

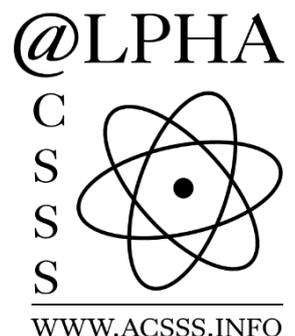
Project Alpha  
Centre for Science and Security  
Studies



Li Fang Wei (Karl Lee)  
Proliferation Case Study Series

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19 May 2014



# About Project Alpha

Alpha was established in 2011 at King's College London's Centre for Science and Security Studies (CSSS) with government funding to improve the implementation of trade controls. Alpha conducts research to understand both illicit trade and the effectiveness of supply-side controls in countering such trade. This research forms the basis of Alpha's outreach and capacity building activities.

## About the Case Study Series

This series was developed to highlight individual cases of illicit trade so that broader policy lessons can be identified and enacted. The series draws upon a variety of open source information—most notably, indictments and criminal complaints. Readers should note that this case study is based primarily upon criminal indictments and complaints.

## Acknowledgements

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## Summary

This case study details the alleged involvement of Li Fang Wei (AKA Karl Lee and numerous other aliases) in supplying Iran's ballistic missile programme in defiance of United Nations sanctions. This case has dragged on for more than a decade, with the US Department of State designating his initial Dalian-based company, LIMMT Economic & Trade, in 2004. Since then, Li has set up numerous other companies in what can be considered three waves. Many of these companies have been sanctioned by the US government. In 2009, Li was indicted by a US court on 118 counts of using US banks to facilitate his proliferation-related activities.

Recent developments in this case considerably escalate its importance. In late April 2014, building on a further indictment, the US designated eight more "entities" connected to Li, although Chinese databases suggest that there are only four companies behind these eight. The US Department of State also announced an unprecedented \$5 million reward for information leading to his arrest and/or conviction. These steps highlight the importance of this case both to non-proliferation efforts and to US-China relations. Further information regarding Li's activities – mostly regarding his continued breach of US sanctions – was released in the recent indictment. However, there is no evidence to suggest that China has taken any non-proliferation specific actions against Li and his network. The Chinese government has responded to recent US action stating that it 'will harm bilateral cooperation on counter proliferation'.<sup>1</sup>

This unprecedented US action may be linked to information uncovered by Project Alpha of King's College London that suggests that Li's network may be moving towards the manufacture of fibre optic gyroscopes, a technology that is perfectly suited for use in ballistic missile guidance systems. Li has previously been accused of attempting to procure guidance components for Iran's missile programme, and moves by Li to manufacture fibre optic gyros could be seen as an effort by Li to move up the proliferation value chain. The recent designations also add weight to information uncovered by Alpha of KCL that suggests that Li is the owner or manager of a substantial graphite factory which opened in the outskirts of Dalian in 2006. This facility likely supplies MTCR-controlled material to international customers.

This case study constitutes a thorough examination of one of the most prolific 'serial proliferators' seen in recent years. In doing so, it re-highlights the proliferation challenges posed by Chinese entities. It also further highlights the need for urgent efforts to improve Chinese implementation of trade controls if global non-proliferation measures against countries like Iran and North Korea are to be effective.

In particular, if confirmed, any moves by Li to manufacture fibre optic gyros should be viewed as one of the most urgent challenges to global non-proliferation efforts: not since AQ Khan has a manufacturer of proliferation-sensitive technologies so brazenly and repeatedly sold their goods for use in prohibited programmes despite ongoing attention from national and international authorities.

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<sup>1</sup> Ben Blanchard, 'China 'resolutely opposes' U.S. sanctions on missile parts supplier', *Reuters*, 30 April 2014, <http://www.reuters.com/article/2014/04/30/us-china-usa-iran-idUSBREA3T07720140430>, accessed 9 May 2014.

## Main Points

- Li Fang Wei (or Karl Lee) has allegedly been involved in supplying a significant amount of material and components to the Iranian ballistic missile programme over the past decade;
- The materials that Li is alleged to have transferred are mostly metals and graphite, but there have also been allegations relating to the supply of guidance components and CNC machine tools;
- Li has created numerous front companies following the designation of his original company, LIMMT Economic & Trade as a proliferation risk. This was probably in order to circumvent the multiple rounds of US sanctions, allowing him to conduct illicit trade, and perhaps also legitimate business;
- The apparent links between Li and a large graphite factory in Dalian, China, are of concern. As are the apparent links with another company that is believed to be involved in the manufacture of fibre optic gyroscopes;
- Li, despite being sanctioned numerous times by the US authorities and facing one of the most complex interagency investigations in Chinese non-proliferation history, is believed to still be operating businesses that manufacture and export proliferation-sensitive items in China;
- The last specific allegations relate to Li's transfer of goods before 2009. However, press reports have alleged that Li made over \$10 million from Iran's missile programme between 2009 and 2013;
- On 29 April 2014, the US Government took further action against Li, going far beyond previous efforts. These included the designation of a further 8 of Li's entities, the seizure of \$6,895,000 of front company assets, and offered \$5m for information leading to his arrest and/or conviction. These steps, like many taken by the US in relation to this case, appear to have angered the Chinese government.
- There is information to suggest that Li's network is moving to manufacture fibre optic gyros – an item that Li has previously been accused of attempting to procure on behalf of Iran. Fibre optic gyros are one of the most advanced guidance technologies with potential uses in missiles, and any move by Li to manufacture such technology in light of other concerns about his activities must be viewed as a grave threat to international peace and security.

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## 1. Introduction

This case study details the alleged involvement of Li Fang Wei (AKA Karl Lee and numerous other aliases) in supplying Iran's ballistic missile programme in defiance of United Nations sanctions. This case has dragged on for more than a decade, with the US Department of State first designating his initial Dalian-based company, LIMMT Economic & Trade, in 2004.<sup>2</sup> Since then, Li has set up numerous other companies in what can be considered three waves. Many of these companies have also been designated by the US government.

In 2009, Li was indicted by a US court on 118 counts of using US banks to facilitate his proliferation-related activities. These charges related to the falsification of business records in order to use US financial institutions to receive payments for proliferation-sensitive goods that Li and his companies had transferred to Iran. The goods that Li is alleged to have transferred are mostly metal alloys and graphite. Although, there are also further allegations relating to CNC machine tools, missile guidance components and other metal items. The scale of his alleged activities is vast: a press report in 2013 alleged that since the 2009 indictment, Li had 'earned' at least \$10 million from his illicit dealings with Iran.<sup>3</sup>

Recent developments in this case considerably escalate its importance. In late April 2014, the US designated eight more "entities" connected to Li, although Chinese databases suggest that there are only four companies behind these eight. The US Department of State also announced an unprecedented \$5 million reward for information leading to his arrest and/or conviction. These steps highlight the importance of this case both to non-proliferation efforts in general and to US-China relations. Further information regarding Li's activities – mostly regarding his continued breach of US measures – was also released when he was charged in his absence at a US court.<sup>4</sup> However, there is no evidence to suggest that China has taken any non-proliferation specific actions against Li and his network. Responding to the most recent US government action, the Chinese government has stated that it 'will harm bilateral cooperation on counter proliferation'.<sup>5</sup>

In fact, new evidence suggests that Li may be expanding his efforts. Not only do the recent sanctions appear to confirm suspicions that Li is the owner or manager of a large graphite factory – Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation – but recent information uncovered by Project Alpha suggests that Li's network may also be moving towards the manufacture of fibre optic gyroscopes, a technology with uses in ballistic missile guidance systems.

This case study outlines the allegations against Li. These allegations relate primarily to missile proliferation, although some of the technology could also have use in nuclear applications. The case study also presents an analysis of the tactics that Li is alleged to have used to evade controls.

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<sup>2</sup> US Federal Register, Vol.69, No.188, 29 September 2004, p.58,212.

