

**FOR PUBLICATION**  
**UNITED STATES COURT OF APPEALS**  
**FOR THE NINTH CIRCUIT**

UNITED STATES OF AMERICA, <i>Plaintiff-Appellee,</i> v. DONGFAN “GREG” CHUNG, <i>Defendant-Appellant.</i>
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No. 10-50074  
D.C. No.  
8:08-cr-00024-  
CJC-1  
OPINION

Appeal from the United States District Court  
for the Central District of California  
Cormac J. Carney, District Judge, Presiding

Argued and Submitted  
February 17, 2011—Pasadena, California

Filed September 26, 2011

Before: Alfred T. Goodwin, Andrew J. Kleinfeld, and  
Susan P. Graber, Circuit Judges.

Opinion by Judge Graber

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**COUNSEL**

John D. Cline, Law Office of John D. Cline, San Francisco, California, for the defendant-appellant.

Gregory W. Staples, Assistant United States Attorney, Santa Ana, California, for the plaintiff-appellee.

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**OPINION**

GRABER, Circuit Judge:

Defendant Dongfan “Greg” Chung, a former Boeing engineer who gave technological information to China, appeals

his convictions on six counts of violating the Economic Espionage Act of 1996 (“EEA”), 18 U.S.C. § 1831(a)(1), (3); on one count of conspiring to violate the EEA, 18 U.S.C. § 371; on one count of acting as an unregistered foreign agent, 18 U.S.C. § 951; and on one count of making a false statement to federal agents, 18 U.S.C. § 1001. Defendant argues primarily that his convictions were not supported by sufficient evidence.

Alternatively, Defendant contends that he is entitled to a new trial because the government failed to turn over exculpatory information in violation of its duty under *Brady v. Maryland*, 373 U.S. 83 (1963), and because the district court made several erroneous evidentiary rulings. Finally, he challenges the district court’s calculation of his offense level under the United States Sentencing Guidelines.

For the reasons that follow, we affirm.

## BACKGROUND

### A. *Investigation and Conviction*

Defendant was born in China in 1936 and became a naturalized citizen of the United States in 1972. He began working as a civil engineer at Boeing in 1964. With the exception of a few years spent at McDonnell Douglas, Defendant worked for either Rockwell or Boeing<sup>1</sup> until September 2002, when his division relocated and he retired. During his employment with Rockwell and Boeing, Defendant worked mainly as a stress analyst on the forward fuselage section of the space shuttle. After retiring, Defendant returned to Boeing as a contractor in 2003 to help evaluate the crash of the space shuttle Columbia. He remained at Boeing until September 11, 2006, when federal agents searched his home and discovered a trove of Boeing technical documents stored beneath the house.

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<sup>1</sup>Boeing acquired Rockwell’s space division in 1996.

Federal agents first suspected that Defendant was spying for China during their investigation of Chi Mak, another engineer who worked for a naval defense contractor.<sup>2</sup> In October 2005, agents searched Chi Mak's residence and found Defendant's contact information in several of Chi Mak's address books. During a second search of Chi Mak's home in June 2006, agents found a letter dated May 2, 1987, addressed to Defendant from Gu Weihao, who was a senior official with the China Aviation Industry Corporation, a Chinese government ministry. In that letter, Gu Weihao asked Defendant to provide information about airplanes and the space shuttle and thanked Defendant for previously providing unspecified information to China. The federal agents also found what they considered to be a "tasking list" in Chi Mak's home. Although the list itself was not addressed to anyone in particular, it requested information about aviation technologies. Because Chi Mak did not have access to aviation technology, the Federal Bureau of Investigation ("FBI") suspected that the list was meant for Defendant.

Following those discoveries, federal agents began to conduct surveillance and trash searches at Defendant's home. In August and September 2006, agents discovered that Defendant was disposing of Boeing technical documents by hiding them between the pages of Chinese-language newspapers, which he then left out for trash collection.

On September 11, 2006, agents interviewed Defendant and, with Defendant's consent, searched his home. They discovered that Defendant possessed more than 300,000 pages of Boeing and Rockwell documents, many of which related to the space shuttle, Delta IV Rocket, F-15 Fighter, B-52 Bomber, and Chinook Helicopter. Approximately 250,000 pages of those documents were kept in binders in an unfinished storage area beneath Defendant's house. Agents also

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<sup>2</sup>In 2007, Chi Mak was convicted of, among other things, acting as an unregistered foreign agent.

recovered business cards, letters, briefings, documents related to travel, numbered lists of technical information related to aerospace or the space shuttle program, and Defendant's journals.

A grand jury indicted Defendant on February 6, 2008. After a bench trial, he was convicted on count 1 for conspiracy to commit economic espionage, on counts 2 through 7 for economic espionage, on count 10 for acting as an unregistered foreign agent, and on count 14 for making a false statement to federal agents.<sup>3</sup> The district court then sentenced Defendant to 188 months' imprisonment and three years of supervised release. Defendant timely appeals.

*B. Evidence Presented at Trial*

During the trial, the government presented many of the documents retrieved from Defendant's home. Much of the evidence, however, relates to activities and communications that predate the limitations period for the alleged crimes. The limitations period for all of the charged offenses ran from February 6, 2003, to February 6, 2008.<sup>4</sup> We therefore will divide our discussion of the evidence chronologically.

*1. Activities and Correspondence Predating the Limitations Period*

The government introduced a letter written in 1979 by Defendant to Professor Gu (aka Ku Chen Lung) of the Harbin Institute of Technology in China. In that letter, Defendant states that he sent Professor Gu some graduate engineering course materials, a book, and some magazine articles. In closing, Defendant expressed his wish to contribute "to China's Four Modernizations." Professor Gu sent a letter to Defendant

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<sup>3</sup>The district court granted the government's motions to dismiss counts 8, 9, 12, 13, and 15. Defendant was acquitted on count 11.

<sup>4</sup>See 18 U.S.C. § 3282 (providing a 5-year statute of limitations).

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thanking him for the materials. There is no evidence in the record of any further communication between Defendant and Professor Gu.

