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## Iran's Khamenei rejects US nuclear talks offer



Ayatollah Ali Khamenei said talks with the US would solve nothing

Iran's supreme leader has dismissed a US offer of one-to-one talks on Tehran's nuclear programme.

Ayatollah Ali Khamenei said in a speech posted online that the US was proposing talks while "pointing a gun at Iran".

On Saturday, US Vice-President Joe Biden suggested direct talks, separate to the wider international discussions due to take place later this month.

But the US widened sanctions on Iran on Wednesday, aiming to tighten a squeeze on Tehran's ability to spend oil cash.

Iran, which is subject to an array of international sanctions, has long argued that its nuclear programme is for energy generation and research.

Tehran's critics believe the government is developing nuclear weapons.

The five permanent members of the UN Security Council plus Germany have held a series of negotiations over the years, but there has been no breakthrough.

Mr Biden offered during a security conference in Germany to hold direct talks.

He said Washington was prepared to hold one-to-one talks with Iran "when the Iranian leadership, supreme leader, is serious".

"That offer stands, but it must be real and tangible and there has to be an agenda that they are prepared to speak to. We are not just prepared to do it for the exercise," he said.

But the ayatollah said such negotiations "would solve nothing".

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## US warns Iran over 'nuclear upgrade'

# escalation



The Natanz facility is at the heart of Iran's dispute with the UN Security Council.

Iran's plans to upgrade its uranium enrichment centrifuges would be a "further escalation" in the nuclear stand-off, the US has warned.

White House spokesman Jay Carney said the move would also be in violation of UN resolutions on the issue.

Iran earlier reportedly told the UN nuclear agency it planned an upgrade at its Natanz plant, which would allow to refine uranium at a faster rate.

The West fears that Iran seeks nuclear weapons - a claim denied by Tehran.

Iran insists its nuclear programme is peaceful.

New talks?

The Iranian plans were set out in a letter to the International Atomic Energy Agency (IAEA) dated 23 January, reports citing diplomats said.

The letter is said to mention a model of centrifuge, called IR2m, which can enrich two or three times faster than the present equipment being used by Tehran, according to the Associated Press news agency.

The IAEA later sent a letter to member states saying Iran had informed the agency of its plans to use the improved machines at its fuel enrichment plant in Natanz, according to a document seen by Reuters.

"The Secretariat of the Agency received a letter from the Atomic Energy Organization of Iran (AEOI) dated 23 January 2013 informing the Agency that 'centrifuge machines type IR2m will be used in Unit A-22' at the Fuel Enrichment Plant (FEP) at Natanz," the IAEA communication is reported to say.

The Natanz facility, in central Iran, is at the heart of the country's dispute with the UN Security Council.

The White House spokesman said that installing more advanced centrifuges at Natanz would "mark yet another provocative step by Iran and will only invite further isolation by the international community".

Meanwhile the European Union's top foreign policy official said on Thursday she believed that negotiations on Iran's nuclear programme would resume shortly.

Catherine Ashton said she was "confident" that there would be a meeting soon.

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## Iran 'plans to upgrade enrichment equipment'

Iran has told the UN nuclear agency it plans to upgrade uranium enrichment centrifuges at its Natanz plant, reports citing diplomats say.

The move would allow the country to refine uranium at a faster rate, increasing fears among western states about Iran's intentions.

Iran insists its nuclear programme is peaceful in purpose. The US and its allies fear it seeks nuclear weapons.

The plan was set out in a letter to the IAEA dated 23 January, reports said.

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## Iran hails progress in nuclear talks with IAEA



IAEA chief inspector Herman Nackaerts led the seven-strong team in talks with Iran

Iran says progress has been made at key talks with the International Atomic Energy Agency (IAEA) in Tehran.

Iran's ambassador to the IAEA, Ali Asghar Soltanieh, said the meeting had been constructive and more talks would be held back in Tehran next month.

The IAEA has not commented, nor is it known whether it gained access to the Parchin military complex, as requested.

The IAEA is investigating "possible military dimensions" to Iran's nuclear programme.

The IAEA's chief inspector, Herman Nackaerts, is expected to issue a statement on returning to Vienna on Friday morning.

