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## A Visit to Ahmadinejad's Nuclear Laboratory

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A recent United Nations report reinforces suspicions that Iran's nuclear program may be serving military purposes -- and that it is being infiltrated and attacked by computer viruses. During a recent visit by SPIEGEL reporters to Tehran's contested nuclear laboratory, scientists wouldn't comment on the developments, but the sensitivity of the issue in Iran is clear.



Amir Reza Jalilian, 39, is the kind of person anyone would want as a neighbor, work colleague or tour guide. He is a jovial man with a velvety voice who jokes a lot and frequently twirls his manicured beard. He has a family, loves good food and has trouble resisting sweets, a problem that is beginning to make itself felt on his hips. Everyone who works with him says that Jalilian is always helpful and wouldn't hurt a fly. It certainly seems that he is no Dr. Strangelove, a man who would take pleasure in seeing the world destroyed by nuclear weapons, or could even bomb it into oblivion himself.

There is, however, something disconcerting that the real Iranian scientist has in common with the fictitious monster Peter Sellers portrayed in the 1964 film "Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb," a stock character that has since come to embody the notion of a lunatic bent on destroying mankind. Jalilian is one of the leading experts on the medical use of isotopes. He works with the chemical elements that are enriched to make fuel for nuclear power plants, but can also be used as the building blocks of nuclear weapons.

### **The Innermost Sanctum of the Iranian Nuclear Program**

Jalilian is indeed the kind of person one would want as a neighbor, work colleague or tour guide, provided he isn't leading a double life, and that his amiable nature isn't a façade, and that there is nothing phony or affected about him. Jalilian has offered to give SPIEGEL staff a tour of the innermost sanctum of the [Iranian nuclear program](#), through what is probably one of the most well-protected workplaces in Tehran, one that is carefully shielded from prying eyes.

Jalilian works in the northern part of the city, between two expressways, where the mountains are visible and the air is cleaner than in the smog-filled basin where much of the city lies. In the densely populated neighborhoods of the Iranian capital, a city of 13 million, apartment buildings alternate with supermarkets, restaurants and daycare centers. The hilly nuclear complex, which is the size of four football stadiums, is probably almost as large as Lale Park, which, like the government district, is only a few minutes away by car.

There are no signs to reveal that this is the home of the Atomic Energy Organization of Iran, which, at least officially, is the heart of all nuclear activities in this country. The complex is sealed off with high walls and barbed wire, with electronic surveillance cameras scanning every hidden corner. Members of the Revolutionary Guard who are particularly loyal to the regime protect the site. All visitors must pass through several security checkpoints, including some with Geiger counters.

### **A Self-Contained World**

It is a small, self-contained world, with its own mosque, cafeterias and administrative buildings. And if opposition sources are to be believed, it also contains highly dangerous laboratories. One

of the world's most controversial nuclear research facilities, the Tehran research reactor, Jalilian's realm, is housed in an inconspicuous domed structure made of gray concrete.

United Nations experts and foreign intelligence agencies suspect that Iranian scientists like Jalilian could be working on the ultimate weapon for the theocracy's political leadership. Several of his colleagues have already been [assassinated](#). In January 2010, a remotely detonated bomb killed nuclear physicist Massoud Ali Mohammadi. A few months later, the nuclear scientists Majid Shahriari and Fereidoun Abbasi Davani were targeted in a double attack carried out almost simultaneously. In all likelihood, Israeli hit squads carried out the attacks.

That's the visible aspect of the conflict. But there is also an invisible aspect, the one that involves striking at the machinery: the cyber war, the attack by killer viruses sabotaging the Iranian nuclear facilities. Both attacks are taking place in parallel. Both are spreading fear and dismay within Tehran power circles. And both are dealing a decisive blow to a possible Iranian weapons program, but could also help prevent a conventional war that would claim thousands and thousands of casualties.

Officially, all three victims were professors. Mohammadi taught at the University of Tehran. Shahriari, an expert on neutron transport, taught at Shahid Beheshti University. Abbasi Davani, the only survivor of the attacks, was an expert in isotope separation. Although Jalilian is not on a UN list of Iranian scientists barred from traveling abroad -- like Mohsen Fakhrizadeh, a professor and Revolutionary Guard who is suspected of being the chief organizer of a weapons program -- he could be on a secret death list maintained by the Israeli Mossad.

