Beacon Basin transceiver training parks:

Raising the bar on transceiver education

Outline

- What is Beacon Basin?
- Development
- Installation
- Case Studies
- Expansion Plans
- Conclusion

Beacon Basin

- Beacon Basin is a beacon search tool that has up to 14 transmitters wired to an external control box and power source. Stays buried in place all season.

- It is possible to turn on 1 transmitter, all 14, or any variation in between.

- Transmitters are buried in varying orientations and at different depths. Probe targets are placed above each transmitter to identify a positive strike.

- Eliminates the task of burying and reburying transmitters when practicing.

- Makes beacon searching fun and efficient!

Development

- With maturation and large market share, BCA has shifted emphasis from marketing to education.

- Digital beacons have made single searches “too easy.” This provides an opportunity to develop better skills for deep and multiple burials.

- Recreational users do not practice enough with their beacons. By making it more fun and efficient, we can make them as proficient with their beacons as professionals.

- Emphasis on simplicity and low cost has enabled BCA to donate many systems to qualified organizations, creating widespread network of sites.

Development

Other Benefits:

- Provides practice opportunities for avalanche professionals, aspiring guides, and mountain rescue teams.
- Allows BCA designers, reps, and educators to train at the same level as U.S., Canadian and UIAGM guides.
- Enables experimentation with evolving search methods, such as “pinpointing on a line” and the “three circle method.”
- Exposure in public places increases awareness of transceivers, encourages their use by off-piste skiers, snowboarders, and “freeriders.”

Installation

- System is made from reclaimed Trackers, fishing tackle box, wire, plywood probe targets, and other inexpensive materials.

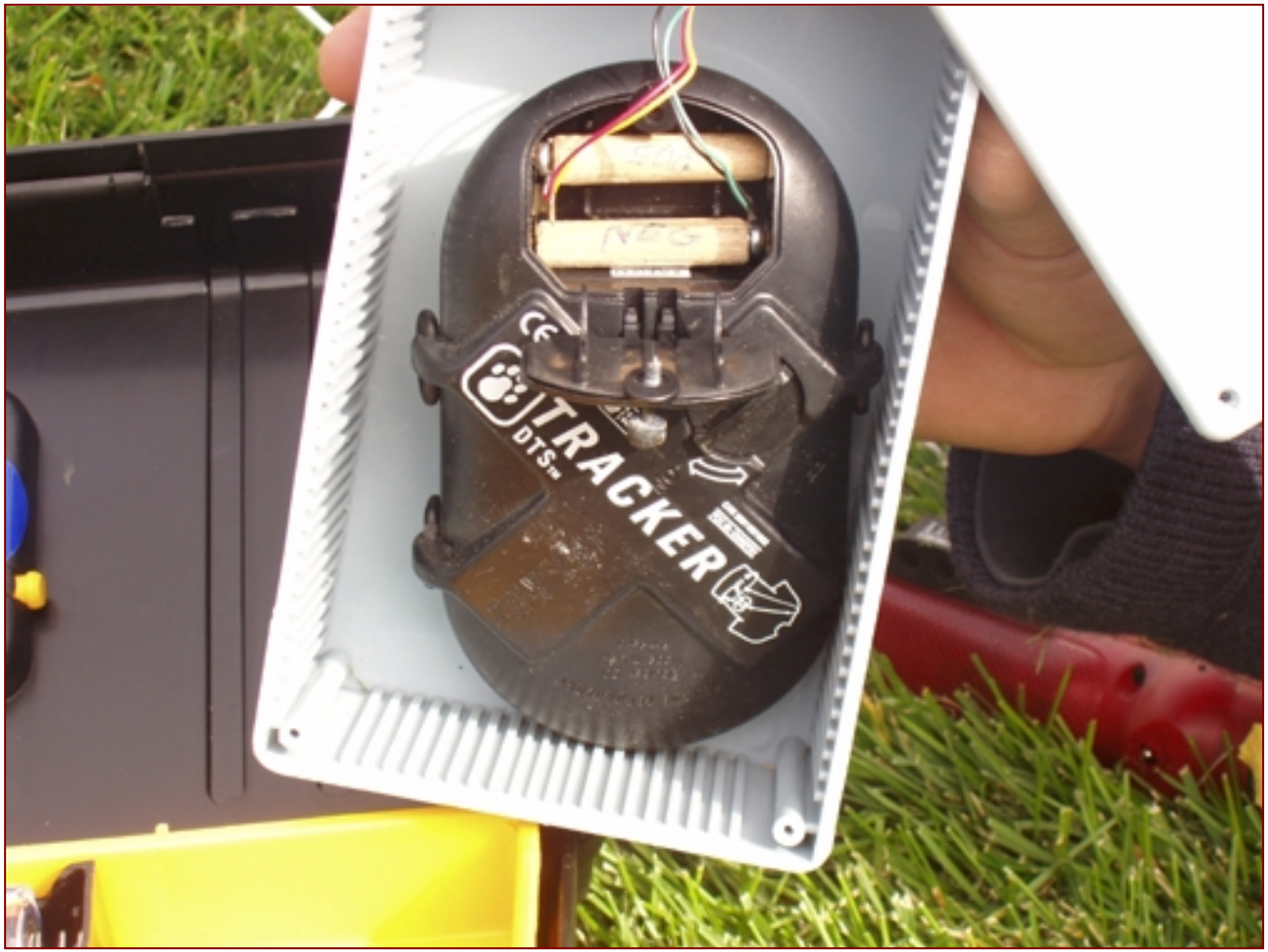
- Installed by the “host” organization early in the season.

