

**Testimony of David Albright,
President of the
Institute for Science and International Security,
before the House Subcommittee on National Security,
Committee of Oversight and Government Reform**

**Hearing title: Protecting America From a Bad Deal:
Ending U.S. Participation in the Nuclear Agreement with Iran**

June 6, 2018

After several months of intense negotiations with Britain, France, and Germany (the E3), President Trump decided on May 8, 2018 that the weaknesses in the Joint Comprehensive Plan of Action (JCPOA) could not be remedied sufficiently to justify the United States from ceasing to further participate in the agreement and re-impose the full suite of U.S. nuclear-related Iran sanctions. The weaknesses of the JCPOA are well known, namely inadequate inspections, sunsets in nuclear limitations, and lack of treatment of intercontinental ballistic missiles (ICBMs).

Significantly, the administration did not remain a member to the agreement while invoking the snap-back clause in the JCPOA, which it could have justifiably done based on the new Iranian nuclear weapons information discovered by Israel in a dramatic seizure in early 2018. As a result, the administration did not end the JCPOA and snap back United Nations Security Council (UNSC) sanctions on Iran, adopting the stance for now that it is not excluding others' continued participation in the JCPOA. It is unclear how long the JCPOA will continue as the United States gradually re-imposes nuclear sanctions on Iran. However, it would need to involve Iran withdrawing from the agreement. If Iran ignores the nuclear limitations, one would expect the re-imposition of the UNSC sanctions and Europe to snap back its own sanctions.

Iran's refusal to allow access to its military sites or honestly address allegations about its past nuclear weapons work is also well documented. Rather quickly in the negotiations on a supplementary agreement, the E3 and the Trump administration reached agreements on fixing this weakness of the JCPOA. They agreed on the need for the International Atomic Energy Agency (IAEA) to improve its inspections in Iran, particularly visiting military sites associated with past nuclear weapons and centrifuge work and implementing Section T. This section is a part of the JCPOA that bans certain work related to nuclear weapons development and subjects certain related activities to Joint Commission approval and IAEA monitoring. So far, Section T has not been implemented or adequately verified due to Iranian resistance. The IAEA appears more cognizant of the inspection problem, having recently stated in its latest quarterly report on

Iran that “timely and proactive cooperation by Iran in providing [complementary] access would facilitate implementation of the Additional Protocol and enhance confidence.”¹

The United States and E3 also agreed that an Iranian ICBM is intrinsically tied to the JCPOA, and its development would be sufficient to justify the re-imposition of draconian sanctions by the United States and the European Union.

However, they could not agree on the sunset issue and how to structure the re-imposition of sanctions if Iran augmented its enrichment program. The E3 did agree that the growth of Iran’s enrichment program was a grave security threat. Nonetheless, they refused to accept the U.S. condition that sanctions would be re-imposed if Iran’s breakout timeline dropped below 12 months. In practice, the 12-month criterion had evolved into a set of conditions that marked when Iran would physically increase its gas centrifuge program. Based on Iran’s voluntary enrichment plant submitted as part of the JCPOA, an example would be Iran deploying an increasing number of advanced centrifuges after the tenth year of the agreement, roughly seven and half years from now. In draft Senate legislation, this number was taken as 100 advanced centrifuges.

Instead of the 12-month criterion, the E3 were proposing another approach that involved definitions of a peaceful nuclear program and what constituted a military nuclear program inconsistent with the JCPOA. The Europeans proposed that if the peaceful use of Iran’s nuclear program could not be established, they would agree to consider returning to the pressure track and sanctions, according to an administration official. However, this language was not enough to convince the administration. There was discussion of trying to quantify such a condition, but from what I understand, those discussions were not sufficiently robust for the administration.

The E3 also argued that the sunset condition proposed by the administration would be a violation of the JCPOA, once enacted, and would lead Iran to withdraw from the JCPOA. The administration rejected this view and assessed instead that Iran would not leave the JCPOA over this issue; Iran would likely choose to remain in the deal at least until the first sunset involving an increase in numbers of centrifuges, which would occur in about seven years.

