



LOGISTIC MANAGEMENT IN CRISIS SITUATIONS

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Annotation

The aim of this article is the analysis of logistics management in the crisis situations based on the case of the organisation of logistics security after Poland's biggest construction disaster that took place on 28th of January 2006 in Chorzów. The introduction defines key concepts, it indicates the aim of the publication and the research methods used. It also presents the state of research in the field of logistics management in crisis situations. The research methods such as a descriptive, legally-institutional and decision making one were used for the analysis of logistics management in crisis situations based on the example of the organisation of logistic security. Having analysed the volume of research within the field of logistics management it was concluded that the field literature does not include the practical aspect of the logistics management process i.e. the logistic security of the people affected. The intend of this article is to complete this gap in the literature. In the later part of this document an organisation of logistics management is analysed. This analysis covers the missions of logistics activities, the factors determining their effectiveness and the authorities responsible for the management of the logistic potential in the crisis situations. Then, five phases of logistics security organisation are presented- a preparatory, an introductory, a phase of integration, removal and the phase of restoring the initial order. Thus, it was found that the specification of logistic activities undertaken at each phase of logistic security activities of the people affected in the crisis situations depends on the type of threat, its' scale and the pace of its' development. The next part of this article covers the analysis of functioning of the logistic groups of crisis management teams at the time of peace when the crisis situations in certain area do not occur but also during the crisis situations and the states of emergency. Then, the research covers the logistic security organisation after the construction disaster in Chorzów. The main tasks of the rescue and logistic service units which were gathered on the site of catastrophe are presented. It should be noted that the actions undertaken by the above-mentioned service units were very effective. This is indicated by the ratio in the number of people rescued during the rescue action to the number of victims who died as a result of the disaster. The conclusion of this article presents findings of the research. Two stages of logistic actions that were undertaken during the rescue operation within the catastrophe area were separated: a stage of securing the continuity of actions and the stage of organising and managing the socio-technical facilities. It should be emphasised that the analysis of rescue operation proved that the effectiveness of actions undertaken in the crisis situations depends on acquiring in a short period of time a great number of special forces concentration in a certain area. Moreover, a successful rescue operation is dependent on the rapid development of logistic facilities. The size of a crisis situation often exceeds operation capabilities as well as supply and service potential of the municipality, county or even a region.

KEY WORDS: logistics management, logistic security, crisis situation, construction disaster in Chorzów.

Introduction

Safety is one of the basic human needs and values. It is associated with threats and the ability of state institutions to undertaking organised, effective and rapid actions in the crisis situations. (Szmulik 2012)

The concepts of logistics management and crisis situation are the starting points for deliberations undertaken in this article. The first term covers the organisation of both supply and delivery of professional, economic and living-related services for the people affected, the organisation of logistic security of the units undertaking rescue and preventative actions as well as the logistic activities as a whole in relation to the restoration of critical, transport and road infrastructure. (Pietras, Pałka 2012). The concept of a crisis situation shall be, in turn, understood as a situation that impacts negatively on the safety of people, property in large sizes or the environment and producing significant restrictions on the operation of the competent public administration authorities due to the inadequacy of the possessed capabilities and resources (Act on Crisis Management).

The intend of this document is to analyse the process of logistics management in the crisis situation using the example of the logistic security organisations after the

construction disaster that took place on the 28th of January, 2006 in Chorzów.

Three research methods were used in this document. Their effectiveness was evaluated throughout the prism of their usefulness for the specific purpose of the research. The first part of the document is dominated by two research methods- a descriptive and legally-institutional one. Thus, in order to analyse the organisation of logistic security after the construction catastrophe in Chorzów, a decisive method was also used.

The issue of logistic management in crisis situations in Polish literature is almost non-existent. The two books by Eugeniusz Nowak (Nowak 2008, Nowak 2009) positively stand out from the others. They present crisis logistic management in the context of theoretical organisation of logistic security of people affected and in the context of logistic view of the management as a component of crisis management. Such a perception on the issue of logistic management provides theoretical solutions that favour a formation of supply and service processes that are implemented in the logistic chains organised for the population affected in the crisis situations. The field literature, however, does not take into account the practical aspect of this process, i.e. the logistic security of people affected. This article aims to fulfil the gap in the literature.