Also in the record is a series of letters, exchanged in 1985, between Defendant and Chen Qinan, who was project manager of the China National Aero Technology Import/Export Corporation. Those letters largely concern what information Defendant should supply while visiting China for a “technical exchange.” Chen Qinan sought information related to the fatigue life and structural design of aircraft and armed helicopters. Defendant, however, offered to provide information about the space shuttle as well, even though he acknowledged that “[i]nformation regarding the space shuttle is classified as secret.” He further explained to Chen Qinan that he had only partial information regarding the helicopter’s structural design because “that information is controlled by the Department of Defense.” In another letter, Defendant expressed an interest in visiting several Chinese aircraft manufacturers and noted his desire to “contribute [his] expertise.” Agent Kevin Moberly, the lead case agent assigned to Defendant’s case, testified that agents found, in Defendant’s home, documents and briefings on laminate slides that were responsive to Chen Qinan’s requests.

The government also presented a tasking list from the Nanchang Aircraft Company, a production factory of the Chinese Ministry of Aviation. Defendant received the list on July 14, 1985, during his visit to the Nanchang plant. The list requests information concerning methods for determining the fatigue life of aircraft and helicopters, including information regarding United States military specifications. Again, Agent Moberly testified that technical documents responsive to the tasking list were found in Defendant’s home.

The record also contains an undated letter from Defendant to Chief Engineer Feng of the Nanchang Aircraft Company. In that letter, Defendant stated that he had “attached the

answers for the questions that were not answered when I was in Nan[c]hang.” He also referred to a list of books that he had collected, and he stated that Zhao Zhen Lan, the San Francisco Education Consul, would arrange for their delivery. In another letter, Defendant referred to 27 manuals that he had sent, and he attached a list cataloguing 24 structure manuals developed by Rockwell’s B-1 Division.

The government presented several letters between Defendant and Gu Weihao,<sup>5</sup> Defendant’s purported “handler.” All of those letters, however, predate the limitations period. The first letter from Gu Weihao to Defendant is dated March 25, 1986. After reporting that he had arrived safely in Beijing after his visit with Defendant in Los Angeles, Gu Weihao stated that he now was engaged in research on damage tolerance and expressed his hope that Defendant could “often provide [his] advice in this area.”

The second letter from Gu Weihao to Defendant, dated May 2, 1987, was found in Chi Mak’s home. In that letter, Gu Weihao wrote that he had asked Chi Mak to visit Defendant and to deliver a small present. Gu Weihao then requested Defendant’s assistance on some “difficult technical issues” concerning the design for “trunkline aircraft (150 seats)” and the space shuttle. Specifically, he was interested in obtaining quality control information. He expressed his preference to consult with Defendant in person and suggested a meeting in Guangzhou “to discuss with [him] in a small setting, which is very safe.” The letter further reads, in pertinent part:

We’ll be responsible for all the expenses of your international travel and stay in Guangzhou. You can discuss the time and route of your trip to China with Mr. Mak in person. . . .

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<sup>5</sup>Professor Gu and Gu Weihao are two different persons.

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You may use “traveling to Hong Kong” or “visiting relatives in China” as reasons for traveling abroad, or we can ask the “Guangzhou Fine Arts Center” or the “Guangzhou Academy of Fine Arts” to extend an invitation to Mrs. Chung and have Mr. Chung, in the name of accompanying his wife, travel abroad together with her. To sum up, if you have any suggestions or if you have anything that I can help you [with] here, you can have Mr. Mak convey it to me. Normally, if you have any information, you can also pass it on to me through Mr. Mak. This channel is much safer than others.

It is your honor and China’s fortune that you are able to realize your wish of dedicating yourselves to the service of your country.

In a third letter, dated April 12, 1988, Gu Weihao informed Defendant that China would soon create the Ministry of Aeronautics and Astronautics Industry. He then wrote:

[W]e are yearning for the enthusiasm and the sincere help from the foreign countries. I profoundly understand what you have in your mind. Therefore, I hope that you will introduce advanced technologies and provide information on advanced technologies. Our perspective will be greatly expanded under the scope of the new ministry. There is no need to limit the scope that we proposed while we were in the United States. Please provide at any time. It is faster and safer by forwarding through Mr. Mak.

In his next letter to Defendant, dated December 12, 1988, Gu Weihao made no requests for information but noted that he had yet to receive a reply to the letters he had written at the beginning of the year. He also sent his regards to Mr. and Mrs. Mak because they had not written him for some time. Defendant eventually wrote back and apologized for taking so

long to reply. Defendant did not refer to Gu Weihao's previous requests for information.

In a letter dated July 5, 1992, Gu Weihao reported that he had fully retired that year.

Although Defendant's journal entries show that he subsequently wrote to Gu Weihao on January 4, 1996, on May 12, 1997, and on December 18, 2001, the content of those letters is unknown. Defendant's journals also document that he hosted Gu Weihao in the United States in 1990, 1991, and 1992. The journal entries, however, merely record when Defendant picked up and dropped off Gu Weihao at the airport, where they ate, and what attractions they visited. One entry notes that Chi Mak and his wife spent an evening with Defendant and Gu Weihao.<sup>6</sup>

Defendant's journals further document that, in April 2001, Defendant traveled to China and gave presentations on the space shuttle. Defendant again traveled to China in September 2002 to attend "National Day" celebrations, but his journal entries record only tourist activities while on that trip.

Immediately preceding Defendant's visit to China in 2002, however, he downloaded more than 500 space shuttle specifications from the Shuttle Drawing System ("SDS"), a restricted Boeing database. Chi Mak's name, plus his work and home phone numbers, were written on one of the SDS documents. Defendant used correction fluid to cover the user name, the date and time stamp, or other information on more than a third of the downloaded SDS documents. On one document, he covered a warning that the document contained proprietary information that could not be disclosed without permission. In January 2003, Defendant created on his home

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<sup>6</sup>Defendant's journal entries list additional social contacts with Chi Mak. Specifically, Defendant recorded four social visits with Chi Mak in 1990, one in 1995, and one in 2002.

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computer a file called "Specification.doc" that contained his indexing system for the downloaded SDS documents.

2. *Activities and Correspondence Within the Limitations Period*

Defendant recorded in his journal that he wrote to Gu Weihao on February 10, 2003. The content of that letter is unknown.

