# SERIOUS INCIDENT MAPPING: ADAPTING US CRIME MAPPING TECHNIQUES TO THE SUBWAY SYSTEM IN THAILAND

THESIS

Presented to the Graduate Council of
Texas State University – San Marcos
in Partial Fulfillment
of the Requirements

for the Degree

Master of SCIENCE

by

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December, 2008

## ACKNOWLEDGEMENTS

I would like to thank my Committee Chair, Dr. A. Steven Dietz, and my Committee members Dr. Tomas Mijares and Dr. Jay D. Jamieson for their mentoring, advice, and encouragement. I could not have completed this work without them.

I would also like to thank my family in Thailand and especially my mother, Professor Sudsanguan Suthisorn, for her love, support, and guidance through this long and stressful process.

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**ABSTRACT**

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The nation of Thailand, like most Asian nations, will experience significant growth in the coming years. To accommodate this anticipated growth, Thailand will continually increase the capacities of public transportation systems around the nation, and especially in the capital city of Bangkok. The planned expansion of the subway system (MRTA) in Bangkok is an important part of the overall public transportation initiative.

The security system for the subway functions well to prevent accidents, fire, floods, crime, and other serious security threats in the stations and along the underground lines at present. However, the planned expansion will present new security challenges, and it is

important to proactively develop new security measures to respond effectively to the new challenges before they arise. The concept of Serious Incident Mapping is a variation of traditional crime mapping, which is designed to provide managers with all types of security-related trend information to assist them in making decisions for security planning, and for responding to security incidents and challenges.

MRTA administrators, mid-level managers, and line personnel were interviewed regarding the security system, security challenges, and future security operations in the subway system to determine if Serious Incident Mapping would be an effective management tool for MRTA in the future. The resulting data were analyzed to form the basis for recommendations to Thailand's government.

# CHAPTER I

# INTRODUCTION

## Introduction and Statement of the Problem

The Subway Security personnel in Thailand occasionally encounter street crime, groping of female passengers, fighting by juveniles, and other offenses along with the continuing possibility of flooding, accidents, equipment failure, illness, and other emergencies in the subway environment. It is possible that public safety and crime prevention in the subway system would be significantly enhanced by systematic data collection and analysis for all types of security issues, similar to the way that crime mapping is used by police departments in the USA and other countries.

The mass rapid transit system project started to become reality when the Royal Decree Establishing Metropolitan Rapid Transit Authority (1992) was promulgated, whereby the Metropolitan Rapid Transit Authority was officially established. The organization subsequently became the Mass Rapid Transit Authority of Thailand (MRTA) under the Mass Rapid Transit Authority of Thailand Act of 2000. It saw to the construction of Thailand's first underground mass rapid transit system and successful implementation. The system was officially opened to the public on 3 July 2004.

The M.R.T. Chaloem Ratchamongkhon Line Project which means the Celebration of Auspicious Kingship is an entirely underground (20 kilometers) system with 18 stations. The tunnel boring started at Ratchadaphisek Station, using 8 Tunnel Boring Machines (TBM).

In the early stages, the progress of the tunnel boring work went slowly but in the later stages the work rapidly advanced at around 500 meters per a month. In February 2001, the mainline tunnel and Depot Approach Tunnel were completed. Moreover, the installation of track and conductor rail for a distance of 60 kilometers could be achieved at a later time. When the station-to-station distance exceeded one kilometer, intervention shafts and emergency exists between stations were constructed in accordance with the requirements of the National Fire Protection Association Standard (NFPA 130). Under the NFPA standard, the building has to be constructed to allow for easy passenger evacuation out of the tunnel within six minutes in case of emergency or fire. Moreover, the intervention shaft will handle smoke extraction and allow fresh air into the station. (There are a total of eight intervention shafts and emergency exists for the M.T.R. Chaloem Ratchamongkhon Line Project.)

The construction of the Depot began in December 1998 on an area of approximate 500 acres. Its elevated structures were constructed at 3 meters above the ground surface for flood prevention, and were finally completed in October 2001. Later on, the concessionaire undertook the construction of additional buildings consisting of operation control center, rolling stock stabling sheds, test track, workshop building and washing plants as well as administration building.

The construction of the M.T.R. Chaloem Ratchamongkhon Line which included stations, tunnels, depots, and interventions shafts was completed. The materials used for the station's design and its interior decoration are mostly granite and ceramic tiles as well as coated metal, again complying to the requirements of NFPA 130 standards for fire prevention, that non-combustible materials must be used. There are facilities provided such as lifts, escalators and air conditioners as well as facilities for the disabled such as wheelchair ramps, Braille letters, public

addresser system, parking facility and toilets for passenger and the disabled. In addition, there are park and ride buildings at Lat Phrao Station and Thailand Cultural Center Station as well as ground level parking facility at six stations. For any other station with enough space, a feeder system is provided to facilitate the integration into another system network such as parking facility for buses, taxis and mass transit vans.

With regard to the service operation, Bangkok Metro Public Company Limited, the concessionaire, appointed Siemens Limited to design and supply the trains, the manufacture of which was commenced on 20 November 2002. The first passenger carriage arrived in Thailand on 15 October 2003, by the world's biggest cargo plane, Antonov AN 124-100, and two trains at a time were shipped to Thailand starting from 19 December 2003. Finally, the whole fleet of 19 train sets totaling 57 cars arrived at Laem Chabang Port, Chonburi, with the final four arriving on 20 April 2004. All these trains had to pass stringent tests to ensure their safety system. It is a great pride for Thailand to have the first subway line, the service of which is equal to that of any other country in the world.

**The City of Bangkok**

The Bangkok Metropolitan area in the central region of Thailand has a registered population of around 20 million people. This figure includes 6 million in the city of Bangkok itself, and 14 million in the five urban provinces surrounding the capitol city. The public transportation system of roads and streets, railways, subway and elevated commuter trains must service a commercial and commuting population of 15-20 million.

Bangkok may be known as one of the worst cities in the world for traffic because the traffic jams on Bangkok's surface roads. Private vehicle usage continues to outstrip infrastructure development. Most of the urban residents own 1 car per 1 person. City residents

complain that they spend more than half their waking day on the streets in their vehicles because of the slow traffic conditions. The government has tried many times to find solutions for improving the state of the traffic in the city center, which can sometimes take an hour just to move one kilometer.

The subway system (MRTA) has presently an average daily ridership of 180,000 passengers. The elevated sky train system (BTS) has presently an average daily ridership of 250,000 passengers. Traffic Police analysts estimate that as many as 5 million vehicles may be moving (or attempting to move) during rush hour on weekdays in the metropolitan area.

**The Mass Rapid Transit Authority of Thailand (MRTA)**

The Mass Rapid Transit Authority of Thailand (MRTA) (previously named the Metropolitan Rapid Transit Authority) is a state enterprise under supervision of the Minister of Transport, established in the year 1992. The MRTA has been designated for the implementation of the rail mass rapid transit system in Bangkok and its vicinity including the provinces as prescribed in the Mass Rapid Transit Authority of Thailand Act, B.E.2543. Currently, the MRTA is supervising the initial system project phase, officially called the M.R.T. Chaloem Ratchamongkhon Line. In Addition, the MRTA has been authorized to implement a part of the MRTA extension network recently approved by the Cabinet on February 6, 2007.

The M.R.T. Chaloem Ratchamongkhon Line is Thailand's first project that has a *public-private partnership* scheme of investment under the Private Participation in State Undertaking Act, B.E.2535. For the public sector, the MRTA has the responsibility and authority for project management, and is the investor of civil infrastructure and land acquisition. For the private sector, Bangkok Metro Public Company limited (BMCL) was granted a 25-year concession as the system operator, and is also invested in train operations system equipment. The system,

commenced operations on July 3, 2004, has presently an average daily ridership of 180,000 passengers (MRTA, 2006).

**Engineering Considerations and Concepts in Design of Underground Stations and Tunnels: Geology and Soil Engineering**

Knowledge of the geology and soils in which the tunnels and stations are to be constructed is critical to the development of safe and economical structural designs. Prior to the award of the construction contracts, the MRTA carried out detailed investigations in order to understand the nature and behavior of the soils along the project route. Following award of the construction contracts, the selected contractors made further investigations for use in their design of the facilities. This was supported by reviews of information available from past building projects adjacent to the alignment.

The Bangkok metropolis lies at the head of the Gulf of Thailand on the Chao Phraya plain. The plain formed in a geological depression resulting from block faulting during the Tertiary period (64 million years ago). Over the time of depression was filled with river and marine sediments consisting of alluvial sand and gravel, inter-bedded with flood plain silts and clays, in the north, and progressing seaward into deltaic deposits and marine clays. The uppermost soil layers in Bangkok comprise uniform deposits of soft marine clay laid down in the last sea incursion between 3,000 to 5,000 years ago. This clay has high moisture content and high plasticity, typical of young marine clays and, in the engineering sense, is considered a very weak material, unable to support even light loadings.

Below the soft clay lies a zone of medium stiff clay and beneath this is s light brown or yellowish brown stiff clay known as the First Stiff Clay layer. The strength of this stiff clay is more than five times that of the soft clay and it is an ideal material in which to locate the

MRTA's tunnels. Within the stiff clay there are layers of silky sand. The uppermost section of the Bangkok Aquifer generally comprises very stiff sandy clay overlying a dense, to very dense, brown silty-sand. The main variation in soil profile along the alignment is the variation in the thickness of the very stiff clay layer and the soils immediately below it.

The presence and location of underground water has a significant bearing on the design of underground stations and tunnels. In Bangkok the water table has been greatly modified over the years by extraction water from the seep aquifers under the city. This pumping has lowered the water table and significantly reduced ground water pressure within the project area. Typically, the upper few meters of the sand layers underlying the First Stiff Clay and the Very Stiff Clay have been dewatered and ground water has therefore HAD minimal impact during the construction of the MRTA project. However, the design of the structures has taken account of the possibility of recharge of the Bangkok aquifer or in the word the recovery of the water table back to levels prior to the large scale dewatering (MRTA, 2003).

**Design Standards**

Between 1996 and 1999, the MRTA awarded a number of design-build contracts to international joint venture contractor teams for the implementation of the M.R.T.Chaloem Ratchamongkhon Line. The design criteria set by the MRTA were aimed at ensuring that the system meets the high standards attained by modern mass rapid transit systems such as those in Japan, Hong Kong, Singapore and Taipei. Design life requirements are: 120 years for underground structures, 50 years for above ground structures, electrical equipment is generally designed for a life of 30 years and mechanical equipment for 20 years.

One of the MRTA's key design requirements was that the design of the system should comply with the United States National Fire Protection Association's "Standard for Fixed Guide

way Transit System", NFPA 130. This standard has been specifically developed for use in the design of mass transit systems and is globally recognized.

NFPA 130 aims firstly to minimize the risk of fire occurrence but also to ensure that, in the unfortunate event of a fire, the necessary alarm and protection systems are provides to ensure safe environments within the station and tunnel egress routes for the time needed to safely evacuate passengers and staff.

**Subway Security Service**

*Subway Security Services.* The subway security services responsibilities are: Flood Protection to include measures to prevent flooding of the stations have been a major design consideration. During the rainy season Bangkok's streets are prone to flash flooding and there is the possibility of major flood should the Chao Phraya River overflow it banks.

Protection against the major flood is provided by stop-logs (flood boards). These are removable barriers that can be placed in front of the entrances when a flood warning is issued. The potential for flooding is highest when high water level in Chao Phraya River is combined with tidal surge up the river. Flood boards are provided to protect entrances up to a level of one meter above the 200 year flood level.

*Fire Safety.* The main defense against fire in the system is the use of construction materials complying with the requirements of NFPA 130. This primary defense is reinforced by the provision of automatic fire alarm and protection system.

Fire detection systems include smoke and heat detectors, manual fire alarm call points, and linear heat detectors in the escalators and running tunnels. The detection systems are connected to the Operations Control Center at the depot, by SCADA, and also to the fire alarm panels at the

Station Operation Rooms. Fire protection devices include water sprinkler systems, FM 200 gas systems in electrical rooms, fire hydrants and hose reels, and portable fire extinguishers.

Stations are provided with emergency egress staircases which, in the event of a fire, will be positively pressured to prevent ingress of smoke and so provide a safe exit route for passengers and staffs. Intervention shafts located between stations are also provided with staircase pressurization systems and will provide safe escape routes in case of an incident in the tunnels. Fire containment within stations is provided by a system of fire compartments within fire-rated walls and doors that limit the spread of fire and smoke in case of an outbreak event.

Smoke extraction systems within the stations are activated automatically in the event of a fire to assist in maintaining a tenable environment while stations are evacuated. At platform level, glass fins contain smoke within the platform ceiling and, together with the smoke extract system, prevent smoke migrating to higher levels.

*Tunnel Ventilation System.* The M.R.T. Chaloem Ratchamongkhon Line is provided with a tunnel ventilation system complaint with NFPA 130 requirements. This system will be activated in the event of train is stopped between stations, a situation known as congestion, and in fire emergency.

Each station is equipped with four tunnel ventilation fans, each capable of producing an air flow of 70m3/second, tow at each end of the station. The fans can be operated in either forward or reverse mode depending upon the location of the incident and the direction of the desired air flows.

In case of the train congestion, the purpose of the fans is to blow enough air over the stopped trains to maintain an acceptable temperature within the trains for the stranded passengers. In the case of a fire emergency, the fans will be called upon to blow smoke away

from the direction of evacuating passengers, to maintain a smoke-free evacuation route, and to keep temperatures tolerable in the path. In addition to the tunnel ventilation fans there are 40 m3/second Under Platform Exhaust fans per station which are operated normally. These fans remove hot air emitted by train braking systems and air-conditioning units while trains are stopped at stations. The intakes for the exhaust air are located underneath the platforms.

*Electrical Power Supplies.* Power is supplied from two discrete 69kV. Metropolitan Electricity Authority (MEA) sources feeding two sub stations located within the maintenance depot at Huai Khwang. From the depot, two 24kV Ring-mains supply power for trains and sub stations. These two independent sources provided redundancy so that, in the event of the loss of one power source, essential services can be maintained by the other.

