ANNOTATIONS OF THE ARTICLES

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SCIENTIFIC ASPECTS OF THE TRANSPORT NOOSPHERE

The article shows the relevance of the topic related to the transformation of the information field of the B-A-D-S system into a new concept of the transport noosphere, in the process of technical evolution. In this connection, it is possible to formulate the purpose of this article; it is to improve the efficiency of the V-A-D-S system by developing the scientific aspects of the transport noosphere.

In the proposed modernized system V-A-D-S «information» was allocated as an independent unit. The formation of the «Information» block of the V-A-D-S system is considered, it is collected and analyzed in the Information Diagnostic Center (IDC). This transformation became possible due to the application of methods of system analysis, probability theory and Boolean algebra.

As a result, a logistic model was obtained showing the information relationships between the elements of the modernized system B-A-D-S and the contribution of each component to the formation of the transport noosphere.

This approach reveals the possibilities of using transport noosphere to ensure that the technical condition of each vehicle with signs of mechatronic systems is taken into account.

Keywords: *transport noosphere, mechatronic systems, Boolean algebra, probability theory, system analysis, logic and diagnostics.*

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ABOUT THE PRINCIPLES OF OPTIMAL ALLOCATION OF AVERAGE COMMISSIONERS IN THE CITY

The relevance of the of the investigated problem is caused by the permanent presence of traffic jams in the streets of cities caused by various road accidents, which drastically reduce the capacity of the carriageway and make it difficult for road users to transit. The aim of the work is to develop the principles for creating the optimal structure of city services for emergency commissioners, which makes it possible to improve the efficiency in liquidating the consequences of road accidents. In the article, the approaches to the location of production in various sectors of the national economy were analyzed; on the bases of these approaches, a scientifically grounded approach to solving the problem of rational development and placement of crews of average commissioners on the territory under consideration is offered. The materials of the article can be useful in regulating and rationing the activities of the services of average commissioners, the state inspectorate of road safety, and in coordinating their interaction with insurance companies.

Keywords: *traffic jams, traffic safety, road and transport incident, average commissioner, urban transport complex.*

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LEGAL TREATMENT AND TECHNICAL EVALUATION OF DRIVER'S ACTIONS WHEN PERFORMING OVERTAKING IN NIGHT TIME

The urgency of the investigated problem is caused by the necessity to regulate the driver's actions when performing a collision at night, which allows to evaluate his actions objectively.

The article is aimed at legal treatment and technical assessment of the actions of the driver, proceeding to carry out a maneuver «overtaking» at night, in case of a collision with an object not properly marked.

This problem is solved by analyzing the current requirements of Russian and international legal norms regulating the actions of the driver in the traffic situation under study.

A calculation has been made showing the need to analyze the technical feasibility of preventing a collision on an object that is not properly marked. This makes it possible to exclude the unjustified conviction of the driver, which has started the maneuver performance of overtaking in nighttime. In order to ensure safety at performing of the «overtaking» maneuver, it is proposed to make a number of changes to the Traffic Rules of the Russian Federation. In particular, to exclude in the point 11.1 of the Rules the combination of requirements not to create hindrances and danger to other participants of the movement, preserving only the requirement not to create danger.

The results of the research have the applied nature and can be used by practicing auto experts for the auto technical expertise in order to obtain objective data on the performance by drivers of the requirements of traffic rules when performing a maneuver «overtaking» at darkness.

Keywords: *nighttime, overtaking, road safety, lack of visibility.*

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EVALUATION OF THE INFLUENCE OF TECHNOLOGICAL PARAMETERS AND OPERATING FACTORS ON THE EFFECTIVENESS OF COMPRESSED NATURAL GAS APPLICATION ON ROAD TRANSPORT

The aim of the presented study is to increase the efficiency of the vehicles operation due to the justified application of compressed natural gas. The mathematical model defining technical and economic indicators of using gas engine fuels on the road transport is developed for achievement of the goal. The assessment of the influence of technological parameters and operational factors on the effectiveness of the compressed natural gas application is based on the results of modeling the technical and economic parameters of the vehicles operation on gas and conventional fuels. As a result of the simulation, the nature of the influence of the main operational factors and technological parameters on the efficiency of the application of compressed natural gas under given conditions was determined. The obtained data are necessary for defining the field of effective use of compressed natural gas on the road transport used at implementation of federal and regional target programs transferring the park of vehicles to gas engine types of fuel.

