

## **Demands on the Physical Preparedness of the Armed Forces for the Missions During Natural Disasters.**

*Author: Maj. General Petr Voznica. – Commander of the Territory Defense Forces of the Czech Army, Czech Republic*

Ladies and gentlemen,

Allow me to introduce myself. I am Major-General Petr VOZNICA and I am commander of the Czech Army Territorial Defense Forces.

During this year's floods in Rychnov District, and especially in my former function of commander of Army Corps 2 seated in the City of Olomouc, I and my staff directed operations to rescue and salvage people and property and to liquidate consequences of the floods in Moravia and Eastern Bohemia in 1997. On the basis of the experience accrued from those operations I would like to familiarize you in my presentation with the importance of bodily ability and psychophysiological resistance during elementary disasters. see *Figure No. 1*

In the introduction I would like to stress in particular that an obligation of each democratic country including the Czech Republic, is also inter alia to provide security for its own inhabitants against any endangerment. The fulfillment of this task requires not only an analysis of foreign-affairs political and military factors of outside safety but also an objective assessment of the broad scale of economic, social, environmental and other aspects. The result of such analysis and assessment must be a definition of the "safety risks and endangerments", and on the basis of the defined risks and endangerments a national defense strategy must be designed which would also inter alia resolve the principles of response to such a risky and dangerous status. The Czech Republic's National Defense Strategy defines the possible military, mixed or nonmilitary endangerments. With respect to the now existing development of international political situation when the Czech Republic is not exposed to a direct military endangerment we consider the nonmilitary endangerments as more probable. Under the nonmilitary endangerments we understand in particular the industrial, environmental and elementary accidents and disasters, and as far as the causes of origins of such events are concerned, in particular it is disasters or societal or social endangerments. Disasters can be:

- **elementary disasters** : fires, floods, windstorms, large-scale landslides, earthquakes, snow calamities, and massive attacks on nature by vermin or wrongdoer;

- **industrial accidents** : in particular, explosions and fires, leakage of harmful substances, radiation accidents, destruction of buildings, large breakdowns of water, gas, sewer, steam or electrical distribution lines, large-scale transport accidents;

- **epidemics** : dangerous diseases of a large number of inhabitants or cattle.

To provide salvage for the population and properties in the case of origination of the above mentioned disasters the Czech Republic has created the "**Integrated Salvage and Rescue System**" see *Figure No. 2*

(ISRS). The System is constituted in accordance with the Czech Republic Government resolution as a system of linkups that ensure coordinated procedures in the liquidation of accidents for the salvage and rescue, emergency, professional and other components, state

administration bodies, natural and artificial persons. The body responsible for organizing the System is the Czech Ministry of Interior. The Czech Army is not a permanent element of the ISRS (except the units of Civil Defense). We respect the principle that the forces and means of the Army can only be used in such cases when the other forces are not sufficient. The fulfillment of tasks is limited by: how full is personnel count in military units ("states"), organization, armament, equipment and machines, level of outfit and preparation mostly for combat deployment. In spite of these factors, the army can boast of the ability of independent activity and of high maneuverability. During placement, the Army is almost independent of the nature and scope of intervention. The Army can act: through the placement of small units for strengthening the permanent components of the ISRS, or in the framework of intervention independently for fulfilling the tasks for which the other components do not have enough tools and means. Now the Czech Army does not keep any special forces and means in readiness for immediate use in accidents and disasters. However, an exception is the Civil Defense units (that should be part of the Territorial Defense Forces) governed by special directives.

We consider the organized placement of military units and equipment provided under the Military Service Act as a "military stopgap". The soldiers in active service in the Czech Army can only be staged for salvage and rescue activities during the disasters that endanger human lives and important economic properties. The soldiers, in accordance with the Convention on Forced Labor and Compulsory Service, cannot be staged for follow-on work to remove the consequences of disaster. The salvage and rescue activities are controlled by a corresponding Accident or Flood Committee that deals in particular with the problems of: being mutually informed, cooperation, preparedness of the components of the ISRS and their advances during a joint intervention. A representative of the Czech Army will always be member of the Committee, especially if the Army stages corresponding forces and means.

At the conclusion of this part I can say that organizationally the measures against floods and for protection or salvage of inhabitants and tangible properties were ensured.

#### **A Brief Characteristic of the Floods in Moravia and Eastern Bohemia in 1997:**

The flood situation formed after very heavy rainfalls in the upper portions of basins of the rivers MORAVA, ODRA, LABE. On July 7, 1997 storm rainfalls started in mountain regions of the mountain ranges Orlické hory, Jeseník, Oderské vrchy, Moravskoslezské Beskydy. In the night from July 5 to July 6, 1997 the storm rainfalls became heavy rains. This resulted in the increase in water discharge on all creeks and rivers. On the rivers in the mountain and foothill regions the stream speed reached up to 10 meters per second and the flood wave flew through those regions during several hours (cities Vsetín, Jeseník, Šumperk, Frýdek-Místek); in the districts in lower regions the wave lasted several days (cities Olomouc, Přerov, Karviná, Opava). In total the floods of 1997 troubled approximately ¼ of the territory of the Czech Republic. and afflicted some 20 districts of the Czech Republic.

