it becomes very apparent that a
number of factors must be considered when devel-
oping an overall search strategy.

5.2 The mental impact of being lost or disoriented
varies with individuals but is generally charac-
terized by a shock-like behavior and disbelief.
Contrary to popular belief, panic is seldom pres-
ent. It appears that a complete loss of contact
with known references results in feelings similar
to vertigo (attitudinal disorientation experienced
by pilots while flying). The subject often feels
that the environment is closing in around him/her
and there is an intense urge to run, break out,
to find the trail or some familiar reference in
that environment.

5.3 After a period of time that varies with each in-
dividual, all subjects seem to get control of
their emotions. (This aspect is true of adults
in various categories but not necessarily of
children). Personal accounts relate how con-

flicts seem to develop between the conscious and subconscious minds about developing a plan of action appropriate for the situation. Eventually, a course of action that seems to offer the highest degree of probable survival, is decided on. This may or may not be a rationale or logical decision.

5.4 If the subject is overcome by a fear of some kind, it is possible that it may over-ride normal behavior and directly impact the outcome of the situation. Basic fears are always with us, and having fears is not abnormal. Everyone is afraid of the dark at some time because it masks one of our five senses. Fear of being alone, animals, suffering, death, and many others all are basic fears about the unknown. How will I react? What will it be like? The impact of these fears tends to be directly related to how well a person handles unknown or unexpected occurrences in daily life.

5.5 Many times there will be a flucuation of thought from a sense of abandonment to a fear about what others will say when the situation is over.

a. What will all my friends or fellow employees say?
b. Who cares whether I am missing? -- Will they tell anyone?
c. Who is going to come out here and look? -- I will bet that they have not even started yet!

5.6 All of these may lead to poor judgement and irrationale behavior. It is imperative to investigate a subject's personality, background, experience and recent mood in order to more accurately predict some type of behavior. Mental attitude is critical because despair and despondency may cause a subject to ignore or entirely disregard obvious aids to rescue.

6.0 The circumstances by which an individual became lost, and a thorough evaluation of the surrounding terrain are both important to establishing a search plan. In general, there are three major categories of circumstances to consider:

a. Known location - the individual was
at a semi-familiar location such as
a home, campground or playground, etc.
b. Enroute - the individual was traveling
a route with one or more individuals
and became separated.
c. No specific location - the individual
is in a wilderness area or relatively
inaccessible location.

6.1 Map and terrain analysis is useful in predicting
subject behavior. Confusion factors on a trail,
mazes, minor and major barriers, natural routes
or travel aids and attractions should be identi-
fied and marked.

✳ Emphasize: PUT YOURSELF IN THE SUBJECT'S SHOES.
Hunter: Where might he have gone?
Berrypickers: Where are the best
berries?

6.2 Compile a subject profile and update it regularly.
Get key people together to go over all the "known"
plus any accumulated "unknowns."

7.0 GENERAL CATEGORIES OF LOST PERSONS

✳ Emphasize: There are a number of general categories
that lost persons can be placed in com-
bined with the pertinent characteristics
that set each category apart. Although
each of the groups exhibit specific traits,
there are always exceptions, and good
search strategy concentrates on the most
likely. The exceptions may be useful in
planning specific confinement techniques.

7.1 Children (1 to 3 years)

a. Unaware of the concept of being lost.
b. Navigational skills and sense of direction
are practically non-existent.
c. They tend to wander aimlessly with no
specific objective.
d. They will seek out the most convenient lo-
cation to lay down and go to sleep.

- Inside a log
- Under a thick bush
- Under an overhanging rock
- Under a picnic table

7.2 Children (3 to 6 years)

a. These children are more mobile and capable of going further than those in the one to three year old category.

b. They have a concept of being lost and will generally try to return home or go back to someplace they are familiar with.

c. They have definite interests and may be drawn away by animals, following older children, or just exploring.

d. When tired, they generally will try to find a sleeping spot.

e. Some have been instructed to stay away from strangers and as a result will not answer or talk to searchers when called by name.

