
RACES Disaster Response Teams may be requested to support ground search and rescue activities requiring deployment of radio-equipped mobile or walking portable units. A common application for RACES in SAR operations is in the conduct of "Sound Sweeps."

All RACES team members should be familiar with the Sound Sweep procedure. Sound Sweeps are an efficient form of grid-searching that utilizes sound signals to help attract and find a missing person. Sound Sweep field experiments have shown that there is a high probability of searchers finding a missing person at three to four times the searcher spacing required for a normal, visual grid search. This means that search teams may cover a three to four times larger search area if they employ sound while conducting their grid search. Sound Sweep area coverage is up to **6 times greater** in dense coniferous forest in summer, **9 times greater** (at a low voice-response volume) in winter and **23 times greater** in sub-alpine forest in winter.

Limitations: The Sound Sweep technique is based upon the presumption that a missing person will respond with sound, usually by shouting, if he/she hears a loud sound generated by the searchers. *For the technique to work the Sound Sweep must be conducted while the missing person is responsive and still capable of an audible (shouted) response.* This means that Sound Sweeps should generally be conducted within 48 hours of search notification.

Base Radio Operation: A base radio is set up in a location that will provide reliable coverage of the search area or route. The base radio operator will repeatedly broadcast the following radio prompt to all the searchers: "*Three, Two, One, Blast...*". This prompt will be re-broadcast typically every one or every two minutes - for the entire duration of the area Sound Sweep. (An assistant radio operator is usually required to relieve with the radio-prompt duties). For road sweeps, the base-radio duties can be handled by a passenger in the lead vehicle.

Field Operation: A Road Sound Sweep is typically done using four radio-equipped vehicles which are driven along a road until they are exactly 1 km (0.62 mile) apart. On hearing the base-radio prompt each vehicle then simultaneously sounds its horn, and then maintains five seconds of radio silence. During this period the searchers *listen carefully* for an audible voice-response from the missing person.

When a response is heard, "Base" is notified, and attempts are made to find and identify the responding person. In this case follow the exact instructions provided by the SAR Team Leader.

If no response is heard the convoy then drives exactly 0.1 km (100 meters, 328 feet) along the road using the vehicle odometer to track their distance traveled. All vehicles then stop, wait for the base-radio prompt and then repeat their simultaneous horn-blast. Again the drivers listen for an audible response from the subject, if none is heard the vehicles are then driven another 100 meters and the simultaneous horn-blast and listening procedure is repeated.

This drive/blast/listen process is repeated until each vehicle has driven in 100 meter increments until they have reached the original starting location of the vehicle in front of the convoy. Then the entire 4-vehicle convoy then travels another 4 km (2.5 miles) miles further up the road, i.e. until the last vehicle reaches the final finishing position of the first vehicle. At this time all vehicles drive forward another 100 meters and the whole procedure is repeated for another 1km and the convoy then moves forward again. Using this procedure a fairly large area adjacent to a road can be searched quickly with minimum manpower.

The Probability of Detection (POD) at 0.1km (100m, 328ft) drive spacing i.e. up to 0.1km either side of the road for normal voice response, is 42% for dense coniferous forest in summer and 62% for sub-alpine forest in winter. For a quiet voice response in sub alpine forest in winter the POD is 42%.

SOG 13: DRT - Sound Sweep Road Searches

Last revision: Thursday, May 27, 2004

Page 2 of 2

If the drive spacing is increased up to 1/10mile (528ft) intervals i.e. up to 0.1miles either side of the road for normal voice response, is less than 5% for dense coniferous forest in summer and 34% for sub-alpine forest in winter. For a quiet voice response in sub alpine forest in winter the POD is also less than 5%

It is absolutely essential that the recommended 100 meter driving interval not be exceeded to avoid the subject's voice response from becoming inaudible.

Higher PODs result from even shorter driving intervals! If the lost person is in dense coniferous forest in summer, a 50 meter interval may be considered by the Search Team Leader.

Operational considerations for sound sweeps: Because the Sound Sweep relies heavily on radio communications, unnecessary radio-chatter must be kept to an absolute minimum. Any radio traffic raises the possibility that the radio prompt, and particularly the important following five seconds of radio silence, will be masked. Operationally necessary radio communications should be conducted during vehicle movement stages between the radio-prompts. Radio silence must be maintained during the radio-prompt and its following five seconds of radio silence.

Searchers should perform periodic radio checks with base during movement stages, especially if they have difficulty hearing the repeated radio-prompts. The searchers may have moved out of good radio contact with base as they travel through the search area or route.

If radio communication becomes poor then the base radio will have to be relocated. This may happen when searchers start with good communication, on a ridge top, but lose communication as they move down to the valley bottom. If necessary, plan to have an alternate base radio location in place, ready to restore communication as the searchers move through the search area.