Arctic museum and Exhibition Center

Report on the expedition to Franz Josef Land with the aim of restoration of the hangar for the aircraft on the polar station "Bukhta Tikhaya" 05.07.2018 – 24.08.2018

St. Petersburg, 2018

Оглавление

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Intoduction

In the period from 05.07.2018 to 24.08.2018 the expedition of the Museum and Exhibition Center for Technical and Technological Development of the Arctic (hereinafter referred to as the Arctic Museum and Exhibition Center) to Franz Josef Land, Polar Station "Tikhaya Bay" was held.

Figure 1. Tikhaya Bay

Goals and objectives of the expedition:

• Carrying out emergency restoration work on the cultural heritage site - a hangar for the aircraft of the Polar Station "Bukhta Tikhaya".

• Analysis of the local situation for the development of the concept of a museum complex on the basis of a hangar for aircraft.

• Inspection of the structures of the polar station in order to study the prospects of its museum and tourist operation.

• Study of the practice of tourist voyages to the North Pole with landing to Tikhaya Bay and development of recommendations for the inclusion of a hangar museum in the tourist scheme (tourist routes).

Works in the Tikhaya Bay were conducted by the Arctic Museum and Exhibition Center on the basis of the Agreements with National Park "Russian Arctic" and licensed organization in Restoration of historical objects.

All the works were paid by Arctic Museum and Exhibition Center.

The main stages of the expedition

1	Preparatory (contracting, design, procurement)	2017 – 2018 rr.
2	Procurement in Murmansk	05 – 09 July 2018
3	Expedition on the icebreaker "50 Years of Victory" from Murmansk to the Tikhaya Bay, ZFI, across the North Pole	09 – 17 July 2018
4	Works on a hangar in the Tikhaya Bay	17 July – 12 august 2018
5	Return on the ship "Mikhail Somov" on the island. Rudolf	12 – 14 august 2018
6	Return in Archangelsk	14 – 23 august 2018
7	Returning to St. Petersburg and preparing reports, next season	24 august –present.

Preparatory stage

In accordance with the restoration project (emergency response works) and for the purpose of preparation of the expedition, preliminary work was carried out on the procurement of materials, equipment, fuel, food and uniforms.

Especially for the restoration of the roof and walls of the hangar was ordered 2 m3 of dry planed timber, which was delivered together with members of the expedition on the icebreaker "50 Years of Victory" to the beginning of the work.

Also, 280 sheets of moisture-proof plywood 1.5 x 3 m with a total weight of approx. 4 tons, of which about 230 sheets were painted in advance on one side with paint in St. Petersburg (enamel silicone facade KO-168) in one layer. The plywood was packed in 3 plywood boxes and delivered at the end of the expedition to the expedition vessel "Mikhail Somov" in the Tikhaya Bay.

Waterproofing of uniflex 35 rolls of HPP, 35 rolls of HCP, impregnation of primer No. 1 30 buckets (with a total weight of about 4 tons) were also purchased for the next 2019, which were also loaded in to the «Mikhail Somov» vessel and delivered to The Tikhaya Bay.

The boards intended for outdoor work on the roof (about 1 cubic meter) were also painted in St. Petersburg.

Also for works of the next 2019, roofing materials were purchased - waterproofing Uniflex 35 rolls of HPP, 35 rolls of HCP, impregnation of Primer No. 1 30 buckets (total weight 4 t), which were also loaded on 4 pallets at the Mikhail Somov and delivered to the Bay of Silence. The unloading of all materials from the "Mikhail Somov" was carried out by helicopter.

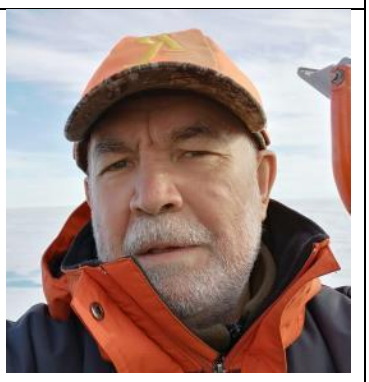
In addition, it was purchased diesel fuel 16 barrels of 200 liters in barrels, gasoline 9 barrels of 200 liters, propane gas10 cylinders of 50 liters. The fuel was loaded on the NES "Mikhail Somov", 22 barrels and gas tanks were delivered to the Bay of Silence, 3 barrels to Rudolf Island.

For the purpose of cargo delivery, agreements were concluded with Sevgidromet for the transportation of cargo to the «Mikhail Somov», as well as with the 2nd Arkhangelsk Air Squadron for cargo transportation by helicopter.

The general logistic scheme was as follows: a group of restorers in the number of 6 people with a cargo for work under a contract with the NP "Russian Arctic" should be abandoned to the Tikhaya Bay on the nuclear icebreaker "50 Years of Victory" with the 3rd tourist voyage to the North Pole. Then the work is carried out for a month, after which the expedition vessel "Mikhail Somov" enters Tikhaya Bay, unloads the materials for the next season of works and takes the group to Arkhangelsk.

