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Vice Chairman Cleveland and Commissioner Glas, I would like to begin by thanking you and the rest of the Commissioners for the invitation to testify today regarding the export controls administered by the Bureau of Industry and Security (BIS) to address concerns related to the People’s Republic of China (PRC).

It is my honor and pleasure to represent BIS today. The professional background and expertise I bring to BIS is most assuredly in government administration and operational management, but when the opportunity to help lead BIS arose, there is no doubt the gravity of the mission was the compelling factor in accepting this position. The complexities and challenges of that compelling mission are not lost on me. Since my arrival at BIS in December of 2019, I have relied greatly upon our outstanding, expert staff to enhance my technical knowledge and support my decision making, certainly to an incredible degree as we await the Senate confirmation of our presidentially nominated leadership. I look forward to hearing from the Commission today and the opportunity to answer some of your questions.

As President Biden has stated, democracies are in competition with autocracies in a rapidly changing 21st century, and the PRC poses perhaps the most complex and serious challenge. The PRC seeks U.S. technologies to further its military modernization, such as through diverting items from civilian to military applications (i.e., its military-civil fusion strategy), creating illicit procurement networks, and stealing intellectual property. The PRC has also been involved in human rights abuses with its campaign of repression, mass detention, and high-technology surveillance against Uyghurs, Kazakhs, and other members of Muslim minority groups in the



Xinjiang Uyghur Autonomous Region. Additionally, the PRC has engaged in anti-democratic crackdowns in Hong Kong. In addition, as described in the Department's report on vulnerabilities in the semiconductor supply chain, issued pursuant to Executive Order 14017, the PRC is the source of significant vulnerabilities.

All of these issues raise serious concerns, and BIS has utilized all the tools authorized by the Export Control Reform Act of 2018 (ECRA) to protect United States national security and foreign policy interests. These interests include maintaining our qualitative military edge, countering proliferation of weapons and other items of concern, maintaining the health of the U.S. defense industrial base, protecting human rights, and supporting U.S. technology leadership. I would like to take the opportunity to provide an overview of BIS's activities in this space, the role of unilateral and multilateral controls, our continuing work on emerging and foundational technologies, and regulatory and enforcement tools we are using to address concerns related to the PRC.

Overview of BIS

BIS administers and enforces export controls for dual-use items, less-sensitive military items, and commercial items under the Export Administration Regulations (EAR). BIS is also one of two bureaus within the Department of Commerce that reviews foreign investments in the United States for national security concerns as part of the Committee on Foreign Investment in the United States (CFIUS). In accordance with Section 705 of the Defense Production Act of 1950 and Executive Order 13603, BIS has authority to issue mandatory surveys to key industry sectors and supply chains critical to the U.S. defense industrial base, which helps address concerns related to supply chain security. Additionally, Section 232 of the Trade Expansion Act of 1962, as amended, authorizes the Secretary of Commerce to determine the effects of imports of any articles on U.S. national security, and whether the importation of the article in question is in such quantities or under such circumstances as to threaten to impair the national security. BIS also plays a key role in industry compliance with the Chemical Weapons Convention and the Protocol Additional to the U.S. Agreement with the International Atomic Energy Agency for the Application of Safeguards within the United States. We utilize these tools to address a wide range of national security challenges, but I will focus on BIS's administration and enforcement of export controls.

The export controls administered under the EAR can be tailored to address sensitive technologies, as well as countries, entities, or end uses of concern. With respect to the PRC, BIS imposes extensive controls, including a policy of denial on license applications for exports of crime control, military, and spacecraft items. BIS also maintains a policy of denial for certain license applications involving weapons of mass destruction end uses, military end users, and military end uses. License applications for dual-use items to be exported to the PRC are generally reviewed to determine, among other things, the risk of diversion to a military end user or military end use or whether the recipient could use the items in the application to violate or abuse human rights. The officials that review these licenses are experts in their technical or



policy fields, and they assist exporters in understanding the regulations, verify the proper classification of an item in the application, and determine whether the export of the items in the proposed transaction is consistent with the regulations. Additionally, all-source intelligence and investigative concerns from enforcement perspectives are factored into license decisions.

BIS also maintains various restricted party lists imposing additional license requirements or other restrictions. For example, BIS maintains the Entity List, which currently includes around 420 Chinese entities, most of which are subject to a licensing policy of presumption of denial for all items subject to BIS jurisdiction. BIS also maintains a Military End-User List, which is a non-exhaustive list of military end users that notifies exporters that a license is required for 73 Chinese entities on that list for a wide range of items subject to BIS jurisdiction.

