INSTRUCTING STUDENTS ON HOW TO CONDUCT A MULTIPLE BURIAL SEARCH USING THE MICRO SEARCH STRIP METHOD

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ABSTRACT: At Yamnuska Mountain Adventures (Yamnuska), guides that instruct the school's recreational avalanche courses have adopted the micro search strip method when teaching multiple burial searches. This paper presents the standardized system that has been implemented at Yamnuska so that all students are taught the same search technique. This paper also looks at teaching techniques that assist student learning, as well as methods for dealing with the wide variety of beacons that students often use.

KEYWORDS: avalanche, micro search strip, multiple burials, novice, pinpoint, students, strip width

1. INTRODUCTION

This paper looks at the system Yamnuska has adopted for teaching multiple burial searches to students. Because the majority of our students are novices, Yamnuska wanted to implement a method of teaching that was effective, efficient and produced successful results with the least number of steps. Yamnuska considered various search systems, but found the micro search strip method the easiest one to teach and for students to learn. The micro search strip method is a systematic search method used in avalanche multiple burial scenarios (Genswein and Harvey, 2002). The micro search strip also works well for the wide variety of beacons that students often bring to courses. This paper will discuss the method for set up, teaching and merits of the micro search strip for instructing novice students.

2. METHOD

A debris area, 25 m^2 to 30 m^2 is marked out with two or three beacons buried at least 6 m apart, and no deeper than 50 cm. Probe targets are buried with the beacons.

Students start at one corner of the debris area and proceed using the micro search strip method, with strip widths of 3 m to 4 m wide (See Figure 1). Once a beacon is located, it is pinpointed, probed and marked. The student then returns to the last point on the micro search strip line before continuing to find the other beacons.

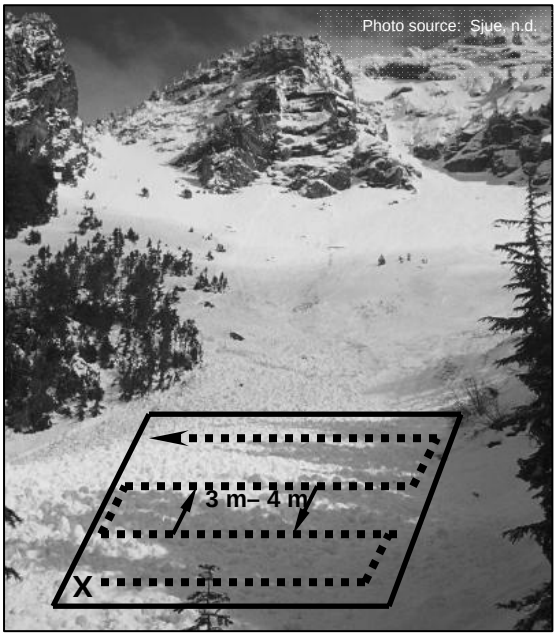

Figure 1: Schematic representation of a debris area and micro search strip lines with their associated dimensions (not to scale).

3. TEACHING POINTS

As an introduction, other methods of multiple beacon searching and their various advantages and disadvantages are discussed.

Students should be very proficient at pinpointing before starting multiple beacon searching. Students who do not have a good understanding of pinpointing will struggle with this exercise, as it is essentially a series of pinpoint searches linked together.

A demonstration of the micro search strip method is worthwhile to start with. Leaving the beacons on the surface, during this demonstration, assists the students to see the methodology and search patterns being used.

Having previously taught the students to use the direction indicators on the beacon for the induction search, it becomes important for them to ignore these now and use the distance or audible signal only. It is useful to get them to think of using the beacon in a very different way - associating it to a metal or mine detector and homing in on the target. A diagram of the number of intersecting flux lines in a multiple search is a useful visual aid to help students comprehend the difficulty of trying to attempt the induction line search at this stage.

Dividing the group up and getting one student to set up a search area for two or three other students will give maximum practice time. Students are encouraged not to rush this exercise. Compare it to a first aid incident where a little time spent assessing the situation can make things far more efficient.

If students have a beacon with a volume control (*e.g.,* Ortovox F1, M1, M2, SOS or Barryvox in analog mode) then 10 or 15 seconds can be spent adjusting the volume control, identifying the number of beacons and their approximate distances from the searcher. Most other beacons will indicate if there are multiple burials. Students are taught that if there is more than one beacon in the search area then the micro search strip method is to be used. If there is only one beacon then the induction method should be used.

Before commencing with the micro search strip method, some beacons with range/volume controls can be preset. Table 1 describes these beacons and their settings. Beacons should be kept in the same orientation throughout the search. Students should carry a probe and markers for indicating located targets. Students should also be encouraged to keep the micro search strip lines as straight as possible and strip widths 3 m to 4 m apart. Comparing this distance to two ski lengths or two arm spans gives the students a visual clue for judging distances and keeps the strip widths more accurate.

Table 1: Beacon settings and indication to start pinpoint search.

Beacon		Range setting*	Start pinpoint search+
Ortovox	F1	2-8 m	Strong signal, one light
	M1, M2	2nd lowest	Strong signal, < 6 m
	X1	N/A	< 6 m
SOS		2nd lowest	Strong signal and light
Barryvox	Analog	A5	Strong signal
	Digital	N/A	< 6 m
Tracker		N/A	< 6 m
Pieps DSP Advanced		N/A	< 6 m

* Range setting for starting micro search strip ~ 5 m.
+ Aural and/or visual display indicate commencement to pinpoint search

Students switch from the micro search strip to pinpoint method when their beacons' distance read-out, audio or lights indicate a burial nearby (See Table 1). The pinpoint is carried out and the target is found using a systematic probing method.

At Yamnuska, the spiral or box probing system, with successive probes being 20 cm distance apart, is taught. Comparing this distance, to a hand span, from the thumb to the little finger, gives the students another visual clue. When found, the target is marked with a ski pole, glove or hat. Marking the target helps orientate the students on the debris and avoids returning to beacons that have already been located.

On completion of the pinpoint search, students must then return their last position on the micro search strip line. Beacons with range/volume control must be returned to the original setting before returning to the micro search strip method (See Table 1). Students continue with the micro search strip and pinpoint search methods until the whole area is covered.

4. FINDINGS

Beacons with a range/volume control are very useful in the initial stages for identifying the number of beacons and their distances within a search area. Beacons with audio signals appear to be more effective at aiding students' orientation during the search, as their attention is not exclusively focused on the visual distance display.

Students must have a good understanding of all the steps involved in performing avalanche rescue. Teaching students how this particular exercise fits in to a large-scale avalanche rescue is essential. At an introductory level close proximity or deep burials are not taught. By keeping the search pattern fairly simple, students are successful and gain confidence in this seemingly complicated rescue scenario. More complex exercises can be introduced on longer courses or to students with more advanced knowledge and experience.

5. CONCLUSION

Yamnuska has had good results teaching the micro search strip method to novice students. Students like the systematic approach and straight line searching that this method uses. The method also seems to be effective for the wide variety of beacons that students often bring to a course.

As beacon technology continues to evolve, so must the teaching and training methods. Currently, Yamnuska has only been teaching this system for three seasons and it continues to develop, striving to improve and streamline the methods used for avalanche safety training.

6. REFERENCES

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