Nowadays, theoretical and experimental study of the behavior of some natural materials (ice, granite, limestone, rocks), have not lost their relevance. This is due to the need to increase the extraction of natural resources in areas of permafrost and the Far North, the development of transport links in the Arctic and the development of new ways to fight ice jams. In the next few years, the Russian government plans to come to grips with the development of the Arctic zone. It is about recreating a new transport infrastructure, implementing large-scale programs of extraction of natural resources, military build-up. Therefore, a need for new experimental data on shock-explosive loading of natural materials for testing techniques developed numerical simulation [1].

In this paper we study the behavior of natural materials with explosive shock loads. The fullscale experiments were conducted in cooperation with “KuzbasSpetsVzryv” in Tomsk region of the Siberian. As objects of study selected limestone and medium first-year ice. Figure illustrates the process of preparation for the experiments. The purpose of this work was to identify the main mechanism and regularities of their explosive loading. In studying the behavior of limestone under explosive loads varied mass of explosives from 5 to 50 kg. The diameter and depth of the wells remained constant at 11 and 560 cm, respectively. Some wells contained water, which reached the level of 200 cm or more. The air temperature was equal to 3°C. In the experiment recorded only the diameter of the crater, which reached 120 cm. In studying the behavior of ice during blasting loads varied mass of explosives. The explosive weight was equal to 4 and 8 kg. The freshwater ice thickness was 70 cm. The depth of water under the ice cover was about 7 meters. The flow of water was low. The water temperature was equal 4°C. After the explosion in the ice formed on the lane in diameter from 2 to 4.3 meters.

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