

## **ORGANIZATION OF MANAGEMENT AND PROVISION OF RESOURCES OF FORCES AND MEANS OF CIVIL PROTECTION DURING EMERGENCY RESCUE AND OTHER URGENT WORK**

Ziyodullayev I.

Master student, of the Department of life safety, the Tashkent state technical university, Uzbekistan, Tashkent E-mail: islomjon13m-19fvax@tdtu.uz Tel (+99893) 549-22-12

Ziyodullayeva R.

Master student, of the Department of life safety, the Tashkent state technical university, Uzbekistan, Tashkent E-mail: roziya13m-19fvax@tdtu.uz Tel (+99897) 751-73-43

Shamansurov S.

Candidate of technical Sciences, associate Professor of the Department of life safety the Tashkent state technical university, Uzbekistan, Tashkent E-mail: sunnat.shamansurov@rambler.ru Tel (+99897) 772-01-61

Naimova M.

Doctoral student (PhD) of the Department of life safety, the Tashkent state technical university, Uzbekistan, Tashkent E-mail: munira.naimova@tdtu.uz Tel (+99890) 191-38-19

### **Abstract:**

This article discusses the issues of ensuring the functioning and increasing the efficiency of the system of material and technical support of civil protection measures in a market economy by applying a logistic approach to preventing, mitigating the influence of potentially dangerous factors and eliminating emergency situations.

**Keywords:** State system of warning and action in emergency situations (SSES), logistics, material and technical support, emergency response, material resources, reserve, supply, material flows.

**INTRODUCTION.** An emergency situation is such a logistic node, which

includes material flows, the number of which is determined by the nomenclature, and the intensity - by the volume of consumption, and the information and financial flows associated with them. Ensuring the rational maintenance and use of material resources at the lowest cost is achieved through the implementation of a constant and flexible management of them.

It is quite obvious that in the elimination of emergencies, the material resources of the reserve are used, which must be replenished in a timely manner to the established volume. Regulation of the frequency and size of replenishment of volumes is the main content of the process

of managing reserves of material resources.

The main measures for planning, timely and comprehensive provision and organization of materials, machinery, equipment and other material resources is the system of material and technical support for the activities of the State system of warning and action in emergency situations (SSES).

The structure of forces and means includes formations, divisions of various purposes, financial and material and technical resources necessary for protection from emergencies. The input of forces to the work site (objects) should be carried out taking into account their readiness for action. First of all, duty formations and the formation of constant readiness should be introduced, the rest - as they are deployed.



Figure 1. Formation of forces and means of civil protection in the elimination of an emergency

Emergency rescue operations in the event of destruction should begin immediately and be conducted continuously, day and night, in any weather, to ensure the rescue of the victims in the time of their survival in the rubble. When planning measures to extract people from the rubble, it is necessary to take into account data on possible deaths depending on the time of implementation of these measures.

To eliminate the consequences of emergency situations in the destruction zones, the formation of civil protection should be involved. Civil protection formations (hereinafter referred to as formations) are created to carry out rescue operations, as well as other civil protection measures in emergency situations of peace and wartime.

**METHOD.** Formations of services are intended to carry out special measures during rescue operations (reconnaissance, medical assistance, localization and extinguishing of fires, anti-radiation and chemical protection measures, protection of agricultural plants and animals, emergency technical work, road restoration and bridges, protection of public order, etc.), as well as for all-round support of actions of general-purpose formations (provision of communications, material and technical, engineering and medical support, transportation of the population, cargo, etc.).

Reconnaissance formations are created to conduct reconnaissance of all types (according to their profile) in the foci of destruction (infection), areas of catastrophic flooding, areas of massive fires, places of deployment of formations and the population, along the routes of advance, as well as to monitor the radiation, chemical and bacteriological situation [1]. Reconnaissance is carried out to collect and transmit reliable data on the situation in the emergency zone to the command and control bodies and forces of the CP, which are necessary for the effective conduct of the RONW and organization of life support for the affected population.

Formations of communications are created to provide communications with the chiefs of civil protection of regions (districts) and emergency departments, command posts with subordinate and interacting forces.

Medical units are created to provide medical assistance to victims, to carry out anti-epidemic and sanitary-hygienic measures in the foci of infection, to care for the injured, as well as for the evacuation of the injured to medical institutions in the suburban area.

The timeliness of their implementation is achieved by the rapid introduction of the forces and means of health care into the disaster zone, the correct organization of their work and the rational evacuation (priority) of the victims outside the disaster areas. At the same time, the affected

population is consistently provided with all the necessary types of medical care, namely, first medical, first medical, qualified and specialized medical aid.

The evacuation of the injured from medical units to medical institutions for further treatment is carried out by automobile formations, as well as using other vehicles, including aviation.

Fire-fighting and forest-fire units are being created for localization and extinguishing of fires on the routes of advancement at rescue sites and in forest areas.

Localization and extinguishing of fires is carried out by joint actions of firefighting units with rescue units to localize and extinguish fires along the routes of force input and at rescue facilities.

The composition of forces and means for the localization and extinguishing of fires in the destruction zones must ensure the fulfillment of the following tasks:

- rescue of people in burning buildings and structures, and their evacuation from the fire zone;
- elimination of fires that impede the advancement of the SSES forces to the places of rescue operations;
- fight against fires that threaten the preserved objects.

Engineering formations are created to conduct engineering reconnaissance, rescue and other urgent work, rehabilitation and repair of roads and road structures, blasting and maintenance of protective structures.