<sup>3</sup> W. Maclean and B. Blanchard, 'Exclusive: Chinese trader accused of busting Iran missile embargo', *Reuters*, 1 March 2013, <http://www.reuters.com/article/2013/03/01/us-china-iran-trader-idUSBRE9200BI20130301>, accessed 31 May 2013.

<sup>4</sup> United States District Court in the Southern District of New York, 'United States of America –against- Li Fang Wei', 28 April 2014, <http://www.justice.gov/usao/nys/pressreleases/April14/LiFangweiIndictmentPR/Li%20Fangwei%20in%20Rem%20Complaint%20and%20S1%20Indictment.pdf>, accessed 9 May 2014 (henceforth referred to as '2014 indictment').

<sup>5</sup> Ben Blanchard, 'China 'resolutely opposes' U.S. sanctions on missile parts supplier', *Reuters*, 30 April 2014, <http://www.reuters.com/article/2014/04/30/us-china-usa-iran-idUSBREA3T07720140430>, accessed 9 May 2014.

## 2. About Li

### Picture of Li Fang Wei and 2014 FBI Wanted Poster<sup>6</sup>



Li Fang Wei is a Chinese national who was born on September 18 1972 in Gannan County, Qiqihar City, Heilongjiang Province, China.<sup>7</sup> He is a businessman based in Dalian, an industrial hub in North Eastern China, and is listed as the 'principal and commercial manager' of a number of companies.<sup>8</sup> Much of what is known about Li was summarised on the 'Wanted Poster' released by the FBI in April 2014.

Li has used a large number of different aliases in his business transactions. A number of these are listed in the 2009 indictment, including: Li Feng Wei, Karl Li, Patric, Sunny Bai, K. Lee, KL, David Li, F. W. Li, Li Fangwei.<sup>9</sup> The recent allegations further lengthen this list.<sup>10</sup> Other sources allege that he has also been known as 'The Tailor'.<sup>11</sup>

Besides what is known about Li's activities, one thing is clear: Li has a good working knowledge of the Chinese system. US government cables in fact allege that a Chinese official commented that Li is 'clever and smart' and had a good knowledge of Chinese controls.<sup>12</sup> It was hinted that the export of dual use items which fall into a 'grey area' has allowed him to avoid prosecution. Perhaps linked to this, another cable notes allegations that Li is in fact a former Chinese government official and has used his connections to avoid prosecution, although this is questionable given that Li is thought

<sup>6</sup> Photograph recently verified by the US Federal Bureau of Investigation (FBI) which included it in a wanted poster in April 2014, 'Wanted by the FBI: Li Fang Wei', <http://www.fbi.gov/wanted/alert/li-fangwei>, accessed 2 May 2014.

<sup>7</sup> This and other extra information was found in Chinese language databases. This included his National ID number: 230225720918531.

<sup>8</sup> Supreme Court of the State of New York, 'THE PEOPLE OF THE STATE OF NEW YORK-against- LI FANG WEI', April 2009, <http://graphics8.nytimes.com/packages/pdf/nyregion/08INDICT.pdf>, accessed 17 March 2014, p.2. (henceforth referred to as '2009 Indictment').

<sup>9</sup> 2009 Indictment, p.1.

<sup>10</sup> 2014 Indictment.

<sup>11</sup> W. Maclean and B. Blanchard, 'Exclusive: Chinese trader accused of busting Iran missile embargo', Reuters, 1 March 2013, <http://www.reuters.com/article/2013/03/01/us-china-iran-trader-idUSBRE9200BI20130301>, accessed 9 May 2014.

<sup>12</sup> US Embassy Beijing, 'China Still Investigating LIMMT; Urges the United States Not to Impose Sanctions', Cable No.08BEIJING886, 11 March 2008.

to have been born in 1972.<sup>13</sup> A June 2008 cable notes a Chinese official claiming: ‘we have never come across anyone quite like this before’.<sup>14</sup>

Li Fang Wei’s business interests are principally located in Dalian, a large city which forms a significant industrial hub on the Eastern Chinese coast near to North Korea. Documentation related to the recent actions taken against Li notes that his companies are based in ‘Eastern China’.<sup>15</sup> While the allegations surrounding Li’s activities relate to Iran, Dalian is of interest for other reasons in non-proliferation circles. It is also a notorious transshipment hub for goods being transferred to North Korea. While only a minority of North Korea’s trade is conducted by sea, for that which is, Dalian forms an important node for transshipment.<sup>16</sup>

#### *What Mr Li Has To Say*

Very little has been heard directly from Li. He made no publically available response to the sanctioning of himself, his companies, or to the 2009 indictment. However, a 2013 press article quotes an interview purportedly conducted with Li in which he denied involvement in proliferation. He said that ‘we used to export steel, things like that. Nothing to do with missiles’.<sup>17</sup>

### **3. The Role of Li and his Other Entities**

While some of Li’s business activities are legitimate – for example, the supply of non-controlled products to countries which do not present a proliferation concern<sup>18</sup> – this section will focus on Li’s alleged illicit activities. It considers Li’s front companies, the new evidence which suggests that Li has interests in manufacturing, and also attempts to procure goods from other companies. It does not focus on the financial transfers which have formed a significant part of the US case against Li.<sup>19</sup>

#### **Li’s Front Companies**

Li is known to have set up a network of front companies through which he has been conducting his business activities. A large number of seemingly unique companies have been sanctioned, or otherwise identified. For example, the 2014 indictment suggests that there have been 26 entities involved in Li’s network.<sup>20</sup> The large number cited in the 2014 indictment, and related designations is likely to be due to confusion caused by deliberate manipulation of variances in English language translations of Chinese company names.

According to an assessment of Chinese language material, Alpha has concluded that these 26 entities correspond to around 12 actual front companies recorded in Chinese databases. The conclusion that there are 12 is based on similarities in the company names (in Chinese), and a

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<sup>13</sup> Secretary of State, ‘Missile Technology Control Regime (MTCR): China’s Record on Controlling Missile-related Exports’, 1 October 2008, Cable No. 08STATE105132.

<sup>14</sup> US Embassy Beijing, ‘Additional Information on LIMMT Shared with China’, Cable No.08BEIJING2391, 18 June 2008.

<sup>15</sup> ‘Wanted by the FBI: Li Fang Wei’, <http://www.fbi.gov/wanted/alert/li-fangwei>, accessed 2 May 2014.

<sup>16</sup> United Nations, Report of the Panel of Experts established pursuant to resolution 1874 (2009), May 2011, p.34, <http://www.ncnk.org/resources/publications/UN-Panel-of-Experts-Report-May-2011.pdf>, accessed 9 May 2014.

<sup>17</sup> W. Maclean and B. Blanchard, ‘Exclusive: Chinese trader accused of busting Iran missile embargo’, Reuters, 1 March 2013, <http://www.reuters.com/article/2013/03/01/us-china-iran-trader-idUSBRE9200BI20130301>, accessed 31 May 2013.

<sup>18</sup> For example, this included exports of graphite electrodes to countries such as Brazil, Germany and Poland. This was seen in Customs databases accessed by Alpha researchers.

