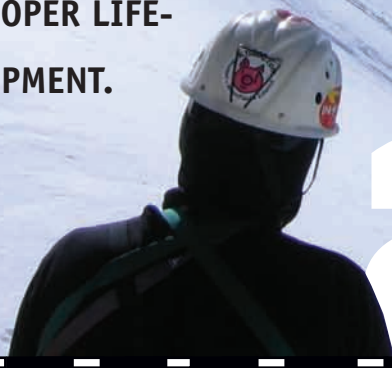




BY CLYDE SOLES

stay alive

EXPLORING THE
BACKCOUNTRY IS
SERIOUS
SO OUTFIT YOUR CUSTOMERS
WITH THE PROPER LIFE-
SAVING EQUIPMENT.



alive

Thanks to improved alpine touring gear, beefier telemark gear, refined splitboards and more powerful snowmobiles, more people than ever are recreating in avalanche country. Indeed, catalogs, magazines and movies routinely glorify the thrill of pushing the limits while minimizing the dangers. As a result of these factors, avalanche rescues and avalanche-related deaths are inevitable.

While education is the best prevention, new technology can improve the odds of avalanche survival. In terms of saving lives, by far the most effective technologies are those that prevent complete burial. But many are unwilling to use such gear (partly because it is seen as expensive and bulky), making it essential to find a buried victim or victims quickly. After reviewing the market, GearTrends® has put together a compendium of what you—and your customers—need to know about the current gear available that will help save a life.

FREE THE SKI

Releasable ski bindings are at the top of the list for avalanche safety, though many prefer to ignore this reality. Unfortunately, current AT bindings are only designed to release when the heel is locked. If caught while on the ascent, there's a good

chance the skis will remain attached. The 7TM and Voile CRB telemark bindings do offer release both on the ascent and descent, but only a small percentage of backcountry skiers use them; all other telemark skiers are essentially bolted to big anchors. And the only hope for snowboarders is that the force of the avalanche rips them out of their boots.

FLOAT ON TOP

Avalanche airbag systems (ABS), either built into a pack or worn over a jacket, are very effective at floating a victim to the surface (if his or her skis aren't attached). These require compressed gas cartridges that inflate the air bags when a rip cord is pulled. Unfortunately, these are still cost-prohibitive—retail is around \$800, with very low margins, and refills cost around \$100. To complicate matters

further, the nitrogen cartridges cannot be shipped in the United States (they are not approved by the Department of Transportation), and most airlines insist on special handling since they are considered dangerous goods.

Life-Link was the only U.S. distributor, but has called it quits on selling ABS packs. A few Internet stores import them and sell direct, primarily to heli-skiers, patrollers and guides.

A company in Minnesota that makes airbags for snowmobiles is currently experimenting with a compact, affordable personal avalanche device. Perhaps in a few seasons, it will have a working version. (www.nebulusflotation.com)

FIND 'EM FAST

Another useful technology for saving avalanche victims is a surprisingly low-tech

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THE ODDS OF SURVIVAL DROP OFF DRAMATICALLY AFTER 15 MINUTES—OFTEN IT TAKES LONGER THAN THAT FOR RESCUERS TO EVEN REACH THE SCENE.

system. The Lawinenball, once sold as the K2 Avalanche Ball, is a spring-loaded “beach ball” that is stored flat in a small fanny pack. When the rip cord is pulled, the bright red ball pops open and stays attached to the victim with a strong 20-foot rope. Since this floats on the surface and is immediately visible to rescuers, it is the fastest system on the market.

While highly effective, the system is a bit cumbersome to carry; ideally, a ski pack would have the ball built-in. The system sells for about \$235, and, unlike ABS systems, it’s reusable at no extra cost. At present, there is no U.S. distributor, but it can be ordered from Austria (www.lawinenball.at).

AVALANCHE BEACONS

Skiers, snowboarders, snowshoers and other winter explorers have no business in the backcountry if avalanche beacons are not also part of the mandatory gear list. Once fairly primitive and fragile radio transceivers that required a lot of practice, these are now becoming very sophisticated and less fragile, though they still require practice.

All modern beacons operate on the same frequency (457 kHz), so all are compatible. Any beacon sold within the past decade is quite good in the most common situation—locating a single victim under a couple feet of snow in a short period of time. This is not a particularly challenging task, either for analog or digital beacons, but it requires practice.

All of the technology in the past few years has concentrated on the two more demanding scenarios: deep burial and multiple victims. In the case of a deep burial (over 3 feet down), the transmitted signal can give the false impression of two people buried several feet apart instead of the actual victim in the middle. In the nightmare scenario with two or more buried victims, the conflicting signals can make searches with older beacons a real challenge in an emergency when seconds count.

