

CENTRALLY STORED WEAPONS BY UNITS: ECONOMIC ASPECTS

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Abstract: *An option for weapons storage – central storage sites by independent units is explained outlining both the advantages and shortages of this way of weapons stowing and protection. An economic model is used to describe and analyse all the theoretical principles.*

Keywords: *Central storage site, logistics, cost efficiency, position duties, structure organisation, materiel management, electronic security system, ordnance service.*

1. INTRODUCTION

The changes in the Army of the Czech Republic (ACR) long-term re-organisation along with the requirements put forward by the military and political structures the Czech Republic (CR) had engaged brought significant reduction in the number of its personnel resulting in similar reduction in the need of both movable and immovable assets. The process involved most of ACR units making them modify necessarily their organisation and deployment structures at all levels.

However, weapon storage and protection have remained a task of the principal ones for all commanders and, of course, for logistic support¹. Every independent unit had to cope with this task - weapons storage and security - to comply the legal regulations in force.

Independent units store weapons separately from other materiel, in safe and furnished rooms or buildings.

2. WEAPONS STORAGE ANALYSIS

The unit should base its concept for storing and securing weapons on local conditions that are always specific for each entity. Storage

facilities follow the previous structure of military forces organisation and limit the total number of weapon storage sites to include:

- System of weapons stowing and storing - de - centralised² and centralised³,
- Construction readiness and furnishing of the facilities,
- Number of single units possessing weapons⁴,
- Number of weapons to stow by accounting entities as in TOE,
- Guarding options,
- Electronic security system (ESS).

In a de - centrally organised system, the weapons are stored right in the subordinate unit's premises. It is necessary the sites were under direct sight of the duty officer of the day at any time. The system of weapons security, handling and key storage during and off working hours should follow the standards in force in ACR.

In a centrally organised system, the weapons are not stored in unit's premises.

¹ Field manuals containing information for weapons security: Zákl-1, Vševojsk-1-1 and Vševojsk-5-6, Vševojsk 5-7/2, Vševojsk 17-4.

² De-centrally stowed weapons system follows the subordinate units deployment under the independent unit command and storage capacity for each of the units.

³ Centrally stored weapons system means weapons are concentrated in a single storage facility for the whole independent unit.

⁴ Each of the cost centres determines the number of accounting entities within the independent unit following the "Plan of implementing higher alert status" being under Chief Logistic Officer's responsibility.

There is a single storage site for the whole independent unit that may not be under duty officer's continuous supervision. An electronic security system is used for guarding.

It is independent unit commander's responsibility to decide upon the system of weapons storage and security after he/she takes into account the recommendations made by the deputy commander, chief of staff, and chief logistic officer and ordnance officer who enter into the decision-making process. The experience and practice of ACR units show the most advantageous system of weapons storage being the **central stores**.

The verified facts supporting the option include the following:

- Construction readiness of the facilities to store weapons, approval of Construction Agency a building or facility (should be specified) in unit's possession be used for storing weapons,
- Furnishing of the building/facility with mechanical security system⁵,
- Modification of the whole premise guarding system by sentinel shifts,
- Necessary furnishing of the store with an electronic security system (ESS)⁶,
- Reduction of overhead cost of heating, electricity, cleaning and maintenance of rooms and building(s),
- Completion of the tasks of personnel/unit training to achieve full operation capabilities of task group resulting in the requirements of supporting the training for as many personnel of the independent unit as possible in each phase of training.

The initial assumptions defined this way allow the cost of central and de-central weapons storage system to be compared for the independent unit.

Such a comparison may be done with simple mathematic models of security and storage cost.

⁵ A building that misses the technical elements required by the standards in force needs construction modifications to be done, such as security screen, safe door, lighting system and fire prevention.

⁶ Acquisition of ESS for one building also substantially reduces the cost of connecting the devices into weapon security low-voltage network.

3. WEAPONS STORAGE MATHEMATIC MODEL OF ECONOMIC COST

When using the above-mentioned simple analysis and described experience, it is possible to set up the cost of weapon storage in both ways.

3.1. Weapon storage sites cost by units:

- Maintenance cost of each storage site - A1-n (cost include room repairs and construction maintenance work),
- Site furnishing cost (pictures, desks, chairs, emergency lamps, cabinets, boxes, stands) - B1-n,
- Electricity cost - C1-n (permanent lighting requirement for the site),
- Guarding system permanent financial expenses⁷ - D1-n (to include the maintenance and repairs of the electronic security system with which every site is equipped),
- Weapon storage site cleaning expenses - E1 -n,
- Premises heating cost - F1-n,
- Duty shifts permanent cost - Z1,
- Total cost of de-central weapon storing - N.

Based on the required cost input the total cost of all sites in the independent unit is⁸:

$$N = A_{1-n} + B_{1-n} + C_{1-n} + D_{1-n} + E_{1-n} + F_{1-n} + Z_1 \quad (1)$$

3.2. Central weapon storage site of the independent unit

- Non-recurring cost of construction work - X (establishing weapon storage site in a

⁷ The law in force requests the storage rooms of units are in direct sight of duty officers, which means increased requirement of the number of personnel on duty concerning the number of sites within the independent unit. Then, it is necessary to count the expenses on the personnel on duty, such as food, working at night, on Saturday and Sunday and on holidays, plus compensatory time off even if extra 150 hours worked over the annual workload does not count. Compensatory time off financial expenses may be included provided the units are primarily intended for training and engagement in operations.

