

# Managing the Inland Search Function



## Plan of Instruction For Managing the Inland Search Function – Basic



**A World Standard for Search Planning & Management**

# Managing the Inland Search Function

## Background

The term SAR is an acronym for two separate functions; first **search** and second **rescue**. Rescue utilizes proven procedures along with a high degree of technical skill for victim retrieval. With known victims in known locations, the principle problem involves devising the quickest method of removing that individual from danger to a place of safety and providing medical aid. By contrast, search for a missing, lost or overdue person often involves sophisticated search theory science, and many investigative techniques including: statistics, probability, human behavior and interviewing. These are but a few of the standard tools used in land search strategies.

Traditionally, emergency systems of some type provide the response for missing, overdue, lost, injured, or stranded people, in outdoor environments. However, Search and Rescue, and more specifically the function of search now regularly occur in rural and urban settings. In SAR, wilderness takes on several meanings. For instance, most consider "wilderness" as generally uninhabited and devoid of anything man-made. While this certainly describes natural areas such as large parks and open countryside, it also describes urban areas after devastation by natural forces such as the recent earthquakes and tsunamis in Japan or on the U.S. East Coast after Hurricane Sandy. Even the explosion and crash of Pan American Flight 103 in Lockerbie, Scotland, decades ago proved to be one of the largest Wide Area Search operations for evidence and human remains in Europe's history. The search for the remains of the space shuttle Columbia all across Texas was another good example of recent events pertaining to Wide Area Search.

It would be difficult to estimate the total demand for SAR services around the world today. Some estimate the numbers of missions in the U.S. alone, exceed 150,000 every year. SAR refers to emergency situations that vary from nation to nation as much as the responders vary in the way they provide relief to persons in distress. SAR programs, equipment and personnel vary geographically in accordance with local needs and also the requirement for Wide Area Search techniques. SAR plays an extremely important role in virtually every disaster, fire response, law enforcement and even many EMS emergencies.

Comprehensive emergency management continuously benefits from ongoing SAR operations. Those incidents provide a training ground and experience building opportunities for disaster response capabilities at the most elementary level. Management concepts used in SAR Operations establish a foundation for providing a response to larger scale emergencies and disasters. Nearly every type of hazard mentioned in Comprehensive Emergency Management Plans (*state and local*) require search and rescue as an Emergency Support Function. Management of SAR operations ranges from directing the actions of a few responders in a small community, to managing an effort involving hundreds or even thousands of searchers in larger urban calamities. The varieties of environments and situations span mountains and heavily forested terrain, coastal and inland environments, all with numerous threats to human safety. Often, these larger situations also involve several political subdivisions and the coordination of both air and ground resources. Local governments and any other agencies or organizations that participate in Search and Rescue response must practice cooperation and coordination among diverse multi-skilled responders. In the longer time frame, these courses will add to future training, planning efforts, and cooperation crucial to a fully integrated emergency response system at the local level.

## The New Managing the Inland Search Function Training Courses

The "*Managing the Inland Search Function*" courses were designed for those who have the responsibility to plan, prepare for, and respond to search operations for missing or lost people in wilderness, rural, or urban environments. The course now divides into two integrated sequential training opportunities. This split of the MISF curriculum aims to reduce the costs of training and be more conducive to work schedules, while more specifically targeting operational functions.

## Original Goals and Objectives

The original 5-day course was designed to provide a comprehensive methodology in search for use by local government jurisdictions and land management agencies and that has not changed. The two training courses,

and the accompanying new student textbook, is now a search planning and management *standard* in numerous countries. The same methods described in both the Basic and Advanced Search Planning and Management courses are also used for evidence searches in many police operations and prison breaks. These are not field skills courses. They are management oriented. Participants learn how to plan for, organize and manage a search effort for missing, lost or overdue persons using incident management (NIMS ICS) as the accepted management structure. Both courses emphasize using the right resources to do the job, reflex tasking based on Lost Person Behavior research for every response which accesses international data (ISRID - *International Search and Rescue Incident Database*) for missing and lost person behavior and lastly, using the correct application of the "science" of search theory and planning. Participants master the ability to properly manage a search effort for a lost or missing person in an effective manner. Small group discussion and case study tabletop map exercises are used periodically throughout Part I and Part II courses

## Dividing the Managing the Inland Search Function Course

For decades Emergency Response International's basic *Managing Land Search Operations (MLSO)* course focused on two comprehensive areas:

The first centered on the overall organization/structure and management of a response effort to find a missing or lost person. Course emphasis included logistics, resources, organizational structure, planning, SAR hazard vulnerability assessments, documentation, and rudiments of investigation, interviewing and protocols for suspending the operation. In recent years Lost Person Behavior was added as another foundation concept in the basic approach.

The second area of emphasis in the course focused on *Search Planning*. This aspect of a SAR incident has received increased emphasis over the last decade. This function represents a discipline unto itself. Started in the 1940's under the banner of Operations Research, the search planning component describes a special resource within the management structure of a search incident. Because *search planning* is so important on complicated or extended operations, the goal was to at least include the rudiments of this discipline in all basic courses. The rationale behind this emphasis is that any extended operations on a search must be based on specific documentation and numerical assessments initiated early in the operation. Specific decisions about tactics and numbers of resources must be based on verifiable operational procedures that are repeatable in a wide array of environments.

### The Split

Far more local agency personnel and designated volunteer responders will be involved in first-on-scene operations than will ever be involved in protracted or extended searches. The bottom line is that while the numbers of incidents are not necessarily going down, planning for rapid first response based on sound management principles solves a good number of search problems fairly quickly. Volunteer overhead team members still need to be familiar with search nomenclature and protocols, multi-organizational structure and responsibilities, as well as the basic concepts of effective search. In addition, local resources and capabilities must be matched with reflex tasking tied to the growing research databases for lost subject behavior. Early documentation combined with basic numerical assessments still ensures effective search operations in all cases both simple and complex. All of these basic components are contained in the initial three-day *Managing the Inland Search Function – Basic* course.

For years many in the SAR community have stated that "Probability Theory" (*or formal Search Planning*) and the use of mathematics is really not necessary in search because the majority of incidents are over in 12 to 24 hours. This off-hand reference, based on gut feeling and anecdotes, is now coming into focus as more statistical data builds within the International Search and Rescue Incident Database (ISRID). In analyzing nearly 50,000 SAR cases, it was found that 81% were resolved within 12 hours. Based on the data now available, while 81% of searches seem to be resolved within that 12-hour window, statistics also indicate that approximately 20% (or 1 in 5) searches have the potential of being more difficult and so require more formal search planning. Even if the time frame is pushed out to 24 hours, one search out of twenty (or approximately 5%) has a potential for either some type of legal action or worse, finding the subject too late to save them. 1 in 20 searches represent about one or two more complicated incidents per year for many (*busy*) jurisdictional teams across the U.S.

If a jurisdiction or SAR Team adheres to the philosophy that most searches only last 12 to 24 hours and they train for only this outcome, that training leads to a very unrealistic expectation of success. In fact, this approach may prove detrimental or even disastrous in a protracted search where sound theory and analysis provide insights beyond simple repeated processes. For this reason, the *Managing the Inland Search Function – Advanced Search Planning* then follows the foundation laid in the Basic Course described above. The focus of the advanced training creates a specialized resource for local jurisdictions for use in protracted or very difficult search operations. From a raw numbers perspective, it is obvious that the majority of personnel in a local jurisdiction would not need this level of specialized training and information. As mentioned earlier, a Search Planner functions as a specialized resource separate from incident command both in duties and responsibilities. Four to six individuals in a large jurisdiction or region of a state serving as primary and backup resources provides more functionality along with more cost-effective training for everyone.

## **Managing the Inland Search Function – Basic and Advanced Search Management and Planning Courses**

### **Basic**

The **Basic Course** spans three days and features the selection of multiple map exercises for use depending on desired (local) geography. Presentations are in the latest PowerPoint computer generated formats with embedded videos if so desired.

Agency personnel and volunteer responders routinely arriving as first on-scene-in-charge at a missing or lost person incident must establish documentation and numerical assessments that will provide essential guidance, regardless of incident length or complexity. The course “*Managing the Inland Search Function - Basic*” provides the essence of what the first-on-scene IC must initiate, manage and document on Type 5, 4, or 3 incidents. For the most part, this training is non-technical, but provides a building-block foundation for both ongoing management of the operation and technical search planning potentially necessary in coming operational periods. Most searches begin as Type 5, 4, or 3 incidents and usually resolve using the informal search planning tactics and management contained in this course (*Reflex Tasks*). The Basic course sets the foundation for the application of search planning as detailed in the Advanced Course program. This training explains the principals involved in the analysis of Lost Person Behavior and lays the foundation for Reflex Tasking, statistical analysis and the use of numerical assessments.

