The Role of Stakeholders in the Decommissioning of Salaspils Research Reactor - 9109

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ABSTRACT

The paper describes the role of different stakeholders in the decommissioning of the Salaspils Research Reactor. Decommissioning was a large challenge for the Latvia, since the country in this moment had no decommissioning experience and necessary technologies for the implementation of the defined goals by the Government. In this case for facilitation of the decommissioning of Salaspils Research Reactor (SRR), the significant role plays the local and international stakeholders. The paper deals with information on the basic stages of decommissioning of SRR and the role of the wide spectrum of stakeholders in preparation, upgrade and implementation of the decommissioning plan. The role of governmental institutions in the decommissioning of Salaspils research reactor is discussed. It was shown, that local municipalities are very important stakeholders, which significantly influence the decommissioning of SRR. The Salaspils municipalities positive impact on the decommissioning processes are discussed. Basic problems with the Baldone municipality in context of radioactive wastes management are indicated. The role of international stakeholders in decommissioning of Salaspils research reactor is discussed. It was shown, that the support from International Atomic Energy Agency significantly promotes the decommissioning of SRR. The main issues were expert support for solution of different technical problems in radioactive wastes management, area monitoring, and verification of decommissioning plans, training of staff and technical expertise during whole process of decommissioning. It was shown, that technical and economical support from DOE, USA provides the possibility to solve the fuel problem during decommissioning of SRR, as well as, to increase the physical safety of SRR and repository “Radons”. It was shown, that a proper coordination of all activities and using the services from stakeholders can significantly reduce the total project expenses. The cooperation between stakeholders during decommissioning of SRR is discussed in the paper.

INTRODUCTION

The research reactor IRT is located in Salaspils site near the capital of Latvia - Riga was put into operation on September 1961. The research reactor was originally built according to former USSR design as a pool type light water-water reactor with nominal thermal power 2 MW. Since 1975, after physical reconstruction of the reactor, the nominal thermal power of reactor was increased up to 5 MW. In May 16 of 1995, the Cabinet of Ministers had made the decision to shut down the Salaspils Research Reactor (SRR) after last 2 years of operation (the decision prohibited obtaining fresh nuclear fuel) and requested the Nuclear Research Centre of the Latvian Academy of Sciences to start the preparation of Concept for decommissioning. In this case the essential stakeholders – the Government of Latvia, local municipality and different state institutions were involved in decision taking process for decommissioning. Decommissioning of Salaspils Research Reactor was a large challenge for the Latvia, since the country in this moment had no decommissioning experience and necessary technologies for the implementation of the defined goals by the Government. In this case for facilitation of the decommissioning of Salaspils Research Reactor (SRR), the significant role was expected for the local and international stakeholders.

INVOLVEMENT THE STAKEHOLDERS IN DECOMMISSIONING

Due to the lack of the experience of decommissioning in Latvia at 90-ties, the involvement of stakeholders was one of the key options for successful implementation of national plans for

decommissioning of Salaspils research reactor. On the another hand, all stakeholders for decommissioning of SRR must be defined and categorized taking into account, that stakeholders interests in the decommissioning project is changing during implementation of the project. All stakeholders involved in SRR decommissioning processes can be identified and grouped according to principles described in [1]. The categorization of possible stakeholders for decommissioning is given in Table I.

Table I. Decommissioning stakeholder's categorization [1]

ISSUES	**STAKEHOLDERS**
ECONOMIC (overall cost of decommissioning, supply chain making a fair profit, impact on economics of local community	ECONOMIC • Government, • Customers, • Decommissioning/radioactive waste management agencies, • Supply chain, • Local community
ENVIRONMENTAL (Local environmental issues e.g. transport, noise, waste management	ENVIRONMENTAL • Regulators, • Local community, • NGOs, • Wider society
SOCIAL (Health and safety, peoples jobs, impact on local suppliers, impact on local community)	SOCIAL • Workforce, • Regulators, • Local community, • Local suppliers, • Wider society

This table defines only basic principles for categorization of possible stakeholders. The identification of stakeholders for decommissioning of SRR was performed taking into account the following basic directions decommissioning:

- Planning of decommissioning (PD);
- Nuclear fuel management (NFM);
- Radioactive wastes management (RWM);
- Dismantling and decommissioning of SRR (D&D);
- SRR site reuse for installation of National Multipurpose Cyclotron Centre (NMCC)

According to these basic directions, all involved stakeholders in decommissioning of Salaspils research reactor were categorized (Table II). It is necessary to stress, that Table II contains information both on the basic stakeholders, which are involved in decommissioning project during all its lifetime, like Government, Radiation Safety Centre, etc., and on the stakeholders for specific directions, like nuclear fuel shipment, construction activities, supplies, etc.

