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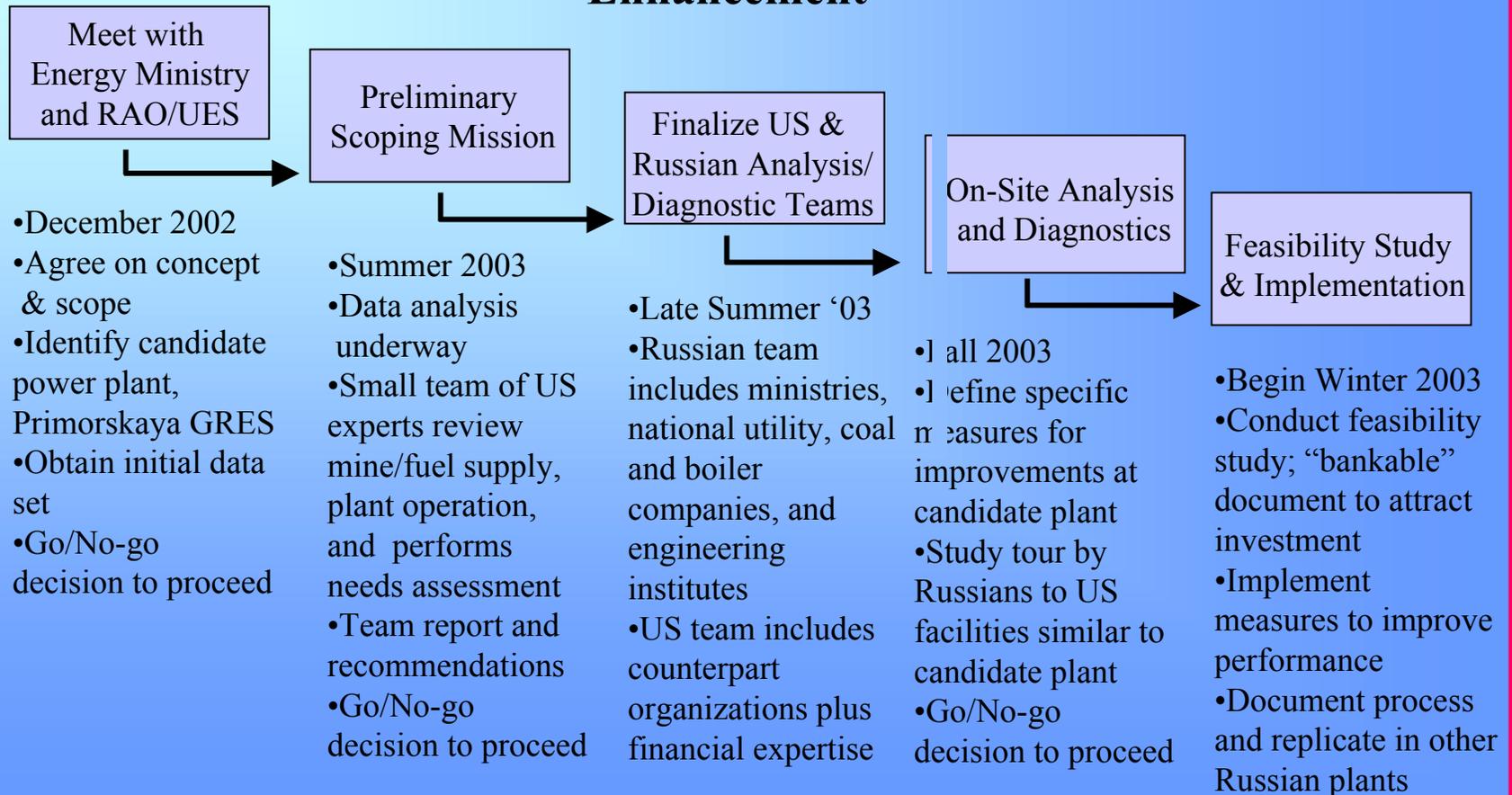
U.S.-Russian Cooperation
Powerplant Efficiency and Reliability
Enhancement
Project Status Report

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301-903-2796



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US – Russian Cooperation on Thermal Power Plant Efficiency and Reliability Enhancement





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Powerplant Efficiency and Reliability Enhancement – Status

WHERE ARE WE?

