



## **SE400 and the Sydney Olympics**

***thorough preparations — lasting consequences***



USA is not the only nation apprehensive about terrorist attacks. Australians are also worried — especially since this nation applied its long-standing alliance with America and sent nearly two thousand troops to assist in the military operations in Afghanistan.

However, Australia is probably one of the nations best prepared for terrorist events. Comprehensive systems and routines have been in place here for quite some time — thanks to the Sydney 2000 Olympic Games.

All along, the SE400 positive pressure demand respirator has played an important role in the nation's domestic preparedness operations. Originally applied to cover the huge athletic event, the SE400 is still part of a protection program that is very much alive and operational.

Preparations started in earnest already two years prior to the Games. There were four major participants in the country's preparations to be able to tackle any potential sinister actions:

- Military
- Police
- Health
- Fire

All of these departments use SE400 for respiratory protection, each in its own way and for its own special purposes.



## Military

The Australian defence force has found that the SE400 fulfils the protection requirements for a wide range of military operations. The DSTO (Defence Services Technological Organisation) advised a special procurement group to survey a number of options. Eventually the SE400 was found the most suitable respirator. While the first response groups, the Special Air Services and other front-line personnel mainly use SCBA equipment, the SE400 is used at the second stage of such activities — for instance decontamination.

Negative pressure equipment was out of the question, for three main reasons: wear time (too long), work load (too high) and protection level (too low).

Nor could conventional PAPR be used. Tests showed that existing PAPR equipment could cope with peak air flows of 180 l/min maximum — at ideal conditions, using only particle filters, and with fully charged batteries. A person working hard in a difficult environment under stressful circumstances reaches peak flows of more than double that of a conventional PAPR.

The Defence force came to visit the S.E.A. head office in Sydney's Warriewood, and conducted a full investigation of the SE400 equipment. It was due to the defence force's specific demands that the sophisticated SE400AT model was created. Among many other important improvements, this model featured threaded multi-gas filters, giving protection not only against NBC (nuclear, biological, chemical) but industrial gases as well — the thread being an absolute requirement by the military. The AT was designed in record time: from November 1999 to March 2000, it was only four months in the making.

In foresight, the SE400 was already now fitted with special sealing rings that would later let it be used inside a chemical protective suit, along with an ingenious pressurisation system.

The specialist squads took their job extremely seriously. Before the Olympic Games, they packed their SE400 and went to Medicine Hat in Alberta, Canada — one of the training facilities where it is possible to perform so-called *live agent training*, which entails handling some of the most sinister substances used in chemical and biological warfare, such as blood agents.

After countless exercises and rigorous training, the SE400 continues to be the standard respirator for all decontamination work, principally for its protection factor and essentially unlimited duration of operation (the decontamination activities can continue for as long as six hours without interruption, making the use of SCBA nigh on impossible). An additional feature of the SE400, completely absent in an SCBA, is the capability of performing self-tests and battery changes — in the field and while wearing the equipment (the SE400 turns into a negative pressure respirator if the fan unit needs to be turned off).



The flexibility and mobility of the SE400 are also contributing factors to the choice of equipment, as the operations may take place anywhere in Australia at very short notice, require highly dynamic work, and are usually conducted in rapidly deployed portable decontamination stations.

S.E.A. provided the military with extensive training and education materials, ostensibly in the form of comprehensive CD-ROMs and 2-day train-the-trainer courses. Regular refresher courses are an ongoing activity among the specialist teams using the SE400 in their work.



## Police

The police force was next in line to start thinking seriously about respiratory protection. The initial reason for wanting a highly effective, yet very flexible and mobile respirator was to provide protection for the forensic specialists in the Olympic response group of the police.

These specialists had to be prepared to encounter people and objects contaminated by highly destructive substances — anywhere in the Sydney metropolitan area.

The police force were looking at the SE400 already in the beginning of 1999 — some 18 months prior to the Olympics. The SE400 was the ideal respirator for the type of work at hand: the forensic section often performs its operations on site, and, with the help of SE400, were all given the flexibility needed to conduct their work without compromising on breathing safety.



The police force also sent some representatives to the live agent training facility in Medicine Hat, Canada.

After the Olympic Games, the police found extended uses for the SE400, and it is now in routine use by several sections of the force.

Like the defence forces, the police received training and education material and from S.E.A., chiefly as train-the-trainer sessions, backed up by highly visual material on CD-ROM.



## Health

There were several potential problems that the Department of Health had to solve. One of the most important questions was, in case of a chemical or biological event, how to prevent the hospital itself from becoming contaminated?

The hospitals had already had a number of experiences with patients (often suicides) contaminating wards after being exposed or exposing themselves to extremely destructive substances.

However, that was in more or less controllable circumstances. Now the health department had to prepare for more disorganised, more chaotic eventualities during the Olympics.

In a state of panic, it was a distinct possibility that the hospitals would be the destination for many “self-presenters” — people who had been near enough to the destruction, but still had the presence of mind to hop into their cars or onto public transport and get themselves to the nearest hospital.

These people would therefore slip through any organised decontamination operations at the scene, and arrive at the hospital carrying the risk with them on their body and clothing.



Several preventive measures were taken among Sydney’s hospitals, spanning from sealing the entire building to comprehensive decontamination shower systems into which people were directed and decontaminated before being admitted into the hospital.

An interesting fact was that the health department in particular appreciated a ‘human aspect’ of the SE400: the wide field of vision in the visor meant that eye-contact was easier and that the SE400 made it possible to come ‘face-to-face’ with a victim or patient without the sinister ‘space alien’ look of other equipment. Also, the capacity for clear voice communication made a big difference to human interaction.

The SE400 was, and still is, used by the personnel operating these functions, along with the specialists charged with determining the type and nature of the contaminant.

S.E.A. provided the initial end-user training, supported by CD-ROM-based training material. Refresher training is still in place under the health department’s own arrangements.



## Fire

The Fire Department was the only major service not to use the SE400 at the time of the Sydney Olympics. They are, however, using it now.

Whereas the actual fire fighters generally use SCBA (mainly due to the lack of oxygen in burning buildings), the SE400 serves its purpose to protect subsequent fire personnel, such as fire investigators examining the scene.

Another area where the SE400 comes into its own in the fire department is chemical and biological terrorist activities. It is the fire department’s charter to deliver any suspicious containers and materials to special examination stations, where the SE400 is worn by analysis experts who determine the nature of the substance.



## **Streamlining**

The use of SE400 by all four major emergency departments has meant a distinct streamlining of Australia's preparedness against possible terrorist attacks and other disasters.

New South Wales, due to the Sydney 2000 Olympics, is still in the forefront of Australia's domestic preparedness. But other states are now following in the footsteps, adopting the SE400 respirator in their emergency operations.

While you probably never caught a glimpse of an SE400 during the two weeks of athletic competitions, you can be assured that it played an important role in the background. In a way, you could say that the SE400 was a highly successful participant in the Olympic Games.

And the SE400 still fulfils the rigorous, demanding, and delicate task of protecting Australia's domestic preparedness personnel in all major emergency departments, in preparation for the eventuality we all hope will never happen.