Preparation of Regional Pre-Investment Studies in the Eastern Sector of the Russian Arctic

Recovery and Disposal of the RTG Device Located at Rogers Bay, Wrangel Island

Pre-Investment Study

April 5, 2010

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Preparation of Regional Pre-Investment Studies in the Eastern Sector of the Russian Arctic

Final stage of consulting services provided under Contract No CS-NPA-Arctic-08/2008 dated 20 August 2008

Recovery and Disposal of the RTG Device Located at Rogers Bay, Wrangel Island

Pre-Investment Study

Project 0090016

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ERM Eurasia Ltd confirms that this Report has been prepared with all reasonable skill, care and diligence and in conformity with the professional standards as may be expected from a competent and qualifies consultant acting as Environmental Consultant having experience in providing services for projects with similar scope of work, complexity, issues and scales.

This Report has been prepared in accordance with the terms of the contract concluded with the Client and the generally accepted consulting practices in Russia and for intended purposes stated in the contract. The conclusions and recommendations made in this Report are based upon information obtained directly by ERM Eurasia Ltd., as well as information provided by third parties, which we believe to be accurate.

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SUMMARY

PROJECT NAME	Recovery and Disposal of the RTG device located at Rogers Bay, Wrangel Island
PROJECT SPONSOR AND PROPOSED BENEFICIARY	The project Initiator is the Federal Marine and River Transport Agency of the Russian Federation (*Rosmorrechflot*). The potential beneficiary is FGUP Hydrographic Company under *Rosmorrechflot*.
LOCATION	Rogers Bay is located on the south-eastern coast of Wrangel Island. The navigation equipment station and the RTG device are located on a sea spit near former Ushakovsky village.
OBJECTIVES	Search for, recovery and disposal of the RTG device.
PROJECT CATEGORY	Priority 2: Clean-up of past environmental liabilities within a UNESCO World Heritage Site
DESCRIPTION OF THE PROJECT ACTIVITIES	The Project includes the following main components: 1 Development and approval of a detailed Declaration of Intent based on this PINS; 2 Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan; 3 Geophysical works related to the RTG search and other research activities; 4 Development and implementation of a monitoring programme for all stages of the Project; 5 Development and implementation of a radiation protection programme for all stages of the project; 6 Development of design and working design documentation, including environmental sections and plans; 7 Procurement of licences, approvals and permits; 8 Delivery of necessary equipment and vehicles; 9 Implementation of engineering activities related to recovery and transportation of the RTG device.

TECHNOLOGIES USED	A detailed RTG decommissioning procedure was developed by the Icebreaking Fleet and Hydrography Department of the Navigation Authority and other subdivisions of *Rosmorrechflot*. RTG disposal procedures are applied in compliance with the applicable legal requirements to nuclear waste management by licensed organisations capable of ensuring the required level of safety.
PROJECT PREPARATION LEVEL	Icebreaking Fleet and Hydrography Department of the Navigation Authority and other subdivisions of *Rosmorrechflot* provided generic technical solutions for the Project implementation
PRELIMINARY COST ESTIMATE	EUR 1,000,000, including EUR 63,500 as budgetary financing, and EUR 936,500 as non-budgetary financing
EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS	The Project is expected to eliminate the risk of current radiation contamination and pollution of the area. Rehabilitation of the area will confirm Russia's international commitments to preserve a World Heritage Site. The Project's key performance indicator is the radiation background level reduced to standard values.

1 INTRODUCTION

This document has been prepared by ERM Eurasia Ltd. (ERM) in accordance with Contract on Consulting Services No. CS-NPA-Arctic-08/2008 dated 20 August 2008 with the Executive Directorate of the National Pollution Abatement Facility (NPAF) within the framework of the Project "Preparation and Implementation of Regional Pre-Investment Studies in the Eastern Sector of the Russian Arctic".

This Project is Component 2 of the Project "Russian Federation – Support for National Programme for the Protection of the Arctic Marine Environment" (The NPA-Arctic Project) and is funded by the Global Environment Facility (GEF). The Executing Agency is the Ministry of Economic Development of the Russian Federation.

The main objective of the NPA-Arctic Project is to develop and establish a sustainable framework to reduce environment degradation of the Russian Arctic from land-based activities on a systematic basis by implementation of a Strategic Action Programme (SAP), which is being developed to comply with obligations of the Russian Federation under international conventions and agreements and taking into account decisions and programmes of the Arctic Council.

The ultimate goal of this Project was to prepare pre-investment studies (PINS) on the investment proposals selected by the NPA-Project in the Eastern Sector of the Russian Arctic, i.e. in the Republic of Sakha (Yakutia) and Chukchi (Chukotka) Autonomous Okrug.

2 PROJECT DESCRIPTION

2.1 BACKGROUND AND OBJECTIVES OF THE PROJECT

The Project includes search for, recovery and disposal of a radioisotope thermoelectric generator (RTG) previously located at a navigation equipment station in Rogers Bay.

The Project objectives are to:

1 eliminate the current source of radiation contamination of marine and land environment, prevent further radiation contamination of the territory and the water area of Wrangel Island and address radiation related impacts on local fauna and communities;

2 improve sanitary and epidemiological situation in terms of radiation contamination, and

3 ensure compliance with Russian and international regulations related to radiation safety and radioactive wastes.

2.2 BACKGROUND

Radioisotope thermoelectric generators (RTG) were mostly used as power supply sources for navigation beacons, light signals, radio beacons and weather stations. In Russia, radionuclide energy stations are deployed along the Arctic coast and on arctic islands.

RTG devices were not deployed within or in the vicinity of residential areas, along the Northern Sea Route. The devices are located in the open air, in areas where other electricity generators were difficult or impossible to use, especially during winter periods. They do not require regular maintenance (GOST 18696-90). Due to the fact that vessel routes are currently monitored by satellites and that the devices' service life has expired, there is no more need to use the existing RTG devices.

An RTG device consists of a heat source based on the Strontium-90 radionuclide (Radioisotope Heat Source, RIT-90), which is an enclosed radiation source. The fuel composition includes ceramic strontium-90 titanate (SrTiO3) and has a double argon arc welding encapsulation. In some RTG devices, strontium is used as part of strontium borosilicate glass. The capsule is protected against external impacts by a thick shell made of stainless steel, aluminium and lead. In the normal operation mode, the level of radiation does not exceed 200 μR/h on the surface of the device and 10 μR/h at a distance of 1 m. As long as the RTG shell used as a transportation packaging for RIT-90 is intact, the device is not considered a radioactive waste.

Service life of all types of RTG devices is 10 years. To date, all devices have exceeded the projected service life of their RITs, which varies from 5 to 11 years depending on a RIT type; most RTG devices have exceeded the operational life period of 25 years specified in certificates issued by the Russian Federal Nuclear Energy Agency (*Rosatom*), and the extended life period of not more than 5 years.

Decommissioning of closed radiation sources in RTG devices is governed by General Regulations on Radiation Source Safety (NP-038-02) developed and approved by the Russian Federal Nuclear Energy Supervision Agency (*Rosatomnadzor*) in 2001 and Para. 5 of the Operation and Decommissioning Guidelines for Radionuclide Energy Units Based on Strontium-90 Radionuclide Heat Sources' approved by the Russian Ministry of Nuclear Energy in 1999.

