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Case Study - Chinese Salesman Arrested in Pressure Transducer Case*

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On May 18, 2012, Qiang Hu, aka Johnson Hu, a Chinese citizen, was formally charged by the District of Massachusetts with one count of conspiracy for violating U.S. export controls by allegedly selling thousands of pressure transducers to unnamed customers through his position of sales manager at MKS Instruments Shanghai Ltd. in China.¹ MKS Instruments is headquartered in Andover, Massachusetts but holds worldwide subsidiaries that distribute its products. Between 2007 and 2012, Hu allegedly worked with unnamed accomplices (co-conspirators), two of whom were employed at MKS Shanghai, and two phony Chinese trading companies, to fraudulently obtain U.S. export licenses for over \$6.5 million worth of pressure transducers. Hu and the co-conspirators allegedly arranged their unlawful export to unauthorized Chinese end-users or to other, unnamed country end-users.² MKS Instruments is not being investigated in the case and appears to have fully cooperated with authorities. Hu was arrested on May 17, 2012 at an Andover hotel and faces up to 20 years in prison and a \$1 million fine.

One important use of pressure transducers is to measure the gas pressure inside centrifuge cascades. Countries, such as Iran, Pakistan, and likely North Korea use a considerable quantity of the equipment in their centrifuge plants and have regularly sought them through surreptitious means as used in this alleged scheme. They often seek MKS pressure transducers because specialized materials inside these pressure transducers allow them to better withstand corrosive gases, such as uranium hexafluoride, than alternative brands (the presence of those materials is the reason why they are controlled).³

* We wish to thank Orde Kittrie for his assistance in highlighting this case to ISIS.

¹ Department of Justice Press Release, "Chinese National Charged in Massachusetts with Illegal Exports of Sensitive Technology to China," May 23, 2012. MKS pressure transducers are classified as "dual-use equipment" controlled for export under national export laws because of the specialized materials contained in them. Not all pressure transducers are controlled in this manner because they use non-controlled materials. However, U.N. Security Council sanctions on Iran ban the sale of all pressure transducers to Iran's nuclear program.

² *Affidavit of Catherine L. Donovan, Special Agent of the Department of Commerce*, May 18, 2012.

³ See footnote 1 explanation. Despite the problems in using alternative brands, procurement attempts show that Iran has also sought these alternatives for its centrifuge program. Like in the case of less corrosion-resistant, fast-acting valves, these alternative brands appear to work well enough in a centrifuge plant, despite their weaknesses.

Henk Slebos, a Dutch member of the Pakistani A.Q. Khan network, was convicted in the Netherlands in 2005 for illegally exporting MKS pressure transducers to Pakistan.⁴ In 2009, the United States through a sting operation arrested an Iranian procurement agent, Parviz Khaki, who attempted to order from a Chinese middleman equipment for centrifuge plants including two MKS Baratron pressure transducers.⁵

This case may shed light on a mystery involving Iran's gas centrifuge program. For several years it has been known that Iran obtained a large quantity of MKS pressure transducers for its centrifuge program. Two 2008 photographs taken of Iranian president Mahmoud Ahmadinejad during a tour of the Natanz pilot fuel enrichment plant show installed MKS pressure transducers (figures 1 and 2). In the background of figure 2, there are several MKS pressure transducers visible in a cascade of IR-1 centrifuges. Iran has used many pressure transducers in its IR-1 centrifuge cascades, perhaps as part of the cascades' computerized safety control systems, requiring the smuggling of hundreds if not thousands of pressure transducers. The Hu case may help explain how Iran received so many MKS pressure transducers, despite this equipment being subject to stringent U.S. export control laws.

The Scheme

Beginning in 2007, according to the indictment of Qiang Hu, Hu allegedly worked with an unnamed MKS Shanghai sales engineer and an unnamed logistics and purchasing manager to "creat[e] an illegal scheme for selling pressure transducers to unauthorized end-users in China and elsewhere..."⁶ Hu needed to obtain export licenses from the United States Department of Commerce to sell MKS pressure transducers. He would allegedly send "intra-company purchase orders" containing false end-user information and certifications to MKS Instruments in Andover, which would unwittingly obtain the U.S. export licenses on MKS Shanghai's behalf. Hu and the co-conspirators would allegedly send the pressure transducers to intermediaries acting on behalf of the actual end-users or to the actual end-users located in China and elsewhere.

