



## INTRODUCTION

Singapore is a city-state with a land surface area of 645 square kilometers located approximately 137 kilometres north of the Equator. The population is about 3.7 million, with a multiracial mix of Chinese, Malay and Indians and a minority of others, supplemented by about half a million expatriates and foreign workers.

Geographically, Singapore is just outside the 'Pacific Rim of Fire' and is thus spared from natural disasters such as earthquakes, typhoons and volcanic eruptions. The challenges for the emergency services, however, are in the form of preventing and mitigating man-made incidents disasters in a highly urbanised environment.

Singapore's infrastructure includes one of the world's busiest airports, the busiest seaport and an extensive network of underground roadways. Land scarcity and high population density has made it necessary to house and locate the population and businesses in tightly packed residential and commercial high-rise buildings. Mishaps thus have a greater potential to inflict mass casualties and extensive destruction to properties. There is also the threat of disasters that could potentially occur in the chemical and petrochemical industries located at the brink of the city-state. A major accident could have off-site impact on population centers. Recently, the threat of terrorism has added a new dimension to emergency preparedness and response.

## FOUNDATIONS OF EMERGENCY PREPAREDNESS

The Emergency Preparedness Programmes and Disaster Management activities undertaken by Singapore are based on the following main principles:-

- a. **Prevention** - Man-made disasters can be prevented. Their tragic consequences can be minimised through a set of comprehensive government regulations on fire and building safety. Regular fire safety enforcement inspections are essential to ensure systems operational effectiveness and prevent human negligence.
- b. **Readiness** - Readiness is contingent upon preparation/preparation. Pre-planning for possible response to different forms of emergencies enhances readiness. The contingency plans are exercised regularly.
- c. **Awareness** - The community must be aware of the nature and scope of disasters. It has to be educated on the importance of emergency preparedness. The community must be involved in exercises, training and physical preparations.
- d. **Coordination** - All agencies responding to an emergency must work within a unified framework to coordinate multi-agency efforts in emergency response and management of disasters and available expertise and resources swiftly to the disaster site to maximise the chances of survival of the injured and to minimise damage to infrastructure.
- e. **Recovery** - Restoration work and the rehabilitation of the injured is an important component of the total disaster management programme. The speedy recovery of the affected population and the resilience of the emergency forces will bring the area back to near-normal conditions.

## EMERGENCY AUTHORITIES

The Ministry of Home Affairs is the principal policy and directing authority responsible for civil defence emergency preparedness and disaster management. Under its command is the Singapore Civil Defence Force (SCDF) responsible for planning, coordinating and implementing the various programmes and activities. The SCDF is the leading authority that will coordinate the pre-planning activities and command and control all mitigating operations during an incident. Some 18 other Ministries and Statutory Boards are also involved in supporting roles under a unified framework of Operation Civil Emergency.

## LEGISLATION

The main laws supporting Singapore's emergency preparedness and disaster management activities are:-

- a. **THE CIVIL DEFENCE ACT 1986**  
This Act provides the legal framework for, amongst other things, the declaration of a state of emergency and the mobilisation and deployment of operationally ready national service rescuers.
- b. **FIRE SAFETY ACT 1993**  
This Act provides the legal framework to impose fire safety requirements on commercial and industrial premises, as well as the involvement of the management and owners of such premises in emergency preparedness against fires.
- c. **CIVIL DEFENCE SHELTER ACT 1997**  
This Act provides the legal framework for buildings to be provided with civil defence shelters for use by persons needing to take refuge therein during a state of emergency.

## ROLES AND FUNCTIONS

The Singapore Civil Defence Force (SCDF) provides 24-hour swift and effective fire fighting, rescue and emergency ambulance services. Other functions include preparing and educating the population in emergency preparedness, procedures and fire safety. The SCDF also enforces fire safety requirements for buildings and in storage and transportation of petroleum.

The Force is also responsible for the provision of warning and protection against the effects of disasters and war by controlling and managing the Public Warning System (PWS) and Civil Defence shelters. In addition, the SCDF conducts rescue operations to minimise the loss of lives and properties. To meet wartime requirements, National Service Units are established, trained and equipped. These could be mobilised in times of need to augment the regular fire and rescue assets.

## CONCEPT OF OPERATION

The SCDF operates with a 3-tier command and control structure with HQ SCDF at the apex commanding 4 Land Divisions supported by a network of Fire Stations and Satellite Fire Posts strategically located over the island. The concept of operation is based on a multi-tier response. The Operations Centre at HQ SCDF will dispatch the nearest resources to the incident. Additional resources from other fire stations could reinforce this first response if the need arises. In a major incident, further reinforcements can be met by the Standby Unit and the recall of off-duty fire fighters. National Service (NS) units such as Rescue Battalion, Heavy Plant Battalion, Medical Company etc. will be mobilised.

## INCIDENT MANAGEMENT SYSTEM

SCDF has developed its capabilities on the need to react to a number of major incidents simultaneously. Major scenarios that have been identified include:-

- a. Oil refinery fires and major industrial accident and explosions;
- b. Mass Rapid Transit incidents, involving underground and overhead trains and cable-ways;
- c. Maritime incidents in the port area;
- d. Chemical related incidents involving hazardous materials;
- e. Air Crash Incidents, both in populated and airport areas;
- f. High-rise fire incidents;
- g. Building collapse incidents.

