

FIRE AND RESCUE INTERNATIONAL

Integrated fire, rescue, EMS and disaster management technology

Volume 1 No 11



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CHILE

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Comment

Fire and Rescue International (FRI) proudly presents its eleventh edition of the magazine. FRI has not only become representative of the industry, but also an excellent source of information to its readers. We trust that you enjoy reading the magazine and find it informative.

New staff

We welcome Sylvester Haskins to our editorial team. Haskins has been appointed as a full time journalist and brings with him a wealth of writing experience.

Cover profile

Working on Fire Chile features on this month's FRI front cover. The company has grown from strength to strength and offers an integrated approach to fire management in Chile including awareness programs, prevention, training, detection, suppression and rehabilitation services.

FRI Images photographic competition

Another R 2 000 was won by a FRI reader who submitted an impressive infield fire photograph. See page 3 for details. **CONGRATULATIONS!**

Submit your high-resolution photograph featuring a rescue, emergency, incident or fire scene and win R 2 000 cash!

News section

Super-storm Sandy features in our news section this month along with the Dakota crash in South Africa, the results of the SAEC Fire Fighter Rescue Challenge, a new EMS station in Vredendal in the Western Cape and Petro SA's recently held advanced petrochemical fire fighting course. The upcoming SAESI conference also features prominently as does Brigit Fire's new fire suppression system and Fremtac Fire and Rescue's new range of rescue line throwers.

Training

Ben Potgieter of Forestry Solutions discusses the results of a survey held regarding training of wildfire/forest fire fighters in South Africa.

Review of the South African 2012 winter fire season

FRI interviewed various role-players in the industry and compiled an interesting overview of the past winter fire season in South Africa.

Technical search

Colin Deiner, writer of FRI's technical feature, shares his experience in the search and rescue field with our readers. Deiner discusses typical scenarios, systems and team structures in the event of a disastrous event. Technology is also highlighted and is the use of canine search and rescue teams.

Entry standards for structural fire fighters

Lenny Naidoo looks at the critical issues surrounding fire fighter selection, training and the educational, fitness and other inherent job requirements of a structural fire fighter.

Conferences

We review the recent annual conference held by the Disaster Management Institute of Southern Africa (DMISA) and the SAIF/NMMU Fire Management Symposium.

We extend a special invitation to all our readers to participate in the magazine. We welcome your expert input, suggestions and views. Fire and Rescue International is your magazine. Read it, use it and share it!



Lee Raath-Brownie



This month's FRI images winner!

Congratulations to

Stephen Devine for his
 "Fire and water" photo taken with
 a 14.1 Mega Pixel Canon camera.

Well done!

Photo description:

This photograph was taken during a recent WoF prescribed burning course presented in Bredasdorp. The students had the opportunity to burn a firebreak on a farm outside Napier. The photo was taken to illustrate the convective heat released. The strike unit was following the ignition crew, holding the fire line.

Stephen Devine wins this month's prize money of R 2 000!

Submit your rescue, fire or EMS photo and win R2 000!

Fire and Rescue International (FRI) has introduced a monthly photographic competition to all its readers. This exciting competition offers you the opportunity of submitting your digital images of fires, fire fighters, disasters, emergencies and rescues.

The rules are simple:

- All photographs submitted must be in jpeg format and not bigger than 4 megabytes.
- Photographs must be in high resolution (minimum 1500 pixels on the longest edge @ 300dpi) for publishing purposes
- **Allowed:** cropping, curves, levels, colour saturation, contrast, brightness, sharpening but the faithful representation of a natural form, behaviour or phenomenon must be maintained.
- **Not allowed:** cloning, merging/photo stitching, layering of two photos into one final frame, special effects digital filters.
- Fire and Rescue International (FRI) reserves the right to publish (printed or digitally) submitted photographs with acknowledgement to the photographer.
- Winners will be chosen on the merit of their photograph.
- The judge's decision is final and no correspondence will be entered into afterwards.
- Brief description should accompany photo.

Entries must include:

Name of photographer
 Contact details (not for publishing)
 Email: (not for publishing)
 Name of photograph
 Brief description of photograph including type of fire
 Camera, lens and settings used

All entries must be emailed to:
lee@fireandrescue.co.za.

>> ENTER NOW!





Under storey burning in Chile



Fire fighting in Chile



The Palma 19 team

Working on Fire in Chile



The first crew leader exchange program proved very successful

Working on Fire in Chile provides integrated fire management services that are environmentally sustainable, economically feasible and socially acceptable.

Working on Fire International first initiated limited activities in Chile in 2009. After numerous successful projects, Working on Fire Chile was officially incorporated in

2011 and now forms part of the Working on Fire International Group of companies.

Chilean and international professionals form the core of Working on Fire Chile. They are backed by an international pool of scientists, operational, detection and training specialists, providing internationally accredited procedures and practices.

The integrated product range provided by Working on Fire in Chile includes awareness programs, prevention, training, detection, suppression and rehabilitation services.

Under canopy burning

The burning of the under storey to reduce dangerously high fuel loads within *Pinus Radiata* plantations, was first introduced by Working on Fire International in 2010. ►



The Palma 21 team

► Various successful manual burns were performed on a small scale, in high forest fire occurrence areas. The resulting high success rate in reducing the occurrence in forest fires, led to the first ever aerial ignition in 2011, performed on a commercial scale by Working on Fire Chile, utilising the Raindance aerial ignition system.

eight helicopter-transported teams, 40 ground-transported teams, supported by water tanker trucks and AT-802 fixed-wing water bombers.

Detection

Workings on Fire Chile currently administrate and operate 70 lookout towers, manned by more than 200 operators across three regions in



The Chilean Helitack-Team

Suppression

Working on Fire first introduced two fire fighting teams for the 2010/2011 fire season, which consisted of one helicopter-transported team and one ground based team.

The following season, 2011/2012, the activities expanded into 12 terrestrial teams and one helicopter-transported team.

For the current 2012/2013 fire season, Working on Fire Chile employs around 800 people, which includes

Chile, spanning over more than 400 000 hectares.

Additionally, in conjunction with the CSIR Meraka Institute in South Africa, Working on Fire Chile is developing a satellite detection system for Chile and the whole of the South American continent. The system is based on the advanced fire information system (AFIS) detection method currently operational in South Africa and various other southern hemisphere African countries.

Training

Working on Fire International has been actively involved in training programs in Chile since 2010. In 2012 an independent training entity, Working on Fire Capacitación, was established to meet the increasing need for accredited and standardised training for the local and Latin American market.

Experienced Chilean instructors form the core of this entity. The internationally accredited standardised course materials of the Working on Fire Group of Companies form the basis of all the courses.

Working on Fire Capacitación will be SENCE, CORMA, ISO9001 and NCH2728 certified by the end of 2012.

The whole range of integrated fire management training is available.

International exchange program

In 2011, an exchange program was initiated between Working on Fire Chile and the Working on Fire program in South Africa. The exchange of knowledge and experience is the primary objective.

The first participants were four crew leaders and a project manager from South Africa. They visited various Chilean firebases and participated actively during the fire season for a period of two months in various regions of Chile.

Working on Fire Chile is headed up by Fritz Lubbe. ▲



CSIR Meraka Institute in South Africa and Working on Fire Chile is developing a satellite detection system (AFIS) for the whole of South America



Wrath of a super-storm

The devastating aftermath of Sandy

The largest ever tropical storm off the US Atlantic coastline, Hurricane Sandy, was officially declared a super-storm by climatologists, owing to its catastrophic impact on the north-eastern coast of the United States (US).

Super-storm Sandy's deadly flooding along the north-eastern US coastline, caused by a major storm swell and strong winds, pushed Atlantic waters toward the coast. This resulted in the overflow of rivers and streams, claiming the lives of more than 130 people and causing an estimated \$60 billion in damage to infrastructure to two dozen East Coast cities.

Roughly twenty five percent of homes and businesses in New Jersey, eight percent in New York, and four percent in certain areas of Connecticut and West Virginia remained without electricity for weeks after super-storm Sandy hit.

The wreckage and devastation caused by the super-storm, in October 2012, was tragically

similar to Hurricane Katrina in 2005, as both storms flooded major US cities; cutting electric power to millions, and tearing apart densely populated coastlines.

The National Aeronautics and Space Administration (NASA) reports that the high tides that occurred at the same time of the hurricane and long periods of heavy rainfall, ultimately magnified the effects of the Sandy storm swell, which was the difference between the storms from a meteorological perspective.

Super-storm chaos

NASA states that Super-storm Sandy created unprecedented chaos in lower New York City, flooding the underground subway system on the evening of 29 October 2012.

Reports state that Sandy became a ferocious Nor'easter, which is so termed as a result of the wind direction from the east, and moving as a macro-scale storm along the East coast of the US and Atlantic Canada. This results in storm surges to coastal New York and New Jersey,

as well as blizzard conditions to the mountains.

According to NASA the landscape of the East coast changed forever, including the lives of residents in the coastal states of Connecticut, Virginia, Maine, New York and New Jersey and the many other states affected by Super-storm Sandy.

Satellite photographs of Mantoloking, a coastal town in New Jersey, show the impact of the storm on the Mantoloking Bridge, which cost roughly \$25 million when it was opened in 2005. The bridge was covered in water, sand and debris from houses, and was eventually closed. Local city officials deemed the bridge unstable. Also, entire blocks of houses on the New Jersey barrier island, also known as Ocean Boulevard, were either damaged or completely washed away by the storm surge and wind.

Raging fires were caused by ruptured gas lines that were ignited in the storm conditions in the New Jersey town. A new inlet had to be cut across the barrier island to ▶



Rescue teams were employed in towns across the US East Coast

► connect the Atlantic Ocean and a local tide pond.

Another town in New Jersey, Jersey Shore, a coastal region of residential communities and beach resorts, was similarly left devastated in the aftermath of the first 72-hours of the storm.

Local volunteers of the Belmar Water Rescue Team in New Jersey took to the streets to rescue local residents.

The team included Brian Allen, a local volunteer, now remembered as a hero, as a result of his rescue of

approximately 40 Belmar residents by any means necessary. This included the use of a kayak, an inflatable raft and a jet-ski. Allen even dove into raging waters of Sandy's storm surge to swim to the rescue of his friends and neighbour.

After more than two months since Sandy ravaged the East Coast, the American Red Cross continues to offer its services to residents affected by the storm.

Michael de Vulpillieres, a Red Cross spokesperson says, "Red Cross volunteers continue to deliver food and relief supplies to those in need."

By the start of 2013, the Red Cross had served more than 1,1 million meals and distributed more than 700 000 relief items to areas on the East Coast.

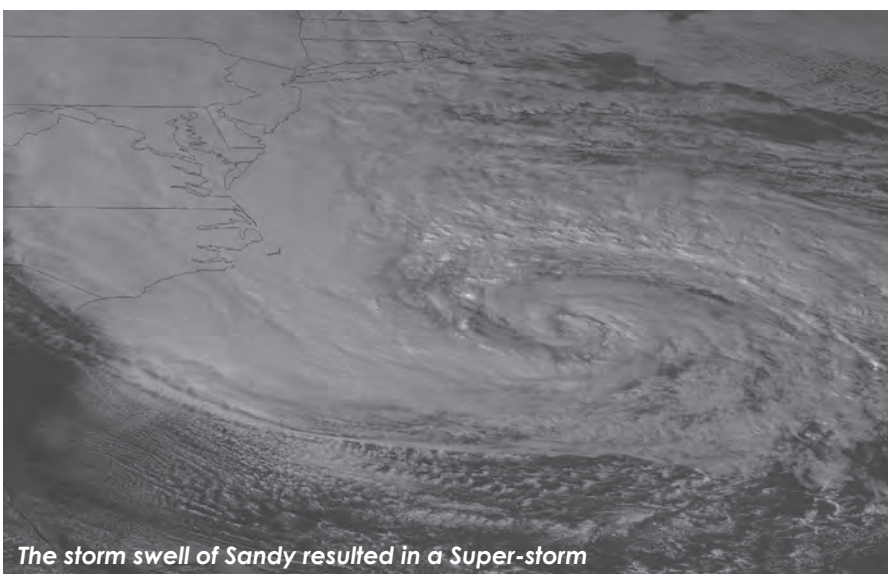
Hurricanes vs the Super-storm

Hurricane Katrina and Sandy had similar characteristics in that they were compact, symmetrical wind field that whipped around a circular low pressure centre, while blowing through the tropics, states NASA.

Hurricane Katrina, however, was a textbook tropical cyclone, whereas Super-storm Sandy moved northward and merged with a weather system arriving from the west and started transitioning into an extra-tropical cyclone.

Tropical cyclones draw their energy from warm ocean waters, while extra-tropical cyclones are fuelled by sharp temperature contrasts between masses of warm and cool air, reports NASA.

Extra-tropical cyclones also tend to be asymmetric, with broad wind and cloud fields shaped more like commas than circles. So when tropical cyclones become extra-tropical, their wind and cloud fields expand dramatically. Their strongest winds generally weaken ►



The storm swell of Sandy resulted in a Super-storm

▶ during this process, but occasionally a transitioning storm retains hurricane force winds, as was the case with Sandy.

Cost of the storm

The US House of Representatives approved a \$9,7 billion bill to make payments to Sandy’s insurance claims, but the relief will ensure that more than 100 000 homeowners are paid hundreds of thousands of other homes and businesses destroyed by Sandy still were without flood insurance.

At the start of January 2013, the US federal flood insurance program was close to running out of funds to pay claims from residents and business owners in the US north-eastern region, according to the Federal Emergency Management Agency.

The US federal flood insurance programme, was already \$20 billion in debt, and in need of a bill to be passed by congress to keep the flood insurance program solvent in 2013.

Critics of the program complain it is inefficient and say it subsidises people who live and build in dangerous and environmentally sensitive flood zones.

Owners of many of these structures will depend on disaster aid distributed through community development block grants proposed in the remainder of the aid package, such as those donations made by large-scale businesses such as Wal-Mart.



The devastation caused by Sandy resulted in damages worth \$60 billion

Corporate good-will

US retail giant Wal-Mart and other big corporate entities, JP Morgan Chase and Co, Goldman Sachs Group Inc and Walt Disney Co offered more than \$1 million each to aid victims of Sandy.

The American Red Cross had previously initiated an annual disaster giving program, which is supported by 39 companies that have pledged to donate \$1 million a year in advance of disasters.

The funds have contributed to the largest Red Cross effort in the US in the past five years, according to a Red Cross spokesperson, with more than 5000 workers as well as its entire fleet of 320 response vehicles responding to the storm.

The larger charitable donations in the aftermath of Sandy were made by JPMorgan Chase and Co which

promised as much as \$5 million to the American Red Cross, and local agencies aiding in the recovery efforts, as well as much as \$5 billion in reduced cost loan assistance for small and medium sized business affected by Sandy.

Soon after Sandy hit, Goldman Sachs Group promised to donate \$5 million for clean-up and recovery efforts, and offered a further \$5 million in loans to small businesses impacted by the storm.

The recovery mandate

On 4 January 2012, the US House Appropriations Chairman, Hal Rodgers, introduced legislation to provide much needed funding for Hurricane Sandy relief and recovery initiatives totalling \$17 billion, over and above the \$9,7 billion approved by Congress earlier.

The legislation bill would include a \$5,4 billion disaster relief fund to the Federal Emergency Management Agency, which will act as a relief and recovery fund for individuals, families, and communities, and will include assistance to individuals in the form of temporary housing, and crisis counselling.

An additional \$5,4 billion would be allocated to the Federal Transit Authority Emergency Relief, \$3,9 billion would go to the Department of Housing and Urban Development, \$1,3 billion to the Army Corps of Engineers for response and recovery projects for Super-storm Sandy. ▲



Flood and fire damage caused by Sandy

No survivors in Dakota crash

Photographs courtesy of the Department of Defence



Two C-47TP Turbo Dakota aircraft were involved in accidents within a month



The Dakota aircraft that crashed during severe weather conditions recently

South Africa was saddened with the news that eleven members of the South African Air Force (SAAF) died in a plane crash in a remote area of the eastern Drakensberg Mountains, on 5 December 2012.

The C-47TP Turbo Dakota transport aircraft crashed during severe weather conditions at an altitude of 3 135m and flying in instrument meteorological conditions owing to bad visibility.

The 35 Squadron aircraft, flying from Air Force Base Waterkloof, Pretoria, at about 7h45 am to Mthatha Airport, Eastern Cape, went missing around 9h45 am local time, according to the Department of Defence. "After the expected time of arrival and no communication from the aircraft, the SAAF activated a search and rescue mission," reported the Department of Defence.

An Oryx helicopter was tasked to search for the missing aircraft, but had to abandon the search due to the very bad weather in the area. The Department of Defence said that a rescue team continued their effort at first light the following day and located the wreckage in the Drakensberg Mountains.

On board the aircraft was a crew of six and five passengers and it was confirmed by the search and rescue team that there were no survivors.

