

The 8th International Ice Drill Symposium



Contribution ID: 38

Type: **Oral**

Analysis of Challenges Encountered in Deep-Hole Ice Drilling

Tuesday 1 October 2019 09:20 (20 minutes)

While drilling deep boreholes in Antarctica and Greenland researchers from many countries have faced serious challenges already at the depths over 2500 m, while below 3000 m these complications turned so dramatic that further penetration was almost impossible. This phenomenon was even given its proper name, i.e. 'warm ice drilling issue', as with increasing depth the ice temperature is rising. Ice melting due to cutting was considered as the main reason for this phenomenon. Analysis of 5G Deep Borehole drilling at Vostok Station shows that the main cause of such complications is formation of freon hydrates on the surface of drill cuttings causing their adhesion.

Acknowledgments

The authors are grateful for the logistic support provided by the Russian Antarctic Expedition. This work was conducted with the support of the Russian Foundation of Fundamental Research No. 18-55-16003\18.

Author: Mr VASILEV, Dmitrii (Saint-Petersburg Mining University)

Co-authors: Mr VASILEV, Nikolay (Saint-Petersburg Mining University); Mr BOLSHUNOV, Alexey (Saint-Petersburg Mining University); Mr DMITRIEV, Andrei (Saint-Petersburg Mining University); Mr TURKEEV, Alexey (Arctic and Antarctic Research Institute); Mr IGNATIEV, Sergey (Saint-Petersburg Mining University); Ms TSYGELNYUK, Elena (Saint-Petersburg Mining University)

Presenter: Mr VASILEV, Dmitrii (Saint-Petersburg Mining University)

Session Classification: Session 3