The problem of how to re-impose sanctions was debated in the context of a proposed Senate Iran Nuclear Agreement Review Act of 2015 (INARA) amendment by creating “off-ramps” that would not make the re-imposition of nuclear sanctions automatic. The intent of the legislation, and an E3/US agreement, was to create conditions that would encourage Iran to renegotiate the sunset conditions while avoiding automatic snapback of U.S. nuclear sanctions.

Negotiations proceeded well on five of six parallel regional issues raised by the Trump administration, for example dealing more broadly with the activities of the Iran Revolutionary Guards Corps (IRGC), human rights, and Iran’s ballistic missiles. The E3 and the United States had reached tentative agreement on the need to act collectively in these five areas. The issue of

¹ IAEA Director General's Introductory Statement to the Board of Governors, June 4, 2018. <https://www.iaea.org/newscenter/statements/iaea-director-generals-introductory-statement-to-the-board-of-governors-4-june-2018>

designating Hezbollah as a terrorist organization was unsettled. In addition, the E3 negotiators expressed increasing interest in a coalition being built by the United States to counter Iran's malign activities in the region.

With lack of agreement on the sunset issue, it was inevitable that President Trump would end U.S. participation in the deal. It is unfortunate that the parties could not reach a compromise, given their fundamental agreement that the sunset issue of the JCPOA would have to be fixed and their agreement on the other two critical issues of inspections and ICBMs. None of the parties directly engaged in the negotiations argued that Iran's increase of its centrifuge program was an inevitable outcome of the JCPOA or that it would be anything but a grave security challenge. Some outside the negotiations, including several non-E3 EU member states, have argued that we should welcome Iran's increase in its enrichment program and that the JCPOA legitimizes that expansion. The E3 and the United States did not accept that attitude.

The negotiations overall helped clarify many transatlantic areas of agreement on the future of the underlying issues of the JCPOA. The partial agreements can be a basis for on-going collaborative work with Europe, as the Trump administration builds its coalition against Iran's most threatening behaviors. In the short term, however, further negotiations with the E3 appear too complicated to pursue, as the E3 is focused on trying to salvage the JCPOA and warding off expected secondary sanctions on its companies and banks. The administration's return to opposing any enrichment in Iran further complicates resuming discussions with the E3 in the short term.

It should be pointed out, however, that this new no-enrichment position eases the administration's task of pressing Saudi Arabia to accept the Gold Standard in a 123 agreement with the United States. It also strengthens the administration's hand in negotiating with North Korea, which no longer can use a precedent of the JCPOA to argue for keeping its own uranium enrichment program. With recent evidence of a secret uranium enrichment plant, often called Kangsong, outside the Yongbyon nuclear site able to continue making weapon-grade uranium, this is no time to consider the idea of allowing North Korea to keep any of its uranium enrichment program.² Any deal can easily provide a guaranteed outside supply of the relatively small amount of low enriched uranium (LEU) North Korea might need for its civil nuclear program.

Like in the case of Iran, North Korea has no economic justification for its enrichment program. Given the technical limitations of both of their centrifuge programs, these two countries will always be able to buy LEU more cheaply from abroad than they can produce it domestically. So, if North Korea makes a denuclearization deal, it will be able to obtain LEU from abroad for its relatively small reactors. Certainly, the United States should not accept continued enrichment in

² David Albright, "On the Question of Another North Korean Centrifuge Plant and the Suspect Kangsong Plant," Institute for Science and International Security, May 25, 2018. <http://isis-online.org/isis-reports/detail/on-the-question-of-another-north-korean-centrifuge-plant-and-the-suspect-ka> ; See also Joby Warrick, "Summit collapse foils chance to press North Korea on suspicious sites," *The Washington Post*, May 25, 2018. https://www.washingtonpost.com/world/national-security/summit-collapse-foils-chance-to-press-north-korea-on-suspicious-sites/2018/05/25/d5a14044-602d-11e8-9ee3-49d6d4814c4c_story.html?utm_term=.733f1074df0c

in any nuclear deal with North Korea. Similarly, it no longer makes sense to legitimize Iran's uranium enrichment programs.

