

SHIP SECURITY MEASURES SINCE SEPTEMBER 11 AND ASSOCIATED COSTS

BY

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Section 1

Introduction

The September 11th terror attacks on the United States placed new emphasis on the need to secure borders and safeguard against terrorist activities. The immediate reaction caused a near standstill of the world economy. The world was waiting to see how the USA would react, and the last thing anyone was concerned about was the flow of trade. Security was stepped up to unprecedented levels, aircrafts were turned back and ports were closed. The measures have been relaxed since, but the drive is towards a permanent improvement in national security.

Port security has always been a priority. While the focus might have broadened to include terrorism, the smuggling of narcotics, firearms and illegal immigrants has always been a concern.

Port authorities around the world, specifically in South America and Eastern Europe had installed more than a hundred mobile scanning devices by the year 2000, designed to vet empty containers¹. Security has therefore always been a priority, although substantial upgrades are necessary to combat terrorism and prevent the smuggling of maximum impact weapons.

In an effort to secure ports and terminals around the world the USA released the Port and Maritime Security Bill shortly after the attacks. Immediate security measures included an increase in container inspection and US coast guards boarding vessels. The bill expands and refines increased security measures and attempts to prevent terrorism entering the USA by taking away the risk of entry by ports. While measures might appear to be excessive, they are essential considering that approximately 200 million sea cargo containers move annually among the world's top seaports, and nearly 50 percent of the value of all U.S. imports arrive containerised by sea².

¹ Stats from Containerisation International, November 2002

² Stats from US Customs website

Section 2

Effects of increased security measures on the shipping industry, as amplified by the bill

The 24-hour rule

US Customs Services now require the electronic submission³ of export cargo manifests and complete shipping documents to be filed 24 hours before cargo is loaded on board vessels departing from foreign ports. The official date of implementation of this measure was 1 December 2002, however a grace period of 60 days was afforded to traders. Regulations cover all import cargo including cargo being transhipped at U.S ports as well as any cargo transiting U.S. ports that remains on the mother vessel. Accredited NVOCC's⁴ will be allowed to file manifests direct with U.S. Customs (carriers will not be required to file manifest data for these approved NVOCC's).

The effects of this requirement are twofold. Firstly, the deadline for documenting shipping instructions and transmitting completed manifests will be earlier and strictly enforced. This requires considerable discipline from shippers and carriers alike. Loading will not take place unless a complete detailed manifest is electronically transmitted to the US customs 24 hours prior to loading, and approved to be received.

In addition to the time constraint the information burden will be increased since vague terminology such as 'Freight all kind' will no longer be acceptable. Cargo that is not adequately described will not be loaded and could even prevent a vessel from entering the USA. Despite the obvious implications for time sensitive production and supply chains in general, these measures create indirect benefits for shippers and the shipping industry. These include earlier bill of lading production and release and pre determined cargo clearance upon arrival at destination.

Penalties per container – for violations of rules	
First Container	\$ 5000
Additional Containers	\$10000
Potential extra Penalties – up to:	Value of the Cargo

Identification

In order to improve security on ports and vessels alike the Port and Maritime Security Bill includes a section aimed at enhanced crewmember identification and international seafarer identification. The USA has proposed an international, uniform and consistent identification system for all nations, where all seafarers have an International Seafarer smart card for identification and tracking. The smart card strip will store biometrics such as fingerprints. However, this proposal is considered to be highly controversial by certain countries that claim that this is an infringement of seafarers' rights.

Issues of privacy aside, however, improved identification methods are crucial. The IMO has handed this responsibility over to the International Labour Organisation, who has appointed a working group. The group is expected to respond by July 2003. Should this form of identification be approved, the cost of implementing technology will be borne by individual shipping companies. While the US Secretary has not yet decided on the

³ In order to transmit information electronically will have to have AMS system

⁴ Non Vessel Operating Common Cargo

specifics of the enhanced crewmember identification requirement, this is an issue that is certain to impose extensive costs on the shipping industry in the future.

