



The Kizhi Federal Museum of Architecture and Cultural History
Cultural Heritage Site of Special Value of the Russian Federation

The Detailed Report **on Preservation of Kizhi Pogost Monuments** **(Kizhi Pogost, C 544) in 2011**



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Dear colleagues!

The following annual broadened report concerns measures of maintenance of the World Heritage Site - Kizhi Pogost in 2011.

We have completed a large amount of work on preservation of the Kizhi Pogost ensemble and on restoration of the Church of the Transfiguration thanks to long-term preparatory works that had been done previously.

Contacts with the World Heritage Committee are of great importance in the restoration process, namely two reactive monitoring UNESCO-ICOMOS missions to Kizhi in 2011. Mission experts developed certain suggestions and recommendations which we have used in our work.

The most important event of the year was the continuation of restoration works on the Church of the Transfiguration. The church log walls have been suspended successfully, the lower, VIIth and partly VIth restoration tiers have been dismantled, the underground part of the church foundation has been build, restoration works on the church ground floor have been accomplished in the restoration complex. Restorers have a modern, specially equipped restoration complex set at their disposal, thus they are able to restore accurately and thoroughly each separate element as well as the monument in the whole.

The development of the World Heritage Site Management Plan has started, and this is another noteworthy event. The requirements specifications for this document have been made, and the Institute of Economics of the Karelian Research Center has set to work. The museum plans to complete this work in 2012 and submit the document to UNESCO-ICOMOS experts for consideration.

Large-scale works on the development of museum infrastructure were going on in 2011, and that will help to improve the territory around the Kizhi Museum and the surroundings of Kizhi Pogost.

The authors of this report expect your suggestions, remarks and wishes and will be thankful for your collaboration in preservation of the World Heritage Site.



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SECTION 1. MEASURES ON PROTECTION OF THE WORLD HERITAGE SITE KIZHI POGOST IN 2011

The World Heritage Site “Kizhi Pogost” (Kizhi Pogost, C544), the object of federal ownership, is in day-to-day management of the Kizhi Federal Museum of Architecture and Cultural History that is subordinated to the Ministry of Culture of RF. All kinds of activities on Kizhi Pogost are controlled by the Department of Surveillance for Compliance with the Law in Cultural heritage at the Ministry of Culture of RF.

1.1. SITE MANAGEMENT

The site is managed according to the legislation in force and the recommendations of the United Nations Educational Scientific and Cultural Organization (UNESCO) for the preservation of cultural and natural heritage, on the basis of strategic and current planning to be undertaken by the Kizhi Federal Museum of Architecture and Cultural History.

The Supervising Committee at the Ministry of Culture of RF was established in 2011 on the initiative of the Kizhi Museum. On the 1st and 2nd of December, the Committee members together with ICOMOS mission controlled the first stage of restoration of the Church of the Transfiguration.

On the 6th of December, the Expert Group for wooden architecture within the Federal Council for Methodology at the Ministry of Culture of RF held a meeting in Moscow. The results of the Supervising Committee’s mission on Kizhi Island were summed up. The first stage of the restoration of the Church of the Transfiguration was viewed favourably.

On the 28th of April, 2011, the Russian Federal Surveillance Agency for Compliance with the Law in Cultural Heritage Protection issued permission № 05-4/48 for the continuation of the first stage of the restoration on the Church of the Transfiguration. This permission had previously been in force until the 31st of December, 2011.

On the 18th of January, the Russian Federal Surveillance Agency for Compliance with the Law in Cultural Heritage Protection issued permission № 05-4/6 for performing repairs and preventive works on the roof and porch of the Church of the Intercession.

The web-camera installed in the restoration complex was set to work in September. The picture is shown on a special web-page made for the communication with the experts of the World Heritage Committee.

Kizhi parish of Petrozavodsk eparchy was given a legal status in 2011.

1.2. DEVELOPMENT OF A MANAGEMENT PLAN FOR THE WORLD HERITAGE SITE

The development of management plan for the World Heritage Site Kizhi Pogost in 2012-2011 started in the museum in 2011. The government contract with the Institute of Economy at the Karelian Science Center of the Russian Academy of Science was signed on tender basis.

In fact, so far, there have not been any documents of this kind in Russia. The Kizhi Museum is a pioneer in Russian Federation in developing such a document set to protect a UNESCO site.

In 2011, the general strategy for the management plan was developed, the concept structure was approved, and the source information was collected. The analytical and methodological basis was prepared for developing the document, risk factors based on the SWOT-analysis were defined, and expert groups focused on different plan sections were formed.

The management plan will determine the required condition of the World Heritage Site on the basis of criteria for the World Heritage List of UNESCO and ICOMOS Principles for the Preservation of Historic Timber Structures. The natural and architectural surrounding that defines the authenticity and integrity of the monument will be considered in the protection measures stipulated in the plan. The criteria for choosing restoration methods for separate design elements and parts will be determined as well.

Much attention is devoted for the issue of establishing effective partnership between business, government and public, for strategic planning in the site development, for the issues of protecting historical landscape, for developing cultural and historical destination of Kizhi.

The specific values of the territory and legal possibilities of its use will be stipulated in the plan.

The management plan aimed at the overall protection of authenticity and integrity of the World Heritage Site will be developed by the end of 2012 and submitted for consideration to the UNESCO World Heritage Centre.

1.3. FINANCING

In 2011, State Budgetary financing in the amount of 51 858, 6 thousand RUB was secured for the restoration of the Kizhi Pogost monuments including:

- complex restoration of the Church of the Transfiguration, 1st stage	33477,1 THOUSAND RUB
- restoration of the iconostasis of the Church of the Transfiguration	11 896,7 THOUSAND RUB
- development of research and design work for the complex restoration of the Church of the Transfiguration	2 226,0 THOUSAND RUB

- engineering supervision for the implementation of the 1st stage of complex restoration of the Church of the Transfiguration	582,2 THOUSAND RUB
- development of design estimates for water intakes for fire-fighting purpose	1 939,6 THOUSAND RUB
- development of project for lifting brackets (for dismantling log walls)	96,0 THOUSAND RUB
- monitoring of the condition of logs stocked for the restoration of the Church of the Transfiguration	96,0 THOUSAND RUB
- examination of the design estimates for the restoration of the Church of the Transfiguration	45,8 THOUSAND RUB
- development of a management plan for the World Heritage Site Kizhi Pogost	1 326.2 THOUSAND RUB
- monitoring of biodeteriorations of the Pogost buildings and surrounding monuments of wooden architecture	91,0 THOUSAND RUB
- monitoring of deformations of the Pogost buildings	82,0 THOUSAND RUB

1.4. PROTECTED AND BUFFER ZONES

In December 2011, the Ministry of Culture of RF issued the Decree of Approval for «the Project of Protected Zones for the Kizhi Pogost Monuments»

The project was developed according to the effective legislation of RF in protection of Cultural Heritage and was harmonized with the regulations of the International Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention). It was approved in the Ministry of Regional Development of RF, in the Ministry of Natural Resources of RF, in the Russian Federal Surveillance Agency for Natural Management. The Vodlozersky National Park approved the project at the request of the Ministry of Natural Resources.