The Russian Federal Service for Environmental, Technical and Nuclear Supervision (*Rostekhnadzor*) of the Russian Ministry of Natural Resources and Environment is responsible for the nuclear energy safety on behalf of the Russian Government.

Previously, *Rosatom* (which is currently named State Corporation Rosatom) covered the following issues:

- interagency coordination of activities related to monitoring, physical protection, decommissioning, disposal, temporary storage safety, transportation, and disassembly of RTG devices, as well as long-term storage of RITs, and
- raising and consolidation of investments from international partners to deal with those aspects as part of the Global Partnership against the Proliferation of Weapons and Materials of Mass Destruction and other international agreements, programmes and projects.

International technical assistance is provided to Russia under the Multilateral Nuclear and Environmental Programme of the Russian Federation (MNEPR), the Agreement for Safe and Reliable Transportation, Storage and Destruction of Weapons, and Prevention of Proliferation of Weapons between the Russian Federation and the US Department of Energy, and the Agreement for Cooperation in Control and Physical Protection of Nuclear Materials between the governments of the Russian Federation and the USA. In addition, Rosatom and the Norwegian Foreign Ministry entered into a technical assistance agreement for the disassembly and disposal of RTG devices.

In 2007, the Russian Government adopted Decree No 444 dated 13 July 2007 initiating the Federal Target Programme (FTP) 'Ensuring Nuclear and Radiation Safety in 2008 to 2015'. Under this Programme, 475.5 million roubles were allocated from federal budget to remove light navigation equipment along the Northern Sea Route and dispose of decommissioned RTG devices. However, currently due to funding constraints not all of RTG devices and light navigation units can be removed. Also, the programme does not provide for installation of alternative power supply units to replace RTG devices.

In March 2007, the Kurchatov Atomic Energy Institute, with the financial assistance from the Government of Canada developed the Strategic Master Plan for Safe Storage and Disposal of RTG Devices in Russia. In October 2007, with the help from the US Department of Energy, an Action Plan for the Kurchatov Institute was developed. The purpose of those plans is to ensure detailed understanding of the activities completed by 2007 by the partner countries (USA, Canada, France and Russia). The plans include schedule of future activities related to the disposal of the remaining RTG devices in Russia by 2015.

In 2008, the Action Plan was adjusted to clarify implementation stages, financing provisions and obligations of the parties. In April 2008, under the auspices of the US Department of Energy / the National Nuclear Safety Administration / the Global Threat Reduction Programme in the former USSR countries and Asia, the Action Plan to Ensure Safe Storage and Disposal of Radioisotope Thermoelectric Generators (RTG) in Russia was developed, including estimated cost of implementation.

For the purpose of improving cooperation and coordinating efforts of donor countries and Russian agencies and companies, an RTG International Coordinating Group was established in 2008 following the International Nuclear Energy Agency's Contact Expert Group Workshop on Problems of Decommissioning Radioisotope Thermoelectric Generators in Moscow in April 2008.

A Strategic Plan for RTG Disposal was thus proposed in 2007 to 2008. The activities envisaged by the Plan follow the approved schedule for all stages of the Plan including financing from the federal target programmes and raising of international funds.

In 2009, 20 RTG devices were removed from the Yenisei Bay. Activities on removal of the RTGs located in Sakha and Chukotka were not conducted in 2009.

<u>RTG device located at a navigation equipment station (NES) in Rogers Bay, Wrangel Island.</u>

According to FGUP 'Hydrographical Company' (FGUP HC), the NES located in Rogers Bay used a Beta-M type RTG device produced in 1984. The RTG device was used for Northern Sea Route navigation purposes. Design documents were developed by the Russian Research Institute of Technical Physics and Automation, Moscow.

According to Federal Law on the Use of Nuclear Energy, FGUP HC under Federal Marine and River Transport Agency (*Rosmorrechflot*) has the complete responsibility for radiation safety of RTG devices located in Chukotka. RTG devices in Chukotka are operated by corporate structures of FGUP HC, namely, Provideniya Hydrographical Base and Pevek Buoy and Hydrography Team.

Rosmorrechflot can therefore be considered the owner of RTG devices. RTG inventory and operations are the responsibility of FGUP HC, which also deals

with decommissioning issues. This company has a necessary licence issued by *Rostekhnadzor*.

However, both Pevek Buoy and Hydrography Team and Provideniya Hydrographical Base do not have enough qualified personnel, equipment and financing to carry out regular inspections. The Magadan Regional Radiation Safety Inspection also carried out no inspections in 2009 due to a 20% cut in financing.

It had earlier been envisaged to remove RTG devices from Chukotka during the period from 2009 to 2011 using the funds from the FTP 'Ensuring Nuclear and Radiation Safety in 2008 and until 2015'. In his letter to the Chief Sanitary Officer in Chukotka, General Director of FGUP HC stated that the funds appropriated by that FTP for the first three years were not enough to finish works for removal and disposal of RTG devices located along the coastal area of the Chukchi Peninsula.

Under Resolution No 150-rp of Governor of Chukotka dd. 27 June 2003, a working group was established to evaluate radiation safety and physical protection issues related to RTG devices located at NESs at Chukotka coastal section of the Northern Sea Route. The working group produced inspection reports for 24 RTG devices, but did not inspect the RTG device located at Rogers Bay.

According to Letter No IZ-28/9263 dated 2 October 2009 from *Rosmorrechflot* (See Appendix A to ERM Stage 3 Report), funds for activities initially allocated for by the FTP for removal of navigation equipment of the Northern Sea Route and disposal of decommissioned RTG devices in 2010-2012 was reduced by 25-30%.

At the same time, there still remains the problem of recovery and proper disposal of the RTG device previously located at a NES at Rogers Bay. *Rosmorrechflot* is therefore expressed their interest to procure additional sources of non-budgetary financing to complete these activities.

2.3 *SITE DESCRIPTION AND LOCATION*

Wrangel Island is located in the Arctic Ocean between the Chukchi Sea and East Siberian Sea. The Long Strait, which is 140 km wide in its narrowest part separates the island from the mainland. The island lies at a junction between the Eastern and Western hemispheres and is divided in two parts by the 180th meridian.

The Wrangel Island State Natural Reserve (including Herald Island) is a protected nature area of federal significance. It was established by Decree No 189 of the Council of Ministers of the Russian Soviet Federative Socialist Republic (RSFSR) dated 23 March 1976. A protected water area five nautical miles wide was created around the reserve. At that time, the reserve covered 795,600 hectares. In 1997, the reserve was expanded after the Russian Government's Decree No 1623-r dated 15 November 1997 added a 12-mile

water area. In 1999, Governor of Chukotka issued Decree No 91 dated 25 May 1999, establishing a 24-mile protected water area around the reserve's existing protected water area. Total area of the reserve is now 2,226,000 hectares including 1,430,000 hectares of water area.

In 2004, Wrangel Island Reserve was included in UNESCO's list of World Heritage Sites under two categories:

- Wrangel Island is a notable example of evolutionary development of various arctic ecosystems including mountain, plain and coastal ecosystems;
- The territory of the island has biodiversity exceptional for the Arctic, including rare and endangered species under both national and global classifications.

Rogers Bay is located at the south-eastern coast of Wrangel Island. The light navigation equipment of the NES and the RTG device are located on the spit close to the former Ushakovsky village.

The location of the NES is shown in Figure 1.1.

