

ICTS 2018

MARITIME, TRANSPORT AND
LOGISTICS SCIENCE

Conference proceedings



Slovene Association of Transport Sciences

University of Ljubljana, Faculty of Maritime Studies and Transport

University of Split, Faculty of Maritime Studies

Slovensko društvo za znanost v prometu
in
Fakulteta za pomorstvo in promet (Univerza v Ljubljani)
Pomorski fakultet (Sveučilište u Splitu)

18. MEDNARODNO POSVETOVANJE O PROMETNI ZNANOSTI

18TH INTERNATIONAL CONFERENCE ON TRANSPORT SCIENCE

ICTS 2018

POMORSTVO, PROMET IN LOGISTIKA

MARITIME, TRANSPORT AND LOGISTICS SCIENCE

ZBORNİK REFERATOV

CONFERENCE PROCEEDINGS

14. – 15 JUNE 2018
PORTOROZ, SLOVENIA

PROGRAMSKI ODBOR SCIENTIFIC COMMITTEE

Elen Twrdy, *Slovenia* – President
Nikola Račić, *Croatia* – Vice-president
Danilo Nikolić, *Montenegro* – Vice-president

Milan Batista, *Slovenia*
Stane Božičnik, *Slovenia*
Olja Čokorilo, *Serbia*
Azra Ferizović, *Bosnia and Herzegovina*
Lucjan Gucma, *Poland*
Esa Hämäläinen, *Finland*
Toshio Hikima, *Japan*
Tomasz Lus, *Poland*

Matteo Ignaccolo, *Italy*
Alen Jugović, *Croatia*
F. Xavier Martínez de Osés, *Spain*
Marko Perkovič, *Slovenia*
Arnaud Serry, *France*
Sanja Steiner, *Croatia*
Ádám Török, *Hungary*

ORGANIZACIJSKI ODBOR ORGANIZING COMMITTEE

Marina Zanne, *Slovenia* – President
Patricija Bajec, *Slovenia* – Secretary

Pero Vidan, *Croatia*
Maja Krčum, *Croatia*

CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana

656(082)(0.034.2)

MEDNARODNO posvetovanje o prometni znanosti (18 ; 2018 ; Portorož)

Pomorstvo, promet in logistika [Elektronski vir] : zbornik referatov =
Maritime, transport and logistics science : conference proceedings / 18.
mednarodno posvetovanje o prometni znanosti = 18th International Conference
on Transport Science - ICTS 2018, 14.-15. June 2018, Portorož, Slovenia ;
[uredniki Marina Zanne ... et al.]. - Portorož : Fakulteta za pomorstvo in promet,
2018

ISBN 978-961-7041-03-3

1. Gl. stv. nasl. 2. Vzp. stv. nasl. 3. Zanne, Marina
295314176

Referati so recenzirani z mednarodno recenzijo / The papers are peer-reviewed by international experts
Založnik: Fakulteta za pomorstvo in promet, Portorož, 2018 / Publisher: Faculty of Maritime Studies and
Transport, Portoroz, 2018
Uredniki / Editors: Marina Zanne, Patricija Bajec, Pero Vidan, Maja Krčum
Naklada: 100 izvodov / Published in 100 copies
© 2018 by FPP Portorož

