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# Investigating precision capabilities of a system of terminal guidance algorithms for prospective manned spacecraft during final descent phase in the Earth's atmosphere

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*The article deals with the problem of ensuring high-precision landing during gliding reentry of a prospective manned spacecraft reentry capsule. The importance of this problem stems from the necessity of transferring landing sites from the territory of Kazakhstan to the territory of Russia. To solve this problem, we intend to use a combined reentry guidance system performing precise terminal guidance based on navigation data from a satellite system during the final phase of capsule descent. A brief description of the system of terminal guidance algorithms designed is given. Issues of research methodology for investigations performed using a modified software package for reentry flight dynamics support of the "Soyuz TMA-M"-type spacecraft are considered. Results of statistical simulation of a combined guidance system in operation, including simulation of both autonomous reentry control before radio reacquisition and final terminal guidance, are presented. The study shows that the error of delivering the capsule to the target point does not exceed the desired value of 1 km.*

**Keywords:** reentry capsule, precision landing, combined guidance system, system of terminal guidance algorithms

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