



## Safety & Security Solutions for Ports and Maritime



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## Security & Safety Solutions for the Maritime Sector

Raptor Global Services, Inc. provides the highest quality technology-based safety and security solutions, in high-risk emerging markets, at cost-effective prices. The company provides sophisticated security technology that supports a wide variety of personnel status, facility monitoring and asset recovery applications. Additionally the company provides assessments and training, which maximizes the savings to our customers by providing a local solutions to a local problems.



Raptor has formed strategic alliances with some of the world's leading providers of proprietary applications and advanced security hardware. These unique alliances are focused on insuring the safety of personnel, safeguarding critical facilities, tracking the whereabouts of assets and monitoring the movement of vehicles in hostile and high-risk environments. When deploying these systems, Raptor works closely with in-country military and security forces to ensure full cooperation and assistance from local, provincial and federal governments.

Many of Raptor's products and services were originally designed for use by the Department of Defense, and are in use by security agencies around the globe. Military versions of a number of these systems are in use today, supporting critical applications worldwide.

### Raptor Global Services Solutions and Services

We live in an era where the safety of personnel, the security of facilities, and the protection of assets have come under increasing threat from the forces of terrorism and criminal elements. Raptor Global Services, Inc. has responded to this threat by creating a cost effective approach to security through a unique portfolio of technology-based solutions and products that are geared to:

- ▶ Safeguarding personnel in hostile environments,
- ▶ Supporting perimeter security in high-risk areas,
- ▶ Deploying video surveillance and communications systems in remote locations,
- ▶ Providing vehicle status and tracking over a wide area,
- ▶ Insuring asset tracking and protection in potentially high pilferage situations.

By combining the elements of proprietary hardware with innovative applications and software Raptor provides a 'seamless' end-to-end package of cost-effective applications, solutions and services, without peer in the world of high-risk emerging market security.

### Raptor is Unique

- ▶ Professional American tactical security specialists, supported by highly trained local security personnel,
- ▶ Some of the most advanced systems for the safety and security of personnel, facilities, vehicles and assets.



- ▶ The unique integration of physical security, advanced technology and low overhead allowing Raptor to extend highly competitive prices to its clients.
- ▶ Advanced software, coupled with innovative middleware, to seamlessly integrate and interpret threat data from multiple sources over a variety of transmission mediums.
- ▶ Operation of a 7X24 Tactical Operations Center (TOC), where the status of personnel, facilities, vehicles and assets are continuously monitored, potential threat situations are analyzed and appropriate responses are coordinated.
- ▶ Strategic partnerships with some of the world's most experienced protective security service firms to ensure the safety of personnel in hostile environments.
- ▶ Highly trained and experienced special ops personnel prepared to engage in the rescue of personnel in life threatening situations worldwide.
- ▶ Seamless integration of all aspects of the business from physical security, deployment of hardware, support of applications, and 7X24 status monitoring- to rapid response, rescue and retrieval.

## The Problem- Vulnerable Industries

It can be argued that the world is less safe today than anytime in the recent past. Whether or not this is true, the fact is that in certain parts of the world facilities are threatened more frequently, property is stolen at a record rate, and people face threats to their personal safety on a much more regular basis than ever before. Certain business segments must confront these threats on a day-to-day basis. Prime among these is the maritime shipping business. The maritime business has always been fraught with theft and smuggling, but more recently it has become the target of those who have in mind the more sinister purposes of piracy and terrorism.



The risk to cargo and vulnerability of ports to acts of terrorism is an ongoing news story and rightfully so. Security experts have noted that deep-water ports and maritime shipping may be the "Achilles heel" in maintaining the security of a country's borders<sup>1</sup>. Not only that, but the increased loss of high value cargo, taken in bulk, through the theft of seagoing containers has more than doubled every five years over the past decade.<sup>2</sup> Just as importantly, once these containers are off-loaded at the ports they are high jacked over-the-road at a rate that is exceeding \$10 billion in losses annually.<sup>3</sup> And, while numerous tracking options are available, comprehensive solutions dealing with the problem from the point of origination to where cargo is distributed are fragmented and poorly implemented.

<sup>1</sup> "Maritime Security: Better Planning Needed to Help Ensure an Effective Port Security Assessment Program" U.S. Government Accountability Office, September 2006.