INDEX

Andrej Androjna COAST GUARD – A CHALLENGE AND A NEED	1
Boris Antić, Nikola Grujić, Dalibor Pešić, Krsto Lipovac IMPLEMENTATION OF THE THEORY OF PLANNED BEHAVIOUR ON RIDERS OF POWERED TWO-WHEELERS	6
Karlo Babojelić, Luka Novačko IMPLEMENTATION OF PTV VISSIM SIMULATION TOOL IN THE PROCESS OF INTRODUCING AUTONOMOUS VEHICLES ON TRAFFIC FLOW	13
Svetlana Bačkalić, Dragan Jovanović, Todor Bačkalić TEMPORAL-SPATIAL ANALYSIS OF TRAFFIC ACCIDENTS ON RURAL ROADS WITH APPLICATION OF THE RELIABILITY THEORY	19
Patricija Bajec, Danijela Tuljak-Suban, Diana Božić SELECTION OF THIRD PARTY LOGISTICS PROVIDER (3PLP) CONSIDERING SOCIAL SUSTAINABILITY CRITERIA	25
Oliver Bajt HYDROCARBONS IN THE GULF OF TRIESTE-THE IMPACT OF MARITIME TRAFFIC	30
Sanja Bauk, Aleksa Čulafić, Špiro Ivošević CONCERNING SOME SIMULATION TECHNIQUES IN ASSESSING SHIP'S HULL DETERIORATION DURING ITS EXPLOITATION	35
Matej Bažec, Franc Dimc GNSS JAMMER DETECTION, CLASSIFICATION AND SPECTRUM ANALYSIS	41
Bojan Beškovnik, Elen Twrdy, Maja Stojaković DEVELOPING ROAD FEEDER SERVICE FOR SUPPORTING LCL BUSINESS IN EASTERN ADRIATIC REGION	45
Rino Bošnjak, Goran Belamarić, Andrea Russo IMPROVEMENT OF CONTAINER TRANSPORT BY DEVELOPING EXTREMELY CONTAINER SHIPS	52
Tanja Brcko DETERMINING THE MOST IMMEDIATE DANGER DURING A MULTI-VESSEL ENCOUNTER	57
Martin Čalasan, Tatijana Dlabac, Nikola Marvučić PID AUTOPILOT DESIGN FOR HEADING CONTROL PROBLEM OF A CONVENTIONAL SHIP	65
Samir Čaušević, Nedžad Branković, Azra Ferizović TRANSPORT COMMUNITY TREATY-INFLUENCE AND ASPECTS FOR BOSNIA AND HERZEGOVINA	69
Olja Čokorilo, Aleksandra Nešić BIRD STRIKE RISK ASSESSMENT MODELING IN AIRCRAFT OPERATIONS	76
Mirko Čorić, Anita Gudelj, Jelena Krčum BIOMETRICS AND THE SIGNIFICANCE OF BIOMETRIC DATA COMPRESSION IN TRANSPORT SYSTEMS	82
Maja Čović, Igor Vujović TOOL LIFE EVALUATION IN HIGH SPEED MILLING STEELS FOR SHIPBUILDING INDUSTRY	89
Hrvoje Dodig, Tina Perić, Ivan Pavić RAPID SOFTWARE DRIVEN DESIGN OF ARM BASED EMBEDDED SHIPBORNE COMMUNICATION DEVICE	94
Azra Ferizović, Smajo Salketić, Amel Kosovac MONTE CARLO SIMULATION IN RAILWAY DEMAND FORECASTING	99
Luka Grbić, Toni Bielić, Jelena Čulin THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS-RELATED DEFICIENCIES	106

