

Studijní opora AJ Lesson plan

Course Name: Management services of military equipment operation and material

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T1 Special technical supervision in the Army of the Czech Republic

Technical supervision is a part of operating of military vehicles in ACR.

1.1 Special technical supervision (STS)

Definition: Technical supervision is „summary of operations which is secure to validate safety of designated technical appliances.“

Goal of STS is „supervise, if military units, military rescue units and military facilities leading managers are following safety regulations concerning technical appliances.“ Objectives of TS are similar.

1.2 Professional technical supervision of pressure equipment

High pressure equipment (devices)

- Stable high pressure bottles, their highest working overpressure exceeds 0,05 MPa and which contain gas, vapor, corrosive liquids, poisonous liquids, explosive liquids at any temperatures or other liquids at temperature exceeding their boiling point when overpressure to 0,005 MPa;
- high pressure transport tanks containing gases with critical temperature below +50 °C and absolute pressure of vapor higher then 0,3 MPa;

Types and terms of revisions and inspections

- a) Revisions and inspections of stable high pressure vessels
- b) Revisions and inspections of safety devices on high pressure tanks
- c) Revisions and inspections of vehicle air reservoirs
- d) Tests and revisions of military vessel (ships) containers and military airplanes
- e) Tests and revisions of gas vessels (bottle)
- f) Filling of gas vessels - Gas vessels – filling station - revision place

1.3 Professional technical supervision of gas equipment

Gas devices are classified into groups A and B.

Group A: gas devices for gas production, where gas is the main production product, including devices, which regulate or liquefy or evaporate gas;

- a) Gas devices for storage and transport of gases.

Group B:

- b) Simple pressure stations as a part of functional unit, used to collecting gas from more than two gas containers.

Inspections, revisions and tests of gas facilities

Check of gas devices -

Revisions of gas devices – initial revision- operational revision

Operator obligations

The tasks for students:

To repeat main tasks of STS.

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- [1] Odborná směrnice Metrologické zabezpečení v AČR, Praha 2002, str. 101
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- [4] Vševojsk 2-9 BEZPEČNOSTNÍ OPATŘENÍ PŘI VÝCVIKU, Praha 2011, str. 79.
- [5] Vševojsk 10-1. Pravidla pro vedení dokumentace. Praha 1992, str. 73.
- [6] Vyhláška č. 344/2002 Sb., kterou se mění vyhláška č. 262/2000 Sb.. kterou se zajišťuje jednotnost za správnost měřidel a měření

T2 Records of STS

Metrology is a discipline that deals with rates of to determine the size of various technical and physical quantities and their measurement. Measurements are usually implemented by the etalon, which is sort of standard. At the national level metrology are empowered national metrology institutes and at the international's International Bureau of Weights and Measures

2.1 Main objectives and tasks of metrological support service

The main objective of metrological support of military material is controlling quality of material while achieving maximum performance in area of reliability, operational safety and minimizing all costs through the lifetime of military equipment.

Main tasks of metrological support:

- To manage and develop subsystem of metrological support;
- To provide training and education of specialized personnel;
- To establish uniform rules, standards and regulations, to develop methods and measurement methodology;
- Metrological supervision of gauge condition and military equipment;
- To establish an uniform nomenclature of gauges;
- To ensure metrological expertise;
- The guarantee of legal provision compliance;
- To provide metrological support during operation, maintenance and repairing of military equipment, including repairing of gauges and instrumentation used for repairing, supplying and storing of material

2.2 Definitions used terms

Accreditation

Accreditation body of Czech Army

Authorization

Main military etalon

Gauge calibration

Control authorities of metrological support

Metrology – summary of knowledge associated with measuring;

2.3 Management and executive authorities

The Chief of Logistics Section of General Staff is responsible for managing of the metrological support of the Armed Forces of the Czech Republic (ACR).

The executive body of metrological support of ACR consists of metrology laboratories, centers of metrology and technical supervision, authorized metrological centers, metrological centers, metrology departments, mobile and stationary calibration laboratories of ionizing radiation.

2.4 Executive means

Executive means perform metrological tasks, calibrations, gauge repairs, metrological expertise, metrological supervision, training of specialized workers and other specialized tasks in the field of metrological support of ACR.

- Metrological laboratories;
- Centers of metrology and technical supervision;
- Authorized metrological centers;
- Metrological centers;
- Metrological departments, mobile and stationary calibration laboratories of ionizing radiation

2.5 Organization and obligations of metrological support service

Chief of logistics is responsible for:

- Condition of metrology support services in range of their authority;
- Methodological management of assigned workers in area of metrological support;
- Planning of metrological support service;
- Overview of gauges and diagnostic devices;
- Coordination of metrology services and technical supervision.

The tasks for students:

- Repeat the principles of ACR metrology.

References and further reading:

- [1] Odborná směrnice Metrologické zabezpečení v AČR, Praha 2002, str. 101
- [2] SKALSKÝ, J. Metrologické zabezpečení v AČR, Prezentace Štěpánov 2012.
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[4] Vševojsk 2-9 BEZPEČNOSTNÍ OPATŘENÍ PŘI VÝCVIKU, Praha 2011, str. 79.

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T3 Crude oil, it's mining, transport and treatment

Energy is a concept with which each of us encounters. Almost daily, media provides information, which are mentioning energy and its impacts on earth regions and continents[1]. Crude oil is basic raw material for production of fuel and lubricants. The operation of military equipment is characterized by a wide range of activities and one of the main tasks in the operation of military equipment also play POL. Its quality and wide range creates one of the fundamental requirements for reliable operation technology. The meaning of this statement is also highlighted by issuing Decree 133/2010 requirements for fuels for motor vehicles on roads and means of monitoring their quality. That this statement was also true, it is necessary to responsibly adhere to established principles for handling fuel where it is necessary to focus on their receipt, storage and distribution to equipment. Just during these processes, based on the experience of departmental activities ACR, usually disrupts the quality of fuel. Any reduction in the quality of the fuel to some extent affects the reliable operation of the military equipment. Some signs of deterioration of the quality of fuel we see immediately that we have to solve problems with the equipment, which remained on the road.

3.1 Formation and structure of Crude oil

Crude oil is material, which is moving between rocks and it's very hard to find its place of formation. During movement causing the absorption of certain substances from surrounding rock, which had some influences on crude oil composition and attributes. Therefore, the composition of original oil can be different than crude oil mined from current sites. For that reason are discussions about the formation of crude oil connected with several groups of theories.

We can divide these theories to two basic groups:

- Anorganic theory
- Organic theory

3.2 Mining

Crude oil deposits are opened and mined by deep wells, from which oil rises by itself, sometimes bursting into meters high above, or draws. In the case of spontaneous discharge, the course of the wellhead must be collected and safely drain. During draining, can be usually used the pressure of gasses collected in upper part of the deposit.

3.3 World supplies

It's really difficult to find out right data about crude oil, because states and companies, are not giving exact informations. They are doing it, because then they can influence the prize of Crude oil or they can make higher audit of company.

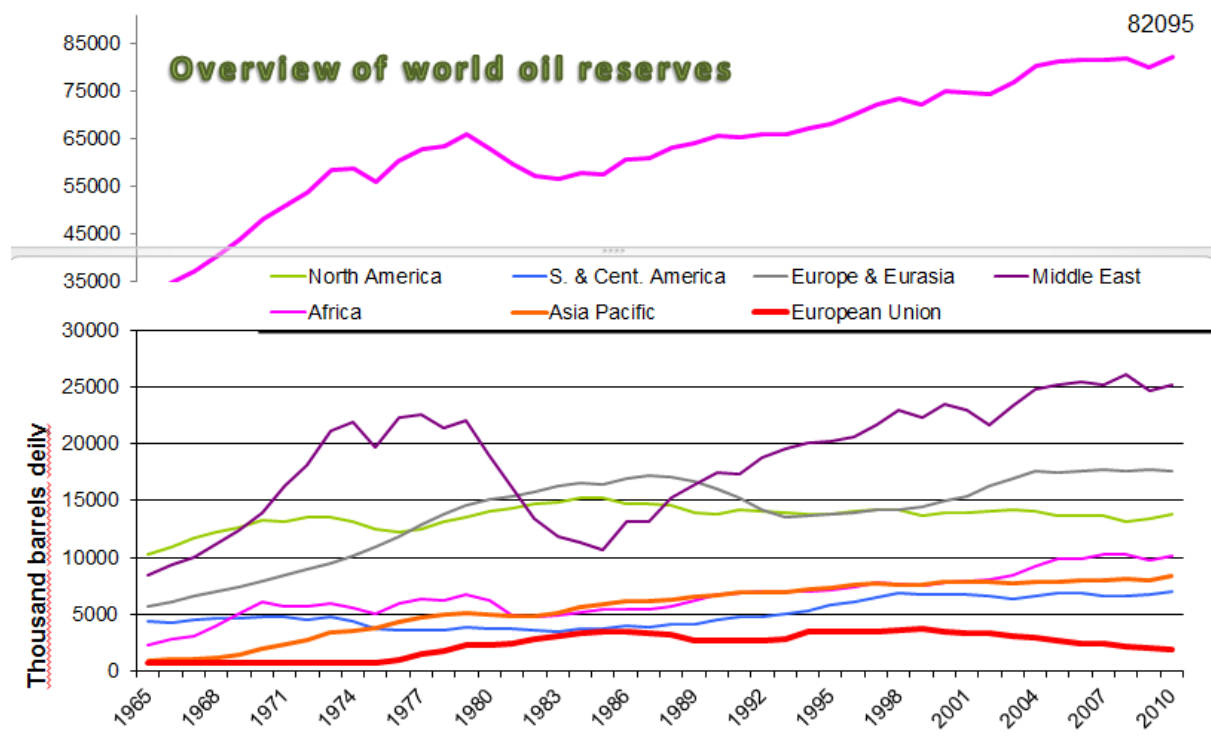


Fig. 3.1

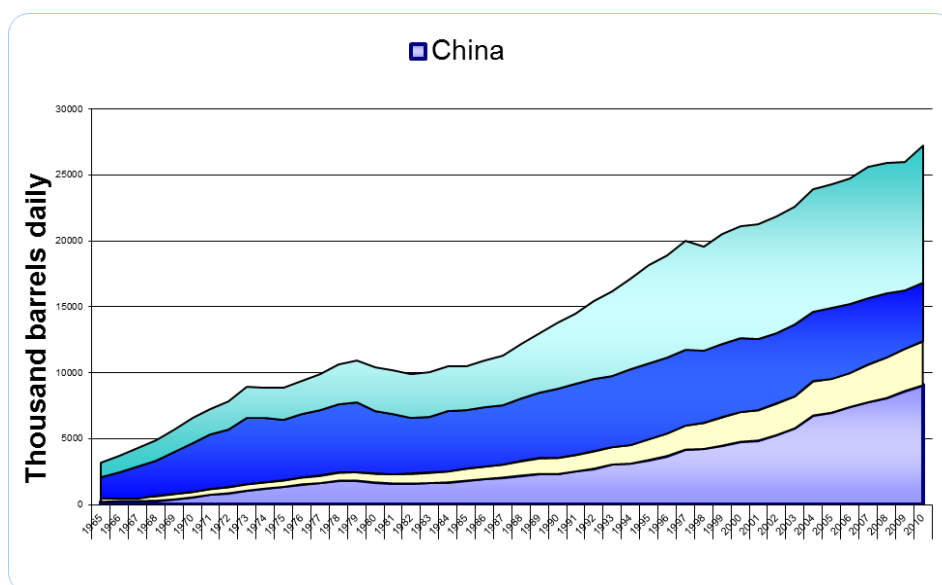


Fig 3.2

3.4 Crude oil and Czech Republic

Import to the Czech Republic and Crude oil in Czech Republic

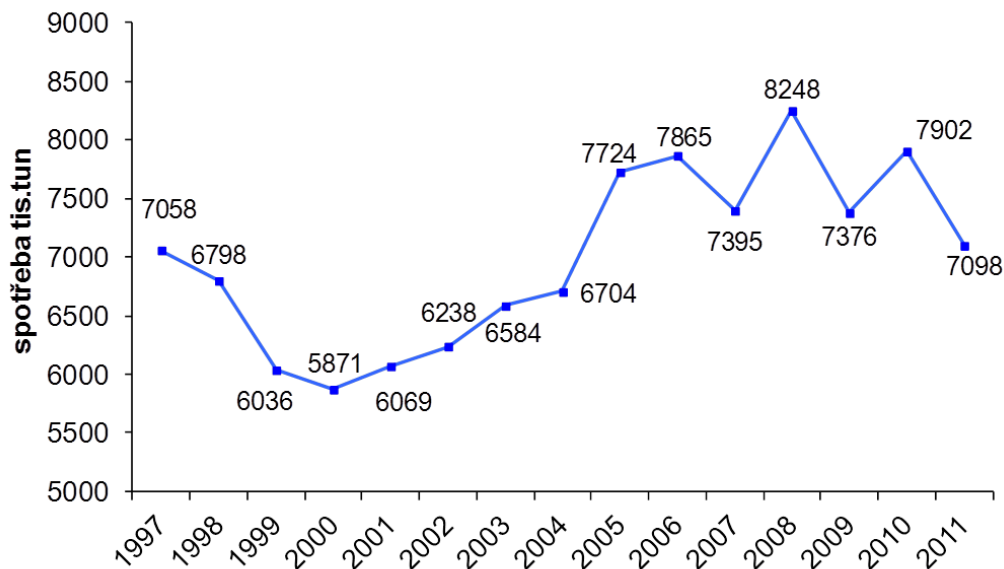


Fig. 3.3

The tasks for students

1. What are the fundamental aspects for formation of petroleum?
2. What are the basic methods of oil extraction?
3. How can be influenced world crude oil production?
4. What does mean peak oil and how does look its scenarios for future?
5. What is the basic method of processing oil and its main phase and fraction?

References and further reading:

- [1] BLAŽEK, RÁBL. Základy zpracování ropy a ropných frakcí. VŠCHT v Praze. Praha. 2002.
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Energy Information Administration, [on line]. Citováno [2011-08-12] . Dostupné Z:<<http://www.eia.doe.gov/basics/quickoil.html>>.

T4 Fuels - attributes, uses and trends

The operation of military equipment is characterized by a wide range of activities and one of the main tasks in the operation of military equipment is also PHM. Its quality and wide range creates one of the fundamental requirements for reliable operation of the equipment. The meaning of this statement is also highlighted by issuing Decree 133/2010 requirements for fuels for motor vehicles on roads and way of monitoring their quality. That this statement was also true, it is necessary to responsibly adhere to established principles for handling fuel where it is necessary to focus on their receipt, storage and distribution to equipment. Any reduction in the quality of the fuel to some extent affects the reliable operation of the military equipment. Some signs of deterioration of the quality of fuel we see immediately that we have to solve problems with the equipment, which remained on the road.

4.1 Technology of PH production

It is a liquid mixture of hydrocarbons of fossil origin, representing the raw material in the petrochemical industry. Crude oil is light yellow to dark black.

Composition of Crude oil:

- Carbon: 84–87 %
- Hydrogen: 11–14 %
- Oxygen: to 1 %
- Sulfur: to 4 %
- Nitrogen: to 1 %

Crude oil sites

- WTI (West Texas Intermediate)
- Dubai, for its prize is sold Middle Eastern oil designated for asian-pacific area.
- Tapis (from Malaysia), for its prize is sold light oil from Far East.
- Minas (from Indonesia), for its prize is sold heavy oil from Far East.

The base of distillation is the heating of raw material, its evaporation, fractionation, condensation and cooling fractions. The column has 30 to 50 trays. The temperature of the mixture on a floor depends on its position in the column. Lighter fractions are cumulating in the upper part of the column. Vapor leaving the column head, pass through the condensator and are collected in a separator drum reflux main rectification column.

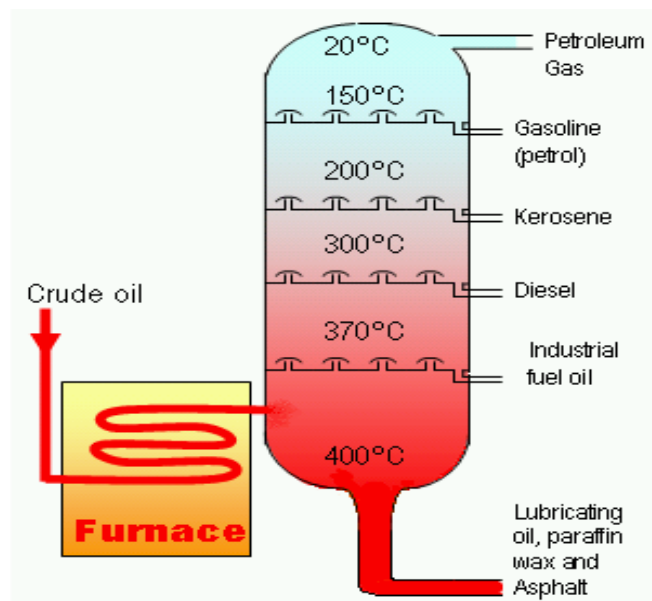


Fig. 4.1

4.2 Fuel types and it's attributes

Kinds of fuels:

- Automobile petrols;
- Diesel oil;
- Kerosen;
- Liquefied petroleum gases— LPG;
- Natural gas— compressed (CNG) or liquid (LNG);
- Alcohols — Methanol, Ethanol (līh), higher alcohols;
- Fatty acids (rapeseed oil acid) and their mixtures with diesel fuel, so called mixed fuels (know under incorrectly name biodiesel);
- Hydrogen;
- exotic fuels - ammonia, nitrometan, dimethyl ether, acetone - butanol mixture.

Requirements of Diesel fuel:

- Matching motor output;
- Quiet;
- Adequate lubricity;

- Fine combustion;
- Useful in different climatic conditions;
- Keeping quality during storage(diesel stability);
- Low emissions.