7.3 Children (6 to 12 years)

a. Their navigational and direction skills are much more developed.

b. They are generally oriented to their normal familiar surroundings and become confused in a strange environment.

c. They may intentionally run away to avoid punishment, gain attention, or sulk.

d. Whether it is intentional or accidental circumstances, they often will not answer when called.

e. Darkness usually brings on a willingness to accept help and be found.

f. Children this age suffer from the same fears and problems that adults would, but with a greater sense of helplessness.

g. The circumstances of loss often reflect their being transplanted into a foreign environment or surroundings by parents or other adults.

7.4 Elderly (above 65 years)

a. Often the person is suffering from senility.

b. They are easily attracted by something that strikes their fancy.

c. Their orientation is to past environments rather than the present.

d. Many pose the same supervision problems that children do.

e. The more active and lucid ones are likely to over-extend and exhaust themselves rapidly which can result in heart attack or other fatal complications.

f. They are often hard of hearing or deaf which presents problems with detection.

7.5 Mentally Retarded (all ages)

a. They act and react much the same as children from the age of 6 to 12.
b. They generally will not respond to their spoken name.
c. They most often will be hidden from view as a result of fright or seeking shelter from the elements.
d. Many times they will hold up for days in the same location.
e. They really have no physical impairments except that they will do nothing to help themselves.

7.6 Despondents

a. Most often they are seeking solitude.
b. Generally they will not respond to searchers as they feel it is an intrusion on their solitude.
c. They will generally be within sight and sound of civilization.
d. They tend to be found near prominent locations

   - lake or scenic hill
   - lookout or area with a view
   - seldom, if ever, found in the underbrush

7.7 Hikers

a. Generally, they will rely on trails with a set destination in mind.
b. Problems or complications usually arise with navigation when trail conditions change or become obscure.

   - slide over trail
   - trail not maintained
   - trail covered intermittently with snow in the spring
   - poorly defined junctions

c. Often times hiking parties are mismatched in abilities and one person falls behind, becomes disoriented and ultimately lost.
d. Cutting switchbacks will many times lead to disorientation or going down the wrong hill or drainage.
e. They are very dependent on travel aids and trails for navigation.

7.8 Hunters

    a. They tend to concentrate on game more than on navigation.

    b. In the excitment of pursuing game, they are often lead into deadfall areas, boulder fields, underbrush, and deep snow with little regard for exhaustion or navigation.

    c. They tend to over-extend themselves into darkness and push beyond their physical abilities.

    d. They are typically unprepared for extremely foul weather (Heavy storms in the fall often signify the movement of animals and consequently an improvement in hunting).

7.9 Cone pickers, berry pickers, mushroom pickers, rockhounds, photographers, etc.

    a. Their intentions are to stay in one location.

    b. They usually carry no provisions or survival type gear.

    c. They go in good weather and as a result do not wear anything but light clothing.

    d. Because their attention is focused on or near the ground, they are often mislead by subtle terrain changes.

    e. Attempts to return to familiar ground only put them further out of contact because of their complete disorientation.

    f. These circumstances usually put them at a high risk for survival.

7.10 Fishermen

    a. Generally, they are very well oriented direction wise because of the directional flow of a river or the position of a lake.

    b. The reason they are overdue is most often accident related such as slipping into the water, falls over cliffs trying to move up or down stream, or swept off of feet in fast moving water.

    c. A very high percentage of this mission category is boat related.

    d. Often this will be a recovery mission.

7.11 Climbers

    a. The individuals in this category are generally well equipped and self sufficient.

    b. They tend to remain on or near designated routes.

c. A primary factor for these incidents is
weather or hazardous conditions which
limit an individual's abilities.
d. Other major factors are falling debris
and avalanche.
e. Technical expertise is generally needed
both for search and recovery.

7.12 General Information Relevant to the Prediction
of Lost Subject Behavior -- The following is
a summary of the major points that must be con-
sidered when trying to predict an individual's
movements or whereabouts.

a. Category and circumstances of the loss --

- children are different from hikers, etc.
- the elements of the loss contribute
greatly in prediction.

b. Terrain

- flat terrain generally yields different
travel distances than mountainous.
- The area should be examined for barriers,
escape routes, confusing drainages or
ridges, etc.

c. Personality

- Consider the aggressive person versus the
ponerer or pessimist.
- Has a total effect on the person's ability
to survive is substantial.

d. Weather

- restricts the subject's movements
- is a principle contributor to hypothermia
- time criticalness of the situation may
call for increased efforts.

e. Physical Condition

- are capabilities encumbered or not.
- a poor condition means an increased sus-
ceptability to hypothermia.
- has a direct bearing on the distance a
subject will travel.

f. Medical Problems

- anything that could possibly precipitate
abnormal behavior.
- could have a direct bearing on the distance
a subject could travel.
- weak heart, diabetes, allergies, medication,
etc.   **84**

8.0 <u>Summary</u>.