As part of the alleged scheme, an affidavit of a Commerce Department agent who investigated the case indicates that the conspirators developed "an elaborate export license 'quota' system in which they used the names and business credentials of legitimate business customers to obtain a large quota of available export licenses in order to sell pressure transducers to customers that lacked a license."⁷ The U.S. indictment claims that Hu and the co-conspirators

⁴ David Albright, *Peddling Peril* (New York: Free Press, 2010), pp. 147-148.

⁵ United States District Court for the District of Columbia, *Grand Jury Indictment: United States of America v. Parviz Khaki and Zongcheng Yi*, May 7, 2012, unsealed July 12, 2012. http://content.govdelivery.com/attachments/USDHSICE/2012/07/13/file_attachments/141298/Khaki%2B_Yi_Super_seding_Indictment.pdf

⁶ United States District Court in the District of Massachusetts, *Indictment: United States of America v. Qiang Hu aka Johnson Hu*, Filed June 13, 2012. Unless otherwise indicated, information quoted in this case study is from the indictment.

⁷ *Affidavit of Catherine L. Donovan*, pp. 11.

would supply unauthorized end-users with goods licensed for legitimate customers,⁸ interchangeably using pressure transducers in storage to fill certain orders for illicit customers. At times, they would also apply “for new licenses in the name of (legitimate, previously licensed) customers...” when those customers had not placed orders.⁹

Hu and the co-conspirators would also “frequently” instruct illicit end-user customers to place orders for MKS Shanghai pressure transducers with two Chinese “front” companies¹⁰ “created by or associated with” the illicit procurement ring. These two front companies, named in the Commerce Department affidavit, served as phony Chinese distributors of MKS pressure transducers and also claimed end-users on U.S. license applications. “Shanghai Racy System Integration Co., Ltd,” or “Racy System,” and “Shanghai Liyouda Electro-Mechanical Equipment Co., Ltd.” were owned and operated by another conspirator, a Chinese citizen who was not an employee of MKS Shanghai.¹¹ After receiving the orders, the conspirators would then allegedly supply MKS Andover with phony end-user information for use in obtaining export licenses. The conspirators would allegedly use quotas assigned to these front companies through the fraudulently obtained export licenses to supply illicit customers.

It is unclear when U.S. authorities caught on to the scheme, but one indication of illegal activities could have been the appearance of U.S.-made, MKS pressure transducers at the Natanz enrichment plant in publicly available photos on the President of Iran’s website in 2008.

Communications about Illicit Procurements which demonstrate the alleged scheme

“Fraudulent” Use of Export Licenses and “Quota System”

In October 2009, Hu allegedly sent to a Chinese customer an e-mail stating, “MKS 622A and 226A (types of pressure transducers) [also called manometers]...are export controlled products by the U.S. in order to avoid possible usage in military and other sensitive fields...Because your previous order(s) is [a] small quantity, our company temporarily borrowed some quota from other customers.”

In May 2010, Hu allegedly e-mailed a Chinese customer about a price quote for MKS type 622B pressure transducers which he also sent to the alleged MKS sales engineer co-conspirator and other employees. The e-mail indicated that due to a time delay in securing a U.S. export license, MKS Shanghai would send “some remaining quotas” from other customers.

In July 2010, Hu allegedly told a Chinese customer that he planned to use an export license issued to another company, the front company Shanghai Liyouda, to send the goods to this

⁸ Ibid, pp. 3.

⁹ Ibid, pp. 9.

¹⁰ Ibid, pp. 3.