One of the first people at the crash site was Netcare 911 spokesperson Chris Botha. "It was a horrible, horrible scene, there was debris scattered across a very large area," said Botha. "I have greatest respect for the search-and-rescue people who had to work in such thin air, packaging each of the bodies," he added.

The tragic loss of the crew on board the Dakota aircraft, was believed to be medical personnel en route to attend to former South African President Nelson Mandela, who was battling with his health at the time.

International news agency CNN reportedly linked the crash to Mandela saying that the aircraft may have carried his medical staff.

However, the Department of Defence said the aircraft was on an official tasking and a spokesperson denied any speculation that the aircraft was carrying medical personnel to attend to Mandela.

Military doctors responsible for the well-being of the 94-year old Mandela often

fly to the same Eastern Cape airport before proceeding to Mandela's home in Qunu, the rural village where the iconic leader was born.

On 12 December 2012, a sombre memorial service was held at Air Force Base Ysterplaat in memory of the victims of the South African Air force aircraft that crashed last week. Lieutenant General Zimpande Msimang, Chief of SA Air Force and senior members of the SAAF paid their last respects during the ceremony.

The South African National Defence Force afforded the families of the crash victims the opportunity to visit the crash site to enable family members to see for themselves where their loved ones had died.

A board of inquiry has been convened to investigate the circumstances surrounding the cause of the accident.

"The Minister of Defence and Military Veterans Nosiviwe Mapisa-Nqakula, the Chief of the SANDF, General Solly Shoke, and Lieutenant General Msimang would like to convey their sincere and deepest condolences to the families and loved ones of the deceased," the Department of Defence stated. ▶



SAESI to host international conference

The 29th international conference, exhibition and training event to be hosted by the Southern Africa Emergency Services Institute (SAESI) at the Expo Centre in Johannesburg between 15 and 17 May is set to be South Africa's largest rescue, emergency medical and disaster management services event, according to the SAESI.

The theme of the conference, trade expo and training event is 'Working together to ensure our future'.

SAESI intends to highlight the need for change, cooperation and interventions by all stakeholders to ensure that the needs of the fire, rescue, emergency medical and disaster management services are addressed in the 21st Century.

Also, the conference will focus on highlighting 'green' and sustainable practices in order to ensure that this topic remains at the top of the agenda of all industry stakeholders. SAESI states that 'by working together, we will be able to face mutual challenges, responsibilities and accountabilities in preventing and building resilient communities towards life threatening emergencies and disasters'.

Numerous international delegates from fire, rescue, emergency medical and disaster risk management, national, provincial and local government will attend the event in Johannesburg.

Also in attendance will be non-governmental organisations, South African Bureau of Standards, Council for Scientific and Industrial Research, South African Police Service and the South African National Defence Force research and education, from Africa and all over the world, reports SAESI.

The emergency services institute states that the trade expo is expected to be the largest ever - with local and international exhibitors.

"In every way, it is the most substantial fire, rescue, emergency and disaster management services conference, exhibition and training event in Africa."

SAESI reports that the vehicle extrication, high-angle rescue and emergency medical services challenges start on Wednesday 15 May and will be concluded on Friday 17 May.

The South African Emergency Care Fire Services Challenge will similarly be conducted during the course of the three-day conference from 15 to 17 May 2013.

Various levels of participation will be available to test the fitness and competence of personnel, participants and delegates in the emergency services industry.

A public information, education and relations (PIER) programme will

be run for several primary schools in Gauteng.

Delegates will have an opportunity to visit and experience the programme which will be presented to the learners.

Highlights of the conference:

- Gauteng Department of Local Government and Housing MEC Lentheng Mekgwe is invited to deliver the keynote address during the opening ceremony on 15 May 2013.
- Approximately 350 to 400 guests will attend the opening and will consist of politicians from provincial and local government, international guests and speakers, senior officials from national, provincial and local government as well as the private sector.
- About fourteen papers will be delivered by international and South African speakers.
- Many of the presenters are senior executives from South African Police Service, South African Bureau of Standards and the South African National Roads Agency Limited.
- Other speakers include the Local Government Sector Education and Training Authority, as well as national, provincial and local government and selective stakeholders in the private sector. ▲

► Only a month earlier on 7 November, another C-47TP Dakota of 35 Squadron was involved in a landing accident at Mthatha Airport, when it bounced on landing and left the runway. Damage included a torn-off main undercarriage, bent propeller and damaged engine and wing. Fortunately, none of the 16 passengers on board was injured.

There was no mayday at this earlier incident, but now a lot of questions after a SAAF C-47TP Dakota crashed. The plane, according to Johnny Smit,

the head of Aeronautical Search and Rescue, had not deviated from its planned flight plan. Now, the SANDF wants to convene a board of inquiry to investigate what went wrong and why this type of plane, which has been in operation for more than 75 years, had crashed.

Nosiviwe Mapisa-Nqakula, Minister of Defence and Military Veterans, paid tribute to the crew and noted how shattered she was when she heard of the news of the crash. "This tragedy has taken away a group of

young soldiers at a time when we are encouraging the rejuvenation of our force with younger members, particularly in the area of scarce skills such as the SAAF," said the Minister.

This tragic accident was the single largest loss of life in a SAAF (non-operational) accident since all 13 crew-members of a Shackleton maritime patrol aircraft were killed when it crashed in bad weather in the Stettynsberg Mountains near Cape Town on 8 August 1963. ▲



Fire fighters taken through the obstacle challenge at SAEC

Fire fighters in peer-to-peer challenge

The Fire Fighter Rescue Challenge has become a much-anticipated event in the local fire industry according to the South African Emergency Care (SAEC) events and entertainment manager Laefitia McCabe.

“It is amazing to see how the rescue challenge has become a must attend event on the calendar of the fire industry in Gauteng.”

The event hosted and coordinated by SAEC has grown in popularity since its inception in 2010 says McCabe.

The SAEC’s third annual Fire Fighter Rescue Challenge saw professional fire fighters and corporate fire personnel attending the event in numbers in October, last year.

SAEC hosted the challenge at its training facility in Modderfontein, Gauteng to an enthusiastic complement of fire fighting personnel and various fire organisations

including, Ekurhuleni Fire Services, Johannesburg Fire Department, Lanseria Airport and BMW SA, among others.

The winning team in the SAEC Rescue Challenge for 2012 was a group of fire fighters from Lanseria – who called themselves Lanseria Airport 2.

The runners-up in the challenge were the fire fighting team of BMW, who named themselves Quantam, and they were followed up by the second team from Lanseria simply known as Lanseria Airport 2.

SAEC reports that the rescue challenge has become an extremely popular and important event on the calendars of these corporate entities and professional fire fighters.

McCabe adds that there is a great camaraderie’ that is shared by the different teams competing in the challenge, owing to the nature of the fire industry.

“There is a feeling of brotherhood if you are a fire fighter. So, when they compete against one another in this challenge it really is awesome to see. If there was one of the guys left behind during a fire drill or obstacle course, then all the other guys would cheer him on,” McCabe enthuses.

Each team has its own war cry in challenge of the prize for team spirit, which forms part of the overall rescue challenge.

McCabe says that they were awarded a floating trophy as the winners, but that there were various trophies awarded to teams in different categories within the challenge.

SAEC reports that the fire fighter rescue challenge has become an important event, not only for professional fire fighters, but the corporate companies that enrol their fire teams to participate as well.

The objective of the challenge can be seen as refresher and skills training for the fire fighting teams, allowing professionals and corporate companies to interact and compete against each other for trophies and prizes, reports SAEC. ▶



Fire fighter up to the challenge



Lanseria Airport 1 team crowned fire 'champs' for 2012



BMW's team Quantum leaping into second place in the 2012 SAEC fire fighting challenge



SAEC training facility in Modderfontein



Sinking in the teeth to save a life

Australian aviation fire fighters graduate



19 new aviation rescue fire fighters graduated in Australia

Airservices Australia has welcomed 19 new aviation rescue fire fighters into service at a graduation ceremony held at the Airservices Learning Academy at Melbourne Airport.

The graduating recruits will join more than 740 fire fighters at the nation's busiest airports as part of Airservices Aviation Rescue and Fire Fighting (ARFF) service.

Airservices general manager: Learning Academy, Linda Spurr,

presented trainee fire fighter Tobi Noble from Sydney, with the Silver Axe Award for the most outstanding recruit on the course.

Amongst the 19 graduating recruits were Tobi Noble, Amanda Barnes and Allison Walters, demonstrating Airservices commitment to increasing the number of women in operational aviation rescue and fire fighting roles.

The recruits completed a physically and mentally demanding 11-week training course at Airservices Learning Academy in Melbourne and the

organisation's fire training ground in Sydney.

The theoretical and practical training undertaken included fighting aircraft and structural fires, aviation rescue techniques and dealing with the hazards of highly flammable aviation fuels.

Airservices Learning Academy has facilitated the training and development of more than 160 new fire fighters over the last four years and continues to provide quality training and development opportunities for fire fighters at all stages of their careers.

Airservices acting executive general manager: ARFF, Michelle Bennetts, said the new recruits will work at stations in Melbourne, Hobart, Launceston, Sydney, Rockhampton, Adelaide and Darwin.

"Airservices has one of the largest, most highly trained, professional aviation rescue and fire fighting services in the world," Bennetts said.

"Our fire fighters have the expertise to provide Australian airports and airline passengers with first-rate rescue and fire fighting services. "We welcome them to Airservices and congratulate them on successfully completing the demanding course." ▲

► McCabe explains the judging process saying, "We have a judge who facilitates the challenge for the professionals. Last year the judge for the event was the Ekurhuleni fire department fire chief."

MCCabe adds that the fire teams are geared up in full bunker equipment and are tested on a range of skills including stamina.

"They are taken on a fire fighting obstacle course that is designed to be a real emergency scenario for fire fighters. The judges are really strict, so, the winners of the challenges are chosen on merit," says McCabe.

The SAEC rescue challenge is run over two days, explains McCabe, "The first day is for the professional

fire fighters and the second day is for the corporate participants. These include companies like BMW and FoodCorp, who have their own fire teams."

A total of 12 teams competed on the first day designed for professionals, followed by a group of 18 corporate teams competing on the second days, reports McCabe.

The event was sponsored by SAEC, and other industry stakeholders, along with other independent corporate donors not necessarily related to the fire industry.

This year's event will be held over two days, not including an initial 9/11 Memorial Service which will be held this year on 11 September 2013.

The opening day will commemorate the fire fighters who gave their lives at the World Trade Centre site in New York, US in 2001.

SAEC reports that every year on 11th September, the management, staff and friends of SAEC remember these fallen heroes in a memorial service that takes place at the SAEC training centre in Modderfontein.

The Fire Fighter Rescue Challenge takes place at the same venue on 12 September and 13 September this year.

At the end of the second day, the challenge is concluded with a 'burn-out' and enjoyed by all in a festive atmosphere, states the SAEC. ▲

R6,5 million EMS station opened in Vredendal



EMS workers welcome the opening of a new EMS station in the Western Cape

The 70 000-strong communities of Vredendal and the Matzikama region in the Western Cape, South Africa were enriched with the opening of an Emergency Medical Services (EMS) station in October, last year.

The R6,5 million ambulance station, which will also serve the 19 neighbouring towns of Vredendal covers an interior of 13 302km², reports the Western Cape Government.

The Vredendal EMS formed part of the greater Western Cape health budget to improve infrastructure in that region.

Western Cape Minister of Health, Theuns Botha, said at the opening of the EMS Vredendal, that 'over the years, emergency calls increased to the point where Vredendal was flagged for an EMS base'.

Botha added that, "The first ambulance station to serve the Vredendal community was originally based in Vanrhynsdorp with the local health inspector operating as the ambulance practitioner."

The new facility handles about 540 emergency calls per month, and the station services and average of 74% priority calls within 15 minutes.

Western Cape Government health spokesperson, Keri Davids, adds "95% of calls are reached within 40 minutes, meeting national emergency response standards in rural areas."

Davids reports that 22 EMS practitioners and six volunteers operating from the Vredendal EMS base are primarily community members of the Matzikama sub-district and supply emergency medical to the 70 000 residents of Vredendal.

"The facility employs 21 operational staff, all with different levels of emergency care qualifications. They will be complemented by eight emergency workers at our satellite station in Bitterfontein – 118 kilometres from here," mentioned Botha.

EMS received R701 million, or 4,8% of the provincial health budget.

Botha stated that at present, EMS has 52 stations in five rural districts in the Western Cape.

"They have approximately 1 500 staff members. We have 248 ambulances in our fleet, which are upgraded every 200 000 to 300 000 km," he added.

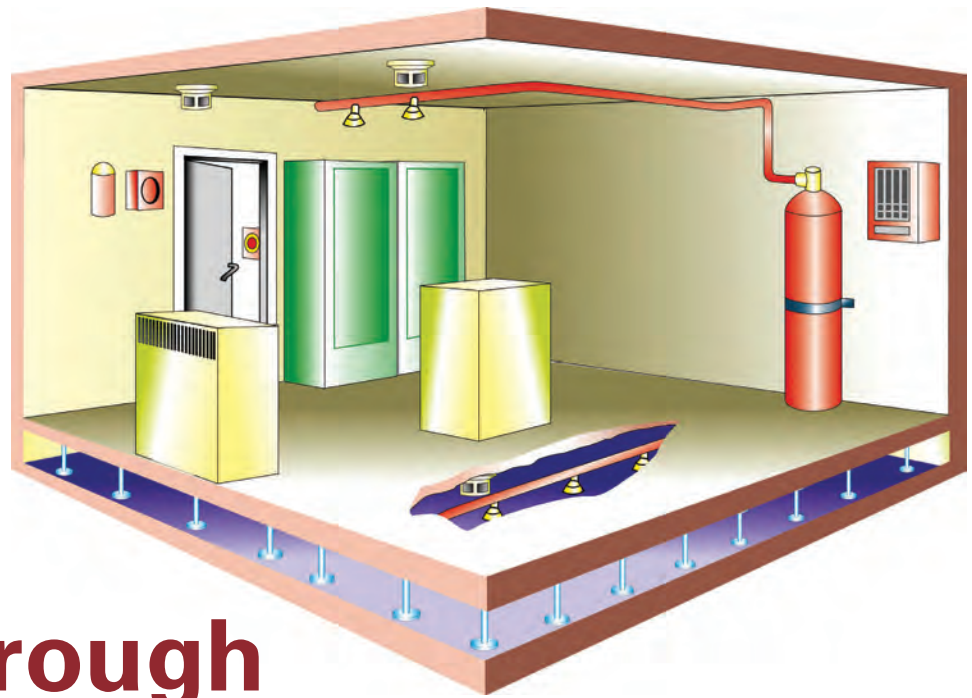
The new EMS infrastructure includes a waiting room for patients, training facility and grounds for fitness training allowing for EMS practitioners to increase their theoretical knowledge and physical status.

The EMS and the Western Cape Government Health reports that the EMS is currently implementing a first responder programme that educates locals from strategic areas in the Western Cape, which will fundamentally improve the quality of service delivered and uplift the community in the future.

Distances between towns can delay mission times of calls to up to nine hours at a time; the first responders will be able to assist patients until an ambulance arrives, especially where 70% of the routes travelled are dirt roads.

The Vredendal station will serve the surrounding towns of Klaver, Trawal, Vanrhynsdorp, Lutzville, Koekenaap, Ebenaezer, Papendorp, Strandfontein and Doringbaai. ▲

The eco-friendly industrial fire suppression system developed by Sevo Systems



Breakthrough fire suppression system

The development of a new fire suppression system in 3M Novec 1230 by fire protection systems manufacturer, Sevo Systems, offers a viable long-term solution for special hazards fire protection replacing the eco-friendly shortcomings of hydro fluorocarbon agents (HFC's).

Novec 1230 fluid, like HFC's has zero ozone depletion potential, but its key differentiating attribute is its global warming potential impact, which is a dramatic reduction from that produced by the most common HFC.

Sevo Systems states that the shortcomings of HFCs led innovative technology developer, 3M, to search for a fire protection agent with environmental characteristics that trumped its predecessors, reports local distributor of Novec 1230 – Brigit Systems.

Sevo Systems, based in Kansas, USA, was formed in 2001 to develop and commercialise this revolutionary new technology that represented a major breakthrough in halon replacement technology.

For many years, Halon 1301 was the fire extinguishing agent of choice in a wide variety of applications and particularly those where it was important to mitigate damage to valuable assets such as electrical and computer equipment, museum artefacts, and ships' engines. However, in the 1980s, it started to become clear that Halon had enormous potential for harming the earth's ozone layer. With this in mind and its perceived impact on global warming product, the production of Halon was phased out in the early 1990s under the terms of the Montreal Protocol.

Environmental regulators were becoming direct participants as members of committees dealing with

fire protection codes and standards development. As a result, the use of halon is now illegal in many parts of the world except in specialised, critical applications. A replacement had to be found, and this led to the development of HFCs.

