# Forensic Economics Regarding Fuel Accounting in Armed Forces of Ukraine

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*Theoretical best practices of forensic experts on peculiarities of fuel accounting in transport and defense fields has been studied and a list of legislative and regulatory acts regulating the procedure for accounting, movement and write-off of fuel and lubricants in military units is given. The authors aimed to highlight the issue of fuel accounting in conditions of martial law and Russian military aggression, document effective use of fuel by military units of the Armed Forces of Ukraine and territorial defense while carrying out combat missions. Research objects of forensic economic examinations are summarized, range of powers granted to experts while conducting such examinations is outlined. Peculiarities of the accounting and movement of military property that are characteristic of the rules for receiving, accounting, issuing and writing off material assets in Armed Forces of Ukraine are indicated. The issues and tasks solved by forensic experts while forensic economic examinations related to accounting and use of fuel by military units of Armed Forces of Ukraine are defined. The list of legislative and normative legal acts that should be guided by forensic economists in their professional*

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*activities while accounting for military property, is presented. Attention has been drawn to the unsettledness of some issues of such accounting (for example when some legislative acts have lost their validity, and new ones have not been adopted instead) causing certain difficulties. The main types of accounting of military property (quantitative and qualitative accounting; accounting of military property in numerical and value indicators) are highlighted and disclosed.*

***Keywords***: *military property; property accounting specifics; fuel and lubricants; quantitative, qualitative, account number accounting; military property accounting in value indicators.*

## Research Problem Formulation

In conditions of Russian military aggression, issues of accounting and effective use of fuel by the military units of the Armed Forces of Ukraine (hereinafter referred to as AFU) and territorial defense are becoming quite important and relevant.

From the first day of invasion in Ukraine, Russian invaders have been purposefully destroying Ukrainian industrial (in particular, oil refining) and social infrastructure. Shortage of fuel in Ukraine that was felt not only by ordinary citizens, arose as a result of the destruction of the main producer of such fuel: the Kremenchuk Oil Refinery, a number of large oil depots, blocking of sea routes and the stoppage of supplies from Belarus. In fact, country has to build a new infrastructure for the supply of oil products through the western borders from scratch. Therefore, effective resolution of the issues of th fuel use by military units of the Armed Forces of Ukraine in the circumstances of Russian aggression can directly affect combat capability of our State.

At the same time, conducting forensic economic examinations on accounting and use of fuel by military units has some peculiarities compared to civilian objects.

## Analysis of Essential Researches and Publications

Like any other defense field, functioning of state institutions is subject to control and evaluation both by society and by economists. Rational operation of defense expenditures can not only ensure the country independence but stimulate the development of its economy. S. Atesoglu and M. Mueller [1], as well as C. Xuang and A. Mintz were among the first to highlight the relationship between defense spending and economic growth [2].

J. S. Smith and M. H. Tuttle [3] proved as early as 2008 that defense spending can

1 Atesoglu H. S., Mueller J. M. Defense Spending and Economic Growth. *Defence Economics*. 1990. Vol. 2. Is. 1. Pp. 19—27. DOI: 10.1080/10430719008404675 (date accessed: 31.05.2022).

2 Xuang C., Mintz A. Defence Expenditures and Economic Growth: The Externality Effect. *Ibid*. 1991. Vol. 3. Is. 1. Pp. 35—40. DOI: 10.1080/10430719108404713 (date accessed: 31.05.2022).

3 Smith J. S., Tuttle M. H. Does Defense Spending Really Promote Aggregate Output in the United States? *Defence and Peace Economics*. 2008. Vol. 19. Is. 6. Pp. 435—447. DOI: 10.1080/10242690701701950 (date accessed: 31.05.2022).

contribute to economic growth if it is used to improve social field and infrastructure allowing business to develop steadily, calmly and stably. They note that wartime military spending rises rapidly with a direct effect on real gross domestic product during the first two quarters but loses its predictability during this period.

A. Abu-Qarn's research [4] analyzed (using Todd-Yamamoto version of the Granger causality test) relationship between defense spending and the economic growth of the rivals in the Arab-Israeli conflict over past four decades and indicated that, contrary to popular opinion and many previous research, he failed to find any sustained negative impact of military spending on economic growth.

In research paper work by JiiTian You, LinXi OuYang, XueYing Zhang, ShaoYi Du [5], it is noted that against the background of the integration of world economy and new international situation that emerged in the mid-2010s, defense legislation has become an important national strategy and its analysis by means of economics plays an important role in building and even increasing competitiveness of the country and nation in international community.

On the other hand, a number of research paper are devoted to economic research in the field of fuel and lubricant accounting and control. The latter include, in particular, research by M. Kotov and V. Drobakha [6] and others.

