

# Changes to the role of US Customs and Border Protection and the impact of the 100% container scanning law

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## **Abstract**

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This paper considers the advantages and disadvantages of the introduction of 100% container scanning law according to Section 1701, Container Scanning and Seals, under Title XVII, Maritime Cargo of Public Law 110–53—AUG. 3, 2007 issued by the 110th Congress of the United States (US) on *Implementing Recommendations of the 9/11 Commission Act of 2007*. Scenarios are discussed which would impact significantly on customs administrations around the world and, in particular, on the additional costs involved in implementing the law as it stands. Options to address the requirements of the law are outlined, leading to the conclusion that streamlined Customs-to-Customs exchange of advanced information for risk management would meet both the priority objectives and the roles of Customs, that is, to enhance security and at the same time, facilitate global trade.

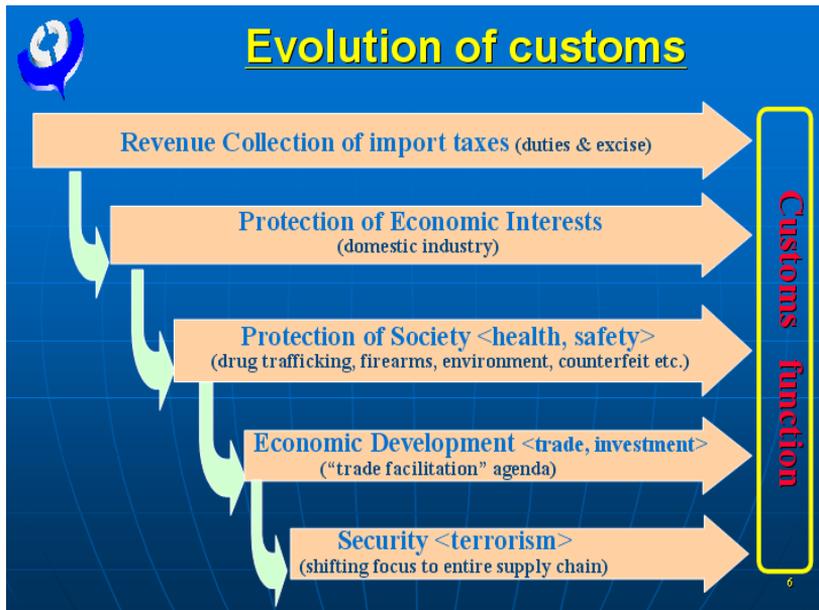
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## **1. Introduction**

The strategic event on 11 September 2001 (9/11) awakened serious concerns about United States (US) national security. The merging of US Customs and Border Protection (CBP) into the United State Department of Homeland Security on 1 March 2003 was one among many reactions by the US government to improve national security post 9/11 (Borner 2003). This change in organisational structure led to a change in the role of CBP.

Traditionally, customs administrations around the world in general and CBP in particular, function as public entities to collect taxes and duties, and supervise and control export and import activities. This traditional function of Customs explains why customs administrations are normally placed under a ministry of finance (and revenue) in many countries (Widdowson 2007, p. 31). Initially, the US Customs Service was part of the Department of Treasury (CBP website). With the dramatic increase in international trade in both volume and value, it is vital for customs administrations to facilitate trading activities. Only after the 9/11 event, for the first time in Customs' history, have security and terrorist fighting been incorporated into the missions of customs administrations and considered priority roles (Ireland 2009, p. 3). The so-called 'ideological shift' (Carluer, Alix & Joly 2008, p. 5) and evolving changes in the role of Customs were identified by Kunio Mikuriya, Secretary General of the World Customs Organization (WCO) as shown in Figure 1.

