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Dear Consul General Magubane and Dr. Gule:

Thank you for your extraordinary hospitality during the recent visit of 911 FUND representatives to South Africa. In addition to all of your efforts, we'd like to thank Ivan Vosloo, Dean Spohr, Thomas Phakathi for their continuous availability and tireless support in making this visit a reality.

We were privileged to work with you and the esteemed firefighters, medical personnel and volunteers in and around Johannesburg. You indeed have much to be proud of, as was evidenced by the high level of morale and enthusiasm by everyone with whom the team met. The team was welcomed like family and made to feel like royalty, and none of us will ever forget the friendships made during the visit.

The trip was an important educational experience since we were able to observe so many of your operations first-hand. Inviting strangers to observe, ask questions and make recommendations is difficult yet extremely proactive. We applaud your recognition that there are challenges to be met and a willingness to work towards achieving established and emerging objectives. We are also grateful for your efforts to create a visitation schedule that provided so complete an overview of both the city and of EMS. Although many of your fire and emergency operations are performed in ways that are similar to our own, we believe that there are several areas where we can learn from each other and mutually benefit.

As promised, we have summarized our observations in the attached report. We look forward to receiving your reaction, and to continuing this collaboration in the realization of your efforts to reduce firefighter risk, enhance civilian health and safety, and minimize property loss from fire.

Sincerely,

Stephan Hittmann

on behalf of

Chief Brian Draper
Isle of Man Fire Service
Douglas, United Kingdom

Lt. Sean Gascie
Oakland Fire Department
California, United States

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Observations and Topics for Further Discussion

17 June 2008

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History and Background of the 911 FUND:

Created in the aftermath of the tragedy that occurred on September 11th, 2001, the 911 FUND was born from the personal, hard-won experience and first-hand knowledge of New York City firefighters and emergency personnel, all-of-whom worked on September 11th at the World Trade Center, and for countless days thereafter. As we watched brother firefighters commit their efforts, and in 343 cases their lives, to the rescue of 25,000 innocent civilians, we became convinced of the need to enhance our systems of emergency management and preparedness, and to share this understanding, along with our skills and lessons-learned, domestically with friends and allies the world over.

Ever since September 11th, we have worked to acquire fire appliances, ambulances and related equipment, then to donate it, along with training, to governments, fire departments, emergency responders and industry, as part of a continuing effort to build preparedness, reduce risk, enhance civilian safety, and minimize property loss from fire and other types of disasters, be they natural or man-made.

Firefighters routinely put themselves in harms way to protect the citizens of all nations. Service, solidarity, fraternity, brotherhood, a willingness to accept risks and make sacrifices is the common bloodline of firefighters worldwide.

That said, however, our experience is that firefighters world-wide have profound training and equipment deficiencies, yet typically assume the same risks as those taken by American and British firefighters. The training, equipment and/or apparatus that we donate are gifts that keep on giving, while adhering to the best principles and highest traditions of the international fire service.

Over the past few years, we've donated dozens of fire appliances and/or ambulances, as well as millions of dollars of equipment and/or training to Argentina, Colombia, the Dominican Republic, Ecuador, El Salvador, France, Panama, Spain, etc. Transportation of donated equipment and apparatus has typically been provided for free or at minimal cost by freight forwarders and shipping companies who share our common goals and values.

All of our efforts in support of the 911 FUND are voluntary and unpaid. We neither request nor accept financial contributions for the work that we do, and 100% of the training and equipment that we provide is given free-of-charge to firefighters and emergency first responders.

Specific activities of the 911 FUND have included:

- Conducting needs assessments to help address critical safety and security issues.
- Donating equipment (turnout gear, SCBA, tools, etc.), fire appliances and ambulances to those with the greatest need.
- Providing training in fire operations, dispatch, emergency vehicle operations, fire prevention, fire safety education, arson investigation, code enforcement, hazardous materials, special operations, emergency medical services, leadership, instructor

development, etc. All training is customized to the needs of the respective department, reflects one or more topics of importance to them, and is typically provided by senior firefighting and/or medical personnel who have extensive hands-on expertise in the respective subject area.

- Working with governments, industry, fire departments and emergency responders in critical safety and security areas, including maximizing inter-agency communication and cooperation/mutual aid, response to NBC and WMD events, maritime and homeland security, strategic planning involving natural disasters and/or acts of terrorism, etc.
- Advising governments and fire departments alike on upgrades to or building and operating new training facilities, including preliminary site and equipment needs, operational costs, staff and curricula needs, etc.

Introduction:

The following report is drawn from information in five areas, namely:

1. Initial meetings in New York with the Consul General, Executive Head of EMS and other South African government officials during 2007 and 2008 (**Attachment A**).
2. Materials provided by EMS during March 2008 prior to the visit (**Attachment B**).
3. The team's first-hand observations while in Johannesburg and the neighbouring communities during our initial fact-finding visit during April 2008.
4. Discussions with the leadership and members of EMS in Johannesburg, as well as the municipal and industry representatives with whom the team met.
5. Independent research.

The report itself is divided into subject-specific sections. Within each section are observations, identification of outstanding issues, recommendations and/or topics for further discussion. Subsequent to these sections is a list of Acronyms used in the report and their definitions, followed by four Appendices.

We cannot stress strongly enough that these observations are not in any way intended as a criticism. They are, rather, a starting point upon which we hope to develop an expanding dialogue with you, other officials in government and industry, and the communities you serve. As we have repeatedly said, our goal in this effort is to further our relationship with EMS, the city of Johannesburg, and indeed all of South Africa, as the 911 FUND supports your efforts to help reduce firefighter risk, enhance civilian health and safety, and minimize property loss from fire.

1. Identification and Quantification of Risk:

In providing a combined and cohesive emergency medical, fire and rescue service for Johannesburg and the surrounding area, the Johannesburg EMS has a long and rich history. Its current configuration, staffing and response protocols emanate from a combination of perceived need, historical experience, as well as complex political and economic factors. While the five Directorates in EMS (Operations, Disaster Management, Proactive Services, Corporate Services and Management Support) "work" as it is presently configured and there indeed is much to be proud of, a fundamental building block prerequisite to understanding the realistic immediate need and potential future allocation or redistribution of resources must be a clear and dispassionate identification and quantification of risk within the greater Johannesburg area.

It is clear that Johannesburg has everything that one would expect from a city of four million covering a geographic area of 1650 square kilometers, including urban, suburban and acutely rural environments. Included in this area are numerous identified and potentially high-hazard environments which appropriately are of great concern to EMS.

An additional factor that dramatically compounds any discussion of multi-hazard emergency and response planning is the risk presented by a natural disaster, and the need for pre-disaster mitigation planning. While it may be difficult to calculate "damages avoided," PDM planning results in significant net benefits to society as a whole (to the population of South Africa and the communities in which they live) in terms of future related reduced losses and savings to the federal treasury, future increased tax revenues, and future reduced hazard-related expenditures.

As it relates to natural disasters, the South African NDMC was created specifically to identify the types of natural disasters that have previously and could prospectively affect the country. While an unpleasant reality, natural disasters in South Africa are relatively common occurrences, and include floods, tornadoes, wildfires, severe climate changes, earthquakes, drought, famine, power outages, pandemic influenza and/or other medically-related disasters, etc.

Natural disasters throughout South Africa have been reported over the past 150 years, many of which have occurred in Gauteng Province. Although the smallest but most populous province with the greatest urbanization and widely considered the economic hub of South Africa, Gauteng is most at-risk from a natural disaster. That being the case, the NDMC developed a "web*Mathematica*"-based software application to: (a) Help predict the time, location and intensity of natural disasters; (b) minimize the amount of time and effort needed to plan for anticipated disasters; and (c) help solve many of the coordination difficulties that have hindered past disaster relief efforts.

As recently as 2006, the devastating wildfire at Table Mountain in Gauteng Province resulted in a significant loss of life, destroyed great tracts of forests and caused enormous environmental damage.

While it's impossible to create an exhaustive list of everything that can be done to prepare for a natural (or man-made) disaster, preparing to the best of our abilities makes virtually any disaster far less devastating. It's imperative, therefore, that Johannesburg, given its leading role as provincial capital and most prominent of the three metropolitan municipalities in Gauteng Province, build the capacity to preserve, maintain and reconstitute its ability to function under the threat or occurrence of *any* disaster that has the ability to disrupt life as it is known.

