A Search Manager's Guide to Tracking in GSAR

"The problem is you have a lot of people who think they know a lot about tracking, but they don't. And you have an awful lot of people in positions of responsibility who can't see something on the ground and don't believe you can either."

Joel Hardin

"Reading signs depends on appreciating the small points, the details that appear to those schooled in observation but disappear to the novice, the incautious, or the hasty." *Jon J. Nordby PhD International homicide investigator "Dead Reckoning: The Art of Forensic Detection"*

PURPOSE

The primary purpose of this guide is to provide SAR Management, who may never have been trained in Tracking, with useful information on how to best employ Tracker Specialists and their tactics in a search. This is also intended as a guide for Tracker Advisors specifically selected to assist SAR Management in a task.

Any person leaving a vehicle, building or campsite will leave footprint impressions. Any person walking over land will leave some sign of his or her passage with every foot fall. That's probably about 2,000 sign or clues every kilometer. The Tracker's skill is in seeing and recognizing that line of sign.

WHY SHOULD WE USE TRACKERS?

A Tracker Specialist is a highly trained Searcher who also, because of his or her training, knowledge, experience and BC Tracking Association certification, is requested to respond to a missing person search or an evidence search as a tracking resource. These persons are certified by the BCTA as: Track Aware (TA), Tracker (TK) and Advanced Tracker (AT). (See pages 15-16 for detailed qualifications). They are specifically trained to see and recognise signs of human passage and take appropriate action to follow it. Trackers can deduce the lost subject's direction of travel, reducing the segment areas to be searched, and thereby reducing the resources and time required to find someone.

WHEN SHOULD WE USE TRACKERS?

Initial Response Teams (IRTs): Trackers should be the first considered for call-out and tasking for a lost subject in back-country wilderness or sparsely populated rural areas. They may be useful as first response in an evidence search, urban or back-

country. **IRTs** or hasty team should include at least one trained Tracker, if not an entire team of trackers.

Search Teams and Dog Teams should have at least one person who is trained Track Aware. They will know what to do if a sign of passage or a clue is found by the team, so as to preserve and report the evidence.

ICP Tracker Advisor If a search involves two or more tracking teams, it is highly recommended that an Advanced Tracker be assigned to the SAR Management Team as a Tracker Specialist Advisor and coordinator. That person is best suited to understand and recommend the tasks and tactics employed by Trackers in the field, and to continuously track and report on the teams' progress.

HOW SHOULD WE USE TRACKERS?

Consider the subject's profile:
What information is there that may help identifying any clues or signs of passage that can or may be positively attributed to the subject?

For example: Footwear size and type. Uses hiking pole(s). Accompanied by a dog (breed?). Carrying a light day pack or heavy overnight/multi-day pack? Walks with a limp? Riding a bike or ATV?

What was the subject doing? Hiking/riding to a destination? In and out on the same trail(s), or on a circle route? Overnighting? Hunting – for what? Birding? Photography? Mushroom picking? ATV/Trail bike riding? Canoeing? Fishing? carrying a Belly boat? Etc…

Anything that the subject might drop or leave behind? Food containers, wrappers, clothing?

Consider the PLS and LKP:

Place Last Seen (PLS) implies a specific location for an initial starting point for both the subject's movement and the timeline. For example: the subject was seen getting out of his/her car and leaving a trailhead in the morning. It is vital that the PLS be examined thoroughly for clues and sign-cut for signature prints and direction of travel. The vehicle should be examined thoroughly not only by police, but also by Trackers for any clues or sign left behind.

The PLS should be examined by a team of Trackers before it is contaminated by other searchers.

The PLS may move and the direction of travel adjusted if the subject is positively identified as having been at a known location at relatively specific time. For example, overnighted at a campsite, passed by on a trail, etc… Perhaps they were seen to be heading in a specific direction.

Any new PLS should be examined by Trackers for clues, signs of passage and direction of travel.

The location of all and any clues found by searchers should be examined by Trackers for additional clues, signs of passage and direction of travel. If the subject dropped something, there must be sign in the close vicinity. Untrained searchers will likely trash sign they are unaware of. They are not "Track Aware".

A searcher trashing a sign is an unfortunate mistake. A trained GSAR Tracker trashing sign is unforgiveable!