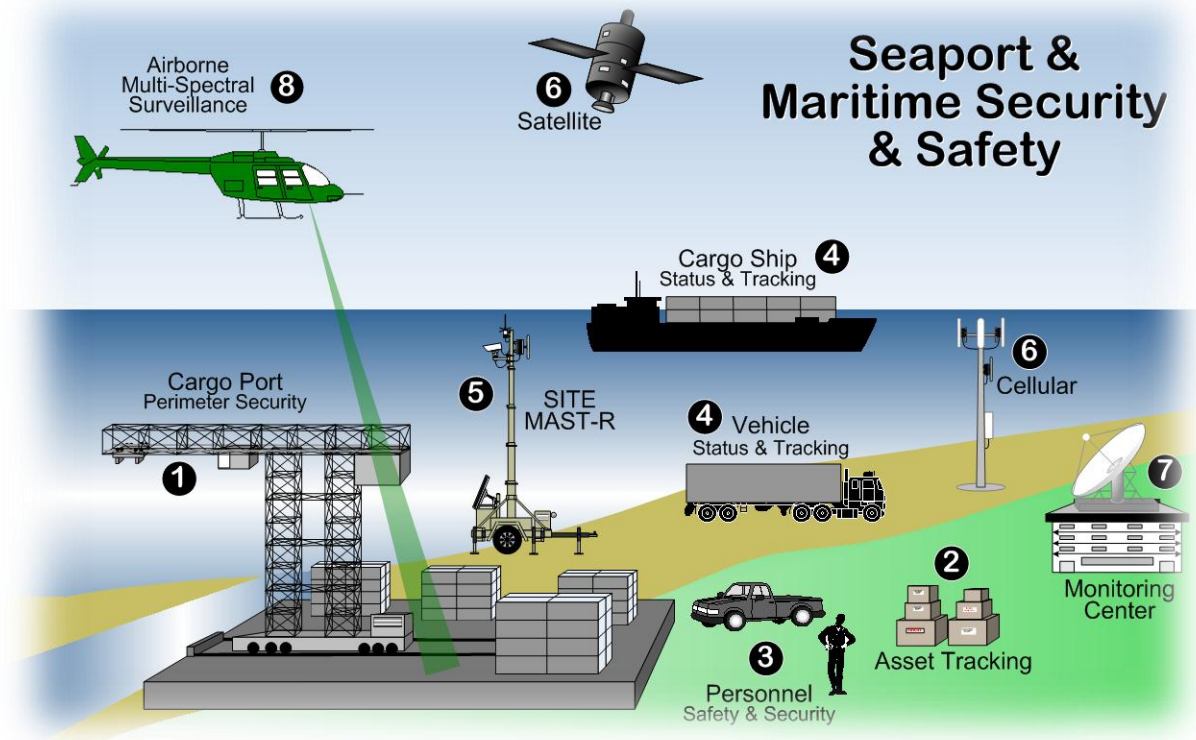
"The International Terrorist Threat to Maritime Transportation" Canadian Security Intelligence Service (redacted), May 2006.

<sup>2</sup> "Crime on the Waterfront - Cargo Container Theft at Los Angeles Ports". LA Business Journal, July 16, 2007.

<sup>3</sup> "Road Remains Bumpy Long After Cargo Containers are Off Ships". DailyBreeze.com April 9, 2006.



## Raptor Maritime Security Solutions



The drawing above shows many of the services and solutions provided by Raptor for the maritime industry.

Specific elements of the comprehensive solutions and service package are indicated by the circled numbers. These include:

- ① Port and Perimeter Security,
- ② Asset Tracking and Recovery Solutions,
- ③ Personnel Safety and Security
- ④ Vessel and Fleet Tracking,
- ⑤ SITE MAST-R Video Surveillance,
- ⑥ Satellite and Wireless Connectivity
- ⑦ Web-Based Incident Management,
- ⑧ Private Security Incident Response and Resolution,
- ⑨ Aerial Multi-Spectral Surveillance

The following pages describe these systems, applications and services in greater detail:



## ① Port Perimeter Security

Ports in virtually all locations of the world are high-profile targets for acts of terrorism, and as such have their own unique set of safety and security requirements. Raptor security systems incorporate a high degree of functionality intended to ensure the integrity of the site's perimeter. These include magnetic detection, fence-mounted acoustic transducers, buried seismic detectors, passive IR motion detectors, video surveillance and other highly proprietary sensors. Many of these systems are

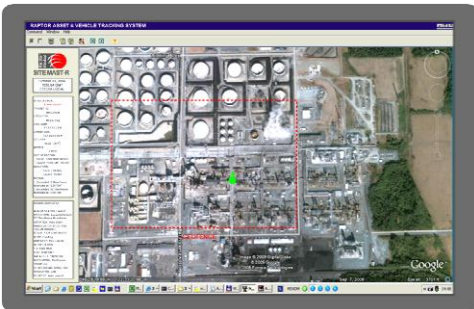


declassified commercial versions of military hardware in use today at some of the US Government's most sensitive installations, both domestically and around the world.

