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BEFORE THE SUBCOMMITTEE ON SELECT COMMITTEE ON THE COMPETITION BETWEEN THE UNITED STATES AND THE CHINESE COMMUNIST PARTY

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Emerging Technology and the Failure of US Export Control Policies

Joe Coonen is your archetypal patriot. Representative of so many young Americans who love their country and respond to the call to serve. Joe is intelligent, excelling in his studies and is athletic, a member of his collegiate track team. The declination of his moral and ethical compass set in the small rural farming community of Seymour, Wisconsin where on March 16th, 2019, Chairman Gallagher presided over Joe's Eagle Scout ceremony speaking about leadership and service. Joe would follow in the Congressman's footsteps. He graduated from Officer Candidate School this summer and will be a commissioned officer in the United States Marine Corps upon graduating from college.

Joe also happens to be my nephew. For me, having served in the U.S. Army, Joe represents every man and woman who has volunteered to wear this nation's uniform with the understanding that they will be asked to make many sacrifices while serving and may be asked to give their lives in its defense. Anyone who has served in our nation's military understands these consequences, but we also maintain an expectation that the U.S. government will do all in its power to ensure our warfighters' success. And yet in permitting the export of U.S. militarily useful controlled technologies to America's most capable and probable adversary this government dishonors our current and future warfighters.

This is not hyperbole. The problem is much more significant than the simple failure of export control policies which have been discussed ad nauseam with no consequential changes; for it is these very disastrous policies which underpin the modernization and advancement of the "greatest threat to democracy and freedom" since World War II. These ruinous export control policies are inexcusably the greatest disservice and insult to Joe and everyone else in uniform. The policies and those who implement them do much more than place short-term commercial gain over the national security interests of the United States. They transfer to the Chinese Communist Party (CCP) the technological tools to build a world-class military and institute

repressive domestic and regional political and economic systems with further aspirations to dominate globally.

With approval rates for the transfer of militarily useful technologies to the People's Republic of China (PRC) standing at over 91 percent, not too distant from U.S. partners and allies, a publicly stated strategy of diversion by China's head of state, and the United States inability to verify the ultimate end use of technologies transferred to the PRC, unlike with every other trading partner, the United States government's export control policy to the PRC is recklessly irresponsible. The policies are even more catastrophic for emerging or foundational technologies as there are practically no controls for the United States' most sensitive and critical technologies. Consequently, U.S. industry with the acquiescence of the U.S. government, serves as a vital provisioner of key technologies to one of the world's most tyrannical regimes and the United States' greatest adversary.

As I have mentioned in previous Congressional testimony, the inertia of unelected bureaucrats in the export control arena has historically prevented administrations from correcting these shortfalls. Congress is best placed to legislate the significant changes required to U.S. export control laws for the PRC. Specifically, for emerging technologies to the PRC, Congress needs to unchain export policies from narrowly defined capabilities that easily evade controls. And other interagency stakeholders, like the Department of Defense, need a greater voice in determining what is controlled and the export policies for those controls to effectively address some of the most pressing national security issues of our time.

Inexistent U.S. Export Controls for Emerging Technologies

Key Points:

- *Emerging technologies: (e.g., artificial intelligence, 5G, aerospace, semiconductors, and biotech) are key for Xi's plans of economic and military hegemony.*
- *Emerging Technologies are predominately EAR99. No license required.*
- *BIS ignores Congress's request to control emerging and foundational technologies at a great cost to U.S. national security.*

Emerging and foundational technologies assist in providing the underlying knowledge and capabilities required for Chairman Xi's and the CCP to dominate and control key technological economic sectors and further modernize their military. Indeed, the Australian Strategic Policy Institute stated that China has a "stunning lead" in research into 37 out of 44 critical and emerging technologies, including those with clear military uses such as artificial intelligence, advanced robotics, autonomous systems, advanced aircraft engines (including hypersonics). U.S. research and emerging technology has invariably played a very important role in China's technological prowess. For example, the Washington Post's investigative reporting revealed that the PRC's lead in hypersonics was gained largely through U.S. software and highlights the utter failure of U.S. export controls designed to restrict China's access to those technologies.

