

# Construction of a Physical Security System for the Logistics Industry Based on TAPA Solutions

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## Abstract

This paper describes “TAPA,” an international security standard for forwarder warehouses, issues related to the TAPA certification in Japan and connected work undertaken by NEC Networks & System Integration Corporation.

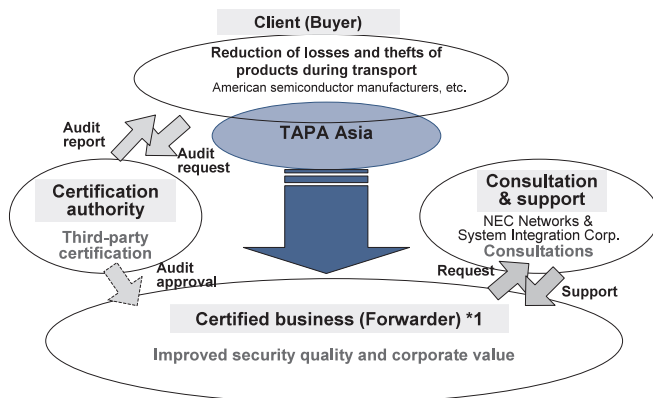
## Keywords

TAPA, TAPA FSR, monitoring camera (CCTV Systems), entrance/exist management system (Access Control), forwarder, personal information protection law, area policy, zoning

## 1. Introduction – TAPA Certification –

### 1.1 Background and Objectives in Launching TAPA

While globalization of markets has led to a rapid increase in freight transport, damages caused by misdeeds during international/domestic transport and warehouse storage such as thefts of hi-tech products are also increasing, thus resulting in deterioration of the logistics environments. Against this background, corporations incurring direct damage, including semiconductor manufacturers such as NEC Electronics America and Intel, logistics businesses and security businesses got together in the USA in 1997 and started the TAPA (Transported Asset Protection Association) as a non-profit making organization aiming at improving the security of freight transport (Fig. 1).



\*1 Forwarder: Ocean and air freight carrier engaged in export/import.

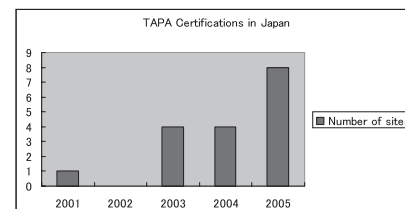
Fig. 1 Businesses involved in TAPA (Correlation).

TAPA is expected to implement safe transport/storage methods by focusing on security level requirements for the logistics industry (particularly on forwarders), who are expected to benefit from TAPA’s operations.

### 1.2 Situations of Certifications in Japan

In Japan, large and small forwarders of air freight are promoting certification for the bonded goods warehouses near Narita and Kansai International Airports (Fig. 2). Their businesses are expected to expand in warehouses near other Japanese international airports such as Haneda and Chubu as well as in ocean freight warehouses near harbors.

#### (a) Increase in TAPA certified companies



Extracted from TAPA Asia website, September 2006.

#### (b) Trends of Forwarders: Trends of TAPA Certifications (50 Companies)

Item	Feb. 2006	Aug. 2006
Already certified	7	7
Application planned	2	3
Application under study in house	25	23
Not decided	6	7
No answer	10	10

Not decided: Includes a company running rental warehouses. Under study: Includes two companies planning certification and three companies advancing toward application.

Material used in Facility Security (TAPA) Forum, SGS Japan, August 2006.

Fig. 2 (a) Increase in TAPA certified companies, (b) Trends of forwarders: Trends of TAPA certifications (50 companies).

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### ■ Items of TAPA FSR

Perimeter security	Security Procedures
Access Control	Standard Security Requirements
Facility dock/Warehouse	Pre-Alerts
Security Systems (Machine security)	Enhanced Security Requirements

### ■ Certification unit: Per location.

### ■ Warehouse security classes: A, B and C.

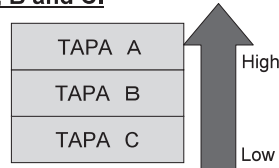


Fig. 3 Items of TAPA FSR.

### 1.3 Freight Security Requirements (TAPA FSR)

The TAPA certification can be obtained by passing a certification audit based on the TAPA-FSR (TAPA Freight Security Requirements). The FSR are composed of eight sections giving the security system specifications and operation guidelines for maintaining the security standards required for freight transport and warehouse storage.

The eight sections of the FSR are listed in **Fig. 3**.

The certification is divided into three classes A, B and C, where Class A means the highest security level. The certification audit consists of 73 items, and the applicant should obtain a total score of 60% or more. The level of certification of each forwarder is indicated in an explicit manner, rating a score from 60% to 70% “Minimally Acceptable,” that from 70% to 85% “Acceptable” and that from 85% to 100% “Exceeds Requirements.” Most forwarders are aiming at a “Class A” certification.

## 2. Effectiveness of TAPA Certification and Associated Issues in Japan

### 2.1 Effects of Certification

The main effects of storing and managing the freight of customers in compliance with the TAPA security standards include; 1) the prevention of damage by theft etc.; 2) an improvement in customer confidence; 3) PR of reliability on the outside, and; 4) expansion of business opportunities toward

high-priced electronic components and aircraft parts.