M. A. Al Qubaisi [7] proposed the following classification of expenses for logistical support for the troops:

a) weapons and military equipment procurement;
b) operation and maintenance of weapons and military equipment procurement;
c) maintenance of military bases and training grounds both inside the country and outside its borders;
d) fuel and lubricants.

For obvious reasons, data on accounting and effective use of fuel in defense field are not available to the general public. If we turn to organization of accounting for consumption of fuel and lubricants in the USA, we found out the following. According to the American non-governmental portal GlobalSecurity.org [8], unit responsible for the army fuel reserves is usually at battalion level or higher: it is there that the actual accounting procedures of fuel and lubricants released and consumed by

4 Abu-Qarn A. The Defense-growth nexus: An application for the Israeli-Arab conflict. *MPRA Paper*. Ben Gurion University of the Negev, 2010. URL: https://mpra.ub.uni-muenchen.de/22275/1/MPRA_paper_22275.pdf (date accessed: 31.05.2022).

5 JiTian You, LinXi OuYang, XueYing Zhang, ShaoYi Du. The Application of Economic Analysis in the Field of Military and National Defense Legislation. *ICEBT 2018 : Proceedings of the 2nd International Conference on E-Education, E-Business and E-Technology*. July 2018. Pp. 175—180. DOI: 10.1145/3241748.3241766 (date accessed: 31.05.2022).

6 Kotov V., Drobaha V. Increase accuracy accounting and control of diesel fuel consumption. *Collected scientific works of Ukrainian State University of Railway Transport*. March 2019. DOI: 10.18664/1994-7852.183.2019.169648 (date accessed: 31.05.2022).

7 Al Qubaisi M. A. Modern military expenditures and problems of sustainable development. *Economic and Social Development : 55th International Scientific Conference on Economic and Social Development* (Baku, 18—19 June, 2020). 2020. Vol. 2/4. Pp. 483—488. URL: https://www.esd-conference.com/upload/book_of_proceedings/Book_of_Proceedings_esdBaku2020_Vol2_Online.pdf (date accessed: 31.05.2022).

8 Chapter 8. Accounting / Petroleum Pipeline and Terminal Operating Units // GlobalSecurity.org. 12 May 1998. URL: https://www.globalsecurity.org/military/library/policy/army/fm/10-416/ch8.htm (date accessed: 31.05.2022).

various units take place. Incoming and outgoing data are collected and transferred to responsible person, who uses them to prepare and submit requests for the next period. If a unit (for example, a company) operates as a separate unit, then its commander is responsible for submitting fuel requirements for operation of vehicles. For planned events, need for fuel and lubricants is calculated for four months (current plus the next three). These services conduct daily and weekly inventories of petroleum products belonging to the army, separately for each type of product.

In the US army, fuel was always accounted for, although they were not used to saving on defense costs. However it was not until 1999 that the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics asked the Defense Science Board to investigate the Army's fuel-related problems because of the increasing number of such problems. A report on that inquiry released in 2001, *Making War More Effective by Reducing the Fuel Burden* found that until the Department of Defense begins to measure the true cost of fuel and develops clear plans to reduce fuel consumption of military vehicles, military will continue to will experience significant logistical and financial difficulties, as well as issues with transporting fuel to battlefield. Department of Defense is the largest consumer of fuel in the United States using approximately 1.8 % of the nation total transportation fuel [9]. This is not surprising, given the types of vehicles used by the US military. It is interesting that among the 10 largest army consumers of fuel, only the *M1 Abrams* tank and the *McDonnell Douglas AH-64,* Apache helicopter are combat vehicles, the rest are auxiliary equipment (for transporting fuel and other ammunition).

Scientific Council recommended that Ministry of Defense standardize pricing methods for estimating the cost of fuel (until then, it set fuel prices based on the wholesale price of refinery without taking into account the cost of delivery, caused the actual cost of fuel to be much higher than that indicated in the military accounting systems). Interestingly, software that the military used to calculate fuel efficiency was written in Fortran (a computer language that is no longer used) back in 1972 and has not been updated since.

Another recommendation of Scientific Council (to which our legislators can make sense) is to stimulate fuel economy throughout the Ministry of Defense: while purchasing new weapons, be sure to take into account its fuel efficiency (note that the allocation of resources and accounting in the Ministry of Defense on at that time efficiency was not encouraged and inefficiency was not punished). Excessive fuel costs are not only a mindless waste of budget funds: after all, it becomes an obstacle to effective war conducting. There are combat advantages of fuel economy in the growth of deployability, maneuverability, range, speed, reliability, etc.

However, such a transition to more energy-efficient weapons, unfortunately, cannot happen quickly. According to A. Andrews (2009) [10], the US Department of Defense consumed 145 million barrels

9 Book E. Pentagon Needs Accurate Accounting of Fuel / National Defense Magazine. 03/01/2002. URL: https://www.nationaldefensemagazine.org/articles/2002/2/28/2002march-pentagon-needs-accurate-accounting-of-fuel (date accessed: 31.05.2022).