Recognizing that leadership is never put more strongly to the test than in a crisis situation where the objectives are immediate and so are the results, we applaud Johannesburg for their recognition that complacency is not an option, and that denial could be deadly.

That said, emergency planners need to think about their emergency management system functions, as well as the cascading effects resulting therefrom. Since emergency management in South Africa is composed of numerous complex and dynamic components, interconnections, interactions and interdependencies, EMS must focus its efforts on strengthening its mitigation, preparedness, response and recovery abilities, while becoming sensitive to the subsequent chain reaction that occurs post-event.

Fires, other types of emergencies or major disasters are largely unpredictable, as is the unpredictability of how those affected will react. To remain proactive, EMS should develop an emergency response structure, integrated with the multitude of other response organizations that exist, the result of which can positively affect emergency management by helping to create a common nomenclature and understanding of these events prior to, during and following a fire, emergency or other disaster.

The most expedient way of doing this is for the leadership of EMS leadership to undertake a risk-based review of the Standards of Fire Cover and Pre-Hospital Care for Johannesburg. Once completed, such a review would form the basis for the production of an IRMP, which in turn would assist EMS as it embarks upon a longer-term strategic planning process. By identifying current and potential risks within the greater Johannesburg area, EMS would be able to refine and improve its continuity of operations plan (integral to the strategic planning process), which includes the ongoing:

- Evaluation of the effectiveness of current prevention programs and response capabilities.
- Identification and definition of specific capabilities that Johannesburg and EMS need to achieve and sustain, depending on relevant risks and threats, to be prepared for all hazards.

- Development of standards, policies and procedures to address both prevention and intervention.
- Identification of opportunities for improvement in all areas, including but not limited to recruiting, hiring, training, large-scale exercises, supervising and equipping EMS, in the facilities available for use, in interagency operations, in directing triage and pre-hospital treatment tactical operations, etc.
- Determination of resource requirements to meet current and evolving needs.
- Initiation of multi-year planning whereby emergency and response planning on the local level works seamlessly with national response protocols, and the society at large is educated in disaster prevention, response and recovery.
- Availability of these documents to the public to see and understand, with an acknowledgement that these are living documents that are periodically updated as need and experience dictate.

2. The Need for a Strategic Plan and the Strategic Planning Process:

As Johannesburg has grown and absorbed outlying Fire Departments, its first responders have expanded their roles many fold. As EMS protects the lives and property of Johannesburg residents and visitors alike, so too must it expand its focus through an ongoing program of self-examination. Advancing public safety through fire prevention, investigation and education, it's essential that EMS embark upon a multi-year strategic planning process and implementation schedule to identify its core values, full scope of responsibilities, appropriate organizational structure, as well as its goals and objectives, all-the-while evaluating and prioritizing new initiatives.

To the extent that it has not yet been undertaken, a department-wide working group should *immediately* be convened to produce a two-year Strategic Plan, i.e., from 2009 through 2010. Following a straight-forward and standardized format, the Strategic Plan should reflect each Department's major goals and objectives, include a description of the benefits of each, a method to define and record benchmarks to track levels of accomplishment, then identify the responsibility center for each goal and objective. On perhaps a quarterly basis, EMS should produce a "Scorecard" to review its progress in each area. In the first quarter of 2011, EMS should produce a "Final Scorecard," and initiate the strategic planning process for the following two years.

The process begins with a detailed review of EMS personnel in every category, including: Uniformed firefighters and officers; EMT's, paramedics and officers; fire marshals; fire inspectors; dispatchers; administrative personnel (technologists, professionals, etc.); trades people (mechanics, carpenters, etc.); volunteers; etc.

Required also is a detailed quantification of the fire and medically-related services that EMS provided during the previous calendar year, quantified as follows: Fires extinguished, non-fire and-medical emergencies, fires investigated for potential arson,

fire inspections (fire code related and field inspections), fire safety events, medically-related emergencies, etc.

We believe that the successes and lessons-learned from the strategic planning process will have a tremendously positive impact on the operational and organizational development within EMS.

While the process is an intensive major commitment, it is well worth the effort. It requires EMS to conduct a detailed introspective assessment of its roles and direction to ensure that their oversight bodies, the public they serve, and perhaps most importantly EMS personnel themselves, understand and embrace EMS priorities in these increasingly complex and challenging times.

That said, traditional firefighting, providing pre-hospital care, and responding to diverse public safety emergencies drive critical responsibilities in several areas, including but not limited to:

2.1 Fires - structural and non-structural:

Traditional structural firefighting, car fires, wildland fires, and rescues related to these fires.

2.2 Medical Emergencies - natural or terrorist-induced:

Involving every aspect of pre-hospital care, mass-casualty trauma care, decontamination and hospital transport.

2.3 Chemical, Biological, Radiological, Nuclear, Incendiary and Explosive:

The ability to respond to and mitigate chemical, biological, radiological, nuclear, incendiary and/or explosive events, and the associated consequence management through continuous training, drills and simulation exercises.

2.4 Fire Prevention - inspection, education, enforcement and evacuation:

Continuing to emphasize its inspection/enforcement role, and combining it with a proactive fire safety education program.

2.5 Fire Investigation - arson, cause/origin, intelligence, law enforcement and site security:

Expanding traditional arson investigation as well as the cause and origin of fires to include law enforcement agency interaction, intelligence-sharing and site-security resulting from increased terrorist threats.

2.6 Structural Collapse - search, rescue and recovery:

Enhanced training and equipment to enable members to perform scene surveys while safely operating at building collapses as well as high-angle and confined space rescues in life-threatening incidents.

2.7 Hazardous Materials - incident response and planning:

Working closely with other local and national resources to provide an increasingly comprehensive capability in this highly technical area, EMS responds to and mitigates hazardous materials incidents at all levels, including biological, chemical, radiological, terrorist and/or other types of WMD events.

2.8 Transportation Incidents - land, air, rail and water:

Responding to emergencies involving all modes of transportation.

2.9 Catastrophic Weather Events - floods, earthquakes, severe climate changes:

Playing a critical role in responding to all types of weather-related emergencies and natural disasters.

2.10 Special Events - planning and response:

Planning for and responding to special events that are local or national in scope, such as the 2010 World Cup where large numbers of people are in attendance with the added threat of mass casualties or terrorism makes these events take on a whole new dimension and makes them no longer routine.

The Strategic Plan itself should reflect but be not limited to the following areas:

2.11 Improve Emergency Response Operations:

- Enhance EMS preparedness to respond to fires, emergencies, disasters and acts of terrorism.
- Implement initiatives to improve overall system performance, operational coordination, resource deployment and service delivery of pre-hospital medical care.
- Develop a system to provide incident commanders with on-scene critical information, enhance emergency response and provide a safer operational environment.
- Extend and enhance training provided to newly-hired recruits.
- Develop training initiatives to ensure the maintenance and sustainability of core competencies and newly-acquired specialized skills for all first responders.

- Develop a continuity of operations plan that in the event of an emergency or threat of an emergency, ensures the continuation and uninterrupted delivery of critical services to the public and other agencies.

2.12 Enhance the Health and Safety of All EMS Personnel:

- Enhance and expand programs to monitor the health and safety of all personnel, both active and retired.
- Enhance operational safety management and behavior.

2.13 Strengthen Management and Organizational Development:

- Implement an enhanced performance management system for mission-critical functions.
- Develop rank-specific training for officers at all levels.
- Develop an EMS-wide communication strategy utilizing new technologies.

2.14 Increase Diversity:

- Improve the diversity of the uniformed fire service by enhanced recruitment.
- Target recruitment of future firefighters by focusing on recruiting young men and women of diverse backgrounds.
- Expand outreach and mentoring efforts to diverse communities by increasing the visibility of EMS career opportunities in firefighting and pre-hospital care.

2.15 Improve Fire Prevention and Fire Safety Education:

- Enhance and develop additional fire prevention and educational outreach programs to make communities safer.
- Implement new safety requirements and evacuation plans for commercial high-rise buildings.
- Integrate fire prevention with community safety education programs and expand the message to include other relevant safety topics.

2.16 Advance Technology:

- Develop state-of-the-art operations, communications and wireless command boards.
- Enhance unit deployment and tracking of all resources.