1. Antioxidants and additives improving the stability of oil

Petroleum diesel fuel is not necessary to stabilize (adity by antioxidant), if it doesn't contains olefins, or if it hasn't be long time stored. During long time storage, but also in vehicle tank and in fuel systém of the engine, where is during circulation oil exposed to high temperature, leads to chemical reactions, during which are forming dissulable materials in oil. There can being resins, if there are olefins. Resins can be created during long time storage at higher temperatures too.

2. Antistatic additives

A discharge of static electricity can cause an explosion of fuel vapor mixtures with air if its composition ranges in values between the lower and upper explosion limits. This danger arises during pumping and transporting of fuel, during refueling and any other manipulations. Static electricity is generated by the movement of the product (pumping, stirring), which has low electrical conductivity, which is typical for deep refined products

3. Deemulgators

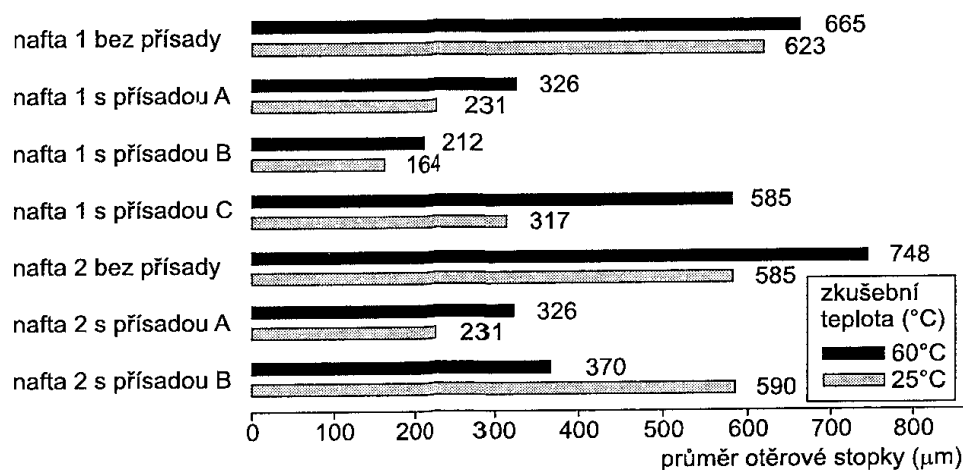
Diesel oil has sometimes light opacity, caused by amused droplets of water, which is very stable. It happens usually at the end of the distribution networks, when it got through several tanks and drainings.

4. Detergent additives to the diesel oil

Additives for fuel stability improve, are suppressing formation of sediments mainly during long time storage, and it can positively changethe speed of engine fuel filter sedimentation. Detergents, both type dispersants and surfactants, are not changing inner stability of fuel, but they are lowering risks, that there will be problems with enging operation caused by clogging of nozzles.

5. Lubricity additives

Deep desulfurization of diesel, reducing end of distilation great content kerosene fraction has resulted in worse lubricity. It concerns mainly so called ecological diesel oil for winter or arctic clima. Therefore, there was included requirement for minimal level of lubricity in EN590.



Obr. 10.4 Výsledky zkoušek mazivosti švédských naft (HFRR)

Fig. 4.2

4.3 Marking PLO within NATO



Fig. 4.3

List of tasks for students:

1. What are the basic characteristics of benzine?
2. What are the basic characteristics of the oil?
3. What are the types of alternative fuels?
4. What is the basic generic range of fuels on the market in the Czech Republic?

5. Why are monitored low-temperature attributes of diesel?
6. What is the meaning of the every symbol for marking PHM?

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T5 Oils, lubricants and fluids

A vehicle transmission, its hydraulic, coolant and brake systems require a wide range of lubricants and fuels, which are designed for a particular specific environment. Setting requirements for attributes of lubricants and operating materials require high expertise not only drivers and operators of military technology, but also to the staff of fuel stores, which are responsible for their proper storage and distribution. The operation of military equipment is characteristic by a wide range of activities and one of the main tasks in the operation of military equipment is also PLO. By its quality and wide range creates one of the fundamental requirements for reliable operation of the equipment. That this statement was also true, it is necessary to responsibly adhere to established principles for handling PLO where it is necessary to focus on their receipt, storage and distribution to equipment. Any reduction in the quality of the PLO to some extent affects the reliable operation of the military equipment. Some signs of deterioration of the quality of fuel we see immediately that we have to solve problems with the equipment, which remained on the road.

5.1 Basic concepts

Additives – Chemicals added to the oil for improving its attributes.

Detergents – additives added to the oil for suppressing high temperature sediments, preventing of corrosion and protecting of engine against corrosion. As detergents are commonly used sulfonates, Alkylphenols or alkylsalicates calcium or magnesium.

Dispersants – added to oils, for keeping solid dirt in suspended state for suppressing formation of sludges, which can block sieve of oil pump, filter or lubricating channels. At excessively formation of dirt can be piston rings baked.

5.2 Determination of lubricants and their production

Functions of oil

- Reduces the friction of moving parts
- Taking heat away
- Clearing inner part of engine
- Protects metal surface of engine against corrosion
- Sealing
- Silencing

Degradation of oil during operation

Engine oil degrades when operating in several ways: The scope and depth of oil degradation is influenced by following factors: okolnosti:

- oxidative stability of the oil, the remaining amount of antioxidants in the oil;
- Remaining amount of lubricating and anti-graze additives;
- Acidity and remain of alcalic reserve of oil;
- Change of viscosity attributes;
- Amount of the mechanical dirt in oil (soot, dust, etc.);
- Content of the fuel in oil, the presence of glycol etc.

5.3 Fluid Lubricants

Viscosity classification of oils

Physical attribute viscosity (do not change with density!) Is one of the fundamental characteristics that must be considered when choosing a suitable lubricant. The viscosity of the lubricating oil (expressing the size of internal friction, and therefore its fluidity) is not a constant value, but depends on environmental conditions. During engine operation is changing temperature and pressure and it's necessary to protect viscosity of oil against its changes.

Index of viscosity

Dependence of viscosity on temperature of the oil is expressed by the so-called Viscosity Index (VI). If value of VI is high, is changing lesser during temperature changes in engine. The viscosity index characterizes the engine oil and is dependent on the type of base oil and viscosity modifier.

Viscous classes and their descriptions and characteristics are standardized. The viscosity grade of oil for motor vehicles are defined by SAE J300 (SAE - Society of Automotive Engineers) viscosity grades for industrial oils ISO VG (ISO - International Organization for Standardization - Viscosity Grade).

Grades of Viscosity

According to use of oils, the oils are divided on all season and summer. All season oils has number mark xxW//yy. Classification is dividing oils by viscosity to six winter grades (0W, 5W, 10W, 15W, 20W, 25W – there is W behind every number, winter) and five summer grades (20, 30, 40, 50, 60).

VI values clearly set out when there is an overall warming of the engine at optimum operating temperature. The coolant heats up after driving about 4 km. The complex warm up will

income after 18 kilometers of driving . This time is clearly influenced by outside temperature, driving style, type of oil, including the technical condition of the vehicle.

API

- Petrol marked by letter "S" (= Service)
- Diesel marked by letter "C" (= Commercial).

The performance level is expressed for the engine type by the next letter (from "A" above) It is true that this is the letter later in the alphabet, the oil is better then. If first specification is "S", oil is mainly for petrol engines, if "C", then it is designed for diesel engines.

For example

SJ/CF – Priority is for petrol engines, usable for diesel engines

CE/SG – Priority is for diesel engines, usable for petrol engines

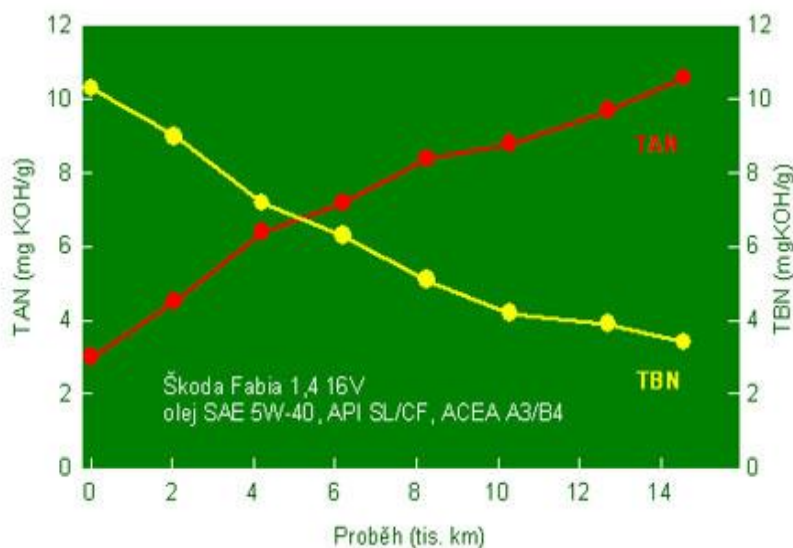


Fig. 5.1

5.4 Plastic Lubricants

Lubricants, together with oil and solid lubricants makes significant group of lubricants for mobile military equipment.

Plastic lubricants are defined according to ASTM (American Society of Testing Materials) as solid up to half liquid product with a thickener scattered in liquid lubricants

Furthermore, they are succesfully used in many other applications, where we can use their attributes, as:

- long re-lubrication and replacement time,
- small demands on operation and maintenance,

- very low consumption of lubricants,
- additional sealing the lubrication points (reduced lubricant leakage and limit the penetration of dirt event. water)

List of tasks for students:

1. What is the proces of oil distilation??
2. What are basic characteristic differences of oil distilation?
3. How are lubricants classified?
4. What is index of viscosity?
5. How are oils evaluated?
6. What is the way of plastic lubricants production?
7. What are basic kinds of plastic lubricants?
8. Evaluation of plastic lubricants

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T6 Refueling vehicles of PLO.

The requirement for security of PLO especially during crisis situations is not possible to complete in the appropriate quality and quantity without the use of automobile tanks. Each unit, where is assumption of operations in field conditions and who own diesel technology has also within the equipment range of vehicles included automobile tanks.

The design and technical and technological equipment must now also comply with all requirements of applicable legislation. In this context, mention may be made especially requirements for operation on public roads in accordance with the ADR (European Agreement concerning the International Carriage of Dangerous Goods), which must be respected even on public roads in the country.

6.1 Determination of tankers

Tankers are in the process of supplying fuel in peace and fight conditions irreplaceable. It is involved in the transport and replenishment of fuel and also for creating a mobile capacity for pumping. In peace conditions, at department, APH can secure part of transport from filling points on rail to storage tank units.

6.2 Basic requirements for AC

Mobility

In fight conditions is required keep throughput of tankers with APH close to throughput of military equipment.

Tatra T-815 6x6 CAP-6

The vehicle is intended to replenish tanks of ground equipment by measured and filtered PLO and oils. It also serves to transport, storage, pumping fuel and heating oil. Tank trucks weighing 11,500 kg is placed on the chassis of Tatra T-815 VP11 20,235 6x6.1R during high cross, which is derived from the basic lorry car VVN. Pump model 100-S-LVN-4 / IV-D-10 is self priming centrifugal horizontal four-speed with mechanical seals. Pump drive is separated from the engine by gear hydraulic motor via a flexible coupling.

Tatra T-815 CAPL-16

Tanker for transporting and filling aircraft fuel, then the transport, storage and pumping fuel. Filling planes can be made with pressure end of 20 meters long hose, but also with classic filling pistol, which has its own hose. Fuel tank is made of fiberglass polyester of thickness 6.5 mm and bottom thickness of 7.5 mm and is divided into three chambers with different volumes. Pump model 100-S-LVN-4 / IV-D-10 is self priming centrifugal horizontal four steps with mechanical seals, and is connected to a motor reduction gear. Another equipment is the pneumatic filling hose winder.

Tatra T-815 6x6 CAPL-16M

Tank truck – filler of air equipment has been designed for filling tanks of aviation technology by aviation oils (kerosene, gasoline). Tank truck meets the requirements of the European Agreement concerning the international carriage of dangerous goods ADR 3, environmental requirements for operation of motor vehicles on public roads EURO III and the specific requirements of military service within the Armed Forces and the armed forces of NATO.

List of tasks for students:

1. What is the specification and classification of vehicles on the PHM?
2. What are the basic requirements and performance and capacity characteristics?
3. What are the types of tanks in AČR?
4. Characteristics and purpose of use of technological elements of the superstructure of AC?
5. System of AC's maintenance – basic species of maintenance and their main objectives of work.

References and further reading:

- [1] MELKES, V., NĚMEC, M. *Cisternové automobily II.* VVŠ PV, Vyškov 1996.
- [2] GAJDOŠ, MEDOVRSKÝ. Čerpadla na PHM I. VVŠ PV. Vyškov. 1987. S 10465/I
- [3] SRNSKÝ. *Příručka pro řidiče cisternových automobilů.* Naše vojsko, Praha. 1998.
- [4] SRNSKÝ a kol. *Příručka pro příslušníky služby PHM.* Naše vojsko, Praha. 1993.
- [5] PHM-4-2. *Cisternový automobil. Převážník na 18 000 litrů.* Praha : Federální ministerstvo národní obrany, 1987.
- [6] PHM-4-4. *Cisternový automobil. Plnič pozemní motorové techniky na 6 000 litrů PH.* Praha : Federální ministerstvo obrany, 1992.

T7 Pumps, flowmeters, dispensers, filtration equipment

The requirement for security of PLO especially during crisis situations is not possible to complete in the appropriate quality and quantity without the use of automobile tanks. Each unit, where is assumption of operations in field conditions and who own diesel technology has also within the equipment range of vehicles included automobile tanks.

The design and technical and technological equipment must now also comply with all requirements of applicable legislation. In this context, mention may be made especially requirements for operation on public roads in accordance with the ADR (European Agreement concerning the International Carriage of Dangerous Goods), which must be respected even on public roads in the country.

7.1 Basics of liquid hydrodynamics

To understand the basic functions of the pump is essential to clarify some basic rules for fluid mechanics. Hydromechanics is part of the mechanics that deals with the balance and movement of the liquid and the interaction of liquids and solids.

Hydromechanics are divided on:

hydrostatic, which explains the conditions of fluids balance and their effects on solid materials in rest;

- Hydrodynamics, are occupied by movement of fluids and their effect on solid materials during relative movement.
- Hydromechanics are used in various fields of engineering, such as pumping equipment, energetics, etc.

Density

The density depends on the composition of the fluid, temperature and pressure. When increasing pressure density rises slightly.

Compressibility

Is ability of the liquid to shrink and swell under pressure. It is characterized by a coefficient of compressibility (delta).

$$\delta = \frac{dV}{V_0 \cdot dp} \quad [\text{Pa}^{-1}]$$

δ - Compressibility, coefficient of compressibility of the liquid [Pa^{-1}]

V_0 - original liquid volume before compression [m^3]

dV - Reducing original volume at pressure increase $[m^3]$

dp - Pressure increase $[Pa]$

Liquids exhibit significant resistance to reducing its volume.

7.2 Pumps

1. Pump flow

It is the amount of fluid that flows through the discharge port of the pump per unit time. According to the method of measurement, we are talking about mass or volume flow. Volumetric flow rate is the volume of liquid flowing through the cross sectional area per unit time. We call it Q .

$$Q = \frac{V}{t} \quad [m^3 \cdot s^{-1}]$$

2. Centrifugal pumps

Pumps are multistage, centrifugal, horizontal, with radial impellers and radial cabinet. They are combined with self-suction stage, which is moved in front of suction unit and it allows independent operation of both parts of pump in one time. Pump is composed from rotor and stator with seals and deposits.

3. Gear pumps

Gear pumps are among the most widespread of rotating hydrostatic pumps. They are used in hydraulic systems, lubrication systems in machinery and equipment as well as major technological pumps in the chemical and petrochemical industry. They are relatively simple design (a minimum of moving parts, virtually driving and driven wheel), have little weight, small dimensions and compact.

4. Piston pumps

Piston pumps are among the oldest types of pumps. The quantity of liquid pumped by pump piston determining the volume created by the movement (stroke) of the piston in the cylinder.

7.3 Flowmeters

They are an important part of the technology at a fuel station. Accurate measurement of the volume of the product, its temperature and continuous volume correction to standard temperature of 15 C is an essential prerequisite for inventory management. Thanks to the integrated water recognition is a system of quality assurance. In combination with the amount released from dispensers can be detected possible leaks. Through the POS system can be monitored and given the amount of losses as telemetry using a highly valuable and versatile

tool for managing storage of fuels and oils. Highly accurate measurement of tank contents has been designed especially for use at petrol stations.

Volumetric flow rate

Volumetric flow rate Q_v denote the volume of fluid which passes through conduit per unit of time (e.g. $\text{m}^3\cdot\text{s}^{-1}$). To determine the volumetric flow rate through the use of differential pressure measurement or calculation of the rate of fluid flow in a pipe of known diameter. We assume, however, that the fluid fills the entire pipe, which may not always correspond to reality. When measuring the flow of liquids is sometimes necessary to perform correction of volume flow to changes in temperature and pressure. For flow measurement of gases and vapors must always perform these corrections due to the compressibility of the flowing medium.

Mass flow rate

Mass flow rate Q_m indicates mass of fluid which passes through the pipe per unit time. For direct measurement, there are two basic methods - flowmeters based on the Coriolis principle and thermal mass flowmeters. Indirectly, the mass flow rate can be calculated from the volume flow and the known values of the density of the flowing fluid ρ :

Total volume - a volume or mass of fluid has passed a certain point of the pipeline for some time. Among the flowmeters that measure the total volume include gas meters and water meters in homes.