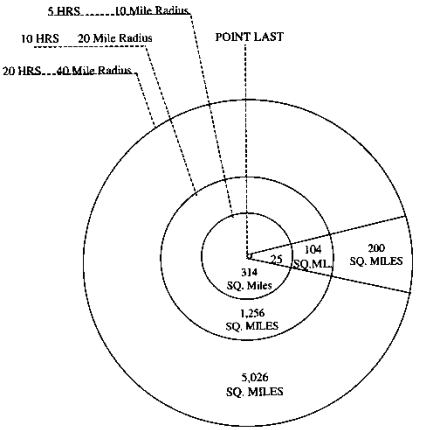
Last Known Position (LKP) is a positively identifiable clue or sign of the subject's location and passage at a relatively known time

(aging of sign). He/she was travelling along a trail and left a sign or clue.

Any new LKP should be examined by Trackers for clues, signs of passage and direction of travel. Unless the clue object was wind-blown, there should be at least 4 footprints or sign within a one-metre circle of the clue.

TRACKING TECHNIQUES AND TACTICS

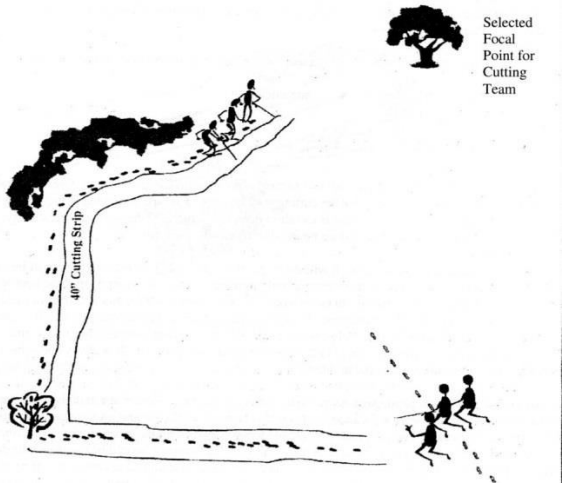
DIRECTION OF TRAVEL: By having Trackers determining the lost subject's direction of travel the theoretical search area is greatly reduced to a manageable sector.



LINE OF SIGN: The contiguous sign found **step-by-step**, all attributed to the same person. Consistent with the direction of travel, gait, stride length, stride interval, boot size, disturbance, flagging, high sign and other identifiable characteristics. One team of Trackers will follow a line of sign **step-by-step**. This is the **Prime Sign Team**. A second team may be sent ahead in the direction of travel to **cut for sign** at roughly 90 degrees to the line

of sign, preferably in an area more likely to produce signs of passage – a track trap. This is the **Sign Cutting Team**.

SIGN CUTTING: (moving ahead of the prime sign team to where it should be heading). Methodology of using multiple tracking teams to move sign in a rapid but controlled manner along the subject's direction of travel. The use of additional team(s) to use appropriate cutting areas (track traps, ground cover, barriers, etc.) to advance sign quickly.



CUTTING FOR SIGN: (deploying well ahead of the Prime and cutting teams). A Tracking Team may be sent well ahead of the LKP and the subject's direction of travel to investigate areas in the general direction of travel and to "cut for sign". This may be a landmark, a fork in the trail, a water crossing / lake or stream edge, along a ridge or treeline, around a clear cut, along roadsides, any possible bottlenecks and/or track traps. Care must be taken not to contaminate the area and single file marking and/or GPS tracking of the team's lines of travel is essential. **Cutting for sign** can also include the perimeter of a property, field, parking lot, roadside, or any place where the subject may have entered or departed an area.

For example, a child wandered away from a home in a new subdivision bordering a forested area and a small lake. It would be prudent to have a Tracking Team cut for sign around the edge of the lake and the edge of the forest. Another example, a child wandered away from the home near a river or a steep embankment. Send a team to cut for sign along the riverbank.

Finding no conclusive sign reduces, but does not totally eliminate the possibility that the lost child wandered into a dangerous area nearby. It also provides indication that the child's direction of travel was probably in another direction.

Terrain permitting, cut for sign part way between the child's home and surrounding land or water.

It is most probable that any sign in the vicinity of the house or a vehicle has been trashed by family and relatives looking for the lost child before calling the police, and Search and Rescue. Nevertheless, have trained searchers look again for any sign that may have been missed.

Light Direction: Sign is best seen when looking in the direction of the sun. When practicable, Tracking Teams should be sent to cut for sign so they can use the light to their best advantage: ie: in the morning, approach a cut for sign area from the west, if possible, and in the afternoon, from the east. Generally, approaching from the north is a compromise better than approaching from the south.

PRIME SIGN: The isolated and unique track of the person of interest. This could simply be the continuous and consistent line of sign.

