Institute for Science and International Security

Report

Unsealed Indictment Shows Iranian Agents Acquired Controlled Camera with Nuclear Weapons Applications from United States

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Highlights

In the spring of 2023, the U.S. Justice Department unsealed an indictment from 2012, which shows that in addition to the previously known high-speed cameras Iran purchased from Russia, brokered by Mohsen Vanaki,[2] *Iran also acquired another camera with applications in nuclear and ballistic missile testing at the same time from the United States.*[3] *From 2006 to 2009, five agents residing in Iran, Azerbaijan, the United Arab Emirates (UAE), and Canada worked together to purchase the camera, which required an export license, from a U.S. company. They then shipped the camera via Canada and the UAE to an Iranian customer with known ties to Iran's nuclear and ballistic missile program.*

While a first attempt to purchase the camera failed, a second attempt succeeded, requiring an elaborate scheme with multiple transshipment points, front companies, and falsified end-user information. Ironically, the Iranian end user experienced multiple technical issues with the camera post-shipment, requiring prolonged back-and-forth communication among the network and with the manufacturer. Despite efforts taken by the multiple agents to ship the camera and conceal its end use, this case reveals red flags and missed opportunities to stop the initial shipment or the repair and technical consultations post-shipment.

While it is difficult to determine in what way the camera could have contributed to Iran's nuclear weapons efforts, there are several indications that Iran was continuing nuclear weapons related activities previously conducted under the Amad plan during that time frame, and multiple governments agreed at the time that Iran's nuclear weapons program was likely ongoing. The case highlights that Iran seeks controlled high-speed cameras for nuclear and

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[2] David Albright, Christina Walrond, "The Trials of the German-Iranian Trader Mohsen Vanaki:
The German Federal Intelligence Service Assesses that Iran Likely Has a Nuclear Weapons Program", *The Institute for Science and International Security*, September, 16, 2009 "https://isis-online.org/uploads/isis-reports/documents/MohsenCaseStudy_23Oct2009.pdf; and David Albright with Sarah Burkhard and the Good ISIS Team, *Illicit Trade Networks*, *Connecting the Dots Volume 1,*
(Washington, DC: Institute for Science and International Security Press, 2021).
[3] Department of Justice Press Release, "Justice Department Announces Charges and Sentence in Connection with Attempts to Acquire Military and Dual-Use Technologies," March 21, 2023; *Beschluss*, Bundesgerichtshof, March 26, 2009 (Decision of the Federal Court of Germany).

military applications. It also serves as an important reminder that Iran does have the type of sophisticated equipment needed to conduct various aspects of nuclear weapons development, then and today. Additionally, this case again shows the value of dual-national and other Iranian procurement agents located outside of Iran, especially in Western countries. Moreover, if they are arrested and prosecuted, Iran has effectively developed a strategy of trading them for innocent Western hostages it has arbitrarily seized inside Iran.

Introduction

On April 17, 2012, Bahram Mahmoudi Mahmoud Alilou, Shahin Golshani, and Asghar Mahmoudi, as well as the UAE-based company Modern Technologies, were secretly indicted by a grand jury in the United States District Court of the District of Columbia on charges of smuggling goods, violating the Arms Export Control Act, and violating International Traffic in Arms Regulations.[4]

Bahram Mahmoudi Mahmoud Alilou (also known as Aran), was a citizen of Iran and a resident of Azerbaijan. He was the owner and managing director of Aran Modern Devices Kish Company (AMD), a company based in Iran that procured goods on behalf of Iranian customers, in this case, Isfahan Optics Industry. Aran also worked for Modern Technologies, a front company based in the UAE used to acquire foreign goods for Iranian customers. Asghar Mahmoudi, a citizen and resident of Iran, was also an owner and managing director of AMD. Shahin Golshani was a resident of the UAE and the General Manager of Modern Technologies. In his role, he received U.S.-originated goods and shipped them to customers in Iran. The indictment states that, in addition to the camera, the agents were also accused of purchasing and sending a meteorological sensor system to Iran and attempting to purchase nose landing gear for an F-5E/F fighter jet.