### **Advanced Search Planning**

When initial response Reflex Tasking and multiple operational periods fail on a search incident, the only viable solution rests on some level of technical search planning. If the basic protocols advocated in the MISF Basic Course have been implemented, the IC – Incident Commander and Search Planner will be able to pick up where the previous operation left off. *Managing the Inland Search Function –*

*Advanced Search Planning* provides the background and fundamental skills necessary to carry out the function of *Search Planner* in the overhead team under the Plans Chief. The course initially provides a cursory review of basic management tenets from the introductory training and then launches into the use and application of statistical probabilities from the International Search and Rescue Incident Database (ISRID- dbS Productions – Robert J. Koester). **The Advanced course is designed for Incident Commanders managing a Type 2, or 1 incident. These ICs will not be doing the search planning themselves, but they will know what formal search planning looks like and also that it is being done correctly.** The curriculum explains and illustrates the Operations Research started in the Second World War as the precursor to land search operations. Basic tenets of “Search Theory” are discussed and related to current land search operations. Practical search maps exercises then illustrate “probability loading” from the statistical analysis in ISRID. Assigning probabilities, Proportional Consensus, Regions, Probability of Detection and how to monitor Probability of Success are all explained and used in practical desk-top map exercises derived from actual land search cases. Once again, the Advanced Course is designed to create a specialized resource for local jurisdictions that can be called upon in protracted or very difficult search operations. (Type 2 and Type 1 incidents)

## PURPOSE AND SCOPE OF THE TRAINING

Managing the Inland Search Function **Basic** and the **Advanced Search Planning Course** provide participants with information and knowledge about conducting search operations and the overall management of a missing person incident. Course completion enables participants to manage and direct search efforts for missing or lost persons in a more coordinated and efficient manner. The training serves as a state-of-the-art forum of information exchange about conducting search operations in wilderness, rural, or urban environments. New Textbook materials, articles, research documents, and the combined experience and knowledge of the instructors along with the course participants all combine to create an *“Information Rich Learning Environment.”* That environment and methodology of information sharing is one of the leading attributes of the course.

- The ultimate goal of the *Managing the Inland Search Function - Basic* course is to improve search incident management. Informed and trained Incident Commanders with state-of-the-art search methods have more capabilities, provide better coordination, usually communicate better, and use preplanning as a hedge against poor results and failure.
- The ultimate goal of the *MISF Advanced Search Planning* course is to provide the background and fundamental skills necessary to carry out the function of *Search Planner* in the overhead team under the Plans Chief. The training is designed to create a specialized resource for local jurisdictions that can be used in protracted or very difficult search operations.
- Progressive teaching techniques maximize the use of case histories and problem-solving exercises that provide practical application and challenge the participants. Practical map exercises based on real anecdotal cases serve as the basis for decision making on similar situations encountered by participants in future actual SAR missions.
- The MISF training courses (Part I and Part II) will be of interest to any agency or organization, whether professional or volunteer, with search related interests, responsibilities, or capabilities.
- Throughout both courses and the New Textbook, search management and planning tenets are described generically for land search so that participants and readers can make the widest possible application of the principles and recommendations. Regardless of the environment (*flat land, mountains, lakes, rivers, air search, urban or suburban neighborhoods etc.*) the elements of good land search management and planning will be the same.
- The training in these courses use focused research and case studies to identify past mistakes with an expectation that lessons learned may well prevent future problems of the same nature.

There is no doubt that many attending this course will know some of the material presented by the very nature of having been involved in SAR at the local level. Some may even feel that they already know all the material. While the latter is doubtful, it is none-the-less important to encourage participants to keep an open mind and consider the scope of the entire training package and the inter-relationships of all the parts.

The training discusses and builds on a logical, disciplined, and organized approach to finding a missing, lost or overdue person. It is important to stress that common sense, experience and professional needs should provide both direction and value to the course and text content.

## OBJECTIVES for the Managing the Inland Search Function Basic Course

After successful completion of these courses, participants will have had exposure to all of the basic tenets of incident management for land search operations and the rudiments of search planning.

After successful completion of the Managing the Inland Search Function - Basic course, participants will be able to:

1. Manage a search as the Incident Commander on a search effort for single or multiple missing / lost persons.
2. Participate as an overhead team member on a search, for a missing/lost person.
3. List the functions and responsibilities within the organizational structure of the Incident Command System for SAR.
4. List the essential elements of a written preplan for search operations and describe the document's importance to a successful and effective effort.
5. List the basic types of search resources and discuss their function and limitations.
6. Describe the most productive and efficient tactics that can be used in search for lost or missing persons in either wilderness, rural, suburban or urban environments.
7. Describe the importance of Reflex Tasking functions that are based on Lost Person Behavior categories.
8. Describe an ordered priority sequence of initial actions in applying SAR resources to locate missing people.
9. Describe the functions of vision, target orientation, search image and briefing as they relate to search, detection and recognition.
10. List at least six specific questions that should be asked of searchers during debriefing at the end of the operational period.
11. Demonstrate the ability to establish a workable and realistic probable search area and searchable subdivisions in a map exercise
12. Identify the key factors involved in deciding to suspend a mission.

In addition, each participant should be able to assist his/her local jurisdiction in the following areas:

1. Assist local Emergency Managers in developing local emergency response plans for all search and rescue operations – Emergency Support Function – ESF #9.
2. Coordinate and provide necessary training to other agencies, personnel, and volunteers assigned Search and Rescue operational duties.
3. In consultation with the local Emergency Manager, develop the local SOPs for the Community Emergency Operations Plan that deal with both the search and rescue functions.

## **QUALIFICATIONS FOR ATTENDANCE**

The MISF Basic and Advanced Search Planning courses were designed for those agency members that have responsibilities for conducting search operations in rural, wilderness, urban or missing aircraft related incidents. This may include personnel from law enforcement agencies, land management agencies, federal reservations, fire rescue services, emergency medical groups and all three levels of government: (local, state and federal). In addition, selected representatives from volunteer and private search organizations will definitely have a need for information contained in these courses as well.

**Pre-requisites MISF:** *Managing the Inland Search Function - BASIC* is a required pre-requisite to the Advanced Search Planning course.

## **SPECIAL REQUIREMENTS FOR THE CONDUCT OF THE TRAINING**

During the case study map exercises the participants will need to break into small working groups. Additional classroom space or small break-out rooms for discussion work well. Group size for break-out and discussion groups for the map exercise sessions should be a maximum of 6 participants.

## MANAGING THE INLAND SEARCH FUNCTION

### Summary of Basic Course Subject Areas and Approximate Times

1. Introduction to course, handout books, initial admin, announcements .....1.0 Hr

#### **Pre-Operations and Planning** (*Concepts, Philosophy and Responsibilities*)

2. Changing Concepts in Search Planning & Management .....1.0 Hr
3. Legal Issues and Public Expectations .....1.0 Hr
4. Search IC - The Job of Managing a Search .....1.0 Hr
5. SAR Vulnerability Assessment & Statistics .....0.5 Hr
6. Operational Preplanning - Developing a Written Plan .....0.5 Hr
7. SAR Resources & Their Application .....2.0 Hrs
8. Case Study of Unique Search - Outcomes and valuable Lessons.....1.0 Hr

#### **Operational Response** (*Responding when the call comes in*)

9. Getting Started: First Notice, Urgency, Planning/Searching Data, etc. 1.0 Hr
10. Investigation & Interviewing .....0.75 Hr
11. Lost Person Behavior and Reflex Tasking (Map Exercise #1)..... 2.0 Hr
12. Organizational Structure: ICS and Six Step Process for SAR Ops0.5 Hr
13. Introductory Exercise (Map Exercise #2) .....2.0 Hr
14. Introduction to the Science of Search – (*Search Planning*)..1.0 Hr
15. Establishing the Search Area (POA) .....1.0 Hr
16. Probability of Detection (POD) & Probability of Success (POS) ... 2.0 Hr
17. Information Exchange - Briefing and Debriefing.....0.5 Hr
18. Searching in the Urban Environment.....1.0 Hr

#### **Management Issues for Base Operations - Post Search Admin**

19. Computers and the Social Media in Search .....1.0 Hr
20. Suspending Operations - Demobilization, Post Mission /Critique. 0.5 Hr
21. Map Exercise (Map Exercise #3).....2.5 Hrs
22. Critique, Closing Comments and Certificates .....0.5 Hr

**TOTAL** .....**24.5 Hrs**

## Managing the Inland Search Function - Basic

### AVAILABLE UNITS OF INSTRUCTION

#### **1. Introduction, Course Administration, Class Objectives (1 Hr.)**

**Scope:** Welcome, familiarization with the facilities, administrative information, course purpose, objectives, agenda and instructional staff introduction. Class participants establish their primary objectives for attending the course and introduce themselves.

