Thank you, Mr. Chairman, Senator Lugar,

other Senators. It’s an honor to be asked to testify today on a matter

that I’ve been following for almost 12 years, in and out of government.

Iran today has reached a status I have long dreaded. It

operates a semi-industrial-scale uranium enrichment facility and is

building up a stockpile of enriched uranium that is of no current

use to its civil nuclear energy program, but that could be put to

weapons purposes. Meanwhile, Iran is also building a research

reactor that will be ideal for producing plutonium, the other path

to nuclear weapons.

Whether or not Iran chooses to go down the weapons route, its

persistence in developing such capabilities could have profoundly

disturbing consequences, including by potentially sparking a proliferation

cascade in the Middle East and beyond.

The danger is compounded by Iran’s failure to cooperate with the

International Atomic Energy Agency’s investigation of past Iranian

nuclear activities and its verification of new undertakings.

Iran refuses to answer questions about the strong evidence of

past nuclear weapons development work, including, for example,

evidence of foreign help with experiments on a detonator suitable

for an implosion-type weapon. Iran has also unilaterally and illegally

rejected its treaty obligation to provide advance declarations

of new nuclear facilities, and to allow inspectors regular access to

facilities under construction, such as the research reactor at Arak.

What Iran chooses not to disclose is difficult to discover.

According to the latest IAEA report, as of mid-February Iran was

operating almost 4,000 centrifuges at its underground uranium

enrichment facility at Natanz, and was getting ready to begin operating

about 2,000 more. The piping is being installed for an additional

9,000 centrifuges, which would bring the total to 15,000 at

some unspecified future date. All the centrifuges operating in the

underground facility so far are of the P–1—that is, Pakistan first

generation—model, although Iran continues to experiment with

more efficient later model centrifuges in an above-ground pilot

plant at Natanz.

By the end of January, Iran had produced a metric ton of gasified

uranium enriched to the 3-percent U235 isotype level needed

to fuel most nuclear powerplants. The IAEA estimates that Iran

was adding about 100 kilograms a month to its stockpile. If it is

further enriched—and that is a big ‘‘if’’—the uranium content of

the Natanz production to date is sufficient, in principle, to provide

the fissile material for one nuclear weapon. Iran thus has a latent

breakout capability.

The accumulation of this much low-enriched uranium makes the

Iran challenge more acute, but several caveats are in order, including

the range of uncertainty in the variables that feed into the

equation of how much is enough for a weapon. Because the lowenriched

uranium is under IAEA’s surveillance, further enriching

it could not be done without tipping off inspectors.

And the basic truth bears repeating, that having a stockpile of

enriched uranium is not the same as having a bomb. Treating

Iran’s enrichment capabilities as equivalent to nuclear-weapon status

would empower its hardline leaders and exaggerate the perception

of danger among Iran’s neighbors, increasing whatever security

motivations they may already have for keeping open a nuclear

weapons option of their own.

For a weapon, the low-enriched uranium first would have to be

further enriched to 90 percent or more. Although it may be

counterintuitive, about two-thirds of the effort required to produce

weapons-grade uranium has already been expended by the time it

is enriched to just 4 percent. Nevertheless, the further enrichment

to weapons-grade would still take several weeks.

Based on public information, it is impossible to say how long it

would then take Iran to reconvert the gaseous highly enriched uranium

to metal and fashion a weapon from it, but a rough estimate

might assign at least 6 months or more to the task. Other nations

would then have some time to react.

Having just enough enriched uranium for one weapon, even once

enriched to weapons-grade, cannot be said to confer nuclear weapons

status. A real deterrent capability would require more. Most

countries also feel the need for a test to ensure reliability, although

this perhaps would not be necessary if Iran received a proven

weapons design through the black market. The notorious Pakistan

black-marketer, A.Q. Kahn, sold a nuclear weapons design to Libya

at the beginning of the decade, and other members of his network

made digital copies of the blueprints.

There is no publicly available evidence that Iran obtained a

weapons design, as well. It is noteworthy, however, that the Libya

blueprints have been described as being from the same family as

the documentation that Iran admitted it did receive from the Kahn

network in 1987 on the casting of uranium in hemispherical

shapes.

As has been widely reported, the U.S. intelligence community

assessed that Iran was working on a nuclear weapons development

up until late 2003. What has not been reported, and is probably

unknown, is how far Iran got in this research. The publicly available

evidence suggests that it was at the developmental, not yet

operational, stage.

Whether Iran has actually made a decision to build nuclear

weapons is uncertain, but its purpose in pursuing uranium enrichment

clearly seems to have a weapons options for the future. It is

hard to reach any other logical conclusion, based on the secrecy

and deception behind the program, the military connections, and

evidence of weapons development work, and the economic illogic of

investing in these expensive technologies without having any powerplants

that can use the enriched uranium.

With regard to this last point, for example, the Bushehr reactor

that underwent a startup test last week, can be run safely only on

fuel made in Russia. Iran’s claims about the purpose of its enrichment

program obfuscate this point.

Iran’s main justification has been an argument for self-sufficiency.

The argument breaks down, on several grounds, however,

including that Iran’s known uranium reserves are insufficient for

the nuclear power program it envisions. Iran already has exhausted

most of its stock of uranium concentrate, known as ‘‘yellow

cake,’’ in order to produce 357 metric tons of uranium hexafluoride

at its facility at Esfahan. This is far from sufficient for a power

program, but is enough feed material for at least three dozen

weapons.

A key policy challenge is how to build a barrier between the

latent nuclear weapons capability and actual weapons production.

