The RECCO Avalanche Rescue System

RECCO® is an avalanche rescue system utilized by more than 500 rescue organizations worldwide to assist in the efficient location of burials. RECCO technology enables rapid directional pinpointing of a victim's precise location using harmonic radar. The two-part system consists of a RECCO® detector used by organized rescue groups, and RECCO® reflectors that are integrated into apparel, helmets, protection gear or boots. The reflector is permanently affixed, requires no training for use and needs no batteries to function.

Although similar in search procedure to transceivers, the RECCO system is not intended for self-rescue nor is it an alternative to transceiver use in the backcountry. Complementary in function, the system is an additional tool that does not interfere with other rescue methods such as avalanche dogs, transceiver searches or probe lines. The RECCO system facilitates a faster organized search for rescuers and provides skiers and snowboarders with one more chance to be found in time.

SKI RESORTS

- Worldwide

MOVING PICTURES

- Commercial
- RECCO® presentation

WHITE BOOK

- Avalanche Awareness

WHITE BOOK CHALLENGE
Enter to win Heli Trip

System
- Info
- Reflectors
- Detectors

Info

The RECCO® system is an exceptional additional search method since it can pinpoint the exact location of burial with harmonic radar. The equation that enables this search precision is an interaction between two critical parts, a reflector and a detector. The RECCO® detector is used by organized rescue groups, and RECCO® reflectors are permanently affixed by snow sports manufacturers to their commercially available clothing, helmets, boots or protection gear. The RECCO system does not interfere with other methods of recovery and functions as an additional tool that complements the performance of avalanche dogs, transceiver searches or probe lines. The RECCO system has become a critical piece of comprehensive avalanche strategies and effectively speeds the search in the event of a slide.

The RECCO system is currently utilized by 440 rescue organizations worldwide to assist in the rapid location of avalanche burials. In Europe an overwhelming majority of ski areas–from Verbier and Chamonix to St Anton and Zermatt–utilize the system. In addition, 50 of the most respected European rescue organizations such as the Mountain Rescue Tirol and Air Zermatt are solidly behind the system.

In North America more than 100 ski resorts, helicopter skiing companies and search and rescue organizations now utilize RECCO technology. From major destination resorts such as Whistler/Blackcomb, Jackson Hole, and Snowbird to rescue organizations such as Parks Canada, Mount Rainer National Park, and Wasatch Backcountry Rescue, the search technology has been widely adopted as an additional tool to increase the probability of a live recovery. With a recent surge, Japan has also become a hotspot of RECCO system coverage with nine resorts–including major destinations such as Arai, Niseko and Hakuba–becoming equipped with RECCO detector technology in 2005.

Developed by Magnus Granhed at the Royal Institute of Technology in Stockholm in response to his personal experience with avalanche tragedy, the RECCO system was introduced in 1983. The first live rescue using the RECCO system occurred in 1987, when a female ski shop employee was located with the RECCO detector and successfully recovered. In the two decades since, the RECCO system has evolved considerably. Tapping into the latest electronic advances, the RECCO detector has been reduced to 1.6kg (3.5 lbs) and the RECCO reflector now weighs less than four grams. This downsizing has allowed the RECCO system to become an extremely practical mountain search tool for time-critical scenarios. The RECCO detector–which is cached at strategic on-mountain locations for rapid response–can be efficiently used in rough terrain and easily transported to the search site by ski, sled or helicopter.

Although similar in search procedure to transceivers, the RECCO system is not intended for self-rescue and is not an alternative to transceiver use in the backcountry. Complementary in function, the system is an additional tool that does not interfere with other rescue methods such as avalanche dogs, transceiver searches or probe lines. Since it operates with a heightened frequency, the system functions with exceptional directional accuracy. Once an initial signal is located, the searcher does not need to follow a flux line and is led directly to the burial. This reduces search time and provides pinpoint accuracy, drastically decreasing the amount of probing required to locate the victim.

Another major advantage of the RECCO system is that since the reflector is integrated into commercially available apparel, helmets, boots and protection gear, it requires no action on the part of the individual skier or snowboarder to function properly. The RECCO system requires no additional investment or training on the part of the consumer, making it ideal for a wide spectrum of user profiles. Since it is non-powered, the RECCO reflector never needs to be switched on, will never loose signal strength and needs no batteries to function. This straightforward design prevents potential user error and ensures the efficient operation of the RECCO system.

Two recent trends have contributed to the increased effectiveness of the RECCO system. First, with cell-based emergency calls common, the response time of organized rescue has been reduced significantly in the mountains. In addition, the rapid upsurge in backcountry activity is extremely concentrated within a two-mile radius of developed ski areas. This close proximity speeds response time of rescue teams, which is the key to a successful live recovery. As these factors have converged, many avalanche rescue efforts now involve both self-rescue and organized rescue components. This new on-mountain reality makes the RECCO system a valuable search tool for facilitating a rapid recovery.