### **'My Work Is Intended to Save Lives, not Destroy Them'**

When asked if he is afraid of assassins, Jalilian responds, "Of course not," shaking his head, as he hands out white lab coats and plastic shoes and guides his guests through a personnel lock. "Why should I feel threatened?," he asks. "I just deal with nuclear materials used in cancer therapy. My work is intended to save lives, not destroy them."

As he tells us during the tour through the reactor building, Jalilian studied in Tehran, the western German city of Aachen and in the United States. He says that almost a million Iranians in 135 radiation treatment centers throughout the country depend on the "nuclear kits" -- containers of molybdenum 99 isotopes -- produced here. But this is only one of the uses of these materials. The other is as a starting point for nuclear weapons.

The reactor-holding basin looks like a swimming pool in a horror movie. Eerie blue light beams appear in the dark water, produced by a phenomenon called Cherenkov radiation, which occurs when electrically charged subatomic particles pass through the surrounding water at high speeds. Silver tubes are leaning against the wall. A portrait of Iranian Revolutionary Leader Ayatollah

Khomeini hangs on the wall above a table of test readings. The portrait is crooked and covered with dust, as if there had been more pressing matters than making sure it was straight and clean.

### **A 'Confidence-Building' Measure Fails**

According to Jalilian, foreigners with no knowledge of the field are "very rarely" granted access to the site. Apparently the political leadership made an exception in January, when President Mahmoud Ahmadinejad, in what was dubbed a "confidence-building measure," invited selected ambassadors accredited with the International Atomic Energy Agency (IAEA) to visit the facility. But the event, intended as a PR coup, proved to be an embarrassment for the regime. The representatives of Germany, France and Great Britain, who are particularly suspicious of Iran's nuclear ambitions, were not invited -- nor, for that matter, was anyone from the United States.

Ironically, if Americans had been invited, they could have brought along the old plans for the reactor. The United States built the five-megawatt, light-water research reactor, completed in 1967, and it even supplied the Shah's regime with weapons-grade uranium. It was an open secret in Washington that the Shah wanted to build the bomb, which didn't seem to bother US politicians at the time. The United States saw the Pahlavi monarch as a reliable ally and couldn't imagine that anything would ever change. The Americans stopped delivering the fuel rods after the 1979 revolution. Argentina provided Tehran with fuel rods for a time, but when UN sanctions were imposed because of Iran's ongoing deceptive cover-up tactics, it terminated all cooperation.

### **'A Military Strike Against our Facility Would Be Mass Murder'**

"Everything is very carefully monitored here in our reactor," says Jalilian, pointing to cameras that record every movement around the basin. Detectors are installed for good measure. Every three months, he adds, IAEA inspectors come to the facility to perform additional inspections. However, Iran never ratified the supplementary protocol that would enable the UN nuclear watchdogs to conduct unannounced inspections. In the meantime, the Iranians were forced to admit to having conducted experiments with polonium 210, the element used to trigger a chain reaction in a nuclear bomb.

Tehran's leaders also provoked the world community in other ways. They spent a long time negotiating an exchange agreement, under which much of their enriched uranium would be sent abroad in return for the delivery of fuel rods for the Tehran reactor, only to pull out of the deal in the end. They continue to enrich uranium, in violation of all UN Security Council resolutions. And now they are no longer enriching 3.5-percent uranium for the production of fuel rods, but are in fact enriching to a level of almost 20 percent, a major step in the direction of producing

bomb-grade material. However, Jalilian insists that he and his colleagues are merely interested in producing the material needed to resupply their reactor with fuel.

Hardly anyone can describe the healing power of the atom as touchingly as the accommodating Ali Asghar Soltanieh, 60, Iran's ambassador to the IAEA in Vienna for the last six years. Soltanieh, a nuclear physicist, is very familiar with the research reactor because it was where he began his career. But his problem is that no matter how smooth his approach, nowadays he only has the support of African and Asian countries, as well as that of Cuba's and Venezuela's aging revolutionaries. The so-called "five-plus-one" group that negotiates key issues with Soltanieh -- the United States, France, Great Britain, Russia and China, plus Germany -- is reacting with growing irritation to his statements.