✱ <u>Emphasize</u>: The information presented here is not going
              to be 100% right all the time. It merely
              represents important facts which were pulled
              from previous case histories. These facts
              should provide you with tools to make the
              job of search manager less complex in the
              decision making process.

✱ 8.1 <u>Refer</u> the students to the charts on pages Lost
       Behavior 10, 11, and 12. Briefly discuss.

✱ 8.2 <u>Refer</u> the students to the Lost Person Behavior
       Problems beginning on page Lost Person Behavior
       13. Divide the class into groups. Assign each
       group a problem. Allow at least 15 minutes,
       then select several groups to present their
       solution.

✱ 8.3 <u>Mention</u> the two articles ("How Far, How Fast"
       and "How to Estimate Hiking Time") on pages
       POA 28 through 32.

       ① THEORETICAL DISTANCE

       ② TERRAIN CORRECTION

       ③ CONTAINMENT

85

Date: December 23, 1982

To: Participants of <u>Managing the Search Function</u> courses

From: Hugh Dougher

Subject: Refinements of some M.S.F. course concepts

This memo addresses some important and recent refinements to
<u>Managing the Search Function</u> theories.

Computers

Perhaps the most exciting idea to be exchanged at the recent
M.S.F. workshop held at Grand Canyon was the increasing
utilization of computers in search management. Professor
John Bownds, University of Arizona, is currently developing
a computer complex that will allow very exact planning and
documentation. Meanwhile, he has written three search
programs that can be used in the Texas Instrument programmable
calculator TI-59. They are:

  DSAR-01 (computes consensus POA),

  DSAR-02 (computes cumulative POD)

  DSAR-03 (computes shifting POA).

I have obtained tapes of each program, and will share with
interested individuals.

The TI-59 can also be used to determine biorythems. Biorythems
may want to be considered when trying to determine the lost
person's behavior.

Cumulative POD

The theory behind cumulative POD assumes independence. That is,
every search effort must be non-biased. However this is difficult
as subsequent teams are influenced by knowledge that the area
has already been searched. This knowledge influences the searchers
to be less efficient. Some suggestions to minimize biases:

  1. explain tactics fully, and strategy behind multiple search,

  2. plan subsequent searches to minimize bias (have second team
        move through area in different pattern, use different
        resources each search, etc.),

  3. consider not including the fact the area has already been
        searched in the briefing. Be careful however, as this can
        cause problems if the searchers discover this information
        through other means and misunderstand the reasons involved.

1.

Probability of Success (POS)

Probability of Success should be considered solely as a planning tool, and needs to be minimized when expressing results. Determining POS can help when deciding how to apply resources different ways. Once these resources have completed their assignments however, POS can only be one of two numbers: 1.0 POS (indicating the subject was found), or 0.0 POS (indicating the subject was not found).

Distributing Probability of Area (POA) into Segmented Search Areas

See following pages.

Refinement of Search Segmentation/POA Distribution
Closed System vs Open System

A useful tool in search management is to segment the search area, and then assign probability of area (POA) to each segment. POA can be assigned based on group consensus (formally known as the Mattson System), subject behavior statistics, or other means. The total of the POA's must equal 1.0. Previously the technique involved dividing the total POA only among those areas to be searched.

Example:

