

THE EFFECTIVENESS AND RETENTION OF MINIMAL TRANSCIEVER, SHOVEL AND PROBE COMPANION RESCUE TRAINING

Derek Bain^{1*}

¹ Glenmore Lodge, National Outdoor Training Centre, Aviemore, Scotland.

ABSTRACT: The deployment of Transceiver, Shovel and Probe (TSP) in guided groups often requires client training in order to have confidence that the equipment can be used effectively in an avalanche burial. To equip our clients with the skills to perform a companion rescue we adapted a minimal TSP training protocol developed previously by Genswein (2010). This protocol takes approximately 15 minutes to deliver and was shown to be sufficient for clients to perform a companion rescue in scenarios performed on the same day as training. Our courses last up to six days, therefore we needed to determine the effectiveness of our protocol towards the end of a course. We measured the performance of novice clients in a single burial field scenario. Clients received minimal TSP training on day one of their courses and were unaware that they would participate in a field test at a later stage. Thirteen separate groups with a total of 74 clients were tested. The instructors timed the companion rescue and recorded milestones as described below. The average time taken for the groups to expose the “casualty’s face” was 6 min 10 secs. The proportion of time spent on each phase of the companion rescue was: Time to start signal search: 13%, Time to find signal: 12%, Time from first signal to crawl: 7%, Time for fine search to first probe: 16%, Time from first probe to strike: 9%, Time from strike to casualty exposure: 43%.

KEYWORDS: TSP, Rescue, Burial, Companion, Training.

1. INTRODUCTION

Glenmore Lodge trialed the deployment of transceiver shovel and probe (TSP) to winter course participants for the 2014 to 2016 winter seasons. As part of the trial a minimal training protocol was adopted for teaching clients companion rescue. This procedure was originally developed through field testing by Genswein and was considered adequate for clients to be effective in rescuing their guide. However, Genswein tested the effectiveness of his procedure using a short rescue scenario on the same day as training. At Glenmore Lodge our courses last up to six days, therefore we wanted to determine the effectiveness of our process towards the end of a course.

To do this we measured the performance of groups in a simple field scenario similar to that of Genswein. The only Glenmore Lodge groups that are guaranteed to receive the minimal TSP training are those on National Governing Body (NGB) courses. On these courses the syllabus is dictated by the NGB and does not contain any requirement for companion rescues with TSP. Therefore, Winter Mountain Leader (WML) training candidates were selected for the formal

field scenarios. In addition, winter skills groups that only received the minimum training have also been included.

2. TRAINING AND TESTING PROTOCOLS

Five WML training courses and three winter skills courses participated in the field scenario. These groups received the Glenmore Lodge minimal training on the morning of day one of their courses and were unaware that they would participate in a field trial 5 days later. The WML trainees were tested in a field scenario in 9 separate groups with a total of 53 participants. The winter skills groups were tested in 4 separate groups with a total of 21 participants. Thirteen groups and 74 students in total participated in the field scenarios. All participants had either no prior training or were novices.

2.1 Minimal Training Process

The procedure below describes Glenmore Lodge’s minimal training process and was performed in approximately 15 minutes. Most instructors delivered additional information for looking after the TSP throughout the week which did not concern companion rescue. This extra information plus the time taken to move a group from the building to the training area would usually take a maximum of 30 minutes. The training occurred in the grounds of Glenmore Lodge where there is a transceiver park. In addition, the training was also delivered on the lawn using transceivers in plastic bottles. The companion rescue training included an instructor

* *Corresponding author address:*

Derek Bain, Glenmore Lodge,
Aviemore, Scotland, PH22 1QZ;
tel: +44 1479 861 256;
email: derek.bain@glenmorelodge.org.uk

demonstration of a signal search, course search and fine search followed by client practice, then explanation and practice of a pin point search and digging process. The detail of the training follows:

The Demo Signal Search

- 1) Basic principles, transmit or receive, time is life.
- 2) Switch transceivers on, search, off until routine established.
- 3) Describe signal search options. Single versus multiple rescuers. 40 meter x 20 meter search.
- 4) Run demo signal search with everyone in search mode.
- 5) Look for surface clues.