And ever since Japanese diplomat [Yukiya Amano](#), 63, replaced the more conciliatory Egyptian Mohamed ElBaradei, 68, as director general of the IAEA in late 2009, the tone is becoming increasingly sharp. The most recent IAEA report states unequivocally that Iran has refused to answer outstanding questions on the "possible military dimensions" of its nuclear program. Amano is demanding more cooperation from Tehran, which is "not fulfilling a number of its obligations." While the American intelligence agencies have become more cautious when it comes to Iran's intentions, even citing a "lack of evidence of a bomb program," the IAEA has adopted an increasingly alarmed tone in recent days. In early June, its nuclear inspectors reported that Tehran is [developing](#) a nuclear warhead.

### **Cyber Attacks on Iran's Nuclear Program**

However, Iran's efforts are stagnating in key areas. For instance, Tehran has not been able to significantly increase the number of its functioning centrifuges or the amount of enriched uranium it has. The Stuxnet computer virus and the cyber war may well be the causes of these setbacks. David Albright, director of the respected Washington-based Institute for Science and International Security (ISIS), believes that attackers "planted" the bugs in the Iranian systems and, in doing so, destroyed about 1,000 of the 9,000 centrifuges already installed. Other experts even speculate that the malicious electronic bug destroyed a third of the Iranian centrifuges. The Israelis and Americans are believed to be behind the attack.

Meir Dagan, the head of the Mossad for many years, even gloated that Iran had revealed "substantial technical vulnerabilities" and would probably not be capable of building a bomb until 2015. It is an open secret that Israeli intelligence tested the effects of Stuxnet on real centrifuges in the Negev Desert that were of the same design as those used in Iran's Natanz reactor and soon to be installed in its Qom reactor.

Saeed Jalili, the powerful secretary of Iran's Supreme National Security Council and a close ally of Ahmadinejad, [admitted](#) to SPIEGEL in mid-January that the computer worm had infected

Iran's nuclear facilities, but he also claimed that the attack had been "repelled." In an interview with an Israeli journalist in mid-April, the head of Iranian civil defense sounded less euphoric. He mentioned "potentially major damage" and accused not only the Americans and Israelis, but also German engineering giant Siemens, claiming that it knew about and was even involved in the cyber attack -- an allegation the company denies. In late April, the Tehran military commander announced that a new computer virus known as "Stars" had been smuggled into Iran. It had supposedly been planted in various networks through official documents and had initially caused only "limited damage."

### **A Plant that Makes Iran's Neighbors Nervous**

Whether a cyber attack is responsible for the repeatedly delayed startup of the Bushehr nuclear power plant remains unclear. The Iranian authorities blame the delays on defective pumps. Iran's Arab neighbors, however, make no secret of the fact that the nuclear plant makes them nervous -- not necessarily because of its alleged military use, but because of its location. Bushehr is in the middle of a notorious earthquake zone in southwestern Iran, and an accident like the one that occurred in Japan's Fukushima plant could trigger a catastrophe stretching well beyond Iran's borders.

Of course, the scientists at the nuclear complex in northern Tehran are also familiar with the problems of the Iranian nuclear program, the cyber attacks and the setbacks. Nevertheless, none of them is willing to comment on the issue, which is apparently too sensitive. In their facility, they say, they are dealing with completely different and more pressing issues. Iranian patients need "medical supplies," says Jalilian, with his persistent smile. He insists that he is not someone who loves the bomb that kills people but, rather, someone who loves the radiation that destroys metastases.

Should the world be more magnanimous and ignore the risk that some of the radioactive material being produced for medical purposes in Iran's research reactor could be diverted to produce dangerous weapons-grade material? Should Tehran's leaders, who, because of their rigid nuclear policies, already bear the blame for the UN's having imposed four rounds of sanctions on their people, agree to a deal on the enriched uranium, if only for humanitarian reasons? Is it conceivable that cancer patients are being turned into political pawns by all sides of the conflict?

Jalilian doesn't go into these questions. But he has heard of the Israelis' "absurd" plans to possibly bomb the nuclear facilities in Natanz, near Isfahan and outside Qom one day. The Tehran research reactor is also allegedly at the top of the list of potential targets for missile strikes. Over lunch in the cafeteria the otherwise soft-spoken Jalilian issues a warning and suggests that his guests pass it on to the rest of the world: "A military strike against our facility would radioactively contaminate the entire northern part of Tehran -- all the apartment buildings, stores and playgrounds. It would be mass murder."