Area a	Area b
.25 POA	.25 POA
Area c	Area d
.25 POA	.25 POA
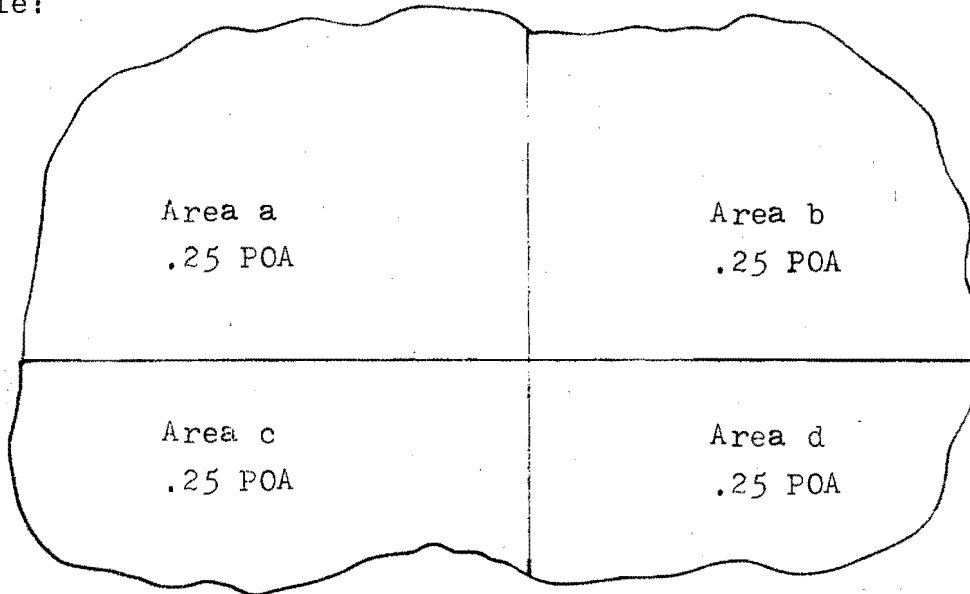
This is referred to as a "closed system" as everything outside the search area is ignored. This distribution of POA thus completely ignores the possibility the subject may be outside the defined search area. If we work our computations within the confines of this closed system we end up chasing our tails. The following example problem demonstrates this point.

Example Problem - Adjusting Probabilities within a Closed System.

Segment a search area into four parts and assign each a POA of 0.25, as shown in the above example. Search each with a resource that will accomplish a desired probability of detection (POD) of 0.7. (this problem is also described on page 63, Search is an Emergency Field Coordinator's Guide).

	Area a:	Area b:	Area c:	Area d:
Original POA's	0.25	0.25	0.25	0.25

After area a has been searched with a POD of 0.7, the probabilities of area change. POA of Area a decreases, and POA's of the other

3.

three areas increase. The exact amount of change can be determined by the formulas:

to determine the new POA of the area just searched:

$$POA = \frac{Pa \times Pm}{(Pa \times Pm) + Pn} \quad \text{where} \quad$$

Pa is the original POA
Pm is the probability the subject was missed (or 1 - POD)
Pn is the probability the subject was not there (or 1 - POA)

to determine new POA's of the other segments:

$$POAb = \frac{1 - \text{new } POAa}{1 - \text{old } POAa} \times \text{old } POAb \quad \text{where} \quad$$

POAb is the area being determined
POAa refers to the area just searched;
new POAa is the number obtained from the above formula

So, to determine the new POA of Area a after it has been searched with a POD of 0.7:

$$POAa = \frac{0.25 \times 0.3}{(0.25 \times 0.3) + .75} = \frac{0.075}{0.825} = 0.09 \text{ POA}$$

To determine new POA of area b after Area a has been searched:

$$POAb = \frac{1 - 0.09}{1 - 0.25} \times 0.25 = \frac{0.91}{0.75} \times 0.25 = .303$$

Same for Areas c and d.

Now we have:

	Area a:	Area b:	Area c:	Area d:
Original POA's	0.25	0.25	0.25	0.25
POA's after Area a searched (0.7 POD)	0.09	0.303	0.303	0.303

Now search Area b with a POD of 0.7.

$$POAb = \frac{0.303 \times 0.3}{(0.303 \times 0.3) + .67} = 0.115 \text{ POAb}$$

$$POAc = \frac{1 - 0.115}{1 - 0.303} \times 0.303 = 0.384$$

Etc.

4.

