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Explosive Welding of Pipes OLGA BURTSEVA, RFNC-VNIIEF — For connection by welding it is suggested to use the explosive welding method. This method is rather new. Nevertheless, it has become commonly used among the technological developments. This method can be advantageous (saving material and physical resources) comparing to its statical analogs (electron-beam welding, argon-arc welding, plasma welding, gas welding, etc.), in particular, in hard-to-reach areas due to their geographic and climatic conditions. The suggestion is to use water as filler. The principle of non-compressibility of liquid under quasi-dynamic loading is used. In one-dimensional gasdynamic and elastic-plastic calculations we determined non-deformed mass of water (perturbations, which are moving in the axial direction with sound velocity, should not reach the layer end boundaries for 5-7 circulations of shock waves in the radial direction). Linear dimension of the water layer from the zone of pipe coupling along axis in each direction is $\geq$ 2R, where R is the internal radius of pipe. Model experiments with pipes having radii R = 57 mm confirmed results of the calculations and the possibility in principle to weld pipes by explosion with use of water as filler. Reduction of pipe diameter after dynamic loading and explosive welding was $\sim$2%.

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