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AND GUNNAR JOHANSSON

*SSI's International Development
Cooperation (SIUS)*

Annual report 1998

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Statens strålskyddsinstitut
Swedish Radiation Protection Institute

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DIVISION/AVDELNING: SIUS

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Annual Report 1998

SUMMARY: SSI:s International Development Co-operation (SIUS), the Swedish program for radiation protection work in Central and Eastern Europe, has since its start in 1992 been granted SEK 109.1 million by the Swedish government the projects are accessed, planned and performed in close co-operation with partner organisations in Eastern Europe.

This Report presents the financial status and a summary of the projects, their status and distribution over the countries and project areas. The presentation is updated as for December 1998.

SAMMANFATTNING: SSI:s Internationella utvecklingssamarbete (SIUS), det svenska programmet för strålskyddsinsatser i Central- och Östeuropa, har sedan starten 1992 beviljats 109,1 miljoner kronor av regeringen. Projekten prioriteras, planeras och genomförs i nära samarbete med mottagarorganisationerna i Östeuropa.

I denna rapport presenteras en översikt av projekten och fördelningen av medlen mellan länder och projektområden t.o.m. oktober 1998.

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Contents

1.	INTRODUCTION	7
2.	SUMMARY OF THE PRESENT SITUATION	8
	2.1 Countries involved	8
	2.2 Project categories	9
3.	SUMMARY OF THE PROJECTS	10
	3.1 Upgrading of national authorities	10
	3.2 Emergency preparedness, early warning	10
	3.3 Nuclear power and research reactors	11
	3.4 Instrumentation	11
	3.5 Decommissioning, waste and environmental control	11
	3.5.1 Paldiski International Expert Reference Group (PIERG)	12
	3.5.2 Sillamäe International Expert Reference Group (SIERG)	12
	3.5.3 Murmansk region	13
	3.6 General radiation protection	13
4.	PRINCIPLES FOR SIUS	14
	4.1 General	14
	4.2 Priority criteria	14
	4.3 Project evaluation	15
	4.4 Quality assurance	15
5.	FINANCIAL SURVEY	16
	5.1 Funding	16
	5.2 Financial status for the fiscal year 1998	16
6.	STATUS AS END OF 1998 FOR ACTIVE PROJECTS	18
	6.1 Common for more than one country	18
	6.2 Paldiski (PIERG) projects	21
	6.3 Sillamäe (SIERG) projects	22
	6.4 Estonia	23
	6.5 Latvia	24
	6.6 Lithuania	25
	6.7 Murmansk region of Russia	27
	6.8 Russia	29
	6.9 Belarus	32
	6.10 Poland	33
	6.11 Other countries	33
Annex 1	PROJECT CLASSIFICATION	34

1. Introduction

During the period 1992 -1998 the Swedish Government has allocated SEK 109,1 million, aside of the ordinary budget, to the Swedish Radiation Protection Institute (SSI) for co-operation projects in the radiation protection field with countries in Central- and Eastern Europe, particularly the Baltic states (Estonia, Latvia, Lithuania) and Russia. This includes SEK 8 million allocated to SSI activities related to the former Soviet naval training reactors at Paldiski, Estonia (the PIERG project) and SEK 10 million to projects addressing the radioactive waste situation in the Barents region in Russia.

The allocation for 1998 was SEK 18 million for continued co-operation in the radiation protection field.

All these SSI co-operation activities are managed within a programme called SSI International Development Cooperation (SIUS).

The objective for SIUS is twofold:

- To provide for a long-term improvement of radiation protection and safety culture in the countries concerned.
- To remedy acute radiation protection problems.

The co-operation is usually based on a "Protocol", a letter of intent signed by SSI and the relevant authority in the co-operating country. This "Protocol" defines areas for co-operation and forms a basis for project proposals.

In this report, the SIUS program for development co-operation is summarised in Chapters 2 and 3. The principles applied for assessing priority to projects before approval and for evaluating results are described in Chapter 4. Chapter 5 describes the financial situation. Chapter 6, which is the main part of the report, presents the status of all projects that are active as of December 1998. Each project is reported with a short description of the objective for the project and present activities.

SIUS is previously described in a series of SSI reports (93-29, 94-10, an internal Status Report in 1995, 96-07, 97-15 and 98-16). Finalised projects presented in these reports are only summarised in this report. In this report, the projects are grouped in categories according to countries and purposes. This classification and the identification code used for each project are explained in Annex 1.

2. Summary of the Present Situation

2.1 Countries involved

Formally, SIUS (previously called Project Radiation Protection East) started its activities in 1992 with a focus on the three Baltic countries. Before 1992, there were some co-operation projects in radiation protection between Sweden and the Soviet Union concerning the consequences of the Chernobyl accident that occurred in 1986, e.g. like agricultural effects, decontamination, dose assessments, psycho-social effects etc. In later years the number of projects in Russia has increased with a strong focus on the northwestern part of the country.

Table 1: The number of projects started within the indicated year.

	1991	1992	1993	1994	1995	1996	1997	1998	Total
Common	1	3	4	5	8	4	5	16	46
Estonia		5	5	2	5	2	1	3	23
PIERG				5	12	4	3	8	32
SIERG								6	6
Latvia		5	5	1	3	2	1	3	20
Lithuania		3	2	6	4	1	5	14	35
Russia		2	1	6	2	5	2	11	29
Murmansk							2	6	8
Belarus					3	1	2	4	10
Poland					1			1	2
Others			2	1				2	5
Total	1	18	19	26	38	19	21	74	216

Protocols on co-operation have been signed with all Baltic States, Belarus and organisations in the Russian Federation. This development is illustrated in Table 1 where the number of projects started within a certain year is presented.

Many projects are fairly large and still going on after some years, others are smaller and have been closed within the year of start. In total, 83 projects have been closed so far and 117 projects were on going in 1998. At that time, 58 new projects not included above were planned. It should be mentioned that the number of projects started during 1998 is quite high and is explained by the fact that many projects have been closed and reopened because of a new administrative system.

The Estonian co-operation (including Paldiski and Sillamäe) is by far the most intense in terms of number of projects. However, some of the projects dealt with acute problems and were comparatively small. In financial terms, the co-operation with Lithuania is almost equal to Estonia due to the more extensive projects dealing with early warning and radiation protection in connection with the Ignalina nuclear power plant. It is anticipated that future co-operation will result in an increased funding to Russia.

2.2 Project categories

The projects are grouped in six main categories plus one extra category called "other project costs" for minor activities that do not have the form of a specific project or for preparations of more formal project activities (see Table 2).

Table 2: Project categories within SIUS

1	Upgrading of national authorities
2	Emergency preparedness, early warning
3	Nuclear power and research reactors
4	Instrumentation
5	Decommissioning, waste, environmental control
5a	Paldiski International Expert Reference Group
5b	Sillamäe International Expert Reference Group
5c	Murmansk waste
6	General radiation protection
7	Other project costs
8	Project management and administrative support

In addition, costs for general project management, planning, administrative support etc. are reported as a separate category "Project management and administrative support".

It should be noted that projects in connection with the Paldiski International Expert Reference Group (PIERG), the waste management projects in the Murmansk region of Russia and the Sillamäe International Expert Reference Group (SIERG) are grouped under category 5 "Decommissioning, waste, environmental control" as three sub-categories, 5a, 5b and 5c respectively (see Annex 1). The reason is that these projects are or have been financed separate from the SIUS general budget.

Waste and environment projects now take the largest share of the SIUS funds for 1998. This is even more obvious if Murmansk, Paldiski and Sillamäe projects, which mainly deal with waste issues, are included. The waste share then becomes about one third. Most, but not all of the problems considered in the waste projects are related to nuclear power reactors. Although Russia and Lithuania are the only nuclear power producing countries involved, there is a general need for activities in this area. Estonia still has problems with radioactive waste from the decommissioned submarines in Paldiski, in Latvia the research reactor in Salaspils has generated radioactive waste and will continue to do so during decommissioning. Belarus has suffered from severe radioactive fallout due to the Chernobyl accident and many remedial activities are required.

Radiation protection in connection with nuclear power dominates the projects called "Emergency", "Reactors" and "Instrumentation, which cover about 25 % of the costs in 1998.