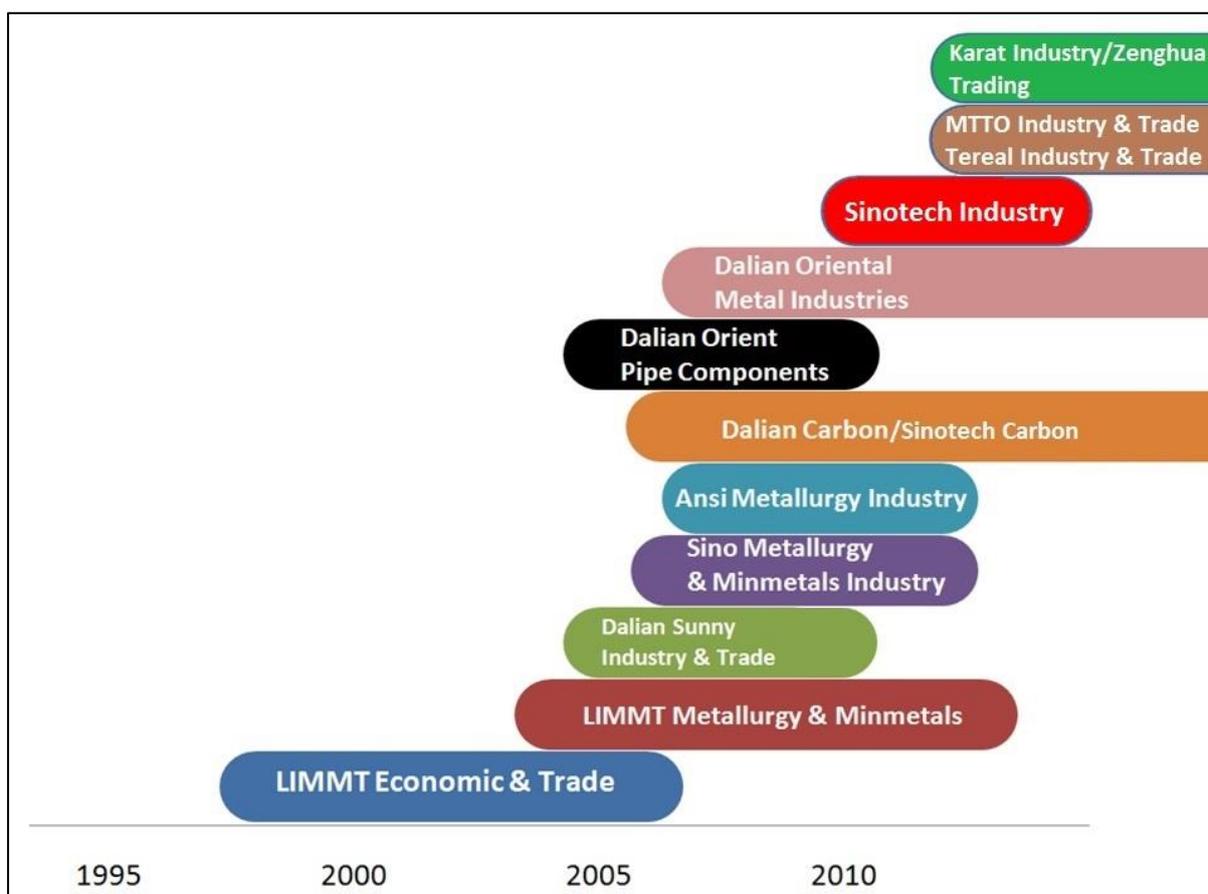
<sup>19</sup> See for example the 2009 and 2014 Indictments.

<sup>20</sup> 2014 Indictment, pp.A-1 – A-3.

variety of other unique identifiers such as contact and registered addresses, owner’s birthplace, phone numbers, recruitment advertisements and email addresses. Most of these companies share at least one of two contact addresses. The first is in Dalian city centre at – Room 2508 Yuexiu Mansion, No. 82 Xinkai Road, Dalian, Liaoning 116011, China – and has been used by Li for at least 10 years. The second is outside of Dalian City – at Songshu Town, Wafangdian, Dalian City.

Of the 12 companies, 11 are listed in the figure below, with Dalian Xinhang Electromechanical Equipment Company Ltd being excluded for reasons presented below. These 11 companies are also listed in various Chinese governmental and commercial databases as conducting export activities. Advertisements and presence on business-to-business online portals also confirm this.

**Diagram Showing the Setting up and Closure of Li’s Front Companies**



Closer examination reveals a number of patterns in operations involving Li’s front companies.

Three waves of companies are identified, corresponding approximately to different impositions of sanctions by the US. Once Li finds that existing recently sanctioned companies cannot fulfil his business needs, on more than one occasion, several companies appear to have been set up at around the same time. An example of this pattern is seen in January 2011 when MTTO Industry & Trade Limited and Karat Industry Co. Ltd. both opened on the same day according to Chinese government records.

The diagram is best explained in three waves:

- 1) The first wave includes Li’s apparently oldest company – LIMMT Economic & Trade which was apparently set up in 1998. On being sanctioned in 2004 Li set up a second company – LIMMT Metallurgy and Minmetals later that year.

- 2) The second wave includes Dalian Sunny Industry and Trade Co. Ltd., Sino Metalurgy and Minmetals Industry Co. Ltd., Ansi Metallurgy Industry Co. Ltd., Dalian Carbon, Dalian Orient Pipe Components, and Dalian Oriental Metals Industry. This wave followed multiple designations on Li's companies in 2005 and 2006. Dalian Carbon was designated in 2009 and changed its English name into Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation (see the section on Li's Manufacturing Activities) which was again designated in 2014.
- 3) The third wave includes companies that were set up since 2009 – Sinotech Industry, MTTO Industry and Trade, and Karat Industry – all three were designated in 2014. These companies were set up following the sanctions imposed in 2009, 2010 and 2011.

Most of the front companies were closed soon after they were designated. However, the third wave companies appear to remain active, along with Dalian Oriental Metals Industry. Significantly, Dalian Carbon / Sinotech (Dalian) Carbon & Graphite Manufacturing Co Ltd also remains active. The scale of the factory (see Li's Manufacturing Activities below) suggests that Li has access to significant resources, although the seizure of \$6.8 from Li's front companies in April 2014 must have been a blow to Li's activities.<sup>21</sup>

The company omitted from the diagram – Dalian Xinhang Electromechanical Equipment Company Ltd. – was probably started after 2010, but specific dates cannot be identified. It is also slightly different from the others because it appears – according to Chinese language sources – to lack an export role, and may have been set up to procure goods from other Chinese companies instead of conducting foreign trade (see Firms Targeted by Li below). It may also have a manufacturing role related to fibre optical gyroscopes (see Li's Manufacturing Activities below).

### **Li's Manufacturing Activities**

The plethora of activities that Li's network has been involved in suggest that he and his network of companies have played the role of both manufacturer and middleman. Recent designations tally with other open source information to suggest Li's interests may include ownership of a major graphite factory in Dalian. Other information gathered from open sources suggests that Li may be expanding his manufacturing operations into other product areas.

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<sup>21</sup> “Karl Lee” Charged in Manhattan Federal Court with Using a Web of Front Companies to Evade U.S. Sanctions’, Department of Justice Press Release, 29 April 2014, <http://www.justice.gov/opa/pr/2014/April/14-nsd-450.html>, accessed 7 May 2014.

*Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation*

Li appears to be linked to a large graphite factory located outside Dalian, owned by Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation. This evidence, until recently confirmed by US government sanctions, could have been considered to be circumstantial. The following indicators mean that Li almost certainly has a business interest in the factory. These include:

The recent US designation which states that Li ‘manages’ Sinotech Dalian Carbon and Graphite Manufacturing Corporation;<sup>22</sup>

The pinyin transliteration of Sinotech (Dalian) Carbon & Graphite which uses the same Chinese name as Dalian Carbon Co., Ltd., another designated entity linked to Li;

A profile on a Chinese language business-to-business portal website lists the owner of the company with the Chinese name referred to in the above point as ‘Li Fang Wei’;

A large number of Chinese language online recruitment notices for the factory state: ‘Please contact Manager Li’;

Multiple online job advertisements for the factory states that the factory has an ‘International sales department’ located in Dalian in Room 2508 Yuexiu Mansion, No. 82 Xinkai Road, Dalian, Liaoning 116011, China. This is a building where many of Li’s sanctioned businesses are based;

The telephone number (86-411-83769372) on Sinotech (Dalian) Carbon & Graphite website, which is the same as a number that was previously listed as an office telephone number for another entity (person) based in the Yuexiu Mansion address;

The cell phone number (13500736303) listed in multiple Chinese language job advertisements for ‘Manager Li’ which is the same as that on the Sinotech (Dalian) Carbon website;

The types of product that Li is accused of exporting (see appendix 1), which includes products produced at the factory (see paragraphs below).

