TACIS NUCLEAR SAFETY

PROGRAMME 1998

TERMS OF REFERENCE (extract)

for

Transfer of Western European Regulatory Methodology and Practices to the Nuclear Safety Authorities of the Russian Federation

(Tacis project No: RF/RA/04)

08/09/00

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1. INTRODUCTION

Tacis activities in the field of Nuclear Safety in the Russian Federation started in 1991, as part of the response of the EU to the G7 recommendations, following the London and Munich Summits in 1991 and 1992.

Most attention in the first years went to actual safety improvements at NPP level, both in equipment and installations and in enhanced operator training. Also part of these activities have been dedicated to strengthen and support the Nuclear Safety Regulatory system.

In May 1997 the European Commission, responding to the recommendations of the first three years programme and responding to the findings of a G-24 meeting with Gosatomnadzor on regulatory assistance issues in 1995, decided to launch another multi-annual programme to continue and extend this Nuclear Safety Regulator Assistance to the Russian Federation.

The first project for year one of this second programme has been completed June 1999.
These Terms of Reference are describing the requirements for the work programme of the project for year two.

2. BACKGROUND

It is well understood that the Russian Federation has its own responsibility to identify and implement its own regulatory framework, which fits the situation in the Russian Federation the best, and that the RF has its own responsibility to implement its own selection of regulatory methodologies and practices.

However, it is also well understood that in this endeavour the Nuclear Safety Authorities of the Russian Federation may well benefit from the experiences and the developments in Western European countries which have led to a well established, highly respected and strong nuclear regulatory culture and infrastructure in these countries, quite capable of maintaining the necessary high level of nuclear safety in their countries.

Within the framework of the programme of the project for year one, RF Gosatomnadzor (RF-GAN) has been provided with Western European regulatory methodology and practices. Different approaches as implemented in the different countries in Western Europe have been presented and discussed with experts of RF-GAN and of its Scientific Engineering Centre (SEC NRS). Special attention has been given to clear responsibility structures, to the structure of legislative and regulatory document pyramids, to the issues of “independence”, “competence” and of “efficiency” of the regulatory body.

Also a good understanding of practices implemented or under implementation in the Russian Federation has been developed, as well as of their needs to strengthen certain areas with external assistance.

Considerable progress has been made in establishing the legal and procedural basis for the implementation of licence-based regulatory practices in the Russian Federation.
New laws, such as the "Law on the Utilisation of Nuclear Power of the Russian Federation" (1995) and the "Law on the Radiation Protection of the Population" (1996) have significant impact on procedures and responsibilities of the different actors and on the scope and extent of mandate and duties of RF-GAN and its supporting organisations.

RF-GAN has requested the continuation of this regulatory transfer project, focussed on joint work to the further implementation of regulatory improvements within the Tacis programme, focussing in this second year on a well-founded analysis of the different possible methods and practices with regard to the existing situation and to the existing regulatory methods and standards in the RF and for the definition and implementation of the most suitable regulations, procedures and working methods.

During the project for year one, good results were achieved in working on practical matters needed for the day-to-day work of RF-GAN and its SEC NRS.

Next to consolidation of the achievements of the first year, the programme for this second year will pay attention to the observation that Federal laws on the utilisation of nuclear power and on protection of the public from radiation, as well as the law on the management of radioactive waste are in need of detailed lower-level legal and regulatory documents, respective procedures and practical implementation. The responsibilities and procedural arrangements will depend on the respective level to be assigned to the document or procedure within the regulatory pyramid that remains still to be completed.

These developments are closely related to the currently ongoing transition from the former strongly entrenched hierarchical system based on the application of detailed prescriptive norms and rules to a flexible well-balanced system with appropriate reallocation of responsibilities.

3. PROJECT DESCRIPTION

The programme for this project for year two of the "Transfer of Western European Regulatory Methodology and Practices to the Nuclear Safety Authorities of the Russian Federation" is addressing the following areas of concern:

- The regulatory pyramid;

- The licensing process for nuclear facilities;
- Guidelines for the Regulatory Body;
- Training of RF-GAN personnel;
- The emergency organisation of RF-GAN;
- New normative documents for nuclear and radiation safety; and,
- Project management techniques and skills.

It is expected that at the end of year two of this programme significant progress has been achieved in improving the present situation, in accordance with the original three year programme.