3. Summary of the Projects

3.1 Upgrading of national authorities

When the Baltic countries and Belarus became independent, they were left with only the peripheral parts of the centralised Soviet governmental authority system. Many of the central functions and expertise had been based in Moscow and were no longer available. The old Soviet system of laws was not fully applicable to the new legal system but had to be applied until new laws could be passed.

Upgrading of national authorities is therefore a very important issue with high priority. There are many projects, each of which not particularly expensive, in this area and the major part has up to now, been allocated to the Baltic States. The distribution of funds depends on national circumstances and characters.

Several advisory projects on the establishment of national radiation protection acts have taken place in the three Baltic States. Estonia and Latvia now have radiation protection acts in operation and Lithuania has a law to be signed. Radiation protection authorities are now established and much work with regulations based on these Acts has commenced or is expected.

The first Baltic/Russian/Swedish/Finnish Radiation Protection Summit was arranged in Stockholm in June 1998 with representatives from the authorities from Estonia, Latvia, Lithuania, Russia and also observers from Finland and the Swedish Nuclear Power Inspectorate. The meeting proved to be a highly appreciated forum for exchange of information and co-ordination of the project work.

The staff of the new authorities are given ample opportunities to benefit from SSI experience in e.g. training courses and workshops, study visits and projects where Swedish radiation protection routines are introduced and adapted to the respective national infrastructures. There has also been assistance in the implementing of European Commission Directives.

3.2 Emergency preparedness, early warning

A total of SEK 12 million, have so far been allocated to projects within this field. The work is mainly multilateral with all Baltic countries involved. Two major activities can be identified:

- The organisation of national emergency preparedness systems which is the second largest project within SIUS. The objective is also to integrate these states with the early warning system available in the Nordic countries and to achieve compatibility in the instrumentation, computing software and communication routines.
- Installation of automatic gamma monitoring and air sampling stations in the three Baltic countries and Belarus for continuous surveillance of radiation doses and radioactive fallout.

These projects require co-ordination with other donor countries. SIUS has therefore multilateral co-ordination with IAEA, EU, and the Nordic countries, with countries in the Reference Group under the Council of the Baltic Sea States, Working Group on Nuclear and Radiation Safety and others.

3.3 Nuclear power and research reactors

Operative radiation protection at the Ignalina nuclear power plant in Lithuania has been improved by projects run by SIUS. Basic equipment for radiation measurement and radiation protection has been transferred. Some spectrometry equipment and other instruments are now considered in a second phase of the project.

Co-operation with the Russian Federation on radiation protection at Sosnovy Bor nuclear power plant is planned jointly with Finnish colleagues but the activity has not yet started. The total funds allocated to contracted projects within this category are SEK 10.1 million.

3.4 Instrumentation

A national measurement laboratory is now established and in operation in Estonia, Latvia and Lithuania. One laboratory each for the authorities concerned is upgraded with some modern equipment for gamma spectroscopy and other measurement technologies. A Russian laboratory in St Petersburg benefits from a similar technical support project.

Co-operation with customs authorities and the border police forces in the three Baltic countries has led to instruction courses and transfer of measurement equipment in order to prevent smuggling of radioactive material to and from the respective country. The total funds allocated to contracted projects within this category are SEK 10.6 million or about 10% of the total.

3.5 Decommissioning, radioactive waste and environmental control

National waste strategies developed by support from SIUS, have been proposed to the governments of Estonia, Latvia and Lithuania. They are now applied in the planning of further development of waste management. In Estonia, these projects are closely related to the Paldiski site and facilities, where the Estonian waste Management Company ALARA AS (run by the Estonian State), now is in charge of the operation. The work at Paldiski is planned, taken due account of advice of an international expert group (PIERG) led by SIUS. Plans are also made for remediation of the Sillamäe waste pond and a similar expert group (SIERG) has been established also led by SIUS. In Lithuania there are several projects started with connection to Ignalina. This work is steered by a steering committee. A strategy project is going on in Belarus since 1995 but at present with some staff problems from the Belarus side.

The problems around radioactive waste management in the Russian Federation have attracted world-wide attention and a number of co-operation partners are involved. To avoid overlap, the Nordic Countries with particularly SSI and NRPA (the Norwegian Radiation Protection Authority) actively involved took the initiative to a multilateral co-ordination effort with the purpose to get an inventory of Russian waste problems and to start co-operation projects with Russia in this area. This has now led to an international advisory co-ordination and expert group (CEG, the "Contact Expert Group") under the auspices of IAEA where the Swedish participation is channelled through SIUS.

Discussions with Gosatomnadzor, the Russian federal radiation protection and nuclear safety authority led in 1995 to the start of an environmental impact assessment project. Plans on an attempt to establish a regional radioactive waste strategy for the north-west part of the Russia are now in an early stage.

3.5.1 Paldiski International Expert Reference Group, PIERG

The Paldiski Training Centre 45 km west of Tallinn was established to train Soviet Navy personnel in the use of nuclear reactors for submarines. It contained two nuclear submarines complete with reactors of types used within the Soviet Navy. When Estonia regained its independence in 1991, the Russian Navy kept control of the Paldiski site with the intent to remove military equipment and to start decommissioning activities. At that time Estonian authorities had very little own competence in the area of nuclear operations and radiation protection and the plans for decommissioning were not clearly defined.

PIERG was established in 1994 with the objective to promote decommissioning by advising and assisting the parties on technical, legal, organisational, financial, waste management and radiation safety matters.

When responsibility for the Paldiski Training Centre was handed over to Estonia in September 1995, PIERG had contributed with advice and assistance during six meetings and an Estonian organisation was established and could take over from the Russians.

After take-over, Estonia requested PIERG to continue its work to provide advice on the further work at Paldiski. The "Terms of Reference" have been slightly modified and nine projects are running at the moment.

Further information on the PIERG work can be found in Minutes from the PIERG meetings and in the PIERG secretariat report.

3.5.2 Sillamäe International Expert Reference Group, SIERG

Sillamäe is a radioactive tailing pond at the coast of the Gulf of Finland (the Baltic Sea) in the Republic of Estonia. In 1948 the area was started to be filled with radioactive waste. Until 1959, the waste from uranium processing was transported to the first marine terrace near the plant and stored at the surface. In the beginning uranium was produced from local alum shale, later the uranium ore was imported from former Czechoslovakia and Hungary. In the early 70-s imported Loparite was refined, containing uranium as a by-product. From 1990 the manufacturing of uranium has been stopped. At the present time production includes, rare earth metals and niobium and using imported concentrated raw material.

The tailing pond is covering an area of 500m x 1000m, located 30 - 50 m from the coastline. A dike protects the sea border. In order to obstruct immediate wave erosion, a new coastal reinforcement has been erected on the coastline, but further reinforcement is yet required. The total volume of the tailing pond is about 8 million m³.

The SIERG is handling several environmental issues:

- Radon emanation
- Leakage of contaminated water to the sea and ground water.
- The stability of the dam.
- Dust pollution due to wind erosion.
- Gamma radiation from the radioactive isotopes.
- Intrusion etc.

3.5.3 Murmansk region

The Barents region with the Kola Peninsula and in particular the area around Murmansk has one of the largest collections of radioactive waste in the world. Much of the material is stored in an inadequate way and many of the storages are full. The remaining storage capacity is far from sufficient.

Apart from the use of radioactive material in medicine, industry and research, two major sources of radioactive waste are found in the region, namely the Kola nuclear power station and the marine nuclear powered vessels, submarines and icebreakers that are based in the area. Over 100 such ships have been taken out of service and are to be decommissioned, many of them with the nuclear fuel still on board.

Within SIUS the support on radiation protection in this area was first focused to general projects with the purpose to introduce international radiation protection standards, federal authority surveillance and co-ordination of international co-operation activities.

The Swedish chairmanship for the Barents Sea Council during 1997 changed these priorities and led to an increased funding (SEK 10 million) for the support of projects attending the radioactive waste problems in the Kola peninsula region - see MU projects in section 6.7.

The problem concerns the unacceptable storage of spent fuel from submarine and icebreakers, on ships and land, and storage of radioactive waste. The problems are a combination of radiation protection of man and environment (already real problem with leakage, high dose values etc.) licensing and inspection by authorities, transport and construction of new facilities. From SIUS side the necessity of having an overall strategy plan in Russia has been emphasised for some time, e.g. through the CEG. It will probably be considered during 1999.

