

## **In China We Trust?**

### **Lowering U.S. Controls on Militarily Useful Exports to China**

Wisconsin Project on  
Nuclear Arms Control  
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## Executive Summary

In mid-October, the U.S. Commerce Department began to implement a new program to reduce controls on the sale of militarily useful American products to China. For the first time, certain companies in China are being allowed to receive such products from the United States without obtaining an export license that would otherwise be required. The Commerce Department is selecting beneficiaries of this program in China on the ground that they are trustworthy—that is, that they are exclusively civilian and can be trusted to confine to peaceful use items that are also highly useful for military production or for making weapons of mass destruction. Freed from the requirement of an export license, the companies, known as “Validated End-Users,” will be able to import a range of controlled U.S. goods more quickly and easily, since U.S. officials will no longer review these shipments before they go out.

Of the first five companies approved, however, two (forty percent of the total) do not meet the selection criteria. They are affiliated closely to China’s military industrial complex and to companies that have been punished by the U.S. government for proliferation or other improper export behavior. Reducing controls on exports to such companies increases the risk that American goods will help China improve its armed forces, and that American goods will be sent illicitly to Syria or Iran.

One of the five companies is Shanghai Hua Hong NEC Electronics Company, Ltd. (HHNEC). This company is majority owned through a corporate chain by China Electronics Corporation (CEC), a Chinese government-owned conglomerate that produces a large array of military equipment, in addition to consumer electronics. In 2006, the U.S. Justice Department described one of CEC’s subsidiaries as a “technology procurement arm of the People’s Liberation Army,” and in 2004, the U.S. Defense Department described the subsidiary as a “critical element of the PLA’s C4I [command, control, communications, computers and intelligence] modernization effort.” Also in 2006, the U.S. State Department punished another CEC subsidiary for proliferation to Iran and/or Syria. Given this negative record, there is a clear risk that CEC will import sensitive American goods without a license through the subsidiary the Commerce Department has blessed, and then shift the goods to one of its other subsidiaries that is outfitting the Chinese army, or supplying Iran or Syria.

A second company the Commerce Department approved is BHA Aerocomposite Parts Co., Ltd. It is partially owned by AVIC I, an instrumentality of the Chinese government that produces fighters, nuclear-capable bombers, and 90% of the aviation weapon systems used by the People’s Liberation Army. AVIC I’s 50% subsidiary and import-

export arm, CATIC, is currently under State Department sanctions that punish proliferation to Iran and/or Syria—one of four such sets of penalties imposed on the firm since 2002 for proliferation to Iran or Syria. A second co-owner of BHA is the Boeing Company, which was fined last year after the State Department accused it of exporting controlled navigation equipment usable in aircraft and missiles to China without the required authorization (the fourth such fine since 1998). The third co-owner is Hexcel Corporation, fined last year by the Commerce Department after allegedly supplying controlled carbon fabric to China without an export license. In 2007, Hexcel was also fined after charges that it knowingly used defective fiber in bulletproof vests sold to U.S. law enforcement officers. It is difficult to see how these three owners of BHA can be trusted to obey U.S. export control laws.

The new program, as it is being implemented, gives Chinese military parent companies the ability to gain access without an export license to virtually unlimited quantities of American products in categories that have long been restricted because of their military potential. CEC, through a firm that it controls, will be able to more easily acquire advanced equipment for manufacturing semiconductors, an essential technology for modern weaponry, that would greatly aid its ongoing production of radar systems for the People's Liberation Army and its production of communications electronics for China's air force and navy. CEC will also be able to more easily receive pressure transducers, which can help make semiconductors, but are also needed in large quantities for gas-centrifuge uranium enrichment. If CEC shifts some of these items to its subsidiary that has been supplying Iran, they could wind up at Iran's uranium enrichment plant at Natanz, which the United States and its allies fear is moving Tehran closer to a nuclear weapon capability.

AVIC I, through a firm that it partially owns, will gain freer access to carbon fibers and composite structures, products that could aid its ongoing production of military aircraft, unmanned aerial vehicles, and other weapon systems. It will also gain greater access to high-performance machine tools, which could aid its production of China's new Jian-10 fighter and its effort to improve China's nuclear-capable B-6 (Hong-6) bomber.

Reducing the regulatory "burden" of export licensing—both for the government and for U.S. exporters—is a key motive for the Validated End-User program. When the Commerce Department announced the names of the first five companies approved, it remarked that they had accounted for eighteen percent of the total exports licensed to China in 2006. This factor may help explain why two companies as risky as HHNEC and BHA could be certified as "trusted customers" at the outset of a new program.

In view of the failure of the selection process to safeguard U.S. national security, the Commerce Department should suspend the Validated End-User program pending a Government Accountability Office (GAO) investigation. The program should not resume until an improved review process is in place, one that takes into full account the activities of companies associated with the firm under review, and one that rejects risky candidates such as HHNEC and BHA.

## Introduction

On October 18, 2007,<sup>1</sup> the U.S. Commerce Department announced that five companies in China had been granted “Validated End-User (VEU)” status,<sup>2</sup> a new designation that allows “trusted customers”<sup>3</sup> in China to import without an export license<sup>4</sup> American products normally controlled because of their usefulness to military programs or to programs for making weapons of mass destruction.<sup>5</sup> According to the Commerce Department, the advantage of the new designation is that it eases the burden of reviewing export license applications for sales of certain items to companies that pose no risk of illicit diversion, allowing the Department to focus its resources on those that do.<sup>6</sup> This policy assumes, of course, that the companies chosen will be above suspicion. It turns out, however, that they are not. Two of the first five companies chosen are closely linked to China’s military production complex. In addition, they are both affiliated with companies that have been sanctioned by the U.S. State Department for proliferation to Iran or Syria, and one of the two also has close ties to several companies that have already violated U.S. export controls. This failure of the selection process—occurring at its outset—casts doubt on the wisdom of the VEU program itself.

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<sup>1</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>2</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>3</sup> “Fact Sheet: Updated China Dual-Use Export Regulations,” U.S. Department of Commerce, Bureau of Industry and Security, available at [www.bis.doc.gov/News/2007/06-15-07%20Export%20Rule%20Fact%20Sheet%20-%20FINAL.pdf](http://www.bis.doc.gov/News/2007/06-15-07%20Export%20Rule%20Fact%20Sheet%20-%20FINAL.pdf), accessed via Google cache on December 4, 2007.

