

When time is your – entrapment



In order to carry out a successful technical rescue operation two main principles have to be kept in mind: preparation is key, and assumption is the mother of all failure. No one could agree more with this than Wim Royackers, a technical rescue instructor for ICET, writes Ann-Marie Knegt.

Top: ICET has set up training schools all over the world.

ICET is dedicated to spreading knowledge about technical rescue according to the SAVER (Systematic Approach to Vital Emergency Rescue) principle. This method is applicable to any type of technical rescue and contains seven steps, which have to be carried out in a consecutive order. They include: incident approach, risk assessment and stabilisation, gaining access, trauma care, creating space, extrication and the evaluation.

Wim explains that these steps work extremely well in any technical rescue situation if followed correctly. He advises students to ensure that each individual step is carried out in full before initiating the next one. “Safety always comes first and therefore the seven-step plan is an excellent mind – jogger in a potentially stressful and dangerous rescue situation.”

In structural collapse situations where victims are entrapped under debris it is essential that the rescue worker keeps in mind his own safety. In order to enter the confined space in an appropriate and safe manner, a number of hazmat checks should always be carried out, says Wim. However, he thinks that this is often ignored in practice, “I strongly advise course participants to check for gas leakages and dangerous chemicals with a suitable portable gas detector. Preferably the rescuer should use a combi-detector that traces explosive atmosphere as well as toxic gases,

and he should determine if the gasses present are heavier or lighter than air. Wind direction and airstreams play an important role during the whole process. Therefore, atmospheric samples should be taken at different levels when descending towards the victim.”

The easiest way to take these measurements is to lower a rope with the gas detector attached to it and to mark the levels at which air samples have been taken, using knots or some other kind of marker.

ICET instructors teach their students how to use a gas detector so that they are able to assess and read the detectors. Depending on the readings they can then decide to ventilate the confined space. The choice of PPE should also be influ-



enced by the readings on the detector. Although it is extremely hard to work when simply wearing a helmet in structural collapse situations, it is sometimes even necessary to wear full SCBA. “Students often forget they have to get out of the space as well as entering it, and carrying this much equipment can cause real difficulties – making it even more important to carry out a thorough risk assessment prior to entry.”

Rescue dogs

Taking wind direction into account can determine the difference between a rescue operation and a recovery dig.

Not only can wind direction influence gas detector readings but it can also influence signals from search and listening devices. Therefore

biggest enemy

in structural collapse

search and rescue dogs can be incredibly useful for the rescue operation.

As a certified rescue dog trainer, Wim has carried out tests in which he equipped his dog, Syl, with a transmitter; an infrared camera and a microphone in order to eliminate disturbing influences that wind direction might have. The results were encouraging, "This exercise meant that we could follow exactly where Syl was going via a wireless connection on a laptop, giving us an exact point of view from the dog's perspective. Not only did it enable us to see and hear exactly what was happening, but it also allowed communication with the casualty, who could provide valuable information about possible entry holes and about the structure of the building. This of course was of

mation of someone being alive, another dog will be taken to the spot where the scent was picked up for confirmation.

Upon arrival near the casualty trauma care needs to be applied by a medical person, and during this time the immediate situation needs to be reassessed and space needs to be created. Heavy objects should be removed from the victim's body depending on the diagnosis of the medical team member, in order to prevent or reduce crush syndrome.

In Wim's experience there are usually multiple factors that influence whether or not the victim can actually be extricated and how this should happen. "After the Turkey earthquake in Izmit in 1999 it took days to get victims out. In some cases



Left to right: whilst trauma care is administered, the rescuer should assess the space in order to safely remove the victim; creating space for a safe extrication is essential; many factors influence if the victim can actually be removed.

great benefit to the whole operation."

Wim explains that unfortunately in real structural collapse situations the rescuers have to prioritise victims that are alive over body recovery operations. For that purpose both the dogs and the electronic equipment are used. However, whereas the electronic equipment can only establish if people are alive, dogs can also find dead bodies. Dogs are also trained to find live victims prior to indicating the location of dead bodies.

Wim emphasises that a deep mutual understanding between a dog and his trainer is an essential skill, and that the dog needs to stay close to the operation at all times because wind direction might affect sound and traces of scents. In most operations, once a dog has given confir-

mation of someone being alive, another dog will be taken to the spot where the scent was picked up for confirmation. Upon arrival near the casualty trauma care needs to be applied by a medical person, and during this time the immediate situation needs to be reassessed and space needs to be created. Heavy objects should be removed from the victim's body depending on the diagnosis of the medical team member, in order to prevent or reduce crush syndrome.