- Host organization and BCA rep maintain the site throughout the season.

- Host organization removes Beacon Basin for the summer.

Installation

- Wire connection to control panel replaces normal AAA batteries.



Installation

- Wires must be run out and buried in snow
- Best done early in the season so storms conceal wires further
- Since power supply is remote, there is no reason to remove the system during the season

Installation

- Remote power supply consists of 6 D-cell alkaline batteries.
- Control box contains electrical switches for each transmitter.
- Laminated “beacon search tips” card is provided at control box for users.

Installation

- Each beacon needs a probe target. We use reclaimed flooring plywood, 1 x 0.5 meter.

- Realistic sized targets build beacon confidence and probing skills.

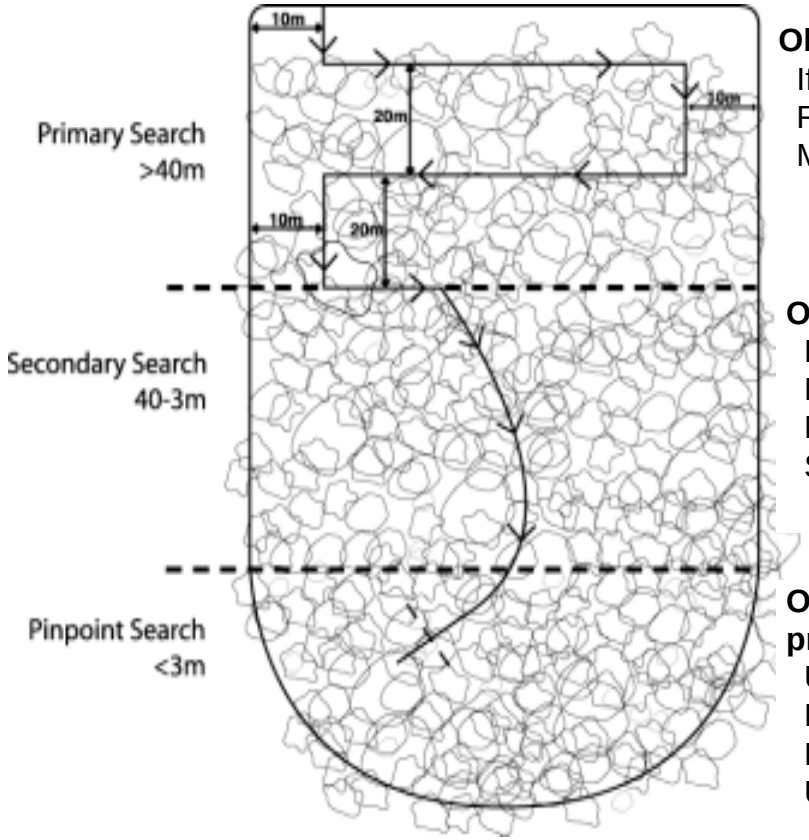
- We align the target with the transmitting antenna to reward “pinpointing on a line.”