As a part of such a plan, a "chain analysis" has been prepared for a special area, Andreeva Bay. A detailed strategy for management of the spent fuel in that area and transport to an interim storage not yet available is considered necessary as a background for further project planning. This project is in a late planning stage but has met with unexpected problems as regards access to information vital for the planning.

Spent nuclear fuel should be reprocessed according to Russian policy. The reprocessing plant intended for Kola waste is situated in Mayak in the Ural region. The spent fuel from nuclear powered ships is also intended to be reprocessed at Mayak. However additional interim storage capacity for high level waste close to this plant is necessary. Before starting the commissioning of that storage (corresponding to the Swedish CLAB) a conceptual study was needed. Such a study is now done by an industry group involving four European companies, SKB in Sweden, Kvaerner Maritime in Norway, BNFL in England and SGN in France. Its conclusions are now discussed by the Russian counterpart. The project is financed jointly by SIUS, the Norwegian Foreign Ministry and EU DG XI.

The co-operation with the Russian counterpart in this region also includes courses and workshops on radiation protection, measurement technology and also on waste management technology.

3.6 General radiation protection

In this project category there are development projects of common interest, co-operative efforts regarding natural radiation, medical radiation protection, follow-up advice after general accidents involving radioactive materials and other activities that do not fit in the categories stated above. The total funds allocated to contracted projects within this category are SEK 11 million or about 10% of the total.

4. Principles for SIUS

4.1 General

The work within SIUS is carried out in the form of projects; each of them planned and performed with defined objectives and time plans. The direct project management is handled by a project leader, usually an expert from SSI. The project work is in some cases done entirely by SSI but in many cases project leaders choose to engage contractors from outside SSI.

Before approval of project proposals, their matching with the co-operation strategy stated by the government for the country in question and with the priority criteria given below, is checked by SIUS. Once approved, the project runs rather independently although with control stations requiring status reports. When the objectives are reached according to the plan, the project is usually closed, but the results could in some cases lead to a follow-up in the form of further projects.

4.2 Priority criteria

SIUS co-operation program is based on the general instructions from the Foreign Ministry's co-operation strategy in Central and Eastern Europe. The Baltic Sea States and Russia have priority in the co-operation according to these instructions from the Swedish Government. There are also humanitarian reasons to give assistance to Belarus where the Chernobyl accident had a large impact. Co-operation with other East and Central European countries might be considered in acute situations and when particularly urgent projects are proposed.

Multilateral co-ordination is very important when priorities are assessed. Many donor countries are now co-operating with East and Central Europe and there is a risk of unnecessary overlap. SIUS has been successful in establishing such co-ordination. The PIERG work, described in section 6.2 below, the Reference Group for the Baltic Sea States and the Contact Expert Group (CEG) are examples of this.

Projects within SIUS must be given a high priority in the country concerned. This is ensured by establishing a bilateral Co-operation Protocol describing the areas of interest and the co-operating bodies involved. The Protocol is usually revised after a couple of years to take into account new problems and adapt to the results achieved. This system is, however, not without exceptions. Acute problems are handled *ad hoc* and without time delay.

The limited resources available also imply that SIUS projects often could be seen to have a catalyst component. A low cost education program by SSI can be very cost-effective if it results in co-ordination of other resources. A small scale SSI demonstration that a certain problem can be solved might trigger a local large-scale effort and co-ordination support from SSI can affect the allocation of large sums of money from the international community.

4.3 Project evaluation

The efficiency of SIUS is high. Sweden was one of the first countries to meet the needs for co-operation with Eastern Europe regarding radiation protection and emergency preparedness. A minimum of administration and a flat organisation has proved to be efficient. This is shown in the appreciation from co-operating countries that can benefit from results without undue delay. It is also demonstrated by the international interest and the multilateral contributions initiated by some of the SIUS projects (e.g. Paldiski, Sillamäe and Management of Waste in the Russian Federation). The Foreign Ministry has also evaluated SIUS and this evaluation has shown that SIUS has been efficient and result oriented.

Such general evaluation criteria are, however, not sufficient to produce the feedback needed for development of the project planning system. The results from each project must be evaluated and compared with the initial expectations. This is often achievable within SIUS, as the number of co-operating partners is rather limited. A project might be followed up within the framework of its successor. The effects of co-operation on the establishment of a national radiochemistry laboratory are for instance assessed when routines for its activities are developed or when laboratory service is needed in some other project.

Similarly individual projects are reported and evaluated in regular co-ordination meetings (e.g. PIERG, the Baltic Sea Reference Group - project GE 202 and NordSam - meetings between the Nordic States radiation protection authority units co-operating with East and Central European countries and the CEG).

4.4 Quality assurance

The evaluation methods described above are examples of the development of a quality assurance (QA) system at SIUS. QA methods are applied in order to ensure efficiency and productivity. The SSI QA system will be introduced formally within SIUS during 1999.

5. Financial Survey

5.1 Funding

Since its start in the fiscal year 1991/92 SIUS (former Radiation Protection East) has received SEK 109.1 million from the Swedish government to provide co-operation with East and Central European countries in the field of radiation protection. Of this, SEK 8 million was allocated during 1994 - 96 to cover the Swedish participation in the Paldiski International Expert Reference Group (PIERG), see Table 3. SEK 10 million is also included for projects regarding radioactive waste in the Barents region (MU).

Table 3: SIUS funding since its start in 1992 in units of SEK 1 000 000. Founding from the Swedish Ministry for Foreign Affairs is indicated by *. All other founding has been provided through SIDA. **Note that the fiscal year 1995/96 is 18 months long. From 1997 the fiscal year coincides with the calendar year.

Fiscal year	General	Paldiski*	Murmansk*	Total
1991/92*	5.00			5.00
1992/93*	6.00			6.00
1992/93	2.10			2.10
1993/94	12.00			12.00
1994/95	12.00	3.00		15.00
1995/96**	18.00	5.00		23.00
1997	18.00		10.00	28.00
1998	18.00			18.00
Total:	91.10	8.00	10.00	109.10

Although based at the SSI, SIUS is operating without financial support from the Institute. SSI-staff working in SIUS projects invoice their working hours according to SSI's external invoice routines, including overhead costs.

5.2 Financial status for fiscal year 1998

In this report the financial status of SIUS is described per end of 1998. At the end of the fiscal year 1997 (December 31st, 1997), the available SEK 8.7 million were transferred to 1998.

5.2.1 AVAILABLE MEANS FOR 1998

For the fiscal year 1998, SIUS received funding from:

1. SIDA SEK 18.0 million
 2. Remaining funds from 1997* SEK 8.7 million
- Total available SEK 26.7 million

*There is also about 10 million ordered but not yet paid which is **not** included in the remaining funds from 1997.

A large share of future project costs will be payable later than 1998 and SIUS has also the possibility to commit SEK 6 million of the 1999 funds for new project orders which will be carried out in 1999.

5.2.2 RESULTS

The results for the fiscal year 1998, broken down for the different countries and in different project categories are presented below.

Table 4: Project orders distributed on countries in units of 1000 SEK.

Project	1996*	1997	1998
Common	3 533	6 788	7 725
Estonia	333	737	718
Paldiski (PIERG)	5 133	1 326	2 954
Sillamäe (SIERG)	0	0	960
Latvia	1 467	345	700
Lithuania	2 600	4 240	2 583
Murmansk	0	2 620	2 172
Russia	3 467	2 570	3 340
Belarus	867	680	930
Poland	133	0	150
Other	0	0	250
TOTAL	17 533	19 306	22 482

The amounts of money paid out to contractors or transferred in other ways to the different recipient countries in 1998 are reported in Table 5.

Table 5: Costs and funds for SIUS for the years 1996 to 1998 in units of SEK 1 000.

Project	1996*	1997	1998
Administration	1 061	1 889	1 785
Common	3 871	5 901	6 560
Estonia	823	1 169	1 240
Paldiski (PIERG)	3 019	3 892	2 748
Sillamäe (SIERG)	0	0	0
Latvia	1 118	839	817
Lithuania	3 049	3 694	4 273
Murmansk	0	602	2 846
Russia	2 661	3 742	3 315
Belarus	605	570	1 184
Poland	26	4	0
Other	76	51	141
TOTAL	16 310	22 353	24 909
FUNDS	15 333	28 000	18 000

Table 6: Funds, which have been reserved in project orders during 1998, distributed among the countries and project categories in units of 1000 SEK.