In early 2003, Defendant recorded in his journal that he input and organized "spec material" on 21 separate occasions. On March 27, 2003, Defendant wrote that he was "done with organizing spec. material and arranging in numerical orders." Defendant then created the file "Spec\_Mod.doc" on his home computer on March 28, 2003, in which he further organized and modified the specification material. Between September 2003 and November 2003, Defendant downloaded additional SDS specifications at Boeing. Both SDS files on his home computer were last modified on December 15, 2003.

On December 27, 2003, Defendant traveled to China. There is no direct evidence in the record that establishes what Defendant did on that trip or whether he delivered SDS documents to anyone in China.

Most significantly, as discovered by federal agents on September 11, 2006, Defendant possessed approximately 300,000 pages of Boeing documents, including: (1) more than 700 SDS documents, one of which bears Chi Mak's name and telephone numbers; (2) documents related to the X-37 space vehicle; (3) documents related to the thermal protection system on the International Space Station; (4) documents related to the F-15 Fighter; (5) documents related to the CH-46 and CH-47 Chinook Helicopter; and (6) documents related to the B-52 Bomber. Defendant told federal agents that he had taken the documents home because he planned to write a book. He also claimed that, although Boeing policy generally prohibited

taking home work documents, his supervisor, William Novak, had given him permission to keep the documents.

The government identified six documents in Defendant's possession that allegedly contained trade secrets: four documents about a phased array antenna for the space shuttle and two documents about the Delta IV Rocket.

As noted, the government presented evidence that, between August 4, 2006, and September 1, 2006, federal agents discovered more than 1,000 pages of Boeing documents hidden between the pages of Chinese newspapers that Defendant had placed in the trash. Defendant's journals also record that, between November 12, 2004, and August 5, 2006, he "[g]ot rid of old newspaper," on 27 separate occasions. Defendant told agents that he had disposed of the documents in that fashion because he did not want NASA documents flying around the trash disposal area.

## DISCUSSION

### A. *Sufficiency of the Evidence*

Defendant challenges, for lack of sufficient evidence, his convictions for acting as a foreign agent, violating the EEA, conspiring to violate the EEA, and making a false statement to federal agents. We review the sufficiency of the evidence de novo to determine whether, "viewing the evidence in the light most favorable to the prosecution, *any* rational trier of fact could have found the essential elements of the crime beyond a reasonable doubt." *Jackson v. Virginia*, 443 U.S. 307, 319 (1979); *United States v. Nevils*, 598 F.3d 1158, 1163-64 (9th Cir. 2010) (en banc).

#### 1. *Acting as an Unregistered Foreign Agent*

[1] Defendant was convicted of acting as an unregistered foreign agent pursuant to 18 U.S.C. § 951(a), which provides

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criminal liability for anyone “other than a diplomatic or consular officer or attaché, [who] acts in the United States as an agent of a foreign government without prior notification to the Attorney General.” The statute defines “agent of a foreign government” as “an individual who agrees to operate within the United States subject to the direction or control of a foreign government or official.” *Id.* § 951(d). The government therefore must prove that, after February 6, 2003, Defendant acted pursuant to an agreement to operate subject to the direction or control of China. Thus, in addition to proving *Defendant’s* intent, the government must also establish that a Chinese official directed or controlled Defendant’s actions during the limitations period.

[2] We conclude that, viewing the evidence in the light most favorable to the prosecution, a rational trier of fact could conclude beyond a reasonable doubt that Defendant still was acting at the direction or control of Chinese officials during the limitations period. Defendant’s relevant actions during the limitations period that were proved by direct evidence included: (1) downloading, inputting, and organizing SDS specification materials; (2) traveling to China in 2003; (3) writing a letter to Gu Weihao in 2003; (4) possessing a huge library of Boeing’s and Rockwell’s proprietary information; and (5) disposing of Boeing technical documents by hiding them between the pages of newspapers, which he deposited in the trash. Sufficient circumstantial evidence ties that conduct to Chinese direction or control.

[3] There is, to begin, ample evidence that, in the mid- to late-1980s, Defendant gathered and delivered technical information regarding the structural design of aircraft in specific response to requests from Chinese officials. Although a foreign official’s directions to an agent are not necessarily perpetual in duration, here the trier of fact reasonably could find that Defendant was still responding to those directions during the limitations period. Gu Weihao was the Chinese official who, in the 1980s, requested information from Defendant. In

1987, Gu Weihao wrote a letter to Defendant that fairly can be read as passing Defendant on to Chi Mak as his new “handler.” After Gu Weihao’s purported retirement, Defendant continued to collect similar technical information and, it could be inferred, conspired with Chi Mak to transfer this information to China; Chi Mak was himself convicted of being an unregistered foreign agent.

Moreover, Defendant began to download the SDS documents before traveling to China in 2002; after that trip to China, he downloaded more documents and spent a great deal more time indexing them in 2003. A rational trier of fact could find that he performed this tedious task because someone in China wanted him to. Given his history and the nature of the material, a rational fact-finder could disbelieve Defendant’s assertion that he planned to write a book and could instead conclude that his purpose was to assist his principal in the course of his unregistered agency.

[4] In summary, a rational finder of fact could conclude that Defendant was continuing to work for China under the direction or control of Chinese officials. Accordingly, we affirm Defendant’s conviction for acting as an unregistered foreign agent.

## 2. *Violations of the EEA*

[5] Defendant was convicted of six counts of violating the EEA. The EEA provides, in pertinent part:

Whoever, intending or knowing that the offense will benefit any foreign government, foreign instrumentality, or foreign agent, knowingly—

. . . .

(3) receives, buys, or possesses a trade secret, knowing the same to have been stolen or appropriated, obtained, or converted without authorization;

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. . . .

shall . . . be fined not more than \$500,000 or imprisoned not more than 15 years, or both.

18 U.S.C. § 1831(a)(3).

Of the 300,000 pages of Boeing documents that were found in Defendant's home, the government identified six that allegedly contained trade secrets. Each document underlies a separate EEA count in the indictment. Four of the documents relate to a phased array antenna that Boeing developed for the space shuttle. The other two documents describe technology that Boeing developed for the Delta IV Rocket. Defendant argues that the documents related to the phased array antenna did not contain trade secrets. He further contends that the government failed to prove beyond a reasonable doubt that, during the limitations period, he possessed any of the trade secret documents with the intent to benefit China.

a. *The Definition of "Trade Secret"*

[6] We start with whether there was sufficient evidence that the documents were trade secrets under the EEA. The EEA defines "trade secret" as information that "the owner thereof has taken reasonable measures to keep . . . secret," and that "derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable through proper means by, the public." *Id.* § 1839(3). Thus, the government must prove three elements: (1) that the information is actually secret because it is neither known to, nor readily ascertainable by, the public; (2) that the owner took reasonable measures to maintain that secrecy; and (3) that independent economic value derived from that secrecy.