"On Prime" When a Tracking Team reports that they are **"on prime"** it means that they are following the evidence of the

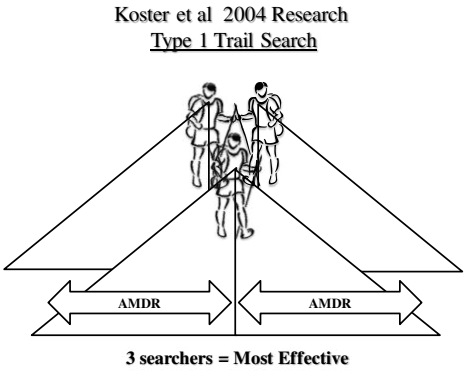
subject's signs of passage and believe that they are consistently tracking the subject's movements.

"Lost prime" means they are unable to continue to follow the line of sign for whatever reasons: contamination by others or animals, hard surface such as highways, or difficult terrain. In such cases they will return to the last prime sign or signature print and cut for sign that they may have missed. Or they may cut around the trashed or difficult area and try to pick up the sign again.

SIGNATURE TRACK: Footprint characteristics such as marks, dimensions and tread patterns that are unique only to the person being followed. This is as valuable as a fingerprint in identifying a subject.

A Signature Track is also a landmark location that must be recorded and preserved as positive evidence of the subject's passage. If the prime sign, line of sign, sign cutting or cutting for sign peters out, this is the location to which Tracking Teams must return in order to re-acquire the line of sign.

Trail Searches with the best probability of successfully spotting clues, are done by a three-person team, according to Koester, et al… This research also indicates that the optimum searcher speed is 1.6 KPH or 1 MPH.



The Average Maximum Detection Range (AMDR) for GSAR Trackers should be determined by the following factors: The team is looking for signs of passage, which means that there should be at least two footfalls within every metre. Therefore, the team should primarily be focussed on approximately one metre either side of the trail, as well as one metre ahead. Secondary AMDR should be for other clues, such as dropped items, which may be quite small, and high sign – sign above ground level, such as broken branches. Thirdly, they should be looking out to the determined AMDR of a non-responsive subject, and fourthly, calling out and listening for a responsive subject.

TRACKERS WORKING WITH A DOG TEAM

Reference: Man-Trackers and Dog Handlers in SAR by Greg Fuller, Ed Johnson and Robert Koester.

No research has clearly proved dog handlers and trackers must always work together. There are two theoretical justifications for combining trackers and dog handlers. One is that the probability of success in finding the lost subject is maximized by assigning these two resources to the same search segment. The second is when there are more available resources than needed to perform the specialized functions. In this case, mixing dissimilar resources in the same search area may increase effectiveness.

The real reason for putting trackers and dog teams together is simply to try and find the subject faster. Using two dissimilar resources may provide simultaneous verification of clues from two different skill sets.

Tracker/Dog Team Guidelines

The best trackers should be kept independent for initial investigation at the PLS, following up on sign reported by other

teams, and advising Command/Operations/Plans on using specialized tracking techniques.

Dogs move much faster than trackers. So, in many cases it may make sense to send in a dog team before a tracking team. However, then the trackers cannot enter the segment until the dog team is done. A combined task only requires the dog, handler and a tracker. Combining resources represents a concurrent approach and if done properly, should enhance the chances of finding the lost subject faster.

Even a Track Aware searcher paired with a dog team can be of valuable assistance to the dog handler.

When a tracker and an air-scent dog team are combined, the dog team will usually be the primary resource. The purpose of combining resources is to detect a wider range of clues in a shorter amount of time. The tracker using their visual search techniques can further enhance the team.

In another case, a dog team may assist a tracker in the task of investigating and following up on a clue of sign found by another team.
The independent verification of a track by a tracker and a dog will almost always lead to a more refined POA and direction of travel.

The tracker and dog handler team should discuss what the handler expects from the tracker. What is the skill level of the tracker? Is the dog air-scent or tracking? How does the dog respond to alerts and indications? What pace will be set? How often breaks are taken?

Handler and tracker must be able to work at the speed of the dog.

Tracker can keep situational awareness, make notes; record/mark/flag clues and POIs on maps or GPS; make radio calls, as required.

Dog handler can concentrate on his dog's movement, indications and alerts.

The dog will go where the scent takes it. Tracker must be situationally aware and report when proceeding out of their assigned area. And be aware of other teams that may have been in the area, which may confuse the dog.

