On the effect of a filtration flow on an equilibrium shape of bodies formed under artificial freezing

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Abstract

Problem solution for determination of the maximum equilibrium shape of an ice body, formed around single freezing column, modeled by point cold source, is obtained, using apparatus of boundary problem theory for analytical functions. Influence of filtration flow velocity on the body shape is studied. Dependence of the ice body maximum dimensions on the Peclet number as well as its dependence on freezing temperature are presented. Calculation results are in fair agreement with experimental data.