Members of the expedition

1	Filin Pavel	Expedition leader	
2	Smirnov Nicolay	The chief architect of the project	

3	Frizin Nicolay	Architect-Restorer	
4	Prokofiev Leonid	Carpenter Restorer	
5	Komov Vladimir	Doctor, carpenter-restorer	
6	Tribunsky Victor	Steward, cook	

Expedition Events

On July 7-8 the expedition members arrived in Murmansk where the necessary products and equipment were purchased. On July 9, in the morning, a car from St. Petersburg with the main cargo (sawn timber,

barrels with food and equipment) arrived and loading began on the nuclear icebreaker "50 Years of Victory". The procedure was lengthy, including a careful double examination at the gate of Atomflot.

Figure 2. Loading to the icebreaker "50 Years of Victory"

The boards were stacked and reinforced on the helicopter deck of the icebreaker, and for the barrels and other equipment a container was identified that was installed on the starboard side.

Figure 3. Cargo on board the icebreaker "50 Years of Victory"

The icebreaker's exit took place on the evening of July 9, around 17-00 with a warm (up to +25) and clear weather.

The transition to FZL was by pure water in clear weather. 11.07. In the morning we approached the archipelago. In the archipelagic waters we met the cruise ship SeaSpirit of the company Poseidon.

Figure 4. Meeting of the nuclear icebreaker "50 Years of Victory" and the cruise ship "SeaSpirit"

In the area of 16-00 after the inspection of the Roubini cliff with one of the largest in the FJL bird markets (20 thousand pairs) and a bear with a cube we approached the Tikhaya Bay.

Figure 5. Rock of Roubini and bears

The whole bay was packed with ice. The expedition leader of the company Poseidon refused to land us. It became clear that there was no chance to land, and we are going to the Pole. On the same day, towards evening, the icebreaker entered the pack ice.