According to the company website:

‘Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation is located in Songshu town, Wafangdian, Dalian, China. It covers an area of 80,000 square meter, with construction area of 40,000 square meter. The total investment is RMB 100 million. The annual production capacity of graphite electrodes is 30,000mt, Sinotech has been in this line since 1997’.<sup>23</sup>

The evidence of links between Li and Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation discussed above, are also strengthened by the graphite products that Li is alleged to have transferred to the Iranian programme. Together, this evidence suggests that Li is a supplier/manufacturer of the goods, and not merely just a middleman.

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<sup>22</sup> ‘Treasury Targets Networks for Facilitating Iran’s Ballistic Missile Procurement and Supporting Oil Sanctions Evasion’, US Department of the Treasury, 29 April 2014, <http://www.treasury.gov/press-center/press-releases/Pages/jl2372.aspx>, accessed 7 May 2014.

<sup>23</sup> Sinotech, ‘About us’, <http://dlcarbongraphite.com/e/about.php?id=000554&fid=000564>, accessed 31 March 2014.

Some of the goods transferred by Li are believed to be consistent with goods manufactured in the factory, given information in open sources regarding the transfers and the product listings on the Sinotech website.

Specifically, furnace electrodes with 4TPI nipples were purportedly transferred by Li to Iran (see appendix 1).<sup>24</sup> This product is featured on the firm's website, and was also advertised for sale by the firm on business-to-business online portals such as Alibaba.

The company's website also features a number of products with a serial number beginning with 'EDM' which corresponds with the cylinders transferred (although EDM-15 is not currently listed, see appendix 1).<sup>25</sup>

A further product allegedly transferred by Li, 'high power electrodes', are also provided by the company.<sup>26</sup>

### *Sinotech's Other Products*

The factory that is thought to be connected to Li appears to manufacture grades of graphite that would be captured by the Missile Technology Control Regime. The MTCR controls on graphite are as follows:

6.C.3. Fine grain graphites with a bulk density of at least 1.72 g/cc measured at 15°C and having a grain size of 100 x 10<sup>-6</sup> m (100 µm) or less, usable for rocket nozzles and re-entry vehicle nose tips, which can be machined to any of the following products:

- a. Cylinders having a diameter of 120 mm or greater and a length of 50 mm or greater;
- b. Tubes having an inner diameter of 65 mm or greater and a wall thickness of 25 mm or greater and a length of 50 mm or greater; or
- c. Blocks having a size of 120 mm x 120 mm x 50 mm or greater.

According to the website, Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation has a number of products which are above the control threshold. These are all listed on the website under the label 'Isostatic Graphite'.<sup>27</sup> Here there are 13 products including those in the EDM series (not including EDM-15 which was allegedly transferred by Li – see appendix 1). Out of these products, 10 are controlled by the MTCR (excluding CDI-2S, CDI-5L and EDM-11). Those that fall under the control threshold are only 0.02 g/cm<sup>3</sup> less dense.

<sup>24</sup> Sinotech, 'Graphite Electrode', [http://dlcarbongraphite.com/e/product\\_view.php?id=000560&fid=000561&mid=27](http://dlcarbongraphite.com/e/product_view.php?id=000560&fid=000561&mid=27), accessed 31 March 2014.

<sup>25</sup> Sinotech, 'Iso-static Graphite', [http://dlcarbongraphite.com/e/product\\_view.php?id=000560&fid=000575&mid=48](http://dlcarbongraphite.com/e/product_view.php?id=000560&fid=000575&mid=48), accessed 6 May 2014.

<sup>26</sup> Sinotech, 'Graphite Electrode', [http://dlcarbongraphite.com/e/product\\_view.php?id=000560&fid=000561&mid=27](http://dlcarbongraphite.com/e/product_view.php?id=000560&fid=000561&mid=27), accessed 31 March 2014.

<sup>27</sup> Sinotech, 'Iso-static Graphite', [http://dlcarbongraphite.com/e/product\\_view.php?id=000560&fid=000575&mid=48](http://dlcarbongraphite.com/e/product_view.php?id=000560&fid=000575&mid=48), accessed 6 May 2014.

## Satellite image and profile view of Sinotech (Dalian) Carbon factory<sup>28</sup>



Profile view of the Factory<sup>29</sup>



### *Other Manufacturing Activities? Dalian Xinhang Electromechanical Equipment Company Ltd.*

Recent information obtained from Chinese language sources including job advertisements suggests that Li may be expanding his manufacturing activities. He is believed to be doing so through a new company, Dalian Xinhang Electromechanical Equipment Company Ltd., which was set up in 2010. There is no evidence that this new manufacturing effort has been pursued in order to provide goods to the Iranian missile programme, although the technology concerned, and Li's past activities, should be cause for concern.

The existence of Dalian Xinhang is reflected in Chinese government records, although it has not (yet) been sanctioned by the US government. The connection between Li and Dalian Xinhang is based on the following pieces of evidence found in Chinese language databases:

<sup>28</sup> Satellite imagery obtained using Google Earth.

<sup>29</sup> Sinotech, 'About us', <http://dlcarbongraphite.com/e/about.php?id=000554&fid=000564>, accessed 31 March 2014.

Dalian Xinghang uses the same telephone number (86-411-85306327) as listed on Sinotech Carbon job advertisements;

Dalian Xinghang lists 'Mr Li' as a contact person, and the same address as many of Li's other companies (Yuexiu Mansion, No. 82 Xinkai Road, Dalian...)

The technology in question relates to fibre optic gyroscopes which have applications in aerospace and missile guidance. Fibre optic gyros can be particularly suited to ballistic missile applications primarily because of their high resistance to vibration and shock, and their high accuracy. Dalian Xinghang have purportedly been a customer of a Chinese company – Shanghai Hengtong Photoelectric Technology Co. Ltd. (see below) – which produces these types of components. US leaked government cables suggest that Li has previously transferred different types of missile guidance components for use in Iran's programme (see God Arrow Sensor Ltd. below), and hence would likely have no difficulty in supplying any fibre optic gyros manufactured by Dalian Xinghang. Both fibre optic gyros and their manufacturing equipment is generally subject to control by the MTCR.

That Dalian Xinghang is starting to manufacture fibre optic gyros is supported by the following evidence:

An online profile of Dalian Xinghang lists the company registered address at the Sinotech factory, contact address at Yuexiu Mansion, and contact as 'Manager Li'. It notes that the company is starting 'mass production' of what is ambiguously referred to as 'newly developed optic fibre sensors', and a yearly production value of RMB2.5 million (around \$400,000 US).

A number of Chinese language job advertisements have been placed online by Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation in April 2014. These were for at least four positions for 'Optic Fibre Coil Winding Machine Operators' in addition to usual adverts posted by Sinotech for graphite-related work. These positions are clearly inconsistent with work undertaken at a graphite manufacturing facility. The advert lists the workplace as Yuexiu Mansion. This is consistent with the suggestion that Li is continuing to expand his efforts to manufacture the gyros.

### **Firms Targeted by Li**

Li is also alleged to have transferred goods which are likely to have been procured from other sources, although it is not clear in open sources as to where Li may have procured some of the metals, powder, or machine tools (see appendix 1).

Evidence does provide more specific details regarding procurement attempts from other entities. There is a suggestion that – seemingly successful – attempts to transfer gyroscopes and accelerometers involved the targeting of a Chinese firm, 'God Arrow Sensor'.<sup>30</sup> Similarly, there are allegations that Li's company Dalian Sunny Industries expressed interest in acquiring a metered gear pump from German firm Oerlikon Barmag.<sup>31</sup>

*God Arrow Sensors Co. Ltd. (2008/2009)*

The firm is based in Chongqing and lists the following description on its website:

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<sup>30</sup> Secretary of State, 'Following Up with the PRC on LIMMT's Continued Proliferation-Related Activities', Cable No. 08STATE111597, 20 October 2008.