The global warming potential (GWP of Halon 1301 is an astonishing 7 140 times that of CO₂, the most common greenhouse gas, while that of the HFC most commonly used in fire protection is 3 220 (2007 IPCC assessment for HFC-227ea).

Further, the atmospheric lifetime of Halon 1301 is 65 years, and that of HFCs used in fire protection about 30 years. There's no doubt that, in environmental terms, HFCs were a step forward. So, with HFCs, the footprint on the environment is still substantial. The concerns about global warming and the high GWP of HFCs create two big issues for those who are currently specifying or purchasing fire protection installations.

The first is that most principled organisations have strong environmental policies and are unlikely to specify fire protection agents that have poor environmental credentials. In countries where regulatory requirements are currently less stringent, such policies will likely be the biggest driving factor for the adoption of environmentally sustainable fire protection.

Another factor of concern is future bans or restrictions that could mean that a HFC system installed today would need to be replaced long before it has reached the normal end of its useful life and the costs of carrying out this replacement work could be substantial.

According to Sevo Systems and Brigit Systems, the Novec 1230 fluid has a global warming potential ▶

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Leading the future

News

▶ of just "1", compared to "3220" for the most common HFC, which is an indication of how well the objective has been met by 3M in its search to produce a fire protection agent that was environmentally superior to any agent previously available.

In addition, Novec 1230 fluid's atmospheric lifetime is only five days, in contrast to a period of about 30 years for HFCs, reports Brigit Systems.

Sevo personnel worked closely with 3M during the critical early stages of proving the ability of Novec 1230 fluid to be a total flooding agent. Sevo worked hand in hand with 3M while achieving UL component recognition prior to system development and then went on to achieve UL approval of their system as a total flooding system, the first UL approved system in North America.

Novec 1230 fluid offers a very wide margin of safety and, therefore, can be used in staffed areas.

For most applications, it is typically used at a concentration of between 4,5% and 5,85%, but the observed adverse effects (NOAL) level is 10%. Therefore, its safety margin is between 71% and 122% – the widest margin of safety of any viable chemical replacement for halon.

Unlike other extinguishing agents, Novec 1230 fluid is not stored as a pressurised gas but as a liquid, which instantly dissipates to form a gas when it is discharged from a properly designed system. Sevo Systems reports that storage in liquid form has many benefits. The Novec



Novec 1230 provides a greener alternative to traditional HFC's

1230 fluid can be easily transported in bulk and even air. Further, refilling a system after discharge is much simpler than working with bulk pressurised gas supplies and much more convenient than sending the cylinders off site.

Sevo Systems offers their Sevo CAPS fill and recharge station to effectively transfer Novec 1230 fluid when refill is required.

With less impact on the environment, favourable handling characteristics and excellent extinguishing properties, Novec 1230 fluid makes great strides in green technology.

It is suitable for delivery by flooding and its noncorrosive, non-conductive properties allow it to be used to protect sensitive equipment such as electrical substations, electrical switchgear, telecommunications and computer room installations.


Brigit Systems believes that it can now provide sustainable systems with Sevo Systems by accessing the technology firm's full range of clean range fire suppression solutions – both from an environmental standpoint as well as safety. ▲



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PetroSA holds an Advanced Petrochemical Fire Fighting Course at its Mossel Bay refinery

Safety in fire training a challenge

PetroSA, South Africa's gas-to-liquids (GTL) refinery recently held its Advanced Petrochemical Fire Fighting Training Course over three days, with an additional night-time practical exercise for members of the various refinery emergency services industry.

Twenty five fire fighters attended the advanced petrochemical fire fighting course held from 16 to 18 October 2012 at the PetroSA GTL refinery in Mossel Bay in the southern Cape.

The courses offered by the world's third largest GTL refinery included hazmat training from awareness to technician level, trench rescue, vehicle rescue, confined space and high-angle rescue.

Apart from these intensive training modules, PetroSA Chief Fire Officer, Brian Oliver says that the refinery also presents first aid and various level of fire training courses leading up to the advanced petrochemical fire training course.

The oil and gas refinery places an express focus on fire and safety - evident in the formulation of its South African Emergency Services Institute (SAESI) registered training institution that is geared towards empowering members of the various refinery emergency services.

Oliver says that PetroSA provides training to fire fighters on an ongoing basis, and that the purpose of PetroSA's course in October last year, was to present training techniques to members of the various refinery emergency services.

"These two courses are held twice a year, depending on demand," says Oliver.

He also says that the courses are run at PetroSA, as well as Sasol Refinery in Secunda, Mpumalanga.

These two venues are the only places where the South African petrochemical fire chiefs run the advanced petrochemical fire training course, states Oliver.

The techniques explored in the training camp included flame bending, use of breathing apparatus, advanced techniques using fire extinguishers as well as hose handling, explains Oliver.

"The course is aimed at employees of petrochemical companies who are members of emergency response teams. Similar training is also provided to members of local and district municipal emergency services."

PetroSA is also accredited to provide marine fire training for the offshore oil industry and general shipping.

Ensuring the safety of trainees during the training programmes is a challenging task in itself.

He says that the fires used in the last training course was 'just as hot and dangerous', as in real emergency situations.

He adds, "PetroSA is constantly ensuring its fire protection is in line with international best practice. All major incidents worldwide are studied to determine if there are lessons to be learned and applied locally."

The training provides fire fighters with the opportunity to experience petrochemical emergencies under controlled conditions and is a skill and resource that can be tapped into in the local industry, as well as internationally, states Oliver.

PetroSA reports that operational excellence is embedded into the refinery's safety-first working culture.▲

Twenty-five fire fighters attended PetroSA's fighting course

New line thrower catapults into local industry



The ResQmax line thrower

Technical rescue equipment supplier, Fremtac Fire and Rescue, has added the ResQmax line-thrower to its product range. The line thrower is ideally used in rescue operations, but can be applied to a range of rescue operations from maritime, tactical and law enforcement operations, states Fremtac Fire and Rescue founder Jimmy Croucamp.

Fremtac Fire and Rescue is the sole distributor of the ResQmax line thrower that was made available to the local industry over the last few months. The product that is manufactured by Rescue Solutions International, has been available in the international market for a few years.

Croucamp says that the ResQmax is a versatile line throwing device that can be used in a range of rescue operations including water rescue-line deployment and has various attachment options. A self-inflating rescue collar is one of these options that can be deployed to a victim in the water and once inflated can be used by the victim as a flotation device. This can also be connected to a tether rope to pull the victim safely to shore.

Other uses for the ResQmax include applications such as ship-to-ship line deployment, man-overboard rescue, utility line deployment, high-angle rescue and ice rescue.

Croucamp adds, "There are also a variety of tactical applications for the ResQmax launcher in police and military operations. A launcher is also made for open cast mining operations, where the launcher is used to get a pilot line over rough and inclined terrain. This is done in order to distribute electrical cables and other utility lines, which saves almost an hour in set-up time, when compared to the conservative process currently in use."

The ResQmax line thrower can throw a wide variety of line up to a distance of 195 metres, while a different specification of the product

in the Tactical ResQmax, when deployed with a grappling hook, a climbing line can be deployed up to a distance of 40 metres. When using a tactical ascending ladder, a line can be deployed up to a distance of 15 to 20 metres.

All the ResQmax line throwers are modular in design that can be used with a variety of accessories in horizontal and vertical line deployment application.

Rescue Solutions International states that entry points that would otherwise be inaccessible can be breached with ease for method of entry and ship boarding operations in both land-based and maritime environments.

It is a non-pyrotechnic line thrower, therefore, it does not require special storage, shipping, recharging or licensing.

The pneumatic line thrower replaces traditional pyrotechnic line guns with an intrinsically safe option, states ResQmax manufacturer Rescue Solutions International.

The system is fuelled by compressed air and the components can be reused, so making line throwing training and inexpensive operation.

Croucamp says that Fremtac Fire and Rescue provides free training to clients that use the specialised equipment supplied by the company.

"Our main area of business is the supply of technical rescue equipment, but we also provide a consulting service and product training to the rescue industry," says Croucamp.

"We package custom training modules for each of our clients. The needs differ from client to client, so we customise equipment proposals, training programmes and information on products, based on the risk assessment done. This is done in order to offer the client the correct equipment and training that suits their particular needs," explains Croucamp.

The typical client base for Fremtac Fire and Rescue's products includes companies in the private sector, as well as mining operations and fire departments.

Fremtac Fire and Rescue, formed in 2004, has grown in leaps and bounds, since founder Croucamp started the company while still plying his trade in the fire service industry.

"I started having an interest in technical rescue fields, which eventually became a passion and ultimately a career," he says.

Fremtac Fire and Rescue now includes a range of services in the technical rescue field in the fire industry that includes fire and safety audits, and includes the supply of a range of water rescue equipment, swift water rescue equipment, high-angle rescue equipment as well as specialised battery operated hydraulic training tools.

Fremtac Fire and Rescue also consults on many emergency related matters such as evacuation plans, and the evaluation of standard operating procedures. "According to those needs we draft recommendations for equipment requirements," states Croucamp.

He says that there is a need for specialised technical equipment in the South African industry and encourages fire and emergency services to actively research and evaluate their rescue equipment needs, in order to approach all rescue operations with greater preparedness and skill.

Croucamp urges the fire services industry to be more proactive in its acquisition and use of specialised rescue equipment.

"The approach to specialised equipment in the industry has been reactive as opposed to proactive," he concludes. ▲

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Smoke from E-III fires is considerably less than regular fires

Simulated fire training made possible by new training fluid

Chevron Phillips Chemical Company recently introduced its new E-III fire fighting training fluid (FTF) for use in various training applications as a fire simulation system, which South African chemical products and services supplier, Chemfit, has made available to the local industry.

When burned in training applications, the Chevron Phillips' FTFs accurately simulate aircraft, motor vehicle and

watercraft liquid petroleum fuel fires, reports the company.

The burn specifications and characteristics of the special FTF liquid allow for signature smoke in the initial burn stage that assists in fire detection and wind direction determination.

After continuous burning, a cleaner smoke rapidly dissipates, creating a training environment that is neighbour-friendly, states Chevron Phillips.

The radiant heat of the fire exceeds 371 celsius and, when aerated through nozzles and under pressure, E-III FTFs burn similarly to a ruptured fuel line.

Environmental benefits

FTFs are specially blended fluids that provide a safe and cost-effective way to train fire fighters, reports Chevron Phillips. "They accurately simulate a typical aircraft, motor vehicle, or watercraft liquid petroleum fuel fire." ▶

Military charging to the rescue



Pakistani military aides flood victims in 2010

The biggest asset available to government is its military," stated Lieutenant General (ret) Nadeem Ahmed during the International Defence Exhibition and Seminar in Pakistan last November.

Ahmed, who resigned from his post as Chairman of the National Disaster Management Authority (NDMA) in 2011, coordinated and managed the response to Pakistan's October 2005 earthquake, as well as the devastating floods in that country in 2010, which left vast regions of Pakistan devastated and ultimately affecting over 20 million people.

Ahmed said in his conference address that the use of the military, owing to its geographical position and the fact that it has experience in handling disasters, allows for the quickest mobilisation of a disaster response team.

He said that developed countries susceptible to natural disasters, such as the recent Hurricane Sandy disaster on the US Atlantic coastline, is an ideal case where the military could play a role in the disaster management efforts.

A key part of the effectiveness of the military is that it has a large spectrum of responders available, stated Ahmed.

The availability of medical care, logistics, aircraft, engineers, soldiers – all military assets – afford the military a competency and set of capabilities that their civilian counterparts do not have, said Ahmed.

He added that the military command structure facilitates control and command, while soldiers provide a security umbrella.

There are challenges faced by government following a disaster and this includes damage assessment, limited access to the disaster site, lack of available resources limited capacity of responders, the need to mobilise quickly, interagency cooperation and the management of international assistance, said Ahmed.

Ahmed stated that it is important to ensure that a second wave of deaths does not occur due to epidemics as a result of the lack of proper medical assistance, food and shelter and the restoration of communications and essential services.

He said it was a common tendency for international organisations to take over the task of disaster response and concluded that it should be the responsibility of government to lead the response.

Lt Gen Ahmed is currently a member of the Abbottabad commission probing the presence of Osama Bin Laden in Pakistan and his killing through a unilateral action by the US military in 2011. ▲

► Chevron adds that the combustion emissions contain lower levels of pollutants than do the emissions from traditional fuels, and contain less than 10 ppm sulphur. Both E-III FTFs and their unburned residues are stable and non-corrosive.

The use of these products can result in cleaner water after water surface burns, and pits and mock-ups may become cleaner as they burn off existing residuals, states Chevron.

Testing emissions

The combustion products FTFs were analysed and compared to those generated by the combustion of a 60:40 diesel and gasoline blend. Both volatile organic carbon (VOC) and particulate matter were measured quantitatively.

A sample of the product under test is poured into the bottom of a flat pan and immediately ignited using a fireplace match.

Data is gathered until the flame self-extinguishes and no significant volume of VOC is being emitted and in the case of the products

tested, this data collection time was approximately three minutes.

VOC was measured with a hydrocarbon analyser and with a flame ionisation detector. The VOCs were reported as methane. Particulate matter was collected on glass fibre filters and the particulate mass was measured by weighing. Each product was evaluated in three replicate test runs and the results represent the average of those three runs, reports Chevron Phillips.

Safety features

The E-III FTFs will not mix with water, therefore, protective clothing that is wet will not absorb fuel, so the fire fighter is afforded increased safety, reports Chevron Phillips.

The product does not generate pockets of unstable, flammable gas in storage vessels or during training operations and because of its low sulphur content there are no sulphur odours present in the air. The explosive vapour emission temperature for the E-III FTFs is above normal ambient temperatures.

Chevron Phillips states that when multiple training fires are planned, water is an acceptable extinguishing agent. The high flash point of the alternative E-III Aviation Grade FTF means that it will not generate pockets of unstable, flammable gas during training operations.

Comparison with other common fuels The emissions from various fuel fires have been test and E-III FTF was show to emit much lower amounts of pollutants than fuels commonly used in live fire training, states Chevron Phillips.

When compared to traditional fossil fuels, the use of E-III FTFs as a training fuel can result in considerable cost savings owing to the fact that up to 30% less FTFs is required to produce an accurate fire simulation, says the company.

Other cost benefits of the E-III FTFs include; unburned product remains stable and can easily be recovered and reused, fuel and water separators remain cleaner, resulting in reduce maintenance costs and E-III fires are controllable by water. ▲



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South Africa:

Minister Edna Molewa honours fire fighting cadets

The South African Minister of Water and Environmental Affairs, Min Edna Molewa, recognised fire fighting cadets during a Working on Fire (WoF) graduation ceremony in Nelspruit, Mpumalanga. Minister Molewa presided over the graduation ceremony and handed out certificates to the best performing graduates.

Speaking at the ceremony, the Minister said, "This Programme was established in 2003 as part of our initiative to create jobs, to alleviate poverty, to skill previously unemployed youth and to contribute to South Africa's integrated fire management capacity. In August 2012, the Programme was the recipient of the Kamoso Award, under the sector Environment and Culture, for best performing Expanded Public Works Programme (EPWP) programme. This prestigious award is testimony to the success of the programme in achieving the above-mentioned objectives."

The Working on Fire (WoF) programme was launched in September 2003 to address the prevention and control of wildland fires, to enhance the sustainability and protection of life, property and the environment through the implementation of integrated fire management practices. The WoF programme is

founded on a high level of basic fire fighting, life skills and various specialised training. The Minister also unveiled a plaque at the Working on Fire Training Academy in Nelspruit.

There are currently more than 5 000 beneficiaries in the programme. The youth make up 85% and women 35% of the total figure. WoF has 199 bases in the nine provinces.

Since 2003, the WoF Programme has provided integrated veld and forest fire management training to over 9 000 individuals. This training has been aimed at empowering all levels of the fire organisation to mitigate the negative impacts of fire in rural areas, in a milieu where global warming and environmental degradation continue to have significant effect on the social and economic conditions of our country.

Minister Molewa added that with interventions like this, we do not just create jobs for the sake of it, but also use such opportunities to enhance the capacity of the environment to sustain life and livelihoods. Whilst the focus of Working on Fire is on fire management, its underlying motivation is poverty relief and skills development that is designed to help beneficiaries build self-esteem and fulfil their true potential.



Minister Molewa handed out certificates to the WoF trainees at their passing out parade in Nelspruit

"With this programme, we address the prevention and control of wildland fires and enhance the sustainability and protection of life, property and the environment through the implementation of integrated fire management practices. Scientists tell us that climate change will cause further increases in the intensity and frequency of fires, as well as changes in seasonality."

"Climate Change increases our temperatures and with that increased drought frequencies that combine to exacerbate the incidence of fire risk. The WoF programme will continue to play a crucial role in militating against this fire risk as well as playing a key role in rolling out fire awareness education campaigns across South Africa. Critically, the key focus will be on highlighting the fact that thousands of beneficiaries are employed by the programme," said the Minister.