#### **2. Changing Concepts in Search Management (1.0 Hr.)**

**Scope:** A review of how the conduct of land search for missing or lost people has changed dramatically in the last decade with added research and international data for lost person behavior; Revised and added

crucials for base line planning; new terms, definitions and practical use of the science of search for finding missing and lost persons; also the basic math skills necessary for search planning.

### **3. Legal Issues and Public Expectations (1.0 Hr.)**

**Scope:** Discusses the basic issues of liability in SAR response, elements used to prove liability, and the most common causes of lawsuits in SAR Response. Emphasis is placed on understanding the law regarding trespass on private property, the process and how most lawsuits occur. Volunteer status, Necessity and the Good Samaritan laws are also reviewed.

### **4. Search IC: The Job of Managing a Search (1.0 Hr.)**

**Scope:** Responsibilities of the Search Incident Commander; Professional competencies; Common mistakes made during previous searches and how to avoid them; core skills of the IC position and the mix of leadership and management; Continuing operational problems in search; What volunteers expect of search managers and what search managers expect of volunteers; and Contents of a good search management kit to take on-scene.

### **5. SAR Vulnerability Assessment & SAR Statistics (0.5 Hr.)**

**Scope:** The importance and benefits of the SAR vulnerability assessment and its role in developing a written plan; Identification of SAR mission types; Collection of information; Hazard mapping and the assessment report; The importance of maintaining local SAR mission data-bases and the overall benefits of SAR statistics.

### **6. Operational Preplanning: Developing a Written Plan (1.0 Hr.)**

**Scope:** Definition of the SAR Operational Preplan; The reasons for planning; Major influences affecting the plan and a detailed discussion of what should go on during the planning process; Characteristics and Components of the written preplan; The SAR planning process and examples of good plan components from a wide source of written plans; Also, a template for developing a written plan is presented.

### **7. SAR Resources and Their Application (2.0 Hours)**

**Scope:** Identifies the types and categories of SAR resources and their functions, limitations, sources, training and availability; State or regional specific resources and their use in that area; Tactical application or how those resources are applied in a practical sense to the field. The sequence of initial actions for applying resources is outlined as appropriate to establishing strategy and tactics. Detection modes, search techniques, and an overview of search resource capability are also covered. Depending on the area and types of searches conducted in the region, guest speakers on dogs, tracking, and aircraft may be used. The objective is to give participants a broad-based understanding of how and when resources should be applied.

### **8. Case Study of a Unique Search - Outcomes and Valuable Lessons (1.0 Hr.)**

**Scope:** This module is an anecdotal case chosen because of its extreme complexities, and the uniqueness of the situation. This incident provides a very good rationale for why the basic course was developed and to point out the difficulties that can occur in some searches that involve multiple jurisdictions. The goal is to avoid mistakes and learn from the experience of others. The incident involves a missing family in the Pacific Northwest coastal area. This search created both national and international news that was covered by virtually all types of media nationwide. Because a State Sheriff's Association conducted a complete review of this incident, the documentation was extraordinary. At the conclusion of the case study, there should be a briefing on how the map problems will be conducted during the context of the remaining course.

## 9. Getting Started (1.0 Hr.)

**Scope:** This is a collective module was designed to capsulize the GETTING STARTED PROCESS when the call comes in for a potential missing person. *(This is a combination of previous modules encompassing First Notice, Determining Urgency, Planning and Searching Data, Callout and specific reference to the Missing Person Report Form)* As a potential search incident unfolds, all these tasks must be completed: Initial contact with the reporting party; Gathering initial information; Evaluation of the problem; Gathering more information and determining priority questions. All the factors involved in determining the urgency of the situation and how these help to set the relative level and speed of response is discussed; the minimum information and data necessary to start the incident management process is outlined along with Information needed by searchers to effectively search in the field. An in-depth look at the Initial and Full Missing Person Report form contents is covered.

## 10. Investigation and Interviewing (1 Hr.)

**Scope:** Identifies the necessity for, and the general principles of investigation to include: Assembling a complete profile; The four types of evidence; Criminal possibilities; Sources of leads and clues; The fundamental elements of interviewing witnesses and persons with potential intimate knowledge of the missing person or circumstances surrounding how the missing subject went missing; pitfalls to the interviewing process; The importance of the Communications Triad; and Where to get specific information.

## 11. Missing/Lost Person Behavior and Reflex Tasking (2.0 Hr.)

**Scope:** Identifies the importance of establishing a detailed subject profile using behavior data as a foundation; The basis and underlying principles behind ISRID (International Search and Rescue Incident Database); Notable behavior of lost and missing persons; The need for data collection and the use of previous mission data in determining probable search areas; The difference between being lost and not being lost; Probability zones based on international data and eco regions.

This module also covers initial actions on every search, regardless of the circumstances that are based on Lost Person Behavior subject categories; Reflex tasking is defined and described along with the very useful "Bike Wheel Model" as a template for on-scene initial response; The logical sequence for planning a search effort is given along with guidelines for developing attainable, verifiable operational period objectives, that can be easily evaluated. The search planning time table for each operational period is discussed and the module concludes with a Reflex Tasking map exercise.

## 12. Organizational Structure: ICS & Objectives: How it is used for SAR Ops (1 Hr.)

**Scope:** How good organization enhances coordination, cooperation and functional positions. The ICS on-scene management system; Operational problems and pitfalls as pointed out in case studies and research; Functional management with specific responsibilities is emphasized along with critical components of an effective management system; Concludes with the cyclic Six Step Management Process developed by the International Association of Chiefs of Police - it is repeated during every operational period.

## 13. Case Study Map Exercise - Tabletop # 2 (2 Hrs.)

**Scope:** This actual search case study map problem utilizes all the basic principles introduced in the course to this point. It is an actual search incident and course participants must use the same resources that were available during the real incident. Interviewing and investigation are emphasized to gather planning data and searching data along with missing and lost person behavior. Participants are also given ground rules for participation in the tabletop map exercises to follow.

## 14. Introduction to the Science of Search (*Search Planning Theory*) (1.0 Hr.)

**Scope:** The history and derivation of search theory dating back to WWII and Operations Research is outlined; Review of current approaches to management and planning of searches; The need for quantification and a detailed explanation of how to use and apply mathematical units of measure; statistical

concepts and their application to the problem of search; probability zones and the use of conventional notation for Search Probability Theory plus selected definitions. The module also discusses probability of success and its importance as a management tool.

#### **15. Establishing the Search Area – (POA) (1 Hr.)**

**Scope:** The process to establish a search area and the four methods used to reduce that area to a manageable size. The potential search area is described as a function of probable scenarios. Identify potential travel distances and probable locations identified for specific regions of probability. All methods of establishing a search area are brought together in a sample problem.

The concept of assigning probabilities to search segments by proportional consensus; Subjective regions of probability combined with missing/lost person behavior data probability zones are also discussed; The concept of shifting probabilities of area and the mathematical analysis necessary for tracking changing values is also covered. As a final practical exercise, the entire process is tracked from start to finish using one incident and all the associated processes and figures.

#### **16. Probability of Detection (POD) and Probability of Success (POS) (1 Hr.)**

**Scope:** POD is defined; The original research and experiments on probability of detection done in the Pacific Northwest along with methods developed around the world; Tactics that are used in search for missing persons, objects and evidence are discussed in detail. Operations research is discussed as it relates to determination of *Sweep Width* and *Coverage*. Methods of determining POD for volunteers using "Average Range of Detection" (AROD or  $R_d$ ) and the current research that substantiates this procedure are also covered. Sample problems with representative calculations are provided along with practical application and use; emphasis on practical procedures to determine reasonably accurate probability of detection calculations. **Type 5, 4, and 3 Incident Commanders** will become familiar with search planning terminology in this module and the two above. They will also learn what information that a formal search planner will need if the incident escalates to a **Type 2 or Type 1 incident**.