List of tasks for students:

1. Characterize basic hydromechanic quantities and basic terms;
2. Explain the meaning of cavitation and its impact on the process of draining;
3. Basic classification of pumps;
4. Explain basic differences between hydrostatic and hydrodynamic pumps;
5. Specify losses in hydrostatic pumps and explain their causes;
6. Specify losses at flow of liquids and explain their causes;
7. Clarify performance characteristic of pumps and its use;
8. Explain principle of main types hydrostatic and hydrodynamic pumps activity.
9. What classification of measured pressures in operation of equipment of PLO is used?

References and further reading:

- [1] GAJDOŠ, MEDOVRSKÝ. *Čerpadla na PHM I. VVŠ PV*. Vyškov. 1987.

- [2] GAJDOŠ, MEDOVRSKÝ. *Čerpadla na PHM II*. VVŠ PV, Vyškov. 1987.
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T8 Refueling vehicles of PLO

The requirement for security of PLO especially during crisis situations is not possible to complete in the appropriate quality and quantity without the use of automobile tanks. Each unit, where is assumption of operations in field conditions and who own diesel technology has also within the equipment range of vehicles included automobile tanks.

The design and technical and technological equipment must now also comply with all requirements of applicable legislation. In this context, mention may be made especially requirements for operation on public roads in accordance with the ADR (European Agreement concerning the International Carriage of Dangerous Goods), which must be respected even on public roads in the country.

Tasks for individual work:

1. What is the specification and classification of vehicles on the PHM?
2. What are the basic requirements and performance and capacity characteristics?
3. What are the types of tanks in AČR?
4. Characteristics and purpose of use of technological elements of the superstructure of AC?
5. System of AC's maintenance – basic species of maintenance and their main objectives of work.

References and further reading:

- [1] MELKES, V., NĚMEC, M. *Cisternové automobily II*. VVŠ PV, Vyškov 1996.
- [2] GAJDOŠ, MEDOVRSKÝ. Čerpadla na PHM I. VVŠ PV. Vyškov. 1987. S 10465/I
- [3] SRNSKÝ. *Příručka pro řidiče cisternových automobilů*. Naše vojsko, Praha. 1998.
- [4] SRNSKÝ a kol. *Příručka pro příslušníky služby PHM*. Naše vojsko, Praha. 1993.
- [5] PHM-4-2. *Cisternový automobil. Převážník na 18 000 litrů*. Praha : Federální ministerstvo národní obrany, 1987.
- [6] PHM-4-4. *Cisternový automobil. Plnič pozemní motorové techniky na 6 000 litrů PH*. Praha : Federální ministerstvo obrany, 1992.

T9 Tanks, dispensers, fuses and armatures

Manipulation with PLO includes whole range of activities, which needs a using of ordered equipment. Right and safe manipulation with PLO appropriate security techniques and tools in a quality working order. Types and composition of equipment is dependent on activity.

When we think about the technical means for handling fuel, we can't find an answer, which century or the period of human development can be described as the starting stage. Crude oil was known many years BC, but it has different names. In the initial period, it was primarily buckets, clay pots and gradual evolution in response to the technical development, which was supported by individual discoveries, this area developed into a modern complex systems for mining, transport, storage and final processing of crude oil, which follow the technical equipment for subsequent handling of the final products derived from crude oil.

List of tasks for students:

1. Which kinds of tanks are used in AČR?
2. What are the basic structural elements of underground and aboveground tanks?
3. What is the system of use and maintenance of the tanks in the AČR?
4. Specify the basic parameters of the system maintenance dispensers.
5. What classification of measured pressures are we using in operation with equipment of PLO?
6. Explain the basic structure and function of the use of fire fuses.
7. How is managed the control of right operation and maintenance of equipment of AČR and PLO?

References and further reading:

- [1] MELKES, V., NĚMEC, M. *Cisternové automobily II*. VVŠ PV, Vyškov 1996.
- [2] GAJDOŠ, MEDOVRSKÝ. Čerpadla na PHM I. VVŠ PV. Vyškov. 1987. S 10465/I
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- [4] SRNSKÝ a kol. *Příručka pro příslušníky služby PHM*. Naše vojsko, Praha. 1993.
- [5] PHM-4-2. *Cisternový automobil. Převážník na 18 000 litrů*. Praha : Federální

ministerstvo národní obrany, 1987.

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Praha : Federální ministerstvo obrany, 1992.

T10 Filter equipment, Imovable infrastructure of PLO

PLO for operation of military equipment needs surveillance, which will keep a good quality. A long time storage can create a dirt in PLO, which can threaten operation of military equipment. Mobility of fight, and supply vehicles needs seriously reliability.

Security of army in peace and fight operations by material, which guarantees its dynamics, mobility and reliability, is main objective of every system of logistics. Fuel, lubricants and operation mass are included in this list of material. The system of fuel use is built on basic principles for holding abilities of army. PLO security in specified time, quantity, area and mainly quality guarantee reliable operation of land military equipment and creates a significant prerequisite for the fulfillment of ambitions realized military activities.

10.1 Dirts in liquids

Dirt in the fuel means any ingredient

- solid,
- liquid,
- Gas state,

that objectively changes the quality parameters of that type of fuel.

Gaseous impurities cause during short-term pollution

- Reduction in pump efficiency,
- misrepresentation of flow meters,

large amount of air can form in the fittings so called steam stopper.

Solid impurities

Solid impurities are formed from different materials. They may be products of corrosion, metal parts, rubber parts aging, aging fuels, paint chips, dust etc..

At solid impurities is necessary to assess their levels of PHM, hardness and dimensions (shape). All impurities has tendency to clog the flow areas in fuel, lubrication and hydraulic systems. In addition, hard dirt may cause a further increase in the number of particles in a liquid to participate in the abrasion fricted components of the process equipment..

10.2 Filters and filter materials

Filter efficiency

It is the amount of collected particulate matter relative to the total amount of the incoming particles to the filter.

$$E = \left(1 - \frac{G_1}{G_2}\right) \cdot 100$$

G1 is the amount of uncaptured particles , G2 is the amount of the incoming particles to the filter.

Expression G1 / G2 is called penetration of filter

Effectiveness varies during the filtering process due to filter clogging particles (see. Chapter 3.1.1 "Non-stationary filtration")

Pressure drop

Expresses resistance of filter against flow of disperse environment. It is the opposite of the permeability of the filter. The objective is to find the filter with high efficiency and low pressure drop. Calculation:

$$\Delta p = p_1 - p_2,$$

p1 is pressure drop in front of filter and p2 behind filter.

The pressure gradient changes during the filtering process due to clogging of the filter trapped particles. Its growth is usually given filter life - either increases in value when no longer be required volume of the dispersion medium transport through the filter, or will damage the filter or decrease efficiency.

Filter lifetime

It expresses the length of the filters can be expressed as the number of particles that the filter is able to capture before there is an increase in the pressure gradient defined (critical) threshold. Life is determined by the speed of the filter clogging and particle concentration upstream of the filter.

Based on the standard EN 799 is defined as "Dust holding capacity":

$$J = E_s \cdot m_p$$

where Es is the middle value of efficiency and mp is the number of particles deposited on the filter until the moment when it reaches a value of 250, or 450 Pa. Knowledge of particle concentration can be estimated the time of life of the filter.

10.3 immovable infrastructure of PLO

Basic terms

- Handling area is an area, where are handled flammable liquids or fuel oil.
- Catching reservoir is reservoir preventing to spill flammable liquids or heat oil escaped from tanks .
- Underground tank is tank, which is covered by soil in prescribed thickness.
- Aboveground tank is a tank that is not covered by a layer of soil in the prescribed thickness or building structures with prescribed thickness.
- Double-walled tank is tank with double jacket the outer shell acts as emergency sump.

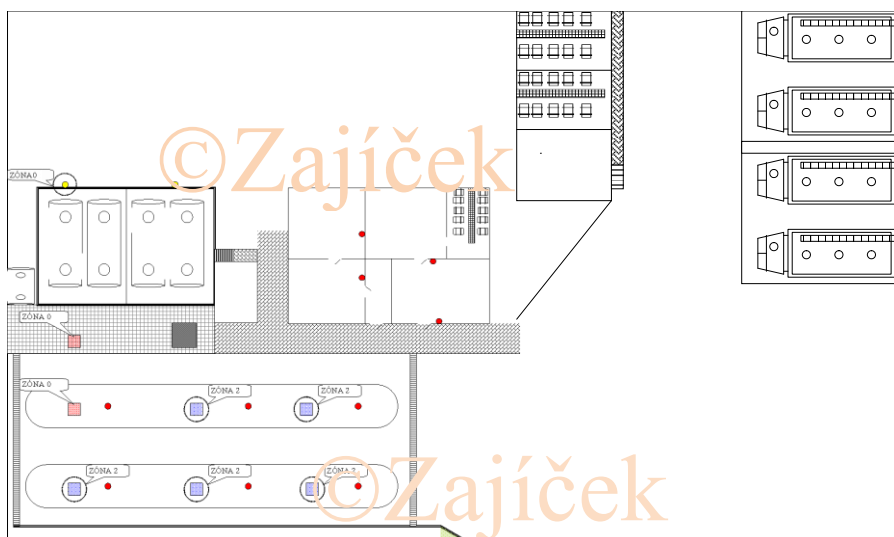


Fig. 10.1

Tasks for individual work:

1. What are reasons of dirt formation in liquids?
2. What are principles for liquid filtration?
3. How are classified filters?
4. How is set efficiency of filtration?
5. Characterize purity of liquids by ČSN ISO 4406?
6. What are recommended codes of PH in distribution chain?
7. Characterize six basic generally binding documents, which are editing requirements for PLO quality?

8. What is basic classifiing of PLO warehouse objects?
9. Specify maintenance periodes of PLO warehouse objects and equipment

References and further reading:

- [1] MELKES, V., NĚMEC, M. *Cisternové automobily II.* VVŠ PV, Vyškov 1996.
- [2] GAJDOŠ, MEDOVRSKÝ. Čerpadla na PHM I. VVŠ PV. Vyškov. 1987. S 10465/I
- [3] SRNSKÝ. *Příručka pro řidiče cisternových automobilů.* Naše vojsko, Praha. 1998.
- [4] SRNSKÝ a kol. *Příručka pro příslušníky služby PHM.* Naše vojsko, Praha. 1993.
- [5] PHM-4-2. Cisternový automobil. Přepravník na 18 000 litrů. Praha : Federální ministerstvo národní obrany, 1987.
- [6] PHM-4-4. Cisternový automobil. Plnič pozemní motorové techniky na 6 000 litrů PH. Praha : Federální ministerstvo obrany, 1992.

T11 Organization and operation of classes of supply III

PLO for operation of military equipment needs surveillance, which will keep a good quality. A long time storage can create a dirt in PLO, which can threaten operation of military equipment. Mobility of fight, and supply vehicles need seriously reliability.

Security of army in peace and fight operations by material, which guarantees its dynamics, mobility and reliability, is the main objective of every system of logistics. Fuel, lubricants and operation mass are included in this list of material. The system of fuel use is built on basic principles for holding abilities of army. PLO security in specified time, quantity, area and mainly quality guarantee reliable operation of land military equipment and creates a significant prerequisite for the fulfillment of ambitions realized military activities.

11.1 Organization of Classes III

General principles of fuel store management(ČS)

Operating represents difficult and dynamic relationship between these factors:

- Attributes of chief;
- Attitudes, needs and other personality traits controlled by members of social groups (fuel store)
- social, economical and legislative environment.

Principles of Command and Control

- Sure competence of commander;
- acquiring and analyzing information needed for decision-making and management;
- Command and operating through goals;
- consistency, determination and perseverance.

Commander-manager, as every manager in the organization, is responsible for the effective achievement of objectives and the efficient use of its available resources, relying on the knowledge of their colleagues.

Fuel storage is part of a logistics company, which is incorporated into a supply platoon. Commanding the warehouse is clearly controlled by the company commander of logistics through the supply platoon commander. Within the organization of the activity of the fuel store is also necessary to perceive professional management, which consists primarily in respect of regulations and instructions of the managing authority of Classes III, which is symbolized by blue colour in the picture.

Within the organization of the activity of the fuel store is also necessary to perceive professional management, which consists primarily in respect of regulations and instructions of the managing Classes III.

Warehouse Management POL by command path

The warehouse management system have a crucial role also commanders of units in the structure of the fuel store belongs. Commanders to ensure the protection of property, are obliged in their powers and responsibilities timely and thorough control to prevent possible damage to property. Commanders overseeing the proper maintenance of the property to ensure compliance with standards and lifetime consumption of assets.

11.2 Main tasks in Classes III

- process and update documentation control of fuel store;
- implement controls the fuel store and establish corrective measures;
- A monthly inventory of fuel;
- organize and control the acceptance of shipments of fuel;
- establish a system of compliance with quality fuel in storage;

11.3 Planning documentations in Classes III

Operating Rules of the fuel store

Is the main document for the operation of the warehouse operator. There are recorded correct operating procedures for each task.

Operating Rules warehouse usually contains: according to CSN 75 3415 (objects for handling oil products and their storage) point 3.9 and other specifications stipulated by the Law of Waste. RX unit commander approves the (equipment).

Listing of emergency rule

This is a basic set of activities that must be observed when disposing of oil spills and accidents. Vševojsk-16-7.

- Listing of emergency rule contains.
- Immediate measures (specify any variants warehouse activities, which may lead to accidental leakage.)
- Follow-ups
- Emergency equipment cooperative or sets stored in the warehouse.

11.4 Controls in Classes III

- compliance with OSH, and environmental protection regularly
- maintenance materials and technological equipment warehouse regularly
- within the system of fuel quality compliance regularly
- inventory of PLO 1x per month
- Fuel supply store set 1x per month

Fuel stores are devices that are generally used by the department to collect waste oil. Most of these wastes fall into the category of "hazardous waste". In this area it is necessary to proceed in accordance with applicable legislation. First, it is necessary to develop the "Decree 383/2001 on details of waste management."

Containers allocated to each waste must be marked with an identification sheet for hazardous waste.

Contaminated fuel, liquid and solid oil waste oil waste (sorption materials, containers of oil substances) collected and disposed of as waste.

List of tasks for students:

1. What is organization structure in classes of supply 3.0 in AČR?
2. How is realized operation of PLO warehouse at independent service?
3. Characterize basic planning documents in classes of supply 3.0?
4. Specify control activities of classes of supply 3.0 managers by time of realization?

References and further reading:

AJP - 4.7, Spojenecká společná doktrína pro ropné produkty, 1. vydání. Brussels: NATO
[1] Standardization Agency, 2013.

[2] BRIŠ, P., *Management kvality*, Zlín: Univerzita Tomáše Bati ve Zlíně, 2005. ISBN 80-7318-312-9.

[3] Normativní výnos MO č. 100/2013, *Kontrolní systém a kontrola jakosti pohonných hmot a maziv v rezortu Ministerstva obrany*, Praha: Ministerstvo obrany, 2013.

[4] *Směrnice. Zásady pro tvorbu a udržování zásob majetku státu v právu hospodaření*

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- [5] MO GŠ, *Odborné pokyny, zvláštnosti hospodaření s majetkem majetkového uskupení 3.0 v rezortu MO*, č.j. 6127-60/2004/DP-3042, Praha: MO, Sekce podpory, 2009.
- [6] Vševojsk-1-1, *Povinnosti funkcionářů a jednotek pozemního vojska*, Praha: Československá armáda, 1993.

T12 Management of documentation in classes of supply 3.0

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12.1 Planning documentation

Compilation in the Plan of the department

In the planning of tasks CLASSES III is necessary to pay particular attention to the tasks that are carried out in cooperation with other units, especially with the company of logistics, which is incorporated Fuel Store. It is essential to specify the exact time these activities in the "Plan of the department for the training year (VR)".

These include the implementation of monthly fuel inventory governing body CLASSES III, which is also required the presence of the fuel store workers.

Procedure for acceptance of PH

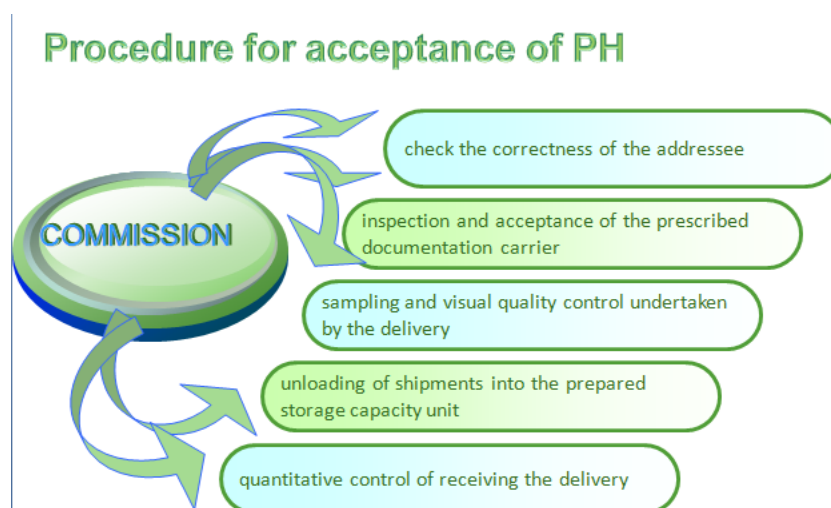


Fig. 12.1

12.2 Evaluation documentation

Delivery waybill - the person responsible for accepting the shipment waybill confirm delivery after completion of the necessary tasks and one copy will assume as part of their own documentation.

Time card - The person responsible for accepting the shipment is confirmed time card after fulfilling the prescribed acts and takes its own copy as part of the documentation.

Bottling ticket - serves to control the discharged amount of PLO in the tank.