Minister Molewa praised the work of the fire fighters, "Allow me to say this to our men and women fire fighters, Bo Mama na Botata, you are not just heroes and heroines of fighting the spread of wildfires, but you are also fighting to save human lives, plants and animals. We applaud you for your hard work and bravery in dangerous situations, all in the interest of serving your beloved country. Bo mama na Botata, we must say, we are very proud of you." ▲



Dr Guy Preston, DDG Environmental Affairs Environmental Programmes; Johan Heine, Co-MD FFA Holdings; Candice Mashego-Dlamini, Mpumalanga MEC for Agriculture; Minister Molewa and Trevor Abrahams, MD, Working on Fire

Unsung heroes of emergency services honoured

Accredited advanced life support ambulance services organisation, LifeMed, conducted an Emergency Services Day of Prayer event last year for emergency services workers and their families.

LifeMed deemed it appropriate to call an assembly of emergency services representatives from the South African Police Service (SAPS), Tshwane Metro Police Department (TMPD), as well as officials from the fire fighter, paramedics, the chaplaincy and trauma councillors industries of South Africa in honour of the service they provide to their communities.

According to LifeMed, 'these are the unsung heroes of our community who work tirelessly to serve our communities in times of need and crises'.



A candle was lit by emergency services representatives



LifeMed's Frikkie Gouws



Tshwane EMS



TMPD Chaplain Morne Lotter

The Day of Prayer was held to show gratitude to all the above-mentioned emergency services personnel for their dedication and compassion, as well as their diligence in the field.

LifeMed, through hosting this event, aims to create a platform and an opportunity where the community demonstrates its support and 'cares for carers' and in turn emergency

service workers show and confirm their dedication to performing emergency service to their communities.

The special service also aims to provide recognition to emergency personnel for the impact they make in the daily lives of South African. The event becomes a day of commemoration, where admiration and reverence is shown to personnel

who have passed away in the line of duty, reports LifeMed.

An invitation of attendance was extended to all personnel serving in the emergency services; state and private institutions.

The Day of Prayer was held at the NG Church Waverly in Villieria, Pretoria on 12 October 2012. ▲



WORKING ON FIRE

SCHOLARSHIP FUND

To enhance the sustainability and protection of life, livelihoods, ecosystem services and natural processes through integrated fire management in order to contribute to economic empowerment, skills development, social equity and accelerated service delivery.



The **WORKING ON FIRE (WOF)** Programme is one of the most successful components of the South African governments Expanded Public Works Programmes designed to alleviate poverty through skills training and the creation of job opportunities. The WOF Programme draws beneficiaries from impoverished communities and transform formerly unemployed and in some cases unemployable youth into fit, disciplined and trained veld and forest firefighters, which are deployed at over 100 bases in fire prone areas across South Africa. South Africa has created a world record proportion of women in the ranks of these firefighters, where some 30% are young women.

The impact of this programme has been widely recognized through the accolades which it has been awarded over the years. Not only has the WOF Programme made a huge contribution to South Africa's veld and forest fire fighting capabilities, but the modest remuneration which the WOF Programme beneficiaries receive is a critical relief measure from the depths of poverty experienced by so many in South Africa. Their income represents a real contribution to the lives of the beneficiaries, their families and communities where they live.

WOF beneficiaries not only receive specialized training in various fields related to their veld and forest fire fighting work but are afforded to progress in the ranks of the WOF structure to become Type II then Type I crew leaders as well as branching out into the management and administration functions in the programme. Some 84 former fire fighters have already progressed into such positions such as instructors, regional managers, media and community liaison officers, financial clerks, stores and procurement administrators, etc.

The WOF Scholarship Fund is intended to provide resources to aspirant current and former wildland fire fighters still engaged by WOF to pursue further formal training to improve their skills and knowledge. The fund will be managed by a committee consisting of former fire fighters and programme managers, chaired by the executive chairman of FFA Operations, the company implementing the WOF programme.

Contributions will be solicited from the general public, both domestically and abroad, corporate social investment resources and public and private institutions both in the form of general contributions and targeted funding initiatives. Individuals or institutions may also choose to sponsor a WOF beneficiary pursue their further studies or training. The intention would be to register the WOF Scholarship Fund as a public benefit entity to allow for tax deductible contributions from the corporate sector. All contributors to the WOF Scholarship Fund will receive annual statements on the utilization of funds and beneficiary progress.

You are urged to make a contribution to this fund which will greatly enhance the ability of the WOF Fund beneficiaries to improve their skills and knowledge and in so doing improve their employment opportunities and contribution they can make to their communities. Contributions can be made via the enclosed pledge form.

For further information, please contact:

The Executive Chairman,
FFA Operations T/A WORKING ON FIRE,
Email: Abrahams@iafrica.com
Tel: +27 (0) 82 557 5069.

Also see the WOF website at www.workingonfire.org

Or deposit your donation in the following Bank Account:

Account Name: FFA Section 21
Account Nr: 405 953 7280
Branch code: 632005
Bank: ABSA Nelspruit
Ref: Scholarship Fund



Training: the missing link in fire management

By Ben Potgieter, Fire risk consultant, Forestry Solutions

The forestry sector invest millions of Rand to protect their assets and people, this includes fire break preparation, providing fire fighting equipment, early detection systems and training of fire fighters in different roles and responsibilities.

Despite all the mitigation measures, even on moderate fire danger periods, fires get out of hand resulting in asset and human losses. Fire fighting experiences are listed among other factors as contributing factors. If fire fighting crews undergo annual training and training is still identified as a shortcoming, then concerns are raised about the effectiveness of the current fire fighting training.

Is training done to improve skills or to comply?

Infield fire simulation sessions reveal that some fire crew members do not have the required skills to effectively use the most basic of tools such as hoses and hand tools. Roles and responsibilities in the team are not clearly identified or understood to improve their efficiencies at the fire line.

A recent 2012 survey on the effectiveness of fire related training revealed the following information.

Are you satisfied with the course content of your fire fighting training				
Training	Excellent	Good	Fair	Poor
Fire boss	29%	23%	24%	24%
Crew leader	29%	24%	23%	24%
Proto team	7%	30%	31%	32%
Basic fire	8%	30%	31%	31%
Average	18%	27%	27%	28%

Are you satisfied with the quality of the trainers/instructors				
Training	Excellent	Good	Fair	Poor
Fire boss	29%	23%	24%	24%
Crew leader	7%	31%	30%	32%
Proto team	5%	32%	31%	32%
Basic fire	11%	30%	29%	30%
Average	13%	29%	29%	30%

Do foresters attend a training session to verify the content and quality of the training				
Training	Excellent	Good	Fair	Poor
Fire boss	50%	17%	16%	17%
Crew leader	7%	31%	31%	31%
Proto team	4%	32%	32%	32%
Basic fire	0%	33%	33%	34%
Average	15%	28%	28%	29%



Ben Potgieter at the recent SAIF/NMMU Saasveld Fire Management Symposium

Managers are not happy with the course content or the quality of the training instructors and neither do they attend the training sessions to ensure the required standard or outcomes. The survey also highlighted high fire crew turnover; this will have an impact on team effectiveness and fire fighting skills

Further investigation also reveals that the SAQA 18 unit standards covering fire fighting training are not correctly structured and needs to be reviewed and aligned with current practices.

The proposed actions required to improve training quality and effective fire suppression should be:

- Train the fire fighting team to operate as an effective fire suppression unit with specific roles and responsibilities through regular infield live fire simulation sessions
- Simulation sessions must be structured to cover initial attack, extended attack and disaster fire scenarios
- More focus will be required in the use of different tactics; direct attack or indirect attack with the available pump systems and hoses in combination with hand tools
- Structured assessments to measure competence as prescribed in the unit standard outcomes
- Adequate budgeting to finance more frequent training and competent assessments

More effective fire suppression can be achieved through selection, training and exposure of fire fighters, honed to work as a team with specific roles and responsibilities. We will all learn that we can achieve even more with less. ▲



Review of 2012 SA wildfire season

Runaway fires in KZN destroyed timber plantations in August

South Africa was subject to increases in wildfire damages and areas burned in 2012, which is consistent with fire statistics for sub-Saharan Africa - a region regarded as the worst fire hazard area in the world.

Wildfire consultant and expert, Dr Neels De Ronde, reports that the estimated total area lost in South Africa for 2012 stands at about 485 622 hectares, a higher average than many Western nations, such as the US, considering the geographical scale of South Africa.

Dr de Ronde says however, that in the Free State in 2012, a total of 380 000 hectares was lost in August alone and about 200 000 hectares in October in one single fire.

Deputy Director of the Department of Agriculture and Forestry (DAFF) for the Free State, Malcolm Procter, in his report on Poverty and Vulnerability in relation to fire hazards, states that more than 170 million hectares are burning annually in sub-Saharan Africa.

“An increase in frequent, more intense fires and widespread burning is a growing concern globally. Southern Africa, in particular, is one of the world’s fire hotspots where millions of hectares burn annually,” states Procter.

Procter says that according to the Council for Scientific and Industrial Research (CSIR), “while wildfires are a natural phenomenon, people are responsible for most fires, sometimes

with devastating consequences to humans, animals (wild and livestock), vegetation and infrastructure.”

These occurred in dry savannah and montane grassland types where fire rotations normally range from 15 to 25 years.

Procter says, “southern Africa is a region known for an environment that sustains burning, marked by distinct dry and wet periods.”

Procter further explains that the regional environment, combined with low development which necessitates the use of fire in land use management, inadequate policies and institutional infrastructure for fire management, accounts for the high vulnerability to uncontrolled fires. ▶

2012 winter wildfire season



Northern Cape wildfires resulted in 370 000 hectares burned in the region in 2012

► Fire season review:

Mpumalanga

The Umbrella Fire Protection Association (UFPFA) manager for Mpumalanga, Trevor Wilson, says that the fire season last the 'standard' five months.

Wilson says the highest volume of fire activity for 2012 in the region was in July and mid-August. This was a 'rough' period plagued with multiple large fire events, he says.

The fires in the Mpumalanga are perceived to be predominantly caused by civilian negligence – with up to 90% of fires believed to be caused by people.

Wilson says that three FPA's are contracted to provide aircraft fire management services – all of which were activated and all of whom flew 'average hours' in 2012. "Between everyone, there were seven spotters, seven choppers and 12 fixed-wing bombers in Mpumalanga," says Wilson.

He mentions that multiple structures were threatened in the region; however, there have been no reports of any destroyed property or fatalities as a result of wildfires in Mpumalanga.

Northern Cape

The fire season in the Northern Cape extended into December, according to UFPFA manager Cliffy Jones. "Our fire season here lasted till the end of December. October through December was a very tough period for fire teams," he says.

Jones reports that the regions had no wildfires in the period January through March, and the period from March leading up to June was similarly uneventful. "Our season started in July through September. We had a total of six fires during this time," reports Jones.

The region suffered a total burn of 370 000 hectares in its rough patch from October through December.

Wildfires in two regions, Kuruman and Koopmansfontein, resulted in a total area of 215 000 hectares being destroyed within two weeks in mid-November. "In November we had two fires, one of those lasting an entire week from 16 to 23 November. The total number of hectares burned in this one incident was 150 000 hectares," says Jones.

December was another eventful month, with a total of four wildfires reported in the region. "One of the fires was about 20km and affected about 70 farmers. We called in the provincial disaster management who assisted with the fire from the beginning to the end," recalls Jones.

The fire required the assistance of the South African Police Service (SAPS), the South African National Defence Force (SANDF), who both coordinated the aerial fire management operations.

"The total damage and affected area as a result of wildfires for the Northern Cape was 370 000 hectares," reports Jones.

KwaZulu-Natal

The KwaZulu-Natal (KZN) fire season lasted until September 2012, reports UFPFA manager Simon Thomas.

He says that the season was 'done and dusted' by the end of the third quarter of 2012, and that this was an earlier shut off than the year before in 2011. "In November of 2011, we had a really bad month of fires. It was a very dry and hot period. In November 2012, we had nothing happening by the way of fires," reports Thomas.

He says that a total of 1 143 hectares was burned for the Midland's and Griqualand region and in Vryheid a total of 30 hectares of timber burned while 2 014 hectares of plantation burned in a fire that lasted four consecutive days in the Zululand area.

Thomas reports, "The last most significant fire for 2012 was the runaway fires in Escort that started on 25 August. It caused extensive damage to timber plantations in the region." The fire, which burned in an area spanning 50km, was tended to by local FPA's, as well as timber company fire resources, but was doused as a result of the cold front and rains that swept through the region in the evening.

"The UFPFA sent fire bombers out to assist with controlling the fire, but nothing could be done. By the time we got there the fire was out of control. That was the worst fire of the fire season," says Thomas.

Free State

The first fire in the Free State occurred ►

Comparison of Fire Stats for Free State

	No of Fires burnt 2002	Area burnt 2002	No of Fires burnt 2003	Area burnt 2003	No of Fires burnt 2004	Area burnt 2004	No of Fires burnt 2005	Area burnt 2005	No of Fires burnt 2006	Area burnt 2006	No of Fires burnt 2007	Area burnt 2007	No of Fires burnt 2008	Area burnt 2008	No of Fires burnt 2009	Area burnt 2009	No of Fires burnt 2010	Area burnt 2010	No of Fires burnt 2011	Area burnt 2011	No of Fires burnt 2012	Area burnt 2012
January											21	3944	11	599	2	408	4	93	-	-	4	42
February											23	6690	4	240	-	-	1	1	-	-	1	1
March											41	44145	5	220	-	-	-	-	-	-	9	657
April											14	3369	7	119	3	20	1	10	3	430	21	1301
May											37	16 330	20	566	9	117	44	821	8	1006	48	6130
June											47	97871	24	3 052	24	1156	113	14779	86	9752	49	5240
July											25	18 1203	91	15 243	43	1798	88	24110	73	1154	2	6699
August											65	104466	129	76 138	50	4962	112	45438	14	11251	7	21136
September											44	41661	88	54 743	60	8184	114	20226	8	12480	1	11875
October											-	-	57	34 538	-	-	135	18304	16	4632	-	1090
November											-	-	24	22 603	-	-	6	3701	-	-	-	-
December											-	-	-	-	4	1700	-	-	-	-	-	-
Current total		400000	104	258600	107	202662	116	95576	876	69144	373	432987	460	211 061	195	35169	618	47042	45	27468	9	244403
Source		Plans	DPLG	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's	FPA's

Comparison of fire stats for Free State



WoF battled through 212 fires in Limpopo last year

Notable 2012 fire statistics:

Wildfires

Region: Free State

A total of 162 000 hectares burned in an August wildfire

Region: Northern Cape

A total of 370 000 hectares burned in the October to December period

Region: KwaZulu-Natal

A 50km stretch of land was burned in Escort on 25 August 2012

Residential fires

Region: St Francis, Eastern Cape

A total of 75 buildings, including 68 houses, six flats and an office premises, were destroyed or damaged causing tens of millions of rand in damage.

Farm land

Region: Free State

Farmers termed the fires that took place in August – the worst they'd seen

Deaths

Region: KwaZulu-Natal

2012 claimed the lives of three people (an average for the region). Only three fatalities

Region: Limpopo

This region had a total of four fatalities in veld and forest fire incidences.

▶ on 3 January 2012, and the last fire took place on the 19 October, according to UFPA manager Malcolm Procter.

He says, however, that the main fire season started towards the middle of the year in July.

With an average figure of 238 000 hectares burned per annum in the Free-state, 2012 saw a marginally higher area of 244 575 hectares burned for the year.

Procter says that the single most devastating period for fires in the Free State occurred on 11 August with the passing of a cold front.

This resulted in the loss of 162 000 hectares in 34 fires on the day, compared to a total fire count of 357 fires for the region in 2012.

In some cases the larger wildfires in the Free State called on the services of up to five Working on Fire (WoF) teams and as much as 70 farmers, states Procter.

The fires that burned on 11 August included 60 000 hectares burned in De Wets dorp, 55 000 hectares in Memel and 11 000 hectares in Reitz on the same day. While these fires were the biggest wildfire cases in the Free State, Procter reports that 'only ground resources and the prevalence of snow in the region put out the fires on 11 August.

A total of three fatalities (average for the region occurred in Free State in 2012, and a total of eleven injuries were sustained as a result of the wildfires.

Limpopo

The first fires reported for Limpopo in 2012 occurred on 7 May, with the last occurring on 26 November, states Limpopo's Umbrella Fire Protection Association Chairperson, Trevor Phillips.

The UFPA reports that there were five major fires in the region for 2012 and these occurred in the areas; Izaneen Community, Williams Trust, Sondela, Marekele and Sterkrivier Nua Ranch.

Phillips says that 90% of the fires recorded were suspected human element in its cause, and mentions that Working on Fire (WoF) attended 212 fires in the region.