Figure 6. Tikhaya Bay is packed with ice

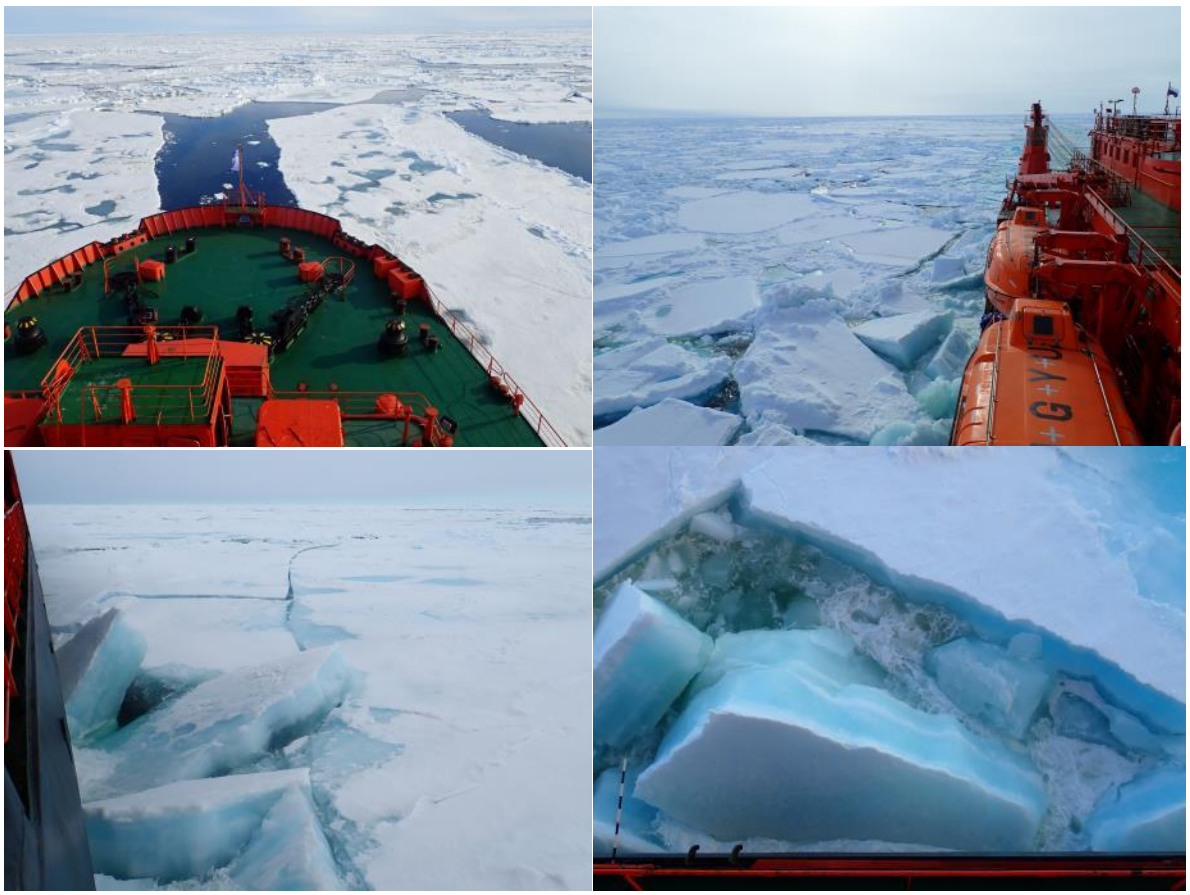


Figure 7. Icebreaker goes in ice

Immediately after midnight from 13 to 14 July, the icebreaker reached the geographic point of the North Pole, the GPS readings were reset. This was the 137th achievement of the pole by a ship in surface navigation.

Figure 8. On the GPS - North Pole.

Figure 9. At the North Pole

July 15 we go south to Franz Josef Land. On the way from the north to the islands they walked along clear water. On the night of July 15 to July 16 came to the island of Rudolph. After that we went to Jackson isl., Cape Norway, where Nansen spent the winter with Johansen.

Figure 10. To the left is Rudolf Island. Right - Jackson Island, Cape Norway

On the same day, towards the evening, came to Appolonov isl, where there was a large walrus harvest, and on the island sat a polar bear. July 17 came to the island of Champ. Then passed by the island of Algiers and by the evening were at the island of Hooker.

Figure 11. Left - at the glacier of the island Champ. On the right - Walrus breeding near. Appolonov

At 20-00 we approached the Tikhaya Bay. Unloading began. First, "Poseidon" decided to take out our cargo and then all the tourists by 4 boats-the zodiac. Cranes began to lower on the boat bundles of our boards, which laid on the bottom and sides of boats. A considerable wave began on the sea. After a couple of walkers, the helmsmen on the boats were wet before the thread.

Figure 12. Unloading in the Tikhaya Bay

On the Polar Station we were settled in a "family house", built in 1937, where all the conditions for normal living were created. The house is divided into two parts - one already had 4 park inspectors and they had their own living room, table, gas stove. We were given a second half, where there were also

wooden beds, a table, a gas stove. The toilet of direct fall is made in the very same house in the entrance hall. The woman from USA used to live with us between 3 and 4 voyages of the icebreaker.

During our presence at the station, the park's staff installed solar panels on the roof of the house and launched the energy supply system into operation. The sauna was heated all the time, and we washed it every 4 days, in turn, with the rest of the station's population. In all, about 20 people lived on the station.

July 18, we organize our life and in parallel we begin systematic work on the hangar, having equipped a workshop in the Aerological pavilion near the hangar. Architects-restorers immediately engaged in the manufacture and installation of missing longitudinal braces between truss farms.

Figure 13. Installation of bows

The rest were busy clearing the entrance to the hangar from the snow. As of July 18, the entire front facade of the hangar was completely covered with a snowdrift.

Figure 14. Clear from snow.

At the same time, work began on removing the remnants of the old hangar plywood, the clamping rails and the numerous nails with which they were nailed. The plywood was removed from the roof of the hangar and walls.

There were a lot of nails, around them foci of rotting wood formed. When they were pulled out, the hat was often broken off, after which it was very difficult to remove them.

Figure 15. Stripping of the hangar from rusty nails.

The crate of the main facade of the hangar was repaired. The cladding was in an emergency condition, a number of wooden parts rotted and began to break out. The entire left part of the crate was dismantled, the decaying racks and crossbars replaced by new ones. Then the crate was re-installed.

Figure 16. Repair crates

For the second week of our stay, we began to clean the metal parts of the hangar farms from the shale rust. They beat rust with a hammer and a chisel. At the end of the procedure, they were coated with a preservative-phosphometh.

The upper arcuate belts of the trusses of the overlap were reinforced with stainless steel nails with a pitch of approximately 25 cm.

Figure 17. Drilling and cranking of roof trusses with self-tapping screws

When the active thawing of snow and ice (the end of July) followed, after completion of the work to replace the damaged or missing parts, we began cleaning the hangar facades in order to reach the lower strapping of the structure. Clearing was extremely hard work.

Figure 18. Cleaning the bottom of the hangar

Close to the eastern facade poured a mountain of old insulation in rotten boxes-packages. We managed to remove a few rows of boxes, below the boxes all frosted into the ice.

Figure 19. Old insulation near the eastern facade of the hangar

During the clearing of the western facade, a number of large gears with a diameter of up to 0.5 m from the windmill, old scales, fragments of weathercocks and various mechanisms were extracted (in the past, in 2017, all this lay almost openly, without snow and ice).