This module also provides an overview of all the basic principles involved in the search theory standard notation formula: (POA X POD = POS). The importance of quantifying values for both search area designation and the ability of resources to detect the missing subject in the field are both emphasized. Practical examples are given concerning decisions about effort allocation and the options that are open to Search ICs when committing resources to the field; The POS for each segment and the overall search effort throughout the search area.

#### **17. Map Exercise - Tabletop # 3 (2 Hrs.)**

**Scope:** The third map exercise is designed to utilize all of the basic principles introduced during the course up to this point. It is another actual search incident and course participants, as before, use the same resources that were available during the actual incident. Interviewing and investigation and use of forms are emphasized to gather planning and searching data along with missing and lost person behavior. Participants are encouraged to document everything; this is the first problem to involve a shift change between groups during the problem.

#### **18. Information Exchange - Briefing/Debriefing (1.0 Hr.)**

**Scope:** Discusses the important elements of briefing to include the function and responsibility of briefing, tips on giving briefings, where and when they should occur, the minimum information for a briefing, and some guidelines as to how they should be conducted. Discusses the important elements of debriefing to include the function and responsibility of doing the debriefing; who should be debriefed and when that activity needs to take place; Specific information that should be gathered and what kind of documentation should be kept in writing.

## **19. Searching in the Urban Environment (1.5 Hrs.)**

**Scope:** Some search topics are the same in the urban environment, and many are different. This module is a synopsis of a three-day course on searching in the urban environment. The need for a comprehensive pre-plan is emphasized with component parts of the vulnerability assessment necessary for planning. The subject profile for the urban search is stressed along with map management, pre-designated search base sites, searcher safety, good investigative techniques, and use of the media plus containment strategies in the city. Urban tactics are discussed with specifics about house to house inquiries and searching buildings. The last portion of this module deals with abduction and international data that provides guidelines in these incidents. This module clearly does not cover any aspect of heavy rescue or entering damaged structures covered in the FEMA Urban Disaster SAR training program.

## **20. Search Base Operations & Documentation (1.0 Hr.)**

**Scope:** Describes the various types of search operation facilities and their use, plus guidelines for establishing search bases, camps, the command post, helicopter-bases, staging areas and other special facilities. Emphasis is placed on safety and organizational layout for best efficiency of operation; the documentation process in terms of why it is important, what and how activities should be recorded and the personnel positions that should be responsible for recording the information.

## **21. Current Research in Search Operations (1 Hr.)**

**Scope:** Describes and explains the latest research going on in the field regarding search. Lost Person Behavior and ISRID (Versions 2); Canine Probability of Detection POD experiments being conducted in the field; Small UAV detection experiments; Basic Searcher POD Experiments using Rd – Sweep Width (W); Correction factors for experience, trails, night searching and defining Probable Success Rate (PSR). New software that is being developed along with Search and Rescue Collection and Analysis Tool and the new GIS Find Software.

## **22. Suspending the Mission, Demobilization & Post Mission (1 Hr.)**

**Scope:** Identifies the key factors involved in deciding when to suspend a search mission. Discusses the importance and inter-relationships of these factors to the decision-making process. The elements of a limited-continuous search are also reviewed along with ideas and techniques for a final debriefing session; the definition and principles of demobilization; identifies the six parts of the demobilization plan. Special emphasis is placed on the legal ramifications of inadequate or no demobilization planning; The objectives and techniques involved in meeting post-search mission responsibilities including organizing and conducting a critique, guidelines and follow-up action, post mission paperwork, thank you letters, etc. Emphasis is placed on improving operations in the future by learning from the mistakes of the past.

## **23. Final Map Exercise Tabletop #3 (2 Hrs.)**

**Scope:** It is another actual search incident and course participants, as before, use the same resources that were available during the actual incident. Interviewing and investigation and use of forms are emphasized to gather planning and searching data along with missing and lost person behavior. Participants are encouraged to document everything. This is really the practical application of all concepts and principles presented throughout the course.

# Managing the Inland Search Function - Basic

## Sample Agenda

The course must have a flexible agenda based on local needs & tangent discussion topics  
 Times for each module are approximate and vary with location and course participant needs.  
 Depending on start times, modify time hacks as appropriate; Times for each module are approx.

**DAY 1:** **INSTRUCTOR**  
 0800 to 0830 Introductions, Handout text, initial Admin. \_\_\_\_\_

**Pre-Operations and Planning** (*Concepts, Philosophy & Responsibilities*)

-55min	Changing Concepts in Search Management	_____
1030 -1040	<b>Break</b> (coffee/tea)	_____
-55min	Legal Issues and Public Expectations	_____
-55min	Search Incident Commander - The Job of Managing a Search	_____
-30min	SAR Vulnerability Assessment & Statistics	_____
1200-1300	<b>Lunch on your own – not provided as part of the course</b>	_____
-55 min	Preplanning - Developing an Operational Written Plan	_____
-120min (+break)	SAR Resources & Their Application	_____
-55 min	Case Study of a Unique Search – Outcomes and valuable Lessons	_____
≈1700	<b>Class ends for the first day</b>	_____

**DAY 2:**

0800 -	Class Starts	
-55min	GETTING STARTED: First Notice, Determining Urgency, Planning & Searching Data, Callout -Missing Person Report Form	_____
	<b>Search Management - Initial Response</b>	_____
-55min	Investigation & Interviewing	_____
-120min	Missing /Lost Person Behavior and Reflex Tasking (Map Exercise #1)	_____
1200 -1300	<b>Lunch on your own – not provided as part of the course</b>	_____
-30min	Organizational Structure: ICS and the Six Step Process	_____
-120min	Map Exercise # 2	_____
1500 -1515	<b>Break</b> (coffee/tea)	_____
-55min	Introduction to the Science of Search	_____
-55min	Establishing the Search Area (POA)	_____
≈1700 -	<b>Class ends for 2nd day</b>	_____

**DAY 3:**

0800 -	Class Starts	
-55min	Probability of Detection (POD) & Probability of Success (POS)	_____
-55min	Information Exchange – Brief/Debrief	_____
1000 -1010	<b>Break</b> (coffee/tea)	_____
-90min	Searching in the Urban Environment	_____
1200 -1300	<b>Lunch on your own – not provided as part of the course</b>	_____
-55min	Current Research in Search Operations (Optional)	_____
-55min	Suspending the Mission, Demobilization & Critique	_____
1500 - 1515	<b>Break</b> (coffee/tea)	_____
2.0 hrs	Map Exercise # 3	_____
1630-1700	<b>Formal course ends.</b> Discussion, closing remarks	_____
	Critique, Certificates - -	_____
≈1700 -	<b>Course ends on 3rd day</b>	_____

**TOTAL** ..... ≈ 24 Hrs.

## EVALUATION

There should be some feedback and evaluation on the course utility and practical value at the end of the course. The feedback should consist of measuring objectives by various methods and techniques outlined in the lesson plans and in the end-of-course critique. Some law enforcement academies prefer a written test as evaluation which is included in the Instructor Training Suite. The map problems serve as one of the best indicators for participant understanding of essential planning and management concepts.

In the City and Guilds Institute of London under the Profiles in Professionalism category for vocational training, police and other law enforcement students have the option of submitting a personal evaluation of a search case study within 6 months after attending the course. By asking students to read, study and comment on real cases and compare their findings with the internationally accepted principles of search planning and management, instructors may fully assess a student's knowledge of applied principles to real life situations in the search arena.

Specific competencies, particularly in complicated courses like "Managing the Inland Search Function - Advanced Search Planning" are not retained indefinitely. The skills and knowledge presented during the training are perishable. Written evaluations serve the following purposes: to evaluate the participant's degree of understanding; to determine the need for revisions in future courses; and to determine the scope of future refresher courses.

## DEPLOYMENT

The **Managing the Inland Search Function - Basic** course should be taken some time in the first year of assignment for newly designated local SAR coordinators and Search Incident Commanders. This exposure will provide a clear template and knowledge for managing Type 5, 4 or 3 SAR incidents. It will also provide a foundation of knowledge and terminology required to supervise or manage the formal search planning function on a protracted search. A refresher course for this training should be attended by those with search responsibilities at a minimum of every three years. Refresher training should consist of a minimum of one and a half to two days review of best practices application of search theory, use of the ISRID database combined with Reflex Tasking and practical map exercises using real search incidents.