Keywords: *gas motor fuel, compressed natural gas, operation of vehicles, mathematical modeling, technical and economic indicators.*

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IMPROVING THE EFFICIENCY OF THE FUNCTIONING OF THE TRANSPORT SERVICE SYSTEM OF THE POPULATION

The article is devoted to the problem of ensuring the quality of passenger road transportation. The research is carried out using elements of the theory of system analysis, mathematical modeling, probability theory and mathematical statistics, expert evaluation theory, field surveys, linear and nonlinear programming, and the theory of road transport.

The paper presents the results of the development of a mathematical model for the formation and quality assurance of passenger road transportation, taking into account the interrelation of the transport quality indicators with the parameters of the rolling stock and the route network.

The appeals of citizens using the city passenger transport in Orenburg are considered. Based on these appeals, a gradient scale has been developed that describes quantitative indicators of complaints from consumers of urban passenger transport services.

Taking into account the current situation in the area of urban passenger transport services, a comprehensive quality indicator has been developed, as well as weighting factors that allow estimating the contribution of private indicators to the general indicator of the quality of urban passenger transport services.

Keywords: *automobile transportation, quality, passenger transportation, dispatching management.*

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THE INFLUENCE OF LANE OCCUPANCY ON THE TRAFFIC INTENSITY

In accordance with the current legislation of the Russian Federation at intersections with high intensity and concentration of road accidents it is used traffic light control. This measure, of course, reduces the risk of accidents, but it also greatly reduces the throughput of the intersection. Subsequently, unrealized demand forms a transport queue of considerable length, impeding the functioning of the transport system in the city. Therefore, improving the efficiency of road traffic at signalized intersections is an important problem especially for large cities.

The purpose of this article is to determine the pattern of the influence of lane occupancy on the traffic intensity for further its practical use in order to improve the traffic management at signalized intersections.

The methodological basis of this work are the traffic flow theory, the theory of planning of experiment and regression analysis.

As a result the numerical values of lane occupancy were eventually determined, under which maximum traffic intensity at the output of a homogeneous uniformly moving traffic flow of different composition is realized. In addition, models, describing the dependence of the intensity of vehicles from the lane occupancy with respect to the direction of traffic flow at the intersection, were obtained.

The obtained results can be used to solve various problems in the field of traffic: operational dispatching management of transport streams; software developing of automated systems of traffic control; simulation of traffic flows.

Keywords: *lane occupancy, traffic intensity, signalized intersections, traffic management.*

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TECHNIQUE AND MACROCALCULATION RESULTS OF THE DIFFERENTIATED ASSESSMENT OF ECONOMIC DAMAGE FROM ROAD AND TRANSPORT ACCIDENT RATE IN THE VOLGA FEDERAL DISTRICT SUBJECTS

In the article questions of quantitative assessment of economy damage, formed as a result of the road accidents (RA), in the Volga Federal District (the VFD) subjects are considered. The relevance of this subject is caused by huge economic losses from road and transport accident rate. In Russia in recent years from 20 to 30 thousands of people annually die in road accident; from 200 to 300 thousands of persons get wounds of various degrees of severity.

The purpose of the article is to present a technique and results of calculation of economic damage to regions in the Volga Federal District, formed as a result of death and wounds of people in road accident and also material (property) losses and ecological harm. Results of calculations of damage from road accident are given. Reasons on influence on the size of damage of the external environment socio-economic factors are presented.

Keywords: *road and transport accident rate, economic damage, the differentiated assessment, regions of Russia, the Volga Federal District.*

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RESEARCH OF INFLUENCE OF STOPPING POINTS ON THE FLOW CAPACITY OF URBAN FREEWAYS AND SIZE OF EXPENSES ON TRANSPORTATIONS

The relevance of the studied problem is caused by many factors (parking of transport, a stop of route vehicles, crosswalks and others), which quantitative influence on the flow capacity of urban freeways isn't defined.

The purpose of the article is to study the influence of stopping points of the route vehicles (RV) on flow capacity (on the example of Orenburg) and to define the coefficients of capacity reduction of these road stretches of urban freeways.