The organisation of logistic management in the crisis situations

The organisation of logistic management in the crisis situations is subordinated to the mission of logistic activities. It is expressed in a bid to reach all the casualties with the delivery of basic supplies and logistic services. The analysis of the crisis situations for the implementation of tasks related to the logistic security of casualties allows the statement about the presence of dichotomy. Logistic activities aim to provide the conditions for survival to the casualties. They involve the organisation of delivery of supplies and services according to the minimal acceptable standards. However, a great number of people affected and the extreme rescue conditions require a mass use of the logistic potential which can be defined as a certain resource of delivery and service capabilities that may be used for logistic security of affected population. The reasonable management of the potential should consist of actions undertaken within the framework of logistic management that would ensure conditions for reaching an appropriate quality of delivery and services to specified recipients at the right time and in the quantities required. (Nowak 2008).

A temporary character of crisis management teams has a significant impact on the efficiency of logistics management in crisis situations. These teams include not only full time employees of public administration but also area experts who only work together during the training and in case of occurrence of a crisis situation. The additional problem in functioning of these groups is their freelance character. It is indicated by fulfilling additional posts within the framework of crisis management teams with the full time public administration employees as well as by employing the area specialists to work for the logistic groups as volunteers. Such a situation impedes the rational planning of logistic tasks and the organisation of their effective implementation. The lack of combining the involvement in the logistic groups of crisis management teams with the work of crisis management centres that are responsible for the preparation of plans of emergency response as well as the organisation and conduction of trainings for the employees of logistic groups of crisis management teams is the source of difficulties in the effective implementation of logistic security of the population affected in the crisis situations.

It should be noted that the public administration authorities on four different levels-from the municipal to central government level, are responsible for the reasonable management of logistic potential in the crisis situations. The effective implementation of the tasks within the framework of logistic management is based on the principle of the hierarchy of activities. It involves placing an organisation of logistic activities at the lowest possible level of administration to be able to implement logistic projects effectively. All the authorities of public administration are involved in the preparation of the logistic potential, i.e. human resources, supply and service resources. However, the direct implementation of logistic tasks is the responsibility of the lowest administrative level unit-the municipality. The public administrative bodies of the higher levels support the administrative bodies on the lower levels with their

logistic potential depending on their needs and the situation (Nowak 2009).

The logistic bodies involved in the accomplishment of logistic tasks for the people affected by the crisis situations consist of logistic security groups and the health care and social aid groups of crisis management teams. These are appointed in municipality, county and region. On the municipality level the logistic security groups include supply, transport and economy as well as household specialists. Their health care and social aid groups involve evacuation, medical and sanitary, anti-epidemic, supply of medical materials and equipment and the social and living assistance specialists. The county and regional logistic support groups include specialists responsible for the coordination of resources and supplies as well as transport, whereas in the county and regional groups of health care, social and living assistance work the specialists responsible for the medical evacuation, medical and sanitary and anti-epidemic issues as well as for the supply of equipment and medical goods. The logistic groups of governmental crisis management teams include a group of planning, support and analysing of resources which consists of two sections-planning and coordination of deliveries of supply and collecting of logistic resources as well as a group of coordination of humanitarian aid that, in turn, consists of two sections-the coordination of activities and cooperation with civil society and humanitarian organisations as well as the bodies delivering supply and providing logistic and medical services. These, in particular, include fire protection units, health services, an ambulance, police, city and municipal police, military, border guards but also the formation of civil defence units. (Nowak 2008).

The phases of logistic security organisation

The notion of five phases of logistic security prevails in the actions of staff responsible for crisis management. (Pietras, Pałka 2012):

1. The preparatory phase activities include forecasting the types and the scale of possible threats and the resulting logistic tasks.

2. The initial phase- it is characterised by the sudden risk development, the nature of which may exceed the size of the logistic potential prepared in a given area for a period of crisis. The scale of undertaken delivery supplies and logistic services provided to the population affected is reduced to bare minimum.

3. The integration phase involves connection of available forces with the logistic resources proportionally to the volume of performed logistic tasks. The effective logistic management that enables effective use of the logistic potential gathered in the crisis situation area and a logistic support given by the superior administrative authorities leads to the increase in the scale of supply and logistic services delivery proportionally to the size of the logistic needs of the people affected.