On the basis of development in individual river basins Flood Committees were gradually activated in afflicted regions on Saturday (July 5) and Sunday (July 6). On Monday (July 7) the Czech Republic Central Flood Committee was activated and created were the Crisis Staffs for the Czech Army General Staff and for Army Corps 2. The purpose of the Crisis Staffs was to coordinate protection, salvage and rescue activities.

The Czech Army units were already staged in the forenoon on July 6 by requests from District Offices heads in accordance with the plans prepared for providing stopgap. The activities of the Czech Army units in that situation were directed by Army Corps 2 Command Group. First of all to strengthen flood banks, to salvage properties and to rescue civilians were the tasks for the staged units. The situation became acute from July 6 to July 7, when on the basis of growing requests the Czech Republic Civil Defense units and units from other components of the Czech Army were gradually staged. The mass staging of the Czech Army forces and means was effected on the basis of the instruction of Chief of the Czech Army General Staff dated July 7, 1997.

During the most critical period of the floods (July 12) the numbers of staged persons from all components of the Czech Army reached altogether 5,472 (without Civil Defense personnel) and up to 819 pieces of equipment and machines were staged. 2,332 helicopter takeoffs were effected with altogether 738 flight hours. 36,920 persons were evacuated. 605 metric tons of bottled potable water, 330 metric tons of water in cisternas, 175 metric tons of bread and 384 metric tons of other material were transported for the afflicted inhabitants.

During the crisis period it was the permanent Command Groups of individual command levels who controlled: initial activities, the primary collection of information from afflicted regions, the establishment of contacts with Crisis Staffs of District Flood Committees, and the preparation and operations of staged forces and means of the Czech Army for the benefit of afflicted regions. This type of directing/control proved fully.

The floods showed that the existing Czech Army due to its organization, strength and placement can only fulfill similar task to a limited extent. It also proved that such crisis situations require, for mastering of such long term burdens, an excellent bodily ability (i.e., physical fitness) of the staged persons.

#### **A Brief Characteristic of the Floods in Eastern Bohemia in 1998:**

Flood situation occurred in the districts Rychnov nad Kněžnou and Náchod due to the flood rains in the night from July 22 to July 23. Level surfaces of the most flooded creeks BĚLÁ, DĚDINA and ZLATÝ POTOK, otherwise calm, rose somewhere up to three meters above normal. Night rainfall reached record values, maximum 204 millimeters per 24 hours in the city of Deštné in the mountains Orlické hory. The cities Skuhrov nad Bělou, Dobruška, Kounov, Deštné, Opočno and Kvasiny were the worst afflicted places.

On the basis of consent of the Czech Republic Government, the Czech Army personnel were staged to salvage and rescue people and properties. Altogether 933 personnel and 67 pieces of equipment and machines and four helicopters from all components of the Czech Army were staged.

Also in this case the requirement of high bodily ability of the staged personnel proved.

#### **Physiological and Psychological Characteristic of the Burden:**

Elementary disasters are not a matter of several hours or a single day. If comparing with sports disciplines, among them you cannot find a similar, "floodlike" burden. The exactingness of salvage and rescue activities is dependent on endurance, strength, speed of

response, dexterity and a short relaxation phase, and all this in combinations that repeat themselves as irregular.

From a viewpoint of ensuring energy losses and intakes during the mentioned burden we can recommend a clear-cut replenishment of energy in the form of liquid and solid food. The necessity of prevention of diseases from fatigue and environment assumes an application of certain ion, vitamin and support means and medicines.

For professional judgment of the psychological characteristic of the burden it is necessary to generally characterize the mentioned activity from viewpoints of **psychological and profессиographical scheme**, specified for the mentioned activity in elementary disasters.

Technical level of the activity is much variable - the activity of soldiers during elementary disasters is given by the actual need to resolve a sudden situation or to prevent a certain situation (responsibility, insufficient professional preparedness, work quality during long lasting fatigue, possibility of training for the burden). The emerged situation and the possible stress can also arise from the problem of technical unadaptableness (managing the boat, engineers work, first aid, etc.).

Performing activities in landscape, mostly in water, in the mud, in heavy dress, managing "less known" equipment and material after energy has been exhausted - the mentioned environment is becoming one of the main factors for arising stress and incorrect decision-making.