System

- Info
- Reflectors
  - Reflectors Info
  - FAQ Reflectors
- Detectors

Reflectors Info

The RECCO® reflector is permanently affixed to skiers and snowboarders while they are recreating in the mountains. The small piece weighs less than four grams and is designed into commercially available outerwear, helmets, boots and protection gear. This ensures the reflector won't be left in the car, stashed mistakenly in the lodge or forgotten at home. It is a non-powered device, meaning it never needs to be switched on, will never loose signal strength and needs no batteries to function. It requires no maintenance and has a virtually unlimited lifespan.

The actual component is a small electronic transponder with a copper aerial and a diode. Similar to a thin, printed circuit card and surrounded by protective weatherproof plastic, it is factory mounted to the exterior of gear that is unlikely to be torn off in the event of an avalanche. The reflector is engineered to sit slightly raised from the body and is placed in a specific external configuration for optimal reflection in the event of a burial.

The two-part technology operates on the frequency-doubling principle. The RECCO reflector bounces back the directional radar signal to the searcher and doubles the frequency, allowing the operator of the RECCO detector to actually hear where the burial is located. This enables rapid pinpointing of the signal and tracks searchers on a direct path to the burial. The reflectors are most effective when worn on a helmet or in pairs–pant and jacket or left and right boot–due to the unpredictable orientation of avalanche burials.

Unlike operating a transceiver, which requires education and practice, there is no learning curve for use of the RECCO reflector. It is integrated into commercially available gear by the manufacturer and therefore requires no additional investment by the on-hill user. The reflector can be washed without damage and will not interfere with any electronic device since it does not transmit any sort of signal. And, with only a passive role to play in the rescue, the RECCO reflector does not compete with other search methods and therefore functions as an effective complement to–but not a replacement for–wearing a transceiver. RECCO reflectors do not prevent avalanches nor do they guarantee location or survival in the event of a burial, but they do provide one more chance for skiers and snowboarders to be found quickly by organized rescue.

System
- Info
- Reflectors
  - Reflectors Info
  - FAQ Reflectors
- Detectors

FAQ Reflectors

Am I safe in the backcountry with RECCO reflectors?

No. RECCO reflectors do not prevent avalanches nor do they guarantee location or survival in the event of a burial. Responsible backcountry travel requires proper gear–including transceiver, shovel and probe–trained partners, adequate avalanche knowledge and smart decisions. The RECCO avalanche rescue system increases your chances of being found–both quickly and alive–in the event of a slide. The best way to stay safe is not to get caught at all.

Can I use a RECCO reflector instead of a transceiver?

No. The RECCO® system is a great complement to, but not a replacement for, a transceiver. The RECCO® reflector provides you with one more chance to be pinpointed by an organized rescue operation in the event of a slide.

Why should I wear two reflectors?

If you get caught in an avalanche, your body can be contorted into a strange position. Since the signal can be weakened when covered completely by the body, a second reflector allows the system to function optimally in any orientation of burial.

Why are reflectors not attached to skis, packs or gloves?

These items can be torn off easily in an avalanche. For the system to function effectively, it is essential rescuers know they are honing in on a live burial and not just a stray ski, pack or glove.

Do I ever need to replace a battery in the RECCO reflector?

No. It is a non-powered device that requires no battery for operation.

Does the RECCO reflector emit dangerous radiation?

No. They do not transmit any sort of signal and are designed only to reflect back the high-frequency signal of the detector.

Can I use RECCO reflectors if I have a pacemaker?

Yes. No signal radiates from the reflector.

Do the RECCO reflectors cause problems when traveling by air?

No, since they do not transmit, the reflectors do not create any electronic interference or cause any problems when passing through airport security.

Can apparel with a reflector be washed without damage?

Yes, if the care instructions on the garment are followed properly.

What brand can I buy that will have RECCO reflectors in their clothing, boots or helmets?

Many international brands including Atomic, Sessions, Arc'teryx, The North Face, Volcom, Quiksilver, Vans, and Pro-Tec have incorporated RECCO reflectors into their products.

Are both my local ski hill and the resort I'm going to for vacation equipped with the RECCO system?

More than 440 resorts, helicopter bases, national parks and search-and-rescue organizations worldwide are equipped with the system. Since this number is increasing rapidly, check the listing on recco.com for the most current information.

System

- Info
- Reflectors
- Detectors
  - Detectors Info
  - FAQ Detectors

Detectors Info

The success of the RECCO® system hinges on operation of the RECCO® detector. It is with this avalanche rescue tool that organizations are able to locate individuals equipped with RECCO reflectors. This portable device is not intended for self-rescue applications, but in the hands of trained searchers it enables efficient location of an avalanche burial when the victim is wearing a reflector. The detectors, which are positioned at convenient locations on the mountain, are operated by area ski patrols, helicopter skiing companies and search-and-rescue outfits.

The RECCO detector is directional, which means the audio signal increases when pointed directly at the reflector. This major operational benefit eliminates the need to follow a flux line into the burial. After the initial signal is received, the RECCO detector leads the operator in a direct line to the victim, increasing precision and saving precious search time. This directional characteristic also allows for an exact location of the burial in the fine search stage, significantly reducing the amount of probing required for a successful find.