- Targets must be above ground to ensure positive probe hits.

- Important to keep them in place to prevent “creeping” to ground.

Search Tips

Phases of the Search



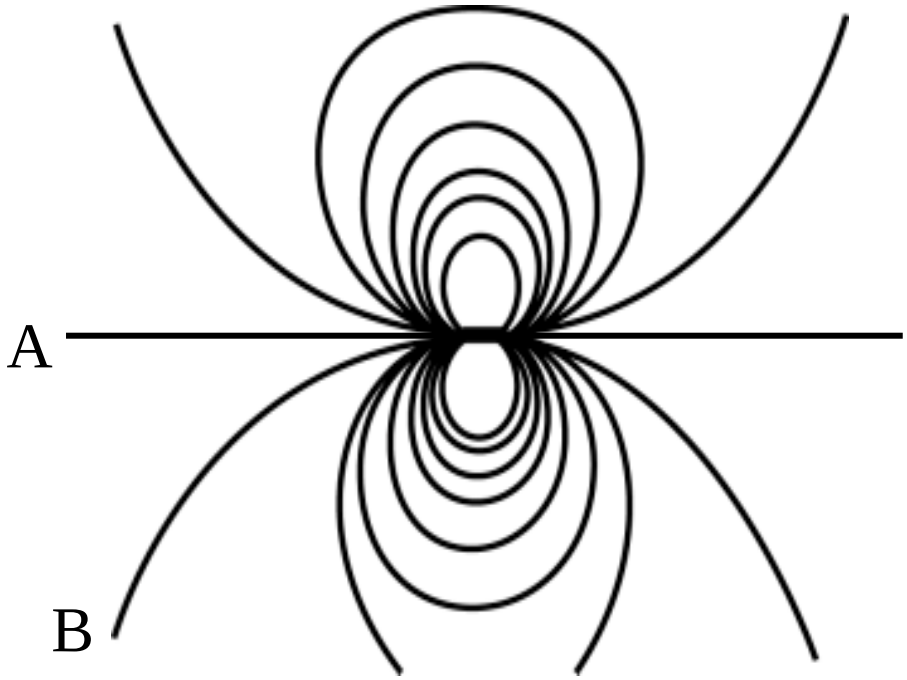
Objective: Locate signal
- If no "last seen point," search entire debris pile
- Rotate beacon horizontally/vertically
- Max 20m between searchers or switchbacks

Objective: Move quickly to pinpoint range
- Keep directional light within center 3 windows
- Move quickly in direction light is pointing
- Make sure distance is decreasing
- Slow down at 10m

Objective: Locate strongest signal, minimize probe/excavation area
- Use beacon close to snow surface
- Extend brackets through “spikes” or “false maximums”
- Begin probing at lowest distance
- Use beacon in hole during deep excavations