In addition to administering these controls, BIS also devotes significant resources to enforcing them. BIS is unique among U.S. government agencies with export control responsibilities in its co-location of licensing and enforcement functions within a single agency. This structure makes information sharing more efficient and facilitates collaboration among regulators, compliance specialists, intelligence analysts, and law enforcement officers. Our enforcement authorities include searching, inspecting, detaining, and seizing items in connection with unauthorized export activity; conducting end-use checks and investigative activities outside the United States, consistent with U.S. international legal commitments and agreements – for example, by BIS Export Control Officers stationed in seven locations, including Beijing and Hong Kong; conducting criminal investigations; issuing orders denying the export privileges of those convicted of a broad range of offenses including conspiracy, smuggling, and making false statements; and imposing administrative penalties, currently rising to the greater of \$311,562, or twice the value of the unauthorized transaction. In FY2020, BIS investigations related to the PRC resulted in a total of 80 months of prison time and \$60,000 in criminal fines. Thus far in FY2021, BIS investigations related to the PRC have already resulted in 226 months of prison time, \$1,858,000 in criminal fines, and \$4,048,000 in civil penalties. BIS also has a unit that assembles, analyzes, and disseminates information from all pertinent sources to inform agencies about the *bona fides* of foreign parties for license application decisions, support designations of entities to the various restricted party lists, and to identify, impair, impede, and prevent the diversion or misuse of export-controlled items.

To further the effectiveness of our controls, BIS also conducts extensive outreach with industry, academia, and other partners to raise awareness of export control requirements and best practices for compliance. It is critical that we have an informed exporting community and that we work with them to identify potential risks. Our Office of Exporter Services provides export counselors to answer questions and organizes seminars and online tools to assist exporters. In just the first seven months of this year, we have fielded over 16,000 calls, and 4,000 emails. Moreover, we organized or participated in online seminars that attracted around 5,000 attendees and produced training videos that received almost 25,000 hits. Additionally, our Office of Export Enforcement Special Agents maintain a cooperative relationship with the exporting community; in FY2020, they conducted more than 658 enforcement outreach visits. During the same timeframe, BIS



initiated 75 Project Guardian leads, which focus on apprising U.S. manufacturers and exporters of illicit procurement threats and on cooperating to identify and respond to suspicious purchase requests.

Role of Unilateral and Multilateral Controls

As part of the administration of U.S. export controls, the United States is a member of four multilateral export control regimes – the Wassenaar Arrangement (for conventional arms and dual-use items), Missile Technology Control Regime (for unmanned delivery systems), Australia Group (for items related to chemical and biological weapons), and Nuclear Suppliers Group (for nuclear-related items). BIS works with its interagency partners to submit proposals to the four regimes and to implement the agreements reached with the other member countries.

Under the EAR, BIS imposes both multilateral and unilateral export controls, and it is clear based on our statutory authority and prior experience that multilateral controls are most effective and the preferred approach in achieving our national security and foreign policy objectives. As articulated in ECRA’s Statement of Policy, Section 1752(5), “[e]xport controls should be coordinated with the multilateral export control regimes. Export controls that are multilateral are most effective, and should be tailored to focus on those core technologies and other items that are capable of being used to pose a serious national security threat to the United States and its allies.” Furthermore, Section 1752(6) of ECRA states that “[e]xport controls applied unilaterally to items widely available from foreign sources generally are less effective in preventing end-users from acquiring those items. Application of unilateral export controls should be limited for purposes of protecting specific United States national security and foreign policy interests.”

We have seen these policies play out in practice. If BIS imposes unilateral controls targeting specific countries or entities and suppliers exist in other countries that can backfill orders to those targets with comparable items, then we will not achieve our national security or foreign policy objectives. The target of our unilateral action will still receive the items of concern. Also, this scenario harms our technological innovation and leadership – if U.S. companies lose sales to their competitors over time, then the loss of revenue deprives U.S. companies of the substantial revenue that funds the research and development needed to stay at the leading edge. Thus, potential unilateral controls must be carefully analyzed to assess their effectiveness on the target and impact on important U.S. industry sectors, both in the short term and long term.