Figure 20. The dismantling of metal details at the western facade of the hangar

In the area on August 10, when the plywood hangar was completely cleared, glacier melting inside the room became very noticeable. Almost all the snow melted and a long ice appeared, which we began to puncture with the help of a jackhammer. Things went pretty fast.

In the hangar there are two centers of formation of the glacier - one to the left of the entrance in the depth of the hangar and the second to the right of the entrance. In general, the entire floor is covered by a glacier, with the exception of the far right corner, where a stream and a small strip along the facade of the hangar flow.

Two large glaciers due to their origin are due to the annexes, which are located behind and on the right. Through the cracks in the planking, the snow was scooped up by snowdrifts to these outbuildings, then it thawed and froze.

From the glacier on the left sticked out a fragment of the wing of the plane. During our work he thawed to a height of 70 cm and fell out of the glacier.

Figure 21. Fragment of the wing of the aircraft

In the same glacier thaws winch control system and hoses from the fire pump.

Figure 22. Electric winch on the left, hoses on the right

On the left, along the western facade, several rows of barrels of lime were thrown out (set one on top of the other). Interestingly, some have inscriptions that are of great interest.

Figure 23. Row of barrels

Thaw various exhibits, in particular, the fire pump thawed.

Figure 24.Old Fire pump

The door in the western facade thawed. To the right of the entrance from the main facade thawed locker.

The entire right corner of the hangar at a height of 2-2.5 m is filled with frozen coal, which began to beat out a jackhammer.

Figure 25. Breakdown of coal in the right near corner of the hangar

The floor was thawed and cleared of ice and debris on an area of about 4x4 m in the right far corner. At this point a stream flows into the hangar. In the period of active melting under the floorboards, water rumbled, and it lingered there in the form of a large puddle. The floorboards in this end are in poor

condition, rotten and broken. At the same end, because of the creek, a mixture of clay and manure was dripped into the hangar, which mixed with various construction debris, in particular, with shingles all over the floor for the plastering of walls in houses. There were also fragments of a completely rotted, crumbling aircraft wing. In some places, the remnants of the wing retained a red color. In the same corner there is a table on which lie several wooden boxes with frozen and rusty nails. The most valuable in these boxes are the inscriptions on them "Silent Bay", "Observatory", "GUSMP", etc. Collected in the hangar finds are stored in the building of aerology.

Figure 26. The floorboards in the far right corner of the hangar and the lower strapping

Figure 27. Boxes with inscriptions

On August 10, we received information that on August 11 Mikhail Somov will come for us. "Somov" approached the bay at night, but for a long time it did not enter because of fog.

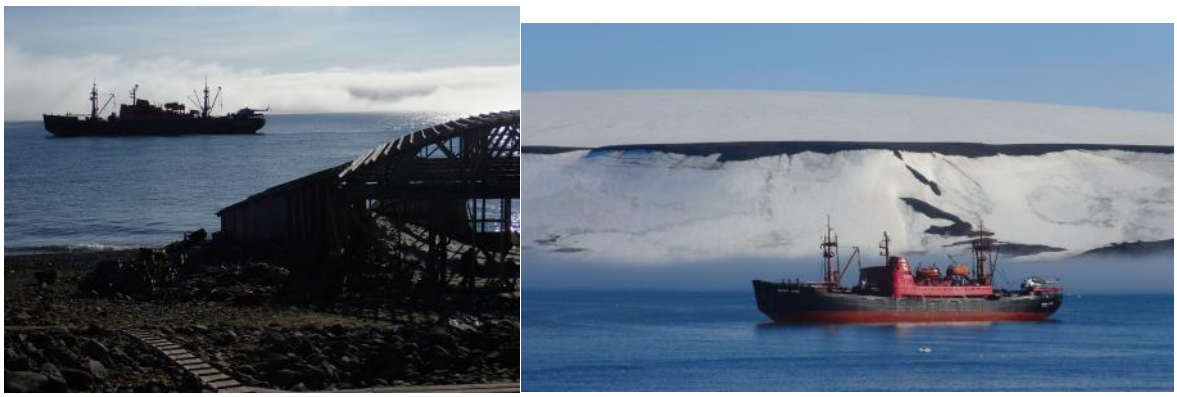


Figure 28. Scientific-expedition vessel "Mikhail Somov" in the Bay of Tikhon

After the fog had cleared a little, a helicopter arrived at lunch. For unloading barrels of fuel, a platform was chosen at the top of the station near the Sedov cross (22 barrels of fuel and 10 cylinders of gas were loaded on suspension brackets) for work of the following seasons.

Figure 29. Helicopter discharge in Tikhaya Bay

For storing plywood and four palettes with roofing paper and primer, a place was chosen to the right of the aerology building about 200 m from the hangar up the station (this is much closer to the hangar than the usual landing place for the helicopter at the Sedov cross).

