

Concept of USAR Canine Operations

Introduction

The primary role of an Urban Search and Rescue (USAR) Dog Team is to assist the Fire & Rescue Services (FRS) in dealing with search phases of collapsed structure and major transport incidents.

An element of the role is also to conduct a search of the immediate area surrounding the incident. In addition to the above, a FRS may provide assistance to local/regional FRS and/or police forces for location of missing persons. The teams are made up of personnel drawn from USAR FRS's and sub-contracted NGO's located throughout the UK. Canine availability is maintained 365 days a year for immediate deployment to incidents.

Definition of Search Dog Team

A search dog team consists of one dog and handler, together with a safety officer dedicated to the canine team.

FRS dog handlers will be licensed by the Chief Fire Officers Association (CFOA) to the national USAR canine standard.

The Role of The Dog Handler

The use of canine search compliments the overall search plan under the direction of the appointed search manager. The qualified dog handler is responsible for the dog and the canine element of the search. They know the capabilities, strengths and weaknesses of their dogs and must control the conduct of the search. Part of this is observing the dog's body language.

The handler must be satisfied that the dog is not expected to work beyond its capabilities.

Role of Canine Safety Officer

The canine safety officer plays a key role within the dog team's safe system of work. They are responsible for the handler's health and safety, and it is therefore important that a USAR competent person should be used.

Methods of Detection

There are three methods of detection available for use in locating casualties:

- Scent** Dog search, which works on detecting the scent of a living person
- Sound** Listening devices
- Vision** Cameras that show images in confined spaces

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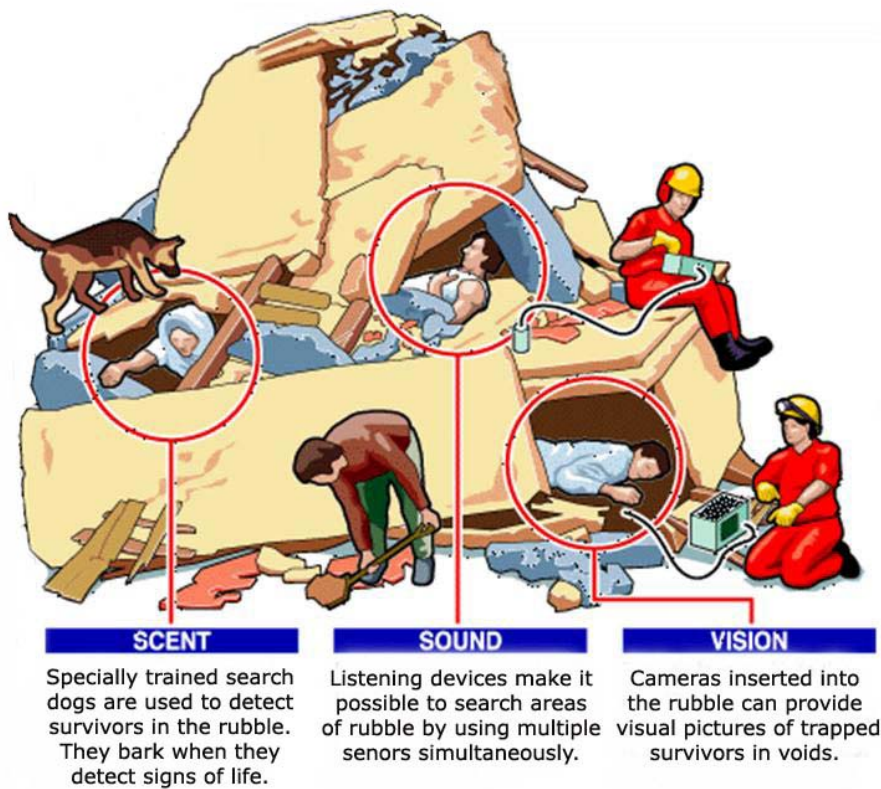


Figure 1: [SOP_DOG 001]
Scent, Sound, and Vision

Used individually, the above technical search tools all have limitations. When combined, they form a comprehensive technical search capability available to incident commanders to detect and locate live casualties.

Incident commanders should use this systematic technical search process in order to formulate a rescue plan, when casualties are located.

It must be remembered, that a dog team is an effective tool, but must not be relied upon as being the only element. Dogs should be used in conjunction with the above search detection tools for collapsed structures.

Uses of FRS Dog Teams

A dog's scenting capabilities allow their effective use in a variety of different operational scenarios at an incident such as the following:

- Collapsed structures
- Buildings
- Rural and immediate areas
- Woodlands
- River banks/shorelines
- Aircraft/road/rail accident scenes

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The dog team(s) can support an incident commander at an incident in two ways:

Positive Searching Incidents:

Where there is positive intelligence that persons are missing.