The protected zone of the World Heritage Site Kizhi



Pogost includes the whole Kizhi Island and the surrounding water area of Onego Lake. Four models of land use and town planning were fixed for Kizhi Island to ensure development of infrastructure in the Kizhi Museum.

Boundaries of protected nature landscape coincide with the boundaries of the museum protected area that was fixed by Decree of the Supreme Council of the Republic of Karelia N X II- 16/484 on February 19, 1993. The zones with regulations for land use and town planning were fixed within the boundaries of protected landscapes in historic villages.

1.5. PROTECTION FROM EMERGENCY SITUATIONS

The site security system is managed by the employees of Museum Security, by the Subdivision of General Board of Ministry of the Russian Federation for Civil Defense, Emergency Management and Natural Disasters Response, and by the Subdivision of Ministry of Internal Affairs of the Republic of Karelia

In 2011, the system of infrared scanners was set in operation to improve the security of the World Heritage Site. The system

controls the Kizhi Pogost and surrounding areas and detects humans or heat source in any kind of weather day and night. This innovation greatly improved the protection of the site from unauthorized access, vandalism or ignition. Simultaneously, the security system with a radio-wave emitter «RADIY» was set in operation to control the Kizhi Pogost perimeter. It gives extra control from unauthorized access beyond the protected perimeter.

The project of the outdoor fire-fighting system for Kizhi Pogost is submitted to the state expert appraisal. The defects elimination process is going on. It is planned to complete the state expert appraisal in 2012. It is planned to start the construction stage in 2013 and to complete in 2014.

The project of water intakes for the fire-fighting purpose in the Kizhi Museum has been developed, and it specifies extra water intakes at some of the museum objects including Kizhi Pogost

In May and October 2010, seasonal testing of fire-fighting system was done as well as the adjustments for winter/summer operating regime. Testing and maintenance of fire-fighting system is done on regular basis.

The wooden floors on the restoration site on the Pogost and the scaffolds for roof repairs by the Church of the Intercession were treated with fire retardant agent.

In 2011, the employees of Museum Security in cooperation with the District Police officer and the officers of Paramilitary fire station № 14 performed a permanent monitoring of the objects under protection. The performance of contractual obligations of the officers



Fig.1. Sensors of infrared monitoring system mounted around the Kizhi Pogost

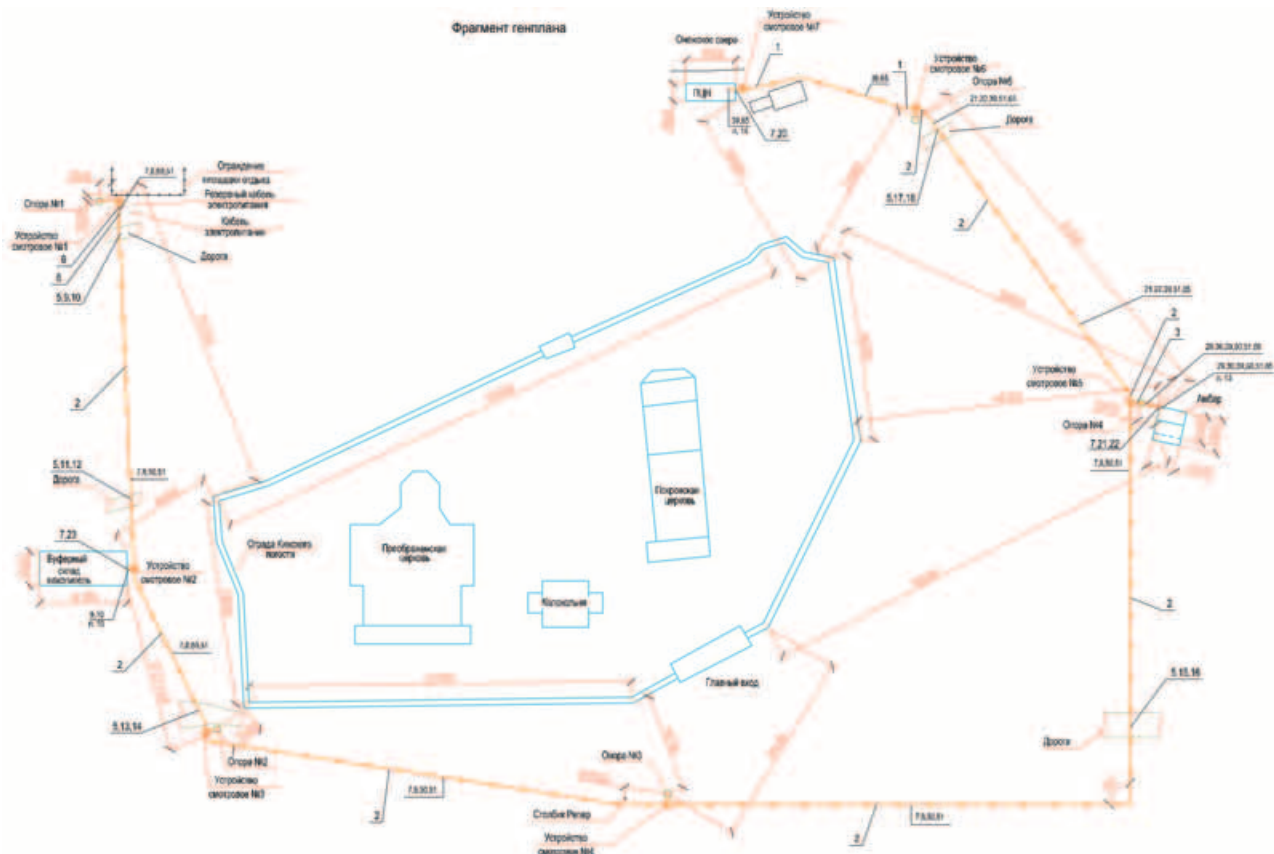


Fig. 2. System of the Kizhi Pogost perimeter guarding by the use of infrared monitoring sensors

from the Non-Departmental Security Agency was controlled as well as job responsibilities of the officers from Paramilitary fire station № 14 during the patrolling of the Kizhi Museum objects. Seasonal guarding post of policemen near the booking office was organized and worked since May to September.

