

III. Iran and nuclear proliferation concerns

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The international controversy over the scope and nature of Iran's nuclear programme intensified following the release in November 2011 of the most comprehensive review and assessment to date by the International Atomic Energy Agency (IAEA) of information about Iranian nuclear research and development activities with 'possible military dimensions'. There was also growing international concern about Iran's expansion of its uranium enrichment capabilities, in continued defiance of the United Nations Security Council's demands, set out in five resolutions, that it suspend all enrichment and other sensitive nuclear fuel cycle activities.¹

The IAEA's assessment of alleged Iranian military nuclear activities

On 8 November 2011 the IAEA Director General, Yukiya Amano, issued the latest in the series of regular reports to the IAEA Board of Governors on safeguards implementation in Iran.² A 15-page annex described the results of the agency's analysis of the information available to it regarding indicators of clandestine nuclear-related activities in Iran, including weaponization. The report attracted considerable attention because the Director General stated, for the first time, that the agency assessed that Iran had carried out activities directly related to the development of a nuclear explosive device and that it might be continuing to pursue some of the activities.³ The report did not address the question of whether Iran had decided to build a nuclear weapon.

The report stated that most of Iran's alleged weapon-related work took place prior to 2003. Information provided by IAEA member states indicated that nuclear research and development activities had been conducted in different military and academic institutions, assisted by advisory bodies, that were linked together in the late 1990s under an administrative umbrella called the 'AMAD Plan'. The consolidated programme was headed by a physicist named Mohsen Fakhrizadeh, and other 'senior Iranian figures featured' in the command structure of the plan 'at least for some significant period of time'.⁴

¹ UN Security Council resolutions 1737, 23 Dec. 2006; 1747, 24 Mar. 2007; 1803, 3 Mar. 2008; 1835, 27 Sep. 2008; and 1935, 9 June 2010.

² IAEA, Board of Governors, 'Implementation of the NPT safeguards agreement and relevant provisions of the Security Council resolutions in the Islamic Republic of Iran', Report by the Director General, GOV/2011/65, 8 Nov. 2011.

³ 'UN nuclear agency IAEA: "Iran studying nuclear weapons"', BBC News, 9 Nov. 2011, <<http://www.bbc.co.uk/news/world-middle-east-15643460>>.

⁴ IAEA, GOV/2011/65 (note 2), Annex, para. 18.

Alleged weaponization activities

According to the report's findings, the weapon-related activities that Iran allegedly pursued under the AMAD Plan involved all of the key technologies needed to develop an implosion-type nuclear explosive device fuelled by highly enriched uranium (HEU). The main activities included the following.

1. *Uranium conversion experiments.* Iran carried out work on the conversion of uranium dioxide into uranium tetrafluoride ('green salt') as part of a larger programme to obtain an autonomous source of uranium feedstock suitable for use at an undeclared enrichment plant.⁵

2. *Experiments with detonating high explosives.* Iran developed exploding bridgewire detonators and conducted experiments with multipoint initiation systems for the symmetrical detonation of a hemispherical high-explosive charge. This work, which has direct application for an implosion-type nuclear weapon, was allegedly assisted by a former Soviet scientist.⁶

3. *Hydrodynamic testing.* Iran made preparations for high-explosives tests using surrogate nuclear material designed to simulate the initial stages of a nuclear explosion. It also constructed a high-explosives test-containment chamber at the Parchin military complex in which to conduct hydrodynamic experiments to test the validity of warhead designs.⁷

4. *Missile payload design and integration.* As part of the so-called Project 111, Iran conducted computer modelling and engineering studies to examine how to integrate a new spherical payload, which was the size and shape of a nuclear weapon, into a re-entry vehicle for the Shahab-3 ballistic missile. Also under Project 111, Iran carried out development work on a prototype firing, arming and fusing system for a missile warhead.⁸

The report stated that most of the alleged weaponization activities were 'stopped rather abruptly pursuant to a "halt order"' by the Iranian leadership in late 2003. The decision may have been motivated by 'growing concerns about the international security situation in Iraq and neighbouring countries at that time'.⁹

According to the report, after 2003 Iran may have resumed some of the work carried out under the AMAD Plan, albeit in a less structured manner under different military and academic institutions.¹⁰ There were indi-

⁵ IAEA, GOV/2011/65 (note 2), Annex, paras 21–22.

