

“Urban Search and Rescue (USAR) – Multi-Agency Operations – An Integrated Approach to Emergency Management.”

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Abstract

The specialist nature of operations involving the rescue of people trapped in major structural collapse environments demands a multi-faceted, highly integrated approach. No single emergency service agency in Australia has the skills or knowledge to adequately cope with major USAR operations, hence NSW has, as have other states and territories, developed capabilities that rely on a number of specialists across a broad spectrum of disciplines. These specialist include personnel who are experts in structural firefighting, hazardous materials, advanced rescue, paramedical and medical support, engineering, K9 search, logistics as well as command and control.

It is recognised that integrated USAR capabilities are critical to managing consequences of potential terrorist activities in the post September 11 and Bali environment. It is also widely recognised that, as a consequence of global warming, there will be an increase in frequency and severity of extreme climatic events. Such events could include, but are not restricted to, cyclonic activity and associated storm surge, flash flooding in urban environments, hailstorms resulting in widespread damage, coastal flooding, etc. It is suggested that such events will rely heavily on USAR capabilities at all levels in instances where such events result in widespread or severe localised structural damage.

It is argued that such an integrated approach to USAR operations results in a synergy ensuring the total output of the Taskforce is greater than the sum of the individual parts of the team. Training is required to focus on integration to ensure challenges of multi-agency Taskforces operating under a unified command in extreme risk environments, typified by major structural collapse, are identified and resolved.

It is additionally argued that a high level integrated approach to the development and operation of such capabilities will represent the most responsible approach to the

expenditure of public money, by adopting a whole of government service in an environment characterised by fiscal constraint.

In the event of a major structural collapse the current resources at both state and national levels will more than likely be rapidly overwhelmed, requiring the additional response of similar resources from other countries, facilitated by the United Nations.

Given the complex nature of successfully resolving USAR incidents, three major challenges are identified. These challenges involve the further integration of USAR response/operation into the phases of the disaster management cycle, the critical link between crises and consequence management, particularly in the current global terrorism environment, and response at the national/international level of USAR capabilities.

USAR – Multi-Agency Operations – An Integrated Approach to Emergency Management

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Introduction

The term Urban Search and Rescue (USAR) was first developed in the United States of America to define operations relating to environments involving the rescue of people from collapsed structures.

“Urban Search and Rescue is the specialist technical rescue capability for the location and rescue of entrapped people following a structural collapse”. (National Urban Search and Rescue Working Group – October 2002.)

Throughout the world full time urban fire services are usually tasked with managing equipment, organisation, training and deployment of USAR Taskforces capabilities. While the subject fire services tend to take the lead role for USAR, given the specialist nature of such operations it is generally recognised that the capability to carry out USAR operations is usually beyond the resources of any one individual organisation.

Typical USAR operations require specialists from disciplines such as structural fire protection, hazardous materials, rescue technicians, ambulance paramedics, trauma doctors, engineers, search dogs and handlers, logistics specialists as well as an integrated command and control system. A USAR Taskforce generally comprises up to 70 individuals, is capable of undertaking its own risk assessments, can operate for 24 hours for up to 10 days and is designed to achieve a level of self sufficiency so as not to impact on the limited resources of disaster affected communities.

USAR operations include capabilities to locate, rescue and provide medical assistance to persons trapped as a consequence of structural collapse. To achieve these goals USAR Taskforces rely on a range of specialist equipment such as fibre-optic and thermal imaging cameras, acoustic listening devices, core drilling and concrete cutting equipment, tunnelling and shoring techniques.

The approach taken in NSW in managing incidents involving structural collapse is one that relies on an integrated process where individual specialists compliment the complete Taskforce objectives. It is this integrated approach that ensures the efficiency of the Taskforce as well as empowering individual members to contribute at an optimum level in all aspects of USAR operations. It is argued that when operations are integrated to the extent that optimum efficiency is achieved, the Taskforce develops a unique robustness that provides the best environment to ensure physical and psychological welfare of Taskforce members

USAR Training

The Australian National USAR Working Group has endorsed three categories of training, namely;

Category 1: first responders, such as fire, police, ambulance and SES personnel. Such techniques include the rescue of lightly trapped persons using hand tools and limited hydraulic lifting and cutting equipment. It is important to note that experience indicates approximately 80% of survivors of structural collapse are rescued using these techniques.

Category 2: USAR rescue technicians and paramedics trained in the use of advanced technical search and rescue equipment and techniques such as tunnelling and shoring to locate and rescue victims suffering deep structural collapse entrapment.