The Demo Coarse Search

- 1) From 35 meters continue demo, run to 10 meters then walk.
- 2) Follow the arrow and reduce the distance.
- 3) No requirement to mention flux lines but set up for a non-linear approach to focus attention on direction indication.

The Demo Fine Search

- 1) Walk to 5 meters.
- 2) Transition to crawl, transceiver at snow surface (land the plane).
- 3) Maintain alignment to lowest distance.
- 4) Confirm lowest distance by bracketing while maintaining transceiver orientation.
- 5) Mark spot for the start of probe search.

Client Practice

- 1) Move group(s) to a location beyond a signal.
- 2) Practice signal, course and fine search.

Pinpoint (Probes and Probing)

- 1) Probes, materials, lengths.
- 2) Demo assembly and disassemble.
- 3) Group practice assemble/disassemble until routine.
- 4) Probing – What are you looking for, spongy resistance.
- 5) Probing – 90 degrees to slope.
- 6) Probing – 25cm gap in concentric circles.
- 7) Continue until strike then leave probe in place.

Digging

- 1) Intro, slowest part of rescue, need for organisation and technique.

- 2) Shovels, materials, size, packing.
- 3) Demo assembly and disassemble.
- 4) Group practice assemble and disassemble until routine.
- 5) Explanation of where to dig dependent on burial depth, less than 1 meter go direct, deeper than 1 meter start 1.5 times depth downhill.
- 6) Organise diggers into V shaped conveyor.
- 7) Demo technique, chopping and blocking, moving debris on knees.
- 8) Run digging for 3-4 minutes. Rotate on command.

2.2 Companion Rescue Scenarios

The WML trainees were tested 5 days after initial training, at their snow hole sites on the second day of an expedition. This location was used to have minimal impact on the training course itself and use the consolidated debris created from digging snow holes. The snow hole sites were all similar having a short steep concave slope running from near flat at the bottom to approx. 35 degrees mid slope. The underfoot conditions were variable but included a lot of debris from digging the snow holes. All participants were on foot, not skis. The protocol for setting up the scenario is shown below:

- 1) The group was briefed about the trial and the scenario.
- 2) When more than one group was being tested the non-participating group were kept out of sight in their snow holes.
- 3) A burial site was selected at the snow hole site as close to mid slope and mid debris as possible.
- 4) An expedition rucksack containing a transmitting transceiver was buried on its side 1 meter below the surface of the debris.
- 5) The bottom edge of the search area was marked with probes, axes, shovels etc., 50 meters from the snow hole debris. If necessary, the snow was tracked and disturbed to create a relatively uniform search area.
- 6) The participants were split into groups with a minimum of 3, maximum of 6 rescuers in each.
- 7) The participants were packed for a journey without shovel or probes assembled.
- 8) The start position for the scenario was 50 meters downhill or adjacent to the lower boundary of the search site that was marked with a probe, shovel, axe etc. The start was opposite either the extreme left or right corner of the debris dependent on lie of the terrain with the rescuers searching up hill.

9) The boundary of the exercise/avalanche debris was indicated to the group and the end of the scenario was given as exposure of the rucksack lid (head/face of the victim).

10) The scenario was started and a stop watch used to measure the time to milestones on a standard checklist.

11) Once the exercise was completed the first group re-buried the rucksack in the same location, depth and orientation.

12) The second group performed the scenario as above.

The winter skills groups were not tested at snow hole sites, but the scenarios were set up to be as similar as possible in scale and dimensions. A rucksack with a transmitting transceiver was buried to 1 meter depth, the search area tracked and defined and the start position of the group was 50 meters from the search area.

2.3 Recording the Scenario Performance

A standard checklist was provided for recording the scenarios. Instructors were trained in its use and practice scenarios were used in parallel to determine the ability of instructors to record accurate timings. The main timing milestones were:

Time to Start Search: The time taken for the first person to start a signal search.