⁶ Warrick, J., 'Russian scientist Vyacheslav Danilenko's aid to Iran offers peek at nuclear program', *Washington Post*, 12 Nov. 2011.

⁷ IAEA, GOV/2011/65 (note 2), Annex, paras 47–51.

⁸ IAEA, GOV/2011/65 (note 2), Annex, paras 59–63.

⁹ IAEA, GOV/2011/65 (note 2), Annex, para. 23.

¹⁰ IAEA, GOV/2011/65 (note 2), Annex, para. 24.

cations that since 2006 Iran had conducted work to validate the design of a device to produce a burst of neutrons that could initiate a fission chain reaction.¹¹ There were also indications that Iran had carried out modelling studies on nuclear warhead design in 2008 and 2009 as well as experimental research on scaling down and optimizing a high-explosives package that could be relevant for a nuclear explosive device.¹² The report acknowledged, however, that the IAEA's ability 'to construct an equally good understanding of activities in Iran after the end of 2003' was 'reduced' owing to the more limited information provided by member states.¹³

Assessing the IAEA's assessment

One section of the report's annex was devoted to describing, in general terms, the sources on which the IAEA had based its analysis and conclusions. It emphasized that the agency had received information from 'a wide variety of independent sources', including from 'more than ten' states.¹⁴ In addition, the agency's assessments were based on the results of its own investigations; information provided by Iran; and discussions with members of the nuclear trafficking network led by the Pakistani nuclear engineer Abdul Qadeer Khan. Overall, the agency deemed the information contained in the annex to be credible and 'consistent in terms of technical content, individuals and organizations involved, and time frames'.¹⁵

However, some government officials and non-governmental analysts pointed out that the IAEA's description of alleged nuclear weapon-related activities undertaken by Iran prior to the end of 2003 relied heavily on well-known material drawn from more than 1000 pages of documents contained on an Iranian defector's laptop computer. The so-called 'alleged studies' documents were supplied to the IAEA by a US intelligence agency, and their authenticity has been frequently questioned.¹⁶ Robert Kelley, a former IAEA safeguards inspector, criticized the IAEA report for its lack of new information and for relying on documents whose 'provenance could not be established'.¹⁷ Kelley and other experts also expressed doubts about specific claims made in the IAEA report.¹⁸

¹¹ IAEA, GOV/2011/65 (note 2), Annex, paras. 55–56.

¹² IAEA, GOV/2011/65 (note 2), Annex, paras. 44–45, 52.

¹³ IAEA, GOV/2011/65 (note 2), Annex, para. 18.

¹⁴ IAEA, GOV/2011/65 (note 2), Annex, paras 12–16.

¹⁵ IAEA, GOV/2011/65 (note 2), para. 8.

¹⁶ See e.g. Lewis, J., 'Is the laptop of death bogus?', Arms Control Wonk, 23 Feb. 2007, <<http://lewis.armscontrolwonk.com/archive/1409/is-the-laptop-of-death-bogus>>.

¹⁷ Quoted in Hersh, S. M., 'Iran and the IAEA', Daily Comment, *New Yorker*, 18 Nov. 2011, <<http://www.newyorker.com/online/blogs/comment/2011/11/iran-and-the-iaea.html>>. See also Salami, I., 'IAEA report thrives on laptop of lies', Press TV, 8 Nov. 2011, <<http://presstv.ir/detail/209074.html>>.

¹⁸ Porter, G., 'Ex-inspector rejects IAEA claims', Asia Times Online, 22 Nov. 2011 <http://www.atimes.com/atimes/Middle_East/MK22Ak02.html>.

Iran promptly rejected the report's findings and continued to categorically deny that it had ever worked on nuclear weapons. Iranian officials either dismissed documents pertaining to the alleged studies as forgeries and fabrications or, where they acknowledged the factual basis of some of the information, insisted that the work had nothing to do with a military programme.¹⁹ Iranian officials also questioned the Director General's motives for preparing the 15-page annex to the report. Iran's ambassador to the IAEA, Ali Asgahr Soltanieh, described it as 'unbalanced, unprofessional and prepared with political motivation and under political pressure mostly by the United States'.²⁰

