Comments of the
Semiconductor Industry Association

On

The Interim Final Rule Entitled
"Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections"

88 Fed. Reg. 73458 (Oct. 25, 2023)
RIN 0694-AI94
Docket No. 231013-0248

Submitted January 17, 2024

The Semiconductor Industry Association (SIA) submits these comments in response to the request from the Bureau of Industry and Security (BIS) in the above-captioned rule. The Interim Final Rule entitled *Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections* (AC/S IFR) amended the Export Administration Regulations (EAR) by refining the scope of the interim final rule released on October 7, 2022 (October 7 IFR) to more effectively achieve national security objectives while responding to public comments about the controls adopted in the October 7 IFR.

Part I of these comments contains introductory and background comments about SIA and semiconductors. Part II contains general comments about the AC/S IFR and related Interim Final Rule entitled *Export Controls on Semiconductor Manufacturing Items* (SME IFR) including requests for BIS to consider. Part III contains comments, questions, and requests about specific provisions in the AC/S IFR for BIS to consider.

Part I -- Introduction and Background

SIA has been the voice of the U.S. semiconductor industry for over 40 years. SIA member companies represent more than 99% of the U.S. semiconductor industry by revenue and are engaged in the research, design, and manufacture of semiconductors. The U.S. is the global leader in the semiconductor industry today. Continued U.S. leadership in semiconductor technology will drive economic strength, national security, and global competitiveness. More information about SIA and the semiconductor industry is available at www.semiconductors.org.

Semiconductors are complex products critical to the functioning of everyday consumer electronics, communications, and computing devices in the automotive, industrial, financial, medical, retail, and many other sectors of the economy. They are also critical components for future technologies, such as artificial intelligence, quantum computing, and 5G/6G telecommunications. Few industries, if any, have a supply chain and

development ecosystem as complex, geographically widespread, and interdependent as the semiconductor industry. A joint report[1] by the Boston Consulting Group (BCG) and SIA found that more than 120 countries were involved as an exporter or importer of semiconductor products. The United States is the world leader in this global market. Semiconductors are consistently one of the United States' top exports. In 2022, U.S. exports of semiconductors totaled $61.1 billion, ranking fifth highest behind only refined oil, airplanes, crude oil, and natural gas.

Domestically, maintaining a strong U.S. semiconductor research, design, manufacturing, and supplier base is both an economic security and a national security imperative. As stated in both the House and Senate versions of the 2021 National Defense Authorization Act: *"The leadership of the United States in semiconductor technology and innovation is critical to the economic growth and national security of the United States."*[2] Given how important the economic vitality and competitiveness of the U.S. semiconductor industry is to national security, as a general matter, it is critical to ensure that U.S. export controls are narrowly tailored and designed to achieve specific national security objectives. We therefore strongly encourage that government work closely with industry to ensure that U.S. policies are crafted in a manner that both enhances our national security while also continuing to enable the semiconductor industry in the U.S. to grow and innovate. To that end, SIA welcomes Secretary Raimondo's recent announcement regarding the reestablishment of the President's Export Council Subcommittee on Export Administration (PECSEA) to "gather insight from key stakeholders to ensure our controls are carefully tailored to maximize our national security impact while advancing U.S. technological leadership"[3] as well as the subsequent request for nominations.[4]

Overseas markets play a crucial role in this capital-intensive industry, comprising more than 80% of U.S. semiconductor sales. Access to global markets is therefore needed to ensure that U.S. semiconductor companies are able to continually fund the very large R&D investments and capital expenditures that are required to maintain U.S. technology ahead of global competitors, a phenomenon that a BCG report[5] termed the "virtuous innovation cycle." It is therefore notable that, in its recently released assessment of the microelectronics industrial base in the U.S., the Department of Commerce

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[1] *Strengthening the Global Semiconductor Supply Chain in an Uncertain Era*, BOSTON CONSULTING GROUP, April 2021, https://www.semiconductors.org/wp-content/uploads/2021/05/BCG-x-SIA-Strengthening-the-Global-Semiconductor-Value-Chain-April-2021_1.pdf.

[2] H.R. 6395 § 1824(b) and S. 4049 § 1098(b).

[3] "Remarks by Commerce Secretary Gina Raimondo at the Meeting of the President's Export Council," U.S. DEPARTMENT OF COMMERCE, Nov. 29, 2023, https://www.commerce.gov/news/speeches/2023/11/remarks-commerce-secretary-gina-raimondo-meeting-presidents-export-council.

[4] *Notice of Reestablishment of the President's Export Council Subcommittee on Export Administration and Solicitation of Nominations for Membership*, U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Jan. 9, 2024, https://www.govinfo.gov/content/pkg/FR-2024-01-09/pdf/2024-00190.pdf.

[5] *How Restrictions to Trade with China Could End US Leadership in Semiconductors*, BOSTON CONSULTING GROUP, March 2020, https://web-assets.bcg.com/img-src/BCG-How-Restricting-Trade-with-China-Could-End-US-Semiconductor-Mar-2020_tcm9-240526.pdf.

acknowledged that "export controls, by limiting the size of the addressable market, may reduce…funds available for corporate R&D."[6]

Revenue from sales in China is particularly critical for the success of U.S. semiconductor firms across the industry ecosystem, as China remains the single largest market for semiconductors, accounting for 31% of global sales and 35% of U.S. chip sales in 2022. It is also the largest market for the sale of semiconductor manufacturing equipment. With the revenue needed to maintain U.S. technology leadership impacted by U.S. government restrictions, we strongly encourage the U.S. government to actively pursue proactive trade and economic policies aimed at opening and expanding market access for semiconductors in third countries – namely to grow the addressable market outside of China. We likewise urge the U.S. government to address trade barriers that impact our companies' ability to operate their complex global supply chains and ultimately sell their semiconductor products in foreign markets.