Figure 30. plywood storage

From the Tikhaya Bay icebreaker proceeded to the island of Rudolph, then to the island of Hayes after which to Malye Karmakuly on Novaya Zemlya.

During the transition at the request of the head of the expedition to the "Mikhail Somov", we conducted a lecture evening about our project and expedition..

Figure 31. Presentation onboard of the "Mikhail Somov"

The main types of work done in the hangar

More details about the work performed will be in the report of the organization that carried out the complex of emergency response works, which will be submitted to the body for the protection of monuments for approval. Below is a list of the main works performed:

№	Type of works in accordance with the project	What is done
2.	Installation of construction tours and stairs for access to the roof.	Done
3.	Dismantling of clamping laths and coating residues from plywood.	Done 100%
4.	Scrolling the upper belt of the trusses with threaded studs with special metal anodizing.	Done 100%
5.	Installation of air braces between farms, replacement of decayed boards in farms.	Completed by 100%. 18 braces fixed
6.	Paving of prepared plywood in two layers on the screws.	The work is planned for 2019. The plywood is delivered by "Mikhail Somov"
7.	The device of waterproofing carpet in one layer.	The work is planned for 2019. The materials were delivered by Mikhail Somov
8.	Removal of plywood residues from external walls.	Done 100%
9.	Замена не пригодных стоек и перекладин главного фасада	Replacement of unfit pillars and rails of the main facade
10.	Replacement of lost side facades.	Completed by 100%. Replaced 4 racks
11.	Installation of lost braces on supporting poles.	Completed by 100%. 15 braces fixed
12.	Installation of prepared plywood in two layers on the walls of the hangar.	The work is planned for 2019. The plywood was delivered by "Mikhail Somov"
13.	The device of the second, the top layer of the roll waterproofing.	The work is planned for 2019. Materials are brought by "Mikhail Somov"
14.	Installation of clamping laths on the roof and on the facades of the hangar.	The work is planned for 2019.
15.	The device of temporary swing gates.	The work is planned for 2019.

In addition, the following works were performed:

1) Cleaning of walls and roofs from old nails
2) Rust removal and phosphate coating of metal parts of trusses
3) Clearing the bottom of the hangar (it was partially realized on the rear northern facade and the eastern facade)
4) Clearing the hangar floor in the far right corner
5) Freezing and storage of potential exhibits (transferred to the aerology building, and large gears from the western facade moved closer to the sea on the slope of the heap with coal)
6) Clearing the hangar from snow and ice (the process is started)
7) Clearing of the hangar from coal (the process is started)
8) Cleaning of glass wool (transferred from the eastern facade of about 30 boxes, the rest is frozen in ice)
9) The cargo of clamping laths, plywood and roofing felt has been accepted and deposited for work in the next season.
10) The frame of the right gate of the garage door is made.
11) The historical material for the restoration of the hangar was selected and stockpiled.
12) Old boards are selected and stocked for use in decorating the exposition.

The main result of the work is the complete preparation of the roof of the hangar for work on its further plywood and roofing. The facades (walls) of the hangar are also prepared for plywood works. Delivered cargo materials for the work on the hangar roofing next year.

Figure 32. Hangar in 1936.

The main conclusions on the work for the next year

A preliminary list of the main works of the next year:

• Covering plywood and walls with plywood, laying roofing material

• Cleaning of glass wool

• Clearing the facades to the lower strapping

• Glacier draining

• Dismantling extensions in front and on the right

• Cleaning the coal from the hangar

• Preservation of museum items

• Strengthening ties in metal braces

• Cleaning the rust of metal parts inside the hangar

2) Next year, after clearing the floors, the volumes for replacing the floorboards will be determined. Opening the floors and strapping along the facades will show the existing problems with the foundation, on the basis of which decisions will also be made.

3) Ideally, you need to make a topographic survey to make a decision on sanitation.

Thus, the next year the heaviest in terms of labor costs fall. The head of the station Quiet Tikhaya can provide no more than 10 places in the house for living. No more than 2 people can be dropped into the station with the first tourist flight at the end of June. The main group (8 people) makes sense to throw on the third flight around July 10. The experience of this season showed that the most active melting occurs in the first two weeks of August. Unfortunately, the last tourist voyage of the icebreaker is in early August. Ideally, people need to pick up later.

The nearest plans for the restoration of the facilities of the polar station (2019 - 2020)

Within the framework of this section the main approaches of NP "Russian Arctic" to the use of the capital structures of the polar station are presented. The text was compiled on the basis of a discussion, station A. Kunikov, deputy. park director R.Perhurov, N.Butorina, P.Filin, N.Frizin.