Throughout this case, the defendants communicated with a representative of Isfahan Optics Industry. Isfahan Optics Industry is linked to Iran's nuclear and ballistic missile programs and was sanctioned in 2010 by the EU and other countries such as Canada and Australia.[5] The German government flagged Isfahan Optics Industry as a concern as early as 2007 and shared warnings with industry partners, but it is not clear whether that only applied to German industry, and whether the German government also warned against the dangers of related Iranian procurement entities or provided information on specific items sought.[6]

[4] United States District Court for the District of Columbia, *Indictment: United States vs. Bahram Mahmoudi Mahmoud Alilou et al.,* April 17, 2012, https://www.justice.gov/usao-dc/press-release/file/1575626/download.
[5] "Isfahan Optics Industry," Iran Watch, January 26, 2011, https://web.archive.org/web/20230404183428/https://www.iranwatch.org/iranian-entities/isfahan-optics-industry.
[6] "Isfahan Optics Industry," January 26, 2011.

According to the European Union, both Modern Technologies[7] and Aran Modern Devices[8] are also linked to Iran's nuclear program. Both companies were sanctioned by the EU in 2011 for their role in procuring high-tech equipment that has military and nuclear purposes. Modern Technologies provides another link to the brokering case involving Mohsen Vanaki, who also used Modern Technologies in the UAE as a front and transshipment point.

The Scheme

First Attempt

Starting in September 2006, Aran, representing Modern Technologies, began emailing a company in Virginia about purchasing a Maxicam 3002 camera and asked questions about the camera's specifications, such as gating time, on behalf of Isfahan Optics Industry in Iran. Aran was in contact with a representative of Isfahan Optics Industry in Isfahan and passed along to this representative the answers given by the Virginia company about the Maxicam.

Later that month, Aran, as a representative of Modern Technologies, sent an email to the Virginia company requesting an invoice for the Maxicam 3002. He then sent an email as a representative of AMD to Isfahan Optics Industry for the Maxicam 3002 requesting 721,680,000 Iranian Rial, or about $78,529, according to the indictment. In October 2006, Aran emailed Golshani requesting that he send a completed and signed end-user form for the Maxicam to the Virginia company. Golshani sent Aran the purchase order with a completed Statement of Ultimate Consignee and Purchaser. The statement listed "System Dizayners Co,'' in Baku, Azerbaijan as the end user, with the end-use being listed as "analysis of smoke attack and power plant pollution."[9] Later that month, Aran sent the Virginia company the above documents for the Maxicam 3002.

In January 2007, Aran sent a letter through AMD to Isfahan Optics Industry informing them that, after many exchanges, he had heard that the U.S. Department of Defense had denied the export license, and the Department of Commerce was unlikely to overrule the decision. The following month, the Virginia company informed Aran that the export license had been denied, and he responded by asking if there were any other conditions where the item could be sold through other companies, without an export license, or with another name.[10] The Virginia company responded saying they would not engage in any illegal transactions. Figure 1 below illustrates the failed attempt.

[7] "Modern Technologies FZC," Iran Watch, July 13, 2011, https://www.iranwatch.org/suppliers/modern-technologies-fzc.
[8] "Aran Modern Devices," Iran Watch, July 13, 2011, https://www.iranwatch.org/suppliers/modern-technologies-fzc.
[9] *Indictment: United States vs. Mahmoudi et al.*
[10] *Indictment: United States vs. Mahmoudi et al.*