In the event of loss of both MEA supplies, there are standby diesel generators at the depot able to supply power for essential services in the stations and tunnel. In addition all stations, intervention shafts and tunnels are also equipped with Uninterruptible Power Supplies (UPS) that will power critical life safety equipment, such as emergency lighting; in the event of loss all other power supplies.

*Station Air-Conditioning Systems.* All stations are air-conditioned. The environment within the station is generally controlled automatically but can be monitored and controlled via computer link at the Station Operation Rooms. The air-conditioning is designed to maintain the stations at a positive pressure. This prevents warmer outside air entering through entrances. Platform screens doors platform level also assist in minimizing cool air loss into the tunnels. The air-conditioning system return air ducts also act as smoke exhaust ducts in the event of fire.

*CCTV.* Most areas around the cashiers' booths, turnstiles, and loading platforms are under constant surveillance with closed circuit television. Unfortunately, the tunnels and street areas outside the stations currently do not have CCTV coverage (MRTA, 2006).

Personnel Security at MRTA has the duty to perform according to the code of security work as safety protection for the subway system, passengers and everyone who are in the location of the subway system.

1) Prevention, protection, and response to incidents at the station, tunnels and on the trains.
2) Preparation and testing of the equipment ready for use in case of emergency.
3) Set the security personnel to be on duty 24/7.
4) Have K-9 unit search for bombs, suspicious materials inside the subway area.
5) Check and take care of all the equipment used in case of fire, flood, and medical emergencies, to ensure that they are ready to use all the times.
6) Train both MRTA personnel and partnerships on theoretical and practical special issues that may happen to the subway system.
7) In case of emergency, all the security personnel must be the primary staff to intervene and stop the incident at soon as possible, assist the police in further action.
8) The cooperation must be aimed at the safety of the passengers using the subway, and the people in the subway area.
9) To prevent and deter the dangerous incidents, abnormal situations, and emergency situations which may occur in the subway system by continuous study of all potential problems.
10) To increase the capacity and efficiency of the subway system.

The limitations of the law is that, the MRTA security personnel are not the having the same power as the regular sworn police therefore it is very difficult to maintain law and order without the authority to do so. They can't carry weapons like pistols; they can only use batons to prevent the unlawful action. It is very fortunate to the MRTA that most of the security personnel are ex police officers, so they have license to carry the guns to do the prevention and deter the causation of crime (RTP, 2006).

*Standard Procedures for Subway Security Personnel Encountering Criminal Behavior.* As the subway security personnel can't use the legal authority as the police officer, they are using the enforcement procedure based on the MRTA's code for security personnel which mainly is to deter the criminal behavior, like the citizen's obligation in Criminal Law. They are focusing on prevention work more than to deal with the criminal behavior. It is best that to prevent than let the incident occur. It the subway system, so the most important task is to prevent any bad incident to happen.

**Statement of the Problem**

The Subway Security Service has good personnel and good training, but also has a wide range of responsibilities and limited law enforcement authority. It is possible that in serious crime or emergency situations, especially in the event that the arrival of the Royal Thai Police was delayed by traffic jams or other priorities, the best efforts of the Security personnel might not be sufficient to contain the damage. It is suggested that upgrading the status of the Security Service to that of fully authorized law enforcement officers, and implementing a serious incident mapping system for use as a systematic planning tool together would significantly enhance the ability of the Subway Security Service to effectively prevent and respond to serious crime and emergency events.

**Research Hypothesis**

A needs analysis research study of the MRTA operational environment will indicate that the ability of the Subway Security Service to respond effectively to their goals and responsibilities would be significantly enhanced by the permanent presence of fully authorized law enforcement officers and the implementation of a serious incident mapping system.

# CHAPTER II

# MAPPING APPLICATIONS

## Adapting the Uses of Crime Mapping to Broader Security Contexts

Adapting crime mapping techniques to broader security goals is a subject that does not appear in criminal justice literature. However, general crime mapping functions may be logically applied to the operational security and safety goals of the MRTA.

Garson and Vann (2001) identified numerous functional uses of crime mapping for improving law enforcement. The following list of functions that might easily be adapted and useful to Subway Security Personnel and MRTA administrators in achieving the goals of the MRTA:

**Pin mapping** for police usually involves using a dot of symbol on a map to indicate the location of a crime. In computerized form, police and administrators can easily recognize areas with high crime risk. Trends may be visualized when time-series data is recorded on a pin map. Basic pin mapping could be used to track everything from criminal incidents in the subway to accident locations, equipment problems in the flood safety, fire safety, and ventilation systems, and passenger complaints.

**Hot Spot Mapping** allows the police to define areas of high crime concentration, and analyze the hot spot area for crime related characteristics like street lighting, income, types of businesses, etc. With this information, administrators can plan changes to prevent crime, and allocate personnel and resources to the most troubled areas. This would be useful for subway security, especially in responding to areas where passenger accidents and injuries occur.

**Crime Density Mapping** is like pin mapping, but with shaded or color-coded indicators of crime prevalence. It solves the problem of overlapping dots or covered dots on a pin map. It would be useful in the same ways as pin mapping.

**Briefing Maps** are good communication tools to illustrate relationships between characteristics of an area. For example, by overlaying a crime density map with an income per capita map, the relation between crime density and poverty may be shown. The subway system could use this in lots of ways, like overlaying ventilators with headache complaints, standing water areas with passenger accidents, etc.

**Integrating Interagency Data** involves overlaying mapping data from other agencies with crime data to see if any patterns emerge. It might be very useful to integrate street traffic, skytrain traffic, and subway traffic data together for everything from passenger usage trends to consequences of stoppages in one system to events in others. Data about sporting events, shopping promotions, political rallies, elections, etc, might bring to light many interesting relationships with the subway system.

**Time-series Mapping** is often used to spot seasonal trends in crime, and is useful in anticipating and preparing for problems that are likely to arise. This would be of considerable use to the Subway Security system, to anticipate seasonal and holiday changes systematically.

**Mapping Spatial Displacements** involves tracking the movement of crime types and trends in reaction to prevention efforts by police, or for other reasons. Tracking the movement of problems allows administrators and line staff to anticipate where to best deploy resources to prevent future problems.

**Orthophotographic Mapping** involves integrating aerial photographs of areas with mapping data. This might be especially useful with the flood and fire safety responsibilities of subway security.

**Crime Mapping Literature Review**

Information from systematic crime mapping allows police officers and administrators to make informed decisions on the street, in the station, and in upper level planning meetings with government officials from other agencies. Information needed by officers on the street is, of course, different from information needed by administrators and managers. However, there are some general similarities. The most useful kinds of mapping information for line personnel, supervisors, and administrators normally involves recent activity, and allows trends and probable changes to be easily visualized. Effective policing often requires responses to patterns, and mapping helps in understanding these patterns. The most basic information shows what, when, and where incidents of interest have happened. From this, emerging "hot spots" may be identified and troublesome behavior may be predicted. Communication with shift supervisors about observable trends and active cases becomes possible.

*Line Personnel.* Maps for4 line personnel should be detailed, easy to read and understand, and allow accurate assessment of street geography. Maps of should include details such as street names, landmark identifiers, and locations of important areas in an officer's beat. (Mazerole, 1997). Maps should be clear and unambiguous. Contrast and focus must allow maps to be read under low light conditions and while vehicles are in motion. (Mazerole, 1997).

Applications of mapping allow the following benefits to line personnel:

(1) It organizes diverse elements of information in a coherent way.

(2) It provides useful visualizations of case related data and patterns relevant to investigative questions.

(3) It provides a data base for crime analysis with appropriate software tools.

(4) It allows managers to prioritize and deploy resources in an efficient manner.

Maps often reveal a whole picture that is greater than the sum of its parts. This happens when many seemingly unrelated and insignificant pieces of evidence are viewed as part of a pattern (La Vigne, 1998). Without maps, data may be incomprehensible or overwhelming for line officers. A list of suspects or pieces of physical evidence means nothing in a huge list by itself (La Vigne, 1998).

These points are illustrated in several case studies outlined by La Vigne and Wartell (1998). In an Illinois case involving rural burglaries, for example, an inexpensive mapping program was used to plot incidents on a county map. Almost all incidents occurred close to major highways, which indicated that there was a traveling criminal group at work. The burglaries also seemed to occur close to cemeteries, which allowed concealment and easy observation. Based on this information, more patrols were placed around cemeteries, leading to the arrest of persons belonging to a group called the Irish Travelers (Wood, 1998).

In a Tennessee rape case, the residences of all ex-offenders living near a crime scene were mapped. Within 2 miles of the crime scene, there were 5 sex offenders, 15 parolees, and 2 juvenile habitual offenders. Victims were able to identify the offender from the suspect group. The interpretation noted that "without the spatial analysis of the offender databases layered on top of the crime scene map, the offender information would not have been readily known" (Hubbs, 1998).

*Police Supervisors.* Police supervisors be aware of crime problems and trends, and also must be able to address problems involving labor union relations, public relations, and political relationships. Calls for service, hot spot mapping, crime displacement, and accountability are all part of the daily decision-making routine for police managers. Hot spots identify specific locations for increased law enforcement activity and to help law enforcement managers solve problems. Hot spots are defined as "a single place with many crimes" (Eck, et al., 2004).

Pin maps and trends in calls for service serves as a basic index of the demand for police services. These maps are most useful as a tool to help managers allocate resources. In some police departments, descriptive data on every call is included, and mathematic weights are assigned according to the seriousness of the calls. The weighted values are then totaled to indicate each post's workload. Resources are assigned to equalize the workload and respond proactively to anticipated problems (Eck, et al., 2004).

*Mapping Trends in Crime Location.* In general terms, displacement occurs when criminal behavior is moved from one place to another. Spatial displacement occurs when offenders move from one area to another in response to a law enforcement effort. Barnes (1995) noted that the literature has identified six kinds of crime displacement:

1) *Temporal.* Offenders perpetrate crimes at times seen as less risky.
2) *Target.* Difficult targets are given up in favor of those easier to hit.
3) *Spatial.* Offenders move from areas that may be targets of crime prevention programs to less protected areas.
4) *Tactical.* Tactics are changed to get around security measures.
5) *Perpetrator.* New offenders take the place of those who move, quit, or are apprehended.

6) *Type of crime.* Offenders take up another type of crime if one type becomes too difficult to commit.

The ability to measure displacement greatly enhances the effectiveness of the crime prevention and enforcement plan (Barnes, 1995). Displacement analysis may be difficult, so managers should assess viability on a case-by-case basis.

*Demographic change and its implications for managers.* 30 million immigrants now live in the United States, which affects police departments that must continually interact with populations with language barriers and cultural differences. Although many communities may feel little effect (particularly those that are more isolated and rural), major metropolitan areas with many immigrants have experienced profound social change (Escobar, 1999).

It is in such places that community policing takes on special significance. Tourism in Thailand involves people from every part of the world, many of whom will use the subway system when they visit Bangkok. Matters are further complicated by the fact that a specific national group, such as the Vietnamese, may not necessarily constitute an easily identified ethnic group. Vietnam, for example, has 53 ethnic groups. Each group's perceptions of what is legal or illegal may differ sharply from local norms. Opportunities for misunderstandings with law enforcement are rife, and community policing officers must understand the cultural values and practices of the groups they encounter. Because police agencies need to know what is going on demographically in their communities to react appropriately, mapping demographics and related factors may translate into better community relations.

*Accountability.* New York City's Computerized Statistics (ComStat) process was initiated in 1994 in the form of crime control strategy meetings. As a result of sharp declines in the city's crime, the system is now widely imitated. According to the police department,

ComStat's objective is "to increase the flow of information between the agency's executives and the commanders of operational units, with particular emphasis on the flow of crime and quality-of-life enforcement information." Crime strategy meetings, held from 7 to10 a.m. twice a week, are part of an "interactive management strategy" intended to improve accountability "while providing local commanders with considerable discretion and the resources necessary to properly manage their commands."

Precinct commanders present at the meetings twice a month. The process format requires that precinct commanders appear before the ComStat meeting prepared to discuss crime and policing in their areas. A big-screen computer map shows the precinct under review. For example, a string of robberies with similar circumstances might lead to questions about known habits of robbery parolees living in the vicinity. As this conversation develops, a map showing relevant parolee addresses illustrates the discussion (NYPD). The crime reduction principles embodied in the ComStat process are:

(1) Accurate and timely intelligence. Information describing how and where crimes are committed, as well as whom criminals are, must be available at all levels of policing.

(2) Effective tactics. Tactics are designed to respond directly to facts discovered during the intelligence gathering process. Tactics must be "comprehensive, flexible, and adaptable to the shifting crime trends we identify and monitor."

(3) Rapid deployment of personnel and resources. Some problems may involve only patrol personnel, but "the most effective plans require that personnel from several units and enforcement functions work together as a team."

(4) Relentless follow-up and assessment. To ensure that appropriate outcomes occur, rigorous follow-up is necessary (NYPD).

The command and control center has the capability to display computerized pin mapping and crime, arrest, and environmental data in charts, graphs, and tables. By using MapInfo software and other computer technology, the ComStat database can be used to create a precinct maps for every precinct in the city, and show almost any combination of crime locations, crime hot spots, and other needed information. These visual presentations are a highly useful part of the ComStat reporting system, since they permit administrators to instantly identify and explore trends, patterns, and possible solutions for crime and environmental problems (NYPD).

*Maps in support of community oriented policing and problem oriented policing.* Three types of maps can be used in support of community oriented policing (COP) and problem oriented policing (POP):

1) Crime and offender information. This includes information about the times, locations, and types of offenses, repeated offenses, methods of offenders, property taken, points of entry, linking evidence, types of vehicles used, and suspect information, such as personal appearance and case status, which is also an aspect of accountability.
2) Community and government resources. These include information about neighborhood watch groups, parolees, probationers, owner occupancy, utility users, patrol deployment, alarm systems in place, lighting, playgrounds, high social stress areas such as low-income housing, liquor stores, and crime hot spots.
3) Demographics. These include information about population change, ethnicity, race, socioeconomic status, the percentage of female headed households with children, and the school-age population.