*//examples - Otrokovice, Veselí na Moravě, Černovice, Kounov, Skuhrov//*

Overall exactingness of the activity can be evaluated from a viewpoint of burden and from a viewpoint of activity. The elementary disasters running in the vicinity of people are, in any sense, evaluated from the viewpoint of burden as activities of large physical and psychical strain. From the viewpoint of activity we can characterize convulsions of nature as activities in unstable positions with frequent changes and a lowered possibility of free movements.

The course of activity and the division of activity are not unambiguous. From long-term uninterrupted activities to activities with breaks or to the short-term intensive-work activities that can be seen with both floods and fires or other convulsion of nature.

The pace of activity is not spontaneous, is forced by a specific situation in a linkup with collective cooperation.

The variability of task is given by the permanent change of situation and this also requires an increased attention. A lack of adequate feedback information can negatively act upon follow-on decision-making processes.

The endangerment during activity in the evaluated situation can have the following extent:

- risk of fall;
- danger of moving bodies;
- risk of combustibles;
- danger of toxic substances, poison and bad smells from dead animals;
- danger of alidity (and also of heat stroke or sun stroke);
- other, unspecified problems.

*//examples - bridges, Olomouc - sodium, Ostrava - crude oil accident, collection of dead animals (altogether 350,000 pieces)//*

Precautions orientated toward both an individual and others in a collective or outside the collective are important factors for reducing negative impacts on psychical status:

- technical precautions - a higher attention should be paid to the equipment and machines, various covers, gas distribution lines, electrical distribution lines, sewerage, water swirls, currents, etc.;

- personal protective aids / vests, masks, apparatuses, clothing, protective dresses, etc. may be helpful for personal safety. However, in some situations such aids can become a hindrance during the fulfillment of tasks and salvagers and rescuers tend to do without using the aids.

The following factors can be regarded as those which **from outside environment** influence work during convulsions of nature:

- coziness is missing (the environment is endangering);
- lighting (varies - natural, artificial, darkness);
- noise (unknown, threatening sounds appear frequently during disasters);
- climatic conditions (lower-average temperature, high humidity, large air flows);
- bad smell (often great, chemical composition is modified).

All this worsens instability of persons and increases the probability of the genesis of a stress situation.

#### Social conditions:

Work during floods or other convulsions of nature is an activity characterized as a service for society (collective) with a high responsibility.

Qualification prerequisites - the individual functions, except TOP management, which are fulfilled by both regular soldiers and compulsory service soldiers, are not specified fully at the beginning. And it is the analysis of arisen situation together with a redistribution of specialists which only make the participation of the Czech Army forces in individual crisis components indispensable even without a requirement for a special expert capability.

**The capability that directly determines the efficiency of staged soldiers is the psychological resistance and bodily preparedness. In addition, in many situation it is the individual immediate decisions that are to be made.**

#### Contents of the activity:

- fulfillment of specialized or auxiliary operations and elementary operations.

#### Directing the activity:

- directions, codes, maps, choice of partial procedures, respecting the rules, planning, etc.;
- and again, the contrast of individual decision!

#### Checking the performed operations and their results:

- the absolute check of rightness consists in the preservation of existence or operation (human life, operation of equipment);
- safety and the need to work in hazardous environment!

#### Requirements for psychical processes and properties in general:

- during activities, situations exist that must be resolved operatively by an evaluation of all conditions (even those social), the activity must be directed in accordance with changing conditions;
- during activities, emergency situation exist that must be resolved operatively, readily and decisively;
- the activity requires a permanent, extreme orientation toward the complex, variable factors that occur irregularly;
- the activity is connected with a large social responsibility;
- the activity expects risks up to personal sacrifices.

#### Requirements for human motoring from physiological and psychological viewpoints:

- requirements for the quality of motility of the entire body;
- speed is high, motions are nonrhythmical;
- the speed in large movements is spontaneous or free, is high, nonrhythmical, in some auxiliary work activities even a high speed occurs in rhythmical movements (paddling, rowing);
- the activity requires a precise coordination of motions in the entire body that are supported by an increased operation of the motility analyzer (kinesthesia).

#### Partial requirements for psychical processes and properties:

- the activity makes requirements for a complex discrimination of objective situation in cognition processes and properties;
- in the watching of situations a large number of various situations exist that make extraordinary requirements for cognition processes and analyzing the processes
- in mediated cognition processes and properties (thinking) expected is the capability of choosing individual procedures in accordance with the changing requirements of a situation;
- requirements for attention need a watchfulness with fast responses based upon a systematic watching of situation;
- requirements for the repetitive application of elementary operations whose sequence is lengthy from a time point of view and the operations cannot be automated make extraordinary requirements for memory;
- in different situations the requirements for emotional strain are different:
  - the activity does not evoke an extraordinary internal strain;
  - a nervousness can occur, ensuing from the unfavorable physical conditions and risks;
  - a strain can appear, growing from the unfavorable social conditions of the activity;
  - a strain growing from the isolation of the dealing subject;
  - a strain growing from increased responsibility;
  - a strain from the abundance of tasks and information;
  - irritability caused by pain;
  - other influences (media reporting).
- apprehensions for relatives and friends (the staging of soldiers from afflicted regions due to the territorial principle of recruiting units, and the staging of the units that are nearest for resolving the situation), etc.