Figure 1: Evolution of Customs



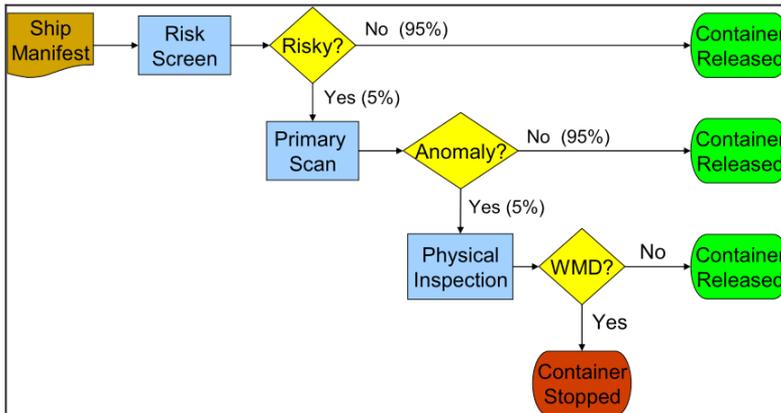
Source: Mikuriya 2007b

Shortly after the tragedy of 9/11, various programs were introduced by CBP to address potential threats of terrorist attacks. These programs included the Container Security Initiative, Customs-Trade Partnership Against Terrorism,<sup>2</sup> Free and Secure Trade Program, and the 24-Hour Rule (Ireland 2009, p. 2). Among these actions, the *9/11 Commission Act* came into force on 3 August 2007. According to Section 1701, Container Scanning and Seals, under the Title XVII, Maritime Cargo of Public Law 110–53—AUG. 3, 2007 issued by the 110th Congress of the US on *Implementing Recommendations of the 9/11 Commission Act of 2007*, ‘A container that was loaded on a vessel in a foreign port shall not enter the United States (either directly or via a foreign port) unless the container was scanned by nonintrusive imaging equipment<sup>3</sup> and radiation detection equipment *at a foreign port* before it was loaded on a vessel ...’ **by 1 July 2012** (emphasis added).

The regulation, which is known as the 100% container scanning law, targets the goal of detecting and neutralising nuclear weapons threats to the US (Bakshi, Flynn & Gans 2010, p. 4). Furthermore, supporters of the policy believe it would contribute to promptly returning the global supply chain to a steady state and minimise the costs arising from delays due to congestion at ports in the case of terrorist attack along the nodes of the global supply chain (Cirincione, Cosmas, Low, Peck & Wilds 2007; Bakshi, Flynn & Gans 2010, p. 4). It is estimated that if a port is attacked, there would be up to a three-month closure and backlog at US ports resulting in considerable losses. Due to the influence of the US in the world economy, an incident such as this may even cause economic recession (Allen 2006, p. 1). From a day-to-day benefits perspective, the law would help Customs to collect accurate amounts of tariffs (Cirincione et al. 2007, p. 25).

The immediate response to the aftermath of 9/11 was that US airport security was significantly tightened. Every passenger and the checked-in luggage and belongings of passengers are scanned. However, there have not been significant changes in security at seaports. ‘Five years after 9/11, only 5% of the six million cargo containers that arrive at US seaports are scanned for threats’ (Cirincione et al. 2007, p. 9).<sup>4</sup> This low percentage of random scanning represents a cautious approach to national security and personal safety at seaports.

Figure 2: Cargo security procedures



Source: Cirincione, Cosmas, Low, Peck & Wilds 2007, p. 13

Customs plays an increasingly important role in the area of free trade, that is, to facilitate legitimate trade and travel and protect the geographic and economic borders of a nation. In the changing nature of border management, the role of Customs is no longer apparent and simple (Lobdell 2009, p. 1). Customs administrations are in ‘the unique position’ to facilitate and secure global trade. The WCO supports customs administrations around the world to better perform these two functions, emphasising their security role, through the *WCO Framework of Standards to Secure and Facilitate Global Trade*<sup>5</sup> (the SAFE Framework) (WCO 2005). So far, 162 of the 177 WCO Members have committed to the SAFE Framework (WCO 2011), which indicates that their security mission is widely and actively accepted by customs administrations.

However, the 100% container scanning law of the US has been very controversial and has faced criticism by port authorities, maritime stakeholders, consignors and transporters, customs administrations, and even the WCO because 100% scanning is unlikely to ensure 100% security (McNeill 2010, p. 5). There is ‘widespread concern that the resulting congestion would hinder trade significantly’ and cause congestion at ports throughout the supply chain (Bakshi, Flynn & Gans 2010, p. 1), financial burdens and technology issues for outbound ports, which would be barriers to legitimate trade (Bennett & Yi 2008, p. 12). These concerns are further discussed below. Moreover, the law goes against the principles of trade facilitation reforms carried out by customs administrations and recommended by the WCO in the SAFE Framework.

## 2. Implications resulting from the implementation of the 100% container scanning law

Several implications would result from the implementation of the 100% container scanning law, an ‘excessive security policy’ (Ireland 2009).

### 2.1 Costs and time constraints

Martonosi, Ortiz and Willis (2005) conducted a study to examine the implementation of 100% scanning with the application of different levels of scanning technology, shown in Table 1.