A transmitter and receiver are the main working parts of the unit. The current detector has evolved significantly and now weighs only 1.6 kilograms (3.5 pounds). At this reduced weight, it is extremely portable and can be easily operated in rough terrain or harsh conditions. Its simple-to-use components include an on-off switch, volume regulator, battery and socket charger. The self-contained unit can be used at full power for three to four hours of search time before it needs to be recharged.

The range of the detector is a complex calculation of many variables including moisture content of snow, direction of burial and orientation of the RECCO detector to the buried reflector. The maximum range of the system is 200 meters through air and 30 meters through snow. A 20-meter corridor, 10 on each side, is recommended for the mountain search path, and an angled orientation of the detector to the slope is optimal for the first stage of the search.

The rescue crew can effectively search with the detector whether on foot, on skis or in a helicopter. Searching by helicopter has become a common use of the RECCO detector due to its extensive range through the air. In this situation, the pilot can be wired to hear the signal through his or her headphones, enabling the helicopter to quickly hone in on the burial and saving significant time in an organized rescue. The detector transports easily, loads quickly and also requires no external apparatus, making it ideal for this airborne application.

The RECCO detector does not interfere with transceiver searches, probe lines or avalanche dogs. Yet, since the device occasionally picks up weak signals from electronic devices such as cell phones, portable radios and transceivers at short distances–even when turned off–management of the search party is required to maximize the effectiveness of the system. With adequate training, however, a successful signal sweep can be accomplished with a minimum of separation in a hectic search situation.

Paired with function that does not replace, compete with or negate the effectiveness of other systems, the RECCO detector functions as an ideal complement in any scenario. The detector is light, fast and straightforward in function, allowing it to integrate easily with comprehensive search strategies. Utilized to its full potential, the RECCO detector is an additional tool that provides rescue organizations with one more chance to realize their ultimate goal of a live recovery.

System
- Info
- Reflectors
- Detectors
  - Detectors Info
  - FAQ Detectors

FAQ Detectors

Can I use my transceiver to search for a buried ski partner who has a RECCO reflector?

No, RECCO reflectors can only be pinpointed with a RECCO detector.

Do transceivers and RECCO detectors use the same frequency?

No. Transceivers transmit on a much lower frequency, therefore their electronics do not interfere with the operation of the RECCO system.

Can ski patrol use both transceivers and a RECCO detector simultaneously in a search situation?

Yes, since their function is complementary they can both be used at the same time in the same search area.

What is the range of the RECCO detector?

The maximum range of the system is 200 meters through air and 30 meters through snow. However, the working range of the system is a complex calculation of many variables including moisture content of snow, direction of burial and orientation of the search device.

What is the suggested corridor when conducting an initial search with the system?

Ten meters wide on each side for a 20-meter corridor is recommended when searching a debris field.

What is frequency doubling?

It is the principle that enables the RECCO system to function effectively. When the signal hits a reflector the frequency of the radar is doubled and bounced back toward the detector. The detector can precisely determine the direction of the high-frequency signal and thus pinpoint the exact location of the reflector.

Does the detector follow a flux line to find a burial?

No. One significant advantage of the RECCO system is that it is directional. Therefore, once a signal is received, the searcher can quickly hone in on the exact location of the burial, eliminating the need to walk in a curve toward the signal and decreasing the amount of probing required to pinpoint a burial.

Can a search be conducted with the system by helicopter?

Yes. Searching by helicopter has become a common use of the RECCO system. Since the effective range through the air is between 100 and 200 meters this is an extremely practical application of the system. The pilot can be wired to hear the signal through his headphones, enabling the helicopter to quickly hone in on the burial and saving significant time in an organized rescue. The system transports and loads quickly, while requiring no external apparatus be attached to the helicopter.

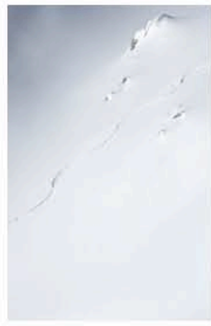
Where are the detectors located on the mountain?

Each ski resort is different due to trail network and total acreage, but in most cases the detector is located at the patrol hut on top of the mountain. Many larger resorts, like Squaw Valley, Jackson Hole, Mammoth Mountain, Verbier and Chamonix locate detectors at multiple strategic locations to speed response time in the event of an accident.

Does my mountain own a detector?

Recco.com has the most current list of resorts that employ RECCO system.

Milestones



1973 Avalanche Tragedy in Sweden

While riding a ski lift in the Åre region of Sweden, Magnus Granhed witnesses the immediate aftermath of an avalanche that roared down Svartberget Mountain. With no effective method of locating buried victims available at the time–save for probes and dogs–Magnus feels helpless as he searches the area with other skiers. A friend of Magnus is one of the two fatalities that result from this catastrophic slide. Yet this tragedy motivates Magnus and he resolves to develop a better method of search technology.

1980 First RECCO prototype constructed

Years of painstaking research in cooperation with Stockholm's Royal Institute of Technology result in the construction of the first RECCO detector prototype. Using radar, this search device can distinguish a microwave harmonic and locate a buried prototype reflector. The first-generation detector functions with directional accuracy and a confirming audio signal, yet weighs almost 20 kilos and has only a five-meter maximum range. Twenty-five years later the detector has evolved to one tenth the weight and now functions effectively at an extensively increased range.