<sup>31</sup> Secretary of State, 'Iran's Solid-Fueled Ballistic Missile Program', Cable No.09STATE113696, 4 November 2009.

‘Our company focuses on developing and producing inertial units and system. Our products of accelerometers, piezoelectric gyroscopes, flexible dynamically tuned gyroscopes, Inertial Measurement Unit (IMU), and Attitude and Heading Sensors are at advanced national standard. Our products are widely used in attitude control system of missile, Unmanned Aerial Vehicle (UAV) and air shells, and stabilization system of military radar antenna and emergency communicate vehicle’.<sup>32</sup>

It is unknown whether the company was aware that its goods were destined to Iran. It is also unclear which of Li’s companies was involved in this effort (documentation refers to ‘LIMMT’ and Dalian Sunny Industries). It is likely that for domestic use (i.e. transfer to Li in Dalian), an end user undertaking would not need to be provided.

*Shanghai Hengtong Photoelectric Technology Co. Ltd.*

The firm, which is a Shanghai-based private company, produces fibre optic gyros. An online profile indicates that since 2010 it has sold to over 20 customers, including Li’s company Dalian Xinhang Electromechanical Equipment Company Ltd. There is no information regarding the specific nature of the product or how many units were sold to Dalian Xinhang.

It is likely that because these goods were being transferred within China, an end user undertaking would not be required. Online descriptions of Dalian Xinhang – unlike other companies connected to Li – do not suggest that the company is oriented towards exports or international trade. It is possible that it was set up to facilitate internal transactions and potentially reverse engineering or manufacture of the gyros (see Li’s Manufacturing Activities above).

*Oerlikon Barmag (August 2009)*

The firm is based in Germany, a constituent part of the Oerlikon Group, an industrial solutions organisation. Oerlikon’s website describes Barmag as a ‘world market leader for filament spinning systems, texturing machines and BCF carpet yarn, staple fiber spinning as well as nonwovens solutions’.<sup>33</sup> The website notes that ‘since 1922, Oerlikon Barmag’s gear metering pumps have been used worldwide as process engineering components’.<sup>34</sup>

Companies of the Oerlikon Group have been targeted significantly by illicit procurement in the past and have good compliance systems in place as a consequence.<sup>35</sup>

*Unnamed Chinese Aramid Fibre Machinery Manufacturer (2011)*

The 2014 indictment provides information that during late 2011, Li visited a Chinese manufacturer with several Iranian nationals.<sup>36</sup> This visit allegedly resulted in one of Li’s companies – Dalian Zenghua Trading Co. Ltd. – signing a contract with the Chinese manufacturer to acquire an aramid fibre production line, which would later be transferred by Dalian Zenghua to Iran. It is unclear whether this transfer was completed.

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<sup>32</sup> Chongqing God Arrow Sensors Co. Ltd., ‘Overview’, <http://www.tjian.com.cn/en/html/About.asp?ID=26>, accessed 31 March 2014

<sup>33</sup> Oerlikon, ‘Welcome to Oerlikon’, <http://www.oerlikon.com/>, accessed 31 March 2014

<sup>34</sup> Oerlikon, ‘Gear metering pumps for Composite Materials’, <http://www.oerlikon.com/manmade-fibers/en/product-brands/oerlikon-barmag/pumps/gear-metering-pumps-for-composite-materials/>, accessed 31 March 2014

<sup>35</sup> For example, see David Albright, *Peddling Peril* (US: Free Press, 2010); Ralph Wirtz, ‘Industry Contribution to thwart Illicit Nuclear Trade’, Remarks to the 2010 Safeguards Symposium, IAEA-CN-184/198, <http://www.iaea.org/safeguards/Symposium/2010/Documents/PapersRepository/198.pdf>.

<sup>36</sup> 2014 Indictment, p.9.

Aramid fibre is a strong, lightweight material often used in body armour (Kevlar etc.) or in the construction of high-performance products, such as racing cars and yachts. Aramid fibre is potentially controlled by the NSG because of potential uses in centrifuge rotors. It can also be controlled by the other regimes when in various formats.

Iran has been seeking the capability to produce carbon fibre indigenously for a number of years. Carbon fibre, like aramid fibre, is a composite strong, lightweight material that has uses in missile and nuclear applications. Iranian production of either should be viewed as a serious proliferation concern.

#### 4. Illicit shipments by Li's Network

Li's network is alleged to have shipped a variety of materials to entities in Iran linked to the country's nuclear and missile programmes. The full scope of the transfers conducted by Li is unclear, although there are some indications regarding the extent of Li's role. As previously noted, a 2013 press report indicates that since the 2009 indictment, Li had 'earned' at least \$10 million from his illicit dealings with Iran.<sup>37</sup>

The 2014 indictment provides more details, alleging that two of Li's companies – Sinotech (Dalian) Carbon & Graphite and "Dalian Zhongchuang Char-White Co, Ltd." <sup>38</sup> – sent 23 separate shipments to Iran between December 2010 and February 2013.<sup>39</sup> It also describes Li as, having conducted 'a great deal of business with Iran', being 'a long time supplier', and a 'principal contributor to Iran's ballistic missile program'.<sup>40</sup>

The table in appendix 1 lists the materials alleged to have been shipped and their possible WMD-related applications. Much of this information is taken from the 2009 and 2014 indictments. However, there are additional allegations which have been recorded elsewhere with less certainty. These are contained primarily in leaked US government cables and testimony by Manhattan District Attorney Robert Morgenthau. These are listed in a table in appendix 2.

Beyond those recorded in the appendices, a 2013 press article also includes allegations by unnamed 'security officials' that Li agreed in 2011 to supply 500 gyroscopes and accelerometers.<sup>41</sup> This was alleged to be sufficient for the manufacture of 500 missiles. Allegations in the same article also relate to Li's transfer of 'fibre-optic gyroscopes'. Interestingly, this may be connected to recent evidence regarding Li's attempts to manufacture guidance equipment (see section above on 'Other Manufacturing Activities?').

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<sup>37</sup> W. Maclean and B. Blanchard, 'Exclusive: Chinese trader accused of busting Iran missile embargo', *Reuters*, 1 March 2013, <http://www.reuters.com/article/2013/03/01/us-china-iran-trader-idUSBRE9200BI20130301>, accessed 31 May 2013.

<sup>38</sup> Open source research revealed no record of a separate company named "Dalian Zhongchuang Char-White Co, Ltd." in Chinese language sources. The Chinese transliteration of Sinotech (Dalian) Carbon & Graphite / Dalian Carbon is "Dalian Zhongchuang Carbon Co. Ltd". Therefore, there is a possibility that these two companies are one and the same.

<sup>39</sup> 2014 Indictment, p.9.

<sup>40</sup> 2014 Indictment, p.2.

<sup>41</sup> W. Maclean and B. Blanchard, 'Exclusive: Chinese trader accused of busting Iran missile embargo', *Reuters*, 1 March 2013, <http://www.reuters.com/article/2013/03/01/us-china-iran-trader-idUSBRE9200BI20130301>, accessed 31 May 2013.

While it can be difficult to assign specific control ratings to goods without examination or full technological specification, the US indictment from 2009 noted that ‘the shipments of many of these materials were in direct contravention of the international guidelines set forth by the NSG and the MTCR’.<sup>42</sup> The potential manufacture of fibre optic gyros is particularly troubling – these components are ideal for use in missile guidance systems. China is an adherent to the NSG and claims to implement the 2002 version of the MTCR control list (although China has not been admitted as a member). Progressively since 2006/7 goods on the NSG and MTCR control lists have also been prohibited for export to Iran by US sanctions.