### 2.2 Issues in Japan

As an international standard, the FSR contains some prescriptions that do not match the domestic situation in Japan. When a Japanese business applies for certification by clearing the international standard, it is important to study the requirements fully, based on the situation in Japan. Some considerations that are related to this approach are discussed in the following.

#### (1) Personal Information Protection Law

TAPA regards it as important that forwarders run operations by employing persons with no criminal history\*<sup>1</sup>. Nevertheless, the Japanese Personal Information Protection Law prohibits the employers from collecting personal information including criminal history without the consent of the person in question. In addition, Japan like many other countries in the world does not have a well-arranged environment for inquiries of the criminal database. To deal with this issue, it is required to confirm the consistency of the reward/punishment and working period information from the submitted curricula vitae and to check the criminal history and reasons for resignations by asking for information from schools and from companies that the person in question as previously worked for. The point with regard to the domestic application of TAPA is to take measures according to the domestic laws.

#### (2) Environmental Measures

FSR requests the recording of clear camera images including those from outside buildings.\*<sup>2</sup>. This stipulation sometimes makes it necessary to provide night illumination however, if there are houses near the premises, it is important to take full consideration on the intensity of nighttime illumination. For the prescription in FSR5.1.10, “At inbound checkpoint for drivers and crews, identity and authorization are validated,” the arriving transport trucks are forced to stop before entering the premises, but this sometimes causes traffic jams in the roads around warehouses. In the TAPA consulting, it is not enough to concentrate exclusively on the security enhancement but environmental measures that have an effect on neighbors should also be taken into consideration.

\*1 FSR5.2.1, “Criminal history checks in place encompassing 5-year criminal history and employment check (vetting within constraints of local county laws).”

\*2 FSR 1.3.1, “Flood lighting of enclosed loading/unloading areas.” and FSR1.3.2, “Dock doors illuminated externally at night.”

### 3. Efforts Made by NEC Networks & System Integration Corp.

#### 3.1 TAPA Certification Solutions

In order to satisfy customers, we basically provide consistent services from the “Assessment phase” through the “Certification phase” (Fig. 4).

#### 3.2 Consulting from the Customer’s Perspective

We draw up the documents required for TAPA certification and the operation/training plans as well as written procedures.

Our consultation strategy aims to “implement an effective security infrastructure that can be executed by the customer.” Complicated security rules sometimes deteriorate the efficiency of operations and as a result, as time passes the security rules tend to become a mere text, making it difficult to maintain the rules continuously and eventually the security is dropped. TAPA continues to hold a certification audit every other year to prevent this, and it is important to develop security with full knowledge of this point. In the Assessment phase, we survey and analyze the current security system of the cus-

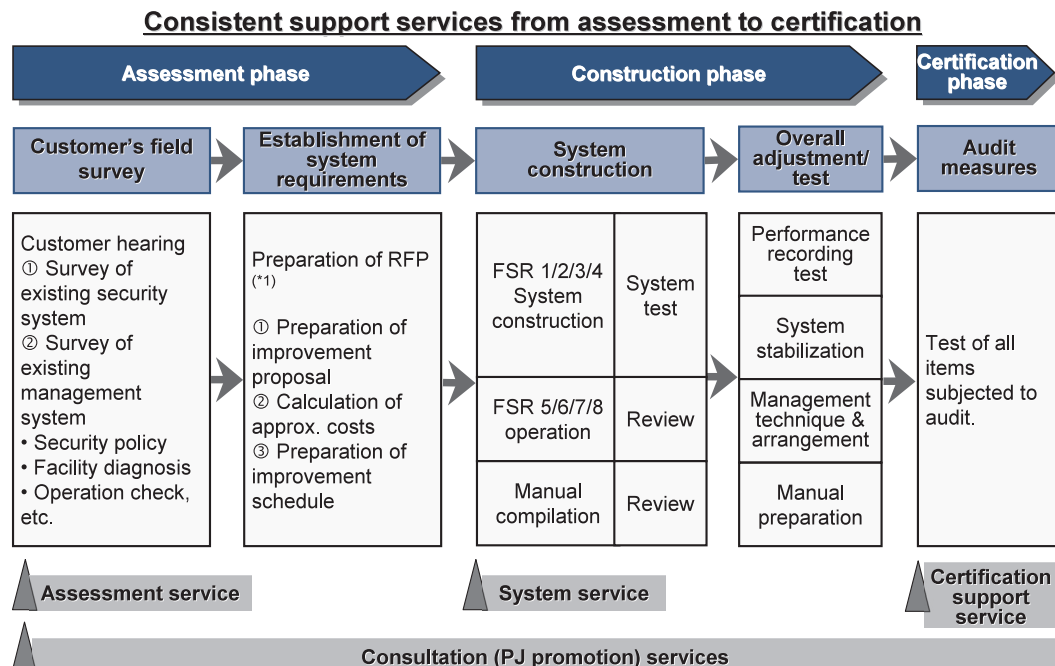
tommer in the same way as the certification audit in order to extract any problems. We then draw up multiple improvement plans. This phase also includes planning for a security system by selecting components (including camera monitoring, access control and illumination) that can comply with the certification standard. Consultation occupies about half of the period required for certification. Minute studies involving the customer take actual operations of the customer into full consideration and prepare an environment for the construction of a security system run in conformity with security rules that can satisfy the customer.