<sup>4</sup> “Approved End-Users and Respective Eligible Items for the People’s Republic of China (PRC) Under Authorization Validated End-User (VEU),” Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>5</sup> “Approved End-Users and Respective Eligible Items for the People’s Republic of China (PRC) Under Authorization Validated End-User (VEU),” Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; see, e.g., Category 1--Materials, Chemicals, “Microorganisms,” and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>6</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

The reason for the selection process is that the VEU program carries an inherent risk of proliferation. The key divergence from the previous system is that U.S. suppliers can now send certain “eligible” controlled items to a VEU company without first applying for a Commerce Department export license.<sup>7</sup> Instead, these exporters would merely be required to submit annual reports on what they had sent, perhaps long after the goods had reached their destinations and been put to use.<sup>8</sup> A VEU company intent on diverting a controlled good for military use through this system could simply import much more of the item than necessary for its own production, and transfer the remainder to a defense purpose. The penalty for such a violation, when and if discovered, could be merely the loss of VEU status.<sup>9</sup>

### **Shanghai Hua Hong NEC Electronics Company, Ltd.**

One company granted VEU status is Shanghai Hua Hong NEC Electronics Company, Ltd. (HHNEC), a firm the Commerce Department describes simply as an “integrated circuits (IC) foundry.”<sup>10</sup> The controlling shareholder of HHNEC, however, is Shanghai Huahong Group,<sup>11</sup> which is, in turn, majority-owned and run by China Electronics Corporation (CEC),<sup>12</sup> a large government-owned conglomerate that produces

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<sup>7</sup> “Approved End-Users and Respective Eligible Items for the People’s Republic of China (PRC) Under Authorization Validated End-User (VEU),” U.S. Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>8</sup> Part 748 – Applications (Classification, Advisory, and License) and Documentation, Export Administration Regulations, p. 27, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/748.pdf>, accessed on November 8, 2007.

<sup>9</sup> “Qs & As on the Major Amendments of Final Rules,” U.S. Department of Commerce, Bureau of Industry and Security, [www.bis.doc.gov/News/2007/QsAsupdateforChinarule103007.pdf](http://www.bis.doc.gov/News/2007/QsAsupdateforChinarule103007.pdf), accessed on November 13, 2007.

<sup>10</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>11</sup> Shanghai Belling 2007 Daily Related Trade Announcement, Shanghai Belling Co., <http://www.belling.com.cn/article.html?id=3680> (in Chinese), accessed on October 26, 2007; Huahong Group Achievements in 2006 Reach Historic Heights, HuaHong Group, [http://www.huahong.com.cn/gb/webpage/news\\_content01.asp?id=533](http://www.huahong.com.cn/gb/webpage/news_content01.asp?id=533) (in Chinese), accessed on November 13, 2007; Chip Manufacturing, HuaHong Group, [http://www.huahong.com.cn/gb/webpage/business\\_make.htm](http://www.huahong.com.cn/gb/webpage/business_make.htm) (in Chinese), accessed on November 13, 2007; Member Enterprises, Huahong Group, [http://www.huahong.com.cn/gb/webpage/company\\_leaguer.htm](http://www.huahong.com.cn/gb/webpage/company_leaguer.htm) (in Chinese), accessed on October 26, 2007; Key Holding/Unconsolidated Companies, China Electronics Corporation, <http://www1.cec.com.cn/english/ce61.asp>, accessed on October 26, 2007.

<sup>12</sup> Corporation Profile, China Electronics Corporation, <http://www.cec.com.cn/cecchannel/english/cecchannel/about/aboutus.html>, accessed on November 13, 2007; City Tax Bureau Transmission to the Ministry of Finance Regarding the Approval of China Electronics Corporation Assets and Related Financial Affairs, September 27, 2000, Wuchang Branch of Wuhan Local Tax Bureau, available at <http://dsfj.wuchang.gov.cn/NEWS/05/2002621113043.htm> (in Chinese), accessed on October 23, 2007; Key Holding/Unconsolidated Companies, China Electronics Corporation, <http://www1.cec.com.cn/english/ce61.asp>, accessed on October 26, 2007.

a wide array of military equipment,<sup>13</sup> in addition to consumer electronics.<sup>14</sup> One of CEC's other subsidiaries, China National Electronics Import & Export Corporation (CEIEC),<sup>15</sup> was punished by the State Department as recently as December 2006 under a law targeting proliferation to Iran and Syria.<sup>16</sup> Another wholly-owned CEC subsidiary, China Electronic Systems Engineering Corporation (CESEC),<sup>17</sup> was alleged by the United States to have sold more than \$27 million worth of telecommunications equipment to Iraq between 1999 and 2001<sup>18</sup> in violation of international sanctions.<sup>19</sup> In 2006, the U.S. Justice Department described this subsidiary as a "technology procurement arm of the People's Liberation Army" (PLA).<sup>20</sup> Through numerous other subsidiaries, CEC manufactures military electronics for China's armed forces.<sup>21</sup> Thus, the VEU system raises the risk that CEC will import previously controlled products through the subsidiary the Commerce Department has blessed, and then shift the products to one of its military units, or to the unit that has supplied Iran. In such a case, it is not clear what recourse the Commerce Department will have other than to drop the

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<sup>13</sup> Company Introduction, China Tongguang Electronic Corporation, <http://www.ctgc.com.cn/intro.htm> (in Chinese), accessed on November 7, 2007; Military-Use Communications Electronics Engineering, China Tongguang Electronic Corporation, [http://www.ctgc.com.cn/projects/military\\_communication.htm](http://www.ctgc.com.cn/projects/military_communication.htm) (in Chinese), accessed on November 7, 2007; Company Introduction, Nanjing Changjiang Electronics Group Co., Ltd., <http://www.bianfu.com> (in Chinese), accessed on November 19, 2007; "Nanjing Changjiang Machinery Group Co., Ltd.," CIDEX 2000: China International Defense Electronics Exhibition: Exhibition Directory, June 27-30, 2000, p. 41.

<sup>14</sup> Company Profile, China Electronics Corporation, <http://www1.cec.com.cn/english/ce20.asp>, accessed on October 26, 2007.

<sup>15</sup> Primary Wholly-Funded Enterprises, China Electronics Corporation, <http://www.cec.com.cn/cecchannel/english/cecchannel/about/gongsilist.html>, accessed on November 14, 2007; About CEIEC, China National Electronics Import & Export Corporation, <http://www.ceiec.com.cn/type/Info.aspx?code=010> (in Chinese), accessed on October 26, 2007.

<sup>16</sup> Department of State, Bureau of International Security and Nonproliferation, "Imposition of Nonproliferation Measures Against Foreign Persons, Including a Ban on U.S. Government Procurement," Federal Register Vol. 72, No. 003, Public Notice 5660, January 5, 2007.

<sup>17</sup> Primary Wholly-Funded Enterprises, China Electronics Corporation, <http://www.cec.com.cn/cecchannel/english/cecchannel/about/gongsilist.html>, accessed on November 14, 2007; Company Introduction, China Electronic Systems Engineering Corporation, <http://www.cec-cesec.com.cn/jianjie.htm> (in Chinese), accessed on October 26, 2007.

<sup>18</sup> Indictment, United States of America v. Andrew Huang, April 12, 2006, available via PACER, accessed on October 29, 2007.

<sup>19</sup> Indictment, United States of America v. Andrew Huang, April 12, 2006, available via PACER, accessed on October 29, 2007.

<sup>20</sup> "Cromwell Man Charged in Connection with Transfer of Technology to Iraq," Press Release, May 1, 2006, United States Attorney's Office District of Connecticut, U.S. Department of Justice, available at <http://www.usdoj.gov/usao/ct/Press2006/20060501-1.html>, accessed on October 23, 2007; Indictment, United States of America v. Andrew Huang, April 12, 2006, available via PACER, accessed on October 29, 2007.

