



MAYDAY on Mount Buffalo

IN FEBRUARY THIS YEAR, THE BRIGHT UNIT TOOK PART IN A TRAINING SESSION TO LEARN ABOUT A NEW EMERGENCY RESCUE DEVICE KNOWN AS TRACME.



Gayle Hughes and Wal Tolliday delivering the briefing on the scenario

Facing North...nothing heard... facing west...nothing heard... facing south...

“Mayday Mayday”
“Signal strength low...only two bars...facing east...”

“Mayday...Mayday”
“Signal strength low...only one bar...”

“What’s our grid reference? Let Search Base know.”

That is what it was like on Mount Buffalo on 22 February this year. Bright SES were testing TRACME, a new emergency rescue device in conjunction with its developers. TRACME is a small personal locator beacon aimed at the bushwalkers, cross-country skiers, deer hunters and other users of the bush. It is intended to be a low-cost alternative to the larger beacons, currently used in marine and aviation applications, which can cost over \$1000 each.

On Saturday 21 February, Bright SES took part in a training session at the Bright recreation reserve. We were shown the device and given instruction in how to use the directional antenna and radios.

A demonstration device was placed on the ground approximately 200m away and the three teams were asked to locate it. The teams had no idea where the device was, but by using the radios, were able to define its general direction within a couple of minutes.

By then walking towards the signal a more accurate definition of its location emerged. With three teams operating, it was easy to triangulate its location. This demonstration and training took place at the local football oval, a flat area with only a few trees and no major obstructions that could block signals or cause echoes.

The next day, the Unit tested the device on Mount Buffalo. We arrived at Cresta

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Carpark on Mount Buffalo at about 8:50. After being given a refresher in how TRACME works, we were presented with a scenario of two missing rock-climbers, overdue from a trip out to the Back Wall.

Two teams were in operation. One team started by following the track out to the Back Wall while the other was driven up the Horn Road and dropped off and headed for the Back Wall cross-country (not the easiest task).

To use the receiving radios, the teams walked in the anticipated general direction of the missing people. At points along the walk, the person with the radio would hold the directional antenna at chest height and aim it in the direction the team was walking and wait for around 20 seconds listening for the signal (which is broadcast every 15 seconds). This was repeated three times by turning 90 degrees from the original direction. Each time the signal was detected, the signal strength was recorded and the direction (e.g. North, 175 degrees). This information was passed back to search base, which could then develop a general idea of where the signal was coming from by using both teams’ observations. This could then reduce the search area.

The area being searched was undulating with many boulders and small copses of trees. It was difficult to gain a “line-of-sight” to the signal, as it was lost many times as the teams walked the plateau, blocked by rocks, trees or hills. Both teams picked up the signal early on and were able to develop an approximation of where the missing people were located.

The lost people were found after about two and a half hours by one of the teams. Despite losing the signal several times, the team persevered and located the targets in a gully some distance from the track. The other team had determined the specific direction and

was planning to head in to that area as part of its next search pattern.

At the same time, the developers had a light plane flying over Mount Buffalo, in a grid search pattern and marked each point where the signal could be detected on a GPS device. This developed a series of points that gave an indication where the targets could be found. These points correlated very well with the actual target location.

Overall, TRACME was successful on this day. The search teams had located the missing people within a relatively short period. If the search had been conducted without the device it would have taken a considerably longer period, possibly even days, and would certainly have required many more personnel. The tracking radios and antennas worked effectively, though a holster and collapsible arms would have aided searchers who had to move through thick scrub. It was difficult to carry the radios and make your way through the thick scrub and scramble over boulders.

TRACME works by emitting a call “Mayday ... Mayday” on UHF Channel 5 (the designated emergency channel) every 15 seconds. The device has a battery life of approximately 7 days and cannot be turned off once it is activated. If it is known that a lost person or party was carrying one of the devices, search teams can be equipped with a small directional antenna attached to a UHF CB radio (see photograph; cost around \$90). The radio needs to have the capability to display the signal strength of incoming communications. The radios used on Mount Buffalo had a series of bars on the screen display that functioned as the Received Signal Strength Indicator. The radios and antennas allow operators to determine the direction (and relative distance) from which the signal is being broadcast within about 90 degrees at the limit of the TRACME device and within a smaller range the closer that the searchers approach to the device. Just as importantly, it allows the searchers to eliminate certain directions and contain

the search to specific areas. Each radio needed a single operator who at regular intervals in the search path checked to see whether any signal could be picked up.

The strengths we identified are:

- TRACME is lightweight and cheap.
- Simplicity of operation in activating and in locating missing people.
- The signal is detectable within 2 km on the ground and with 6-8 km in the air.

From our point of view, we identified the following weaknesses:

- TRACME requires knowledge on the part of the searchers that the missing people were carrying such a device.
- There is an assumption that when the device is detected that the missing person(s) have not lost/misplaced it e.g. someone with hypothermia may have activated the device but then put it down and left it behind as he/she became disoriented.
- The searchers need to be equipped with the appropriate antennas and radios.

- The signal is limited to “line of sight” and is affected by reflections (from boulders, etc.)
- The receiving device needs a pouch and collapsible arms in which it could be carried when the operator is moving through dense scrub or scrambling over rocks.

TRACME is still being developed and no doubt there will be further trials in the future.

Overall, TRACME seems to have potential as a lightweight low-cost EPERB. It would work very well in conjunction with a light plane or helicopter, but as we all know these resources are not always available to be deployed, due to weather conditions, availability and costs. It is another tool that will support search-and-rescue, but is not a complete solution, just a useful part of it.

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By Graham Gales
Bright Unit VICSES



From left: Trevor Brown, Karl Meyland, Graham Gales, John Irlam, Roger Hurren, Gayle Hughes, Nicole Epema, Wal Tolliday



Close-up of directional antenna to radio



John Irlam and Karl Meyland testing TRACME in the field