Until now, this court has had no occasion to interpret the EEA's definition, and the case law in other circuits is sparse.

The EEA's definition, however, is derived from the definition that appears in the Uniform Trade Secrets Act ("UTSA"),<sup>7</sup> a model statute which permits civil actions for the misappropriation of trade secrets. Thus, we consider instructive interpretations of state laws that adopted the UTSA definition without substantial modification.

With regard to the element of actual secrecy, the comment to section 1 of the UTSA explains that "information is readily ascertainable if it is available in trade journals, reference books, or published materials." The EEA's text, however, deviates from the UTSA by identifying "the public," as opposed to "persons who can obtain economic value from [the proprietary information's] disclosure or use," as the set of parties who might know or readily ascertain the information. There is some conflict between circuits as to whether that deviation alters the "readily ascertainable" analysis. Compare *United States v. Lange*, 312 F.3d 263, 267 (7th Cir. 2002) (interpreting "the public" as not necessarily meaning the "general public," but potentially "the economically relevant public" (emphasis in original)), with *United States v. Hsu*, 155 F.3d 189, 196 (3d Cir. 1998) (observing that "the EEA alters the relevant party from whom proprietary information must be kept confidential"). Because Defendant does not

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<sup>7</sup>The UTSA defines "trade secret" as

information, including a formula, pattern, compilation, program, device, method, technique, or process, that:

(i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and

(ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Unif. Trade Secrets Act § 1(4) (amended 1985), 14 U.L.A. 438 (1990). Many states have adopted the UTSA, but state laws often deviate from its text.

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contend that the secret information in this case was readily ascertainable, we need not weigh in on this issue.

As for the second element, reasonable measures for maintaining secrecy “have been held to include advising employees of the existence of a trade secret, limiting access to a trade secret on [a] ‘need to know basis’, and controlling plant access.” Unif. Trade Secrets Act § 1 cmt., 14 U.L.A. 438, 439 (1990); *see Buffets, Inc. v. Klinke*, 73 F.3d 965, 969 (9th Cir. 1996) (holding that, under Washington state law, job manuals were not trade secrets because employees were allowed to take them home and because “employees were advised of neither the manuals’ status as secrets, nor of security measures that should be taken to prevent their being obtained by others”). Security measures, such as locked rooms, security guards, and document destruction methods, in addition to confidentiality procedures, such as confidentiality agreements and document labeling, are often considered reasonable measures. *See, e.g., MAI Sys. Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 521 (9th Cir. 1993) (interpreting California’s UTSA and holding that the plaintiff had taken reasonable measures to maintain the secrecy of its customer database by “requir[ing] its employees to sign confidentiality agreements respecting its trade secrets”); *Wyeth v. Natural Biologics, Inc.*, 395 F.3d 897, 899-900 (8th Cir. 2005) (holding that, under Minnesota’s UTSA, the plaintiff had implemented reasonable measures by limiting access to confidential information, training employees, controlling documents, and obtaining oral and written understandings of confidentiality); *Rockwell Graphic Sys., Inc. v. DEV Indus., Inc.*, 925 F.2d 174, 178-80 (7th Cir. 1991) (considering both physical security measures and confidentiality agreements).

With regard to the third element, whether the information derives independent economic value from being kept secret, courts most often consider the degree to which the secret information confers a competitive advantage on its owner. *See, e.g., MAI Sys.*, 991 F.2d at 521 (holding that the plaintiff,

which serviced computers running MAI software, derived economic value from the secrecy of its customer database because the defendant, which offered the same technical services, would be able to direct their sales efforts to customers using MAI software); *Trandes Corp. v. Guy F. Atkinson Co.*, 996 F.2d 655, 663 (4th Cir. 1993) (finding that, “[a]rmed with a copy of the [plaintiff’s proprietary] object code, an individual would have the means to offer much the same engineering services as [the plaintiff]”). Some courts also have considered the cost and effort necessary to develop the secret information. See *Beard Research, Inc. v. Kates*, 8 A.3d 573, 594 (Del. Ch. 2010) (finding economic value because “it took [the plaintiff] hundreds of hours to get its catalog business up and running” and because “a competitor could not have generated a similar system without expending a comparable amount of time and money”). In any event, the analysis is fact-intensive and will vary from case to case.

b. *Phased Array Antenna Documents*

In the 1990s, NASA contemplated replacing the space shuttle’s dish antenna with a phased array antenna. Boeing competed with other companies to supply the antenna. But Boeing was the sole-source contractor at the time for integrating technologies, including the new antenna, into the shuttle. The proposed communications upgrade required Boeing’s engineers to determine the feasibility of installing the new antenna at the existing antenna locations on the shuttle’s forward fuselage by enlarging or adding an opening. Those potential structural changes required conducting the appropriate stress analyses. Additionally, engineers had to figure out how to dissipate the heat generated by the new antenna—either by reducing the number of “elements” used in the antenna or by installing an active cooling system—so that the shuttle could reenter the atmosphere safely. Ultimately, however, NASA opted not to place a phased array antenna on the shuttle.

Defendant possessed four documents related to the phased array antenna project. Two documents listed the tasks and

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hours necessary to complete the integration project. Those documents underlie counts 2 and 4 of the indictment. The other two documents, which underlie counts 3 and 5, were slide presentations about the communications upgrade. Among the data contained in the slides was a list of the antenna's specifications, including the proposed number of elements in the antenna.

[7] First, we look to whether the phased array antenna documents were secret and not readily ascertainable. The government points out, and Defendant does not contest, that the tasks-and-hours lists underlying counts 2 and 4 were never made public. With regard to the slide presentations underlying counts 3 and 5, Defendant correctly argues that the documents contain information similar to that presented by Boeing engineers at a NASA-sponsored conference that was attended by Boeing's competitors. But the portions of those documents relating to the number of elements in the phased array antenna were *not* disclosed at the conference. Therefore, sufficient evidence supports the conclusion that all four phased array antenna documents contained secret information. Moreover, as we previously noted, Defendant does not contend that the secret information in those four documents was readily ascertainable.