Every jurisdiction should have access to the specialized capability of a search planner. Whether that is in the form of a volunteer or an official agency representative, the function is indispensable for Type 2 and Type 1 incidents involving protracted or wide area searches. As mentioned above, most personnel in a local jurisdiction would not need this level of specialized training and information. The Search Planner functions as a specialized resource which is separate from incident command both in duties and responsibilities. Volunteers can serve this vital function well as a specialized local resource or team. Four to six individuals in a large jurisdiction or region of a state serving as primary and backup resources provides more functionality along with more cost-effective training for everyone. **The Managing the Inland Search Function – Advanced Search Planning** should be attended within at least 6 months of going through the **Basic** and should be followed up with a refresher every three years.

## **MATERIALS CHECKLIST: Basic MISF Course**

### **STUDENT TEXTS**

**Required:** Textbook – Managing the Inland Search Function

**Required:** Lost Person Behavior – A Search and Rescue Guide on Where to Look – for Land, Air and Water by **Robert J. Koester**

**Optional:** Handbook - The Handbook for Managing the Inland Search Function

**Optional:** Selected papers from research studies for reference

**NOTE:** Many states and sponsoring agencies prefer to provide 3-ring binder for the students. This is so other information specific to the country, state, region, or county can be kept with the book. The textbooks are perfect bound and do not lend themselves to being placed in a 3-ring binder. However the books can be 3-hole drilled and can be inserted into a binder.

### **STUDENT MATERIALS**

Student pre-work or assignments (*Train the trainer courses usually have pre-work*)

3-ring notebooks (*if necessary*)

Name tent for each participant (*pass around marker to write names*)

Course critique forms

Certificates and MISF Patches

Calculators for math computations and straight edge for measurement on maps

### **INSTRUCTIONAL AIDS**

Instructional Suite PowerPoint (Instructor Package available thru ERI)

Laminated maps for use in tabletop exercises

Vinyl overlays for operational period designations

Embedded videos (optional) for case studies on CD

### **CLASSROOM FACILITIES**

Blackboard, chalk and eraser

Flipchart and felt tip markers

Podium or instructor table at front of classroom

Reference tables for handouts, journals, research materials and example texts, etc (*two*)

Student seating - Desks? Tables with chairs work out much better

Separate work or breakout areas for students to work exercises/problems

Separate work-table for instructors (layout and organize instructional materials)

Room that can be secured for storage and access to a copy machine

3-hole punch for students to insert handouts and extra worksheets into 3-ring binder

### **AV EQUIPMENT**

Overhead projector if available to assist with the map exercises for assignments (optional).

Computer projector

Extra bulbs and extension cord

Sources of immediate back-up equipment

Screen (*as large as possible*); realistically this should be at least 6 X 8 feet.

### **MISCELLANEOUS ADMIN. MATERIALS**

Receipt book if necessary for registrations

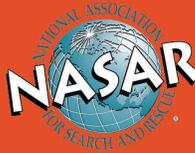
Paper, pens or pencils & tape (*masking tape to hold down vinyl overlays*)

Extra transparencies (vinyl) & water soluble pens

**ESSENTIAL:** Means to make and distribute a class roster

# Textbook for MISF

## Managing the Inland Search Function



World Standards in Land Search Management and Planning



ERI Publications & Training  
The National Association For Search And Rescue

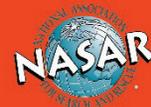
This is the new publication from Emergency Response International and the National Association for Search and Rescue. This 500 page Text represents a collaborative effort by ERI and NASAR to develop a comprehensive guide to pre-planning, and search operations in wilderness, rural and urban environments, for Search incidents in any size jurisdiction. The book provides techniques for objective assessments, the latest research, guidance for planning and documentation regardless of incident length or complexity. This publication updates, merges and replaces the textbooks for Managing Land Search Operations (MLSO) and Managing the Lost Person Incident (MLPI). The book clearly focuses on agency personnel and volunteer responders routinely arriving as first on-scene during missing or lost person incidents as well as overhead staff on longer complex operations.

The priorities and concepts covered in the handbook come directly from

## The Handbook for Managing the Inland Search Function



A Companion Fieldbook for  
*Managing the Inland Search Function*

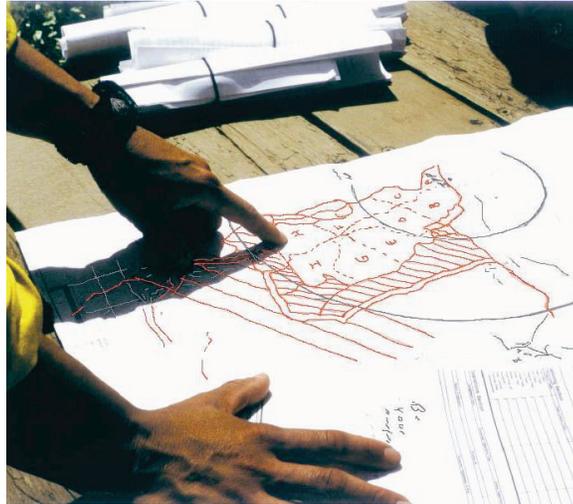


ERI Publications & Training  
The National Association For Search And Rescue

the Managing the Inland Search Function Textbook above and courses from Emergency Response International and NASAR.

The checklists, worksheets, reminders and organizational assistance in this handbook provide the necessary tools, in sequence to help manage real-time search operations phase by phase. This requires a complete understanding of the concepts and their derivation. By derivation in this context, our focus is the above mentioned courses, centers on why the concepts help to create successful search operations.

# Managing the Inland Search Function



## Plan of Instruction For Advanced Search Planning for Managing the Inland Search Function



**A World Standard for Search Planning & Management**

## The New Managing the Inland Search Function Training Courses

The *Managing the Inland Search Function* course was designed for those who have the responsibility to plan, prepare for, and respond to search operations for missing or lost people in wilderness, rural, or urban environments. The course now divides into two integrated sequential training opportunities. This split of the MISF curriculum aims to reduce the costs of training and be more conducive to work schedules, while more specifically targeting operational functions.

### Original Goals and Objectives for original 5-day course

The original 5-day course was designed to provide a comprehensive methodology in search for use by local government jurisdictions and land management agencies and that has not changed. The two training courses, and their accompanying student textbook, are now a search management *standard* in numerous countries. The same methods described in both the Basic and Advanced Search Planning courses are also used for evidence searches in many police operations and prison breaks. These are not field skills courses. They are management oriented. Participants will learn how to plan for, organize and manage a search effort for missing or lost persons using incident management (NIMS ICS) as the accepted management structure. Both courses emphasize on using the right resources to do the job, reflex tasking based on Lost Person Behavior research for every response, accessing international data for missing and lost person behavior and lastly, the correct application of the "science" of search theory and planning. Participants master the ability to properly manage a search effort for a lost or missing person in an effective manner. Small group discussion and case study tabletop map exercises are used periodically throughout the **BASIC** and **ADVANCED** courses

### Dividing the Managing the Inland Search Function Course

For decades ERI's basic course, then called (*Managing Land Search Operations*) focused on two comprehensive areas:

The first centered on the overall organization/structure and management of a response effort to find a missing or lost person. Course emphasis included logistics, resources, organizational structure, planning, SAR hazard vulnerability assessments, documentation, and rudiments of investigation, interviewing and protocols for suspending the operation. In recent years we added Lost Person Behavior as another foundation concept in our basic approach.

The second area of emphasis in the ERI course focused on *Search Planning*. This aspect of the SAR incident has received increased importance over the past half-decade. This function represents a discipline unto itself. Started in the 1940's under the banner of Operations Research, the search planning component describes a special resource within the management structure of a search incident. Because this function in search is so important on complicated or extended operations, ERI has endeavored to at least include the rudiments of this discipline in all basic courses. The rationale behind this emphasis is that any extended operational search must be based on specific documentation and numerical assessments initiated early in the operation. Specific decisions about tactics and numbers of resources must be based on verifiable operational procedures that are repeatable in a wide array of environments.

### The Split

Far more local agency personnel and designated volunteer responders will be involved in first-on-scene operations than will ever be involved in protracted or extended searches. The bottom line is that while the numbers of incidents are not necessarily going down, planning for rapid first response based on sound management principles solves a good number of search problems fairly quickly. Volunteer overhead team members still need to be familiar with search nomenclature and protocols, multi-

organizational structure and responsibilities, as well as the basic concepts of effective search. In addition, local resources and capabilities must be matched with reflex tasking tied to the growing research databases for lost subject behavior. Early documentation combined with basic numerical assessments still ensures effective search operations in all cases both simple and complex. All of these basic components are contained in the initial three-day *Managing the Inland Search Function*.