It is also critical that U.S. export controls are implemented in a multilateral manner, such that they do not undermine innovation and the technology base in the United States, by disallowing U.S. companies from selling to overseas customers or in certain markets when their foreign competitors are unencumbered from selling to those same customers or markets. As the Commerce Department has repeatedly stated, multilateralism is a fundamental factor in the effectiveness of export controls. But while we acknowledge BIS's well-meaning efforts to engage with U.S. allies and partners towards achieving multilateral and plurilateral export control alignment, the results of these efforts so far fall well short of the rhetoric. The reality is that U.S. companies remain severely disadvantaged in the global marketplace due to the unilateral controls implemented in the October 7 IFR and AC/S IFR. And even when other countries have adopted similar lists of items subject to export controls, those other governments have not implemented end-user and end-use controls similar to BIS controls in Part 744 of the EAR. Therefore, companies whose products are subject to U.S. export controls face a diminishing market that provides opportunities for growth by companies that are not subject to U.S. export controls. In other words, while the size of the total addressable market for U.S. semiconductor products has contracted, the total addressable market for non-U.S. semiconductor products is growing. This is true not only for those products subject to U.S. export controls, but also for products that are not subject to export controls due to the broader chilling effect that such controls have on the global market. Our comments will address these unintended, but very real, consequences in more detail below.

Finally, SIA and our member companies recognize the need to protect national security and believe maintaining a healthy U.S. semiconductor industry is an essential component to achieving that goal. To that end, SIA has long been a partner of the U.S.

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[6] *Assessment of the Status of the Microelectronics Industrial Base in the United States,* U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, OFFICE OF TECHNOLOGY EVALUATION, Dec. 2023, https://www.bis.doc.gov/index.php/documents/technology-evaluation/3402-section-9904-report-final-20231221/file

Government in providing support and feedback regarding export control policy, particularly with respect to semiconductors. SIA appreciates the opportunity to provide its comments, questions, and requests with respect to the AC/S IFR and SME IFR.

Part II -- General Comments

Comment II.A: BIS should consider the unintended consequences of the AC/S IFR and SME IFR, in particular, that these rules accelerate the design-out of U.S.-origin products and technology from global supply chains.

Export controls should consider foreign availability of controlled commercial products to avoid creating incentives for the development of competing technologies outside the U.S. If controls are not modernized as technologies and national security concerns evolve – which includes decontrols where appropriate in light of future developments – the broad application of such controls disincentivize investment in the U.S. and risks ceding U.S. leadership to global competitors by "designing out" U.S.-origin technology from global technology supply chains.

As U.S. export control rules grow increasingly complex, and the "small yard" to which these rules apply grows ever broader, many foreign customers are increasingly opting to source non-U.S. technology, software, components, and equipment to avoid the risk of "tainting" their foreign-made items. That is, even foreign customers that are not directly affected by the rules are making business decisions to avoid U.S.-branded content (i.e., that which is exported from the U.S. and sold by a U.S. company) in order to reduce their risk of shipment delays or supply chain disruptions due to current or future U.S. export controls that they cannot fully understand. This over-control is unintended and harmful to the U.S. industrial base, particularly where there is availability of competitive non-U.S. technology, software, components, and equipment. These risks exist across the different subsets of the semiconductor supply chain and are amplified by the application of extraterritorial unilateral controls like the foreign direct product rule (FDPR).

Export controls also factor into procurement and investment decisions of governments and companies worldwide. The prior experience of the machine tool industry, the satellite industry, and others should be carefully considered, as there may be lessons to be learned on how export controls contributed to procurement and investment decisions, to the possible detriment of the affected U.S. industry. Implementation of multilateral and plurilateral controls may mitigate the negative impact, but if U.S. controls are more extensive and more restrictive than similar controls imposed by other governments, the negative impact on U.S. industry will persist.

BIS should also consider that the comparative advantage held by the U.S. may be at risk if China develops an entire ecosystem of chips and chipmaking equipment that is "good enough" to replace incumbent suppliers in the technologies of the future – such

as electric vehicles and the IoT – not only in the Chinese domestic market but globally.[7] Evidence exists that Chinese competitors are making progress to that end, posing a serious challenge to continued U.S. semiconductor leadership globally. Exacerbating this dynamic is the lack of proactive U.S. trade and economic policies to open new markets for U.S.-origin semiconductor products, while China continues to expand its network of trade agreements and its global economic influence via the Belt and Road and Digital Silk Road initiatives.

More specifically, at the heart of the October 7 IFR, the SME IFR, and the AC/S IFR, is an effort to deter China from making progress toward leading-edge technology process nodes. However recent product announcements demonstrate that China is, in fact, making technological progress despite U.S. and allied restrictions.[8] Similarly, chip design is one of the U.S. and its allies' greatest strengths. Design of microprocessors, artificial intelligence (AI) accelerators, and smartphone chips historically has been dominated by U.S. and allied companies. Likewise in this segment of the industry, evidence suggests that foreign competitors are developing alternatives, challenging the underlying assumption that the U.S. will necessarily maintain its leadership.

China's indigenous tool market is also experiencing rapid growth, as Chinese foundries replace foreign-made equipment with domestic alternatives in the wake of restrictions. According to market analysis, nearly half (47.25%) of all machinery equipment tenders by Chinese foundries from January to August 2023 were won by local manufacturers.[9] In this case, restricting the ability of companies subject to U.S. export controls to service the installed base of tools already in Chinese fabs is forcing Chinese legacy chip producers – ostensibly not the focus of the regulations – to replace tools manufactured by U.S. and western-headquartered companies with Chinese domestic equipment, hastening the development of domestic "good enough" alternatives which are then not subject to the jurisdiction and oversight of the U.S. and allies. It runs counter to the expressed purpose of the rules and could contribute to the Chinese stated goal of achieving self-sufficiency.

Overbroad U.S. controls also create an incentive for China to invest in legacy

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[7] Jingyue Hsiao, *Major China-based semiconductor equipment providers form strategic investment venture*, DIGITIMES ASIA, Jan. 5, 2024, https://www.digitimes.com/news/a20240105VL202/china-investment-semiconductor-equipment.html; Jacky Wong, *Surpassing Tesla, China's BYD Will Take On the World in 2024*, WALL STREET JOURNAL, Jan. 2, 2024, https://www.wsj.com/business/autos/chinas-ev-champion-byd-will-take-on-the-world-in-2024-9da4cfde.