Andrzej Grządziela	110
VIBRATION DIAGNOSTICS OF MARINE GAS TURBINE ENGINES	
Lucjan Gucma	116
DETERMINATION YSTAD NEW OUTER PORT PARAMETERS FOR RO-PAX FERRIES OF 230 METER LENGTH BY USE OF REAL TIME SIMULATION METHOD	
Esa Hämäläinen, Tommi Inkinen	121
INTERMODAL TRANSPORTATION COSTS	
Katja Hanžič, Maršenka Marksel, Gregor Srpčič, Miralem Hadžiselimović, S.Seme	128
CHARGING INFRASTRUCTURE CHALLENGES AND POLICY SUPPORT IN SELECTED COUNTRIES OF THE DANUBE REGION	
Mojca M. Hočevar	135
TRANSPORT VOCABULARY IN A COMPREHENSIVE MODERN BUSINESS DICTIONARY: ENGLISH-SLOVENE	
Matteo Ignaccolo, Giuseppe Inturri, Nadia Giuffrida, Vincenza Torrisi	139
INVESTIGATING SCENARIOS FOR FREIGHT TRAFFIC IN THE EASTERN SICILY PORT SYSTEM	
Gorana Jelić Mrčelić, Martina Penović Buble, Jelena Žanić Mikuličić,	146
INTEGRATED COASTAL ZONE MANAGEMENT IN THE REPUBLIC OF CROATIA	
Alen Jugović, Gorana Stumpf, Ana Perić Hadžić	150
CONSUMPTION AND ACTIVITIES OF TOURISTS IN CRUISE TOURISM IN THE REPUBLIC OF CROATIA	
Violeta Jurkovič	155
“I JUST DIDN’T THINK IT WAS GOING TO SINK”: SYNCHRONOUS CORPUS ANALYSIS OF PRONOUNS USED WITH REFERENCE TO SHIPS	
Josip Kasum, Jakša Mišković, Ivica Pavić	160
THE ROLE OF REGIONAL ELECTRONIC NAVIGATIONAL CHARTS COORDINATING CENTERS IN THE PROVISION OF ENC SERVICES	
Blaž Kirbiš, Marko Perković, Blaž Luin	167
PORT OF KOPER ACCOMMODATEING LARGE CONTAINER VESSELS USING LASER- RANGING SYSTEM	
Barbara Knez, Drago Sever	172
THE IMPACT OF THE INFRASTRUCTURE CHANGE ON THE QUALITY OF PUBLIC PASSENGER TRANSPORT: CASES FROM THE COASTAL-KARST REGION	
Ivica Kuzmanić, Igor Vujović	180
MARITIME ZONE SURVEILLANCE WITH VIDEO CAMERAS	
Nenad Leder, Tea Duplančič Leder	184
UNMANNED VEHICLE SYSTEMS IN HYDROGRAPHIC SURVEY - NEW OPPORTUNITIES AND CHALLENGES	
Vivien Lorenčič, Elen Twrdy	189
PEDESTRIAN FLOW AND WALKING BEHAVIOUR ANALYSIS ON THE PASSENGER TERMINAL OF THE PORT OF KOPER BY USING THE SIMULATION MODEL	
Blaž Luin, Marko Perković, Stojan Petelin	195
IMPACT OF WIND ON STACKED EMPTY CONTAINERS	
Marjan Lukežič, Peter Vidmar	199
DEVELOPMENT OF THE EARLY STAGE OF THE FIRE ACCORDING TO THE LIMITED CARGO COMPARTMENT	
Tomasz Lus	205
EXPLOITATION OF DIESEL ENGINES WITH SMALL STROKE VOLUMES IN CITY BUSES	
Zvonimir Lušić, Mario Bakota, Danijel Pušić	212
USE OF ECDIS IN ASTRONOMICAL NAVIGATION	
Axel Luttenberger, Lidija Runko Luttenberger	220
STAKEHOLDERS IN ABATING MARINE LITTER IN THE ADRIATIC	
Irina Makarova, Ksenia Shubenkova, Vadim Mavrin, Aleksey Boyko, Vladimir Shepelev	226
THE IMPACT OF URBAN PLANNING ON THE TRANSPORT SYSTEM AND CITIZENS’ MOBILITY	