The White House created a list of 19 critical and emerging technologies with over 100 technological subfields that are significant to national security. One would think the federal government would move quickly to stop the Chinese government from accessing the high-tech tools that will be the backbones of future weapons systems. Yet, other than very narrowly

defined controls for semiconductor and certain biological technologies, nearly every emerging technology on the list has no export controls associated with them. The novelty of emerging technology, by its nature, does not fit neatly within the confines of the Department of Commerce's Commodity Control List (CCL). U.S. Export Control Officials welcome this dilemma, with their penchant for advancing U.S. commercial interests over those of national security and leave emerging technologies uncontrolled with no license requirements.

This defective approach has allowed some of the United States' most high-powered semiconductors to be transferred to the PRC without a license. The Chinese semiconductor industry especially benefits from lax classification rules. Simply consider that less than one year ago, prior to October 7, 2022, some of the United States' most sensitive semiconductors and their manufacturing equipment and know-how, arguably so-called "crown-jewels" around which export controls were meant to build higher walls, were EAR99 and transferred to the PRC without a license. That these technologies were unlicensed and providing the CCP with the very technological capabilities to globally dominate economically and militarily clearly points to the utter brokenness of U.S. export controls. Now consider that there are still no controls for nearly all other emerging technologies.

Similarly, in a 2022 report on PLA acquisitions, CSET discovered that most of the AI chip purchases being adopted for combat and combat support functions were EAR99 graphic processing units (GPUs) – the mainstay of AI. Sans gêne, NVIDIA has even reconfigured its chipsets to evade the new and very narrowly focused semiconductor controls which will ever continue to be diverted to the PLA to advance their AI programs. How do we know these GPUs will be diverted? Because the PLA needs GPUs such as NVIDIA's for its programs to weaponize AI and there is nothing stopping their diversion after they arrive in China. The more important question that Congress should ask of export control officials is why they believe they will not be diverted.

There are also sophisticated software packages that have civil and military applications for design and analysis of systems. The main issue with software is the General Software Note (GSN). The GSN states that any software sold online to the public is not subject to export controls; it is EAR99. Thus, software used in research and development, multiphysics software, software used to model hypersonic systems, or software to design gas turbine engines and castings for hot sections are all very 'high-tech' gained through years, even decades of research and trial and error are readily sold to nearly any Chinese entity without requiring a license because the software is EAR99. By way of example, the Zona software, developed largely with U.S. tax-payer dollars was reported to have immensely assisted the PLA's hypersonics program is classified as EAR99.

Like the controls themselves, the process for adding emerging and foundational technologies to the control list is equally defective. U.S. industry can self-classify or submit a request to BIS for Commodity Classification Automated Tracking System (CCATS). Under the CCATS process, Section 4823 of ECRA only requires BIS to "consult" with the other export control stakeholders: the Departments of Defense, State, Energy and they do not have an equal voice in the process.

Interagency stakeholders at the Departments of Defense, State and Energy, can also propose controls, but the Department of Commerce must agree with any unilateral controls, a very rare occurrence. If the control is approved, there is a three-year period to establish a multilateral control, or the new control becomes null and void. Of the few dozen controls that exist, they were nearly all implemented under Wassenaar Arrangement (WA) obligations. It does not require much imagination to appreciate that uncooperative WA members such as Russia will prevent the implementation of meaningful controls for emerging technology. There are work arounds for Russia, but the end results are meek controls accepted by the lowest common denominator among 42 member states that arrive on scene years after they are needed the most.

Additionally, there is no appeal or dispute resolution/escalation mechanism if there is a disagreement between the U.S. export control agencies. BIS is the final arbiter in deciding what is and what is not controlled, and their equities – placating American firms eager to sell to China – are not aligned with DoD's equities: national security. Consequently, there are emerging and foundational technologies and capabilities that engineers at DoD believe should be controlled but are not because of the difficulty in developing a control with any specificity that would be definable by current CCL standards.