For years many in the SAR community have stated that Probability Theory (*or formal Search Planning*) and the use of mathematics is really not necessary in search because the majority of incidents are over in 12 to 24 hours. This off-hand reference, based on gut feeling and anecdotes, is now coming into focus as more statistical data builds within the International Search and Rescue Incident Database (ISRID). In analyzing nearly 50,000 SAR cases, it was found that 81% were resolved within 12 hours. Based on the data now available, while 81% of searches seem to be resolved within that 12-hour window, statistics also indicate that approximately 20% (or 1 in 5) searches have the potential of being more difficult and so require more formal search planning. Even if you push the time frame to 24 hours one search out of twenty (or approximately 5%) has a huge potential for either some type of legal action or worse, finding the subject too late to save them. 1 in 20 searches represent about one or two more complicated incidents per year for many (busy) teams across the U.S.

If a jurisdiction or SAR Team adheres to the philosophy that most searches only last 12 to 24 hours and they train for only this outcome, that training leads to a very unrealistic expectation of success. In fact, this approach may prove detrimental or even disastrous in a protracted search where sound theory and analysis provide insights beyond simple repeated processes. For this reason, *Advanced Search Planning for Managing Land Search Operations* then follows the foundation laid in the Basic course described above. The focus of the advanced training creates a specialized resource for local jurisdictions for use in protracted or very difficult search operations. From a raw numbers perspective, it is obvious that most personnel in a local jurisdiction would not need this level of specialized training and information. As mentioned earlier, a Search Planner functions as a specialized resource separate from incident command both in duties and responsibilities. Four to six individuals in a large jurisdiction or region of a state serving as primary and backup resources provides more functionality along with more cost-effective training for everyone.

## **Managing Land Search Operations – Basic and Advanced Search Planning Courses**

### **Basic**

The **Basic Course** spans three days and features the selection of multiple map exercises for use depending on desired (local) geography. Presentations are in the latest PowerPoint computer generated formats with embedded videos.

Agency personnel and volunteer responders routinely arriving as first on-scene-in-charge at a missing or lost person incident must establish documentation and numerical assessments that will provide essential guidance, regardless of incident length or complexity. The course *Managing the Inland Search Function* provides the essence of what the first-on-scene IC will have to initiate, manage and document on Type 5, 4, or 3 incidents. For the most part, this training is non-technical, but provides a building-block foundation for both ongoing management of the operation and technical search planning that could be necessary in coming operational periods. Most searches begin as Type 5, 4, or 3 incidents and usually can be resolved using the informal search planning tactics and management contained in this course. The Basic course sets the foundation for the application of search planning as detailed in the Advanced Search Planning course. This training explains the principals involved in the analysis of Lost Person Behavior and lays the foundation for Reflex Tasking, statistical analysis and the use of numerical assessments.

## Advanced Search Planning

When initial response Reflex Tasking and multiple operational periods fail on a search incident, the only viable solution rests on some level of technical search planning. If the basic protocols advocated in the Basic MISF Course have been implemented, the Search Planner will be able to pick up where the previous operation left off. *Advanced Search Planning for Managing the Inland Search Function* provides the background and fundamental skills necessary to carry out the function of *Search Planner* in the overhead team under the Plans Chief. The course initially provides a cursory review of basic management tenets from the introductory training and then launches into the use and application of statistical probabilities from the International Search and Rescue Incident Database (ISRID- dbS Productions – Robert J. Koester). **This course is designed for Incident Commanders managing a Type 2, or 1 incident. These ICs will not be doing the search planning themselves, but they will know what formal search planning looks like and that it is being done correctly.** The curriculum explains and illustrates the Operations Research started in the Second World War as the precursor to land search operations. Basic tenets of “Search Theory” are discussed and related to current land search operations. Practical search map exercises then illustrate “probability loading” from the statistical analysis in ISRID. Assigning probabilities, Proportional Consensus, Regions of Probability, Probability of Detection and how to monitor probability of Success are all explained and used in practical desk-top map exercises derived from actual land search cases. Once again, the Advanced Planning course is designed to create a specialized resource for local jurisdictions that can be called upon in protracted or very difficult search operations. (Type 2 and Type 1 incidents)

## PURPOSE AND SCOPE OF THE TRAINING

Managing the Inland Search Function **Basic** and **Advanced Search Planning** provide participants with information and knowledge about conducting search operations and the overall management of a missing person incident. Course completion enables participants to manage and direct search efforts for missing or lost persons in a more coordinated and efficient manner. The training serves as a state-of-the-art forum of information exchange about conducting search operations in wilderness, rural, or urban environments. Current text materials, articles, research documents, and the combined experience and knowledge of the instructors and course participants all combine to create an “*Information Rich Learning Environment.*” That environment and methodology of information sharing is one of the leading attributes of the course.

- The goal of the *Managing the Inland Search Function* course is to improve search incident management. Informed and trained Incident Commanders with state-of-the-art search methods have more capabilities, provide better coordination, usually communicate better, and use preplanning as a hedge against poor results and failure.
- The goal of the *Advanced Search Planning for Managing the Inland Search Function* course is to provide the background and fundamental skills necessary to carry out the function of *Search Planner* in the overhead team under the Plans Chief. The training is designed to create a specialized resource for local jurisdictions that can be used in protracted or very difficult search operations.
- Progressive teaching techniques maximize the use of case histories and problem-solving exercises that provide practical application and challenge the participants. Practical map exercises based on real anecdotal cases serve as the basis for decision making on similar situations encountered by participants’ in future actual SAR missions.
- The MISF training courses (**Basic** and **Advanced Search Planning**) will be of interest to any agency or organization, whether professional or volunteer, with search related interests, responsibilities, or capabilities.
- Throughout both courses and the Textbook, search management and planning tenets are described generically for land search so that participants and readers can make the widest possible application of the principles and

recommendations. Regardless of the environment (*flat land, mountains, lakes, rivers, air search, urban or suburban neighborhoods etc.*) the elements of good land search management and planning will be the same.

- The training in these courses use focused research and case studies to identify past mistakes with an expectation that lessons learned may well prevent future problems of the same nature.

There is no doubt that many attending this course will know some of the material presented by the very nature of having been involved in SAR at the local level. Some may even feel that they already know all the material. While the latter is doubtful, it is none-the-less important to encourage participants to keep an open mind and consider the scope of the entire training package and the inter-relationships of all the parts.

The training discusses and builds on a logical, disciplined, and organized approach to finding a missing, lost or overdue person. It is important to stress that common sense, experience and professional needs should provide both direction and value to the course and text content.

## **OBJECTIVES for the (MISF) Advanced Search Planning Course**

After successful completion of this course, participants will have had exposure to all the basic tenets of incident management for the Inland search function and the rudiments of search planning.

After successful completion of the Advanced Search Planning for Management of the Inland Search Function course, participants will be able to:

1. Manage a search effort for single or multiple missing/lost persons and be able to monitor and supervise the search planning function in the ICS management hierarchy.
2. Describe and define the importance of “*a detection index*” or “*sweep width*” as it relates to the function of search planning.
3. List the functions and responsibilities of the Search Planner position in the management structure of ICS.
4. List the primary reasons why the numbers, the math and the search theory formula can become so important and powerful in a protracted Type 2 or Type 1 search incident.
5. Describe why the concept of “*effort allocation*” is so important to effective search planning.
6. Identify regions of probability that coincide with plausible scenarios on a search area map subdivided into searchable segments.
7. Transcribe International Search and Rescue Incident database probability zones based on Lost Person Behavior onto an operational search maps for use with tactical resource application.
8. Explain the process of applying probability (the numbers) to a well-defined operational search map.
9. List the primary factors involved in determining *effort allocation* for any specific search sortie.
10. Describe why vision basics, target orientation, and search image are so important in the briefing process.
11. Describe why spacing between searchers should never be used as an indicator of searcher coverage in a specified area.
12. List the reasons why searcher speed in varying terrain conditions and cover should be recorded as benchmarks for the search planner in future operations.
13. Demonstrate the ability to reconcile numerical assessments and values when the search area is expanded or contracted or a clue is located.
14. Describe how the value of Probability of Success is used to justify searching or researching specific areas or suspending a SAR operation altogether.
15. Be able to supervise the search planning function on site on a major search incident and translate the importance of the numbers produced.
16. Be able to complete a SAR vulnerability assessment specific to a local jurisdiction.
17. Be able to compile an Emergency Resources Inventory list for SAR incidents in their jurisdiction listing initial, backup, specialized and disaster related response resources.
18. Be able to complete a realistic and competent SAR plan for inclusion in their jurisdiction’s Emergency Management Plan.
19. Be able to assist a volunteer SAR Team in creating a realistic and effective mission statement.

