



**Concept and programme for the realization of a
radioactive waste repository for short-lived low- and
intermediate-level waste in the Leningrad Region
Tacis R4.05/04**

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Introduction

- ~ 220,000 m³ of radioactive waste in Leningrad Region by 2030
- Mainly in un-conditioned form at LSK Radon, Leningrad NPP
- Estimated 90 % is short-lived (half-life < 30 years)
- Need for a LILW-SL repository; could serve as pilot for the RF
- VNIPIET, St.Petersburg involved in several studies
- Consortium – VNIPIET co-operation to prepare
 - Declaration of Intent (DON)
 - Investment Justification (OBIN)
 - Overlapping DON and OBIN (waste-specific parts)



Earlier Studies

- Underground concept in clay for a Leningrad region repository
(SGN/IVO/AEA Technology/VNIPIET) Dec.1997, funded by Tacis
- Surface concept designed for Lithuania
(SKBIC/SWECO/Westinghouse), December 2001, funded by Sweden
 - accepted by Lithuanian government
 - a site selected near Ignalina, procurement of detailed design to start
- Comparative study
(SKB IC/ VNIPIET), April 2007, funded by Sweden
 - both concepts technically feasible, could be built to meet safety req's
 - underground option needs development, first-of-a-kind
 - cost for underground concept 3-5 times higher than for surface concept



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The 2008 Tacis Study

Objective

- To prepare a sound basis for a decision to construct a regional repository for *LILW-SL* in the Leningrad region

Beneficiary

- Rosatom

End-user

- RosRAO (appointed September 2008)

Project duration

- 1 year



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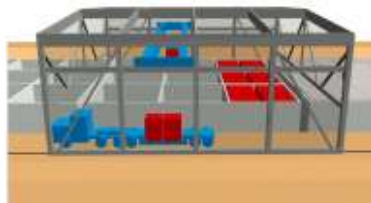
Information Gaps and Assumptions

- No reliable waste data (previous studies based on assumptions)
- The new waste category VLLW will be applied
- $\geq 50\%$ of the total waste volume can be categorized as VLLW
- First phase repository for 50 000 m³ of waste



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Surface Disposal Concept

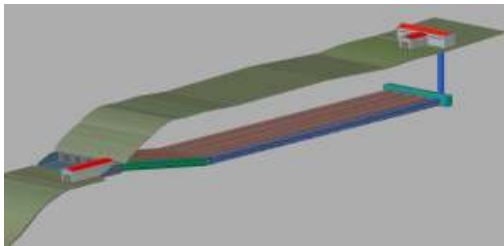
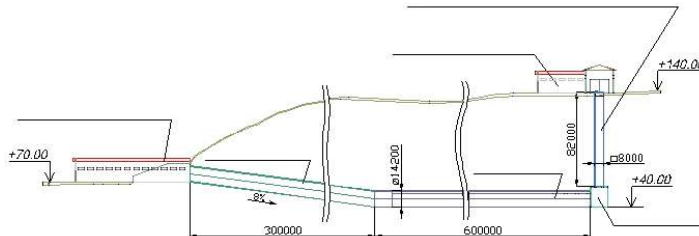


- Above water table
- No water contact with the waste
- Proven technology and safety
- Modular concept



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Underground Disposal Concept



- Below water table
- Eng. barriers not described
- Safety relies on geology
- Not proven for waste disposal



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Possible Sites

Limited screening process, criteria provided by the Consortium

Site no.	Location	Repository type
1	Area close to "Radon"	Surface
2	Area close to "Radon"	Underground
3	v. Rakopezhi area	Surface
4	Lubanovo compartm. area	Surface
5	Kostivskoe compartm. area	Underground, surface



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Cost Estimates

Prepared by VNIPIET experts (price level Q1 2008)

- Surface disposal facility ca 2 Billion RUB
(ca 40 kRUB/m³)
- Underground disposal facility ca 4 Billion RUB
(ca 80 kRUB/m³)



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Declaration of Intent (DON)

- **Surface disposal concept** recommended for further studies (OBIN):
 - Proven technology and safety
 - Lower cost
 - Underground concept is kept as an option, considering waste uncertainties, non-technical & non-economic factors
- **Possible sites**
 - No. 3 v. Rakopezhi area
 - No. 5 Kostivskoe compartment area
- Limited screening process → Further investigations needed.



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Waste Inventory & Waste Acceptance Criteria

- Up-date of repository inventory
 - Presently available info on waste volumes compiled
 - How much long-lived waste? Can it be separated from the short-lived?
- Waste acceptance criteria
 - Review of waste acceptance criteria in Europe
 - Comparison with IAEA guidelines
 - Recommended preliminary WAC for Leningrad repository



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Investment Justification

- Conceptual design of surface option
- Focus on parts directly related to radwaste management
- Ca 1000 pages in total



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Public Relations

- Key messages
- Analysis of the current situation
- Specification of target groups
- Communication strategy and plan
 - National and regional level
 - Local level



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Project Achievements

- The Leningrad repository project now in the formal RF process
 - awareness created of the need to build a repository
 - the Declaration of Intent is ready to submit
 - OBIN document well under way
- Evaluation speaks for surface concept, assuming waste is SL-LILW
- Site studies for a repository have been initiated
- Public relations strategy and plan
- RosRAO actively involved after appointment as End-user



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Way Forward

- Recommended further technical work:
 - Waste data
 - Site evaluation including communication with stakeholders
 - Site specific design
 - Preliminary safety assessment
 - Completion of OBIN
- Public communication
- Develop both design options to the same level of detail in OBIN
- The Leningrad repository project a pilot for other regions
- A working group to take the project into the next phase



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Summary and Conclusions

- Project delivered on time and within budget
- Main obstacle – information on the waste, how much is long-lived?
- Good collaboration with VNIPIET!
- The project has a "home" with RosRao
- Much work remains!



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