Iran's Nuclear Archive

One development that confirmed the E3/US agreement on the need to improve inspections in Iran was Israel's dramatic revelation on April 30th about Iran's hidden "nuclear weapons archive." The archive holds some 100,000 documents and files, or a half ton of documents, CDs, and other materials, reportedly containing vital information about Iran's past nuclear weapons-related effort, in particular the work of the AMAD program. This program's structured work on developing the nuclear weapon itself was largely halted in 2003 or 2004 but carried on in a more research-oriented fashion afterwards, aimed at eliminating scientific and engineering bottlenecks in developing nuclear weapons and increasing know-how about them.

These revelations highlight the fundamental mistake made by the JCPOA negotiators not to settle the issue of Iran's past and possibly on-going nuclear weapons program prior to the implementation of the JCPOA in January 2016. Because this issue is so fundamental to preventing Iran from acquiring nuclear weapons, the decision to sweep this issue under the carpet served to not only weaken the JCPOA, but with this new information, serves to call into question its very purpose.

The new information makes the sunsets far deadlier, as the documents show that Iran's nuclear weapons program is both more organized and more advanced than previously thought, allowing a faster dash to a bomb. As reported on June 3rd in the *London Times*, "'What Iran told the International Atomic Energy Agency about its capacities was almost comical compared to what we have here,' said an Israeli intelligence expert who has studied the documents. 'Iran said there had only been feasibility and scientific studies but what we see is that Iran ran a fully fledged nuclear weapons programme and that it followed directions from the political levels.'"³

According to the Israelis, this archive was not gathering dust but was part of an on-going stewardship program meant to enable Iran to reincarnate its nuclear weapons program on short order. It was being kept in a secret location and maintained under the authority of an Iranian military organization, Organization of Defensive Innovation and Research, or SPND, by the Persian acronym. The SPND's head is Mohsen Fakhrizadeh, the former head of the AMAD program. He is assisted by other former members of AMAD, according to the Israelis who have analyzed the nuclear archive. In short, Iran is maintaining and nurturing a reconstitution kit ready for use to build nuclear weapons.

The conditions of its existence of this archive and the extent of the information in it suggest that Iran has been violating the JCPOA and the spirit of the Nuclear Non-Proliferation Treaty. Under the JCPOA, Iran agreed that "under no circumstances will Iran ever seek, develop or acquire nuclear weapons."⁴ Under the NPT, Iran should be rigorously challenged why it possesses and

³ David Charter, Berlin | Roger Boyes, "Secret files prove Iran is trying to build bomb, claims Israel," *The Times*, June 4, 2018. <https://www.thetimes.co.uk/article/secret-files-prove-iran-is-trying-to-build-bomb-02qxs8mpc>

⁴ *Joint Comprehensive Plan of Action*, Preface, Vienna, July 14, 2015.

maintains such an archive while simultaneously refusing to allow the IAEA to visit military sites and personnel named in the archive.

The Israelis are right to criticize the failure to ensure that Iran has come clean about its past nuclear weapons program and to permit inspectors to monitor those facilities and individuals involved in past activities. The IAEA knows how to do this type of work, if the country cooperates, and has made many visits to nuclear weapons-related sites in both South Africa and Taiwan after those nations ended their nuclear weapons programs. The lack of Iranian cooperation reinforces the view that Iran is merely hiding its nuclear weapons program, awaiting the right moment for it to re-emerge. At a minimum, the archive requires a much tougher approach on inspections in Iran.

The new information makes it more urgent to fix IAEA inspections in Iran, even if the JCPOA falters. Iran is still a signatory to the Nuclear Non-Proliferation Treaty, and its comprehensive safeguards agreement requires cooperation with the IAEA over determining whether its program is purely peaceful. Iran has a binding legal obligation to grant the IAEA inspectors access to sites materials, equipment, documents, and personnel to resolve outstanding questions about the military dimensions of its past nuclear activities. The IAEA has an obligation to investigate completely the personnel, sites, equipment, and activities described in the Nuclear Archive discovered by Israel, including gaining access to military sites. If Iran refuses, then it is in violation of its safeguards obligations. As discussed above, the IAEA appears to be more determined to better address its inability to conduct adequate inspections of military sites.

