Toward a Realistic and Effective P5+1 Deal With Iran

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The Key Issues for the Negotiators

- Uranium Enrichment Limits & “Practical Needs”
- The Arak Reactor and the Plutonium Path
- Enhanced IAEA Inspections Regime
- IAEA Investigation On Weapons Experiments
- Issues Referenced in UNSC Resolutions
- Sanctions Relief
- Duration of the Agreement and Phasing

Limits on Uranium Enrichment Capacity

http://img.rt.com/files/news/1e/

Competing negotiating goals:

- Increase the time necessary for Iran to produce enough weapons-grade uranium for nuclear weapons
- Iran's "practical" civilian nuclear fuel needs, which may (or may not) grow

Solving the Uranium Enrichment Challenge

Possible options available include:

- Limits on enrichment levels – 5 percent
- Limits on stockpile size
- Limits on overall capacity over time
- More efficient centrifuges
- Repurpose Fordow for centrifuge research and development
- Extend firm fuel supply assurances to reduce “need” for indigenous Iranian enrichment’
- Multinational enrichment center options

A Win-Win Solution on Arak

The Proliferation Risk

- Planned reactor would produce plutonium for 2 bombs/year
- Would require a new separation plant

Realistic Options

- Reduce from 40 MW to 10 MW output
- Use 3.5 % enriched uranium fuel (instead of natural uranium)
- Ship out the spent fuel

Monitoring, Inspections, PMDs

More Extensive IAEA Inspections

- Existing safeguards agreement is not comprehensive
- Code 3.1
- Additional Protocol

Resolving IAEA Investigation of PMD Concerns

- Full cooperation with the IAEA investigation on these experiments
- IAEA investigation will likely extend beyond the negotiating deadline for Iran-P5+1 talks
- Goal is to ensure Iran's nuclear program is entirely peaceful

Understanding “Breakout” Timelines

Since 2007, U.S. Intelligence Community has assessed that *“Iran has the scientific, technical, and industrial capacity eventually to produce nuclear weapons if it decides to do so.“*

IC assesses that if Iran were to make decision to build nuclear weapons, its more likely it would seek to do by means of undeclared, secret facilities (a.k.a. “sneak-out”).

Iran’s nuclear capacity can be reduced and limited, but not entirely eliminated.

Most calculations of “breakout” start with the time required for producing enough weapons-grade uranium (enriched to 90%) for one bomb (25kg).

Fissile material production is a key hurdle, but not the only technical hurdle to nuclear weapons:

- Designing & constructing a nuclear device
- Integrating warhead into a delivery system
- Possibly conducting several nuclear explosive tests, which would require more HEU

These as well as political and legal barriers would extend real-world timelines further.