It is remarkable, but not surprising, that BIS has managed to hold off nearly any controls on emerging and foundational technologies despite Congress requesting such controls over five years ago. And BIS adeptly continues to do so with no consequences. The self-perpetuating appeal of working within ineffective multilateral export control regimes and an alleged inability to define the technology are generally the convenient excuses for not controlling most emerging technologies. BIS has made it nearly impossible for the interagency to implement new controls for emerging technologies because the level of specificity they desire for the control and an increasingly unreasonable mandate to work such controls through sloth-like international regimes. But country-specific controls for emerging technologies could easily be developed and implemented, particularly when the U.S. or a few like-minded states are the only countries possessing the technology.

Nor should we mistakenly believe that if somehow the United States had effective export control policies for emerging and foundational technology to the PRC that these transfers would then be denied. More likely, as is the case for current militarily useful technologies requiring a license, the U.S. government will approve over nine out of ten requests for transfer to the PRC. The entire export control system as it relates to the PRC needs to be overhauled. The United States needs to arm its warriors not its adversaries.

Willful Blindness: An Insider's Account of How America's Ineffective Export Regime Increases China's Military Strength

On May 11, 2023 I provided written and verbal testimony to the House Foreign Affairs Subcommittee on Oversight and Accountability about the serious policy obstacles and problems with U.S. export control policies vise-a-vise China and offered Congress potential solutions. In my testimony, I explained why I voluntarily resigned in protest from my post as DoD's lead Foreign Affairs Advisor for exports and technology security policy on China. I could no longer in good conscience continue to serve when I believe that too many officials refuse to recognize

and correct U.S. export control policy failures concerning China. I felt like I was watching a car crash in slow motion every time the federal government approved a technology transfer that fed the buildup of an adversarial Chinese military or furthered its modernization efforts. I made seven legislative proposals to correct the flawed export control policies that are permitting such circumstances.

To avoid redundancy, I am submitting that testimony here as an attachment. The account nonetheless generated false narratives and logic fallacies that merit redress in this written testimony as they are equally applicable to emerging and foundational technologies.

For example, Ms. Kendler, the Assistant Secretary of Commerce for Export Administration, made questionable assertions in her July 20th, 2023, written statement such as the effectiveness of the entity list or that the excessively high approval rate for the export of militarily useful technology to the PRC is not a good indicator of the efficacy of U.S. export controls. Perhaps most debatable is the suggestion that export enforcement efforts in the PRC are effective when in fact the bilateral End-Use Check agreement between the U.S. and the PRC does more to invite diversion than to dissuade it.

Indeed, Ms. Kendler's opening sentence points directly to the failure of U.S. export controls: "BIS is responsible for protecting U.S national security and foreign policy interests by ensuring that U.S. technology is not used by adversaries to harm the United States." The hard undeniable evidence of U.S. controlled technology discovered in the drones attacking Ukraine, diverted from the PRC to Iran is illustrative of this failure. Or consider that U.S. software was instrumental in offering the PLA the lead in hypersonics. If still in denial, the PLA's spy-balloon ladened with U.S. controlled technology and used over sovereign U.S. territory and some of our most sensitive military sites should certainly drive home the point that U.S. export controls serve more to arm the PLA than dissuade illicit diversion.

The U.S. does not have many opportunities to get its hands on the military equipment of its adversaries. But it appears that in 100 percent of the cases where the U.S. does, there are U.S. dual-use technologies that China has diverted and are thus illustrative of Xi's strategy of systemic diversion. That USG officials know this and do nothing more than add a few more Chinese entities to an ineffective list are indicative that immediate and bold Congressional action is required.