With an abundance of detailed information now in hand, the IAEA can ask for greater access in Iran with better justification than before. The United States should work with its allies in Europe and elsewhere to raise this issue at the IAEA Board of Governors. Working together, they should ensure that the IAEA inspectors carry out their responsibilities under the NPT and comprehensive safeguards agreement. The United States, the European Union, and other members of the IAEA Board of Governors have a responsibility to ensure that Iran reveals its past nuclear weapons programs and is in compliance with its safeguards agreement.

The E3 should be expected to play a critical role in the JCPOA ensuring that inspections in Iran are improved. Preserving the JCPOA should not become an excuse to allow Iran to back slide on compliance and avoid allowing the IAEA access to military sites or effectively implementing Section T of the JCPOA.

The new information argues for putting much more pressure on Iran to allow the IAEA to do its job both under the JCPOA and the comprehensive safeguards agreement. If Iran refuses, then the JCPOA should be discarded and the world should return to a pressure campaign and the universal re-imposition of sanctions.

What is new?

The Nuclear Archive contains much new information not previously available to the IAEA or Western governments. I have reviewed much of the information gathered by the IAEA about Iran's past nuclear weapons programs and it is compelling, but this information has many gaps

and is unable to lead to conclusions about the current program and its intentions. The archive fills in many of these holes, and overall, according to the Israelis, it presents a much more complete picture of Iran's nuclear weapons efforts than previously available.

What was missing from the previously existing information? The new information includes: the number and kilotons of nuclear weapons sought by Iran, the location of planned nuclear weapons test sites, other nuclear weapons related sites and activities, uranium metallurgy work, military uranium enrichment activities, additional equipment that Iran must potentially declare today under Section T, information about calculations, and simulations captured in videos. This new information adds many key missing pieces to the puzzle of Iran's past and possibly on-going nuclear weapons program.

Fordow Enrichment Plant

A new archive document released by Israel is a draft contract signed by the Atomic Energy Organization of Iran (AEOI), then headed by Reza Aghazadeh and the Iranian Defense Ministry, headed then by Ali Shamkhari. The document orders the transfer of responsibility, and required information, methods, and budget, to the Defense Ministry for the task of further enriching uranium hexafluoride from three percent to over 90 percent, or weapon-grade. The AEOI would have produced the three percent enriched uranium, likely in its secret Natanz enrichment plant, and the onward enrichment would have been accomplished in a military facility. There is no date on the paper but the Israelis have assessed that it is likely from 2001.

The onward enrichment to weapon-grade, a sure sign of intended use in nuclear weapons, would have been slated for Project Ghadir, an underground facility for the AMAD program. This facility was built in secret by Iran in the mid-2000s after the official end of the AMAD program and publicly exposed by Britain, France, and the United States in 2009. After its exposure, Iran re-purposed the underground halls for the production of uranium enriched less than five percent and allowed IAEA inspections. It was first known publicly as the Qom site and then later called the Fordow uranium enrichment site.

This document parallels my understanding of Iran's decision to build the Fordow underground enrichment plant that I assessed a few years ago was likely designed to make weapon-grade uranium from low enriched uranium, based in large part on inspector findings when they first visited the plant. At the time, based on available information, the Iranian nuclear weapons program could not be directly linked to a plant to make weapon-grade uranium. The link had to be inferred. Today, the new documents from the archive directly link Fordow to the planned production of weapon-grade uranium as late as 2009, when Iran was caught building this secret plant.

The Iranian agreement translated into English follows on the next page.

Agreement from the Nuclear Archive Obtained by Israel in Tehran and provided recently to journalists in Europe

Agreement

This agreement was drafted on _____, between the Atomic Energy Organization of Iran (AEOI), represented by engineer Reza Aghazadeh, which will be referred to in this agreement as the Organization, and the Ministry of Defense, represented by Amir Daryaban Ali Shamkhani, for the following subjects:

Article 1) Subject of the agreement

According to this agreement, the Organization is transferring to the Ministry of Defense its task of enriching UF6 by centrifuges from 3% to over 90%.