2.4 OVERVIEW OF RISK ANALYSIS AND ACCIDENT RISK PROBABILITY

During the PINS preparation process, no information was provided regarding previous emergency risk assessments related to the RTG.

As required by Russian regulations and guidelines of international organisations, a comprehensive risk assessment and an Emergency Preparedness and Response Plan should be done at the preparatory stage of the Project for all implementation stages, including the personnel and land radiation safety measures.

2.5 PRIORITY OF THE PROJECT FOR NPA-ARCTIC

Priority 2: Clean-up of past environmental liabilities within a UNESCO World Heritage Site.

2.6 APPLICABLE NATIONAL AND INTERNATIONAL REGULATIONS AND STANDARDS

2.6.1 *IAEA Conventions and Agreements:*

- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986);
- Convention on Early Notification of a Nuclear Accident (1986, 1991);
- Convention on Nuclear Safety (1994);

- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997);

- Code of Conduct on the Safety and Security of Radioactive Sources (2004).

2.6.2 Federal laws of the Russian Federation

- Federal Law No.52-FZ dated 30.03.1999 "On Sanitary and Epidemiological Welfare of Population";

- Federal Law No 3-FZ dated 09.01.96 "On Radiation Safety of Population";

- Federal Law No.68-FZ dated 21.12.1994 (as amended on 30.10.2007) "On Protection of Population and Territories against Emergencies of Natural and Man-made Origin";

- Federal Law No 5151-1 dated 10.06.93 "On Certification of Products and Services";

- Federal Law No 92-FZ dated 10.07.01 "On Special Environmental Programmes for Rehabilitation of radiation-contaminated lands";

- Federal Law No.7-FZ dated 10.01.2002 "On Environmental Protection";

- Federal Law No 33-FZ dated 14.03.95 "On Specially Protected Nature Areas";

- Federal Law No 184-FZ dated 2712.02 "On Technical Regulations";

- Federal Law No 73-FZ dated 03.06.06 "Water Code of the Russian Federation";

- Federal Law No 174-FZ dated 23.11.95 "On State Environmental Review".

2.6.3 Decrees of the Russian Government

- Decree No 124 dated 21.02.02 'On safety declaration of potentially hazardous underwater facilities located in inland waters and the territorial sea of the Russian Federation';

- Decree No 505 dated 22.07.92 'On approval of inventory procedure for places of extraction, transportation, processing, utilisation, storage and disposal of radioactive materials and sources of ionizing radiation in the Russian Federation';

- Decree No 710 dated 23.07.93 'On measures for comprehensive addressing of radioactive waste management issues and discontinuation of sea burial of radioactive waste';

- Decree No 1298 dated 11.10.97 'On approval of the Rules of state recording and control of radioactive waste and materials';

- Decree No 962 dated 15.12.00 'Regulations on state recording and control of radioactive waste and materials in the Russian Federation';

- Decree No 306 dated 14.03.97 'On the decision-making process for deployment and construction of nuclear facilities, radiation sources and storage facilities';

- Decree No 45 dated 26.01.05 'On licensing of specific types of activities';

- Decree No 20 dated 19.01.06 'On engineering surveys for development of design documents, construction and reconstruction of capital structures';

- Decree No 145 dated 05.03.07 'On state expert review of design documents and engineering survey findings'.

2.6.4 Regulatory documents approved by the Russian Federal Nuclear and Radiation Safety Supervision Service (Gosatomnadzor) and Rostekhnadzor

- RD-07-17-2008 'Regulations on supervision of physical protection of radiation sources, radioactive materials and waste' (Instruction No 892 of Rostekhnadzor dated 14.11.08);

- RD-07-04-99 'On approval of the Instruction on supervision of radiation safety during construction, handling and utilisation of radioactive materials and products containing radioactive materials and during handling of radioactive waste' (Instruction No 11 of Gosatomnadzor dated 08.02.99);

- RB-023-02 'Recommendations for establishing acceptability criteria for storage and disposal of conditioned radioactive waste' (Gosatomnadzor, 2002);

- RB-003-98 'Requirements to the radioactive waste handling quality assurance programme' (Gosatomnadzor, 1998).

2.6.5 Other Key Regulatory Documents

- Instruction No 786 of the Russian Ministry of Natural Resources dated 02.12.02 'Federal waste classification list (as amended on 30.07.03)';

- Instruction No 323 of Rostekhnadzor dated 10.05.07 'On approval and enactment of the Regulations on supervision of the state recording and control of radioactive waste and materials';
- RD-07-04-99 'On approval of the Instruction on supervision of radiation safety during construction, handling and utilisation of radioactive materials and products containing radioactive materials and during handling of radioactive waste' (Instruction No 11 of Gosatomnadzor dated 08.02.99);
- Regulations on state recording and control of radioactive waste and materials in the Russian Federation (the Russian Ministry of Nuclear Energy, 1999);
- NP-058-04 'Safety of radioactive waste handling. General requirements' (Rostekhnadzor, 2004);
- NP-073-06 'Rules of physical protection during transportation of radioactive materials and radiation sources' (Rostekhnadzor, 2006);
- NP-034-01 'Rules of physical protection of radiation sources, storage stations and radioactive materials' (Gosatomnadzor, 2001);
- NP-053-04 'Safety rules during transportation of radioactive materials';
- NP-055-04 'Radioactive waste burial. Principles, criteria and key safety requirements' (Rostekhnadzor, 2004);
- Key sanitary rules for radiation safety (OSPORB-99);
- Sanitary rules for radioactive waste handling. SPORO-2002 (Chief Sanitary Officer of the Russian Federation, 2002);
- NP-020-2000 'Collection, processing, storage and conditioning of solid radioactive waste. Safety requirements' (Gosatomnadzor, 2000);
- NRB-99/2009 Sanitary rules and norms SanPiN 2.6.1.2523-09 'Radiation safety norms';
- NP-069-6 'Subsurface burial of radioactive waste. Safety requirements' (Rostekhnadzor, 2006);
- PNAE G-14-038-96 'Requirements to the feasibility report on the safety of radioactive waste storage stations in terms of consideration of external impacts' (Gosatomnadzor, 1996);
- Temporary criteria for decisions related to soil, solid construction, industrial and other types of waste containing gamma-emitting radionuclides (Chief State Sanitary Officer of the Russian Federation, 1992);
- Regulation on and requirements to the contents of sections in the design documents (approved by Decree No 87 of the Russian Government dated 16 February 2008).

2.7 ANALYSIS OF ALTERNATIVES TO THE PROJECT

Zero Alternative

As a result of non-implementation of the Project, the current level of adverse environmental impacts associated with radioactive materials will remain the same. There will also remain risks of increasing adverse environmental impacts due to possible damage to protection of the radiation source.

Retaining the source of radiation contamination of a World Heritage Site contradicts the status of the Site.

2.8 CURRENT STATUS AND ENVIRONMENTAL AND SOCIAL IMPACTS ASSOCIATED WITH THE RTG DEVICE

A navigation beacon equipped with the RTG device was destroyed by storms. An inspection performed on 2 September 2003 found the RTG device on the sea shore of the spit, within the tidal zone, 4 m from the water edge during low tide. Radiation level measured using the DRG.01T1 radiation meter indicated 6.993 μR/h. Radiation was emitted to all sides. A torn cable roughly 50 m long, party covered with pebbles was also found on the spit. Parts of the beacon (logs, metal reflectors, etc) were found scattered in the range of 500 m around the spit.