New US National Intelligence Estimate on Iran

The general conclusions and timelines contained in the IAEA report were consistent with official testimony about the findings of the most recent US National Intelligence Estimate (NIE) on Iran's nuclear programme. The updated NIE was completed, after lengthy delay, in early 2011 and reflected the consensus views of 16 US intelligence agencies. It reportedly concluded that Iran was continuing to take steps towards developing a nuclear weapon capability, although not on the same scale and in a less structured manner than prior to the autumn of 2003.²¹ This represented something of a shift from the main conclusion of the controversial 2007 NIE on Iran. The earlier document had concluded 'with high confidence' that Iran had halted its weaponization research in the autumn of 2003 and assessed with 'moderate confidence' that it had not resumed work on nuclear weapons as of mid-2007.²²

According to testimony given to the US Senate in February 2011 by James Clapper, the Director of National Intelligence, the US intelligence community assessed that Iran was 'keeping open the option to develop nuclear weapons in part by developing various nuclear capabilities that better position it to produce such weapons' and to reduce the time frame needed to do so.²³ However, he confirmed that the intelligence community still had

¹⁹ 'US dictated new IAEA report to Amano', Press TV, 8 Nov. 2011, <<http://www.presstv.ir/detail/209020.html>>; and 'IAEA report is unbalanced, politically motivated: Iran envoy', *Tehran Times*, 10 Nov. 2011.

²⁰ 'Iranian envoy criticizes IAEA conduct', Press TV, 22 Nov. 2011, <<http://www.presstv.ir/detail/211406.html>>.

²¹ Miller, G., and Warrick, J., 'U.S. report finds debate in Iran on building nuclear bomb', *Washington Post*, 19 Feb. 2011. The 2011 NIE was not released in an unclassified form.

²² US Director of National Intelligence, 'Iran: nuclear intentions and capabilities', National Intelligence Estimate, Nov. 2007, <http://www.dni.gov/press_releases_2007.htm>, pp. 6–8; and Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2008*, pp. 348–49.

²³ Clapper, J. R., Director of National Intelligence, 'Worldwide threat assessment of the U.S. Intelligence Community', Statement for the record for the US Senate Select Committee on Intelligence, 16 Feb. 2011, <<http://www.dni.gov/testimonies.htm>>, pp. 4–5.

a high level of confidence that Iran had not yet made a decision to restart its nuclear weapon programme. Clapper added that Iran's decision making on the nuclear issue was 'guided by a cost-benefit approach, which offers the international community opportunities to influence Tehran'.²⁴

IAEA Board of Governors resolution on Iran

On 18 November 2011 the IAEA Board of Governors adopted a new resolution on Iran.²⁵ The resolution expressed 'deep and increasing concern about the unresolved issues regarding the Iranian nuclear program, including those which need to be clarified to exclude the existence of possible military dimensions'. It stressed the need for Iran to provide the IAEA with 'access to all relevant information, documentation, sites, material, and personnel' as part of an intensified dialogue to resolve the outstanding issues relating to Iran's nuclear work. The resolution also called on Iran 'to engage seriously and without preconditions in talks aimed at restoring international confidence in the exclusively peaceful nature of Iran's nuclear program'.²⁶

The new resolution, which was submitted by the five permanent members of the UN Security Council (China, France, Russia, the United Kingdom and the United States) and Germany (the P5+1 states), did not directly censure Iran or call for additional punitive steps to be taken against it. Russia and China, along with some Non-Aligned Movement countries on the board, reportedly ruled out measures that, in their view, would lead to the further isolation of Iran.²⁷ Russia's ambassador to the IAEA, Grigory Berdennikov, had warned before the vote that the Director General's latest report 'in effect, has been transformed into a new source of rising tensions over Iran's nuclear program' by a 'well-orchestrated media campaign, aimed at the further aggravation' of the controversy.²⁸ China had urged a cautious approach, with a Foreign Ministry spokesperson emphasizing that the nuclear controversy should be 'addressed through dialogue and cooperation'.²⁹

²⁴ Clapper (note 23), p. 5.

²⁵ IAEA, Board of Governors, 'Implementation of the NPT safeguards agreement and relevant provisions of United Nations Security Council resolutions in the Islamic Republic of Iran', Resolution, GOV/2011/69, 18 Nov. 2011. The resolution was approved by a vote of 32-2, with Cuba and Ecuador rejecting it and Indonesia abstaining.

²⁶ IAEA, GOV/2011/69 (note 25), paras 2, 4.

²⁷ Dahl, F. and Westall, S., 'U.N. nuclear watchdog board rebukes defiant Iran', Reuters, 18 Nov. 2011, <<http://www.reuters.com/article/2011/11/18/us-nuclear-iran-iaea-idUSTRE7AGORP20111118>>.