1984 Zermatt becomes the first with RECCO detectors

Zermatt becomes the first major ski resort in the Alps to adopt the RECCO system for operational rescue use. After considerable testing, the resort and Air Zermatt decide to incorporate the RECCO system into their comprehensive avalanche strategy. Twenty years after the fact, the RECCO system now experiences widespread acceptance worldwide, with more than 440 ski areas, heli skiing operations and rescue organizations currently equipped with the RECCO system.

1987 Woman recovered alive with RECCO reflectors

A Swiss sport shop employee becomes the first live recovery of the RECCO system when she is found after being caught in a slide in Lenzerheide. Probing and dog searches were unsuccessful, yet she had been given a pair of RECCO reflectors earlier that day and search crews pinpoint her location with the RECCO detector, saving her life.

1988 Nevica fully integrates reflectors

Building on the efforts of Bogner and Degree 7, Nevica becomes the first brand to integrate reflectors into its entire apparel line. With this new method of application, skiers and snowboarders are no longer required to make an extra effort to carry the RECCO reflector. It soon becomes the predominate manner of equipping skiers and snowboarders with RECCO reflectors. Twenty years later, many major international brands such as The North Face, Sessions, Schoffel, Quiksilver, Arc'teryx and Volcom have made a responsible commitment to improve customer safety and currently incorporate RECCO reflectors into their designs.

1989 NATO adopts the RECCO system

In 1986 a major avalanche accident in Norway results in the death of 16 soldiers. After three years of testing, the Norwegian military chooses the RECCO system and equips every soldier with a RECCO reflector. Several other NATO countries that conduct winter training in Scandinavia, including Holland and Great Britain, follow their lead and begin incorporating RECCO reflectors into their military uniforms.

1996 Alta and Snowbird embrace the RECCO system

Following a two-year test on new generation technology, Alta and Snowbird become the first North American ski resorts to fully embrace the RECCO system. Nine years after this introduction in the Wasatch, the technology has been integrated into the rescue operations of more than 50 major U.S. ski resorts including Jackson Hole, Telluride, Mammoth Mountain, Squaw Valley, and Mt. Baker, as well as Aspen and Sun Valley.

1997 RECCO® detector downsized

Rapid advances in electronic components enable a significant reduction in the size and weight of the RECCO detector. At only 1.6 kilograms, the new detector is extremely portable and can be easily utilized in rugged rescue environments. The new detector creates an immediate surge in the placement and utilization of the RECCO system.

1998 RECCO system welcomed by Canada

With the introduction of the RECCO system at Whistler/Blackcomb, Fernie, and Lake Louise, Canada becomes the next mountain country to utilize the RECCO system. These three resorts are the first to tool up with the new RECCO avalanche rescue system, but the list expands during the next seven years to include most major resorts in British Columbia and Alberta.

2002 Olympic rescue plan utilizes RECCO

In preparation for the 2002 Winter Olympics, all major ski resorts in Utah, as well as Salt Lake County Sheriff Search and Rescue, are equipped and trained with the RECCO system. This organized effort gives the Wasatch–an area of concentrated backcountry use and high avalanche danger–the highest density of RECCO detectors in North America.

2002 The RECCO system accelerates internal efficiency

Progressive developments in available electronic components lead to a major internal advance in the RECCO system. Increased speed, accuracy and range are the direct benefits of this major refinement. The new electronics inside the RECCO detector allow for a larger search area, increase its sensitivity and heighten the efficiency of burial location.

2002 First live crevasse rescue with the RECCO system

An Austrian snowboarder is reported missing at the end of the day. After an exhaustive three-hour slope search, rescue crews learn the missing person is wearing a RECCO reflector. Quickly dispatched with a RECCO detector to a nearby crevasse field, searchers locate the victim in just 10 minutes using the RECCO system. Found 15 meters deep in the crevasse, he is recovered alive and unharmed after his eight-hour ordeal.

2004 Bella Coola Heli Ski adopts the RECCO system

Widespread testing in the Swiss Air Rescue proved the RECCO system effective for helicopter rescue due to its extensive airborne range, easy portability and no external apparatus requirement. Integrating the system into heli skiing operations was the next logical step, since client safety is a clear focus of this industry. Bella Coola becomes the first company to equip all clients with RECCO reflectors, while Wasatch Powderbird Guides, Chugach Heli, and Sun Valley Heli Ski join Ruby Mountain Heli's lead and place RECCO detectors at their operations to increase safety measures.

2004 Parks Canada signs on with the RECCO system

After in-the-field testing, Parks Canada commits to placing RECCO detectors at their Jasper, Lake Louise, Banff, and Sunwapta stations. Rogers Pass follows the next season to complete the extensive RECCO system coverage of alpine national park locations. With bases in Canada's most avalanche-prone ranges and a network of highly regarded career professionals, Parks Canada further cements their reputation as a leader in the field of organized rescue by taking this proactive step.