Article 2) Responsibilities of the parties:

2.1. The responsibilities of the Organization:

- 2.1.1. Transferring to the Ministry of Defense a copy of all the schematics, scientific and professional documents and original samples relating to the project.*
- 2.1.2. Cooperating and helping making accessible the information, work performed and methods used by the Organization.*
- 2.1.3. Transferring the required budget to the Ministry of Defense.*
- 2.1.4. Preparing and supplying UF6 enriched to 3%, and transferring it to the Ministry of Defense in accordance with the timeline and quantities agreed upon.*

2.2. The responsibilities of the Ministry of Defense:

- 2.2.1. Preparing the project's timeline and assessing the required budget.*
- 2.2.2. Drafting a progress report for the project and delivering it to the relevant officials.*
- 2.2.3. Ensuring the project is classified top secret.*

Article 3) The budget:

It has been agreed that the estimated budget of the project will be deposited directly, in coordination with the president, into the Ministry of Defense's account, through the Management and Planning Organization.

Article 4) Delivery between the parties:

This agreement has four articles, and it was drafted in two identical copies and delivered to the parties.

Ministry of Defense—Ali Shamkhani

Head of the AEOI—Reza Aghazadeh

This document supplements a schematic from the nuclear archive released by Israel on April 30th, which my organization subsequently compared to the Fordow centrifuge plant. We overlaid this schematic from the AMAD archive on the Qom, now called the Fordow, deeply buried enrichment plant (see figure).⁵

- The schematic matches the entrances and expected layout of the deeply buried Qom uranium enrichment plant.
- The schematic is an AMAD document, showing that the origin of this plant was in the Iranian nuclear weapons program, a fact we have long assessed but is now proven.
- We and others assessed that the Qom plant was likely intended to make weapon-grade uranium for nuclear weapons. The new document from the archive establishes this point.
- The site's public revelation in 2009 by Britain, France, and the United States derailed Iran's ability to make weapon-grade uranium at this secret site. Locating the site was not easy for Western intelligence agencies.
- Iran was building this plant at a time when U.S. intelligence agencies were stating that Iran's nuclear weapons program had ended. The linkage of this facility to the AMAD program provides new evidence that in 2009 Iran was creating a facility in secret to make the raw ingredient for nuclear weapons, namely weapon-grade uranium.

Underground Nuclear Testing

The Nuclear Archive contains more details about Iran's plans to conduct underground testing of a nuclear device. Previously, there was no direct information about Iran's underground nuclear testing plans in the AMAD plan. An excerpt from one of our earlier reports on the status of the IAEA's information on an underground nuclear test site, citing an IAEA report and using information obtained by interviewing officials knowledgeable about the underlying information follows below.⁶ However, the information does not state that the information is about the testing of a nuclear explosive device; that conclusion is inferred.

The IAEA received a schematic diagram for an underground testing site that is 400 meters deep with a control unit 10 kilometers away. The diagram shows the placement of a high voltage power generator. The information shows the development of a remote system for firing an object in the 400 meter-deep shaft. Text accompanying the diagram calls for the simultaneous remote firing of two spark gap detonators. Although EBWs are safer, both methods would work. Is this related to the two EBWs needed to set off the two halves of the R265 system? According to the November 2011 safeguards report, the IAEA has been informed by another member state that these arrangements directly reflect those which have been used in nuclear tests conducted by nuclear-weapon states. IAEA officials assessed that this information is most likely related to testing a nuclear explosive

⁵ Albright and Frank Pabian, "It Fits! Qom Site Layout," Institute for Science and International Security, May 1, 2018, <http://isis-online.org/isis-reports/detail/it-fits-qom-site-layout/8>

⁶ David Albright, Paul Brannan, Mark Gorwitz and Andrea Stricker, "ISIS Analysis of IAEA Iran Safeguards Report: Part II - Iran's Work and Foreign Assistance on a Multipoint Initiation System for a Nuclear Weapon," Institute for Science and International Security, November 14, 2011. <http://isis-online.org/isis-reports/detail/irans-work-and-foreign-assistance-on-a-multipoint-initiation-system-for-a-n/8>

device, although it reflects the conceptual development of a test rather than representing an engineering drawing or plan.