This is difficult when, in Iran’s case today, the distinction is

blurred almost to the point of invisibility. The United States and

its allies do, however, have several policy tools to help keep Iran’s

enrichment program from unlimited expansion. If Iran continues to

defy the Security Council, its enrichment program can be con-

strained by export controls, sanctions, financial pressure, interdiction,

and other means of exploiting Iran’s vulnerabilities.

Among the dangers presented by Iran’s nuclear program is the

risk that it will start a domino effect in the region. Many of Iran’s

neighbors are concerned about its growing weapons capability. For

some states, such as its gulf neighbors, an Iranian nuclear weapon

would present a direct and dire threat. For others, such as Egypt

and Turkey, the threat is indirect and more tied to concerns about

the power balance and loss of relative status and influence in the

region. Together, these concerns have contributed to a surge of

interest in nuclear power in the region, almost certainly, in part,

to signal to Iran and to their own populations that they have a

hedging strategy.

Since 2006, 15 countries in the Middle East have announced new

or revived plans to explore civilian nuclear energy. They’ve justified

their interest in terms of electricity needs, energy diversification, a

desire to conserve oil and gas for export earnings, and the role of

nuclear energy in retarding global warming. They do not talk

openly about it in strategic terms, and certainly do not say they

want nuclear energy as the building block for an atomic bomb, but

they do see nuclear energy as a status symbol and a way to keep

technological pace with Iran. The question is how to keep this interest

confined to purely civilian nuclear programs. Keeping Iran

from getting nuclear weapons is the best preventative.

Nuclear power, in itself, is not a proliferation threat. It can contribute

to proliferation risks by providing cover for clandestine

activities and an industrial and personnel infrastructure that could

be useful to a weapons program. However, it is only the sensitive

areas of the fuel cycle, primarily uranium enrichment and plutonium

reprocessing, that present the problem. If states agreed to

forgo these technologies and to accept enforceable transparency

measures, then nuclear power can contribute to their economic

development without sparking proliferation concerns.

A good example of this is the decision by the United Arab Emirates

to forgo enrichment and reprocessing, and to accept the IAEA

safeguards additional protocol. This sets a positive model for the

region and beyond, in stark contrast with Iran. If such a stance

helps the UAE to acquire state-of-the-art nuclear technology from

the West, the Iranian people might well ask their leaders why they

persist with policies that lead to increasing political and economic

isolation while their gulf neighbors can freely enjoy the benefits of

peaceful nuclear cooperation.

Mr. Chairman, I’ll stop here and submit the rest of my testimony

and prepared remarks.

Thank you, Mr. Senator. I’ll try to answer the

question directly.

The first step, Iran would have to enrich further to 90 percent.

As I said, most of the work has already been done by the time you

get to low enriched, but it’ll take several weeks to get to highly

enriched. They could do that either at Natanz, in which case they

would probably have to reconfigure the cascades, or, if they had

some hidden facility somewhere, which we don’t know whether

they do or not, but maybe, in a worst-case scenario, one might

think that they might, so——

That would be step one, further enriching to HEU.

Step two would be to take this highly enriched gasified uranium,

reconvert it to metal form, and fashion the metal into a pit for a

weapon. And then, associated with that, build the weapon itself,

the various firing mechanisms and so forth. And all of that kind

of work is unclassified, and I said in my testimony, an estimate—

you know, an estimate might be at least 6 months or more.

A third step would be, then, to——

For that—at least 6 months for that step of weaponization.

Then the third step would be to have some means of delivering

the weapon. The means that is usually talked about is a missile,

and Iran is—been working steadily on missiles, and there is evidence

that they were trying to design a nose cone that could accommodate

a weapon. And that’s probably the most likely, but one

could also deliver a nuclear weapon in the back of a truck, and, you

know, it—so, the—but—so, the delivery, it’s a little bit hard to

answer that question of how long to build a missile and how far

they are in being able to mate the two.

I think the reason that the intelligence community has given this

wide range of 2010–15 is because the 2010 is the worst case. If

they were to take the uranium they have now, further enrich it to

HEU, takes several months, and then at least 6 months to

weaponize it, and then maybe they already have a missile they

could use. So, that’s the 2010. But, each of those—there’s a lot of

big ‘‘if’s’’ there, and therefore, it might take longer.

And one should stress, just having one weapon doesn’t really—

you know, that’s a huge risk for them to take; to try to further

enrich it, the inspectors would know. Just to get one weapon? It

doesn’t seem logical that they would do that. So, probably they

would want to be able to—you know, if you’re going to take that

risk, you’d have more.

I think most of them are very concerned about

it. In the gulf region, Bahrain, United Arab Emirates, Saudi Arabia,

they see it as a potential direct threat, because they’ve had,

some of them, territorial disputes, they have sectorial disputes,

Iran has, in the past, interfered in their domestic politics. Other

countries a little bit further afield feel that if Iran had a nuclear

weapons capability, their own status would necessarily decline.

Egypt used to be the center of the Muslim world, and they see the

financial center moving to the gulf, they see the political center

increasingly being encroached upon by Iran, and they would worry

about that status. Turkey is in a kind of a similar position.

All of the—several of these countries, though, are willing to forgo

an enrichment and reprocessing capability. And I think it’s a very

positive momentum that the United States and its policies can try

to promote this positive momentum. It’ll be very difficult to get

Egypt to accept any constraints, as long as Israel doesn’t accept

any constraints. And that’s why a lot of these issues are intertwined.

But, there is some positive momentum in the region.

Thank you, Senator.