

6.	Игнатьев С.В., Зосиев В.В., Тchernyak A.V., Малышев А.В. Структурная организация системы поддержки принятия решений для технической диагностики радиоэлектронного оборудования. <i>Актуальные проблемы вузов ВВС: Межвуз. сб. науч. тр.</i> [Contemporary Issues of Air Force Universities: Interacademic Collected Papers]. Moscow, Ministry of Defence of the Russian Federation Publ., 2006, iss. 21, pp. 87–94.	9.	Кристовидес Н. Теория графов. Алгоритмический подход [Theory of Graphs. Algorithmic Approach]. Moscow, Mir Publ., 1978, 432 p.
7.	Оре О. Теория графов [Theory of Graphs]. Moscow, Nauka Publ., 1980, 336 p.	10.	Игнатьев С.В., Тихонов В.В., Красников А.В., Осипов А.А. Анализ системы материальной поддержки системы материально-технического обеспечения радиоэлектронной аппаратуры [A Motion Model of Material Flows of the Material and Technical Support System for Radio Electronic Equipment]. State registration Certificate of the computer program 2016610952. 2016 (in Russ.).
8.	Давыдов П.С. Техническая диагностика радиоэлектронных систем [Technical Diagnostics of Radio Electronic Systems]. Moscow, Radio i svyaz Publ., 1998, 256 p.		

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A SPATIO-TEMPORAL MODEL OF A MATERIAL AND TECHNICAL RESOURCES TRAFFIC NETWORK OF A RADIO-ELECTRONIC FACILITIES GROUP EXPLOITATION

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Abstract. Support of complicated radio-electronic facilities (REF) reliability at the established level mostly depends on the operation effectiveness of the current technical exploitation system, with the logistic system (LS) as one of the component part.

The main task of the LS is considered to be well-timed supply of material resources (MR), which are necessary for REF proper exploitation. At the same time, the task of fast and proper decision-making when controlling necessary resources supply becomes relevant due to considerable space diversity and remoteness of special-purpose systems with REF as the basic element from storage and maintenance bases. To perform the task it is necessary to know possible (preferable) routs of MR delivery, taking into consideration emergency situations, traffic jams, roadways heavy maintenance, natural disasters and other factors, as well as the choice of optimal route variants according to the desired time value and/or MR delivery cost. Taking into account the above-mentioned facts, this research suggests a spatio-temporal model of logistics system of the group of radio-electronic facilities transportation network exploitation. This model can help to solve the task of selecting preferable MR delivery routes according to established criteria.

Keywords: logistic system, radio-electronic facilities, material resources, spatio-temporal model, transportation network, graph.

References

1. Ignatev S.V., Zosiev V.V., Tchernyak A.V., Malyshev A.V. Functional structure of decision support system for technical diagnostics of radio electronic equipment. *Aktualnye problemy vuzov VVS: Mezhevuz. sb. nauch. tr.* [Contemporary Issues of Air Force Universities: Interacademic Collected Papers]. Moscow, Ministry of Defence of the Russian Federation Publ., 2006, iss. 21, pp. 87–94.
2. Davydov P.S. *Tekhnicheskaya diagnostika radioelektronnykh sistem* [Technical Diagnostics of Radio Electronic Systems]. Moscow, Radio i svyaz Publ., 1998, 256 p.
3. Barzilovitch E.Yu. *Modeli tekhnicheskogo obsluzhivaniya slozhnykh sistem* [Models for Complex System Maintenance]. Moscow, Vyssh. Shkola Publ., 1982, 231 p.
4. *DSLlib*. 2016. Available at: <http://www.dslib.net/sys-analiz/sistema-informacionoj-podderzhki-prinjatija-dlja-tehnicheskogo-obsluzhivaniya-i.html> (accessed February 12, 2017).
5. Dorokhov A.N., Kernozhitsky V.A., Mironov A.N., Shestopalova O.L. *Obespechenie nadezhnosti slozhnykh tekhnicheskikh sistem* [Ensuring Reliability of Complex Technical Systems]. 2nd ed., St. Petersburg, Lan Publ., 2016, 352 p.
6. Ignatev S.V., Tikhonov V.B., Krasnikov A.V., Osipov A.A. Analysis of the material support system for anti-aircraft missile weapons operating. *Vestn. Yaroslavskogo VVU PVO* [Bulletin of Yaroslavl Higher Military College of Air Defense]. Yaroslavl, Yaroslavl VVU PVO Publ., 2016, iss. 2.
7. Ore O. *Teoriya grafov* [Theory of Graphs]. Moscow, Nauka Publ., 1980, 336 p.
8. Gorbatov V.A., Gorbatov A.V., Gorbatova M.V. *Discretnaya matematika* [Discrete Mathematics]. Moscow, Astrel Publ., 2003, 447 p.
9. Kristofides N. *Teoriya grafov. Algoritmitschesky podkhod* [Theory of Graphs. Algorithmic Approach]. Moscow, Mir Publ., 1978, 432 p.
10. Ignatev S.V., Tikhonov V.B., Osipov A.A. *Model dvizheniya materialnykh potokov sistemy materialno-tekhnicheskogo obespecheniya radioelektronnoy apparatury* [A Motion Model of Material Flows of the Material and Technical Support System for Radio Electronic Equipment]. State registration Certificate of the computer program 2016610952. 2016 (in Russ.).