Due to factors such extreme temperatures, ambient noise, high winds (and accompanying storms), and incursion of animals, traditional detection systems tend to *false alarm* on a regular basis, thus severely affecting the ability of the system to accurately notify security specialists in the event of an actual alarm. The Raptor system is different in that it incorporates the same highly proprietary technology used by the US Department of Defense and various US intelligence agencies to separate the day-to-day *clutter* of normal operations from an alarm condition and establish a *signature* for both normal and potential threat conditions.

The status of the perimeter is constantly monitored, using Raptor's proprietary "Raptor-IMS" network management system. In the event of an *incident*, the IMS software provides a carefully crafted escalation and notification procedure that incorporates any number of elements including, mass notification, coordination with local authorities, and, in certain circumstances, dispatching private security personnel to resolve the situation.

## ② Asset Inventory Control & Tracking



Asset inventory control and tracking includes the capability of monitoring and tracking the location and status of high-value assets. The theft of valuable property and assets has become almost epidemic both domestically and internationally. The theft of equipment such as pumps, compressors, heavy equipment and tools is common at job sites and port locations. Just as often many high value items are *misplaced* during the frantic pace of day-to-day activities and, while they may not have been

misappropriated, locating them can still take valuable time and resources.

Raptor has developed a highly proprietary job site asset tracking system that employs a combination of RFID, Wi-Fi Mesh, cellular and satellite, not only locate lost or stolen assets, but also to maintain logistical control of valuable property. The system operates by establishing a "geo-fence" that defines the space in which the property is allowed to move. Multiple geo-fences or "zones" may be established with various levels of threat conditions assigned to each zone. The TOC is notified when an asset moves beyond pre-established boundaries and appropriate response/notification measures are provided to the operator.



The Raptor asset control and security system is not only used to notify the TOC in the event of a threat, but also to manage inventory in remote locations. The logistics management system interfaces with existing inventory control systems to maintain a dynamic record of assets. The system, originally designed to handle military deployments of troops, hardware and resources in combat situations, is ideally suited to keeping track of valuable property and assets on a worldwide basis.

### ③ Personnel Safety and Security

In an era where the safety of personnel has come under increasing threat from the forces of terrorism and criminal elements, Raptor has responded by creating a solution that specializes in the tracking of personnel on a worldwide basis. The Raptor system incorporates some of the most sophisticated and advanced electronic tracking systems available today to dynamically monitor the location and status of key personnel. In addition, Raptor is different from companies that merely track and report on the status of personnel in that Raptor has the capability of dispatching rapid response security forces to deal with potentially life threatening



Raptor-PST “Man Down” and “Lone Worker” products are the cornerstone of the company’s personnel security and safety products. Both operate in a similar fashion in that the rugged *industrialized* transceivers are small, self-contained “pager-size” units that can be worn on the belt, in a pocket or on a hard hat. The transmitter has two buttons, one green and one red. The green button can be pushed to send an “all is well” ping to the receiving unit. This signal is relayed via Wi-Fi mesh, cellular or satellite to the TOC and shows the location and status of the person wearing the unit. In the event of an emergency, the red button can be pushed which sends a Level One alarm to the TOC, at which time the highest level of response/resolution is applied to the situation.

The unit can also be programmed to automatically “ping” on a regularly scheduled basis. The personal unit also has a “Man Down” feature in that if the unit is horizontal for a pre-programmed period of time an alarm is sent to the TOC. This feature is applicable in situations where noxious gases or other safety hazards may be present and the worker may be suddenly incapacitated. Smaller “pendant-size” Raptor-PST units are also available. These can be worn by executives, office personnel or other workers in less harsh environments. These systems function in a similar fashion to the “ruggedized” version.

Raptor offers a specialized version of the Raptor-PST “Lone Worker” system for senior managers and key personnel. This system is designed for use in situations where the potential of a *kidnapping-for-ransom* situation may exist. Recent press reports have noted that kidnapping for ransom has become virtually a *cottage industry* in countries such as Nigeria and Mexico, with high profile executives and government officials being prime targets. This service is coupled with the Raptor-PSS (Protective Security Service) program described elsewhere in this document.



