Iran as a Pioneer Case for Multinational Nuclear Agreements

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Based on a 2005 IAEA report:

Satisfies the West's bottom line:
No Nuclear Weapons in Iran

Satisfies (the moderate) Iranians' bottom line:
Enrichment on Iranian soil

Achieves this by the most intrusive inspection regime possible: Westerners present 24 hours a day, 7 days a week.

Our proposal both maintains the NPT's promise of peaceful nuclear technology and reduces the number of national enrichment facilities.

What are the alternatives?

Unfortunately, we see only two possible outcomes unless something new is tried:

Military Action

Iran continues its present course, probably outside the NPT.
The Multinational Centrifuge plant:

We estimate that the facility will employ about 230 people:

- Managers
- Accountants
- Technicians

Employees will come from each of the partner countries. There will be employees from each country present 24/7.

5 Million SWU-kg/yr support 42 reactors.

The most intrusive inspections imaginable!

Organizational Chart for Joint Venture

- All centrifuges are “black boxed” to preserve the technological secrets.
- In addition, Iran would sign a treaty, as the URENCO countries did, pledging not to enrich uranium anywhere else.
<table>
<thead>
<tr>
<th>Number of Reactors Sustained</th>
<th>Cascade Capacity SWU-kg/yr</th>
<th>TC-12 (Current URENCO Centrifuges)</th>
<th>TC-21 (Next Generation URENCO Centrifuges)</th>
<th>Russian Generation 6 (?) Centrifuges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Centrifuges</td>
<td>Total Capital Investment Required</td>
<td>Number of Centrifuges</td>
<td>Total Capital Investment Required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$56M - $84M</td>
<td>1,200</td>
<td>$45M - $67M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$1.1B - $1.7B</td>
<td>24,000</td>
<td>$0.9B - $1.3B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$2.3B - $3.5B</td>
<td>50,000</td>
<td>$1.9B - $2.8B</td>
</tr>
</tbody>
</table>

**What does this do for Iran?**

Iran has declared plans for 50,000 centrifuges (P1s or P2?) and 20 Reactors by 2035—but they don’t match up!
What does it do for the West?
Increased assurances that Iran will not get a nuclear bomb.

• Technology safe:
  – “black boxed” centrifuges
  – “Smart tags” on centrifuges
    • Continual monitoring of position
    • Motion/acceleration sensors

• Material accountancy much greater than IAEA
  – Western Technicians, bookkeepers, managers
  – Joint venture extending into uranium conversion

• Built in self-destruct mechanisms
• Increased mechanisms for detecting covert enrichment facilities

This Proposal Offers Increased Detection of Covert Enrichment Facilities

UNMOVIC and UNSCOM found that knowing who are the skilled workers etc. was a key monitoring tool in Iraq.

This was one of the reasons by UNSCR 1441 required Iraq to provide names of all WMD workers.

The Joint Enrichment Facility, with Western Technicians, Western Bookkeepers, and Western Managers working side-by-side with Iranian experts will provide even greater awareness.
Hypothetical Timeline of Joint Facilities Enrichment Capabilities

- P1s phased out as uneconomical
- Possible pause to await increased demand.
- 15,000 URENCO Centrifuges
- 30,000

Start the joint venture right away with current Iranian centrifuges and Western technicians coming in immediately.

More Details, including papers we have written, can be found on our website:

http://mit.edu/stgs/irancrisis.html
A Possible Self-Destruct Mechanism:

- This seems a political necessity.
- We have some ideas, but it will probably take a developmental program to institute it.

In addition, there are important manufacturing reasons by the facility should be above ground.

This implies that as a backup destruct mechanism, the plant could be bombed.
A special circuit could be turned on to produce an asymmetric magnetic field → producing a crash.