Category	GE	PA	SI	ES	LE	LI	MU	RY	VI	PO	OV	TOTAL
Authority sup.	300	0	0	160	450	630	0	0	530	0	0	2 070
Emergency	2 625	0	0	0	0	0	0	0	0	0	0	2 625
Nuclear	0	0	0	0	0	130	0	0	0	0	0	130
Laboratories	0	0	0	0	0	100	0	0	100	0	0	200
Waste/Environ.	50	2 954	960	158	0	1 083	2 172	2 390	0	0	50	9 817
Gen. Rad. Prot.	650	0	0	0	50	440	0	650	0	0	0	1 790
Other	1 000	0	0	400	200	200	0	300	300	150	200	2 750
Administration	3 100	0	0	0	0	0	0	0	0	0	0	3 100
TOTAL	7 725	2 954	960	718	700	2 583	2 172	3 340	930	150	250	22 482

6. Status as of December 1998 for Active Projects

In this chapter all active projects in 1998 are described briefly. Closed projects are excluded in those cases when they have been described in earlier reports.

6.1 Common for more than one country

This section presents projects where more than one recipient country is directly involved in the project work.

GE 1 UPGRADING OF NATIONAL AUTHORITIES

GE 102A Library service

Library service to all recipient countries from the SSI library, i.e. purchase of reference literature, database searches etc.

GE 104A Authority co-ordination

The first Baltic/Russian/Swedish/Finnish Radiation Protection Summit was arranged in Stockholm in June 1998 with representatives from the authorities from Estonia, Latvia, Lithuania, Russia and also observers from Finland and the Swedish Nuclear Power Inspectorate. The meeting proved to be a highly appreciated tool for exchange of information and co-ordination of the project work. Three workgroups were appointed and a joint meeting was suggested.

GE 2 EMERGENCY PREPAREDNESS, EARLY WARNING

The main objectives with these projects are to strengthen the emergency preparedness in Estonia, Latvia and Lithuania, to improve the early warning systems available and to prepare for a future co-operation around the Baltic Sea in case of a nuclear power reactor accident. Some previous projects have been directed towards emergency planning issues on-site the Ignalina NPP in Lithuania. Within one of these a handbook about the Ignalina NPP intended for persons engaged in national radiological emergency response organisations around the Baltic Sea was produced. Some of the projects were aimed at issues related to the review of national emergency plans. Others led to national systems of monitoring stations.

GE 201A Automatic gamma stations

Early Warning System for Estonia, Latvia and Lithuania with a central unit and four automatic gamma stations in each country. The project has come to a final phase and only minor checks of the performance remain until the project will be closed.

GE 202F Meeting of the Baltic Sea States Ref. Group 1998

The objectives of this group, that meets once a year and functions through working groups, are to exchange information, to discuss policy questions and to promote an integrated Baltic system for environmental emergency monitoring. During the latest meeting of the Reference Group under the Council of the Baltic Sea States, which was held in September 1998 in Helsinki, its responsibility and terms of reference were discussed - see minutes of the Helsinki meeting. A new approach can be expected.

GE 202G Baltic Sea States Ref. Group WGA

The main objective with this project is to strengthen the radiological emergency preparedness in Estonia, Latvia and Lithuania and in particular to discuss and propose strategies and principles for such activities. (This working group is a sub-group of GE202F).

THE FOLLOWING PROJECTS GE 205A-H ARE A CONTINUATION AND SPLIT UP OF THE CLOSED PROJECT GE 203A.

GE 205A Planning, training, and evaluation of exercises

The main objective with this project, jointly run with the Swedish Rescue Board, is to assist the Baltic countries in the planning, training, and evaluation of emergency exercises with an emphasis on information exchange and active participation.

GE 205B Emergency centres

The main objective with this project is to update the emergency centres in Estonia, Latvia and Lithuania with the emphasis on needs for better communications, especially across borders. INPP and the city of Daugapils in Latvia are of particular interest.

GE 205C Information to the public

The main objective for this project is to support the information centre at INPP. SKI/SIP is financing this project with 75.000 SEK.

GE 205D Early warning and air monitoring

The main objective with this project is to develop systems for early warning and air monitoring. The interconnections between different stations and compatibility with the Danish type monitoring units are of particular interest.

GE 205E Monitoring systems and measurement strategies

The main objective with this project is to analyse monitoring systems and to discuss measurement strategies at local, regional and central level in the Baltic countries.

GE 205F Pre-study Russian co-operation

The main objective with this project is to make a pre-study of the emergency preparedness organisation at the Kola NPP, Sosnovy Bor NPP and the Murmansk area.

GE 205G Examination of the emergency plan at INPP

The main objective with this project is to finish the examination of the emergency plan at INPP and to assist with the implementation. SKI/SIP is supporting the project with 400.000 SEK.

GE 205H Steering group for co-ordination of emergency projects

The main objective for this project is to co-ordinate the projects GE 205A - G, follow up results and prepare for continued co-operation within the emergency preparedness field. This is done within a steering group for all GE 205 projects.

GE 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

GE 502A RESTRAT - Handbook for restoration of contaminated areas

Participation in a CEC project from the Baltic countries through Studsvik EcoSafe AB with the intention to analyse methods for restoration of contaminated sites and to produce instructions (a handbook) on suitable methods for decontamination and restoration. Relevant background information is now collected and models are defined. Work on making prognoses and compiling the handbook continues.

GE 504B New Baltic waste management workshop

A third workshop on waste handling was held at Studsvik in November 1997 with focus on waste generated in research, medicine and industry and with more experience from the PIERG work included.

GE 505A Nordic-Baltic course in environmental radioactivity

A two-week course on radiophysics and biology, waste handling, dosimetry etc with participants from the Baltic and Nordic countries. Baltic participation and parts of joint costs are financed by SIUS. NKS has provided the additional funds needed. The course was run in May 1998.

GE 506A Regional workshop on impact assessments

A two-week workshop on safety assessment methodologies and their application in remediation projects was arranged jointly by SIUS and IAEA. It was held in Stockholm on September 8 - 19, 1997 with participants from several East European countries. The project is co-financed by SIUS and IAEA.

GE 6 OTHER RADIATION PROTECTION

GE 608C Radiobiology grants 1998/99

Grants for students from Estonia, Latvia, Lithuania and Russia to attend a one-year Master of Science course in radiobiology at London University. Similar scholarships have been granted earlier years.

GE 608D Radiobiology grants 1998/99

Grants for three students from the recipient countries to attend a one-year Master of Science course in radiobiology at London University. Similar scholarships have been granted earlier years.

GE 612A CEC-project, educational material

Translation and printing of a European radiation manual to the three Baltic languages. The manual is an educational material on radiation and radiation protection for elementary and high schools. The project is financed by the CEC DG XI and SSI/SIUS.

GE 7 GENERAL RESERVED

GE 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

GE 8 PROJECT MANAGEMENT AND ADMINISTRATIVE SUPPORT

GE 801B Project management and administrative support

Administration of the project work, planning, financial administration, evaluation, reporting etc.

GE 803A Investigation of consultants

The project has the aim to investigate which companies could be possible to contract within the SIUS projects in Central and Eastern Europe.

6.2 Paldiski (PIERG) projects

Projects concerning the former Soviet naval base in Paldiski, Estonia, provided with two stationary nuclear submarines for training purposes. The fuel elements were removed during 1994. The base was formally turned over to Estonia in September 1995 when the submarine hulls had been scrapped and the reactor compartments sealed in concrete sarcophagi. Further decommissioning is now in progress, including waste handling and clean-up operations.

To support decommissioning the Paldiski International Expert Reference Group (PIERG) was established in 1994 under Swedish chairmanship and with participants from Estonia, Russia, Denmark, Finland, France, Germany, UK, USA, IAEA, CEC and Sweden. Initially the PIERG projects were financed separately and not included in the SIUS budget. There is now no separate financing from the Swedish side but part of the SIUS funds are reserved for PIERG projects and it is practical to report these under a separate "country" section labelled "PA".

More detailed information on the PA projects and the PIERG deliberations can be found in the Minutes from the PIERG meetings - see projects PA 702A to PA 715A.