<sup>21</sup> Company Introduction, China Tongguang Electronic Corporation, <http://www.ctgc.com.cn/intro.htm> (in Chinese), accessed on November 7, 2007; Military-Use Communications Electronics Engineering, China Tongguang Electronic Corporation, [http://www.ctgc.com.cn/projects/military\\_communication.htm](http://www.ctgc.com.cn/projects/military_communication.htm) (in Chinese), accessed on November 7, 2007; Company Introduction, Nanjing Changjiang Electronics Group Co., Ltd., <http://www.bianfu.com> (in Chinese), accessed on November 19, 2007; "Nanjing Changjiang Machinery Group Co., Ltd.," CIDEX 2000: China International Defense Electronics Exhibition: Exhibition Directory, June 27-30, 2000, p. 41.

subsidiary from the VEU program. That, of course, would not reverse the harm done, or be a meaningful penalty.

### Specific diversion risks

China's military is in the midst of a comprehensive modernization of its command, control, communications, computers, and intelligence (C4I) systems.<sup>22</sup> High-quality semiconductors are essential to any such modernization effort.<sup>23</sup> Some of the dual-use goods now eligible for license-free export to HHNEC (see Annex I) are needed to set up and operate a modern foundry capable of producing such semiconductors.<sup>24</sup> Useful items for such a foundry include equipment specially designed for automatic loading multi-chamber central wafer handling systems (Export Control Classification Number 3B001.c.2),<sup>25</sup> pressure transducers (2B230),<sup>26</sup> and chemicals used in semiconductor production (1C350.c.3, 1C350.d.7).<sup>27</sup>

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<sup>22</sup> Annual Report to Congress, Military Power of the People's Republic of China, Office of the Secretary of Defense, 2004, p. 6, 24, available at [www.defenselink.mil/pubs/d20040528PRC.pdf](http://www.defenselink.mil/pubs/d20040528PRC.pdf), accessed on November 13, 2007.

<sup>23</sup> "Electronics Industry Study Report: Semiconductors and Defense Electronics," The Industrial College of the Armed Forces, National Defense University, 2003, p. 7, 20.

<sup>24</sup> Section 8 – Electronics Technology, Militarily Critical Technologies List, U.S. Department of Defense, September 2006, p. 61, 67, Defense Technical Information Center, available at [www.dtic.mil](http://www.dtic.mil), accessed on November 9, 2007.

<sup>25</sup> Category 3--Electronics, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 26-28, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl3.pdf>, accessed on November 8, 2007; "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>26</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 2--Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 30-31, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007; "A Handbook for the Nuclear Suppliers Group Dual-Use Annex," accessed via the Risk Report on November 13, 2007.

<sup>27</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 51-54, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007; Sunniva R. Collins, "Stainless Steel for Semiconductor Applications," presented at the 39th Mechanical Working and Steel Processing Conference of the Iron and Steel Society, Indianapolis, 19-22 October, 1997, available at [www.swagelok.com/downloads/webcatalogs/en/stainlessforsemiconductors.pdf?301Red=Y](http://www.swagelok.com/downloads/webcatalogs/en/stainlessforsemiconductors.pdf?301Red=Y), accessed on December 7, 2007.

The technology and processes needed to produce high-performance civil-use semiconductors are largely the same as those needed to make military ones;<sup>28</sup> therefore, if diverted, these items could be used to build a facility devoted to the production of military-use semiconductors, or be used to upgrade and re-supply such a facility already in operation. The result could be an across-the-board improvement in the reliability and performance of China's military electronics.

CEC has several units that produce defense electronics systems heavily dependent on high-performance semiconductors. Many of these companies could use items imported without a license through HHNEC. One example is CESEC, mentioned above, a CEC subsidiary which the Defense Department has described as a "critical element of the PLA's C4I modernization effort," because of its role in "designing, integrating and operating the PLA's telecommunications and computer networks."<sup>29</sup> Another CEC subsidiary, CEIEC, also mentioned above, supplies components used in air and naval defense systems,<sup>30</sup> satellite and microwave communications,<sup>31</sup> and electronic warfare.<sup>32</sup> In the early 1990s, the Commerce Department approved licenses for the export to CEIEC of semiconductor wafer testing equipment, semiconductor manufacturing equipment, microwave research equipment, and high-performance computers.<sup>33</sup> After importing this American equipment, useful for producing radar, CEIEC exported a three-dimensional air surveillance radar to Iran.<sup>34</sup>

Some of the items eligible for license-free export to HHNEC also raise the possibility of diversion to a nuclear program. Pressure transducers (2B230) are used in semiconductor manufacturing,<sup>35</sup> but are also required in large numbers for gas-centrifuge uranium enrichment plants.<sup>36</sup> Allowing one CEC subsidiary to import these items license

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<sup>28</sup> Section 8 – Electronics Technology, Militarily Critical Technologies List, U.S. Department of Defense, September 2006, p. 61, available at Defense Technical Information Center, [www.dtic.mil](http://www.dtic.mil), accessed on November 9, 2007.

<sup>29</sup> Annual Report to Congress, Military Power of the People's Republic of China, Office of the Secretary of Defense, 2004, available at [www.defenselink.mil/pubs/d20040528PRC.pdf](http://www.defenselink.mil/pubs/d20040528PRC.pdf), accessed on November 13, 2007.

<sup>30</sup> Products, China National Electronics Import & Export Corporation, <http://www.ceiec.com.cn/english/product/list.aspx?prototype=3&lcode=02002>, accessed on November 21, 2007.

<sup>31</sup> Communication Systems, China National Electronics Import & Export Corporation, <http://www.ceiec.com.cn/product/list.aspx?prototype=5&lcode=02002> (in Chinese), accessed on November 21, 2007.

<sup>32</sup> Products, China National Electronics Import & Export Corporation, <http://www.ceiec.com.cn/english/product/list.aspx?prototype=3&lcode=02002>, accessed on November 21, 2007.

<sup>33</sup> "U.S. Exports to China 1988-1998: Fueling Proliferation," April 1999, Section I, Part B, Wisconsin Project on Nuclear Arms Control, available at [www.wisconsinproject.org/pubs/reports/1999/CRSec1B.pdf](http://www.wisconsinproject.org/pubs/reports/1999/CRSec1B.pdf), accessed on November 21, 2007.

<sup>34</sup> "U.S. Exports to China 1988-1998: Fueling Proliferation," April 1999, Section I, Part B, Wisconsin Project on Nuclear Arms Control, available at [www.wisconsinproject.org/pubs/reports/1999/CRSec1B.pdf](http://www.wisconsinproject.org/pubs/reports/1999/CRSec1B.pdf), accessed on November 21, 2007.

<sup>35</sup> "A Handbook for the Nuclear Suppliers Group Dual-Use Annex," accessed via the Risk Report on November 13, 2007.

<sup>36</sup> "A Handbook for the Nuclear Suppliers Group Dual-Use Annex," accessed via the Risk Report on November 13, 2007.

free raises the risk that another subsidiary, such as CEIEC—sanctioned just last year under the Iran and Syria Nonproliferation Act<sup>37</sup>—could send them to Iran, where they could contribute to the success of the uranium enrichment plant at Natanz.