Table II. Stakeholders' categorization for Salaspils Research Reactor decommissioning.

No.	**Stakeholder**	**Direction of decommissioning**	**Functions**	**Impact on decommissioning**
1.	Government	PD,NFM, RWM, D&D, NMCC	Decision making, financial support	Govern D&D processes
2.	Radiation Safety	PD,NFM, RWM,	Approval of plans,	Facilitate SRR

	Centre	D&D	control of execution	D&D
3.	Environmental Protection Foundation	PD, NFM, RWM, D&D, NMCC	Financial support	Facilitate SRR D&D
4.	Environmental Quality Control Bureau	RWM, D&D, NMCC	Approves Environmental Impact Assessment studies and issue permits	Facilitate SRR D&D
5.	Salaspils municipality	RWM, D&D, NMCC	Site municipality , approves EIA results	Facilitate SRR D&D
6.	Baldone municipality	RWM	Repository site municipality, approves EIA results	Hinders SRR D&D, increase expenses
7.	Customers	PD,NFM, RWM, D&D, NMCC	Execution of projects on the Contract basis	Facilitate SRR D&D
8.	Radiation related construction commission	RWM, D&D, NMCC	Construction's permits for radiation related projects	Facilitate SRR D&D
9.	International stakeholders (IAEA, EC, DOE, companies of Russia, etc.)	NFM, RWM, D&D, NMCC	Implementation and financial support for decommissioning related projects	Facilitate SRR D&D
10.	Researchers and scientists	D&D, NMCC	Site related persons	Facilitate/hinder SRR D&D
11.	Media	RWM, D&D, NMCC	Information supply for society	Facilitate/hinder SRR D&D
12.	NGO's organizations	RWM, D&D	D&D control on behalf of society interests	Facilitate/hinder SRR D&D

Stakeholders for planning of Salaspils Research Reactor decommissioning

The experience of involvement of stakeholders in Salaspils RR D&D project shows, that stakeholder must be involved at the early stages of the project planning and execution. German company PREUSSAG NOELL, essential stakeholder for planning of decommissioning of the SRR, started decommissioning and dismantling conception studies in July of 1998 after the shutdown of the SSR in June of this year. This significantly promoted the decommissioning by preparation of initial decommissioning plan for SRR. The results of studies [2, 3] were presented in March 10 at Ministry of Environmental Protection and Regional Development (MEPRD). Prepared concepts were used for preparation of the Order No. 57 of Cabinet of Ministers in October 26, 1999, which accepted the option to direct dismantling of SRR to "green field" conditions. German company PREUSSAG NOELL also trained team – project manager, site manager, radiation protection manager and quality assurance manager for decommissioning of SRR, which was essentially for implementation of planned decommissioning activities. Decommissioning of SRR was also studied by Cross [4]. The results of all studies were used for upgrading of the initial decommissioning plan in 2003-2004.

Stakeholders for organization of Salaspils Research Reactor decommissioning

It was shown [5-7], that suitable organization desirable promotes decommissioning activities. According to the policy of Ministry of Environment (MOE), the State agency "BAPA" deals with decommissioning

and dismantling of SRR. The steering group coordinates and Radiation Safety Centre (RSC) controls all these activities. According to the decision of the Government, financial provisions were supplied from state budget or/and Environmental Protection Foundation. All these stakeholders are important for each years planning activities and control of results. The principal schema of decommissioning organization is shown in Figure 1. Implementation of decommissioning activities during 1999-2008 confirmed that created organization schema gave a possibility to carry out all decommissioning measures with necessary control and optimization of investments. Significant role in the organization of the Salaspils Research Reactor decommissioning played International Atomic Energy Agency (IAEA), which also is very important stakeholder of SRR decommissioning. Decommissioning activities also was supported by the municipality of Salaspils city. Authorities of municipality accept the decommissioning plans, as well as, the results of EIA. It significantly facilitates the implementation of decommissioning activities and creates constructive atmosphere for successful decommissioning of SRR. Moreover, Salaspils municipality supported the Government's