*Courts and corrections.* As in other realms, law enforcement mapping can apply to any situation involving the display or analysis of spatial data. Courts and corrections are unusual in

that many of their applications may involve large-scale representations of the type referred to as high-resolution geographic information systems.

*Conclusion.* If geographic information is useful in a law enforcement context, ways can often be found to present that information in a map. Geographic crime data alone are not enough to create a meaningful map, as they must be paired with a base map and other data to make the map interesting. Every day, however, the demand for "geographically enabled" data grows as businesses, governments, and organizations begin to appreciate the value of maps and spatial analyses.

# CHAPTER III

## METHODOLOGY

This study is exploratory in nature. It is not essential that the findings be generalizable beyond the organization selected for the study. In fact the results of this study explain an aspect of security associated with the MRTA and are unique to the MRTA. Also, because MRTA in general and the security group in particular is a relatively small organization, a traditional quantitative study would explain little that the organization does not already know. Therefore, this study uses basic qualitative research processes to better understand These factors suggest that the organizations selected do not need to be large, but do need to be comprised of enough complexity to ensure that the researcher will have adequate opportunity to observe the development of social value as defined by the participants.

A basic qualitative approach may prove the most beneficial in collecting the data for addressing the above research questions. Patton (2001) suggests that this may be done through interviews and direct observation of the organizations in question. An interview protocol was developed that paralleled the frameworks discussed in the review of literature. The questions contained in the interview protocol were:

1) Describe your role in the organization. Does it fit the goals on MRTA?
2) What are the problems that MRTA is facing? How do you view these problems?
3) What are the possible solutions to the problems?
4) Would a mapping system help to solve the problems? Would it help you do your job? Would it help to achieve the goals of MRTA?

The above questions surround concepts and ideas to allow the interviewer the opportunities to pursue tangential concepts that seem to help address the research questions, and to allow the researcher to adjust his language to that of the organizations in question. The researcher tested these questions prior to using them.

The researcher is a career employee of the subject organization and has secured permission from the head of the MRTA for all aspects of the project. The data, results, and conclusions generated by the study will be used internally in the MRTA. The researcher will begin his data collection efforts with the head of MRTA. The researcher will allow the head of the MRTA to recommend study participants. The researcher conducted 20 interviews with staff of MRTA. The roles of the participants are outlined in the table below:

| Role | Number |
|---|---|
| Top Administrators | 2 |
| Supervisors | 2 |
| Security Officers | 16 |

Each interview lasted approximately 20 minutes. Sandberg (1996) and others have suggested that as the interview process moves forward the interviewer will begin to recognize a repeated pattern in the information being provided by the participant – usually this occurs by the time the researcher has conducted approximately 20 interviews.

Patton (2000) suggests that the best method for exploring the interview information collected is to record the interview and have it transcribed. Patton goes on to suggest that the transcripts are then treated as data, and a content analysis is conducted. The transcripts are

reviewed, looking for patterns, concepts or themes, which the researcher then codes. These codes can then be interpreted in a number of different ways.

The interviews were conducted in Thai but were transcribed into English under the supervision of the researcher. These transcriptions were then analyzed using the following processes. The interview questions were used as the primary organizer for the data, so the initial sort of the data was around these questions. From this organization the researcher examined the data for patterns that seemed to help explain the data, as well as address the needs of MRTA.

# CHAPTER IV

# RESULTS

The following are the analysis of the data collected. As mentioned earlier the data were initially organized around the interview protocol questions (the complete transcripts can be found in the appendix). As described in the methodology, participants for this study were divided into three groups – top administrators, supervisors and security officers. The 16 security officers interviewed were divided into 4 groups, each group consisting of 1 shift supervisor, 1 assistant supervisor and 2 security officers. When they were asked each questions, they participated together in discussing their views (talked at the same time), with the shift supervisor summarizing and clarifying the answers.

The initial step for understanding the data that was collected is to organize the data around each of the interview questions. A portion of that data is provided below (the complete data set is included in the Appendix):

**1. Describe your role in the organization. Does it fit the goals on MRTA?**

*Participant 1.* My responsibilities are divided into two parts, which are 1) to maintain security and safety system to the public using the Chaloem Ratchamongkhon Line, which was opened to the public on July 3, 2004, and 2) to extend the M.R.T. system network to cover more areas in the Bangkok Metropolitan Area and surrounding communities in accordance with the government's mandate, with a time frame for completion within 6 years. This includes 91 km. of MRTA's extension and new line projects.

I must make sure that construction will be carried out with a deep sense of environmentalism, and with concerted effort to minimize traffic disruption. I think I am doing my best. My role is similar to the appointed manager of the Government's task who is responsible for construction the subway. If only the project can be done on schedule, I will feel that I have completed 100% work as the Governor of MRTA. However, only when the contract is signed will it be possible to forecast when the subway construction will be done and open to public. As the Governor, it is my duty to follow the government's policy, and also my responsibility to make sure that MRTA has made every effort to ensure the public's satisfaction with the subway system, and to ensure job satisfaction for MRTA's employees as well. I believe if employees are happy working at MRTA, this can guarantee the high quality and efficiency of service to the Thai public.

*Participant 2.* I am responsible for 3 departments: Operational Department, Security and Rescue Department, Maintenance Department. My job is to make sure that all the administrative work for MRTA is done correctly. I deal with all the legal work, including damage claims and lawsuit cases. I also look after the security and safety work. I focus on the safety of the subway passengers. Nevertheless, I am responsible for the overall maintenance and operation of the subway trains. I think what I am doing right now is according to the MRTA's goals. I must follow up to make sure that all the contractors are doing what it is written on the contracts, and make sure that they are responsible for their work. When MRTA extends the operating lines, my responsibility will be over-loaded.

*Participant 3.* My line of duty is under the Vice Governor, to whom I must report all incidents, and he in turn will report them to the Governor. My work is to maintain the security and safety of the entire MRTA subway system. I used to be a policeman, and then I transferred

to work at MRTA. I worked at Traffic Police Division of the Metropolitan Police, and I was responsible for traffic control on the expressways in Bangkok. I am very keen on prevention of accidents and suppressing crime, and so, working as the Head of the Security and Rescue Department is not a new environment for me. We set up a team to analyze risk and to make assessments of the threats to security and safety which may happen in subway stations. For each identified threat, we develop a booklet of how security officers are required to handle the incident. We measure how serious the threat can be in terms of possible damage to the subway station, subway system, passengers, employees, environment, and the image of MRTA. We try to find applicable procedure to handle every threat. We try to minimize the damage.

I have 120 security officers under my command. I have to make sure that they are doing the best job they can. I try to look for new tactics and new techniques all the time for them to learn. Knowledge is very important to the security officers. This type of work cannot be done by instinct, and it must be learned practically. The goal of my department is to establish a training institute for security and rescue work, so that we can offer these courses to other security officers and train our security officers as well.

*Participant 4.* I think my performance can help MRTA to reach the organization's goals. I analyze incidents and threats that might happen in the subway stations. When I analyze every incident, I also try to make updates and additions to the manual. I try to recommend improvements for the procedures for each type of incident. Whatever I have recommended will be included in the training programs that our security officers have. I will try to demonstrate my ideas and instructions for them to follow. We will discuss it ahead of time with the supervisors to make sure it is applicable. I also try to look for more knowledge on new techniques, methods

used to prevent harm from happening, and reduce the harm when something happens. I think what I am doing covers all the tasks I am responsible for.

*Security Officers.* As mentioned earlier the security officers were interviewed in groups and some of the questions were adjusted slightly so they would be better understood by the participants. For example the first question asked of the security officers was, "What is your role in the organization whether the work is suitable for the position?"

*Group 1.* We think that our job is to maintain safety and security of the subway's passengers and its stations. We have to guard, and must be alert to all circumstances that occur inside the subway area. We must follow the rules and regulations of MRTA thoroughly, as we have been taught and trained. It is very essential that we follow the instruction guidelines, and avoid doing things by instinct. We have to follow what we have been trained and taught. We think the job descriptions are matched with the goals of MRTA.

I am the shift supervisor, therefore I must make sure that all my team members are doing what they are supposed to do without any laziness or absent-minded behavior. I think the job performance is according to MRTA's goals.

*Group 2.* Security officers are doing work similar to police patrol. It is not difficult for us, due to our past experiences in the military. The goal is to make sure that the passengers are safe throughout their trips inside the subway stations. We must be on guard all the time; we know that it takes only one second for a bad incident to happen. We also have very good team work; we know what each person on the team is responsible for. We have been taught to be the security officers. We are trained to do an important job that we are proud of. We know about the subway system and its physical structure. We know that we are trusted with the passengers' lives. We follow instruction handbook when we are on duty. We think we are doing the job

according to MRTA's expectations, which is to keep passengers and the environment inside the subway stations safe and sound.

I (shift supervisor) emphasize that all my team must do the job the way they were trained. We maintain peace and safety of our passengers. The work is not that tiring, we can use judgment and discretion in the normal operations, such as staying at the gate to be on guard there during the rush hour, and walking during the regular hours. If any of my team has a question, I make sure that they come to me and ask me. If it is very unusual or important, I will discuss the issue with the director. I think we are doing good work, and we meet the scope of the job as security officers here.

*Group 3*. Our job is to maintain peace and safety for all the passengers and everyone who enters the subway station. The job is to guard all situations, physical, environment, and human behavior. We have to make sure that nothing will go wrong in the subway. If we suspect anything at all, we must keep an eye on that, and report it to the supervisor. We must listen to how the shift supervisor tells us to proceed. We all have been trained for many situations such as: hostage capture, fire crisis etc. We must use what we have been trained to do. All procedures are written in the hand book of instruction. So to maintain the peace and safety, we must be 100% certain in knowing what to do, and who will be the command of the situation. We think we are accomplishing MRTA's goals of safety and security for our passengers and the subway itself.

I (shift supervisor) agree with my team, they are very diligent. When we go to work, I mean for every security officer in every shift, we have to meet at the Thailand Cultural Center Station, and hear the shift supervisor inform us about the current news, what has been happening in the past hours, any situation occurring to MRTA or other transportation system, any crime

incidents, and how it was handled. In another words, we are informed and briefed about what is going on and what needs to be known. You can see that we can't miss anything. I think we are doing the work according to MRTA's goals. Because I am a civilian shift supervisor, I must work harder than my team so they will accept my leadership. I must have their trust so they will follow my instructions and directions. I am trying my best to be a good shift supervisor.

*Group 4*. Our job is to secure the people and buildings of MRTA. We have to make sure that no incidents happen, especially to our subway system. It is important that all the passengers know that they are handled with care and safety. If not, they will not use the subway, and we like them to use the subway as much as they can to decrease the traffic congestion. We patrol and observe all incidents. We use our experiences from being ex-policemen and ex-soldiers, so the work at MRTA is very similar to what we used to do. We must dress properly to gain respect from the passengers. Our uniform is similar to police uniforms, with many devices. When passengers see how we look, they feel that they will be safe in the subway. We all think that we are doing the job according to MRTA's goals.

As to me, (shift supervisor) the goals set by MRTA on our security and safety work is very well designed. I often check that everyone in my team is doing what they are supposed to do, especially in crisis situations. Nevertheless, there has been only 1 major incident which happened inside of a subway station. It was a thief who ran in from the street and tried to get inside the subway, and our security officer and BMCL security officer were able to capture him. After the thief was captured, a policeman came and took over the case. I think we are ready to respond to any type of situation. Our training, and rehearsing methods and techniques of what to do and how to handle situations make us confident in our capabilities. I think we are doing the job to meet the goals of MRTA.

**2. What are the problems that MRTA is facing? How do you view these problems?**

*Participant 1.* The problems that MRTA is facing include some of the world's greatest fears, such as terrorist attacks with suicide bombs or dirty bombs. I try to emphasize to all of our security officers that it is essential that they follow the handbook procedures step by step; never to use their own judgment when reacting to any problem that occurs in the subway stations. Budget is another problem, of course, as you know the best training, maintenance, and equipment necessary for dealing with safety issues is very costly. We have a very limited budget, and even though we know what type of equipment and methods are best to use for prevention serious incidents and dangerous crimes, we are not always able to get everything that we would like to have in place. Another critical problem is that our security officers only have law enforcement authority only when they are inside the subway stations. When they are not inside the stations, they are just like any other pedestrian. So when there is a problem underground, if the criminal runs outside the subway, our security officers can do nothing to capture this criminal. The authority to pursue and seize the suspect is very important for public's trust in our officers for their safety and security. We are endorsing the proposed regulation of MRTA to expand the authority of our security officers (when in active pursuit) to carry firearms and make arrests of crime suspects on the streets around the subway station areas.

*Participant 2.* I think MRTA is facing the problem of keeping up with the advanced technology. Though we are trying to catch up with all the high technology, it moves very rapidly and is very costly. Another problem that I think we have to put in mind is the nature of human behavior, especially when people are used to their routine activities. They tend to be unaware of what is surrounding them, and they are not alert when they are used to what they are doing. When this situation happens, there is risk for crisis episodes, for criminals always find the

opportunity to commit crime, and those who are doing the prevention job cannot neglect their duty for even a minute. I really worry that the security officers will be this way after they are used to their routine work. We have to be serious about every step of the procedures when they are on duty, they cannot omit anything. The last thing I worry is terrorist attack. We have never experienced the circumstances before, I have no idea how serious or harmful it can be to our subway passengers. I hope it will never happen. This comes back to the point I raised, that if our security officers do their job with full attention, I will be relieved because our security officers are fully trained. I have no doubt of their capacities unless the human nature takes over their attention from being alert to everything when they are on duty.