#### 3.3 Construction of a Security System with Regard to Actual Operations

In the Construction phase, we conduct the security design, equipment selection, construction and adjustments based on the execution program that has been established in the Assessment phase.

##### (1) Access Control System Taking into Consideration Operations That Include Lines of Flow

A logistics warehouse is a place where vehicles and humans enter and exit very frequently. Unlike an office, a warehouse has a large number of entrances for the input and output of



\*1. RFP: Request for Proposal. \*2. FSR: Freight Security Requirements.

Fig. 4 TAPA Certification Solutions.

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freight. Based on this fact, we confirm the lines of flow based on an area policy and zoning plan, and construct access control facilities by considering actual operations. The TAPA certification places importance on the management of the access history records. As the records should be conserved and disclosed in certification audits held every other year, consideration is required for the configuration of the backup equipment of the access control server. At present, mainstream security systems use IC cards from the viewpoint of durability, etc. This procedure makes it necessary to decide the IC card carrying method by considering issues regarding their use in the warehouses, i.e. by assuming accident occurrence such as entanglement of the neck strap in a machine etc.

### (2) Monitoring Camera CCTV Systems Able to View All Sides of the Facility

The camera installation standard of TAPA specifies that a “CCTV system able to view all sides of the facility” (FSR 1.2.3) is indispensable for certification. In order to conform to this requirement, it is essential to study the introduction of the CCTV monitoring cameras by focusing on two main points, which are their number and installation locations. This policy is implemented by basic planning using the building plan as a reference and by undertaking a field survey on the site.

The points to consider in this procedure are; 1) image angles (camera installation angles); 2) installation heights (focal distances) and; 3) measures for dealing with natural environments (temperature control to deal with freezing and sunlight etc.). The installation technology and expertise are important for this purpose. Since installing too many cameras increases the initial cost, it is essential to use only the minimum required number of cameras.

### (3) Lighting in View of the Actual Operations

TAPA requires that the interior of a warehouse is illuminated for 24 hours a day (FSR 1.3.3). As this is expected to increase the power consumption, we redesign the lighting equipment aiming at reducing the running costs. The cost-conscious optimization measures involve; 1) calculation of minimum illumination required for camera image recording; 2) brightness that allows human viewing, and; 3) changes to lighting equipment specifications.

### 3.4 Certification Support (Creation of a Maintenance System Bearing in Mind Actual Operations)

This service supports the acquisition of certification from a practical aspect, by assisting measures to be taken in the certi-

fication audit and offering countermeasures against the issues pointed out in the audit. While acknowledging the importance of improving the relevant issues, we also stress the importance of creating a mechanism that enables easy maintenance and administration, and promote the establishment of a security operations conference. Such a conference is held periodically by gathering the customer, our staff in charge of the customer’s facilities, the security company and the system manufacturer in order to maintain the TAPA certification and improve/maintain the security of the customers’ facilities.

## 4. Examples of Construction

This section shows the case of a system construction at VAN-TEC World Transport Co., Ltd.

- 1) Facility name: Narita Logistics Center (total floor area 9,600m<sup>2</sup>) (**Photo**), company-owned warehouse.
- 2) Certification acquisition period: March to October, 2006.
- 3) Equipment required for certification: Monitoring camera system, access control system, lighting equipment, security office, etc.
- 4) Certification audit system: 3 persons from the Committee for the promotion of TAPA security measures and 6 persons in charge of actual operations.
- 5) Issues and hard-to-solve points in the certification: Setup of certification targets, study of the lines of vehicle and human flow, in-house coordination (for promoting the importance of TAPA).

One of the important issues in TAPA certification is the de-



Photo Narita Logistics Center, VANTEC World Transport Co., Ltd.

velopment of a feeling of unity among staffers. Enhancement of security always leads to increases in job burdens, which can be accepted only when they are “allotted impartially” among the staffers. The TAPA certification acquisition members at VANTEC have themselves drawn up a new procedure by adopting a policy of meticulous care and by sometimes exchanging job allocations. They have also succeeded in creating a system that can accept job changes smoothly and by successfully extending it in-house. It is thanks to the arrangement of a collaborative system that they have succeeded in acquiring the TAPA certification very smoothly.

## 5. Conclusion

At NEC Networks & System Integration Corporation we aim to continue to construct physical security systems for the logistics industry in collaboration with customers via our TAPA solutions. At the same time, we are also determined to help implement a safe and secure society through our creation of mechanisms that are designed to pre-empt misdeeds.

In closing this paper, we express our deep gratitude toward the staff of VANTEC World Transport Co., Ltd., TAPA ASIA Management Committee and SGS Japan Inc. for their kind advice and cooperation.

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