4. The phase of removing the results of the disaster. It involves the activities of emergency service units such as transport, renovation and construction. The main actions are then directed not on helping the victims of a crisis situation but on the normalization of the situation within the affected area i.e. such as warehousing and distribution

of allocated material resources, transport tasks related to the transport of people, equipment and materials necessary to the elimination of destruction.

5. The phase of restoration to the initial state. It usually lasts the longest. It involves the restoration of damaged infrastructure but also the actions of technical, supply, social assistance units and others. Within this phase the transport and storage tasks are crucial.

It should be noted that the specification of logistic activities undertaken at different phases of logistic security of affected population in crisis situations depends on a type of danger and the scale and pace of its' development (Szymonik, Maciejewski 2008). According to the scale of threats the main administrators of logistic activities are on municipal level: village mayors, mayors, mayors of the towns and city mayors. On the county level these are district governors, on the regional level-governors and on the country level it is the relevant minister's function. However, these are always the logistic groups of municipal, county, regional and governmental crisis management teams that are the initiators of these actions (Nowak 2008).

The functioning of logistic groups of crisis management teams.

At the times of peace when the crisis situations do not occur within a certain area the logistic groups of crisis management teams perform the tasks within the framework of the first phase of logistic security (i.e.. prevention) The tasks of the logistic groups at the preparatory phase involve: forecasting of the logistic situation (especially medical), determining the necessary supply and services' potential, the comparison of logistic resources with the projected needs of the people affected in the crisis situations, planning of logistic tasks, forming conditions for the management of logistics and the accomplishment of scheduled logistic tasks but also training service units responsible for the fulfilment of the logistic tasks. The high efficiency of logistic operations requires from the leaders of logistic groups of crisis management teams a participation in the decision-making process that is pursued in the centres of crisis management.

A decision to establish a crisis management team in the event of an emergency is made by the mayors, mayors of the towns, city mayors, district governors and governors. However, they do not have the obligation to make a decision about its' formation. In the event of an emergency, the logistic groups of crisis management teams perform tasks within the framework of the initial phase, integration, removing the effects and restoring the original order. These include the organisation of medical assistance for the injured and sick, supply sourcing and logistic services for the population affected, the evacuation of injured and their property, providing emergency shelter for the evacuated people, medical and sanitary, anti-epidemic operations, psychological care for people affected, rescue and evacuation of livestock and providing it with the veterinary help. Moreover, the groups of logistic crisis management teams are involved in estimating damages and losses, starting assistance

programs for the affected persons and restoring services and logistic resources (Nowak 2008).

States of emergency may be introduced in the event of any special risks (natural disaster, emergency or military) threatening the people, their property, the infrastructure, the environment and the country. The introduction of many limitations of freedom and human rights for a human and for a citizen is their feature. These limitations contribute to the formation of favourable conditions for the organisation and accomplishment of logistic actions and they enable prevention or a rapid removal of the effects of the crisis situation. It is important from the perspective of the logistics to involve the suspension of activities of certain companies in order to exploit their potential for the achievement of the logistic tasks, to order a specific activity (especially in the field of logistic operations), the imposition on the employers of an obligation to delegate their employees for the command of the body in charge of rescue and preventive actions (a possibility of giving them tasks of another kind than the ones included in their work commitments), an obligation to work Sundays, holidays and during their regular days off, a partial or full regulation of certain products' supply, a duty to vacate or secure the dwellings or any other premises, the evacuation orders from certain places, areas and buildings within a certain period of time, an order and a ban of staying at certain places and objects, an order or a ban of a particular method of movement, the use of the real estate and the movables without the consent of their owner or an authorised person and performing personal and material services. These in particular include the active participation of rescue units providing first aid to the people affected and performing specific tasks. As Eugeniusz Nowak rightly remarks: "the introduction of the states of emergency favours the implementation of, inter alia, logistic tasks for the affected population as well as personal states of rescue and preventive teams involved in crisis response. Hence, mobility logistic groups ZZZK (of crisis management teams-G. W.-J.) will be one of the first initiators of actions on introducing states of emergency and the resulting restrictions on the freedom and rights of the human and the citizen during the situations of particular threats to the population including their property, the environment and the infrastructure." (Nowak 2008).

