

Remediation of Contaminated Areas of Frantz Josef Land. The Arctic Council and Barents Euro-Arctic Council Project.

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Arctic Monitoring and Assessment Programme (AMAP)

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1. Preamble.

NEFCO/AMAP "Updating of Environmental "Hot Spots" List in the Russian Part of the Barents Region: Proposal for Environmentally Sound Investment Projects" prepared at the request of the Kirkenes Summit of the Barents Euro-Arctic Council in January, 2003 considered Frantz Josef Land as a matter of special concern and distinguished the archipelago in the list of hot spots and priority projects (Project A 7-2).

Within the territory of the 42000-ha National Park "Franz Josef Land" there is a lot of abandoned equipment and up to 40000 tons of oil products and lubricants in the territories of closed meteorological fuel/lubricant stations and especially military units.

According to the Arkhangelsk Department of Natural Resources and Environmental Protection, several islands are ecologically critical areas.

For example, over 20 thousand tons of various oils and lubricants in 200-L drums (up to 100 thousand drums) were left on Hoffman Island at the former location of a long-range aviation in 1960's. The drums have been partially frozen to the ice.

In the northern part of Graham-Bell Island in which according to preliminary estimations there are up to 18 thousand tons of oils and lubricants (gasoline, diesel oil, aviation kerosene and waste oils) in 200-L drums (up to 90 thousand drums) and in 80-ton and 400-ton tanks left after a long-range aviation regiment relocation in the early 1990's.

PCB-containing equipment of airfield service facilities and radar stations is most likely located on the both islands.

On the northern part of Alexandra Island there are several thousand tons of oils and lubricants in drums.

High risk of the environmental contamination with oils, heavy metals and persistent organic fuel/lubricant pollutants requires immediate measures for disposition of oil products and containers, first of all, drums and other fuel/lubricant pollution sources and remediation of contaminated areas.

In order to evaluate the level of contamination with fuel/lubricant chlorinated biphenyls (PCB), the AMAP project for estimating contamination of Graham Bell Island with PCB's was implemented in 2004. The project implementation resulted in identifying potentially hazardous sites and overall assessment of PCB contamination in the region of the islands. Following the evaluation results it was recommended to conduct a comprehensive survey in the regions of high background PCB concentrations and develop project proposals for the island surface cleanup and rehabilitation of contaminated areas.

This project proposal was reviewed on the Arctic Council SAO Meeting in Khanty-Mansiysk on October 12-14, 2005 and on the Ministerial meeting of the Barents Euro-Arctic Council in Rovaniemi, Finland on October 20-21, 2005 and was supported at both meetings

The meeting on FJL surface cleanup under the chairmanship of the Deputy Chairman of the State Duma took place on January 24, 2006 in Moscow with participation representatives of the key RF ministries, Working Groups of AMAP, ACAP, Arctic Council SDWG, BEAC WGE, NEFCO and UNEP/GEF. The meeting noted that the Remediation of Contaminated Areas of Frantz Josef Land Project should be implemented as a cooperative project between the BEAC, Arctic Council, AMEC and the projects which are being implemented in Russia such as UNEP/GEF NAP "Arctic". Also the meeting stressed the need to start Stage 1 in 2006 so that a model project including the inventory of contamination sources and surface cleanup involving the BEAC, Arctic Council and NAP "Arctic"

funds could be Stage 1. The meeting also appealed to the Arctic Council, Barents Euro-Arctic Council, UNEP/GEF and AMEC to support the Franz Josef Land contaminated area project and undertake the necessary steps for its implementation

2. Main Stages of the Project

Stage 1 - Model project, 2006 (Alexandra Island).

- Reconnaissance survey at the pilot area of about 1 sq.m including three or four sites such as storage facilities for waste oil and drums with residual oils, building of a radar station.
- Comprehensive survey of identified sites including geodetic survey; mapping of the fuel/lubricant storage areas; determination of technical conditions of drums and tanks; determination of volumes and types of stored oil-products and evaluation the probability and rate of fuel/lubricant leakage from drums and tanks. Identification of PCB-containing equipment.
- Sampling and chemical analysis of soil, liquids and the drum content to determine POP concentrations.
- Pilot disposal of 500 drums with waste oil and lubricant residues including drainage and disposal of liquids from the drums, compaction and disposal of the drums.
- Pilot work on cleanup of a 1 ha area free from the drums with the use of modern methods of oil spill removal from soil in the North.

Stage 2 - Exploratory design, full-scale project development, establishing of the atmosphere monitoring station, 2007.

- comprehensive geodetic survey of the fuel/lubricant storage areas and oil-contaminated areas on Hoffman, Graham-Bell, Heiss and Alexandra Islands; mapping of fuel/lubricant storage facilities; determination of technical conditions of drums and tanks; determination of volumes and types of stored oil-products and evaluate the probability and rate of fuel/lubricant leakage from drums and tanks.
- Detailed sampling and chemical analysis of soil, liquids and the drum content to determine POP concentrations (on Graham-Bell Island – taking into account the work accomplished in 2004; on Alexandra Island – taking into account the pilot project results).
- Identification of PCB-containing equipment of airfield service and air-defense facilities, collection of samples to determine PCB concentrations.
- Assessment of the level of environmental risk in the region on the basis of the studies performed.
- Establishing of the atmosphere monitoring station on the base of Krenkel polar station (Heiss Island)
- Development of a phased project for fuel/lubricant storage facility removal, fuel/lubricant disposal and rehabilitation of contaminated soils on Hoffman, Graham-Bell, Heiss and Alexandra Islands based on the survey and chemical analysis results, providing for a pilot stage.