Dispensing fuel into a land motor technology own department

- take over from the driver's command to use (the Book of operation of military technology), check its validity;
- verify information about the driver and motor technology;
- refill diesel technology required kinds of fuel

12.3 Records of PLO

At the end of the month the asset manager 3.0 MU (Chief of service of fuel will make an inventory of stocks of fuel (fuel-Vševojsk-1-1 and 1-1). The actual inventory level must be the same as the balances in each column for each type of fuel.

In the event that the actual situation is different with registration, perform the alignment states as follows:

1. Surpluses - exposure to accounting document for receiving fuel into evidence.
2. Schodky- exposure to accounting document for serving as an irregularity and solve such damage.

List of tasks for students:

1. Characterize planning documents of classes of supply 3.0, when and how much are processed?
2. What are approaches for realization of calculation expected year consumption of PLO of department ?
3. How is monitored consumption of PLO of department?
4. Specify accounting moves of PLO properties and when they are realized?

References and further reading:

- [1] AJP - 4.7, *Spojenecká společná doktrína pro ropné produkty*, 1. vydání. Brussels: NATO Standardization Agency, 2013.
- [2] BRIŠ, P., *Management kvality*, Zlín: Univerzita Tomáše Bati ve Zlíně, 2005. ISBN 80-7318-312-9.
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- [5] MO GŠ, *Odborné pokyny, zvláštnosti hospodaření s majetkem majetkového uskupení 3.0 v rezortu MO*, č.j. 6127-60/2004/DP-3042, Praha: MO, Sekce podpory, 2009.
- [6] Vševojsk-1-1, *Povinnosti funkcionářů a jednotek pozemního vojska*, Praha: Československá armáda, 1993.

T13 Management documentation material of class III.

POL intended for use ground military equipment require continuous monitoring, which will be oriented to maintain the specified quality. Long-term storage of POL creates impurities. These impurities can endanger the service of military equipment. Mobility combat and supply vehicles requires reliability in crisis situations.

The main task of individual logistics systems is ensuring the material for any army in peacekeeping and combat operations, which guarantee dynamics, mobility and reliability for military. We must include Pohonné hmoty, maziva a provozní hmoty to this list material. The fuel supply is built on the basic principles to maintain the ability of the armed forces. Ensuring of POL within the specified time, the amount in the appropriate space and above the required quality guarantee reliable operation of ground military technology creates a significant prerequisite for the fulfillment of ambitions realized military activities.

13.1 Planning documentation

In the planning of tasks CLASSES III is necessary to pay particular attention to the tasks that are carried out in cooperation with other units, especially with the company of logistics, which is incorporated Fuel Store. It is essential to specify the exact time these activities in the "Plan of the department for the training year (VR)".

These include the implementation of monthly fuel inventory governing body CLASSES III, which is also required the presence of the fuel store workers.

13.2 Evaluation documentation

Dispensing fuel into a land motor technology own department

- handle basic documents;
- justify the ways of moving material;
- refill diesel technology required kinds of fuel

13.3 Evidence of PLO

- handle basic documents;
- justify the ways of moving material;
- refill diesel technology required kinds of fuel

Tasks for individual work:

1. Describe the planning documents material class III., when and how large range are processed?
2. What kinds of approaches to realization the calculation of the expected annual consumption of POL unit do you know?
3. What kinds of approaches to realization monitoring consumption of POL unit do you know?
4. Specify the financial movements POL and when are this realized?

Literature:

- [1] AJP - 4.7, *Spojenecká společná doktrína pro ropné produkty*, 1. vydání. Brussels: NATO Standardization Agency, 2013.
- [2] BRIŠ, P., *Management kvality*, Zlín: Univerzita Tomáše Bati ve Zlíně, 2005. ISBN 80-7318-312-9.
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T14 Principles for the inventory of fuels – disposals

The Czech Army to perform tasks, which for the Czech Army resulting from legislation and tasks, which perform for providing training members of the Czech army in peacetime, needs material, which belongs to the state. Management with state property needs rules, which are defined in legislative documents and in internal regulations. Their main target is orientation and management activities for effective treatment with confide asset. For optimal achieving target set in management with assets are established control mechanisms, their target is monitoring at regular intervals the actual state of the asset. His physical condition, efficiency of use, quality of maintenance and appropriate methods of storage are controlled. The most important control mechanism in the area of asset management is the annual inventory of asset.

Inventory is among the main tasks of the unit. The content and scope of inventory affects the performance of the tasks of the members of the unit. Some people are in active inventory and they are in some committee, which makes inventory. Other members are not in commissions, but they are prepare asset for inventory. They have this asset for performing their duties and other specified tasks.

14.1 General principles of inventory

Basic terms

Inventory = means the sum of measures and activities to determine the actual status of all assets and liabilities and verify that determine the actual state corresponds to the state of assets and liabilities in their accounts and additional (material) records.

Stock-taking = means that part of the inventory. It is a custom to determine the actual state of assets and liabilities on a certain date. Inventory ends with drawing up the inventory list.

Inventory listing = means conclusive accounting entry that records among other states actually recorded assets and liabilities.

Inventory difference = is a difference between the real and financial condition (surplus, deficit or deficit on cash), which can not be substantiated by an invoice.

Materially responsible person = is a civilian employee with whom an agreement was reached on the responsibility to protect values.

The preparatory period

The goal of the preparatory period of inventory is to prepare an inventory for personnel, administrative, physical and technical aspects. Before starting the preparatory period shall commander ordered a cost center to conduct an inventory, in which at least provides: období průběhu inventarizace;

- the date on which captures inventory assets, receivables and payables;

- type and method of inventory;
- the composition of the inventory committee (if necessary Sub-Committee) and the identification of the person responsible for coordinating with the tax office;

14.2 Preparation of documentation

Workbook of Commission

After performing physical inventories in each fuel stores comparison is made of the physical state with the state registration. In case a physical state is lower than the records, it is necessary to proceed to the calculation of natural decreases.

Methodical approach of tanks measuring

- measure the temperature of fuel;
- specific control of rods (check whether specific rod starts to really zero);
- in the expected level interval level of fuel in [cm] chalk mark specific rod (fuel-soaked chalk facilitates more accurate readings);
- specific rod slowly start measuring and fitting tank after reaching the bottom quickly pull rod density and subtract from scale readings;

14.3 Inventory of PLO

Zjištění opravných hodnot naměřených PH v závislosti na teplotě

Při měření byla naměřena teplota u podzemní nádrže s BA 7°C. Měřením bylo zjištěno množství PHM ve výši 12.200 litrů. Teplotu 7°C je nutné přepočítat na 15°C. Opravná hodnota, kterou budeme hledat v tabulkách předpisu PHM-1-2 v příloze 9 je 8°C (rozdíl mezi 7°C a 15°C).

Naměřené množství si rozdělíme na následující hodnoty

10.000 litrů	88 litrů
2.000 litrů	18 litrů
200 litrů	2 litry
12.200 litrů	108 litrů

Použít tabulky pro opravné hodnoty BA

Tabulka 1
(k příloze 9)

Opravné hodnoty objemu pro benzín

Při rozdílu teploty měřené a referenční v °C (referenční 15 °C)

Naměřená teplota v °C	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°
7000	8	15	23	31	39	46	54	62	69	77	85	92	100	108	116	123
8000	9	16	24	32	40	48	56	64	71	79	87	95	103	111	119	126
9000	10	17	25	33	41	49	57	65	73	81	89	97	105	113	121	128
10000	11	18	26	34	42	50	58	66	74	82	90	98	106	114	122	129
11000	12	19	27	35	43	51	59	67	75	83	91	99	107	115	123	130
12000	13	20	28	36	44	52	60	68	76	84	92	100	108	116	124	131
13000	14	21	29	37	45	53	61	69	77	85	93	101	109	117	125	132
14000	15	22	30	38	46	54	62	70	78	86	94	102	110	118	126	133
15000	16	23	31	39	47	55	63	71	79	87	95	103	111	119	127	134
16000	17	24	32	40	48	56	64	72	80	88	96	104	112	120	128	135
17000	18	25	33	41	49	57	65	73	81	89	97	105	113	121	129	136
18000	19	26	34	42	50	58	66	74	82	90	98	106	114	122	130	137
19000	20	27	35	43	51	59	67	75	83	91	99	107	115	123	131	138
20000	21	28	36	44	52	60	68	76	84	92	100	108	116	124	132	139

Fig. 14.1

Methodical approach conversion volume of fuels depending on the temperature :

PH Inventories are recorded and charged based on a conversion accounts temperature + 15 ° C. Conversion to PH accounting is performed at a temperature of containers from 250 liters above.

To convert the volume depending on the temperature is determined by the temperature of 15°C. To determine the correction value is the difference in the measured actual temperature fuel to 15 °C. If the temperature is below 15 ° C, temperature adjustments are added to the measured actual amount of fuel. If the actual temperature is higher correction values are deducted.

Requirements for dip table

The quantity of fuel in the tank is generally measured by the measurement rods, which are indicated by the values in the linear scales (cm).

The individual tanks for fuel are handled dip tables. Tables are used to convert the measured values in longitudinal degrees on volume [I]. Dip chart must be authorized by the company that carries litering of tanks and must be verified by the superior level. At each tank must be a separate dip table.

Tasks for individual work:

1. Explain importance and target inventory.
2. Explain the basic concepts.
3. Explain the basic structure inventory in the Czech Army in periods and content of each period in the section inventory material of class III.
4. Do you know some kinds of inventory in the Czech Army?
5. Characteristic of the basic documents held or processed during the inventory material of class III.
6. Explain the methodological proces of finding real status PH in tanks.
7. Describe the procedure for solving inventory differences.

References and further reading:

- [1] *Směrnice následná řídící kontrola hospodaření s majetkem státu, Čj. 285/2009-3042*, Praha: Ministerstvo obrany, 2009.
- [2] *Metodické pokyny pro nakládání s nepotřebným movitým majetkem státu, čj. 6127/1/2004-3042*, Praha : MO ČR, 2005.

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- [4] RMO 47/2013, *Předcházení škodám a řešení škod na majetku státu v působnosti Ministerstva obrany*, Praha: MO AČR, 2013.
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T15 Basics for inventorying of PLO – natural decreases

AČR for the fulfillment of objectives needs material, which belongs to the state. State Property Management requires rules that are defined in legislative documents and internal regulations, whose main goal is manage handling with entrusted to them. For optimal reach of goal in managing with property are made control mechanisms, whose goal is to monitor real state of property. It's controlled by physical condition, utility usage, quality of maintenance and ways of storage. The most important control mechanism in the field of property management, is the annual inventorying of property.

Inventorying is one of the main objectives of department. Either one are members of committee, whose is making inventorying. Other ones, who are not in committees, are preparing items for inventorying.

15.1 General principles of inventory

Example

When measuring the temperature measured at the underground tank with BA 7°C. By measuring the amount of fuel was found in the amount of 12,200 liters. 7°C temperature must be recalculated at 15°C. The correction value, which we will seek redress in tables 8 ° C (difference between 7°C and 15°C).

The measured quantity is divided to the following values

determining the quantity	correction value
10.000 litres	88 litres
2.000 litres	18 litres
200 litres	2 litres
12.200 litres 108 litres

15.2 Preparation of documentation

Methodical approach of tanks measuring

- measure the temperature of fuel;
- specific control of rods (check whether specific rod starts to really zero);
- in the expected level interval level of fuel in [cm] chalk mark specific rod (fuel-soaked chalk facilitates more accurate readings);

- specific rod slowly start measuring and fitting tank after reaching the bottom quickly pull rod density and subtract from scale readings;

15.3 Inventory of PLO

Methodical approach conversion volume of fuels depending on the temperature:

PH Inventories are recorded and charged based on a conversion accounts temperature + 15 ° C. Conversion to PLO accounting is performed at a temperature of containers from 250 liters above.

To convert the volume depending on the temperature is determined by the temperature of 15°C. To determine the correction value is the difference in the measured actual temperature fuel to 15 ° C. If the temperature is below 15 ° C, temperature adjustments are added to the measured actual amount of fuel. If the actual temperature is higher correction values are deducted.

Standards of natural decreases

NORMY PŘIROZENÝCH ÚBYTKŮ PLO SNAŽOVANÍ PH				
Druh PHM	Podmínky uložení PHM (typ skladu)	Roční období (měsíce)	Doba uložení v měsících	Norma přirozeného úbytku
Benzín automobilový a letecký	V nadzemních nádržích bez tepelné izolace a v malých obalech uložených na volném prostranství	IV-IX X-III	6 6	0,75 0,40
	V nadzemních nádržích s tepelnou izolací a v malých obalech uložených v povrchových skladech	IV-IX X-III	6 6	0,50 0,25
	V podzemních nádržích a malých obalech uložených v podzemních skladech	IV-IX X-III	6 6	0,25 0,20
Petrolejí letecký a nafta motorová	V nadzemních nádržích bez tepelné izolace a v malých obalech uložených na volném prostranství	IV-IX X-III	6 6	0,25 0,15
	V nadzemních nádržích s tepelnou izolací a v malých obalech uložených v povrchových skladech	IV-IX X-III	6 6	0,15 0,10
	V podzemních nádržích a malých obalech uložených v podzemních skladech	IV-IX X-III	6 6	0,12 0,05

Fig. 15.1

Decreases of PLO

When you determine the difference between the actual quantity PLO measured flow meter automobile tanks and declared amount on the delivery consignment note (PLO volume issued on receipt form from the flow of truck tankers less than indicated on the delivery status of the consignment note) the beneficiary performs depreciation tolerance meter automobile tanks according to ČSN 25 7503 up to 0.5% of the actual quantity supplied PLO.

Measurement of underground tanks after unloading from PLO AC (15-20 min after unloading shipments), was an increase in the volume of PH only about 11,998 liters

Workbook of Commission

Přehled a uložení majetku zjištěného při inventarizaci skladu PHM k											
Druh PHM	Hlavaí sklad PHM										
	nádrže	Místnost 5,7,8,9	Místnost 4	BOX 1	BOX 2	BOX 3	BOX 4	ŠŽ VVM	Skutečný stav	Evid. stav	Rozdíl
BA-95	15 807		100					45	15 952	15 968	-16
NM-35	36 899							105	37 004	37 057	-53
RUBIA 15W/40					1 200				1 200	1 178	22
OT 10W/30					800				800	778	22

Fig 15.2

List of tasks for students:

1. Explain mean and goal of inventorying.
2. Characterize basic terms.
3. Clarify basic classification of inventorying in the AČR by the period and the content of the period.
4. What are kinds of inventorying in AČR?
5. Characterize documents managed during classes of supply 3.0
6. Explain methodical advance of real state of PH in tanks discovering.
7. Clarify advance of inventorying different solving .

References and further reading:

- [1] *Směrnice následná řídicí kontrola hospodaření s majetkem státu, Čj. 285/2009-3042*, Praha: Ministerstvo obrany, 2009.

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- [4] RMO 47/2013, *Předcházení škodám a řešení škod na majetku státu v působnosti Ministerstva obrany*, Praha: MO AČR, 2013.
- [5] RMO 48/13, *Hospodaření a nakládání s majetkem v působnosti Ministerstva obrany*, Praha: Ministerstvo obrany, 2013.

T16 The organization of POL warehouse – management documentation

Fuels are in the category of dangerous substances, which can have a significant impact on human health and environment. Therefore we must manipulate with dangerous substances responsibly and we must respect possible negative consequences, which may occur in the event of an explosion, fire or leakage into water or soil.

The largest amount of handling with POL is implemented in warehouses with POL, where are mainly stored substance pumped and stored. These handling operations need to secure especially suitable facilities and equipment that will meet the strict safety requirements defined by generally binding legal regulations. During the operation of these devices, it is also necessary to lay emphasis on maintenance, which have an important role to periodic statutory inspection tours.

POL storage is among one of the most important and longest stage of material handling. For this reason it is necessary on this issue give particular attention in maintaining the quality of POL, so that in the end after a certain storage time given quality POL without the slightest disruption quality.

Warehouse management and handling systems are files of operational, organizational and material resources. They are used for storage and handling with POL.

The basic meaning of warehouse management is an essential material and technical potential, which ensures the smooth filling.

In the 90 years of the opening of the export and import policy of the Czech and Slovak Federative Republic and later the Czech Republic began in our country to build a new filling stations. These filling stations were equipped with new and modern technologies focused not only on superior customer service, but also more comfortable and safer working employees. In connection with the approaching legislation to modern European and later the EU requirements, attention has been focused primarily on technology, which reducing environmental risks. These risks were associated with the operation of the filling station (double-shell tanks, the maximum filling level monitoring, vapor hydrocarbons, roofing handling areas and their impervious embodiment, etc.).

The penetration of digitization in all industry also could not avoid the operation of filling stations. They are digitized flow meter and counter dispensers, level measurement, control valves pipes, are creating new software management systems, which substantially simplifies the control and the ability to check fuel level.

The claims were later raised to the filling stations operator for introducing new mandatory operational documentation.

16.1 General principles of management of the fuel store

Incorporating a fuel warehouse at logistics company

Fuel storage is part of a logistics company, which is incorporated into the supply platoon. Imperiously is clearly controlled warehouse logistics company commander through the platoon commander supply. Within the organization of the activity of the fuel store is also necessary to perceive professional management, which consists primarily in respect of the Regulations and Guidelines managing authority CLASSES III, which is symbolized by the figure in blue. As a result of this procedure in this case has an important position and the interaction between different control elements, which ensures the prevention of futures and tasks collisions.

Warehouse Management PHM by command path

The warehouse management system also have a crucial role commanders into whose structure Tankfarm belongs. In order to ensure the protection of property commanders are required in their powers and responsibilities timely and consistent control to prevent possible damage to property. Commanders overseeing the proper maintenance of the property, in order to ensure compliance lifetime consumption and property. By organizing technical and metrological support to prevent premature wear or deterioration state of the managed assets, or limit the scope and intensity of the resulting devaluation of its repair or reconstruction or modernization.