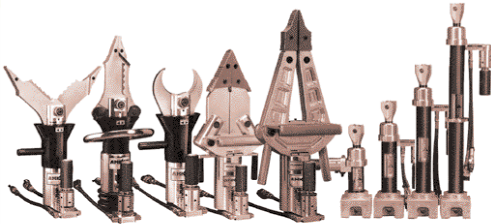
In Wim's experience there are usually multiple factors that influence whether or not the victim can actually be extricated and how this should happen. "After the Turkey earthquake in Izmit in 1999 it took days to get victims out. In some cases

we lost them because they had been stuck under debris for such a long time that when they did get released, all the toxins that had accumulated in their bodies were released and entered the blood stream, which was such a blast to the system that their bodies just gave up," he recalls. In cases where extrication can take place, it usually results in a long and time-consuming process, as Wim experienced in Bam in Iran after the 2003 earthquake. Although working on top of victims should always be avoided, (because the smallest action or movement can cause the unstable building layers to collapse) when dealing with a pancake scenario in which a highrise building has gone flat on the ground, there is no choice but to start on top. Because the confined spaces will be situated in the

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lower regions of the collapsed building or in between floors, silence and caution when operating is imperative to avoid movement of the structure.

Another factor is the local people who will be present at the site, and a safe zone needs to be created in order to provide space for the rescuers to carry out their work. Wim explains that in the aftermath of 9/11 the extrication work went quickly because the supply and disposal routes were all free, whereas in the city of Bam (Iran, 2003, earthquake) virtually all routes were cut off. This was also the case in Turkey, where it was almost impossible to reach victims. "We had to move debris by hand and when you have to cut holes in concrete with a hammer and a chisel, it takes a very long time to get people out to safety."

Wim emphasises that rescue professionals should have a background knowledge on building structures, and should be able refer to this knowledge during a structural collapse rescue operation. "A better understanding and interpretation of a building's structure will help the student to spot possible confined spaces sooner, as well as locations of victims. It also helps to determine the safest way to approach."

Wim is currently involved in several ICET projects. In China, Wim will be training Chinese instructors, who will then train a group of profes-



Wim Royackers and his highly trained rescue dog, Syl, are well known in international search and rescue circles.

sionals from the Vietnamese National Committee for Rescue and Search (VINASARCOM). Wim has trained groups of Sri Lanka Rescue Units in the Netherlands as part of a train-the-trainer concept. The experience gained will be used in the new training centre which is being set up in Sri Lanka. Rescue teams from all over the world follow training at the facilities in the Netherlands and in locations abroad on all aspects of technical rescue, including high angle and swift water and flood rescue. Wim is convinced that it is extremely important that local people can respond after a disaster, because if they have to wait for foreign rescue teams to come and help them out, it can take too much time for them to arrive.

Waiting for outside help was a major problem in the past, which is why FEMA (Federal Emergency Management Agency) and NASAR (National Association for Search And Rescue) were created in the USA. INSARAG (International Search and Rescue Advisory Group) has been reorganising the international logistics structure for rescue teams. "It is not just about confined spaces, it is the whole organisational process surrounding it. Before you can actually start getting the victim out it takes a huge amount of time to actually locate the victim and get to their location – time is your biggest enemy in USAR. "Just as children are able to communicate with foreign friends, rescue workers too have a common language of their own," Wim concludes.

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RESCUE PROFILE

Wim Royackers is a freelance technical rescue instructor for Dutch company ICET. He is also currently active as a professional firefighter for the fire service of the city of Breda in the Netherlands and he is one of the country's top certified search and rescue dog trainers.

PRODUCT PROFILE PRODUCT

TRAINING ON GAS DETECTION EQUIPMENT FROM DRAEGER

Draeger has now added specific training on gas detection equipment to its Confined Space and Emergency Procedures training courses, at its purpose built training centre in Blyth (Northumberland, northeast England).

Four gas detection courses are now on offer: Gas Detection with Draeger Tubes; Portable Gas Detectors and How to Use Them; Recalibration and Servicing of Air Monitoring Equipment; and Use of Gas Detection Equipment in Confined Space Entry. The latter course looks at the legislative requirements and why/how it should be carried out.

Regarding confined space rescue, the one-day course Safe Entry into Confined Spaces is intended for anyone who is required to enter, or supervise others to enter, confined spaces such as chambers, vats, silos, pumping stations, culverts, sewers, service ducts and excavations.

Emergency Procedures within Confined Space is intended for anyone who is required to enter (or supervise others) in confined spaces and is required to carry out first aid and rescue casualties (the length of this course is tailor-made).