CEC also oversees a number of other defense electronics subsidiaries that could benefit from license-free items bound for HHNEC. Nanjing Changjiang Electronics Group Co.,<sup>38</sup> for example, produces radar systems for the PLA,<sup>39</sup> while China Tongguang Electronic Corporation<sup>40</sup> develops airborne communications for China's air force and navy.<sup>41</sup> Wuhan Zhongyuan Electronics Group Co., also a wholly-owned CEC subsidiary,<sup>42</sup> specializes in shortwave tactical communications equipment and military anti-jamming technology.<sup>43</sup>

### **BHA Aerocomposite Parts Co., Ltd.**

A second company granted VEU status is BHA Aerocomposite Parts Co., Ltd.<sup>44</sup> BHA is a joint venture between China Aviation Industry Corporation I (AVIC I), the Boeing Company, and the Hexcel Corporation.<sup>45</sup> These three owners<sup>46</sup> have a history of violating U.S. export controls that should have barred BHA from consideration.

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<sup>37</sup> Department of State, Bureau of International Security and Nonproliferation, "Imposition of Nonproliferation Measures Against Foreign Persons, Including a Ban on U.S. Government Procurement," Federal Register Vol. 72, No. 003, Public Notice 5660, January 5, 2007.

<sup>38</sup> Company Introduction, Nanjing Changjiang Electronics Group Co., Ltd., <http://www.bianfu.com> (in Chinese), accessed on November 30, 2007.

<sup>39</sup> "Nanjing Changjiang Machinery Group Co., Ltd.," CIDEX 2000: China International Defense Electronics Exhibition: Exhibition Directory, June 27-30, 2000, p. 41.

<sup>40</sup> Company Introduction, China Tongguang Electronic Corporation, <http://www.ctgc.com.cn/intro.htm> (in Chinese), accessed on November 7, 2007.

<sup>41</sup> Military-Use Communications Electronics Engineering, China Tongguang Electronic Corporation, [http://www.ctgc.com.cn/projects/military\\_communication.htm](http://www.ctgc.com.cn/projects/military_communication.htm) (in Chinese), accessed on November 7, 2007.

<sup>42</sup> Primary Wholly-Funded Enterprises, China Electronics Corporation, <http://www.cec.com.cn/cecchannel/english/cecchannel/about/gongsilist.html>, accessed on November 14, 2007.

<sup>43</sup> Wuhan Zhongyuan Electronics Group Company, China Enterprise Confederation, <http://www.cec-ceda.org.cn/famousdb/qiye386/intro.html> (in Chinese), accessed on December 4, 2007.

<sup>44</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>45</sup> Joint Ventures, Hexcel Corporation, <http://www.hexcel.com/Products/Structural+Parts/Joint+Ventures/>, accessed on November 15, 2007; "New BIS Program Changes Export Rules on Targeted Products for Select Companies in China," U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007; "Boeing Awards New Contracts with Chinese Suppliers," Boeing China, [http://www.boeingchina.com/en/news/newcontent\\_en.asp?num=1&category=1&id=1500](http://www.boeingchina.com/en/news/newcontent_en.asp?num=1&category=1&id=1500), accessed on October 23, 2007.

<sup>46</sup> "Boeing Awards New Contracts with Chinese Suppliers," Boeing China, [http://www.boeingchina.com/en/news/newcontent\\_en.asp?num=1&category=1&id=1500](http://www.boeingchina.com/en/news/newcontent_en.asp?num=1&category=1&id=1500), accessed on October 23, 2007; "Boeing in China," The Boeing Company, <http://www.boeing.com/companyoffices/aboutus/boechina.html>, accessed on October 30, 2007; United States Securities and Exchange Commission, Form 10-Q: Quarterly Report Pursuant to Section 13 or 15(d)

AVIC I, one of the three co-owners, is a large Chinese government-owned corporation that develops and produces fighters, bombers, missiles, and 90% of the aviation weapon systems used by the People's Liberation Army.<sup>47</sup> AVIC I's 50% subsidiary and import-export arm, China National Aero-Technology Import & Export Corporation (CATIC),<sup>48</sup> is currently under State Department sanctions that punish proliferation to Iran, one of three such sets of penalties imposed upon the firm since 2002 for proliferation to Iran.<sup>49</sup> A wholly-owned CATIC subsidiary, Tal Industries, was sentenced in 2001 to a \$1 million criminal fine, a 5-year period of corporate probation,<sup>50</sup> and a 10-year denial of U.S. export privileges,<sup>51</sup> for making false and misleading statements in a case in which American machine tools from McDonnell Douglas,<sup>52</sup> now part of Boeing,<sup>53</sup> were diverted in China.<sup>54</sup> Several of the machines wound up at an AVIC factory that produced fighter planes and cruise missiles, far from their declared and approved destination.<sup>55</sup> This diversion was discovered due to conditions attached to the

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of the Securities Exchange Act of 1934, Hexcel Corporation, available at [http://google.brand.edgar-online.com/EFX\\_dll/EDGARpro.dll?FetchFilingHTML1?SessionID=Zo\\_NWQvURc0QRAh&ID=5342544](http://google.brand.edgar-online.com/EFX_dll/EDGARpro.dll?FetchFilingHTML1?SessionID=Zo_NWQvURc0QRAh&ID=5342544), accessed on November 15, 2007; BHA Aero Composite Parts Company, Air News, <http://www.airnews.cn/hr/showRecruit.aspx?type=701&id=198> (in Chinese), accessed on November 15, 2007.

<sup>47</sup> Profile, China Aviation Industry Corporation I, [www.avic1.com.cn/English/profile/jtfc\\_01.htm](http://www.avic1.com.cn/English/profile/jtfc_01.htm), accessed via Google cache on October 30, 2007.

<sup>48</sup> A Brief Introduction of the Company, China National Aero-Technology Import & Export Corporation, <http://www.catic.com.cn/en/public/subordinate.asp?1=1&TypeTreeID=1779>, accessed on October 23, 2007.

<sup>49</sup> Department of State, Bureau of International Security and Nonproliferation, "Imposition of Nonproliferation Measures Against Foreign Persons, Including a Ban on U.S. Government Procurement," Federal Register Vol. 72, No. 003, Public Notice 5660, January 5, 2007; Iran Nonproliferation Act of 2000, U.S. Department of State, <http://www.state.gov/t/isn/c15234.htm>, accessed on November 8, 2007.

<sup>50</sup> "People's Republic of China Corporate Entity Waives Immunity and Enters Plea to Felony Export Violation; Sentenced to Pay \$1 Million Criminal Fine and Five Year Term of Corporate Probation," U.S. Department of Commerce, Bureau of Industry and Security, available at <http://www.bis.doc.gov/News/archive2001/DOJReleasePRCCase.htm>, accessed on November 15, 2007.

<sup>51</sup> "Action Affecting Export Privileges: Tal Industries, Inc.," U.S. Department of Commerce, Bureau of Export Administration, Federal Register Volume 66, Number 100, pp. 28419-28421, May 23, 2001.

<sup>52</sup> "People's Republic of China Corporate Entity Waives Immunity and Enters Plea to Felony Export Violation; Sentenced to Pay \$1 Million Criminal Fine and Five Year Term of Corporate Probation," U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/News/archive2001/DOJReleasePRCCase.htm>, accessed on November 15, 2007; "McDonnell Douglas, China National Aero Technology Import and Export Corporation and Others Indicted on Federal Charges for Making False and Misleading Statements in Connection with Exporting Machinery to the People's Republic of China," U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/News/Archive99/DOJIndictmentMcDonnellDouglas.html>, accessed on November 1, 2007.