*Participant 3.* The problems the MRTA is facing concerning safety and security are associated with the operational system. MRTA is not the only agency in charge of responding to all incidents that happen inside the stations. MRTA works in cooperation with our concession contract agency called BMCL (Bangkok Metro Public Company Limited), and BMCL also has security officers to do the safety and security job. We do not have any written document defining operational responsibilities or the scope of security and safety measurement between MRTA and BMCL. It is not clear to both partners how to operate when incidents happen. I really worry about this. Another cooperation issue is with the policemen, as there are 11 police stations with jurisdiction along the subway line (20 kilometers). When incidents happen while the subway train is running very rapidly, more than 4 police jurisdictions might be involved. It is very troublesome to deal with the separate police jurisdictions in the investigation and in prosecuting arrested suspects. The last problem is we need to deal with involves policemen who may not understand the subway system. It is the regulation that when an incident happens, the police will be in charge of the situation when they arrive on the scene. If the police commander

does not know and see the structure of the system, he cannot be any help in resolving problems. He might actually cause unnecessary delays. We, I mean MRTA and BMCL, together set up a training course to give representatives from each involved police station the basic knowledge of the subway system, including the map showing the entrances and exits of the stations. But it seems like when they finally learn and understand, they are always transferred to another police station. It was a waste of time for both MRTA and BMCL to put all the effort and time to do this, so at present, this course is no longer offered.

*Participant 4.* My opinions about the problems that MRTA is facing are similar to my chief's opinions. The first problem is the scope of duty between MRTA and BMCL. Because our security officers are more experienced than BMCL's security officers, they let MRTA security officers do most of the security work, and the BMCL officers only guard the gates (entrances and exits), and the ticket windows. Everything is OK at this time, but I worry that accountability will be an issue if there is anything serious that happens. The lines of responsibility are not clearly defined. Therefore, from this point, I think it will be best if we know the exact scope of the work we are required to accomplish. Not only this, but also when tragedy occurs, the proper agency must be in charge, or be the commanding agency at the scene. There should be no question about authority in an emergency. Working with two partnerships, the scope of responsibility must be clear. Another problem I view is about the cooperation with other agencies such as policemen, nurses, fire fighters, district officers, news reporters etc. I think we should have clear rules about who is allowed to enter the area. One last thing that I worry is security officers' natural behavior. People always neglect the rules that they must follow according to the procedure manual. When they are used to their work, they tend to forget about following the basic procedures. They think that it is far too much to remember all the time, and

tend to think it is far too much to do. Usually when accident happens, it is because of human negligence. If only they are alert and cautious, no accidents would happen. I am not talking about the natural disasters, which are the threats that we cannot prevent. In that case, we can only lessen the harm done to our subway system and passengers.

*Group 1.* The problem that MRTA is facing is about cooperation with BMCL, because we do not have an agreement of whose responsibility it is when it comes to the operational system. Now BMCL's security officers know that MRTA's security officers used to be policemen, soldiers and marines, so they let us do the security work, and they only guard the exists, entrances, and the automatic fare collection gates. Sometimes when some minor incidents happened, the BMCL team did not report the incidents to us even though they should report all circumstances to us, no matter what.

We fear terrorist attack, and natural disasters like earthquakes, flooding, and fire. We have trained how to handle these situations, but nevertheless we still fear the possible damages. We do not know when it will happen, so it is human nature that we are scared of things that we cannot control.

I (shift supervisor) think it is good that we constantly examine what we are concerned about. Discussing things or incidents that we are not used to or never experienced will make us more aware of its causation and possible solutions.

*Group 2.* The problems for MTRA's security and safety issues are natural disaster and human-caused disaster. We have to be prompt at all times to face these critical incidents. We also have the cooperation system problem between MRTA and BMCL. If we do not know who is responsible for the job when crisis comes, tremendous harm to the subway system might be the result. Another problem that our team has experienced concerns jurisdiction when a criminal

runs out of the station after committing a crime. We have no authority to go on chasing the bad guy outside. Now we are using the Criminal Procedures Code Law which allows a citizen who witness crime to catch the criminal and hold him for the police. If it is a misdemeanor, MRTA's security officers are allowed to follow and pursue. There is no harm done with this situation. But if it is a felony, and our security officers use deadly force when they assume that the criminal might kill an innocent victim, no law protects this security officer's behavior. He would be arrested for using too much force on the criminal. As I am saying, if incidents happen inside MRTA, we do have the authority to deal with the situation like a policeman (Not investigation work). We worry about incidents that happen outside of the subway area, and it is a continual process. For example, if a man tries to pick pocket a passenger, and one of our security officer is at the scene. He yells at the thief and tells him to freeze, but when the thief sees the security officer, he is scared and runs out from the subway station. If the security officer still pursues or follows and tries to capture the thief, he will be doing so at his own risk. No one can help him if the uniformed police arrest him. So our problem doing security work to meet the goals of MRTA may cause us to put ourselves at risk.

I (shift supervisor) think it is a serious problem because it is about how to work without jumping over the line of the regulations, in this case, leaving the subway stations' area. It is an urgent problem that needs to be solved at once. With proper authority, our staff can do the security and safety work without any fear of violating the law. For natural disasters, I worry a bit, but I believe that our subway system can handle these situations. Human-caused disasters would be unlikely to occur, for we have BMCL security officers checking every access point. All the equipment we use is designed for maximum service to public and guarantees a high level of control and safety of passengers at the stations and on the trains.

*Group 3.* The problem we think that MRTA is facing is terrorist attack, and none of us have experienced terrorists attack before. We worry about "dirty-bombs" and suicide bombs. We have a great K-9 unit, so it eases our worries quite a bit.

To me, being the shift supervisor, the way I look at the problems may be different from my team. The problem MRTA is facing is human nature as explained by behavior theory. I worry that if people are used to the routine work everyday, they might begin to invent short cuts instead of following the instruction handbook of what is to be done. If this happens and he can escape being caught, he may tell his friends to do the same thing without realizing that all procedures are important. Missing one small instruction about what is supposed to be done when an incident happens may collapse the whole safety system. So I worry about my security officers themselves.

*Group 4 .* We think that MRTA's problems involve working with BMCL. We now divide each agency's work according to the respect BMCL's officers have toward MRTA's security officers. They (BMCL) know that most of us are ex-uniformed persons, so they think that we have more experience and have more knowledge and skills on the job. So BMCL only guards the accesses to subway system. We do not mind doing the work, but we'd rather have the agreement between MRTA and BMCL that defines each safety team's responsibilities. We like to work according to the regulations, so that when anything happens we will stand on the solid proof that it is what we are supposed to do. Other problems would be terrorist attack, fire, and flash floods.

I (shift supervisor) agree with my team about doing the security and safety work. Authority is one of the important issues when an incident happens. We must be in command of

the situation. If we have no authority, who will listen to us? So it is best to have written documents to guide our performance.

**3. What are the possible solutions to the problems?**

*Participant 1.* The best solutions to the problems that MRTA is facing begin with providing more training for the security officers, so that they will be able to respond quickly and effectively to security threats. We must never minimize the importance of strong security, and our officers must realize that they are protecting the lives of the passengers and the other employees at all times. They have to practice the handbook procedures until they can react instinctively when they are facing serious security threats. For the authority issue, I have sent the written draft regulation to the Cabinet for approval; we are waiting for the results now. By the way, we have new methods to train our security officers on a monthly basis. I really want them to know what the world is facing. They are the face of the MRTA security and safety's work. To me, they must do their job with high awareness and seriousness, rather than just a routine job.

*Participant 2.* The solutions that I try to offer the security officers are training, both practical and knowledge based. I have developed many short courses concerning to the security and safety work such as: fire safety, station design and construction considerations, flood protection, access level and retail maps, physical structure of the platform, station forecourts and reviewing handbook procedure to serious incidents which may happen inside the subway station (fire, flash flood, bombing). Some of the courses offer training so that they will be experienced in circumstances such as: how to put out the fire, how to evacuate passengers from the station, and how to transport passengers from one station to a safe place. I have invited many experts to teach our security officers to be able to deal with situations like an expert would, for example: how to use physical techniques to arrest a drunk without weapons, how to examine passengers

who walk in the station without searching them, how to put out fire, how to rescue life etc. I think with all the training and courses they took, they will be able to control the emergency situations very well. I also emphasize that the security officers must always follow the handbook procedures or the training methods. If they follow instructions, there will be less risk of making a mistake. I recommended that all of the security officers follow my quest without any doubts.

For the new technology devices, we try to send our technology officers on study tours, so they can bring back up-to-date devices as often as possible. It is very fortunate that our Governor views that the more advanced technology can improve the safety of the passengers. Now we train our staff personnel every month with new knowledge, and they practice how to evacuate passengers out from the stations with co-partners such as BMCL security officers, policemen, and nurses once every two months. I can say we are ready to face the crisis.

*Participant 3.* We need to set up a formal meeting and discuss the responsibility that each agency has for security and safety issues. The agreement must be signed by our Governor and the Director of BMCL so that when incidents happen, both MRTA and BMCL will know whose responsibility it is. For now, MRTA is the agency which controls and takes charge of the situations. MRTA's security officers were ex-policemen, ex-marines, ex-soldiers, and so they are more experienced with security and safety work. Informally, MRTA staff members are responsible for patrolling and preventing dangerous incidents, while BMCL's security officers are trained differently, and their main job is to guard the entrance of the ticket toll areas. I really think there must be a settled, formal work responsibility for both agencies. Another problem about jurisdiction occurs when a crime incident happens, and many police stations have authority to be involved. It becomes very difficult to solve or investigate the crimes. So right now, the Governor has urged to the Metropolitan Police Bureau to establish a unique police station to be

responsible for the subway system. We have one example already, as there is a police branch under the Traffic Police Division called "The Express Way Police Station" with jurisdiction specifically along the expressway. If this new subway police station can be established, we can continue offering a short review of the subway system, maps, and all the subway access to every policeman in this police station. It would be a very good solution for the problems I have mentioned. Other possible incident which might happen is terrorist attack. It worries me too, but I think with our strict rules at the entrances to the stations, it will be very difficult for such thing to happen. Passengers will spend about four minutes maximum inside the subway station. We also have our security officers trained to watch out for suspicious behavior. Our security officers are trained to be alert at all time. We offer training on new technical knowledge, and explain new situations which have occurred in the subway stations in other countries, so I think they know and are aware of the dangerous and risky situations. I believe that security officers must be "on guard" all the time. I know that our job is very challenging; it deals with opportunity for those who want to commit crime and serious incidents, so we must not open the loophole for such unexpected incidents at the subway station.

*Participant 4.* To me, the solution to solve these problems must be as follows: 1) set up a meeting between MRTA and BMCL and make a comprehensive written agreement on each agency's responsibilities and duties. 2) Offer short study tours for those who are involved with serious incidents at the subway stations. 3) Have the supervisors and their teams rehearse procedures and follow the exact steps in the handbook of crisis management for each type of incident. We must make sure that they will not do things by their instincts; it must all be done according to the instructions in the manual.

*Group 1.* We think that MRTA should set up a meeting with BMCL and discuss what obligations the security officers of each agency should have. At the moment, there is no big problem working among the two, only minor issues such as when minor incidents happened and the BMCL's security officers did not report to MRTA's security officers. To security management administration, it is very important that all unusual incidents be reported and are known to the administrative staff. In this case, it should have been reported to MRTA's Safety and Security Department.

For terrorists attack, though MRTA has put the great effort in training all security officers, the training should be done regularly, especially on new issues or techniques that the terrorists are using. We should have information on the impact of each terrorist's attack incident around the world.

*Group 2.* We are the action force, so we can only recommend very broad solutions based on our opinions of what should be done regarding our concerns. We think MRTA's Law Department should write the regulations and recommend that the government pass a decree expanding security officers' authority. For the natural disasters, we think that we should have event rehearsals every six months, with the passengers and all the agencies involved. Every 3 months, we should rehearse with BMCL officers, and every month we should rehearse within MRTA's security officer teams. We emphasize that for natural disasters there is no way to prevent the causation, but we can minimize the harm which may occur. So, we have to know exactly what to do without any doubt and reluctance.

*Group 3.* We think that problem of complacency after doing the routine work for a long time may be solved by rewarding those who work very strictly according to the procedures. This can be evaluated by the shift supervisors, Head of Safety and Security Department, and

Vice Governor responsible for Safety and Security Work. This will give motivation and inspiration to all the security officers. For dirty bombs and such, training is a must for all this new technology, but we should not forget to prepare for the old ways of disturbing the peace. MRTA is trying to have all of us trained. We think that not only training on techniques, but maintaining good physical ability is important, so when we face critical incidents we will be able to handle all situations. I (shift supervisor) think that when we recruit new officers, we should really select the persons who are best for the job, both mentally and physically. My opinion is that a person with good physical appearance who is very strong and looks good might not have the proper mental or psychological characteristics. This person is not suitable to do the security job which involves more than good physical appearance. So it is very important to be thorough when we select the staff. Maybe we should give these applicants a psychological test too.

*Group 4.* We think that you must have many suggestions from those you have already interviewed. To us, we think what MRTA offers us many opportunities to be able to do a good job, including all of the training and short courses on new knowledge, and the focus on problem oriented issues. We have the ability to do a good job, but we need to be more recognized by public. The MRTA's regulation on security officers' authority may not be enough when crime incidents happen inside the subway system. It would be perfect if we had more authority to chase the criminal and make arrests. So we think MRTA's Law department should endorse the Acts to the government, so we can handle the incident from the beginning to the end. This is not because we want to compare our work to the uniformed police, but we are concerned for the passengers' safety more than anything.

I (shift supervisor) would also like the MRTA to offer more training on life saving techniques. We should invite the paramedics to teach or give the training to us. So when an emergency happens, we can be the first to prevent the loss of life.

**4. Would a mapping system help to solve the problems? Would it help you do your job? Would it help to achieve the goals of MRTA?**

*Participant 1.* I think at this time, what we have in place is sufficient to maintain the security and safety of the passengers. We only have one line in operation so far, which is called The Chaloem Ratchamongkhon Line Project. It has a total route length of 20 kilometers and 18 subway stations.