Stage 3 - pilot stage, 2008.

- Removal of several of Hoffman, Graham-Bell, Heiss and Alexandra Islands fuel/lubricant storage facilities primarily those that contain waste oil.
- Remediation of lands on-site and in vicinity of the removed storage facilities
- Conservation of PCB-containing equipment

Stage 4 – stage of a full-scale surface cleanup on Hoffman, Graham-Bell, Heiss and Alexandra Islands. The terms and scope of work will be specified after Stages 2 and 3 have finished.

- Removal of fuel/lubricant storage facilities.
- Remediation of lands on-site and in vicinity of the removed storage facilities
- Disposal of PCB-containing equipment.

3. Expected results

- Assessment of the overall contamination of Frantz Josef Land's Hoffman, Graham-Bell and Alexandra Islands by petroleum hydrocarbons and POP and assessment of the threat of the environmental contamination with oil products and POP.
- Main technical solutions and phased project for fuel/lubricant storage facility disposal and rehabilitation of contaminated areas.
- Identification, conservation and disposal of PCB-containing equipment on the archipelago's islands.
- Removal of a part of potentially hazardous substances – pollution sources from Hoffman, Graham-Bell, Heiss and Alexandra Islands;
- Materials for experimental rehabilitation of contaminated areas in the Far North;
- Methods of rehabilitation of abandoned settlements and facilities on hard-to-reach arctic islands.

4. Key Participants:

- Arctic Council Arctic Monitoring and Assessment Program (AMAP)
- Arctic Council Action Plan to Eliminate Pollution in the Arctic (ACAP)
- Arctic Council Sustainable Development Working Group
- Barents Euro-Arctic Council Working Group for the Environment
- NEFCO
- Ministry of Natural Resources
- Roshydromet
- UNEP/GEF NAP “Arctic”
- Environmental Security Department of the Russian Armed Forces
- RF FSS Frontier Service
- Non-Governmental Organization Polar Foundation
- Other participants

This project might also be implemented as a joint project between Arctic civilian institutions (Arctic Council and Barents Euro-Arctic Council) and the Arctic military cooperation AMEC

5. Proposals for Logistic Support of the Project.

Works on Stages 1-3 will be performed with the use of the Northern HSA RV's Mikhail Somov and Ivan Petrov, helicopters MI-8T 2nd Arkhangelsk United Aviation Division and RF FSS Frontier Service aviation. In the course of Stage 3 implementation, an ice class small displacement tanker can be leased. To accomplish Stage 3 work, either existing equipment can be purchased or its development by leading manufacturers can be ordered, if necessary.

6. Duration.

Stage 1 - 1 year

Stage 2 - 1 year

Stage 3 – 1 year

Stage 4 – depends on the results of the implementation of the previous stages

7. Total Cost of the Project

The estimated project cost is given in the table. However, it should be taken into consideration that Stage 3 cost will significantly depend on the Stage 2 estimation results, first of all, on the results of development of the project for fuel/lubricant storage facility removal, fuel/lubricant disposal and rehabilitation of contaminated soils on Hoffman and Graham-Bell Islands. Stage 4 scope and expenses will be estimated after completion of Stages 2 and 3.

Preliminary estimate of the project cost

Expense Item	Total, USD
Model project (Stage 1)	
1.1. Materials and equipment	\$42 400.00
1.2. Consumable materials	\$18 800.00
1.3. Geological and geodetic survey, sampling and analysis, cameral treatment	\$36 000.00
1.4. Fuel discharge, drums disposal and area remediation	\$23 000.00
1.5. People transportation and meals	\$5 100.00
1.6. Transportation costs	\$84 500.00
1.7. Preparation and distribution of a report	\$5 000.00
Total for items 1.1 - 1.7	\$249 168.00
1.8 Operating expenses and contingences 20%	\$42 960.00
Total*	\$257 760.00
Stage 2	
2.1. Materials and equipment	\$83 550,00
2.2. Geological and geodetic survey, sampling and analysis, cameral treatment	\$120 000,00
2.3. Transportation costs	\$230 000,00
2.4. Establishing of atmosphere monitoring station	\$100 000,00
2.5. Development of the phased project for fuel/lubricant storage facility decommissioning and rehabilitation of contaminated areas (for the three sites)	\$160 000,00
2.6. Development and dissemination of the report	\$5 000,00
Total for items 2.1 - 2.6	\$714 000,00
2.7 Operating expenses and contingences 20%	\$142 800,00
Total	\$856 800,00
Stage 3**	\$2 000 000.00

* including approx. \$40K Russian in kind input

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