## **5. Methods used by Li**

The methods allegedly used by Li in facilitating his illicit transfers encompass both those commonly used by proliferators, and those unique to this case. In terms of the front companies, Li has left an extensive record in online databases, suggesting that while he has great knowledge of the Chinese system, he does not have connections to prevent such a record.

In setting up companies he may have cooperated with other individuals. Besides the one company (LIMMT Metallurgy and Minmetals) set up under his own name, others are set up under what is believed to be his mother’s name (before she died in 2012), as well as potentially four others connected to him (by birthplace, and other indicators).

While many of the companies share the same contact addresses – either the Yuexiu Mansion, or the Sinotech factory (Songshu Town, Wafangdian, Dalian) – the companies were registered at different locations across Dalian city. Under Chinese regulations, the registration of an English language name for a company is not a requirement. This has both added a layer of complexity to Li’s activities, as well as making it difficult for the US to take measures to sanction the companies.

In terms of operating the companies, Li appears to view them as disposable, replacing them when actions are taken against them by the US. In some cases multiple companies lapse at the same time, for example, Dalian Sunny Industry & Trade and Dalian Orient Pipe Components both closed on the same day in January 2010.

It is possible that some companies have been created to undertake distinct roles. For example, Sinotech Industry, set up in November 2009, may have been set up to relieve further pressure which would likely be exerted on the factory. The factory provides Li with income from considerable legitimate business activities. Chinese government records show that the capital invested in the factory was RMB25 million (over \$4 million). As noted, the factory – then known as Dalian Carbon was sanctioned in 2009 – and following the sanction, changed its English name to Sinotech (Dalian) Carbon & Graphite Manufacturing Corporation (later sanctioned in 2014).

Another example is provided by Dalian Xinhang Electromechanical Equipment Company Ltd. (established at an unknown date, likely after 2010) which may have been set up to procure from the Chinese domestic market, and to play a role in Li’s new manufacturing activities.

Allegations in the 2009 indictment suggest that Li’s use of multiple front companies was complemented by other methods designed to inspire confidence amongst other unwitting

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<sup>42</sup> 2009 Indictment, p.4.

companies. This included the use of official looking letter heads. Many proliferators use these and other techniques in their activities.

There are also trends observable in the way that Li's front companies are closed. Rather than taking active steps to close the companies down after they have been sanctioned, Li allows them to lapse. Chinese language databases indicate that all of Li's companies have closed in the past due to their failure to pay tax, the inability of local authorities to contact the owner, or when the business license has not been renewed.

Another method – more specific, but certainly not unique to this case – was the alleged use of contacts in the Iranian embassy in Beijing to coordinate transfers.<sup>43</sup> The gyroscopes and accelerometers – according to US State Department cables – were transferred by Iranian embassy contacts to Iran in December 2008 and potentially January 2009. They are said to have been hand-carried, transferred in a visiting delegation's travel bags.<sup>44</sup>

## 7. US Government Action

The US government is known to have repeatedly made efforts to discuss Li's activities with Chinese authorities since at least 2006.<sup>45</sup> The US government has also taken numerous unilateral steps to interrupt Li's activities. Sanctions have been imposed against a number of Li's companies in several waves, under the Iran Nonproliferation Act (2000), the Iran, North Korea, and Syria Nonproliferation Act (2006), and EO 13382 (2005). 20 instances of sanctions have been imposed; this includes those in April 2014, when 8 front companies were sanctioned.<sup>46</sup>

As previously mentioned, the New York State Court has also raised an indictment against Li in 2009 on 118 counts for use of New York-based banks.<sup>47</sup> This, because of the shape of the US legal system, was not directly connected with actions taken by the federal government. This was recently followed by charges levied against Li in April 2014 at another New York Court.<sup>48</sup> These allegations mostly also related to Li's use of the US financial system.

The most recent steps taken by the US mark a significant escalation in their efforts to disrupt Li's activities and to bring him to justice. In late April 2014, the US designated 8 more front companies connected to Li, and the US Department of State announced an unprecedented \$5 million reward for information leading to his arrest and / or conviction.<sup>49</sup> However, given that Li is believed to be in China (a country with which the US has no extradition treaty), it is unlikely – without significant developments – that Li will be brought to justice in the US.

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<sup>43</sup> Secretary of State, 'Continued Assistance to Iran's Missile Program By The Chinese Firm LIMMT/Dalian Sunny', Cable No.07STATE111099, 8 August 2007.

<sup>44</sup> US State Department Cable, 'Informing Beijing Of Chinese Firm Limmt's Continued Proliferation To Iranian Ballistic Missile Program (s)', Cable No.09STATE25689, 18 March 2009.

<sup>45</sup> Secretary of State, 'Following up with China on Missile Proliferation Cases', Cable No. 07STATE28429, , 7 March 2007.

<sup>46</sup> See 'Nonproliferation Sanctions', website of the US State Department, <http://www.state.gov/t/isn/c15231.htm>, accessed 13 May 2014.

<sup>47</sup> 2009 Indictment.

<sup>48</sup> 2014 Indictment.

<sup>49</sup> 'Wanted by the FBI: Li Fang Wei', website of the Federal Bureau of Investigation, <http://www.fbi.gov/wanted/alert/li-fangwei>, accessed 6 May 2014.

## 8. Chinese Government Response

The Chinese government – it appears – has been less responsive in its efforts to prevent Li's activities than the US. Often US demarches to the Chinese MFA have been met with claims that information is incorrect or falling short of legal standards.<sup>50</sup> US State Department cables indicate the following Chinese responses to US enquiries:

- As of August 2007 the Chinese MFA noted that LIMMT had been punished for its illegal activities and that an unspecified 'license' (but likely the business licence) had been revoked.<sup>51</sup> They also noted that efforts had been made to improve the monitoring of graphite exports. Presumably this referred to LIMMT Economic & Trade which was closed in June 2006.
- In November 2007, China's State Administration of Foreign Currency put two of Li's companies on a watch list of companies that have acted abnormally with regards to foreign currency exchange.<sup>52</sup> It is unclear whether this action was linked to non-proliferation concerns.
- As of March 2008, investigations of Li's network were said to be ongoing.<sup>53</sup> China had imposed administrative measures against Li. The ongoing investigations were said to be amongst the most complicated inter-agency investigations ever mounted by the Chinese authorities.
- As of June 2008, China was said to be at the final stages of taking action against Li's network, but that the investigation was still ongoing.<sup>54</sup> LIMMT Economic & Trade was said to have been closed down and therefore no longer legally existing under Chinese law. The MFA had also allegedly convinced MOFCOM to prevent Li from registering new companies in his own name, which he has not.
- The most recent action by the US – which is unprecedented for non-proliferation purposes – can be taken as a sign that the US government is still not satisfied with the responses received from the Chinese government.

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<sup>50</sup> US Embassy Beijing, 'China Shocked at E.O. 13382 Designations of Four Chinese Entities', Cable No.06BEIJING12181, 13 June 2006.

<sup>51</sup> US Embassy Beijing, 'China Urged to Investigate and Cease LIMMT'S Sales of Dual-Use Materials to Iran', Cable No.07BEIJING5269, 10 August 2007.

<sup>52</sup> Website of China's State Administration of Foreign Currency, <http://www.shanxigov.cn/n16/n78571/n78694/n79099/n79476/n940751.files/n940750.pdf>, accessed 12 May 2014.

<sup>53</sup> US Embassy Beijing, 'China Still Investigating LIMMT; Urges the United States Not to Impose Sanctions', Cable no.08BEIJING886, 11 March 2008.

<sup>54</sup> US Embassy Beijing, 'Additional Information on LIMMT Shared with China', Cable No.08BEIJING2391, 18 June 2008.