For the safety of passengers, every station interior is designed to be an open area without niches or garbage bins, in order to prevent any placement of unwanted or dangerous objects in the station. In addition, there are closed circuit televisions installed for around the clock inspection. Platform screen doors in the form of glass walls are installed along each station platform to provide safety for passengers waiting for the train. They are designed to open only when the train stops at the platform. In addition, there is a sensor installed at every door to make sure that no passenger is caught between the closing doors.

After the other lines are completed, applying crime mapping will be very useful. As I mentioned the route of the line with 18 subway stations is short, only 20 kilometers, and all security officers must study all the diagrams of the physical structures, including the exits doors, entrances to the joining stations of the subway trains and the sky train, all the risky spots, and they must learn all of this by heart. They must be able to visualize them even with their eyes closed. I see no need for the serious incident crime mapping at the moment.

*Participant 2.* When we mentioned the word "map", it is clear that we must know all details about the subway stations, entrances, exits, connection routes, platforms, retailed shops, ticketing concourse, levels of subway station and risky spaces. I believe our security officers memorized these physical structures in their minds. I think what we are having now is adequate to maintain security and safety; nevertheless, in the future when we expand 3 more lines network, we may use the mapping system according to your study.

*Participant 3.* I think that mapping of serious incidents is not necessary at this time; it will be very useful and helpful in the future when MRTA extends new lines. At present, there are 18 subway stations, and all the high risk spots are identified and closely watched. Every security officer is trained to face crisis situations with systematic procedures. All electronic and mechanical equipment has instruction handbooks with safety procedures, which every security officer has read and rehearsed every month. MRTA puts tremendous emphasis on safety control, and therefore all security officers are taught to recognize strange situations either from people or in the environment. We have K-9 units to smell narcotics and bombs. I think for now we can manage all incidents with knowledge base we have. I am supervising all the security officers to ensure that they work as they suppose to do. To me, being the head, I should supervise everything about the job performance of the people under my command. When they have problems, they can come and consult with me. I try to make them love their jobs and love MRTA, and with this atmosphere; we can do the best job.

*Participant 4.* I do not think it is necessary to use the mapping now. We can handle all situations now. I think when MRTA expands more lines; we will certainly need the mapping. We have 120 security officers to look after 20 kilometers line, along the line there is 18 subway stations. I think the way they are working is very good, with the teams divided into three shifts of

eight hours each. With each of the operational team we have EOD, and a K-9 team. They have learned the map of the subway system by heart. They can close their eyes and remember the map structure, so what we have now is about right for now. We can surely adapt the study of crime mapping to MRTA security's management in the future. Perhaps when you finish the degree, you can help us with your study.

*Group 1.* Our opinion to your questions about mapping system, at present, is that we have no problem at all concerning the mapping. All of us know the structures and maps of the entire underground by heart. It is the first obligation that we had when we were trained for security officers' work. Another point is that the M.R.T. Line is still very short. The number of officers we have is sufficient to take care and handle the whole system, and we have BMCL's security officers to help handling exists, entrances and automatic toll gate as well. We think that it may be useful when we extend more Lines. By that time your study will be very useful for MRTA's goals. It can sure help us recognize the connecting points of the lines.

To me (shift supervisor), the mapping will be very useful when we have more lines, I think we can pin point the spots where the incidents are likely to happen very easily, and it will help us work better if we will know how serious of each spots can be in terms of harm to the passengers and the staff.

*Group 2.* We like what you are suggesting to us, it will be very useful for us when there are many lines to handle. Now we only have one line and everyone remembers how the maps are.

To me (shift supervisor), I think maybe the mapping will be useful to those who are not part the staff here. For example, when we have crime incidents, the police must come to take charge, so we don't have to worry if he knows the map of the system or not. He will look at the

"mapping system" and he can handle the situation. So to me, it will be useful to use, nevertheless for us, it is still not that useful unless we expand the lines. By that time it will be very useful to examine and evaluate the situations that happen in the subway stations.

*Group 3.* We like your idea and think it is good to have such mapping in our system, it will be useful to spot our where the security officers are located while they are on duty. It will be good for those who are the administrators to be able to know the map. But for us, at this time, the line is still too short and we still can handle all the incidents. We use the trains from station to station, so it is very fast and convenient for us to go to an incident very fast. When we expand the line, then the situations will change, it must will be a "must have" for the better achievement of the security work.

I (shift supervisor) agree with my team, I think all of us can envision the whole system's map even when they close their eyes. We have been working, studying the structure, the maps, and the risky spots for a long time, so now we can manage the situation. It will change when we extend the lines. We will need this mapping for the efficiency of the safety and security work.

*Group 4.* We think that we don't need the mapping in the way you have explained to us as yet. As you know, the line we are responsible for is very short. You can see from the statistics figures that only 1 case has happened per year, and we could arrest the criminal. We observe the unusual gestures of passengers who come into the subway system, so when we see some strange behavior , we will watch that person closely and we can use radio transmission (walky-talky) to notify the other security officers to be aware of this atypical passenger until he or she left the subway system. We think it will be useful when we have more lines.

To me (shift supervisor), I think that situations or incidents happen underground, the regulations give us the authority to manage so that the passengers will be safe. The police who

have the jurisdiction seem to depend on our decisions and work. The Chief used to be a Police Colonel, and all the policemen trust his decisions. In the future when we expand the lines we will need your mapping study plan. I forgot to tell you that, for all circumstances that happen, we must report them to the Chief. So while waiting for the Chief to arrive, the shift supervisor will be in command of the situation. When the Chief shows up, then he will take over. As you know, traveling in subway it only takes few minutes to arrive at the scene. So, I can put it into simple words, no right now, and yes in the future. Perhaps you can do them for us.

**Themes**

Each of the questions used in the interview protocol provided answers sets, and these answer sets contained unique themes that can be used to generate a summative answer to the question. Listed below are the themes that emerged from the analysis of each question and an interpretation of those themes.

*Question 1.* Question 1, "Describe your role in the organization. Does it fit the goals of MRTA?" generated some expected responses as well as other themes. The primary theme that emerged was the focus on security for the subway, passengers, equipment, and facilities. A second theme was the emphasis on the backgrounds of the security staff and the respect these officers have for each other and from their subway partners – BMCL. Another theme that emerged was a sense that all participant think they are closely following and supporting the goals of the MRTA and the comments seem to suggest that the participant are all aware of the organizations goals.

*Question 2.* Question 2, "What are the problems that MRTA is facing? How do you view these problems?" developed several consistent problems across interviews. The major problem areas seem to be: 1) security roles between MRTA and BMCL, 2) authority to act as

law enforcement officers after leaving the subway, 3) following the SOP, 4) staying current with technology (both technology to do their work and technology used by terrorists or other bad guys), 5) whether or not they are truly prepared for a major incident, and 6) are they seeing all the problems they have.

*Question 3.* Question 3, "What are the possible solutions to the problems?" developed some interesting themes. These were 1) the need for extensive and continuous training, 2) the need to stay current with technology, 3) the need to identifying more subtle problems, 4) changing policies that govern action of the officers (allowing MRTA security officers to function outside of the subway), 5) rehearse response to serious incidents, 6) develop formal agreements with MRTA and BMCL, and 7) developing a recognition and rewards program for security officers.

*Question 4.* Question 4, "Would a mapping system help to solve the problems? Would it help you do your job? Would it help to achieve the goals of MRTA?" yielded some very interesting themes. These were 1) that the security officers have the subway system memorized and do not need maps, 2) that given the that the system has only one line at present there is no need for a computerized mapping system, and 3) that a mapping system would not help them in conducting their jobs.

**Examination of the Themes**

The above themes are interesting and provide a unique look at the MRTA of Bangkok, Thailand. There were some consistent findings across the questions. The primary areas that seem to be relevant to this study are the relationship between MRTA and their partner BMCL and the abutted police jurisdictions, the need to ensure that the security officers are as prepared

as possible for a critical incident, and the concerns brought forward with an expanding subway system. These would be the meta-themes for the data.

*Relationship with partners.* MRTA seems to have a good relationship with their partner BMCL; however, parts of this partnership are ill defined and though this has not led to any major problems the possibility of a major problem is apparent. The same is true of the relationship between MRTA and those police departments whose jurisdiction overlaps the subway. Relationships with both of these groups were seen by the study participants as important to both maintain and to achieve clarity on. There were many solutions to this problem suggested and it seemed that the problem itself was and will be complex enough for more than one solution to be needed.

*Preparation for critical incidence.* Preparation for incidences also seemed to occupy much of the data. The security officers of the MRTA seem to be well trained and are highly focused, but are concerned that even with the training they have received there is still doubt of their ability to respond correctly. There are several mentions of the need for more training and more simulations. Added to this the need to prepare the partners mentioned above (BMCL and local police) in the event of a critical incident, which is not currently done. Without questions this theme ties closely with the first meta-theme, relationship with partners.

*Expanding the subway system.* Expanding the subway system was mentioned several times in the data and typically as something that will happen but that is still somewhat nebulas in terms of security. There is an expressed need to stay on the cutting edge of technology to ensure that the new systems can meet the demands of the public. Staying on the edge of technology was also mentioned for the security group of the subway both in terms of conducting their jobs at the

highest level possible and understanding threats. Again this theme ties closely to the two previously discussed meta-themes.

# CHAPTER V

## CONCLUSIONS AND RECOMMENDATIONS

The primary purpose of this research was to determine if the process called crime mapping would be a good fit with the MRTA system in Bangkok, Thailand for tracking crime and other safety/risk incidence. To do this the researcher interviewed 20 members of the MRTA that had some accountability for security, safety and response to critical incidents. The short answer to the question is that the MRTA does not think they need to invest in a crime mapping process as they do not believe it will enhance their ability to address issues associated with security, safety and response to critical incidents. The long answer is a little different.

As discussed previously, there were three meta-themes that emerged from the data. These were relationships with BMCP and bordering police stations, preparation for critical incidents, and expanding the subway system. These themes were tightly connected to each other and indicate several recommendations. First, preparation for a critical incident needs to be conducted with both the BMCP and bordering police stations. Without question the closer and clearer the relationship between the MRTA security officers and the officers of both the BMCP and the police stations, the better the response will be to a critical incident. This should be coupled with the development of a clearly defined set of roles between these groups and an expansion of the MRTAs security officer abilities.

Second, it is clear that as the subway system expands it will be even more important for the MRTA security officers to have the authority to work outside of the subway when called upon to do so.

This will also necessitate the need for the security officers to have a clear understanding of the communities that surround the subway stations and know the local geography. It may become important for the MRTA security officers to develop their own investigative group which also has the authority to work more broadly than just within the subway.

Third, training and simulations need to be continuously used to prepare officers for the unlikely event of a major critical incident. Training should be conducted in conjunction with local police, emergency medical staff, and BMCP security staff. Simulations should involve as many public agencies as possible.

Final, there is a clear need for technology that can support the complexity of a growing subway system. One such technological implementation is a crime or incident mapping system. A crime/incident mapping system could be shared across agencies and would allow MRTA officers to see more clearly what is happening both within and around their subway stations.

There is obviously more room for further research with the MRTA and security. Future studies could look at crime that occurs in the immediate vicinity of the subway stations to determine if it is linked to the subway as a transportation conduit.

In addition there are implications for other mass transit organizations. Though most major mass transit – especially subway and commuter train systems have their own security/law enforcement groups, there is little research concerning the integrated of these groups with other bordering security/law enforcement groups. There is a need to better understand the relationships between these groups as they share the same problems. Also, it would be meaningful to test the effectiveness of a shared critical incident/crime mapping system with subway/commuter train systems in a variety of locations.

## REFERENCES

*author's note: much of the information collected for this paper was generated by personal interviews with Thai MRTA officials, including the Governor of the MRTA System, Mr. Prapat Chongsanguan, and with Royal Thai Police officials.


Barr, R., & K. Pease (1990). Crime placement, displacement and deflection. In: M. Tonry and N. Morris, eds., *Crime and Justice: A Review of Research*, Vol. 12. Chicago, IL: University of Chicago Press.

Brown, S., D. Lawless, X. Lu, & D.J. Rogers (1998). Interdicting a burglary pattern: GIS and crime analysis in the Aurora Police Department. In: N. La Vigne and J. Wartell, eds., *Crime Mapping Case Studies: Successes in the Field.* Washington, DC: Police Executive Research Forum, pp. 99–108.

Barnes, G.C. (1995). Defining and optimizing displacement. In: J.E. Eck and D. Weisburd, eds., *Crime and Place.* Monsey, NY: Criminal Justice Press; and Washington, DC: Police Executive Research Forum, pp. 95–113.

Eck, J.E., J.S. Gersh, & C. Taylor (2004). Mapping hotspots of crime and related events. In: V. Goldsmith, P.G. McGuire, J.B. Mollenkopf, and T.A. Ross, eds., *Analyzing Crime Patterns: Frontiers of Practice.* Thousand Oaks, CA: Sage Publications.

Escobar, G. (1999). Immigrants' ranks tripled in 29 years. *The Washington Post.* January 9, pp. A1, A4.

Garson, G.D., & Vann, I.B., (2001), Geographic Information Systems for Small and Medium Law Enforcement Jurisdictions. Raleigh: North Carolina Governor's Crime Commission.

Hagen, Frank E. (2006). Essentials of Research Methods in Criminal Justice and Criminology, 2nd ed. Allyn & Bacon, Boston.

Hakim, S. & G.F. Rengert (1981). *Crime Spillover.* Beverly Hills, CA: Sage Publications.

Hubbs, R. (1998). The Greenway rapist case: Matching repeat offenders with crime locations. In: N. La Vigne and J. Wartell, eds., *Crime Mapping Case Studies: Successes in the Field.* Washington, DC: Police Executive Research Forum, pp. 93–98.

La Vigne, N. & J. Wartell, eds. (1998). *Crime Mapping Case Studies: Successes in the Field.* Washington, DC: Police Executive Research Forum.

LeBeau, J.L. & K.L. Vincent (1997). Mapping it out: Repeat-address burglar alarms and burglaries. In: D. Weisburd and J.T. McEwen, eds., *Crime Mapping and Crime Prevention*. Monsey, NY: Criminal Justice Press, pp. 289–310.