Vessel Security

The vessel security plan proposed by the Port and Maritime Security Bill aims at securing vessels, thereby making them less vulnerable to terrorist activity. The security plan proposed by the USA is comprehensive, but expensive. Security plans must be implemented for all vessels and approved by the vessel's flag state. The proposed process, as it stands, is as follows: Prior to drawing up the security plan, which will include designating a ship security officer as well as a company security officer, all vessels must be surveyed by the Regional Survey Officer (RSO). Depending on the resident country of the RSO, the RSO must be transported, at the company's expense, to survey vessels around the world. Vessels entering the USA must have their plans reviewed by the US Secretary of the department of homeland security.

IMO regulation has no legal enforcement but can be ratified into the legislation by each country, the cost of which will be borne by the company. It is predicted that the process of surveying and implementing security plans for vessels travelling into the USA will be very costly, since these plans would have to be submitted for review by the USA as well. The cost of the survey will be dependent upon the vessel, geographical area and the appointed RSO. No RSO has been appointed as of yet. The deadline for implementing security plans is 1 July 2004.

Automated Identification System

The IMO has approved the requirement, proposed by the Port and Maritime Security Bill, that all vessels must have AIS's installed onboard. This requirement applies to vessels between 300 and not more than 50 000 gross tonnage. All vessels built after 1st January 2003 are required to have it installed, while existing vessels are required to have these systems installed by July 2004. There are currently two approved AIS's in the world, with a reported estimated cost of \$3000 per vessel.

The main purpose of this requirement is to assist in the identification of vessels at sea. The AIS stores specific details of vessels such as vessel id, number of crew on board, course, position and speed. Vessels will also be able to receive any reports on other ships or hazards in the area and any port data needed. While these are all benefits, one negative implication of this advanced identification system is that it makes vessels more vulnerable to piracy.

Seals

In an effort to improve the tracking of containers, and in order to reduce terrorist capabilities, the USA are in the process of developing performance standards in relation to the seals required for all containers bound towards the USA. In the interim, seal standards have been furthered through security based initiatives such as C-TPAT and the CSI, the details of which are explained later. Both initiatives require the use of high-security bolt seals on all containers to prevent interference.

At a more sophisticated level, seals can be used to track the position of a container along a journey. An example of this is the electronic seal, which can be purchased at significant cost. There is still a great deal of research being conducted into these higher technology seals (e-seals) that have the ability to both track and protect containers, and thus enhance security at a container level. The most sophisticated use Global Positioning Satellite

technology to track containers. The industry has had to absorb the costs of these more secure seals, although the reduction of container breach is a positive consequence.

The ISO (International Organisation for Standardisation), the worldwide body of national standards organisations from 140 countries will be responsible for developing standards for electronic seals. They currently have an electronic seal pilot project underway.

Cost Summary

Shipping Lines	Administration costs relating to additional procedures
	Personnel costs relating to additional procedures
	Possible costs of sophisticated seals and tracking systems
	Crew identification systems
	Vessel Security Plan costs and associated surveys by the RSO
	Cost of AIS installation (\$ 3000/installation)
	Penalties relating to non-compliance with 24 hr rule (\$ 5000; \$ 10 000 thereafter)

Section 3

Implications of the Bill for Ports and Terminals

US customs have applied a three-tiered approach to deal with the increased terrorist threat following September 11th. The first tier dealt with security of US ports through the immediate increase in US port security, along with continuing measures. The second tier deals with the security of major world ports through the placement of US customs officials at these major foreign ports. Finally, the third tier deals with the security of all world ports through the application of security standards backed by the IMO and World Customs Organisation (WCO) across ports throughout the world. This three-tiered approach will address a global security infrastructure for port security.

US Measures – Tier 1

Immediately increased port security measures in the USA included more thorough investigations of containers, facilitated by greater use of inspection technology (i.e. X-ray, Gamma-ray and radiation scanning). Enhanced physical security measures were undertaken along with additional information gathering activities that would complement emergency funded port security measures. Total port facility enhancement costs were estimated at \$4.4 billion for the implementation of the Marine Transportation Security Act in the US.

The Sea Cargo Targeting Initiative, launched in August 2002, to identify high-risk containers through an automated system, drove the information gathering activities.