Irina Makarova, Ksenia Shubenkova, Eduard Mukhametdinov, and Zlata Almetova INCREASING CHILDREN'S SAFETY ON ROADS BY CHOOSING RATIONAL SCHOOL ROUTE	233
Marija Malenkovska Todorova, Radojka Donceva, Jasmina BunevskaTalevska ROADSIDE DESIGN AND TRAFFIC SAFETY	240
Nikola Matulić, Gojmir Radica, Nikola Račić SIMULATION OF FUEL AND EMISSION BENEFIT ON RANDOM SHIP VOYAGE BY POWERING THE AUXILIARY	246
Rima Mickiene, Elena Valioniene COMPLEX APPROACH TO MARITIME TRANSPORT SECTOR ATTRACTIVENESS AND STATE COMPETITIVENESS	253
Waldemar Mironiuk CHANGING OF STABILITY PARAMETERS OF THE SHIP DURING FLOODING COMPARTMENTS IN THE ASPECT OF MARITIME SAFETY	260
Arijana Modić, Andrija Vidović, Željko Lovrić AIRPORT LANDSIDE SECURITY: FROM RECOMMENDED PRACTICE TO STANDARD	265
Jelena Nikčević A DECADE OF THE MONTENEGRIN MARITIME LEGISLATION	271
Maja Ozmec-Ban, Ružica Škurla Babić, Arijana Modić AIRPLANE BOARDING STRATEGIES FOR REDUCING TURNAROUND TIME	277
Ivica Pavić, Jakša Mišković, Zaloa Sanchez-Varela APPLICATION OF THE MARPOL CONVENTION ON WARSHIPS	282
Tina Perić, Nikola Račić DISTRIBUTION OF WASTEWATER POLLUTION FROM CRUISE SHIPS ON FREQUENT ROUTES IN THE ADRIATIC SEA	288
Jan Perša RESPONSES TO CHANGES IN URBAN TRAFFIC SYSTEM	295
Dalibor Pešić, Emir Smailović, Boris Antić, Krsto Lipovac DRIVING UNDER THE INFLUENCE OF ALCOHOL IN SERBIA	302
Miloš Pljakić, Dragan Jovanović, Svetlana Bačkalić, Boško Matović GIS-BASED SPATIAL ANALYSIS OF CHILD ROAD ACCIDENTS: CASE STUDY OF NOVI SAD	308
Tanja Poletan-Jugović, Paola Badurina-Tomić, Ines Kolanović QUALITY AND PERSPECTIVE OF THE LOGISTICS FREIGHT FORWARDING OPERATOR'S SERVICES ACCORDING TO CURRENT TRENDS AND ENVIRONMENT	314
Ružica Popović, Željko Šore THE ANALYSIS OF THE PROJECTED SEA STATE IN THE FUNCTION OF THE SAFETY OF NAVIGATION	320
Tomasz Praczyk ODOMETRIC NAVIGATIONAL SYSTEM FOR BIOMIMETIC UNDERWATER VEHICLE	324
Tomislav Skračić, Jowita Denc, Maciej Denc MARITIME ENGLISH TEACHERS AND MARINE ENGINEER OFFICERS – FINDING THE MIDDLE GROUND	329
Jure Srše, Edvard Roškar, Marko Perkovič, Peter Vidmar MARINE FOULING AND ITS EFFECTS ON VESSEL PERFORMANCE AND ECONOMIC EFFICIENCY	334
Tatjana Stanivuk, Eli Marušić, Jelena Žanić Mikuličić, Branko Franić ORGANIZATIONAL PERFORMANCES AND STRATEGIES IN THE CHANGEABLE ENVIRONMENT OF THE MARITIME INDUSTRY – OFFSHORE COMPANY	340
Ladislav Stazić, Ivan Komar, Antonija Mišura, Mihaela Bukljaš Skočibušić SIMPLIFICATION OF EVALUATION METHODOLOGY FOR SHIP'S PMS DATABASE	346
Sanja Steiner, Dajana Bartulović, Dario Fakleš INTEGRATION OF FATIGUE RISK MANAGEMENT IN AVIATION SAFETY MANAGEMENT SYSTEM	351

Piotr Szymak, Paweł Piskur MEASUREMENT SYSTEM OF BIOMIMETIC UNDERWATER VEHICLE FOR PASSIVE OBSTACLES DETECTION	358
Senka Šekularac-Ivošević, Špiro Ivošević, Tamara Jeremić RESEARCH OF HUMAN RESOURCES IN THE FUNCTION OF IMPROVING MARITIME EDUCATION: EXAMPLE OF THE MARITIME FACULTY OF KOTOR	363
Ružica Škurla Babić, Maja Ozmec-Ban, Jasmin Bajić COMPARISON OF GLOBAL AND CROATIA AIRLINES PREMIUM AIR TRAVEL TRENDS	367
Snežana Tadić, Slobodan Zečević, Ana Kostadinović CITY LOGISTICS PROBLEMS AND SOLUTIONS OF THE CENTRAL ZONE	374
Nataša Tomić-Petrović ENVIRONMENTAL FRIENDLY TRANSPORT AND NAVIGATION IN THE REPUBLIC OF SERBIA	381
Pero Vidan, Srđan Vukša, Mihaela Bukljaš Skočibušić, Vinko Turković HANDING OVER THE BRIDGE WATCH – CRITICAL SPAM PERIOD OF BRM	386
Milorad Vidović, Gordana Radivojević IoT IN LOGISTICS: EFFECTS OF DECREASING NUMBER OF WASTE BIN SENSORS ON COLLECTION LOCATIONS	393
Srđan Vujičić, Darijo Mišković, Dražen Damić APPLICABILITY OF NOVEC 1230 SYSTEM ON BOARD, IN TERMS OF ITS ENVIRONMENTAL FRIENDLINESS AND SUSTAINABLE DEVELOPMENT IN MARITIME TRANSPORT	400
Luka Vukić, Helena Ukić Boljat, Merica Slišković COMPARISON OF CLIMATE CHANGE COST OF FREIGHT ROAD, RAIL AND MARITIME TRANSPORT	405
Nenad Vulić, Ivor Šuljić, Igor Šuljić COMPARISON OF IACS CLASSIFICATION SOCIETIES PROPELLER STRENGTH CALCULATIONS	409
Viktar Zaika ABOUT SOME ASPECTS OF PROFESSIONAL RELIABILITY OF LOCOMOTIVE DRIVERS	416
Marina Zanne LAND TRANSPORT DEVELOPMENT IN SLOVENIA	419
Marko Zubčić, Maja Krčum, Zvonimir Šakić “GREEN SHIPS” – PERSPECTIVE AND DEVELOPMENT	426
Dejan Žagar, Franc Dimc AUTONOMOUS SAILING BOATS – APPARENT BLIND SPOT OF RESEARCH COMMUNITY	433
Martina Živković, Josip Orović, Igor Poljak ANALYSIS OF STEAM TURBINES FOR FEED WATER PUMPS ON LNG SHIPS	441
SPONSORS	446



