

Concept of Development of Basic Engineering Model for Ballistic Structure of Unmanned Spacecraft

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Abstract. The article deals with the concept of development of the basic engineering model of ballistic structure (BS) for the unmanned SC. The complete engineering model of the BS is a combination of the basic and the special models. Typically, such a model is needed to calculate the BS for a specific type of SC, which is the most frequent task in spacecraft design. The basis for development of the models are the so-called compliance matrixes for the factors of functional purpose (FFP) and BS. The latter are formed based on the statement of work (SOW) and the ballistic analysis data from the previous launches. The difference between the FFP data for the basic and the special engineering models (EM) lies in the difference of specific values of FFP and inclusion of additional values, characteristic for the SC under development, into the matrix. The proposed basic EM BS, based on the data of the functioning unmanned SC, makes it possible to calculate the majority of features of BS, greatly simplifying the process of designing new SC.

Keywords: engineering model, ballistic structure, system, factors of functional purpose