A second inspection in 2006 showed that the RTG device source was either totally covered with pebbles or was under the water; no traces of the device were found. Some reflectors were partly covered with pebbles, with some reflectors and wooden logs washed away to the sea.

In 2008, head of the Reserve's security department inspected the RTG location and reported that the device was washed away to the sea, the shape of the spit changed, and no traces of the beacon and the RTG device could be seen on the spit.

Despite repeated requests to address the problem and dispose of the source of radiation threat, no measures were ever taken, which violates the current operating regime of the Wrangel Island Reserve.

The unsafe condition of the RTG device is a threat to the protected nature area, which violates Para. 1, Article 9 of Federal Law No 33-FZ 'On Specially Protected Nature Areas' and Para.12 of the Regulation on the Wrangel Island Reserve. In case the RTG device becomes damaged, the coastal strip may become contaminated with radioactive materials.

The exact location of the RTG device is currently unknown.

Lost RTG device owned by *Rosmorrechflot* may be a serious threat to the Reserve's biodiversity and is a factor of increased radiological hazard.

2.9 PROJECT PREPARATION LEVEL

In 2004-2007, the administration of the Reserve had filed to the authorities a number of requests with regard to recovery and disposal of the lost RTG device.

Icebreaking Fleet and Hydrography Department of the Navigation Authority and other subdivisions of *Rosmorrechflot* provided generic technical solutions for the Project implementation (also see Section 1.11.1 of this PINS).

2.10 PROPOSED ACTIVITIES

The Project comprises the following components:

10 Development and approval of a detailed Declaration of Intent based on this PINS;

11 Preliminary evaluation of scope and schedule of works; development of a detailed stakeholder engagement plan;

12 Geophysical works related to the RTG search and other research activities;

13 Development and implementation of a monitoring programme for all stages of the Project;

14 Development and implementation of a radiation protection programme for all stages of the Project;

15 Development of design and working design documentation, including environmental sections and plans;

16 Procurement of licences, approvals and permits;

17 Delivery of necessary equipment and vehicles;

18 Implementation of engineering activities related to recovery and transportation of the RTG device.

2.11 APPLIED TECHNOLOGIES AND PROJECT LOGISTICS

2.11.1 Applied Technologies and Project Logistics

There is a detailed procedure for the disposal of RTG devices which follows the current legal requirements for radioactive waste management. There is also a list of organisations capable of performing such disposal and ensure required level of safety.

A detailed RTG decommissioning procedure was developed by the Icebreaking Fleet and Hydrography Department of the Navigation Authority and other subdivisions of *Rosmorrechflot*:

Decommissioning of the RTG device includes the following steps:

1) Monitoring of radiation environment including monitoring of the gamma-radiation intensity on the RTG surface and at 1 m from the RTG surface..

2) RTG dismantling on site. The fact of dismantling shall be reported to the territorial agencies of *Rospotrebnadzor* (as represented by the Chief Sanitary Officer of an appropriate territorial district), Ministry of Internal Affairs of the Russian Federation, and *Rostekhnadzor*.

3) RTG shall be delivered from the place of dismantling to the place of loading onto a vehicle for its shipment to the RTG developer and manufacturer by the operating organisation or an organisation(s) being employed, which shall have appropriate licences and permission certificates for the RTG transport packing design and its transportation issued in the established order. RTG transportation shall fully comply with the transportation safety requirements established by the IAEA "Regulations on the safety of transportation of radioactive materials", "Regulations on the safety of transportation of radioactive materials" developed and approved by the *Rostekhnadzor*, standard technical documentation for a specific RTG type, and "Sanitary Regulations on the radioactive safety of personnel and population during transportation of radioactive materials".

   Removal of RTG from NES locations and from temporary storage areas can be made only by a written permission of General Director of the FGUP HC, or an acting director, after prior agreement with the *Rosmorrechflot*

4) RITEG shall be transported to the RITEG developer and manufacturer by organisations (enterprises) having a licence for handling of radioactive materials during their transportation, where a permission certificate is available for RITEG packing design and transportation, and where a properly developed and approved transportation process flow-chart is available.

   RITEG shall be transported in accordance with the following process flowchart: NES – hydrographic vessel – FGUP "Atomflot" – FGUP "Atomflot" storage – railway car – FGUP "VNIITFA" – PO "Mayak". A dismantled RTG is sent for disassembly to the Russian Research Institute of Technical Physics and Automation (FGUP "VNIITFA") which has been involved in this type of activities for the last 10 years. The disassembly process is based on technical regulations developed for each RTG type. There have been certain

difficulties related to the disassembly of RTG devices in unsafe condition: in particular, uranium oxidisation starts when the uranium protection sealing is damaged, which may increase contamination levels. Also, the surface of RIT modules in some RTG devices was found to be contaminated. In addition, RIT modules can not be extracted from certain RTG devices due to mechanical damages. The number of RTG devices in unsafe condition has been increasing recently.

As of April 2008, most of the disassembled RTG devices have been sent to PO Mayak for disposal.

2.11.2 Accommodation and Social Services for Personnel

Accommodation and social services provided to personnel are based on the semi-mobile scheme and include mobile field camps which can accommodate up to 15 personnel including engineers, workers and operational staff.

2.11.3 Wastewater Management

It is proposed to use mobile wastewater treatment systems (FIL D'EAU, http://www.vseslav-eco.ru/FIL_DEAU or similar systems).

2.11.4 Waste Management

Generation of solid and liquid household waste is expected in relation to the functioning of a residential area. The design documents will provide for a detailed description of the waste management process for all stages of the Project.

Waste will be sorted and disposed into special packaging. Most of solid household waste generated will be removed from Wrangel Island.

3 ENVIRONMENTAL AND SOCIAL ASPECTS OF THE PROJECT IMPLEMENTATION

3.1 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS IN THE AREA OF PROJECT IMPLEMENTATION

3.1.1 Environmental and Geographical Characteristics of the Area

The island covers around 7,670 square kilometres, of which 4,700 square kilometres are occupied by mountains. The coastline is low and is dissected by lagoons which are separated from the sea by sandspits. The northern part of the island is occupied by lowland Academy Tundra. The central part of the island is mostly mountainous. There are a number of small glaciers on the island.

The region is fully located in the permafrost area.

Mountain ridges are separated by valleys with numerous rivers. There are over 140 rivers and streams over 1 km long and 4 rivers over 50 km long on the island. The island hosts around 900 small lakes, most of which are located in the Academy Tundra, and only 6 are over 1 square kilometre in size. The average depth of the lakes is less than 2 m. Most of the lakes belong to the thaw and lagoon types.

Wrangel Island has severe climate. The region is blanketed by masses of dry and cold Arctic air for most of the year. Warmer and more humid air can reach the island from the south-east during summer. Dry and heated air from Siberia comes to the island periodically.

Polar day lasts from the second decade of May to around the last decade of July; polar night starts from the second decade of November to late January.

Winters are long and are characterised by steady frosty weather and high northerly winds. The average temperature in January is -22.3^{o}C. February and March are the coldest months; during this period the temperatures usually stay below -30 ^{o}C, with frequent snow-storms with wind speeds of 40 m/s or above.