[8] Anton Shilov, *Huawei's New Mystery 7nm Chip from Chinese Fab Defies U.S. Sanctions*, TOM'S HARDWARE, Sept. 3, 2023, https://www.tomshardware.com/news/huaweis-new-mystery-7nm-chip-from-chinese-fab-defies-us-sanctions; Charlotte Trueman, *Chinese-made 7nm chips in Huawei phone raise questions over U.S. export ban*, COMPUTERWORLD, Sept. 8, 2023, https://www.computerworld.com/article/3706373/chinese-made-7nm-chips-in-huawei-phone-raise-questions-over-us-export-ban.html; Jeff Pao, *SMIC bypasses US curbs to make 7nm chips*, ASIA TIMES, Sept. 5, 2023, https://asiatimes.com/2023/09/smic-bypasses-us-curbs-to-make-7nm-chips/.

[9] Fanny Potkin and Yelin Mao, *Chinese chip equipment makers grab market share as US tightens curbs*, REUTERS, Oct. 18, 2023, https://www.reuters.com/technology/chinese-chip-equipment-makers-grab-market-share-us-tightens-curbs-2023-10-18/.

technologies, with the unintended consequence of artificially repressing Western companies' investment in legacy technologies. Traditionally, when controls have been limited to "cutting-edge" technology on a narrow set of dual-use cases, there is a relatively small commercial economic incentive for a potential competitor to make the significant investments necessary to approach the cutting edge. Instead, what typically happens is that the potential competitor operates in "follower" mode, and feeds on the domestic commodity portion of the market with modest investment and a cheap local supply chain. These vendors may use this learning to try to "bootstrap" themselves to the higher performance part of the market, but in the semiconductor industry, that tends to be a constantly moving target, and the investments required tend to be daunting. The gap may slowly close over time – but also may persist for as long as the technology advances.

However, if export controls are too aggressive and try to control the lower performance items, then the market size for the foreign supplier expands significantly. This expanded market justifies a lot more investment by the domestic suppliers in the country of concern. The unintended consequence is that foreign competitors seize market share in legacy technologies, to the detriment of U.S. suppliers.

Comment II.B: BIS should implement licensing policy evenly.

Unevenly applied licensing policy can distort the market, creating winners and losers unintentionally.

We therefore recommend that when BIS grants a license for a particular product, BIS should fast-track licenses for competitors' comparable products. Ideally, the license effective dates should be aligned within product types, to ensure that all competitors have an equal opportunity to bid for customer business. This alignment is critical to ensure no party receives an unfair competitive advantage due to inconsistent licensing decisions, particularly given that semiconductor products are tightly integrated into finished products and "second sourcing" is difficult and expensive, and therefore rarely occurs.

Also, it would be helpful for BIS to maintain a register of published licenses by product category and key features. Currently, companies have no way of knowing whether a particular product or technology will be granted a license, except through rumors and by conducting market research. Companies that do not apply for licenses or whose licenses are not given equal treatment are then at a severe disadvantage to competitors who are more aggressive about filing, or more fortunate in having their licenses approved by BIS.

Comment II.C: BIS should implement improved mechanisms for interaction with industry.

While we welcome the announcement regarding the PECSEA, we encourage the Commerce Department and the Administration to issue proposed rules when possible and, more broadly, to develop additional mechanisms to facilitate regular engagement with industry stakeholders in the development of future export controls.

Comment II.D: We ask BIS to further clarify the complex new regulations.

In comments on the October 7 IFR, we noted the complexity of new regulations including the enhanced foreign direct product rules. The increasing complexity under the AC/S IFR and SME IFR severely impacts broad and informed compliance. While we appreciate the FAQs published by BIS on December 29, 2023,[10] and understand that plans to issue an upcoming corrections and clarifications rule, there are a number of questions regarding these rules that BIS has not yet addressed:

- BIS should further clarify the definition of "headquartered" company. The definition of "headquartered" could go two different directions: either (1) a simple, objective test, like situs of incorporation, or (2) a multipart, subjective "nexus" kind of test. Which direction does BIS intend to go, and does BIS plan to publish a FAQ or a rule change to further clarify this definition?

- BIS should issue a formal interagency review process for the review of notification requirements submitted in SNAP-R for License Exception NAC. We suggest that the review includes an appeals process for filers in scenarios where BIS requires a license rather than providing a confirmation of License Exception NAC eligibility.

- We request that BIS publish the applicable subparagraphs of z.1 to z.4 of ECCN 4A003.z, as these subparagraphs appear to be missing in the AC/S IFR.

- BIS should clarify that, in the case of in-country transfers, repair or storage of items at another location is not a change in end-use. Repair or storage of an item that has already been authorized should not require reauthorization. A more restrictive interpretation would cause unnecessary business interruptions and compliance costs without serving the stated policy objective of the regulations.

Finally, it is important to recognize that, given the complexity of the regulations, reasonable parties can differ in interpreting the license requirements. Where lack of clarity leads to differing interpretations, companies with similar products can end up taking different compliance approaches, which in turn leads to inconsistent outcomes

[10] *Frequently Asked Questions (FAQs) for "Export Controls on Semiconductor Manufacturing Items" (SME IFR) and "Implementation of Additional Export Controls: Certain Advanced Computing Items; Supercomputer and Semiconductor End Use; Updates and Corrections" (AC/S IFR)*, U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Dec. 29, 2023, https://www.bis.doc.gov/index.php/documents/policy-guidance/3434-2023-frequently-asked-questions-003-clean-for-posting/file.

and could distort the market. One such example relates to the license requirements in Section 744.23(a)(2)(i), which we elaborate on below in Section III.B(vi) of this submission.

Comment II.E: We ask that BIS retain and expand the deemed export exclusion.

In the preamble to both the AC/S IFR and SME/IFR, BIS requests comments on the deemed export exclusion to licensing requirements for foreign nationals. Deemed exports and reexports are excluded from the license requirements related to regional stability reasons for control in Section 742.6(a)(6)(iv) of the EAR.