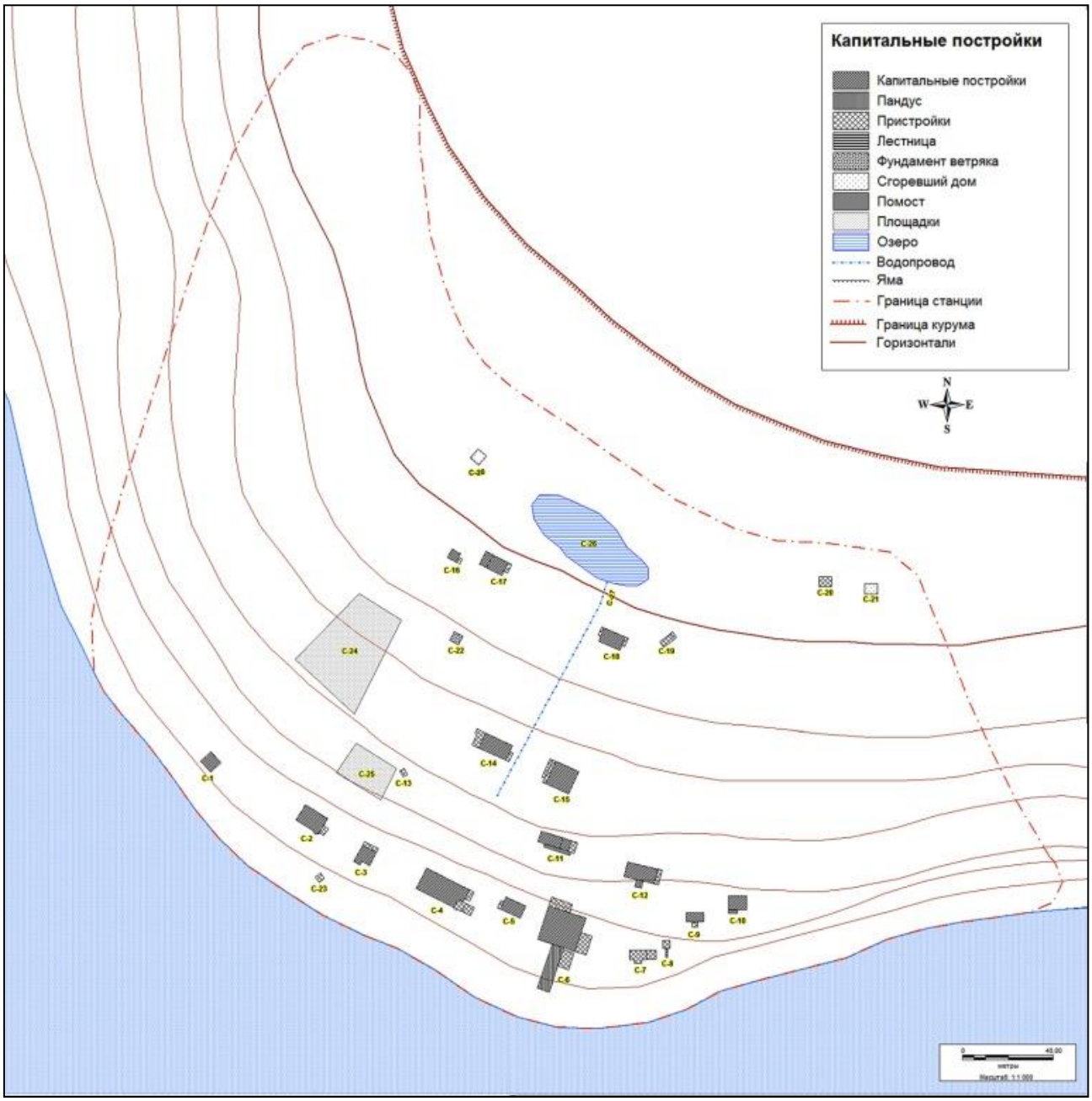


Figure 33. Scheme of the capital structures of the Polar Station of the Bay Tikhaya according to the report of NP "Russian Arctic" for 2011

Figure 34. View of the station Quiet Quiet on top. Photo by N.Smirnov, 2018.1. Tractor garage C-1

In the season of 2017, the Arctic Museum and Exhibition Center carried out repairs to the roof, gates, windows, cleaning and conservation of the tractor. The completion of these works is required, namely, replacing the temporary gate leaf with a replica of the "native" leaf. The gates are executed on 50% in the season of 2018. In the next meson the gate needs to be completed and hung on the garage. In the garage, you should place more complete information about the tractor and its use, carry out additional cleaning in the garage and muse the situation.

2. Laboratory building C-2

Inside the house there is a glacier and ruin. The house is basic, but a frame house. In the foreseeable future, the park does not see the expediency in its repair. Conservation and maintenance in the existing form is required. Watch the windows and doors. You can place additional information about the functionality of the house.