¹¹ Ibid, pp. 9.

customer. He called Shanghai Liyouda his “rep company.” He wrote, “During the application process,...we will continue the supply using our rep’s quota...your company will place PO [purchase order] directly with our rep company.” The Commerce Department affidavit indicates, “Documents obtained from MKS show that during 2010 and 2011, MKS-Shanghai sold over 2,000 pressure transducers to Liyouda.” Those pressure transducers allegedly went to illicit end-users.

In August 2010, the MKS logistics and purchasing manager allegedly sent an e-mail to Hu and other employees describing the alleged scheme and problems encountered: “...Our current usable export license(s) (are) in severe shortage. We have to describe the end users to the Department of Commerce if we want to repeatedly apply export licenses for existing customers. And the fact that customers don’t actually buy makes it difficult to apply.” The manager seems to be describing the problem faced by the illicit procurement ring of repeatedly using the same false end-user information when applying for U.S. export licenses. The e-mail continues on to describe how the alleged conspirators avoided this problem by using quotas designated for legitimate end-users: “...Since the quantity is really very large, as we discussed, we can use some of the quota from Hanghong, Shangyu Jingsheng and Shiva Medical (not too many)... otherwise it will affect us in the future...”

Use of Two Front Companies as Middlemen and False End-Users

In March 2008, the MKS Shanghai sales engineer allegedly sent e-mail communications between the owner of the two front companies “created by or associated with” the illicit procurement ring and an illicit Chinese customer. The e-mail stated to the manager of Racy System, “Please help with the order (for pressure transducers) because of license issues.” The sales engineer told the actual Chinese customer, “Because this product is a military product, you will need an export license from the U.S. Dept of Commerce. Therefore, this agency company (Racy System) will handle the order. Please understand.” Moments later, the owner of Racy System responded to the customer, “I heard that your company wants to purchase MKS72211TBA2FJ Pressure Thin Film Manometer (pressure transducers). Our company is the agent of MKS in China, and we have export license from the US Dept of Commerce. Please inform us about your quantity and contact information.”

From June 2008 to September 2011, MKS Shanghai’s conspirators allegedly caused MKS Andover to “apply for, and obtain, four export licenses from the U.S. Department of Commerce authorizing the sale and export of 193 MKS pressure transducers to Company A (the term the indictment uses to identify Racy System), which was identified as the ultimate consignee (end-user).”¹² The Commerce Department affidavit indicates that the license stated the “end-user was Racy System and that the parts would be used in medical plasma cleaning systems allegedly manufactured by Racy System.” Further, the Commerce Department special agent who investigated the case stated that she did not believe Racy System manufactured such equipment and that the addresses listed for Racy System were an apartment and a small

¹² Indictment and *Affidavit of Catherine L. Donovan*, pp. 10.

conference room. During 2010 and 2011, the investigator writes, Racy Systems “took delivery of thousands of MKS pressure transducers with a retail value exceeding \$4.5 million.” She also wrote, “Some of these (pressure transducers) were obtained pursuant to the export licenses issued in the name of Racy System. Others were obtained pursuant to export licenses issued in the names of other companies.”¹³

In December 2008, the MKS sales engineer allegedly contacted a customer with a Chinese name located in Dubai and working for a company called Parr Lab Technical Solutions regarding the sale of a gauge.¹⁴ He notified the customer that the goods “must ship to China, because of license...” The Parr Lab agent and the MKS sales engineer allegedly decided that the former would order the goods through Racy System and collect them from MKS Shanghai. According to the Commerce Department affidavit, in 2004, the United States conducted a pre-license inspection of Parr Labs’ location in Hong Kong because it sought to buy parts usable in missiles. The United States deemed Parr Labs an “unsuitable end-user for any U.S. commodities” and added it in 2005 to the Department of Commerce List of Unverified (Red Flagged) End Users. Persons and entities on the list are “suspected of diverting U.S. products for nefarious purposes, including the production of weapons of mass destruction.”¹⁵

In January and February 2011, Hu and the co-conspirators allegedly exported 200 pressure transducers in two separate consignments to Shanghai Liyouda.