The Backcountry Access Tracker was the first beacon that used two antennae and a digital signal processor to simplify and speed searches. Since that groundbreaking design, most of the other companies have introduced beacons with two antennae (Arva, Ortovox X1) or three antennae (Pieps DSP, Mammut Pulse). The new Ortovox S1 will use a single antennae but a smarter computer to analyze signals.

Some beacons (Arva Advanced, Mammut) allow the option of switching from digital to analog when searching, so the rescuer can hear the actual beep from a

greater distance or distinguish between the sound of different beacons. A few beacons will give a visual warning if more than one signal is received. The better ones (such as Pieps DSP) will actually tell how many signals it is picking up.

Next season, Ortovox and Mammut will introduce radically new technology to aid with multiple burials. Assuming it reaches production, the Ortovox S1 will graphically show the location of each buried victim on an LCD. The Mammut Pulse will tell the searcher if victims wearing Pulse beacons are still alive by using a sensitive motion sensor to detect heartbeats and a Wi-Fi connection to transmit data. The Pulse might help with triage when there are few rescuers available, and it’s also a very good beacon when searching for other brands. Of course, both will be significantly more expensive than beacons currently on the market.

Over the next few years, expect to see more wireless communication so that beacons can be diagnosed at a service center and have software upgrades. Currently, a feature on the Pieps DSP, the Ortovox S1 and Mammut Pulse will also have this ability.

Both Backcountry Access and Mammut now include training DVDs with their beacons. These are far superior to the instruction manuals for teaching proper use of beacons. We hope other companies will follow.

BEACON CONCERNS

Many people don’t realize that beacons are not built for a lot of banging around. The ETSI testing standard only requires that a beacon function after six drops (once on each side of the beacon) onto a wood floor from a height of 3 feet while turned off. This is considered a weak drop test for a life-safety product, and there is no testing of crush resistance. At least one person has died when his beacon failed following an impact during an avalanche. Consumers need to be educated that their beacons must be sent in for inspection following a hard impact since there can be internal damage that results in intermittent performance. In other words, it may test OK at the trailhead but not work when needed.

Another cause for concern is the batteries used in beacons. Retailers must be very explicit that the only batteries that can be used are alkaline ones. Even though beacons will function with rechargeable NiMH or disposable lithium batteries,

these are in fact dangerous. The power curves of these batteries gives very little indication of when they will run out. The unit may function at the trailhead but quit suddenly during a search, which draws much more power.

Another complicating factor is that there’s a chance the beacon won’t work properly even with premium brand alkaline batteries. Since there is no standard on battery dimensions, sometimes a loose fit can cause a beacon to shut off when jiggled. Ortovox issued a recall because of this problem and replaced the doors of its M1/M2 beacons. Other brands are not immune but haven’t taken action. After installing fresh batteries, consumers should turn on a beacon and give it a violent shake or two to make sure it doesn’t switch off.

Older generation analog beacons (such as the Ortovox F1, Pieps 457 Opti 4, SOS F1-ND) don’t have any advantages other than slightly lower price. Added bells-and-whistles like an altimeter, thermometer and compass simply clutter up a lifesaving device with battery-draining features that are not needed.

An untapped market exists for dog beacons: rescue dogs and non-working pooches deserve avalanche protection too. It’s generally agreed that dogs should not wear a 457 kHz beacon since that could slow the recovery of humans. The obsolete 2275 kHz single-frequency beacons found on eBay are one option. A more expensive alternative is purchasing an SOS Snowbug transmitter (\$115) for the dog, but this requires the SOS SB analog beacon (\$245) to search. Hopefully, future digital beacons will take care of our canine friends too.

FIND ‘EM LATER

Due to the growth of non-releasable bindings, deeper burials and longer recovery times are more likely. The odds of survival drop off dramatically after 15 minutes—often it takes longer than that for rescuers to even reach the scene, let alone conduct an effective beacon search and dig a hole in hard snow.

With the Black Diamond Avalung, you really can buy time. This under-snow breathing device has been credited with saving





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several lives so far. Assuming no trauma and the mouthpiece gets put in place, a buried victim still has good odds of surviving even after an hour or more of burial.

The Avalung should be considered a necessity for anyone using non-releasable bindings in avalanche country...and a good idea even for those with release bindings. The new packs with built-in Avalungs greatly increase convenience, though the styles and colors may not suit everyone.

FIND THE BODY

Many high-end ski jackets and pants now have a small RECCO chip attached to a sleeve or pant leg (it only costs a few dollars extra). This passive device reflects a signal back to a transmitter, sort of like selective sonar, to give the location of an avalanche victim. The transmitters are now used by ski patrols at many of the major resorts in North America.

When the alarm is sounded, patrollers will deploy with handheld transmitters to search strips 60 feet wide. If conditions permit, a helicopter can be used from as far as 600 feet above the snow. The system has been credited with saving several lives at resorts in Europe, including one person lost in a crevasse.