4. OBJECTIVES

The overall objectives of this project for year two of the programme are:

- Strengthening the foundation and the structure of the regulatory system;
- Improved understanding and further incorporating of Western European regulatory practices in the RF;
- Achieving clearer interfaces, including responsibilities, and improved collaboration between licensees, industry and scientific-technical institutions;
- Developing and applying indicators for measuring the performance of the regulatory system and assessing the progress achieved;
- Improving the application of new regulations and procedures and improving the use of advanced management methodology and working techniques by implementing adequate training programmes; and,
- Enhancing the management capabilities and efficacy of the regulatory body and of its supporting organisation;

5. SCOPE OF WORK

A Team of Experts shall provide technical assistance to the Beneficiary in the Russian Federation in order to achieve the objectives above. The Contractor's experts shall perform the tasks listed below.

Task 1. Preparation of a detailed inception report

The Team of Experts shall prepare a detailed inception report for this assignment.

This inception report shall address the methods to be applied for this project and it shall include a detailed time schedule, a detailed organigramme and a detailed manpower plan, covering also manpower from Local Subcontractor(s) and including also tasks assigned to the Beneficiary, lines of communication, etc. In addition a detailed Logframe shall be included, addressing inputs, outputs, milestones, critical issues, monitoring, etc.

In preparing this detailed inception report, the Contractor shall familiarise himself with the results of relevant studies already performed, still underway or already planned in order to avoid unnecessary duplication of effort.

A project-specific QA/QC plan, covering all project activities of the Contractor, including those to be performed by the Local Subcontractor(s) and by the Beneficiary, shall have to be prepared by the Contractor, and

submitted for approval together with the detailed inception report for this Project.

Task 2. Establishing the regulatory pyramid also at lower levels

In order to comply with the laws on the Utilisation of Nuclear Power of the Russian Federation and for the Radiation Protection of the Population, a complete set of legal and regulatory documents and respective procedures needs to be developed. As a first step, the Government of the RF, acting jointly with the RF-GAN and the Ministries involved, has prepared a legal and regulatory development plan. During year one of this three year Tacis assistance programme, technical assistance has been provided to RF-GAN in the development of the top level of these documents. The work under this task will focus on the general description (overview) of what has been done in the first year programme and what still has to be done split in 2nd and 3rd year programme.
Then the task will go ahead with the completion of the 2nd year programme part and on expanding the technical assistance to RF-GAN to the more detailed lower-level legal and regulatory documents and respective procedures.

The Contractor shall provide technical assistance to RF-GAN with:

- Systematic organisation of the legal and normative documents concerning nuclear and radiation-hazardous facilities (regulatory pyramid) and with the systematic organisation of information on organisations, competencies and procedures;

- Implementation of new and improved legal and regulatory documents.

- Co-operative development of a system of safety-related legal and regulatory documents and other information by RF-GAN together

with other parties involved in the preparation, application and enforcement of these documents; and,

- Amendments or modifications, when needed, of laws and regulations.

Task 3. Improvement of the licensing process for nuclear facilities

Past licensing processes for Nuclear Power Facilities (NPF's) in the RF differed considerably from the ones practised in Western Europe.
Currently (1995 – Law on the Utilisation of Nuclear Power of the Russian Federation; 1996 – Law on the Radiation Protection of the Population) the regulatory system underlying this licensing system has been renewed.

Under these new laws the licensing procedures for the construction, commissioning, operation, modification, decommissioning and dismantling of NPF's need to be adjusted considerably. These new licensing processes require intensive interactions with other parties involved, especially with the operator of the facility.

In order to optimise the transition from the previous situation to the new legal requirements as quick and as efficient as possible, RF-GAN requires:

- Technical assistance in adapting the licensing procedures and relevant guiding documents to the new legal basis; and,

- Working models and practical support from experienced regulators and safety experts for the development of new forms of interaction between on the one hand the regulatory body (central and regional offices) and the Technical Support Organisations (TSO's) and at the other hand, the licensees, the industry and the design and development organisations.

Therefore the Contractor shall propose and execute in close collaboration with RF-GAN a clearly outlined and practice based approach, to cover the following areas of concern:

- Achievement of a significant improvement of the licensing practices and licensing procedures of NPF's, taking into consideration the licensing procedures as practised in the EU;

- Achievement of improved licensing practices of safety related programmes in the modification of NPF's;
- Development of improved requirements for safety review reports on the different types of NPF's; and,
- The development of a Quality System for the proper and effective management of the interfaces between licensee, industry and design/development organisations at the one hand and the regulatory body (central as well as regional) and other governmental institutions involved on the other hand.

The Contractor shall address in this task the licensing procedures for nuclear power plants and for fuel cycle facilities as well as for the transportation of radioactive material and nuclear fuel.