In May, 2011, the Museum Security officers participated in the tactical exercises organized by the Situation Headquarters in the Republic of Karelia within Russia’s National Anti-Terrorism Committee. These exercises were aimed at improving the antiterrorist protection.

Museum employees received training and instructions for emergency situations and use of fire fighting equipment during the year. The persons arriving at Kizhi Island are given security instructions. The work of Museum Security office is organized on regular basis.

The Video Monitoring System that works day and night near the Pogost collects all security and fire alarms and video surveillance. The annual maintenance of fire-protection monitors and alarm systems was performed.

1.6. PROTECTION AND MONITORING

The Kizhi Museum continued a complex monitoring of Kizhi Pogost monuments in cooperation with experts of the Forest Research Institute at the Karelian Research Centre, Russian Academy of Sciences (Petrozavodsk) and “Spetsprojectrestavratsiya” Institute (Moscow).

A part of the monitoring programme for deformations was fixing reference points on facades of the buildings. The points were fixed during a complex geodetic survey of the monuments (the Church of the Transfiguration, the Church of the Intercession, and the Bell-Tower) in June and September, 2011. The survey has not revealed any changes in the existing deformations as well as in heights and turns of the monument. The alternations in reference points lie within the measurement error and have seasonal character.

In 2011, the Kizhi Museum in cooperation with the experts from the Forest Research Institute at the Karelian Research Center continued a complex monitoring of biodeteriorations of Kizhi Pogost monuments. Regular inspections of the monuments, monitoring of temperature and humidity, of fungi growth and insects lesion focus were performed.

The database of information on the condition of wooden design elements has been developed during 14 years period. This data makes it possible to find humidifying areas in time, to detect fungal activity, to localize the focus of borers, to develop a programme of preventive measures.

The monitoring activities in 2011 revealed the overall stability condition of monuments. The preventive measures taken in 2010-2011 improved the microclimate in the Church of the Intercession and eliminated highly humidified areas in the Bell-Tower.

According to the monitoring results, it is recommended to perform preventive works on some rotting and borer-affected elements of the octagonal part of the Church of the Intercession. Permanent monitoring, preventive conservation and maintenance were performed during the year.



Fig. 3. 3D model developed as a result of laser scanning of the Church of the Transfiguration in 2010-2011

1.7. STUDY

The Kizhi Architectural Ensemble is the main tourist sight of the Kizhi Museum and the focal point of the main outdoor tourist exposition. Thus, the main research is one way or another focused on the Kizhi Architectural Ensemble.

The 6th scientific conference dedicated to a local epic-singer Ryabinin took place in the museum in 2011. More than 300 researchers from Russia and abroad singled up for the participation in this conference. One of the most important topics is restoration and preservation of folk architecture. The reports on the Kizhi Architectural Ensemble were included into the programm of the conference.

In 2011, the regular 13th issue of collected research papers «Kizhi vestnik» was published in the Kizhi open-air museum. Articles on building and study history of the Kizhi Pogost Architectural Ensemble were published in this issue along with the others. The work on compilation of the materials and documents for the publication of «The Chronicles of the Kizhi Architectural Ensemble» was finished. This chronicle contains some historical facts about the ensemble since it was first mentioned in the documents until 1945. The publication is planned for 2012.

During the year 2011, researchers of the Kizhi Museum developed the following research and development projects: «Interiors of Kizhi churches», «History of Kizhi district in peasants genealogy (XVI-XIX cc.)» and «Historical and ethnographic study of villages in Kizhi district».

Archeological heritage of the Kizhi Pogost is studied permanently. The preparation work for the Archeology Monograph of Kizhi in the Middle Ages was performed during 2011. This publication is planned for 2012.

1.8. PROMOTION PROGRAM AND INFORMATIONAL SUPPORT

Total amount of tourists in 2011 comprised 159 000 persons. Twenty two permanent exhibitions were organized in the monuments located in the immediate neighborhood of the Kizhi Pogost Ensemble in 2011. The following exhibitions were made in the Church of the Intercession: interior exposition in the church proper, icon painting exhibition in the refectory, and “History of Kizhi parish” in the hall. In addition to that, the church bells were exhibited in the Bell Tower.

The exhibitions dedicated to A. Opolovnikov, to wooden architecture of Kizhi Island, and travelling exhibitions of photos and paintings were set in Petrozavodsk. The Museum Center of Pedagogy organized travelling exhibitions into 16 organizations in Petrozavodsk and in some Karelia districts. The topics of these exhibitions were «Kizhi through children’s eyes», «The wooden fairy-tale of Kizhi», «Open-air paintings on Kizhi Island», «Monuments of wooden architecture on Kizhi», «The Museum through children’s eyes», «Kizhi is the island of inspirations», «Zaonezhiye fairy-tale».

One of the main activities of the Kizhi Museum Press Service is providing informational support for the works on preservation and restoration of the Kizhi Pogost. Monthly paper «Kizhi» publishes fresh restoration news. In 2011, twelve news materials on restoration of

the Churches of the Transfiguration and the Churches of the Intercession were published in the news in the main column. The paper published eight analytical materials during the year. The quickest way to communicate information is the distribution of press-releases on current events. In 2011, the Museum Press Service prepared six press-releases about the restoration workflow, and these releases were sent to more than 530 addressees.

The restoration of a UNESCO Site, the Church of the Transfiguration, attracts intense attention of Karelian and Russia journalists. Twelve materials were published in local papers «ТВР-Панорама», «Карелия», «Мой Петрозаводск», «Karjalan sanomat». Two materials were published in the Federal newspaper «Российская газета».

The materials concerning the preservation of the Church of the Transfiguration are broadcasted several times a year on different TV and radio channels in Russia. Seven materials were broadcasted on local channels. Six materials were broadcasted on Russia channels and in a report on radio «Golos Rossiy». Two materials were broadcasted abroad, namely on Japanese channels «TBS Vision» and «NHK». In addition to that, 14 news based on museum press-releases were made on TV and radio.