## ④ Vessel and Fleet Tracking



Fleet tracking is a crowded field with over two hundred and fifty companies domestically engaged in some level of geospatial fleet and vehicle tracking<sup>4</sup>. However, most are in the domestic general transportation area and do not place particular emphasis on the international maritime sector.

Raptor has the most advanced applications, hardware and services designed to track and monitor the status of assets, and transportation. While most geospatial tracking systems employ a single mapping overlay, the Raptor “modular” approach to the integration of

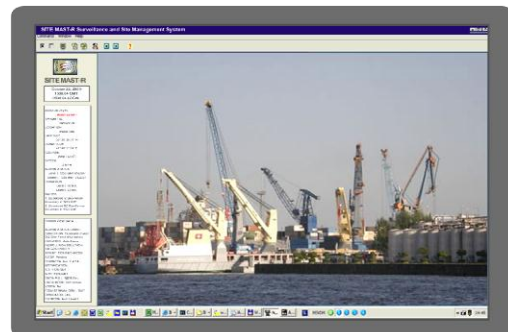
software, applications and hardware allow various systems to seamlessly interact between the most popular mapping applications. This results in highly detailed and accurate map overlays, regardless of location.

Raptor tracking systems incorporate a combination of land-based GSM/GRPS and CDMA cellular, GPS and A-GPS systems, as well as LEO and GEO mobile satellite systems to ensure ubiquitous and reliable coverage on a local, regional or worldwide basis, both indoors and outdoors. Raptor systems range from small hand-carried or concealed personal units, to hidden or embedded asset and vehicle tracking systems with a battery life of eight years or more.

The Raptor vehicle tracking system is particularly suited to improving driver efficiency, maximizing routes, locating hard to find sites, and ensuring that operators comply with DOT, EPA, OSHA and other governmental regulations.

## ⑤ SITE MAST-R Video Surveillance

The **SITE MAST-R** system is designed to support site security, safety and telecom needs by providing remote video surveillance, perimeter security, personnel status, asset tracking and communications to virtually any location in the world via the Internet. The system can also be used to monitor and assess the progress of construction activities on the site by providing a real-time view of the site. This feature greatly reduces the amount of time qualified oversight personnel need to be on the site, and reduces their exposure to potential danger due to the need for fewer trips to the site.



The Raptor **SITE MAST-R** system provides coverage over a large area while having the capability to ‘zoom’ in to examine objects in fine detail. Its IP-based design allows it to be interconnected wirelessly in a mesh-network configuration. This feature allows for sites to be relocated or set up on a temporary basis with only a few minutes of setup time.

<sup>4</sup> Source: Directions Magazine, March 2010:



Multiple cameras are utilized in the video system that can be remotely controlled over the Internet to provide a full range of pan, tilt and zoom (PTZ) functions. Very low light and IR cameras are also available as options to the basic configuration.

The video system is complimented by a high quality audio system that can be extended through the use of additional wireless audio pickup devices.

The SITE MAST-R system not only provides high-resolution video, it also supports high quality telecommunications and Internet coverage through the application of a 'carrier grade' wide area Wi-Fi network.

Optional enhancements are available in the SITE MAST-R system to support a wide variety of security and safety applications such as:

- ▶ TraceGEO-IPM: an advanced perimeter protection and monitoring solution that incorporates video, motion detection, passive IR, acoustic and seismic transducers, coupled with an intelligent incident management system, to remotely detect intrusions in the harshest environments,
- ▶ TraceGEO-PST: wireless systems that support the monitoring and safety of personnel working in hazardous or potentially hostile environments,
- ▶ TraceGEO-AST: a complete line of asset, vehicle and equipment tracking, status monitoring and incident management and resolution solutions and services.

In addition, machine-to-machine control and status monitoring is available through the application of the latest ZigBee technology. The ZigBee system can be used to:

- ▶ Remotely turn on and off pumps, generators and other site equipment,
- ▶ Monitor the status of electrical systems, engines and support systems,
- ▶ Poll performance and maintenance data from the 'J Bus' data port of equipment.