The Sondela fires that took place in the course of the year claimed two lives, reports Phillips. It also resulted in the loss of 64 residential dwellings and 1 500 hectares burned.

Phillips says that the services employed for these fires include forest fire fighting teams, spotter planes and choppers.

North West

At the time of going to print, no fire statistics were received from the UFPA in the North West. ▲

Haiti two weeks after the earthquake: scenes of devastation in Fort National



Technical search

using technology to find trapped victims - with some help from man's best friend

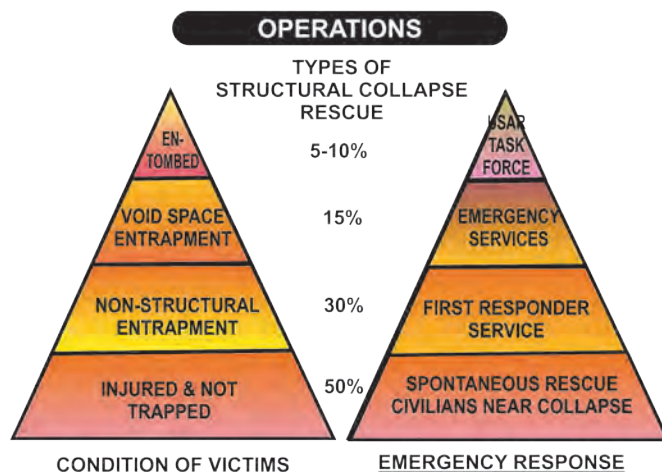
By Colin Deiner, Chief Director, Disaster management and Fire Brigade Services, Western Cape Provincial Government

Rescuing a person trapped in a collapsed structure is arguably the toughest rescue job you could possibly be asked to do. It could take up to twelve hours plus of frustration and backbreaking work to eventually access a victim and remove them from their predicament. Most important, you would want the person to be alive when you finally get to do this.

Technical rescue, in the urban search and rescue context, refers to the search and location of people trapped in collapsed structures by using electronic equipment such as seismic and acoustic listening devices, fibre optic and video based search cameras and canines. Urban search and rescue response normally consists of four phases. The first phase would be immediately after the structural collapse, when many of the victims are not trapped at all and can merely be removed from the surface of the structure without much effort. This normally accounts for 50% of all victims and is done by bystanders or informal responders. The second phase consists of persons that are partially trapped and need some sort of assistance to be extricated. Approximately 30% of all victims will be found in this situation and can be extricated by the local emergency services.

It starts getting tricky when you get to the third phase when you will find approximately 15% of victims trapped in voids formed by collapsed structural members (beams,

walls etc). These people can, in many cases, be rescued through technical rescue squads using methods such as the grid (line-and-hail) search that is performed by a group of rescuers moving in a line over a collapsed structure and identifying voids that have formed where after they shout into the void, listening carefully from a response from a trapped victim. The remaining five percent of victims (fourth phase) are generally trapped deep within a structure ▶



This graphic indicates the condition of victims vs the relevant emergency response in operations for structural collapse

- ▶ and the only possible way of locating them is through a careful process of elimination and the application of specialised skills normally only found in within an urban search and rescue (USAR) task force.

Where to start

Searching for entombed victims in a collapsed structure can be likened to looking for the proverbial needle in a haystack. If you consider that you may be looking for only 5% of a multi-storey structure's inhabitants when all its floors are laying on the ground you will appreciate how challenging this can become. When you extrapolate this scene to an earthquake scenario, where you might be required to search any number of structures of this size, the situation could become overwhelming. For the purpose of this article, I will only focus on a single structure, however the practices proposed here, can be adapted to include more than multiple structures on the same collapse site. So how do we go about it?

First up we need to establish a strong incident command structure and develop a search plan. It is only by marrying our plan and the resources at our disposal to the risk, that we can achieve any success. Having had the opportunity to be involved in the management of several structural collapse search and rescue operations in the past, I have used a simple method of asking six questions which will guide my thinking and give me an idea of where trapped victims might still be.

Question 1. Time of day? That will indicate where in a particular building people might be at a specific time. If it was at 02h00 in the morning, most people would be in bed. If it was mid-morning most people would be at work or in school.

Question 2. Time of year? A seaside location with a warm climate will pose different challenges to an industrial region in the middle of winter.

Question 3. What was the building used for? If it is an office block, you should be ok. If it was a residential complex, prepare to be busy for many days.

Question 4. What did the building look like? A detailed plan indicating the location of bedrooms, offices etc will give us a fair idea of where the people were located when the disaster happened.

Question 5. How did the structure collapse? This question can give us a number of clues. If it was an explosion, you will generally find debris spread over a large area and victims might be thrown a fair distance away from their original location. If it was an earthquake and people had a few minutes warning, we might find them under certain solid structures such as tables or in corners.

Question 6. How and when was the building constructed? The type of building materials used and the age of the materials will dictate that the structure behaves in a certain way during the collapse. The older the concrete, the more sturdy the structure, contrary to popular belief.

A practical example of the above method was the response to the Marmara earthquake in Turkey in



Emergency crews conduct a search and rescue exercise amidst the rubble of the World Trade Centre in New York in 2001

August 1999. Our small South African team was tasked with searching two, eight-storey structures in a town called Cinarcik on the southern banks of the Marmara Sea. Cinarcik is a large commercial town housing a fair number of its population in low cost housing projects. The earthquake occurred around 03h00 in the morning, when most people were in bed on a warm late summer night. The buildings both shook vigorously before the floors collapsed on top of each other in what is known as a "pancake" collapse, basically resembling a stack of pancakes on a plate, before tilting slightly forward.

From the above information, we were able to ascertain that most people would be found in their bedrooms or in the passages leading from the bedrooms to the front doors, or to their children's rooms. We found 12 victims during these operations and all of them were found in the close proximity of these areas. The fact that the buildings belonged to the local council also allowed us to get good plans of the residential units and accurately determine the location of the various rooms.

I'm not exactly certain of the origin of this rule (apologies to whoever developed it for not giving the appropriate credit), however I do recognise that person, or persons, for a practical solution that has worked for us over the years.

Know your resources

Any technical search and rescue operation is totally dependent on the types of rescue equipment available and the quality of staff at your disposal. Conducting a "full-on" search with seismic and acoustic listening devices and search cameras will need a minimum of seven well-▶

Technical search

► trained individuals as well as a rescue crew capable of breaching reinforced concrete, cutting steel construction and lifting heavy components of a collapsed structure. If you are dealing with more than one collapsed structure, you will have either to increase your staff or develop a plan whereby each of the buildings are triaged and prioritised by your structural and hazardous materials specialists before committing your specialist search teams to what will be a long and involved operation.

How do you do this? Assuming you have a full urban search and rescue task force available, start by separating the search component from the rest of the task force and then splitting the rescue and support component (of the task force) as well as the search teams in two. The search team component should consist of the following:

- **Search team manager** (1) - functions as search/recon team supervisor, records information, and communicates details and recommendations back to the task force leader
- **Canine search specialists** (2) - conducts canine search operations and verifications of alerts
- **Technical search specialist** (1) - conducts electronic search operations including acoustic/seismic listening devices and/or electronic viewing equipment
- **Medical specialist** (1) - provide medical treatment for search/recon team members and recovered victims
- **Structure specialist** (1) - provides advice regarding building stability, shoring, stabilisation, access, victim location, hazard assessment and marking
- **Hazardous materials specialist** (1) – monitors atmospheres in and around voids and confined spaces. Assesses, identifies and marks hazardous materials dangers. Works with structure specialist regarding hazard assessment and marking.
- **Rescue specialists** (2) - provide assistance to the search/recon team including drilling/breaching for electronic viewing equipment and/or deployment of listening devices

The first search and recon team's role will be to conduct a hazard assessment (unstable structures, hazardous spillages, rats, etc), conduct an initial search and perform any priority rescues. They will achieve this in the following steps:

- Draw a plan of the structure and area to be searched
- Determine the obvious hazards
- Conduct an initial search
- Determine equipment needs
- Mark the position of the trapped victims using the International Search and Rescue Advisory Group (INSARAG) building marking system

The search team must travel light and not be hampered by large volumes of equipment that they will need to carry with them. An assortment of search, medical and light rescue equipment will suffice. The following equipment list will be sufficient:

- Hammer drills (preferably battery-operated)
- Electronic viewing equipment (SearchCam, fibre optic)
- Electronic listening devices (acoustic, seismic, etc)
- Atmospheric monitoring equipment (flammable, toxic, oxygen-deficient atmosphere).
- Marking materials (orange spray paint/surveyors tape and barrier tape, etc)
- Alerting devices (loud hailer, aerosol horns for emergency signalling).
- Medical kit (paramedic backpack)
- Structure evaluation equipment – evaluation forms, measuring devices (clinometer, range finder), recording devices
- Personal gear - per person (safety equipment, food, water, etc)

Once these activities have been completed, the team will move on to other structures or other areas within the same structure if required.

The search team will be followed by the first half of the task force, who will continue the search and rescue operations and, once completed, do a reassessment of the structure to determine if any further work still needs to be carried out. The work of this group will consist of the following:

- Securing and maintaining sustained entry points
- Easy breaking and breaching
- Easy victim removal

If this group has established the possibility of more people trapped, the second component of the task force will move in and conduct detailed rescue operations. This will release the first-in team and will allow them to move on to another structure. The second half of the task force should be better equipped and will be responsible for heavier rescue work and the removal of multiple victims.

Their work will consist of the following:

- Difficult search work
- Structural shoring ►

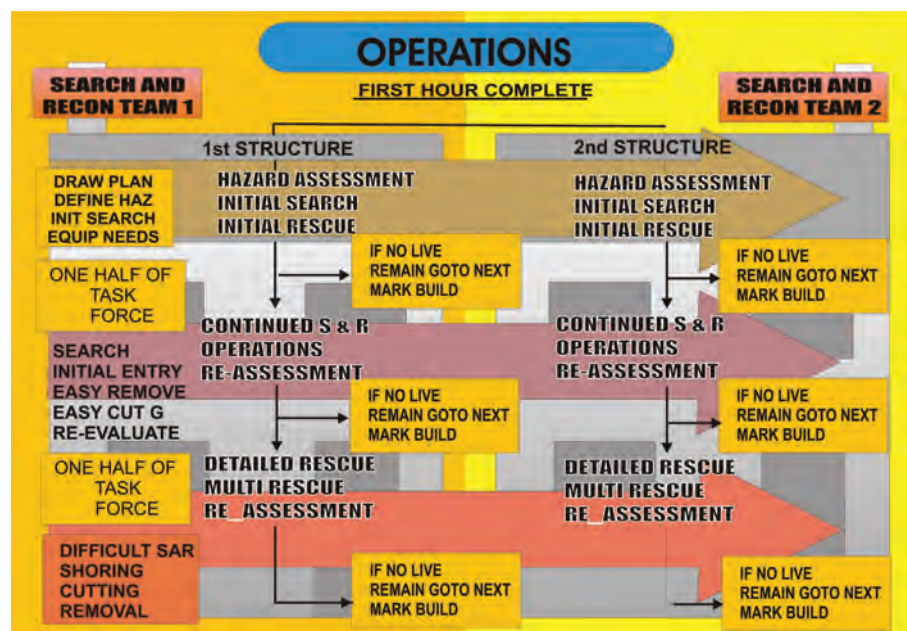


Figure 2 The sequence of operations conducted by a task force at full capacity during a complex, multi-structure operation



Photo: Ally Rogers, Photo Editor, Belvoir Eagle

Cheetah, a military working dog, helps show Staff Sergeant Allen Tacho and a small rescue squad where victims are trapped under rubble from a helicopter crash

- ▶ • Concrete breaking and breaching
- Metal cutting and relocation
- Trapped victim access and removal

Figure 2 shows the sequence of operations conducted by a task force at full capacity during a complex, multi-structure operation.

Canine search and rescue

Following the establishment of an operational command system, the next step that must be taken is to determine the search methodology that will need to be followed. When dealing with a large building or multiple collapsed structures, you will normally start by conducting a “wide-area” search consisting of a grid search to start off with followed by a more detailed canine search.

The value of using dogs to conduct search and rescue operations has increased exponentially over the last two decades since they have been trained to develop the ability to find live victims. During the 1999 earthquake in Izmet, Turkey, a dog from the Hungarian rescue team was able to locate a live toddler trapped underneath the body of her dead mother and covered in several layers of rubble for an extended period of time. This is a great example of the value of search and rescue dogs that are capable of discriminating between live and dead victims.

Dogs have a scenting ability 44 times more than that of humans and are able to discern the unique characteristics of a human’s scent which is generated by the shedding

of more than 40 000 dead cells per minute. Due to the subsequent bacterial activity, vapour is produced which then permeates the surrounding air. Each vapour has a specific relative density and moves very similar to smoke. Should a person be trapped beneath several layers of collapsed structures, the scent will move through any prevailing void spaces and the canine handler must form a clear picture of the collapsed pattern of the structure to determine where the scent is emanating from. The dog might indicate a positive scent at a particular void opening but the victim might be located in a remote area from this opening.

Search and rescue dogs represent the ultimate level to which these animals can be trained. Generally, dogs that are non-aggressive but have a high work and play drive are considered suitable for this task and then trained for a minimum of six weeks. These dogs are initially trained in the wilderness environment and if found to be competent they are then moved on to the USAR phase.

As important as training the dogs, so important it is to ensure that the handlers are as well trained to trust and understand the dog and its way of working. It also important for all operational members of the task force to at least have a working knowledge of the canine search and rescue process.

During a search mission, the canine handler will work closely with the search team manager and advise him/her on the ability and challenges that the dog may have ▶



During the search mission, the location of any known or potential victim may be obstructed by debris

▶ in carrying out the search plan. Initial things that must be considered include the time of day, wind direction and size of the area needing to be searched. If it is a large site, it is then normally divided up into smaller, more manageable, parts. It is a rule that two dogs are to be used on any search mission (more about that later). From a safe zone, the first handler will deploy his/her dog to cover the designated area. If no alerts are made during this phase, the handler may direct the dog to perform a finer grid search. Should a positive alert be indicated a second dog would be sent on to the site to verify the first alert. It is only when both dogs alert at the same point that a rescue effort will be started. It has been found in the past that dogs tend to generate false alarms when they get tired or despondent by not finding a victim for a long period and for this reason, the second dog verification is important.

Once the canines have completed the initial search, they are then moved off the site to enable the removal and relocation of concrete and steel etc. They should however not be moved too far away and can be brought back on site at various intervals to recheck the areas previously indicated.

Remember that dogs are not machines; they can get tired and need to rest. They can also be injured and need plenty of attention. They also have their off-days and generally work better in a cooler environment and on a stable site. Hot weather, strong winds and the presence of chemicals will have a negative impact on the dog's ability to work effectively and it must be managed in the best way possible when these circumstances prevail. If the use of fuel driven equipment is necessary the area must be ventilated before a dog is brought into the area for a follow up search.

Your canine search team offers many advantages. It is able to cover a wide area in a short time, gain access into confined areas and work on site that could be dangerous for humans to work on. Dogs can also locate live, unconscious victims that cannot be done with electronic search devices. There are also some disadvantages, the main one being the fact that it is a scarce resource. The training, certification and recertification of search and rescue dogs is a costly exercise. The bottom line, however, is that the canine SAR component is an integral part of the USAR team that must be looked after and maintained properly.

Technical search

Technical search can be defined as the searching of a collapsed structure using seismic and acoustic listening devices and search cameras to locate trapped victims.

The use of seismic and acoustic devices have become common practices with all international search and rescue teams and provide a particular advantage when the victim's scent may not reach the surface and therefore be inaccessible to search dogs.

Search missions involving the use of listening devices are generally more refined than canine searches, cover a more defined area and are of a longer duration. Device operators are usually focussed on the small area they are covering and it might be necessary to deploy additional lookouts to oversee the safety of this group.

Operations with listening devices would generally involve the deployment of an array of two or more pick-up probes around the perimeter of a building or collapsed area. A hailing device will be used to attempt to give direction ▶



Search and rescue volunteers practicing with a telescoping camera to explore pile of rubble

▶ to any conscious victim trapped within the structure. The victims should be directed to make a repetitive sound (ie “knock repeatedly”). The repetitive reaction from the victim will provide the operator with an identifiable sound to detect. The general area should be made as quiet as possible during this operation and the incident commander should be able to communicate with all earth moving machinery in the vicinity of the search operation. If detected, the different probes are assessed separately to determine which gives the strongest indication and should theoretically be closest to the source of the sound/victim. If necessary, the array of probes may then be triangulated (around the area of the original probe giving the strongest indication) to more precisely identify the victim’s location. If two or more sensors are available and a signal is heard, the louder sensor should be left in place while the other sensors are moved step by step in a circular fashion around the first sensor. The optimum indicator of the location of the victim will be at the point where the loudest sound is picked up. When conducting a seismic search, there are some important pointers to keep in mind:

- Always have two people listen to the sounds. One person may fixate on a particular sound and not be able to discriminate this sound from ambient sounds such as machinery operating nearby.
- Keep in mind that the majority of collapsed sites constructed out of different materials: steel, concrete,

brick, and wood each material having a different sound transmission capability. Always place the probes on the same materials. If one probe is on concrete and the other on steel, you will get a distorted amplification on the steel structure.