10 Andrews A. Department of Defense Fuel Spending, Supply, Acquisition, and Policy. CRS Report for Congress. September 22, 2009. 27 p. URL: https://sgp.fas.org/crs/natsec/R40459.pdf (date accessed: 31.05.2022).

of petroleum products every year. In fiscal year 2000, fuel costs accounted for 1.2 % of the total expenditures of the Ministry of Defense and in 2008 they increased to 3.0 %. Over the same period, total defense spending has more than doubled, fuel spending has increased by nearly 500 %. According to the same report, there were 141 oil refineries in United States.

At the same time, V. Dachkovskyi and I. Kondratiuk [11] note that new or modernized weapons and military equipment should be effective in performing military tasks. However, not only adequate cost of their acquisition, but the cost of their operation is an integral part of the adoption of new and modernization of old models. The mentioned researchers proposed a method of technical and economic evaluation of weapons and military equipment procurement samples adopted or allowed for operation in the Armed Forces where structure of total costs for operation of weapons and military equipment procurement has the following components: costs of storage, maintenance, fuel and lubricants, repair of weapons and military equipment procurement samples and costs for ammunition.

However, most materials reveal these issues as of peacetime. It should be noted that a certain experience of the functioning of the forensic expert system during the war, that ensured necessary researches in Yugoslavia (1991—2001) is highlighted in the book by H. Ball [12], published much after the end of Yugoslav wars.

On the other hand, application specifics of forensic examinations during martial law were not considered in these research papers.

Professionals of the Sumy branch of the NSC «Hon. Prof. M. S. Bokarius FSI» during 2020 developed *Guidelinesfor conducting forensic economic examinations in cases of resolving issues related to research on military property accounting*. As is well known, military property includes, in particular, fuel and lubricating materials. In conditions of hostilities and shortage of fuel in Ukraine, the issue of accounting and effective use of fuel by military units of Armed Forces of Ukraine requires closer attention.

## Article Purpose

Elucidation of fuel accounting issues in conditions of martial law and Russian military aggression, determination of documentary justification for effective use of fuel by military units of the Armed Forces of Ukraine and territorial defense during combat missions.

## Main Content Presentation

Preservation issue and effective use of military property has gained considerable relevance in recent years. This is primarily due to the armed aggression in Crimea and East of Ukraine, started by Russia in 2014, and hostilities throughout the territory of Ukraine that have been ongoing since February 2022, as well as the current difficult economic situation. In addition, in the military field there are issues of imperfect regulatory and legislative provision of accounting and handling of military property (in particular, regarding its write-off), which elimination will make possible to protect military property from

11 Dachkovskyi V., Kondratiuk I. Technical and economic assessment of the weapons and military equipment exploitation. *Political Science and Security Studies Journal*. 2021. Vol. 2. № 4. Pp. 39—47. DOI: 10.5281/zenodo.5810146 (date accessed: 31.05.2022).

12 Ball H. Working in the Killing Fields: Forensic Science in Bosnia. University of Nebraska Press, 2015. 232 p. DOI: 10.2307/j.ctt1d9nj5c (date accessed: 31.05.2022).

theft, damage, destruction, etc., as soon as possible.

Legislation of Ukraine defines military property as state property assigned to military units, institutions and organizations of the Armed Forces. It includes "*houses, buildings, transmission devices, all types of weapons, combat and other equipment, ammunition, fuel and lubricants, food, technical, airfield, skipper, material, cultural and educational, medical, veterinary, household, chemical, engineering property, communication property, etc.*" [13].

Military property is managed by the Ministry of Defense of Ukraine by attaching it to military units (in case of their formation or reformation) and redistributing this property between military units (in case of their disbandment). Military property is assigned to military units of Armed Forces of Ukraine under the right of operational management.

It is necessary to account for all military property, regardless of its purpose and sources of income, at the same time, it should be done in a timely, reliable and accurate manner. This is necessary in order to obtain factual data on availability, loss, shortage, movement, value and quality (technical) condition of military property that will contribute to correct organization of logistical support of military units, arrangement of proper control over storage conditions, expediency and effectiveness of military property use (expenditure) and will help prepare data for compilation of accounting documents and state statistical reporting.

Taking into account the state of war currently operating on the territory of Ukraine with the aim of preventing abuse and effective use of fuel and lubricant materials, forensic economists are asked questions about documentary and regulatory validity of the use of fuel by military units of Armed Forces.

Forensic experts have right to act only within the limits of granted powers. The same forensic economic examination is carried out based on the established facts of fuel shortages and overtime write-offs in compliance with relevant decision of investigating judge or the investigator's resolution.