To put this concern into perspective, BIS conducted studies on the impact of U.S. export controls on the space industrial base in 2007 and 2014. The U.S. space industry was studied because the United States treated commercial spacecraft items as munitions items under the International Traffic in Arms Regulations (ITAR) in 1999, whereas other countries licensed such items under their dual-use controls. The ITAR impose stricter export control requirements than the EAR, including by imposing a general license requirement for all countries and treating foreign-made items incorporating U.S.-origin ITAR content as subject to U.S. jurisdiction, regardless of the amount of such ITAR content. Thus, while most commercial spacecraft items were controlled



multilaterally, the United States unilaterally treated such items as military items, which, in effect, exceeded the controls of other countries. The 2014 study (available at <https://www.bis.doc.gov/index.php/documents/technology-evaluation/898-space-export-control-report/file>) mentioned that the 2007 study found the U.S. share of global satellite manufacturing revenue decreased after the ITAR changes were implemented in 1999, from 63 percent in 1996-1998 to 41 percent in 2002-2005, and that lost foreign sales attributed to ITAR requirements in 2003-2006 averaged \$588 million annually. The 2014 study found that survey participants “lost sales opportunities between approximately \$988 million and \$2 billion from 2009 to 2012.” The survey participants reported various reasons for the lost sales, including giving up export opportunities to avoid the complexity of ITAR compliance requirements and foreign customers avoiding the purchasing of or designing out ITAR-related products and services. For example, one respondent stated that “customers in allied countries will do everything possible to avoid ITAR-related controls. We are the supplier of last choice.”

While it’s clear that multilateral controls are more effective and have fewer drawbacks than unilateral controls, there may be instances in which the U.S. Government determines that unilateral controls are warranted to address pressing and critical national security and foreign policy objectives. I will later describe both unilateral and multilateral steps we have taken as part of our unique tools to address concerns related to the PRC.

Identifying Emerging and Foundational Technologies

The issue of identifying emerging and foundational technologies has been raised extensively, including in a report issued by a Commission policy analyst earlier this year. We have found that there are misunderstandings about the steps BIS has taken in this regard, so I would like to provide greater background on this issue, the challenges we face, and the work BIS has already done.

Background

By way of background, the issue of identifying emerging and foundational technologies is not entirely new and did not originate solely with the passage of ECRA in August of 2018. BIS has always worked with its partner export control agencies to determine whether new export controls are warranted on emerging technologies and whether existing controls must be recalibrated on existing (or foundational) technologies to address new national security or foreign policy concerns. In addition, identifying emerging and foundational technologies will not result in the creation of a new list of such technologies. Such technologies will be described in BIS’s existing Commerce Control List (CCL). This process follows the normal course of identifying new technology-based export controls and will also facilitate such technologies being treated as “critical technologies” for CFIUS screenings.

With respect to emerging technologies, much of this work was previously done with the four multilateral export control regimes. For example, four months before the passage of ECRA, BIS



reclassified specified target assemblies and components for the production of tritium on the CCL after having previously identified the items as emerging technology and imposing temporary unilateral controls while we worked with the Nuclear Suppliers Group to impose multilateral controls. Additionally, a couple of months after the passage of ECRA, BIS implemented new controls previously agreed by the Wassenaar Arrangement on certain mask substrate blanks related to extreme ultraviolet lithography, as well as polycrystalline substrates and polycrystalline ceramic substrates. All of these technologies are now on the CCL and are controlled for export to a number of destinations, including the PRC.

With the passage of ECRA, Congress made clear that identifying emerging and foundational technologies should continue to be a key priority for the Department, in addition to traditional efforts to modernize and update the lists of controlled items under the multilateral export control regimes. ECRA mandates that the President lead an ongoing interagency effort to identify such technologies that are essential to U.S. national security. In identifying such technologies, Section 1758(a)(2)(B) of ECRA requires that the interagency effort take into account: (i) the development of emerging and foundational technologies in foreign countries, (ii) the effect export controls imposed on emerging and foundational technologies may have on the development of such technologies in the United States, and (iii) the effectiveness of export controls on limiting the proliferation of emerging and foundational technologies to foreign countries.

Factors in Identifying Emerging and Foundational Technologies

There are several key factors in identifying emerging and foundational technologies meeting the criteria described in Section 1758(a)(2)(B) of ECRA. First, identifying cutting-edge developments in research requires the participation of government agencies that are directly involved in funding or conducting the research at issue. Such agencies are often not directly involved in the export control process or implementation of international trade regulations.

