



Global Partnership - France Main achievements in the nuclear field

web site : <http://www-pmg8.cea.fr/>



France - GP projects implementation

Objectives

- Contribute to an effective threat reduction
- Implement a real partnership between the French and Russian organisations and companies
- Promote a sustainable industrial cooperation between France and the Russian Federation in the corresponding areas

French projects to meet the following Kananaskis priorities

- To secure and dispose safely highly radioactive materials
- To destroy chemical weapons
- To improve nuclear safety and security
- To deal with bio-terrorism threat

Future trends

- Employment of former weapons scientists



Global Partnership: cooperation framework

- **Bilateral: legal frame fully completed**
 - Nuclear : MNEPR (ratified 01/2005), implementation agreement (ROSATOM-CEA) 02/2006
 - CWD : intergovernmental agreement (02/2006), ratified 02/2007 by French parliament (12/2006 by R.F.)
 - Implementation agreement for the Shchuchye project **signed 04/07/2007**
 - Bio threat response : projects through ISTC
 - **CEA in charge of the implementation** (3 Ministries funding : Defence, Industry, Foreign affairs, steering committee under presidency of SGDN)

- **Multilateral (Treasury Department in charge):**
 - **Contribution to the NDEP : 40 M€ committed**

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3



Nuclear activities



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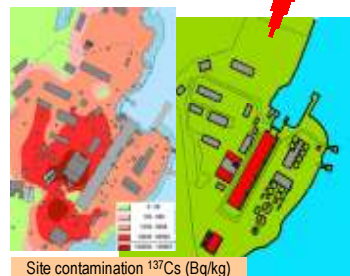
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4



Gremikha: project presentation and schedule

- Work to perform on the former naval base at Gremikha:
 - Unloading of nuclear cores from Alfa class submarines
 - Packing and transportation of spent nuclear fuel out of the site
 - Shipment of solid and liquid radwaste
 - Clean-up of contaminated areas and buildings before closure
- First priority : removal of fissile and high radioactive materials
- Heavy constraints : site access, polar climate, status of the “closed city”



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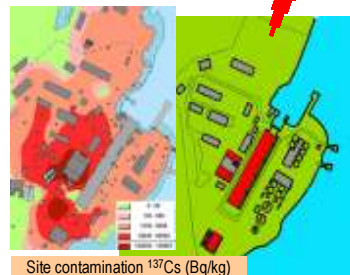
5



Gremikha: project presentation and schedule

Roadmap:

- Global engineering and radiological survey (KIRO) 2005→2007
- Documentation for implementation: optioneering and basic design 2006→2008
- Safety enhancement and preservation works 2006 - 2008
- **Radioactive material removal and clean-up 2008→2015**



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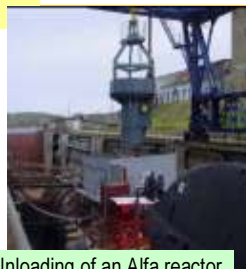
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6



Gremikha: achievements

- France, EBRD and European Commission fund the studies (KIRO, DON, OBIN), performed by KI and other Russian organizations
- Coordination group for donors, steered by Rosatom; coordination with other similar projects: several transverse activities identified between remediation projects



Unloading of an Alfa reactor core : summer 2005

Budget up to now :

- ✓ For KIRO, DON + OBIN → 10 M€ (FR) + 1.2 M€ (EC) + 3 M€ (EBRD)
- ✓ Up to 10 M€ (FR) + 3 M€ (EBRD) for preparatory work and safety/security enhancement works



2 Mobile sanitary stations on site : dec 2005/nov 2006

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7



Gremikha: achievements

- Improvement of radioprotection state is effective: individual and collective equipment and elimination of hot spots on the OPEN-PAD
- Improvement of working conditions is in progress: cloakroom, suits, ..
- Preservation of the industrial means is in progress: dry dock, handling means, diesel generators, ..
- Feasibility study (DON + OBIN started end 2006) in progress:
 - ✓ → Mains options almost decided for Alpha cores, VVR assemblies and waste management
 - ✓ → Detailed Design is going to start for shipping by 2008 safe SFA to Mayak



Unloading of an Alfa reactor core : summer 2005



2 Mobile sanitary stations on site : dec 2005/nov 2006

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8



Severodvinsk: solid waste incinerator

- Facility located at Zvezdochka plant : not working since more than 10 years
- Objective : operate the facility with a process flow of 20-40 kg/h
 - *Building fitting up*
 - *Sorting out, storage and conditioning station*
 - *Oven and control system*
 - *Gaseous effluents treatment*
 - *Ashes conditioning station*
- Road map :
 - *Input data collecting (2004)*
 - *Feasibility and basic design (2005-2006)*
 - *Realisation (2,5 years; started 01/2007)*

Work in progress :

 - ✓ *Safety report for state expertise*
 - ✓ *Detailed design*



Total budget : 10 M€

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9



Radioisotope thermal generators (RTG)

- France ready to contribute to the elimination of RTGs.
- Other countries involved : Norway, USA, Canada, ...

Achievements and progress :

- 2005 cooperation with Norway (piggy backing) extended to 2006, implementation by 2007
- 2007 : development of bilateral cooperation with Russia, with regards to the end of cycle :
 - ✓ Removal of 4 multi-source RTGs from the baltic coasts
 - ✓ Basic design of a dedicated hot cell to improve and enhance dismantling capacity

Total up to now : 0,7 M€ (through Norway) + 1 M€

RHS-90	
Dimensions of the cylinder	10 by 10 centimetres
Weight	5 kilograms
Capacity	240 watts
Concentration of strontium 90	1,500 TBq, or 40,000 curies
Temperature on the surface, centigrade	300-400 degrees
Exposition dose rate at the distance of 0,02 to 0,5 metres	2,800-1,000 R/h



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10