3. Personnel Issues:

In six clearly-defined (and *very* expansive) geographic districts, EMS operates 29 fire stations with 88 fire appliances, 60 ambulances and seven primary response vehicles, has financial authorization for approximately 1200 personnel, and responds to an estimated 15,000 calls per month. Included in these 1200 personnel are 66 platoon commanders, 29 station commanders, 6 district-based divisional managers, one operations director and two deputy directors. Shifts being 12 hours in length, firefighters work two day shifts, followed by two night shifts, then have four days off. Of an operational workforce of 1200 personnel and when prioritizing the diverse challenges facing EMS, the single largest one is "manpower," with approximately **700 vacancies** that reportedly exist.

EMS and the City are to be commended for their reliance on approximately 550 volunteers. They are no substitute, however, for a force of trained (and much-needed) professionals.

Whilst not having the opportunity to study in-depth the risk modeling being employed in the allocation of current resources, our feeling is that these numbers, when factored by a coverage area the size of Johannesburg, is *extremely* low given the identified risks, current workload and anticipated growth in commerce, industry and population.

The protracted resilience of the current workforce is a particular concern, especially at the operational command level, which is compounded by the need to prepare for new dimension response capability as well as the upcoming 2010 World Cup.

Given the size of each district, coupled with the call volume and workload diversity of EMS (pre-hospital care, fires, water rescues, high angle rescues, building inspections, etc.), the 29 fire stations at their present staffing levels appear to be at a choke-point by placing unrealistic pressure on the many fine professionals now serving in EMS by compromising their ability to maintain operational and command effectiveness at times of high frequency or prolonged incidents. A large single event, multiple simultaneous events, a massive long-term dynamic-type disaster or a significant loss of existing personnel (from an outbreak of pandemic flu, a natural disaster, act of terrorism, etc.) has the potential to render EMS almost totally incapacitated and unable to meet its operational demands.

This places an enormous (and often untenable) burden on those within EMS, and potentially exposes EMS as well as the local and national government to a wide-range of risks.

While we're not in a position to make recommendations about "appropriate" levels of Operational, Fire and Community Safety resources necessary for present or future planning purposes, *the attraction of suitable candidates, the retention of existing personnel and the current reward program are of major concern.*

Continuous staff turnover caused by high resignation levels and recruitment difficulties are organizationally debilitating in many ways, not the least of which are resilience within the existing workforce, staff morale and the limitation of its response capability. *Continuing on so obviously dysfunctional a path is pointless.* On the one hand it necessitates an ongoing financial and training investment in what, at best, is an inherently inefficient system; and on the other hand, it inhibits organizational growth and much-needed expanded training and skill enhancement. When introducing the reward program into this equation, these factors are widely thought to have contributed to the current situation of approximately **700 vacancies**.

The retention of its current firefighters is, therefore, an area of **paramount** importance, both in terms of (timely and high quality) service delivery, as well as the City's return on its investment.

3.1 Recruitment:

It's our understanding that an applicant for employment within EMS must complete both the 12th grade and "Firefighter One" program as prerequisites to full-time employment. While either or both of these can be satisfied via the "Learnship Program," through voluntary night courses or by paying privately to take the "Firefighter One" program, the huge number of vacancies speaks to the inherent flaws within this approach.

While on their face these requirements may seem reasonable, they are problematic when one acknowledges that public schools are tuition-based, many poor people simply cannot afford to attend, and the "Firefighter One" course costs approximately 10,000 Rand, which is often well outside the affordability of many people given the fact that the median annual income for working adults in Gauteng Province was estimated to be 25,000 Rand.

EMS should, therefore, consider changes to these requirements (perhaps on a pilot basis), and in this regard, we propose the following:

- EMS introduce an alternative but rigorous assessment and induction program as a pre-cursor to full employment. (Any modification to what exists at present must be sufficiently robust as to provide EMS with reasonable confidence in the future success of individual candidates.)
- A fresh look at the volunteer firefighters currently working at Fire Stations or in BESAFE Centres. These volunteers represent a wonderfully dedicated and hard-working group of individuals who are quite frustrated at their inability to progress to full-time employment. They are, nonetheless, a large pool of potential employees, and they deserve every consideration. Many of these volunteers have demonstrated over a long period of time their determination and loyalty to EMS, and we suggest that the Brigade Management Team investigate methods by which the

route through the "Firefighter One" program could be improved and made available to these volunteers at little or no cost.

An anecdotal case in point: While visiting an EMS-run Community Centre, the team spoke with two volunteer firefighters in their early 20's, both of whom have been active in community outreach and teaching fire safety for several years. Both men reportedly walk to the fire station because they don't have the money to take a bus or taxi. While both completed the 12th grade, they can't afford the tuition for "Firefighter One," and hope to get into a much sought-after Fellowship Program available on a lottery basis. These are two of an unknown number of volunteer firefighters who are desperate to get into the paid service.

It's our belief that greater educational and financial investment in these volunteers will reap significant and long-term rewards to EMS.

3.2 Attrition:

Attrition of current personnel is extremely high, and we propose the following as ways to help limit this problem:

- EMS should promote its importance and its role as an employer-of-choice. In the *short to medium-term*, EMS should introduce a marketing campaign to educate the public about the essential services it provides, along with detailed information about salary, job security, career advancement opportunities, the highly attractive benefits package (housing, pension, shift allowances), etc. A simple and inexpensive way of doing this would be to produce a leaflet outlining the above and making it available in BESAFE Centres, schools, libraries, government buildings, etc.
- In terms of a *long-term* recruitment strategy, the attraction to EMS via the highly successful Junior Cadet Program should be expanded. Involving youngsters from the age of 12, this program is proving itself to be quite successful and should, therefore, be expanded.

3.3 The Current Reward Program:

The reward program between Johannesburg and neighboring departments makes it financially attractive for trained firefighters and paramedics to "hopscotch" from one municipality to another is problematic at best. This program, i.e., *a 5% salary increase each time you move*, is a classic half-full/half-empty scenario. Half-full because it creates an ongoing irresistible financial incentive for firefighters and paramedics to continuously move between departments. Half-empty because it drains EMS on many levels, including: The loss of an experienced employee who the city paid to train; the need to pay overtime to other staff to ensure coverage; the ongoing challenge of recruiting and training staff (which is burdensome to the Training Division

and necessitates their delaying or totally ignoring other types of essential training); and which is motivationally detrimental to the remaining staff and experientially detrimental to city residents. The reward program was repeatedly brought to our attention as being problematic, and it is our opinion that this program should be stopped or dramatically modified (e.g., by providing financial incentives exclusively for promotion).

Municipalities should not be rewarding employees from other municipalities to leave their jobs, the cumulative effect of which is to adversely affect all of the participating communities. Johannesburg and its neighbors have an excellent relationship, and they need to come together to devise a practical solution to this problem.

4. The Rietfontein Fire and Rescue Training Academy:

Rietfontein is an especially valuable resource to the city and to EMS since the facility itself is far above average and has a superbly qualified and highly-motivated staff. Included on its grounds are various fire simulators (used for flashover scenarios, back draft scenarios, single family search and rescue operations, etc.), facilities for tanker fires, transformer fires, hazardous material spills, a massive training tower (used for interior attack, exterior attack, balcony rescue, stairwell operations, etc.), classrooms, office space, etc. The planned addition of buildings and other facilities, coupled with the fact that Rietfontein is an accredited educational facility, further enhances its value by providing it with tremendous flexibility in terms of the EMS-related and potentially other types of courses to be taught.

The Medical Training Facility was highly impressive and extremely well-organized, has quality equipment, routinely provides mandated recertification for all emergency medical staff, provides training for members who are transitioning from EMT status to Paramedic, and offers a well-stocked library of job-related books available for loan.

The Commercial Training Academy also merits recognition in its efforts to train members of industrial fire brigades on the proper use of extinguishers, fire safety, building evacuation, etc.