- Listen for an uneven tapping. The victim might be injured or exhausted and tapping may be weak and without any clear rhythm (other than a concrete breaker or generator working close by).

Search cameras and fibre optics

Search cameras and fibre optic search devices have become particularly valuable when search teams have drilled a series of holes (in a floor space or collapsed wall) and an operator(s) subsequently follows with the search device to make a quick assessment of the void space.

Although this equipment is relatively simple to use, the most difficult aspect is to master is the determination of which direction one is viewing when the instrument is inserted into a drill hole or void opening. This requires consistent training and familiarisation with the specific device being operated. The equipment is also affected by the rescue squad when cutting/breaching near a victim.

While fibre optics are usually fibre scopes running down a flexible outer body which can be remotely manipulated in a specific direction and used in a number of applications, ▶



Damage caused by the Marmara earthquake in Turkey in August 1999

- ▶ a SearchCam is a pole mounted camera specifically designed for urban search and rescue. The camera itself is remotely movable over a ± 90 degree angle. In addition, a high definition monitor displays a television like picture in front of the operator.

The SearchCam is typically operated by drilling a hole (slightly bigger than the head of the camera) using a core drill bit into a void. The very light sensitive camera head is placed into the hole where a built-in light source will illuminate the interior of the void. Turning the telescoping pole and using the articulation allows viewing in all directions. A microphone and speaker will allow listening for sound and possibly communicating with a victim.

Both the SearchCam and fibre optics are very useful tools, not only during the search but also during extrication, where it can guide cutting and avoid hurting the victim. The newer SearchCam versions also have the ability to record the picture as well as transmitting it back to the command post.

Building and victim marking

A very important aspect of search and rescue operations is the building marking systems that are used universally to indicate that a structure has been searched and what the result of that search has been. The INSARAG building marking system will be used by all teams working on a specific mission and has been designed to be easily and universally understood.

The basic symbol consists of a one-metre-by-one-metre square box at the primary access point into any compromised structure (this is usually done with luminous spray). On various parts within the box, certain information is provided by the team who has searched the area. This information relates to the location and condition of the victims, possible hazards identified, persons unaccounted for and the details of the search (time started, time completed).

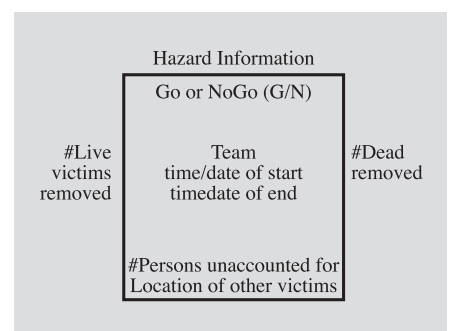
The reason for this practice is to ensure that a structure is not searched for a second time (which used to happen often in the past) and that any teams arriving after the departure of the first search team are well informed of any remaining work that might have to be done.

During the search mission, the location of any known or potential victim may be obstructed by debris and only located by means of specialised equipment. In certain cases, it may also not be possible to immediately remove the victim. In this case, a large "V" is drawn near the location of the known or potential victim.

- The letter "L" with a number will denote the number of live victims
- The letter "D" with a number will denote the number of dead victims.



Building marking in Haiti



Structure marking

Conclusion

In this article, I have covered a very technical and advanced topic. However, this capability does not readily exist, although I must add that South Africa has some of the best and most experienced technical search operators I have encountered. This capacity has been built up over a number of major disaster responses in recent years. I think it is important for us to realise the importance of having access to this kind of capacity and continuously supporting its further development. ▲



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Fire fighter selection: compliance to minimum requirements including fitness and medical standards should be a necessity



Entry standards for structural fire fighters

By Lenny Naidoo, chief fire officer, Rural Metro Emergency Management Services, South Africa

One of the most critical issues facing our fire services at present revolves around how we select our fire fighters.

In theory, we should scrutinise the job description of a fire fighter and align the tasks and skills required to perform the job of a fire fighter.

When we look closely at what fire fighters are expected to do, it becomes clear that there are minimum requirements that any prospective fire fighter needs to meet.

Fire fighters are expected to attend to:

- Fires
- Rescues
- Hazardous materials incidents
- Medical incidents
- Humanitarian requests

All of the above requires knowledge, skills and attributes and, due to demands of the job, physical fitness and medical standards are a necessity.

Educational requirements

There are various different criteria for fire fighters wanting to enter the fire service currently. Different criteria bring about various problems for fire fighters that want to move from one fire service to another. A fire fighter may satisfy all criteria and yet may not be able to get employment at another service. Let us consider the qualifications necessary to become a member of the service: there is no prescribed level of education for entry. Municipalities are now starting to enforce Matriculation Certificate (Grade 12) or NQF 4 as a requirement. When one looks closely at the Matriculation Certificate as a requirement, the question can be raised as to which subjects are acceptable. Should mathematics and science be mandatory or preferred? If mathematics is listed, then what level of mathematics would be deemed acceptable?

Inherent job requirements

Fire fighters are expected to work under the most testing conditions. Incidents will require fire fighters to

work in dark, cold, wet, hot and dirty conditions. In addition, incidents could last for extended periods and could be at height or below ground. These factors require fire fighters to be screened for acrophobia (fear of heights), claustrophobia (fear of confined spaces) as well as fear of working in water.

A way to measure abilities could be to:

- a. Subject prospective fire fighters to climb up and down a ladder using the accepted techniques within a predetermined time.
- b. Set up a circuit that the candidate must negotiate within a specified time. The circuit should simulate dark conditions and confined spaces.
- c. Request the candidate to move across water, not necessarily swimming, and then retrieve an object from the bottom. The level of water could be approximately 1,5 metres. The objective here is not to test ability to swim but rather to determine if there is a fear of water. ▶

► Physical fitness requirements

This is a contentious issue for two reasons:

- It impacts on the intake of women and
- Is often criticised as to what exactly is being measured.

Again, there are different criteria being applied. Very common is the assessment of aerobic fitness whereby candidates are subjected to 2,4 kilometre run within a specified time. Upper body strength is sometimes measured by subjecting candidates to bench press using free weights and the weight for bench press is rated to the candidate's body weight. Flexibility, explosive strength and ability to grip are in some cases part of the criteria.

All the above can to a certain extent measure the ability of a fire fighter to perform at an acceptable level.

In using the above method, the "grey area" will always be in its relation to the age of the candidate and its application to either male or female. It will always be argued that fires and rescues are not selective to whether you are male or female, young or old. Understandable – gender equality will be argued if the same standards are applied to males and females. It can be argued that females should be given the opportunity to develop if they show potential.

In addition, consideration must be given to when and how often the assessments are conducted once a candidate is in service.

The possible solution to physical fitness requirements

We require a physical fitness assessment that measures ability irrespective of age or sex. Candidates must be tested against various tasks performed during fire rescue operations.

The United States has a program called Candidate Physical Ability Test (CPAT) that measures the capabilities of fire fighting recruits along eight job-specific areas.

The following is a list of the components that make up CPAT (this is a pass/fail test):

Stair climb

For this event, you must wear two 5,7-kilogram weights on your shoulders to simulate the weight of a high-rise pack. Prior to the initiations of the timed CPAT, there is a 20-second warm-up on the step mill at a set stepping rate of 50 steps per minute. During this warm-up period, you are permitted to dismount, grasp the rail or hold the wall to establish balance and cadence. If you fall or dismount the step mill during the 20-second warm-up period, you must remount the step mill and restart the entire 20-second warm-up period. You are allowed to restart the warm-up period twice. The timing of the test begins at the end of this warm-up period when the proctor calls the word "start". There is no break in time between the warm-up period and the actual timing of the test. For the test, you must walk on the step mill at a set stepping rate of 60 steps per minute for three minutes.

Hose drag

For the hose drag event, you must grasp a hose line nozzle attached to 60 metres of 45 millimetre-diameter hose. Place the hose line over your shoulder or across your chest, not exceeding the 2,4-metre mark. You are permitted to run during the hose drag. Drag the hose 23 metres to a pre-positioned drum, make a ninety-degree turn around the drum and continue an additional 7,6 metres. Stop within the marked one-and-a-half-metre by two-metre box, drop to at least one knee and pull the hose line until the hose line's 15-metre mark crosses the finish line. During the hose pull, you must keep at least one knee in contact with the ground and knee(s) must remain within the marked boundary lines.

Equipment carry

For the equipment carry event, you must remove two saws from the tool cabinet, one at a time, and place them on the ground and adjust your grip. Upon return to the tool cabinet, place the saws on the ground, pick up each saw one at a time, and replace the saw in the designated space in the cabinet.

Ladder raise and extension

For this event, you must walk to the top rung of the 7,3-metre aluminium extension ladder, lift the unhinged end from the ground and walk it up until it is stationary against the wall. This must be done in a hand over hand fashion, using each rung until the ladder is stationary against the wall. You must not use the ladder rails to raise the ladder. Immediately proceed to the pre-positioned and secured 7,3-metre aluminium extension ladder, stand with both feet within the marked box of 910mm x 910mm and extend the fly section hand over hand until it hits the stop. Then, lower the fly section hand over hand in a controlled fashion to the starting position.

Forcible entry

For this event, you must use a 4,5-kilogram sledgehammer to strike the measuring device in the target area until a buzzer is activated. During this event, you must keep your feet outside the toe-box at all times. After the buzzer is activated, place the sledgehammer on the ground. ►



Stair climb



Hose drag



Equipment carry



Ladder raise



Forcible entry



Search



Rescue drag



Ceiling breach and pull

Spice up your leadership with vision

By Wayne Bailey, Board Member, International Fire Service Accreditation Congress (IFSAC), USA

Have you ever heard the inner voice speak out to you? That's the birthplace of vision. The inner voice that starts within and is asking, "What is your mission in life?" Whatever you put your sights on, it will not come to pass unless you have a "Why that makes your cry." What is your why? What is the very thing you can't live with or without.

What makes you work day and night and reminds you of your vision? You work a couple of extra shifts a week or month? Perhaps sending your kids to private school? Having a second home on the beach? I'm not talking about becoming a slave to your job, but to what keeps you focused? Unless there is a strong enough reason and it comes from the depths within, you will not accomplish the task or goal.

There is the grumpy voice. You're the one that can take a lemon and turn it into lemonade with this voice. If you're



Wayne Bailey

discontent with life, the very thing you're disgusted with can bring you a vision to make life better. If you're tired of sitting in traffic everyday on

the way to work, you just might come up with a vision to work from home, change your work schedule to leave home early and leave work early find a way to work from home or your favourite vacation spot. If you make positives changes in your life because of the stress, you have the catalyst for vision.

The smiley voice knows you're unable to accomplish great things alone. John Maxwell said, "If you want to lead others to greatness, find a good mentor, an advisor who can help you sharpen your vision." No one man or woman had ever accomplished anything great unless they had help. The CEO of a Fortune 500 company needs their employees. A fire officer knows he or she can't fire alone. Even the richest men and women in the world need others to help fulfil their vision. Zig Ziglar said "you can only get what you want, if you help enough other people get what they want", so practice giving before you ask a hand. ▲

► Search

For the search event, you must crawl through a tunnel maze that is approximately 0,9 metres high, 1,2 metres wide and 19,5 metres in length with two ninety-degree turns. At a number of locations in the tunnel, you must navigate around, over and under obstacles. In addition, at two locations, you must crawl through a narrowed space where the dimensions of the tunnel are reduced. Your movement is monitored through the maze. If for any reason, you choose to end the event, call or rap sharply on the wall or ceiling and you will be assisted out of the maze.

Rescue

For this event, you must grasp a 75-kilogram mannequin by the handle(s) on the shoulder(s) of the harness (either one or both handles are permitted), drag it 10,7 metres to

a pre-positioned drum, make a 180 degree turn around the drum and continue an additional 10,7 metres to the finish line. You are not permitted to grasp or rest on the drum. It is permissible for the mannequin to touch the drum. You are permitted to drop and release the mannequin and adjust your grip. The entire mannequin must be dragged until it crosses the marked finish line.

Ceiling breach and pull

For this event, you must remove the pike pole from the bracket, stand within the boundary established by the equipment frame, and place the tip of the pole on the painted area of the hinged door in the ceiling. Fully push up the 27,2-kilogram hinged door in the ceiling with the pike pole three times. Then, hook the pike pole to the 36,3-kilogram ceiling device and pull the pole down five times.

Each set consists of three pushes and five pulls. Repeat the set four times. You are permitted to stop and, if needed, adjust your grip. Releasing your grip or allowing the pike pole handle to slip, without the pike pole falling to the ground, does not result in a warning or constitute a failure. You are permitted to re-establish your grip and resume the event. If you do not successfully complete a repetition, the proctor calls out "miss" and you must push or pull the apparatus again to complete the repetition. This event and the total test time ends when you complete the final pull stroke repetition or as indicated by a proctor who calls out "time."

This type of testing is fair and any candidate wishing to enter the service will clearly understand the requirements and can practice and train accordingly. ▲



Rope rescue: knots by the numbers

By Schalk van der Merwe, lecturer, Cape Peninsula University of Technology, Department Emergency Medical Sciences

The static Kernmantle rope used for rescue consists of two major parts, the core that is the inner part and the mantle the outer cover that serves as protection for the core. The core is responsible for approximately 70 to 80% of the load to be carried and the mantle the balance at between 20 to 30%. The exact numbers will be manufacturer dependant.

When you bend the Kernmantle rope, consider the 'four-to-one' rule so to ensure equal distribution of the



Four to one rule

load throughout the entire rope. The 'four-to-one' rule means that when we bend an 11mm rope, the bend diameter should be 44mm. When the rope bends beyond the 'four-to-one' rule, a stress concentration is created as what can be seen over a screw-link/carabiner or within the twists and turns of the knots we use in rescue.

This stress concentration is focused on the outside core, which will be stretched along with the outer mantle around the bend; whereas the inner parts of the rope will have to be bunched up. This is identical to what is seen when you bend your finger with the skin over the knuckles: it stretches and thins hence why your knuckles appears whiter and the crumpling of the skin at the bottom of your finger. A stress concentration will result in an uneven distribution of the load throughout the rope.

The tying of knots is not just about having nimble dexterity; there are critical underlying concepts in the tying of a knot. Understanding stress concentrations allows the rescuer to grasp how the introduction of knots into the rope reduces the efficiency; however, this reduction is only in effect so long as the knot is in place, with the rope returning to its original rated strength once you remove the knots from the system. These stress concentrations can be minimised by tying the appropriate knot and dressing it prior to loading the knot. A good knot will minimise stress concentrations by spreading the frictional force over a greater surface area within itself, resulting in improved efficiency over another knot for instance. Knot dressing is in essence the manipulation of the loops and lines within a knot as not to run across each other, but rather parallel and a worthwhile investment in safety and performance of our knots. It has been found that the failure to dress knots could contribute to a 50% reduction in the knots initial efficiency.

These efficiency losses will not have a compounding affect. The system efficiency can be determined by identifying the weakest knot within the system. For example, the system ▶

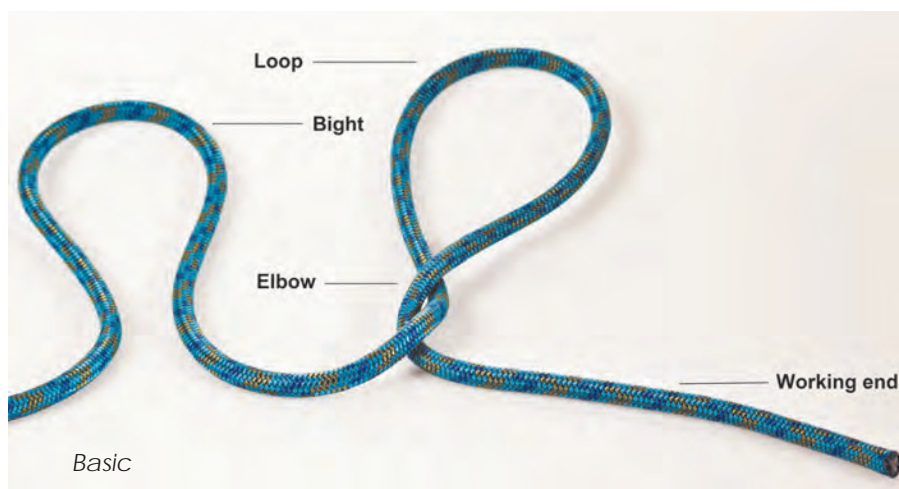


Figure eight on bight cross loaded



Double loop figure eight B

loading these knots by loading it end to end instead of from the loop(s), will cause a significant loss in efficiency by approximately 56%.