<sup>53</sup> Exchanging McDonnell Douglas Stock for Boeing Stock, The Boeing Company, <http://www.boeing.com/companyoffices/financial/exchange.html>, accessed on November 30, 2007.

<sup>54</sup> "Action Affecting Export Privileges: Tal Industries, Inc.," U.S. Department of Commerce, Bureau of Export Administration, Federal Register Volume 66, Number 100, pp. 28419-28421, May 23, 2001.

<sup>55</sup> "Export Controls: Sensitive Machine Tool Exports to China," U.S. General Accounting Office, November 1996, available at [www.gao.gov/cgi-bin/getrpt?NSIAD-97-4](http://www.gao.gov/cgi-bin/getrpt?NSIAD-97-4), accessed on November 14, 2007.

export license,<sup>56</sup> which was required at the time but will not be required under the VEU system.

Although the other two owners of BHA are the American companies Boeing and Hexcel, this does not make BHA safer. Last year, Boeing entered into a consent agreement with the State Department to settle allegations that Boeing had exported QRS-11 quartz rate sensors, devices used both for aircraft navigation and missile guidance, to China without the required authorization.<sup>57</sup> The consent agreement, Boeing's fourth since September 1998,<sup>58</sup> required the company to pay a penalty of \$15 million,<sup>59</sup> to appoint a special export compliance official from outside the corporation, to allow short-notice audits by the State Department, and to create a senior management position responsible for arms export compliance.<sup>60</sup>

Perhaps the most troubling aspect of the case—and the most incongruous with VEU selection—was that, according to a State Department document, Boeing continued to export these items without a license even after repeated warnings from the State Department, claiming that its own legal analysis had determined that Boeing's exports of the item were not subject to State Department regulations, and that Boeing, therefore, would continue the exports without notifying the State Department.<sup>61</sup> This attitude does not indicate that Boeing, or a company it partially owns, can be counted on to maintain “compliance with U.S. export controls,” a factor to be considered for VEU selection.<sup>62</sup> The press also reported in 2005 that the Commerce Department was looking into whether Boeing violated the terms of licenses issued for Boeing's exports to BHA itself.<sup>63</sup>

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<sup>56</sup> “Export Controls: Sensitive Machine Tool Exports to China,” U.S. General Accounting Office, November 1996, available at [www.gao.gov/cgi-bin/getrpt?NSIAD-97-4](http://www.gao.gov/cgi-bin/getrpt?NSIAD-97-4), accessed on November 14, 2007.

<sup>57</sup> Draft Charging Letter, United States Department of State, available at <http://www.pmddtc.state.gov/Consent%20Agreements/2006/The%20Boeing%20Company/Consent%20Agreement.pdf>, accessed on October 23, 2007; Consent Agreement, In the Matter of: The Boeing Company, 2006, United States Department of State, available at <http://www.pmddtc.state.gov/Consent%20Agreements/2006/The%20Boeing%20Company/Consent%20Agreement.pdf>, accessed on October 23, 2007.

<sup>58</sup> Consent Agreements, U.S. State Department, Directorate of Defense Trade Controls, [http://www.pmddtc.state.gov/consent\\_agreements.htm](http://www.pmddtc.state.gov/consent_agreements.htm), accessed on November 15, 2007.

<sup>59</sup> Consent Agreement, In the Matter of: The Boeing Company, 2006, United States Department of State, available at <http://www.pmddtc.state.gov/Consent%20Agreements/2006/The%20Boeing%20Company/Consent%20Agreement.pdf>, accessed on October 23, 2007.

<sup>60</sup> Consent Agreement, In the Matter of: The Boeing Company, 2006, United States Department of State, available at <http://www.pmddtc.state.gov/Consent%20Agreements/2006/The%20Boeing%20Company/Consent%20Agreement.pdf>, accessed on October 23, 2007.

<sup>61</sup> Draft Charging Letter, United States Department of State, available at <http://www.pmddtc.state.gov/Consent%20Agreements/2006/The%20Boeing%20Company/Consent%20Agreement.pdf>, accessed on October 23, 2007.

<sup>62</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>63</sup> Dominic Gates, “U.S. Holds Up Boeing's Plan to Outsource Work in China,” Seattle Times, September 2, 2005.

Hexcel, the third co-owner of BHA, is a Connecticut-based company that produces advanced structural materials,<sup>64</sup> including carbon fibers that are used in the U.S. F18, F22, and F35 fighter planes.<sup>65</sup> In 2006, Hexcel agreed to pay \$203,400 to settle charges that it committed 22 violations of Commerce Department export control regulations,<sup>66</sup> including three charges of illegally exporting AS4C carbon fabric to China in 2002,<sup>67</sup> the same year that BHA formally opened.<sup>68</sup> Under the VEU system, Hexcel now will be able to ship this product (ECCN 1C010.b) to BHA without applying for an export license.<sup>69</sup> Hexcel also agreed in 2007 to pay \$15 million to settle allegations that it knowingly used defective fiber in bulletproof vests sold to U.S. law enforcement officers.<sup>70</sup> Hexcel's record does not inspire confidence in its willingness to abide by government regulations.

### Specific diversion risks

AVIC I has a number of military subsidiaries that could benefit from the items eligible for license-free export to BHA (see Annex II). Chengdu Aircraft Industry (Group) Corporation, Ltd. (CAC)<sup>71</sup> builds the J-10 (F-10), a fourth generation Chinese fighter first deployed late last year.<sup>72</sup> CAC is equipped with a composite material

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<sup>64</sup> "Hexcel Promotes Composites at Asian Aerospace 2007," Press Release, October 1, 2007, Hexcel Corporation, available at <http://www.hexcel.com/News/Market+News/Hexcel+promotes+composites+at+Asian+Aerospace+2007.htm>, accessed on October 23, 2007.

<sup>65</sup> Space and Defense, Hexcel Corporation, <http://www.hexcel.com/Markets/Space%20and%20Defense>, accessed on November 2, 2007.

<sup>66</sup> Order Relating to Hexcel Corporation, April 28, 2006, Department of Commerce, Bureau of Industry and Security, available at [efoia.bis.doc.gov/ExportControlViolations/E968.pdf](http://efoia.bis.doc.gov/ExportControlViolations/E968.pdf), accessed on October 22, 2007.

<sup>67</sup> Proposed Charging Letter: Hexcel Corporation, April 28, 2006, U.S. Department of Commerce, Bureau of Industry and Security, available at [efoia.bis.doc.gov/ExportControlViolations/E968.pdf](http://efoia.bis.doc.gov/ExportControlViolations/E968.pdf), accessed on October 22, 2007; Order Relating to Hexcel Corporation, April 28, 2006, U.S. Department of Commerce, Bureau of Industry and Security, available at [efoia.bis.doc.gov/ExportControlViolations/E968.pdf](http://efoia.bis.doc.gov/ExportControlViolations/E968.pdf), accessed on October 22, 2007.

<sup>68</sup> Chronology of Relations Boeing and China, Boeing China, <http://www.boeingchina.com/en/aboutboeing/chronology.shtml>, accessed on October 22, 2007.