Lincoln, E., & Guba, E. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publishing.

Mamalian, C.A., & N.G. La Vigne, and the staff of the Crime Mapping Research Center (1999). *The Use of Computerized Crime Mapping by Law Enforcement: Survey Results.* Washington, DC: U.S. Department of Justice, National Institute of Justice. FS 000237.

MapInfo Corporation. (1995). *MapInfo Professional User's Guide*. Troy, NY.

Mazerolle, L.G., C. Bellucci, & F. Gajewski (1997). Crime mapping in police departments: The challenges of building a mapping system. In: D. Weisburd and J.T. McEwen, eds., *Crime Mapping and Crime Prevention*. Monsey, NY: Criminal Justice Press.

MRTA, Annual Report of the Mass Rapid Transit Authority of Thailand, 2007, 175 Rama IX, Huai Khwang, Bangkok, Thailand, February, 2008.

MRTA, Annual Report of the Mass Rapid Transit Authority of Thailand, 2002, 175 Rama IX, Huai Khwang, Bangkok, Thailand, February, 2003.

New York City Police Department (NYPD) Office of Management, Analysis and Planning. New York City Police Department. *The CompStat Process*. Unpublished paper. New York, NY: New York City Police Department.

Patton, M. Q. (2001). *Qualitative evaluation and research methods, 3rd.* Beverly Hills,CA: Sage Publishing.

Reppetto, T.A. (1974). *Residential Crime*. Cambridge, MA: Ballinger.

Rich, T.F. (1995). *The Use of Computerized Mapping in Crime Control and Prevention Programs*. Washington, DC: U.S. Department of Justice, National Institute of Justice.

RTP, The Royal Thai Police, published by the Commissioner General's Office, Royal Thai Police Headquarters, Bangkok, Thailand, 2006.

Sandberg, J. (2000). Understanding human competence at work: An interpretive approach. *Academy of Management Journal, 43, 1,* 9-25.

Weisburd, D. & L. Green (1995). Measuring immediate spatial displacement: Methodological issues and problems. In: J.E. Eck and D. Weisburd, eds., *Crime and Place*. Monsey, NY: Criminal Justice Press; and Washington, DC: Police Executive Research Forum, pp. 349–361.

Wood, C.H., & C.P. Keller, eds., (1996). *Cartographic Design: Theoretical and Practical Perspectives*. Chichester, UK: John Wiley & Sons.

Wood, D.R. (1998). Geospatial analysis of rural burglaries. In: N. La Vigne and J. Wartell, eds., *Crime Mapping Case Studies: Successes in the Field*. Washington, DC: Police Executive Research Forum, pp. 117–121.

APPENDIX A

# Applying Crime Mapping to Serious Incidents for Mass Rapid Transit Authority of Thailand (MRTA)

Interviews with structured questionnaires were divided into 3 groups:-

1. Top Administrators: 2 cases
   **Mr. Prapat Chongsanguan**
   **Mr.Ronnachit Yamsa-ard**

2. Supervisors: 2 cases
   **Police Major Colonel Anusin Sirivedcharapan**
   **Mrs. Kanjana Rattano**

3. Security Officers: 16 cases

   Four Groups:

   Group 1

   1) **Sergeant Kitti Seadtasingh (shift supervisor)**
   2) **Sergeant Akraravat Jirakittitanaporn (assistant supervisor)**
   3) **Police Sergeant Watcharapong Wongyai**
   4) **Sergeant Charlit Wongsaveak**

   Group 2

   1) **Sergeant Prapon Prakmak (shift supervisor)**
   2) **Sergeant Patcharat Korrom (assistant supervisor)**
   3) **Sergeant Bandit Chanpan**
   4) **Mr. Prakasit Bhommisignharaj**

   Group 3

   1) **Mr. Siriyos Sutat Na Adyudhaya (shift supervisor)**
   2) **Sergeant Jarmon Chompak (assistant supervisor)**
   3) **Police Sergeant Adul Buapa**

4) **Police Sergeant Issara Sorn-ngai**

Group 4

1) **Sergeant Sanou Khunin (shift supervisor)**
2) **Sergeant Pravit Booneak (assistant supervisor)**
3) **Police Sergeant Arkarapong Supawong**
4) **Police Sergeant Kraikchai Chanjeard**

The 16 security officers interviewed were divided into 4 groups, each group consisting of 1 shift supervisor, 1 assistant supervisor and 2 security officers. When they were asked each questions, they participated together in discussing their views (talked at the same time), with the shift supervisor summarizing and clarifying the answers.

**The primary questions in the interview instrument were:**

5. Describe your role in the security of the organization.
   Does it fit the goals of MRTA?
6. What are the problems that MRTA is facing?
   How do you view these problems?
7. What are the possible solutions to the problems?
8. Will the mapping system help to solve the problems?
   Will it help you do your job?
   Will it help to achieve the goals of MRTA?

## Results for Question 1.

**Governor of MRTA (Mr. Prapat Chongsanguan)**

I have been appointed as the Managing Director of Metropolitan Rapid Transit Authority (at present called the Governor of Mass Rapid Transit Authority of Thailand) by the Cabinet of Thailand in October 17, 1997 and I was reappointed by the Cabinet of Thailand on March 2006, and will stay in the position for 5 more years. My responsibilities are divided into two parts, which are 1) to maintain security and safety system to the public using the Chaloem Ratchamongkhon Line, which was opened to the public on July 3, 2004, and 2) to extend the M.R.T. system network to cover more areas in the Bangkok Metropolitan Area and surrounding communities in accordance with the government's mandate, with a time frame for completion within 6 years. This includes 91 km. of MRTA's extension and new line projects. I must make sure that construction will be carried out with a deep sense of environmentalism, and with

concerted effort to minimize traffic disruption. The first priority of MRTA's operation is to carry a large number of passengers at any given time with convenience, speed, safety and punctuality, and with world-class technology, subway system design, personnel, and equipment. Secondly, MRTA must cooperate closely with the Bangkok Metro Public Company limited (BMCL) which is our concessionaire on the service operation. Thirdly, MRTA has to speed up the project implementation for new subway lines, and carry out the work in accordance with the Cabinet's resolutions for completion, which are: - the Blue Line, the Orange Line and the Purple Line. (May 2005- January 2010)

I think I am doing my best. My role is similar to the appointed manager of the Government's task who is responsible for construction the subway. If only the project can be done on schedule, I will feel that I have completed 100% work as the Governor of MRTA. However, only when the contract is signed will it be possible to forecast when the subway construction will be done and open to public. As the Governor, it is my duty to follow the government's policy, and also my responsibility to make sure that MRTA has made every effort to ensure the public's satisfaction with the subway system, and to ensure job satisfaction for MRTA's employees as well. I believe if employees are happy working at MRTA, this can guarantee the high quality and efficiency of service to the Thai public.

**Vice Governor (Mr.Ronnachai Yamsaart)**

***Answer to question 1***

I am the Vice Governor on Operational Affairs of MRTA. I am responsible for 3 departments: Operational Department, Security and Rescue Department, Maintenance Department. The Operational Department is divided into 2 divisions: Civil Work and Concession Contract Administration Division and Train Operational Control Center Division. For the Security and Rescue Department, it is divided into 2 divisions: Security and Safety Division and Rescue Division. For Maintenance Management Department, it is composed of2 divisions: Maintenance of Structural Engineering Division and Maintenance of Power Supply System and Mechanical Equipment Division.

My job is to make sure that all the administrative work for MRTA is done correctly. I deal with all the legal work, including damage claims and lawsuit cases. I also look after the security and safety work. I focus on the safety of the subway passengers. Nevertheless, I am responsible for the overall maintenance and operation of the subway trains. I think what I am doing right now is according to the MRTA's goals. I must follow up to make sure that all the contractors are doing what it is written on the contracts, and make sure that they are responsible for their work. At the moment we have a 25 years contract with the concessionaire called BMCL, which is responsible for day-to-day subway operation. MRTA must work closely with BMCL , especially on passengers' safety measurement. When MRTA extends the operating lines, my responsibility will be over-loaded.

**Head of the Security and Rescue Department (Police Major Colonel Anusilp Sirivedchapan)**

***Answer to question 1***

My line of duty is under the Vice Governor, to whom I must report all incidents, and he in turn will report them to the Governor. My work is to maintain the security and safety of the entire MRTA subway system. I used to be a policeman, and then I transferred to work at MRTA. I worked at Traffic Police Division of the Metropolitan Police, and I was responsible for traffic control on the expressways in Bangkok. I am very keen on prevention of accidents and suppressing crime, and so, working as the Head of the Security and Rescue Department is not a new environment for me. My department is divided into two divisions: Security and Safety Division, and Rescue Division. The Security and Safety Division is responsible for all the security and safety work. We set up a team to analyze risk and to make assessments of the threats to security and safety which may happen in subway stations. For each identified threat, we develop a booklet of how security officers are required to handle the incident. We measure how serious the threat can be in terms of possible damage to the subway station, subway system, passengers, employees, environment, and the image of MRTA. We try to find applicable procedure to handle every threat. We try to minimize the damage.

We have to work with the BMCL security officers, although we have no written document defining the operational boundaries of each agency. Now MRTA's security officers take care all the subway stations, and every incident that happen inside the stations, and all platforms at all levels in the subway system, while BMCL security officers will take care of the entrances, exits, ticket vending machine areas, and the automatic gates for fare collections. The work is combined together and requires cooperation, so we should have clear understanding of responsibilities and accountability while doing the job. It is known to BMCL's security officers that most of MRTA's security officers were ex-policemen, ex-soldiers, and ex-marines, so BMCL's officers respect the MRTA's security officers more. I have 120 security officers under my command. I have to make sure that they are doing the best job they can. I try to look for new tactics and new techniques all the time for them to learn. Knowledge is very important to the security officers. This type of work cannot be done by instinct, and it must be learned practically. The goal of my department is to establish a training institute for security and rescue work, so that we can offer these courses to other security officers and train our security officers as well.

**Chief of Security Planning and Analyzing Division (Mrs. Kanjana Rattano)**

***Answer to question 1***

I think my performance can help MRTA to reach the organization's goals. I analyze incidents and threats that might happen in the subway stations. We have a "standard operating procedures manual" that includes proper responses by security officers for each type of circumstance. When

I analyze every incident, I also try to make updates and additions to the manual. I try to recommend improvements for the procedures for each type of incident. Whatever I have recommended will be included in the training programs that our security officers have. I will try to demonstrate my ideas and instructions for them to follow. We will discuss it ahead of time with the supervisors to make sure it is applicable. I also try to look for more knowledge on new techniques, methods used to prevent harm from happening, and reduce the harm when something happens. I think what I am doing covers all the tasks I am responsible for.

**Security Officers**

***Answers to question 1***

What is your role in the organization whether the work is suitable for the position?

Group 1

We think that our job is to maintain safety and security of the subway's passengers and its stations. We have to guard, and must be alert to all circumstances that occur inside the subway area. We must follow the rules and regulations of MRTA thoroughly, as we have been taught and trained. It is very essential that we follow the instruction guidelines, and avoid doing things by instinct. We have to follow what we have been trained and taught. We think the job descriptions are matched with the goals of MRTA.

I (shift supervisor) would like to inform you more of what we do. We have 120 security officers, and we are divided into 4 operational teams (30 security officers). The security work is to secure all 18 subway stations 24/7, so the operational teams are scheduled into 3 shifts; morning shift 07.00-15.00hrs, afternoon shift 15.00-23.00hrs, and night shift 23.00-07.00hrs. Each operational team will include EOD, and a K-9 unit. The "on duty" team will be working throughout the entire underground system of 20 kilometers with 18 stations, as our passengers use the subway as the transportation from one place to another. I am the shift supervisor, therefore I must make sure that all my team members are doing what they are supposed to do without any laziness or absent-minded behavior. I think the job performance is according to MRTA's goals.

Group 2

Security officers are doing work similar to police patrol. It is not difficult for us, due to our past experiences in the military. The goal is to make sure that the passengers are safe throughout their trips inside the subway stations. We must be on guard all the time; we know that it takes only one second for a bad incident to happen. We also have very good team work; we know what each person on the team is responsible for. We have been taught to be the security officers. We are trained to do an important job that we are proud of. We know about the subway system and its physical structure. We know that we are trusted with the passengers' lives. We follow instruction handbook when we are on duty. We think we are doing the job according to MRTA's

expectations, which is to keep passengers and the environment inside the subway stations safe and sound.

I (shift supervisor) emphasize that all my team must do the job the way they were trained. We maintain peace and safety of our passengers. The work is not that tiring, we can use judgment and discretion in the normal operations, such as staying at the gate to be on guard there during the rush hour, and walking during the regular hours. If any of my team has a question, I make sure that they come to me and ask me. If it is very unusual or important, I will discuss the issue with the director. I think we are doing good work, and we meet the scope of the job as security officers here.

Group 3

Our job is to maintain peace and safety for all the passengers and everyone who enters the subway station. The job is to guard all situations, physical, environment, and human behavior. We have to make sure that nothing will go wrong in the subway. If we suspect anything at all, we must keep an eye on that, and report it to the supervisor. We must listen to how the shift supervisor tells us to proceed. We all have been trained for many situations such as: hostage capture, fire crisis etc. We must use what we have been trained to do. All procedures are written in the hand book of instruction. So to maintain the peace and safety, we must be 100% certain in knowing what to do, and who will be the command of the situation. We think we are accomplishing MRTA's goals of safety and security for our passengers and the subway itself.

I (shift supervisor) agree with my team, they are very diligent. When we go to work, I mean for every security officer in every shift, we have to meet at the Thailand Cultural Center Station, and hear the shift supervisor inform us about the current news, what has been happening in the past hours, any situation occurring to MRTA or other transportation system, any crime incidents, and how it was handled. In another words, we are informed and briefed about what is going on and what needs to be known. You can see that we can't miss anything. I think we are doing the work according to MRTA's goals. Because I am a civilian shift supervisor, I must work harder than my team so they will accept my leadership. I must have their trust so they will follow my instructions and directions. I am trying my best to be a good shift supervisor.