2. Follow through figure of eight (not the same as a Flemish bend) ▶



Follow through figure of eight B.



Follow through Figure of Eight C

▶ efficiency will be 100% (no loss in rating) by making use of a tensionless hitch as an anchor. This is because the knot at the end of the line is not bearing any load. The anchoring line the system efficiency will be reduced to ~80%, should you make use of a figure of eight on a bight.

As mentioned earlier, different knots have different efficiencies due to the bends that were created by their construction. This also varies with the type of rope used and the condition of the rope ie wet versus dry. For instance, nylon rope can lose up to 15% of its strength when wet. Rope and webbing configuration lend themselves to being inherently tight or inherently loose. Construction materials and the stretch of these materials, such as nylon, tend to tighten some configurations (double fisherman's, alpine butterfly and figure of eight on a bight), while loosening others (bowline and clove hitch). Understanding this vital element regarding knots assists us in understanding the need for safety knots.

It remains good practice to make use of safety knots irrespective of the inherent characteristics of the knots used in rescue operations. The fisherman's bend and the figure of eight are the most common safety knots I have seen used.

The Ashley book of knots -1944- ABoK numbering will be used for clarity due to the nebulous nature of naming knots. For instance, the figure-eight loop is also known as the Flemish loop, Flemish eight or the figure of eight on a bight, which is perhaps the most commonly used. However, despite the regional terminology,

a single ABoK number of #1047 for figure of eight on a bight exists. The ABoK numbering system will also assist you when exploring the fascinating world of knots.

Knotting by numbers

The foundation of rope rescue was built on the figure of eight knot (ABoK # 420) and the subsequent variations or "evolution" of the figure of eight. After all, it is only a turn and a half around itself! The figure of eight is an excellent safety knot as it prevents the line from running through the device and an indication that the end of the line is approaching. The family of figure of eight knots is widely accepted within the rescue community and have since evolved into the figure of nine and the subsequent figure of ten knot. Some of the popular knots within this family are as follows:

1. Figure of eight on a bight



Figure eight pure

The figure of eight on a bight knot (ABoK #1047) is often used as an anchoring knot within the system. Anchor dependent, the double loop figure of eight, a variation of the usual knot, is a very efficient knot by between 77 to 80%. The double loop figure of eight is also a popular choice when constructing an equalised anchor and litter rigging. Cross

► The follow through (ABoK #1047) is essentially the same as the figure of eight on a bight including its efficiency, but threaded in reverse (rewoven with parallel ends), typically around a single anchor point or through your harness. The follow through figure of eight often requires a safety knot. The Flemish bend or figure of eight bend (ABoK #1411) is typically used to join ropes. The Flemish bend has



Flemish bend A

been punted as being more secure as the popularly used knot within the fire service such as the sheet bend. The Flemish bend differs from the follow through figure of eight by means of threading opposing ends. Safety knots are mandatory should you use this for rescue purposes. The efficiency of the figure of eight bend is yet to be established as results range from 50 to 81%.

3. Inline figure of eight and Alpine butterfly



Alpine butterfly

The inline figure of eight (ABoK #1058), also known as a directional figure of eight, is commonly referred to as a loop knot and used often therefore its pairing with the Alpine butterfly knot (ABoK #1053) as many technicians use them interchangeably with the inline figure of eight also being made on a bight. The inline figure of eight is designed for an unidirectional load and thus having limited functionality. The Alpine butterfly has gained great popularity at the expense of the inline figure of eight mostly because of the efficiency of the working end.

Both loops, when loaded, have 75% efficiency, where the butterfly trumps the directional eight by being able to multi-directional (three directions) load, thus voiding the possibility to be cross loaded. These loops are often used at the point of the stretcher and jockey, where the jockey has the ability to manoeuvre below the tender (single person load).

This indicates that one should consider the efficiency of the knot when pulled end to end irrespective if there is load on the loop or not. The inline figure of eight has a dismal efficiency of ~59% compared to that of the Alpine Butterfly at ~69%. The location of the knot could be very useful and under minimal (Single Person) load when used as Jockey attachment onto the tender.

4. Figure of nine



Figure nine pure B

The figure of nine knot without a loop is shown here for the purpose of clarity. The figure of nine (ABoK #521) on a bight hasn't yet made significant inroads within the professional rope rescue fraternity, but is a stern favourite amongst cavers. There should be less stress concentrations within the knot due to the additional half-turn (before finishing) within this knot, consequently improving its efficiency, which ranges from 69 to 84%. By cross loading the figure of nine loop, it will have similar efficiency as a cross loaded figure of eight on a bight ie 55%.

The figure of nine loop uses extra rope to construct making this knot bulkier, but less likely to jam, and possibly easier to untie. It would be a useful knot to add to the repertoire of knots for rescue and is reported



Figure of nine on a bight anterior

to be useful in smaller, more flexible diameter ropes.

5. Figure of ten



Figure ten pure

If one looks at the progression of the figure of eight to the figure of nine with the addition of a half turn, it is expected that a full turn prior to finishing the knot, will result in the figure of ten. It has the inherent characteristics of the figure of nine, which is accentuated by the figure of ten on a bight by the significant increase in rope used for its



Figure of ten on a bight

construction. This knot is very bulky in comparison to the figure of eight and nine. The efficiency of the figure of ten would be approximately 73 to 87%. The figure of ten, despite its stated drawbacks, successfully spreads the frictional force over a greater surface area by means of the additional turns within the knot.

In conclusion

A good knot has certain characteristics:

- Easy to tie
- Easy to identify
- Secure once tied and wouldn't slip under load
- Maximum efficiency (minimises the loss in overall rope strength)

Make sure you are aware of the knot skills-set requirements for your organisation and, as goes for most technical skills, use it or lose it! I certainly encourage combined training events with allied services, as this is a great way to encourage skills retention and cross pollination of skills/techniques by rescue personnel.

Practice makes perfect! ▲



Mayor Leswafo Joshua Matlou,
Mopani District Municipality



The DMISA conference councillors

Disaster Management Institute of Southern Africa (DMISA) annual conference

Fire and Rescue International (FRI) attended the conference briefly reviews the DMISA conference in this edition of the magazine. However, some of the papers presented will be featured in detail in future editions of FRI.

Tzaneen's Karibu Leisure Resort and Conference Centre in Limpopo Province, South Africa hosted the recently held Disaster Management Institute of Southern Africa (DMISA) annual conference. The theme of the conference was 'Taking up the challenge: readiness for disaster risk reduction'.

The conference provided an ideal opportunity for the diverse range of stakeholders in disaster management from across Africa to gather and share skills, knowledge and experience and attracted more than 350 delegates from South Africa, neighbouring countries as well as international visitors.

The event was hosted/co-hosted by the Mopani District Municipality; Limpopo Provincial Government; the South African Weather Service (SAWS) and the National Disaster Management Centre (NDMC) of the Department of Cooperative



The customary DMISA candle lighting ceremony



Pat Reid's son, Barry Reid and his wife, Wendy, receiving the DMISA Gold Commemoration

► Governance and Traditional Affairs (CoGTA).

The conference started with the traditional candle lighting ceremony in remembrance of the victims of the disasters that occurred since the previous conference.

Dr Mal Reddy presented a very moving eulogy in tribute of Pat Reid, founding member and past president of DMISA. Schalk Carstens, together with Dr Mal Reddy, presented a Gold Commemoration to Reid's son, Barry Reid.

Schalk Carstens, president of DMISA, welcomed all to the 26th annual DMISA conference after which the acting executive mayor of Mopani District Municipality, Helen Moshobane, gave an overview of the disasters that the district and the rest of Africa faced.

The keynote address was delivered by Ken Terry, head of the NDMC, on behalf of Minister Richard Baloyi of CoGTA. "Communities must be able to understand the risks they face. Identifying natural hazards, and understanding its potential impact on people and assets is a fundamental element of guiding resilient development. Disaster risk assessment is valuable tool as it examines the likelihood and outcomes of expected disaster events. Disasters are complex problems", he stated.

Mmaphaka Tau of the NDMC, presented phase two of the United Nations' International Strategy for Disaster Reduction (UN/ISDR) theme for 2102 to 2015: Making South African municipalities resilient – my municipality is getting ready. He said, "there is an acknowledgement that disasters aren't natural; only hazards

are natural. However, hazards become disasters due to the actions taken when hazards happen". Tau elaborated on the ten-point checklist – essentials for making municipalities resilient. He furthermore stated that the ideal situation is an integrated approach to risk reduction and a 'bottom up and top down' method will assist.

Western Cape PDMC's Colin Deiner, presented delegates with an insight to South Africa's response to international disasters and gave a historic overview of urban search and rescue (USAR) on an international level and how the USA pioneered USAR. Deiner also described USAR practises, task force deployment and typical operations after which he outlined the history of South African USAR response teams and events covered. Operations in Japan 2011 were also reviewed and South Africa's readiness explained. "USAR is not a glamour job. Each member has to be fully trained", said Deiner.



Colin Deiner



Helen Moshobane



Mmaphaka Tau

The NDMC's head, Ken Terry, asked delegates whether they had read the Disaster Management Act 57 of 2002. Quite a number of attendees had not after which Terry flipped through his formal presentation and announced that his actual presentation will be in the form of a conversation. "Let's talk", said Terry. "I am a public servant and I serve the public. You cannot be in disaster management and not serve the public", he added. He said that government only gets a certain amount of money from tax and that is all they have to spend. He also said that disaster management isn't about money. He used Colin Deiner ►

DMISA conference



Ken Terry

► as an example and said that while Deiner was in Gauteng, he received a big budget and that the budget for Cape Town is small in relation, but he makes it work. "How do we take what we have and make it work? We need to keep our eyes on the ball and the ball is the public. We seem to work in silos and we don't like to share. It's all about attitudes. Disaster management is everybody's business", concluded Terry.

The conference, in usual DMISA custom, highlighted various other disaster management and risk reduction issues including feedback after the Duduza Tornado disaster in Gauteng; the feasibility of an informal settlement early flood warning system; the potential impact of line departments on community-based risk reduction; culture and gender-based biases and the vulnerability of black South African woman to HIV/AIDS and drought relief schemes.

Dr Johan Minnie of Aurecon, discussed leadership and management roles and options available to disaster managers in building resilient communities. Dr Minnie elaborated on the various leadership styles and challenges facing disaster managers and the alluded to the difference between managers and leaders. "Leadership does not equal management but leadership includes management," stated Dr Minnie. "Read, read read. You need to be able to change between leadership styles in accordance with the situation," concluded Dr Minnie.



Dr Johan Minnie

From paper to practice – making disaster risk management work was a presentation by Owen Becker of Buffalo City Metropolitan Municipality in which he addressed the lack of accountability and volunteerism. Becker also discussed national and provincial participation and the various legal instruments relevant to disaster risk management. He elaborated on the disaster risk management framework and discussed the various institutional scorecards saying, "if not required, it won't be done or audited."



Owen Becker

Ferdie Mocke of Disaster Management Solutions (DMS) presented an innovative scheme using fuel load reduction by turning it into energy through a viable business opportunity that could benefit communities.

Reducing the incidents of wildfires through hazard and risk mapping was a paper presented by Malcolm Procter of the Department of Forestry and Fisheries (DAFF) while Dr Andries Jordaan of DIMTEC, University of the Free State (UFS), discussed his study on drought in southern Africa and whether it is due to climate change or human intervention. Johan Stander of SAWS shared information regarding the guidelines for an estuary early warning system for South Africa.



Dr Andries Jordaan

"Can we deal with three disasters at the same time?" A question asked by Neville van Rensburg of the Western Cape government's health department in his informative presentation. Dr Jan Willem Proper of NHTV Breda University of Applied Sciences in the Netherlands deliberated resilience as an imperative in transport organisations while Olivia Kunguma of DIMTEC, UFS discussed public awareness campaigns with a special focus on the disaster risk reduction strategy for fire and flood hazards in the Western Cape.

The event was concluded by prescribing the resolutions of the conference and several special awards were made. Schalk Carstens, outgoing president, thanked all the sponsors, speakers, councillors and other facilitators as well as the administrative staff of DMISA for their tireless input. ▲



Special awards to members of the NDMC



Aurecon won the best exhibitor award



Winners in the lucky draw



SRK Consulting's team



Mdu Nxumalo of Umgungundlovo District Municipality and Mathabo Chueu of CoGHSTA Limpopo



Olivia Kunguma, Johannes Belle, Gerrie van Coppenhagen, Alice Ncube and Dr Andries Jordaan of UFS DiMTEC



Bizbox exhibited their highly nutritional bulk-feeding scheme



Aurecon's team

DMISA annual general meeting held



A new council was elected after the 28th Annual General Meeting of the Institute was held.

Dr Mal Reddy is taking over as president of the institute while Dr Johan Minnie was elected vice president.

The proceedings included a report from the president, reports from the regions of the institute (Tshwane, Limpopo, Southern Gauteng, Magalies, Western Cape, Algoa and KwaZulu-Natal) and announcements regarding the election of the DMISA Council.

The DMISA councillors were inaugurated and sworn in.



Robert Jowitt, Dave Sowden, Maggie Moropana and Theo de Hart of The Sysman Group



Susan Mothibi of UNISA with Thabo Khupari of Tlokwe City Council



Rural Metro's Charles Cary and Busani Ndlovu



Lebogang Maskile, Rudzani Malala, Francis Mosetho, Ntobeko Nkangane, Siyabonga Mthethwa and Dr Johan Stander of SAWS

SAIF/NMMU Saasveld Fire symposium

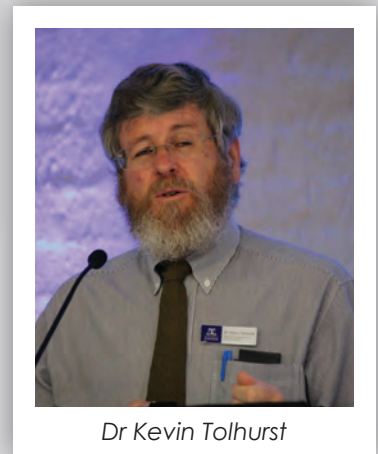
Nelson Mandela Metropolitan University (NMMU) Saasveld in cooperation with the Southern African Institute of Forestry (SAIF) recently held a symposium focusing on forest and wildfires.

The 8th Fire Management Symposium was held in White River, Mpumalanga, and boasted international speakers as well as several local fire experts.

The organiser of the symposium, Tiaan Pool, NMMU Saasveld, welcomed all attendees, presenters, sponsors and the media to the event. Ben Bothma of Komatiland Forests chaired the first session and introduced Dr Kevin Tolhurst of the University of Melbourne in Australia who discussed the long-term effects of continuous prescribed burning. Dr Tolhurst, who initiated and coordinated the Wombat Forest fire effects multi-disciplinary study, presented some of the findings of this on-going project. The study was initiated 25 years ago and has provided ▶



Tiaan Pool



Dr Kevin Tolhurst

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Dr Winston Trollope

► a comprehensive overview of the long-term effects of prescribed burning. "Fire has kept the species composition constant", said Dr Tolhurst. He also discussed the ecosystem's resilience and fire memory and concluded in saying that the three-year burning cycle in Australia has not lost any species and has allowed patchiness to develop assisting in the survival of small species/invertebrates. "Change isn't a bad thing if the resilience is sustainable", stated Dr Tolhurst.

Tonie Rossouw of the South African Weather Service (SAWS) discussed the interpretation of weather data for use in fire investigations. Rossouw suggested the use of satellite pictures to complete data in the case of an investigation. "A picture is worth a thousand words, stated Rossouw. He also gave a brief overview of their new product, forecasting product generator (FPG), the SAWS lightning detection network (LDN), the website for aviation data and invited attendees to visit the SAWS website. Rossouw also provided a brief look at the newly recommended National Fire Danger Rating System (NFDRS) and confirmed that it has been operational since 1 April 2012.

Mpumalanga Umbrella Fire Protection Associations' (MUFPA) Trevor Wilson detailed the NFDRS pilot project and presented an overview of the various fire danger indexes and data comparisons with the current fire danger index (FDI). Wilson also voiced MUFPA's concerns regarding the new NFDRS and said, "We have to marry the science with the operational reality". He also announced the formation of a task group that will be responsible for investigating the fire danger rating systems, both the FDI and the FDR, prior to it being gazetted. The task group is representative of all the UFPAs and DAFF. FRI will detail the issues regarding the NFDRS is its next issue.

Disaster Management Solutions' Ferdie Mocke delivered a presentation on an innovative biomass system, producing biomass pellets from invasive alien plants (or any other fibrous product) and a stove that will burn these pellets for use in cooking, heat generation and water heating for rural homes. Mocke described how alien invasive plants or any other vegetation excess or waste can be used in producing these biomass pellets and in doing so, reduce forest fuel loads and waste, which otherwise would have had an impact on fires. "It is not waste, it is an energy form", stated Mocke.