Table 1: A comparison of 100% scanning using alternative technologies

| Parameter                                | Base policy | 100% scanning same technology | 100% scanning slightly improved technology | 100% scanning greatly improved technology |
|--|-------------|-------------------------------|--|---|
| Fraction containers screened             | 0.05        | 1.00                          | 1.00                                       | 1.00                                      |
| Targeting method                         | Random      | N/A                           | N/A  | N/A                                       |
| Detection rate                           | 0.95        | 0.95                          | 0.95                                       | 0.95                                      |
| Scanning rat (TEU/hr)                    | 20          | 20                            | 30   | 30  |
| False positive rate                      | 0.05        | 0.05                          | 0.05                                       | 0.01                                      |
| Equipment unit cost (\$M)                | \$4.5       | \$4.5                         | \$1.0                                      | \$1.0                                     |
| Annual maintenance costs (\$)            | \$200 000   | \$200 000                     | \$90 000                                   | \$90 000                                  |
| Operators per scanner                    | 4           | 4                             | 4  | 4   |
| Hand searching rate (containers per day) | 1           | 1                             | 4.8  | 4.8                                       |
| Number of inspectors per team            | 5           | 5                             | 5  | 5   |
| Annual operator/inspector salary (\$)    | \$50 000    | \$50 000                      | \$50 000                                   | \$50 000                                  |

Source: Martonosi, Ortiz & Willis 2005, p. 223

As can be seen from Table 1, any option would significantly increase CBP’s operational costs. The conclusions reached from a detailed cost-benefit analysis of the three options were that 100% scanning with the same technology may be cost effective for attacks with direct (labour and technology) and indirect (delay, intervention, ruination) consequences of more than USD 10 billion, but were still not viable due to the infeasibility of land and human resources (Martonosi, Ortiz & Willis 2005, pp. 228-37). The study’s assumptions about the cost of an attack account only for material loss, not human loss.

Moreover, normally 5% of the scanned cargo will be physically inspected (Cirincione et al. 2007, p. 5). So, if the scanning percentage is 100%, Customs would have to spend considerably more resources (human and financial) on physical inspection. It takes 15 to 20 customs officers four hours to conduct a physical inspection of a container (Cirincione et al. 2007, p. 14).

Indirect costs and time constraints may be incurred from scanning procedures (Cirincione et al. 2007, p. 4), especially for perishable goods and fresh foods. Several authors view cost as the main implication of the law, including Dallimore (2008), Bennett and Yi (2008), and McNeill (2010).

## 2.2 Requirements for advanced technologies

In order to scan a container, Customs need to use an x-ray or gamma scanner. The kind of technology would have to be clearly defined (Cirincione et al. 2007, p. 16) or standardised (Bennett & Yi 2008, p. 155) otherwise the effort would be worthless. Apart from the expense of purchasing scanners, their usage, maintenance, daily operation, and the training of customs officers would add significantly to the overall cost of 100% scanning. Keeping in mind that many outbound ports are in developing countries (Carlier, Alix & Joly 2008), the technology available in outbound ports to the US is not sufficiently advanced to conduct 100% scanning of all cargo using non-intrusive inspection scanners (Cirincione et al. 2007, p. 17).

Also, these types of scanners emit radiation that requires a large exclusion zone to prevent harm to customs personnel. Thus, port facilities would need to be re-arranged and possibly re-structured to ensure a safe working environment (Ireland 2009, p. 12).

### 2.3 Collaboration with foreign customs administrations and sharing information

Shipping one container may involve up to 25 different parties and require 30 to 40 documents (Allen 2006, p. 2) and that shipment may move from country to country. While the current security procedures highlight cooperation with domestic carriers, for advanced information on cargo, the new law calls for close collaboration and cooperation with foreign customs administrations (Dallimore 2008, p. 104). Therefore, outbound customs administrations would most influence the success of US 100% container scanning law. Table 2 shows the reasons why the law requires containers to be scanned at foreign ports before loading.

Table 2: Reasons for scanning

| Location of Scan  | Consequence of Attack | Risk of Tamper | Trustworthiness of Scan | Technology Cost to U.S. |
|---|-----------------------|----------------|-------------------------|-------------------------|
| Prior to arriving at foreign port (exporter supply chain) | Low                   | High           | Low                     | \$                      |
| At Foreign Port   | Low                   | Medium         | Low to High             | \$                      |
| At U.S. Port  | High                  | Low            | High                    | \$\$                    |
| Beyond U.S. port (within importer supply chain)           | High                  | Medium         | Medium                  | \$\$                    |

Source: Cirincione, Cosmas, Low, Peck & Wilds 2007, p. 30

Foreseen and heavy burdens (on cost, technologies and human resources) on foreign ports may prevent them agreeing to implement the law. Before 9/11 customs administrations were mostly concerned with imported cargo and had little to do with export cargo. In the event the law is implemented, additional resources would need to be allocated for export cargo (Mikuriya 2007a, p. 51). Even if the shortage of resources is resolved, the sharing of business information, the effectiveness of scanning and the mutual recognition of scanning results by CBP and foreign ports are difficult and sensitive issues to be dealt with – and these issues may affect the independence and sovereignty of nations.