ABOUT SOME ASPECTS OF PROFESSIONAL RELIABILITY OF LOCOMOTIVE DRIVERS

Viktar Zaika, D.Sc.

Brest State University named A.S. Pushkin, Department of Track and Field athletics, Swimming and Skiing
224016, parkway of Cosmonauts 21, Brest, Republic of Belarus
viktor.z@tut.by

ABSTRACT

Increased requirements to certain professionally significant qualities (PSQ) are shown by a trade of the locomotive driver, and it means, what not every physically and mentally healthy person can successfully seize the given trade and provide further necessary level of professional reliability and safety on a railway transportation.

Professional reliability of locomotive driver – ability to preservation of demanded PSQ in extreme conditions of activity. The close interrelation and interdependence's degree of development PSQ and professional reliability allows considering process of their formation, perfection and development as the system which backbone factor is its purpose - formation of professional reliability, and a feedback mechanism - result - the level of the articulation PSQ.

The most effective way of development PSQ – special exercises prior to the beginning of activity, on separate actions of forthcoming activity.

Specific feature of labour activity of the locomotive driver of the main movement is work in the conditions of long influence of monotonous factors, as serves as the incentive reason causing a condition of monotony at which the mental activity directed on regulation and control over activity decreases.

Different in degree of monotony of working conditions cause also distinctions of characteristics of a condition of monotony, but the picture of this condition in the main will be same. Hence, stability formation to monotony and knowledge of ways and means of improvement of mechanisms of self-checking and self-control can raise efficiency of professional work not only locomotive drivers, but also other experts whose activity is realized in the conditions of monotonously operating factors.

Keywords: reliability, professionally significant qualities, self-checking, self-control

1 INTRODUCTION

The problem of professional reliability of locomotive drivers concerns complex problems. The organization of researches in this area is extremely difficult, but it is represented absolutely necessary as professional reliability in many respects is a guarantee of successful activity of locomotive drivers.

The individual and typological features refracting external influences of activity and promoting its best development, in the process of specialization are realized in PSQ [2].

Specificity of requirements to PSQ of the locomotive drivers depending on a kind of movement and working conditions is expressed both in criteria of professional suitability, and in updating of spent tests.

Allocation of high degree of readiness for emergency action in the conditions of monotonously operating factors (REA) as one of psychological correlations predicting success of activity in conditions of monotony [1], has allowed to receive not only the qualitative and quantitative characteristics of its PSQ at locomotive drivers, but also to develop techniques of its formation and correction [3-5].

Essential necessity of professional work of the locomotive driver is the requirement to long concentration of attention with simultaneous ability to its emergency switchings, and the exit over frameworks of optimum values can even interfere at achievement of high level of professional skill.

The raised indicators of emotional stability in extreme conditions of activity are observed at the most reliable locomotive drivers. It is possible to ascertain that this mental phenomenon becomes professionally significant quality of the locomotive drivers which is shown in extreme conditions of activity [1, 4].