## ⑥ RFID, Wi-Fi, Satellite and Cellular Connectivity

Another unique feature of the Raptor portfolio of solutions and services is the proprietary wireless *hybrid* platform. Unlike most tracking and status monitoring solutions that use a single pathway for data reporting, Raptor incorporates multiple platforms, seamlessly integrated into a *least cost-best available* transmission system. This ensures that critical data is never lost due to unavailability of the transmission path.



For example, in a warehouse, job site or storage yard, RFID may be incorporated to track and account for assets and property. RFID has low operational cost since no outside network provider is involved (except for data backhaul), and thus little or no monthly recurring service charges are assessed. However, RFID is also limited in the area it covers. Effective coverage is usually measured in feet or yards.

WiMAX, Wi-Fi and Wi-Fi-Mesh provide much better coverage and better data throughput capability. However, WiMAX or Wi-Fi systems must be purchased, installed and maintained. Wi-Fi Mesh systems are ideally suited for offshore platforms in that they can be utilized to not only serve as a wireless aggregation point for status monitoring and tracking, but also can



distribute a wide variety of telecom and Internet-based services. However, Wi-Fi systems are, at best regional in coverage, and a means of *backhaul* must be provided to transport the data to a gateway. This can be accomplished by VSAT, point-to-point wireless and in some cases cellular.



Cellular is perhaps the best *compromise* system when considering cost and availability. Newer cellular systems have been designed to accommodate short burst data (SBD) transmission such as the General Packet Radio Service (GPRS) used by GSM. GPRS is a cost effective way to communicate either simplex (one-way) or duplex (two-way) from a data modem and coverage is much wider than currently available through Wi-Fi Mesh. However, cellular is by no measure *ubiquitous*. Since cellular networks are built to accommodate users in cities, towns and interstate highway corridors, serious *gaps* in coverage are apparent in rural or remote areas. In some instances specialized cellular providers have built and operate networks that cover specific areas and/or applications,

such as off-shore platforms in the Gulf of Mexico.

Satellite coverage is the most ubiquitous of all transmission paths. However, satellite is also the most expensive in terms of monthly recurring cost. Satellite is also limited in access since *open skies* are normally required in order to receive or transmit to and from the satellite.

Raptor incorporates multiple mobile satellite (MOBSAT) solutions in order to provide the best coverage possible. By using a combination of low earth orbiting satellites (GlobalStar, Iridium and Orbcomm), with a global geosynchronous satellite network (Inmarsat), Raptor can provide continuous coverage anywhere on the face of the globe on land or at sea.

When combined with the other wireless transmission methods previously described, the Raptor status monitoring/tracking platform can provide continuous end-to-end coverage without ever experiencing a break in communications.

## 7 Raptor-IMS- Web-Based Incident Management

Raptor Global adds another dimension to personnel and asset tracking by providing a comprehensive monitoring and threat analysis service on a 7X24 basis. The activities, status and locations of personnel, vehicles and assets are tracked and monitored from the Raptor tactical operations center (TOC). Any change of status from a predefined activity level is immediately relayed to the TOC, where the data is interpreted to determine whether a threat exists, or an incident is taking place. In the event of an incident, appropriate resources are directed to resolve the situation.





“Operator Overload” is one reason why many network operations centers (NOCs) encounter serious problems when tasked with critical and potentially life threatening situations. That is why Raptor uses the proprietary “Raptor-IMS” (Incident Management System) in its tactical operations centers (TOCs). “Raptor-IMS” is a specially designed suite of software and applications originally deployed by US Department of Defense, designed to minimize the number of *events* an operator must observe and to separate potentially serious incidents from the normal *clutter* of day-to-day activities.

The intelligent and intuitive “Raptor-IMS” system accumulates millions of bits of data that is generated during *typical* activities at a specific location and establishes a normal *signature* for that location. Any event that occurs outside of this signature is compared to previously established *threat* signatures and if the signature matches one of these pre-defined conditions, or if it is outside of established boundaries, an *incident* is declared and the operator is notified in a number of ways, including visually and audibly.

“Raptor-IMS” automatically determines the threat level, recommends the appropriate action and undertakes the proper incident response solution, all within seconds. It notifies all concerned parties following a previously established notification/escalation list, and ensures that follow-through activities are underway on a minute-by-minute basis.

Raptor is in the process of building two secure tactical operations centers. The first is being developed in Dubai, UAE and will be used to serve the Middle East and Africa. The second one will be constructed in either the US or Central America and will be used to monitor activities the Americas. The two TOCs will be interconnected to provide backup capability.