Tiaan Pool announced the newly developed higher certificate in Wildfire Management that will become effective in 2014. Pool profiled the Nelson Mandela Metropolitan University-Saasveld campus, its qualification framework and research projects. He furthermore ►

► explained the reasoning behind introducing a certificate in wildfire management, the target audience, exit outcomes and detailed the modules.

Kelvin Price of CW Price discussed smart weather information derived from Vital Fire Weather, one of his company's inventive services. Price, a veteran in the supply of weather data to the forest and wildfire industry, explained the key benefits of the system, which includes access via the internet, twice daily sms alerts to subscribers and updated data at five-minute intervals.

SA fire guru, Dr Winston Trollope, presented his research findings of a study on the long-term effects of prescribed burning in African grasslands and savannahs and recent developments in fire management. Dr Trollope detailed the key factors to consider in a prescribed burning program and explained fire management objectives and fire regimes using Mun-Ya-Wana game reserve in Zululand as a case study.

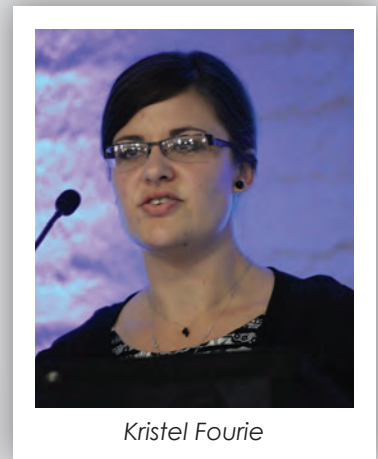
The African Centre for Disaster Studies at North West University's Kristel Fourie presented attendees with details on the newly formulated Southern African Society for Disaster Reduction (SASDIR). Fourie discussed the focus, objectives and background to SASDIR and outlined its role within the SADC countries.

Jean du Plessis, an attorney who specialises in fire investigation, discussed the obstacles in the way of smooth legal action; described the litigation process, issues to consider prior to taking the legal route. "Don't make it an emotional process", said Du Plessis.

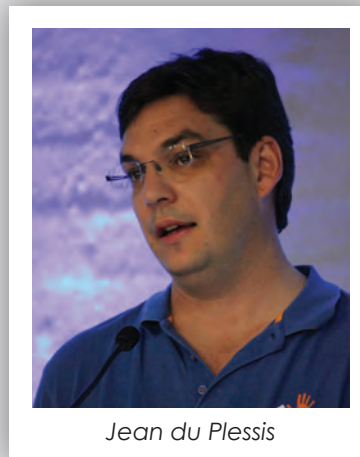
Dr Kevin Tolhurst presented the Phoenix bushfire risk management model, explained its design criteria and added that it was a scenario-based model. Dr Tolhurst said "we should be calculating our saves, not only our losses".

Dr Phillip Frost of the CSIR Meraka Institute gave a presentation on its Advanced Fire Information System (AFIS) and its advantages. Dr Frost also announced the recently launched AFIS mobile app and gave attendees a life demonstration of the new AFIS website. He furthermore detailed a research project done on the evaluation of the various fire danger indices used in countries across southern Africa.

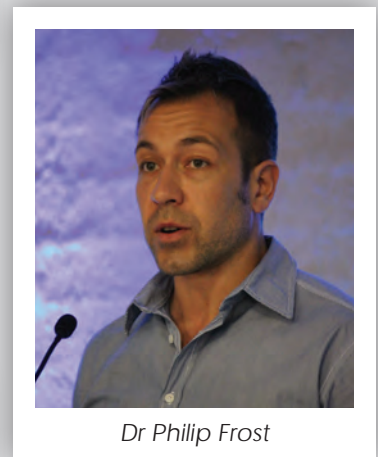
Ian Henderson of Masonite gave a sobering (but amusing) talk on fighting fires in the real world, with a myriad of examples on what could go wrong (as it has done before), presenting some 'real' case scenarios after which Duncan Ballantyne of the Lowveld and Escarpment Fire Protection Association (LEFPA) summarised the symposium. ▲



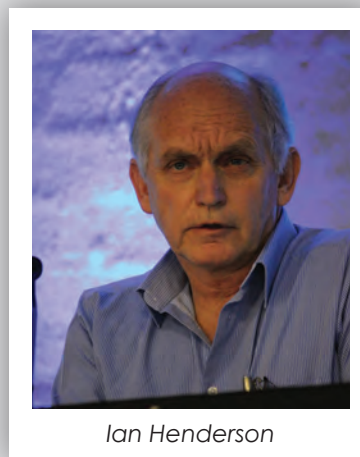
Kristel Fourie



Jean du Plessis



Dr Phillip Frost



Ian Henderson



Duncan Ballantyne

2013

March

4 - 8 March 2013

International Search and Rescue Advisory Group (INSARAG) earthquake response simulated search and rescue exercise (SIMEX) "count down"

The objective of this exercise is to introduce and practice INSARAG disaster response methodologies. This includes coordination between urban search and rescue (USAR) teams, conducting assessments in the affected area, being aware of logistical constraints, reporting to Local Emergency Management Authority (LEMA) and On-Site Operations Coordination Centre (OSOCC), testing USAR sector coordination, applying INSARAG marking tools as well as INSARAG documentation and communicating with the local population

Venue: Kriens, Switzerland, exact venue TBC
Invited countries may find more information at www.vosocc.unocha.org

7 - 8 March 2013

Hazmat 2013

The hazmat conference is an essential opportunity for hazmat specialists to share experiences and knowledge with like-minded professionals working in the hazmat and chemical incident industry.

Venue: Eastwood Hall, Nottingham, Nottinghamshire, United Kingdom

Contact: Tel: +44 0 870 190 6621

For more information visit: www.the-ncec.com

11 - 15 March 2013

The African Centre For Disaster Studies intermediate and advanced incident command system training

Modern training techniques and practical exercises empower course candidates to fill a position within an incident management team and gain competence in the utilisation of the ICS for incidents such as veld and forest fires, structural fires and natural disasters.

Venue: North West University, Potchefstroom

Contact: Christo Coetzee Tel: 018 299 1632
email: christo.coetzee@nwu.ac.za

For more information visit: www.nwu.ac.za

13 March 2013

Practical risk assessment workshop

The workshop aims to equip participants with the necessary tools and skills to carry out a quality risk assessment in their workplace by identifying relevant elements. An understanding of risk in the fields of project management, quality management and change management are also discussed and applied.

Venue: Port Elizabeth Workshop code B5813

Contact: Carey Evans Tel: 031 764 7136 or
email: carey@saimeche.org.za

For more information visit: www.saimeche.org.za

18 - 22 March 2013

The African Centre For Disaster Studies incident command system (ICS) command and general staff

The course will provide students with the skills and

knowledge that will enable them to perform as a member of an incident management team in one of the command and general staff positions.

5 day course.

Venue: North West University, Potchefstroom

Contact: Christo Coetzee Tel: 018 299 1632
email: christo.coetzee@nwu.ac.za

For more information visit: www.nwu.ac.za

19 - 20 March 2013

Basic ambulance assistant (BAA) refresher/update Course

A course aimed at all basic ambulance assistant health care professionals and developed to update/refresh all skills and BAA protocols as according to The Health Professions Council of South Africa. CPD points will be awarded.

Venue: LifeMed Ambulance Services
C/o Michael Brink (Nico Smith) and
19th Avenue Villieria, Pretoria

Contact: Charmaine Oosthuizen Tel: 012 330 9413
or email: training@lifemed911.co.za

For more information visit: www.lifemed911.co.za

19 - 21 March 2013

Wildland urban interface conference

The most influential people in fire fighting, involved in combating the challenges of wildland fire will join to discuss the problems faced and how collectively new strategies can be implemented.

Venue: Peppermill Reno Hotel Casino, 2707 S. Virginia Street, Reno, Nevada

Contact: IAFC@compusystems.com

For more information visit: www.iafc.org/wui

April

8 - 12 April 2013

Prescribed burning for fire managers

Presented by the FFA Training Academy in conjunction with the Working on Fire programme. The course is designed to assist the fire manager in understanding the planning, preparation, coordination and execution when conducting prescribed fire operations in fynbos

Venue: Agri Mega show grounds, Bredasdorp

Contact: Stephen Devine Tel: 076 390 5346
email: stephen.devine@wofire.co.za

8 - 12 April 2013

Veld and forest fire cause and origin determination course

Hosted by the Working on Fire programme, a team of highly qualified fire investigators will present this outstanding training opportunity. The course has been specifically adapted for South African conditions

Venue: Agri Mega show grounds, Bredasdorp

Contact: Mandla Ndlovu Tel: 073 234 7143
email: mandla.ndlovu@wofire.co.za

10 - 11 April 2013

Tangent Link's 10th aerial fire fighting conference, exhibition and air show

This world leading conference aimed at the world's aerial fire fighting community will bring together international government, procurement and

operational officers, civil organisations, international manufacturers, operators and service providers to discuss and debate the latest techniques, technologies and platforms available to tackle the specific and persistent threat of wildfires

Venue: Marseille, France – details to follow

Contact: Rebecca Covey Tel: +44 1628 550047
email: rcovey@tangentlink.com

For more information visit: www.tangentlink.com

15 – 18 April 2013

Moscow international protection, security, fire fighting and safety exhibition

The largest commercial, international exhibition of systems and technologies of protection, security and fire safety in Russia and the CIS has been in operation since 1995.

Venue: Expocentre Krasnaya Presnya, Moscow, Russia

Contact: Ilya Sobolev Tel: +44 207 596 5170
email: ilya.sobolev@ite-exhibitions.com

22 – 27 April 2013

Fire department instructor conference and exhibition (FDIC)

The event will bring together a number of decision makers, experts and trainers along with many manufacturers and suppliers from the fire industry to present a comprehensive display of products, equipment, accessories and technologies for fire fighting and a number of educative seminars and workshops on different aspects of fire fighting and special events like award functions.

Venue: Indiana Convention Centre, Lucas Oil Stadium, Indianapolis, USA

Contact: Tel: + 888 299 8016
email: registration@pennwell.com or
Susie Cruz email: scruz@pennwell.com

For more information visit: www.fdic.com

23 – 26 April 2013

Full scale exercise – POLEX 2013

This exercise aims to practice search and rescue operations and international coordination methodology in accordance with the International Search and Rescue Advisory Group (INSARAG Guidelines). This exercise based on an earthquake scenario will be open to both full-scale self-sufficient USAR teams and other interested participants or observers.

Venue: Poland, exact venue TBC

For more information visit: www.insarag.org

25 – 26 April 2013

Civil intelligence, surveillance and reconnaissance (ISR) Europe

This new European based conference and exhibition will attract a truly international delegate base to discuss and debate the wide-ranging requirements of civil organisations and agencies to utilise manned and unmanned ISR systems and related technologies in both day-to-day and emergency operations.

Venue: Grenchen Airport, Switzerland

Contact: Sophie Spence Event Operations Executive
Tel: +44 0 1628 550041
email: sspence@tangentlink.com

For more information visit: www.tangentlink.com

May

3 – 7 May 2013

Fire-Rescue Med 2013

An event for fire-based EMS leaders promising to deliver inspiring and informative speakers, great networking opportunities, outstanding educational sessions and exhibitors who offer the latest products and technology.

Venue: Orleans Hotel, Las Vegas, Nevada, USA

Contact: Mary-Jane Vita Tel: 00 1 703 537 4821
email: mvita@iafc.org

For more information visit: www.iafc.org

4 May 2013

International Fire Fighters Day

For more information visit: www.firefightersday.org

9 – 11 May 2013

Fire fighting european helicopter show

Our program will feature a display and demonstration of fire fighting helicopters and associated airborne and ground equipment. Forest and bush fire fighting is the main purpose and utilisation for these helicopters.

Venue: Letiště 98, 503 41 Hradec Králové 7,
Czech Republic

Contact: Emma Davey Tel: +44 020 8549 5024
email: emma@avbuyer.com

For more information visit: www.eurohelishow.com

15 – 17 May 2013

South African Emergency Services Institute's 29th international conference, exhibition and training event

The conference and training event will cover vehicle extrication, urban search and rescue, high angle rescue, EMS challenge and emergency services combat challenge.

Venue: Johannesburg Expo Centre, Johannesburg,
South Africa

Contact: Wiek Alberts Tel: 076 494 2609
email: wieka@telkomsa.net

For more information visit: www.saesi.com

21 – 22 May 2013

Intermediate Life Support (ILS) refresher/update course

A course aimed at all intermediate life support health care professionals. Developed to update/refresh all skills and ILS protocols as according to the Health Professions Council of South Africa. CPD points will be awarded

Venue: LifeMed Ambulance Services
C/o Michael Brink (Nico Smith) and
19th Avenue Villieria, Pretoria

Contact: Charmaine Oosthuizen Tel: 012 330 9413
or email: training@lifemed911.co.za

For more information visit: www.lifemed911.co.za

29 – 31 May 2013

Australian and New Zealand Disaster and Emergency Management Conference

Will provide a forum to examine the issues surrounding natural and man-made hazards.

Venue: Brisbane, Australia

Contact: email: admin@anzdmc.com.au

For more information visit: www.anzdmc.com.au

Cowboy in a hardhat

There's a fire on the mountain
There's a fire in the town
There's flames across the prairie
Seems the whole world's burnin' down

There's terror in my horse's eye
An' mine are wild and white
'Cause the devil's slingin' fireballs
An' it feels like hell tonight

An' we're cryin' for the cavalry
We're prayin' for the rain
'Cause this place is dry and tinder
Like as not we'll build again

But I turned lose all the critters
Wife an' kids are in the truck
Seems we been run out of Dodge
An' we sure run out of luck

Then through the wild inferno
There rides a hero band
On their big red fire wagons
An' Lord, they've come to make a stand

They look the devil in the eye
Boys, it's do or die tonight
Says a cowboy in a hardhat
Come to set things right

The cowboy in the hardhat
Shakes out a loop of hose
He may be spittin' in the wind
But seems this cowboy knows

The odds are stacked agin' him
An' all that's in the path
But it's something that he's born to
To take on nature's wrath

Then the flames take on a hunger
And it seems he'll be consumed
But singed and sooty he fights on
No thought of death or doom

As the conflagration darts and ebbs
Then comes in waves again
But the cowboy in the hardhat
Is not like other men

Who merely do the possible
To hold what's in their grasp
He reaches deep within himself
And finds the strength to last

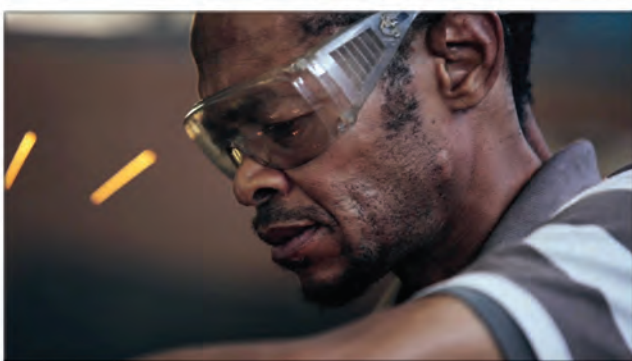
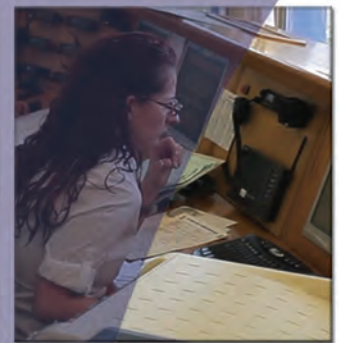
Beyond the thresholds mortals keep
Within the lines and odds
He'll stop the devil in his dance
Upheld by greater Gods

Then through the soot and cinder
The ashes and the steam
My home stands firmly founded
'Mid the smoke as in a dream

Then the heroes mount their wagons
An' pull their hard hats down
No time for praise or gratitude
For the fire still burns in town

But we'll remember when it's o'er
And take the time to tell
Of the cowboy in the hardhat
Who quenched the fires of hell

Author unknown



FIRST IN INTEGRATED FIRE MANAGEMENT



SAESI 2013

Working together to ensure our future

Fire, Rescue, Emergency Medical and Disaster Management Services
29th International Conference, Exhibition & Training Event

2013



Emergency Services Africa

Working Together To
Ensure Our Future

Conference

Trade Exhibition

Fire fighter challenges

SAESI AGM

Pier Programme



Hosted by incoming President
Ofentse Masibi: Executive Manager Operations:
Ekurhuleni Metropolitan Municipality,
this major event has many exciting
sponsorship opportunities available

Expo Centre, Johannesburg

12 - 17 May 2013

For further information please contact the event organiser Wiek Alberts on:

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Fax: +27(0)86 2984 620 | www.saesi.com



SAESI ESTABLISHED IN 1959