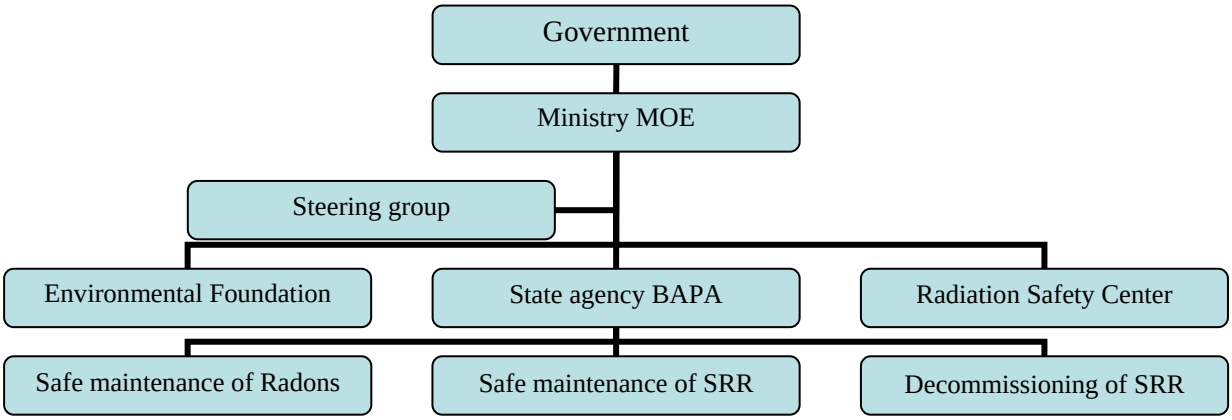

Fig. 1. Organization's schema for decommissioning of Salaspils Research Reactor.

plans to use the territory of SRR for installation of cyclotron centre. It gives a possibility to upgrade of initial decommissioning plan for reuse of territory and some reactor's systems (special canalization and ventilation, radioactive wastes management system, area monitoring system, etc.), which resulted in considerable savings for the decommissioning project. It is an example of providential cooperation between local municipality and decommissioning project managers and stakeholders.

Stakeholders for execution of decommissioning activities in Salaspils Research Reactor

According to the concept of decommissioning, the preparation measures would be performed in 1999-2005 years. These measures were supported from the State budget and Environmental protection foundation, as well as, from the projects with international stakeholders. For receiving of licensee for decommissioning of SRR, the Environmental Impact Assessment (EIA) studies for decommissioning of SRR and for upgrading of national radioactive wastes repository were performed during 2003-2005 years, which significantly increased the number of stakeholders. Several scientific institutions, personally impacted stakeholders, administratively impacted stakeholders and generally concerned stakeholders were involved in the decommissioning processes [8-10]. Based on the results of EIA studies for decommissioning of SRR, the upgrade of decommissioning plan was initiated in 2003. Taking into account positions of stakeholders, the final stage of decommissioning was changed to reuse of the site for radiation related technologies. In December of 2004 the Government of Latvia accepted the upgraded decommissioning plan for time period up to 2010. One of the key stakeholders for implementation of

SRR decommissioning plan is IAEA. The first technical cooperation project for decommissioning of the SRR was submitted to IAEA for 1997-1998 years. There were 5 expert missions from IAEA from July of 1997 up to June 1998 year. Up to now, the IAEA is an important international stakeholder not only for decommissioning of SRR, but also for installation of National Multipurpose Cyclotron Centre at the territory of SRR. Practically by the efforts of the experts of IAEA, team for decommissioning of SRR was trained, supported with technical solutions in dismantling and radiation measurements technique and radioactive wastes management field. Due to support of IAEA, the radioactive wastes cementation facility (Fig. 2) was installed in the SRR hall. Facility gives a possibility to use tritiated water for conditioning of solid radioactive wastes. It fully solves tritium water utilization problem in SRR. Another cooperation example is connected with radiation measurements. IAEA expert missions studied the real situation on site and provided the information for necessary upgrades of free release system, stack monitoring system and area monitoring system. Transfer of "know-how" knowledge from different experts was helpful for setup of specific materials (graphite, beryllium) management system. Company "ENRESA" from Spain was involved in SRR decommissioning and radioactive wastes management studies in the range of European Community (EC) program Transition Facility [11]. Elaborated recommendations for radioactive wastes management and prepared SRR bioshield dismantling plan significantly promotes decommissioning of Salaspils research reactor .Due to common efforts together with other international stakeholders – Department of Energy, USA, Russian Federation companies

Fig. 2. Installed radioactive wastes cementation facility in reactor's hall.

and EURATOM Supply agency (ESA), the fresh and spent fuel was removed from SRR to Russian Federation (see Fig. 3). It was a large challenge for Latvia and all measures was finished in 2008 – just 10 years after shut down of SRR. More than 15 different domestic stakeholders were involved in the shipments of fuel.