Research on these issues is carried out taking into account peculiarities of accounting and movement of military property, in accordance with accepted rules for receiving, issuing and writing off material assets in Armed Forces, regulated by relevant regulatory acts, in particular:

- Law of Ukraine: *On the Legal Regime for Property in the Armed Forces of Ukraine* [14];
- Instruction on accounting for military property in Armed Forces of Ukraine[15];
- Regulation on procedure for accounting, storage, write-off and

13 Про правовий режим майна у Збройних Силах України : Закон України від 21.09.1999 р. № 1075-XIV (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/1075-14 (date accessed: 31.05.2022).

14 Про правовий режим майна Збройних сил України ... . URL: https://zakon.rada.gov.ua/laws/show/1075-14 (date accessed: 31.05.2022).

15 Про затвердження Інструкції з обліку військового майна у Збройних Силах України : наказ Міноборони України від 17.08.2017 р. № 440 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z1192-17 (date accessed: 31.05.2022).

use of military property in Armed Forces [16];

- National regulation (standard) of accounting in public sector 121 *Fixed assets* [17]*;*
- Regulation on inventory of military property in Armed Forces [18];
- Procedure for applying the Project on accounting accounts in the public sector; A standard correspondence of accounting sub-accounts to reflect transactions with assets, capital and liabilities by managers of budget funds and State trust funds; Standard correspondence of accounting sub-accounts for displaying operations for the State budget implementation; Standard correspondence of accounting sub-accounts for displaying local budget operations; Changes to some regulatory legal acts of the Ministry of Finance of Ukraine on accounting [19];
- Procedure for drawing up standard forms of memo slips and other accounting registers of public sector entities; memo slips № 1—17; log of analytical accounting of deposited wages and scholarships; register of deposited sums; negotiable instrument; accounting certificate; log: *Journal-main* [20]*;*
- Guidelines on organization and maintenance of accounting in Armed Forces of Ukraine [21];
- Calculating project of accounting in the public sector [22];
- Regulations on accounting in the Armed Forces of Ukraine [23];

16 Про затвердження Положення про порядок обліку, зберігання, списання та використання військового майна у Збройних Силах : Постанова КМУ від 04.08.2000 р. № 1225 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/1225-2000-%D0%BF#Text (date accessed: 31.05.2022).

17 Про затвердження національних положень (стандартів) бухгалтерського обліку в державному секторі : наказ Мінфіну України від 12.10.2010 р. № 1202 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z1017-10 (date accessed: 31.05.2022).

18 Про затвердження Положення про інвентаризацію військового майна у Збройних Силах : Постанова КМУ від 03.05.2000 р. № 748 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/748-2000-%D0%BF#Text (date accessed: 31.05.2022).

19 Про затвердження деяких нормативно-правових актів з бухгалтерського обліку в державному секторі : наказ Мінфіну України від 29.12.2015 р. № 1219 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z0085-16 (date accessed: 31.05.2022).

20 Про затвердження типових форм меморіальних ордерів, інших облікових регістрів суб'єктів державного сектору та порядку їх складання : наказ Мінфіну України від 08.09.2017 р. № 755 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z1416-17 (date accessed: 31.05.2022).

21 Методичні рекомендації з організації та ведення бухгалтерського обліку у Збройних Силах України : наказ Міноборони України від 19.12.2014 р. № 905 (зі змін. та допов.).

22 Про затвердження Плану рахунків бухгалтерського обліку в державному секторі : наказ Мінфіну України від 31.12.2013 р. № 1203 (із змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z0161-14 (дата звернення 31.05.2022).

23 Положення з бухгалтерського обліку в Збройних Силах України : затв. наказом Міноборони України від 21.06.2007 р. № 363 (зі змін. та допов). URL: http://parusconsultant.com/?doc=06VHE9B9B8&abz=ARUA4 (дата звернення 31.05.2022).

- Instruction on the use of automotive equipment in the Ministry of Defense and Armed Forces of Ukraine [24].

It should be remembered that accounting of military property in cases provided for by law is carried out in compliance with requirements for preservation of state secrets.

Military property of permanent reserves intended for use in a special period (which in peacetime is in long-term storage in military units) is accounted for separately from the other.

Military property at military (ship) facilities, in support services of military administration bodies, in services of military units and formation, in warehouses, arsenals, and bases are accounted for both in peacetime and in a special period in accordance with requirements of regulatory and legal acts of the Ministry of Defense of Ukraine and legislative acts of Ukraine.

In accounting of military units, full and reliable information on military property and funds, income and expenses, as well as on all economic transactions carried out for:

- balance sheet and off-balance sheet accounts provided for by the Project of accounting calculations of Budget Institutions [25];
- general and special funds of the State Budget of Ukraine;
- software classification codes of expenses;
- codes of economic classification of expenses or codes of classification of budget revenues by special fund;
- items of expenditure according to the estimate of Ministry of Defense or types of income of special fund;
- security services;
- structural subdivisions;
- materially responsible persons;
- military units enrolled in support.