2005 The RECCO system expands its network to Japan

With a full-scale expansion into Japan, the coverage of the RECCO system is extended to the Asian continent in 2005. Starting first with Arai, nine Japanese areas–including major resort destinations Niseko and Hakuba–become equipped with RECCO detector technology in one single season. This substantial increase in detector-equipped areas is merely the first stage in a coordinated effort to equip the island nation, which will see the number of resorts outfitted with the RECCO system continue to grow rapidly during the 2006 season.

Avalanche Facts
- Equipment
- Avalanches
- White Book

Equipment

Transceiver

An avalanche transceiver, also called a beacon or a Pieps, is the most commonly used backcountry tool for finding a buried victim. Available in digital or analog versions, it is a small electromagnetic device that is strapped to the torso and transmits a constant signal when turned on. If a member of the party is buried in an avalanche all remaining members switch their devices to "receive" and begin the process of honing in on a signal with their own unit. Once an initial signal is found, a practiced searcher can then follow the flux line, which is the curved line of transmission, to the buried source. Next the location is pinpointed with a grid-style fine search, then rescuers can begin the process of probing the snow for an exact burial location.

Analog transceivers, first developed in 1968, provide visual and audio clues of varying intensity that lead the searcher to the burial. Digital transceivers, popularized during the last five years, utilize microprocessors to interpret the raw signal information and transform it into digital data, which simplifies the process of finding the burial. Although many brands of transceivers are available, such as BCA Tracker, Ortovox, Pieps, and Barryvox, all digital and analog styles sold operate on the standard 457-kHz frequency and are compatible with all current models. Each type of transceiver has specific performance advantages, but all of them require training, education and practice for maximum proficiency in search situations.

Avalanche Probe

An essential tool for backcountry rescue, a probe commonly refers to a lightweight, collapsible pole used to search the snow for buried avalanche victims. Probes pack down small enough to fit in a daypack and assemble quickly in a manner similar to a tent pole. Probe styles are selected based on weight, speed of assembly and total length, which ranges from 1.5 to 3.5 meters. The mountain purpose of a probe is to pinpoint the exact location of a buried victim after a careful transceiver search has approximated the signal to a one-meter square. Used in this capacity, a probe saves significant recovery time that could be wasted by an imprecise dig.

When all else fails, including transceiver searches, RECCO® detectors and avalanche dogs, rescue crews will form a tight shoulder-to-shoulder configuration and carefully probe the debris field one step at a time. Called a probe line, this laborious technique is employed by organized rescue groups only as a last resort after an avalanche accident and rarely results in a live recovery. Moving literally one step at a time, this method is extremely time consuming and often forces rescuers to remain in the field for long hours or multiple days before a body can be finally located.

Avalanche Shovel

An avalanche shovel is a simple, compact and portable tool that allows mountain travelers to dig into the snow. Most shovels sold for avalanche usage are comprised of two parts–a blade and a handle–that can be split apart for easy packing. The blades vary in surface area and are made either of aluminum or a highly durable Lexan plastic. Some of the models feature extendable handles for more leverage or are outfitted with safety tools, such as snow saws or collapsible probes, inside the handle. The shovel, like the probe and transceiver, should be a permanent part of each backcountry kit and is carried in the ski pack for easy immediate access in the event of an accident. Its mountain functions are digging test pits to study the snowpack and digging out avalanche burials that have been located using a transceiver and probe.

Partner

No backcountry user should travel in avalanche terrain without a reliable and educated partner. The chance of surviving is significantly higher if your ski or snowboard partner has practiced the skills needed to rescue you from an avalanche burial. This person is the one who is trusted with the task of locating you in the event of a burial and digging you out. Before leaving the ski area or entering the backcountry, conducting a careful evaluation of your partner's avalanche skill is an essential exercise in staying safe.

Avalung

Invented by Colorado MD Thomas J Crowley and developed by Black Diamond Equipment, the Avalung is an external sling-type apparatus that enables a buried individual to breathe under snow. When the tube is held in the victim's mouth, the device extracts air from the snow, delivers it to the mouth through surgical tubing and expels carbon dioxide in a different location so the air supply is not contaminated and ice masking is prevented. This stops carbon dioxide poisoning, allowing the victim to survive longer. Since the introduction of the second generation of this device–the Avalung II¬–four incidents have been documented where the technology has contributed to a live recovery.

ABS Airbag System

The ABS system is an airbag that inflates around the skier or snowboarder when deployed in an avalanche. It is intended to float the user to the top of the slide, significantly reducing the chances for burial and offering some protection against trauma injuries. The collapsed airbags stow in an attached backpack, which the skier wears on the hill. Pulling a shoulder-mounted T-handle, which then causes a Nitrogen air cartridge to inflate the two 75-liter bags in less than three seconds, triggers them. The product is reusable by simply replacing the cartridge and is much more common in Europe. Since its introduction, there have been 30 documented cases of this technology saving lives in European avalanche accidents.

Avalanche Dogs

Avalanche dogs are trained to detect human scent deep under the snow. The animals operate efficiently in rescue situations and are likely to track down the location of a burial long before an organized probe line finds a missing victim. Many mountain areas train and maintain a core of specialized search dogs for avalanche rescue. They are often transported to the scene of an avalanche with the assistance of a lift or helicopter. The dogs are handled by skilled volunteers and are guided through an extensive training program to gain expert search proficiency.