The summers are cool, with occasional frosts and snowfalls. The average temperature in July ranges from +2^{o}C to +2.5^{o}C. Warmer and drier weather are experienced in the centre of the island which is separated from the sea by mountains and because the interior's topography encourages better warming of air and foehn winds.

Annual precipitation is around 180 mm.

Wrangel Island has the biggest species wealth in the Arctic Region for both flora and fauna and is characterised by a combination of typically Arctic and relatively South Asian and American species. The plant communities are represented by partially landscape-forming Pleistocene relicts.

The island has unique types of plant communities and endemic soil types including around 40 endemic types and subtypes of Tracheophytes, insects, birds and mammals.

It is the key territory for a whole range of rare and protected birds and animals including the largest rookeries in the Eastern Arctic Region and a unique population of snow geese.

3.1.2 Socioeconomic Characteristics of the Area

The island is a specially protected nature area. Economic activities are currently not allowed on the island. The only economic facilities include the administration of the Reserve and an operating polar station in Rogers Bay. Heat and electricity is generated locally using diesel generators and a heating plant.

Although administratively Wrangel Island is part of the Iultinsky District, the administration of the Reserve is located in the town of Pevek in the Chaunsky District. Personnel of the scientific department and the reserve security service mostly work on a rotational basis. During the summer field season (July to August), specialists of external organisations visit the island to conduct scientific studies.

3.2 CURRENT ENVIRONMENTAL AND SOCIAL ISSUES TO BE ADDRESSED BY THE PROJECT

The Project will address the following potential significant environmental and social issues:

1 Environmental impacts associated with radioactive waste and materials; unfavourable radiation situation; radioactive contamination of soils and sea water;

2 Proliferation of radiation contamination through sea waters and air;

3 Radiation safety and direct factors of influence on health and well-being of the Reserve's personnel and visitors; exacerbation of the sanitary and epidemiological situation; an increased risk of cancer;

4 Unfavourable mental and emotional environment due to radiation phobias;

5 Impacts of radioactive waste and materials on the local biodiversity; impacts of accumulation of radionuclides in body tissues of living

organisms and food chains including potential impacts of mutagenic agents;

6 Impact of radiation agents and limitations on traditional use of natural resources;

7 Impact on the quality of fish resources.

3.3 ASSESSMENT OF ENVIRONMENTAL RISKS ASSOCIATED WITH THE CURRENT SITUATION

The risks occurring in relation to potential environmental harm are assessed as **high**, and non-resolution of this problem can result in **regional** and **transboundary** consequences.

3.4 PRELIMINARY ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROJECT

In the course of Project implementation, the maximum environmental impact is expected to be caused by air emissions from vehicles during search and handling activities. Taking into account strong local winds, it is expected that this impact will be minimal.

Where the Project activities are done in normal operation mode, no radiation impact on the environment and personnel health is expected. Emergency response actions will be developed in relevant sections of design documents.

3.5 EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS OF THE PROJECT

The Project is expected to eliminate the risk of current radiation contamination and pollution of the area.

Rehabilitation of the area will confirm Russia's international commitments to preserve a World Heritage Site.

The Project's key performance indicator is the radiation background level reduced to standard values.

3.6 NATIONAL AND INTERNATIONAL ENVIRONMENTAL PRIORITIES ADDRESSED BY THE PROJECT

Project activities agree with the two key areas of the Strategic Action Program for Protection of the Russian Arctic Environment (SAP-Arctic):

- Prevention and abatement of pollution of the coastal and marine environments in the Russian Arctic, including the transboundary

transport of pollutants with aquatic and atmospheric flows oil, chemical, and radiation contamination;

- Conservation and improvement of the quality of the environment, living conditions of the indigenous small-in-numbers peoples and conditions for traditional nature use by native small nations of the North.

Under the first component, the Project follows the following objectives:

- Improving the system of the state environmental control and monitoring, of assessment of anthropogenic contamination levels of the Russian Arctic seas, strengthening control over the transboundary transport of pollutants in the Arctic;;
- Reducing the negative environmental impacts in the hot spots in the Russian Arctic;
- Developing/improving financial and economic mechanisms for attracting investments to solve environmental problems in the Russian Arctic;
- Expanding fundamental and applied research related to the spread and impacts the critical pollutants on man and the environment in the Arctic;
- Raising the level of environmental education and awareness; ensuring public access to information concerning the environmental pollution in the Russian Arctic;
- Developing international cooperation among the Arctic countries in the area of environmental protection in the Russian Arctic.

Under the second component, the following main objectives will be reached:

- With respect to remedying past environmental damage on land and in the coastal zone of the Arctic seas:
    - Expanding public-private partnerships to improve effectiveness of environmental protection;
    - Developing and implementing investment projects aimed at remedying past environmental damage on land and in the coastal zone of the Arctic seas;
    - Using the existing and developing new international instruments for attracting investments into the implementation of environmental projects in the Russian Arctic.

Removal of unused RTG devices from the Northern Sea Route and their disposal are among priority measures for Stage 1 of SAP-Arctic (2009-2012).

The Project also agrees with the main objectives of the Government Policy in the Arctic defined in the Basic Provisions for the National Policy of the Russian Federation to 2020 and onwards (approved by President on 18.09.2008). In particular, in the field of environmental safety the Project aims at one of the main objectives of the Russian Arctic Policy, i.e. conservation and protection of the natural environment in the Arctic, elimination of environmental consequences of human activities under the conditions of intensification of economic efforts and global climate change. The Project shall ensure the following measures in order to reach the goals of the Russian Arctic Policy in the field of environmental safety in the Russian Arctic region:

- Remediation of natural landscapes;
- Processing of toxic industrial wastes;
- Ensuring of chemical safety.

The need for measures aimed at clean-up of environmental liabilities and remediation of areas in critical environmental condition, efficient control of threats to environmental safety and establishment of economic instruments for environmental liability clean-up is defined in the Programme of Socioeconomic Development of the Russian Federation on a Medium-term Perspective (2006-2008) approved by the Government Decree No. No.38-r dated 19.01.2006. The Programme sets out the following essential objectives of the governmental environmental policy:

- Efficient control of threats associated with deterioration of the environmental situation in connection with an increase in industrial waste generation;
- Implementation of measures for remediation of the areas in critical environmental condition, including governmental support for any work aimed at reducing the past environmental liabilities;
- Creation of economic instruments and mechanisms for clean-up of past environmental liabilities and appropriate compensation.

In general, as a World Heritage Site the Wrangel Island Reserve falls under the provisions of the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage. The status of a World Heritage Site has a number of benefits in terms of environmental protection and full support of areas included in the List of World Heritage Sites, including financing preferences.

With regard to addressing RTG related issues, the Project agrees with the objectives of the Concept of the FTP ''Ensuring Nuclear and Radiation Safety in 2008 to 2015'. Under this Programme, 475.5 million roubles were allocated from federal budget to remove light navigation equipment along the Northern Sea Route and dispose of decommissioned RTG devices.

3.7 STAKEHOLDER ENGAGEMENT PROCESS

3.7.1 Administrative and Supervisory Bodies

- **Ministry of Natural Resources and Environment of the Russian Federation**

Managing agency of the Reserve.

- **Federal Marine and River Transport Agency of the Russian Federation (Rosmorrechflot)**

Owner of the RTG device.

- **Rosatom State Nuclear Energy Corporation**

Temporary storage and disposal of the removed RTGs.