These operations could also involve a full mobilisation and deployment of personnel and equipment from the National Service operational units.

## SPECIAL CAPABILITY

SCDF has also established some special rescue capability, namely the **Disaster Assistance and Rescue Team (DART)**, a specially trained unit that can undertake high-risk fire fighting and rescue operations. This includes deep penetration, rescue in confined space, collapsed buildings and height rescue, and life detection for wide area search. The DART is also the main component in the SCDF overseas contingent and is capable of rapid despatch for urban search and rescue missions within the region.

**Hazardous Material Incident (HIT) Teams** are strategically located in 4 fire stations. The HIT is adequately trained and equipped to handle hazardous material (HAZMAT) incidents throughout Singapore.

## PUBLIC WARNING AND PROTECTION

Another significant role of SCDF is to provide early warning and adequate protection to the population in times of national emergency. The SCDF has in place a Public Warning System (PWS) with an island wide network of more than 240 outdoor sirens mounted strategically on high rise buildings.

The implementation of CD Shelter Programme involves the construction of hardened shelters in the Mass Rapid Transit (MRT) underground stations and new apartment buildings. Since 1997, all new residential developments must have apartment shelters. This is an important milestone in our emergency preparedness and readiness.

## FIRE SAFETY AND PREVENTION

The prevention of fires is a cornerstone strategy for SCDF to achieve its mission to protect and save lives and properties. The SCDF formulates, implements and enforces fire safety regulations. This includes vetting of Building and M&E Plans submitted by the professionals, on-site inspections of building systems and enforcement checks on the compliance of fire safety standards. To instil greater sense of fire safety culture in the industry, the Force focuses on programmes to educate professionals in areas of fire safety and engaging the professional bodies in the introduction of self-regulation scheme for building plans.

## PUBLIC EDUCATION

Community involvement and participation in Civil Defence is essential to prepare the Nation to deal with emergencies. Since 1982, the SCDF has been reaching out to the various segments of the population with the objectives of enhancing the awareness of the whole population in Civil Defence.

Under the Civil Defence Public Education Programme, the SCDF aims to have at least one member of every household trained in civil defence skills. In addition, emergency exercises in food, water and fuel rationing, blood collection and shelter occupation are conducted regularly to educate the public on emergency procedures and preparedness.

## INVESTMENT IN TRAINING AS THE WAY FORWARD

SCDF places heavy emphasis on training to equip our personnel with the desired knowledge, competency, skills and attitudes. The opening of the Civil Defence Academy in Mar 1999 marked a significant milestone in the history of the Singapore Civil Defence Force. The Academy, with purpose-built features, meets the training needs of regulars, national service personnel, emergency response personnel of the industries, fire fighters and rescuers from other parts of the world.

The training facilities in the Academy include the use of state-of-the-art simulators and modern communication technology to make learning simpler, more interesting and more realistic.

## INTERNATIONAL COOPERATION

Over the past years, Singapore was involved in the following areas of co-operation in disaster management:

**a. International Relations Programme**

Singapore has an on-going exchange programme with a number of countries from the Asia-Pacific and Europe. The various emergency authorities in Singapore, especially the Ministry of Home Affairs, the Singapore Civil Defence Force and the Singapore Police Force meet their respective foreign counterparts from time to time to exchange views and experiences on emergency preparedness and disaster management.

**b. Overseas Rescue Assistance**

The Singapore Civil Defence Force has since assisted the Philippines in the Baguio Earthquake rescue operation in 1990 and Malaysia in rescue operation in the collapse of the Highland Towers in Kuala Lumpur in 1993. More recently, the SCDF overseas rescue contingent assisted Taiwan in the Taiwan 921 Earthquake rescue operation in September 1999. The Singapore Civil Defence Force's Overseas Rescue Contingent is listed with the United Nation's International Search and Rescue Advisory Group (INSARAG) register as an international Search and Rescue Team. Since April 1999, the Singapore Civil Defence Force registered two of its disaster management experts to be part of the United Nations Disaster Assessment and Coordination (UNDAC) Team.

**c. Training**

The Singapore Civil Defence Force deeply values the sharing of ideas, expert knowledge and technology in disaster prevention and management with its overseas counterparts and has on-going programmes with countries in the Asia-Pacific, Europe and the USA. Singapore is continuously learning from other countries and adopting suitable ideas for use in its own local context, so as to constantly upgrade its mode of operation to tackle both old and new challenges.

The Singapore Civil Defence Force also offers training courses, such as the Urban Search and Rescue Course, Fire Fighting and Hazmat Course and Emergency Behaviour Management Course, to its international partners. These training are conducted with realism in the Civil Defence Academy, with its modern innovation like training simulators and facilities. To date, some 263 participants from 2337 countries have attended courses at the Civil Defence Academy.

## CONCLUSION

Singapore values public safety and security. It believes in being prepared to face major disasters so as to ensure minimum losses and disruptions. It garners all efforts to promote and institutionalise emergency preparedness among its people, while developing and exercising contingency plans for a wide range of foreseeable disasters to be executed by various emergency agencies in close coordination. Where appropriate, it also learns from the partners worldwide and shares its experience and rescue resources with nearby countries in need of assistance.

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