### ⑧ Raptor Protective Security Service (PSS) Partners



In most routine cases, Raptor works with local authorities in the recovery of assets. However, there are situations where public safety resources may not be adequate to resolve the situation. For that reason, Raptor has teamed with a number of premier providers of protective security services (PSS), with specific focus on the maritime sector, to provide a professional and highly effective first-response solution to the rescue of personnel and the recovery of high-value assets. Raptor PSS partners are employed in tactical situations where local law enforcement services are unavailable, or where civil law enforcement infrastructure is in disarray due to internal strife, or natural disasters.

Raptor PSS partners are highly-trained professionals with years of military special operations and security experience. They operate with the full cooperation of local authorities, and are available to protect personnel and assets on a case-by-case, country-by-country basis. They are specially trained to deal with hostage situations, kidnappings and threats to personal safety, and are experienced in asset recovery. Raptor PSS partners can apply the appropriate response ranging from delicate negotiations, to the maximum application of force, if and when necessary. In addition, Raptor PSS partners can provide training and resources to equip client companies to deal with potentially hostile situations.



Raptor's relationships with premier protective security service firms are important because it brings a number of support elements to the enterprise including:

- ▶ Investigative services pertaining to the theft or loss of assets, and working with local authorities, (or if necessary on their own) in recovery of property.
- ▶ Providing situational analysis support in interpreting the information collected by the TOC and determining potential threats to personnel or property.
- ▶ Providing rapid response (both measured and maximum force) in the rescue of personnel in the event of a hostage or kidnapping situation.
- ▶ Providing support and training to end users and TOC personnel in threat assessment and in coordinating a suitable response.
- ▶ Representing the Raptor services portfolio to existing and potential customers as needed.
- ▶ Working with Raptor in formulating an end-to-end package of services that can not only be provided to the end user, but also used to gain the endorsement and support of insurance underwriters.

## 9 Aerial Multi-Spectral Surveillance

The aerial multi-spectral surveillance system (MSS), under joint development by Raptor and its defense contractor partners, is a highly proprietary multi-spectral surveillance system designed to locate and identify specific "abnormalities", using an airborne platform, from heights as great as ten thousand feet (3 km) or more.<sup>5</sup>



The Raptor-MSS airborne surveillance system incorporates the most sophisticated spectral analysis algorithms currently available to interpret abnormalities that may be present in any of over fifty spectral bandwidths. The image resolution is so great that it can detect an abnormality smaller than six inches (150 mm) from ten thousand feet with precision accuracy.

Highlights of Raptor-MSS:

- ▶ The military version of Raptor-MSS is scheduled for near-term deployment to locations in hostile environments worldwide to detect buried mines, IEDs, trip wires, ordinance, snipers, etc.
- ▶ The enterprise version is scheduled to be available in the winter of 2011, and when combined with the Raptor-IMS (incident management system), will be offered by Raptor as an end-to-end incident identification/resolution solution for these applications:
  - ◆ Detection of leaks, both above and below surface of the water, and the ability to detect minor spills before they become major environmental hazards,

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<sup>5</sup> The Raptor-MSS system is currently adapted to manned fixed wing or helicopter platforms. However, Raptor is working with a strategic partner in evaluating the effectiveness of both fixed wing and rotary UAVs in supporting the multi-spectral equipment platform.



- ◆ Perimeter security- the ability to detect incursions, penetrations, etc., including tunneling activities, into secure facilities and under fenced perimeters,
- ◆ Detection of un-declared hazardous or dangerous cargo including nuclear and chemical agents
- ◆ Detection of underwater security threats including mines, explosives or other devices.
- ▶ Depending on configuration, Raptor-MSS can be used to detect below-ground abnormalities to a depth of twelve feet (4 m) or greater and in the water to a depth of fifty feet (15 M) or more.
- ▶ Raptor-MSS is also available in an interactive wireless networking format that allows land-based operators and analysts “real-time” access to the system during operations.
- ▶ Raptor-MSS surveillance services are cost effective and are available either on a monthly retainer or a “per event” ad hoc basis.
- ▶ While Raptor-MSS is intended to be provided as a service-based solution, the system is available for sale, under certain situations, to governments and commercial enterprises upon US Department of State approval.

## Contact Information

Raptor provides end-to-end security technology solutions for homeland security, military, energy, maritime, transportation and enterprise applications. For more information about **Raptor Global Services, Inc.**, please visit our website at [www.raptorglobalinc.com](http://www.raptorglobalinc.com) or contact:

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