Group 4

Our job is to secure the people and buildings of MRTA. We have to make sure that no incidents happen, especially to our subway system. It is important that all the passengers know that they are handled with care and safety. If not, they will not use the subway, and we like them to use the subway as much as they can to decrease the traffic congestion. We patrol and observe all incidents. We use our experiences from being ex-policemen and ex-soldiers, so the work at MRTA is very similar to what we used to do. We must dress properly to gain respect from the passengers. Our uniform is similar to police uniforms, with many devices. When passengers see

how we look, they feel that they will be safe in the subway. We all think that we are doing the job according to MRTA's goals.

As to me, (shift supervisor) the goals set by MRTA on our security and safety work is very well designed. I often check that everyone in my team is doing what they are supposed to do, especially in crisis situations. Nevertheless, there has been only 1 major incident which happened inside of a subway station. It was a thief who ran in from the street and tried to get inside the subway, and our security officer and BMCL security officer were able to capture him. After the thief was captured, a policeman came and took over the case. I think we are ready to respond to any type of situation. Our training, and rehearsing methods and techniques of what to do and how to handle situations make us confident in our capabilities. I think we are doing the job to meet the goals of MRTA.

**Summary for Question 1:**

The participants seem to be aligned in their understanding of their roles and jobs, and can clearly articulate their individual fit in the organization. There seems to be considerable alignment with the goal of increasing the size and service capacity of MRTA. There is a high degree of commitment to the organization and a high level of wanting to ensure customers are safe and comfortable using MRTA facilities. The participants seem to be driven by a high need to provide customer satisfaction, an orderly work environment, and the need to complete the new line. In addition, there seems to be a clearly understood relationship between MRTA and BMCL staff.

## Results for Question 2.

**Governor of MRTA (Mr. Prapat Chongsanguan)**

***Answer to question 2***

The problems that MRTA is facing include some of the world's greatest fears, such as terrorist attacks with suicide bombs or dirty bombs. I try to emphasize to all of our security officers that it is essential that they follow the handbook procedures step by step; never to use their own judgment when reacting to any problem that occurs in the subway stations. Budget is another problem, of course, as you know the best training, maintenance, and equipment necessary for dealing with safety issues is very costly. We have a very limited budget, and even though we know what type of equipment and methods are best to use for prevention serious incidents and dangerous crimes, we are not always able to get everything that we would like to have in place. Another critical problem is that our security officers only have law enforcement authority only when they are inside the subway stations. When they are not inside the stations, they are just like any other pedestrian. So when there is a problem underground, if the criminal runs outside the subway, our security officers can do nothing to capture this criminal. The authority to pursue and seize the suspect is very important for public's trust in our officers for their safety and security. We are endorsing the proposed regulation of MRTA to expand the authority of our

security officers (when in active pursuit) to carry firearms and make arrests of crime suspects on the streets around the subway station areas.

**Vice Governor (Mr.Ronnachai Yamsaart)**

***Answer to question 2***

I think MRTA is facing the problem of keeping up with the advanced technology. Though we are trying to catch up with all the high technology, it moves very rapidly and is very costly. Another problem that I think we have to put in mind is the nature of human behavior, especially when people are used to their routine activities. They tend to be unaware of what is surrounding them, and they are not alert when they are used to what they are doing. When this situation happens, there is risk for crisis episodes, for criminals always find the opportunity to commit crime, and those who are doing the prevention job can not neglect their duty for even a minute. I really worry that the security officers will be this way after they are used to their routine work. We have to be serious about every step of the procedures when they are on duty, they can not omit anything. The last thing I worry is terrorist attack. We have never experienced the circumstances before, I have no idea how serious or harmful it can be to our subway passengers. I hope it will never happen. This comes back to the point I raised, that if our security officers do their job with full attention, I will be relieved because our security officers are fully trained. I have no doubt of their capacities unless the human nature takes over their attention from being alert to everything when they are on duty.

**Head of the Security and Rescue Department (Police Major Colonel Anusilp Sirivedchapan)**

***Answer to question 2***

The problems the MRTA is facing concerning safety and security are associated with the operational system. MRTA is not the only agency in charge of responding to all incidents that happen inside the stations. MRTA works in cooperation with our concession contract agency called BMCL (Bangkok Metro Public Company Limited), and BMCL also has security officers to do the safety and security job. We do not have any written document defining operational responsibilities or the scope of security and safety measurement between MRTA and BMCL. It is not clear to both partners how to operate when incidents happen. I really worry about this. Another cooperation issue is with the policemen, as there are 11 police stations with jurisdiction along the subway line (20 kilometers). When incidents happen while the subway train is running very rapidly, more than 4 police jurisdictions might be involved. It is very troublesome to deal with the separate police jurisdictions in the investigation and in prosecuting arrested suspects. The last problem is we need to deal with involves policemen who may not understand the subway system. It is the regulation that when an incident happens, the police will be in charge of the situation when they arrive on the scene. If the police commander does not know and see the

structure of the system, he can not be any help in resolving problems. He might actually cause unnecessary delays. We, I mean MRTA and BMCL, together set up a training course to give representatives from each involved police station the basic knowledge of the subway system, including the map showing the entrances and exists of the stations. But it seems like when they finally learn and understand, they are always transferred to another police station. It was a waste of time for both MRTA and BMCL to put all the effort and time to do this, so at present, this course is no longer offered.

**Chief of Security Planning and Analyzing Division (Mrs. Kanjana Rattano)**

***Answer to question 2***

My opinions about the problems that MRTA is facing are similar to my chief's opinions. The first problem is the scope of duty between MRTA and BMCL. Because our security officers are more experienced than BMCL's security officers, they let MRTA security officers do most of the security work, and the BMCL officers only guard the gates (entrances and exits), and the ticket windows. Everything is OK at this time, but I worry that accountability will be an issue if there is anything serious that happens. The lines of responsibility are not clearly defined. Therefore, from this point, I think it will be best if we know the exact scope of the work we are required to accomplish. Not only this, but also when tragedy occurs, the proper agency must be in charge, or be the commanding agency at the scene. There should be no question about authority in an emergency. Working with two partnerships, the scope of responsibility must be clear. Another problem I view is about the cooperation with other agencies such as policemen, nurses, fire fighters, district officers, news reporters etc. I think we should have clear rules about who is allowed to enter the area. One last thing that I worry is security officers' natural behavior. People always neglect the rules that they must follow according to the procedure manual. When they are used to their work, they tend to forget about following the basic procedures. They think that it is far too much to remember all the time, and tend to think it is far too much to do. Usually when accident happens, it is because of human negligence. If only they are alert and cautious, no accidents would happen. I am not talking about the natural disasters, which are the threats that we cannot prevent. In that case, we can only lessen the harm done to our subway system and passengers.

**Security Officers**

***Answers to question 2***

Group 1

The problem that MRTA is facing is about cooperation with BMCL, because we do not have an agreement of whose responsibility it is when it comes to the operational system. Now BMCL's security officers know that MRTA's security officers used to be policemen, soldiers and marines, so they let us do the security work, and they only guard the exists, entrances, and the automatic

fare collection gates. Sometimes when some minor incidents happened, the BMCL team did not report the incidents to us even though they should report all circumstances to us, no matter what.

We fear terrorist attack, and natural disasters like earthquakes, flooding, and fire. We have trained how to handle these situations, but nevertheless we still fear the possible damages. We do not know when it will happen, so it is human nature that we are scared of things that we cannot control.

I (shift supervisor) think it is good that we constantly examine what we are concerned about. Discussing things or incidents that we are not used to or never experienced will make us more aware of its causation and possible solutions.

Group 2

The problems for MTRA's security and safety issues are natural disaster and human-caused disaster. We have to be prompt at all times to face these critical incidents. We also have the cooperation system problem between MRTA and BMCL. If we do not know who is responsible for the job when crisis comes, tremendous harm to the subway system might be the result. Another problem that our team has experienced concerns jurisdiction when a criminal runs out of the station after committing a crime. We have no authority to go on chasing the bad guy outside. Now we are using the Criminal Procedures Code Law which allows a citizen who witness crime to catch the criminal and hold him for the police. If it is a misdemeanor, MRTA's security officers are allowed to follow and pursue. There is no harm done with this situation. But if it is a felony, and our security officers use deadly force when they assume that the criminal might kill an innocent victim, no law protects this security officer's behavior. He would be arrested for using too much force on the criminal. As I am saying, if incidents happen inside MRTA, we do have the authority to deal with the situation like a policeman (Not investigation work). We worry about incidents that happen outside of the subway area, and it is a continual process. For example, if a man tries to pick pocket a passenger, and one of our security officer is at the scene. He yells at the thief and tells him to freeze, but when the thief sees the security officer, he is scared and runs out from the subway station. If the security officer still pursues or follows and tries to capture the thief, he will be doing so at his own risk. No one can help him if the uniformed police arrest him. So our problem doing security work to meet the goals of MRTA may cause us to put ourselves at risk.

I (shift supervisor) think it is a serious problem because it is about how to work without jumping over the line of the regulations, in this case, leaving the subway stations' area. It is an urgent problem that needs to be solved at once. With proper authority, our staff can do the security and safety work without any fear of violating the law. For natural disasters, I worry a bit, but I believe that our subway system can handle these situations. Human-caused disasters would be unlikely to occur, for we have BMCL security officers checking every access point. All the equipment we use is designed for maximum service to public and guarantees a high level of control and safety of passengers at the stations and on the trains.

Group 3

The problem we think that MRTA is facing is terrorist attack, and none of us have experienced terrorists attack before. We worry about "dirty-bombs" and suicide bombs. We have a great K-9 unit, so it eases our worries quite a bit.

To me, being the shift supervisor, the way I look at the problems may be different from my team. The problem MRTA is facing is human nature as explained by behavior theory. I worry that if people are used to the routine work everyday, they might begin to invent short cuts instead of following the instruction handbook of what is to be done. If this happens and he can escape being caught, he may tell his friends to do the same thing without realizing that all procedures are important. Missing one small instruction about what is supposed to be done when an incident happens may collapse the whole safety system. So I worry about my security officers themselves.

Group 4

We think that MRTA's problems involve working with BMCL. We now divide each agency's work according to the respect BMCL's officers have toward MRTA's security officers. They (BMCL) know that most of us are ex-uniformed persons, so they think that we have more experience and have more knowledge and skills on the job. So BMCL only guards the accesses to subway system. We do not mind doing the work, but we'd rather have the agreement between MRTA and BMCL that defines each safety team's responsibilities. We like to work according to the regulations, so that when anything happens we will stand on the solid proof that it is what we are supposed to do. Other problems would be terrorist attack, fire, and flash floods.

I (shift supervisor) agree with my team about doing the security and safety work. Authority is one of the important issues when an incident happens. We must be in command of the situation. If we have no authority, who will listen to us? So it is best to have written documents to guide our performance.

## Results for Question 3.

**Governor of MRTA (Mr. Prapat Chongsanguan)**

***Answer to question 3***

The best solutions to the problems that MRTA is facing begin with providing more training for the security officers, so that they will be able to respond quickly and effectively to security threats. We must never minimize the importance of strong security, and our officers must realize that they are protecting the lives of the passengers and the other employees at all times. They have to practice the handbook procedures until they can react instinctively when they are facing

serious security threats. For the authority issue, I have sent the written draft regulation to the Cabinet for approval; we are waiting for the results now. By the way, we have new methods to train our security officers on a monthly basis. I really want them to know what the world is facing. They are the face of the MRTA security and safety's work. To me, they must do their job with high awareness and seriousness, rather than just a routine job.

**Vice Governor (Mr.Ronnachai Yamsaart)**

***Answer to question 3***

The solutions that I try to offer the security officers are training, both practical and knowledge based. I have developed many short courses concerning to the security and safety work such as: fire safety, station design and construction considerations, flood protection, access level and retail maps, physical structure of the platform, station forecourts and reviewing handbook procedure to serious incidents which may happen inside the subway station (fire, flash flood, bombing). Some of the courses offer training so that they will be experienced in circumstances such as: how to put out the fire, how to evacuate passengers from the station, and how to transport passengers from one station to a safe place. I have invited many experts to teach our security officers to be able to deal with situations like an expert would, for example: how to use physical techniques to arrest a drunk without weapons, how to examine passengers who walk in the station without searching them, how to put out fire, how to rescue life etc. I think with all the training and courses they took, they will be able to control the emergency situations very well. I also emphasize that the security officers must always follow the handbook procedures or the training methods. If they follow instructions, there will be less risk of making a mistake. I recommended that all of the security officers follow my quest without any doubts.

For the new technology devices, we try to send our technology officers on study tours, so they can bring back up-to-date devices as often as possible. It is very fortunate that our Governor views that the more advanced technology can improve the safety of the passengers.

Now we train our staff personnel every month with new knowledge, and they practice how to evacuate passengers out from the stations with co-partners such as BMCL security officers, policemen, and nurses once every two months. I can say we are ready to face the crisis.

**Head of the Security and Rescue Department (Police Major Colonel Anusilp Sirivedchapan)**

***Answer to question 3***

We need to set up a formal meeting and discuss the responsibility that each agency has for security and safety issues. The agreement must be signed by our Governor and the Director of BMCL so that when incidents happen, both MRTA and BMCL will know whose responsibility it is. For now, MRTA is the agency which controls and takes charge of the situations. MRTA's security officers were ex-policemen, ex-marines, ex-soldiers, and so they are more experienced

with security and safety work. Informally, MRTA staff members are responsible for patrolling and preventing dangerous incidents, while BMCL's security officers are trained differently, and their main job is to guard the entrance of the ticket toll areas. I really think there must be a settled, formal work responsibility for both agencies. Another problem about jurisdiction occurs when a crime incident happens, and many police stations have authority to be involved. It becomes very difficult to solve or investigate the crimes. So right now, the Governor has urged to the Metropolitan Police Bureau to establish a unique police station to be responsible for the subway system. We have one example already, as there is a police branch under the Traffic Police Division called "The Express Way Police Station" with jurisdiction specifically along the expressway. If this new subway police station can be established, we can continue offering a short review of the subway system, maps, and all the subway access to every policeman in this police station. It would be a very good solution for the problems I have mentioned. Other possible incident which might happen is terrorist attack. It worries me too, but I think with our strict rules at the entrances to the stations, it will be very difficult for such thing to happen. Passengers will spend about four minutes maximum inside the subway station. We also have our security officers trained to watch out for suspicious behavior. Our security officers are trained to be alert at all time. We offer training on new technical knowledge, and explain new situations which have occurred in the subway stations in other countries, so I think they know and are aware of the dangerous and risky situations. I believe that security officers must be "on guard" all the time. I know that our job is very challenging; it deals with opportunity for those who want to commit crime and serious incidents, so we must not open the loophole for such unexpected incidents at the subway station.

