

## Planning of the seaports critical infrastructure protection in the light of the ISPS Code requirements

### Planowanie ochrony infrastruktury krytycznej w portach morskich w świetle wymagań Kodeksu ISPS

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**Key words:** security management, crisis management, port protection plan

#### Abstract

Seaports play a very important role in the international sea-land transport chains and have a strong effect on the efficiency of foreign trade. As their influence on the regional economy and society is also significant, they face a high security risk. That is why they should be specially protected as infrastructural facilities of critical importance to the state. Moreover, protection of seaports constitutes an important element of the general concept of crisis management on local, regional and international levels. In recent years, both the European Union, by adopting the directive on enhancing port security, and the International Maritime Organization, by preparing the International Ship and Port Facility Security (ISPS) Code, have paid special attention to the protection of seaports against any incidents endangering their security. Vital among such activities is the preparation and implementation of a seaport protection plan and port facility protection plans. Those plans need to be consistent with the port critical infrastructure protection plan.

**Słowa kluczowe:** zarządzanie bezpieczeństwem, zarządzanie kryzysowe, plan ochrony portu

#### Abstrakt

Porty morskie mają bardzo istotny udział w międzynarodowych morsko-lądowych łańcuchach transportowych oraz duży wpływ na efektywność handlu zagranicznego. Ponieważ również silnie oddziałują na regionalną gospodarkę i społeczeństwo, mogą być miejscem szczególnie narażonym na różnego rodzaju zagrożenia ich bezpieczeństwa. Dlatego też powinny być pieczołowicie chronione jako obiekty infrastruktury krytycznej państwa. Ochrona portów stanowi też ważny element ogólnej koncepcji zarządzania kryzysowego w ujęciu lokalnym, regionalnym i międzynarodowym. W ostatnich latach Unia Europejska, podejmując dyrektywę w sprawie poprawy bezpieczeństwa portów, oraz Międzynarodowa Organizacja Morska, opracowując Międzynarodowy Kodeks Ochrony Statku i Obiektu Portowego, zwracają uwagę na ochronę portów morskich przed zdarzeniami zagrażającymi ich bezpieczeństwu. Ważne miejsce w tych działaniach zajmuje opracowanie i wdrożenie planu bezpieczeństwa portu i planów ochrony obiektów portowych. Plany te muszą być zgodne z planem ochrony infrastruktury krytycznej obiektu portowego.

## Introduction

Seaports constitute an important link in the integrated sea-land transport chains of a given country. They also form a subsystem of diverse economic, spatial and functional relations between the port and its surroundings – national, regional and urban. That is why a port is particularly

vulnerable to various types of activities of criminal groups, as well as any dangers resulting from the inobservance with navigational safety rules or port operations regulations.

Due to the strong linkage between the elements of the organizational and spatial structure of the ports, any disturbance in the work of one port facility affects instantaneously the operation of the

whole port and causes disturbances in the functioning of the whole sea-land transport chain. What is more crisis management in ports is very complex and tackles diverse spatial, technological, economic and social problems. In a crisis situation, such problems may pose a serious threat to the port ecosystem and the social security in the port region. In view of such a situation, the Directive of the European Parliament and of the Council on enhancing port security [1] emphasizes that: The security of people, infrastructure and equipment, including means of transport, in ports as well as in relevant adjacent areas should be protected against unlawful acts and their devastating effects. Such protection would benefit transport users, the economy and society as a whole. That is why port security and protection of port facilities are among the most important issues of strategic management in seaports [2].

The increase in ships traffic, the greater size of ships handled by seaports, the growing number of ships carrying hazardous cargo (tankers, LNG carriers, chemical cargo carriers) and consequently the rising amount of hazardous cargo being stored in ports, all these phenomena lead to an increase in ecological risk level, especially with regard to the occurrence of a large number of potential threats resulting in contamination of maritime and coastal environment [3], which may lead to long-term contamination of port basins and the adjacent areas.

The most perilous of such events involve spillage into port waters of many thousands of tonnes of oil from a damaged tanker and explosions of gas carried by a ship or gas explosions resulting from faulty operation of LNG terminal equipment. Hazardous cargo carried, for example, in containers, also poses a significant threat to port security. The significance of the protection of the natural environment of ports is growing, as in the past few years the number of possible scenarios of terrorist attacks on seaports, and the scope of damage such attacks may cause, has increased [4]. Nowadays ports may be attacked from the land, from the air, from the water surface and from under the water.

Because of the dynamic changes in the external surroundings of a port, strategic thinking of future port facilities security undergoes constant evolution – it transforms and heads towards preparation of safe conditions for work both in seaports as well as related manufacturing plants and service workshops (such as, for example, construction shipyards and repair shipyards). The evolution affects the subject, the object and the functional approach to port systems security problems.