Task 4. Development of guidelines for the Regulatory Body

Due to the above mentioned new laws on the utilisation of nuclear power and on radiation protection the duties of RF-GAN have changed and are extended significantly.

RF-GAN and its supporting organisations will have to perform detailed reviews and assessments of documents and dossiers, to be submitted by licensees.

Within RF-GAN only limited experience exists regarding this new responsibility and the consequently new type of work.

In order to solve the complication of this transition towards the new rules, RF-GAN now prepares guidelines for the staff of its regional offices, for staff of SEC NRS and of other expert organisations for the proper "expert and safety judgement on nuclear and radiation-hazardous installations". This forms part of the tools of the Quality Management system which is under development within RF-GAN at present.

RF-GAN expressed its intention to want to take the experience of the Western European regulators into consideration in drafting and implementing such guidelines.

The Contractor therefore shall assist RF-GAN in creating access to the current practice and experience in the EU regarding the development, implementing and use of such guidelines.

Thereto the Contractor shall propose and prepare a detailed description of at least two systems (implemented and well experienced in one or more countries of the EU) that are most applicable to the situation in the RF and the Contractor shall organise and conduct a training workshop to transfer this information and know how to those key experts of RF-GAN and its supporting organisations, responsible for the preparation of these guidelines.

The elaboration of the guidelines for the RF is explicitly the responsibility of RF-GAN itself and therefore not within the scope of the Contractor.

Task 5. Additional training of RF-GAN personnel

The new laws in RF have a significant impact on mandate and responsibilities of RF-GAN. This implements also the need for additional vocational education and training of the personnel of RF-GAN, in order to be able to accept and shoulder these new responsibilities and to manage this new mandate properly.

This need involves both the RF-GAN personnel on-site of NPF's, involved in the technical aspects of inspection and the personnel, newly recruited for managing all licensing aspects.
In addition to this, the fast changing economic situation in the Russian Federation caused an increased mobility of personnel. As a consequence of this, many more need to be trained than before. Since RF-GAN's budget for training remained limited, the need for a lean but efficient training system, adequate to meet all requirements of today is very vital for the quality of the tasks and for the amount of work to be performed by RF-GAN personnel.

At present, RF-GAN is on its way to improve and adjust its training concept.

In order to optimise the use of the limited resources available and in order to adjust the training system of RF-GAN as fast and as efficient as possible to the revised conditions and needs, the Contractor shall provide RF-GAN with advice and guidance in the establishing of its training system, using Western European practices and standards, for the following:

- The development of a concept for training of the personnel of the regulatory body, including the definition and the assignment of the different roles, mandates and duties to RF-GAN headquarters at Moscow, to the RF-GAN regional offices throughout the country, to the RF-GAN personnel on-site at the

NPF sites and to the Novovoronezh Training Centre (NTC) of RF-GAN; and,

- The development of a set of educational and training requirements regarding the vocational qualification of the different RF-GAN personnel functions.

In addition to this, the Contractor shall provide technical assistance to RF-GAN for the following:

- The development of training materials and training documents; and,

- The development of principles, and methodological approaches (including the development and implementation of a system of quality and performance indicators) to the training programme of the regulatory staff by the NTC.

In order to be able to manage this development and assistance process in an efficient manner, the Contractor shall propose a detailed programme for this task in the inception phase.

Task 6. Improvement of the emergency organisation of RF-GAN

According to the new laws, RF-GAN is obliged to inform the government and the public as an independent Expert Authority about the situation in an NPF in case of accident or emergency conditions. In order to be able to perform this duty, RF-GAN needs certain kind of information, independent of analyses made by the operator of the NPF. This information needs always to be available for RF-GAN.

At present, work for improving the alarm warning system, the prompt information transfer and the emergency help in case of radiation-hazardous situation, is being carried out in Russia.

One of the associated tasks is to improve the information exchange between the operating organisation, the organisations of the chief designer and scientific leaders and government bodies involved with emergency activities (such as the emergency control centre of MINATOM, emergency centre of RF-GAN, emergency centre of the Ministry for Emergency Situations, emergency room of the President of the Russian Federation).

In order to meet the requirements of this task, RF-GAN has started to build up an emergency organisation that has access to independent key information, continuously, and which can analyse data by itself, without outside expert assistance. Some of the equipment for this emergency centre of RF-GAN has been provided by the USA.

The Contractor shall do his outmost to improve the emergency centre of RF-GAN in the following aspects:

- Improvement of the ensured undisturbed flow of primary information from the NPF directly to the emergency centre of RF-GAN, also in case of a disruptive accident; and,

- Improvement of the RF-GAN response procedures for informing the government of the RF and the public of the situation in the NPF under accident and emergency conditions.