Second, identifying emerging technologies can be particularly difficult when such technologies are nascent or exist at a theoretical level. Under an ideal export control system, the export control agencies and the public should clearly understand the scope of controls so that they can be applied consistently and transparently. When the direction of certain research is unclear (e.g., what breakthroughs will become viable), identifying the specific technologies essential to national security – the statutory standard – is especially challenging and often requires greater time to ensure we understand the technology and potential options.

Third, foreign availability of emerging and foundational technologies plays a key role in this analysis, as required by ECRA. For many emerging technology areas, we have found that the United States is only one of many countries leading certain segments of development in the relevant technology area. In addition, there are often areas of cooperation taking place between U.S. organizations and those located in allied countries. However, we are seeing that the PRC is a near-peer competitor in many of these technology areas as well. Thus, the effectiveness of



new, unilateral export controls on such technologies could be diminished in limiting the proliferation of the technology to countries of concern. Additionally, while BIS imposes new, unilateral controls when appropriate, it is possible that the imposition of such controls could hinder the development of such technologies in the United States and impact the ability for U.S. researchers to cooperate with partners in allied countries. Thus, when there is clear foreign availability, we believe that imposing new controls on emerging technologies posing national security concerns is most effective when implemented through the multilateral process.

The issue of foreign availability is the same, and likely even more pronounced, for foundational technologies. Because such technologies are already in production, there are often developers and producers of such technologies in foreign countries, thereby making new unilateral controls less effective. Additionally, foundational technology candidates can be former multilaterally controlled items that have been decontrolled, many times because of widespread foreign availability outside of regime members. As a result, we believe changes in controls for foundational technologies should be carefully calibrated, which we have done in the past for specific mature technologies that could be used by military end users or in military end uses. Further, it is important that we work with the multilateral regimes or like-minded supplier governments to review multilateral or plurilateral controls – the national security and foreign policy interests of the United States are better served if countries of concern, including the PRC, cannot obtain the same technologies from suppliers located outside the United States. Additionally, multilateral or plurilateral controls help ensure U.S. companies compete on an even playing field with foreign competitors and are not at a competitive disadvantage, which could harm development of such technologies in the United States.

BIS Actions Taken Since the Passage of ECRA

With this background in mind, BIS has taken a number of actions to implement the objectives of ECRA. First, BIS has worked to include organizations directly involved in conducting or funding research with the review of emerging and foundational technologies. BIS convened the Emerging Technology Technical Advisory Committee after having reconstituted its membership and goals to focus on emerging and foundational technologies. Members include individuals in academia, industry, federal laboratories, and pertinent U.S. Government agencies who are engaged in the development and production of cutting-edge technologies. Also, BIS has worked with the National Security Council (NSC) to organize interagency working groups for certain technology categories. These working groups meet on a regular basis and include representatives from the Departments of Commerce, Defense, Energy, and State, as well as other agencies as warranted, such as those involved in funding or conducting the research at issue.

With respect to emerging technologies, BIS solicited comments from the public in an Advance Notice of Proposed Rulemaking on identifying potential emerging technologies warranting control, including under 14 representative technology categories. For each of these representative categories, it is possible that the NSC working group will recommend identifying emerging technologies warranting control under the criteria described in Section 1758(a)(2)(B)



of ECRA. However, it is also possible that the working group will recommend that existing controls are currently sufficient for the relevant technology category or that emerging technologies in one category may overlap with those in another category.

The work with our interagency colleagues has resulted in the identification of 37 emerging technologies, all of which were added to the CCL as a result of final rules published in the *Federal Register* on May 23, 2019; January 6, 2020; June 17, 2020; and October 5, 2020. These new controls addressed some of the 14 representative technology categories as well as technologies in additional categories not previously suggested in the request for public comment. Thirty-six of these technologies were also implemented under relevant multilateral export control regimes, which both further protects such technologies from being acquired from other supplier countries and enhances U.S. national security. BIS also published a proposed control that was subsequently adopted by the relevant multilateral regime and is being finalized for publication as a final rule. In addition, BIS is working to finalize additional emerging technology proposals for review. As previously noted, this is an ongoing process.

With respect to foundational technologies, BIS solicited public input on August 27, 2020 and has reviewed approximately 80 comments. BIS is working with its interagency colleagues to submit proposals for certain foundational technologies to the relevant multilateral export control regimes. Furthermore, BIS has undertaken additional efforts, which I will discuss next, that have imposed additional controls on items subject to BIS's jurisdiction, including items that may later be identified as emerging or foundational technologies.

Given ECRA's requirement to seek multilateral controls on emerging and foundational technologies, the controls imposed to date as well as those being prepared will have specific technical parameters to facilitate adoption by the multilateral export control regimes as well as industry compliance.