Time to Signal: Total time taken from exercise start to obtain the first signal.

Time to Crawl: Total time taken from exercise start to lowering the transceiver towards the snow surface.

Time to Probe: Total time taken from exercise start to the first probe.

Time to Strike: Total time taken from exercise start to probe strike of the buried rucksack.

Time to Exposure: Total time taken from exercise start to exposure of the rucksack lid.

RESULTS

Table 3 shows the average time for all groups to reach the timing milestones.

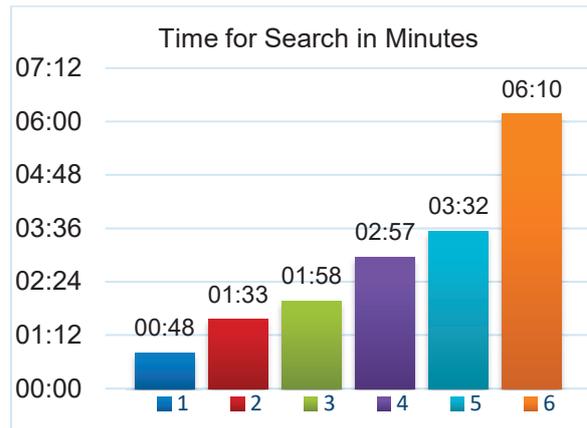


Table 3: 1 = Time to start search, 2 = Time to signal, 3 = Time to crawl, 4 = Time to probe, 5 = Time to strike and 6 = Time to exposure. The average time taken for the groups to expose the “casualties face” was 6 min 10 secs. The slowest time taken was 9 min 45 secs.

Table 4 shows the proportion of the total time spent on each phase.

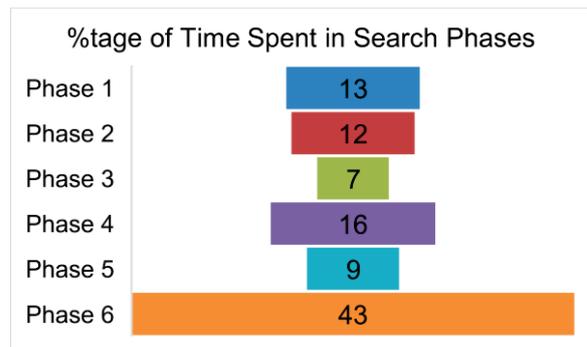


Table 4: The search phases are 1 = Time to start search, 2 = Time from search start to find signal, 3 = Time from first signal to crawl, 4 = Time from crawl to first probe, 5 = Time from first probe to strike, 6 = Time from strike to exposure of “casualties face”. The longest phase of the rescue was from a probe strike to digging out the “casualties face” which accounted for 43% of the total time taken.

3. CONCLUSIONS

Glenmore Lodge uses a minimal training protocol similar to and developed from that of Genswein. The effectiveness of our training was unknown, therefore we conducted field scenarios with groups that had received our minimal training 5 days earlier.

The quicker companion rescue can be performed the less likely the victim will suffer asphyxiation. From this point of view the quicker the better. It has been determined that after 10 minutes of burial in a maritime snowpack survival chances diminish quickly, Haegeli et al. (2011). We

therefore considered 10 minutes as a benchmark time for a potentially effective companion rescue.

In our field tests we achieved an average of 6 min 10 secs therefore can conclude that our minimal training is effective up to 5 days. Unsurprisingly the slowest part of our scenario performances was during the digging phase. This suggests that quality time spent on this part of the training may have the biggest impact on performance. To this end perhaps delaying our probing and digging training until we have useful snow may have benefit.

The biggest influence on scenario performance is likely to be the snow density and the resultant effect on digging. Most of the scenarios were performed in debris created from digging snow holes in a dense maritime snowpack. However, avalanche debris is highly variable and it is possible that it could be harder than the snow used for the scenarios. This would therefore slow this phase of the rescue further. In the context of the Glenmore Lodge trial and normal course function it was not practical to set up scenarios to address this.

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