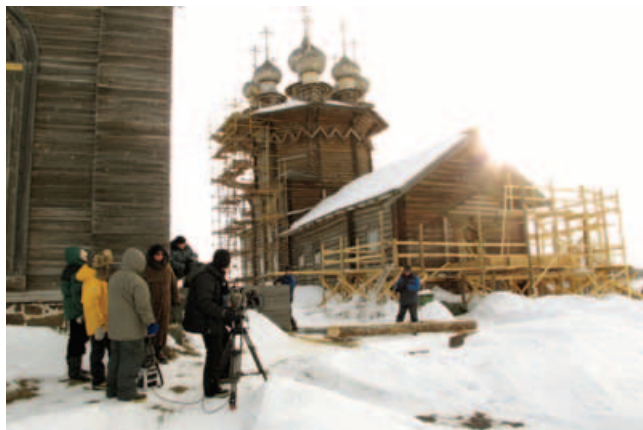


Fig. 4. Work of film crew of Japanese TV broadcaster NHK on the Pogost

All printed materials, i.e. press-releases, news and authors' articles are placed immediately on the museum web-site. The video-recordings of works performed on the Pogost and in the restoration complex are placed on the museum site as well. Six news materials, five press-releases, seven articles from the Kizhi newspaper concerning the restoration were placed on the web-site during the year 2011. The report on the preservation of the Kizhi Pogost monuments in 2010 was published. Four videos about the workflow of restoration activities on the Church of the Transfiguration in 2010 were placed in «Gallery» section of the web-site as well as the album of photos «Restoration of the Church of the Transfiguration in 2011». A video report of Russia NTV Company was placed in the «Callery», too. More than 400000 unique users visited the Kizhi Museum web-site in 2011.

Ninety seven references were published on web-sites of Russian and Karelian News Agencies, news digests and portals, five press-releases about the Kizhi Pogost were placed on Museum.ru.

The project activities of the Summer School on Kizhi Island and Summer University on Kizhi Island were performed in summer, 2011. These activities popularize the Kizhi Pogost among children and teenagers.

Lectures and classes on five topics were given in the Museum Center for Presentations. Some activities were organized and performed on the International Day of Monuments and Historical Sites and on the day of the Transfiguration.

In 2011, the museum printed about 30 kinds of promotional materials that included images of the Kizhi Pogost monuments with the total circulation of 14 500 items.

1.9. PRESERVATION OF LANDSCAPES, NATURAL AND ARCHITECTURAL ENVIRONMENT.

Preservation of landscapes, natural and architectural environment is one of the important tasks for the Kizhi open-air museum.

The Commission for Preservation of the Historical Landscape supervises all activities on the Kizhi landscape and natural environment. This Commission ascertains how and why the landscape changes and prescribes the measures to eliminate these changes.

The Museum implements an environmental monitoring programme, an environmental safety programme (meant for visitors and Museum staff), and a landscape clearing programme on Kizhi Island.

In 2011, landscape protection activities included sanitary felling and clearing out the meadows from the growth of bushes.

The initial stage of landscape management plan development became the decisive move for the year 2011. Comprehensive analytical materials were compiled, a three-dimensional landscape model was made by the means of MapInfo system, and the landscape analysis was performed. The developed MapInfo system is the main tool of expert estimation for impacts on the environment. It will become the basis for developing the principles of preservation and improvement of the visual landscape characteristics within the general strategy of the World Heritage Site management. The work on visual evaluation of the landscape and on the landscape management plan will continue in 2012.



Fig. 5. 3D model of the Kizhi island. A fragment

The working agreement was signed with the Vodlozersky National Park to preserve the Natural Heritage. This National Park is in charge of protecting the natural environment of the Federal Nature Reserve «Kizhi» (the territory of the Kizhi Museum is a part of this Nature Reserve).

The Kizhi Museum performs systematic control of the impacts of humane activities on the environment.

1.10. DEVELOPMENT OF THE MUSEUM INFRASTRUCTURE

The building of a loading terminal on Kizhi Island is completed. The terminal is more than 3 km. remote from the Kizhi Pogost. It is a modern hydrotechnical structure equipped with a fire-protection system and wastewater treatment. The terminal is used for the receipt of cargo, mooring of small-sized boats; it has a ramp for snowmobiles as well. The building

costed 182,3 mln. RUB including 13,9 mln. spent for equipment.

The adjustment of the project for «Administrative and Public Center on Kizhi Island» is going on. In December, the architectural aspect of the project was submitted for consideration to the Expert Group by the Council on Historical and Cultural Heritage of Karelia at the Ministry of Culture of Karelia. The Expert Group expressed approval and recommended to keep the work going.

In 2011, «Sever Stroy Project» Co Ltd started the works on electric power supply (4 MW) to Kizhi Island. This step will improve the reliability of power supply on Kizhi Island. The works are planned to be completed in 2013.

The building of road from Velikaya Guba to Oyativtshena Village was started. The work will be completed in 2014. This road makes it possible to transport loads and passengers straight to Kizhi Island all year round.



Fig. 6. New cargo terminal on Kizhi

SECTION 2. IMPLEMENTATION OF THE COMPLEX RESTORATION OF THE CHURCH OF THE TRANSFIGURATION IN 2011

Introduction

In 2011, the 1st stage of the complex restoration of the Church of the Transfiguration was continued. In general, the measures of the preliminary period and of the 1st stage that were fulfilled during 2007 - 2011 could be set forth as the following:

1. The restoration complex was set in operation. It gives the opportunity to perform a high-quality restoration all year round and to instruct and educate restorers. The territory of the complex boasts storage facilities as well;

2. The experimental restoration of two log buildings was performed in the complex to test the restoration techniques, to develop proper restoration methods, and to provide hands-on training to carpenters-restorers;

3. The lifting system was mounted in the church in full; three restoration tiers were suspended and securely fixed; the remaining tiers were fixed rigidly in the space; the lowest VIIth tier was dismantled;

4. The porch and refectory of the church were dismantled according to the traditional method (i.e. without lifting equipment); lots of efforts were spent on the restoration of historical floors of the XVIIth century;

5. The restoration of the VIIth tier is performed indoors in the restoration complex, the original geometry of the church basement part was restored;

6. The restoration site on the Pogost is fully prepared for operation including site security facilities;

7. The reconstruction of the church foundation and zero circle works are going on.

Conceptually, the 1st stage of complex restoration finishes as soon as the lowest VIIth restoration tier is mounted on the original place on the reconstructed firm foundation. The corrected geometry of the restored church basement (this is in fact the VIIth tier) will be different from the deformed upper tier and, consequently, from all the remaining tiers in the church.