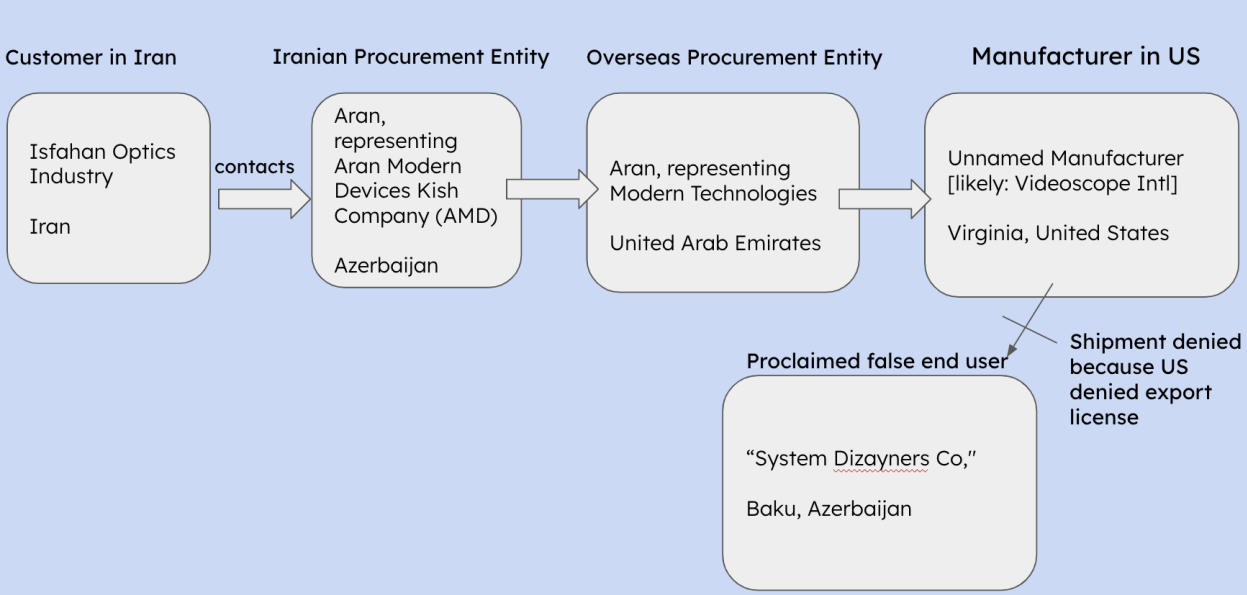

Figure 1. In their first attempt, Aran and Golshani used their front company in the UAE to try to purchase the camera from the U.S. and ship it to Iran using a false end-user statement.

Second Attempt

At this point, Aran and Golshani enlisted the help of two co-conspirators. In February 2007, an unnamed agent in Iran asked a dual citizen of Iran and Canada, residing in Canada, to request a quote for the Maxicam 3002 from the Virginia company. Shortly after this request, the Canadian agent sent an invoice for the Maxicam 3002 to Aran, stating that the item would be shipped to Modern Technologies in Sharjah, UAE. Aran then sent a letter through AMD to Isfahan Optics Industry stating they had purchased the camera through another channel, and it was to be delivered within five weeks.

In March, the co-conspirator in Canada paid $30,000 by check to the Virginia company as a down payment for the Maxicam. He then wired $11,000 to the company as a final payment. This indicates that the commission on the camera was the difference between the price paid to the Virginia company ($41,000) and the price given to Isfahan Optics ($78,529), namely $37,529. The indictment does not include what, if any, conditions were set for the final payment. The Maxicam was then sent to the Canadian trading company operated by the co-conspirator, who shipped it to Modern Technologies in Sharjah, UAE. In April, Mahmoudi requested that Golshani send the Maxicam 3002 to an address in Tehran, Iran, with an invoice listing the Maxicam 3002 at $100. The low-value input for the shipment of the Maxicam was likely intended to evade customs and export control scrutiny. Figure 2 illustrates the elaborate scheme that ultimately succeeded.