'Extensive activities'

Tehran has vehemently denied that it is trying to produce nuclear weapons, but has for seven years refused IAEA inspectors access to Parchin, where the agency believes explosives tests with potential nuclear elements may have been conducted.

The IAEA complained last month that "extensive activities" had been observed at Parchin including, according to Western satellite images, the wholesale replacement of soil at the complex, which Iran insists is a conventional weapons testing ground.

In [its latest report](#), published in August, it said it was unable "to conclude that all nuclear material in Iran is in peaceful activities".

Iran is under UN sanctions for its failure to cooperate fully with international inspections.

The European Union and the US have put in place additional sanctions which appear to be hitting the Iranian economy hard, causing the Iranian rial to fall sharply in October, sparking protests.

The US Treasury announced further sanctions on Thursday against seven more Iranian companies and five more individuals, freezing any assets they may have in the US.

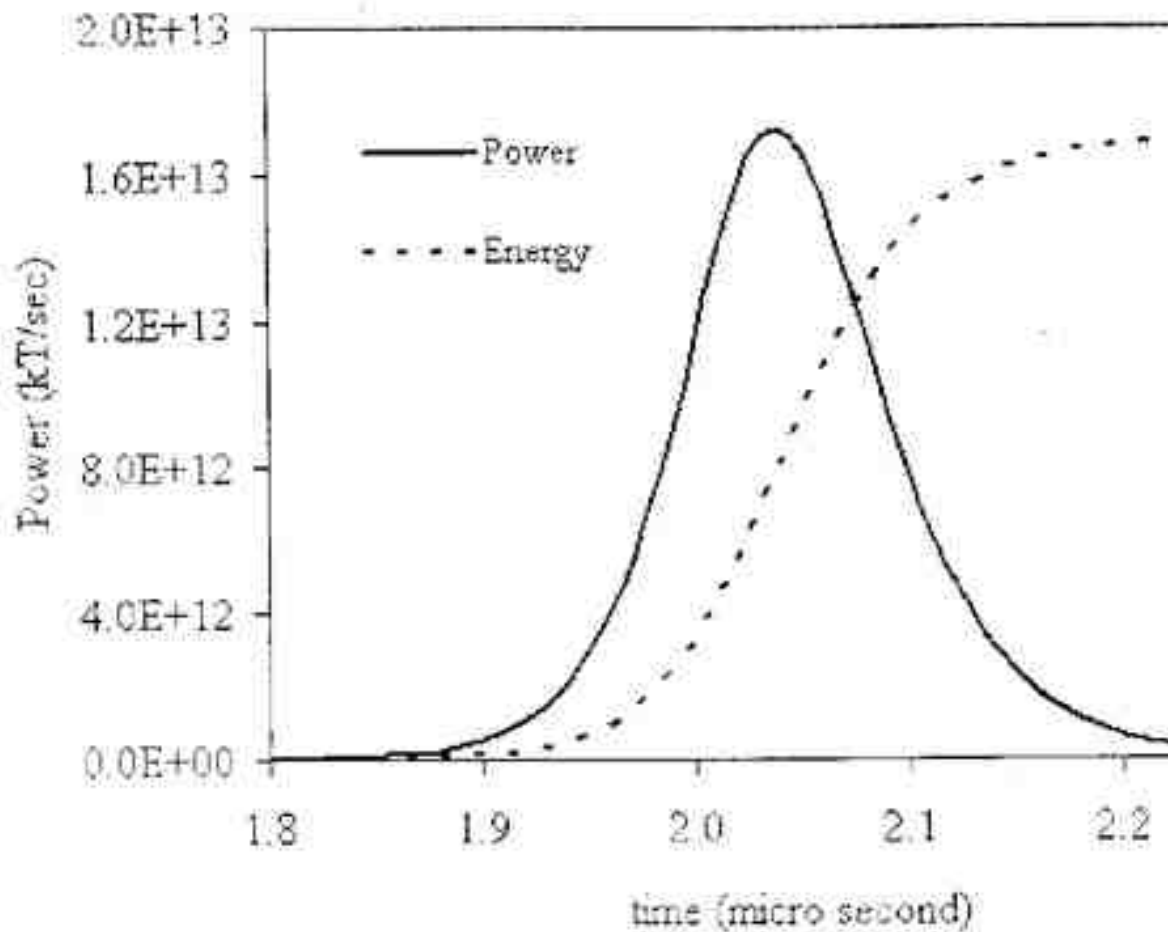
"So long as Iran continues to pursue a nuclear programme in defiance of multiple UN Security Council resolutions, the US will target those involved in Iran's illicit enrichment activities," the Treasury Department said [in a statement](#).