Category 3: Taskforce management, command and control.

Intermediate courses are conducted for Taskforce specialists who are not required to provide the operational search and rescue capability, but are however, essential members of the Taskforce. These specialists include doctors, engineers, K9 Teams and communication specialists.

Throughout the development of its USAR capability, the NSW Fire Brigades (NSWFB) has worked in partnership with the ACT Fire Brigade. In doing so assistance has been sought from international experts from the US and UK. The end result of this work has been the production of a training and assessment Compact Disc (CD) that represents international best practice learning and development strategies and outcomes. The CD has been adopted nationally and by a number of other countries.

The Category 1 USAR program represents an extremely cost effective training and assessment process designed to be easily integrated into existing operating guidelines of agencies responsible for providing rescue services. The Category 1 CD utilises self paced learning techniques and is designed to facilitate widespread and rapid skills acquisition, required by first responders to USAR incidents.

There are currently approximately 3 000 Category 1 trained emergency service personnel in NSW. As is appropriate in effectively dealing with the early stages of USAR operations, as well as dealing with minor incidents involving structural collapse, the majority of these resources are locally based across the state.

USAR training reflects the reliance on expert skills which each individual brings to the operation and practices an integration of specialist skills and knowledge to achieve common objectives of the Taskforce. While it is recognised that all members of the Taskforce possess unique and relevant skills, training for taskforce membership includes common competencies, like remote living skills, hygiene and health, site marking, state based emergency management arrangements, etc

A crucial element of USAR training and operations is that of managing multi-agency teams. Unified command and control is critical in successfully achieving Taskforce objectives, particularly given USAR incidents represent one of the most hazardous emergency environments. USAR Taskforce Training (Category 2) must reflect the operational challenges associated with reporting processes that are quite unique and at times challenging given the single combat agency approach to emergency management in NSW. USAR Taskforce management must focus on consultative decision making processes with an emphasis on conflict resolution skills. Furthermore, the command and control of USAR Taskforces is typified by management by objectives, span of control and clearly delineated lines of responsibility and accountability.

The NSW State Disaster Plan, while recognising the multi-agency necessity of USAR Operations, has designated the NSWFB as the lead agency for these types of emergencies. The plan allocates specific responsibility for Taskforce management to the NSWFB.

USAR Incidents

The following is a list of examples where USAR resources were either deployed, or could have been deployed had they been readily available

Australia

- 2003 - Structural stability assessments following the Canberra bushfires (ACT)
- 2003 - Waterfall train derailment (NSW)
- 2001 - Childers backpackers' fire (Qld)
- 2000 - Glenbrook train crash (NSW)
- 1999 - Sydney hailstorm (NSW)
- 1997 - Thredbo landslide (NSW)
- 1989 - Newcastle earthquake (NSW)
- 1977 - Granville train disaster (NSW)
- 1978 - Sydney Hilton Hotel bombing (NSW)
- 1974 - Cyclone Tracy (NT)

International

- 2002 - Bali bombing
- 2001 - New York City terrorist attack *
- 2001 - Washington DC terrorist attack *
- 2000 - Nairobi (US Embassy) terrorist attack
- 2000 - Taiwan earthquake**
- 2000 - New Guinea tsunami
- 1999 - Athens earthquake
- 1999 - Turkey earthquake**
- 1995 - Kobe earthquake
- 1995 - Oklahoma City terrorist attack
- 1993 - World Trade Center terrorist attack

- * Australian USAR Task Force offered by Australian Government
- ** Australian USAR specialists deployed at UN request

Current USAR capabilities

The Melbourne Metropolitan Fire Brigade was the first agency in Australia to recognise the need for a USAR capability following the World Trade Center bombing in New York City in 1993. Similarly, the NSWFB recognised the need following the 1989 Newcastle earthquake, but due to unique NSW rescue arrangements only commenced developing its capability following the 1995 Oklahoma City bombing. In recent years the Queensland Fire & Rescue Service has also developed a comprehensive USAR capability to the extent that NSW and Queensland are registered with the United Nations for international assistance as required.

The following table summarises the current situation.

State / Territory	Current USAR capability
New South Wales	2 complete Task Forces (Sydney) 2 USAR response teams (Newcastle & Wollongong) 1 reconnaissance vehicle 1 medium helicopter for Recon. Team (shared with NSW Police)
Victoria	1 complete Task Force (Melbourne)
Queensland	1 complete Task Force (Brisbane)
Australian Capital Territory	12 person team with equipment
South Australia	Developing capability – some people trained
Western Australia	Developing capability – plans for complete Task Force
Tasmania	Developing capability – some people trained
Northern Territory	Developing capability – some people trained

Figure 1: Current Australian USAR development

As can be seen, current USAR resources are concentrated on the east coast of Australia, with the NSW Government investing a significant amount of money in developing a world class capability. The Western Australian Fire & Emergency Services Authority has recently committed itself to developing a USAR Task Force capability. New Zealand is also developing a significant USAR capability, but would look to Australia for assistance in the event of a major collapse.