Myth #1: U.S. Industry Self-Regulates. Some export control officials, lobbyists, and think-tank analysts assert that U.S. industry self-regulates, in that they will not submit export applications that they know will be denied, and thus the excessively high rate of approval is not a useful indicator to measure the effectiveness of controls. This is a red herring; of course, everyone can agree that industry will not submit a license for something they know will be denied. Thus, ACME USA has never applied for a license to export the moon-based death laser.

However, U.S. industry is one of the most prolific exporters of militarily useful technology to the PRC. The high approval rate does not point to a self-regulating U.S. industry, but rather to a wholly different problem. China is the largest recipient of U.S. licensed technology, and the U.S. Government approves over 90%, ignoring Xi's military-civil fusion (MCF) strategy and

taking at face value the laughable assertions that US technologies will not be diverted to the PLA or MSS. One merely needs to consider that U.S. controlled technology was diverted to the PLA's spy-balloon and then used directly against the United States. The high rates of approval points to a broken system wherein it only takes one bad decision to approve a transfer adjudicated by a biased BIS controlled license review process to establish a precedent which then opens the flood the gates for other approvals of the same technology.

U.S. industry will export whatever and wherever it can legally. Industry relies on the USG to draw the line and have explained to DoD licensing officials that "if we shouldn't export it, the USG can deny it." Competitive and inherent business interests preclude a company (especially a public company) from self-regulating, beyond explicit regulatory requirements.

Indeed, the licensing application process encourages U.S. industry to keep pushing the boundaries, incrementally, often barely perceivable, thereby constantly establishing new precedents. And, as BIS unilaterally eliminates DoD conditions from applications with no push back from DoD leaders this further erodes the boundaries and lowers the barrier for more capable technologies.

Again, once the precedent is established it is next to impossible to deny future transfers as BIS and other stakeholders to included DoD leaders will declare that applications for similiter technologies can be exported to the PRC based on PRECEDNCE. And, these officials do so with a willful blindness towards Xi's MCF strategy and that the U.S. has no effective verification mechanism to determine actual end use. This is the problem that excessively high rates of approval reveal – not that U.S. industry does a wonderful job at self-regulating.

Relatedly, for BIS to further put the onus on U.S. industry to 'know its customer' is disingenuous. With Xi's most recent laws further lowering the veil on an already opaque economy, understanding of domestic Chinese business relationships and association with the PLA is already nearly impossible. If the U.S. intelligence community struggles to decipher increasingly unclear business relationships and association with the PLA, why does BIS believe that U.S. industry will fare any better?

Myth #2: End-Use Checks and Additional Resources for the "Changing Strategic Environment." Perhaps the best kept secret in both Beijing and Washington DC is that the Department of Commerce's Bureau of Industry and Security (BIS) does not have the capacity or the ability to confirm the actual end-use of U.S. technologies exported to China. This should send alarms across the U.S. export control community and the United States' government. Yet, export control and enforcement officials commit crimes of omission by failing to highlight or even mention this major shortfall with serious national security implications in Congressional hearings or reports.

With all its other trading partners, U.S. export control officers (ECOs) can conduct post-shipment verifications with few restrictions for up to five years after a technology is shipped. But, unique to China, U.S. officials have only 180 days after an item is shipped to request a post shipment verification (PSV) check, and only on a fraction of licensed exported technology.

PSVs are the only way to verify the actual end-use of U.S. technology. 180 days are woefully insufficient, especially when compared to five years for every other county. After a mere 180 days China can do as it pleases with American technologies, and it is obvious to even the casual observer that China does precisely that as witnessed during the autopsies of our adversaries' military equipment.

These end-use check restrictions, codified in the bilateral agreement between the U.S. and China, make the ultimate end-use of U.S. technology impossible to verify. As such, the U.S.-China End-Use Check (EUC) agreement serves more as an enticement for diversion rather than its intended purpose of dissuasion. The United States inability to verify end-use invites diversion within China to the PLA or internationally to Russia, Iran, and North Korea. The PLA spy-balloon loaded with U.S. commercial technology is more than adequate proof of systemic diversion of U.S. and other foreign technology to the PLA absent a meaningful verification mechanism.