Lessons and Recommendations

The U.S. government continues cracking down on the efforts of illicit procurement networks in China and elsewhere. U.S. efforts alone to investigate the alleged dealings of MKS Shanghai employees led to the discovery of the scheme, and only after millions of dollars worth of pressure transducers were allegedly sold.

The chances are good that Iran was a customer of this smuggling network. The quantity of MKS pressure transducers sold during the alleged scheme numbered into the thousands and Iran has sought MKS pressure transducers on other occasions, and has in fact obtained them, as the photos of these pressure transducers at Natanz indicate. Iran may have used additional China- or Dubai-based intermediaries to obtain the equipment from MKS Shanghai and its affiliated Chinese trading companies, further obscuring its role and creating another degree of separation between MKS Shanghai and Iran. If the allegations in this case are true, this rogue Shanghai salesman may be responsible for supplying Iran with untold quantities of a key, U.S.-made good that Iran requires to operate its centrifuges.

This case shows that Chinese private citizens and companies conspire to violate U.S. export control laws. This subsidiary’s rogue efforts are not alone and it is one among many China-

¹³ *Affidavit of Catherine L. Donovan*, pp. 10.

¹⁴ *Ibid*, pp. 16-17.

¹⁵ *Ibid*.

based companies caught conducting illicit trade.¹⁶ China does not do enough to stop these illegal activities and is negligent in enforcing its own trade control laws and U.N. Security Council sanctions on Iran and North Korea. This case and many others in recent years point to systematic illicit procurement and transshipment efforts through China to Iran. The United States should designate China a “Destination of Diversion Concern” under Title III of the Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA). CISADA requires the executive branch to designate as a “Destination of Diversion Concern” any country that allows substantial diversion to Iran of proliferation-sensitive U.S.-origin goods, services, or technologies. Designating China a destination of diversion concern would require companies there to apply for special licenses to import controlled or sensitive U.S. goods on account of the high risk that they may be diverted to Iran.¹⁷

This case shows that U.S. pre-license inspections are useful in identifying potentially nefarious customers of controlled and sensitive U.S. goods, as the inspection of Parr Labs showed. The United States should consider conducting pre-license inspections for all unfamiliar Chinese companies seeking to purchase sensitive equipment to ensure they will not be diverted to banned Chinese entities or transshipped to proliferant states such as Iran, Pakistan, or North Korea.

This case shows that the clever schemes used by illicit procurement networks are continuing and even becoming more elaborate. U.S. companies and other major country suppliers of dual-use goods in China should take a closer look at the activities of their subsidiaries located there, making improvements to internal compliance systems as needed. Companies continue to be the first line of defense against illicit nuclear trade; their due diligence efforts to determine the identity of customers and internal compliance systems to prevent bad actors for carrying out these types of schemes remain vital bulwarks against proliferant states obtaining the goods they seek.

Links to the case documents:

[Department of Justice press release](#)

[Indictment of Qiang Hu](#)

[Criminal complaint against Hu](#)

[Commerce Department investigator affidavit](#)

¹⁶ See additional ISIS case studies involving China: <http://isis-online.org/studies/category/illicit-trade/>

¹⁷ For more on designating China a destination of diversion concern, see Albright et al., *U.S. Nonproliferation Strategy for the Changing Middle East*, (Washington, D.C.: The Project on U.S. Middle East Nonproliferation Strategy, January 2013), pp. 48. http://www.isis-online.org/uploads/isis-reports/documents/US_Nonproliferation_Strategy_for_the_Changing_Middle_East.pdf



Figure 1: Iranian president Mahmoud Ahmadinejad examines an advanced gas centrifuge test stand at the Natanz pilot fuel enrichment plant during a 2008 visit. An MKS pressure transducer can be seen. Source: Website archive of the president of Iran, www.President.ir



Figure 2: President Ahmadinejad examines gas centrifuge equipment, which includes an older MKS pressure transducer (next to his right hand) during a visit to the Natanz pilot fuel enrichment plant in 2008. In the background is an IR-1 gas centrifuge cascade which contains many more recent (mid-2000s) models of MKS pressure transducers. Source: Website archive of the president of Iran, www.President.ir