## QUALIFICATIONS FOR ATTENDANCE

The MISF Basic and Advanced Search Planning courses were designed for those agency members that have responsibilities for conducting search operations in rural, wilderness, urban or missing aircraft related incidents. This may include personnel from law enforcement agencies, land management agencies, federal reservations, fire rescue services, emergency medical groups and all three levels of government: (local, state and federal). In addition, selected representatives from volunteer and private search organizations will definitely have a need for information contained in these courses as well.

**Pre-requisites MISF:** *Basic Management of the Inland Search Function* is a required pre-requisite to the Advanced Search Planning course.

## SPECIAL REQUIREMENTS FOR CONDUCTING THIS TRAINING

During the case study map exercises the participants will need to break into small working groups. Additional classroom space or small break-out rooms for discussion work well. Group size for break-out and discussion groups for the map exercise sessions should be a maximum of 6 participants.

# MANAGEMENT OF the INLAND SEARCH FUNCTION

### Advanced Search Planning Course Subject Areas and Times

1. Introductions, handout books, initial admin announcements ..... 1.0 Hr

#### Operational Response (*Carrying out the function of Search Planner*)

2. Organization: The Search Planner in the ICS Structure..... 0.5 Hr
3. Missing & Lost Person Behavior Statistical Analysis..... 1.0 Hr
4. Reflex Tasking based on Category of Subject from ISRID ..... 1.0 Hr
5. Review of the Science of Search – (*Search Planning Theory*) ..... 1.0 Hr
6. Map Exercise (Map Tabletop #1) ..... 2.5 Hr
7. Establishing the Search Area (POA) Part 1 ..... 1.0 Hr
8. Probability of Area (POA) Part 2..... 1.5 Hr
9. Target Orientation, Vision & POD (POD Part 1) ..... 1.0 Hr
10. Search Tactics: Determining Probability of Detection (POD Part 2) ..... 1.0 Hr
11. Map Exercise (Tabletop # 2) ..... 3.0 Hrs
12. Applied Search Theory and Planning (POA X POD = POS)..... 2.0 Hrs
13. The POD Briefing / Debriefing Connection..... 1.0 Hr
14. Search Planning in the Urban Environment ..... 1.0 Hr

#### Suspension and Documentation - Post Search Admin

15. Suspending or Continuing a Search based on Numerical Assessments .... 1.0 Hr
16. Current Research in Search Operations ..... 1.0 Hr
17. Final Map Exercise (Map Tabletop #3)..... 3.0 Hrs
18. Critique, Closing Comments and Certificates ..... 0.5 Hr

**TOTAL**

**24.00 Hrs**

# Management of Land Search Operations - Advanced Search Planning

## UNITS OF INSTRUCTION

### 1. Introduction, Course Administration, Class Objectives (1 Hr)

**Scope:** Welcome, familiarization with the facilities, administrative information, course purpose, objectives, agenda and instructional staff introduction. Class participants establish their primary objectives for attending the course and introduce themselves.

### *Operational Response (Carrying out the function of Search Planner)*

### 2. Organization: The Search Planner in the ICS Structure (0.5 Hr)

**Scope:** The ICS on-scene management system is reviewed with specific focus on the position of Search Planner under the Plans Chief function; Responsibilities and tasks related to Operational Period functions as well as regular briefing and debriefing for the IC and Plans Chief. Documentation and map records are emphasized for future access and use.

### 3. Missing and Lost Person Behavior Statistical Analysis (1.0 Hr)

**Scope:** The International Search and Rescue Incident Database is detailed and explained as it relates to plotting probable search areas on the map. Probability density and distribution are discussed as they relate to application of initial and follow-on resources that will be committed to probability zones in the search area.

### 4. Reflex Tasking Based on Category of Subject Groupings in ISRID (1.0 Hr)

**Scope:** This module covers the initial actions on every search, that are based on Lost Person Behavior Subject Categories regardless of the incident circumstances; Reflex tasking is reviewed and further defined along with useful "Bike Wheel Model" for on-scene initial response; The logical sequence for planning a search effort is given from the database descriptions along with guidelines for developing attainable and verifiable operational period objectives. Categories of Subject in the ISRID database are compared and contrasted to show the differences and similarities.

### 5. Review of the Science of Search (Search Planning Theory) (1.0 Hr)

**Scope:** Review of the history and derivation of search theory dating back to WW II and Operations Research; Review of current approaches to management and planning of searches; The need for quantification and a detailed explanation of how to use and apply mathematical units of measure; statistical concepts and their application to the problem of search; probability zones and the use of conventional notation for Search Probability Theory plus selected definitions. The module also discusses the Probability of Success and its importance as a management tool.

### 6. Establishing the Search Area (1 Hr)

**Scope:** The process to establish a search area and the four methods used to reduce that area to a manageable size. The potential search area is described as a function of probable scenarios. The ISRID database combined with terrain analysis are used to identify potential travel distances and probable locations within specific regions of probability. All methods of establishing a search area are brought together in a sample problem.

### 7. Determining Probability of Area (1 Hr)

**Scope:** This in-depth module outlines the concept of assigning probabilities to search segments by proportional consensus; Subjective regions of probability combined with missing/lost person

behavior data probability zones are also discussed; The concept of shifting probabilities of area and the mathematical analysis necessary for tracking changing values is also covered. As a final practical exercise, the entire process is tracked from start to finish using one incident and all the associated processes and figures.

#### **8. Target Orientation, Vision and POD - POD Part 1 (1 Hr)**

**Scope:** This first module in POD deals with the how and why searchers see clues or even the missing subject in a given environment. Simple explanations do not fit as this is a complex process of sensation (vision) and decision making. Vision, perception and detection versus recognition are discussed with practical examples; Feature integration, form, organization and grouping along with vision basics are all covered. Canonical perspective and visual briefings are covered in summation of this module along with some conclusions about target orientation and POD as they relate to briefings or programming before searchers go to the field.

#### **9. Search Tactics - Determining POD - POD Part 2 (1 Hr)**

**Scope:** POD is re-defined and discussed in detail; the original research and experiments on probability of detection carried out in the Pacific Northwest along with "Critical Separation" developed in the UK; Tactics that are used in search for missing persons, objects and evidence are discussed in detail. Operations research is discussed as it relates to determination of *Sweep Width* and *Coverage*. Methods of determining POD for volunteers using "Average Range of Detection" (AROD) and the current research that substantiates this procedure are also covered. Sample problems with representative calculations are provided along with practical application and use; emphasis on practical procedures to determine reasonably accurate probability of detection calculations.

#### **10. Map Exercise - Tabletop # 2 (3 Hrs)**

**Scope:** The second tabletop map exercise is designed to utilize all of the basic principles introduced during the course up to this point. It is another actual search effort and course participants, as before, use the same resources that were available during the actual incident. Interviewing and investigation and use of forms are emphasized to gather planning and searching data along with missing and lost person behavior. Participants are encouraged to document everything as this will be the first map exercise to involve a shift change between groups during the problem.

#### **11. Applied Search Theory and Planning ( $POA \times POD = POS$ ) (2.0 hours)**

**Scope:** The module provides an overview of all the basic principles involved in the search theory standard notation formula: ( $POA \times POD = POS$ ). The importance of quantifying values for both search area designation and the ability of resources to detect the missing subject in the field are both emphasized. Practical examples are given concerning decisions about effort allocation and the options that are open to a search manager when committing resources to the field; The probability of success for each segment and the overall search effort throughout the search area; Determination and use of shifting probabilities and the impact on search tactics; The POS tracking form is also reviewed and participants will track probability of success through multiple searches and several segments.

#### **12. The Briefing / Training / POD Connection (1.0 Hr)**

**Scope:** This module discusses the questions of how or if searchers see or recognize clues, or even the missing subject. These questions defy simple explanation. This session explains why it is much more than just seeing an item, a clue or the subject. It is a little known fact that perception, and judgment based on that perception, combines the complex processes of vision and decision making. This presentation will discuss the connection and possible benefits for probability of detection (POD) through the briefing process for searchers immediately before they enter the field. Also covered will be the influence of training for increased probability of detection and success during search operations.