<sup>69</sup> Proposed Charging Letter: Hexcel Corporation, April 28, 2006, U.S. Department of Commerce, Bureau of Industry and Security, available at [efoia.bis.doc.gov/ExportControlViolations/E968.pdf](http://efoia.bis.doc.gov/ExportControlViolations/E968.pdf), accessed on October 22, 2007; "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>70</sup> "Hexcel Corp. Pays \$15 Million to the U.S. in Connection with the Sale of Defective Zylon Bullet-proof Vests," October 30, 2007, Press Release, U.S. Department of Justice, available at [http://www.usdoj.gov/opa/pr/2007/October/07\\_civ\\_861.html](http://www.usdoj.gov/opa/pr/2007/October/07_civ_861.html), accessed on November 2, 2007.

<sup>71</sup> Enterprises, China Aviation Industry Corporation I, <http://www.avic1.com.cn/English/enterprises/qyzc.htm>, accessed on November 1, 2007; "Boeing Awards New Contracts with Chinese Suppliers," Boeing China, [http://www.boeingchina.com/en/news/newcontent\\_en.asp?num=1&category=1&id=1500](http://www.boeingchina.com/en/news/newcontent_en.asp?num=1&category=1&id=1500), accessed on October 23, 2007.

<sup>72</sup> Zhao Huanxin, "Home-made Fighter Jet to Add Sky Power," China Daily, January 6, 2007, available at [http://www.chinadaily.com.cn/china/2007-01/06/content\\_776078.htm](http://www.chinadaily.com.cn/china/2007-01/06/content_776078.htm), accessed on November 6, 2007; Annual Report to Congress, Military Power of the People's Republic of China, Office of the Secretary of

machining center,<sup>73</sup> and could use carbon fibers (1C010.b)<sup>74</sup> or resin-impregnated fibers (1C010.e)<sup>75</sup> diverted from BHA to produce composite parts for the J-10, which would improve the aircraft's performance. Another AVIC I subsidiary, Xi'an Aircraft Industry (Group) Company, Ltd. (XAC),<sup>76</sup> developed and manufactured China's nuclear-capable B-6 (Hong-6) bomber.<sup>77</sup> This bomber has been improved with features such as new engines for extended range<sup>78</sup> and an aerial re-fueling capability,<sup>79</sup> and is reportedly being adapted to carry cruise missiles.<sup>80</sup> Composite materials from BHA could be incorporated into these improved versions, giving AVIC I's B-6 greater range and better performance. A third AVIC I subsidiary is China Aircraft Strength Research Institute,<sup>81</sup> which could benefit from the diversion of non-destructive inspection equipment for use with composites (1B001.f).<sup>82</sup> This subsidiary has conducted full-scale verification tests for

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Defense, 2007, p. 4, [www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf](http://www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf), accessed on November 14, 2007.

<sup>73</sup> "Chinese to Partner on Boeing Airplanes, 7E7 Dreamliner," The Boeing Company, available at [http://www.boeing.com/commercial/news/2004/q2/nr\\_040610g.html](http://www.boeing.com/commercial/news/2004/q2/nr_040610g.html), accessed on October 30, 2007; Composite Material Machining, Chengdu Aircraft Industrial (Group) Co. Ltd., available at <http://www.cac.com.cn/cfys/fhcljg.asp> (in Chinese), accessed on November 19, 2007.

<sup>74</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>75</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>76</sup> Enterprises, China Aviation Industry Corporation I, <http://www.avic1.com.cn/English/enterprises/qyzc.htm>, accessed on November 1, 2007; "Air Beauty-B6 Bomber," Xian Aircraft Industry Group Company, [http://www.xac.com.cn/xac1/civil/h6fj01\\_e.html](http://www.xac.com.cn/xac1/civil/h6fj01_e.html), accessed on November 6, 2007.

<sup>77</sup> "Air Beauty-B6 Bomber," Xian Aircraft Industry Group Company, [http://www.xac.com.cn/xac1/civil/h6fj01\\_e.html](http://www.xac.com.cn/xac1/civil/h6fj01_e.html), accessed on November 6, 2007.

<sup>78</sup> Annual Report to Congress, Military Power of the People's Republic of China, Office of the Secretary of Defense, 2007, p. 4, [www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf](http://www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf), accessed on November 14, 2007.

<sup>79</sup> Annual Report to Congress, Military Power of the People's Republic of China, Office of the Secretary of Defense, 2007, p. 18, [www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf](http://www.defenselink.mil/pubs/pdfs/070523-China-Military-Power-final.pdf), accessed on November 14, 2007.

<sup>80</sup> Robert Hewson, "Chinese Air-Launched Cruise Missile Emerges from Shadows," Jane's Defence Weekly, January 31, 2007; see also "Air Beauty-B6 Bomber," Xian Aircraft Industry Group Company, [http://www.xac.com.cn/xac1/civil/h6fj01\\_e.html](http://www.xac.com.cn/xac1/civil/h6fj01_e.html), accessed on November 6, 2007.

<sup>81</sup> Enterprises, China Aviation Industry Corporation I, <http://www.avic1.com.cn/English/enterprises/qyzc.htm>, accessed on November 1, 2007.

<sup>82</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 9-10, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

fighters and bombers<sup>83</sup> and studies the strength and damage resistance of composite materials.<sup>84</sup> The Institute has helped develop a composite vertical stabilizer for China's Q-5 fighter.<sup>85</sup>

In addition to these three AVIC I subsidiaries, there are several other subordinates that could benefit from a diversion of some or all of the items now eligible for license-free export to BHA. Other AVIC I subordinates include the National Defense Key Laboratory for Advanced Composites, a research center under AVIC I's Beijing Institute of Aeronautical Materials<sup>86</sup> that focuses on composite materials for missiles.<sup>87</sup> Its scientists published a study on AS4 carbon fiber in 2003,<sup>88</sup> the year after Hexcel allegedly made three illegal shipments of AS4C to China.<sup>89</sup> AVIC I also oversees Jinan Research Institute for Special Aeronautical Composites,<sup>90</sup> which designs, tests, and produces composite materials for military aircraft, missiles, and radar installations,<sup>91</sup> and

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<sup>83</sup> "Aircraft Strength Research Institute of AVIC," Airshow China '96: Official Exhibition Directory, Zhuhai Airport, Guangdong Province, China, 5-10 November 1996, p. 51.

<sup>84</sup> Wang Zhenghao, Zhao Guiping, Ma Junfeng, and Zhang Jianxin, "Experiment Study on the Strain Rate Behavior of Carbon/Epoxy Composite Materials," *Acta Materiae Compositae Sinica*, 2007, Vol. 24, No. 2, pp. 113-119, accessed via Wanfang Data, <http://www.wanfangdata.com.cn/qikan/periodical.Articles/fhclxb/fhcl2007/0702/070220.htm> (in Chinese), accessed on November 6, 2007; Yang Xu, Shen Zhen, Yan Ying, and Liu Bing-shan, "New Methodology for Evaluating Toughness of Composite Laminates – Investigation of Damage Resistance," *Chinese Journal of Aeronautics*, 2003, Vol. 16, No. 2, pp. 73-79, accessed via Wanfang Data, <http://www.wanfangdata.com.cn/qikan/periodical.Articles/hkxb-e/hkxb2003/0302/030203.htm>, accessed on November 6, 2007.