Education

No equipment will make much difference without adequate training, avalanche awareness and smart decision making. Transceiver searches and probing techniques require constant repetition to perfect, while precious time can be saved in all areas with good preparation. Speed is an important variable in any avalanche rescue, since only 35 percent of burials are recovered alive after 35 minutes. The only way to hone the required survival skills is through constant practice. Avalanche education classes are also an excellent way to gain knowledge. These avy classes are taught regularly and are referenced for North America at both avalanche.org and avalanche.ca. Taking a class, traveling with someone you trust and practicing often with your gear are proven ways to minimize your risk, but there is no guarantee of safety—the best strategy is not to get caught at all.

Avalanche Facts
- Equipment
- Avalanches
- White Book

Avalanches

The numbers present one picture of avalanche accidents, however exceptions to the statistical rule occur with regular frequency. The following five stories represent some recent anomalies to the common knowledge widely circulated about avalanches. They show not all slides happen in the backcountry, survival is possible after 30 minutes of burial, transceivers do not always withstand associated trauma and ski patrol has quick response capability in close proximity slides. These recent incidents are not intended to disprove the averages, but simply to illustrate not all incidents conform to the standard profile.

Not all slides happen in the backcountry

Snowboarder Swept to his Death from Chair
Lee Canyon, NV
January 9, 2005

A 13-year-old snowboarder was killed when swept off a chairlift by an avalanche at the Las Vegas Ski and Snowboard Resort. Two witnesses to the incident described a booming noise, a rush of snow and a 7-meter-high wall of snow rocketing toward the chair they were riding to the top of a run named The Line. They saw the victim, who was four chairs ahead of them, swept into the slide and buried beneath the moving tumult of snow. Even with approximately 20 skiers searching the debris within minutes, and a full rescue operation mounted soon after, his body was not recovered until eight hours later. The slide followed two weeks of heavy snow accumulation in which 200 centimeters fell on the resort.

Avalanche Buries Couple in their Sleep

Soldier Mountain, ID
January 2, 2004

A Washington couple was killed in a nighttime avalanche near the base of Soldier Mountain Ski Resort that destroyed their cabin. The slide hit the ski cabin at approximately 1:00 a.m., blasting through windows and creating a 4.5-meter deep debris pile. Their son, who was sleeping in the loft with his wife–who also survived the ordeal–tried unsuccessfully to dig out his parents then made his way out to get help. Rescue crews arrived on the scene two hours after the slide and were able to free the grandparents in approximately one hour but could not save the parents. Twelve hours later, rescuers heard barking and subsequently dug out the family dog, which had been swept into the fireplace and survived the burial. A heavy slab of snow that fractured on a ridge high above the cabin triggered the slide.

Extended Burial, Recovery and Survival

Snowshoers Survive 24-Hour Burial
Artist Point, Mt. Baker Backcountry, WA
December 12, 2005

A party of college students–two women and one man–was snowshoeing between Artist Point and Table Mountain in the Mt. Baker Backcountry on a Friday morning when all three were completely buried by a soft-slab avalanche. Almost 24 hours later, the man was able to dig a hole in the snow surface and begin yelling for help. A party of backcountry skiers heard his cries, promptly dug him out and returned him to the ski resort boundary. A rescue party returned and located the body of one of the women, who was dead, through probing. The second was found, alive, when a rescue party member accidentally stepped into the air pocket that allowed the snowshoer to live through the overnight burial. It is probable the two were buried under a large overhanging cornice, which often forms in this localized area, providing them with the air space that enabled them to survive.

Transceiver Damaged from Slide Trauma

Transceiver destroyed in Hourglass Couloir fatality
Hourglass Couloir, Jackson, WY
February 10, 2003

A member of the storied Jackson Hole Air Force died when swept down Hourglass Couloir–a permanently closed area–at the Jackson Hole Mountain Resort. Both the victim and his ski partner were caught in the slide, which carried them 200 vertical meters into Tensleep Bowl. The avalanche buried only the victim, but destroyed his partner's transceiver, forcing him to search with just a probe pole until additional help arrived five minutes later. The victim was located in 12 minutes under only two feet of snow and dug out in just over 20 minutes, but did not survive. The resort conducted a secondary dog and transceiver search to ensure no in-bounds skiers had been buried in the debris.

Quick Response of Rescue

Rescuers Search for three days to Clear Slide Area
Dutch Draw, Park City, UT
January 14, 2005

A snowboarder was caught, buried and killed when he launched over a cliff and triggered a massive slide in the Dutch Draw area adjacent to the Canyons Mountain Resort. The victim was part of a five-person party that accessed the run from a marked gate at the top of Peak 9990. Most of the members had transceivers and shovels in their cars, but decided not to get them before entering the backcountry. The slide caught only one member of the party, but conflicting initial reports placed up to 15 in the bowl at the time of the incident.

