

The radio-wave recording method to estimate relative driving capability of high explosives

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Explosive-driven flyer-plate experiments are widely used in RFNC-VNIITF gas dynamics research to assess and control the quality of full-scaled produced explosives parameters. The given paper is focused on the experimental investigation of the steel plate acceleration by explosive products using the radio-wave recording method within M-60 technique. According to M-60 technique, the plate throwing process is experimentally investigated using electric contact sensors, which are conventionally used for the explosive driving assessment. The use of electric contact sensors array has several disadvantages: they do not allow continuous and nonperturbative sensing of the plate acceleration within the whole measurement range; moreover, their manufacturing is labour-intensive. Radio-wave method of recording the plate motion helps to avoid the mentioned disadvantages. In the given experiment, the radio interferometer with the probing radiation wavelength of 3 mm was used to record the plate motion. Compared to the electrical contact technique, which implies discrete plate flight recording and the sensors affecting the plate flight, the radio-wave method provides with much more informative data due to the continuous recording of the plate acceleration within the whole measurement range. The relative driving capability calculated based on the experimental results is shown to be the nearly the same for both electric contact and radio-wave recording methods.