The organisation of logistic security after the construction disaster in Chorzów Poland's biggest construction disaster took place on the 28 January 2006 in the trade hall number 1 during the Katowice International Fair (Mendera 2007). At the time of an event, at 5:15pm local time when the central section of the roof of the hall collapsed due to the weight of snow and ice there were over 500 people in the hall. Due to the fact that the construction catastrophe site was located on the border of two cities- Chorzów and Katowice the calls about the incident were coming simultaneously to two urban stations of managing the State Fire Fighters Unit and the Rescue Service. Both stations sent their subordinated units to the catastrophe site. These included nine fire fighting and rescue brigades. This fact contributed to the faster accomplishment of increased concentration of rescue forces. Moreover, an operational unit was also sent to the scene of catastrophe by the duty officer of the

Regional Rescue Coordination Unit after receiving at 5:21pm an information about the collapse of the roof. Moreover, he put three cranes, three fire fighting troops, a section of road traffic safety and a heavy truck of technical rescue on a standby. He also informed the Medical Rescue Coordination Centre, the Regional Crisis Management Centre and the Regional Police Headquarters about the incident requesting at the same time to put on a standby their subordinated units. (Błaszczński 2007).

In the initial phase of logistic management organisation the rescue actions were undertaken mostly by the exhibition participants and bystanders. Their goal was the evacuation of people from the danger zone. The first rescue and fire fighting units and the medical rescue teams arrived at the scene at 5:30 pm. They undertook the actions aiming to secure the area of catastrophe against the return to the hall the people who managed to evacuate themselves earlier. Moreover, with the help of the equipment collected on the site of disaster such as hoists, air cushions, metal cutting saws, metal cutting hydraulic equipment and jacks they began the rescue operation aimed at rescuing. In addition, they undertook actions aimed at lightening the rescue scene and providing medical help to the victims. Due to the shortage of manpower and resources available on the scene of catastrophe, Capt. Ryszard Wolski – the Chief of the Rescue Action, requested additional medical rescue teams, cranes, technical rescue teams, the police and the municipal police (Headquarters of the State Fire Service in Katowice 2006).

Upon arriving on the site of the operation of a group of Regional Rescue Coordination Unit at 5.35 pm Jr. Brig. Janusz Ciesielski overtook the leadership of the rescue teams. He divided the operation area into two operational sections-the northern and the southern. The task of the rescue teams was the release of people crashed by the collapsed roof and medical assistance to injured people. The officer of Regional Rescue Coordination Unit kept informing about the situation at the catastrophe site the Silesian Regional Chief of the State Fire Brigade who, in turn, appointed a liaison officer who went to the Crisis Management Centre of the Silesian Governor and the national Rescue Coordination and Civil Protection Centre. As a result, additional technical rescue units, a section of road rescue and two fire fighting sections were sent to the scene. Despite of the size of logistic potential accumulated at the catastrophe site still, the necessary forces and resources needed for the effective rescue actions were not gathered. Due to the insufficient number of medical rescue teams there were intervals in the transport of the injured to the hospitals. Thus, the person in charge of medical rescue actions made a decision to form a site of segregation. As a result, only the most seriously injured were taken to the hospitals in ambulances. The medical assistance to those lightly injured was provided at the site (The Headquarters of the State Fire Service in Katowice, 2006).

Having arrived at the site, the Silesian Regional Commander in Chief of the State Fire Brigade, brigadier general Janusz Skulich decided to overtake the leadership of the ongoing rescue operations. The National Rescue Coordination and Civil Protection Centre sent on his

request two search and rescue groups with dogs, 80 cadets of the State Fire Service School, technical rescue teams and cranes from the Malopolska and Opole region as well as a group of psychologists from the Main School of Fire Service. Due to the extremely low temperature of -17 degrees centigrade, the Crisis Management Centre of the Governor sent to the site two buses and blankets and dealt with the organisation of hot drinks and meals for the emergency and rescue units. Moreover, the Chief of the Rescue Action appointed the operation headquarters that were regularly supplied with the specialists who came to the site. He also organised medical assistance sites and appointed people responsible for the formation of forces reception site and the logistic security. In order to continue the rescue operation the acquisition of petrol saws, fuel, pneumatic tents and thermal air blankets was necessary.