Next, we will consider the types of accounting of military property conducted by relevant services (food, property, housing and maintenance, fuel and lubricant materials, etc.), some features of such accounting, as well as the amount of knowledge of forensic experts necessary for conducting forensic economic examinations related to accounting and use of fuel by military units of the Armed Forces of Ukraine.

Firstly, there are four main types of military property accounting maintained by relevant services (in particular, service of fuel and lubricants):

- quantitative accounting of military property;
- qualitative accounting of military property;
- accounting of military property in numerical indicators;
- accounting of military property in value indicators.

Quantitative accounting of military property is carried out in natural indicators in standard units of measurement and accounting, determined by the *State Classifier of Ukraine, Classifier of the system of designations of measurement and*

24 Про затвердження Інструкції про використання автомобільної техніки у Міністерстві оборони та Збройних Силах України : наказ Міноборони України від 12.12.2016 р. № 678. Київ, 2016.

25 Про затвердження деяких нормативно-правових актів … . URL: https://zakon.rada.gov.ua/laws/show/z0085-16#n13 (date accessed: 31.05.2022).

*accounting units ДК 011-96* [26]. According to quality (technical) condition, military property is recorded by categories (no more than five) by degrees of suitability (suitable or unsuitable) or by grade in accordance with State standards.

Military property is recorded in accounting and numerical indicators in accordance with factory numbers of samples of military property. Valuation of military property is carried out in national currency of Ukraine.

Military property value (as of the moment it comes under the control of the Ministry of Defense) is determined by its purchase price or the value (price) specified in contracts concluded for its manufacture and delivery.

Military property value of located in military units and secured by them under the right of operational management is determined according to the Methodology for determining the residual value of the property of the Armed Forces of Ukraine and other military formations [27] (except for cases when the value of military property is determined on the basis of a report on the valuation of property prepared by in accordance with the Law of Ukraine *On Appraisal of Property, Property Rights and Professional Appraisal Activity in Ukraine* [28]).

Secondly, accounting of military property is carried out by materially responsible persons and relevant services.

Previously, military property according to its characteristics can be qualified as stocks (in particular, fuel and lubricants), according to the requirements of the order of the State Treasury of Ukraine; *On approval of standard forms of accounting and write-off of stocks of budgetary institutions and Instructions on their compilation* [29] (expired on the basis of the order No. 838[30] of Ministry of Finance of Ukraine dated on 31.12.2020) were recorded in the following accounting registers:

- logs on quantitative and total accounting (standard form No. 3-6);
- logs on quantitative and total accounting (standard form No. 3-6a);
- quantity and total accounting cards (standard form No. 3-7);

26 Державний класифікатор України «Класифікатор системи позначень одиниць вимірювання та обліку ДК 011-96» : затв. наказом Держкомстандартизації, метрології та сертифікації України від 09.01.1997 р. № 8. [Чинний від 01.07.1997 р.]. URL: https://zakon.rada.gov.ua/rada/show/v0008217-97 (date accessed: 31.05.2022).

27 Про затвердження Методики визначення залишкової вартості майна Збройних Сил України та інших військових формувань : Постанова КМУ від 29.05.1998 р. № 759 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/759-98- %D0 %BF (date accessed: 31.05.2022).

28 Про оцінку майна, майнових прав та професійну оціночну діяльність в Україні : Закон України від 12.07.2001 р. № 2658-III (зі змін. та допов.). URL https://zakon.rada.gov.ua/laws/show/2658-14 (date accessed: 31.05.2022).

29 Про затвердження типових форм обліку та списання запасів бюджетних установ та Інструкції про їх складання : наказ Держказначейства України від 18.12.2000 р. № 130 (утрат. чин.). URL: https://zakon.rada.gov.ua/laws/show/z0962-00 (date accessed: 31.05.2022).

30 Про затвердження змін до деяких нормативно-правових актів з бухгалтерського обліку бюджетних установ : наказ Держказначейства України від 28.01.2002 р. № 12 (зі змін. та допов.). URL: https://zakon.rada.gov.ua/laws/show/z0140-02#Text (date accessed: 31.05.2022).

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- negotiable note (standard form № 3-11).

In other words,military property accounting was carried out by recording in cards, accounting logs, other material media in a special (paper or electronic) format in the form of information, order, manuals, journals, typescripts, containing information about amount of property accounted for, its quality (technical) condition, registration and factory numbers, value (price), as well as about its movement, loss or shortage.

Instead, Ministry of Finance of Ukraine (order No. 816 dated on 28.12.2020[31]) changed the norms of guidelines on accounting for public sector entities, as a result of which budgetary institutions received an updated form of inventory write-off act.

Missing of approved standard forms for registration of individual economic transactions with stocks, State sector entity is allowed to independently develop and approve in administrative document on organization of accounting appropriate forms of necessary primary documents, which must contain mandatory details.