It is important for U.S. commercial innovation and leadership to allow companies to continue to recruit and retain the best and brightest talent and avoid overly broad restrictions on the nationalities of available talent. As SIA has previously noted, one of the key factors driving growth and innovation in the U.S. semiconductor industry and across the broader tech sector is the availability of highly educated professionals – from both the U.S. and abroad – to create jobs and develop new technologies.[11] In many respects, the U.S. is already falling behind in the global competition for a skilled semiconductor workforce.

In the U.S., there is a significant gap between the number of U.S. persons qualified for technical positions in the semiconductor industry and the number of positions U.S. companies need to fill. To bridge the workforce gap, U.S. companies need access to the best talent, which may often be a non-U.S. person.

In July 2023, SIA and Oxford Economics published a report highlighting the significant shortage of technology workers in the semiconductor industry. The report found that the United States lacks a sufficient number of technicians, computer scientists, and engineers, with a projected shortfall of 67,000 of these workers in the semiconductor industry by 2030 and a gap of 1.4 million such workers throughout the broader U.S. economy. One of our core recommendations is to pursue policies designed to retain and attract more international advanced degree students within the U.S. economy, for the following reasons, among others:

> *The process of growing the domestic pipeline of U.S.-citizen students pursuing advanced degrees in STEM fields will take years or decades to bear fruit. In the meantime, we estimate that approximately 16,000 master's- and PhD-level international engineers are leaving the U.S. each year. For the semiconductor industry alone, these departures contribute to a projected total gap of approximately 17,000 master's and PhD engineers by the end of the decade. Simply put, the workforce gap for individuals with advanced engineering and computer science degrees cannot be realistically addressed for the foreseeable*

[11] See: https://www.semiconductors.org/policies/workforce/.

future solely with U.S.-citizen graduates.[12]

And while the U.S. struggles to retain engineering graduates educated in U.S. universities, Chinese universities continue to produce more than 77,000 STEM PhD graduates per year.[13]

In light of the workforce shortages and talent retention challenges, the imposition of a license requirement for nationals from the 45 countries specified in Country Groups D:1, D:4, and D:5 (excluding those also listed as A:5 and A:6 countries) to access certain source code and technology, similar to the regional stability controls for specified items on the Commerce Control List, would put U.S. semiconductor companies at a significant competitive disadvantage vis-à-vis global competitors. Even if such a licensing policy were based on a presumption of approval, the process of applying for such licenses alone would discourage the hiring of nationals from these countries, as well as create significant business and operational delays in a fast-paced industry due to the extended timeline from persons being hired to actively working. There are similarly many long-serving, valuable employees of semiconductor firms who are nationals of the restricted countries but reside in the U.S. and partner countries and could be negatively impacted by a new license requirement. Additionally, deemed exports are unique to the EAR. This places U.S. companies at a particular disadvantage in comparison to our peers.

We therefore appreciate BIS's thoughtful approach on deemed exports and deemed reexports in these regulations – namely the exclusion of such requirements from the regional stability controls in Section 742.6(a)(6)(iv) – which will help to ensure that U.S. companies are able continue recruiting and retaining the best talent for developing and producing the next generation of technologies. However, we note that the effectiveness of the deemed exports and reexports exclusion is severely undermined without implementing exclusions for similar technology ECCNs that can also be required for the development and production of ICs, including advanced node ICs. Indeed, we recommend that BIS consider a similar exclusion for ECCNs 3E002 (microprocessor technology) and 4E001 (computer technology under 4E001 not limited to products classified under 4A090).

For example, there is a considerable overlap between ECCN 3E001 for development of chips controlled under 3A090 and ECCN 3E002. A similar overlap exists between ECCN 4E001 for the development of electronic assemblies controlled under 4A090, and 4E001 for computers controlled under ECCN 4A003. Retaining a licensing requirement for deemed exports of technology controlled under ECCN 3E002 and 4E001 for computers controlled under 4A003 significantly undercuts the deemed export exclusion

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[12] *Chipping Away: Assessing and Addressing the Labor Market Gap Facing the U.S. Semiconductor Industry*, SEMICONDUCTOR INDUSTRY ASSOCIATION, July 8, 2023, https://www.semiconductors.org/wp-content/uploads/2023/07/SIA_July2023_ChippingAway_website.pdf.

[13] *China is Fast Outpacing U.S. STEM PhD Growth,* CENTER FOR SECURITY AND EMERGING TECHNOLOGY, Aug. 2021, https://cset.georgetown.edu/wp-content/uploads/China-is-Fast-Outpacing-U.S.-STEM-PhD-Growth.pdf.

under the AC/S IFR. In general, the deemed export licensing experience of SIA member companies with respect to ECCN 3E002 and 4E001 for computers controlled under 4A003 has led to negative and counterintuitive outcomes.

To the detriment of U.S. chip designers, BIS's frequent practice of imposing overly restrictive license conditions has led to situations and outcomes in which licenses are granted, but in practice cannot be used, because the overly restrictive conditions prevent the applicant from performing the intended job description. In several cases, deemed export licenses for non-U.S. nationals with world-class expertise have included conditions so restrictive as to make the licenses practically useless. This contributes to the broader workforce shortage and talent gap in the United States described above.

PART III -- Comments on Specific Provisions of the AC/S Interim Final Rule

Below, SIA provides comments on BIS questions 2, 3, 5 and 6 (but not 1 or 7) in Section D of the AC/S IFR. SIA comments on Section D question 4 of the AC/S IFR can be found above in Section II.E of this submission.

BIS Question 2. *Developing technical solutions to exempt items otherwise classified under ECCNs 3A090 and 4A090.*

SIA members offer a cautionary note with respect to technical solutions of the type described in Section D Question 2 of the AC/S IFR, or what some are referring to as "on-chip governance" mechanisms. The impact to U.S. chip suppliers of incorporating such mechanisms would go well beyond the cost of designing and implementing such a mechanism – they would create yet another chilling effect on sourcing U.S.-origin chips with such features due to concerns over privacy, or the specter of the U.S. government gaining the ability to surveil or monitor the use of such products. In addition, we think it is highly unlikely that semiconductors, of which over one trillion are shipped each year, could be tracked using such mechanisms.