- **Kurchatov Atomic Energy Institute**

Transportation and disposal of the removed RTGs, consultancy support, arrangement of the International Nuclear Energy Agency's Contact Expert Group workshops.

- **Administration of the Chukchi Autonomous District, Chaunsky District and Iultinksy District**

Approval of land-related issues.

- **Regional department of** *Rosprirodnadzor*

Supervisory activities, approval of survey programme, permitting, expert review, environmental monitoring.

- **Regional department of** *Rospotrebnadzor*

Supervisory activities, approval of survey programme, expert review, sanitary and epidemiological reports, participation in surveys, project support.

- **Regional department of** *Rostekhnadzor* **in Moscow**

Supervisory activities, approval of survey programme, licensing, permitting, expert review.

- **Regional department of the Subsoil Use Agency**

Approval of survey programme and design documents, expert review.

- **Regional department of Amur Basin Water Agency**

Approval of survey programme and the design, water use and disposal permits.

- **Chukchi Hydrometeorology and Environmental Monitoring Agency**

Hydrometeorological and environmental monitoring licensing; hydrometeorological expert review, supply of weather station reports, supply of hydrometeorological data, hydrometeorological surveys, participation in the monitoring programme.

- **Regional department of the Federal Service for Veterinary and Phytosanitary Supervision (*Rosselkhoznadzor*)**

Approvals and supply of information on biological and food products.

- **North-Western Regional Department of the Federal Fishery Agency (*Rosrybolovstvo*)**

Approvals and catch quotas for scientific purposes as part of surveys, participation in collection of information related to the state of water biological resources.

- **Chukchi branch office of FGU Territorial Information Fund in the Far Eastern Federal District of Ministry of Natural Resources**

Supply of archive data.

- **Regional department of the Federal State Statistics Service (*Rosstat*) in the Chukchi Autonomous District**

Supply of archive statistical data.

- **Far Eastern department of the Federal Service for the Cultural Heritage Legislation Compliance Supervision (*Rosokhrankultura*)**

Approvals and supply of archive data.

- **Border Service of the Russian Federal Security Service**

Approval of surveys and other activities; entry permits for foreign nationals.

3.7.2 Non-governmental organizations potentially operating in the area

International and Russian organisations:

- Bellona;
- Greenpeace-Russia;
- WWF-Russia;
- The International Union for Conservation of Nature (IUCN), Russia;
- The International Social and Environmental Union;

- The Civil Centre for Nuclear Non-Proliferation;
- The Environmental Safety and Protection Commission of the Public Chamber;
- Public Organisations Union 'Russian Environmental Congress';
- Green Patrol;
- The Russian Society for Ecological Economics (RSEE);
- The International Society for Ecological Economics (ISEE);
- The International Ecological Engineering Society (IEES);
- Service Civil International (SCI) – volunteer centre (Antwerp, Belgium);
- Environmental and Educational Centre 'Zapovedniki' (Moscow).

Regional organisations:

- Chukchi regional charity environmental public movement 'Caira-Club' (Anadyr).

3.7.3 Potential Sponsors

- **United States Agency for International Development (USAID)**

Possible co-financing of the Project.

- **Ministry of Foreign Affairs of Japan**

Possible co-financing of the Project.

- **The Norwegian Radiation Protection Authority**

Possible co-financing of the Project.

The Project Initiator is Federal Marine and River Transport Agency (*Rosmorrechflot*) under the Ministry of Transportation represented by its subdivision, FGUP 'Hydrographical Company' (FGUP HC), which is the potential beneficiary.

The Project was thrashed out with the Administration of Chukotka and the federal Ministry of Natural Resources and Environment.

Under Resolution No 1748-r of the Russian Government dated 31 December 2004, FGUP HC comes under the jurisdiction of *Rosmorrechflot* as its strategic subordinate company. In this regard, there is limited publicly available information on the Company.

Rosmorrechflot was established by Decree No 314 dated 9 March 2004 'On the system and structure of federal executive bodies' of the Russian President and was put under the jurisdiction of the Ministry of Transportation by Regulation on the Federal Sea and River Transport Agency approved by Decree No 371 of the Russian Government dated 23 July 2004.

Rosmorrechflot's priority areas include: development of advanced and efficient infrastructure for marine and inland water transport; provision to freight owners of accessible, substantial and competitive marine and inland water transport to meet the requirements of the innovative development of the national economy; integration into the global transport space and implementation of Russia's transit potential; and improvement of sea and inland port and navigation safety.

The objective of FGUP HC is to ensure navigation safety. As part of this, the Company performs various hydrographical and piloting works and surveys in the Arctic and other seas.

FGUP HC employs 800 people.

4.1 BANKING DETAILS OF FGUP HC:

Full name	Federal State Unitary Enterprise 'Hydrographical Company' of Federal Marine and River Transport Agency, Ministry of Transportation of the Russian Federation
Legal address	12, Moskovsky Avenue, St. Petersburg 190031, Russia
Actual address	12, Moskovsky Avenue, St. Petersburg 190031, Russia
Telephone/fax	Tel. +7 (812) 310-39-70, Fax +7 (812) 310-37-68
E-mail	reshet@hydrograph.spb.ru
Certificate of registration in the Unified State Register of Legal Entities	No 2057810456482 dated 2 June 2005
INN	7812022096
General Director	Gennady Alekseyevich Batalin
Chief Accountant	Marina Mikhailovna Zhilinskaya

5 INVESTMENT FEASIBILITY AND FINANCING PLAN

5.1 TOTAL COST OF THE PROJECT

The total project cost is estimated at EUR 1,000,000, including EUR 63,500 as budgetary financing, and EUR 936,500 as non-budgetary financing.

5.2 PRELIMINARY PHASES FOR PROJECT IMPLEMENTATION AND BUDGET BREAKDOWN

The Project will be implemented in three stages:

- Stage 1 (1st year of Project implementation) – Completion of surveys and development of design documents.
- Stage 2 (1st – 2nd year of Project implementation) – Development of design and working documents; completion of preparatory activities.
- Stage 3 (2nd year of Project implementation) – Delivery of equipment and materials; completion of technical measures to recover and dispose of the RTG device.

No	Period	Component	% of total financing, EUR*
1	1st year of Project implementation	Development and approval of a detailed Declaration of Intent based on this Pre-Investment Study	0.1/1 000
2	1st year of Project implementation	Preliminary assessment of scope and schedule of works; development of a detailed stakeholder engaged plan	0.2/2 000
3	1st year of Project implementation	Geophysical works and other research activities related to the RTG search	10/100 000
4	1st – 2nd year of Project implementation	Development and implementation of a radiation protection programme for all stages of the project including installation of discipline-promoting barriers and signs	0.5/5 000 of which: 20/1000 – budgetary; 80/4000 – non-budgetary
5	1st – 2nd year of Project implementation	Development and implementation of a monitoring programme for all stages of the project	0,5/5 000
6	1st – 2nd year of Project implementation	Development and implementation of a radiation protection programme for all stages of the project	0,5/5 000 of which: 50/2500 – budgetary; 50/2500 – non-budgetary
7	1st – 2nd year of Project	Development of design and working design documents, including environmental sections	8/80 000

	implementation	and plans	
8	1st – 2nd year of Project implementation	Procurement of licences, approval and permits	0,2/2 000
9	2nd year of Project implementation	Delivery of necessary equipment and vehicles	20/250 000
10	2nd year of Project implementation	Implementation of engineering activities related to the RTG recovery and transportation	60/600 000 of which: 10/60 000 – budgetary; 90/540 000 – non-budgetary
		Total	**100/1 000 000 of which: 6,35/63 500 – budgetary; 93,65/936 500 – non-budgetary**

* The RUB/EUR exchange rate used in the calculation is 45/1.