[8] Next, we consider whether Boeing took reasonable measures to maintain the four documents' secrecy. Although none of the documents was kept under lock and key, Boeing implemented general physical security measures for its entire plant. Security guards required employees to show identification before entering the building, and Boeing reserved the right to search all employees' belongings and cars. Boeing also held training sessions instructing employees not to share documents with outside parties, and it required employees, including Defendant, to sign confidentiality agreements. Further, two of the four phased array documents (underlying counts 3 and 5) were marked as proprietary. Thus, there was sufficient evidence to support the conclusion that Boeing took

reasonable measures to keep all four phased array antenna documents secret.

[9] Finally, Boeing derived some economic value from keeping the phased antenna array documents secret. The documents underlying counts 2 and 4 listed the tasks and hours necessary for the antenna's integration into the space shuttle. Boeing engineer Emad Farag testified that the estimates of hours, tied to the list of tasks, would tip off competitors to more than just the costs associated with this specific project. Although Boeing had no competitors for the integration project itself, Farag suggested that a competing company might bid against Boeing for integration work when the sole-source contract ran out. Moreover, the documents would show a competitor how Boeing operates, "not just related to the integration . . . , but it has implication for everything else we're working on." The documents, he testified, would give a competitor who studies them the advantage of knowing how Boeing accomplishes its work, including engineering and processing, and would reveal Boeing's relative costs for performing each type of work. A reasonable inference is that the information could assist a competitor in understanding how Boeing approaches problem-solving and in figuring out how best to bid on a similar project in the future, for example, by underbidding Boeing on tasks at which Boeing appears least efficient.

The antenna documents underlying counts 3 and 5 contained information regarding the number of elements in the antenna. Farag testified that such information was significant because it established that Boeing could install antenna modules on the space shuttle without a system for active cooling. The information was economically significant, according to Farag, because it would give competitors insight into the efficiency that Boeing had obtained and because the number of elements affected the cost of developing the antenna. Importantly, Farag also testified that, unlike the integration project, the development of the antenna itself was not pursuant to a

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sole-source contract. That project was open to competition from other companies, and Farag specifically identified a potential competitor. Consequently, Boeing derived economic value from keeping secret the information regarding the number of elements in its proposed antenna.

[10] Viewing the evidence in the light most favorable to the prosecution, we therefore conclude that there was sufficient evidence to support the district court's finding that the documents underlying counts 2 through 5 contained trade secrets.

c. *Delta IV Rocket Documents*

Defendant also possessed two documents related to the Delta IV Rocket, a booster rocket that is designed to launch manned space vehicles. His possession of those documents underlies counts 6 and 7 of the indictment. Defendant does not contest the district court's finding that the Delta IV documents contained trade secrets.

d. *Defendant's Intent to Benefit China*

[11] To convict under § 1831 of the EEA, the government must prove that Defendant acted with the intent to benefit a "foreign government, foreign instrumentality, or foreign agent." 18 U.S.C. § 1831(a). Unlike the foreign agent count, which required evidence of a foreign government's direction or control, criminal liability under the EEA may be established on the basis of Defendant's intent alone.

We hold that there was sufficient evidence to support the district court's finding that Defendant possessed the relevant trade secret documents during the limitations period with the intent to benefit China. The government presented ample evidence that, during the 1980s, Defendant intended to benefit China by providing technical information responsive to requests from Chinese officials and by delivering presenta-

tions to Chinese engineers. Defendant also delivered a presentation on the space shuttle to Chinese engineers in 2001. Five years later, federal agents discovered that Defendant possessed thousands of Boeing's technical documents, some of which he had downloaded and catalogued in 2003, and some of which contained trade secrets.

[12] Defendant argues that there is insufficient evidence to prove that his intent to benefit China extended to the possession of *trade secrets*, as opposed to technical documents in general. Given Defendant's history of passing technical documents to China, however, a rational trier of fact reasonably could infer from Defendant's more recent possession of similar documents that his intent to benefit China persisted well into the limitations period and extended to his possession of the trade secrets. Moreover, given Defendant's history of delivering information to China, and the absence of any evidence (other than his own exculpatory testimony) regarding his scholarly or literary intentions, a rational fact-finder could reasonably discount Defendant's explanation that he possessed the documents because he intended to write a book. Thus, viewing the evidence in the light most favorable to the prosecution, there was sufficient evidence to conclude, beyond a reasonable doubt, that Defendant possessed the trade secret documents with the intent to benefit China. We therefore affirm Defendant's convictions for violating the EEA.

### 3. *Conspiracy to Violate the EEA*

Defendant argues that there is not sufficient evidence to prove beyond a reasonable doubt that, during the limitations period, he conspired with others to violate the EEA. We disagree.

To prove a criminal conspiracy, the government must show: "(1) an agreement to engage in criminal activity, (2) one or more overt acts taken to implement the agreement, and

(3) the requisite intent to commit the substantive crime.” *United States v. Sullivan*, 522 F.3d 967, 976 (9th Cir. 2008) (per curiam) (internal quotation marks omitted).

[13] Again, the record amply demonstrates that Defendant agreed to collect and transmit technical information to China in the 1980s. In May 1987, Gu Weihao wrote to Defendant to request assistance on technical issues concerning aircraft and the space shuttle. He suggested that Defendant pass any information through Chi Mak because that “channel [was] much safer than others.” In 1988, Gu Weihao wrote that he hoped Defendant would “provide information on advanced technologies” and that “there [was] no need to limit the scope that we proposed while we were in the United States.” Again, Gu Weihao suggested that Defendant should forward all information through Chi Mak because it would be “safer and faster.” Thus, the record demonstrates that Defendant, Gu Weihao, and Chi Mak agreed that Defendant would pass information on advanced technologies to China. Although there is no direct evidence that Defendant specifically agreed to pass *trade secrets* to China, a rational trier of fact could reasonably infer from Gu Weihao’s letters and from Defendant’s possession of the trade secret documents that Defendant did not intend to except such documents from the scope of the agreement.