The major works planned for the 2nd stage of restoration are correcting the deformations in the remaining part of the church and reinforcing weak parts. The deformations will be corrected by reassembling log walls step-by-step starting from the church basement to the central cross.

In 2012, the 1st restoration stage will be completed, and the works of the 2nd stage will be started. As stipulated in the schedule, these works in 2012 include dismantling, restoration and mounting of the VIth restoration tier on the original place and dismantling of the Vth tier.

This section of the report describes in detail the workflow and results of work in 2011. The restoration was performed on two sites: Pogost (the main restoration site) and the restoration complex (the complementary site). The report explanations are backed up with photos.

2.1. THE WORKS PERFORMED ON THE KIZHI POGOST. RECONSTRUCTION OF THE FOUNDATION OF THE CHURCH OF THE TRANSFIGURATION.

In 2011, the reconstruction of church foundations was going on. In 2010, the Kizhi Museum and «Alekon» Co ltd signed a Government contract on reconstruction of the underground part of the foundation in 2010-2011. Some part of this work was performed in 2010 according to the schedule; the remaining volume of work was completed in 2011. The building of historical rubblework i.e. the overground part of foundation on which the VIIth tier will be placed is planned for 2012.



Fig. 7. Mounting of curb for underground part of the foundation

In 2011, «Alekon» Co ltd experts completed the underground part of the foundation in line with project №255/06-KЖ and with the authors' proposals developed by the experts of "Stroyreconstructsija" Co Ltd. The upper part of this strip foundation is made of reinforced concrete. The installation of three extra connecting beams of reinforced concrete was introduced into project №255/06-KЖ as the addition. These beams are located underground in three church annexes (northern, southern and western). Thus, they are concealed from sight and won't spoil the appearance of the monument. The installation of extra beams was caused by the necessity to make rigid connections in three annexes due to the change of geometry of the church basement part after it has been restored in the restoration complex. Consequently, the corrected geometry caused the necessity to introduce changes into the horizontal projection of the underground part of the foundation.

After major works on foundation were completed, the planning of bottom was performed under the whole church building: the bottom was made even; the holes, trenches and earthfills made during the repairs since the XIX c. were removed. «Dornit» material was laid on the evened bottom. This material separates the historical level from the temporary covering used for work purposes. This separation could be of great use for archeologists in the future. The finishing layer of planning is a macadam base laid in the polymeric mesh with the cell dimension 60x60 mm. This mesh reinforces the macadam base and secures density and rigidity. The design of bottom in the church basement gives the opportunity to perform restoration works in comfort, improves the appearance of the church basement and restoration site on the whole, and reduces dust impact on the church wooden elements.



Fig. 8. Ground leveling and laying of polymer mesh in the basement of the Church of the Transfiguration

After the completion of the underground part of church foundation, the decision was

taken to build an experimental part of the overground rubblework. A part of original rubblework was laid dry on the foundation strip of reinforced concrete. This experiment gave the opportunity to visualize the rubblework, to evaluate its appearance and design features, and to get fully prepared for the finishing works on foundation in 2012.



Fig. 9. Pilot part of loose rock foundation (above ground)

2.2. THE WORKS PERFORMED ON THE KIZHI POGOST. DISMANTLING, TRANSPORTING AND STORING OF CHURCH ELEMENTS. CONSERVATION MEASURES FOR WINTER PERIOD.

1. Dismantling of church elements.

In 2010, the logs of the VIIth restoration tier were dismantled. However, due to some features of the church design, small amount of logs still remained in the church walls. This concerned mostly western part of the church that has lots of spaces between the windows and doorways.

In 2011, the dismantling of church logs from the VIIth restoration tier was going on. By the autumn, 2011, it was completely dismantled and passed to restoration. Totally 344 beams and logs were removed from the VIIth tier. The refectory floors made of half logs had been dismantled and stocked before; they will pass to the restoration on schedule in approximately 2013. After the VIIth tier had been completely dismantled, the analysis of structural stability of church building suggested to dismantle some more church elements to fix it more safely in the suspended position in winter. The decision was taken to continue dismantling log walls between the windows and doors in the western part of the church up to the upper part of these windows and doorways. Thus, more 94 elements of the upper VIth restoration tier were dismantled and stocked in the storage facilities in autumn; these elements will be preserved and studied to find out the appropriate restoration methods. The restoration of these elements is planned for 2012.

The gap of 5 meters appeared between the foundation and suspended log walls because more logs than expected earlier were dismantled from the western part of the church. The eastern side of the church remained in the same condition like in the end of 2010 because the dismantling has not been done yet.



Fig. 10. Dismantling of the VIIth restoration tier elements and fixing of lifted walls on lifting constructions

2. Transportation and storage.

The dismantled elements of the VIth and VIIth restoration tiers were labeled and transported to the restoration complex, washed, dried and stocked on special racks. This procedure was fine-tuned in 2010 in full, and the restorers follow the steps of this procedure now. These particular steps are described in detail in the report for 2010. A special system of stocking and storage was developed to find and deliver the required elements to the restoration workshop as quick as possible. The amount of stored materials will decrease in the future. It is very likely that the volumes of dismantled elements will be reconsidered to provide good storage conditions meanwhile the concept of dividing the church into restoration tiers will stay the same.

3. Conservation of the church for winter period

After church log walls had been dismantled, the upper part of the building was fixed securely on the lifting supports and on six auxiliary holders set to support the most loaded parts and longspan walls.



Fig. 11. Monument conservation for winter period

As in previous seasons, the church was prepared for winter period upon the completion of all main works. The dismantled part of the church was protected with shields of wooden framing covered with reinforced material. The work technique was fine-tuned in 2010. In addition to standard measures of conservation, the following works were performed:

As in previous seasons, the church was prepared for winter period upon the completion of all main works. The dismantled part of the church was protected with shields of wooden framing covered with reinforced material. The work technique was fine-tuned in 2010. In addition to standard measures of conservation, the following works were performed:

- taking preventive measures for the lifting equipment;
- controlling the operating condition of the church and geometric position of the upper restoration tiers;
- fixing the loosened joints of the metalwork inside.