16.2 The functions and objectives of the fuel store

Responsibilities of the managing authority CLASSES III

- process and to update management documentation of fuel store;
- implement controls of the fuel store and establish corrective measures;
- A monthly inventory of PLO;
- organize and control the acceptance of shipments PLO;
- establish a system of compliance with quality fuel in storage;
- plan and conduct professional training of the fuel store members;

Requirements for Fuel Store

In accordance with the fulfillment of the basic functions of a fuel warehouse and structure matyerial which is handled here, the warehouse meet the essential requirements in the following categories :

- BOZP
- Environment
- fire protection
- combat readiness

The location of the fuel store department

Warehouse operates a land motor technology. Usually incorporated in the permanent parks military equipment in accordance with the technological treatment procedure motor technique. This option also allows you to secure the security guards through the Supervisory park service military equipment.

With regard to security measures and measures to protect the environment is appropriate that all individual parts warehouse were concentrated in a single area.

Functions of warehouse

- Receipt PLO PKP;
- Fuel storage PKP (operating liquids and gases) including maintenance provided supplies and maintaining quality;
- material finish - mixture preparation;
- distribution PHM PKP;
- keeping records PHM PKP;
- MPACT collecting oil (waste oil origin or waste contaminated with oil substances).

16.3 Environmental, fire, health and safety measures

- sufficient space for material handling;
- adequate sanitation for warehouse operation;
- adequate and appropriate equipment protection equipment with valid certificates;
- applicable periodic inspection tours of technical equipment in specified periods;
- professionally prepared and health and safety measures regularly trained staff.

The requirements in the field of environmental protection

- using the latest technological equipment not to allow leakage of fuel out of the area for storing and pumping PHM;
- installation of heat recovery units and its continued operation during refilling diesel technology and the filling of the tank truck;
- equipment in underground tanks functional signaling a maximum fill level of emergency;

Requirements for fire protection

- prescribed material means of fire protection and a sufficient number including their corresponding placement and functionality;
- vent pipes underground and aboveground tanks topped with fuse;
- Equipped with appropriate material designed for hazardous explosion hazard;
- processing and storage of relevant documents processed within the specified range in accordance with generally binding legal regulations;

16.4 System of inspections and maintenance

Tech. Equip. Of tanks

- Fill valve
- dispensing valve
- measuring armature
- signaling tankful (3 levels)
 - minimal
 - maximal
 - Wrecking
- drain valve

Tank cleaning

To ensure the quality of PLO and lubricants performs regular tank cleaning, tank trucks and trailers, transportable tanks and fuel tanks constant fuel depots

Underground tanks warehouses

- Automobile PH 3-5 years

Tanks AC

- 1x per 6 months

List of tasks for students:

1. Where is usually located warehouse with POL in the unit and why?
2. Functions and tasks of the warehouse with POL?

3. Do you know the different parts warehouse with POL.
4. Do you know the basic structural elements of underground tanks?
5. What are the basic structural elements of underground tanks?
6. For what purpose is intended display device interlayer space and on what principle it works?
7. What is the purpose of a vapor system and which has degree?
8. Describe the each phases of vapor hydrocarbons.
9. Describe the distribution and determining pipeline in warehouses with POL?
10. Describe basic maintenance activities in the warehouse with POL.
11. Specify inspection tours set for warehouse with POL.

References and further reading:

- [1] Zákon 67/2001 O požární ochraně
- [2] Vyhláška 246/2001 O stanovení podmínek požární bezpečnosti
- [3] Zákon 254/2001 Zákon o vodách
- [4] Zákon 356/2003 Zákon o chemických látkách a chemických přípravcích
- [5] Vyhláška 231/2004 Podrobný obsah bezpečnostního listu
- [6] Zákon 185/2001 Zákon o odpadech
- [7] Vyhlášku 383/2001 O podrobnostech nakládání s odpady
- [8] Zákon 381/2001 Katalog odpadů ve znění pozdějších předpisů
- [9] ČSN 65 0201. Hořlavé kapaliny – provozovny a sklady
- [10] ČSN 65 0202. Hořlavé kapaliny plnění a stáčení, výdejní čerpací stanice
- [11] ČSN 33 2030. Bezpečnost strojních zařízení pro vyloučení od nebezpečí statické elektřiny
- [12] ČSN 75 3415. Objekty pro manipulaci s ropnými látkami a jejich skladování
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- [16] *EKOoil - Vložkování nádrží* [online]. Olomouc: Firma Pavel Bureš - EKOoil, 2006, 1. 4. 2010 [cit. 2010-04-05]. Dostupný z WWW: http://www.ekooil.cz/index.php?action=show&id_java=11-81&id=18
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T17 Operation efficiency of GFV

An example of evaluating the performance of the public sector at the highest national level, the report by the World Health Organization World Health Report 2000 (WHO 2000). [1] In this report, the research team evaluated the effectiveness of health systems in individual countries. Published chart created great media attention and considerable critical acclaim. Chart created a new wave of interest about efficiency of health care. The example shows that managers at all levels of management in the private and public sectors are forced to make maximum use of the resources that are available. Competition threatens effectively managing companies in the private sector. In the public sector amplifies the control of the state [2] and every manager of public organizations should feel responsible for the efficient use of resources, which are obtained from the contributions of taxpayers.

Efficiency is explained by a number of definitions. Jablonský J. (2004) defines efficiency as the ratio of outputs that review unit produces, and input that is consumed in the production. Each unit is characterized by a set of input and output characteristics of the numerical. The term production unit while we generally understand unit that produces an output whose production consumes some inputs. It is a homogeneous unit, performing the same or similar activity. [2]

Fiala J. (2002) states that the effectiveness (efficacy - the ability to do things right) indicator of the performance of the production system. Efficiency refers to the transformation process and describes the relationships between inputs and outputs. Efficiency refers to the production of the desired number of outputs in the desired quality with a minimum number of inputs. [3]

Friedman D. (1990) situation is efficient if it can not improve. If there is no possible situation that would have been better. [4]

17.1 Operational efficiency

Efficiency is explained by a number of definitions.

Jablonský J. (2004) defines efficiency as the ratio of desired outputs, which produces review unit, and input that in this production consumes.

Each unit is thus characterized by a set of input and output of numerical characteristics. The term production unit case can generally understand that forms an output whose production consumes some inputs. It is a homogeneous unit, performing the same or similar activity.

Evidence vehicle operating costs

Evidence of operating costs must be kept to an individual vehicle. This means that each cost item recorded in the accounts must include the identification of the vehicle (registration plate or vehicle code).

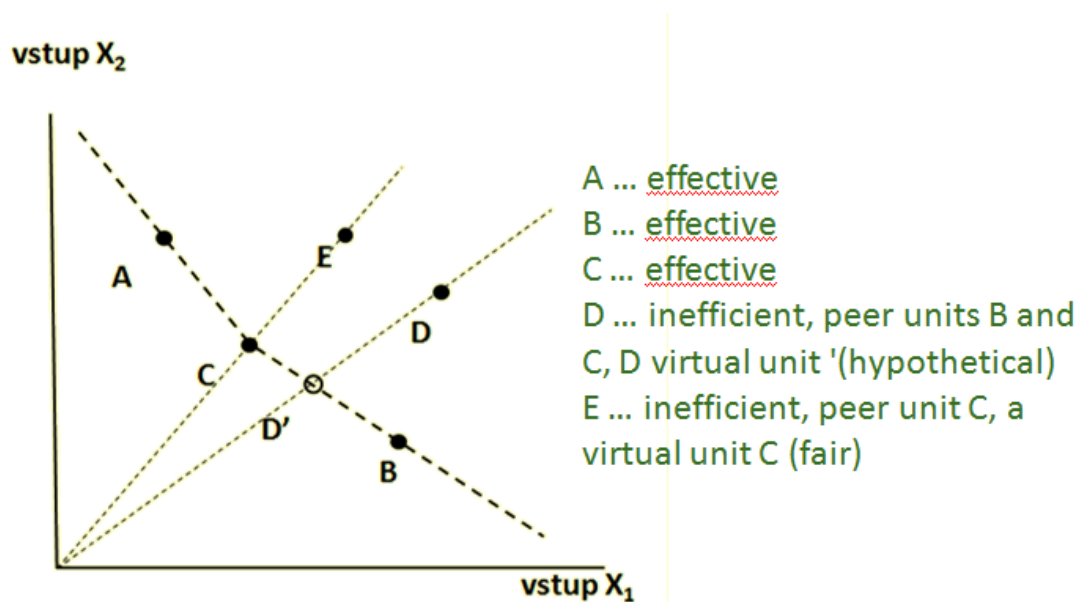
If the cost item binds to multiple vehicles or concerns Corporate Governance (ie., That is not related to any specific vehicle), to include the so-called overheads. Total expenses were then divided on individual vehicles.

Reserves in the process of checking drivers, driving the economy and administration

- Dispatchers have no direct control over drivers
- drivers do not drive the economy established with regard to fuel consumption
- it is not possible to prove theft of PLO
- the inability to compare filled up vs evidenced by the amount of fuel
- bug tracking engine at idle, heating and complete timesheets drive

17.2 Application of new tools

DEA method



Writing assessment model, production units



$$U_1 = \frac{u_1 y_{11} + u_2 y_{21} + \dots + u_n y_{n1}}{v_1 x_{11} + v_2 x_{12} + \dots + v_m x_{m1}} = \frac{\sum_{i=1}^n u_i y_{i1}}{\sum_{j=1}^m v_j x_{j1}}, \quad \leq 1$$

$$U_2 = \frac{u_1 y_{12} + u_2 y_{22} + \dots + u_n y_{n2}}{v_1 x_{12} + v_2 x_{22} + \dots + v_m x_{m2}} = \frac{\sum_{i=1}^n u_i y_{i2}}{\sum_{j=1}^m v_j x_{j2}}, \quad \leq 1$$

.....

$$U_k = \frac{u_1 y_{1k} + u_2 y_{2k} + \dots + u_n y_{nk}}{v_1 x_{1k} + v_2 x_{2k} + \dots + v_m x_{mk}} = \frac{\sum_{i=1}^n u_i y_{ik}}{\sum_{j=1}^m v_j x_{jk}}, \quad \leq 1$$

Kde:

u_{ik} a v_{jk} = jsou individuální váhy jednotlivých vstupů a výstupů pro hodnocené jednotky
 U = produkční jednotka.

Fig 17.1

Define the inputs and outputs for evaluating supply platoon



vozidlo	označení jednotky	vstupy				výstupy		
		pořizovací cena [Kč]	spotřeba PH na 100 km [l]	náklady na 1. servisní kontrolu [Kč]	náklady na 2. servisní kontrolu [Kč]	ložná plocha [m ²]	maximální roční přepravní kapacita [m ³]	počet km do servisní odřezky [km]
IVECO	U1	2560000	35	12 200	20 000	86	25800	5000
MAN	U2	1982000	27	12 700	18 000	52	15600	4000
SCANIA	U3	2658000	37	14 500	20 000	86	25800	7000
VOLVO	U4	3175000	33	16 000	21 000	78	23400	7000
DAF	U5	2784000	38	13 500	18 000	90	27000	5000
Renault	U6	2430000	35	13 000	19 500	76	22800	4000

Inputs

- Number of staff
- direct personnel costs
- direct costs per unit (fuel, ND)
- overhead costs (training, accounting depreciation,
- number of vehicles

Outputs

- mileage
- number of shipments
- duration of transport,
- weight of transported material,
- number of vehicles

Fig 17.3

The output configuration of the monitoring system

Vozidlo: Scania R 380 L4AX2			RZ: []											
Datum	Od	Do	Začátek cesty/konec cesty	Stát	Přestávka [h:min]	Doba jízdy [h:min]	Km	Prům. spot [l/100km]	± PHM	T	Stav nádrže [l]	Stav nádrže [%]	Topení [h:min]	Tachometr
30.08.2013	00:59	01:59	Ulice Nádražní, Mikulov, Okres Břeclav (CZ) Ulice Nádražní, Mikulov, Okres Břeclav (CZ)	CZ CZ	-	01:00	0,0	0,0	802,9		802,9		-	901505
30.08.2013	04:18	04:27	Ulice Nádražní, Mikulov, Okres Břeclav (CZ) Drasenhofen, Okres Mistelbach (AT)	CZ AT	02:18	00:08	2,2	0,0	-8,8		794,0		-	901507
30.08.2013	04:27	07:59	Drasenhofen, Okres Mistelbach (AT) Übelbach, Okres Graz-Umgebung (AT)	AT AT	-	03:32	270,0	26,3	-71,0		723,0		-	901777
30.08.2013	07:59	08:53	Übelbach, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	-	00:53	17,1	0,0	-3,3		720,2		-	901794
30.08.2013	10:22	10:29	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	01:29	00:07	0,4	0,0	2,3		722,5		-	901794
30.08.2013	10:46	10:48	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT)	AT AT	00:16	00:01	0,0	0,0	-1,4		721,1		-	901794
30.08.2013	11:13	13:23	Ulice Murmühlweg, Gratwein, Okres Graz-Umgebung (AT) Guntramsdorf, Okres Mödling (AT)	AT AT	00:24	02:09	171,3	26,1	-44,7		676,5		-	901965
30.08.2013	13:55	15:49	Guntramsdorf, Okres Mödling (AT) Mikulov, Okres Břeclav (CZ)	AT CZ	00:32	01:53	116,0	34,1	-39,5		636,9		-	902081
30.08.2013	15:49	16:33	Mikulov, Okres Břeclav (CZ) Brno, Okres Brno-Město (CZ)	CZ CZ	-	00:44	53,3	26,9	-14,4		622,6		-	902134
30.08.2013	-	-	-	-	05:01	10:32	630,3	28,6	-183,1	-	622,6		-	902134
02.09.2013	06:28	08:56	Brno, Okres Brno-Město (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	-	02:28	51,5	59,5	-30,6		591,9		-	902186
02.09.2013	09:35	09:35	Ivančice, Okres Brno-Venkov (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	00:38	00:00	0,0	0,0	0,0		591,9		-	902186
02.09.2013	10:54	10:58	Ivančice, Okres Brno-Venkov (CZ) Ivančice, Okres Brno-Venkov (CZ)	CZ CZ	01:18	00:04	0,2	0,0	2,3		594,3		-	902186

Fig 17.4

Driving style – gear change overview

rychlost [km/h]	otáčky do [1/min]						
	0 - 800	800 - 1000	1000 - 1200	1200 - 1400	1400 - 1600	1600 - 1800	> 1800
> 90	0,0 %	0,0 %	0,0 %	0,0 %	0,4 %	0,0 %	0,1 %
85 - 90	0,0 %	0,0 %	0,0 %	22,3 %	0,5 %	0,3 %	0,8 %
75 - 85	0,0 %	0,0 %	2,8 %	20,1 %	0,2 %	0,1 %	1,0 %
65 - 75	0,0 %	0,0 %	14,5 %	1,8 %	0,3 %	0,7 %	0,7 %
50 - 65	0,1 %	2,5 %	5,4 %	2,9 %	1,0 %	0,5 %	0,3 %
20 - 50	1,2 %	3,1 %	5,6 %	3,2 %	1,4 %	0,2 %	0,1 %
1 - 20	3,2 %	1,3 %	1,0 %	0,4 %	0,1 %	0,0 %	0,0 %
0 - 1	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %

Optimální	20:01:06	50,6 %
Méně výhodné	18:01:56	45,6 %
Nevýhodné	01:28:54	3,7 %
Volnoběh	----	0,0 %

Fig 17.5

17.3 Operational efficiency of fuel depots

Scheme of realization of delayed orders of fuel F-54

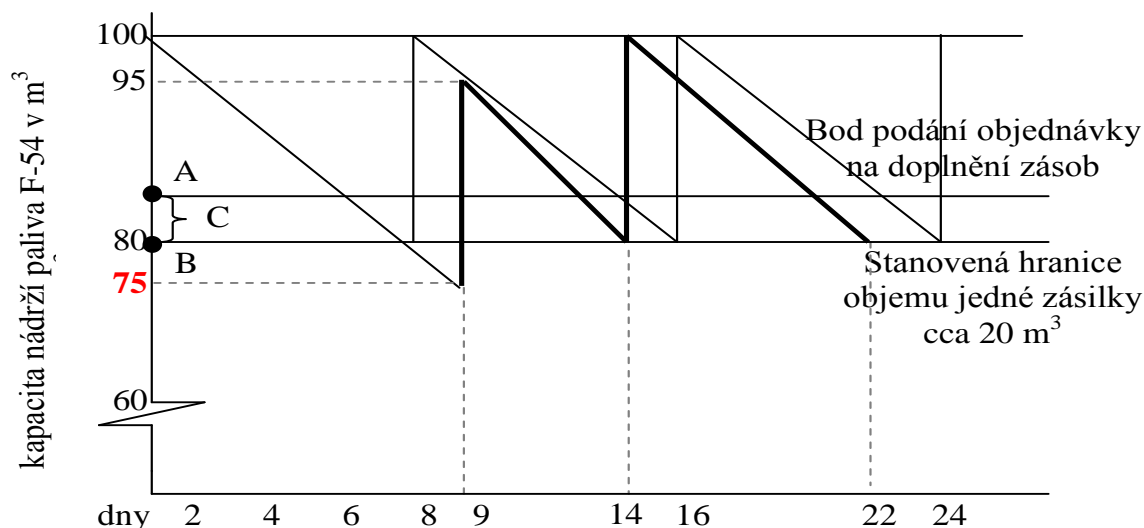


Fig. 17.6

Economic order quantity shipments PLO (F-54)

When determining the strategy for the implementation of the order, the aim should be to minimize the sum of the cost of holding inventory and ordering costs delight called. Model economic order quantity (Economic Order Quantity, EOQ) is a concept which determines the optimal order quantities based on the ordering costs and maintenance supplies . The optimal order quantity occurs when ordering incremental cost is the incremental cost of maintaining inventory.