The contractor's report shall show and demonstrate all his efforts to improve these aspects.

Thereto the Contractor shall detail his approach, based on practical experiences as established and successfully implemented in Western European countries, in the Inception Report.

Task 7. Transfer of up-to-date project management techniques

Project Management and Quality Management according to highly demanding principles as practised by Regulatory Authorities in Western Europe are also needed in the Russian Federation these days, in order to make it possible for RF-GAN to meet in a cost- and time-efficient manner the requirements resulting from the new laws in the Russian Federation and in order to make it possible for RF-GAN to comply with requirements regarding the management of the various international projects they are involved in these days.

During the first year of this three year programme a first exchange of project management techniques has taken place, resulting in the identification of the needs of RF-GAN.

The second year shall be used by the Contractor for a consequent and consistent transfer of the identified needed and wanted Project Management and Quality Management principles and techniques to RF-GAN, whereas in addition a training system for all different kinds of users shall be established and implemented by the Contractor.

The Contractor shall make a proposal – based on his knowledge and experience – for the content of this transfer and for his approach how to meet the requirements of this task.
In addition, in the Inception Phase, the Contractor shall elaborate the details of this approach, including a detailed implementing schedule, which will be included in the Inception Report.

During and after the transfer of this modern Project Management and Quality Management methodology, a systematic training system will be established and implemented by the Contractor. The Contractor shall use modern (quality management) techniques to provide information to the Commission as well as to the Beneficiary of the rate of success both of the established training system and of its implementing.

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Task 8. Elaboration and review of normative documents for nuclear and radiation safety

The new laws in the Russian Federation ("Law on the Utilisation of Nuclear Power in the Russian Federation" and "Law on Radiation Protection of the Population") are defining a new form of normative documents, federal norms and rules regarding the exploitation of nuclear energy.

In order to achieve the correct legal basis for all actors in compliance with these new requirements, RF-GAN has to develop in a fairly short period of time an optimum system of normative documents, specifying nuclear and radiation safety of nuclear facilities.

RF-GAN requires assistance from Western Regulatory Authorities, experienced in applying this modern approach, with the following:

- Revision of the rules for nuclear safety of reactor systems of NPP's (PNAE-G-01-024-90).

  This normative document defines requirements to provide nuclear safety for the reactor and reactor systems important for safety. These requirements cover:

  - *the active core and its elements,*
  - *systems of emergency shut-down,*
  - *control systems for neutron flow and reactivity,*
  - *equipment of the primary loop, and*
  - *systems for the emergency cooling of the active core.*

- Revision of the safety rules for storage and transportation of nuclear fuel at the nuclear power objects (PNAE-G-14-029-91).

  This normative document defines the general principles and safety requirements during the storage and transportation of nuclear fuel at the NPF's, requirements on nuclear safety of the storage facility and treatment of fresh and irradiated nuclear fuel, packing sets for transportation of fresh and irradiated nuclear fuel and for nuclear fuel storage facility commissioning.

- Guidelines for the normative document development on nuclear and radiation safety – new draft.

These guidelines will define the main recommendations for the development of the normative documents, ratified by RF-GAN. The guidelines will:

- *contain recommendations on the ranking of the normative documents development, and*
- *define requirements on:*
  - *i) the content of different types of normative documents,*
  - *ii) the order of their forms execution, and,*
  - *iii) the implementation of procedures on the development of normative documents.*

Task 9. Participation of RF-GAN to international conferences

The new laws regarding nuclear and radiation safety in the Russian Federation ask for a more pro-active role of RF-GAN in following the developments regarding nuclear and radiation safety at international level. This includes the active participation of experts and staff of RF-GAN in international meetings and conferences.
The current budget of RF-GAN is very small and permits less active international involvement of RF-GAN experts than wanted.

In order to accommodate this complication, the Contractor shall make a provision in his financial proposal for this project which can be used at the request of RF-GAN for financial support for the participation of experts of RF-GAN in international nuclear and radiation safety related meetings and conferences.

Task 10. Final report

The Contractor shall produce the Final Report of the Project, with the related Documents and Attachments (Executive Summary, Final Press Release, etc.). The Final Report shall summarise the work done and the results obtained, highlighting the achievements and it shall make recommendations for further work, in agreement with the Beneficiary (and the Local Subcontractor(s)). The report shall also summarise the lessons learned, the difficulties and pitfalls encountered and the way these were overcome.

The final report will also contain as an annex a list of meeting, seminars with minutes and list of participants.

The final report shall make recommendations for the 3rd year programme.