[14] The difficult issue presented by this case is whether the agreement between Defendant, Gu Weihao, and Chi Mak continued into the limitations period. Viewing the evidence in the light most favorable to the prosecution, we conclude that there is insufficient evidence to support the finding that Defendant conspired with Gu Weihao during the limitations period.<sup>8</sup> The bare fact that Defendant wrote to Gu Weihao in

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<sup>8</sup>We disagree with the district court’s finding that Defendant conspired during the limitations period with Professor Gu; Bu Shi Lin, an official with China’s Aviation Ministry; Consul Wu Hui Jun; Zhao Zhen Lan; Chen Qinan; Engineer Feng; and Consul Shang. There is no evidence that

2003 is insufficient to prove a continuing conspiracy, given that Gu Weihao last requested information in 1988 and purportedly retired in 1992. All subsequent correspondence between Defendant and Gu Weihao that appears in the record discusses only personal issues and makes no mention of technical information.

[15] By contrast, the record does support the district court's finding that Defendant conspired with Chi Mak to pass trade secrets to China during the limitations period. As recounted above, the record shows that Defendant agreed with Chi Mak in the 1980s to deliver information on advanced technologies to China. The government also presented evidence that Defendant downloaded shuttle design documents from a restricted Boeing database in 2002, approximately four months before the limitations period began. Chi Mak's name and telephone numbers were written in Chinese on one of those documents. During the limitations period, Defendant downloaded, indexed, and modified shuttle design specifications. Although the government does not allege that the shuttle design documents contained trade secrets, a rational trier of fact could reasonably infer from Defendant's unauthorized

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Defendant maintained contact with *any* of those individuals during the limitations period. The record shows that, in 1985, Defendant delivered material on the B-1 Bomber to Chen Qinan and Engineer Feng by forwarding it through Zhao Zhen Lan. But it appears from the record that Defendant sent that material in response to a one-time request; there is no evidence of contact with those officials after 1985.

Putting the limitations period aside, the evidence of an agreement to transmit trade secrets between Defendant and several of his alleged co-conspirators is too attenuated to support a finding of conspiracy. For instance, Defendant delivered only graduate course materials and magazines to Professor Gu in the late 1970s. There is no evidence that he agreed to send anything to Professor Gu that was not available to the general public. Moreover, the only evidence of a conspiracy between Defendant and Bu Shi Lin, Consul Wu, and Consul Shang consisted of Defendant's journal entries that document sporadic social contact with those officials, usually over dinner.

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collection of such data that Defendant continued to work with Chi Mak to pass technological information to China. It is equally reasonable to infer that Defendant's possession of the trade secret documents was part of that same effort. Thus, viewing the evidence in the light most favorable to the prosecution, we conclude that a rational trier of fact could have found, beyond a reasonable doubt, that Defendant conspired with Chi Mak to violate the EEA after February 6, 2003.

#### 4. *False Statement*

[16] We also hold that there was sufficient evidence to support Defendant's conviction under 18 U.S.C. § 1001.<sup>9</sup> The district court correctly found that Defendant "knowingly and willfully" made a materially false statement to federal agents when he told them that his boss, William Novak, had given him permission to take work documents home. While being interviewed by federal agents, Defendant claimed that, though engineers generally were not allowed to do so, Novak had made an exception for him. According to Agent Moberly, Defendant explained that, when his division was "closing up shop," Novak asked him if he wanted to take the documents home because, otherwise, they were going to be destroyed.

At trial, Novak testified that, when the shuttle group moved

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<sup>9</sup>Title 18 U.S.C. § 1001 provides, in pertinent part:

(a) Except as otherwise provided in this section, whoever, in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully—

. . . .

(2) makes any materially false, fictitious, or fraudulent statement or representation; . . .

. . . .

shall be fined under this title[ or] imprisoned not more than 5 years . . . .

to a smaller facility in 1999, he instructed his engineers to dispose of obsolete data in designated dumpsters and to box up unneeded data to send to a secure storage facility. Novak further testified that he did not recall telling his engineers that they could take work documents home, nor did he recall Defendant making such a request. As to the general rule and any exceptions, Novak testified:

We weren't allowed to, but occasionally I'm sure some of us if we needed to finish an assignment or something, guys would take some stuff home with the expectation to bring it back the next day or the next few days or whatever.

[17] Defendant argues that Novak's testimony was insufficient to prove that Defendant lied because Novak testified only that he could not *recall* giving Defendant permission. Defendant is correct that Novak's testimony does not squarely contradict Defendant's statement. But a rational trier of fact could reasonably infer, beyond a reasonable doubt, that Defendant had not obtained exceptional permission from Novak, given Boeing's general policy against taking work documents home permanently and the care with which Boeing disposed of the obsolete documents when Defendant's division closed. Also, several Boeing engineers testified that they could take documents home temporarily, but never permanently. Thus, viewing the evidence in the light most favorable to the prosecution, a rational trier of fact could reasonably conclude, beyond a reasonable doubt, that Defendant falsely stated that he had permission to take Boeing documents home.

#### B. Brady Claims

Defendant argues that the prosecution violated its duty to disclose exculpatory information as required by *Brady v. Maryland*, 373 U.S. 83 (1963), and in violation of the Fifth Amendment's Due Process Clause. Specifically, Defendant takes issue with the prosecution's failure to turn over three

documents: (1) DX 580, a written summary, prepared by Boeing engineers Tony Chi and William Novak, analyzing the content and sensitivity of the documents found at Defendant's home; (2) DX 606, a spreadsheet that Novak had prepared shortly before trial summarizing his review of a series of government trial exhibits; and (3) a "302 memorandum" prepared by FBI Agent Gaylord, lead case agent on the Chi Mak case, in which he memorialized a telephone interview with Professor Gu. Reviewing de novo, *United States v. Price*, 566 F.3d 900, 907 (9th Cir. 2009), we affirm the district court's determination that no *Brady* violations occurred.

To prevail on a *Brady* claim, Defendant must establish that: (1) the evidence at issue is "favorable to the accused, either because it is exculpatory, or because it is impeaching"; (2) the evidence was suppressed by the government; and (3) prejudice resulted. *Id.* (internal quotation marks omitted). "The touchstone of the prejudice analysis is whether admission of the suppressed evidence would have created a reasonable probability of a different result." *Id.* at 911 (brackets and internal quotation marks omitted).