In discussing the importance of opportunities for ongoing skill enhancement and promotional opportunities through aggressive in-service training, Rietfontein's faculty agree that training is the best vehicle to make the good people within EMS even better. Some offered innovative ideas for the future and were open to new training possibilities, and most expressed support for and were encouraged by the dedication of the senior staff. Expanded training should, therefore, be introduced to reinforce current skills, build new skills and promote advancement. Didactic and hands-on instruction in dispatch operations, chauffeur school, pump and ladder operations, fire prevention, specialized drills, hazardous materials, special operations, building construction, leadership/officer training, ICS, instructor development, writing skills,

pre-hospital care, etc., must all be introduced in the future. In this regard, we make the following recommendations:

4.1 In-Service Training:

Rietfontein has enormous potential for future development, and should be used much more so for in-service training, refresher training, multi-unit drills, large-scale exercises and countless other training and educationally-related purposes. What was witnessed, however, was a profound lack of in-service or refresher training for firefighters. While little explanation was provided as to why this is the case, ***this is a critical situation that must be corrected.***

Skills must be maintained through a combination of practical experience, classroom, hands-on and refresher training. Firefighters must be proficient at assessing a situation, formulating an intervention plan and implementing that plan with minutes, if not seconds. If the plan is less effective than hoped for, and/or if other variables are introduced (e.g., a structural collapse), firefighters must quickly know it, change direction and return to work. These skills can only be learned by training and practical experience, or it will cost people their lives.

All firefighters, therefore, should be required to return to Rietfontein on a periodic basis for in-service and refresher training on fire attack, ventilation, inspections, community service, ICS, Haz-Mat, search and rescue, engine and truck operations, forcible entry, etc. This is especially true for firefighters who work in areas where there is little actual work, as well as for those who (for medical, administrative or other reasons) have been "off-line" for one year or longer. Another reason for this is the fact that building construction, materials, codes, auto design, etc., are constantly changing, all-the-more need for ongoing training.

Training must be ongoing, repetitious and as realistic as possible, without compromising safety. Since firefighting is often chaotic, especially when working in an unfamiliar environment, skills must be second nature. Important also is the need for brutally-honest company-based reviews of each incident within the fire station to assess the "lessons-learned" from interventions, and adapt accordingly.

We encourage Rietfontein, indeed all of EMS, to adopt the credo of the New York City Fire Training Academy, displayed in large letters and which says with irrevocable conviction above its entranceway: ***"Let No Man's Ghost Come Back To Say His Training Let Him Down!"***

4.2 Basic and Specialized Training:

While the ultimate goal of each of our fire departments is largely the same, we thought many of the methods and equipment used within EMS to achieve these goals were different. We recommend, therefore, that standardized additional training be given in the following areas:

- **Firefighter Removal:** Firefighter safety is an extremely important topic, and from what was observed, removal techniques for injured firefighters are an essential area that needs to be stressed. A "down firefighter" may be the result of a medical condition, not necessarily a fire-related injury. An example of a drill that could be run would involve instructing three of the largest members to don their turnout gear and SCBA's. Go to the stairs and have two of the members carry the third member (acting as if he was unconscious) up one flight in a wide staircase. (Less experienced firefighters will generally try to carry the "unconscious" member from side-by-side positions, each holding one arm. This method is unnecessarily strenuous because it overuses the small muscles of the upper body, instead of taking advantage of the more powerful muscles of the lower body. It also invites serious injury to the lower back of the unconscious firefighter.) Now select two of the smallest members and set the stage by first narrowing the stairway (like you would find leading to a cellar). Using our method, the two members would carry the "unconscious" member with emphasis on leg muscles, which is our prescribed way to carry, and which is generally quicker and easier. This task is of vital importance, and with a willingness to learn and share information, we see no reason why firefighters in Johannesburg couldn't adopt an efficient method and practice in this area, as in others.
- **Collapse:** Work needs to be done in learning about building construction, types of collapse, stages of collapse rescue, tools, shoring, void entry with breaching and debris removal (using light, medium or heavy saws, torches, air bags, etc.). We view this as a mid-level priority that can only be addressed given increased access to heavy machinery.
- **Confined Space:** This is the area where we felt considerable work needs to be done, especially in terms of safety to the rescuer. No method for collapse shoring was observed, and a cache of struts and wood timbers, with proper training would greatly minimize the risk to rescue personnel. Firefighter removal techniques and a method to monitor atmospheric conditions are also needed. Monitoring for lower explosive levels as well as oxygen and carbon monoxide levels is a critical safety issue. Patient packaging techniques and equipment are also important in this area.
- **Forcible Entry:** Tools such as haligans, mauls, heavy axes, etc., are important, as are procedures on their use, which we believe could dramatically enhance EMS efficiency in this area.

- **Mask Confidence:** Rietfontein should provide additional training in this area using blacked-out face pieces, search lines, setting off PASS alarms, etc., so that mask confidence becomes second-nature.
- **Special Operations Training:** Based on our observation of your equipment and methods, training is needed in breaking and breaching, collapse operations, heavy rigging, shoring and cribbing, torch operations, trench rescue and void search.
- **Miscellaneous Training:** Additional training should be provided in the following areas: Auto extrication, communication on the fire ground, engine operations, hose stretches, ladder skills, lock-out tag-out, monitoring of firefighters during operations, removal techniques (trapped firefighters, man in a machine, under a train, etc.), roof operations, ropes and knots, SCBA procedures (reduced profile, quick escape, mask confidence, etc.), search techniques, simple entries with a safety line, railroad emergencies, multiple-casualty incidents, electric utility emergencies, physical fitness, etc. All of these require minimal equipment, and must be mastered before emphasizing any advanced training. (Training in these areas must be coordinated with access to and use of the appropriate equipment, which we would be happy to recommend.)

4.3 **Drills and Progress Reports:**

Once new recruits are assigned to a fire station, there appears to be no tracking or evaluation mechanism to demonstrate the skills they learned at Rietfontein. Daily drills and progress reports should be mandated for newly-hired firefighters for at least their first year of service. These drills should review operations at fires, motor vehicle accidents, strategies and tactics, reading assignments, policies and procedures, etc. Periodic evaluations of newly-hired firefighters should be completed by shift officers and sent to Rietfontein to systematically track each recruit's progress. In addition, Rietfontein should:

- Publish a daily drill schedule to be followed in all fire stations to ensure that skills learned are maintained. We were dismayed to learn that no station-based drills are required.
- Introduce an Annual Training Day where firefighters return to the Academy for skills refresher training.
- Have the ability to mandate training when new equipment, policies and/or procedures are being introduced.

4.4 **Officer Training:**

Officer training appears absent from program at Rietfontein, and is very much needed for newly-promoted and senior officers alike. Training in officers' roles and responsibilities at each rank, in administrative and operational matters, decision-making, problem-solving, company administration, personnel

communication, report writing, in-unit training, community relations, computer skills, etc., are all required of officers, and must be introduced as an ongoing part of the training provided by EMS.

Another key component of officer training and responsibility is the need for an intimate working knowledge of ICS. The accountability of ICS currently in place needs to be better understood. Incident Command and safety coordination, particularly during an emergency, coupled with the strategies and tactics required to successfully manage a variety of fire and emergency situations, must be developed.

On several occasions concern was expressed by officers (two of whom were at the senior operational level) as to the need for the ongoing development and maintenance of skills, particularly in Incident Command and Operational Capability. Training in this area is critical in providing EMS with appropriately skilled officers capable of meeting the ever-increasing operational demands being placed upon them.

Effective role-related training is *essential* to maintaining operational capability and for ensuring the continuous health and safety of staff. The introduction of officer training at all levels of Incident Command are critical to the maintenance of effective risk assessment, decision-making, planning, objective setting, prioritizing and reviewing the practical outcomes of emergency interventions. Officers must have a clear understanding of their roles and responsibilities at incidents, together with an understanding of ICS principles and how to safely maximize personnel and resource use in a dynamic environment.

Concern was repeatedly expressed that officers at the Tactical and Strategic Command level are not receiving the appropriate level of training needed to maintain competence in this area. A serious challenge to EMS but an essential responsibility is its ability to integrate current and aspiring officers while meeting current and future demands being placed upon it. It is *strongly* recommended, therefore, that an assessment of Incident Command capability be undertaken, in conjunction with a training needs analysis, to inform and support the introduction of courses designed to improve operational leadership, especially at Tactical and Strategic Command levels.

4.5 The Commercial Training Academy:

Given the fact that the Commercial Training Academy provides ongoing training for non-EMS personnel, primarily from the Johannesburg business community, participants should be required to pay a fee for this training, thereby allowing EMS to recoup its costs for these services at a minimum, and possibly derive a profit to assist EMS as it expands.

4.6 Instructor Development:

Just like the fact that a good teacher doesn't necessarily make a good principal, a good firefighter doesn't necessarily make a good instructor. That being the case, instructor development courses should be introduced. How to teach the adult learner, developing questioning techniques, giving lectures, demonstrating skills, encouraging interactive activities, etc., are all important skills to be learned, and correlate directly with instructional outcomes.