**Chief of Security Planning and Analyzing Division (Mrs. Kanjana Rattano)**

***Answer to question 3***

To me, the solution to solve these problems must be as follows: 1) set up a meeting between MRTA and BMCL and make a comprehensive written agreement on each agency's responsibilities and duties. 2) Offer short study tours for those who are involved with serious incidents at the subway stations. 3) Have the supervisors and their teams rehearse procedures and follow the exact steps in the handbook of crisis management for each type of incident. We must make sure that they will not do things by their instincts; it must all be done according to the instructions in the manual.

**Security Officers**

***Answers to question 3***

Group 1

We think that MRTA should set up a meeting with BMCL and discuss what obligations the security officers of each agency should have. At the moment, there is no big problem working among the two, only minor issues such as when minor incidents happened and the BMCL's security officers did not report to MRTA's security officers. To security management administration, it is very important that all unusual incidents be reported and are known to the administrative staff. In this case, it should have been reported to MRTA's Safety and Security Department.

For terrorists attack, though MRTA has put the great effort in training all security officers, the training should be done regularly, especially on new issues or techniques that the terrorists are using. We should have information on the impact of each terrorist's attack incident around the world.

Group 2

We are the action force, so we can only recommend very broad solutions based on our opinions of what should be done regarding our concerns. We think MRTA's Law Department should write the regulations and recommend that the government pass a decree expanding security officers' authority. For the natural disasters, we think that we should have event rehearsals every six months, with the passengers and all the agencies involved. Every 3 months, we should rehearse with BMCL officers, and every month we should rehearse within MRTA's security officer teams. We emphasize that for natural disasters there is no way to prevent the causation, but we can minimize the harm which may occur. So, we have to know exactly what to do without any doubt and reluctance.

Group 3

We think that problem of complacency after doing the routine work for a long time may be solved by rewarding those who work very strictly according to the procedures. This can be evaluated by the shift supervisors, Head of Safety and Security Department, and Vice Governor responsible for Safety and Security Work. This will give motivation and inspiration to all the security officers. For dirty bombs and such, training is a must for all this new technology, but we should not forget to prepare for the old ways of disturbing the peace. MRTA is trying to have all of us trained. We think that not only training on techniques, but maintaining good physical ability is important, so when we face critical incidents we will be able to handle all situations. I (shift supervisor) think that when we recruit new officers, we should really select the persons who are best for the job, both mentally and physically. My opinion is that a person with good physical appearance who is very strong and looks good might not have the proper mental or psychological characteristics. This person is not suitable to do the security job which involves more than good physical appearance. So it is very important to be thorough when we select the staff. Maybe we should give these applicants a psychological test too.

Group 4

We think that you must have many suggestions from those you have already interviewed. To us, we think what MRTA offers us many opportunities to be able to do a good job, including all of the training and short courses on new knowledge, and the focus on problem oriented issues. We have the ability to do a good job, but we need to be more recognized by public. The MRTA's regulation on security officers' authority may not be enough when crime incidents happen inside the subway system. It would be perfect if we had more authority to chase the criminal and make arrests. So we think MRTA's Law department should endorse the Acts to the government, so we can handle the incident from the beginning to the end. This is not because we want to compare our work to the uniformed police, but we are concerned for the passengers' safety more than anything.

I (shift supervisor) would also like the MRTA to offer more training on life saving techniques. We should invite the paramedics to teach or give the training to us. So when an emergency happens, we can be the first to prevent the loss of life.

## Results for Question 4.

**Governor of MRTA (Mr. Prapat Chongsanguan)**

***Answer to question 4***

I think at this time, what we have in place is sufficient to maintain the security and safety of the passengers. We only have one line in operation so far, which is called The Chaloem Ratchamongkhon Line Project. It has a total route length of 20 kilometers and 18 subway stations.

For the safety of passengers, every station interior is designed to be an open area without niches or garbage bins, in order to prevent any placement of unwanted or dangerous objects in the station. In addition, there are closed circuit televisions installed for around the clock inspection. Platform screen doors in the form of glass walls are installed along each station platform to provide safety for passengers waiting for the train. They are designed to open only when the train stops at the platform. In addition, there is a sensor installed at every door to make sure that no passenger is caught between the closing doors.

After the other lines are completed, applying crime mapping will be very useful. As I mentioned the route of the line with 18 subway stations is short, only 20 kilometers, and all security officers must study all the diagrams of the physical structures, including the exits doors, entrances to the joining stations of the subway trains and the sky train, all the risky spots, and they must learn all of this by heart. They must be able to visualize them even with their eyes closed. I see no need for the serious incident crime mapping at the moment.

**Vice Governor (Mr.Ronnachai Yamsaart)**

*Answer to question 4*

When we mentioned the word "map", it is clear that we must know all details about the subway stations, entrances, exits, connection routes, platforms, retailed shops, ticketing concourse, levels of subway station and risky spaces. I believe our security officers memorized these physical structures in their minds. I think what we are having now is adequate to maintain security and safety; nevertheless, in the future when we expand 3 more lines network, we may use the mapping system according to your study.

**Head of the Security and Rescue Department (Police Major Colonel Anusilp Sirivedchapan)**

*Answer to question 4*

I think that mapping of serious incidents is not necessary at this time; it will be very useful and helpful in the future when MRTA extends new lines. At present, there are 18 subway stations, and all the high risk spots are identified and closely watched. Every security officer is trained to face crisis situations with systematic procedures. All electronic and mechanical equipment has instruction handbooks with safety procedures, which every security officer has read and rehearsed every month. MRTA puts tremendous emphasis on safety control, and therefore all security officers are taught to recognize strange situations either from people or in the environment. We have K-9 units to smell narcotics and bombs. I think for now we can manage all incidents with knowledge base we have. I am supervising all the security officers to ensure that they work as they suppose to do. To me, being the head, I should supervise everything about the job performance of the people under my command. When they have problems, they can come and consult with me. I try to make them love their jobs and love MRTA, and with this atmosphere; we can do the best job.

**Chief of Security Planning and Analyzing Division (Mrs. Kanjana Rattano)**

*Answer to question 4*

I do not think it is necessary to use the mapping now. We can handle all situations now. I think when MRTA expands more lines; we will certainly need the mapping. We have 120 security officers to look after 20 kilometers line, along the line there is 18 subway stations. I think the way they are working is very good, with the teams divided into three shifts of eight hours each. With each of the operational team we have EOD, and a K-9 team. They have learned the map of the subway system by heart. They can close their eyes and remember the map structure, so what we have now is about right for now. We can surely adapt the study of crime mapping to MRTA security's management in the future. Perhaps when you finish the degree, you can help us with your study.

**Security Officers**

***Answers to Question 4***

Group 1

Our opinion to your questions about mapping system, at present, is that we have no problem at all concerning the mapping. All of us know the structures and maps of the entire underground by heart. It is the first obligation that we had when we were trained for security officers' work. Another point is that the M.R.T. Line is still very short. The number of officers we have is sufficient to take care and handle the whole system, and we have BMCL's security officers to help handling exists, entrances and automatic toll gate as well. We think that it may be useful when we extend more Lines. By that time your study will be very useful for MRTA's goals. It can sure help us recognize the connecting points of the lines.

To me (shift supervisor), the mapping will be very useful when we have more lines, I think we can pin point the spots where the incidents are likely to happen very easily, and it will help us work better if we will know how serious of each spots can be in terms of harm to the passengers and the staff.

Group 2

We like what you are suggesting to us, it will be very useful for us when there are many lines to handle. Now we only have one line and everyone remembers how the maps are.

To me (shift supervisor), I think maybe the mapping will be useful to those who are not part the staff here. For example, when we have crime incidents, the police must come to take charge, so we don't have to worry if he knows the map of the system or not. He will look at the "mapping system" and he can handle the situation. So to me, it will be useful to use, nevertheless for us, it is still not that useful unless we expand the lines. By that time it will be very useful to examine and evaluate the situations that happen in the subway stations.

Group 3

We like your idea and think it is good to have such mapping in our system, it will be useful to spot our where the security officers are located while they are on duty. It will be good for those who are the administrators to be able to know the map. But for us, at this time, the line is still too short and we still can handle all the incidents. We use the trains from station to station, so it is very fast and convenient for us to go to an incident very fast. When we expand the line, then the situations will change, it must will be a "must have" for the better achievement of the security work.

I (shift supervisor) agree with my team, I think all of us can envision the whole system's map even when they close their eyes. We have been working, studying the structure, the maps, and the risky spots for a long time, so now we can manage the situation. It will change when we extend the lines. We will need this mapping for the efficiency of the safety and security work.

Group 4

We think that we don't need the mapping in the way you have explained to us as yet. As you know, the line we are responsible for is very short. You can see from the statistics figures that only 1 case has happened per year, and we could arrest the criminal. We observe the unusual gestures of passengers who come into the subway system, so when we see some strange behavior , we will watch that person closely and we can use radio transmission (walky-talky) to notify the other security officers to be aware of this atypical passenger until he or she left the subway system. We think it will be useful when we have more lines.

To me (shift supervisor), I think that situations or incidents happen underground, the regulations give us the authority to manage so that the passengers will be safe. The police who have the jurisdiction seem to depend on our decisions and work. The Chief used to be a Police Colonel, and all the policemen trust his decisions. In the future when we expand the lines we will need your mapping study plan. I forgot to tell you that, for all circumstances that happen, we must report them to the Chief. So while waiting for the Chief to arrive, the shift supervisor will be in command of the situation. When the Chief shows up, then he will take over. As you know, traveling in subway it only takes few minutes to arrive at the scene. So, I can put it into simple words, no right now, and yes in the future. Perhaps you can do them for us.

APPENDIX B

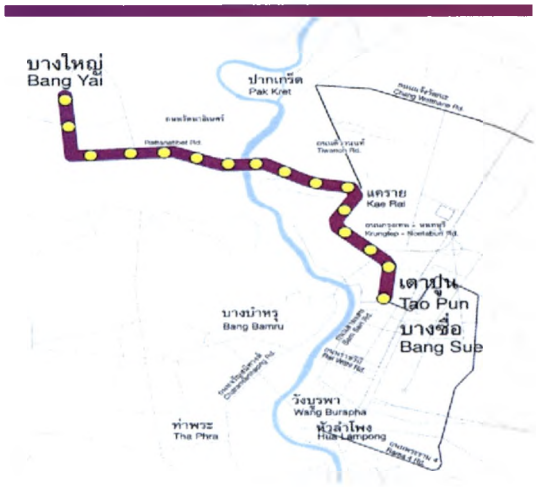
Existing and Future subway Lines in Bangkok, Thailand

First line stations

# Tonburi and Banglamphu


บางใหญ่
Bang Yai
ปากเกร็ด
Pak Kret
แคราย
Kae Rai
บางซื่อ
Bang Sue
หัวลำโพง
Hua Lamphong
ท่าพระ
Tha Phra
บางแค
Bang Khae

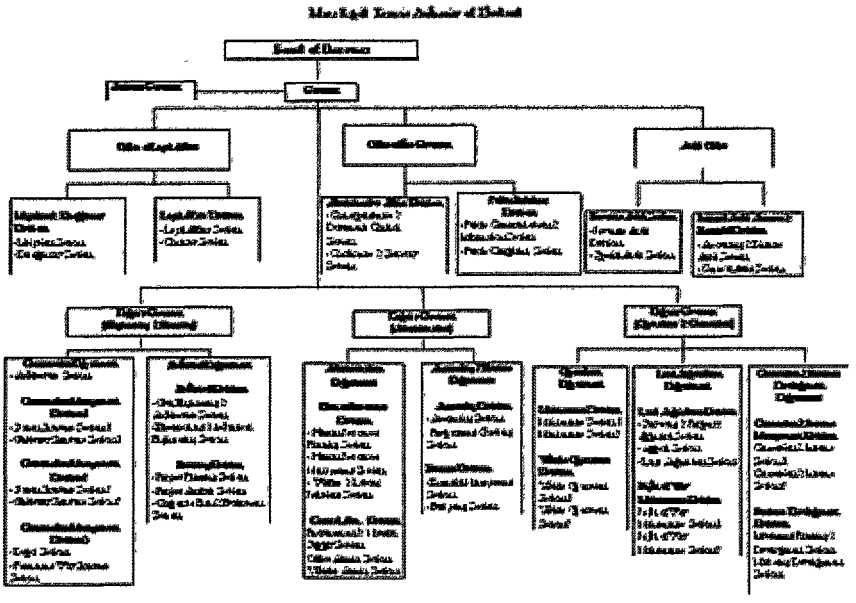
- Main Routes




- Future line 2010

APPENDIX C

MRTA Administration



## VITA

Sorason Suthisorn was born in Fresno, California, on July 22, 1979, the son of Sudsanguan Suthisorn and Saekson Suthisorn. He has lived most of his life in the nation of Thailand. After completing his law degree at Bangkok University in Bangkok, Thailand, he entered the service of the Mass Rapid Transit Authority (MRTA) in Bangkok, which has authority for operating and expanding the subway system in that metropolitan area. In August, 2006, he entered the Graduate College of Texas State University-San Marcos. He will return to his duties at MRTA in Bangkok in January, 2009.

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