[18] In this case, no prejudice resulted from the delayed production of DX 580 and DX 606. Shortly before trial, Boeing produced DX 580 to the defense in response to a subpoena. Although defense counsel did not discover DX 580 among the subpoenaed materials until June 8, 2009 (the day before the fifth day of trial), the defense recalled Novak and used the document to cross-examine him. After the court ordered Boeing to conduct a search for any reports similar to DX 580, Boeing produced DX 606 on June 15, 2009. Defendant then was allowed to recall and cross-examine Novak and Agent Moberly regarding the contents of DX 606. Because Defendant used the disputed evidence effectively at trial, no prejudice resulted from Boeing's failure to turn over the documents sooner. See *United States v. Woodley*, 9 F.3d 774, 777 (9th Cir. 1993) (holding that the defendant was not prejudiced because he used the evidence at trial, even though he could

not use the suppressed documents in the opening statement). Indeed, defense counsel admitted to the district court that, with respect to DX 580 and DX 606, Defendant was “not ultimately prejudiced because . . . we were able to get what I think is the ultimate best facts out on the table.” Given that Defendant has not established prejudice, he cannot make out a viable *Brady* claim.

[19] Similarly, Defendant was not prejudiced by the government’s failure to turn over the memorandum that summarized Agent Moberly’s interview of Professor Gu. According to the memorandum, Gu denied knowing Defendant and denied requesting or receiving any of the materials mentioned in Defendant’s 1979 letter. Agent Gaylord then read Gu’s letter to Defendant thanking him for the materials. Gu responded that it seemed that he had, in fact, received the materials but that he still did not remember Defendant. The government did not turn over the memorandum before trial or otherwise notify Defendant that it had interviewed Professor Gu.

After trial, defense counsel learned that Gu was living in the United States as a naturalized citizen and that he had been interviewed by the FBI before trial. Defense counsel met with Gu, who told counsel that he did not specifically recall Defendant. He also reported that the materials described in Defendant’s letter could have been obtained from textbooks, student materials, or publications. Additionally, Gu explained that the reference in the letters to China’s modernizations was used by Chinese intellectuals throughout the world and was not rooted in communism or support for the Chinese regime. Finally, he stated that he had told Agent Gaylord essentially the same information.

During an evidentiary hearing on the prosecution’s failure to produce the Gu memorandum, Defendant submitted to the court a letter written by Gu, dated January 21, 2010. That letter stated that the “technical information mentioned in [Defendant’s] letter(s) that was gifted to Harbin Institute of

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Technology is publicly published materials, does not harm the United States.”

[20] The district court properly ruled that Defendant was not prejudiced by the government’s failure to produce the memorandum. The memorandum itself is not exculpatory; it merely documents that Gu did not remember Defendant and did not remember receiving materials from Defendant.

Even assuming that disclosure of the memorandum would have led defense counsel to Professor Gu before trial, no prejudice resulted from Defendant’s inability to present Gu’s explanation of his correspondence with Defendant in 1979. Even if the information that Gu later volunteered to defense counsel explained away the 1979 correspondence, that clarification would not have created a reasonable probability of a different result. The government presented considerable other evidence establishing Defendant’s desire to contribute his expertise to China, as recorded, for instance, in his correspondence with Chen Qinan. Moreover, Defendant’s intent to benefit China was apparent from his conduct. Thus, he was not prejudiced by the absence of the Gu memorandum and, consequently, there was no *Brady* violation.

### C. *Confrontation Clause*

[21] Defendant also argues that he is entitled to a new trial because the district court violated his Sixth Amendment right to confront the witnesses against him by admitting a State Department official’s certification that the phased array antenna and Delta IV documents contained technical data that was export-controlled. The government does not dispute that the admission of that certification was error. Rather, the government contends that the document’s admission was harmless. We agree.

We review de novo whether admission of a document violates the defendant’s Confrontation Clause rights. *United*

*States v. Orozco-Acosta*, 607 F.3d 1156, 1162 (9th Cir. 2010), *cert. denied*, 131 S. Ct. 946 (2011). In evaluating whether a violation is harmless, we consider: (1) the importance of the witness' testimony in the prosecution's case; (2) whether the testimony was cumulative; (3) the presence or absence of evidence corroborating or contradicting the testimony of the witness on material points; (4) the extent of cross-examination otherwise permitted; and (5) the overall strength of the prosecution's case. *Id.* at 1161-62.

[22] Considering those factors, we hold that the admission of the certification was harmless. The exhibit was not important to the government's case because, to establish criminal liability under the EEA, the government need not prove that the relevant documents were subject to export controls. 18 U.S.C. § 1831. Rather, the government need only prove that Defendant knowingly possessed *trade secrets* with the intent to benefit China. *Id.* Additionally, the district court's decision did not mention whether any of the trade secret documents was export-controlled. Because the export-controlled status of the trade secret documents was not a necessary element of any count of conviction, we need not consider whether the evidence was cumulative or whether there was other evidence that corroborated or contradicted the State Department's certification. Also weighing in favor of harmlessness is the fact that Defendant had an opportunity to cross-examine the government's witnesses as to whether the information in the phased array antenna or Delta IV documents was in the public domain. Moreover, the prosecution presented a strong case that the four antenna documents contained trade secrets. Engineer Farag testified that the hours estimates and the information regarding the number of elements to be used in the antenna were kept secret by Boeing and that the information, if disclosed, would have been valuable to Boeing's competitors. As for the Delta IV documents, Defendant does not contest that they contained trade secrets. Thus, the weight of the *Orozco-Acosta* considerations tips in favor of the prosecution. The admission of the certification was therefore harmless.

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D. *Admission of the Unaddressed “Tasking List”*

[23] Next, Defendant seeks a new trial on the ground that the district court erred by admitting the purported tasking list that was found in Chi Mak’s home. At trial, Defendant objected to the list’s admission on hearsay grounds. Reviewing for abuse of discretion, *United States v. Gallenardo*, 579 F.3d 1076, 1081 (9th Cir. 2009), we hold that the district court properly admitted the list over Defendant’s objection because it was not offered for the truth of the matters asserted and therefore was not hearsay. The list contained no declaration of fact capable of being proven true or false. *See United States v. Reilly*, 33 F.3d 1396, 1410 (3d Cir. 1994) (“Instructions to an individual to do something are . . . not hearsay . . . because they are not declarations of fact and therefore are not capable of being true or false.” (citation and internal quotation marks omitted)). Thus, the district court did not abuse its discretion by admitting the list.