Unfortunately, many people believe they don't need beacons if they have RECCO chips on their clothing or boots. They don't realize that RECCO is all but useless in the backcountry, where it will take ski patrol far too long to reach.

PROBE 'EM

While modern avalanche beacons are quite good at getting a rescuer to the general vicinity of a victim, the final search can be sped up with the use of probe poles. Shops that sell beacons should be certain that customers also carry a probe and shovel. And not cheap ones!

It took a while but, at last, just about everyone has gotten the message that ski poles make terrible avalanche probes. They are too slow to assemble, too short, and ineffective in hard snow. Cheap probe poles aren't much better. The assembly mechanism is fiddly, the narrow diameter shafts tend to deflect rather than go straight down,

and they are prone to breaking.

The best probes have guides that quickly locate the pole segments and a secure locking mechanism that's easy to operate with gloved hands—G3 and Life-Link are the clear leaders for ease of assembly. Larger diameter tubes offer greater rigidity, and an oversize tip makes removal easier from sticky snow. Carbon fiber is a better way to save weight than going shorter for not much more money. Though not mission critical, depth markings on a probe pole are a nice luxury.

Short probes are an abomination! Although research shows that the odds of survival below a depth of 6 feet are remote, it isn't out of the question. There is no reason for a store to sell any avalanche probe shorter than 230 cm (7.5 feet), and longer probes (up to 320 cm or 10.5 feet) should be encouraged. Though several brands offer probes that fit inside a shovel handle, these are usually inferior to a separate probe and should be discouraged.

Carrying a short or flimsy probe gives ski partners a clear message: "I care more about 3 ounces, a little bulk and a few bucks than your life."

DIG 'EM

A shovel is the single most important part of an avalanche rescue kit. As with probes, the quality of your shovel indicates how much you care about your friends. Yet this vital tool often receives the least consideration. While other mountain safety gear (ice axes, carabiners, ropes, etc.) have to meet international standards, backcountry shovels are not subjected to any independent testing.

There are numerous accounts of shovel blades, both metal and plastic, breaking in the field—a lifetime warranty is meaningless when you're trying to save a life. Cheap shovels have no place in a backcountry store.

Polycarbonate (aka Lexan) shovels have earned a bad reputation for bouncing off avalanche debris or cracking in the cold, though this is more a function of design than the material. The Indigo shovel, for example, is much stiffer than other polycarbonate blades and compares well to metal. Life-Link as much as acknowledges its standard polycarbonate blades are inadequate in anything but soft snow by offering an identically shaped, stiffened composite blade that is "designed to chop ice and stubborn snow."

It is a mistake to say that all metal shovels are superior to plastic. Most aluminum blades are not heat-treated, rather they are simply work-hardened (fancy way of saying stamped in a press). The extra expense of heat-treating makes a tougher, more durable shovel, but only the G3

AviTech and Voile T6 shovels give this level of performance. Furthermore, metal blades tend to be shallower, so they are less efficient at moving snow than a same-size plastic blade. Some blades are either bare or anodized aluminum and will glom up with wet snow, reducing shoveling efficiency. The best shovels have epoxy coatings to prevent sticking.

Whether metal or plastic, customers should be encouraged to sharpen the blade occasionally with a file. This aids penetration of hard snow and cutting through willow branches that are common in avalanche paths.

Most people end up regretting the purchase of a shovel with a non-extendable handle. The extra length allows faster digging and is a huge back-saver for minimal weight and expense. A popular accessory from several companies (Black Diamond, Ortovox, SOS, Voile) is a snow saw that fits inside the shovel handle.


AVY ADD-ONS

Shops selling beacons, probes and shovels should also stock the accessories used for avoiding avalanches and dealing with the aftermath.

A very useful, inexpensive gadget is a slopometer for measuring angles. While this feature is built into better compasses, the ones made for snow study indicate the most dangerous angles. Snow study cards and thermometers are more for the professional or avid student; most people don't need them.

Snow saws are useful for performing shear tests and cutting blocks to build igloos. These have large teeth to quickly cut through snow. However, many prefer saws with smaller teeth since they can also cut wood in an emergency. The G3 Bonesaw is unique in that it can attach to a shovel handle, ski pole or ice ax for greater length.

Another worthwhile accessory is the G3 Rutschblock Cord. This is an 18-foot steel cable with "cutting teeth" every foot or so that greatly simplifies avalanche testing and cutting cornices.

In the end, it's up to each backcountry user to be prepared for the potential pitfalls of exploring avalanche-prone areas. This season, Backcountry Access is launching an educational campaign about the importance of practicing probing, shoveling and searching with beacons. Its popular Beacon Basin training centers are now found at 24 locations in North America and 13 in Europe. Ultimately, proper training and equipment will be the best defense to saving lives. 

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