### **13. Searching in the Urban Environment (1.5 Hr)**

**Scope:** Some search concepts are the same in the urban environment, and many are different. This module is a portion of a three-day course on searching in the urban environment. Probability of Area values still must be established in the urban or city environment. If resources are sent out to search, somehow an evaluation of that effort must be made. That's what Probability of Detection is all about. Urban tactics are discussed with specifics about house to house inquiries, searching buildings, and coming up with some reasonable estimation of probability of detection. The need for experimentation in this arena is huge. Past methodologies and experiments are discussed with regard to current recommendations for establishing more accurate calculations in this environment.

### **14. Suspending or Continuing a Search Based on Numerical Assessments (1 Hr)**

**Scope:** This module identifies the key factors involved in deciding when to suspend or continue a search and suggests a methodology to use numbers in that assessment process. This presentation discusses the importance and inter-relationships of these factors to the decision-making process. Of primary importance to suspend or continue, should be some type of assessment that places numerical value on the factors identified.

### **15. Current Research in Search Operations (1.0 Hr)**

**Scope:** Describes and explains the latest research going on in the field with regard to search. Lost Person Behavior and ISRID (Versions 2); Canine Probability of Detection POD experiments being conducted in the field; Small UAV detection experiments; Basic Searcher POD Experiments using  $R_d$  – Sweep Width (W); Correction factors for experience, trails, night searching and defining Probable Success Rate (PSR). New software that is being developed along with Search and Rescue Collection and Analysis Tool and the new GIS Find Software.

### **16. Final Map Exercise Table-Top (3 Hours)**

**Scope:** Practical application of all concepts and principles presented throughout the course.

### **17. Formal course ends. Discussion, closing remarks, Critique, Certificates - -**

## Managing the Inland Search Function – Advanced Search Planning

### Sample Agenda

The course must have a flexible agenda based on local needs & tangent discussion topics.

Times for each module are approximate and vary with location and course participant needs.

Depending on start times, modify time hacks as appropriate; Times for each module are approx.

DAY 1:		INSTRUCTOR
0800	Class Starts	
-55min	Introductions, Handout text, initial Admin.	_____
	<b>Operational Response</b> ( <i>Carrying out the Function of Search Planner</i> )	
-55min	Organization: The Search Planner in the ICS Structure	_____
-55min	Missing & Lost Person Behavior Statistical Analysis	_____
1030 -1045	<b>Break</b> (coffee/tea)	
-55min	Reflex Tasking based on Category of Subject from ISRID	_____
1200-1300	<b>Lunch</b>	
-55min	Review of the Science of Search ( <i>Search Planning Theory</i> )	_____
-150 min	Map Exercise (Tabletop #1)	_____
-55min	Establishing the Search Area (POA)	_____
1700	<b>Class ends for the first day</b>	

DAY 2:		INSTRUCTOR
0800 -	Class Starts	
-55 min	Probability of Area (POA)	_____
-55min	Target Orientation, Vision & POD (Part 1)	_____
-55min	Search Tactics: Determining POD (Part 2)	_____
-55min	Map Exercise (Tabletop #2)	_____
<b>1200 -1300</b>	<b>Lunch</b>	
-120min	Map Exercise: (Tabletop #2)	_____
-90min	Applied Search Theory and Planning (POA X POD = POS)	_____
1500 -1515	<b>Break</b> (coffee/tea)	
-55 min	The POD / Briefing / Training Connection	_____
<b>1700 -</b>	<b>Class ends for 2nd day</b>	

DAY 3:		INSTRUCTOR
0800 -	Class Starts	
0800 – 1000		
-55min	Search Planning in the Urban Environment	_____
-55min	Suspending or Continuing Based on Numerical Assessments	_____
1000 -1015	<b>Break</b> (coffee/tea)	
-55min	Current Research in Search Operations	_____
<b>1200 -1300</b>	<b>Lunch</b>	
-180min	Final Map Exercise (Tabletop # 3)	_____
<b>1500 - 1515</b>	<b>Break</b> (coffee/tea)	
<b>1630-1700</b>	<b>Course ends.</b> Discussion, closing remarks	_____
	Critique, Certificates - -	_____
<b>1700 -</b>	<b>Course ends on 3rd day</b>	

**TOTAL** \_\_\_\_\_ **24.00 Hrs**

## EVALUATION

There should be some feedback and evaluation on the course utility and practical value at the end of the course. The feedback should consist of measuring objectives by various methods and techniques outlined in the lesson plans and in the end-of-course critique. Some law enforcement academies prefer a written test as evaluation which is included in the Instructor Suite. The map problems serve as one of the best indicators for participant understanding of essential planning and management concepts.

In the City and Guilds Institute of London under the Profiles in Professionalism category for vocational training, police and other law enforcement students have the option of submitting a personal evaluation of a search case study within 6 months after attending the course. By asking students to read, study and comment on real cases and compare their findings with the internationally accepted principles of search planning and management, instructors may fully assess a student's knowledge of applied principles to real life situations in the search arena.

Specific competencies, particularly in complicated courses like Advanced Search Planning for Managing Land Search Operations, are not retained indefinitely. The skills and knowledge presented during the training are definitely perishable. Written evaluations serve the following purposes: to evaluate the participant's degree of understanding; to determine the need for revisions in future courses; and to determine the scope of future refresher courses.

## DEPLOYMENT

The *(introductory)* **Managing the Inland Search Function - Basic** course should be taken some time in the first year of assignment for newly designated local SAR coordinators and Search Incident Commanders. This exposure will provide a clear template and knowledge for managing Type 5, 4 or 3 SAR incidents. It will also provide a foundation of knowledge and terminology required to supervise or manage the formal search planning function on a protracted search. A refresher course for this training should be attended by those with search responsibilities at a minimum of every three years.

Every jurisdiction should have access to the specialized capability of a search planner. Whether that is in the form of a volunteer or an official agency representative, the function is indispensable for Type 2 and Type 1 incidents involving protracted or wide area searches. As mentioned above, most personnel in a local jurisdiction would not need this level of specialized training and information. The Search Planner functions as a specialized resource which is separate from incident command both in duties and responsibilities. Volunteers can serve this vital function well as a specialized local resource or team. Four to six individuals in a large jurisdiction or region of a state serving as primary and backup resources provides more functionality along with more cost-effective training for everyone. **The Advanced Search Planning for Managing Land Search Operations** should be attended within at least 6 months of going through the **Basic** and should be followed up with a refresher at a minimum of every three years.

## MATERIALS CHECKLIST: Advanced MISF Course

### **STUDENT TEXTS**

**Required:** Text - Managing the Inland Search Function

**Required:** Lost Person Behavior – A Search and Rescue Guide on Where to Look  
– for Land, Air and Water **by Robert J. Koester**

**Optional:** Handbook - Handbook for Managing the Inland Search Function

**Optional:** Selected papers from research and statutes/administrative regulations relating to search and rescue from the state, province or local jurisdiction.

**NOTE:** Many states and sponsoring agencies prefer to provide 3-ring binders for the student text. This is so other information specific to the country, state, region, or community can be inserted into the book. The books are shrink-wrapped in plastic, 3-hole punched and spiral bound. This means the books can be used independently or placed in a ring binder.

### **STUDENT MATERIALS**

Student pre-work or assignments (*Train the trainer courses usually have pre-work*)

3-ring notebooks (*if necessary*)

Name tent for each participant (*pass around marker to write names*)

Course critique forms

Certificates and Advanced Search Planning MISF Pins

Calculators for math computations and straight edge for measurement on maps

### **INSTRUCTIONAL AIDS**

Instructional Suite PowerPoint (*Instructor Package available thru ERI*)

Laminated maps for use in tabletop exercises

Vinyl overlays for operational period designations

Embedded videos and case studies on CD

### **CLASSROOM FACILITIES**

Blackboard, chalk and eraser

Flipchart and felt tip markers

Podium or instructor table at front of classroom

Reference tables for handouts, journals, research materials and example texts, etc (*two*)

Student seating - Desks? Tables with chairs work out much better

Separate work or breakout areas for students to work exercises/problems

Separate work-table for instructors (layout and organize instructional materials)

Room that can be secured for storage and access to a copy machine

3-hole punch for students to insert handouts and extra worksheets into text

### **AV EQUIPMENT**

Overhead projector if available to assist with the map exercises for assignments

Computer projector

Extra bulbs and extension cord

Sources of immediate back-up equipment

Screen (*as large as possible*); realistically this should be at least 6 X 8 feet.

### **MISCELLANEOUS ADMIN. MATERIALS**

Receipt book if necessary for registrations

Paper, pens or pencils & tape (*masking tape to hold down vinyl overlays*)

Extra transparencies (*vinyl*) & water soluble pens

**ESSENTIAL:** Means to make and distribute a class roster