The steps involve:

- 1) Reflecting up to date information about possible terrorist activities through the addition of new criteria to US customs automated systems
- 2) Manifests processing through the Automated Targeting System (incl. review by trained personnel)
- 3) Standardised US Customs procedures to identify high-risk shipments

Global Measures – Major Ports – Tier 2:

The second tier through the CSI (container security initiative) was launched to create a global security infrastructure to enable the screening of the majority of the 6 million containers before arrival in the USA. The initiative seeks to target the top 20 ports, covering 70% of all containerised imports to the USA. The initiative is based on bilateral agreements between the USA and foreign customs authorities, which entails the placing of US customs officials in the agreed foreign ports to assist local customs officials in the screening of containers. There are a number of countries that have signed up for the initiative, with the most recent being Spain. Other countries that have signed up include Holland, Germany, France, Belgium, Canada, Singapore, Japan, China (Hong Kong).

The Container Security Initiative has three essential elements.

- (1) The use of automated information to identify and target high-risk containers;
- (2) Pre-screening containers identified as high-risk before arrival at US ports;
- (3) The use of detection technology to quickly pre-screen high-risk containers;

Initially CSI will be implemented with high volume (US bound) ports and governments, enabling early detection of potential security concerns. The availability of advance information through the 24-hour manifest rule is a critical factor in the success of the initiative, because it enables the early identification of high-risk shipments for screening purposes.

CSI accreditation yields the benefit of decreased delays for shipments that have passed through CSI ports. This in turn results in a greater amount of traffic diverted through CSI ports.

The criteria for selection includes:

- Volume of US bound container exports
- Strategic and major consolidation centres
- Strategic locations and transshipment ports
- Willingness to engage in the programme

The WCO has unanimously passed a resolution allowing all 161 member states to develop programmes using CSI principles. Thus, countries like South Africa can become part of the CSI programme through their adoption of the WCO resolution.

Global Measures – secondary ports- tier 3:

While the CSI seeks to initially target major ports, other foreign ports will form part of a more extended security infrastructure through the standards being applied by the International Maritime Organisation (IMO).

The Port and Maritime Security Act specifies that foreign port assessments are to be conducted by the USA on major overseas ports from which vessels are bound to the USA in order to ensure that appropriate standards are applied. These standards are not defined, but the council has argued that these have to be similar to the standards as defined by the IMO. While at this stage the US is unlikely to conduct port assessments on South African ports due to their lower volume status, South Africa was a contracting government at the International Convention for the Safety of Life at Sea. As a contracting party they are affected by a significant new amendment to the Safety of Life at Sea Convention (SOLAS) made in a conference held in London during December 2002. The new amendment is the International Ship and Port Facility Security Code (ISPS Code).

Under this code there are detailed requirements for governments, port authorities and shipping lines.

The first requirement with respect to ports is that a facility security assessment be conducted to identify:

- 1) Important assets and infrastructure that are vital to the port facility
- 2) Threats to those assets and infrastructure
- 3) Vulnerability of the port facility through the identification of weaknesses

Based on the port assessment, a level of risk will be attributed to the facility. If the level of risk is significant a port facility security officer and security plan will be introduced. The plan will account for measures required to cope with an increased security risk. Security plans are approved by the IMO, and all port security measures need to be in place by July 2004 to be compliant with the IMO timeframe, although these measures are not mandatory. In order to become compliant with IMO security standards, some infrastructure investments will be required.

Infrastructure requirements to secure ports, are likely to include the implementation of access control, internal and perimeter security, lighting, fencing, identification systems, terminal monitoring systems (incl. security alarms, video surveillance, communication systems), electronic data systems and some form of scanning technology. Training and security awareness will be required as well. The Maritime Transportation Security Act is believed to have cost \$ 963 million for the first year costs for port security equipment and personnel, with estimated recurring annual costs of \$535 million⁵.