But Israel's Prime Minister Benjamin Netanyahu has warned that, despite the sanctions, Iran is only six or seven months from having "90%" of what it needs to make a nuclear bomb.

## Alarming evidence points at Iran nuclear bomb effort

- Updated 17:56 29 November 2012 by [Debora MacKenzie](#)
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ات توان و انرژی آزاد شده بر حسب زمان طی

پالس توان

A graph showing two smooth curves tracing the energy of a nuclear explosion, with a caption in Farsi: is this definitive evidence that Iran is building nuclear weapons? By itself, no, say experts contacted by *New Scientist* – but when combined with other recent clues, some feel it is starting to add up to something.

The graph was [leaked](#) this week by a country hostile to Iran's nuclear research, in an apparent attempt to stir up a meeting of the International Atomic Energy Agency in Vienna, Austria, which starts today. Among other matters, the IAEA member states will consider charges that Iran is developing a nuclear bomb. Iran insists its nuclear activities are peaceful.

The graph shows how a 50-kiloton nuclear explosion, about three times the size of the Hiroshima bomb, releases energy and power over a few microseconds. It could simply be a

theoretical model – Iran's rate of publication in the nuclear engineering field is [growing faster](#) than any other country's. It may also be wrong – [experts at the Monterey Institute for International Studies say the graph contains an elementary mathematical error](#).

But there are reasons for concern. In November 2011, the IAEA [reported](#) that two countries' intelligence services had given it modelling studies performed by Iranian researchers in 2008 and 2009, aimed at determining the "nuclear explosive yield" of highly-enriched uranium (HEU) spheres "subjected to shock compression, for their neutronic behaviour". The graph is said to come from these studies.

## Design hurdle

In fact, it reflects a tricky design problem. If Iran is developing a bomb, it is thought likely to use a design in which the explosive "core" includes a neutron generator, such as the hydrogen isotope deuterium or the element polonium. This allows the core to be lighter and more stable. Neutron generators feature in all modern nuclear weapons.

In these cores, conventional explosives arrayed around a hollow sphere of fissile material – say, HEU - are detonated, compressing the HEU so that it exceeds critical mass, starting a chain reaction. This also compresses a neutron generator inside the HEU sphere, triggering fusion reactions that release fast neutrons. They boost the chain reaction in the HEU, so more of it undergoes fission.

But not always. The whole process must produce enough neutrons at just the right point in the chain reaction. Too few, too early or too late, and fission can fizzle; the bomb's explosive force depends on how many neutrons emerge and when.

Engineers solve this problem by detonating cores with conventional explosives and neutron generators, but using a substitute for the HEU. They then measure the neutrons produced, says David Albright of the [Institute for Science and International Security](#), a nuclear monitoring group that tracks Iran.

The results are then plugged into computer models based on commercial models used in the nuclear industry, to calculate what the released neutrons would have done if the core contained HEU. The graph leaked this week, says Albright, could be from such a model.

## Real data?

The worry is that the data could have come from suspected [tests at the Parchin military site](#) in Iran in 2003. Iran refused the IAEA's request last February to inspect Parchin. On the other hand, "it could be just a modelling exercise, not based on any real data at all", warns Albright.

Even if it is, "the application of such studies to anything other than a nuclear explosive is unclear", the IAEA remarked drily in 2011, saying it would ask Iran to explain. [This month](#) the IAEA said it was "unable to report any progress on clarifying the issues." Talks between it and Iran resume on 13 December.