In some cases, a Team Leader may also be assigned to a combined tracker/dog team. The GSTL can handle the note-taking, mapping, and communications. The GSTL is in charge of the team and should make decisions, especially when it comes to safety, situation awareness, and coordination with other teams and the ICP.

Advantages of Open System vs Segment Search

Tracking employs an "Open System" of searching, as explained by Daniel O'Connor. ***(Additional comments in bold italics)***

Among the advantages of an open system are the following:

1. The ability to start a Search with a few segments, without having to divide up the entire theoretical Search Area, easing the initial computational burdens and mapping tasks by eliminating areas that are not immediately relevant.
Tracking Teams can help determine most likely direction of travel and segments with the highest Probability of Area (POA) to be searched.

2. The ability to "follow the clues," i.e., to expand the Search toward the subject by adding additional segments based on new information without the requirement of developing a new consensus.
Follow the line of sign and direction of travel, rather than search a segment. When the line of sign ends – then cut for sign and/or search the segment.

3. Allow the inclusion of non-contiguous segments. Did the despondent subject travel to a location out of the primary search area?
Cut for sign well ahead of the prime and sign-cutting teams. Cut around a segment to determine if the subject entered or left it. For example: use trackers to search the perimeter while dog teams search the inside of a segment.

4. Monitor Rest of the World (ROW) probability, the likelihood that the subject is no longer in the Search Area, or in the case of Bastard Searches, never was.

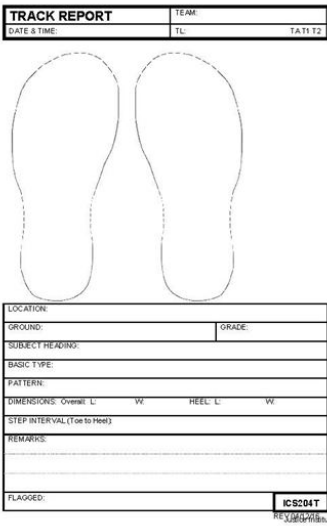
If there is no conclusive sign that a lost subject was moving to or in a segment, why search there?

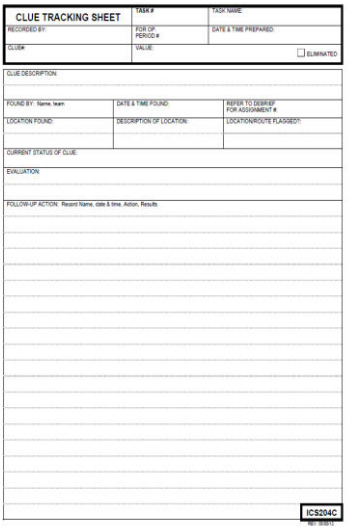
5. Deal with new information just outside the defined Search Area by expanding the search area out of ROW and adding the Influence of Clue to shift Probability of Area (POA) toward the newly created segment.
When a conclusive clue, signature track or prime sign identifies the subject's direction of travel, it becomes the LKP and new segments should be created in the direction of travel.

6. Provides the potential to Shift POA without POD. POA is not recycled internally, but can be reintroduced into the defined Search Area from the accumulated total in ROW. The search effort of resources that usually do not produce POD, like tracking dogs, hasty teams, man-trackers, etc. can be quantified as clues and used to shift POA.

Documentation:

ICS 204T **ICS 204C**





All found tracks and clues must be protected, reported and recorded. A GSAR Tracker's notes, photos and completed ICS forms 204T and 204C will be used by the Management Team to document what was found and to plan the next phase of a search.

ASSIGNMENT DEBRIEFING	TASK#	OPERATIONAL PERIOD #:
ASSIGNMENT#	ASSIGNMENT NAME:	DATE & TIME STARTED:
TEAM NAME:	TEAM LEADER:	DATE & TIME FINISHED:
DEBRIEFED BY (PLANNING):	DATE & TIME:	PAGE 2 OF 2

EXPLAIN WHAT YOUR TEAM ACTUALLY DID, TACTICS USED (INCLUDE TIMES AND MAP COORDINATES IF AVAILABLE):

☐ Map Attached ☐ Deviation From Assignment? Use check boxes on 1st page to indicate Completed or Incomplete.

POD Describe factors affecting POD below:	ESTIMATED POD IF RESPONSIVE: %	IF UNRESPONSIVE: %
Subject:	Environment:	Searchers:

CLUES - Include Time and Location	CONT. ON CLUE TRACKING SHEET (204C) No:
Current Status of Clues:	

DESCRIBE DIFFICULTIES OR GAPS IN COVERAGE, PROBLEMS ENCOUNTERED:

DESCRIBE ANY HAZARDS OR DANGERS IN SEARCH AREA(S):

WEATHER OBSERVATIONS:

COMMENTS & SUGGESTIONS:

TEAM LEADER SIGNATURE: ICS204 Cont.