There are two types of military property accounting in military administration bodies: operational and according to primary accounting documents. Operational accounting of military property is the main accounting type, it is conducted on the basis of reports periodicity determined by time sheets of urgent reports.

Military property (in particular, fuel and lubricants) received from the supplier is subject to accounting according to primary accounting documents.

Primary accounting documents include: invoices, orders, purchase orders, check demands, distribution and delivery information, deeds, receipts, travel, work, production and distribution letters, certificates. They are intended for registration of operations related to movement and change of value and qualitative (technical) condition of military property and are the basis for records of accounting data in accounting registers.

Accounting registers reflect availability, movement and quality (technical) condition of military property (its value).

Military property is recorded at the place of its responsible storage (location) and in financial service.

Accounting in military units is conducted according to memo slip form.

All memo slips are registered in registers of synthetic accounting: *Journal-Main* log.

Procedure for keeping records of fuel and lubricants of service of fuel and lubricants in the division of the military unit is defined in ch. XVIII *Peculiarities of the accounting of fuel and lubricants, special liquids, alcohol and technical means of service of fuel and lubricants* Instructions on the accounting of military property in the Armed Forces of Ukraine [32] (hereinafter referred to as *Instruction № 440*) defining:

31 Про визнання таким, що втратив чинність, наказу Державного казначейства України від 18 грудня 2000 року № 130 : наказ Мінфіну України від 28.12.2020 р. № 816. URL: https://zakon.rada.gov.ua/rada/show/v0816201-20 (date accessed: 31.05.2022).

32 Про затвердження Інструкції з обліку військового майна ... . URL: https://zakon.rada.gov.ua/laws/show/z1192-17 (date accessed: 31.05.2022).

*"1. Accounting for fuel and lubricants, specific liquids and alcohol is carried out according to the following standard units of measurement:*

- *in support services of military administration bodies and military units, in operational and accounting unit, storage units and Military property registration card (categorical one) of support center, in fuel warehouse and refueling point for equipment of military unit, in unit of the aviation unit, as well as in the unit located or operating separately from its of military unit, in kilograms by name, brand and quantity, and in warehouses (storages) of the supply center, in fuel warehouse, in price terms per accounting unit;*
- *in a unit stationed or operating with its military unit, in liters, by names, brands and quantity;*
- *in financial and economic body of military unit, supply center, as well as on the ship (vessel) in kilograms by names, brands, quantity and value.*

*Structural division of Ministry of Defense designated for organization and conducting public procurement, conclusion and support of contracts for the supply of military property in the direction of rear support, keeps records of fuel and lubricant materials that come from manufacturers (suppliers) according to centralized calculations, by names, brands, quantities and cost, as well as control over the fulfillment of the terms of contracts for the supply of fuel and lubricants.*

*2. For the refueling of equipment with fuel and lubricants in the service of a military unit, a distribution (handover) notice is drawn up separately for each unit handed over to the Head of fueling point of military unit for execution. After expiry of its validity period (at the end of each working day), the Head of equipment refueling point of the military unit sums up results of fuel delivery (in liters and kilograms) in the report and submits it to relevant service of providing military unit.*

*Recalculation of issued fuel from liters to kilograms is carried out by the head of the military unit or the head of the filling station. Calculation accuracy is one kilogram (at the same time, the mass of 0.5 kg and more is rounded up to 1 kg and less than 0.5 kg, to zero).*

*3. Release of fuel from warehouse of a military unit to driver of a fuel filling station or tanker truck for refueling equipment is carried out under a signature in manual of military property issued for temporary use. At the same time, the Head of supply service of military unit issues to the driver of the refueling station (tanker) a distribution (dispensing) notice, according to which the driver of the refueling station (tanker) refuels vehicle with fuel and accepts the fuel that is drained from, under his signature in the log of accounting documents. Refueling and receiving fuel are made out with separate distribution (dispensing) information.*

*After refueling (acceptance) of fuel, the driver of fuel tank (tanker truck) hands over the distribution (delivery) list and the remaining (accepted) fuel to the warehouse of the military unit. The head of the warehouse puts his signature in the record book of military property issued for temporary use, about the acceptance of fuel and handing out information from the driver of the fuel tank (tanker). At the end of each working day, Head of military unit warehouse sums up results of the fuel delivery (in liters and* *kilograms) in handout (handover) report and submits it to relevant service of the military unit.*

*4. Fuel received at a warehouse (refueling point) of a military unit by a unit that independently refuels equipment with regular fuel is recorded in this unit in the book of military property (warehouse, unit).*

*Dispensing of fuel in a unit that carries out independent refueling of equipment with regular means is carried out according to distribution (issuance) information with appropriate records of amount of fuel dispensed in the waybills (appendix 82) and work sheets of aggregates (appendix 83)".*

The form of the waybill and its design is determined by Clause 1 of Appendix 82 of Instruction № 440, according to which "*waybill is an administrative document issued to the unit commander and the driver for the performance of the task and is the basis for accounting for the operation of the machine, as well as for writing off expenses and determining saving (over expenditure) of fuel*".