Furthermore, this is not a resource issue. There are increasingly calls to allocate greater resources to BIS and the U.S. export control community to deal with the 'new complex strategic environment' caused by the CCP's diversionary practices. Unfortunately, this is not a problem that can be solved by the standard suggestion of throwing more money at it. Until the U.S. has an agreement with the Government of the PRC that permits the verification of the actual end-use of U.S. technologies, as it has with every other trading partner, no amount of additional resources will stop the diversion of U.S. technology from further modernizing and expanding the PLA's military capabilities. In fact, until the EUC agreement can be renegotiated to meet common internationally accepted practices, the only responsible course of action is to deny most, if not all, exports of dual-use technologies to the PRC.

Myth# 3: Multilateral Controls are the Most Effective. Another red herring; everyone agrees that under ideal circumstances the U.S. should implement controls in unison with our partners and allies. Multilateral controls would appear to be more effective than unilateral controls. This of course assumes wide foreign availability.

However, when there is limited foreign availability, which is the case for several, if not all, emerging and critical technologies a "coalition of the willing" for each technology may be a more expedient and appropriate way to proceed with those states that have the lead in a particular technology – very similar to the controls on semiconductors and its manufacturing equipment. One approach does not necessarily negate the other – a new multilateral structure of so-called techno-democracies could still be established while simultaneously, and more quickly, working on controls for specific technologies unilaterally, or with a limited number of partners.

Yet, Congress must recognize that a major challenge in leading our partners and allies in this effort is the simple fact that the U.S. is one of the most prolific exporters of controlled technology to China. The United States should lead by example by getting its own house in order first. And my former supervisors at DTSA have been politely lectured as much by their foreign counterparts. When the U.S. leads others will follow. For example, the U.S. led on implementing export controls for human rights violations in Xinjiang and again following Russia's incursion into Ukraine; when they did, partners and allies followed America's lead. As

a consequence, an argument could be made that unilateral controls and export control policies directed at the PRC may be the most effective tool for quickly rallying our partners and allies towards more responsible multilateral controls.

However, it is much easier to sit back and keep repeating that multilateral controls are best and do the absolute minimum. Afterall, the various multilateral export control regimes are notoriously slow in establishing a consensus required for new controls and when they do, they are so watered-down to be practically meaningless. Again, this environment works best for those who are averse to establishing consequential controls that might impact commercial interests over national security. And, it offers an excuse to Congress, albeit a very poor one, to explain the seemingly inability to implement controls over emerging and foundational technologies.

Lastly, there are technologies that the U.S. alone controls. I would encourage the Committee to request a presentation on those technologies from the U.S. intelligence community, as well as a briefing on the technologies upon which the PRC is dependent and implement more restrictive controls on these technologies.

Myth #4: Export Control Restrictions = De-Coupling. Yet another logical fallacy. Nearly everyone agrees that it is not in the United States' interest to de-couple from China. But put in proper perspective, in 2022, U.S. exports to China totaled $153.8 billion. The biggest US export to China was agricultural products – food! No one advocates that the U.S. stop selling food to China. It represents just over 23% of our exports to China and is an important export for the American farmer. On the other hand, licensed exports of militarily useful technology to the PRC were valued at $1.1 billion in 2022, representing just .7% of U.S. exports to China. Even if the United States were to deny all licensed militarily useful technology to China – a responsible policy in itself – $1.1 billion in denied transfers of capabilities that the Chairman of the CCP himself said his country will divert to its military if necessary is more in line with a de-risking strategy than a call for de-coupling.

And, from an economic standpoint, this same $1.1 billion is further dwarfed by total global US exports of $2.1 trillion a small speed bump for a $25.5 trillion economy. These are hardly the sums that would indicate a decoupling, but rather the denial of these technologies would represent a more responsible approach to protecting national security and our warfighters.