Options for Iran's Enrichment Program

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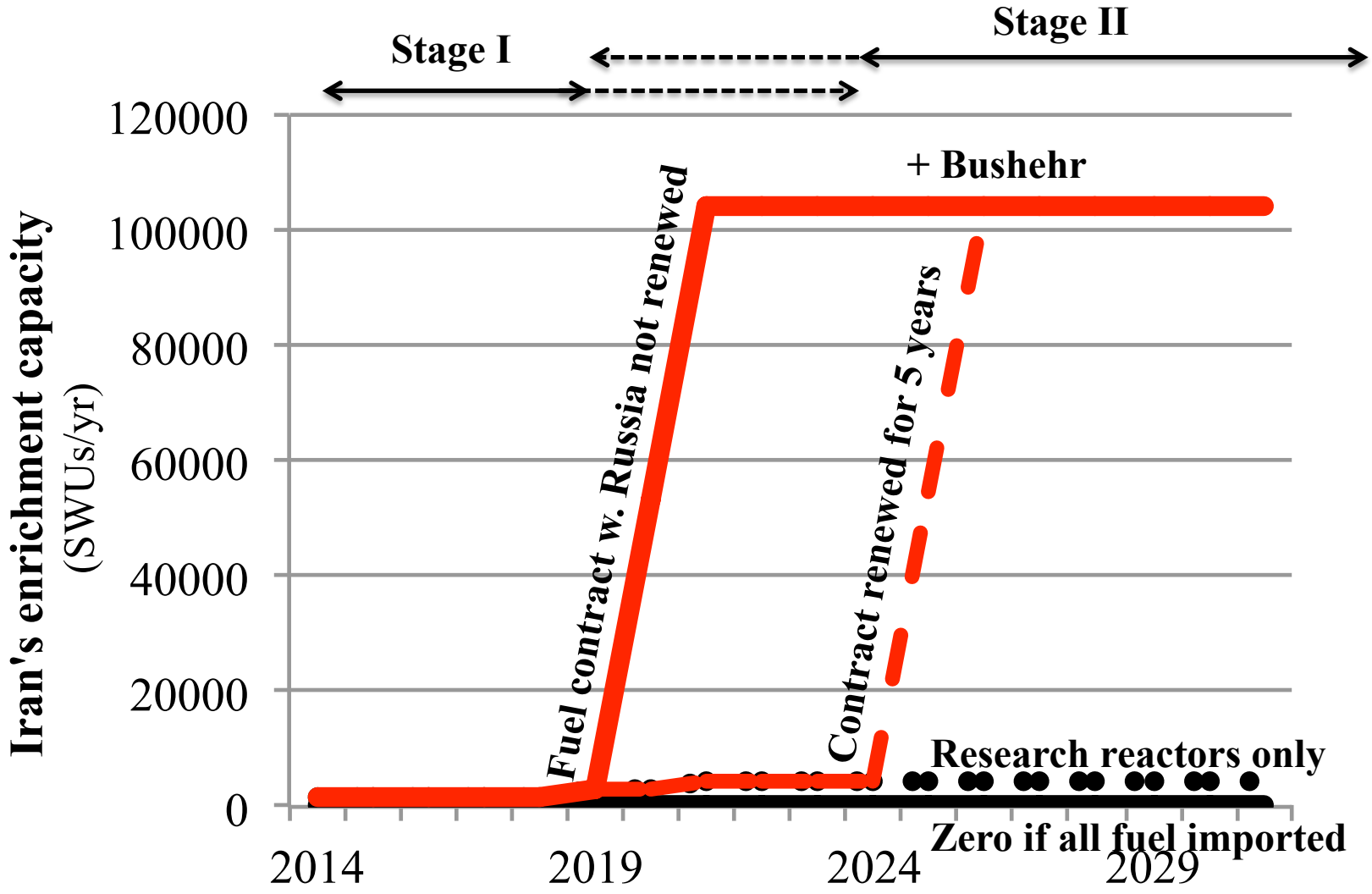
Scenarios for Iran's "Practical Needs" for Enrichment

(5000 SWU = 1 bomb from natural, 3 bombs from 3.5% enriched U)



Stage I: Rationalizing the Current Situation

Iran currently has *installed* 18,000 IR-1 centrifuges (~13,000 SWU/yr)

Plus 1000 IR-2Ms installed. (~3500 SWU/yr?). Working on IR-4…8

IR-1s are obsolete and could be retired and replaced by IR-2ms to support research-reactor LEU needs.

<u>Compromise for Stage I</u>

1. **Installed capacity in low thousands of SWUs/yr until it is time to build up capacity for Bushehr.**
2. **Enhanced transparency for Iran's centrifuge production and stocks.**
3. **Minimized stocks of low enriched UF_6 that could be further enriched.**

For at least 5 years. Longer if Iran is willing to extend its fuel contract with Russia.

Provides time for negotiations on Stage 2.

Stage I provides time to cool down inflamed situation

Iran's "right" to industrial-capacity enrichment has been made a national cause.

Behind this probably is an interest within Iran's security establishment – as in Japan's – in having a nuclear-weapon ***option***.

Some see Iran's option as an intention and have established the imperative to zero out Iran's program at all costs.

Stage I would provide Iran and the West an opportunity for a cooler assessment of the costs and benefits of different possible paths forward.

In Stage II, it may be possible for the negotiators to agree on a solution that may be beyond reach this summer and that may lay the basis for a new international regime for enrichment.

Stage II. National or Multinational Enrichment?

National -- Every state has a right to enrich fuel for power reactors.

That gives every country with an enrichment plant the option of a quick breakout to produce weapon-quantities of HEU.

– Acheson-Lilienthal Report, 1946

Today only Brazil, Iran and Japan among non-weapon states have national enrichment plants.

Multinational -- ***Urenco*** (Germany, Netherlands, UK).

Germany made Urenco's first commercial centrifuges but, because of residual distrust of Germany, operation of a German enrichment plant was delayed till 1985 - ten years after Netherlands & UK. ***Today, Urenco owns the only operating enrichment plant in the U.S.***

In 1977, the U.S. adopted the policy: "We don't reprocess spent power reactor fuel (to separate out plutonium). You don't need to either."

Can the U.S. adopt a similar position with regard to enrichment:

"We don't have a national enrichment plant. You don't need one either."

Enrichment Capacity, LEU, Stockpiles, and Achieving SQ of 90% UP6

Source: Steve Fetter, University of Maryland