Defendant also challenges the *relevance* of the document for the first time on appeal. Defendant argues that the list is not connected to Defendant because it was neither addressed to Defendant nor found in Defendant’s home. Rather, it was found in Chi Mak’s home, in an envelope addressed to Chi Mak, and with a return address for Shouling Barnes, who is Chi Mak’s sister.

We review an evidentiary ruling for plain error when, on appeal, the defendant asserts a different basis for his objection than that asserted at trial. *Gallenardo*, 579 F.3d at 1081. Here, the district court did not plainly err by admitting the list because: (1) it was found in Chi Mak’s home; (2) Gu Weihao had suggested in several of his letters that Defendant forward information through Chi Mak, and (3) the list requests, among other things, “Boeing Company’s Technical Information on Chemical Milling,” “NASTRAN—NASA Structural Analysis Program,” “McDonald Douglas Aircraft Company, Process Standards for the manufacturing of F-15 and F-18.” Defen-

dant had access to that information, and documents responsive to the list were found in Defendant's home. Thus, the list was relevant because it tended to prove that Defendant collected documents in response to requests from China. *See* Fed. R. Evid. 401. The fact that the list was not addressed to Defendant may diminish its probative value to some degree, but it does not render the list irrelevant. The district court therefore did not plainly err in admitting the evidence.

Even if the district court had erred by admitting the list, the error would have been harmless. *See Gallenardo*, 579 F.3d at 1081 (holding that the erroneous admission of evidence is harmless when "it is more probable than not" that "the evidence did not affect the [trier of fact's] verdict." (internal quotation marks omitted)). The government presented many other letters and two other tasking lists that requested technical information from Defendant. Although Defendant correctly argues that the disputed list contains the most specific requests for information regarding military aircraft, the tasking list that Defendant received from officials at the Nanchang aircraft plant also requested information on military specifications. Thus, it is more probable than not that the exclusion of the list found in Chi Mak's home would not have materially affected the verdict.

#### E. *Sentencing*

Defendant maintains that the district court erred in calculating his offense level under the Sentencing Guidelines. Specifically, he argues that the court should not have applied U.S.S.G. section 2M3.2 to determine Defendant's offense level. We review "the district court's interpretation of the Sentencing Guidelines de novo, the district court's application of the Sentencing Guidelines to the facts of a case for abuse of discretion, and the district court's factual findings for clear error." *United States v. Cantrell*, 433 F.3d 1269, 1279 (9th Cir. 2006) (internal quotation marks and brackets omitted).

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According to U.S.S.G. section 3D1.2, the foreign agent offense (Count 10) and the EEA and conspiracy offenses (Counts 1 through 7) should be grouped together. The offense level for grouped charges is determined by using the guideline resulting in the highest offense level. U.S.S.G. § 3D1.3. The Guidelines' statutory index shows section 2B1.1 as the guideline corresponding to the EEA offenses; that section provides a minimum base offense level of 6, with increases depending on the amount of loss caused by the offense. There is no assigned guideline, however, for acting as an unregistered foreign agent.

[24] The Guidelines instruct that, when no guideline exists for a particular crime, the court should use the most analogous guideline. U.S.S.G. § 2X5.1. Here, the district court decided that section 2M3.2, entitled "Gathering National Defense Information," was most analogous for sentencing on the foreign agent count. That section dictates an offense level of 30 unless the defendant gathered top secret information, in which case the offense level is 35.

Defendant asserts that section 2M3.2 applies only when a defendant has gathered government-classified information, whereas he did not possess such classified information. He urges that section 2B1.1 is more analogous. The district court rejected that proposed analogy because it is not possible accurately to measure pecuniary loss caused by the crime of acting as an unregistered foreign agent.

[25] We hold that the district court properly chose section 2M3.2 as the most analogous guideline for the foreign agent charge. Contrary to Defendant's argument, section 2M3.2 is not limited to offenses involving government-classified information. The accompanying commentary states: "The statutes covered in this section proscribe diverse forms of obtaining and transmitting national defense information with intent or reason to believe the information would injure the United States or be used to the advantage of a foreign government."

U.S.S.G. § 2M3.2 cmt. background. Although the commentary explains that the offense level distinctions for espionage-related offenses “are generally based on the classification of the information gathered or transmitted,” the relevant guidelines divide such information into only two categories: “top secret” and “otherwise.” U.S.S.G. §§ 2M3.1-2M3.4. Thus, the Guidelines lump all information that is not “top secret” into one category; the offense level distinctions do not require that the information gathered be classified.

[26] In the alternative, Defendant maintains that the term “national defense information” at least presupposes that the information improperly transmitted be held by the government. We do not think that is required for application of section 2M3.2 by analogy.

[27] This guideline typically applies to a conviction for espionage under 18 U.S.C. § 793. The Supreme Court long ago held that, for an espionage conviction to stand, the information in question must be nonpublic to *some* degree; otherwise there could “be no reasonable intent to give an advantage to a foreign government.” *United States v. Gorin*, 312 U.S. 19, 28 (1941) (interpreting the Espionage Act of 1917, the predecessor statute to § 793). Documents need not be marked secret, so long as they relate to national defense and are “transmitted with the intent to advantage a foreign nation or injure the United States.” *United States v. Lee*, 589 F.2d 980, 990 (9th Cir. 1979). In this case, Defendant gathered and gave to Chinese officials nonpublic information related to the X-37 space vehicle, the Delta IV Rocket, the F-15 Fighter, and the Chinook Helicopter. When transmitting that secret information, which related to national defense, Defendant had the intention to advantage China. That is no less true where the information was in the hands of a government contractor, rather than in the hands of the United States itself. Considering that the conduct underlying Defendant’s offense involved gathering national defense information, the district court did

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not err in choosing section 2M3.2 as the most analogous guideline applicable to the foreign agent conviction.

**AFFIRMED.**