"I am not worried about this one paper, but together with everything else, it is alarming," says [Olli Heinonen](#) of Harvard University, who was the IAEA's anti-proliferation chief until 2010. We need to consider the different kinds of evidence, he says.

## Satellite images

For example, the IAEA report this month said satellite images of Parchin show removal of buildings and equipment, "run-off of large amounts of liquid... over a prolonged period" from the containment building thought to have housed the tests, and replacement of "considerable quantities of earth". The containment building vented to the outside, says Albright, so any explosive tests there might have released telltale chemical or radioactive traces. [There are fears that these are being removed before the IAEA can inspect.](#)

Moreover, the IAEA report says Iran has so far made 233 kilograms of uranium enriched to nearly 20 per cent, which takes little effort to enrich further to 90 per cent, weapons-grade. Iran is also poised to treble its rate of production, supposedly to fuel a medical isotopes reactor in Tehran. But Albright [calculates](#) that the reactor would need at most 18 kg a year. "Even the current rate of production of 20 per cent [enriched uranium] far exceeds Iran's need" for the medical isotopes reactor, he says in an ISIS report.

16 November 2012 Last updated at 18:14 GMT

# Iran ready to double uranium enrichment at Fordo - IAEA

## Iran nuclear crisis

Iran is ready to double the output at its underground uranium enrichment facility, the UN nuclear watchdog says.

A leaked report by the International Atomic Energy Agency (IAEA) said there were 2,784 centrifuges at Fordo, and that Iran could soon double the number operating from 700 to 1,400.

The development is likely to fuel Western suspicions that Iran is seeking to develop nuclear weapons.

The government in Tehran insists the nuclear programme is entirely peaceful.

Talks this year about the uranium enrichment programme between Iran and the so-called P5+1 - the US, UK, France, China, Russia and Germany - have made little progress.

Bushehr fuel 'removed'

Iran's progress at Fordo was disclosed in a leaked report based on the findings of the IAEA's inspectors, who visit the facility regularly.

While the uranium enrichment plant is not yet fully operational - with only about 700 of the 3,000 centrifuges the facility is designed in use - experts say it could be within months.

The IAEA report said four new cascades of 174 centrifuges each "having been subjected to vacuum testing, were ready for feeding" with uranium hexafluoride (UF<sub>6</sub>) gas.

Once the new cascades were in operation, monthly production of 20%-enriched (medium-enriched) uranium would be about 25kg (55lb) per month, compared with 15kg at present, one

official said.

The facility at Fordo, which is buried deep under a mountain inside a military base near the holy city of Qom, is designed to contain 16 cascades producing medium-enriched uranium, which experts say could be enriched to about 90%, or weapons-grade, in a relatively short time.

The IAEA also revealed in its report that Iran had produced about 233kg (512lb) of higher-grade enriched uranium since 2010, an increase of 43kg since August.

Earlier this year, the Atomic Energy Organisation of Iran (AEOI) used 96kg of its supply of 20%-enriched uranium for conversion into fuel for its medical research reactor in Tehran. Experts say it would be difficult to turn the fuel into weapons-grade uranium.

Nuclear fuel had also been removed from the core of the nuclear reactor at Bushehr without a reason being given by Iran, the IAEA added.

The report also said that "extensive activities" at the Parchin military site had seriously undermined an investigation into indications that experiments related to nuclear weapons might have been carried out there. Iran is suspected of attempting to remove evidence.

Iran has denied that there are any nuclear-related activities at Parchin.

The IAEA's report concluded that the agency was "unable... to conclude that all nuclear material in Iran is in peaceful activities".

## US denies Iran nuclear talks New York Times report



Iran maintains that its nuclear programme is solely for civilian purposes

The White House has denied a report [in the New York Times](#) saying that Iran had agreed to one-on-one negotiations over its nuclear programme with the US.

The report, quoting unnamed officials, said Iran had agreed to the talks for the first time but would not hold them until after US elections on 6 November.

The White House said it was prepared to meet Iran bilaterally, but that there was no plan to do



so.

Western states think Iran is seeking nuclear weapons, something it denies.

Iran has been a key foreign policy topic in the US election campaign.

