

Iran gives early date for reactor

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Iran says its Bushehr nuclear power will start working in mid-2008.

The announcement seems to contradict the state-run Russian contractor building the site which gave a start date of the end of the year.

The Iranian announcement came two days after Iran received a second delivery of enriched uranium from the company. The plant is still being built.

Tehran says it will not stop its domestic enrichment programme despite the threat of more UN sanctions.

"The Bushehr nuclear power station will launch at a capacity of 50% next summer," Iranian foreign minister Manouchehr Mottaki was quoted by the Iranian news agency as saying.

No explanation was forthcoming for the apparent contradiction.

The United States has said it believes Iran is planning to build a nuclear bomb. But Iran has always insisted its programme is for peaceful purposes only.

And earlier this month the US released an intelligence report which suggested Iran had stopped its nuclear weapons programme in 2003.

It was soon after the release of that report that Russia began shipping nuclear fuel to Iran.

Washington says it supports the supply of enriched uranium to Iran as long as Moscow retrieves the fuel.

Enriched uranium is used as fuel in nuclear power stations. When it is more highly enriched, it can be used to make nuclear weapons.

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/middle_east/7165405.stm

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Introduction :: Mining uranium
Uranium is the basic raw material of both civilian and military nuclear programmes.

It is extracted from either open-cast pits or by underground mining. Although uranium occurs naturally all over the world, only a small fraction is found in concentrated ores.

When certain atoms of uranium are split in a chain reaction, energy is released. This process is called nuclear fission.

In a nuclear power station this fission occurs slowly, while in a nuclear weapon, very rapidly. In both instances, fission must be very carefully controlled.

Nuclear fission works best if isotopes - atoms with the same number of protons, but different numbers of neutrons - of uranium 235 (or plutonium 239) are used. These isotopes have almost identical chemical properties, but different nuclear properties. Uranium-235 is known as a "fissile isotope" because of its propensity to split in a chain reaction, releasing energy in the form of heat.

When a U-235 atom splits, it emits two or three neutrons. When other U-235 atoms are present, these neutrons collide with them causing the other atoms to split, producing more neutrons.

A nuclear reaction will only take place if there are enough u-235 atoms present to allow this process to continue as a self-sustaining chain reaction. This requirement is known as "critical mass".

However, every 1,000 atoms of naturally-occurring uranium contain only seven atoms of U-235, with the remaining 993 being denser U-238.

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-----BUSHEHR - Nuclear power station

The Bushehr nuclear power station (image: DigitalGlobe)Iran's nuclear programme began in 1974 with plans to build a nuclear power station at Bushehr with German assistance.

The project was abandoned because of the Islamic revolution five years later, but revived in the 1990s when Tehran signed an agreement with Russia to resume work at the site.

Moscow delayed completion on the project while the UN Security Council debated and then passed resolutions aimed at stopping uranium enrichment in Iran.

In December 2007, Moscow started delivering the canisters of enriched uranium the plant needs.

Earlier in the same month, a US intelligence report said Iran was not currently running a military nuclear programme.

There are two pressurised water reactors at the site.

One of these should go on stream in early 2008.

ISFAHAN - Uranium conversion plant

Isfahan uranium conversion plantIran is building a plant at a nuclear research facility to convert uranium ore into three forms:

- Hexafluoride gas - used in gas centrifuges
- Uranium oxide - used to fuel reactors, albeit not the type Iran is constructing

Metal - often used in the cores of nuclear bombs. The IAEA is concerned about the metal's use, as Iran's reactors do not require it as fuel.

NATANZ - Uranium enrichment plant

A recent satellite image of the Natanz site

Iran resumed uranium enrichment work at Natanz in July 2004, after a halt during negotiations with leading European powers over its programme.

It announced in September 2007 that it had installed 3,000 centrifuges, the machines that do the enrichment.

This is the facility at the heart of Iran's dispute with the United Nations Security Council.

The Council is concerned because the technology used for producing fuel for nuclear power can be used to enrich the uranium to a much higher level to produce a nuclear explosion.

ARAK - Heavy water plant

The Arak plant in 2002 (image: DigitalGlobe)The existence of a heavy water facility near the town of Arak first emerged

with the publication of satellite images by the US-based Institute for Science and International Security in December 2002.

Heavy water is used to moderate the nuclear fission chain reaction either in a certain type of reactor - albeit not the type that Iran is currently building - or produce plutonium for use in a nuclear bomb.