The level of uneasiness raises and mental function of self-checking is overloaded because of insufficiently developed PSQ. On the one hand, it partially helps to compensate insufficiently developed PSQ, but on the other – the level of pressure raises up to intensity. It is expressed in infringements of logic structure of operating actions, and also in increase in time of their performance. It happens also because in normal conditions repeatedly and regularly fulfilled actions lead to formation of skills which are not enough in extreme conditions of activity. Developing any system of self-control, the locomotive drivers get qualities of actions, skills and the abilities similar professional that help to cope with adverse conditions with smaller expenses, keeping power resources [3].

On possibility of diagnostics, formation, perfection, correction professional reliability (as integrated professionally significant quality) the locomotive driver specified by following positions:

- PSQ is a cash level's possibility of display's function (mental and psychomotor processes), necessary for efficiency of professional work;
- PSQ – the merge of congenital and acquired;



- PSQ are a part of structure of the person and the general macrostructure of the person;
- Abilities in development and specialization in activity are realized in PSQ;
- Neurodynamic basis of PSQ are typological qualities of nervous system [4].

The work's purpose - formation of professional reliability of locomotive drivers

2 METHODS AND THE RESEARCH ORGANIZATION

For objecting view achievement theoretical and empirical methods were used: the theoretical and bibliographic analysis; comparison of independent characteristics that has allowed to receive the objective information on level of professional success of examinees; pedagogical supervision; pedagogical experiment; diagnostics; methods of mathematical statistics.

The estimation of the articulation of PSQ was defined by means of the techniques applied in engineering psychology for carrying out psychophysiological inspections on a railway transportation that has allowed to reveal reliability's interrelation of activity with a level of development of these qualities:

- Technique of an estimation of level of vigilance (Readiness for emergency action) in the conditions of monotonously operating factors (REA).
- Technique of speed's definition of switching attention (SA).
- Technique of definition of emotional stability (ES).
- Technique of an estimation of time sense (TS).
- Technique of an estimation of reaction to moving object (RMO).
- Technique of an estimation of time of simple visually - impellent reaction (SIR).
- Technique of an estimation difficult visually - impellent reaction (DIR).
- Technique of an estimation of volume of attention (Va).
- Technique of definition of individual psychomotor rate – tepping-test (TEPP).

As criterion of an estimation of level of the articulation professionally significant qualities indicators act:

- readiness for emergency action in the conditions of monotonously operating factors (REA):
 - difference between reactions to signals with the prevention and without the prevention (Prea),
 - number of admissions of signals (Nrea);
- speed of switching the attention (SA):
 - time of performance of the mixed search of black and red numbers (SA_t),
 - time of switching attention (TS_a),
 - quantity of errors during performance of the mixed search of black and red numbers (SA_{er});
- emotional stability (ES):

- time of performance of the mixed search of black and red numbers at active hindrances (ES_t),
- a difference in time of performance of the mixed search of black and red numbers with hindrances and without hindrances (Tes),
- quantity of errors during performance of the mixed search of black and red numbers with active hindrances (ES_{er});

- difficult visually-impellent reaction (DIR):
 - time of performance of difficult impellent reaction (T_{dir}),
 - quantity of nervous pressing (N_{dir});
- time of performance of simple impellent reaction (SIR);
- time sense (TS);
- time of reaction for moving object (RMO);
- attention volume (Va);
- the tepping-test (TEPP);
- an expert estimation (EE).

By the selected techniques 100 machinists have been surveyed. Marks of their professional reliability on a 9-ball scale are put down. As experts locomotive driver instructors have acted.

3 RESULTS OF RESEARCH AND THEIR DISCUSSION

The technology of formation of professional reliability of the locomotive drivers is understood as purposeful formation PSQ, individual receptions, ways and their sequence, the set parameters of activity providing preservation in difficult conditions. Following components are included in the structure of the developed technology of formation of the locomotive drivers' professional reliability: target, substantial, organizational, operational, diagnostic.

Ascertaining experiment was spent in vitro with use of the psychological diagnostic complex intended for diagnostics and control of functional conditions.

For revealing of interrelations of expert estimations and professional reliability with indicators PSQ the received results have been subjected to inter correlation analysis. The indicator of professional reliability of the locomotive drivers' activity (n=100) (by an expert estimation) significantly correlated with indicators of readiness for emergency action in the conditions of monotonously operating factors (REA – $r = -0,287$; $-0,350$); and emotional stability (ES – $r = -0,196$) which, in turn, are closely interconnected with indicators SA ($r = 0,229$ – $0,664$), DIR ($r = 0,196$; $0,316$), SIR ($r = 0,560$).