## Port critical infrastructure

The extent of the effects of the occurrence of events that violate seaport security may be so vast that seaport systems have been recognised as critical infrastructure in the transport sector [5] – that is the part of the national infrastructure which is of fundamental significance for maintaining essential social functions, health, security, protecting the natural and social welfare of the society, and whose disturbance or destruction could significantly affect the state as a whole [6].

In this aspect, seaports fulfil the cross-cutting criteria and the sector-specific criteria for identification and designation of European critical infrastructure, in particular:

- the economic effects criterion,
- the social effects criterion,
- the interdependence criterion (interconnections between the elements of sectors infrastructure),
- the environmental criterion,
- the sector-specific criterion (transport).

The port critical infrastructure exerts also an important influence of cross-border character. This results from the international character of the trading in goods and passenger traffic in seaports and the participation of seaports in international transport chain. The fact that seaports have been defined as elements of the state critical infrastructure implies that a programme for their protection needs to be developed and implemented. In compliance with the provisions of the European Programme for Critical Infrastructure Protection [6], the programme should, to a greatest possible extent, minimise the negative influence of the effects of security violations in ports by ensuring the existence of appropriate and uniform critical infrastructure security protection levels, limiting the number of failures to minimum, and providing fast and tested remedies [5].

Hence, it becomes necessary to develop comprehensive organisational undertakings which aim at preparation of local, maritime and port administrations to handle crisis management and take into account management structures, and to ensure availability of appropriate resources for preventing crisis situations and eliminating the possible consequences of the occurrence of such situations. It is important to diagnose and predict future threats, in particular in order to determine the location and the circumstances of their occurrence, and to assess port system security, including the character and the dynamics of the system processes with regard to possible incidents, threats and risks [7].

That is why the notion of crisis response system in seaports should be redefined and new concepts of crisis management should be created, which would take into account the specificity of port systems. Conceptual works in this regard should commence with identification of seaport areas as areas that require mandatory protection against threats. Another step involves conducting an up-to-date assessment of port facilities – the assessment will later be used to prepare plans for protection of port facilities and then complex plans for port security. Based on the assessment, scenarios of threats to port facilities be created, which will form basis for the development of port crisis management concepts. The next step will be to specify the plans for the protection of ports critical infrastructure, which will comprise both identification of the important elements of the infrastructure as well as the rules, the guidelines and the means for their protection.

### **Crisis management in seaport**

In the Act on Crisis Management [8] it is assumed that crisis management is conducted by public administration bodies and involves prevention of the situations resulting from threats and leading to breach of, or serious damage to, the social links, which has a significant negative effect on the level of security of people and their property.

Crisis management in seaports [9] may be defined as the activity of local administration authorities (Province and Municipal Crisis Management Divisions) as well as maritime administration authorities (Maritime Offices) and port administration authorities (Port Authorities) which involves:

- prevention of crisis situations that could occur in seaport areas and / or in their direct vicinity,
- preparation for taking control over such areas by undertaking planned activities,
- responding when crisis situations occur (using mitigation strategy),
- elimination of the effects of such situations,
- and reconstruction of critical infrastructure resources.

Port critical infrastructure comprises technical infrastructure, i.e. both land and water infrastructure (incl. navigation) that constitutes a part of marine and land transport and communication system, together with communication, cargo handling, cargo storage, hazardous materials and substances storage, as well as IT network systems present in ports and widely understood rescue systems.

Any activities for the protection of the infrastructure should comprise all undertakings that aim

at ensuring functionality, operational continuity, and integrity of port infrastructure to prevent any threats and risks (weaknesses), and to limit and neutralise the effects of such threats and risk, the effects of equipment failures, the effects of attacks, as well as the effects of any events that interfere with the operation of port systems, including maritime enterprises.

A specific position among the operational activities conducted within the crisis management is occupied by drafting of plans for crisis management and critical infrastructure protection. The plans comprise crisis response projects and programmes for optimisation of the usage of the means and resources available in the crisis systems. The following elements should be included in the ports critical infrastructure protection plans created at the regional level:

- list of port critical infrastructure systems and facilities,
- identification of the character of the threats to the critical infrastructure and the assessment of the likelihood of their occurrence,
- characteristics of the resources available for the protection of critical infrastructure,
- possible activities to be conducted when the operation of critical infrastructure is threatened or disturbed,
- possible variants of the reconstruction of port critical infrastructure,
- rules for cooperation between public administration and the owners of port facilities,
- indication of the dates and modes of the plan updating.