<sup>85</sup> Research and Development of a Fully Composite Material Vertical Stabilizer for the A-5 Aircraft, China Aviation Industry Corporation I, [http://www.avic1.com.cn/Chinese/jtfc/jtfc\\_06\\_9\\_1987\\_07.htm](http://www.avic1.com.cn/Chinese/jtfc/jtfc_06_9_1987_07.htm) (in Chinese), accessed via Google cache on November 19, 2007; China Aircraft Strength Research Institute, China Aviation Industry Corporation I, [http://www.avic1.com.cn/Chinese/qyzc/qyzc\\_yjjg\\_zgfjdyjs.htm](http://www.avic1.com.cn/Chinese/qyzc/qyzc_yjjg_zgfjdyjs.htm) (in Chinese), accessed on November 20, 2007.

<sup>86</sup> Beijing Institute of Aeronautical Materials, China Aviation Industry Corporation I, [http://www.avic1.com.cn/Chinese/qyzc/qyzc\\_yjjg\\_bjhkcljy.htm](http://www.avic1.com.cn/Chinese/qyzc/qyzc_yjjg_bjhkcljy.htm) (in Chinese), accessed via Google cache on November 19, 2007.

<sup>87</sup> National Key Laboratory of Advanced Composites, Wuma, <http://www.wuma.com.cn/zhaosheng/lac.htm>, accessed on November 12, 2007.

<sup>88</sup> Bao Jianwen, Li Ye, Chen Xiangbao, and Sun Xiaodan, "Study on the Electron Beam Curing Composites Reinforced by AS4 Carbon Fiber," *Journal of Aeronautical Materials*, 2003, Vol. 23, No. 4, pp. 31-34, accessed via Wanfang, available at <http://www.wanfangdata.com.cn/qikan/periodical.Articles/hkclxb/hkcl2003/0304/030407.htm>, accessed on November 1, 2007.

<sup>89</sup> Proposed Charging Letter: Hexcel Corporation, April 28, 2006, U.S. Department of Commerce, Bureau of Industry and Security, available at [efoia.bis.doc.gov/ExportControlViolations/E968.pdf](http://efoia.bis.doc.gov/ExportControlViolations/E968.pdf), accessed on October 22, 2007.

<sup>90</sup> Enterprises, China Aviation Industry Corporation I, <http://www.avic1.com.cn/English/enterprises/qyzc.htm>, accessed on November 1, 2007.

<sup>91</sup> Introduction, Research Institute for Special Structures of Aeronautical Composites, [http://en.risac.com/newEbiz1/EbizPortalFG/portal/html/ProgramShow.html?ProgramShow\\_ProgramID=c373e9089825a4838f7e8f6967e0555b](http://en.risac.com/newEbiz1/EbizPortalFG/portal/html/ProgramShow.html?ProgramShow_ProgramID=c373e9089825a4838f7e8f6967e0555b), accessed on November 6, 2007; Institute Introduction, Research Institute for Special Structures of Aeronautical Composites, [http://www.risac.com/newEbiz1/EbizPortalFG/portal/html/ProgramShow.html?ProgramShow\\_ProgramID=c373e9085549bf158feb5731aab9a426](http://www.risac.com/newEbiz1/EbizPortalFG/portal/html/ProgramShow.html?ProgramShow_ProgramID=c373e9085549bf158feb5731aab9a426) (in Chinese), accessed on November 6, 2007.

Luoyang Optoelectro Technology Development Center,<sup>92</sup> which produces air-to-air and surface-to-air missiles and air defense systems.<sup>93</sup>

The advanced composites and sophisticated equipment now eligible for license-free export to BHA could—if diverted to these AVIC I defense production subsidiaries—enable a qualitative improvement in China’s military aircraft production. This risk, which has always been sufficient justification for the existence of national security-based export controls, has not lessened because of increased interaction between American and Chinese companies. It is still important to know exactly how an American export will be used before it leaves the United States. Otherwise, American pilots could someday be forced to engage in combat with Chinese fighter planes made more lethal by American products.

### **VEU Review and Approval**

Reducing the regulatory “burden” of export licensing—both for the government and for U.S. exporters—is a key motive for the VEU program.<sup>94</sup> When the Commerce Department announced the names of the five firms it selected, it highlighted the fact that they had accounted for 18 percent of total licensed exports to China in 2006.<sup>95</sup> This factor may help explain why two companies as risky as HHNEC and BHA could be certified as “trusted customers” at the outset of a new program. Both of these companies appear to be excluded by the Commerce Department’s own factors for selection. These include the entity’s “relationships with U.S. and foreign companies.”<sup>96</sup>

Firms such as HHNEC and BHA can only be construed as safe if this relation to other companies is ignored. But such a narrow view could lead to the approval of almost any subsidiary company, no matter how dangerous the parent. A subsidiary of a company on the Commerce Department’s “Entity List” of risky end-users, for example, could pass a review process that did not take into account parent companies. The VEU

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<sup>92</sup> Enterprises, China Aviation Industry Corporation I, <http://www.avic1.com.cn/English/enterprises/qyzc.htm>, accessed on November 1, 2007.

<sup>93</sup> Luoyang Optoelectro Technology Development Center, 5th China International Aviation & Aerospace Exhibition, Official Exhibition Directory, November 2004, p. 177.

<sup>94</sup> “Enhancing Secure Trade with China,” Remarks by Under Secretary of Industry and Security Mario Mancuso to the U.S.-China Business Council, June 18, 2007, available at <http://www.bis.doc.gov/news/2007/mancuso06182007.htm>, accessed on December 5, 2007; “Approved End-Users and Respective Eligible Items for the People’s Republic of China (PRC) Under Authorization Validated End-User (VEU),” Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>95</sup> “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

<sup>96</sup> Part 748 – Applications (Classification, Advisory, and License) and Documentation, Export Administration Regulations, p. 26, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/748.pdf>, accessed on November 8, 2007; “New BIS Program Changes Export Rules on Targeted Products for Select Companies in China,” U.S. Department of Commerce, Bureau of Industry and Security, <http://www.bis.doc.gov/news%5C2007%5Cchina10182007.htm>, accessed on October 19, 2007.

regulations acknowledge the importance of these relationships by requiring that applications for VEU status include an account of the candidate’s corporate structure and affiliations. These expressly include any “corporate relationship that the entity has with either government or military organizations.”<sup>97</sup> It is unclear why the Commerce Department and other U.S. agencies in the review process—including the Departments of State, Defense, and Energy<sup>98</sup>—did not give this factor greater weight.

## **Conclusion and Recommendations**

In light of the diversion risks posed by two of the first five Chinese companies approved for VEU status, the Commerce Department should suspend the VEU program pending a Government Accountability Office (GAO) investigation of the security review process. If it is decided that the program should continue, the Commerce Department should clarify how the factors considered in its review process are evaluated, and should provide assurances that a given entity’s potential to reduce export licensing will not be considered in the review, particularly not at the expense of otherwise disqualifying security concerns. The review process should automatically disqualify any firm owned or controlled, in whole or in part, by a parent that, either through its own actions or by the actions of a subsidiary, manufactures, develops or markets military products that could benefit from the use of a product eligible for license-free export to the firm under review. Also, the review process should automatically disqualify any firm owned or controlled, in whole or in part, by a parent that, either through its own actions or by the actions of a subsidiary, has been sanctioned, fined or otherwise punished by the U.S. government during the past five years in connection with improper export behavior.