BIS Question 3. *Identifying ways to assist semiconductor fabrication facility compliance in recognizing ''direct products.''*

SIA believes that the new red flag 19 in Supplement No. 3 to Part 732 is helpful. However, it would be more useful for BIS to publish a list of entities, so that companies can integrate the lists into their transaction screening processes. U.S. companies typically screen parties to transactions against BIS's lists, including the Denied Parties List, Entity List, Unverified List, and other similar lists. A new list that could be rapidly and effectively integrated into existing screening processes is preferable to a "red flag" approach.

BIS Question 4. ***Deemed exports and deemed reexports.***

SIA provided comments on BIS question 4 in Section II.E, above.

BIS Question 5. ***Control parameters under 3A090, in particular Note 2 to 3A090.*** **In response to this AC/S IFR, BIS seeks comments on how to refine the parameters under ECCN 3A090 to more granularly cover only ICs that would raise concerns for use in training largescale AI systems and to and to more specifically define ICs not designed or marketed for use in datacenters.**

SIA members respectfully suggest that more discrete technical control parameters should be a subject for additional discussion in forums including the Information Systems Technical Advisory Committee. In addition, SIA members respectfully suggest that BIS should implement a mass market exclusion, which would exclude from the scope of 3A090 ICs that are not susceptible of effective control because of the way they are sold. A useful model provision would be the General Software Note codified in Supplement No. 2 to Part 774 of the EAR at paragraph (2), excluding items that are:

1. Generally available to the public by being:

a. Sold from stock at retail selling points, without restriction, by means of:

1. Over the counter transactions;

2. Mail order transactions;

3. Electronic transactions; or

4. Telephone call transactions; and

b. Designed for installation by the user without further substantial support by the supplier.

BIS Question 6. ***Definition of headquartered companies.*** **BIS seeks comments on the definition of entities headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5, including comments on the ability to access information required to assess the status of a foreign party and any other factors that would support the policy goal of limiting access to advanced computing capability by Macau parties or a destination specified in Country Group D:5 parties.**

SIA notes with concern the unprecedented expansion of controls to companies that are "headquartered" in countries of concern. Any regulation requiring the exporter to make a determination of where a particular company is "headquartered" must be clear, simple, and straightforward to assess. SIA members respectfully submit that the

definition of entities headquartered in, or whose ultimate parent company is headquartered in, either Macau or a destination specified in Country Group D:5 should be clarified to refer to the juridical person organized under the laws of Macau or the laws of a country specified in Country Group D:5.

Even if BIS clarifies what the ambiguous term "headquartered" means, this requirement will be difficult to comply with from an operational perspective. Therefore, it would be helpful if BIS provided guidance, including specific examples and best practices, in an FAQ. Specifically, we request that BIS clearly define what steps an exporter must take to verify the location of an entity's headquarters:

1. Will BIS require exporters to maintain a case-by-case certification from each party?
2. Will a party's representations of where its headquarters are located (e.g., via public-facing information like its website) be acceptable?
3. As headquarters locations can change over time without notice, is an exporter obligated to confirm headquarters periodically?
4. Will BIS enforcement actions related to errors in identification of "headquarters" locations consider the challenges of making accurate determinations and keeping those determinations current?

It is also crucial that the relevant guidance should be based on publicly available and readily determinable information to allow an exporter to make determination of Macau/D:5 country headquartered company with reasonable efforts. For example, if BIS decided to use “control” as a condition to determine a company’s ultimate parent, it is helpful to provide specific criteria to determine what constitutes “control”.

Part III.B – Other Comments

SIA also wishes to offer the following additional comments with respect to the AC/S IFR:

i. License Exception Notified Advanced Computing (NAC)

License Exception NAC is a novel, untested concept. In practice, the current license exception still requires an entity to seek approval under a “pre-notification” framework, which in practice is effectively a new license requirement.

The mechanism for filing in SNAP-R was introduced after the time the AC/S IFR was promulgated, leaving exporters guessing as to how it might be utilized. BIS and the interagency had not even determined what the review process and criteria, or the escalation process or criteria, might be at the time the AC/S IFR was promulgated. In a regulatory environment featuring a 30-day delayed effective date, exporters were left to speculate whether and how to utilize License Exception NAC. In the future, we respectfully request that BIS refrain from imposing regulatory requirements unless and until the implementation frameworks and mechanisms are in place at the time of rule

publication. The preferred solution would be a detailed process similar to Sections 2-5 of Executive Order 12981 Administration of Export Controls,[14] such as including a description of the interagency review timeline, interagency dispute resolution process, and resolution procedures.

SIA and its member companies recommend the following modifications to the NAC process in order to create a true license exception.

- BIS should implement a one-time Commodity Classification Automated Tracking System (CCATS) and end-user review that determines if future notifications are required or alternatively if companies can follow a reporting process annually. Enacting this will help companies plan and ensure that BIS is not inundated with repetitive reviews. This also aligns with the approach taken to review and approve encryption under license exception ENC.

- BIS should consider including the following definition of a "datacenter" in the regulations: "a facility that provides shared access to applications and data using a complex network, compute, and storage infrastructure." This definition would clearly differentiate datacenters typically shared by multiple tenants for training AI models from edge applications which proliferate more broadly across the compute environment and are used for AI inferencing. BIS also should consult its Technical Advisory Committees regarding the feasibility of adopting a definition of "datacenter" that includes technical control parameters, similar to the "collective maximum compute capacity" and "envelope" used in the definition of "supercomputer" codified in Section 772.1 of the EAR.

- BIS should issue bulk authorizations for NAC and shift reporting requirements to post-shipment rather than pre-shipment notification. This could streamline processes and reduce administrative burden.

- BIS should revise the NAC Notification Requirement 740.8 (a)(2) in order to clarify the definition of "multiple exports" in the context of NAC. It is unclear if it refers to multiple exports to the same party or the same product. It is also unclear if the exports must be all associated with a single purchase order. Additionally, clarification is needed on whether a notification for a parent company applies to all of its subsidiaries.

- BIS should make it clear that the NAC notification requirement is not applicable for exports involving a Country Group D:5/Macau-headquartered entity when the final destination of the exported items is outside D:5/Macau.