Additional Tools to Address Concerns Related to the PRC

To address concerns related to the PRC, including its military modernization and human rights abuses, BIS has imposed various unilateral controls. In 2020, BIS added new license requirements for additional items subject to BIS jurisdiction if the exporter knows that the item is intended, entirely or in part, for a military end use or military end user (which includes any person or entity whose actions or functions are intended to support military end uses) in the PRC. Many of these items were multilaterally controlled but were decontrolled. This control addresses the objective of ECRA's foundational control requirement by restricting these items when destined to military end uses and end users in some of the most problematic countries that are not subject to trade embargoes.

Moreover, in 2021, BIS implemented new controls that require a license if the exporter knows that any item subject to BIS jurisdiction is intended, entirely or in part, for a military-intelligence end use or a military-intelligence end user in a certain set of countries. BIS continually assesses



technologies, end uses, and end users to identify items that can be misused to engage in activities that are contrary to U.S. national security and foreign policy interests.

In addition to new controls tied to specific types of items or end users, BIS has also added entities to the Entity List as a result of their support to China's military modernization efforts and/or weapons of mass destruction programs, or their implication in human rights abuses. In 2021 alone, BIS added (i) seven Chinese supercomputing entities to the Entity List due to concerns involving these organizations' support for China's military actors, its destabilizing military modernization efforts, and/or its weapons of mass destruction programs, (ii) fourteen Chinese entities for being implicated in human rights violations and abuses in the implementation of China's campaign of repression, mass detention, and high technology surveillance against Uyghurs, Kazakhs, and other members of Muslim minority groups in the Xinjiang Uyghur Autonomous Region, and (iii) five Chinese entities for acquiring and attempting to acquire U.S. technology to support the People's Liberation Army's (PLA) military modernization, and for potential involvement in the procurement of U.S.-origin items for unauthorized military end-use. Moreover, our enforcement analysts and Special Agents continue to target illicit procurement actors who seek to obfuscate end uses and end users to circumvent export control restrictions to steal sensitive U.S. technology or acquire sensitive items, as evidenced, for example, by last month's \$469,060 administrative penalty involving a U.S. company that exported semiconductor manufacturing-related items to PRC entities involved in the illicit procurement of commodities and technologies for unauthorized military end-use in China.

As I mentioned previously, however, the most effective controls are those that are multilateral. To that end, we are working through the multilateral regimes to propose and implement new controls on certain items. Additionally, as discussed above, when the multilateral regimes cannot achieve our objectives, we are working on a plurilateral basis with likeminded countries. We are also working to coordinate on those items that are already controlled. For example, the United States and European Union have established the U.S.-EU Trade and Technology Council, which will include a working group on export controls. We are also continuing bilateral discussions with allied countries, especially those supplier countries of certain technologies of concern, to coordinate on common controls and policies. Specifically, we are working to share information and reach an understanding with our allies on coordinating license review policy for various types of technologies and seek to have them take into account our restricted party lists when evaluating whether to approve a license. Our engagement with allies is critical to the long-term success of our efforts to address national security and foreign policy concerns related to the PRC.

These efforts would not be complete without the continued work of our staff to promote compliance with our controls related to the PRC and conduct outreach with the exporting community. In July of this year, BIS hosted its first China Academia Conference to discuss threats posed by certain elements of PRC-linked academia. The briefings were delivered by U.S. and other Western academics to give the audience a unique perspective on issues and potential



actions. The conference was attended by over 200 individuals from 18 government organizations and 38 academic institutions. BIS is leveraging these unique relationships to develop new tools to assist universities comply with the EAR and identify attempts to misappropriate U.S. intellectual property to prevent its export and identify enforcement leads to disrupt and deter these illicit activities.

Finally, just last week, BIS hosted its annual Update Conference, which attracted hundreds of participants to the virtual event. The conference featured representatives from BIS our interagency colleagues to discuss a number of export control topics, including controls related to military end users and military end uses in China as well as foreign policy-based controls addressing human rights and other concerns. BIS continues to be engaged with the exporting community to keep them informed on our controls.

Conclusion

Thank you again for the opportunity to testify. I hope that this overview of BIS's administration and enforcement of export controls is helpful to the Commission's review of emerging risks related to U.S.-China relations. BIS will continue to work with our interagency partners, Congress, the exporting community, and counterparts in allied countries to further our national security and foreign policy objectives. I am now happy to answer your questions.