The preparation of crisis management plans should be preceded by the assessment of the likelihood of the occurrence of crisis situations in a port, including the occurrence of threats to port critical infrastructure as well as coastal and marine environment. An important issue in port security is that of natural environment protection, in particular marine environment protection. Due to the specificity of the problem of seaports protection, it should be considered both from the point of view of ports protection from the land and the water as well as from the point of view of protection of particular port facilities.

### **Seaports protection form the land and the sea**

The protection of ports from the land requires involvement of vast financial resources as well as technical measures related to separation of ports (access restriction), installation of modern CCTV

systems and equipment for controlling passenger and cargo traffic. Protection and monitoring must cover not only port areas but also selected areas outside the port where potential sources of threats to port installations may be located. An important and complex task is also to check the containers that are loaded onto ships, which involves, among others, looking for the so-called higher risk containers.

The assessment of the port protection from the land may be conducted by following the checklist of Port Facility Security Assessment (PFSA Checklist). The list should contain issues related to the terrain, its fencing, access points, traffic register, patrolling, lighting, signalling system, CCTV, personnel and vehicle security inspection.

The protection of ports from the sea is a difficult task as due to the possibility of utilising sea vessels for an attack, any floating vessel in the roadstead or entering the port basins may theoretically be considered a potential threat. Hence, bearing in mind the above, a port security system must also comprise observation and supervision of the basins close to the port and the fairways. This requires implementation of the Maritime Situational Awareness system that would transfer information about vessels heading towards a given port. Observation of the coastal waters traffic is conducted by means of Vessel Traffic Systems.

Analogical PFSA Checklist, in its part referring to assessment of port security from the side of the sea, should comprise issues referring to means for observation of vessels afloat and patrolling navigational canals and other fairways, navigational security, pilotage and observation of moored vessels.

The practical aspect of the preparation of the concept of crisis management in seaport areas, especially with regard to the security of those areas and the threats faced by them, involves identification of port facilities in compliance with the provisions of the ISPS Code (International Ship and Port Facility Security) International Maritime Organization – IMO [10]. The next step involves preparation of the assessment of port facilities security according to the criteria laid down in the ISPS code, paying particular attention to the identification of critical infrastructure at the level of the particular terminals, port facilities, and finally the whole port area. Based on that, protection plans for particular port facilities are prepared and finally an integrated port security plan is developed. For that purpose it is assumed that a port facility is any area within a port or a harbour where relations between ships in international voyages and ports occur.

The need to conduct assessment of port security (including its critical infrastructure) which would take into account the specificities of the different sections of a port and its adjacent areas if these have an impact on security in the port, and take into account the assessment for port facilities within their boundaries, is also required by the previously mentioned EU directive [1, 11].

### **Security plan for the port and its facilities**

The previously mentioned international [12], European [1, 5] and national [8, 11] documents impose an obligation to create plans of port protection, to maintain and update them; this obligation refers also to the port critical infrastructure.

The plans for the protection of seaports, which have been developed based on the results of the port security assessment, adequately address the specificities of different sections of a port and integrate the security plans for the port facilities. For each security level, the plans should identify [11]:

- the procedures to be followed,
- the measures to be put in place,
- the activities to be undertaken.

The port security plans should be based on the following general aspects [13]:

- defining all areas security-relevant areas; special attention should be paid to the interfaces between sub-areas;
- diversifying measures both with regard to different parts of the port, changing security levels, and specific intelligence;
- monitoring of the subareas and their activity;
- identifying an organizational structure supporting the enhancement of port security;
- integration and coordination with other plans or response activities or activities aimed at preventing threats as well as emergency plans.

Port security plan should also present in details the organisation with regard to port security, division of tasks, work procedures, and rules for cooperation with the officers responsible for the security of the port facilities and equipment (such as terminals) as well as sea vessels. It is also vital that the plan provides for liaison with cargo control, baggage and passenger control authorities in the port. Moreover, the port security plan should clearly set out the requirements related to the reporting to proper port security authorities about any security breaches and any other security concerns. It should also specify precisely the requirements with regard to training and exercise in this respect.



The inclusion of seaports into the critical infrastructure of the state implies that the port security plans have to be coordinated with the requirements of the plans for the protection of this infrastructure, which need to take into account both the character of the threats as well as the resources required for protection against it, the conditions for the operation in threat situation and variants of reconstruction of port critical infrastructure, as well as the rules for cooperation between public administration and the owners of port facilities. The effective implementation of port security plans and protection of port critical infrastructure requires full and efficient cooperation between the Ministry of Internal Affairs and Administration bodies (Voivodeship Office) and the Ministry of Infrastructure (Maritime Office), which are responsible for coordination of the activities with regard to the protection of critical infrastructure in seaports.