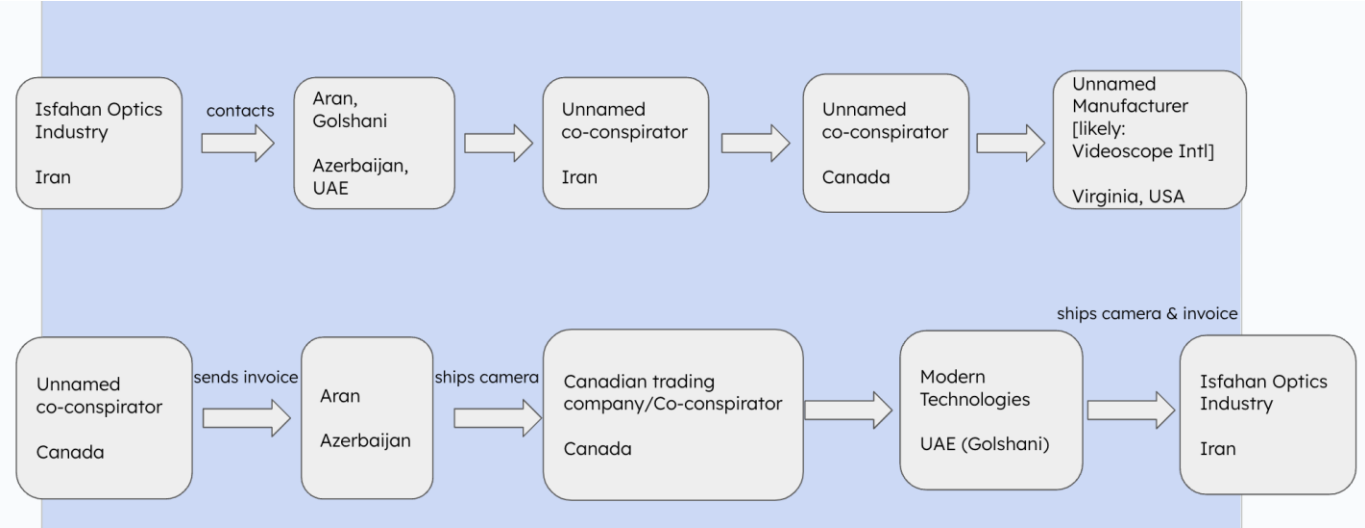

Figure 2. After the failed attempt, Aran and Golshani recruited a contact in Canada to acquire the camera from the Virginia company. The source in Canada then sent the camera and invoice to Golshani in the UAE, who shipped it to Iran.

Issues with the Camera

The following month, the camera began to malfunction. Aran sent an email to the agent in Canada with the subject line "Maxicam3002 Malfunction! [sic]"[11] and questions sent to him by Isfahan Optics Industry. The unnamed Canadian agent forwarded these questions to the Virginia company. Instructions and correspondence from the Virginia company were all sent through the co-conspirator in Canada to be sent to the UAE and ultimately back to Isfahan Optics Industry.

Repairs were also needed for the camera's power supply in July 2007, so Aran and Golshani shipped the power supply from Iran to Modern Technologies and then to the co-conspirator in Canada, who returned it to the Virginia company for repair. In October 2007, the agent in Canada shipped the repaired power supply back to Modern Technologies in the UAE. Golshani emailed Aran an airway bill for the repaired power supply with proof that he had sent it to Iran.

In January 2008, Aran asked the agent in Canada for a CD and catalog for the camera. The next month, Aran emailed a representative of Isfahan Optics Industry acknowledging problems with the camera and stating that AMD was arranging for Isfahan Optics Industries to receive installation and operation training. Aran sent a letter to Isfahan Optics Industry signed by Mahmoudi. The letter stated that a specialist from Canada would be sent to the U.S. for training on the installation and operation of the camera, and this specialist would then travel to Iran to fix the problems.

In February 2009, Aran sent an email to the co-conspirator in Canada, forwarding technical questions about the Maxicam 3002 which he had received from Isfahan Optics Industry.

[11] *Indictment: United States vs. Mahmoudi et al.*

Seemingly getting impatient, Aran also directly emailed a representative of the Virginia Company, identifying himself as a representative of Modern Technologies, and falsely stating that he had purchased the Maxicam 3002 from another source but had encountered problems with it. He asked the same technical questions he had emailed to the agent in Canada prior. It is not clear whether the Virginia Company ended the communication at this point and notified authorities.