Myth #5: The Entity List is an Effective Tool Against Diversion. Ironically, leaders in the export control community point with inexplicable pride to the increased number of Chinese persons on the entity list as a success story. In reality, their misplaced faith in their whack-a-mole approach fails to recognize the systemic nature of Xi's MCF strategy, acknowledge that the PRC actively skirts entity list restrictions, and realize that their failed export control policies, to include no end-use verification mechanism, invite diversion.

As it stands, the entity list's only utility is providing U.S. export control officials with the deceptive impression of responsibleness by going through the motion of doing something meaningful. The truth of the matter is that Chinese business names, individuals, and address are

easily and quickly changed, or new businesses established – such as Honor – anything necessary to maintain the flow of needed U.S. technologies to dominate key technology sectors and further modernize their military and state security apparatchik. Consequently, the entity list is a useless vehicle for preventing diversion while providing U.S. officials with a dangerous false sense of security that it does.

Limiting additions to the entity list to one subsidiary or affiliate at a time makes a bad measure even worse. Such limitations to the entity list ignore the reasonable expectation that technology will be diverted within a parent company structure much more easily. If any element of a Chinese business is found to have diverted technology or be associated with the PLA or MSS, the entire business structure should be placed on the entity list.

Nonetheless, the process for adding entities, whether it includes single subsidiaries, affiliates, or the entire parent company structure, is reactive. The reactive nature of the entity list is arguably demonstrative of failed U.S. export control policies, adding entities only after they are found to be involved in activities that are "contrary to the national security or foreign policy interests of the United States" – are in effect, like closing the barn door after the horses have already gotten out.

Given, the U.S. government's inability to assess actual diversion within the closed PRC state, U.S. export control officials across the interagency are willfully blind in accepting assurances from PRC officials that U.S. technology will not be diverted. They accept these assurances in the same manner that they accept end-use assurances from the United States' closest partners and allies. The only difference being that U.S. export control officers can verify actual end use with every other trading partner other than China.

Under such circumstances the entity list is of no consequential utility in preventing diversion. The needed technologies to modernize China's military will continue to flow to a different malleable Chinese end-user given the failed porous export control policies of the United States.

Recommendations

The list of myths above are just some of the ways the U.S. export control officials and their servile followers justify the continuation of a broken export control system that, rather than protecting U.S. national security interests, is in fact endangering them. This calamity suggests an urgent need for Congressional action and reform. As such, reform does not require tweaks to a non-responsive commodity control list that does not even regulate the most sensitive U.S. technologies. The fix desperately requires a wholesale change to export control policies as they relate to a China and the U.S. export control processes and regulations that oversee those policies.

In additional to the recommendations included in my May 2023 testimony, Congress should:

- Craft legislation for country specific policies for how the interagency adds technologies to the CCL, with a specific focus on emerging and foundational technologies.

- For the pariah states of China, Russia, North Korea, Iran, and potentially others, the Department whose equities are greatest impacted by particular technologies, should have the greatest voice in determining what is controlled and how it is controlled.

- Most controls should invariably be directed by the Department of Defense as the national security implications for much of the emerging and foundational technologies are as obvious as they are significant.

- To capture quickly morphing emerging technologies, narrowly defined parameters of the CCL will need to be abandoned in adapting controls for these countries which so adroitly flaunt a rules-based export control system.

In her written testimony to the Subcommittee on Oversight and Accountability on May 11th, 2023, the Honorable Ms. Nikakhtar, best describes the danger of lax licensing requirements for emerging and foundational technologies to our national security:

> "The key point to emphasize here is that EAR99 items do not require licenses for export to most entities located in foreign countries of concern, including the PRC and countries that routinely serve as points of diversion to Russia, Iran, North Korea, and Cuba. This is enormously problematic because all emerging and foundational technologies – i.e., technologies that have still not made their way to the CCL – are designated as EAR99 by the Commerce Department. This means that they are freely exported with the lowest licensing requirements. **The fact that licensing requirements for the nation's most sensitive and dangerous technologies are no different than current license requirements for innocuous items such as tables and chairs is absurd. This needs to change**."