The leading method of the research is the natural determination of flow capacity on stages of the highway and in zones of stops of RV, and calculation of coefficient of capacity reduction based on these data. The coefficient of capacity reduction of the road stretches with stopping points of RV changes from 0,73 to 0,49, depending on geometrical parameters, number of stops and the usage time of stopping points. Materials of the article can be useful at identification of "bottlenecks" of a street road network and in the development of actions for the traffic organization.

Keywords: *flow capacity, economic efficiency, stopping points, route vehicles.*

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ENSURING ENVIRONMENTAL SAFETY OF MOTOR TRANSPORT FLOWS BY THE INTEGRATED ACCOUNT OF EMISSIONS OF HARMFUL SUBSTANCES AND DEVELOPMENT OF ORGANIZATIONAL AND TECHNICAL ACTIVITIES

Urgency is due to the need for complex accounting of harmful substances from road traffic generated during the operational wear of tires, brake mechanisms, road surface and the development of modern organizational and technical measures aimed at their reducing. The purpose of the study was to develop a technique for the ecological monitoring of motor transport flows on the parameters of complex contamination of the surface layer of the atmosphere. It makes it possible to estimate the total toxicity of harmful substances that can accumulate in the surface layer of the atmosphere and penetrate the respiratory zone of the population. Experimental studies, determining the concentrations of harmful substances, coming to the environment as a result of wear of tires, brake mechanisms, road surface from the traffic flow at the busiest intersections in Orenburg, were carried out using standardized methods and equipment. The predicted masses of harmful substances and the degree of toxic air pollution from road traffic are determined. The obtained results of environmental monitoring can be used to solve a set of scientific and practical tasks for organizing traffic, including the assessment of ecological effectiveness and efficiency of various organizational and technical solutions for each of the emission sources.

Keywords: *harmful substances, environmental pollution, ecological safety, motor traffic flows, traffic intensity, transport work, complex indicator.*

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EXPENSE CONTROL OF SPARE PARTS TAKING INTO ACCOUNT THEIR QUALITY AT PASSENGER TRANSPORT ENTERPRISE

The subject is the influence of the quality of purchased spare parts on their application.

The aim is to determine the specific cost of spare parts based on their quality during operation term of rolling stock, and the assessment of the deficiency level of spare parts.

The used method allows to record not only the fact of staying of measured parameter in the admission or out of it, but the specific value of this parameter. Level of deficiency in this case is defined as the probability of one of the events.

The experiment showed that the effectiveness of the use of original spare parts has averaged 32.5 thousand rubles a year.

The number of defective spare parts in recent years has decreased (≈ 30%) due to the transition of the passenger motor transportation enterprises for genuine spare parts.

Keywords: *spare parts, quality control, expenses, level of defects, specific costs.*

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TECHNIQUE IMPROVEMENT OF PROTECTION OF THE CAR BODY PAINT COATING AT THE CAR OPERATION

The purpose of the presented research is to increase in efficiency of cars operation due to reasonable use of protection means of paint coating during cars operation.

The main damages of cars bodies depending on the reason of their emergence are considered. The structure of paint coating of a car body with distribution of layers thickness of the different materials which are a part of a protective surface is studied. Factory values of thickness of protecting paint coatings of bodies in modern cars are provided. Modern ways of paint coating protection of a car body are analyzed, the main advantages of the most widespread method are revealed. Zones of a car body are shown which are the most subject to mechanical damages in operation. The criterion function of thickness determination of paint coating, taking into account car operating time, allowing to solve a problem of calculation of admissible and extreme values of coating thickness of front body panels without long service tests, is developed, and it also allows to receive some indicators of reliability of a body protective surface in operation. As a result of mathematical modeling the nature of influence of external factors on efficiency of cars bodies operation is defined. The obtained data are necessary for identification of effective application field of protecting paint coatings of bodies during cars operation.

Keywords: *car body, car, protecting paint coating, technical condition, maintenance.*

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TO THE QUESTION OF ASSESSMENT OF EFFECTIVE CARS USE

The relevance of the article is caused by the fact that the preventive maintenance and repair system allows to maintain good technical condition of the car and ensure its safe and comfortable operation. However, it

isn't always obviously possible to define the actions allowing to receive the best result in aspect of efficiency of the car operation.