- Technical information received
- Russian Contacts Identified
- US Team Defined
- Phased Approach Implemented



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Powerplant Efficiency and Reliability Enhancement – Status

RUSSIAN TECHNICAL ISSUES (1)

- Primorskaya GRES (Gosudarstvennaya Rayonnaya Electrostantsiye – Regional, state-owned electric generation power plant)
- Total Design Capacity 2,570 MWt, consisting of:
 - Unit 1: 1,280 MWt (4 x 110 MWt plus 4 x 210 MWt) – Commissioned
 - Unit 2: 645 MWt (of 3 x 215 MWt) – One Commissioned
 - Unit 3: 645 MWt (of 3 x 215 MWt) – Under Construction
 - Installed Capacity: 1,495 MWt – Actual Capacity: 1,467 MWt
 - Fuel Source: Bikinskiy Coal from the Luchegorsk Mine
 - Almost 30% of Coal is Imported (from other Russian mines)



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RUSSIAN TECHNICAL ISSUES (2)

- Fuel supply about 1750 kcal/kg vs. design 2000 kcal/kg
- Lack of conveyor belts, poor bulldozer maintenance
- High wear and tear rate on railway deliveries
- No quality control system for coal received
- Heating and flushing system for black oil in winter doesn't exist
- Excessive ash cover of convection heating surfaces of boilers
- Only one boiler working in Unit 2 – construction terminated



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RUSSIAN TECHNICAL ISSUES (2) cont.

- No heat load automation at boilers
- Need to replace worn compressors
- Obsolete control and measurement instrumentation
- Unavailability of automated process management systems
- High-voltage breakers don't meet appropriate standards
- Need a new oxygen-nitrogen station
- Inadequate ash dumping space
- Deteriorating water quality in cooling pond (summer) due to algae



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Powerplant Efficiency and Reliability Enhancement – Status

RUSSIAN CONTACTS:

- Viktor Vladimirovich Milush, Team Leader
Director of Primorskaya GRES and Coordinator for Luchegorsk Mine
- Alexey Mikhailovich Bychkov, Director
Department of New Techniques and Technologies
RAO EES Rossii
- Oleg Borisovich Pluzhnikov, Deputy Director
Ecological Department
Ministry of Energy of the Russian Federation

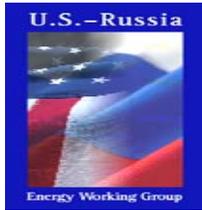


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U.S. TEAM:

- Robert Gentile, Team Leader, President, LTI/Atlantic Partners. Extensive engineering experience; chief regulator for surface mining, reclamation and enforcement for the U.S.; Assistant Secretary for Fossil Energy.
- Robert Dolence, Mining Engineer, President, Robert C. Dolence Associates. Senior positions in U.S. Department of Interior and Energy, Deputy Secretary for Environment and Natural Resources, State of Pennsylvania.

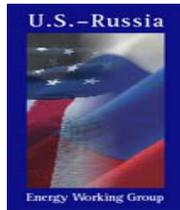


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Powerplant Efficiency and Reliability Enhancement – Status

U.S. TEAM cont.

- Steve Denton, General Manager, Usibelli Coal Mine, Inc., Alaska. Expert in coal mining and mine reclamation operations under severe and arctic conditions.
- Vladimir Vaysman, Mechanical Engineer, Parsons Energy & Chemicals Group, Inc. Specialist in utility and industrial boiler plant modification and emission reduction projects. Extensive experience in Eastern Europe. Fluent in Russian.



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Powerplant Efficiency and Reliability Enhancement – Status

SCHEDULE AND NEXT STEPS:

- Data analysis underway. Team will work with V.V. Milush toward a Summer assessment; timing, on-site logistics, other technical issues
- Join U.S.-Russian Go-No-Go decision to be made following preliminary assessment report
- “Go” decision will identify full analytical/diagnostics required; Russian team to include ministries, national utility, coal and boiler companies, engineering institutes. U.S. team represents counterparts plus financial expertise.