President Barack Obama and Republican challenger Mitt Romney will hold their third and final campaign debate on Monday, on the subject of foreign policy.

'Crippling sanctions'

The New York Times report said the US and Iran had agreed to one-on-one negotiations "in principle".

But US National Security Council spokesman Tommy Vietor said in a statement that it was untrue the US and Iran had "agreed to one-on-one talks or any meeting after the American elections".

"We continue to work... on a diplomatic solution and have said from the outset that we would be prepared to meet bilaterally," he added.

Negotiations between Iran and the the P5+1 negotiation group - which includes the UK, US, France, China, Russia and Germany - have stalled.

Western nations have used increasingly harsh sanctions in an effort to pressure Iran over its nuclear programme.

Mr Romney has accused Mr Obama of being too soft on Iran.

Mr Obama opposes a near-term military strike by the US or Israel on Iran's nuclear facilities, but says he is determined to stop Iran from building a nuclear bomb.

"The president has made clear that he will prevent Iran from getting a nuclear weapon, and we will do what we must to achieve that," Mr Vietor said.

"The onus is on the Iranians to do so, otherwise they will continue to face crippling sanctions and increased pressure."

## **Obama 'gave full backing to Stuxnet attack on Iran'**

13:40 1 June 2012

*Paul Marks, senior technology correspondent*



(Image: News Pictures/MCP/Rex Features)

When George W Bush handed over the presidential reins to Barack Obama in 2008, he asked that the incoming man continue running what he regarded as two of his administration's most promising security programs: the remotely-piloted drone war against Al Qaeda in Afghanistan - and the development of a cyberweapon nicknamed 'the bug', aimed at destroying Iran's nascent nuclear capability.

Obama agreed - but we have now come to know that bug by another name: [Stuxnet](#).

This revelation is at the heart of an apparently impeccably-sourced book due to be published in the US on 5 June. In *Confront and Conceal: Obama's Secret Wars and Surprising Use of American Power*, author David Sanger alleges that Stuxnet, which eventually wrecked hundreds of uranium centrifuges in Iran in 2010, was created by cyberweapons experts at the US National Security Agency in collaboration with 'Unit 8200', a cyber operation of Israeli intelligence.

The worm worked by issuing commands that [suddenly slowed the fast-spinning centrifuges](#) -

smashing them to pieces in the process. While motives alone have always suggested US and Israeli involvement in Stuxnet - they are after all the most vocal opponents of Iran's nuclear power and weapons capability - the book is the first account to provide evidence to back that theory. No forensic analysis has yet come close to identifying the authors of the worm.

Sanger says the Stuxnet program - then codenamed "Olympic Games" - began under the Bush administration with a low level spyware campaign that gradually mapped the network configuration of the computer and embedded control systems in Iran's Natanz uranium enrichment plant. Once the spyware reported back, coders were able to construct software that would use that map to invade the plant's control systems to issue overspeed and sudden braking commands - while reporting that all was fine to operators. The plant's management fired some operators as a result, thinking them incompetent.

Some of Sanger's anonymous sources - who he says are "American, European and Israeli" - are extraordinarily close to the White House and [publication of an excerpt in the New York Times](#) (where Sanger is a journalist) today will doubtless have kicked off a hunt for moles in Washington, DC. For instance, Sanger describes in detail one such Bush administration meeting in the White House Situation Room in which the wrecked "rubble" of a test centrifuge from the Oak Ridge Lab in Tennessee was revealed to demonstrate how well an early version of Stuxnet worked in tests.

Under Obama, all was not sweetness and light between the US and Israeli coding teams: Stuxnet was meant to stay within the Natanz network only - but Sanger quotes a US source saying a coding error by the Israelis led to the bug copying itself in the outside world. As a result Obama is said to have come close to shutting the program down - but decided its continuing nuclear havoc was worth the risk. However, Stuxnet's subsequent discovery by antivirus firms, who undertook widely-publicised analyses of its code, tipped off the Iranians to its presence.

Stuxnet's heritage lives on however: in proving that malware can attack and destroy industrial infrastructure, it was merely in the vanguard of a new breed of viruses, like the recently discovered [Flame](#), [whose capabilities could be profound](#).