

INTERNATIONALIZATION OF THE NUCLEAR FUEL CYCLE: FUEL ASSURANCES AND TAKE-BACK

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NEAR AND LONG-TERM SOLUTIONS

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*Российская Академия Наук
Russian Academy of Sciences*

Introduction

- 2006, proposals for nuclear fuel assurance of supply
 - International Atomic Energy Agency (IAEA)
 - Russia, President Putin
 - USA, President Bush
 - Supplier states
- Joint Committees of the U.S. National Academies (NAS) and the Russian Academy of Sciences (RAS) formed to
 - address these and other fuel assurance concepts and their links to nonproliferation goals.
 - the committee also addressed many technology issues relating to the fuel assurance and fuel cycle concepts.
 - provide background information and support for several consensus findings and recommendations of the joint committees.
- Funded by MacArthur Foundation and Carnegie Corporation of New York

Premises

Nuclear power will likely spread to nations that do not now have it.

The more countries to which enrichment or reprocessing spreads, the greater the risk of proliferation of nuclear weapons will be.

12 Approaches for Assurance of Supply

- NTI fuel bank
- RANF and WNA: basic assurances and reserves
- Russian LEU reserve
- Russian fuel-cycle centers
- UK Enrichment Bonds
- German Multilateral Enrichment Sanctuary Project (MESP)
- US GNEP and blended down uranium
- Japan's Standby Arrangements

1 Arrangement for Take Back

- Russian Fuel Leasing

Findings Derived from the Workshop

Few countries will forgo forever a right to develop uranium enrichment or spent fuel reprocessing.

No single mechanism or strategy for assurance of nuclear fuel supply is likely to address every country's legitimate needs and desires.

New mechanisms for assured nuclear fuel supply may only modestly change countries' incentives to establish enrichment facilities.

It may become increasingly difficult to maintain a system in which nationally controlled facilities in only a few countries provide all enrichment and reprocessing services. Offering the opportunity to profit from these technologies may reduce the perception of unfairness and inhibit the spread.

Findings Derived from the Workshop (cont.)

Arrangements that would provide assured return of spent nuclear fuel could provide a much more powerful incentive for countries to rely on international nuclear fuel supply than would assured supply of fresh fuel.

For many countries, the political barriers to taking other countries' spent nuclear fuel or nuclear waste are substantial.

Implementation of what is feasible today should not be delayed while other options are being perfected.

- make assured fuel supplies available before there is a major commitment to new entrants.
- continue to support a broad menu of approaches
- establish additional incentives for countries to not pursue sensitive steps

Not from the Academies: Some Proposed Principles

- Build toward international agreement on common goals and actions: Promoting a clean, safe, secure expansion of nuclear for the benefit of all.
- Greater clarity in proposals: process, roles, and criteria
- Sovereign rights of states.
- Incentives: Push to increase
 - Benefits and a stake in promoting a safe, secure nuclear enterprise
 - Cost and effort to redirect toward weapons
 - Detectability of clandestine programs or diversion
 - Timeline to a weapon
 - Uncertainty of achieving weapon
- Recognize that rational for some is not rational for all.
- Technology's role?