On April 30th, Israel revealed information from the archive on five sites Iran was considering for conducting a nuclear test. It stated that the archives contained many more documents on underground testing.

Prior to obtaining the archive, the information on underground nuclear testing was indirect and inferred, and based on few sources. Afterwards, the information includes the sites Iran was evaluating as underground nuclear test sites and other specific information about nuclear testing as well. The information in the archive goes well beyond just an inferred, rather simple, conceptual development of an underground nuclear test.

Recommendations

The new Nuclear Archive information calls for the IAEA to redouble its efforts to get to the bottom of Iran's past military nuclear activities and provide a full accounting for them to ensure those efforts have ended. With more site and individuals identified, the IAEA can ask for greater access in Iran with better justification than before. If Iran refuses, then it is in violation of its safeguards obligations as well as the JCPOA.

The United States should work with its allies in Europe and elsewhere to raise this issue at the IAEA Board of Governors. Working together, they should ensure that the IAEA inspectors carry out their responsibilities under the NPT and comprehensive safeguards agreement.

The E3 should ensure that inspections in Iran are improved under the JCPOA. Preserving the JCPOA should not become an excuse to allow Iran to back slide on compliance and avoid allowing the IAEA access to military sites or effectively implementing Section T of the JCPOA.

Overall, the new information justifies putting much more pressure on Iran to allow robust inspections. If Iran continues refusing to answer honestly the IAEA's questions and allow broad access, then the JCPOA should be abandoned by all and the international community should return to an intense pressure campaign and the universal re-imposition of sanctions.

So far, the administration has been ambivalent about the JCPOA continuing without its participation. It needs to clarify its intent. If it will tolerate the continuance of the JCPOA, and Europe's continued participation (meaning the United States will not seek UN sanctions snapback), it should waive sanctions on certain activities on-going under the JCPOA. These include the modification of the Arak reactor and perhaps non-nuclear, stable isotope separation work in the centrifuges at the underground Fordow site. These are useful limitations to keep in effect from a nonproliferation standpoint.

The fate of the Iran nuclear deal is still yet to be determined. Iran may decide to stay within the constraints of the JCPOA, and in effect, try waiting out President Trump's first term in the hope that he will not be re-elected. European governments have indicated that this may be a preferred strategy for both Iran and Europe. The E3 have also reportedly warned Iran not to surpass the

JCPOA limits or it will be forced to snap back sanctions. In this case, in the medium term, the proliferation aspect may stay contained and the Trump administration will be able to significantly increase a range of sanctions against Iran.

However, over the next several months, Iran may face leadership and internal pressures to start to withdraw from the JCPOA, deploy more centrifuges, and resume higher levels of enrichment. Iran's Supreme Leader stated on June 4th that the "Iranian nation & government will not stand being under both sanctions & nuclear restrictions." He continued, the AEOI "must immediately make the preparations for achieving 190K SWU [separative work units, an enrichment term used here incorrectly to express a large enrichment program]—for now within the JCPOA—starting tomorrow."⁷ This warning appears to indicate that the Supreme Leader may want to try use his own pressure by threatening the Europeans to do Iran's bidding or the nuclear restrictions under the JCPOA. The Ayatollah may have decided that Europe is unlikely to be able to provide Iran with the economic benefits envisioned under the JCPOA in the face of the threat of resumed U.S. sanctions and secondary sanctions against European businesses and banks.