Details on the Camera

The Justice Department describes the Maxicam 3002 as a "high-speed camera with known nuclear and ballistic missile testing applications." The camera appears to be classified as a high-speed camera due to its short exposure time rather than due to the number of frames per second (fps); the frames per second for the Maxicam 3002 are specified as 10 or 20 in a technical datasheet. As such, it is not a typical high-speed framing camera with thousands to millions fps used in nuclear weapons development to photograph detonations, explosions, and resulting shockwaves, and it is difficult for the Institute to assess in what way the camera could have contributed to Iran's downsized but ongoing nuclear weapons program at that time.[12] Furthermore, the camera does not appear to be controlled strictly for nuclear applications, but military applications more broadly. The indictment indicates that the shipment of the Maxicam 3002 required export license approval by the Department of Defense and the Department of Commerce, possibly because the camera has an integrated Generation III image intensifier and thus may fall under Category 12 of the U.S. munitions list, which controls lasers, imaging, and other guidance equipment, and which triggers a State Department export license requirement with possible interagency review.[13] More likely, the camera was categorized as a dual-use item on the Commerce Control list due to the image intensifier's short gating time, specified in the indictment as 3 to 5 nanoseconds, where the Commerce Control List under Category 6, Sensors and Lasers, lists certain camera types and components with less than 50 nanosecond frame exposure time as controlled for nuclear non-proliferation purposes.[14] The indictment is not specific on the licensing requirements, other than stating that the defendants failed to acquire an OFAC license, required due to sanctions placed on Iran. On its website, Video Scope International, Ltd. (Video Scope) noted that products with image intensifiers were intended for use in the United States only and that export licenses were required for international customers.[15]

A knowledgeable person from a Western country consulted by the Institute suggested that the camera is primarily controlled for conventional military purposes by their government but

[12] David Albright with Sarah Burkhard and the Good ISIS Team, *Iran's Perilous Pursuit of Nuclear Weapons* (Washington, DC: Institute for Science and International Security Press, 2021).
[13] 22 CFR Part 121, https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M/part-121.
[14] Commerce Control List, Category 6, Sensors and Lasers, https://www.bis.doc.gov/index.php/documents/regulations-docs/2338-ccl6-6/file.
[15] Video Scope International Website, February 5, 2007, https://web.archive.org/web/20070205052443/http://www.videoscopeintl.com/ [Accessed via Internet Archive].

added that there are potential technical uses related to nuclear weapons. This person specified that some critical non-weapon-grade uranium or non-plutonium components are easy to test with the camera, if the right test setup exists.

This model of the Maxicam does not appear to be sold anymore as of 2023, but an old datasheet for the Maxicam 3002 describes it as an all-digital gated intensified charge-coupled device (ICCD) camera, which allows image acquisition at very low light levels or over a wide light spectrum at high speeds.[16] The gating and amplification for the camera occur in the image intensifier tube. Image intensifiers were initially developed for night vision applications by the military, but increasingly, their development is being driven by scientific applications.[17] The camera can be operated entirely by computer control, and it includes a frame grabber, power supply, and C-View software for real-time viewing and image capture.[18] A picture of the Maxicam 3002 from Video Scope's data sheet is included below (Figure 3).

Video Scope International, a Northern Virginia-based company that made and sold the camera in the time frame of the case, also advertises specifications that can be made for the camera, including high speed gating of less than 3 nanoseconds, an intensifier gate, and gate delay. Neither the datasheet nor the website lists any applications for the Maxicam 3002. A newer model of the Maxicam, the Maxicam 4000, is advertised as having many applications including microscopy, bioluminescence, UV corona discharge observation, and photon counting.[19]

Figure 3. MAXICAM 3002. Source: Video Scope International.

Connection to Vanaki Case

In 2007, German authorities arrested a German-Iranian citizen named Mohsen Vanaki for illegally orchestrating the transfer of dual-use equipment with nuclear weapons applications to Iran. Vanaki used his small German trading company to arrange the sale of dual-use equipment

[16] Video Scope International, "INTENSIFIED DIGITAL CCD CAMERA MAXICAM 3002," February 7, 2007 [Accessed via Internet Archive].
[17] "An Introduction to Gated Intensified Cameras (ICCDs)," Oxford Instruments, accessed August 17, 2023, https://andor.oxinst.com/learning/view/article/intensified-ccd-cameras.
[18] Video Scope International, "INTENSIFIED DIGITAL CCD CAMERA MAXICAM 3002," February 7, 2007.
[19] Video Scope International, "INTENSIFIED CAMERA MAXICAM 4000," accessed September 1, 2023. https://videoscopeintl.com/intensified-camera/.