The port security plan should set out the requirements for undertakings with regard to security for each subarea, that is in compliance with the wording of the ISPS Code – a port facility for which the protection plans are drawn. The ISPS Code assumes that the plans for protection of port facility aim at ensuring application of measures established for the protection of persons, port facilities, ships, cargo and ship stores within the port facility, in order to avoid a risk of occurrence of an incident disturbing the protection.

The plan for protection of port facility defines:

- seaport facility – port and harbour area where any ship-port relations take place;
- risk – the dependence between the consequences and likelihood of the occurrence of an incident that threatens the security;
- protection – as resistance to intentional unlawful acts committed with a purpose to damage or destroy ships and ports;
- the team for crisis management of protection – a group of people with suitable knowledge, authorised to use measures necessary in a situation of increased threat or occurrence of an incident that breaches protection;
- a protection breaching incident – each suspicious activity or circumstance that threatens the protection of a ship or port facility;
- threat scenario – possible ways in which a protection breaching incident may occur;
- port facility protection officer – a person responsible for drawing a port facility protection plan and proper execution of the tasks related to the protection of the facility.

The protection plan for each port facility should be based on the findings of the port facility security

assessment, taking into account the specificity of the ship / port relations, and the assessment of the threats determining the most likely types of incidents (threats and scenarios), in relation to each separate element of a port terminal that requires protection. When a plan is developed, it should take into account the identification and the assessment of the important elements of the port assets as well as the weak points in port facilities, protection systems, personnel, processes.

The content of the port facility protection plan should be diversified, depending on the specific circumstances occurring in a port facility or port facilities the plan refers to. The port facility protection plan should specify, among others [14]:

- the measures that prevent any weapon or any other dangerous substances or objects that are designed to be used against people, ships or port facilities and whose transport is not legitimised, to be brought within the port premises;
- the measures that prevent unauthorised persons from entering a port facility, a ship moored in that port and any areas of restricted access;
- the procedures for responding to threats or protection violations, comprising the provisions on how to maintain the operations vital for the seaport or the ship / port relations;
- the procedures for evacuation in the face of security threats or protection breaches;
- the tasks of the port facility personnel who are in charge of protection activities as well as protection tasks performed by other port facility personnel;
- procedures for connecting the port protection activities and the ship protection activities;
- procedures for conducting periodical plan reviews and updating;
- procedures for alerting about security breaching incidents;
- identification of the port facility security officer and the details of 24-hour communication systems;
- measures for ensuring plan data protection;
- measures providing effective protection of cargo and loading equipment in a port;
- procedures for auditing the port facility protection plan;
- emergency response procedures – when the system alerting about a threat to the protection of the ship in a ship moored in the port is activated;
- procedures for ship crew disembarkment or crew exchange, and access to the ship by visitors, including representatives of seafarer organisation.

A port facility protection plan should also include procedures for efficiency assessment as well as regulations for keeping the records of the security incidents and threats, inspections, audits, training, mock alarms and practical exercises. It should also specify the protection measures that need to be introduced as well as the time of their introduction. Moreover it should provide for alternative protection measures that endure adequate protection level.

## Summary

Seaports, being vast technological economic complexes with diverse trade-economic structures belong to the areas which require special – mandatory protection and constitute an important subject as well as object of crisis management at numerous economic and administration levels: international, national, regional and local.

The crisis management in seaports is the responsibility of local administration authorities, as well as maritime and port authorities. It involves prevention of crisis-like situations that may occur in seaport areas, preparation for taking control over them by means of planned activities, responding whenever crisis situations occur, limiting and removing their effects, and successful reconstruction of critical infrastructure resources.

The preparation of crisis management plans should be preceded by the assessment of the likelihood of the occurrence of crisis situations in the port. In view of the protection of critical infrastructure, the analysis and the assessment of the likelihood of the occurrence of threats to port critical infrastructure should comprise first and foremost the following issues: prevention, counteracting, assessment of the effects of critical situations, monitoring, analysing and predicting threats to seaports, as well as collection and storage of the data regarding past threats and those predicted to occur in future in seaport areas.

Following the assessment of the security of the port and its facilities, plans for the protection of the port facilities and the port itself should be prepared. The plans should be maintained and regularly updated. They should take into account the specificity of the particular areas of the port as well as the other plans for the protection of the facilities located within the port premises. The plans for the protection of particular port facilities, based on the findings of their security assessments, are drawn to ensure that the measures provided for the protection of people, port facilities, ships, cargo, transport units and ship stores in the port facility are applied in order to avoid the risk of a protection violation

incident. The range of the security plans for the port and its facilities must be compliant with subject range of the plan for critical infrastructure protection in seaports.

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