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<sup>97</sup> Part 748 – Applications (Classification, Advisory, and License) and Documentation, Export Administration Regulations, Supplement No. 8, p. 1, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/748.pdf>, accessed on November 8, 2007.

<sup>98</sup> Part 748 – Applications (Classification, Advisory, and License) and Documentation, Export Administration Regulations, Supplement No. 9, p. 1, October 31, 2007, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/748.pdf>, accessed on November 8, 2007.

## ANNEX I

Items eligible for license-free export to Shanghai Hua Hong NEC Electronics Company (HHNEC), including Export Control Classification Number (ECCN)

### **Pressure transducers (ECCN: 2B230<sup>99</sup>)**

Pressure transducers (2B230)<sup>100</sup> are used in semiconductor manufacturing, and also to measure the pressure of uranium hexafluoride gas in centrifuge facilities for uranium enrichment, as well as in other nuclear applications.<sup>101</sup>

### **Chemicals (ECCN: 1C350.c.3, 1C350.d.7<sup>102</sup>)**

Phosphorus oxychloride (1C350.c.3)<sup>103</sup> is a precursor to Tabun nerve agent.<sup>104</sup> Hydrogen fluoride (1C350.d.7)<sup>105</sup> can be used in uranium conversion plants to convert uranium dioxide (UO<sub>2</sub>) to uranium tetrafluoride (UF<sub>4</sub>).<sup>106</sup>

### **Chemical manufacturing equipment (ECCN: 2B350.d.2, 2B350.g.3, 2B350.i.4<sup>107</sup>)**

Heat exchangers (2B350.d.2),<sup>108</sup> condensers (2B350.d.2),<sup>109</sup> valves (2B350.g.3),<sup>110</sup> and pumps (2B350.i.4)<sup>111</sup> with contact surfaces made from fluoropolymers<sup>112</sup> have chemical and biological weapon applications.<sup>113</sup>

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<sup>99</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>100</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 30-31, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>101</sup> "A Handbook for the Nuclear Suppliers Group Dual-Use Annex," accessed via the Risk Report on November 5, 2007.

<sup>102</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>103</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 51-54, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>104</sup> WMD Primer (Risk Report): Chemical Weapons, Risk Report Volume 11 Number 3 (May-June 2005), accessed on November 13, 2007.

<sup>105</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 51-54, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>106</sup> NRC Regulations: Export and Import of Nuclear Equipment and Material -- Appendix J to Part 110 -- Illustrative List of Uranium Conversion Plant Equipment Under NRC Export Licensing Authority, Risk Report Volume 4, accessed on December 3, 2007.

<sup>107</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>108</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 32-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>109</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 32-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

**Semiconductor manufacturing equipment (ECCN: 3B001.c.2<sup>114</sup>)**

Equipment specially designed for automatic loading multi-chamber central wafer handling systems (3B001.c.2).<sup>115</sup>

**Resist material (ECCN: 3C002<sup>116</sup>)**

Used for semiconductor lithography.<sup>117</sup>

**Hydrides (ECCN: 3C004<sup>118</sup>)**

Hydrides of phosphorous, arsenic, and antimony (3C004)<sup>119</sup> are frequently used in the production of compound semiconductors.<sup>120</sup>

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<sup>110</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 32-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>111</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 32-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>112</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 32-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>113</sup> "Saint-Gobain Settles Charges of Unlicensed Exports," Press Release, June 25, 2004, U.S. Department of Commerce, Bureau of Industry and Security, available at [http://www.bis.doc.gov/News/2004/StGobainPerf\\_June04.htm](http://www.bis.doc.gov/News/2004/StGobainPerf_June04.htm), accessed on November 9, 2007.

<sup>114</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>115</sup> Category 3--Electronics, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 26-28, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl3.pdf>, accessed on November 8, 2007.

<sup>116</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>117</sup> Category 3--Electronics, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 35-36, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl3.pdf>, accessed on November 8, 2007.

<sup>118</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>119</sup> Category 3--Electronics, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 36-37, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl3.pdf>, accessed on November 8, 2007.

<sup>120</sup> Section 8 – Electronics Technology, Militarily Critical Technologies List, U.S. Department of Defense, September 2006, available at Defense Technical Information Center, accessed on November 9, 2007.

## ANNEX II

Items eligible for license-free export to BHA Aerocomposite Parts Co., Ltd., including Export Control Classification Number (ECCN)

### **Fibrous and filamentary materials (ECCN: 1C010.b, 1C010.e<sup>121</sup>)**

Carbon fibers (1C010.b)<sup>122</sup> are extremely strong but lightweight; they can be used in military aircraft.<sup>123</sup> Pitch-impregnated or resin-impregnated fibers (1C010.e)<sup>124</sup> are used to make high-quality composite parts for missiles, rockets, airframes, and isotope separation systems.<sup>125</sup>

### **Organic matrix composite structures or laminates (ECCN: 1A002.a<sup>126</sup>)**

Composite structures or laminates consisting of an organic matrix and various fibrous or filamentary materials.<sup>127</sup>

### **Inspection equipment for composite materials (ECCN: 1B001.f,<sup>128</sup> 1D001<sup>129</sup>)**

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<sup>121</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>122</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>123</sup> Space and Defense, Hexcel Corporation, <http://www.hexcel.com/Markets/Space%20and%20Defense>, accessed on November 2, 2007.

<sup>124</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>125</sup> "Section 14: Materials and Processing Technology," Militarily Critical Technologies List, July 2007, U.S. Department of Defense, available at Defense Technical Information Center, [www.dtic.mil/mctl/MCTL/Sec14MCTLg.pdf](http://www.dtic.mil/mctl/MCTL/Sec14MCTLg.pdf), accessed on November 2, 2007.

<sup>126</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>127</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 1-2, 31-33, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>128</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 9-10, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>129</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List,

Non-destructive inspection equipment specially designed for composite materials and capable of inspecting three-dimensionally (1B001.f),<sup>130</sup> as well as associated software (1D001).<sup>131</sup>

**Numerically-controlled machine tools (ECCN: 2B001.e.1.a;<sup>132</sup> 2D001, 2D002<sup>133</sup>)**  
Machine tools for removing metals, ceramics, or composites using liquid jets (2B001.e.1.a),<sup>134</sup> as well as enabling software (including that allowing simultaneous coordination of more than four axes for contouring control).<sup>135</sup>

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November 5, 2007, p. 72, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>130</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 9-10, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>131</sup> Category 1--Materials, Chemicals, "Microorganisms," and Toxins, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 74, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl1.pdf>, accessed on November 8, 2007.

<sup>132</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007; Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 74, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>133</sup> "Approved End-Users and Respective Eligible Items for the People's Republic of China (PRC) Under Authorization Validated End-User (VEU)," Department of Commerce, Bureau of Industry and Security, Federal Register Volume 72 Number 202, pp. 59164-59166, October 19, 2007.

<sup>134</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 8-10, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.

<sup>135</sup> Category 2—Materials Processing, Supplement No. 1 to Part 774--The Commerce Control List, November 5, 2007, pp. 44-45, available at Export Administration Regulations Database, <http://www.access.gpo.gov/bis/ear/pdf/ccl2.pdf>, accessed on November 8, 2007.