The Instruction on the use of automotive equipment in the Ministry of Defense and the Armed Forces of Ukraine (hereinafter referred to as Instruction No. 678)[33] defines the main measures for the effective use of machines, saving motor resources, diesel fuel, gasoline, lubricants, etc., as well as the procedure and features of vehicle using in Ministry of Defense and Armed Forces. It states the following:

*"2.5. The main measures to save motor resources and fuel are:*

*compliance with the norms and rules for operation of automobile equipment, defined in instructions for operation of equipment samples;*

*<...>*

*vehicle use at the most economical modes of engine operation; <...>*

*3.2. Planning the use of vehicles should ensure combat readiness, combat duty, project implementation for combat training and economic activity of military units, efficient and accident-free use of vehicles and economical use of fuel.*

*<...>*

*3.35. Accounting of vehicle use and the work performed is carried out: in the road and route sheets, work unit sheet, in the accounting log for the vehicle work, consumption of fuel and lubricants, in the accounting log k of automotive equipment (Appendix 11), in Monthly Operation Project, in the vehicle license (special installation, engine).*

*3.36. Vehicles of military units are used according to waybill <...>.*

*The waybill is an order to the unit commander and the driver to perform the task. It is the basis for writing off and determining fuel savings (overspending), as well as accounting for work performed.*

*The waybill is drawn up in the automobile service (technical unit) of the military unit, signed by the automobile service Head certified with a seal, and handed over to the division for signature (in some cases, to the officer on duty in the unit).*

*Waybill is issued for one day, for on-duty vehicles — an on-duty tractor, a fire engine, fire engines of fire departments — for up to five days and when the vehicle is sent on combat duty, training and on a long business trip — for the duration of the task, but not more than 10 days In the event of*

33 Про затвердження Інструкції про використання автомобільної техніки ... .

*a longer business trip, the head of the vehicle (head of the convoy) is issued for reporting forms of waybills, which are registered and signed by the deputy commander of the military unit for armaments (automobile service Head) and certified with a seal.*

*Waybills are handed over for signature to the unit commander who assigned cars taking into account provision of sufficient time for the preparation of drivers and cars for the flight, but no later than 4:00 p.m. the day before departure.*

*In the event that a military unit leaves due to an alarm, waybills are prepared in advance and stored in the unit (unit) on duty issued to the senior who is going to the park with drivers.*

*In some cases (if there are specifics of deployment or performance of tasks by a military unit), procedure for storing and issuing travel documents is established by the military unit commander.*

*3.40. The operation of the machine during use is confirmed by entries in the waybill. After each trip or on the day the car is returned, the driver fills out section II: "Car operation". The head of the car (the person at whose disposal the car was allocated) in column 14 of the waybill makes a record of the speedometer reading, the time and place of release of the cars and puts his personal signature. If the use of the machine was entrusted to the driver, the entry in the waybill about its operation is made by the driver. After the end of using the car, the waybill is checked, signed by the commander (senior technician) of the unit or a person appointed by the military unit commander and handed over to the military unit automobile service (technical unit).*

*It is forbidden to issue a new waybill to drivers, if the waybill for previous car leaving the park has not been drawn up and handed in, and in case of loss, until the reasons are clarified and measures are taken.*

*3.41. Data from the waybill about vehicle operation, fuel consumption are recorded daily in accounting log for the vehicle operation, fuel and oil consumption."*

Therefore, requirements of the above legislative acts provide that:

- accounting in the Armed Forces is conducted in accordance with normative legal acts of the Ministry of Defense and State Treasury of Ukraine defining the rules and specifics of accounting in budgetary institutions (military units, warehouses, etc.);
- accounting is a mandatory type of accounting that is kept at the enterprise;
- basis for displaying an entry in accounting registers are properly executed primary documents;
- primary documents must have mandatory details;
- military property is recorded at the place of its responsible storage (location) and in the financial service;
- accounting in military units is conducted according to memo slip form.
- all memo slips are registered in the registers of synthetic accounting (*Journal-main* log).
- waybill is an administrative document issued to the unit commander and the driver to perform the task, it is the basis for accounting for vehicle operation, as well as for writing off expenses and determining fuel economy (overspending).

In other words, research objects while forensic economic examination on accounting and use of fuel by military units of Armed Forces are:

- primary accounting documents;
- property purchase or delivery contracts;
- content of conducted inventories,
- accounting registers of analytical accounting of military property (fuel) regarding quantity, movement, shortage or surplus;
- registers of synthetic accounting (memorial orders, *Journal-main* logs).

Forensic expert investigates asked questions for issue resolution and based on results of a thorough analysis of these objects, provides a well-founded conclusion.