It should be emphasized that the main task of the rescue forces was still at the time the release of the injured from beneath the collapsed roof (since 9.10 pm the implementation of this task was supported by the search and rescue teams accompanied by the search dogs that pointed to the places where they could possibly find people alive), the transfer of the injured to the segregation site, providing first aid to the injured and the transfer of the most badly injured to the medical rescue team in order to be transferred to the hospitals. The Centre of the Medical Rescue Coordination gathered and passed the information regarding the vacant places in the Silesian hospitals to the medical rescue teams. The actions of the police and the Municipal Police were focused on securing the operation area against the bystanders and on helping with transporting the injured to the segregation site and then, to the medical rescue teams. Moreover, the Police arranged a deposit for the items that belonged to the people affected by the disaster (Błaszczński 2007).

The last survivor was pulled out from underneath the collapsed roof at 10.15 pm. Despite of the unequivocal opinion of the experts on the 29 January, the Chief of the Rescue Actions delayed the acceptance of the fact that only dead people could be found underneath the hall rubble until the afternoon hours. It was not until after another rescue actions of searching the site did not contribute to finding signs of life that he made a decision about the process of gradual withdrawal of forces. Since then the activities of the services were focused on securing the building against the bystanders and on search for the dead bodies. The actions of the Regional Emergency Response Team were focused around the organisation of psychological support for the people affected, their families and the members of rescue operation teams but also on the selection of a specialist company to be responsible for demolishing the exhibition hall and for establishing the procedures for the accomplishment of this task (Błaszczński 2007).

The phase of removing the effects of disaster began with the introduction onto the site of a company with the heavy duty equipment designed for the implementation of demolition process (2nd February 2006). The last two fatalities were removed from underneath the collapsed hall during these works. There were altogether 64 fatalities removed from underneath the rubble. The rescue

operation was ceased on 20 February. 140 people were rescued and one of them died later in the hospital.

It should be noted that the ratio of the people rescued as a result of the rescue action to the number of victims who died as a result of a disaster proves the high effectiveness of the actions undertaken by the rescue and logistic services. Besides, the analysis of the injuries suffered by the casualties testify positively about the progress of a rescue operation. It was estimated that almost all the people (64 out of 65 fatalities) died at the very moment of the catastrophe. Just one person died later in the hospital.

Conclusions

During the rescue operation led on the catastrophe area two stages within the logistic operations may be distinguished- the stage of securing the continuity of the operation and the stage of organisation and managing of socio-technical facilities. Within the framework of the first stage of logistic activities when the dispatched rescue units kept arriving respectively to the site, the activities of logistic services were directed to organising a force reception site, the facilities needed by the medical services, the headquarters site, deposit sites, a temporary resting place for the rescuers, the lightening of the area and the distribution of hot drinks. The police deposit site was established in one tent while in another one there were: a temporary warehouse, medical services information point and the headquarters. In another two tents there were medical sites where assistance to the injured was provided. The medical assistance site and a resting site for the medical rescue teams were located in the last tent. Additionally, the temporary sites offering hot drinks and meals provided to the site were created. The scouts and the members of the Polish Red Cross were in charge of their distribution. Within the framework of the second stage of logistic activities when a considerable number of rescue forces participated in the rescue operation, the activities of the logistic units were focused on the organisation of social facilities for the rescuers. The temporary food and drink sites were established in three tents where meals and hot drinks were served. There were two tents that functioned as resting points for the medical rescue teams and a temporary warehouse was established in another, unheated tent. The activities of the logistic services also focused here on the organisation of technical and warehouse facilities where in one tent a site of distribution for fuel, oil, lubricants and the equipment provided to the operation site was created as well as a handy repair point for saws repair and blades replacement while in another tent there were social and warehousing facilities where blankets, drinks and meals were stored. Their other activities included the organisation of the sites for the victim identification (two tents), the organisation of the permanent headquarters site

(communication and social based on the leadership container), a temporary site for retaining the victims in the unheated tent supervised by the police officers and the organisation of the storage for the animals rescued from the danger site (The Headquarters of the Regional State Fire Service in Katowice, 2006).

It should also be noted that the analysis of the rescue operation proved that the effectiveness of actions undertaken in the crisis situations depends on acquiring in a short period of time a great accumulation of specialist forces. (Dominiak M. 2006). Besides, the success of the rescue action is dependent on the rapid unfolding of the large logistic facilities. The size of a crisis situation often exceeds the operational possibilities and the supply and service potential of a municipality, county or even a region.

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