PA 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

PA 506B Continuation of project C6 - Solid waste storage

This project started on advice on safe storage of the control rods, which are conditioned but still remaining in Paldiski, has now developed into a more general concern about the Solid Waste Storage facility at the site. The waste originally stored in compartments is now retrieved, classified, compacted and packed in storage containers. The project will be finished during 1998.

PA 510B Project C10 - Site management plan

The suggested ALARA Ltd site management plan has been updated with due consideration of the lack of financial support. It was necessary to postpone a number of activities to 1998. Declassification of buildings is pointed out as a priority as the subsequent reduction of the supervised area makes these projects very cost-effective.

PA 511B Project C11 - Assessment of management of liquid waste

Evaluation of two proposed methods of management of sediments in liquid waste tanks.

PA 511C Project C11 - Solidification of liquid waste

Phase 1 of a project on solidification of liquid waste from tanks on the Paldiski site. This first phase is to make tests of different founding recipes on pressure solidity etc.

PA 512B Cont. project C12 - Future storage and waste treatment building

The project on converting the MTB building at Paldiski into an interim storage and waste treatment facility has now passed its first phase. The storage area is finalised but the waste receiving and treatment area is still to be constructed in a second phase.

PA 513A Project C13 - Final repository for low and intermediate waste in Estonia *Financed by IAEA*

An outline for the establishment of a repository for radioactive waste in Estonia has been presented. A surface repository was proposed in the Paldiski area. The first IAEA expert mission on the subject was conducted successfully in April 1997.

PA 514B *Project C14 - Dismantling plan for the
Liquid Waste Storage Building*

Financed by CEC

A project with the purpose to collect information needed to specify a detailed dismantling plan for this building. The project is now included in the CEC/PHARE programme. Eleven companies are selected for a call for tenders for a feasibility study.

PA 7 GENERAL RESERVED

PA 701B *General, reserved*

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future reallocations.

PA 714A *PIERG 13*

The PIERG 13 meeting was held in April 1998 in Stockholm to discuss the remaining problems at Paldiski and to plan future PIERG work and its financing. The meeting is now evaluated and reported.

PA 715A *PIERG 14*

The PIERG 14 meeting was held in November in Tallinn to discuss the remaining problems at Paldiski and to plan future PIERG work and its financing. The meeting is now evaluated and reported.

6.3 Sillamäe (SIERG) projects

The Sillamäe uranium refinery plant, now used for refining loparite, produced and still produces radioactive waste. A lot of this waste was dumped in a dam situated very close to the Finnish Bay and covering an area of about 0,3 km². The content of this dam was assessed in a previous project - see SSI Report 94-08 and ES 503A-D in. Leakage to the open sea is still small and the ground water is not yet affected.

SI 5 WASTE AND ENVIRONMENTAL CONTROL

SI 501A *Planning of restoration of the waste deposit*

Means for Studsvik RadWaste AB to participate in the planning of the restoration of the waste deposit in Sillamäe.

SI 502A *Planning of restoration of the waste deposit*

Means for VBB VIAK AB to participate in the planning of the restoration of the waste deposit in Sillamäe.

SI 503A *Participation in "NATO Advanced Research Workshop"*

The objectives for the project is to participate at the NATO Advanced Research Workshop and to present Swedish experience at Sillamäe and to collect information from other actors in the Sillamäe work.

SI 7 GENERAL RESERVED

SI 701A *General, reserved*

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

SI 702A SIERG 3

SIERG is the Sillamäe International Expert Reference Group. The SIERG-3 meeting was held in Ranstad in Sweden in March 1998.

SI 703A SIERG 4

The SIERG-4 meeting was held in Tallinn in Estonia in December 1998.

6.4 Estonia

ES 1 UPGRADING OF NATIONAL AUTHORITIES

ES 102B Legal support and regulations

Support to the Estonian Radiation Protection Centre in the drafting of the Estonian radiation protection regulations.

ES 104A Support to the National Radiation Protection Centre

Providing office and measurement equipment, computer software etc for the Estonian Radiation Protection Centre.

ES 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

ES 503B Sillamäe remedy actions

The Sillamäe uranium refinery plant, now used for refining loparite, produced and still produces radioactive waste. A lot of this waste was dumped in a dam situated very close to the Finnish Bay and covering an area of about 0,3 km². The content of this dam was assessed in a previous project - see EST-5.03 in SSI Report 96-07. Leakage to the open sea is still small and the ground water is not yet affected.

Before this remedy stage further dumping must cease. The Sillamäe plant, still in operation, must have access to a new waste deposit. This means that this project is dependent on results from the "PA" projects and from the earlier projects: "National waste strategy" and "Saku". For that reason it has been halted for a considerable time but planning is now resumed and the project will be reactivated during autumn 1997.

ES 503C Sillamäe remedy program

The main purpose of this project is to participate through Studsvik RadWaste AB together with Estonian authorities and other organisations in the development of a restoration plan for the Sillamäe deposit in Estonia. The project is closed but is included here, as it was not described in the previous report.

ES 503D Forming of SIERG

A number of independent parties have joined the Sillamäe co-operation and the need for international co-ordination is obvious. Through this project Studsvik RadWaste is engaged in development of guidelines for and the establishment of the Sillamäe International Expert Reference Group (SIERG).

EST 6 OTHER RADIATION PROTECTION

ES 605A Continued radon survey

A radon survey in Estonian houses. Education and equipment related to radon from soil. Results from the project were reported at the Regional IRPA Congress in Stockholm June 1998. A new measuring round started during the autumn 1998.

ES 607A Radiation environment study scholarships

The purpose of this project is to provide a scholarship in Radiation and Environmental Protection sufficient to provide for a one-year study at the University of Surrey, England. The project is recently closed but was not mentioned in the previous report.

ES 7 GENERAL RESERVED

ES 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.5 Latvia

LE 1 UPGRADING OF NATIONAL AUTHORITIES

LE 104A Development of inspection and supervision

The main purpose is to support the authority work with rules and regulations, assist with information efforts and to provide some necessary equipment for the organisations involved. The project works along well-known co-operation lines and has already achieved some of its goals.

LE 4 INSTRUMENTATION

LE 401B Illicit trafficking

The purpose of this project is to make a careful investigation of those professional areas that are essential for defeating illicit trafficking with radioactive materials. Normative problems, non-proliferation control, radiation protection aspects, border- and customs control and police supervision should be looked into. The investigation should identify suitable actions for different areas of responsibility and propose upgrading of authority and institution networks.

The project was initiated according to agreements between SKI/SSI/NRPA and the Latvian Ministry of Environment and is financed jointly by SKI; SSI and NRPA.

LE 402A National laboratory for radiological measurements

Measuring equipment for liquid scintillation counting and for alpha spectrometry with four detectors has been purchased together with other laboratory equipment, necessary chemicals and the calibration samples that are necessary for future operation with ascertained quality. The project is basically finalised. Only some minor follow-up activities remain.

LE 6 OTHER RADIATION PROTECTION

LE 601A Radon in dwellings

Measurement of radon in indoor air to evaluate the dimensions of the Latvian radon problem. So far, the levels are low to moderate (max 900 Bq/m³). Equipment was transferred to the Latvian

authority. Results from the project were reported at the Regional IRPA Congress in Stockholm June 1998.

LE 7 GENERAL RESERVED

LE 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.6 Lithuania

LI 1 UPGRADING OF NATIONAL AUTHORITIES

LI 103A Legal support

Legal support to the Radiation Protection Centre in Lithuania on drafting a new radiation protection law in Lithuania. The new Radiation Protection Law has recently been accepted by the Lithuanian parliament.

LI 105A Support to the new radiation protection centre

Provisions for equipment of different kinds to the Radiation Protection Centre. Advice on authority administration is also included.

LI 106 A Worker protection

A project on industrial welfare for the workers at the Ignalina NPP. The project is carried out by the Swedish Labour Welfare Council.

LI 3 NUCLEAR POWER AND RESEARCH REACTORS

LI 302B Continued operative radiation protection - Ignalina

Continuation of project LI 302A. Aside from technical safety at Ignalina nuclear power plant there are a number of different radiation protection problems.

LI 303A Information material for INPP

The purpose of this project is to produce suitable information material in Lithuanian and possibly English to be used at the Ignalina NPP Information Centre.

LI 304A Internal information for INPP

The purpose of this project is to investigate the possibilities for assisting the INPP to extend the information to the employees.