List of tasks for students:

1. What is the basic difference between the monitoring of effectiveness of vehicles in the civilian sector and in the Army of the Czech Republic?
2. Specify the basic capabilities of new systems to monitoring the effectiveness?
3. Do you know the input and output parameters for evaluating the effectiveness of the warehouses with POL?

References and further reading:

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- [8] *Informačního systému logistiky Ministerstva obrany Armády České republiky*.
- [9] Všeob-P-4, *Hospodaření s majetkem v rezortu Ministerstva obrany*, Praha: Ministerstvo obrany, 2004.
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T18 Evaluation of the effectiveness of operation PVT

An example of evaluating the performance of the public sector at the highest national level, the report by the World Health Organization World Health Report 2000 (WHO 2000). [1] In this report, the research team evaluated the effectiveness of health systems in individual countries. Published chart created great media attention and considerable critical acclaim. Chart created a new wave of interest about efficiency of health care. The example shows that managers at all levels of management in the private and public sectors are forced to make maximum use of the resources that are available. Competition threatens effectively managing companies in the private sector. In the public sector amplifies the control of the state [2] and every manager of public organizations should feel responsible for the efficient use of resources, which are obtained from the contributions of taxpayers.

Efficiency is explained by a number of definitions. Jablonský J. (2004) defines efficiency as the ratio of outputs that review unit produces, and input that is consumed in the production. Each unit is characterized by a set of input and output characteristics of the numerical. The term production unit while we generally understand unit that produces an output whose production consumes some inputs. It is a homogeneous unit, performing the same or similar activity. [2]

Fiala J. (2002) states that the effectiveness (efficacy - the ability to do things right) indicator of the performance of the production system. Efficiency refers to the transformation process and describes the relationships between inputs and outputs. Efficiency refers to the production of the desired number of outputs in the desired quality with a minimum number of inputs. [3]

Friedman D. (1990) situation is efficient if it can not improve. If there is no possible situation that would have been better. [4]

18.1 Operational efficiency

Efficiency is explained by a number of definitions.

Jablonský J. (2004) defines efficiency as the ratio of desired outputs, which produces review unit, and input that in this production consumes.

Each unit is thus characterized by a set of input and output of numerical characteristics. The term production unit case can generally understand that forms an output whose production consumes some inputs. It is a homogeneous unit, performing the same or similar activity.

Tasks for exercise

1. Determine the effectiveness of the production units as specified example.

The present set of production units determine their order on the basis of their operational effectiveness.

For the inefficient units propose measures to achieve an efficient state.

Create a graphical representation of the results.

sklad	vstupy výdaje na personál [kč]	výstupy četnost výdejů PHM [výdej]
sklad 1	152 460	2 735
sklad 2	135 540	3 280
sklad 3	264 840	2 651
sklad 4	185 400	3 895
sklad 5	205 000	3 684
sklad 6	109 480	3 896

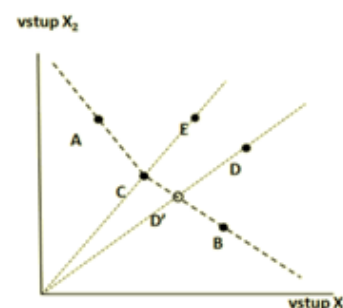


Fig. 18.1

2. Present new trends in traffic monitoring and their possible applications to the ACR.

sklad	vstupy							výstupy			
	VAC [kč]	RTZS [kč]	VÚTZ [kč]	VPO [kč]	PP [ks]	VP [kč]	OS [m ³]	PV [výdej]	PAC [použití]	MSPHM [m ³]	PSZ [ks]
sklad 1	152 460	43 250	25 042	63 540	4	1 366 400	725	2 735	36	145	5
sklad 2	135 540	52 020	38 000	55 842	4	1 366 400	1 120	3 280	22	103	14
sklad 3	264 840	63 540	20 420	58 024	3	1 026 000	925	2 651	45	85	5
sklad 4	185 400	42 570	26 014	72 500	3	1 026 000	682	3 895	64	90	8
sklad 5	205 000	45 284	29 024	84 251	4	1 366 400	945	3 684	32	75	12
sklad 6	144 250	49 580	35 012	80 214	4	1 366 400	1 132	2 547	24	120	12
sklad 7	280 420	52 350	25 436	86 254	5	1 706 000	1 025	2 548	35	95	14
sklad 8	109 480	67 250	36 540	72 000	3	1 026 000	845	3 896	42	100	11

Annual expenditure

VAC = expenses for the operation of trucks (regular maintenance, inspections technological equipment vehicles, MOT, insurance)

RTZS = annual spending on revision of technological equipment store (dispensers, hydrocarbon emissions, static electricity)

VÚTZ = expenditure on maintenance of technological equipment warehouse

VPO = expenses for the operation of buildings (energy, water)

PP = number of staff

VP = expenditure on staff

OS = volume warehouse facilities

PV = number of dispensing PLO

PAC = frequency of use of road tankers

PSZ = Number of coiled shipments of PLO

MSPHM = the amount of stored fuel

Fig. 18.2

18.2 Application of new tools

Writing of assessment model of production units



$$U_1 = \frac{u_1 y_{11} + u_2 y_{21} + \dots + u_n y_{n1}}{v_1 x_{11} + v_2 x_{12} + \dots + v_m x_{m1}} = \frac{\sum_{i=1}^n u_i y_{i1}}{\sum_{j=1}^m v_j x_{j1}}, \quad \leq 1$$

$$U_2 = \frac{u_1 y_{12} + u_2 y_{22} + \dots + u_n y_{n2}}{v_1 x_{12} + v_2 x_{22} + \dots + v_m x_{m2}} = \frac{\sum_{i=1}^n u_i y_{i2}}{\sum_{j=1}^m v_j x_{j2}}, \quad \leq 1$$

.....

$$U_k = \frac{u_1 y_{1k} + u_2 y_{2k} + \dots + u_n y_{nk}}{v_1 x_{1k} + v_2 x_{2k} + \dots + v_m x_{mk}} = \frac{\sum_{i=1}^n u_i y_{ik}}{\sum_{j=1}^m v_j x_{jk}}, \quad \leq 1$$

Kde:

u_{ik} a v_{jk} = jsou individuální váhy jednotlivých vstupů a výstupů pro hodnocené jednotky
 U = produkční jednotka.

Fig. 18.2

18.3 Operational efficiency of fuel warehouses

Economic order quantity shipments PLO (F-54)

When determining the strategy for the implementation of the order, the aim should be to minimize the sum of the cost of holding inventory and ordering costs delight called. Model economic order quantity (Economic Order Quantity, EOQ) is a concept which determines the optimal order quantities based on the ordering costs and maintenance supplies . The optimal order quantity occurs when ordering incremental cost is the incremental cost of maintaining inventory.

List of tasks for students:

1. What is the basic difference between the monitoring of effectiveness of vehicles in the civilian sector and in the Army of the Czech Republic?
2. Specify the basic capabilities of new systems to monitoring the effectiveness?
3. Do you know the input and output parameters for evaluating the effectiveness of the warehouses with POL?

References and further reading:

- [11] *World Health Report 2000*, Geneva: World Health Organization, [on line] citováno [2013-04-20] dostupné na [www: <http://www.google.cz/books?hl=cs&lr=&id=luqgKK2euxoC&oi=fnd&pg=PR7&dq=World+Health+Report+2000&ots=sKnc556DQ7&sig=GlcUkIGChDOe9TsVdCXsofxj2k&redir_esc=y>](http://www.google.cz/books?hl=cs&lr=&id=luqgKK2euxoC&oi=fnd&pg=PR7&dq=World+Health+Report+2000&ots=sKnc556DQ7&sig=GlcUkIGChDOe9TsVdCXsofxj2k&redir_esc=y). 2001. ISBN 924159168X. ISSN 1020-3311.
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T19 OSH Risk management

The entry of new countries into the European Union has provided a new and simpler options for companies particularly in their business. Firms have gained greater opportunities for international exchange of goods. Conditions are not the only thing supporting international trade. Entry into the EU also brought a more specific example, the definition of requirements and rules in the field of safety and health at work. Management companies sometimes perceives these rules and requirements as the reason for increasing the company's expenses, or activity, which sometimes limits the time at work.

19.1 Principle Management Health and Safety Measures

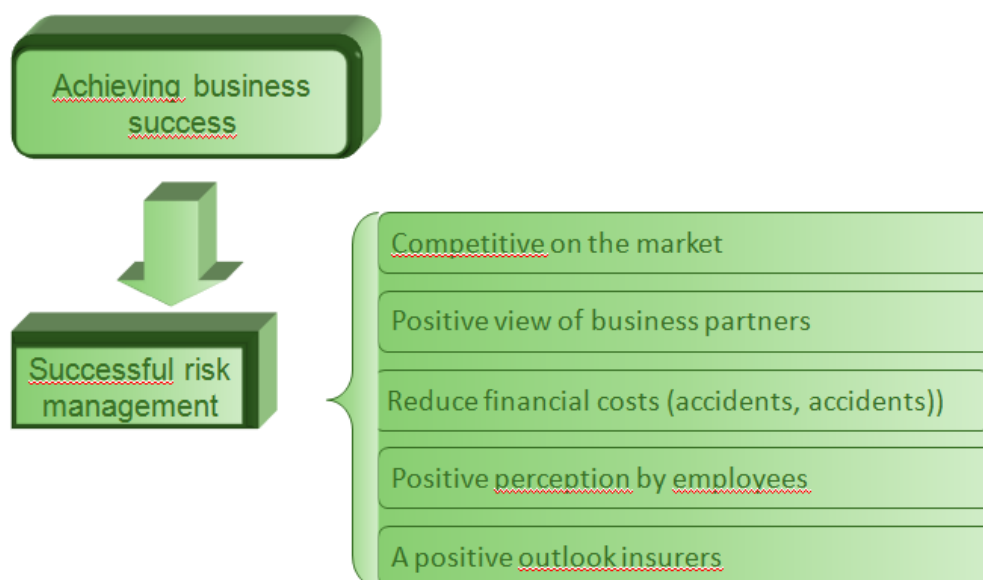


Fig. 19.1

Risk is a possibility that an event will occur, or the status of negotiations with consequent adverse effects on the fulfillment of goals and objectives. Significance degree of risk is determined by the potential adverse impacts and likelihood when exposed to this risk.

Risk management is a systematic and methodical systematic activity that is undertaken by managers within the internal control system so that this system was capable to identify, evaluate and minimize risks.

19.2 Process Management Health and Safety Measures

It is the process by which the organization seeks to analyze the risks and using the summary of the information to decide which risks are acceptable or not. For unacceptable risks are

proposed countermeasures that help mitigate the impact of adverse events and facilitate the reconstruction of damaged assets or convalescent persons treated[7].

Management system for health and safety at work, it is fitting that its introduction in organizations is beneficial and effective only if it becomes an integral part of the overall management system applied in the organization.

Goals of management System of Health and Safety Measures

In the process of application Health and Safety Measures management system can define the following primary objectives::

- implement an effective management system Occupational safety and health, which will be an integral part of the current management systems;
- minimize the risks resulting from abuse Health and Safety Measures
- apply into the system all requirements resulting from legal standards;

Corporate Culture

Corporate culture significantly affects the long-term success of the company. As a set of shared values, attitudes, norms and patterns of behavior affects the inner workings and effectiveness of each organization. In practice, long-term decisions through relationships and attitudes in the workplace also about quality, profitability, productivity and safety. As a way of thinking and perception has its outer function to the surrounding environment.

Risks Management

It forms one of the main prerequisites for the proper functioning Health and Safety Measures management system. Risk management (reducing risks) is the process by which the body control trying to avoid the effects of existing and future risks and proposes solutions that help eliminate the effect of adverse effects. Risk management is the decision-making process based on risk analysis.

Risk analysis should include

- identification of assets - definition of organization assessed its borders and a description of the assets they own and is located within the boundaries assessed;
- determining the value of assets - determine the value of assets (eg. the cost and performance characteristics of assets) and their significance for the subject, assessing the potential impact of their loss, change or damage the existence or the subject's behavior;
- threat identification - determining the types of events and actions that may adversely affect the value of assets;

19.3 General principles of health and safety Measures in fuel warehouses

Load by heat

Load heat at work is determined by the amount of metabolic heat generated by muscular work and environmental factors, which means the air temperature, the temperature of the surrounding surfaces, velocity and relative humidity. Load heat is evaluated in terms of its short-term and long-term carrying capacity of the employees.

Long-term tolerable heat load is limited by the amount of water lost from the body while working in sweat and breathing. It is expressed as a viable long period of work.

In the short term tolerable heat load is limited by the amount of heat stored in the body, which may not exceed the employee aklimatizovaného i neaklimatizovaného 180 kJ.m-second

Cold

Load cold at work is evaluated in terms of its carrying capacity for employees in the innings. Bearable cold load values are determined with respect to the energy output of the staff in the work and the air temperature corrected by the speed of its flow. In work carried out in the workplace in the building expresses Cold load operating temperature; the outdoor air temperature workplace corrected by the speed of its flow.

If the operating temperature or corrected temperature air at the workplace falls below 4°C, the employee must be equipped with work gloves protecting against cold.

Basic requirements for storage PB POL

- In operating areas kiosks petrol stations may be imposed maximum 10 m³ of flammable liquids, of which 2 m³ I. hazard class.
- In the space of one parking space in the garage is allowed to store fuel in unbreakable containers in the amount of:

40 liters of space intended for passenger cars;

80 liters in the space designated for trucks and specialty vehicles.

Tasks for individual work:

1. What is the basic difference between monitoring the efficiency of vehicles in the Czech Army?
2. Do you know the elements of the OSH management;
3. Describe the process of risks assessment?
4. Describe the safety profile warehouse with POL;

5. General principles for the use of safety signs and symbols;

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- [21] Nařízení vlády č. 495/2001 Sb., kterým se stanoví rozsah a bližší podmínky poskytování osobních ochranných pracovních prostředků, mycích, čistících a dezinfekčních prostředků
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- [23] Vyhláška 246/2001 Sb., o *stanovení podmínek požární bezpečnosti a výkonu státního požárního dozoru*.
- [24] Vyhláška MZV č.64/1987 Sb. o *Evropské dohodě o mezinárodní silniční přepravě nebezpečných věcí (ADR)*.

T20 Risk assessment in branch of fuel

The entry of new countries into the European Union has provided enterprises with new and simpler options especially in the implementation of their business, particularly that offered greater opportunities for international exchange of goods. Conditions are not the one that supports international trade. Entry into the EU also brought a more specific example, the definition of requirements and rules relating to safety and health at work, sometimes management companies perceived as a source of increasing costs of the company, or activity, which in some cases limits the time at work.

20.1 Principles and the principles of risk assessment

Management of risks

It forms one of the main prerequisites for the proper functioning health and safety measures management system. Risk management (reducing risks) is the process by which the body control trying to avoid the effects of existing and future risks and proposes solutions that help eliminate the effect of adverse effects. Risk management is the decision-making process based on risk analysis. After considering especially economic and technical factors management solves the adoption of appropriate measures to eliminate or reduce the size of the risk to an acceptable (acceptable) level, with regard to the effectiveness of the measure process of eliminating or minimizing risks.

The result of the identification and definition of threats is to create a registry of threats and vulnerabilities subject to subsequent evaluation of the impact on non-performing assets of the organization. health and safety measures is possible to include asset quality of the workforce and its health due to the working environment, the funds spent on repairing injuries and removing the consequences of accidents and emergencies. In some cases, due to inadequate state health and safety measures lead to a reduction in production organization, due to poor morale due to poor working conditions, lack of motivation of employees, damage to reputation among business partners.

Identification of assets and their grouping

The objective of identifying assets to create a registry vulnerabilities Organization (flaws and weaknesses), which could be exploited by potential sources of threats. Assessing the value of an asset is based on the size of damage due to damage, destruction, or loss, expressed in money or other (loss of life, injuries, loss of biodiversity, ecosystem as a percentage etc.) Units.

Valuation of assets

When valuing the assets are taken into account in particular the following aspects[7]:

- cost, respectively. purchase price;

- importance of assets for the existence or operation of the organization;
- the cost of bridging the damage and the removal rate of the damage;
- yield characteristics and other aspects, eg. the potential contribution of assets.

20.2 Static electricity in liquids

Liquids may be electrostatically charged when there is relative movement between the liquid and the surrounding solids or is present the second immiscible phase. Also spraying liquids also creates a highly charged mist or aerosol. The level of accumulation of electric charges in the liquid is strongly dependent on the conductivity of the fluid.

When handling flammable liquids is the creation of any atmosphere generally associated with the liquid which is handled.

A discharge of static electricity in a fuel warehouse

Fuels are electrizeable and the flow is charged static electricity. At the hub size affects their pollution, temperature and velocity. With higher water content and impurities, and higher velocities in a larger charge. The size of the charge may be increased up to the risk of shock

Danger of static electricity

- Among the actions that could cause static electricity inside the tank include:
- performance;
- dispensing of liquids;
- agitation;
- measurement;
- sampling.

Lessons before the shipment

- In accordance with professional regulations, must be done instruction of persons providing transportation fuel. Lessons should be done in the following range:
- issue a written order to move (shipping instructions - purpose of the shipment date, shipment destination, axis shift speed, dangerous places etc. - the exact content addresses the professional regulation);
- properties of the substances carried and their potential impact on the surrounding environment;

- emphasize the main precautions when handling fuel and the operations that must be performed prior to shipment (control activity - closing all valves, check for leaks);
- accident instructions.

20.3 Transport of Fuel

Vehicle designation CAP-6 M during transport fuel F-54

Vehicles and containers (eg. Tank trucks) must also be warning signs placarded. Vehicles are called labels on both sides and at the rear, containers shall be labeled on all sides.

