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Construction of the New Wintering Complex at Vostok station

English version provided by the author

Construction of the new wintering complex at Vostok station

Information Paper submitted by the Russian Federation

On 25 April 2019 Dmitry Medvedev, Chairman of the Government of the Russian Federation signed an order to develop proposals for the construction management of the new wintering complex at Vostok inland Antarctic station.

Vostok station was opened in December 1957. The station was named after the sloop “Vostok”, one of two ships of the Russian South-Polar Expedition, two hundred year anniversary of which will be celebrated in January 2020.

The station is situated 1500 km away from the sea, at 3500 meters above sea level. The lowest air temperature on the planet, namely, -89.2 °C was registered at Vostok station. Because of these low temperatures nine months of the year Vostok station operates in full autonomy, without any possibility to access it either by air or land. The functioning of the station is totally dependent on the supplies delivered during summer season by the transport-sledge convoys.

Vostok station infrastructure consists of four buildings mounted on piles in 1978 and practically snow-covered by now. Generating capacity of the power station makes up 270 kW, fuel tank capacity – 200 t.

From time to time some renovation was carried out at the station, including frame structure change, mounting of heat-insulated panels, repairs to the living rooms and laboratories.

Station buildings are worn out, then, living and working conditions of the expeditioners necessitate their urgent improvements. In this connection the construction of the new wintering complex becomes necessary.

The proposed components of the new five-module wintering complex with places for 15 persons in winter and up to 35 during summer season are as follows:

- total number of living rooms, offices and working rooms for wintering personnel – 22;
- total number of double living rooms, and working rooms for seasonal personnel – 13;
- glaciological lab;
- advanced research lab;
- kitchen/food storage/mess room – 7 rooms;
- rest and recreation area (billiards, fitness);
- hydroponic greenhouse;
- hospital facilities of 7 rooms, 60–65 sq. m total area;
- sauna;
- laundry room;
- water supply/conditioning;
- power supply station, heated garage and workshop;
- water treatment and regeneration complex.

Apart from the complex it is planned to set up the following:

- emergency diesel power plant with two 60 kW-generators and fuel reserve of 10 m³;
- diesel fuel farm with capacity no less than 550 t;
- solar battery farm to generate power in summer.

The construction of the new wintering complex is planned to be over by 2023/24. Dismantling and removal of the old building constructions from Vostok to Progress station and then by sea out of Antarctica will be carried out in parallel with construction activities.

As before, scientific research will be focused on the environment of this special planet region. It is planned to study paleoclimate, subglacial Vostok lake, oldest ice, to observe Earth's magnetic and electric fields, to research the human adaptive capacities and so on.

The renovated station will serve as a logistic base for scientific traverses into adjacent regions of Central Antarctica.

In accordance with the Protocol on Environmental Protection to the Antarctic Treaty and with national procedures, prior to the start of the wintering complex construction activities the Environment Impact Assessment will be prepared and the permit for the activities in Antarctica will be obtained.