[14] Executive Order 12981 – Administration of Export Controls, Dec. 5, 1995, https://www.govinfo.gov/content/pkg/WCPD-1995-12-11/pdf/WCPD-1995-12-11-Pg2127.pdf.

- License Exception NAC permits the export, reexport, and transfer (in-country) of any item described in the affected ECCNs, except for items designed or marketed for use in a datacenter and meeting the parameters of 3A090.a. Per the AC/S IFR, BIS is providing License Exception NAC for the less powerful advanced ICs. Note 2 to 3A090 demonstrates the U.S. government's determination that advanced ICs with a total processing performance (TPP) less than 4800 should be considered as a category of less powerful advanced ICs. Indeed, Note 2 specifies that any item with a TPP performance below 4800 that is not designed or marketed for datacenters is not even controlled by 3A090. Extending License Exception NAC eligibility to include 3A090.a.2 items designed or marketed for datacenters, where the TPP is less than 4800, would benefit manufacturers of lower performance high density items which are now subject to this licensing requirement, while not surpassing a performance level that has been determined to be appropriate for additional control. For an IC with a TPP of less than 4800 – whether designed or marketed for use in datacenters or not – there does not appear to be any national-security-based or other logical reason why a performance density figure at or above 5.92 should preclude availability of License Exception NAC.

- BIS should explicitly state whether a Purchase Order (PO) is mandatory for NAC shipments. Given that an export license does not necessitate a PO, the same principle should apply to NAC notifications. If a PO is required, we ask that BIS consider other agreements such as a contract, pro-forma PO or letter of intent.

- SIA requests that BIS provide guidance on how to calculate "quantity" for purposes of License Exception NAC submissions. "Quantity" is a required field in SNAP-R for License Exception NAC notifications, and BIS has advised that quantity is a consideration in the interagency review process. However, it is standard practice for customers to order a small number of samples for evaluating product capabilities prior to purchasing a larger quantity of items, such that the exporter would not know the ultimate quantity at the time of License Exception NAC submission. SIA requests that BIS provide guidance on how to determine "quantity" for purposes of License Exception NAC submissions. For example, should an exporter estimate six (6) months of expected shipments, or two (2) years of expected shipments?

ii. Enumerated ECCNs and Notes

BIS should create sub-categories to differentiate items that are NAC-eligible from items that need an export license (i.e., items incorporating 3A090.b ICs versus items incorporating 3A090.a ICs). As the rule is currently written, there is no differentiation for products that are eligible for NAC versus products that need an export license. BIS created the ".z" entries attempting to fix issues from the October 2022 rule where they were not able to differentiate 5A992.c items with or without the high-performance ICs (3A090). Similar issues now exist with ".z" if there are no sub-categories to differentiate "NAC" versus "license" items. The ".z" entries should reflect in all relevant respects the classification and license exception eligibility of 3A090 and 4A090 sub-paragraphs.

iii. Licensing for Non-D5 End Users via China

BIS should clarify if the requirement for a license applies when advanced computing items pass through a Chinese company but are destined for a non-Country Group D:5 end user.

iv. Expanded Foreign Direct Product Rule (FDP)

BIS's use of "Produced by" vs. "Direct Product" is problematic. The use of "produced by" in new FDP rules should be reconsidered, as it represents a significant expansion and may have unintended implications for affected entities. BIS further expanded new FDPR by using "a party to the transaction" to define the scope (Note to 734.9(h)(2)), which conflicts with the original provisions of the FDP rules and should be clarified.

v. Temporary General License (TGL)

BIS should clarify the term "ultimate end use" in the TGL, especially regarding whether it includes software and technology. Guidance on the scope of "ultimate end use" concerning technology transfer would be beneficial. Clarification is required around what constitutes knowledge of the "ultimate end use." It is currently unclear what is expected of exporters who are not aware of "ultimate end use" – for example, when an exporter is shipping to an original design manufacturer (ODM) who will build servers and then sell those servers to distributors who will then sell to the distributor's customers.

BIS should explain the relationship between the new TGL and the 2022 TGL. Clarity is needed on whether the 2023 TGL supersedes the expiration of the 2022 TGL, specifically whether companies can use the new TGL to continue or resume activities meeting the TGL product and end use scope.

BIS should confirm, either in an FAQ or preferably in the corrections and clarifications rule, that recipients can be located in countries that are listed in country groups D:1 and D:4. (This appears to be an accidental omission.) As written, shipments are limited to exports, reexports, and transfers to D:1, D:4, and D:5 (minus A:5, A:6) when the recipient is located in, but not headquartered in Macau or D5. This draft limits the TGL to recipients located in Macau or D:5, though we believe BIS's intent is to permit exports, reexports, and transfers to D:1, D:4, and D:5.

The TGL provides authorization for limited supply chain related end-use activities (integration, assembly (mounting), inspection, testing, quality assurance, and distribution) but does not appear to cover customer support. Given that some U.S. headquartered companies may have customer support teams located in countries that require export licenses (Vietnam, China, Kuwait, etc.), it would be sensible for the TGL authorization (or a license exception) to authorize transfer of products to those internal

teams to support this ongoing business. Such customer support is of a similar nature to the end uses currently permitted under the TGL.

BIS should clarify whether the TGL can be used when exporters do not know the "ultimate end use" location but obtain export authorizations to ship legally to D:1, D:4, or D:5 destinations if needed. For instance, can a U.S. company use TGL to send 3A090 items to its subsidiary in China for inspection, testing, or quality assurance for worldwide distribution if the company holds a valid export authorization for any subsequent reexport or in-country transfer to an end user in China?

vi. Applicability of Sections 744.23

As noted above in Comment II.D of this submission, the complexity of (and in many cases, the lack of clarity in) the AC/S IFR regulations can lead to differing interpretations of various requirements, leading to different compliance approaches, which in turn leads to inconsistent outcomes and could distort the market.

With respect to one such ambiguity in the regulations, BIS should publish FAQs clarifying the license requirements and end use restrictions for software and technology destined to a facility in China for the production of advanced node ICs that are not subject to the EAR.

