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Firing Phenomenon Optimization for Multiple Unguided Rockets Launchings from LAROM Platform

Neculai-Daniel ZVÎNCU^{1,*}, Cristian-Emil MOLDOVEANU¹, Mihai-Ionuț UNGUREANU¹, Dumitru Costin BERECHET¹, Florin-Marian DÎRLOMAN^{1,2}

¹Military Technical Academy "Ferdinand I", 39-49 George Cosbuc Boulevard, Bucharest, Romania

² Faculty of Chemical Engineering and Biotechnologies, University 'Politehnica' of Bucharest, 1-7 Gh. Polizu Street, Bucharest, Romania

Abstract

The process of firing with a weapon system is a complex thermodynamic and mechanical one. For the case of a multiple guided / unguided rockets weapon systems, the structure of the platform is subjected to considerable efforts. The purpose of this research article is to optimize the firing process when launching multiple unguided rockets from LAROM platform, a Romanian mobile multiple unguided rockets launcher that can operate with the standard 122 mm rockets, as well as with the more advanced 160 mm rockets. The variant firing GRAD 122 mm rockets, with a strike range up to 20 km was considered for the evaluation. The authors calculated, for different scenarios of rockets launched, the minimum forces, moments and oscillations. The assessment took into consideration the induced forces on the launch facility (tipping part, chassis). Having the theoretical results, conclusions could be drawn regarding the optimization of the firing process for the launching scenarios considered. The optimization is performed for the launch order determinations, considering the rockets available on the pods, and for the time required between the launchings.

Keywords: LAROM, platform, rocket, optimization, oscillations.