Implications of Non-Compliance

The USA will prescribe conditions of entry for any vessel arriving from a port considered to maintain ineffective security measures, or any vessel carrying cargo originating from or transhipped through such a port. Failure to comply with these conditions could result in:

- 1) Refusing entry
- 2) Inspection
- 3) Any other conditions deemed necessary

These actions will be taken 90 days after notification that the relevant port does not carry out the appropriate security measures. The actions will be not be taken if the situation is rectified within this time.

If the port is successful in complying with IMO security standards, there will be less risk of terrorist intervention as a result of port vulnerability. Therefore if South African ports are perceived to be "safe", the burden of inspection will be reduced on our transshipment ports, preventing costly delays. However, if we are perceived to be a country where our ports are easily susceptible to terrorist interference, far greater care will be taken in transshipment ports and the USA with respect to cargo, vessel and personnel inspection. Furthermore, South African ports may be bypassed as a result of perceived security weaknesses to avoid delays further down the pipeline. It is therefore necessary that each country participate in the relevant steps needed to comply with IMO security standards if their ports are to remain a feature in global trade.

Global security backing

US Customs initiatives have gained the support of the G8 and the World Customs Organisation (WCO) in their approach to increased customs security measures, with

⁵ According to US Coast Guard estimates, published Dec 30, 2002

particular attention towards maintaining the efficiency of world trade through partnerships with business, risk management procedures and the use of electronic information sharing.

An expert task force has been created by the WCO (28 June 2002) to standardise information relating to the identification of high-risk cargo while providing new international guidelines to provide advanced electronic transmission of customs data. These measures, along with the establishment of partners with private industry, are one of the efforts designed to safeguard global supply chains, while facilitating a balance of increased security commensurate with efficient international trade flows.

Port and terminal facilities around the world are likely to come under increasing pressure to take the appropriate security steps to ensure greater control of threats to port security while still enabling efficient trade flows.

Cost Summary

Ports	Port Infrastructure Investment costs
	Additional Security Personnel costs
	Implementation of Risk Identification systems
	Port Assessment Costs
	Cost of creating a Security Plan
	Technology Investment (scanners, CCTV, ID systems) costs

Section 4

Implications of security measures on supply chains:

Introduction

Recent threats imposed on the USA by terrorist attack permanently changed the way we conduct global business. Supply chains are by their very nature extended and international. The imposed legal and more specifically program initiatives imposed by the USA to protect their ports create a collection of implications on the functioning of the supply chain worldwide.

Over the past 20 years, the aim of business has been to create a seamless, integrated and efficient supply chain that operates at a speed that could facilitate 'just-in-time' manufacturing and a customer service focussed on streamlining transits. US businesses alone were reported to spend \$1 trillion⁶ in the year 2001 on improving their logistical operations. However, with the increase in security measures exercised over the supply chain in an attempt to control the international flow and contents of cargoes, the efficiency of the integrated supply chain would be compromised by US Customs initiatives and inspection.

Implications imposed on the supply chain by the Bill

Given that the amount of containers inspected will increase from 2% to 10%⁷, the anticipated result is inevitable delays at ports and terminals as authorities try to deal with the increase. These delays will result in slower transit times and the erosion of supply chain efficiency. A consequence is increased inventory on hand, which has been

⁶ The Economist Special Report, 6 April 2002

⁷ Stats from PONL Frontline, December 2002

estimated to cost US businesses around \$20 billion⁸ per annum. Other consequences include, but are not restricted to, potential increases in port surcharges, which could lead to increased freight rates.

The C-TPAT Initiative:

Despite the initial sentiment that increased customs inspections and transportation costs are the only results derived from the increased security, there are many benefits originating from these initiatives that ultimately enable business to find a cost effective way to protect business interests while conforming to a higher standard of security. Business can also avoid these new measures from threatening the effectiveness of supplying the product.

One such US Customs initiative is the Customs Trade Partnership Against Terrorism (C-TPAT). C-TPAT is a government-business initiative focusing on strengthening security across the supply chain and promoting cooperative relationships between all supply chain partners from importers and carriers to warehouse operators and manufacturers. The aim of the program is to encourage all business partners to exercise regulation and integrity in their practices and to ensure that their security guidelines are communicated effectively to all their supply chain partners. C-TPAT requires participating businesses to evaluate their processes, assess the cost and time implications of implementing the program and assess their organisational readiness to fully adopt C-TPAT.