Negative Searching Incidents:

Where there is a likelihood that persons are missing and a search of the area is required to confirm that this is not the case.

Building and Collapse Structure Searches

Primary Search

This should be a comprehensive full area search that includes the immediate area of the collapse, the resulting rubble pile and the collapsed structure itself.

The main purpose of this search is to locate those casualties that are relatively easy to locate and rescue. This can be followed by other technical search activities (listening devices, search cameras etc.) to find potential areas of rescue.

Secondary Search

As rescue operations continue and the debris is removed, more voids may be uncovered that will require more precise searches by the dogs.

Sweep Search

As the layers of rubble are removed, it is good practice to recommit the search dogs every few hours. They can then sweep the whole site to locate any scent channels that may have been opened during the rubble removal.

Immediate Area Searches

Hasty Search

The first search tactic is usually a hasty search. The purpose of this is to cover the most obvious places a subject might be in the least time possible. If it is unsuccessful, it is followed up with a grid search.

Grid Search

The dog covers the area by quartering the area and searching it methodically. The space between each pass will depend on weather and terrain.

For immediate area searches, the use of helicopters, thermal imaging and search teams should also be considered.

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Advantages of Search Dogs

- Quick and effective in covering immediate areas
- Can locate multiple victims
- Can detect deeply buried casualties that may not be observed by visual /audio search techniques
- Can locate unconscious victims who would not be located by acoustic search techniques
- Can work remotely from a handler in a high risk area
- Very mobile and can be moved quickly and effectively to multiple search sites
- By working on scent, they enable the handler to interpret complex and, at times, conflicting information

Limitations of Search Dogs

- A search dog is not infallible. It is a living, non-verbal animal, and as such its effectiveness depends on the handler’s ability to interpret the information offered by the dog.
- The dogs’ ability to detect human scent can some times be affected by the additional scents that are generated from collapse structure incidents (chemical components, environmental conditions etc).
- They respond and react to human scent, and can react to scent emanating from other people i.e. rescuers.
- They only detect live casualties.
- The type of collapse may trap casualties in airtight voids where the scent does not escape. Also, climatic conditions can have an effect i.e. temperature, air humidity, where the scent can be suppressed. This may result in the dog not giving a positive indication.
- Collapse structure dogs are trained not to respond to deceased victims. However there is no exact time scale to when scent changes from live to dead (see human remains detection dogs).
- They can get tired, hot and stressed.
- They require a minimum of 6 hours undisturbed rest in every 24 hour period.

How a Search Dog Works

A dog’s sense of smell is thousands of times more developed than a human being.

Research has indicated that the dogs’ scent capability works in the range of ppb (parts per billion – compared to normal fire and rescue service measuring equipment which works in parts per million - ppm). This enables dogs to detect the scent specifically from a live casualty.

The scent can be made up of a combination of air borne and ground borne scent. It is a combination of scents associated with a specific individual, and is influenced by their sex,

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their working environment, diet and clothing. This combination is known as a 'scent picture'.

The following diagram indicates some of the materials that contribute to the scent picture.

The scent picture is carried on the wind or by thermal currents and the dog is trained to detect these scents. It's response locates the origin of the scent.