LI 4 INSTRUMENTATION

LI 402A National laboratories for radiological measurements

The co-operation with Lithuania in this field involves two national laboratories, Environmental Protection Ministry (EPM) and Ministry of Health, State Public Health Centre (PHC). PHC has been provided with gamma spectrometry equipment. Calibration samples for both laboratories

have been delivered. The project is basically finalised. Only some minor follow-up activities remain.

LI 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

LI 503A Waste management projects

Together with the Lithuanian side, SKI/SIP and SSI/SIUS have financed the following sub-projects:

- 1 Disposal of very low level solid waste at INPP.
- 2 a Long term safety assessment of the existing storage facility for bitumenized waste at INPP.
b Long term safety assessment of the existing facility for storage of RMI waste (Research, Medicine, Industry) at Maisiogala.

Both sub-projects have now resulted in final reports and are to be finalised.

LI 503B Storage of class 3 waste

Project on recycling of waste and to give proposals for temporary storage and final reposition of group 3 waste from INPP.

LI 503C Analysis of the Maisiogala project

The purpose of this project is to make an analysis on long term safety of the Maisiogala waste storage facility for low and medium level waste. The project has resulted in a final report and is about to be finalised.

LI 506A Waste seminar

A five days seminar on management of radioactive waste was held in Stockholm in May 1998 for Lithuanian experts and administrators. The project was financed jointly by SSI/SIUS and SKI/SIP.

LI 507A Pre study of bitumen storage

The purpose of this project is to study the economical and technical prerequisites on the change of the bitumen storage at INPP from the existing basins to transport containers which could be transported to an approved long term waste storage facility.

LI 508A Purchase of conditioning facility

The purpose of this project is to assist the INPP in the purchase of a conditioning facility (cementation) for ion-exchange resins.

LI 509A Co-ordination of waste projects

Project for the co-ordination of the waste management projects in Lithuania especially for waste from the INPP.

LI 510A Management of solid waste at INPP

The purpose of this project is to engage Swedish experts in an assessment of the needs for further radiation protection projects dealing with waste management in Lithuania and to outline descriptions of these.

LI 512A Program for Management of solid waste at INPP

The project has the aim to bring forth program proposals, develop project descriptions and to present them at the Steering Committee and on orders from the SC compile complete project descriptions.

LI 6 OTHER RADIATION PROTECTION

LI 601A Biological effects on decontamination of staff in Chernobyl

A retrospective study of Lithuanian decontamination staff at Chernobyl who spent 1 - 6 months in the contaminated area. External doses up to 250 mGy were registered in a central register in Vilnius for more than 5 000 workers. The body contents of Pu and Sr were determined.

LI 602A Medical radiation protection

Radiation protection in x-ray diagnostics was investigated during a pre-project. Problems around film supplies and film handling appears to be the major cause for unnecessary doses. CEC and IAEA have sponsored training courses and SSI supplies necessary hardware for quality control of x-ray equipment.

LI 603A Radon studies

The radon risks in Lithuania are investigated by measurements in a random sample of dwellings all over the country. Education on measurements, countermeasures and risks with radon exposure is included as well as procurement of equipment.

LI 603B Translation of "The Radon Book" to Lithuanian

A project on translating the manual - "The Radon Book" (Radonboken) from Swedish to Lithuanian and printing.

LI 7 GENERAL RESERVED

LI 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.7 Murmansk region of Russia

As regards the SIUS co-operation with Russia, the "Murmansk region" comprises the Kola Peninsula, the Archangelsk oblast on the east side of the White Sea and also islands in the Barents and Kara Seas. In this region a great number of radiation hazardous enterprises and facilities are located and there are also outflows in this area of large rivers which may be contaminated by radioactive material from nuclear enterprises in the inner part of the Russian Federation.

The Murmansk region is handled separately from the rest of the Russian Federation for a number of reasons. Although belonging to the regional administration in St Petersburg, the Murmansk region is geographically very far away. The Swedish interest in the Murmansk region is also separated with special funds, other groups of interest (the Arctic Co-operation, the Barents Sea Council and others).

The region is unique as regards radioactivity in the environment and the number of facilities associated with nuclear power and radioactive waste. Some examples:

- Kola NPP with 4 VVER-440 reactors, interim storage for spent fuel and radioactive waste. The NPP is operated under MINATOM responsibility.
- Eight nuclear-powered vessels in the icebreaker fleet with a total of 13 reactors operated by the Murmansk Shipping Company (MSC).

- Four service ships belonging to MSC used for interim storage of spent fuel and radioactive waste.
- Northern Fleet and Naval Shipyards including nuclear-powered submarines and battle cruisers based at eleven ports along the northern coast of the Kola peninsula and Archangelsk.
- Dumped radioactive waste and nuclear reactors with or without spent fuel in the Barents and Kara Seas
- Lighthouses powered by large amounts of radioactive Sr-90.
- Many other military and civilian installations and deposits under varying technical conditions.

Since 1997, when the Barents Sea Council was run under Swedish chairmanship, the SIUS has had a special budget for projects in the Murmansk region – see Section 5 for more details.

MU 1 UPGRADING OF NATIONAL AUTHORITIES

MU 101A Authority support

Although the Murmansk area belongs administratively to the north-west Region of the Russian Federation, both the Ministry of Atomic Energy, the Gosatomnadzor of Russia and the federal Committee of Ecology have their local offices in Murmansk, running with some independence. These offices need some support with the purpose to increase efficiency, improve communication and streamline policy and routines with those federally and internationally applied. The project is so far in a rather early planning stage.

MU 102A Licensing of the LEPSE decommissioning

The vessel LEPSE, one of the floating interim storages for spent nuclear fuel kept in the harbour of Murmansk, is about to be decommissioned in a Russian/Norwegian/French project now in a late planning stage. Before realising these plans there is, however, a need for licensing acceptance by the Federal Radiation Protection Authority, Gosatomnadzor (GAN). Within the present project, GAN is assisted in the licensing process with transfer of know-how, software for analysis etc. The purpose is to avoid a situation when the licensing process is a bottle-neck in the decommissioning procedure.

MU 103A Seminar on nuclear liability

A seminar on nuclear liability with special aim on the Russian situation intended for high managerial positioned persons at GAN was held in Stockholm in May 1998. Some late follow-up work is still in progress but the project is basically finalised.

MU 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

MU 501A Pre-project - Kola and Mayak

This pre-project comprised the first efforts to take preliminary contacts with the Russian counterparts involved in the Murmansk waste problems. The objective was to prepare project plans for MU 502A (see below) and for a so called “Chain Analysis” – an overall strategy for the maintenance of the submarine spent fuel and radioactive waste from its present storage conditions to an interim storage according to international standards.

The first part of the project was done already in 1997 but the very general approach in the Chain Analysis turned out to be more complicated. Its scope was modified and limited in a number of steps – among others the geographical generality. It has now developed into the pre-project MU501B – see below. This means that MU 501A is now closed.

MU 501B Pre-project - Andreeva Bay

This pre-project is an international co-operation with Norway, UK, France and Sweden with the purpose to work out project plans on a waste strategy for spent submarine fuel from the Naval Base at Andreeva Bay on the north coast close to the Russian/Norwegian border. The project is thus a reduced "Chain Analysis" covering all steps in the management of spent fuel from the present storage to an internationally acceptable interim storage.

MU 502A Conceptual study - Mayak

According to the Russian long-term plan, spent nuclear fuel from the Murmansk area should be transported to Mayak in Ural for reprocessing. The logistics in this transport will require storage capacity in Mayak that does not exist today. Three possible interim storage options are evaluated in this project; a new wet storage (like CLAB), a new dry storage and continued commissioning of the present half finished wet storage so far not accepted by Russian authorities. The project is financed jointly by SIUS, the Norwegian Foreign Ministry and the CEC and is now finalised.

MU 503A Discussions - remedial actions in Murmansk

Initially in the series of Murmansk projects there was a need for identification of problems and also responsible bodies involved. This required participation in existing for a for co-operation and also a series of meetings and small work-shops. This was done in this project, now finalised.

MU504A Conceptual study – Murmansk repository

According to the Russian long-term plan, spent nuclear fuel from the Murmansk area should be transported to Mayak in Ural for reprocessing. The logistics in this transport will require storage capacity in Mayak (project MU 502A) but also similar storage capacity at the Murmansk end of the transport line. Experiences from the Mayak conceptual study should be used to produce a similar study for a Murmansk storage.