However, as forensic expert practice demonstrates, most often documents provided for research make impossible to provide categorical answers, because they do not have a complete and sufficient amount of information, or are selective and contain a significant number of unconditioned corrections. Responsible persons of military units of the Armed Forces of the Armed Forces in conditions of martial law prepare fuel accounting documents in an untimely manner causing their untimely submission for examination.

Thus, on the one hand, the issue of effective use of fuel by military units of the Armed Forces is very important and relevant. On the other hand, the following issues accompany the conduct of forensic economic examinations on accounting and use of fuel by military units of the Armed Forces:

- provision of an incomplete package of documents necessary for solving the issues raised before forensic economics;
- provision of documents containing a significant number of unconditional corrections;
- difficulty in calculating the total amount used fuel related accounting documents is recorded either in kilograms or in liters requiring correct conversion from one value to another, taking into account fluctuations in air temperature and fuel density (such data that cannot always be provided to forensic expert for research).

While forensic economic examinations related to accounting and use of fuel by military units of the Armed Forces of Ukraine, forensic experts resolve the following issues:

1) "Is the write-off of fuel and lubricant materials (specify which exactly) justified according to primary documents and accounting records of the military unit ... for the period ... for military equipment operation (specify which ones exactly)?";
2) "In what quantity and for what amount, according to military unit waybills ... is use of fuel and lubricants (specify what exactly) during the period ... for military equipment operation(specify what exactly)?";
3) "Is the lack of fuel and lubricating materials (specify which ones) of military unit ... for materially responsible person ... indicated in inventory description from ... for the total amount of ... UAH as of (specify date) documented?";
4) "Is it documented that the remains of fuel and lubricant materials (specify which ones) of the military unit ... for materially responsible person ..., specified in the inventory description

from ... for the total amount of ... UAH as of (specify the date)?";

5) "Whether the conclusions of audit report (inspection or other control measure) regarding the causing of material damage to the military unit ... (therefore – the state) in the form of a lack of fuel and lubricant materials (specify which ones) for the total amount of ... UAH specified in the inventory have been documented description from ...?";
6) "Whether the conclusions of the professionals regarding the causing of material damage to the military unit ... (therefore, to the state) in the form of a lack of fuel and lubricants (specify what exactly) for the total amount of ... UAH indicated in the inventory from ..., provided that the primary accounting documents to which (as determined by investigation) knowingly false information regarding the issue of fuel at the combat supply point of military unit ... (or specify other reasons) was entered?".

## Conclusions

The authors analyzed current legislation of Ukraine regulating expert economic activity regarding the accounting of fuel costs in the Armed Forces, noting that it does not provide an opportunity to unequivocally answer the questions asked to forensic experts. On the other hand, it does not take into account peculiarities of conducting such examinations in wartime conditions that requires a separate regulation.

Theoretical and practical aspects of conducting forensic economic examinations on accounting and use of fuel by military units of the Armed Forces of the Armed Forces of Ukraine can be applied in forensic expert practice in order to optimize working time of forensic experts.

**Судові економічні експертизи з питань обліку пального у Збройних силах України**

***Наталія Панченко, Ірина Гордієнко, Ольга Грек***

*Досліджено теоретичні напрацювання судових експертів щодо особливостей обліку пального в транспортній та оборонній сферах, наведено перелік законодавчих і нормативних актів, якими врегульовано порядок обліку, руху та списання пально-мастильних матеріалів у військових частинах. Авторки мали на меті висвітлити питання обліку пального в умовах військового стану й російської військової агресії, документально обґрунтувати ефективне використання пального військовими частинами Збройних сил України та територіальної оборони у процесі виконання бойових завдань. Узагальнено об’єкти дослідження судових економічних експертиз, окреслено коло наданих експертам повноважень під час проведення таких експертиз. Зазначено особливості обліку й руху військового майна, характерні для правил прийому, обліку, видавання та списання матеріальних цінностей у Збройних силах України. Визначено питання й завдання, вирішувані експертами під час проведення судових економічних експертиз, пов’язаних з обліком і використанням пального військовими частинами Збройних сил України. Наведено перелік законодавчих та нормативно-правових актів, якими мають керуватися у своїй професійній діяльності економісти-експерти, обліковуючи*

*військове майно. Звернено увагу на неврегульованість деяких питань такого обліку (наприклад, коли одні законодавчі акти втратили чинність, а нових натомість не ухвалено), що спричиняє певні складнощі. Висвітлено й розкрито основні види обліку військового майна (кількісний і якісний обліки; обліки військового майна в обліково-номерних і вартісних показниках).*

***Ключові слова:*** *військове майно; особливості обліку майна; пально-мастильні матеріали; кількісний, якісний, обліково-номерний облік; облік військового майна у вартісних показниках.*

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The authors declare that they have no conflict of interest.

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