The opening of the piled-up protective structures is carried out by teams of mechanization of work in conjunction with rescue teams and is carried out by a bulldozer or an excavator, as well as manually, if necessary.

Unblocking (removal of victims) from rubble, littered premises, from the upper floors of destroyed buildings.

The release of injured people from destroyed and damaged buildings and structures should be carried out by dismantling the rubble, making openings in the walls and ceilings, removing them from the upper floors using technical rescue equipment.

Rescue teams and services are involved with the use of special equipment to carry out work to remove the victims. The debris is disassembled by the rescue service in the form of manual disassembly of the debris using reinforced mechanization equipment. The construction of openings in stable walls is carried out using a hydraulic hammer, concrete hammer and jackhammers, in unstable walls - with manual cutting machines or drilling tools [3]. To rescue victims from the upper floors of destroyed buildings, depending on the situation, technical means of rescue are used, as well as ladders, aerial platforms and car lifts.

Emergency technical units are created to conduct emergency technical work on the networks and structures of utilities, transport, communications and road facilities.

The elimination of accidents on utility power networks is carried out in order to reduce to the maximum possible level of secondary damaging factors, to create the most necessary conditions for the successful implementation of the RONW.

To localize accidents at utility and energy levels, the following formations are involved: emergency technical service for power grids, service of water supply and sewerage (heating) networks, emergency gas service.

Formations of radiation and chemical shielding are created to eliminate the consequences of radioactive and chemical contamination and ensuring the actions of formations on the routes of advance and in the centers of destruction.

Formations of the protection of public order are created to carry out commandant service and maintain public order in settlements, at facilities, in areas of deployment, as well as at assembly points, on routes of evacuation of the population to a safe zone and the advancement of civil protection forces in the lesions (infection) [2].

Protection of public order during the elimination of emergencies arising in the destruction zones is carried out by the services of public order.

The composition of the forces and means of protecting public order must ensure the fulfillment of tasks as intended:

- protection of the emergency zone by cordoning and ensuring the access control;



- ensuring public order in and around the cordon zone by deploying reinforced detachments, patrolling territories using vehicles;
- protection of property and material values left unattended, support of exported documents and material values;
- identification of the victims and registration of irrecoverable losses.

Formation of logistics are created to provide the formations participating in the liquidation of the consequences of emergencies, water, hot meals (dry rations), clothing and household goods, as well as fuels and lubricants. Subdivisions of technical support are created to carry out routine maintenance of equipment in the field and its evacuation. Technical support is aimed at maintaining in working order all types of transport, engineering and other special equipment used in the elimination of an emergency. For this purpose, maintenance of machines, repair and evacuation of equipment that failed during the execution of tasks is carried out. The material and technical support of the civil protection forces is organized with the aim of creating conditions for the conduct of the RONW in the zones of destruction.



Figure 2. Formations of logistic and medical units ("Red Crescent" organization)

A practical innovation for improving the logistics system is a logistic approach, when using which there is a process of end-to-end integration of the functions of acquisition, distribution and supply of material and technical means of measures of the State Emergency Service and Civil Protection, i.e. the process of the integrated movement of material and technical means from the sources of their production to the end consumers.

Logistics takes a certain place in the security system. The logistic approach to the prevention, mitigation of the influence of potentially dangerous factors and the elimination of emergency situations is based on the choice of a criterion for assessing (measuring) their possible consequences [5].

**RESULT.** The level of preparedness of civil protection units is expressed in relative or physical terms. The relative

indicator of preparedness is presented as the ratio of life support opportunities to needs [1]:

$$K = \frac{P_{mp} + (3_T - 3_{T1}) + (B_n - B_{n1})T}{\Pi_h + \Pi_c}$$

$P_{mp}$  - the volume of material resources of a certain nomenclature in the reserve (in natural units);  $3_T$  - stock of material resources of a certain nomenclature;  $3_{T1}$  - inventory of material resources of a certain nomenclature, located in a possible emergency zone;  $B_n$  - daily opportunities for the production of material resources of a certain nomenclature;  $B_{n1}$  - daily opportunities for the production of material resources of a certain range of enterprises located in a possible emergency zone;  $T$  - life support period (in days);  $\Pi_h$  and  $\Pi_c$  - the need for material resources of a certain nomenclature of the affected population and the personnel of emergency rescue teams, respectively, for the life support period.

All measures for the priority life support of the population should be linked in terms of time and place with other measures taken to save, preserve the life and health of the affected population [3].

The logistics of creating and using reserves consists in the accumulation of material resources in places as close as possible to the zones of possible emergency situations in the required volumes, of a certain nomenclature, suitable for use in the elimination of emergencies within the prescribed time frame [2].

As part of the material support for the actions of the forces of the Civil Defense, an uninterrupted supply of fuel, lubricants, protective equipment, communication equipment, medical equipment, exchange and special clothing, food, water and other types of material necessary for the elimination of emergencies should be carried out.

For the material support of the actions of the forces of the GZ, the following formations are involved: a mobile gas station, a mobile food supply point, a mobile food supply point, a mobile clothing supply point, a drinking water service, and a point for issuing personal protective equipment.

Depending on the situation and in the presence of a base, other formations of services can be created by the decision of the relevant chiefs of civil protection.

We can conclude, at the moment there is a need for the development of methodological recommendations establishing the procedure for determining the need for forces and means, which can be used in the future when carrying out operational calculations of the needs of forces and means of civil protection in the course of the RONW in the destruction zones. The calculation methodology given in the recommendations should make it possible, based on the minimum initial data, to obtain generalized quantitative characteristics of the composition of the forces and means of the CP for solving certain problems.

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