British Columbia Tracking Association
Tracker Specialist Certification Levels

Tracking Specialist – An individual who, because of his or her training, knowledge, experience and BCTA certification, is requested to respond to a missing person search or an evidence search as a tracking resource. These persons are certified by the BCTA as: Track Aware (TK), Tracker (TK) or Advanced Tracker (AT).

Track Aware (TA) – Novices have learned to identify clues and recognize signs of passage of a lost subject. They understand the importance of drawing a footprint card; learn to correctly set up and use a tracking stick; determine the direction of travel and report this information to a Team Leader and/or SAR Command. They are able to follow a single line of sign using the team step-by-step method, in most light and weather conditions present, including at night. They demonstrate the ability to work effectively and efficiently as a member of a tracking team.

Successful completion of this phase of training does not certify the graduate as a Tracker. It certifies that the graduate is fully aware of how tracking can be successfully employed in search tasks.

Tracker (TK) - The Tracker is able to present himself/herself to SAR Management as a BCTA certified Tracker specialist, able to respond as a member of a tracking or search team in a variety of SAR tasks.

At this level, Trackers understand even more of the significant advantages and usefulness of tracking in ground searches. While adding to the basic skills learned in Track Aware, Trackers have learned to rapidly move single and multiple lines of sign, with controlled and efficient teamwork. Communication skills are more

important, as are common sense and reasoning, Trackers are familiar with interviewing, note -taking and report writing. Trackers demonstrate the ability to work in two or more teams, to efficiently follow the appropriate lines of sign of one or more lost subjects. They use team step-by-step and team sign-cutting techniques, and are able to describe and use the best sign-cutting areas. They are able to reasonably assess the aging of sign and able to isolate the appropriate sign from false sign. In typical multi-team and multi-subject search scenarios, they demonstrate proper communication skills; expanded knowledge and usage of proper tracking terminology; conduct witness interviews and make useful field notes.

<u>Advanced Tracker (AT)</u> - The BCTA Certified Advanced Tracker is able to present himself/herself to SAR Management as able to lead tracking teams in a variety of search tasks.

The Advanced Tracker will be able to participate and lead most tracking tasks. Emphasis is focused on analyzing the mission and enhanced skills in communication, common sense and reasoning, leadership and teamwork. Advanced Trackers are able to lead teams to move a line of sign much quicker but with discipline, control and accuracy. They will be able to use all their tracking skills in conducting an evidence search.

GSAR Tracker Call Out List

The BCTA provides EMBC with an annual list of selected, certified Trackers (TK & AT)) who have agreed to be called out as required for mutual aid. The list may also include trackers who are Team Leaders or SAR Managers, who are capable of advising SAR Command on the effective employment of trackers in a search. Trackers must be requested for mutual aid through the ECC.

References:

Ground Search & Rescue Track Aware Booklet
Compiled by Win Koch, SARM Comox Valley GSAR, JIBC GSTL Instr., BCTA Training Officer, BCTA AT Instr.

A Guide to Advanced Tracking Techniques
Compiled by Win Koch, SARM Comox Valley GSAR, JIBC GSTL Instr., BCTA Training Officer, BCTA AT Instr.

British Columbia Tracking Association
TRAINING AND CERTIFICATION STANDARDS
For Ground Search and Rescue TRACKER SPECIALISTS
(DRAFT) March 2013 prepared for:
National Search and Rescue Secretariat
Search and Rescue New Initiatives Fund
PROJECT TITLE: Human Tracking Training for British Columbia Ground Search and Rescue SAR NIF #: SN201112

Man-Trackers & Dog Handlers by Greg Fuller, Ed Johnson and Robert J. Koester

Sweep Width Estimation for Ground Search and Rescue
Prepared for U.S. Department of Homeland Security
United States Coast Guard Operations (G-OPR)
Washington, D.C. 20593-0001
Contract DTCG32-02-D-R00010 Task Order DTCG32-03-F000012
Prepared By R. Koester, D.C. Cooper, J.R. Frost, R.Q. Robe
Potomac Management Group, Inc. 30 December 2004

Controversial Topics In Inland SAR Planning
A NEWSAR White Paper February 2004
By Daniel O'Connor NEWSAR