Port and terminal security: advances in technology

by Kim E. Petersen

"If the terrorists don't shut us down, the cost of security will," lamented a beleaguered — and not atypical — port terminal operator in Florida. It is no secret that subsequent to the devastating terror attacks of Sept. 11 and the al-Qaida assaults against ships, such as the USS Cole and the VLCC Limburg, that security regulations were created that carry a stiff price tag. For example, the U.N.'s International Maritime Organization created the International Ship and Port Facility Security Code, which for the first time established minimum-security standards for ships and port facilities worldwide. The U.S. corollary to the ISPS Code is the Maritime Transportation Security Act of 2002.


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Both of these regulations have done much to safeguard sailors, port workers, communities and the industry itself from terrorist incidents. Unfortunately, both the ISPS Code and the Maritime Transportation Security Act have had the effect of torpedoing long-standing budgets of port operators who are now scrambling to address the crush of new regulatory obligations. Fences, security lighting, access controls, closed-circuit cameras and guards seemingly everywhere are just a few of the funding headaches facing maritime management in 2005. Unfortunately, as terrorists become more sophisticated, so too must the risk mitigation strategies adopted by their potential targets — and ports and ships definitely fit into that category. But the good news is that recent developments in technology and security services are delivering cost-effective solutions to an industry desperate for help.

Areas of concern

A port or terminal operator can divide up his or her areas of concern into three fundamental categories: landside, surface and subsurface threats. As our understanding of the terrorist threat expands, the homeland-security industry focuses on creating high-tech security systems and devices designed around the unique requirements of the maritime industry.

Landside Threat

Landside threats are usually the first to be assessed by port or terminal operators. The ISPS Code and the Maritime Transportation Security Act provide guidance for assessing possible threats to the assets and infrastructure of a port facility. These landside threats attempt to exploit vulnerabilities ranging from a facility's perimeter fence to buildings, roads and quaysides.

Perimeter security is fundamental to landside security, and the emergence of revolutionary "smart" technologies, designed to minimize manpower requirements and reduce the chance of error, are now becoming both reliable and affordable. One example of this technology is intelligent video surveillance, which is a smart extension of fairly common closed-circuit television, or CCTV. Intelligent video surveillance software, based on artificial intelligence called "computer vision," runs all objects in a camera's view against threat-specific pre-programmed rules. For example, when an object violates a rule, a small boat loiters next to a ship or a bag is left unattended in a cruise terminal or on a quayside, the software alerts security personnel by phone, pager, e-mail or an alert console. Intelligent video surveillance allows a port to detect, classify and track potential threats in real-time, often using their existing CCTV system. Object Video is one of the leaders in the industry and has spent considerable time addressing the unique requirements of port and terminal operations. Unlike conventional video motion detection, microwave or infrared-based surveillance systems, Object Video's product reduces false alarms by detecting the variations between normal occurrences, such as the natural movement of waves vs. a suspicious vessel near a shoreline and then alerts the user as to the threat.

Once a threat is identified, the port must have an appropriate response force, with expert personnel that are trained in threat identification and response. The security force is the first responder to a security incident, and must understand the specific nature of the maritime threat and is certified in a broad scope of maritime security specialties. No longer are security guards that spend part of their week protecting banks or bowling alleys appropriate for securing critical infrastructure at ports and terminals. Oceanix Maritime Security, a joint venture of Cognisa/Group 4 Securicor (the second-largest security company in the world) and SeaSecure, provides a complete maritime security solution that encompasses ongoing regulatory compliance, port and facility guard forces trained to PFSO standards; security system design, selection, integration and procurement; and ISPS Code/Maritime Security Transportation Act-compliant training.

Surface Threat

The surface threat to ports is arguably the most lethal — and likely. Al-Qaida has already demonstrated its ability to successfully attack commercial and mili-

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tary vessels by simply ramming a small boat laden with explosives into the hulls of the Cole and the Limburg. Any type of readily available speedboat, or even a jet ski, traveling at 30 knots can cover 1,000 yards, or one-half nautical mile, in only 60 seconds. The amount of time available to a crew or to shore personnel to recognize a threat and then react appropriately is very limited. How can law enforcement be expected to respond if time doesn't even exist for the landside security force to react to the threat? The issue is further complicated for commercial ships as they are typically unarmed. Unlike the U.S. military or Coast Guard, shippers, cruise lines, and terminal operators must rely on strictly passive defensive measures. Fortunately, robust security solutions are reaching the market that does not rely on military, government, or law enforcement intervention.

One such surface-protection solution comes in the form of small-craft intrusion barriers, which are floating "walls" similar to Jersey barriers used on the shoulders of highways. One prominent small-craft intrusion barrier provider, the Yodock Wall Co., has designed a unique barrier system that effectively delineates restricted areas, providing both a visual and a formidable physical barrier in the water. The interlocking floating barrier prevents access to restricted port areas — such as cruise ship basins — and can prevent an explosives-laden speedboat from reaching its target. These devices are low-cost, easy to install and just recently available to non-military buyers.