²⁸ 'Publication of speculations about Iran's alleged research untimely: Russia', ITAR-TASS, 19 Nov. 2011, <<http://pda.itar-tass.com/en/c154/276160.html>>.

²⁹ Chinese Ministry of Foreign Affairs, 'Foreign Ministry spokesperson Hong Lei's regular press conference on November 9, 2011', 10 Nov. 2011, <<http://www.fmprc.gov.cn/eng/xwfw/s2510/t876741.htm>>.

Status of Fordow enrichment plant

In 2011 international tensions over Iran's nuclear programme were heightened by new developments at the enrichment facility being built by the Atomic Energy Organization of Iran (AEOI) in an underground tunnel complex on a military base at Fordow, near the city of Qom. The Fordow Fuel Enrichment Plant (FFEP) had become the subject of controversy in 2009, when Iran acknowledged that it was building the previously undeclared facility. At the time Iran had explained that the site was being prepared as a 'contingency' plant so that enrichment activities would not be halted in the case of military attacks on Iran's pilot- and commercial-scale centrifuge plants at Natanz.³⁰

According to the IAEA Director General's report of 8 November 2011, Iran had revised the information it provided to the IAEA about planned enrichment operations at the Fordow facility. In 2009 Iran had stated that the purpose of the FFEP was to produce low-enriched uranium (LEU), enriched up to 5 per cent in the isotope uranium-235 (U-235), for use as nuclear fuel.³¹ In June 2011 Iran informed the IAEA that the plant would instead produce LEU enriched 'up to 20 per cent' to be fabricated into fuel to replenish the Tehran Research Reactor (TRR).³² The production of 20 per cent LEU would be moved to Fordow from the pilot fuel-enrichment plant at Natanz, under IAEA supervision, and the total output of 20 per cent LEU would be tripled at the new plant, using advanced centrifuges.³³ In September 2011 there were contradictory signals from the Iranian leadership about whether it would be willing to hold talks on a revived nuclear fuel exchange deal with the USA under which Iran would halt production of the 20 per cent LEU.³⁴

On 9 January 2012 Iran announced that it had begun enriching uranium at the FFEP.³⁵ Iranian officials stressed that the Fordow plant was subject to

³⁰ IAEA, Board of Governors, 'Implementation of the NPT safeguards agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran', Report by the Director General, GOV/2009/74, 16 Nov. 2009, para. 12. See also Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2010*, pp. 385–88.

³¹ IAEA GOV/2009/74 (note 30), para. 7.

³² The TRR is a 5-megawatt-thermal research reactor that is used to produce medical isotopes. Iran has undertaken to produce fuel plates for the reactor after it exhausts the fuel supplied by Argentina in 1993.

³³ 'Iran to triple production of 20% enriched uranium', *Tehran Times*, 9 June 2011; and Pomeroy, R. and Amiri, M., 'Defiant Iran plans rise in nuclear enrichment', Reuters, 9 June 2011, <<http://www.reuters.com/article/2011/06/08/us-iran-nuclear-enrichment-idUSTRE7572R620110608>>.

³⁴ Ahmadinejad and Abbasi-Davani at odds on enrichment claims', Institute for Science and International Security (ISIS), Iran in Brief, 14 Sep. 2011, <<http://isis-online.org/isis-reports/detail/ahmadinejad-and-abbasi-davani-at-odds-on-enrichment-claims/>>. On previous fuel exchange proposals see Kile (note 30), pp. 385–88; and Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2009*, pp. 388–89.

³⁵ 'Iran enriching uranium at Fordo plant near Qom', BBC News, 10 Jan. 2012, <<http://www.bbc.co.uk/news/world-middle-east-16470100>>

IAEA safeguards and that the enrichment operations were intended to produce fuel that would enable the TRR to continue to produce medical isotopes. They also insisted that Iran would not give up its legitimate right under the 1968 Non-Proliferation Treaty to pursue uranium enrichment for peaceful purposes.³⁶

Iran's announcement elicited strong criticism from France, Germany and the UK (the 'EU-3') as well as from the USA.³⁷ They denounced the Iranian move as a provocation and a step intended to bring Iran closer to achieving a so-called 'breakout' capability that would enable it to make enough weapon-grade uranium for a nuclear weapon in a short period of time.³⁸ The British Foreign Secretary, William Hague, pointed out that Iran had already accumulated several year's worth of LEU enriched to nearly 20 per cent but still lacked the technical ability to manufacture the fuel plates for the TRR.³⁹