The party called 911 on a cell phone and ski patrol arrived within 20 minutes, but after sweeping the slide path and finding no signal, determined that continuing the initial search posed too much danger to the rescue party. Stabilization efforts triggered a second slide, then crews were dispatched to search for 39 day-skiers that could not be confirmed safe. After three days of searching, rescuers found the victim's body below one meter of snow and finally determined no other people were likely buried in the nine-meter deep debris. The slide was reported by avalanche professionals as the largest ever seen in that path and had a two-meter crown at the fracture.

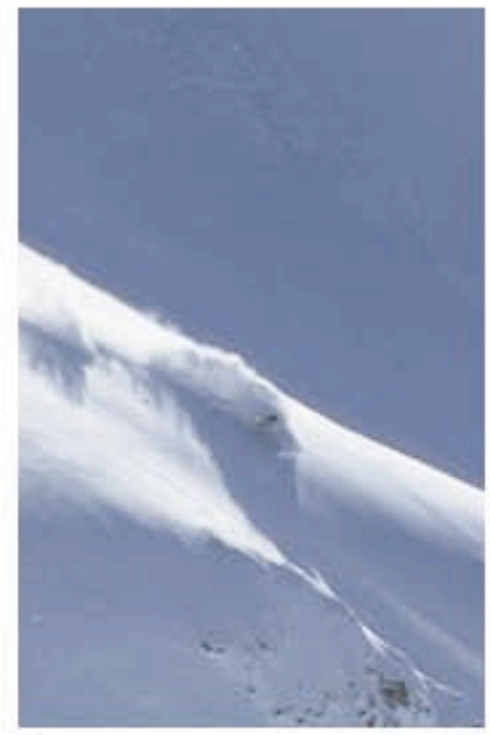
Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

600 Words

RECCO® is an avalanche rescue system utilized by 440 organizations worldwide to assist in the efficient location of burials. First introduced in 1983, the technology was developed by Magnus Granhed with the cooperation of Stockholm's Royal Institute of Technology in response to his personal experience with an avalanche tragedy. Since then, the system has proven itself effective in the field and has been adopted globally by ski resorts, helicopter skiing operations and search-and-rescue organizations as an additional tool for avalanche rescue.

Utilized universally throughout Europe, Japan and North America–from major destination resorts such as Whistler/Blackcomb, Jackson Hole and Squaw Valley to Europe's marquee areas like Zermatt, Chamonix, and Verbier–the RECCO system has been widely adopted as an additional tool to aid the search. A preponderance of leading search-and-rescue operations are also equipped with the RECCO system, from Parks Canada, Mt. Rainer National Park and Wasatch Backcountry Rescue to Air Zermatt. In total, 440 of the most respected rescue organizations in the world have integrated the advanced location technology into their operations.



The RECCO system enables rapid directional pinpointing of a buried victim's exact location using harmonic radar. The two-part system consists of a RECCO® detector used by organized rescue groups and RECCO® reflectors that are integrated into clothing, helmets, protection gear or boots.

The RECCO reflector is permanently affixed to skiers and snowboarders while they are recreating in the mountains. The small piece, essentially an electronic transponder with a copper aerial and a diode, weighs less than four grams. It is factory mounted to the exterior of gear that is unlikely to be torn off in the event of an avalanche. This ensures the reflector can't be left in the car, stashed mistakenly in the lodge or forgotten at home. It is a non-powered device, meaning that it never needs to be switched on, will never loose signal strength and needs no batteries to function. It requires no maintenance and has a virtually unlimited lifespan.

The success of the RECCO system hinges on operation of the RECCO detector. It is with this avalanche search tool that rescue organizations are able to locate individuals equipped with RECCO reflectors. In the hands of trained searchers, this portable device, which operates with a transmitter and receiver, enables efficient location of an avalanche burial. The detectors, which are positioned at strategic locations on the mountain, are operated by area ski patrols, helicopter skiing companies and search-and-rescue outfits. The latest generation of detector has evolved significantly and now weighs only 1.6 kilograms (3.5 pounds). At this reduced weight, it is extremely portable and can be easily operated in rough terrain or harsh conditions.

Although similar in search procedure to transceivers, the RECCO system is not intended for self-rescue and is not an alternative to transceiver use in the backcountry. Complementary in function, the system is an additional tool that does not interfere with other rescue methods such as avalanche dogs, transceiver searches or probe lines. Since it operates on the frequency-doubling principle, the system is entirely directional resulting in pinpoint accuracy and increased efficiency. The RECCO system facilitates a faster organized search for rescuers and provides skiers and snowboarders with one more chance to be found in time.

Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

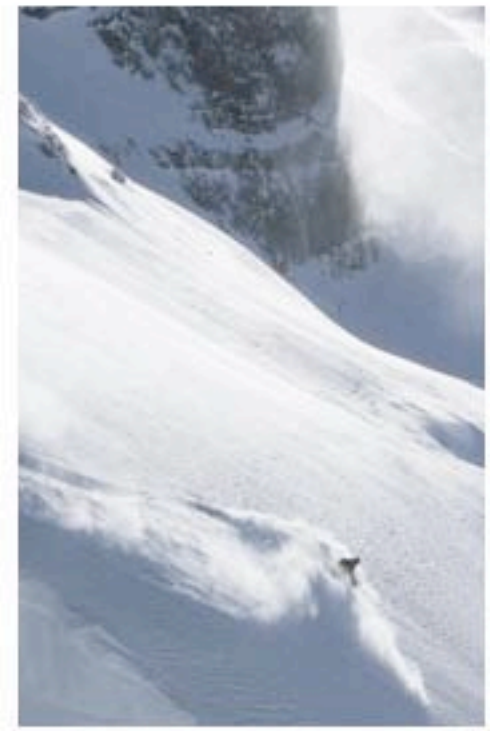
300 Words

RECCO® is an avalanche rescue system utilized by 440 rescue organizations worldwide to assist in the efficient location of burials. First introduced in 1983, the technology was developed by Magnus Granhed with the cooperation of Stockholm's Royal Institute of Technology in response to his personal experience with an avalanche tragedy. Since then, the system has proven itself effective in the field and been adopted by an extensive network of major ski resorts, helicopter skiing operations and search-and-rescue organizations in Europe, Japan and North America.

The RECCO system enables rapid directional pinpointing of a victim's precise location using harmonic radar. The two-part system consists of a RECCO® detector used by organized rescue groups and RECCO® reflectors that are integrated into apparel, helmets, protection gear or boots.

There is no learning curve for use of the RECCO reflector. The piece can't be forgotten since it is permanently attached and it needs no batteries to function. The manufacturer has taken responsibility for incorporating the reflector into their design, so no additional investment is required of the consumer. RECCO reflectors do not prevent avalanches nor do they guarantee location or survival in the event of a burial, but they do assist organized rescue crews in pinpointing the burial location.

Although similar in search procedure to transceivers, the RECCO system is not intended for self-rescue and is not an alternative to transceiver use in the backcountry. Complementary in function, the system is an additional tool that does not interfere with other rescue methods such as avalanche dogs, transceiver searches or probe lines. The RECCO system facilitates a faster organized search for rescuers and provides skiers and snowboarders with one more chance to be found in time.



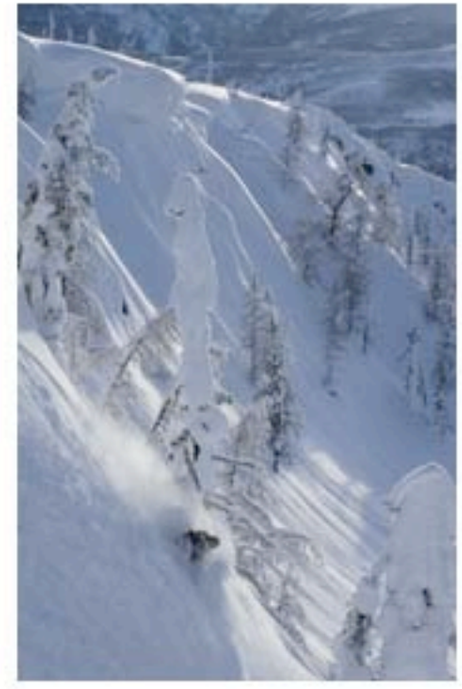
Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

150 Words

RECCO® is an avalanche rescue system utilized by 440 rescue organizations worldwide to assist in the efficient location of burials. RECCO technology enables rapid directional pinpointing of a victim's precise location using harmonic radar. The two-part system consists of a RECCO® detector used by organized rescue groups, and RECCO® reflectors that are integrated into apparel, helmets, protection gear or boots. The reflector is permanently affixed, requires no training for use and needs no batteries to function.

Although similar in search procedure to transceivers, the RECCO system is not intended for self-rescue nor is it an alternative to transceiver use in the backcountry. Complementary in function, the system is an additional tool that does not interfere with other rescue methods such as avalanche dogs, transceiver searches or probe lines. The RECCO system facilitates a faster organized search for rescuers and provides skiers and snowboarders with one more chance to be found in time.



Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

100 Words

RECCO® is an avalanche rescue system utilized by 440 rescue organizations worldwide to facilitate the rapid location of burials. The two-part system consists of a detector used by organized rescue groups and reflectors that are integrated into apparel, helmets, protection gear or boots. Together they enable directional pinpointing of a victim's precise location using harmonic radar but are not a substitute for a transceiver. Complementary in function, the system is an additional tool that does not interfere with avalanche dogs, transceiver searches or probe lines. The RECCO® system facilitates a faster organized search and increases the chance of being found in time.

Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

50 Words

RECCO® is an avalanche rescue system utilized worldwide to facilitate the rapid location of burials. The two parts–reflector and detector–enable rapid pinpointing using harmonic radar but are not a substitute for transceiver use. Complementary in function, the RECCO system increases the chance of being found in time.

Media

- System Info
  - 600 Words
  - 300 Words
  - 150 Words
  - 100 Words
  - 50 Words
  - 30 Words
- Downloads
- Media Contact

30 Words

RECCO® is an avalanche rescue system utilized worldwide to rapidly locate burials. It is not a substitute for a transceiver, but does increase the chance of being found in time.