4.7 Instructor and Course Evaluations:

Instructor and course evaluations (completed anonymously and submitted to Rietfontein for review and appropriate follow-up) should be introduced to ensure that instructors are performing well, materials are being effectively taught, and courses provide meaningful instruction in response to ongoing needs and priorities.

EMS should also introduce firefighter and officer performance evaluations to ensure that they are meeting acceptable standards. An annual timetable for these evaluations should then be announced, with it the responsibility of the Department's leadership to ensure that performance evaluations are periodically conducted in a fair and dispassionate manner, and that they become one of several factors when considering an individual for promotion.

4.8 Educational Diversity:

EMS has an extensive volunteer pool into which it needs to tap as an important personnel resource. Since Rietfontein is already a credentialed academy, it can teach both EMS-related subjects as well as general education courses. When it was suggested that this should be considered, the statement was made was that "If we start giving away free education, the next day there will be 5,000 people at our gate." If indeed there is legitimacy to this concern, Rietfontein should concentrate its efforts on offering educational opportunities to current volunteers, and not the general public. Given the need for a 12th grade education and completion of the "Firefighter One" program as prerequisites to full-time employment, Rietfontein could:

- Add a predetermined period (of additional weeks of basic training, night classes or special classes given periodically throughout the year) to enable volunteers to complete these subjects.
- Publish eligibility guidelines that would make this available to volunteers who have been active for a period of time, must successfully complete certain training, have excellent attendance, participate in EMS-sponsored drills and meetings, and meet other reasonable criteria.
- Introduce employment contracts to ensure that employees work for a predetermined period of time in exchange for pre-employment

instructional and/or financial support. This period could vary depending the amount and cost of education that students receive, and would guarantee the city and EMS a return on the investment it has made in educating these people.

4.9 Ongoing Investment in Reitfontein:

Further investment in Rietfontein will both facilitate its growth and provide a solid foundation for the introduction of additional programs in the days ahead. Expanding its existing facilities, building (short-term) residential accommodations for students, introducing new courses that enhance skills for EMS personnel and others, are all vehicles that encourage individuals to grow in their respective careers, and help respond to the new demands of lifelong learning. These are the challenges to which Rietfontein should respond with vigor, enabling it to become the world-class facility it is capable of becoming.

5. Promotional Standards:

While EMS has strict requirements in place for entry-level positions, the same cannot be said for promotion to other ranks. Numerous cases were cited where people were promoted because they moved from one division or department to another, were politically-connected, were unqualified but nonetheless moved into important Operations-level positions, etc. We see this as seriously problematic, and believe that a promotional system must be established in such a way as to ensure that it is comprehensive, fair and dispassionate.

Among the suggestions we would make to correct this problem are as follows:

- Educational prerequisites, years of experience or time in grade, operational certification, physical fitness, the need to pass a written exam, etc., **for every rank**, need to be established then made available to those within EMS and to the public.
- Annual personnel evaluations should be conducted for every officer, then reviewed when considering a person for promotion.
- Formal instruction should be provided at every rank, but especially important at the first promotional level. EMS and national priorities, as well as material drawn from other departments, will help to ensure that all officers are trained and have general consistency in their methods of operation, all of which are critical to successful operations.

6. Appliances and Equipment:

The appliances in use by EMS are a mix of American and European-style, with some of the appliances also having both styles of equipment on board (some of which uses Pacific Standard Threads, and some of which use National Standard Threads). There are innumerable operational issues that emanate from this level of inconsistency, with the result being that rather than having the best of both worlds, EMS has serious problems with both.

An example is a Fire Station that has a right-hand drive E-One pumper with the pump panel on the left side, and the compartment with the fittings and adapters on the right side. The appliance operator spends his time literally running around the vehicle to do his job.

In addition, the E-One pumpers and Tele-Squirts don't carry any ground ladders, hose loads are lacking at best, methods of getting water from underground hydrants into the pumps are inadequate, pumpers and ALP's carry a multitude of adapters to make the American and European equipment connect to each other, none of the appliances appeared well-equipped with hand tools for structural firefighting, etc.

Some complaints about the American appliances focused on their inability to get into tight areas given their limited turning ability. While complaints such as these are legitimate, they speak more to the issue of vehicle specification and geographic placement than they do about vehicle usage. Other complaints focused on E-One appliances that were built on international commercial chassis with four-door cabs and large front bumper extensions, the effect of which makes them hard to fit into tight areas as well. While there are those who prefer a European platform vis-à-vis an American platform, *from an operational standpoint, the main focus should be on which platform works best for Johannesburg.*

6.1 Equipping Appliances:

The combination of having an American-style chassis vehicle with British-style equipment and fittings doesn't serve EMS very well. Compounding this is the amount of unused space in many of the compartments, which could be used for essential equipment, including but not limited to: 24V electric saws and chargers; 180 meters of 19 mm hose reel tubing; thermal imaging camera; chemical protection suits; environmental packs and Haz-Mat ID boards for dealing with minor chemical spills; lifejackets for working in, on or near water; an assortment of 12 mm climbing ropes and carabiners for basic rope rescue or vehicle stabilization; etc.

Shown below are photos of EMS appliances with empty compartments:



6.2 Appliance Maintenance:

One of the stations in downtown Johannesburg had two ladder trucks, both of which had air brake system pressure below the safe operating range. In both cases, the on-duty crews failed to check these leaks, the result of which was a delay when the trucks needed to respond to an alarm.

Firefighters should be expected to perform some basic maintenance on their appliances and the equipment used on a daily basis. This helps EMS to protect the public, and protect the lives of firefighters themselves. Our impression was that the general condition of most appliances was fair at best, and that appliance and equipment checks that could easily be done in fire stations are *not* being performed.

Of particular concern was the seemingly regular unavailability of fire appliances due to breakdowns and/or repairs. Whilst at the Orange Farm Fire Station the crew was on-duty but had no appliance since it was at the workshops for repair. Similarly, two of the City Centre ALP's were experiencing problems and were out-of-service, thereby placing a significant burden upon other ALP's remaining in-service. In focusing upon conventional appliances and whilst cognizant of the problems being experienced at Orange Farm, it was disconcerting to find a spare vehicle at the Kibler Park Fire Station where it wasn't in use due to lack of on-duty personnel.

6.3 High Visibility Markings:

On a similar note, the UK Fire and Rescue Services have invested heavily in high visibility markings and scene lighting around the periphery of each appliance. This lighting is designed specifically to compliment the internal inward facing locker lights, and provide an illuminated pathway around the vehicle that could be supplemented by external mast lights. The system is such that when the driver selects the "In Attendance" mode from within the cab, the door exit lights, step and scene lights are automatically activated, together with PTO engagement and pre-set pump outputs of 4 bar low

pressure and 25 bar high pressure hose reels. Shown below are several photos for illustration purposes:

The photos below illustrate British-style appliances with high visibility markings and fully-equipped compartments:





6.4 Fleet-Related Issues and the Procurement Process:

The effectiveness of Fleet Services must be reviewed when a fire station that serves a high risk area with a heavy workload is unable to respond due to the fact that their appliance was broken down or being repaired, when a clearly roadworthy appliance is being held as a spare at a nearby station. General discussion with personnel revealed considerable discontent with the repair arrangements that are in place, compounded by the fact that vehicles are only occasionally replaced with comparable vehicles when one is in for service or repair. It appears as if the current 10 year lease, service and repair contracts aren't serving EMS very well, and we recommend that they be reexamined.

At present, the procurement process for appliances doesn't seem to involve all relevant departments in what should be a collaborative and proactive approach to vehicle design, specification and procurement. It is imperative that when EMS seeks to select the best appliance design and configuration ideas, each department upon whom the procurement will impact should have input so everyone effectively takes ownership for the process. At a minimum, this process should include Corporate Services, Rietfontein (especially the Skills Development Coordinator), the Capital Projects Manager, Fleet Services, Operations (including personnel at both the firefighter and platoon level), etc.

Strategically and prior to beginning this process, other departments in Johannesburg (such as the Disaster Management and the PIER group) should be involved in the basic outline to ensure that the city and EMS are in sync. The types of incident and emergency scenarios that firefighters are trained to deal with must correlate with the equipment they use. The appliance procurement process is an important part of this equation to ensure that the appliances used by firefighters meet their needs as they assume the profound risks associated with this work.