### 2.4 Hindrance to national and international trade facilitation

At a national level, customs administrations make great efforts to harmonise and simplify customs procedures to streamline trade. At an international level, the WCO's recommendations and conventions encourage trade facilitation, and at the same time strive to ensure security. Instruments and guidance suggested by the WCO are compatible with the World Trade Organization's (WTO) trade facilitation agenda (Widdowson 2007, p. 34). Meanwhile, 100% container scanning law may cause restrictions to free trade and infringe Articles I, V, VIII, X and XI of GATT (Dallimore 2008, pp. 215-9). The WCO even lobbies the US Congress against 100% scanning (Ireland 2009, p. 11).

Customs administrations, in this case, have to consider the trade-off between human lives, national security and defence issues and trade facilitation requirements. Many authors contend that a fair choice would be unlikely (Carluer, Alix & Joly 2008, pp. 2, 19). Comparing the cost of an attack and the benefit of a prevention solution, such as 100% container scanning, is not meaningful because security (human lives) and economic benefits are not in the same cost-benefit units (Mankiw 2010, p. 231).

### **3. Possible alternative solutions**

#### **3.1 Defer the implementation of the 100% container scanning law**

Despite the implications mentioned above that would result from 100% container scanning law, ‘the question as to whether trade security initiatives have a positive or negative impact on trade facilitation at this time remains unanswered, as most companies continue to struggle with various stages of implementation, and nations wrestle with what is the perfect balance between facilitation and security’ (Lobdell 2009, p. 1). The necessity of such a law remains vital, especially if there is an increase in terrorism attacks and organised crime. Thus, it would seem reasonable to defer the implementation of the law until the technology is more developed and available (especially in developing countries), and the CBP obtains additional political support to facilitate collaboration with customs administrations (because trade facilitation for economic growth is currently the first priority – not security – in developing countries). Screening at the originating ports would lead to US ports being the ‘last line of defence, not the first’ and put the US in more danger if less screening at US ports is required (Allen 2006, p. 6).

On the other hand, with the implementation of the law, security along the supply chain would improve significantly, creating much less opportunity for terrorism activities; threats would be prevented and stopped at the originating ports; faster recovery of the supply chain in the case of terrorist attack would be ensured and avoid serial closure of ports for lengthy periods leading to massive economic losses.

Furthermore, tariff collection would increase and corruption would be diminished because of the added transparency arising from the use of the non-intrusive imaging devices (Allen 2006, p. 6).

#### **3.2 Further improve Customs-to-Customs exchange of advanced information for risk management**

This option requires the following activities:

- To enhance the effectiveness of risk management, information about a shipment, including the number of containers, to be sent (preferably electronically) to outbound customs administrations prior to loading.
- Information to be processed by outbound Customs, and at the same time, transmitted to CBP for their risk assessment.
- High-risk information to be further examined or a physical examination made of the goods by outbound Customs, if necessary.
- Results of the examination and risk assessment to be sent to CBP prior to the ship’s departure.
- CBP then to determine whether the shipment is eligible to enter US ports. This would not ensure there would be no additional information required or that the shipment is exempt from physical examination at US ports.

The advantage of this option is that it is economically feasible. The estimated budget for the Buenos Aires port authority to have four non-intrusive inspection devices was USD 33 million, including the expense of upgrading infrastructure. A container scanner may cost millions of dollars while ‘investments in IT and existing infrastructure only often triple the compliance costs’ (Allen 2006, p. 3). Moreover, this option would ensure customs administrations are well informed about real-time export and import activities (De Wulf & Sokol 2005, p. 285) and are able to take the initiative in decision making (ASEAN 2005). This is a risk-based approach committed to by several customs administrations (Carmody 2011, p. 7; McNeill 2010, p.1; ESCAP 2002).

Challenges to the success of this option are the agreement by customs administrations about the sharing of information, examination and risk assessment results; the level of information technology development; trustworthiness and mutual recognition of customs clearance results; and the secure transmission of data and information. In addition to Customs, the option requires cooperation and high compliance by the business sector to provide advanced information (Lobdell 2009, p. 2). In some cases, further incentives should be offered to the business sector, for example, the provision of free e-customs software and training so that companies can transmit the necessary information (Ministry of Finance of Viet Nam 2005).

#### 4. The preferred solution

Each of the options has its advantages and disadvantages. However, in the short term, the use of advanced information for risk management is likely to be more feasible.