However, Iran must be aware that if it violates the conditions of the JCPOA, it will grow the U.S. coalition against it and lead to the imposition of more sanctions, including possibly EU and UNSC sanctions. The administration is now free to re-impose the nuclear sanctions that were in a straightjacket under the Iran deal and effectively unusable even against Iranian terrorism, ballistic missiles, or other malign activities. During the next several months, the future of the Iran nuclear deal will become clearer, as well as the administration's deployment of its new strategy to pressure Iran to abandon enrichment and reprocessing and deter it from scaling up its nuclear weapons capabilities.

⁷ Ayatollah Seyed Ali Khamenei on Twitter, June 4, 2018, https://twitter.com/khamenei_ir/status/1003660784403189761

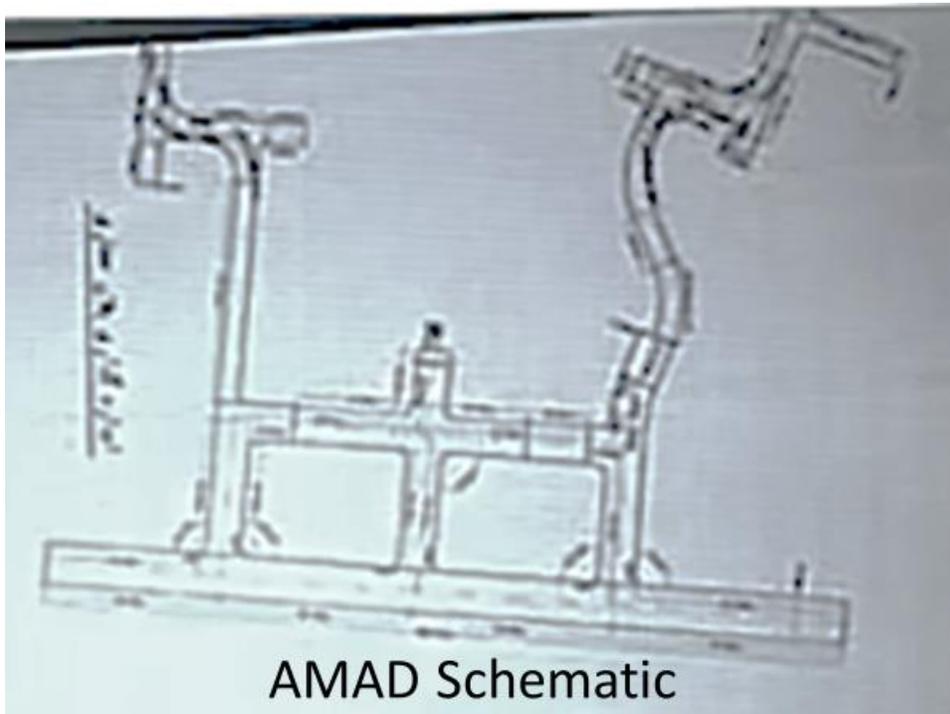
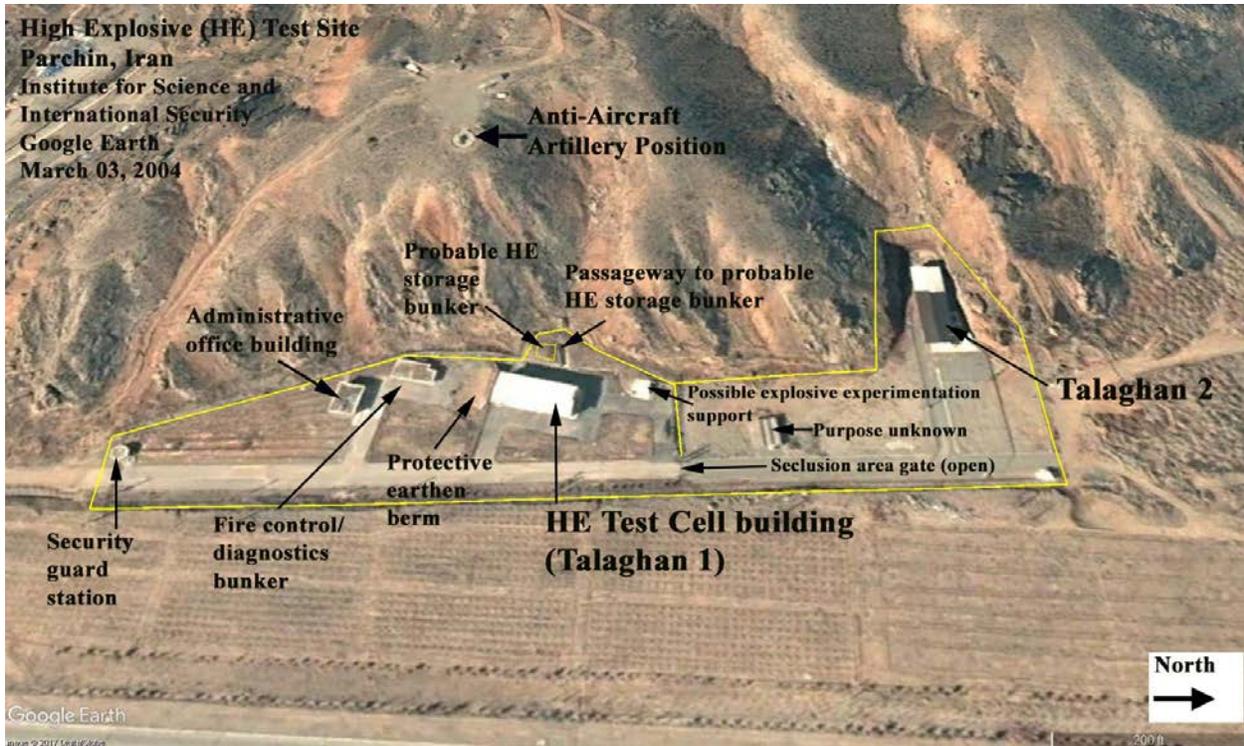