A needs assessment should be undertaken to determine the number of appliances needed and what their specific functions will be. Inner city engine, suburban engine, brush fire engine, the type(s) of ALP's needed, their reach and response areas, vehicle lifespan, vehicle replacement schedules, etc., are all factors to be considered. Finally, ***appliances must be "firefighter-friendly" in terms of their operation and layout.***

By keeping the fleet's composition as similar as possible makes it easier to stock parts, which also means that fewer parts need to be stocked. Training repair personnel is easier because they are working on common appliances and components, with appliance downtime being reduced.

A plan, therefore, should be devised to move to an American or European-style platform. The changeover should have a specific timeline with milestones to be achieved along the way.

Among the suggestions we would make, therefore, are as follows:

- A redistribution of certain appliances seems warranted, with the reallocation of appliances to the districts where they are most needed and appropriate for the streets or terrain. Smaller appliances should be moved to fire stations that serve communities with smaller streets, and newer appliances should be moved to the busiest fire stations. Observed was at least one fire station without a full complement of appliances, while other stations had spare appliances that weren't being used. This should be corrected.
- When designing new appliances for future acquisition, the engineer's panel should be placed on the engineer's side of the rig, thereby allowing the engineer to maintain visual contact with the crew while operating the pump panel.
- Consideration should be given to having multiple smaller trucks, preferably four-wheel drive, given the large number of unpaved roads in the Informal Settlements and in areas surrounding Johannesburg.
- Given the frequent flooding that occurs in and around Johannesburg, EMS should consider the acquisition of additional zodiacs to assist with rapid surface rescue, and SCUBA to assist with victim rescue.
- Revise the lease agreement by which the city supplies appliances to EMS to ensure that replacement vehicles are appropriate to the station and the terrain of the areas where they are assigned.
- Expedite service and repair timeframes for all appliances. Frequently reported was the fact that stations often wait an extremely long time to have their rigs serviced, which clearly is a problem.
- Institute a better tracking system to ensure that EMS knows the location and availability of all spare appliances, with spare appliances strategically placed around the city to better support EMS needs in larger and/or busier stations with the greatest workload.

7. Operations:

From an operational standpoint there are several challenges facing EMS that became quite apparent during both casual observation and in talking with members of the department. Some of these challenges are created by a seeming lack of accountability, others are organizational in nature, and some reflect the age-old fire service tradition that "this is the way we've always done it."

The current organizational structure is modular, the effect of which hinders communication and has a domino effect that leads to other problems. While it is essential that everyone recognize and abide by a clear chain-of-command, that chain needs to be modified when it causes more problems than it resolves.

7.1 Reporting Lines:

Operations, Fleet Services and Training (Rietfontein) report to different Directors, the result of which is limited communication between staff at lower levels within these Divisions, with potentially critical topics getting lost when going up or down the chain-of-command. The following are specific examples of problems that were observed in this area:

- When a new recruit graduates from Rietfontein, they become the responsibility of Operations, who oversee all station operations. Since Rietfontein can neither create, institute nor require in-service training (which is the sole responsibility of Station Commanders), the practical result is that little or no in-service training takes place, which is a recipe for disaster, and over which Training has no authority.
- Fleet Services is in another loop altogether, and Operations staff are generally unaware of when a station is out-of-service because appliances are being repaired. The irony here is the fact that spare appliances are housed in various stations and could easily be moved to keep companies in-service. Several stations were visited where their appliance was out-of-service because of mechanical issues, and the on-duty crews were literally standing around with nothing to do.

It is imperative, therefore, that Operations, Fleet Services and Training form a stronger working relationship with ongoing staff interaction, and that the EMS organization chart be revised to place all three areas under one Director to correct problems such as these.

7.2 Accountability:

Station Commanders, indeed all officers, must be accountable for their job performance. While there may be acceptable reasons for the some of the conditions observed at different fire stations, there are some for which there is simply no excuse.

7.3 Haz-Mat and Technical Rescue:

Johannesburg has a small number of certified Haz-Mat and Technical Rescue personnel, deploys Haz-Mat and Technical Rescue teams as needed, and is considering an expansion in both of these areas. While both areas are expensive in terms of the extensive training required and specialized equipment needed, EMS should consider:

- Training and equipping some of its Engine and Truck Companies as primary responders and/or to provide support in these areas. This would get trained people on scene more quickly, allow for better coverage throughout

Johannesburg, and give EMS a more robust response capability when circumstances warranting this expertise occur.

- Pre-positioning specialized equipment and appliances at strategic locations to assist in this effort. Examples of the types of specialized equipment that EMS should consider pre-positioning include PPE, SCBA, protective overalls, disposable respirators, Level A and/or vapor-protective suits, gloves, overboots, portable radios and generators, helmets, harnesses, ropes, rigging hardware, thermal imaging cameras, cribbing, tools, flashlights, headlamps, floodlights, gas and radiation detectors, biological agent monitors, megaphones, flare kits, portable barricades, emergency decontamination showers, mass casualty systems, trauma kits, splints and cervical collars, prone boards and stretchers, emergency blankets, etc.

8. Water Supply:

The water supply throughout Johannesburg and the surrounding area is via a municipal water supply system. Although water supply in general seems adequate, access to the water supply for fire and other purposes is via a mixture of at least seven different types of fire hydrant outlets, some of which are underground while others are aboveground, which when combined, contribute to water supply being an operational nightmare for EMS.

These outlets include a combination of British Standard 750 Fire Hydrants (63mm) and American Pillar-style Hydrants (63mm and 100mm). This diversity has necessitated a range of adaptors and keys to access the water supply and creates a great deal of inefficiency when EMS needs to rapidly access water, the effect of which is to delay the time it takes to get water on a fire. While we recognize that EMS has undergone a change from the British type of fire appliance to one of a predominantly American style, it should also be recognized that British Fire Hydrants (with a single supply line from a single-headed standpipe) are hydraulically inefficient, and that twin lines from a double headed standpipe yield four times the quantity of water.

It is recommended, therefore, that the municipal water supply company adopt a single standard of fire hydrant installation with 4½" outlets, preferably aboveground, along with a replacement program for non-standard outlets. From a firefighting/operational perspective: (a) The single-headed, 63mm outlet standpipes should be withdrawn from service and replaced with double-headed capacity, fitted with a "Galena" type valve to permit the initial connection of a single supply line prior to twinning the feed to the pump; and (b) given the questionable ability to access sufficient water for fire operations, every adapter for hooking-up to underground hydrants should be a single outlet 2½" standpipe. By simply changing to an adapter with a larger barrel size and two discharge outlets, the water supply from a single hookup would be doubled.

A well-executed plan also needs to be in place for each pumper to hook-up to multiple hydrants when working at a fire, with firefighters well-trained in this evolution so it becomes second nature.

A similar program should also be adopted to retrofit and upgrade outdated water mains wherever necessary, with larger water mains capable of delivering larger quantities of water.

From an urban growth perspective, this is a problem that will not get better on its own, and if left untreated, will have a greater potential for civilian and firefighter loss of life.

9. Dispatch, Communications and the Emergency Command Centre:

A number of challenges face Johannesburg in this area.

Calls to EMS for emergency assistance are routed from the telephone company to the municipal "Jo'burg Connect Call Centre," which is the same umbrella system that residents use when they want to access local government in a *non*-emergency situation. The concept of having a single point of contact into utilities and other government services is commendable and works well in terms of customer relations. It is *not*, however, the preferred avenue through which emergency calls should be routed, since it's far too slow when responding to life-critical calls for assistance.

Callers today need to dial 375-5555, 375-5911, 10177 or 112 (on a cell phone) to access an operator, with calls answered in the order they are received. A person calling with an emergency, fire, drowning, car accident, heart attack, etc., has their call answered by the same person who is answering calls about water bills, taxes or pot holes. Operators then prioritize calls and send it to another agent who asks pertinent questions, determines the nature of the emergency, then refers it to dispatch.

This is extremely confusing during an emergency, when viewed in comparison to calling 911 in the North American system or 999 in the British system.

A related concern is the fact that the Emergency Command Centre is vulnerable in the event of a catastrophic event, and Johannesburg has no redundant or fallback control facility which could then be activated. This being the case, we recommend the following to correct these problems:

9.1 Dispatch and Communications:

Calls coming for emergency police, fire or medical issues should be separated from "Jo'burg Connect," and we recommend that Johannesburg adopt a 911, 999 or other three-digit number dedicated exclusively for emergency calls, with the same number accessible from either a land-line or a cell phone.