Current risk assessments from most states and territories reveal a heavy reliance on states that currently possess these resources. Given USAR experiences overseas, it is clear that in the event of a major structural collapse that even the most prepared state would experience an overwhelming demand on existing resources. National

resources would also be rapidly overwhelmed, potentially requiring international assistance facilitated by the United Nations.

USAR Operations

The Taskforce represents a unified team of specialists who rely on each others skills and knowledge to ensure operational goals are achieved.

The roles and responsibilities of all Taskforce members are clearly defined. Consequently all members are able to perform at an optimum level to guarantee the goals and objectives of the team are met. The efficiency and effectiveness of the Taskforce is critical in guaranteeing both physiological and psychological safety objectives.

Operational phases are categorised to ensure integration is maintained throughout all aspects of deployment. These phases include standby/alert, assembly, mobilisation, operations and demobilisation.

The NSW USAR capability is overseen by a State USAR Steering Committee, reporting to the NSW State Emergency Committee. These forums represent a further integrated approach in that the committees are comprised of all relevant agencies contributing to the state capability.

NSW is also represented by the National USAR Working Group whose composition also emphasises an integrated approach.

Funding

NSW has recently received significant funding to double the states existing single Taskforce/single event capability. This will result in two complete USAR Taskforces based in Sydney which meet both national and international guidelines. In addition, minor capabilities are being established in Wollongong and Newcastle. These capabilities will soon be complemented by a specifically designed transportation system, which includes helicopter reconnaissance support.

It is argued that an integrated approach to both USAR training and operations was pivotal in the provision of this funding as it represents the most efficient expenditure of public funds in this area of disaster management. This efficiency is based on non-duplication of physical and training resources, minimisation of physical and psychological harm as well as adherence to contemporary management principles.

Future Challenges

While NSW, as with other states, has recently made remarkable in-roads into the establishment of USAR capabilities, based on the integrating operational elements, it is argued that further integration of these capabilities should be extended to other aspects of emergency management processes in three specific areas.

1/ Disaster Management Cycle

It is essential that the operational activities associated with the Taskforce are further integrated into the Prevention, Preparedness, Response and Recovery phases of the disaster management cycle, given the inter-dependability across these phases. This is particularly relevant with the phases of response and recovery. It is the successful resolution of complex operational issues, typified by thorough integration at this phase that will impact on the overall recovery process of the affected community.

Given the complex composition and operational nature of the Taskforce, there is a significant role for this at the response/operational level to ensure a seamless and supportive transition into the recovery phase, particularly human components of recovery.

2/ National/International Response

In the event of a major structural collapse the current resources at both state and national levels will more than likely be rapidly overwhelmed, requiring the additional response of similar resources from other countries.

State/Territory USAR Committees and the National USAR Working Group are currently investigating existing legislation and policy in an attempt to identify and resolve barriers for effective and streamlined cross border response. Given that disaster management is a state/territory based responsibility, which is underpinned by state/territory based legislation and policy, there are significant challenges associated with this process. These challenges include differences in paramedical qualifications and capabilities, multi state/territory registration for doctors, liability and workers compensation issues, differences in legislative powers, K9 search and rescue standards, etc.

Challenges for the acceptance of international support include customs requirements for food, quarantine requirements for search dogs, registration for doctors and paramedics, liability issues, etc. The National USAR Working Group is currently addressing these challenges.

There is still much to achieve to ensure issues associated with domestic and international assistance are adequately resolved.

3/ Critical link between crisis and consequence management

Australia is confronted by many issues directly related to emergency service personnel, as a consequence of global terrorism. In this context, it is recognised that a future challenge for the success of USAR operations is a further level of integration, focussing on the critical link between crisis and consequence components of disaster management.

This is particularly relevant given the interstate/territory dependency on cross border response of existing limited USAR capabilities. Individual state and territories will depend significantly on accurate and timely intelligence prior to committing state/territory assets to other jurisdictions. A more integrated approach to appropriate communication of relevant agencies responsible for crisis and consequence

management will ensure timely and responsible deployment of resources in the event cross-border assistance is required.