With respect to the following fact patterns, compliance objectives would be furthered if BIS were to state for the public in the preamble responses to comments or in an FAQ response, whether Draft Answers A1 and A2 or Draft Answers B1 and B2 below are the correct answers to the following two similar fact patterns involving the application of the licensing requirement in Section 744.23(a)(2)(i).

FAQ X1: U.S. Company A wants to export U.S.-origin 3D991 IC design software to a non-embargoed third country software design Company B. At the time of the possible export, US Company A would know that the software would be used by Company B to create IC software designs that Company B would later send to a facility in China that produces advanced node ICs. The foreign-made IC designs would not be subject to the EAR under either the de minimis or foreign direct product rules. No Entity List entities or other Part 744 issues would be involved. The U.S.-origin software would stay with Company B and would not be incorporated into the software designs or separately sent to the facility in China that produces advanced node ICs.

Question: Does 744.23(a)(2)(i) impose a requirement on Company A to obtain a license before it exports the software given its knowledge that the software would be used in a third country to produce a foreign-made item (the IC design) not subject to the EAR that would be destined to a facility in China that produces advanced node ICs?

> Draft Answer A1: Yes. Section 744.23(a)(2)(i) imposes a requirement on Company A to get a license to export the software because the exporter knows

that the software is ultimately destined for an end use described Section 744.23(a)(2)(i), namely the production of ICs at a facility in Macau or a Country Group D:5 country where production of "advanced node ICs" occurs. The controls in section 744.23 are "end use" controls rather than item-based controls. Thus, it does not matter that the U.S.-origin software would not be incorporated into the foreign-made designs to be sent to the facility in China or otherwise sent separately to the facility in China. It also does not matter that the foreign-made designs are not subject to the EAR. What matters, for licensing purposes, is what the exporter knows at the time of export about whether there is an end use described in section 744.23 that will ultimately result in connection, albeit indirectly, with the export.

In addition, the non-U.S. Company B would have a licensing requirement itself under section 764.2(e) to send its foreign-made designs to the facility in China because it would have used an item subject to the EAR with knowledge that a violation of the EAR had occurred and was about to occur in connection with the item, even though the U.S.-origin software itself would not be sent to the facility in China.

Draft Answer B1: No. Unless the U.S.-origin software in this example is incorporated into a foreign-made product to be sent to the facility in China that produces advanced node ICs or otherwise sent separately to the facility, Section 744.23(a)(2)(i) does not impose a licensing requirement in this case. For there to be licensing requirement under Section 744.23(a)(2)(i) in this example, the U.S.-origin software itself must be "destined to" the facility in China, whether as stand-alone item or incorporated into a foreign-made item destined to the facility. Because the foreign-made IC designs are not subject to the EAR under the de minimis or foreign direct product rules, and because the U.S.-origin software is not sent to the facility in China in whole or as a component of the foreign-made item, no licensing requirement exists – even though there was knowledge at the time of export that the software would be used to design ICs that would be produced in a facility in China that produces advanced node ICs.

FAQ X2: All the facts in FAQ X1 are the same, with the only difference being that Company A would send U.S.-origin 3E991 technology to Company B to produce semiconductor manufacturing equipment in the third country that itself was not subject to the EAR under the de minimis or foreign direct product rules. Would Section 744.23(a)(2)(i) impose a requirement for Company A to get a license to export the 3E991 technology because it would know at the time of export that the technology would be used to produce equipment that would later be exported to China to produce ICs in a facility that produces advanced node ICs?

Draft Answer A2: Yes, for the same reasons in Answer A1.

Draft Answer B2: No, for the same reasons in Answer B1.

vii. Applicability of Sections 744.23 and 744.6 to Intellectual Property

SIA asks that BIS clarify whether Sections 744.23(a)(2)(i)-(ii) and 744.6(c)(2)(i)-(ii) of the EAR apply to exports of semiconductor technology items to China to companies/facilities engaged exclusively in design (e.g., a fabless design house).

In its commentary to Sections 744.23(a)(2)(i)-(ii) and 744.6(c)(2)(i)-(ii), BIS explains these sections "are revised to clarify the types of end uses captured by the controls, as well as the types of ''facilities'' where a prohibited end use must occur." BIS also states that:

> *"[B]ecause the controls still capture ''development'' activities that may occur at the same ''facility'' where ''advanced-integrated circuits'' are ''produced,'' this change also better captures ''development'' and product engineering activities at R&D fabrication ''facilities'' that may not engage in volume manufacturing of integrated circuits.* ***On the other hand, BIS also clarifies that a "facility" where only "development" activities occur would not fall within the scope of controls****, primarily because this could over-capture "facilities" engaged exclusively in design or other forms of "development" of consumer items (e.g., smartphone ICs) that will be "produced" outside of China or at approved "facilities" in China and therefore do not necessarily warrant control. BIS welcomes comments on the implications of these changes relative to the objectives and considerations stated throughout this IFR."* (emphasis added).

We seek confirmation from BIS that if a company plans to export semiconductor technology items to a fabless design company in China that is engaged exclusively in development activities (e.g., design of semiconductors), and not production of physical chips, the aforementioned "facility" carve-out applies and the end use restrictions in Sections 744.23(a)(2)(i)-(ii) and 744.6(c)(2)(i)-(ii) do not apply to the transaction.

The specific fact pattern that falls within the commentary above is as follows:

- Company A plans to export, reexport, or transfer (in-country) semiconductor technology items ("Development Technology A") to a fabless design company in China that is engaged exclusively in development activities (e.g., design of semiconductors) and does not have any production capabilities whatsoever.

- The fabless design company in China uses Development Technology A along with other technology and software to develop a new and distinct production-ready item ("Production Item B"). That new Production Item B is then sent to a facility to produce physical integrated circuits ("ICs"). Development Technology A is never sent to a production facility, rather only Production Item B is sent to the production facility to manufacture physical ICs.

- Again, Company A's exports of Development Technology A to the fabless design company are not delivered, as exported, to a facility where production

occurs. Development Technology A is only exported to the fabless design company engaged exclusively in development activities.

We seek confirmation from BIS that Production Item B, if subject to the EAR, would be subject to Section 744.23(a)(2)(i)-(ii), and, if not subject to the EAR, would be subject to Section 744.6(c)(2)(i)-(ii).