⁸ Depending its structure there may be up to seven unit's weapon storage sites within an independent unit.

separate premise needs all conditions of weapon storing to be accomplished to comply appropriate standards – bars, safe doors and other to be completed),

- Non-recurring cost of acquisition and installation of modern electronic security system centrally connected on security control panel - Y,
- Non-recurring cost of site furnishing (pictures, desks, chairs, emergency lamps, security elements) - B1-m,
- Duty shifts permanent cost - Z,
- Single premise maintenance permanent cost - A,
- Premise heating cost - F,
- Permanent financial expenses on guarding system - D
- Central weapon storage aggregate cost – Nc.

The determined cost inputs define the cost of the single weapon-storage per independent unit:

$$N_c = X + Y + B_{1-m} + Z + F + A \quad (2)$$

The permanent expenses on weapon security are only liable to annual inflation rate. The level of expenses for central and de-central mode of weapon storage system equals one another. Eliminated cost of:

- Maintenance of each weapon storage site,
 - Storage site furnishing,
 - Electricity for storage sites lighting,
 - Permanent financial expenses on guarding system,
 - Building heating,
- cause simplified equations:

$$N = Z_1 \quad (3)$$

$$N_c = X + Y + Z \quad (4)$$

3.3. De-central weapon storage sites guarding cost may be determined and calculated following the law and restrictions in force. Initial conditions for allowance calculation:

- Number of personnel on duty for de-centrally guarded weapons is 16 (8 sites at units)⁹,

- Scale salary CZK 12,560 is determined to be the average salary within the span from grade 6 to grade 8 (equals the third degree of the seventh salary grade) for military professionals under four years of experience at the ranks of warrant officers¹⁰,
- Extra allowance CZK 1000 for “Confidential” security clearance holders¹¹,
- Rank allowance CZK 1800¹²,
- Night work allowance is CZK 52,560 per year (20% of hour - rate average),
- Saturday/Sunday shift allowance is CZK 56,160 (25% of hour-rate average),
- Holiday shift allowance is CZK 23,760 (100% of hour-rate average),
- Annual aggregate allowance is CZK 2,119,680,
- This sum disregards incentive bonus and leadership allowance that differ by position, performance and the quality of work done,
- Salary average is set at CZK 15,360 totalling CZK 184,320 per year (hour-rate average is CZK 90),

The total amount of allowances for the 16 duty personnel in de-centrally organised weapon storage system in a calendar year is then CZK **2,119,680**. The allowances per duty person in a calendar year are then CZK **132,480**.

$N = Z_1$, for which the allowance amount for 16 duty personnel is CZK 2,119,680.

Central weapon storage sites guarding cost may be determined and calculated following the law and restrictions in force:

- There are only 2 duty personnel for the whole independent unit. We can decrease economic cost of the describe mathematic model by using duty officer,
- Construction modifications of the building/facility, furnishing of each of the stores (store rooms) following law in force,
- Acquisition and installation of the electronic security system linked to one

⁹ Data taken for Bechyne base 3517

¹⁰ Annex 3 to government decree 564/2006

¹¹ Government decree 565/2006

¹² Act 143/1992 as amended later

duty site, furnishing of the duty site with monitoring and recording equipment.

“X” cost - building construction modifications:

- Security grid and doors, security foils for windows, there are 8 storage rooms in the building, duty site and duty personnel resting room and building entrance door.
- One security foiled and grid-equipped window cost is CZK 10,000, one safety door cost is CZK 5000.

That implies the total expenses of that commodities are 10 x CZK 10,000 and 9 x CZK 5,000, totalling in CZK 145,000. Installation cost is CZK 55,000 making the total sum of construction modifications cost “X” CZK 200,000.

“Y” cost - electronic security system:

- Cameras plus accessories, switchboard, sensors, monitors and recorders are approximately CZK 380,000. ESS may be installed for less than CZK 120,000. This cost may be expected to keep under CZK 500,000 in total.

“Z₁” cost – duty personnel:

- The above-mentioned personnel overtime allowance Z₁ resulting from the above-mentioned calculations is CZK 265,000 over the year.

The total cost N_c of acquisition and implementation of the central weapon storage site in one year is:

$$N_c = X + Y + Z = 200,000 + 500,000 + 265,000 = \text{CZK } 965,000$$

$$N_c = X + Y = 200,000 + 500,000 = \text{CZK } 700,000$$

Comparison of different ways of weapons storing:

The cost of de-central storing way of weapons is CZK **2,119,680**. Central weapon storage system building cost including duty personnel is CZK **965,000**. The cost of central storing way of weapons which is in the charge of duty officer is CZK 700,000. Total annual savings are thus CZK **1,420,000**.

4. CONCLUSION

Centrally organised system of weapon storage result in aggregate savings of CZK 1,420,000 per year. Also, the number of

personnel on duty less by 16 persons allows intensive training to meet the goals of troops training plans.

The required funds necessary for building central weapon storage should be requested within the independent unit’s midterm plan and the construction works planned for the following year in the calculation sheets in budget draft.

The models and calculations of the optimum cost load may also consider the option of a single storage site. When compared with the N_c model described above this one saves even more input attributes - energy, furnishing, cleaning, handling and consignment system establishment and simplification.

Selection and installation of suitable equipment should follow the acts in force as well as internal standards.

The equipment to secure the building and the company to install the equipment need certification given by the National Security Agency and accreditation for the Czech Armed Forces.

The system of weapons storage and security should always consider the possibility for weapons to get to the hands of unauthorised persons such as various antisocial elements or terrorist groups. Therefore, the final solution should result from a thorough analysis of conditions and risks done by all the involved officers of the independent unit.

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