Fig.3. Expert of EURATOM seals container with spent fuel.

During implementation of the SRR decommissioning project, other essential international stakeholders – the Government of Denmark, Sweden Radiation protection institute and EC were involved. Early and proper involvement of stakeholders significantly promoted all decommissioning activities. From beginning, the dismantling of unused conventional

Fig. 4. Dismantling of unused 400 m^3 tank.

and free released facilities, reactor's systems and buildings were performed using contracts with domestic companies. The dismantling of unused 400 m^3 tank in the reactor's yard by workers of contractor is shown in Fig. 4. The dismantling of the first and second cooling circuits, scientific equipment in the reactor's building; collecting and treatment of "historical wastes" was performed using services of

different domestic stakeholders. The total dismantled amount of different materials is presented in Table III.

Table III. Material flux from decommissioning of Salaspils Research Reactor.

Year	**1999**	**2000**	**2001**	**2002**	**2003/4**	**2005/6**	**2007/8**	**Total**
Metallic scrap for reuse, tons	11	31	48	23	75	8	36	**232**
Concrete for disposal, tons	9	64	230	51	39	13	4	**410**
Another materials ,tons	3	38	9	11	14	4	3	**82**
Conditioned radwastes, tons	2	7	16	16	14	22	7	**84**
Conditioned spend sealed sources and wastes ,TBq	6.2	4.6	1.8	5.2	0.6	82	2.0	**102.4**

Stakeholders for radioactive wastes management

The stakeholder's impact on the SRR decommissioning project in mainly cases has a positive effect with exception of Baldone municipality, which significantly hinders upgrade of repository for radioactive wastes and increases the total expenses of the project [12]. Despite the positive conclusions from safety assessment studies for repository "Radons" [8, 10, 11], the attention of local municipality of Baldone city to the construction of additional vaults for radioactive wastes from decommissioning of SRR is negative. Some negative impact on the implementation of decommissioning of SRR was observed from media, researchers and scientists and NGO's side. These impacts were identified during EIA studies for upgrade of repository. The existing cooperation between the Baldone municipality and State agency "BAPA" includes the following measures:

1. Preparation and submission of 3 months activities report for local municipality;
2. Preparation and submission of annual environment monitoring report;
3. Participation in the renovation activities of Baldone middle school;
4. Support of different projects for Baldone municipality;
5. Developing of wastes minimization program for decommissioning of Salaspils research reactor.

The last issue demonstrates the changes in the planning of decommissioning due to negative impact of local municipality. Previous plan includes the conditioning and disposal of very low radioactive wastes together with other radioactive materials. More careful sorting of dismantled materials will be performed now to decrease the amount of conditioned wastes. Radioactive wastes management activities are performed with involvement of stakeholders, which are interested in safe operation of repository "Radons" and proper conditioning of radioactive wastes for final disposal in repository. Thus, the DOE experts and the Government of USA provide support for increasing safety of repository "Radons". The same activities were performed by the Government of Sweden during 2003-2004 years. Experts from IAEA and University of Latvia, Faculty of Geographical and Earth Sciences are involved in studying of radioactive wastes conditioning technologies to increase quality of cementation of solid radioactive wastes in containers. Special project is developed for reduction of radionuclide leaching from cemented radioactive wastes. It becomes possible after installation in Salaspils research reactor the laboratory for testing of radioactive wastes cementation process. It is a good example for cooperation of IAEA, University of Latvia and Ministry of Environment for increasing of radioactive wastes management quality in Latvia.

CONCLUSIONS

1. The early involvement of stakeholders in decommissioning activities significantly facilitates the decommissioning of Salaspils research reactor.
2. The Salaspils reactor's decommissioning experience confirms, that for small country with one research facility without corresponding infrastructure the significant role play not only national governmental institutions, but also international stakeholders –IAEA, DOE, the Governments of donor countries and European Community.
3. It was shown, that local municipalities are one of key stakeholders. The Salaspils research reactor's site municipality significantly facilitates the decommissioning of SRR, but repository's site municipality hinders the decommissioning of SRR .The additional efforts must be spent to develop the cooperation with repository's site municipality to receive the support for radioactive wastes management system in Latvia.
4. It was found, that proper stakeholders activities coordination is essential factor for facilitation of research reactor decommissioning. Decommissioning project for small countries usually takes a long time period with involvement of many stakeholders governing the essential role of stakeholder's coordination, which must be included as a component for project management.

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