Despite the infinite value of human life, ‘in both public and private decisions, we are at times willing to risk our lives to save some money’ (Mankiw 2010, p. 232). Examples given are that people still decide to buy a small car, even one without air bags, or that traffic lights are not installed at every crossroad. Other opinions are that ‘real security means choosing policies that not only keep Americans safe, but also keep them free and prosperous. The 100 percent scanning mandate does none of these well’ (McNeill 2010, p. 1).

According to McNeill (2010), ‘It is impossible to screen 11.6 million containers every year without bringing the global economy to its knees’. The US economy would face the loss of USD 500 billion in profit and more than five hours of delays per container if 100% containers are scanned (McNeill 2010, p. 1). The regulation would place heavy burdens on foreign customs administrations (Allen 2006, p. 9).

Customs-to-Customs exchange of advanced information for risk management would meet both the priority objectives and the roles of Customs, that is, to enhance security and at the same time, facilitate global trade.

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## Notes

- 1 This paper stems from personal, independent research by the author and does not reflect the views of Vietnam Customs on the issue.
- 2 'The Customs-Trade Partnership Against Terrorism [C-TPAT] is a voluntary program that grants members expedited cargo processing if they submit to and meet CBP review of their supply chain security procedures. In practical terms, importers that are members of C-TPAT receive various benefits that reduce the level of scrutiny applied to their cargo shipments' (Cirincione et al. 2007, p. 11).
- 3 '... scanning technologies that can effectively scan the cargo without ever needing to open the container' (Cirincione et al. 2007, p. 17).

- 4 'While all cargo containers entering the U.S. are screened for security risk, currently only about one in twenty are physically scanned with technology that can detect WMD [Weapons of Mass Destruction]. Of this small fraction, only 5% then undergo secondary scans by means of physical inspection.<sup>2</sup> Cargo containers therefore might be attractive vessels for smuggling conventional, chemical, biological, or nuclear weapons into the United States' (Cirincione et al. 2007, p. 8).
- 5 A non-binding instrument by the WCO comprised of technical customs standards aimed at securing without impeding international trade (Ireland 2009).

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## Editor's note

In a letter dated 2 May 2012, US Department of Homeland Security (DHS) Secretary Janet Napolitano advised the House Committee on Homeland Security, US House of Representatives, of a decision to extend the statutorily imposed deadline for 'the 100 percent scanning mandate' for an additional two years, that is, until 1 July 2014.

In doing so, Secretary Napolitano identified '... two critical conditions which necessitate an extension of the July 1, 2012 deadline:

- ***Use of systems that are available to scan containers will have a significant and negative impact on trade capacity and the flow of cargo.***

DHS has provided seven reports to Congress that detail the significant diplomatic, financial, technological, and operational barriers encountered throughout the deployment of integrated scanning systems to six foreign ports between 2007-2010, as part of the SFI pilots.<sup>7</sup> Based on our own operational experiences, and on substantial input from many industry partners and foreign government stakeholders, we conclude that utilization of current available, state of the art, integrated radiation detection systems and imaging equipment would be cost prohibitive and significantly impact trade capacity and the flow of cargo at this time.

- ***Systems to scan containers cannot be purchased, deployed, or operated at ports overseas because ports do not have the physical characteristics to install such a system.***

The space within the confines of most ports is exceedingly scarce and expensive, complicating the installation of scanning technologies. Additionally, integrated systems to scan transshipped cargo efficiently have yet to be developed. No integrated solution exists that can be seamlessly incorporated into the precise operations of moving cargo from barges-to-ships, from ships-to-ships, and from rail-to-ships without adversely impacting port operations and creating delays. While scanning systems for outbound cargo can be and have been integrated into busy port environments on a case-by-case basis, this has to-date, proven to be the exception rather than the rule and is often the result of complex and protracted negotiations.

<sup>7</sup> *Update on Integrated Scanning System Operations*, (May 29, 2008; June 12, 2008; January 4, 2010; July 15, 2010; January 24, 2011; May 20, 2011; and February 29, 2012). These challenges include: 1) operational costs associated with equipment, construction, communications and information technology, personnel, and resolution of alarms that occur; 2) diplomatic challenges related to obtaining critical host nation support; 3) severe space constraints within ports where land is limited and costly; 4) logistical and operational obstacles associated with deploying multiple systems or re-routing containers through the systems without causing bottlenecks that would trigger delays; 4) [*sic*] limitations on currently available technologies to adequately handle transshipped cargo and provide adequate automated alarm capabilities; 6) perceptions of health and safety concerns; and 7) varying degrees of terminal operator cooperation.'