3. Bathhouse C-3

In the season of 2018, the bath was renovated to restore its functionality. In the next season it is planned to complete the repair and start the sauna in operation (a bath for station staff and guests). The questions are raised about the use of modern parts in exteriors (a standard modern wooden purchase door has been installed, unrelated in the historical window frames installed).

4. Residential house P-4

This is the main house of the station (house number 1). The capital structure, the roof and the walls are in good condition. Inside, the house is half-full of glaciers, in the middle of the house the glacier was removed as early as the 90s. A clear concept for using the house at the park is not. In the future, they plan to remove the glacier from the house and make there either a "polar museum" or a guest house for staff and guests, or both. In any case, the development of design estimates and restoration work is required. Inside the house is a lime finish with decor elements. It is necessary to understand how and in what materials it is to be restored. Now the rooms, clogged with a glacier in themselves look extremely curious and unusual - ice-staked chairs, tables, heating batteries ... A real ice kingdom, a frozen time. Perhaps in this form it is necessary to museum the house? This picture resembles the kind of room of happiness from the movie Tarkovsky "Stalker". In order to study the process with ice in the house, I was given ice level marks - wrapped with screws with a red tape on them wound on which the date of marking was written by the marker.

Figure 35. The glacier in the house number 1

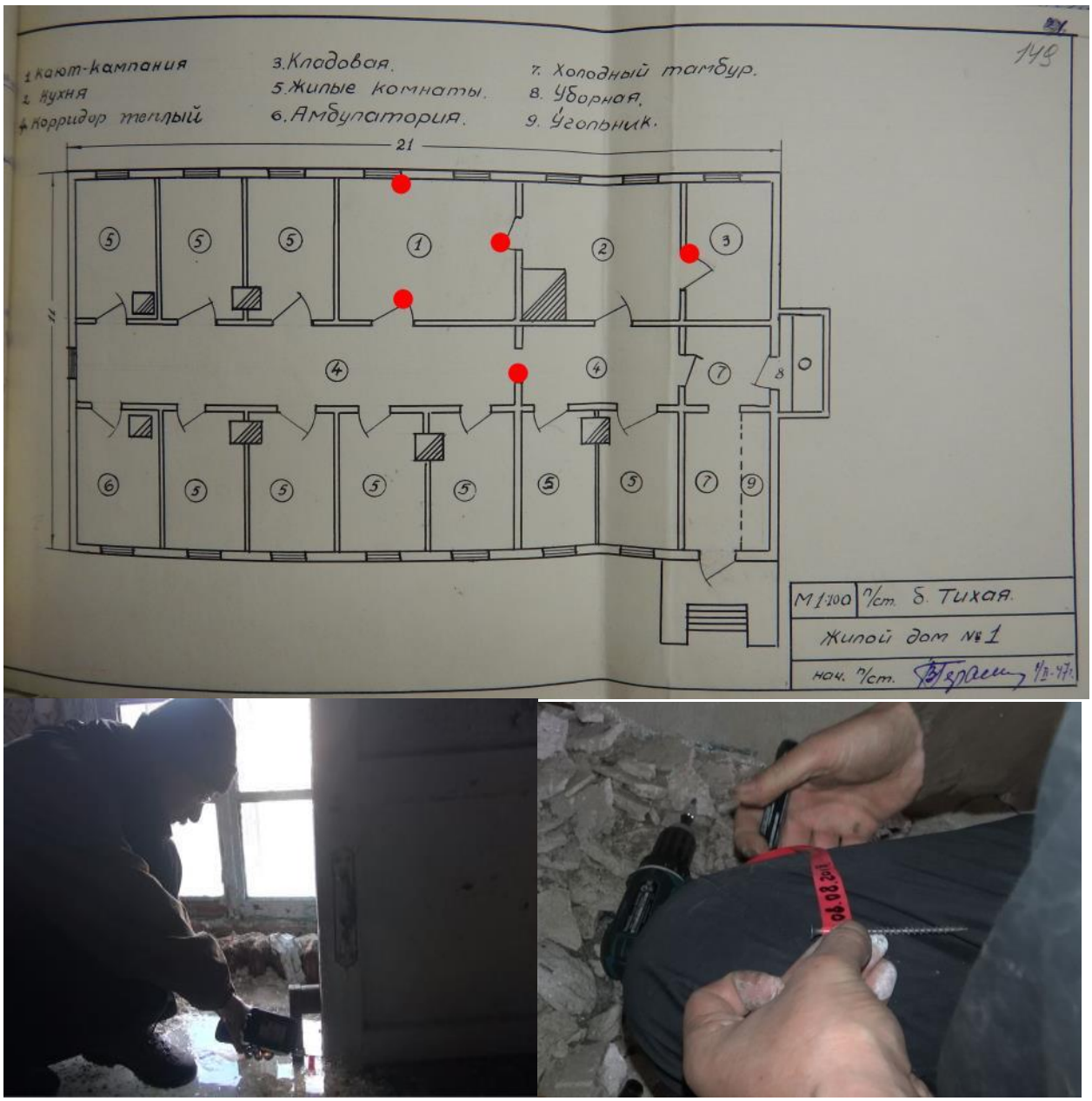


Figure 36. Placement of labels and labels themselves

1. Barnyard C-5

Inside, the cattleman is packed with ice. Conservation and preservation of appearance.