Regarding paragraph 2.2. «Dismantling of church elements...» in general, it should be noted that the technology of dismantling, transporting and storing logs as well as the preparation of church for winter period had been fine-tuned in previous years, and this technology is preserved up to now. All activities for conservation and dismantling of church elements could be implemented with some specifications in winter as well.

Thus, it will give the opportunity to dismantle and assemble elements on the Pogost, i.e. perform the restoration, all year round. In theory, this circumstance could reduce the restoration period greatly, simplify the organization of work, and the workflow could be kept uninterrupted in time. The gaps in work are caused by summer navigation period, unfavorable weather conditions and, by the fact that the island is difficult of access in winter.

2.3. THE WORKS PERFORMED IN THE RESTORATION COMPLEX. THE RESTORATION OF LOGS AND CHURCH WALLS

In the end of 2010, the basement part of church was assembled in the restoration complex. The horizontal projection and heights were set more precise. Thanks to this refined and corrected position in space, it became possible to eliminate the deformations of church log walls that appeared during the construction period and threatened the stability of the building. A new geometric position of log walls was corrected on the basis of theoretical research and analysis of deformations.

The correct position of church was already clarified on the stage of project development, and it is based on the thorough examination of the system of beam joints and the geometric position of church basement. The historical position of church basement (i.e. horizontal projection and vertical marks) that had formed by the time of dismantling (the middle of 2010) was corrected on the basis of the above mentioned examination and project proposal. As a result, restorers achieved the original geometry of log walls (i.e. the geometry as of the time of church building). All beams fitted into their slots, i.e. set to the correct position, and the floor level of XVIII c. was set horizontally. The analysis of a new geometry of the church basement revealed max. horizontal shifting to 25 cm, and max. vertical shifting to 40 cm. Actually, this church basement was shown to UNESCO mission in February, 2011.



Fig. 12. Framework of the basement (before the restoration) placed in new corrected outline. Beginning of the year 2011

The church wall axis was marked on the floor in the restoration complex before the dismantling and then the test-assembly of log walls started. The dismantling, restoration of logs and re-assembly took place only after the marking was completed.

Museum Carpenter's Center co-worked with «Zaonezhiye» Co ltd that won the tender to perform a preliminary assembly and restoration of the lower tier. In reality, these two units form one unified restoration team. The volumes of work and functions were agreed beforehand. Museum carpenters had the most laborious task of setting complex insertions and prosthesis into the age-old logs. Afterwards the logs passed to «Zaonezhiye» carpenters who assembled restored elements (the old ones, new ones and restored ones) in one block. The optimal way of organization in line with «quality-quantity-time» principle was found and

the result was a big volume of work done with high quality.

According to the restoration project, the dismantled VIIth tier was divided into two parts. Six sets of logs had to be restored in 2011. The first part of work was accomplished and can be submitted to UNESCO mission and the Government Commission for approval. The tender for the second part of the work was held, and «Zaonezhiye» Co ltd stays the contractor.

This circumstance keeps the work continuity or, in other words, the opportunity to get one restoration tier restored completely by one team.

The important restoration event was the imitation of loads from the upper part of church. This procedure was called «test-pressing of the assembled part». Special devices with jacks were brought on the island. These devices can generate the expected (designed) loads on the assembled part. Thus, the in-fact position of logs in the walls was modeled, and the quality of inserted parts (new material set into original logs) was tested.

The amount of new material today is about 40% which is a bit more than stipulated in the project. The reason is serious deterioration of logs up to completely rotten ones as well as the excessive load of church on the basement (basically the load of diagonal walls of the main octahedron). The amount of elements that have to be completely replaced will be gradually decreasing as the experts consider the lower tier the most deteriorated than the others.

The restored part of the church passed the load test successfully; it will be dismantled and reassembled on the main restoration site (i.e. in the church) next year.

It is noteworthy that every restored element of the church passed through several experts. The particular decisions for this or that part of the log were taken by the commission of experts in restoration, engineering, and architecture. Every element entered the electronic database which tracks it in all details before, during and after the restoration. The analytical report on restoration with diagrammes, illustrations and figures will be included in one of science publications.



Fig. 13. Start of the basement framework assembly in the restoration assembly workshop



Fig. 14. The church basement framework under “Loading simulation” test

2.4. THE WORKS PERFORMED IN WORKSHOPS ON PUDOZH SECTOR OF THE MUSEUM. RESTORATION OF THE ICONOSTASIS FRAME OF THE CHURCH OF THE TRANSFIGURATION.

In 2011, the Kizhi Museum continued the restoration of the iconostasis frame of the Church of the Transfiguration.

The prophets tier section of the iconostasis frame was completed in 2011. The conservation of gilded surface and the frame basis was performed. The contractor is Moscow Art Research and Restoration Directorate.

Prior to starting restoration works on the Deisis tier of the iconostasis, experts from St. Petersburg "Atrium" Co. Ltd examined carefully the state of preservation in 2010. The results of this examination based adjusted cost estimations for works. The tender was won by the present contractor. The contract term lasts until the end of 2012. The work was started in the

second half of 2011. The demountable parts of the Deisis tier were transported to Moscow to contractor's workshop to keep the work going all year round. The remaining parts were restored on Kizhi Island till late October, 2011. This work will continue during the warm season of 2012. The monitoring of iconostasis condition was performed during 2011. Besides a detailed recording of the Deisis tier condition, this monitoring controlled the workflow of restoration as well. The continuous monitoring helped to solve a number of problems in restoration and in organization of work specifically on Kizhi Island.

However, there are some problems that became apparent as soon as the restoration started in 2009 and, these problems were still left without any solution in 2011. Thus, the experience of restoration in 2009-2011 revealed that the condition of dismantled iconostasis frame requires more complex and laborious approach than expected before. It became obvious that a team of 8-10 highly qualified restorers working all year round is needed to fulfill the schedule of restoration (in terms of money 15,5 mln RUB yearly). However, the

museum disposes with possibilities for work of only 5-6 restorers during the warm season (i.e. 6 months). The transportation of all dismantled iconostasis elements to the contractors' workshop is not possible due to bad condition of gilding and beams. Obviously, the restoration period should be extended at least to more 2-3 years. Another possible solution is creating conditions for year-round work and accommodations for the requisite number of experts on



Fig. 15. A part of the fretted iconostasis frame



Fig. 16. Restoration of the iconostasis frame on Kizhi in the museum workshop

Kizhi Island.

The final result of restoration efforts depends on the effective solution to the problem of a year-round work on Kizhi Island.