### *China's International Commitments*

There are questions regarding whether the Chinese government response has been consistent with international commitments. US State Department cables have shown reluctance by China to act unless there is clear evidence of a breach of Chinese national export controls. A key question, therefore, relates to the legality of Li's efforts under Chinese domestic law.

In the Li case, the following considerations are relevant:

- While not an MTCR member, China has had legislation in place since 2002 which adheres 'by and large' to the MTCR guidelines according to a 2005 Chinese whitepaper;<sup>55</sup>
- However, since China's adoption of missile-related export control legislation in 2002, China's control lists have not been updated to keep in step with the MTCR;
- China has an obligation to comply with UNSCR 1737 (2006) which requires that states should prevent transfer 'of all items, materials, equipment, goods and technology which could contribute to Iran's enrichment-related, reprocessing or heavy water-related activities, or to the development of nuclear weapon delivery systems, namely' – this resolution also includes reference to an October 2006 MTCR annex;<sup>56</sup>
- Chinese 2002 missile-related export control legislation includes a 'catch-all' provision;
- SBIG, the alleged recipient of much of the technology, was designated in UNSCR 1737. In practical terms, this means that China must:
  - Freeze its assets;
  - Exercise vigilance in terms of transit of persons through territories;

Therefore, if the allegations against Li are true, it is likely that Li has caused China to breach its international commitments. As US government representatives have noted in cables, 'deceptive practices involving a proscribed entity and prospects for further deals between the parties, suggest that the transfer of this material would be inconsistent with China's obligations under UNSCR 1737'.<sup>57</sup>

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<sup>55</sup> 'China's Endeavors for Arms Control, Disarmament and Non-Proliferation', Chinese Government White Paper, September 2005, <http://www.china.org.cn/english/2005/Aug/140343.htm>, accessed 6 May 2014.

<sup>56</sup> United Nations Security Council Resolution 1737 (2006), available from [http://www.un.org/ga/search/view\\_doc.asp?symbol=S/RES/1737\(2006\)](http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/1737(2006)), accessed 6 May 2014.

<sup>57</sup> Secretary of State, 'NIAG 8233: Transfer of Maraging Steel from China to Iran', Cable no.09STATE3943, 20 January 2011.

## 9. Conclusions: Unanswered Questions?

The Li case – while apparently involving transfers to Iran’s missile rather than nuclear programme – perhaps presents one of the most prolific cases of proliferation-related trade in recent years. The case highlights the important contribution that individuals can have to sanctioned programmes, and the value of open source in uncovering these efforts.

New information reinforces suspicions regarding the full extent of Li’s operations. This information suggests that Li is not only playing the role of a middleman in supplying Iran’s programmes: The recent sanctions apparently confirm suspicions that Li is the owner of a substantial graphite factory in the outskirts of Dalian which likely supplies MTCR-controlled material. There is also evidence which suggests that he is developing manufacturing facilities for some of the most advanced missile guidance components.

However, there are still many unanswered questions regarding Li and his activities. For example, who is the real Karl Lee? What is his background? What has allowed him to continue his activities for so long, whilst leaving such an extensive open-source trail? Perhaps, more importantly in the present, what is the full extent of his network? Are there more companies which Li is involved with, and what other technologies are they involved in manufacturing?

The potential manufacture of fibre optic gyros marks a potentially significant escalation of this case. Not since the AQ Khan proliferation network has a non-state actor been publically known to have made efforts to develop the capability to manufacture such a sensitive technology whilst having a proven track record in supplying programmes of concern. Resolving this case must now be one of the most pressing objectives of the counter proliferation community.

## Appendix 1: Illicit Shipments

Li Fang Wei's alleged shipments to Iran <sup>58</sup>		
Material	Possible applications	Other Details
Tungsten-Copper Alloy plates / ingots (400 pieces / 30,000kg +) Cost: €1,480,000.00	<b>Missile:</b> Materials can be used to make jet vanes and to insulate other components.	Order allegedly submitted by SBIG in June 2007. Machined to look like mechanical parts. <sup>59</sup> In 2007, a shipment of 6 tungsten copper plates was allegedly detained by China Customs. It is not clear whether these were related, and where the destination for this shipment was. <sup>60</sup>
Hollow Tungsten-Copper cylinders (200 pieces)	<b>Missile:</b> Materials can be used to make jet vanes and to insulate other components.	
Tungsten Powder (2,000kg+15,000kg) <sup>61</sup> Purity 99.97% Particle size 5.5-6.5µm <sup>62</sup>	<b>Missile:</b> The powder can be melted down and cast to make nose cones; nozzle throat inserts; missile jet vanes.	Cables indicate that first shipment was received by mid-Dec 2006, second order sought at this time. <sup>63</sup> Morgenthau testimony alleges 19,000kg. <sup>64</sup>
Steel plates (8 pieces)	Type unspecified in media reports	
Maraging steel rods (24,500kg) Diameter: 38.1mm <sup>65</sup> Length: 450.2mm Cost: €1,440,000.00 <sup>66</sup>	<b>Nuclear:</b> Can be used to make components for gas centrifuges <b>Missile:</b> Can be used in missile fuselages and solid rocket motorcases, propellant tanks, and interstages.	'Partially machined in order to disguise it as mechanical parts in order to evade Chinese customs officials'; 'deceptive practices involving a proscribed entity and prospects for further deals between the parties, suggest that the transfer of this material would be inconsistent with

<sup>58</sup> Unless otherwise specified, details of materials taken from Indictment, available from Supreme Court of the State of New York, 'THE PEOPLE OF THE STATE OF NEW YORK-against- LI FANG WEI', April 2009, <http://graphics8.nytimes.com/packages/pdf/nyregion/08INDICT.pdf>, accessed 17 March 2014; and Morgenthau testimony in 'Engaging Iran: Obstacles and Opportunities', Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>59</sup> Secretary of State, 'China's LIMMT Preparing Possible Imminent Delivery of Gyroscopes and Accelerometers to Beijing-based MODAFL Rep for Use by Iranian Missile Entity', Cable no.08STATE118099, 5 November 2008.

<sup>60</sup> Secretary of State, 'Continued Assistance to Iran's Missile Program By The Chinese Firm LIMMT/Dalian Sunny', Cable No.07STATE111099, 8 August 2007.

<sup>61</sup> Secretary of State, 'Continued Assistance to Iran's Missile Program By The Chinese Firm LIMMT/Dalian Sunny', Cable No.07STATE111099, 8 August 2007.

<sup>62</sup> 2009 Indictment, p.17.

<sup>63</sup> Secretary of State, 'Following up with China on Missile Proliferation Cases', Cable No. 07STATE28429, 7 March 2007.

<sup>64</sup> Morgenthau testimony in 'Engaging Iran: Obstacles and Opportunities', Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>65</sup> Secretary of State, 'NIAG 8233: Transfer of Maraging Steel from China to Iran', Cable no.09STATE3943, 14 January 2009.

<sup>66</sup> 2009 Indictment, p.12.

		China's obligations under UNSCR 1737. <sup>67</sup>
High strength aluminium alloys (15,000kg)	<p><b>Nuclear:</b> Can be used to make components for use in gas centrifuges.</p> <p><b>Missile:</b> Can be used to make motor cases for use in solid fuelled missiles, propellant tanks and rocket inter-stages.</p>	According to testimony of Morgethau, 'specialized aluminium alloy used almost exclusively in long-range missile production'. <sup>68</sup> May relate to the shipment described in the 2014 indictment as '1,300 aluminium alloy tubes'. <sup>69</sup>
Graphite cylinders for use in Electrical Discharge Machines (EDM-15), (200 pieces / 1,700kg) Cost: €89,000	<b>Nuclear and Missile:</b> Full machines can be used to cut parts with high accuracy.	
High power graphite electrodes (200 metric tonnes) Cost: €220,400 <sup>70</sup>	<b>Potentially Nuclear:</b> Of use in arc remelt furnaces, or in refining furnaces.	
Furnace electrodes with 4TPI nipples (450 metric tonnes)	<b>Potentially Nuclear:</b> Of use in arc remelt furnaces, or in refining furnaces.	
Cold-drawn seamless steel pipes (20,000kg) <sup>71</sup>	<b>Unknown:</b> Unspecified Grade	2014 Indictment allege that two invoices 'reflected the sale of' these goods.