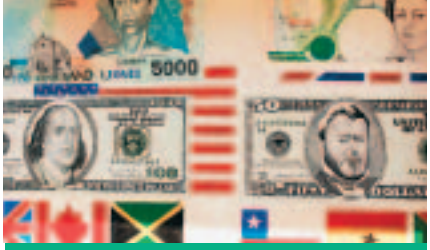
Another recent innovation is the use of privately contracted waterborne patrols. These patrols serve in much the same capacity as a Coast Guard or police patrol, using specially trained crews and purpose-built boats. These security patrols can extend warning and detection times and provide a powerful deterrent to terrorist planners. SeaWolf Security Group, a pioneer in waterborne security, has developed a fleet of patrol vessels that vary in size from 24 feet to 65 feet, and are capable of providing security patrol solutions to ports, anchorages, offshore platforms and shipping lanes. In an era of limited Coast Guard resources, waterborne security by such firms as SeaWolf is an attractive option for high traffic ports and terminals.

Subsurface Threat

The subsurface terrorist threat could arrive in the form of combat surface swimmers, scuba divers, minisubmarines or even mines. Intelligence reports have indicated al-Qaida's persistent interest in training terrorist operatives in subsurface attack techniques. Al-Qaida reportedly has in its inventory minisubs, human torpedo systems and divers trained in underwater demolitions. An al-Qaida diver could surreptitiously attack a vessel using a variety of explosive devices, ranging from limpet mines to easily constructed improvised explosive devices. Combat swimmers could perform acts of sabotage to vessels or piers without ever alerting landside security to their presence, thereby effectively circumventing conventional security systems.

Fortunately, several technologies have been developed to combat subsurface threats. While the science of subsurface counterterrorism technologies is not new, the availability of systems designed for non-military customers has only recently taken place. Commercial off-the-shelf products, such as underwater cameras, CCTV, hull-scanning equipment, and acoustic lens sonar have been effectively integrated into several pilot port- and vessel-security programs as a first line defense against subsurface terrorist threats. Other ports are proactively integrating fiber-optic swimmer nets, swimmer- detection sonar and remote-operated vehicles into their security systems.

Contributing editor Kim E. Petersen is the president of SeaSecure LLC and the Executive Director of the Maritime Security Council, which represents 70 percent of the world's shipping.



Foreign Exchange Rates

Week Ending: 1/28/05

Argentina (*peso*)	3.0871
Australia (*dollar*)	1.2883
Bahrain (*dinar*)	0.3770
Barbados (*dollar*)	2.0780
Brazil (*real*)	2.6710
Canada (*dollar*)	1.2385
Chile (*peso*)	586.2000
China, P.R. (*renminbi*)	8.2865
Colombia (*peso*)	2371.0000
Costa Rica (*colon*)	481.2100
Czech Republic (*koruna*)	23.2090
Denmark (*kroner*)	5.7110
Dom. Rep. (*peso*)	29.0250
Ecuador (*sucre*)	25,000.0000
Egypt (*pound*)	5.8710
England (*British pound*)	.5298
Europe (*Euro*)	.7672
Guatemala (*quetzal*)	8.0986
Haiti (*gourde*)	37.7910
Honduras (*lempira*)	19.4410
Hong Kong (*dollar*)	7.8003
Hungary (*forint*)	188.4300
India (*rupee*)	43.7800
Indonesia (*Rupiah*)	9155.8000
Israel (*shekel*)	4.4100
Jamaica (*dollar*)	61.1500
Japan (*yen*)	103.1200
Jordan (*dinar*)	0.7140
Kenya (*shilling*)	77.0930
Kuwait (*dinar*)	0.2920
Lebanon (*pound*)	1517.3000
Malaysia (*ringgit*)	3.8006
Mexico (*peso*)	11.3220
New Zealand (*dollar*)	1.3993
Nicaragua (*gold cordoba*)	16.2300
Norway (*krone*)	6.3347
Pakistan (*rupee*)	59.1800
Peru (*nuevo sol*)	3.2620
Philippines (*peso*)	55.1900
Poland (*zloty*)	3.1189
Russia (*ruble*)	28.0800
Saudi Arabia (*riyal*)	3.7504
Singapore (*dollar*)	1.6328
Slovak Republic (*koruna*)	29.4970
South Africa (*rand*)	5.9456
South Korea (*won*)	1029.00
Sri Lanka (*rupee*)	99.0670
Sweden (*krona*)	6.9757
Switzerland (*franc*)	1.1852
Taiwan (*dollar*)	31.8700
Thailand (*baht*)	38.5350
Trinidad (*dollar*)	6.2777
Turkey (*lira*)	1,340,000.0000
U.A.E (*dirham*)	3.6730
Uruguay (*peso*)	24.9700
Venezuela (*bolivar*)	1921.0000

The exchange rates show the number of currency units needed to equal one U.S. dollar.