

Session 1 – posters

Performance Assessment of Spent Fuel Assemblies Removed from Shutdown RBMK Reactor Cores for Reburning in Operating Power Units

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In 2018 – 2035, the design lifetime of 11 Russian RBMK-1000 reactors will expire. The fuel of shutdown for decommissioning reactor has some residual performance. In case of step-by-step decommissioning such fuel can be burnt in the RBMK-1000 units which are still in operation and its reburning will minimize fresh fuel needs.

The poster concerns economical effect of shutdown reactor fuel reburning, describes milestones of the SFA handling procedure (Fig.1) offered for the Leningrad NPP and provides some information about SFA efficiency assessment and procedure safety analysis (Fig.2).

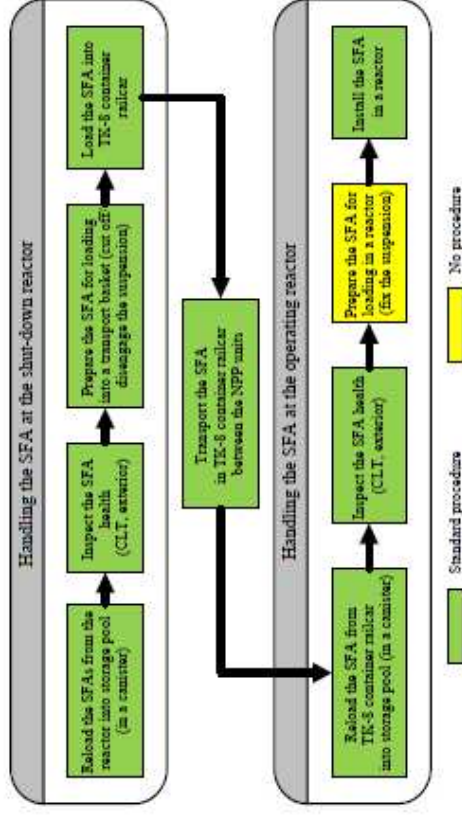
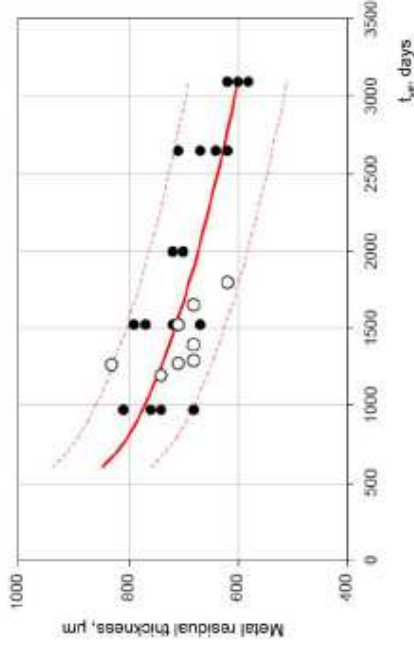


Fig. 1 Flow Chart of SFA Handling



• o metallography data, RIAR and IRM, resp.
— oxidation kinetics with uncertainty range limits, p = 95 %
Fig. 2 Thickness of Fuel Rod Cladding Below Spacer Grid

The requirements to health of the candidate fuel subject to reburning are set, and the procedures and a scope of fuel control at all stages of the fuel handling are proposed.

The assessments confirm residual performance of the RBMK-1000 SFAs sufficient for their safe and cost effective reburning in operating units of the same type.

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Developing Regional Spent Fuel Strategies

NUCLEAR THREAT INITIATIVE:

- NTI is a non-profit, non-partisan organization with a mission to strengthen global security by reducing the risk of use and preventing the spread of nuclear, biological, and chemical weapons.

PROJECT BACKGROUND:

- The lack of a repository program strains the credibility of the nuclear community and undercuts public and political acceptance for all nuclear activities.
- States must recognize that a national waste management problem exists and translate that recognition into a national commitment to provide a solution. Both storage and disposal programs for HLW/SNF are needed.
- Many countries facing storage/disposal siting challenges have an interest in exploring regional approaches to spent fuel management.

PROJECT OBJECTIVE:

- Provide practical options that help countries to solve their nuclear waste management challenges as well as address broader nuclear fuel cycle security, safety and proliferation concerns.

PROJECT FINDINGS

- A consent-based staged, adaptive approach to spent fuel management is proven global best practice.
- Large challenges remain for multinational storage and disposal initiatives but the alternative – requiring each nuclear power nation to be self-sufficient at the back-end – is equally challenging.
- The possibility of multinational options arising should not be used as an excuse for countries to neglect domestic responsibilities; all countries must have a vibrant national program for spent fuel management.
- Trying to find a host community should not be the first step in any national or regional spent fuel management strategy. Types of cooperation short of disposal (such as cooperative R&D and insights on engagement strategies) can be helpful starting points.

NEXT STEPS

- Catalyze regional partnerships to conduct collaborative study on various technical and non-technical topics such as spent fuel transportation and the security aspects of spent fuel management
- Explore the prospects for establishing a ‘virtual multinational laboratory’ to coordinate research

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Developing a Spent Fuel Strategy for a Newcomer Nuclear Power Country

- Ensuring that radioactive waste management is not postponed or neglected during early phases of using nuclear technologies
- Assess all the options:
 - direct disposal of spent fuel
 - reprocessing (foreign or domestic)
 - early or late disposal of wastes
 - separated or co-located storage, conditioning and disposal facilities
 - national facilities or shared regional stores or repositories
- Outputs: key decision points and a waste management roadmap

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