

THE REMOTE EXPLOSIVE SCENT TRACING PROGRAMME

The Operational Methods section of the GICHD has been involved with research into the development of Remote Explosive Scent Tracing (REST) since 1994. That involvement increased in 2004 when Norwegian Peoples' Aid (NPA) invited us to provide specialists in animal psychology to prepare a group of dogs in Angola for REST, and as from May 2007, our involvement in this field will again increase.

In April 2007, the Swedish Rescue Services Agency (SRSA) agreed to fund the expansion of research into REST by supporting financially a dog-training facility that has been established adjacent to APOPO's facilities in Morogoro, Tanzania. SRSA will employ 24 local staff to run the facility, and an Operations Manager to provide administrative support. GICHD will contribute the services of an animal-detection specialist (Dr Max Jones) and a consultant with a Master's degree in Experimental Psychology (Ms Yolande Dunn). An Advisory Committee has been established and is composed of behavioural scientists, mine-detection dog trainers, and chemists who will oversee the work being conducted.

REST refers to a method for detecting landmines and unexploded ordnance (UXO) in which samples of dust are taken from locations that are suspected of being contaminated and presented to animal detectors (typically dogs or rats) in remote laboratories. This approach has three major advantages over more conventional methods of detection. First, REST technology has the potential to reduce substantially and quickly the land area that needs to be inspected by other more expensive and slower means (e.g., metal detectors). It has the potential for rapid area reduction enabling limited resources for detection and clearance to be deployed in areas where real threats have been established. Second, by using animals as the primary detection agents, REST provides a potentially flexible detection system responding to a wide variance in targets. Third, whereas the use of animal detectors in the field is constrained by environmental factors, the use of a laboratory for REST greatly enhances the reliability and endurance of the animal detectors.

REST involves two distinct and major components: the collection of samples from areas suspected of containing landmines or UXO (known as "sampling"), and the analysis of those samples by animals detectors (known as "analysis"). Considerable resources have been spent in recent years developing procedures and equipment to optimise both of these components. For example, the filters through which air and dust are drawn in the sampling phase have been optimised, as have the materials used for the storage of these filters. Furthermore, REST bears a close resemblance to some methods of detecting drugs, firearms, and contraband used by governments, NGOs and commercial companies around the world, and REST technology has benefited from adaptations of those methods as they continue to be refined.

It is clear that REST for landmine/UXO detection presents unique challenges, and that further research into both components is necessary before REST can be deployed confidently as an operational system of landmine detection.

The research being conducted at the facility in Morogoro has three clear aims. First, the research aims to identify how best to develop a REST system that can be deployed for operational activity.

This involves identifying best-practice methods of collecting sand/soil/dust samples from areas suspected of containing landmines, of training dogs to indicate the presence of odours emanating from landmines, of storing those samples, of presenting those samples to the dogs, and of feeding back the results of analysis to field operators. A second but related aim is to identify variables that affect the accuracy and reliability of a REST system so as to optimise parameter values and produce a robust operational system. These variables will exist in both the sampling and analysis phases of REST, and in addition to assisting with prescribing best practice, could be cited as challenges that any organisation offering REST must address in their Standard Operating Procedures. The third aim is to conduct experiments that inform our understanding of the mechanisms underlying the effects of specific key variables. Exactly which variables will be investigated experimentally will be determined by consultation with members of the Advisory Committee. Finally, this research is also likely to assist our understanding of how mine-detection dogs perform their tasks, and the variables that determine the accuracy and reliability of that performance.

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For more information on REST, please see [here](#), or contact Mr. Havard Bach (Head of Operational Methods Section) at h.bach@gichd.org, or Dr. Max Jones (Animal-Detection Specialist) at bm.jones@gichd.org