<sup>67</sup> Secretary of State, 'NIAG 8233: Transfer of Maraging Steel from China to Iran', Cable no.09STATE3943, 14 January 2009.

<sup>68</sup> Morgenthau testimony in 'Engaging Iran: Obstacles and Opportunities', Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>69</sup> 2014 Indictment, p.11.

<sup>70</sup> 2009 Indictment, p.13.

<sup>71</sup> 2014 Indictment, p.11.

## Appendix 2: Further Allegations

Further allegations		
Product / Material	Further details	Possible applications
Computer Numerically Controlled (CNC) Cold Flow Forming Machine (Model 3GFF-700) <sup>72</sup>	Allegedly these were procured and transferred to Iran.	<b>Missile:</b> capable of manufacturing re-entry vehicle shells and solid rocket motor cases;
Gyroscopes (400)	Although not mentioned in the 2009 indictment, alleged that Li Fang Wei was ‘engaged in negotiations’ to send <sup>73</sup> ; Allegedly provided drawings (May 2008); samples (September 2008); <sup>74</sup> delivery (October 2008); Arrangements for further deliveries. Allegedly DTT-3 dynamically tuned gyroscopes manufactured by Chinese firm ‘God Arrow Sensor’. <sup>75</sup> Gyroscopes and accelerometers transferred by Iranian embassy contacts to Iran in December 2008 and potentially January 2009. <sup>76</sup>	<b>Missile:</b> can be used in missile guidance systems
Accelerometers (600)	Although not mentioned in the 2009 indictment, alleged that Li Fang Wei was ‘engaged in negotiations’ to send <sup>77</sup> ; Allegedly provided drawings (May 2008); samples (September 2008); <sup>78</sup> delivery (October 2008); Arrangements for further deliveries. Allegedly model TJA-27 accelerometers manufactured by Chinese firm ‘God Arrow Sensor’. <sup>79</sup> Gyroscopes and accelerometers transferred by Iranian embassy contacts to Iran in December 2008 and potentially January 2009. <sup>80</sup>	

<sup>72</sup> Secretary of State, ‘Informing Beijing of Chinese Firm LIMMT’S Continued Proliferation to Iranian Ballistic Missile Program (s)’, Cable No.09STATE25689, 18 March 2009.

<sup>73</sup> Morgenthau testimony in ‘Engaging Iran: Obstacles and Opportunities’, Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>74</sup> Secretary of State, ‘China’s LIMMT Preparing Possible Imminent Delivery of Gyroscopes and Accelerometers to Beijing-based MODAFL Rep for Use by Iranian Missile Entity’, Cable no.08STATE118099, 5 November 2008.

<sup>75</sup> Secretary of State, ‘Following Up with the PRC on LIMMT’s Continued Proliferation-Related Activities’, Cable No. 08STATE111597, 20 October 2008.

<sup>76</sup> Secretary of State, ‘Informing Beijing of Chinese Firm LIMMT’S Continued Proliferation to Iranian Ballistic Missile Program (s)’, Cable No.09STATE25689, 18 March 2009.

<sup>77</sup> Morgenthau testimony in ‘Engaging Iran: Obstacles and Opportunities’, Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>78</sup> Secretary of State, ‘China’s LIMMT Preparing Possible Imminent Delivery of Gyroscopes and Accelerometers to Beijing-based MODAFL Rep for Use by Iranian Missile Entity’, Cable No.08STATE118099, 5 November 2008.

<sup>79</sup> Secretary of State, ‘Following Up with the PRC on LIMMT’s Continued Proliferation-Related Activities’, Cable No. 08STATE111597, 20 October 2008.

<sup>80</sup> Secretary of State, ‘Informing Beijing of Chinese Firm LIMMT’S Continued Proliferation to Iranian Ballistic Missile Program (s)’, Cable No.09STATE25689, 18 March 2009.

Tantalum (100 pieces)	Although not mentioned in the 2009 indictment, alleged that Li Fang Wei was ‘engaged in negotiations’ to send. <sup>81</sup>	<b>Missile:</b> Can be used in high-strength alloys;
Co-rotating screw extenders	Alleged that SBIG was looking to acquire from German firms. There is still uncertainty surrounding success, and also potential relationship of this attempt to Li. <sup>82</sup>	<b>Missile:</b> Potentially of use in an extrusion production line for the manufacture of tactical rocket systems. <sup>83</sup>
Metering gear pumps <sup>84</sup>	Alleged that LIMMT attempted to acquire from German firm – Oerlikon Barmag. There is still uncertainty surrounding success. <sup>85</sup>	<b>Missile:</b> Use in missile manufacturing processes (composites related?).
High carbon ferro-manganese <sup>86</sup>	Mentioned in Morgenthau testimony, but not elsewhere. 1,400 tonnes allegedly shipped to Iran.	<b>Unknown</b>
EDM-11B Graphite Cylinders	Offered by Dalian Sunny and probably shipped in December 2006. <sup>87</sup> Allegedly 370 cylinders were also being prepared for shipment to Aban Commercial and Industrial Co. in August 2007. <sup>88</sup> This was allegedly being procured from a firm called Liaoning Industry and Trade Co. Ltd. (the cables imply this is a separate entity, aware of the Iranian end-user; the entity was later directly associated with Li in the 2009 indictment).	<b>Nuclear and Missile:</b> Potential use in electrical discharge machines which can be used to cut parts with high accuracy.
Natural Graphite	In 2008 natural graphite was allegedly provided to Iranian firm Nevasht Afzar – purportedly a manufacturer of pencil lead. <sup>89</sup> A potential sale of graphite electrodes was also discussed with this entity in April 2008.	<b>Unknown</b>
Aramid Fiber Manufacturing Equipment <sup>90</sup>	According to the 2014 indictment, Li visited the equipment manufacturer along with Iranian officials and took delivery of the equipment before it was re-exported to Iran.	Production of Aramid Fibre

<sup>81</sup> Morgenthau testimony in ‘Engaging Iran: Obstacles and Opportunities’, Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>82</sup> Secretary of State, ‘Iran’s Solid-Fueled Ballistic Missile Program’, Cable No.09STATE113696, 4 November 2009.

<sup>83</sup> Secretary of State, ‘Iran’s Solid-Fueled Ballistic Missile Program’, Cable No.09STATE1136964, November 2009.

<sup>84</sup> Secretary of State, ‘Iran’s Solid-Fueled Ballistic Missile Program’, Cable No.09STATE113696, 4 November 2009.

<sup>85</sup> Secretary of State, ‘Iran’s Solid-Fueled Ballistic Missile Program’, Cable No.09STATE113696, 4 November 2009.

<sup>86</sup> Morgenthau testimony in ‘Engaging Iran: Obstacles and Opportunities’, Hearing Before the Committee on Foreign Relations of the United States Senate, 6 May 2009, <http://www.gpo.gov/fdsys/pkg/CHRG-111shrg52971/html/CHRG-111shrg52971.htm>, accessed 17 March 2014.

<sup>87</sup> Secretary of State, ‘Following up with China on Missile Proliferation Cases’, Cable No. 07STATE28429, 7 March 2007.

<sup>88</sup> Secretary of State, ‘Continued Assistance to Iran’s Missile Program By The Chinese Firm LIMMT/Dalian Sunny’, Cable No.07STATE111099, 8 August 2007.

<sup>89</sup> Secretary of State, ‘Following Up with the PRC on LIMMT’s Continued Proliferation-Related Activities’, Cable No. 08STATE111597, 20 October 2008.

<sup>90</sup> 2014 Indictment, p.9.

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