The Scent Picture

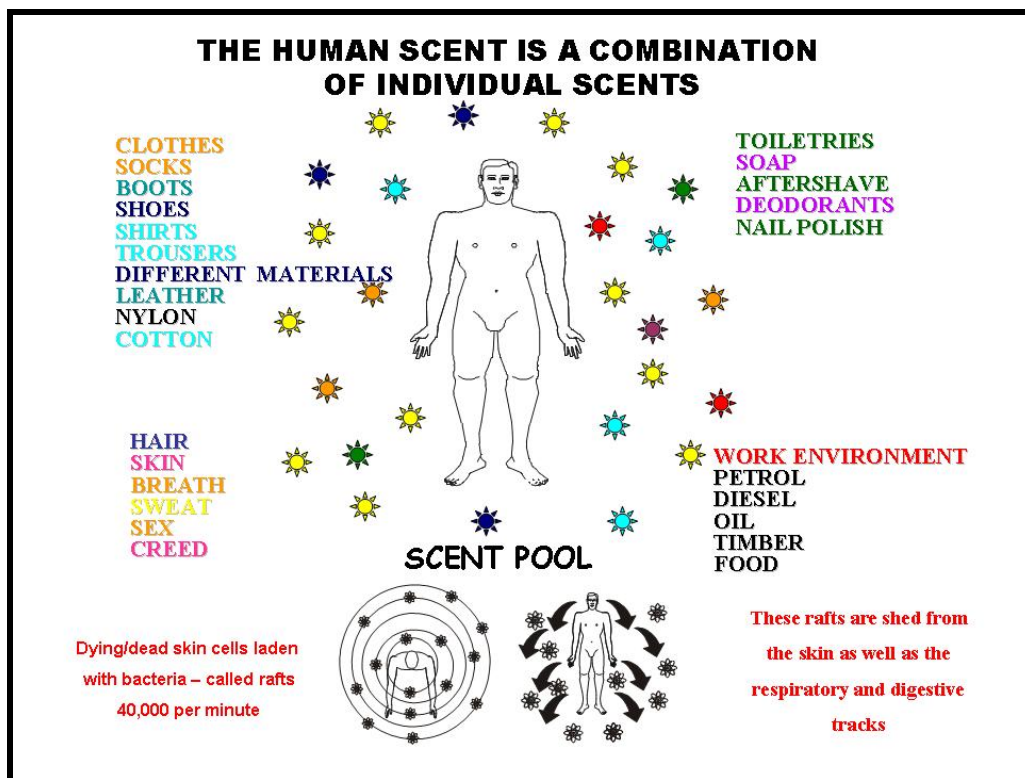


Figure 2: [SOP_ DOG 001]
The Scent Picture

Depending on the circumstances, this scent can travel a considerable distance and can be identified by a dog working a long way from the originator. It could be as far as 400 metres in an open search. The scent spreads out from the casualty, forming, in effect, a cone of scent that is at its strongest at the casualty, diluting in strength as the size of the cone increases. The dog detects the cone of scent and then works its way to where the scent is at its strongest.

The scent should be strongest at the casualty's location, especially when they are on the surface or in the immediate sub surface of a collapsed structure. If they are deeply buried, the scent may emerge at a considerable distance from the casualty.

The interactions described are often referred to as the 'scent channel' and must be considered by the handler when trying to verify and establish the casualty's location with the support of other technical search equipment.

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Scent Channels

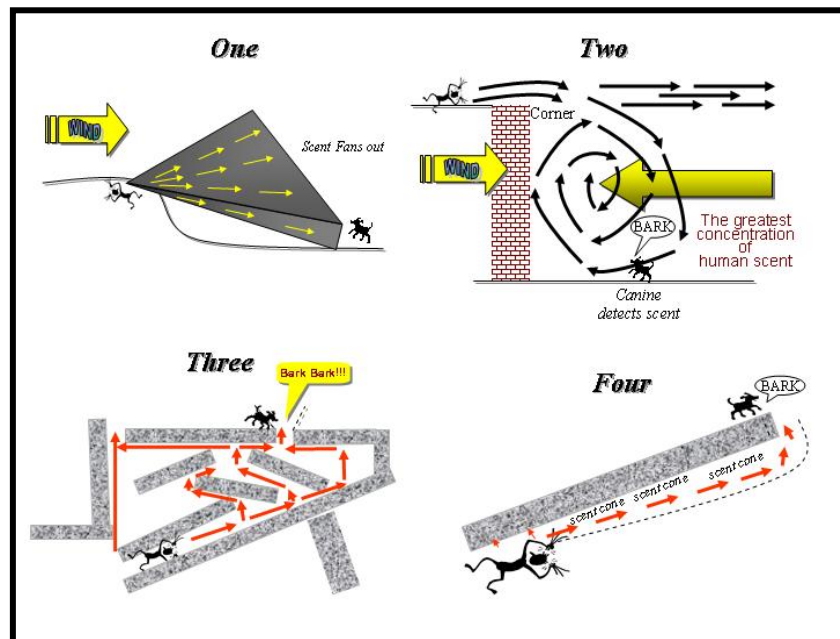


Figure 3: [SOP_DOG 001]
Scent Channels

In a collapsed structure, there may be more than one ‘scent channel’ because of the air currents that are at work. This is due to the complexities of the voids and channels within the collapsed building environment.

Equally there may be more than one casualty in close proximity.

Human Remains Detection Dogs

Fire Service search dogs are trained to identify the presence of scent emanating from a live casualty and will ignore the scents associated with the decomposition of human flesh.

Some police forces in the UK will provide dogs (Cadaver Dogs) that will locate the scent associated with dead bodies or body parts. Using dogs to search for dead bodies must be managed sensitively as the families of the missing persons may believe that the relative(s) are still alive.

Summary

A search dog team is an integral element of a USAR team and not a separate entity. The dog teams can be detached from their parent FRS USAR Unit and may be deployed anywhere in the country to cover a protracted incident. Dog teams will work under the direction of the FRS that has required their attendance in accordance with the Incident Command System (ICS).

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The dog teams work in hazardous surroundings on a regular basis and are experienced in working safely in high risk areas. For canine search activities the handlers and dogs have received extensive training in FRS USAR operations. They are equipped with personal protective equipment for operating in the USAR environment.

Authors – Pete Mills, Chris Pritchard

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