Therefore, the purpose of this article is to determine the possibility of using the developed technique of the effectiveness evaluation of the vehicle operation on the integrated indicator on the example of the car brands KAMAZ-4310, equipped with engine KAMAZ - 740.10 taking into account the technical condition of the camshaft lobes.

It was found that when comparing two options strategies to repair the camshaft (where the first option involves the replacement of a camshaft with worn lobes on new one, and second option – on restored one), the operation of the car KAMAZ-4310 will be more effective through the use of the first option of repair camshaft engine KAMAZ - 740.10, other factors being equal.

Keywords: *efficiency of car operation, diagnostics, maintenance, repair.*

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DEFINITION OF NEED FOR IMPROVEMENT OF METHANE GAS STATIONS NETWORK

The subject is the gas-filling network of affiliated gas stations designed for the needs of the passenger bus fleet, participating in regular route passenger traffic.

The aim is to define ways of improvement of gas-filling infrastructure.

The developed formalized dependences of parameters of gas-filling infrastructure on parameters of a bus fleet work are applied. Decisions on the actions directed on improvement of filling network are made on the bases of the indicator of consumer satisfaction with infrastructure facilities.

The presented coefficient can assess the existing gas-filling network for a certain circle of consumers (bus fleet) and define the missed benefit because of remoteness of gas stations. For definition of the required actions the analysis of a route on several conditions is carried out. By results of this analysis routes of city passenger traffic are divided into three categories.

The offered scheme of placement of affiliated gas stations within Orenburg for the bus routes, referred to the 3rd category, is given as an example.

Presented in the article results of researches at designing the affiliated gas stations allow to create the gas-filling station which is completely adapted under parameters of the certain group of the mobile structure, working at regular passenger routes.

Keywords: *compressed natural gas, gas station, consumer satisfaction, bus, filling post, tank.*

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THE CALCULATION OF THE OPERATION DURATION OF THE TRAFFIC LIGHT OBJECT ALLOWING ACCESS OF THE PEDESTRIANS TO THE TRAFFIC AREA

The relevance of the problem is related to the need to resolve conflicts that arise between pedestrians, beginning to move on an allowing traffic light signal, with drivers of vehicles, that legally finishing the intersection driving, and drivers of vehicles, that beginning the movement on the allowing traffic light signal, and pedestrians, legally, but incorrectly and not reasonably finishing crossing the traffic area.

The article is aimed at ensuring the safety of pedestrians and increasing the capacity of traffic flows at regulated intersections and pedestrian crossings.

These problems are solved by calculating the intermediate stroke of the traffic-light object for each of the directions of the road network node and changing the duration of the main step of the pedestrian phase.

A technique is proposed for determining the duration of the pedestrian phase and the duration of the intermediate step, which, on the one hand, allows to solve the pedestrian safety problem by eliminating the intersection of the pedestrian path with the trajectory of vehicles at one point at a time, on the other hand, minimizing traffic flow losses, connected with the access of the pedestrians to the traffic area, shortly before the signal is switched on, allowing the movement of vehicles at the clashing direction

The results of the study can be used to calculate the traffic light cycle at the nodes of the road network and in determining the safety degree of traffic organization.

Keywords: *traffic safety, pedestrian flow, intermediate tact of work, main tact of work, traffic light object.*

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SCIENTIFIC SUBSTANTIATION OF INDICATORS NORMALIZATION OF PASSENGER TAXI ACTIVITY

The purpose of the study is to improve the quality of passenger transportation by passenger taxi on the basis of the normalization of the indicators of passenger taxi activity, existing in the Russian legislation.

The relevance of the article is determined by the insufficient study of the procedures of indicators rationing in taxi activity.

As the normalized indicators the indicator of number of permissions to passengers transportation by automobile taxi, given by the regional authorities on a gratuitous basis for the applicant, and the indicator of number of parking spaces for automobile taxi in municipal units are accepted.

The regularities of these indicators are determined taking into account the number of people, the average wage, the number of licensed buses used for regular transportation and the length of motor roads in the regions.

Keywords: *taxi, permission, parking, population, wage, roads.*

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