European Union (EU) and US officials pledged to intensify sanctions aimed at forcing Iran to return to negotiations about its nuclear activities.⁴⁰ On 23 January 2012 the Council of the European Union imposed an embargo that prohibited the 'import, purchase or transport of Iranian crude oil and petroleum products' by EU member states.⁴¹ The Council also imposed a freeze on the assets of the Central Bank of Iran within the EU.⁴² Iran had earlier threatened to block the Strait of Hormuz if Western countries attempted to enforce an embargo on Iranian petroleum exports, which reportedly prompted a sharp warning from the USA.⁴³

The intensified Western sanctions against Iran over its nuclear programme led to renewed fears about a possible armed conflict. Tensions were heightened on 10 January 2012, when an Iranian nuclear scientist was assassinated in a bomb attack that Iran claimed was part of a foreign-

³⁶ 'Iran N-activities totally transparent', Press TV, 10 Jan. 2012, <<http://www.presstv.ir/detail/220360.html>>.

³⁷ 'Iran enriching uranium at Fordo plant near Qom' (note 35).

³⁸ Enrichment from natural uranium to 3.5% U-235, which is typical of reactor fuel, is significantly more time consuming and resource intensive than subsequent enrichment to the weapon-grade uranium (typically enriched above 90%) required for a nuclear weapon.

³⁹ Schneeweiss, Z., 'U.K.'s Hague 'disappointed' by Iran's provocative enrichment', Bloomberg, 9 Jan. 2012, <<http://www.bloomberg.com/news/2012-01-09/u-k-s-hague-disappointed-by-iran-s-provocative-enrichment.html>>.

⁴⁰ Hafezi, P. and Dahl, F., 'EU ministers plan Iran oil embargo, IAEA team to visit', Reuters, 10 Jan. 2011, <<http://www.reuters.com/article/2012/01/10/us-iran-idUSTRE8090ZL20120110>>.

⁴¹ Council Decision 2012/35/CFSP of 23 Jan. 2012 amending Decision 2010/413/CFSP concerning restrictive measures against Iran, *Official Journal of the European Union*, L19, 24 Jan. 2012.

⁴² US sanctions on financial institutions that dealt with the Central Bank of Iran were included in the National Defense Authorization Act for Fiscal Year 2012, US Public Law no. 112-81, signed into law 31 Dec. 2011, <<http://thomas.loc.gov/cgi-bin/bdquery/z?d112:h.r.01540>>, section 1245. See also 'Obama signs US sanctions bill into law', BBC News, 31 Dec. 2011, <<http://www.bbc.co.uk/news/world-us-canada-16376072>>.

⁴³ 'U.S. message on Strait of Hormuz conveyed through 3 officials: Iran', *Tehran Times*, 15 Jan. 2012.

orchestrated sabotage campaign aimed at slowing its nuclear programme.⁴⁴ There was also mounting speculation that Israeli political leaders were considering pre-emptive military action against Iran's nuclear facilities.⁴⁵

With its diplomatic and economic isolation deepening, Iran showed signs of adopting a more conciliatory approach to the nuclear issue. On 18 January 2012, the Iranian Foreign Minister, Ali Akbar Salehi, said during a visit to Turkey that Iran would resume talks with the P5+1 group about its nuclear programme.⁴⁶ Iran also confirmed that, prior to the talks reconvening, it would host a visit by the IAEA at the end of the January 2012.⁴⁷

⁴⁴ 'Iran car explosion kills nuclear scientist in Tehran', BBC News, 11 Jan. 2012, <<http://www.bbc.co.uk/news/world-middle-east-16501566>>. Three similar attacks against Iranian nuclear scientists had been carried out by unknown assailants since Jan. 2010.

⁴⁵ Bergman, R., 'Will Israel attack Iran?', *New York Times*, 25 Jan. 2012.

⁴⁶ 'Iran: talks with P5+1 may be in Turkey', Press TV, 18 Jan. 2012, <<http://www.presstv.ir/detail/221782.html>>. On previous negotiations between Iran and the P5+1 states see Kile (note 30), pp. 388–89; and Kile, S. N., 'Nuclear arms control and non-proliferation', *SIPRI Yearbook 2009*, pp. 389–92.

⁴⁷ 'IAEA inspectors due in Iran in January', Press TV, 13 Jan. 2012, <<http://www.presstv.ir/detail/220856.html>>.