The presented results testify the importance of revealed PSQ for success of professional work of the locomotive drivers and possibility of their formation with the help of psychological and pedagogical training.

Various forms and methods of psychological and pedagogical training include as modeling, with working off

necessary actions, and formation, training and perfection PSQ [3-5]. By working out of pedagogical technology both directions have given the chance diagnostics, formations, perfection, correction to professional reliability, as integrated professionally significant quality of the locomotive driver have been used.

Revealed statistically authentic communications of a professional assessment of locomotive drivers' work (n=25) with indicators REA, SA, ES, SIR, DIR ($p < 0,05-0,01$) after forming pedagogical experiment testify that the selected indicators for locomotive drivers have appeared rather objective and informative (figure 1).

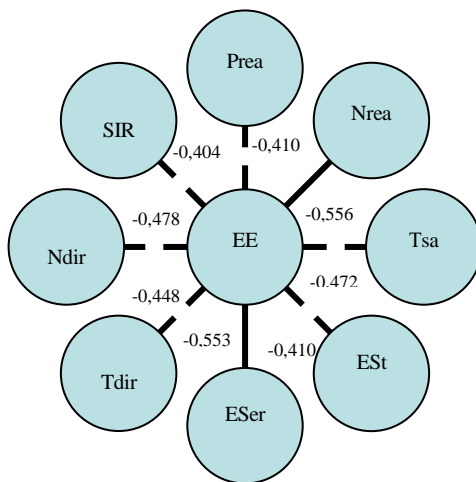


Figure 1: The Basis of a correlation galaxy round an indicator of an expert estimation of professional locomotive drivers' reliability

On the basis of results of the spent pedagogical experiment it is possible to take for granted that the technology of formation of locomotive drivers' professional reliability is effective enough. Positive changes after the end of pedagogical forming experiment at locomotive drivers of experimental group (n=25) are observed on indicators of performance of techniques: readiness for emergency action in the conditions of monotonously operating factors (REA), attention switching (SA), emotional stability (ES), simple impellent reaction (SIR), difficult impellent reaction (DIR), attention volume (Va) ($p < 0,05-0,01$). In control group (n=25) the quantity of errors has significantly decreased ($p < 0,01$) during performance of test DIR, on other indicators of significant distinctions is not revealed.

Application of the developed technology of formation of professional reliability has provided achievement diagnostic the purposes and a target component as a whole.

As well as acquisition of professional skill, PSQ locomotive drivers need special regular training.

4 CONCLUSIONS

Professional reliability of the locomotive drivers is provided with complex PSQ: readiness for emergency action in the conditions of monotonously operating factors, emotional stability, in the speed of switching attention, stability the intellectual functions, self-checking and the self-control, shown in the conditions of mental pressure, monotony and exhaustions.

Working out the technology of formation of the locomotive drivers' professional reliability is caused by necessity of minimization of failure of activity on the basis of revealed PSQ.

Purposeful development of PSQ promotes additional growth of professional reliability of the locomotive drivers.

4.1 Prospects of the further researches

Revealing of adverse factors complicating professional work, the emotional conditions arising under their influence, and PSQ, defining ability to resist to them and providing professional reliability has the big prospects for the further researches in transport sphere.

REFERENCES

- [1] Nersesaj, L. S. (1992). Psychological aspects of increase of reliability of management of moving objects. Moscow: Promedek.
- [2] Shadrikov, V. D. (1997) Abilities of the person. Institute of practical psychology. Moscow: MODEK.
- [3] Zaika, V. M. (2012) Psychological readiness of locomotive driver of the main movement. Locomotive inform.(№ 11., pp. 60–62).
- [4] Zaika, V. (2012). The formation of professional reliability of locomotive drivers. Scientific Journal of Transport Problems. (Vol. 7, Is. 3, pp. 108–117).
- [5] Zaika, V. M. (2014) Professional reliability of the experts, which activity is realized in the conditions of monotonously operating factors. Actual problems of a motor transportation complex. (pp. 252–256). Samara: SSTU.