Tasks for individual work:

1. Do you know fundamental difference between monitoring the efficiency of vehicles in Army of the Czech Republic?
2. elements of the OSH management;
3. Do you know the risk assessment process??
4. Determining the safety profile of warehouse with POL;
5. general principles for the use of safety signs and symbols;
6. obligations on producers of hazardous substances;
7. static electricity in POL, creation and elimination of electricity;
8. general principles for handling with POL;
9. specify protective equipment for the warehouse with POL;
10. Do you know the six basic legislative documents with Czech technical standard and internal rules for handling POL?
11. POL Transport in accordance with ADR, documentation and labeling;

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T21 Quality management

Modern society can not be satisfied with the quality achieved only in the business sector. Social structure of the Company consists of numerous non-profit organizations, government, civil associations and foundations, which should meet the requirements of efficient and rational behavior. They must proceed efficiently and provide quality service with a high degree of professionalism [1]. It is characteristic of the period when the market is excess supply over demand, and many producers are trying to gain a competitive advantage. This does not apply in the nonprofit sector often or in public and government, where the competitive pressure is not as great, or missing [2]. Understanding that the quality of products and services affects not just consumer satisfaction, but also has a significant influence on the prosperity of the organization must enforce even in this environment [3].

Security material for any army in peacekeeping and combat operations, which guarantees her dynamics, mobility and reliability is a priority mission of logistics systems. Fuels, lubricants and consumable materials belong to this material. The fuel supply is built on the basic principles to maintain the ability of the army. POL security at a specified time, an amount in the appropriate area and especially in the required quality guarantee reliable operation of ground military techniques and creates a significant prerequisite for the fulfillment of ambitions realized military activities.

Fuel, lubricant and operating materials have a significant presence in the supply of the Army of the Czech Republic. The main task in POL security is to provide the necessary amount of this commodity in the appropriate quality and within the required time. Major tasks of the Army of the Czech Republic are to maintain the quality of fuels, lubricants and fuels. For this problem are the structures created by Army of the Czech Republic organizational elements that together form a system whose main priority is to maintain quality. The arrangement of the system is to some extent based on the general principles of quality management, which is especially characteristic of the civil environment [4].

21.1 General view of the quality control

Basic terms

Quality

According to ISO 9000 - the degree of compliance with the requirements set of inherent characteristics.

According to other sources, it is possible to define quality as the sum total of character entities that affect its ability to satisfy stated and implied needs.

quality Management

All activities of the entire leadership that establishes the quality policy, objectives and responsibilities and implement them by such means as quality planning, quality control, quality assurance and quality improvement within the quality system.

General concept of quality

- There are many definitions and diverse approaches to the definition of quality.
- Quality is fitness for use (Juran)
- Quality is compliance with requirements (Crosby)
- Quality is what it regarded as the customer (Feigenbaum)
- According to other sources, it is possible to define quality as the sum total of character entities that affect its ability to satisfy stated and implied needs.

Management of quality

Management is currently a very specialized activity, without which it can not do any major organizational unit. The need to control is felt not only in business but also in non-profit organizations, government and public administration [3].

The focus of most managers is particularly focused on achieving favorable economic results. At this orientation substantially unchanged five only widen approaches to achieve these results and which factors are necessary in respect management practice. While in the past it was enough to focus on quantitative and economic aspects of management, currently it is necessary to manage and qualitative aspects [3]

Corporate social responsibility

With quality improvement concepts, is also associated with Corporate Social Responsibility (CSR- Corporate Social Responsibility). In the field of fuels, it is in this context particularly the issue of environment.

Responsible approach to business is one of the most dynamic and interesting areas for organizations working on globalizing markets. In the field of business today and enforce such principles such as accountability and transparency in the activities of the organization or what's compliance with relevant international standards and national legislation. It also includes respect for human rights, action against corruption and bribery as well as increased dialogue with government and private organizations [8].

21.2 The system of quality control in the Czech Republic

The control system for the fuel market is secured primarily by government oversight through the Czech Trade Inspection, whose role is clear from the legislative framework. The control system also operates private entities whose activities arise from the law, but is based on a comprehensive assessment of the quality of services, where the net effect of granting a certified valuation. This system is generally based on the requirements themselves sellers

who award these evaluations are used as advertising on the quality of services provided. It is also possible to control the quality of fuels include corporate internal control systems that are based on rule approved by the governing bodies of these entities.

Czech Trade Inspection

It is a state body whose task is, among other things, to operate on the fuel market, which plays the role of state supervision over the quality of fuel. Its activity is apparent from the statutory legislation, which had in this area clearly defines the rights and obligations. CTI performs inspection supervision through its trained inspectors who focus primarily on sampling at public service stations.

Program Quality Seal

It focuses on a comprehensive assessment of service gas stations. The program is based on many years of experience in handling fuel on the way from the manufacturer to the end consumer and has become synonymous with quality fuels sold at petrol stations holder of this seal of quality.

Comparison of the results of ČOI and PK checks

Druh monitoringu	Produkt	2007 (2/2008)		2008		2009	
		počet vzorků	% nevyhov.	počet vzorků	% nevyhov.	počet vzorků	% nevyhov.
ČOI	automobilové benzíny	1018	3,3	1010	1,8	769	1,8
	motorové nafty	1244	5,4	1216	8,9	866	8,9
	LPG			200	4,0	201	4,0
	celkem	2262	4,5	2429	5,6	1847	5,6
Pečeť kvality	automobilové benzíny	1454	0,5	3225	0,3	3508	0,2
	motorové nafty	2535	2	3527	2,7	3850	2,4
	celkem	3989	1,5	6752	1,5	7358	1,4

Fig. 21.1

The results in the table show that the program is in the control of fuel quality significant representation, which mainly contributes a considerable amount of samples compared to controls ČOI.

Membership in professional organizations or associations

In the context of appropriate fuel quality and also brings positive results memberships in professional organizations or associations, which obliges its members to provide quality services. In the petroleum industry occupy a central place following two associations.

- Czech Association of Petroleum Industry and Trade (CAPIT)
- Community petrol stations Czech Republic

21.3 The system of quality control in the ACR

Levels of monitoring the quality of fuel in the ACR

The current fuel quality monitoring system consists mainly of departmental elements MO. The civilian environment enter it required commodity suppliers who demonstrate that they supply quality range of products and services through contractors outsourcingu.

Role of KSJ PLO ACR

Even though they are clearly defined quality requirements of fuels, lubricants and fuels a wide range of generally binding regulations, does not mean they always get good fuel. In order to completely fulfill the requirement to distribute fuel to a high standard, it is necessary to integrate systems and controls that its authority will identify any anomalies. In this context, especially a KSJ PLO ACR also monitoring the quality of fuel.

Monitoring the quality of newly introduced fuel to ACR

To MoD may not deliver the products, unless they are approved by a competent person Mentorship (chief inspector KSJ PHM ACR) in accordance with the relevant national regulations (quality standards, specifications) [13].

An applicant who wishes to supply the MoD fuels, lubricants or operational matter, must have built a quality system in accordance with the requirements of CSN EN ISO 9001: 2001. In the event the contract is concluded outside the Czech Republic must be taken to implement adequate controls either on its own or through agreements with national professional supervision of the State in which the obligation of contracts implemented

Monitoring the quality of fuel in the process of distribution and storage

In this case it is the stage where the different types of fuel handling, especially by specialists who are ready for their activities by some form of educational activities. Thus, we can assume that during this stage should not be impaired quality. Unfortunately, experience shows that it is not. It was here when some error occurs to the highest damage, since it is usually impaired quality of large volumes of fuel (e.g. mixing two different kinds of fuel tanks).

Tasks for individual work:

1. What is the basic difference between monitoring the efficiency of vehicles in the Army of the Czech Reublic?
2. What is the importance of quality for the organization?
3. What social responsibility of organizations and how it can be applied in the Army of the Czech Republic?
4. What is the basic principle of quality control POL in the Army of the Czech Republic?
5. What is the organizational structure of the quality system of POL?

6. Characteristics of the level of quality. Which entities are organized quality systém here?
7. The principle of monitoring the quality of newly introduced fuel to the Army of the Czech Republic.
8. The principle of monitoring the quality of fuel in the process of distribution and storage.
9. The principle of monitoring the quality of fuel during use.
10. Do you know the processes in the distribution of fuel?
11. What is tribodiagnostics and its use within the quality system of POL?
12. Describe the structure of customers and their requirements in the section of security services POL?
13. Do you know kinds of analyzes in the Army of the Czech Republic and their purpose?
14. Do you know the basic documents of the quality of POL?
15. Do you know the basic aspects of marking POL?
16. Do you know the basic storage period for fuel?
17. Do you know the principles of liquid filtration?

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T22 Quality management tools in POL

Modern society can not be satisfied with the quality achieved only in the business sector. Social structure of the society consists of numerous non-profit organizations, government, civil associations and foundations, which should meet the requirements of efficient and rational behavior. They must proceed efficiently and in particular to provide its service quality - with a high degree of professionalism [1]. This is characteristic of the period when the market is excess supply over demand, and many producers are trying to gain a competitive advantage. This rule does not apply in the nonprofit sector or in the public and government, where the competitive pressure is not as great, or missing [2]. Understanding that the quality of products and services affects not just consumer satisfaction, but also has an impact on the prosperity of the organization must enforce even in this environment [3].

Security of any army in peacekeeping and combat operations material for its dynamism, mobility and reliability is a priority mission of logistics systems. Fuels, lubricants and consumable materials definitely on the list of such material belongs. The fuel supply is built on basic principles to keep the armed forces. POL security at a specified time, the quantity in the appropriate area and especially in the required quality guarantee reliable operation of ground military techniques and creates a significant prerequisite for the fulfillment of ambitions realized military activities.

Fuels, lubricants and consumable materials have a significant presence in the supply of the Army of the Czech Republic. The main task of the security services POL is to provide the necessary amount of this commodity in the appropriate quality and in the required time. Maintaining quality fuels, lubricants and fuels is an important task for the units and military equipments. For this problem are created organizational elements in the structures Army of the Czech Republic that together form a system whose main priority is to maintain quality. The arrangement of the system is to some extent based on the general principles of quality management, which is especially characteristic of the civil environment [4].

22.1 Characteristics of the methods of quality assessment

Basic methods

- Flow diagram
- Pareto diagram
- spot diagrams
- Control diagram

Process management tools contribute:

- its monitoring and better manage management
- to a deeper understanding of the process and implementation process approach

- problems of identification,
- to solve problems related to the diagnosis and resulting partial specific problems,
- to improve the functioning of the entire system
- to rationalize and objectification implemented decisions.

Flow diagram

The goal is to show the flow diagram of activities, a sequence of operations, continuity of operations, partial decisions based on alternative outputs etc. In essence, it is the ultimate directed graph that has a beginning and an end, operational and decision blocks and includes a loop formed by decision blocks.

Basic symbols

For processing flowcharts commemorate least basic meanings of symbols, others can be found in ISO 5807: 1996 [7]:

Limit Mark: represents the input or output, such as the beginning or end of the program.



Fig. 22.1

Processing:

represents any kind of processing functions, eg. the implementation of defined operations or group of operations, resulting in a change in value, form or location or determine which of several flow direction has to be monitored.



Fig. 22.2

Decision-making: is a decision or switching functions with a single entry, which may be a number of alternative outcomes, only one of which can be activated after evaluating the conditions laid inside the symbol. Relevant evaluation results can be attributed to the links representing paths.

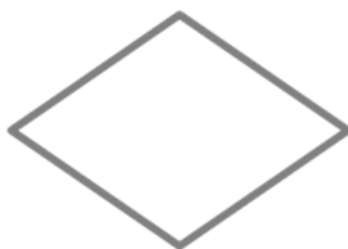


Fig. 22.3

Database:



Fig. 22.4

The process of accepting the shipment of PHO

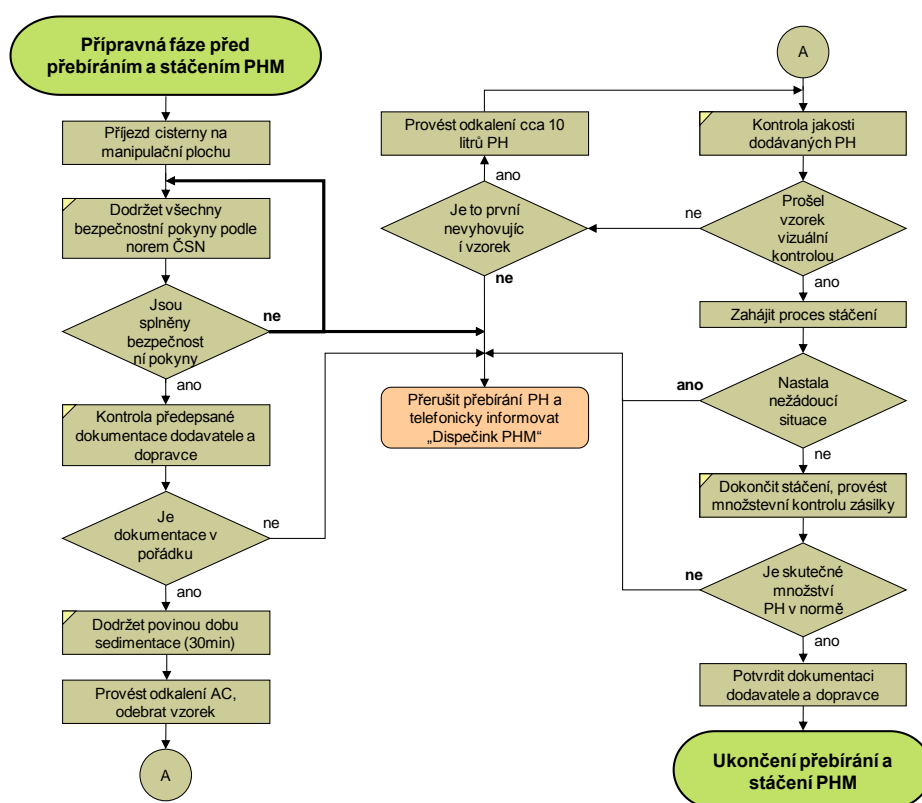


Fig. 22.5

Integrated diagram - tribo system design in ACR

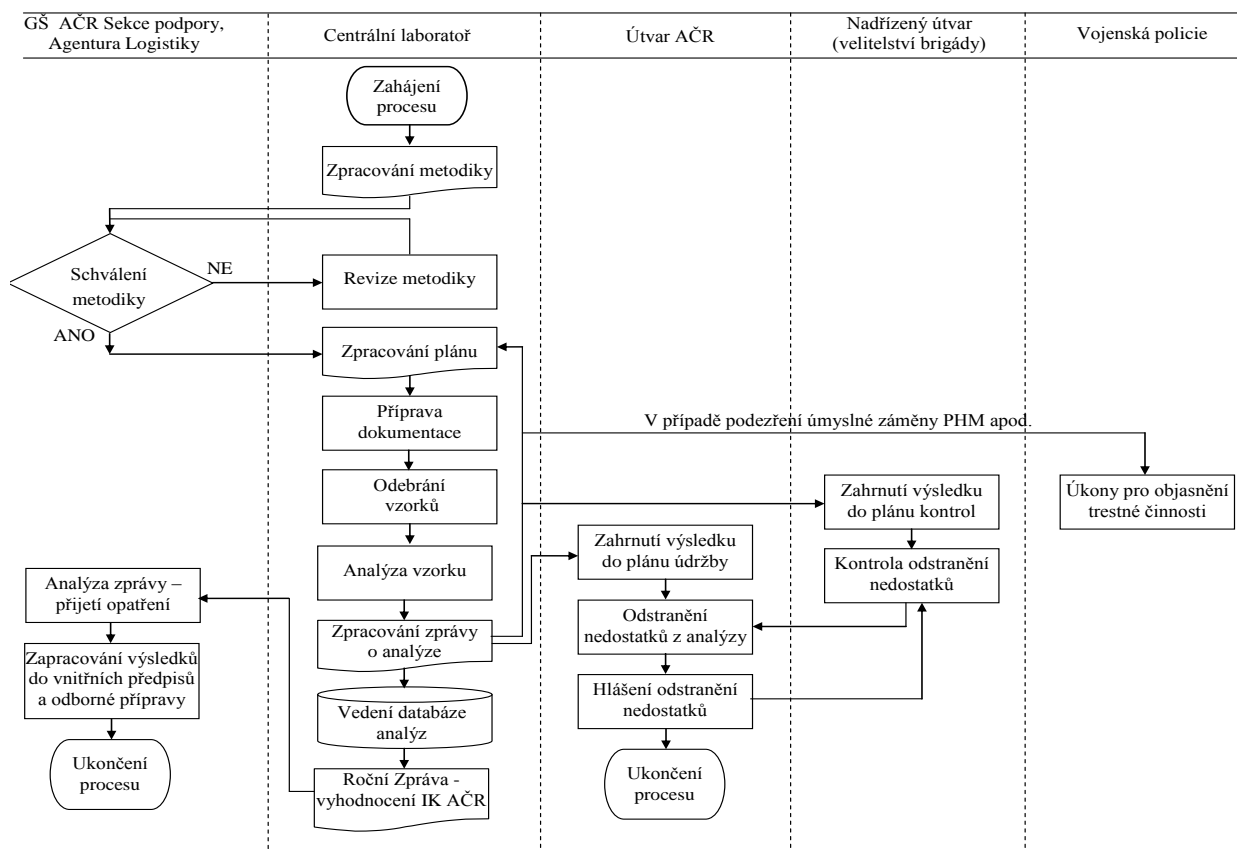


Fig. 22.6

Cause and effect diagram

Cause and effect diagram shown in graphical form the relationship between consequences and causes of variation in this character.