Additionally, we seek confirmation from BIS that the export of Development Technology A *would not* be subject to Sections 744.23(a)(2)(i)-(ii) and 744.6(c)(2)(i)-(ii) due to BIS's commentary that a "facility" where only "development" activities occur would not fall within the scope of controls.

As BIS commentary notes, capturing design-only companies will result in over-capture of general purpose, consumer device ICs such as those that are used in the production of smartphones, tablets, consumer IoT devices, and related goods. This would significantly impact trade and commerce in consumer goods while having little to no impact on U.S. national security interests and threats given the general purpose and non-unique nature of such technology. We seek feedback from BIS on this interpretation.

viii. Applicability of Sections 744.23 and 744.6 to U.S. Persons

SIA asks that BIS also confirm the applicability of the exclusion set forth in Section 744.6(d)(4) of the EAR to a U.S. subsidiary company, employing U.S. persons acting on behalf of the parent company headquartered in a Supplement 3 Country ("Parent Company A").

Parent Company A has a U.S. subsidiary, and some of Parent Company A's executive and senior management employees are U.S. persons employed by the U.S. subsidiary for U.S. tax purposes ("management employees"). The principal sales and transactional activities are conducted with Parent Company A, not the U.S. subsidiary. For purposes of this factual scenario, the management employees are acting on behalf of Parent Company A, and not on behalf of the U.S. subsidiary. The U.S. subsidiary was only established for employment and tax purposes, and in all instances, the management employees are acting on behalf of Parent Company A. Section 744.6(d)(4) provides the following exclusion to the restrictions in paragraphs (c)(2)(i) through (iii) of Section 744.6:

- *Paragraphs (c)(2)(i) through (iii) do not apply to a natural "U.S. person," as defined in paragraphs (a)(1) and (3) of the definition in § 772.1 of the EAR, employed or working on behalf of a company headquartered in the United States or a destination specified in Country Group A:5 or A:6 and not majority-owned by an entity that is headquartered in either Macau or a destination specified in Country Group D:5.*

BIS made it clear that the U.S. person activities would fall within the exclusion set forth above. Given the U.S. persons employed by the U.S. subsidiary are acting on behalf of Parent Company A, we seek confirmation from BIS that the U.S. subsidiary, which technically employs the U.S. persons, similarly falls within the exclusion.

ix. Apparent Error in the FAQ for License Exception ENC

We appreciate BIS's recent issuance of FAQs[15] related to the AC/S IFR. However, there appears to be an error in the answer provided for III.Q12, regarding License Exception ENC. Specifically, III.Q12 of the FAQs provides the following:

> *If I have a 5A002.z or 5A992.z item that is authorized under License Exception NAC, do I also need to comply with the requirements for license exception ENC?*

BIS responded in III.A12:

> Yes. Items classified under the .z paragraphs may sometimes have to meet the requirements of more than one provision of the EAR to be authorized for export. For items in Category 5 Part 2, they must meet both the requirements of license exception NAC and of license exception ENC. **Thus, some items could require a license exception ENC classification request in addition to a NAC notification to be authorized for export without a license**. (emphasis added)

However, the description of Export Control Classification Number 5A002 on the Commerce Control List (CCL) provides that ENC is not available for 5A002 items meeting the parameters of 3A090 (i.e., 5A002.z items).

That said, in relevant part, License Exception ENC at Section 740.17(b)(3)(iv) explicitly references certain 5A002.z items as authorized:

> (iv) "Cryptographic activation" commodities, components, and software. Commodities, components, and software classified under ECCNs **5A002**.b**, z.2**, or 5D002.b or z.5, where the product or cryptographic functionality is not otherwise described in paragraph (b)(2) or (b)(3)(i) of this section. (emphasis added)

Given the inclusion of .z items in Section 740.17(b), our expectation is that BIS intended for paragraph .z items to be eligible for License Exception ENC as long as the destination is <u>not</u> to a destination subject to Regional Stability (RS) control, which could be confirmed in a subsequent FAQ or corrected rule.

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[15] "*FAQs for SME IFR and AC/S IFR,"* U.S. DEPARTMENT OF COMMERCE, BUREAU OF INDUSTRY AND SECURITY, Dec. 29, 2023, https://www.bis.doc.gov/index.php/documents/policy-guidance/3434-2023-frequently-asked-questions-003-clean-for-posting/file.

To the extent BIS intends for paragraph .z items to be eligible for ENC, we recommend the following **clarifications** in the License Eligibility list for 5A002 in the CCL:

> *LVS*: Yes, $500 for "components," except for 5A002.z **to destinations subject to the RS reason for control**; N/A for systems and equipment.
> *GBS*: N/A.
>
> *ENC*: Yes, for certain EI controlled commodities, see §740.17 of the EAR for eligibility, except for 5A002.z **items to destinations subject to the RS reason for control**.
>
> *NAC*: Yes, for 5A002.z **items that are not designed or marketed for datacenters with a total processing performance of 4800 or more to destinations subject to the RS reason for control**; N/A for all other 5A002 commodities.

x. Unintended Capture of Items Containing Controlled GPUs

Semiconductor-manufacturing equipment (and other items controlled under the SME IFR) that contain controlled GPUs (or other controlled commodities containing such GPUs) should not be controlled under this rule. They should be controlled, if at all, under ECCNs 3A090, 4A090, or other ECCNs containing ".z" entries in the AC/S IFR. This exclusion also should apply to the aftermarket service and support of equipment under circumstances where a company must ship replacement computers or GPUs to repair already installed SME. For example, Section 742.6(a)(6)(iii) should be amended to provide that the license requirements do not apply to exports, reexports, or transfers for end uses in inspection, metrology, or data-review equipment for the production of semiconductors or other electronic devices.

* * *

Thank you for the opportunity to comment on the Interim Final Rule. If you have any additional questions or would like to discuss these comments further, please contact SIA via mthornton@semiconductors.org.

Uploaded to www.regulations.gov. ID – BIS 2022-0025

Courtesy copy sent to: Eileen.Albanese@bis.doc.gov.