#### Requirements for personal qualities:

- even the individual activities need to be checked for their course or for the obtained results with an emphasis laid upon carefulness and assiduity; in case that risky elementary

operations occur, we lay emphasis upon deliberation and calmness; in the tasks where initiative is emphasized we push independence and professional bias.

#### Collective activities:

- the linkup to the relatively independent activities does not emphasize the specific qualities that influence the communication between persons;
- tasks are being performed in cooperation; in addition to unison, emphasis is laid upon the qualities that allow mutual grasping and understanding (devotedness);
- the activity requires to submit to command, discipline, a certain submissiveness and self-control are needed.

#### Psychological resistance:

Any salvage and rescue action or an action that is being performed in extreme, straining situation must be prepared and trained under the conditions of the Army. The psychical burden originating during convulsions of nature is characteristic of the appearance of the following situations: excessive tasks, problems, conflicts, frustrations, deprivations, stresses, aggressions, anxiety and fear.

Such situations, through sports and physical training, can be trained and prepared for and in small social groups it is possible to find out the response. The behavior of the group, actions of individuals, changes in communication and in relations, responsibility, all this can advise the commander of where are the bottlenecks in a collective, how to motivate the collective, how to stimulate his or her unit for providing stable and responsible outputs. The objective of the preparation is not to give a one-shot output but to permanently perform responsible work at high intensity without motoric faults.

A parallel with the burden at the level of high sports performance that is comparable up to the burden in top sports.

The comparison of the requirement for outputs with the performances in the sphere of efficiency and top sports during these burden situations is not direct. It is easier and much more understandable: to compare the salvage and rescue activity requirements with the requirements for individual kinds of sports and disciplines, and to compare rather with the process of preparation and not so with one-shot performances.

The activity of the salvager or rescuer is, already by physiological characteristic, long-term and perseverant with the requirements for a high level of human motoring and for coordination, the activity is performed in the aerobic zone and the energy releases are at the level of releases in mountaineers, rafters, marathon runners, i.e. sportsmen and sportswomen who are engaged in the adrenaline (or epinephrine) sports. The preparation of (Civil Defense) specialists - salvagers and rescuers is in its general phase as time consuming as the preparation of nonspecialists - other salvagers and rescuers, with a difference in the subjects trained.

#### Conclusion:

On the basis of all the mentioned realities it can be unambiguously stated that for the fulfillment of tasks in crisis situations a very good psychical and physical preparation of each individual is necessary. Physical training shows an immediate influence upon both the



forming of bodily ability and the development of functional psychical reliability in soldiers. Doubtless, the sound organism and high bodily ability make easier the thinking operations and endeavour in combat or other, complex situations, and they also allow to successfully complete courageous decisions. Therefore the excellently prepared soldier, capable of overcoming the difficulties of crisis situations, cannot do without a sufficient physical training. It is understandable that such a bodily ability can be developed not only in physical training and sport activities but also in the framework of everyday training and service, if they near to the conditions of actual combat. The successful forming of the psychical resistance, which allows to overcome negative statuses, is possible under the conditions of long-term physical burden and systematic training in any season and in any weather. Therefore in the physical training routines it is necessary to create situations with the burden increasing up to a high limit of physical capabilities of a given individual. In the process of physical training and sport activities, for the purpose of the forming of psychical resistance of soldiers fully utilized are routines: to overcome obstacles, to train self-defense, to master accelerated movements, to train military practical swimming. The staging of units for the removal of consequences of elementary disasters can be compared with the fulfillment of combat tasks. In spite of this reality it turned out that the preparation and training of troops should also be orientated toward the training of specific elementary operations for mastering of extreme situations. All this should be projected into the contents of special physical training (schedule of hours, modifications of subjects, material support, methodical and professional preparation).

*Figure No. 1*

## THE CHARACTERISTICS OF POSSIBLE DISASTERS

- **elementary disasters** : fires, floods, windstorms, large-scale landslides, earthquakes, snow calamities, and massive attacks on nature by vermin or wrongdoer;
- **industrial accidents** : mighty explosions and fires, leakage of harmful substances, radiation accidents, destruction of buildings, large breakdowns of water, gas, sewer, steam or electrical distribution lines, large-scale transport accidents;
- **epidemics** : dangerous diseases of a large number of inhabitants or cattle.



# INTEGRATED SALVAGE AND RESCUE SYSTEM FUNDAMENTAL COMPONENTS