This project was never initiated and its preconditions have now changed. It should now be reconsidered and perhaps cancelled.

MU 505A Workshops - waste handling and management

In this project, a workshop or seminar should result in exchange of know-how and technology between Swedish and Russian scientists and experts in the field of waste handling and management with an emphasis on international recommendations and praxis and managerial infrastructure. The project involves Studsvik RadWaste and the seminar was held in Oskarshamn in October 1998.

MU 505B Workshop on safe handling of radioactive waste

In this project, Russian experts from GAN, Minatom and other bodies involved in radioactive waste management and handling in the Murmansk region were invited to Studsvik in May 1998 to study methods for waste treatment, decontamination, decommissioning, quality assurance and other routines of interest. The focus was on practical problem-solving and established working routines rather than rules, requirements and international policies. The project report contains an interesting presentation of the Russian Long Term Plan for management of spent nuclear fuel.

MUR-7 GENERAL RESERVED

MU 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.8 Russia

RY 1 UPGRADING OF NATIONAL AUTHORITIES

RY 103A Prestudies CEC/TACIS/RAMG

This project in co-operation with CEC has the aim of strengthening the emergency response functions at Gosatomnadzor GAN. The project is mainly financed by CEC/PHARE/RAMG.

RY 3 NUCLEAR POWER AND RESEARCH REACTORS

RY 301A Radiation protection - Sosnovy Bor

Funds are reserved for a pre-project outlining the possibilities for future co-operation with the Sosnovy Bor nuclear power plant outside St. Petersburg, in particular to assess the needs in relation to present Finnish and CEC activities in the area.

RY 4 INSTRUMENTATION

RY 401B Further equipment for Russian institutions

The Institute of Radiation Hygiene and the Radium Institute in St. Petersburg have been provided with instruments for alpha, beta and gamma spectrometry and other scientific equipment. The objective is to provide for environmental monitoring in the area and thus improve the early warning system.

RY 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

RY 502A Waste strategy

A planned project with the purpose to support the development of an extensive Russian strategy for handling of radioactive waste was planned but is now reduced in priority - see MU 503.

RY 503B Waste assessments

Methods for assessments of the consequences of radioactive releases have been discussed in a series of workshops. Computer equipment and software has been transferred and used to evaluate prevalent conditions for a number of sites. The objective is to strengthen the capacity at the Russian Radiation Protection Authority to evaluate the conditions present when issuing licenses for waste storage and also to provide reference material in the form of site studies. Federal as well as regional staff is involved and an expansion to the Murmansk area is planned.

RY 503C Pre-project on near surface disposal

The project is a follow-up and continuation of RY 503B with the purpose to prepare for a main project addressing EIA procedures for near surface disposals in co-operation with the Russian authority GAN (federal and regional).

RY 503D Course on safety assessment on near surface repositories for GAN.

A five days course arranged jointly by SKB, Kemakta and SSI was held in September 1998 in Stockholm with participation from Gosatomnadzor (federal and regional), Environmental Protection Committee and some other Russian organisations. The course was arranged jointly with the IAEA and was based on experiences from a previous project (GE 506A). General radiation protection principles were discussed together with safety assessment methodology with a focus on near surface repositories.

RY 503E GAN participation in the IAEA project on near surface disposal

The purpose of this project is to support Gosatomnadzor when participating in the IAEA-ISAM project on long term safety assessment methodologies for near surface disposals.

RY 503F Assessment of standards and norms on waste management

The purpose of this pre-project is to assist GAN with an inventory and assessment of the Russian standards and norms on management and handling of radioactive waste with a view on international praxis in the area. The project should result in a proposal how the Russian legal framework should be developed and in a detailed project plan for that procedure.

RY 504B CEG activities

The Contact Expert Group (CEG) was established in 1995 on Nordic initiative (c.f. project RYS-5.01) with the purpose to collect information on international co-operation projects concerning radioactive waste in the Russian Federation, to be a forum for discussions between those involved and to avoid double work by introducing liaison between similar projects in an early stage. The group is supported from the IAEA, financed by the member countries. This project covers the 6th meeting with the CEG, held in Augusta, USA.

RY 504C CEG activities for Murmansk

This project covers the 7th meeting with the CEG, held in Murmansk Russia. See above for details on CEG.

RY 6 OTHER RADIATION PROTECTION

RY 604A Doses in Russia after the Chernobyl accident

Independent measurements of dose to the population in the Brjansk area and development of computer programs for dose estimation. The work has now been going on for 7 years with repeated annual measurements of external doses to about 150 persons and urine sampling on 50 - 70 persons each year for estimation of internal caesium contamination. Dose distributions inside anthropomorphic phantoms have also been studied in different outdoor and indoor environments. Co-operation with colleagues in different Russian institutes is established. So far, experimental and theoretical values agree and indicate a continued 10 - 20% annual reduction.

RY 608B Radiological equipment to Novosibkov

The purpose of this project is to establish good radiation protection practices in medical radiology as a base for further improvements in the radiological situation in the Bryansk Oblast close to the Ukrainian border and Chernobyl (see project RY 604A and VI 402C). Transport and installation of surplus equipment from Swedish hospitals is financed by SSI/SIUS in co-operation with Lions Club.

RY 609A Radon studies

Co-operation with the Institute of Radiation Hygiene in St. Petersburg for improving their ability to make accurate and traceable calibrations of meters for radon gas and radon decay products in air. This comprises transfer of a certified radon source, radon decay product measuring equipment and an aerosol particle counter. Negotiations on suitable instrumentation are proceeding.

RY 615A Studies of eco-systems in the forest

The purpose is to develop models for the ecological behaviour of Cs-137 in the forest environment and to compare their predictions with experimental results from Sweden and Obninsk in Russia. The work is done in co-operation between Uppsala University (Prof. K J Johansson) and the Radioecology Department in Obninsk (prof. Alexachin). Present results have

shown the important role of fungi and the project is now expanded to take this new aspect into consideration.

RY 616A Quantification of chromosome defects

Co-operation between the Institute of Biochemical Physics in Moscow and the Institution of Genetics in Uppsala, as regards experimental and theoretical studies for the development of new methods for quantification of chromosome damage. The project is finalised and under evaluation.

RY 617A Dose-response for chromosome changes

Co-operation between SSI, the Central Research Institute of Roentgenology and Radiology, St Petersburg and Department of Radiation Genetics and Chemical Mutagenesis, Leiden University as regards in vivo dose-response studies of induced chromosome changes caused by low gamma doses to lymphocytes. The project is finalised and under evaluation.

RY 7 GENERAL RESERVED

RY 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.9 Belarus

VI 2 UPGRADING OF NATIONAL AUTHORITIES

VI 104A Radioactive waste project (CEC/RAMG)

Support to Roshydromet, the Belarus radiation protection authority, with the purpose to improve the supervision of waste management in Belarus. The project is mainly financed by CEC/TACIS/RAMG.

VI 105A Authority support (CEC/RAMG)

Support to Roshydromet, the Belarus radiation protection authority, with the purpose to improve the legal framework, licensing and registration procedures, establish a more efficient supervision and also to provide hardware useful for the authority operations. The project is mainly financed by CEC/TACIS/RAMG.

VI 2 EMERGENCY PREPAREDNESS, EARLY WARNING

VI 201A Air monitors

Two air monitoring systems similar to those installed in the Baltic countries will be installed in co-operation with Belhydromet in addition to the gamma monitoring stations now in operation.

VI 203A Emergency centre

Co-operation between SSI, the Uppsala Emergency Centre and Belarus authorities on the establishment of a Belarus emergency centre. The project is in an early planning stage with an expected start in 1999.

VI 4 INSTRUMENTATION

VI 402C Decontamination equipment and methodology

The main purpose of the project is to introduce modern decontamination equipment and methods in a medium scale operation in the Switilowitche village in Gomel, Belarus and to educate local instructors to lead such work. The project is financed jointly with the IAEA and Denmark.