5.3 SOURCES OF FINANCING IDENTIFIED

In identifying potential sources of financing for the Project, a number of factors critical for potential sponsors were taken into consideration as follows:

- Non-commercial nature of the Project which is basically unprofitable from the perspective of potential investments;
- Lack of an approved procedure for search and recovery of lost RTG devices, and
- Limited regional budget financing.

5.3.1 *Sources of Budget Financing*

Possible financial support of the Project under the Federal Target Programme 'Ensuring Nuclear and Radiation Safety in 2008 and until 2015' was discussed in September 2009 with Mr. Mikhail Aturin, Deputy Head, Icebreaker Support and Hydrography Department at Rosmorrechflot, and Sergei Fedorov, Deputy General Director of the Hydrographic Enterprise.

By Letter 113-28/9263 dd. October 2, 2009 (see Annex) the Rosmorrechflot informed ERM on 25% to 30% cuts in financing of measures for recovery and removal of the RTG devices along the Northern Sea Route in 2010-2012 under the Federal Target Programme 'Ensuring Nuclear and Radiation Safety in 2008 and until 2015'. Given problems arising with regard to timely recovery and disposal of the RTG devices, Rosmorrechflot recognises the need to use external funds, including those attracted under the NPA-Arctic Project

5.3.2 *International Financing Sources*

Possible funding opportunities under the Global Threat Reduction Initiative (GTRI) with the regard to the Project were discussed with Mr. Christopher Landers and Mr. Bill Abramson of the United States Department of Energy (US DoE). It was noted that the US DoE's activities under the GTRI focus on removing and/or securing high-risk vulnerable nuclear and radiological materials and equipment around the world (including the RTGs) that pose a threat to the United States and to the international community. Therefore, the GTRI's first priority is to remove existing RTGs. Lost RTGs cannot be financed under the GTRI.

At the same time, the DoE noted significance of the issue of the lost RTG at Rogers Bay and promised its support in promoting the Project at international level. This PINS was submitted by the DoE to the parties actively involved in the RTG projects in Russia, including the Ministry of Foreign Affairs of Japan and the Norwegian Radiation Protection Authority.

During the meeting with Mr. Jess Bratton and Mr. Yury Kazakov of USAID in the USAID Russian office in Moscow in January-February 2010 it was confirmed that USAID is interested in co-financing of the Project.

This PINS has been submitted to USAID and is currently under review

Following discussions with Mr. Henrik Förström and Mr. Amund Beitnes of NEFCO held in August 2009 to February 2010, it was confirmed that the Project is in line with the priorities of the Arctic Council's Project Support Instrument which will be managed by NEFCO as soon as the PSI is commissioned in the first half of 2010.

5.4 *CONTRACTORS*

The Customer (Beneficiary) acts through a Contractor, or the Project Coordinator who engages subcontractors to implement individual components of the Project on the terms and conditions of a government contract:

I. During Stages 1 and 2 licenced research and design organisations will be engaged in inventory, preparation for surveys and development of design and working design documents.

Below is the recommended list of participants at Stages 1 and 2 of the Project:

- **ZAO Central Research and Design Institute of Navy;**
- **FGUP Russian Research Institute of Technical Physics and Automation;**
- **FGUP Hydrographical Company. Provideniya Hydrographical Base.**

Those can be involved in research and design activities, engineering and environmental surveys, sampling and radiological and analytical works.

- **ZAO Chaunskoye Mining and Geological Company**

To be involved in geophysical studies and engineering and geological surveys.

II. For Stage 3, specialised licensed organisations will be engaged to perform preparatory and engineering works.

The RTG device will be disassembled on site by trained personnel of an operating company in accordance with regulatory and technical requirements.

- **FGUP Hydrographical Company, Provideniya Hydrographical Base**

Decommissioning of closed radiation sources in RTG devices is governed by 'General regulations on radiation source safety' (NP-038-02, Gosatomnadzor, 2002) and Para. 5 of the 'Operation and decommissioning regulations for radionuclide energy units based on Strontium-90 radionuclide heat sources' (the Russian Ministry of Nuclear Energy, 1990) for each RTG type.

To be able to perform the decommissioning activities, FGUP HC (represented by Provideniya Hydrographical Base) will draw up a special work permit (NRB-99, OSPRB-99).

Transportation of the RTG device from the disassembly area to the place of loading onto a vehicle and subsequent shipment to the manufacturer will be carried out by an operating organisation and/or contractor which have required licences and certificates for the RTG packaging and transportation.

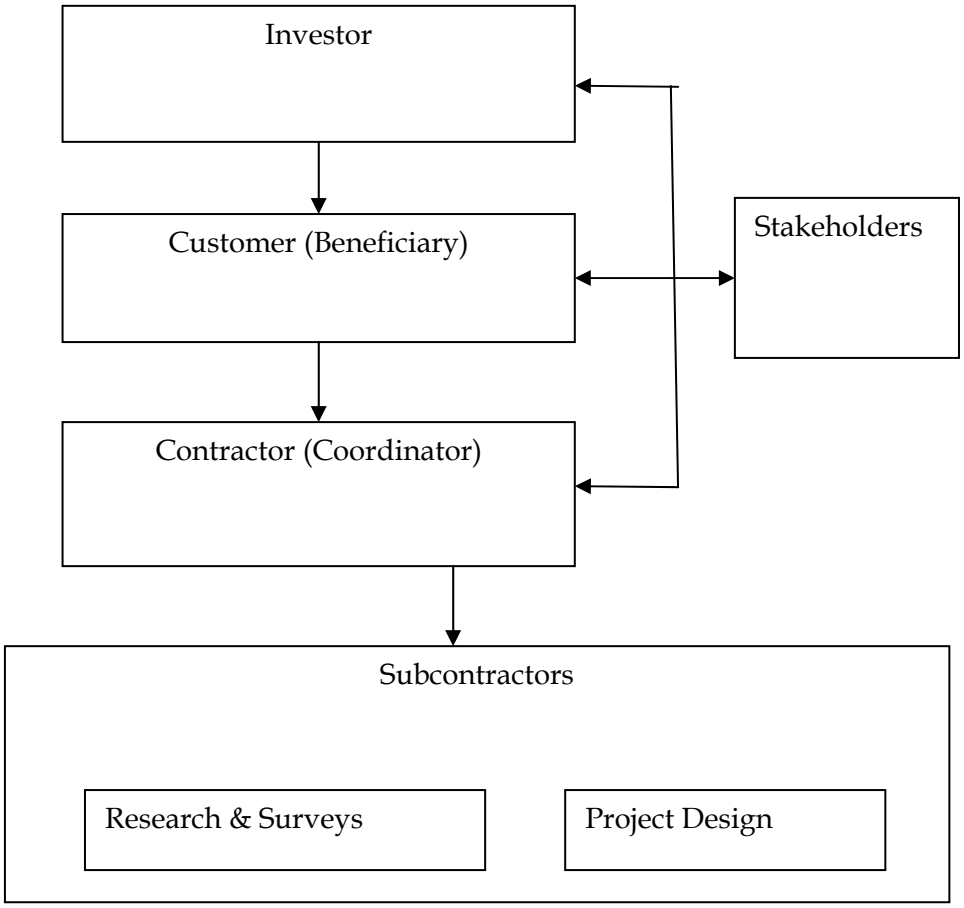
Transportation of the device should follow the applicable safety requirements specified in the IAEA's 'Rules for safe transportation of radioactive materials', Rostekhnadzor's 'Rules for safe transportation of radioactive materials', technical documents for specific types of RTG devices, and sanitary rules and regulations for personnel and local communities during transportation of radioactive materials.