This gives us:

	Area a:	Area b:	Area c:	Area d:
Original POA's	0.25	0.25	0.25	0.25
POA's after Area a searched	0.09	0.303	0.303	0.303
POA's after Areas a and b searched	0.115	0.115	0.384	0.384

Search Area c, then Area d. Note the final POA's after all four areas have been searched. They are identical to the original POA's! We have committed manpower, resources and time, and yet are right back where we started, with little learned.
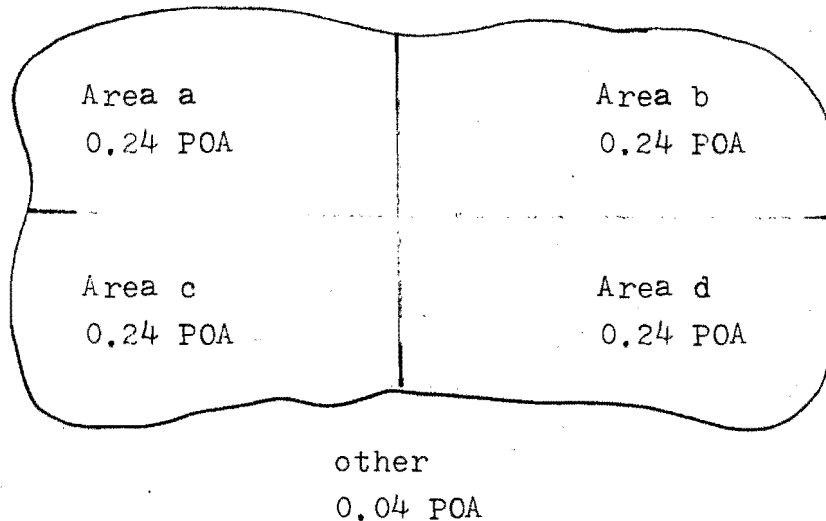
	Area a:	Area b:	Area c:	Area d:
Original POA's	0.25	0.25	0.25	0.25
POA's after Area a searched	0.09	0.303	0.303	0.303
POA's after Areas a and b searched	0.115	0.115	0.384	0.384
POA's after Areas a, b, and c searched	0.157	0.157	0.157	0.525
POA's after Areas a, b, c and d searched	0.25	0.25	0.25	0.25

If the above problem had been worked with unequal POA's, and various POD's, the final POA's after each area had been searched would not have been identical to the origianl POA's. This is because the unequal POD's would have tended to resuffle the numbers. Nevertheless, while not as apparent, the concept would still be legitimate. We'd be chasing all the numbers around a closed area without an escape valve, (ie. the possibility of the subject being outside the areas being searched).

On the other hand, if we had initially assigned some number (no matter how small) to the area not being searched - the rest of the world, mine shafts, the planet Venus, whatever (We'll refer to it as "other") - this number would increase as each area was searched unsuccessfully. Ultimately, a point would be reached where the "other" POA becomes the largest fraction. This can be important when considering search expansion or suspension.

Example Problem - Adjusting Probabilities, Open System

Segment a search area into four parts. Assign each a POA of
0.24. Assign all other possible subject locations a POA of 0.04.

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|                    |                    |
|  Area a            |   Area b           |
|  0.24 POA          |   0.24 POA         |
|                    |                    |
| - - - - - - - - - -|- - - - - - - - - - |
|                    |                    |
|  Area c            |   Area d           |
|  0.24 POA          |   0.24 POA         |
|                    |                    |
|_____|_____|
```

other
0.04 POA

Search each area with some resource that will accomplish a
desired probability of detection (POD) of 0.7.

$$POAa = \frac{0.24 \times 0.3}{(0.24 \times 0.3) + 0.76} = 0.086$$

to determine how searching Area a effects the POA's of the
other areas:

$$POAb = \frac{1 - 0.086}{1 - 0.24} \times 0.24 = 0.289$$

$$POAc = \frac{1 - new\ POAa}{1 - old\ POAa} \times old\ POAc$$

etc.

The adjusted probabilities, after each area has been searched, are:

	Area a:	Area b:	Area c:	Area d:	other
Original POA's	0.24	0.24	0.24	0.24	0.04
POA's after Area a searched	0.086	0.289	0.289	0.289	0.048
POA's after Areas a and b searched	0.108	0.108	0.362	0.362	0.06
POA's after Areas a b, and c searched	0.145	0.145	0.145	0.485	0.08
POA's after Areas a, b, c, and d searched	0.22	0.22	0.22	0.22	0.12

Notice the "other" is slowly increasing. If we were to continue to
search Areas a, b, c, and d enough times, we would reach a point
where the "other" POA becomes the largest fraction. At this point
the search manager has an important tool which he can use to
justify decisions such as increasing the search area, increasing
the emphasis on investigation, or mission suspension.

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