from Russian, European, and American manufacturers to Iranian front companies located in the United Arab Emirates, one of them being Modern Technologies.[20]

One of Vanaki's most notable undertakings included brokering the sale of two high-speed framing cameras manufactured by BIFO in Russia, after Germany and Switzerland denied many of his requests for export licenses because of insufficient end-user information, and for which he was charged with violating several German anti-proliferation laws with possible harsh sentencing.

In 2008, a German state court dismissed the charges against Vanaki based on the U.S. National Intelligence Estimate that Iran was most likely not developing a nuclear weapons program at the time of Vanaki's business dealings. The ruling came as a surprise, considering it was decided despite Germany's own intelligence estimates that there were strong indications that Iran actually did have a nuclear weapons program at the time of the crime.

The following year, the Bundesgerichtshof, Germany's Federal Court of Justice, ruled that the state court should not have dismissed the case, as the U.S. National Intelligence Estimate should not have been used as proof and is not intended to be used as fact, and because its finding that Iran had no nuclear weapons program had been rejected by German intelligence. After a retrial, Vanaki was sentenced to a 22-month suspended sentence and ordered to pay the court 5,000 Euros.[21]

Vanaki's high-speed camera procurements occurred in parallel to Aran's and Golshani's efforts to supply Iran with the Maxicam 3002. In both cases, a dual Iranian citizen played a major role in acquiring controlled equipment for Iranian customers, as did falsified end-use documents when purchasing these goods. In the Vanaki case and in the Aran case, holes in the international fabric of export controls were exploited, one by purchasing the items in Russia, and one by transshipping them via Canada.

Vanaki's arrest was not the end of Iran's efforts to procure specialized BIFO cameras. After Vanaki was arrested, another Iranian agent made an effort to buy three of the same high-speed cameras from the Russian company BIFO, using a front company in the UAE.

Still yet another network attempted or achieved multiple procurements of additional computer-controlled CCD cameras with high resolution and high-speed data transfer, primarily seeking CCD cameras from U.S. and Japanese manufacturers, as well as U.S. software to operate CCD cameras. However, many of these additional known sought-after cameras cost only a fraction of the BIFO camera and the Maxicam 3002.

[20] "The Trials of the German-Iranian Trader Mohsen Vanaki."
[21] "The Trials of the German-Iranian Trader Mohsen Vanaki."

Lessons and Recommendations

This case involving the five agents' purchase of the Maxicam 3002 highlights the need for international cooperation to counter sophisticated and well-connected networks of agents and front companies in multiple countries, and the need for sharing timely, counter-proliferation related information between governments. The Vanaki case shows that at least the German government was aware that high-speed cameras with nuclear applications were of interest to Iranian procurement entities, and that certain front companies and transshipment points were used to procure these controlled items. Despite this, the Virginia company appeared unsuspecting, as correspondence between the Virginia company and Aran, via the Canadian agent, went on well past Vanaki's arrest in November 2007 and continued into 2009.

The case thus also stresses the importance of two-way industry-government cooperation: sharing information on illicit procurement trends and entities among governments, followed by targeted outreach to warn the affected national industry. Here, a relationship focusing on prevention, rather than strict enforcement, may encourage industry to share information on suspicious inquiries with the government, and thus create an advantageous loop of information sharing in which both parties benefit.

Lastly, the case emphasizes the importance of individual companies' internal compliance systems, including small and medium-sized enterprises that only sell a handful of specified equipment, to detect and thwart illicit procurement attempts. Red flags which the company could have picked up on include the circumstance that two individuals, both representing a trading company rather than a credible end user, attempted to purchase the same product with the same specifications within a short period of time, with the first being denied an export license – especially as this followed direct communication to the company that they intended to procure the camera regardless of this initial rejection.