VI 5 DECOMMISSIONING, WASTE, ENVIRONMENTAL CONTROL

VI 501A National waste strategy

Phase 1 and 2 of this project are finalised, that is preparation of a detailed outline of the project during a visit in Belarus, six Belarus experts visiting Sweden for information on the Swedish situation and discussions of elements in a waste management strategy. Most of the strategy text, which should be drafted by Swedish experts, is now prepared. Due to delay with allocation of national resources and appointment of the Belarus project team, the remaining part of the work has not progressed as planned and was temporarily halted in the autumn 1996. A CEC mission in 1998 indicated that the conditions now have improved and that the work will be resumed in 1999.

VI 504A Forestry machinery (planned)

As a result of the Chernobyl accident, large forest areas in Belarus produce timber with contamination in the outer parts. These parts have to be removed in the cutting and taken care of in a proper way. Special equipment is necessary for this procedure, rather uncommon in forestry.

VI 7 GENERAL RESERVED

VI 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.10 Poland

PO 7 GENERAL RESERVED

PO 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

6.11 Other countries

ÖV 5 WASTE, ENVIRONMENTAL CONTROL

ÖV 501A Workshop Foodstuff measurements

A workshop on Caesium and Strontium measurements in foodstuffs was held in Stockholm in October 1998 for Ukrainian experts. The project is sponsored by the IAEA but run as part of the SSI/SIUS programme.

ÖV 6 OTHER RADIATION PROTECTION

ÖV 601 Research project: Cancer in children of emergency workers in Chernobyl

Studies of doses and possible hereditary effects from irradiation of more than 600 000 emergency workers involved in rescue work after the Chernobyl accident. A Ukrainian register contains data

on about 200 000 people. Registration of children to exposed fathers and development of methods for retrospective dosimetry. Measurements on chromosomal translocations have indicated unexpectedly low doses to Estonian clean-up workers. Electron Spin Resonance measurements of free radicals in tooth enamel are studied with regard to sensitivity.

ÖV 7 GENERAL RESERVED

ÖV 701B General, reserved

General costs for basic discussions with the co-operating parties on policy and principles. Pre-projects needed to evaluate certain proposals for future work. Funds for unexpected projects and future allocations.

Annex 1

Project Classification

To simplify administration the co-operation projects are classified as follows.

Country codes

GE	Common projects, for more than one country.
PA	PIERG-projects in Paldiski, Estonia.
SI	SIERG-projects in Sillamäe, Estonia.
ES	Estonia
LE	Latvia
LI	Lithuania
MU	Murmansk region of Russia. Financed over a separate budget.
RY	Russia except Murmansk region
VI	Belarus
PO	Poland
ÖV	Other countries (Ukraine etc).

Categories

Within each "country" the projects are divided into the following main categories:

1. *Upgrading of national authorities*
Legislation, organisation, information, computer support, etc.
2. *Emergency preparedness, early warning*
Organisation, education, dose predictions, gamma monitoring, communication etc.
3. *Nuclear power and research reactors*
Safety at work, releases, organisation and other plant related issues not dealt with elsewhere.
4. *Instrumentation*
Laboratories, mobile and stationary measurement equipment, education etc.
5. *Decommissioning, waste, environmental control*
National waste strategies, plant specific programs, radiological clean-up, measurement programs, education etc.
- 5a *Paldiski International Expert Reference Group*
Decommissioning, dismantling, waste management, storage and disposal at Paldiski, Estonia.
- 5b *Sillamäe International Expert Reference Group*
Remediation, decontamination, waste management, storage and disposal at Sillamäe in Estonia.

5c *Murmansk waste*

Waste strategies, area specific programs, waste management, radiological clean-up and other similar projects connected to radioactive waste in the Barents region of the Russian Federation.

6. *General radiation protection*

Medicine, radiological protection of workers, dosimetry, radioactive lighthouses, radon, non-ionising radiation etc including research support.

7. *Other project costs*

Projects not covered by any of the categories above.

8. *Project management and administrative support*

Includes resources needed to plan, organise and report on the various projects.

Project identification code

Projects in the same category are numbered in consecutive order. ES 501A is for instance the first project (the suffix A) on Waste management environmental protection etc. (category 5 - first digit) in Estonia (ES) and the letter B means it is a continuation of a previous project with letter A. (exception is the emergency preparedness projects GE 205).

SSI-rapporter 1999

SSI reports 1999

99:01 Publikationer 1998

Statens strålskyddsinstitut

99:09 Säkerhets- och strålskyddsläget vid de svenska kärnkraftverken 1998

Statens strålskyddsinstitut

99:02 SSI:s projekt avseende avveckling av

kärntekniska anläggningar – en förstudie

Avdelningen för avfall och miljö, Avdelningen för personal- och patientstrålskydd, Administrativa staben. Henrik Efraimsson, Hans Ehdwall, Thommy Godås, Peter Hofvander, John-Christer Lindhé, Juha Lumpus, Ingemar Lund, Lars Malmqvist, Erik Welleman 50 SEK

99:10 SSI's International Development Cooperation (SIUS)

Annual report 1998

Gábor Szendrő, Sten Grapengiesser, Gunnar Johansson

50 kr

99:03 Föreskrifter om skydd av människors hälsa och miljön vid slutligt omhändertagande av använt kärnbränsle och kärnavfall -bakgrund och kommentarer

Avdelningen för avfall och miljö

99:04 Calibration in Medical Diagnostic Beams at the Swedish Secondary Standard Dosimetry Laboratory

Avdelningen för miljöövervakning och mätning. Jan-Erik Kyllönen and Jan-Erik Grindborg 30 SEK

99:05 Long-term funding and faithfulness to the original goal

Department of Waste and Environmental Protection Gabriella Sjögren

99:06 Personalstrålskydd inom kärnkraftindustrin

Avdelningen för personal- och patientstrålskydd Ann-Christin Hägg, Thommy Godås, Lars Malmqvist, Peter Hofvander, Ingemar Lund och Erik Welleman 50 SEK

99:07 Erfarenheter från 1998 års avfalls- och miljöinspektioner och viss annan tillsyn vid de svenska kärntekniska anläggningarna

Avdelningen för avfall och miljö 40 SEK

99:08 Avveckling av kärnkraftverk i USA – en reserapport.

Avdelningen för avfall och miljö, Avdelningen för personal- och patientstrålskydd. Henrik Efraimsson, John-Christer Lindhé, Lars Malmqvist, Ingemar Lund och Erik Welleman. 60 SEK

STATENS STRÅLSKYDDSinSTITUT, SSI, är en central tillsynsmyndighet med uppgift att skydda människor, djur och miljö mot skadlig verkan av strålning. SSI arbetar för en god avvägning mellan risk och nytta med strålning, och för att öka kunskaperna om strålning, så att individens risk begränsas.

SSI sätter gränser för stråldoser till allmänheten och till dem som arbetar med strålning, utfärdar föreskrifter och kontrollerar att de efterlevs, bland annat genom inspektioner. Myndigheten informerar, utbildar och ger råd för att öka kunskaperna om strålning. SSI bedriver också egen forskning och stöder forskning vid universitet och högskolor.

Myndigheten medverkar i det internationella strålskyddssamarbetet. Genom projekt Strålskydd Öst bidrar SSI till förbättringar av strålskyddet i främst Baltikum och Ryssland. SSI håller beredskap dygnet runt mot olyckor med strålning. En tidig varning om olyckor fås genom svenska och utländska mätstationer och genom internationella varnings- och informationssystem.

SSI har idag ca 125 anställda och är beläget i Stockholm.

THE SWEDISH RADIATION PROTECTION INSTITUTE (SSI) is a government authority with the task of protecting people and the environment from the harmful effects of radiation. SSI ensures that the risks and benefits inherent to radiation and its use are compared and evaluated. SSI also develops competence on radiation to minimise the risk involved for the individual.

SSI decides the dose limits for the general public and for workers exposed to radiation and also issues regulations which, through inspections, it ensures are being followed. SSI provides information, education, advice, carries out research and also administers external research projects.

SSI participates on a national and international level in the field of radiation protection. A special SSI project called Radiation Protection East is contributing towards improvements in radiation protection standards in the former Soviet states.

SSI is responsible for coordinating activities in Sweden should an accident occur involving radiation. Its resources can be called upon at any time of the day or night. In the event of an accident, a special emergency preparedness organisation comes into operation. Early notification of emergencies is obtained from automatic alarm monitoring stations in Sweden and abroad and through international and bilateral agreements on early warning and information.

SSI has 125 employees and is situated in Stockholm.



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