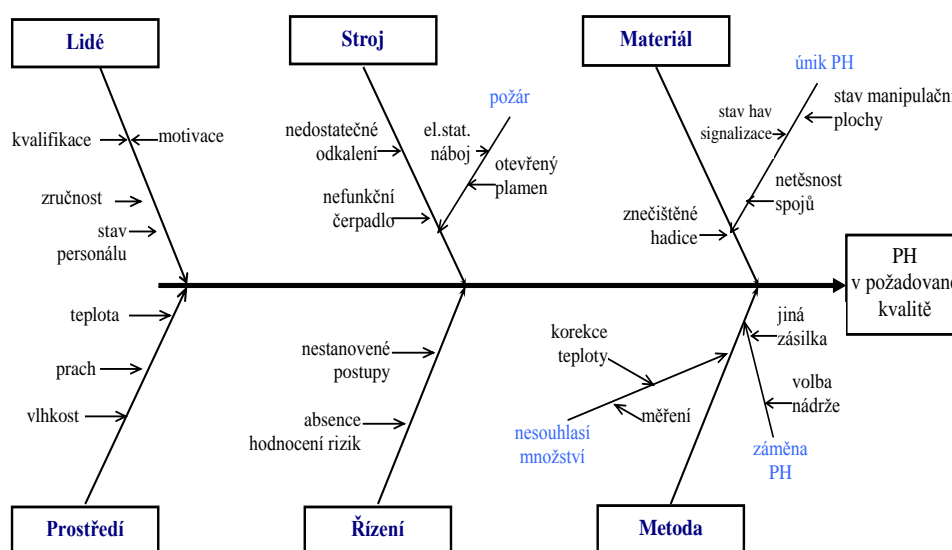


Fig. 22.7

Pareto diagram

It is based on the idea of the Italian economist Vilfredo Pareto, who at the beginning of the last century found that 80% of national income is 20% of the population.

22.2 Specifications processes undermining the quality of PHM

Assessment of the level of risk processes in the distribution chain through a questionnaire survey of managerial staff in the field of fuel was evaluated as dangerous "process of refueling in the field through mobile devices."

22.3 Application of the methods of quality assessment in PHM

Tabulka 18 Závislost obsahu mědi na počtu ujetých kilometrů

i	x_i [km]	y_i cu [ppm]	x_i^2	$x_i y_i$	y_i^2
1	9223	5,6	85 063 729	51 649	31,4
2	9453	7,8	89 359 209	73 733	60,8
3	9789	8,5	95 824 521	83 207	72,3
5	10350	10,5	107 122 500	108 675	110,3
6	10506	25,6	110 376 036	268 954	655,4
7	10732	33,4	115 175 824	358 449	1 115,6
8	10984	42,8	120 648 256	470 115	1 831,8
SUM	71037	134,2	723 570 075	1 414 781	3 877,5

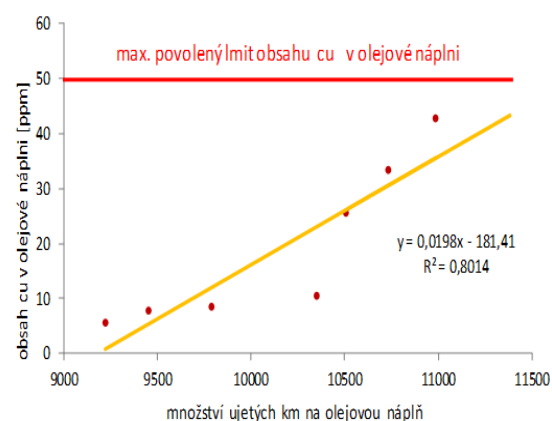


Fig. 22.8

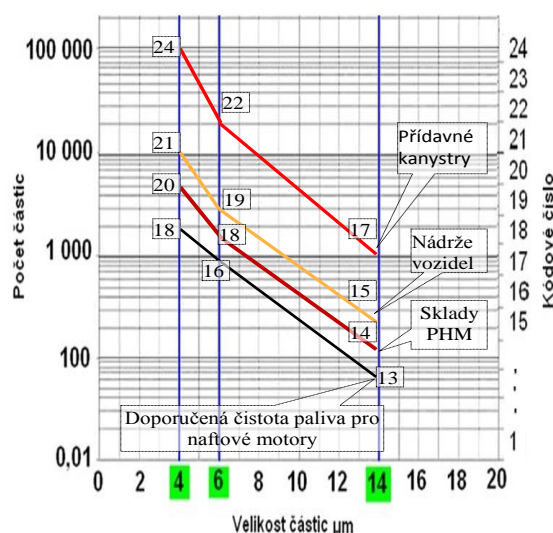
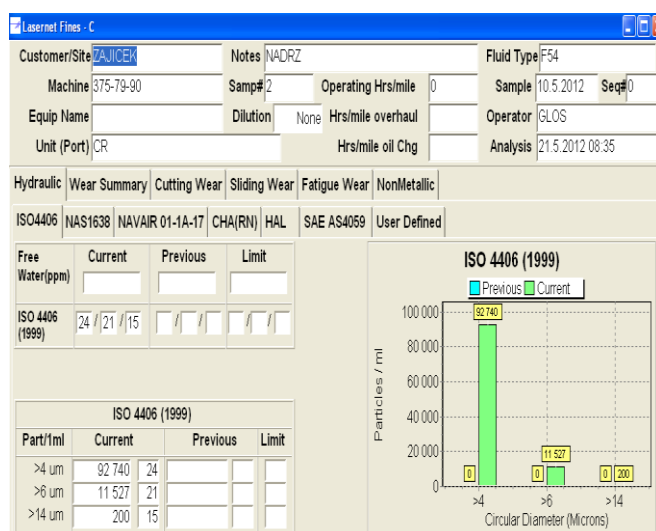


Fig. 22.9

Tasks for individual work:

1. Do you know the main principles of data collection?
2. Do you know the variants of graphical and numerical data processing?
3. What are the most common methods of evaluation processes disruption the quality of POL?
4. Describe the importance of quality for the organization?
5. What is the social responsibility of organizations and how it can be applied in the Army of the Czech Republic?
6. Do you know the basic principle of quality control POL in the Army of the Czech Republic?
7. Do you know the organizational structure of the system of quality of POL?
8. Characteristic levels of quality and which entities are organized quality system?
9. The principle of monitoring the quality of newly introduced fuel into the Army of the Czech Republic.
10. The principle of monitoring the quality of fuel in the process of distribution and storage.
11. The principle of monitoring the quality of fuel during use.
12. Do you know the processes in the distribution of fuel?
13. What is tribodiagnostics and its use within the quality system of fuel?
14. Do you know the principles of liquid filtration?

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T23 Czech Republic's oil security and influence on Czech Army

Energy security has become a major factor in the further development of the early 21st century. Without a guaranteed energy supplies can not ensure economic stability, socio-political stability of any society and even the stability of civilization as a whole. Energy security is becoming an important political and military theme in a number of cases.

Due to the different positions of the individual members of the international scene are different their interests. This is reflected in the different perceptions of the importance of energy security problem and how to resolve threats. This all leads to the fact that without geopolitical view of the issue of energy can not parallel understand the global or regional security issue.

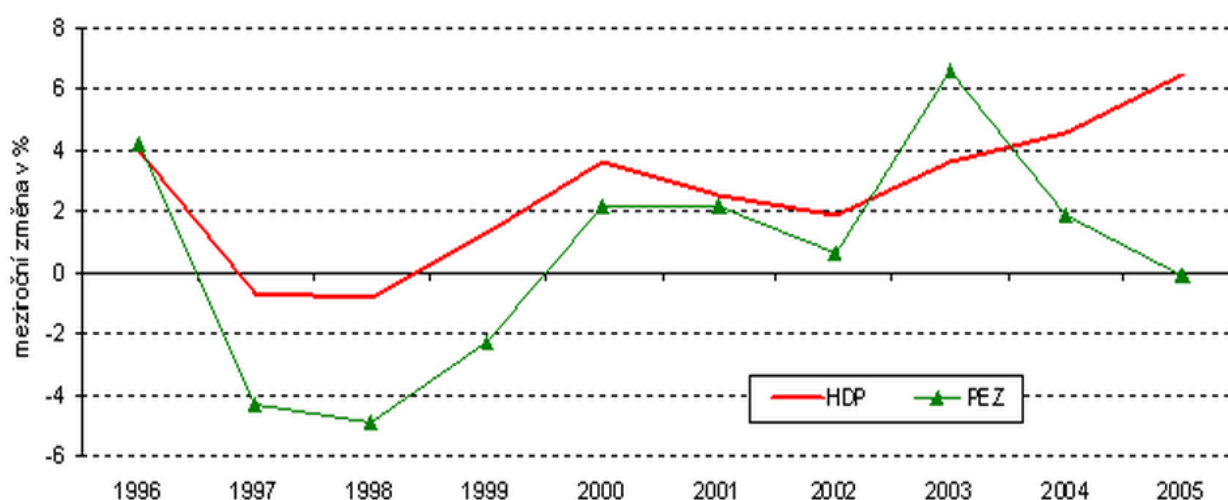
23.1 Primary energy sources

Among the primary energy source PEZ include:

- nonrenewable energy sources
- renewable energy sources.

Namely coal, oil, natural gas, uranium and natural renewable potential (sun, water, wind, biomass, geothermal energy).

Graf č. 1 HDP a prvotní energetické zdroje



Pramen: ČSÚ

Fig. 23.1

STATE ENERGY POLICY

Respect for energy security becomes a key development issues, especially in network industries with regard to the development of international terrorism.

The vision of the State Energy Policy defines the basic priorities creating the framework for long-term development of the energy economy of the Czech Republic.

The basic priorities of the State Energy Policy are:

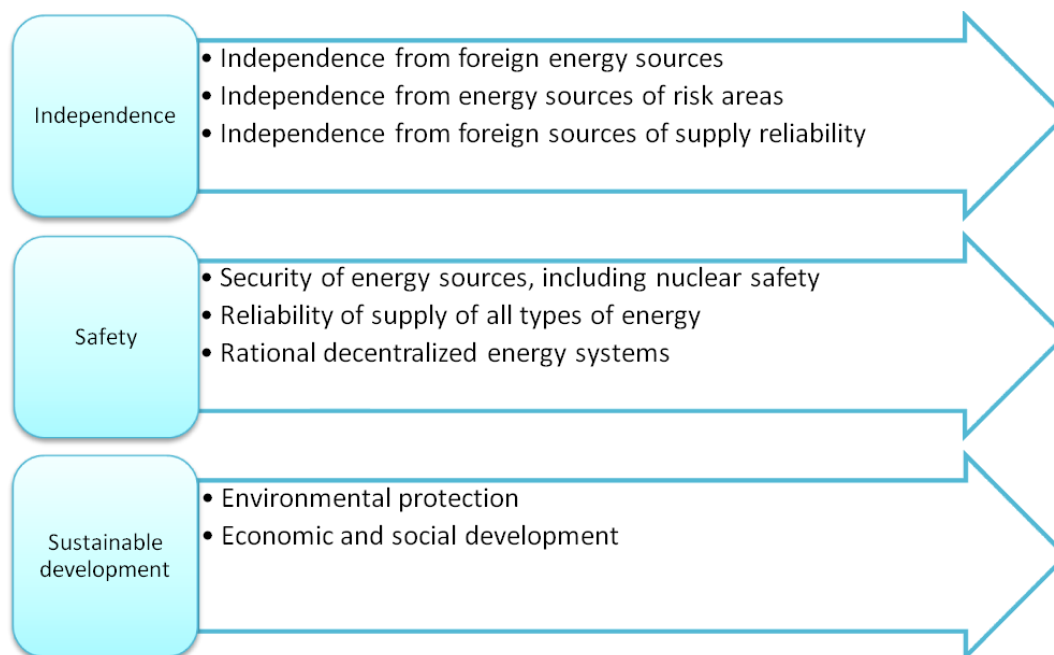


Fig. 23.2

23.2 A system of oil supply to the Czech Republic



Fig. 23.3

Impact on supply of Czech Republic

Russia has opened a new oil pipeline to China. Annually, it would be up to the largest buyer of crude oil in the world should get thirty million tons of oil.

Central oil Nelahozeves

Used to receive as oil from the Družba pipeline and the IKL for storage, mixing different types of oil and the distribution of oil to the customer. The largest part of the capacity tank used by the State Material Reserves Administration for storage of strategic oil reserves. Total storage capacity currently stands at 1.55 million cubic meters.

23.3 Measures of Oil Emergency

Petroleum safety

A summary of the principles, measures and ways of creation, maintenance and use of emergency strategic reserves of crude oil and petroleum products, designed to reduce or overcome emergencies arising from their lack of a prepared procedures and measures to deal with such emergencies.

Tasks for individual work:

1. Which materials belong among primary energy sources?
2. Do you know basic features of the energy concept of the Czech Republic?
3. Describe the oil supply system of the Czech Republic?
4. Do you know the annual consumption of oil in Czech Republic?

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T24 Final exercise

24.1 Management of risks of health and safety measures

- risk assessment
- characterization and application of FMEA
- characterization and application methods of STROM
- characterization and application of methods ISHIKAA'S DIAGRAM

24.2 Fuel supply and provisioning

- structure inventory and reserves of PLO
- calculation of the estimated fuel consumption
- planning and monitoring limit of PLO
- evaluating the effectiveness of the operation

24.3 Quality management in the security of PLO

- Quality assessment instrument
- Application flowchart
- Mind Maps application
- Applications and further dot plot

List of tasks for students:

1. Create documents for entering the essay and presentation.

T25 Recovering of GME

25.1 Pick up the equipment and move them on area for practical training

- To appoint the commanders of vehicles, pickup planned fleet of vehicles and build column of vehicles.
- To tell orders to move
- Own move to recovery training area.

25.2 Practical training consist of – self recovering, recovering and evacuation of immobile equipment

Planned workplace:

I. Station - Recovery tracked vehicles- By direct towing (straight)

- recovery using by pulleys
- (vehicle: jammed BVP II – recovery tank VT 72 B)

II. Station – Self recovering tracked vehicles

- Use the beam
- With anchoring of track BVP II
- (Vehicle: 2 × jammed BVP II)

III. Station – Self recovering of wheeled vehicles

T 810 using a winch and natural anchors (bench of trees)

IV. Station – Evacuation of immobile equipment

a) variant - tracked equipment

(vehicles: immobile - damaged vehicle BVP II – evacuated wrecker – VPV)

b) variant - wheeled vehicles

(vehicle: immobile - damaged vehicle lorry T 810 - evacuated wrecker - AV 15)
Evacuation to realize by lift on the crane with

V. Handling equipment for low loader P 50 N

Immobile equipment is extended on the out feed means and moved to MCP in the field,

In peace in the workshop hall for repair.

(vehicle: immobile - damaged vehicle VT 72 B – evacuation set of VT T815 tractor with semitrailer P-50N).

For recovering and evacuation of equipment to keep all safety precautions.

25.3 Maintenance after use.

Implement maintenance after use in full range.

To begin by cleaning, washing vehicles after training.

Follow the technological procedures on the small bridges for maintenance.

After transport to the park to refuel equipment and to park vehicles on parking lots

The tasks for students:

To prepare for practical training in field.

References and further reading:

- [1] Zákl-1, hlava 6, Základní řád ozbrojených sil České republiky. *Praha: MO, 2005.*
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T26 Maintenance of GME

26.1 Methodological picking up equipment from park, including entering into park equipment.

To appoint the commanders of vehicles, pickup planned fleet of vehicles and build column of vehicles.

Establish commander vehicles and enter them specific tasks to be addressed in connection with the entrance to the park and communications with duty officer of park.

Pick up equipment from the park and build column according to proper rules.

26.2 The practical activities in navigation of equipment, training activities under the supervision of a military traffic control service

During picked up equipment from park use navigation by signals of arms.

On the beginning to practice the activity and then realized departure from park of equipment. Build column practically and after give the order for move.

During this pass short "course" of a military traffic control service " under management of specialist in this branch.

To learn the rights and obligations of a military traffic control service (VPS) - what you has to do and what can to do. The obligations of the driver when is checked by police. (VPS).

26.3 Exhibition of practical activities of the Chief of technical check station at his post.

- Practical activities NKTS when checking vehicle ready for use.
- The management documentation of NKTS at the workplace
- Activity NKTS with the vehicle when checking eligibility
- Obligations NKTS.

26.4 Practical putting into practice of the various kinds of fundamental maintenance.

Practical maintenance after use for a particular vehicle wheeled and tracked.

Demonstration of implementation of basic maintenance - for wheeled vehicles.

Perform their own maintenance and registration in the relevant documentation.

Demonstration of implementation TÚ 1 - LRD vehicles

Demonstration of implementation TÚ 2 - vehicles Pandur (DINGO, IVECO).

List of tasks for students:

- Perform repetitions of safety precautions when is realized practical training with equipment in park.

References and further reading:

- [1] Zákl-1, hlava 6, Základní řád ozbrojených sil České republiky. *Praha: MO, 2005.*
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T27 Deployment of POL technical means in the field

The period of preparation for security operations is an important stage, which has a major impact on the future operation of the unit. The required amount of reserves, their quality and usefulness are the essential prerequisites for the completion of tasks in the operation.. Another aspect is the creation of preconditions distribution of reserves on mobile devices due to planned tasks, the proposed replenishment systems and the creation of supply points.

Reserves are loaded during mobilization measures or during preparation for the task in the operation.

The distribution of individual types of material of class III. should correspond to the composition of the units, which will provide logistics company (warehouse of POL). We must know possible means to strengthen in this case, which are allocated to the master stage and will supply our care (eg. engineer machines and similar devices).

Tasks for individual work:

1. Learn basic tactical technical data technology!
2. Calculation of BM expected consumption mpr during transfer.

References and further reading:

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