The restoration of church interior requires the preparation of a number of elements like lighting appliances, vestments etc. The restoration of various interior elements is scheduled by the Museum in consecutive order. In 2011, the first lot of two candle-holders from the Church of the Transfiguration collection was sent to the workshops of Grabar All-Russian Art, Scientific and Restoration Center.

2.5. REPORT ON TWO WHC UNESCO-ICOMOS REACTIVE MONITORING MISSIONS ON KIZHI ISLAND IN FEBRUARY, 22-24 AND IN NOVEMBER-DECEMBER 30-4, 2011 (THE MISSIONS FOCUS WERE THE ISSUES OF RESTORATION OF THE CHURCH OF THE TRANSFIGURATION)

There are no common and consensual methods of restoration for log buildings. This is the reason why it was very difficult to find out a compromise and mutually acceptable settlement to the restoration of first wooden monument in the world the Church of the Transfiguration on Kizhi Island. At the same time, every particular country and even every particular restorer have their own traditions, experience, and a point of view.

The Kizhi Museum has spent many years in search of these optimal and sometimes innovative methods of restoration for the church. Different methods and techniques have been tested on some smaller size monuments of architecture. Experts from other countries within WHC UNESCO missions made a significant contribution to the theoretical part and shared their practical experience in restoration. They wrote their recommendations in annual reports that are based on the results of joint meetings, which is very important, useful and productive.

Thus, during the scheduled mission of UNESCO on Kizhi Island in February, 2011, Russian restorers came to agreement with WHC UNESCO experts about mutually acceptable principles and methods of logs restoration. Besides the restoration of separate elements, they agreed upon the method of correcting deformations in the



Fig. 17. ICOMOS/UNESCO mission experts on Kizhi pogost. February 2011



Fig. 18. Discussion of restoration methods and approaches with ICOMOS/UNESCO mission experts in February, 2011

VIIth restoration tier that was dismantled in 2010. The preliminary assembly of this tier in its intact condition was performed in the restoration complex.

The restoration of the VIIth tier (marked «A») based on these joint decisions took place in July - November, 2011. These restoration efforts needed the appraisal, which was also critical for the restores so they could feel confident at work in the future.

That is why the Museum initiated and provided financing for the unplanned WHC UNESCO mission on Kizhi Island in November, 30 - December, 4 in 2011. Andrew Powter, expert from Canada and Arnt Haugen, expert from Norway, accurately inspected the restored church elements, expressed their positive appraisal, and recommended to continue the work without stopping in no event. The preliminary positive conclusion was received by internet when this report was prepared. A detailed report of international experts is being developed. It is noteworthy to mention that Russian restorers performed expert examination side by side with UNESCO experts. The opinions of Russian and International experts coincided which proves that the evaluation was objective.

Thus, the work of Kizhi Museum restorers and contractors (both in project developing and production) was evaluated objectively and in proper time, and they got the opportunity to continue the restoration of the Church of the Transfiguration. The methods and techniques of restoration that were agreed and coordinated with all interested parties will be used for all design elements of the Church of the Transfiguration.

Two reactive monitoring missions of WHC UNESCO in 2011 once again confirmed the correctness of the chosen restoration concept in spite of the arguments of the so-called opponents to restoration.

On the whole, the active collaboration with UNESCO was commended by Sergey Lavrov, the Minister of Foreign Affairs of Russian Federation. The Director of the Kizhi Museum Elvi Averyanova was awarded a UNESCO medal and the award of Honors for her personal contribution to the collaboration between Russian Federation and the United Nations Educational Scientific and Cultural Organization (UNESCO).



Fig. 19. Work of ICOMOS/UNESCO advisory mission experts in Restoration workshop. December 2011



Fig. 20. Acceptance of the basement restoration by ICOMOS/UNESCO experts and members of the national Supervisory board set up by the Ministry of Culture of Russian Federation. December, 2011

2.6. CONTROLLING THE CONDITION OF LOG WALLS AND LIFTING EQUIPMENT IN WINTER AND IN SPRING AFTER THAWING.

The Church of the Transfiguration was prepared for winter period upon the completion of all major works in autumn. This preparation included two basic tasks:

1. to secure monument's stability in space for a long time period before the restoration continues on the Pogost;
2. to protect log walls and open space under the church from precipitations.

The first task of securing the stability in space was solved by mounting seven extra supports under church walls in addition to the existing supports of lifting equipment, and, by adjusting three suspended upper tiers of the church. These tiers are supported only by lifting equipment with the minimum clearance set.

The second task was solved by constructing a wooden framing under the church walls and by covering this framing with reinforced material. The facade screen was used to cover refectory walls. The logs and other parts that were dismantled in 2010 were stocked (preserved) in the restoration complex and their condition is under control as well.

A visual monitoring of the suspended church and lifting equipment was accomplished during the whole restoration season. Experts performed a detailed supervision after winter and the following conclusion was made: «The log walls, design elements and lifting equipment have not been damaged or deformed during the past period, they are reliable and suitable for the further restoration activities».

The precise engineering calculations for the lifting system and supplementary measures for safety will guarantee a secure conservation of the monument. The conservation technology is reliable and fine-tuned.



Fig. 21. Monument conservation for winter period

SECTION 3. PRESERVATION OF THE CHURCH OF THE INTERCESSION AND POGOST FENCE IN 2011.

3.1. RESTORATION WORKS ON THE CHURCH OF THE INTERCESSION

In 2011, the implementation of complex project for the preservation of monument was going on. This project includes restoration of roofs, porch and window décor.

The shingles on the last altar dome were partly replaced in winter. The boarding on the northern, western and eastern roofs of the church proper was completed by spring. Building of scaffolds for restoration on the southern roofs of the church proper was started in autumn after the tourist season. The roof boarding on the south-western roof slope was completed by the end of 2011. The works on the roof are planned to be completed by the beginning of tourist season in 2012



Fig. 22. Scaffoldings mounted for completion of roof restoration

The restoration and reconstruction of the church porch were completed by the beginning of the tourist season. All works were performed under the authors' supervision by the experts of "Spetsprojectrestavratsiya" Institute (Mr. Rahmanov's workshop).

Sixteen window surrounds were made (including five ones in 2010), and eleven ones were set on the northern and southern church facades.

3.2. RESTORATION WORKS ON THE KIZHI POGOST FENCE

The northern tower and the fence part that adjoins the restoration site were reroofed. The cross on the northern tower was replaced with a new one.