Search Tips

Flux Lines

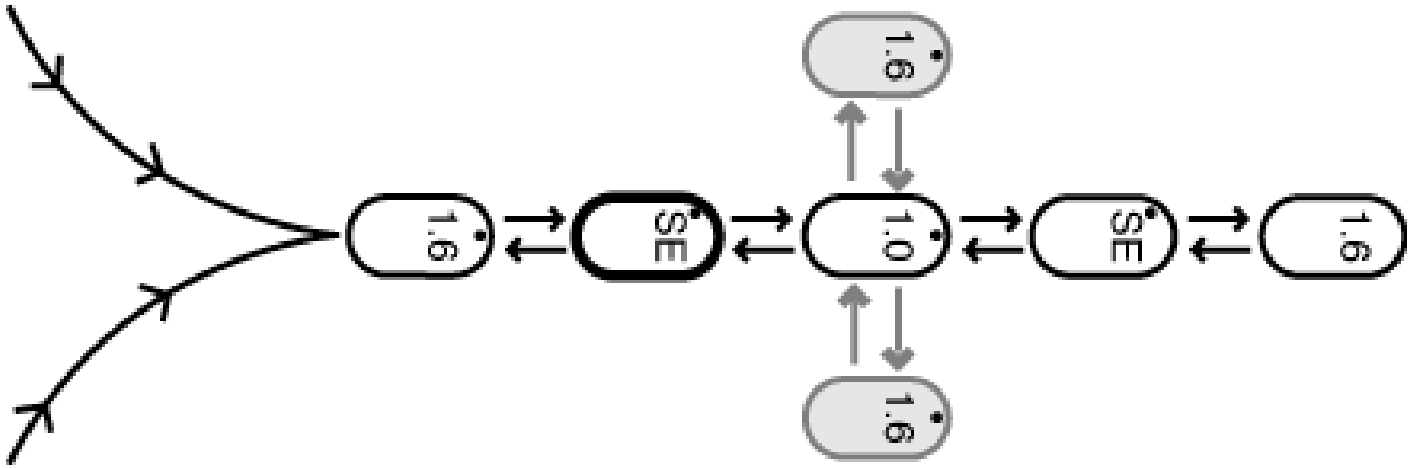


Modern transceivers follow the shape of the electromagnetic flux lines coming from the transmitting beacon's antenna. Your path during the secondary search will be either straight (point A) or curved (point B), depending on the orientation of the transmitting beacon. If you have a digital beacon, the directional lights will lead you along the flux line. The distance indicator shows distance along the flux line, not straight-line distance.

Search Tips

Bracketing/Pinpointing on a Line

From the point where you have located the smallest reading, “bracket” at 90-degree angles to the left and then to the right in search of a lower reading. Extend your brackets through “spike” readings (with digital beacons) or “false maximums” (with analog beacons).



Search Tips

Multiple Burials

If your beacon displays more than one signal, follow the one with the lowest distance reading. Digital beacons will isolate that signal once you get close. With an analog beacon, you will need to isolate that signal by adjusting your orientation and sensitivity control. Pinpoint the first victim and turn off their beacon if possible. If this is not possible, and the next signal is not apparent, we recommend the “three-circle method.”