Transportation of the RTG device from navigation equipment stations and temporary storage stations must be authorised by a written consent of the General Director (his alternate) of FGUP Hydrographical Company after a preliminary approval by Rosmorrechflot.

Transportation of the RTG device to the manufacturer should be carried out by organisations which have the required waste materials handling licences and a certificate for RTG packaging and transportation, as well as an approved technical transportation plan.

Decommissioning and transportation of the RTG device can only be performed in compliance with the above listed rules.

The project management diagram is shown in Fig. 4.1.


Investor
Customer (Beneficiary)
Stakeholders
Contractor (Coordinator)
Subcontractors
Research & Surveys
Project Design

This information can be obtained from the NPA Arctic Project Office or from the Executing Agency

7 ANALYSIS AND ASSESSMENT OF RISKS AND UNCERTAINTIES

7.1 ISSUES REQUIRING SPECIAL ATTENTION IN THE PROCESS OF THE PROJECT PLANNING

7.1.1 Financial and Economic Aspects

- High transportation cost and seasonal character of logistics plans;
- High operating costs;
- Optimal overhead and current operating expenses while using vehicles and equipment taking into account the remoteness of the project implementation areas.

7.1.2 Technical Aspects

- Remoteness of the project implementation area;
- Extremely severe operating conditions for materials, mechanisms and equipment;
- Technical complexity of the Project;
- Navigation periods;
- applied materials and agents;
- Compliance with health & safety requirements.

7.1.3 Institutional Aspects

- Legitimacy and administrative procedures for project activities;
- Borderland regime in the project implementation areas; requirements to obtain necessary permits and perform necessary procedures;
- Specially protected natural area regime of the Reserve;
- Radiological characteristics of the area are generally treated as confidential information.

7.1.4 Environmental Aspects

- Low stability of tundra and sea-coast ecosystems;
- Current weather conditions.

7.1.5 Social Aspects

- Qualification of personnel engaged in the project implementation;
- Living and labour conditions of personnel.

7.2 KEY RISKS AND MITIGATION MEASURES

7.2.1 Key Risks

Below are the key risks related to potential implementation or non-implementation of the Project and capable of causing significant effects on the outcomes of the Project:

Financial and Economic Risks:

- Lack of interest of identified potential donors;
- Withdrawal of one or more sponsors from the Project;
- Failure to comply with the schedule of payments;
- Changes in the logistical plans and, subsequently, the schedule of payments, deficit and of the original budget and unpredicted increase in the Project cost.

Technical Risks:

- Impossibility to reach the target areas;
- Breakdown of equipment, vehicles and mechanisms;
- Personnel sickness and accident rates;
- Impossibility to meet the project implementation schedule;
- Impossibility to locate and/or recover the RTG device using the available technical means.

Institutional Risks

- Refusal of regulatory and supervisory bodies to grant a permit for the expedition and field works;
- Delays in the delivery of cargo during the preparation to the expedition and field works; delays in the removal of equipment and samples.

Environmental Risks:

- Damage to the environment when travelling outside roads;

- Damage to the environment caused by an emergency.

Social Risks:

- Lack of qualified workforce among the permanent residents of the region;
- Extreme living and labour conditions caused by the remoteness and weather factors resulting in::
    - Failure to retain the required quality of work due to the human factor.

7.2.2 Risk Mitigation Measures

The Project provides for the following measures aimed at mitigating the identified risks:

Financial and Economical Measures:

- Consultations with a large number of potential donors with regard to the geographical coverage of their financial support (conducted by ERM at the PINS preparation stage);
- Development and approval of acceptable schedule of payments; development of the procedure for and timely adjustment of Project financing;
- Expansion of mechanisms for partnership between the state and private businesses; promotion of engagement of Russian and international investors.

Technical Measures:

- Use of certified vehicles and equipment, tested technologies, materials and chemicals;
- Compliance with procedures and technical requirements to the use of equipment, materials and chemicals;
- Engagement of certified and licensed contractors during the project implementation;
- Engagement of contractors which possess substantial resources and advanced equipment for the RTG recovery and disposal;
- Engagement of corporate and individual contractors with good reputation for the project implementation and supply of equipment.

Institutional Measures:

- Timely procurement of all necessary permits;
- Establishment of stable relations with administrative, supervisory and regulatory authorities.

Environmental Measures:

- Compliance with all established rehabilitation procedures (mandatory reclamation of the area of works; compliance with design requirements to the disposal process); non-use of all-terrain vehicles outside temporary roads without a real need.
- Imposition of strict measures on personnel guilty of violating environmental requirements.

Social Measures:

- Engagement of qualified personnel for the project implementation;
- Creation of optimal accommodation conditions for personnel.

ANNEXES

Факс 234-31-78

МИНИСТЕРСТВО ТРАНСПОРТА
РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ АГЕНТСТВО
МОРСКОГО И РЕЧНОГО ТРАНСПОРТА
(РОСМОРРЕЧФЛОТ)

ЗАМЕСТИТЕЛЬ РУКОВОДИТЕЛЯ

Петровка ул., дом 3/6, Москва, 125993
Тел. (495) 626-11-00, факс: (495) 626-15-62
www.morflot.ru, E-mail: info@morflot.ru

02 ОКТ 2009 № ИЗ-АД/9263

на № 137/09 SB от 14. 09. 2009 г.

Директору Московского филиала
Компании ERM Eurasia Limited

С.А. Бурцеву

Москва 123001, Трехпрудный пер. 11/13,
строение 3, офис 1.

Уважаемый Сергей Арнольдович!

Росморречфлот, рассмотрев Ваше письмо о привлечении инвестиций для выполнения работ по утилизации РИТЭГ, расположенного на острове Врангеля, сообщает.

Согласно планируемым и представленным Минфином России в августе т.г. бюджетным ассигнованиям на реализацию федеральных целевых программ, финансирование мероприятий по вывозу с объектов навигационного обеспечения Северного морского пути и утилизации РИТЭГ, снятых с эксплуатации, осуществляемых в рамках ФЦП «Обеспечение ядерной и радиационной безопасности на 2008 год и на период до 2015 года», в 2010-2012 г.г., сокращено на 25-30% от запланированных первоначально.

Учитывая указанное обстоятельство и возникающие в связи с этим проблемы по вывозу и утилизации РИТЭГ, Росморречфлот просит подтвердить возможность включения мероприятий по поиску и утилизации РИТЭГ, расположенного на острове Врангеля, в прединвестиционные исследования, проводимые в рамках Проекта ЮНЕП / ГЭФ «Российская Федерация – Поддержка Национального плана действий по защите арктической морской среды».

И.Е. Захаров

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FIGURES

Fig. 1.1. Location of the navigation equipment station at Rogers Bay