Membership to the program remains voluntary but businesses have to ensure they implement strict procedural and access control integrity, as well as sound physical measures to protect buildings and facilities from outside intrusion and unlawful entry. Specific manifest procedures must be implemented to ensure that manifests submitted are legal, legible and accurate and businesses must ensure sufficient personnel checks are executed through employee screening, application verification and background checks. In addition, businesses must ensure employees have sufficient training and education to recognise security breaches and encourage participation in tighter controls.

The benefits of participation in the program include:

Reduced number of inspections at US borders resulting in the expedited movement of members' cargoes over dedicated lanes. An account manager exclusively assigned to deal with members' cargoes as a direct point of contact with US Customs. A self-policing relationship with Customs, which exclude members from regular Customs verifications. Eligibility for account based processes so those members only make monthly or bimonthly payments as agreed upon.

There are also a significant number of business related benefits arising from participation such as avoiding costs associated with delays, reducing inventory needs and transportation costs associated with delays at borders, protecting a business's supply chain, people, reputation and gaining a brand name to do business with other C-TPAT participants.

Non-compliance with security measures:

Although the time to review security and implement security measures into a business may be costly, the biggest cost to business may be that of non-compliance with measures such as C-TPAT. Costs may emanate from participants refusing to do business with those that do not comply with the requirements, cost incurred from loss in production time,

⁸ The Economist Special Report, 6 April 2002

increased transportation costs and lost business opportunities when delays at the US ports and borders begin to mount.

Securing the supply chain will also result in avoidance of losses incurred by carriers due to theft of cargoes and commercial vehicles, as the extra measures taken will assist in preventing such occurrences. Losses suffered due to theft by businesses worldwide were reported to be in the region of \$50 billion per annum. Compliance with the stipulations can only benefit manufacturers, receivers and carriers alike. In turn this would counteract the high downside risk effects on world trade.

Cost Summary

Supply Chain	Additional US Port surcharges (\$ 30/40 feu)
	Efficiency costs relating to delays (i.e. lost business)
	Additional Inventory costs for buffer stock (\$20 billion)
	Administration costs relating to additional documentation requirements
	Costs associated with longer cycle times
	Penalties for non-compliance

Section 5

Final Thoughts

- Are US measures a silent barrier to trade?
- How can the WTO embrace these measures to stimulate world trade?
- Are we sacrificing efficiency and competitiveness for security?
- Will third world producers have the technical capabilities to comply with US requirements?
- Should the third world burden be reduced by means of assistance from the developed world?
- Will greater transparency of supply chains lead to efficiency gains?
- Will improved discipline in the shipping industry lead to stronger relationships and improved service?
- Is the fight against terrorism negotiable?

Appendix

Costs:

Marine Transportation Security Act (US)	Ports
Estimated Total Port Facility Enhancement Costs	\$ 4.4 Billion
First Year Costs	\$ 963 Million
Costs per year thereafter	\$ 535 Million
Additional US Port Surcharge	\$ 30/ 40 per FEU
Global Cost of theft 2001	\$ 50 Billion
Amount Spent on Logistics in the US 2001	\$ 1 Trillion
Cost of 5% increase in Inventory	\$ 20 Billion
Cost of AIS	\$ 3000
Penalties per container – for violations of rules	
First Container	\$ 5000
Additional Containers	\$10000
Potential extra Penalties – up to:	Value of the Cargo

Perspective Fact Sheet

Facts	Figures
No. of containers handled (2001)	244m TEU
Total movement in containers (2001)	72m TEU
No. of parties in a transaction	Up to 25
No. of documents generated in a trade	30-40
No. of containers arriving in the US (2001)	6m TEU
No. of containers arriving in the US per day (2001)	17000
Value of all US imports arriving by sea	50%
Increase in container inspections	2% - 10%
Time taken to stop containers in transit, process paperwork, inspecting by hand, using 5 customs officers	One container every 3 hours
Time taken when inspection station using high-tech mobile scanners and fewer people is used	Eleven containers per hour