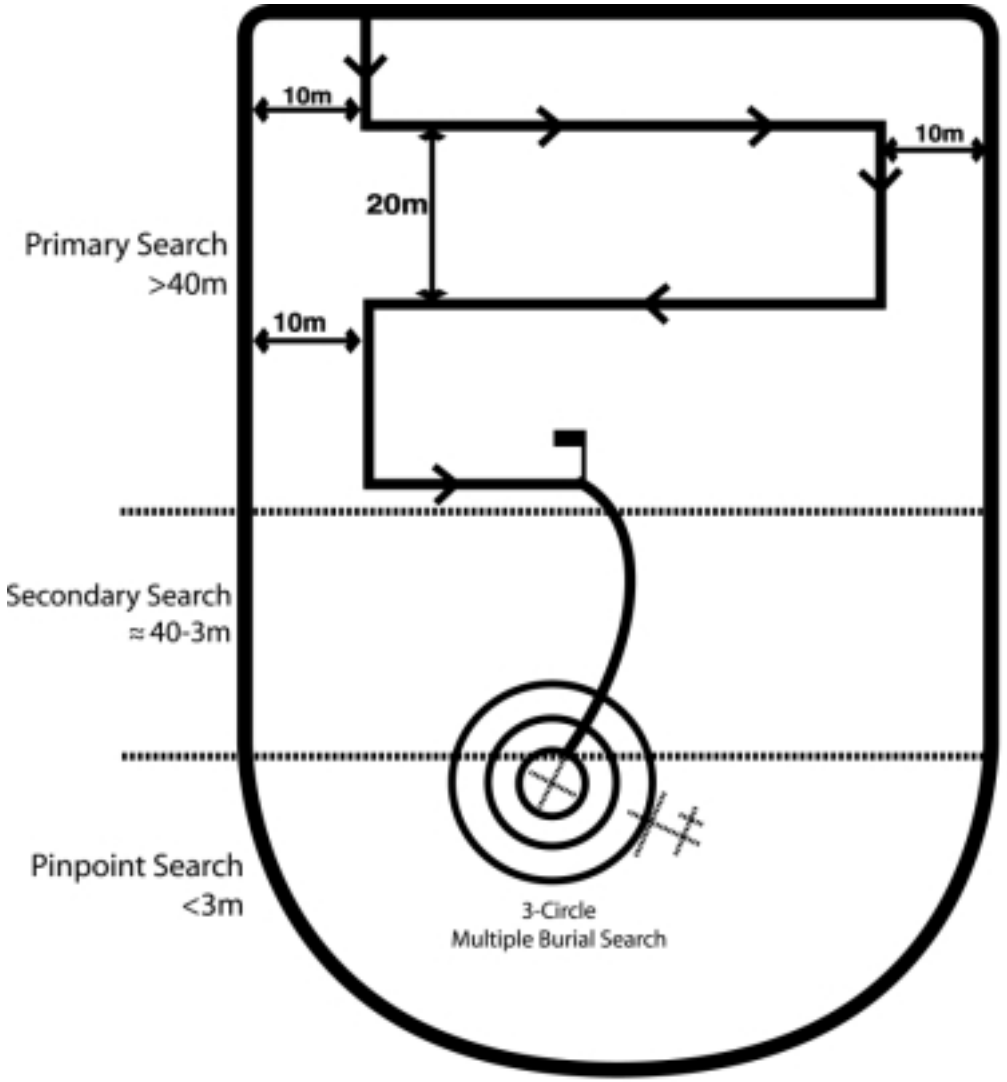
Three-Circle Method

This method applies to all transceiver types. Take three steps back and search for second signal in SE mode, maintaining three-meter radius around the first victim. Look for a sudden change in distance and direction. If no signal is captured, take another three steps back and repeat—up to three circles (nine-meter radius). Once a new signal is acquired, pinpoint by bracketing.

After locating each victim, it is important to complete each circle if victims are still missing. Once all the circles have been searched, return to the point at which the primary search was abandoned. Continue the primary search from here if victims are still missing.

Special Mode

This method is used exclusively with the Tracker DTS. Special (SP) mode enables more efficient searching in a similar circular pattern but with the searcher rotating the beacon rather than physically walking in circles. For more info on multiple burial searching with Special mode, see www.bcaccess.com.



Case Study 1

Loveland Basin Ski Area

- Initial test site, installed Nov. 18, 2002
- 14 transmitters, 100m x 100m area
- 12 professional users first day
- 149 recreational users, 70 hours search practice time by March 15, 2003.