Operators receiving these calls should:

- Be able to quickly ascertain the nature of the emergency.
- Route the call to the appropriate agency.
- Stay on the line with the caller (e.g., if a child is calling) until help arrives.
- Be trained in emergency management protocols and be able to coach callers in basic first aid, CPR and other related practices.
- Have access to mapping and topographic information.
- Be knowledgeable about the CIDS system, which, along with photos of each type of building in a station's response area, should be found in each appliance. (The CIDS system provides critical information about building design and construction, as well as the location of fire command stations, stairwells, standpipe outlets, freight and passenger elevators, utilities, sprinkler valves, mechanical rooms, fire dampers, roof accessibility, hazardous materials, etc.)

While we acknowledge that the identification of emergency dispatch operators and the introduction of new responsibilities for these people create some management and administrative issues that need to be addressed, we believe that the benefits of a revised system far outweigh these concerns.

The "Jo'burg Connect Call Centre" should focus its efforts on *non*-emergency situations, similar to the way 311 was established in New York City where operators can answer questions about and/or direct calls to utilities or other government services.

9.2 Emergency Command Centre:

The Command Centre (housed in the same building as the Johannesburg Police Department) has no redundant or fallback facility which could be activated should a catastrophic event render the primary facility untenable. While some limited security exists at the Command Centre, a real concern is the fact that the building itself, its communication infrastructure and its personnel are at severe risk from an unexpected event such as a fire, larger-scale natural disaster or act of terrorism. Living in the modern world of international terrorism, these factors combine to make the Command Centre a very soft target. If it were incapacitated, emergency services throughout greater Johannesburg would suffer a massive disruption. Accordingly and as a matter of some urgency, it is strongly recommended that an immediate effort be undertaken to activate a secondary facility to serve in a redundant fashion as a fallback communication, command and control centre. Once established, this facility should be tested and exercised on a regular basis to ensure that clear lines of communication and control can be quickly re-established, and that a clear understanding exists by all personnel why, when and how the activation of the fallback facility will take place.

10. Fire Stations:

Most fire stations are quite large with living quarters for their personnel, which apparently was routinely available to officers and firefighters in past years. Several of the stations also had training towers.

Firefighting tools, equipment and PPE were in fair condition, with every member having a helmet, boots, full turnout gear, gloves and SCBA.

Observed were several stations undergoing interior renovations, while others seemed very much in need of repair and immediate renovation. Overall, progress is being made to modernize each station. General station upkeep (basic repairs, simple construction work, painting, etc.) and maintaining their tools and equipment is expected of firefighters world-wide. Everyone in every fire station should embrace this concept. Johannesburg EMS has two things that many other fire departments are lacking, namely an abundance of space and a decent level of funding. Because of this, it was frustrating to see so many fire stations in need of repairs that could easily be done "in-house."

The use of the larger fire stations should also be expanded to provide for different types of community functions. All stations should be open to the public for tours, and literature on recruitment, water safety, learn not to burn, the BESAFE Centres, PIER Program, Jr. Cadet Program and others should be distributed and discussed.

11. Fire Safety Department:

Responsible for commercial inspections, code enforcement and fire prevention, it appears as if the Fire Safety Department follows NFPA guidelines in its enforcement role of commercial fire codes. *Incredibly understaffed*, they nonetheless provide an absolutely essential service.

Given the large number of abandoned buildings in downtown Johannesburg that squatters use for housing, compounded by the large population living in the Informal Settlements (in some cases for decades), a manifestly unsafe situation for citizens and for EMS has developed. Fire safety in both situations is among the biggest problems facing EMS, and legislation should be considered as a method of making these communities increasingly fire department-friendly.

A much heavier investment of time and resources in fire safety is among the best investments Johannesburg could make in its efforts to reduce losses from fire.

12. Mutual Aid and Interagency Operations:

The relationship between Johannesburg and its neighbouring communities seemed quite good. Numerous representatives from the greater Johannesburg area were present at the opening of the Ekuphileni Wellness Center, and several neighbouring communities send firefighters for training at the Rietfontein Fire and Rescue Training Academy.

Given the strong interpersonal relations that exist with the adjoining municipalities who provide mutual aid for Johannesburg (and vice-versa), widespread interest was expressed in enhancing the mutual aid system to ensure seamless interoperability. Based on a realistic evaluation of the capabilities of personnel, levels of training, as well as systems and equipment now in use, the current mutual aid agreements should be periodically reviewed and updated to ensure their absolute accuracy.

Developing reliable mutual aid programs is a complex and ongoing challenge, and should (at a minimum) reflect each participant's capabilities in the following areas:

- Animal health emergency support
- CBRNE detection
- Citizen preparedness and participation
- Citizen protection/evacuation and in-place
- Command Centre management
- Critical infrastructure protection
- Economic and community recovery
- Emergency public information
- Environmental health
- Facility management
- Firefighting operations and support
- Food and agriculture safety
- Information gathering and recognition of indicators and warnings
- Interoperable communications
- Isolation and quarantine
- Mass care/prophylaxis
- Medical supplies management and distribution
- Onsite incident management
- Responder safety and health
- Risk management
- Structural damage and mitigation assessment
- Triage and pre-hospital care
- Urban search and rescue
- Volunteer management
- WMD/Haz-Mat response and decontamination

Formal mutual aid arrangements enable governments at all levels to coordinate preparedness activities more effectively, spread costs, pool resources, distribute

risk, and thereby increase the overall return on investment. We also recommend that an ongoing program of expanded joint training, drills, large-scale exercises and strategic personnel exchanges be introduced and maintained, and that familiarity with and training at major industrial sites also be initiated to enhance communication and the collective preparedness. *Practice makes perfect!*

In furtherance of these efforts, ongoing coordination must also be maintained with the Johannesburg Metro Police Department to develop an all-hazards preparedness policy that will define the responsibilities and resources to be brought to bear in any type of emergency. A standardized set of concepts would allow for effective, efficient and collaborative incident management at all levels and at any emergency.

A unified command system should also be developed when multiple agencies are involved and incident jurisdiction has the potential of coming into play (e.g., a rail event involving police, firefighters and railroad personnel), or when incidents cross political or geographic jurisdictions.

13. Community Fire Safety:

Among the most impressive programs introduced by EMS are its various fire safety programs, all of which merit special recognition for their ingenuity and positive contributions to community well-being. Among its most impressive programs are:

13.1 BESAFE Centres:

Building upon its efforts to teach basic fire safety education in schools and through other activities, the opening of seven BESAFE Centres throughout Johannesburg (with more to come) has enabled EMS to introduce risk reduction, fire safety education and basic preparedness into the everyday lives of a large portion of the population. BESAFE Centres have both classrooms and full-scale, life-size, realistic living quarters (i.e., a kitchen, bedroom, living room and bathroom, complete with appliances and different types of fixtures), all of which teach fire safety. In these settings, children and adults alike can be placed in settings much like the one in which they live, and taught about the dangers of a paraffin (kerosene) stove, why you shouldn't put clothing on an electric heater to dry, how not to store household chemicals, safe practices when using a fireplace, how to properly escape a fire through doors (which are fitted with radiant heat panels to simulate a hot door) and working windows through which people are taught to safety escape, how to avoid in-home drowning, etc.

Providing safety classes and opportunities for community meetings, open 5-7 days a week, and often physically located adjacent to or near a fire station to encourage familiarity and interaction, BESAFE provides children and adults with invaluable tips to encourage fire prevention through community education.

The success of these Centres has been so great that some have been expanded to include small pools where water safety can be taught. Some even have scale versions of streets and intersections to teach children how to safely cross streets and walk with or against traffic.

In addition to fire safety, the BESAFE Centres teach about flood safety, AIDS prevention, first aid and a host of other topics through hands-on training, flash cards, flip charts, realistic props, actual fixtures, etc. in a simple, basic and highly effective manner.

EMS also deserves much credit for its partnership with Bic, a leading manufacturer of disposable lighters. Bic has supported the BESAFE Centres by donating children's workbooks and coloring books which BESAFE then distributes to help educate children about the importance of fire safety.