Figure. Qom Site with overlay of AMAD schematic, showing location of underground enrichment site by matching it with the tunnel entrances. Source: http://isis-online.org/uploads/isis-reports/documents/Qom_Site_Schematic_Overlay_May_1_2018_final.pdf

**From the Iranian Nuclear Archive Seized in 2018 in Tehran by
Israel:
Images and information relevant to the Parchin site and the
development of nuclear weapons.**

**Supplement to Written Testimony of David Albright before the
House Subcommittee on National Security,
Committee of Oversight and Government Reform**

June 6, 2018



The top image is a Google Earth commercial satellite image showing the Parchin complex that was involved in nuclear weapons high explosive testing work in the AMAD project. This site has been extensively sanitized by Iran. The Nuclear Archive discusses this site, including the two main facilities which Iran calls in the documents Talaghan 1 and 2. Talaghan 1 contains the high explosive test chamber often discussed publicly and by the IAEA. European journalists recently received from senior Israeli intelligence officials an image from the archive of a Marx generator in Talaghan 2, which is a building on the north end of the site (see second image). According to the Israelis, the Marx generator produced a high voltage pulse for a flash x-ray used inside Talaghan 2 to examine small-scale tests of hemispherical high explosives components for the AMAD project in a small, elongated chamber. The Nuclear Archive shows that Iran conducted many more high explosive tests related to nuclear weapons development than previously known. The IAEA has not visited the Talaghan 2 building. Source: Senior Israeli intelligence officials



An assembly device for the central portion of a nuclear explosive, where a surrogate metal would be used instead of highly enriched uranium. It contains what the Israelis call the “flyer” of the inner part of a nuclear device and a core made of a surrogate material instead of highly enriched uranium (inner core not visible in the image but see below). The external hemisphere is apparently the flyer; one of which can be seen in the background on the left of the image. This device can be recognized in a simulation in the video of Prime Minister Netanyahu presenting the nuclear archive on April 30, 2018 at about 6:45/19:48. The animation shows the device in action assembling an actual nuclear weapon. It is significant that Iran built this assembly, which appears in this case for use with a surrogate metal core of material, not an actual nuclear weapon. It is unclear if it is a full-size assembly device. Source of image and text: Senior Israeli intelligence officials. The video can be found at <https://www.youtube.com/watch?v=pkhrV4cZLE>