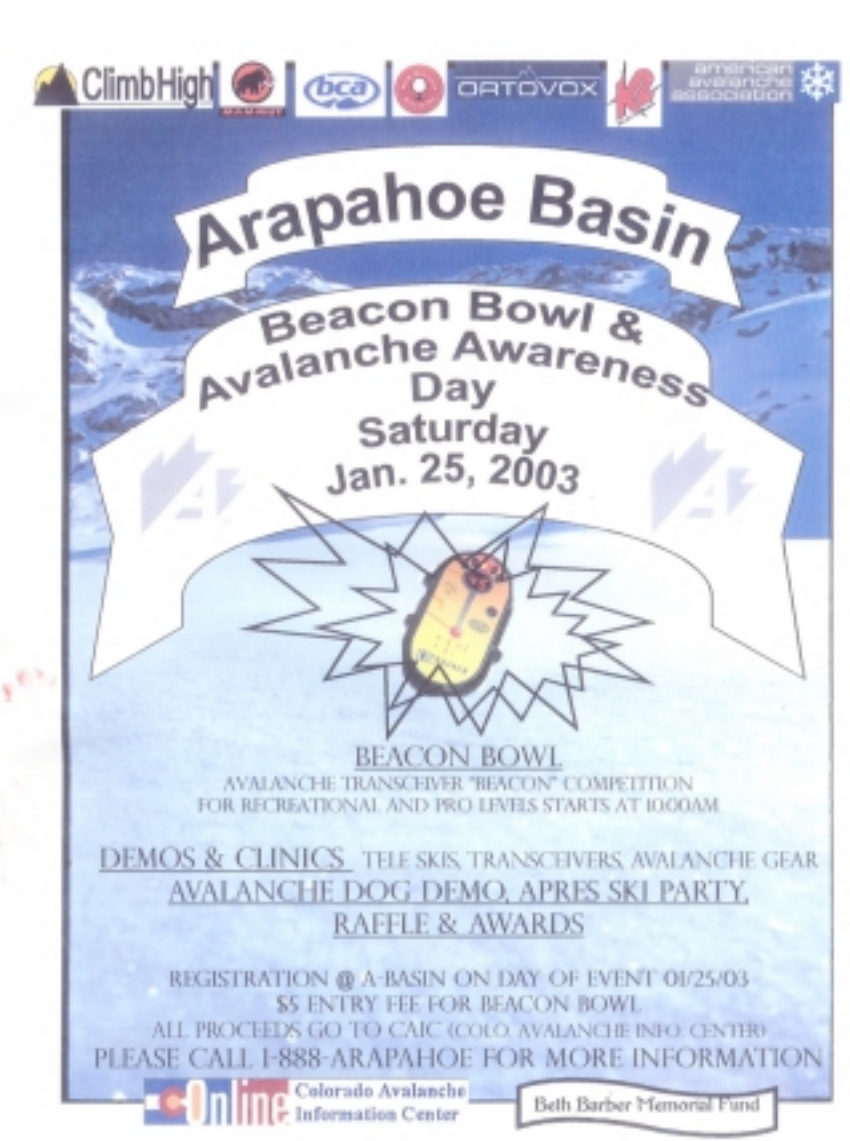
Install time	4 hours
Practice search time	70 hours
Number of users	149
Avg. preparation time per search hour	3.4 minutes

Expansion

- BCA expanded the program in 2003-04 to 10 sites in the U.S. and Canada.
- Developed first European sites at Narvik, Norway and Zinken, Austria.

Expansion

- Colorado location was moved to Arapahoe Basin, highest ski area in North America.
- Has become the location of the nation's most competitive transceiver Olympics: A-Basin "Beacon Bowl."
- Competitions are always won with the Tracker DTS!



Case Study 2

Kokanee Glacier

- Installed in December of 2003 at our favorite ski touring location. Hut used by Alpine Club of Canada for avalanche education.

- 252 users and 504 hours of search time.

- Deep burial reality:
  most beacons 2m deep by February.

Install time	6 hours
Practice search time	504 hours
Number of users	252
Avg. preparation time per search hour	.71 minutes

Beacon Basin Partners

US Partners

Vail, CO
Breckenridge, CO
Telluride, CO
Crystal Mountain, WA
Stevens Pass, WA
Alpental, WA
Kirkwood, CA
Squaw Valley, CA
Bridger Bowl, MT
Jackson Hole, WY
Chugach Powder Guides/AK
H20 Guides/Valdez
Exum Guides/Teton Pass
UAFC/Salt Lake City

Canadian Partners

Whistler, BC
Blackcomb, BC
Whitewater, BC
Kokanee Glacier, BC
Valhalla Lodge, BC
Mt. Carlyle Lodge, BC
Mt. Norquay, AB
Sunshine Village, AB

European Partners

Austria

Seegrube Austrian Alpine Club
Werfenweng Mtn. Rescue Team
Zinken Mtn. Rescue Team
Hof Mtn. Rescue Team
St. Anton Mtn. Rescue Team
Montafon Mtn. Rescue Team

Germany

Spitzing
Skiarena Steibis

France

ENSA/Les Grandes Montets

Italy

Altavatellina

Norway

Narvik

Conclusion

- Beacon Basin is a cost-effective tool for avalanche education, especially advanced scenarios.
- Low cost enables more sites and greater public exposure.
- Program is expanding to 40 sites in 2005-06.
- This will include at least 10 sites in Europe.

For more information on Beacon Basin
please visit
www.bcaccess.com/beaconbasin