13.2 Jr. Cadet Corps:

A second level of highly effective community outreach is the Jr. Cadet Corps. Aimed at boys and girls between 12 and 18 years of age, participants come together on Saturdays to work and train in a highly organized paramilitary format where discipline is heavily emphasized. The instructors are strict, enforce the rules, and insist that all participants work and learn. The focus is on firefighting, with the structure and discipline often replacing what these children are missing in their home life. Given specific tasks and timelines within which they need to be completed, there are realistic consequences for failure. When old enough, participants have the opportunity become volunteers with EMS, with the hope of their entering the paid fire service at some future point.

Providing classroom and hands-on training about firefighting policies and procedures, as well as the equipment and appliances used, and providing its participants with a first-hand look at the essential role that EMS plays in the community, the Jr. Cadet Corps is an important avenue for recruitment into EMS.

13.3 The PIER Program:

The PIER Program is proactive in terms of helping to prevent injury in the home, as well as encouraging community emergency preparedness. PIER volunteers distribute written material about different types of emergencies, provide community demonstrations on what to do in an emergency, and help to establish community emergency response teams (especially important in the Informal Settlements).

13.4 Other Programs and the Future of Community Fire Safety:

It appears as if the responsibility for community education remains almost exclusively within the purview of these programs. While highly effective, it is recommended that the above programs, as well as the "Shack Attack" program at the Orange Farm Centre and the "Learn Not to Burn" program need to be extended to operational crews in fire stations for delivery on a daily basis. Community fire safety activity should be a core role within each firefighter's job description, and form part an important of their daily work routine. Community safety initiatives at an operational level would also act as a catalyst to make each fire station a Community Safety Center. ***Every opportunity must be taken to promote fire safety education.*** The volunteer work being undertaken throughout BESAFE, the Jr. Cadet Corps, the PIER Program, etc., combine to provide EMS with a pool of highly dedicated, hard-working and fire safety aware young people. These individuals should be actively supported in their aim of becoming full-time firefighters as they have the potential to become a bright future for the Fire Service.

All told, ***the community education programs that exist in Johannesburg are absolutely world class,*** and we recognize them as such. A similar commitment should be made to addressing other EMS needs that are of equal importance.

14. Informal Settlements:

Informal Settlements are well-known to EMS as being at extremely high risk, with little or no space separation, very high fire loadings, inadequate water supplies and poor means of access and egress. The emergence of these Informal Settlements into vacated high rise buildings in the city centre is extremely worrisome, and presents EMS with significant challenges and a great deal of risk.

With the complete removal of the fire safety building infrastructure (including the fire alarm and emergency lighting systems, structural fire separation, etc.), the risk of a single fire-related incident escalating into a major catastrophe with multiple loss of life and a very high degree of danger to operational crews is a major concern. It is our understanding that under certain laws, squatters now have occupancy rights. This, however, should not preclude the government from pursuing every available avenue in trying to remove illegal squatters from these buildings. A vigorous relocation program, coupled with the physical structural protection of vacated buildings to prevent entry or re-entry, should be introduced as soon as possible. The imminent potential for the loss of firefighter and other lives in the Informal Settlements cannot be overstated, and it is incumbent upon Johannesburg to make a concerted effort to reduce or eliminate the risk of so potential a catastrophe.

The BESAFE Centres and the Shack Attack program are working extremely hard to reduce the risk from fires within these communities, and they're to be commended for their many successes to date.

The risk of drowning, from floods as well as simply through non-swimmers getting into difficulty, was highlighted on a number of occasions. Whilst this particular threat is being addressed and prevented through improved education and swimming lessons, a response tool/technique that EMS may wish to consider is equipping all of its vehicles with "throw-lines" that would provide all EMS drivers with an initial rescue capability without recourse to entering the water. Similarly, all members should be provided with basic "working in, near or on water" training to raise both awareness and operational competence when faced with life-threatening and highly emotional drowning scenarios. **Attachment D** is a copy of the IOMFRS Operational Policy on water safety, which has been appended an example of an excellent program with a long track-record of success in this area.

15. The Need for an Expanded Dialogue with Government and Industry:

Fire protection has historically been a local responsibility. Each community has both static and dynamic conditions that are unique to itself, and a system of fire protection that works well in one community cannot necessarily be assumed to work equally well in another. *Fire prevention is the key*, and without intensive and ongoing local-level planning, the system of fire protection is apt to be ill-suited to local needs.

Each community must balance acceptable risks, the need for adequate fire protection with reasonable financial costs. Major emergencies, however, could easily overwhelm the capabilities of EMS, and both Johannesburg and its neighboring communities must have detailed cooperative plans for coping with such emergencies. Effectiveness can only be improved through pre-planning, joint training, familiarity with each other's day-to-day operations and some standardization of tools, equipment and response protocols.

Even with joint planning, however, expanded coordination must involve the national government as well as local industry. Fire prevention, fire suppression and public education on fire safety should remain the responsibility of local governments. Regulatory responsibilities for fire prevention, code enforcement and financial support for local fire departments should remain at the government level. So too must government's be responsible to provide adequate financial support to local municipalities, especially those that are staffed entirely by volunteers.

While we recognize that government alone cannot satisfy all requirements, industry must fulfill its responsibility when it is the beneficiary of services provided by firefighters who it calls upon in time of need. Firefighters are a basic form of insurance. No one likes paying the cost for this insurance, but they deeply appreciate having it in times of emergency. *In prevention we have cure*, and our hope is to

strengthen industries awareness of the risks from fire, natural disasters and/or acts of terrorism.

By sharing information, identifying risks, performing vulnerability assessments, developing emergency response and business continuity plans, enhancing overall readiness, implementing appropriate prevention and protection programs, and by providing increased financial support for local fire departments, industry can dramatically assist their community by both being an employer, and in responding to and recovering from an emergency.

16. Issues for Further Discussion:

We are prepared to elaborate on any of the information provided in this report, to provide additional material on topics discussed, and/or to refer EMS to organizations that might be of assistance as it relates to any of the subjects addressed in this report, as well as other subjects of interest.

We have discussed at some length the need to develop relationships with South African Airlines, shipping companies, hotels, freight forwarders and others who might support your efforts by providing transportation for 911 FUND personnel who are SME's prepared to donate their time and expertise to provide training for EMS personnel in many (if not all) of the areas discussed in this report. Also needed is transportation for appliances, equipment and other assistance we might be able to donate. We would appreciate any update of your efforts in these areas.

17. Conclusion:

Much like emergency first responders the world over, the core values of EMS include:

- **Service:** An unwavering call to protect and serve.
- **Bravery:** The ability to overcome fear through fortitude, instinct, compassion for others and training.
- **Safety:** To keep citizens free from danger by providing the best equipment and training to reduce risk to the public and its members at fires and other emergencies.
- **Honor:** The enormous commitment necessary to perform tasks that require excellence of character, inspire each other through pride, and acknowledge that every action reflects on each EMS member, both past and present.
- **Dedication:** A commitment to the objectives of the mission of EMS as part of its code of conduct in the faithful observance of duty, and calls on everyone to fulfill their obligations professionally and honestly.
- **Preparedness:** By combining all of the components of its core values, EMS maintains its constant state of readiness to meet all threats and challenges, traditional and new.

The single greatest asset of EMS continues to be its uncommonly dedicated men and women, both uniformed and civilian, and we applaud your efforts to reduce firefighter risk, enhance civilian health and safety, and minimize property loss from fire.

Acronyms:

ALP	Aerial Ladder Platform
ALS	Advanced Life Support
BESAFE	Basic Emergencies, Safety And Fire Education
BLS	Basic Life Support
CBRNE	Chemical, Biological, Radiological, Nuclear and Explosive
CIDS	Critical Incident Dispatch System
CPR	Cardio-Pulmonary Resuscitation
EMS	Emergency Management Services
EMT	Emergency Medical Technician
EOC	Emergency Operations Centre
Haz-Mat	Hazardous Materials
ICS	Incident Command System
IOMFRS	Isle of Man Fire and Rescue Service
IRMP	Integrated Risk Management Plan
IFSAC	International Fire Service Accreditation Congress
JMPD	Johannesburg Metro Police Department
NBC	Nuclear, Biological and Chemical
NDMC	National Disaster Management Centre
NFPA	National Fire Protection Association
PASS	Personal Alarm Safety System
PDM	Pre-Disaster Mitigation
PIER	Public Information, Education and Relations
PPE	Personal Protective Equipment
PTO	Power Take-Off
SCBA	Self-Contained Breathing Apparatus
SCUBA	Self-Contained Underwater Breathing Apparatus
SME	Subject Matter Expert
WMD	Weapons of Mass Destruction