

Week in Review

Section 4

Iran's Nuclear Program: For Electricity or a Bomb?

By VALERIE LINCY
and GARY MILHOLLIN

THIS summer, international attention has been focusing on nuclear sites in Iran. Kenneth Brill, the American representative at the International Atomic Energy Agency, has accused Iran of "aggressively pursuing a nuclear weapons program," and President Bush has warned that "we will not tolerate the construction of a nuclear weapon" in Iran. Iran is building a string of nuclear plants, and the International Atomic Energy Agency has criticized the country for failing to report nuclear material.

For its part, Iran says that its nuclear program is benign, legal and meant only to provide energy. It has cited its membership in the Nuclear Nonproliferation Treaty, which guarantees "the inalienable right . . . to develop . . . nuclear energy for peaceful purposes."

But the uncomfortable reality is that the equipment and raw material Iran could use to power Tehran can also give it an ability to build a bomb. There is no technical incompatibility between such programs, only a legal one — Iran's signature on the nonproliferation treaty, obliging it to abstain from using its nuclear fuel for arms instead of electricity.

In practical terms, that means international monitors have little chance of saying for sure whether a supposedly peaceful program will be turned into a military one until a

Valerie Lincy is a research associate at the Wisconsin Project on Nuclear Arms Control, a research group in Washington that tracks mass destruction weapons. Gary Milhollin directs the project.

Step by Step, Why It's Hard to Know If Uranium Is Being Used to Make Weapons

How to make a bomb	How Iran can do it	Is it legal under the treaty?	What inspections can't tell us
1 Obtain natural uranium.	a. Import it (1.8 tons came from China in 1991). b. Mine it (a mine at Saghand is scheduled to open in 2005).	a. Yes, as long as Iran reports the imports (it didn't report the one from China in 1991). b. Mining need not be reported.	It is impossible to tell how natural uranium will be used.
2 Convert the uranium to a gas.	Import or build the necessary equipment (a plant at Isfahan is substantially complete). Import the gas directly (some came from China in 1991).	Yes, as long as Iran lets inspectors measure the gas produced or imported.	The gas can be concentrated to reactor grade for nuclear power, or a higher grade for bombs or a research reactor. The final use will not be clear.
3 Process the gas to concentrations useful either in reactors or bombs.	Import or build the necessary gas centrifuges (a pilot plant is ready for testing; a larger plant is planned that could fuel a reactor or several dozen bombs a year). Import the material directly.	Yes. Iran can produce bomb or reactor-grade uranium as long as it lets inspectors track it.	Highly enriched uranium gas can make fuel for a research reactor or a Hiroshima-type bomb. The final use will not be clear.
4 Convert the gas to uranium metal and insert it in a bomb.	a. Import the necessary conversion equipment (uranium metal already has been produced in experiments). b. Secretly prepare the non-nuclear parts of a bomb, making it ready to receive the uranium fuel.	a. Yes, if Iran first drops out of the treaty by giving three months' notice. b. No. Building bomb parts would be illegal (though difficult to detect).	Only at this stage, once Iran is on the verge of acquiring a uranium bomb, can inspectors be certain of its intentions.

Source: Wisconsin Project on Nuclear Arms Control

bomb is very nearly ready for assembly. Meanwhile, preparations can go on perfectly legally.

At the moment, Iran plans to mine uranium, convert it to a gas and transform it into nuclear fuel with gas centrifuges, which it is allowed to do as long as monitors can watch. It will have 1,000 centrifuges in hand by year's end —

enough to make one bomb annually — and says it will import or build some 50,000 for its site at Natanz. The result, it claims, will be reactor fuel for electricity.

But the uranium refined in these centrifuges could also fuel an atomic bomb, and Iran's critics use deductive logic to argue that the military purpose is the real one. They

argue that in an oil- and gas-rich country like Iran, it will cost many times more to produce electricity from uranium than from petroleum. In addition, they say, Iran has no need to make reactor fuel of its own. Its only power reactor — which has been under construction at Bushehr for years — will be fueled by Russia for at least 10 years after it be-

comes active.

Experts believe it would be easiest for Iran to build a nuclear bomb from uranium, rather than from plutonium, which requires the reprocessing of spent reactor fuel. But even the plutonium route could be open if Iran were determined to use it and build a reprocessing plant.

As with uranium, Iran can do this



At Iran's Bushehr nuclear plant.

Spotting an arms program is hard until it's too late.

without breaking the treaty, as long as international inspectors can monitor each plant and track the material produced.

The treaty also has an escape clause. Any country that declares its "supreme interests" to be in jeopardy can drop out on three months' notice. This would allow Iran to keep all the nuclear material it accumulated while it was a member and convert it to bomb-making once it had waited three months. Again, it would have broken no agreements.

So Iran can walk right up to the edge of nuclear weaponry while a full partner in the nonproliferation treaty. Once its nuclear program matures, it would have a good chance of crossing the line and fabricating a bomb without being discovered. Or it could declare its intentions and simply cancel its treaty obligations.