2. Hangar C-6

Overhaul and creation of a museum complex.

3. Aerological office + tower C-7, C-8

Conservation and preservation of appearance. Inside the box of the aerological shed, a "repository" of waste and garbage at the station was created. In the future, this burial ground needs to be cleaned.

4. Residential beam C-9

The beams were built in 1993 by biologists using materials from the laboratory building (?). Now it is used as a dwelling for employees (the station's head), there is also a bathhouse. On the wall of the beam there is a large banner with the scheme of the station.

5. Magnetic pavilion C-10

In good condition, it is used as a dwelling for the employees of the station.

6. Warehouse C-11

The building is in good condition, the left part is used as a warehouse for products, the right part is used as a storage for museum items.

7. Aerological Pavilion C-12

The building is in good condition. In the right part, the post office of Russia and a gift shop are made. In the left part in the season of 2018 a workbench was made and barrels with equipment were placed. On the farms under the roof there are brought the reams for the hanging of the hangar. The park planned to use the pavilion to accommodate the visit-center. Now, after the beginning of the work on the hangar, the idea of the visit-center in aerology "hung".

8. Radio control room S-14

The building needs repair, inside the chaos, the remains of the glacier. There are partially preserved equipment and furniture. Requires repair of the roof and windows, cleaning in the room. In this building it is very promising to place an exposition dedicated to the history of radiocommunications in the Arctic.

9. Apartment house S-15

The main building of the station at the present stage. The house is in good condition. Internal repair is required. The planned "human resource" at home is the placement of 15-17 people in 5-6 triple rooms. An open question is the interior decoration of the house and the layout. Historically, the house was with shingles and lime walls. Now lime and shingles are removed. Inside the house a number of partitions are removed. In the hall there is a toilet and a washbasin. It is necessary to solve the issue of placing a dry closet. Now the toilet

10. C-16 Wind Turbine Generator

The wind generator is an important dominant of the station and its loss will significantly change the appearance of the polar. It is necessary to survey the bearing structures of the windmill tower - metal corners. The lower part of the tower is cleaned in a wooden house. Visual inspection of 2018 in the house showed that the corners are covered with shale rust, the most dangerous place is the junction of the corners with the ceiling of the house - there are the greatest accumulations of rust and the remaining thicknesses are unclear. In a bad condition, the corners of the plumage of the windmill - it used thin iron and it strongly corroded. It is necessary to involve an expert and carry out urgent works to strengthen the tower.

11. Mechanical workshop and power station S-17

This is one of the most interesting facilities of the station, is located next to the windmill, it has an interesting architecture with a roof penthouse. Inside, the unique equipment, machine tools, engines, furniture, tools were preserved. Need speedy repair of the roof. Especially in poor condition, the part of

the house far from the entrance, the ceiling is broken and flowed there. In general, after repairing the roof and minor cleaning, the facility is ready for museification and display.

12. Finnish House ("Bachelor House") C-18

The house stands on a creek, there is no ice inside, but the house strongly "led". It is extremely difficult to restore. It is supposed to be used as a fuel storage. Perhaps in the case of the development of tourism at the station, it makes sense to completely disassemble the house, to build in the same volume the modern house, but with the preservation of the exterior and interior elements.

13. Pavilion of atmospheric electricity S-19

Preservation of appearance.

14. The meteorological site

It is necessary to install two fallen weather vanes.

15. Radio antennas

It is necessary to urgently strengthen the remaining radio antennas.

Conclusion

Obviously, at the moment the Tikhaya Bay is the only real point of tourism development in the high-latitude Arctic. Now in the summer season tourists are guaranteed to land from five voyages of the icebreaker "50 Years of Victory". The average tour is 2 million rubles, one of the most expensive tours in the world. In addition, the tourists are landen from by the cruise liner "Sea Spirit", as well as the tourists of the liner that is going along the route of the Northern Sea Route. From next year one more cruise liner will go from Norway to FJL. In the future, after the construction of the runway on Alexandra island, it will probably be used for boarding tourists. Thus, Tikhaya Bay already plays an important role in the development of high-latitude Atrctic tourism. At the same time, tourists are not told about the history of the station and its role in the development of the Arctic. Since Franz Josef Land was a springboard for expeditions to the North Pole, the exposure in the hangar should be devoted to the history of conquest of the North Pole. In fact, it will be the world's northernmost museum dedicated to the history of the the North Pole.