Fig. 23. Restoration of the northern tower of the Pogost enclosure

CONCLUDING PART

Long preliminary period (2003-2009) is already in the past and 1st restoration stage (2010-2012) has already started, and this stage determines the rest of restoration flow. The methodological basis is laid during this stage as well as particular techniques and methods of restoration are fine-tuned, and the organization of the whole process is developed and improved.

That is why two reactive monitoring missions of WHC UNESCO and one mission of the Ministry of Culture of RF were held in 2011. One can say with certainty that all the arguments about supposedly wrong concept of restoration have already exhausted. The best confirmations to this statement are the works on the Church of the Transfiguration that have been performed in line with this concept. The issues of appropriate restoration methods for damaged logs have been also settled through a productive dialogue with experts.

The works that will be out of sight in the future were completed during the reporting period: the underground part of the foundation was reconstructed, the excess ground was removed from the Pogost, and the bottom was leveled in the church basement. These works may seem not so important from somebody's point of view, still the restored building must be set on a firm foundation.

The log walls and design elements are restored in a specially built restoration complex located 2,9 km to the north of Pogost. All year round carpenters-restorers, engineers and architects are saving every single element of the log building that is almost 300 years old. Thanks to regular financing, the restoration process is well-organized, qualified and responsible contractors are employed, a strong team of restorers and auxiliary services have been formed.

The assistance of the Ministry of Culture of RF, of UNESCO experts, and public approval, all of these are giving hopes for completion of the works in the near future. The basic volume of works on church reassembly is planned to be completed in four years on the condition that restoration is going all year round. After that, the metal frame that has supported the church for 30 years will be removed, and the interior and iconostasis will be restored.

The restoration of other monuments on the Kizhi Pogost is going on but still in a smaller scale for the major efforts are focused on the main masterpiece, the Church of the Transfiguration. The surroundings of the Kizhi Pogost are not ignored as well as the protection of monuments and the development of documents. All of these measures have been carefully considered, they are complex and aimed at preservation of the World Heritage Site named Kizhi Pogost C544, for the future generations.

Head of restoration works
on the Church of the Transfiguration,

N.L.Popov

Chief Custodian of the stationary monuments,

A.J.Lyubimtsev.



Fig. 1. Mounting of curb for grouting of reinforced concrete foundation (underground part)



Fig. 2. Grouting of reinforced concrete foundation (underground part)



Fig. 3. Grouting of foundation and building of a pilot loose-rock foundation is completed. Dismantling of the Church of Transfiguration logs is completed.



Fig. 4. Monument conservation for winter. Top view on the underground foundation part.



Fig. 5. Dismantling of logs from the Church framework by the use of lifting system.



Fig. 6. Logs are dismantling by SKF "Alekon" company fitters. They have been working on the Church since 2004.



Fig. 7. The Church after logs dismantling. North-east view. Autumn 2011.

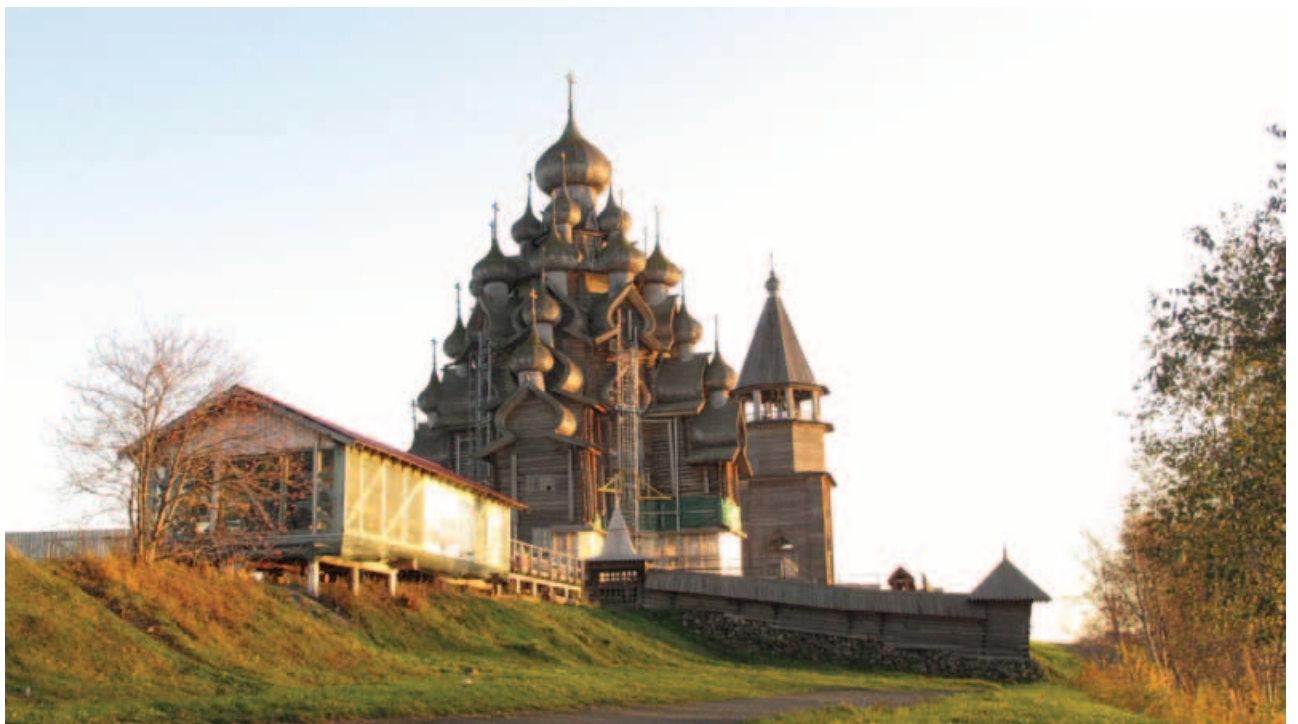


Fig. 8. The Church after logs dismantling. North-west view. Autumn 2011



Fig. 9. Start of the monument framework assembly in new corrected outline



Fig. 10. Work on accurate superposition of historic and new wood in the monument framework



Fig. 11. Process of framework assembly



Fig. 12. Installation of metal constructions with jacks for simulation of loadings on the framework



Fig. 13. Foundation after the restoration with applied load on the framework timber sets



Fig. 14. ICOMOS/UNESCO experts estimate the quality of restoration