February 7, 2011

Mr. Timothy Mooney
Office of Exporter Services, Regulatory Policy Division
Bureau of Industry and Security
U.S. Department of Commerce
1401 Constitution Avenue, N.W., Room 2705
Washington, DC 20230
ATTN: Notice of Inquiry – CCL

PM/DDTC, SA–1, 12th Floor,
Directorate of Defense Trade Controls,
Office of Defense Trade Controls Policy
ATTN: USML – Positive List
Bureau of Political Military Affairs
U.S. Department of State
Washington, DC 20522–0112

Re: Request for Public Comment on (i) Commerce Control List: Revising Descriptions of Items and Foreign Availability (75 Fed. Reg. 76,664) and (ii) Revisions to the United States Munitions List (75 Fed. Reg. 76,935)

Ladies and Gentlemen:

The Semiconductor Industry Association ("SIA") is the premier trade association representing the U.S. semiconductor industry. Founded in 1977 by five microelectronics pioneers, SIA unites over 60 companies that account for nearly 90 percent of the semiconductor production of this country.

SIA is pleased to comment on the proposed rulemakings of the U.S. Department of Commerce and U.S. Department of State on the Commerce Control List ("CCL") and the U.S. Munitions List ("USML") respectively. Because the Requests for Public Comment are closely related, SIA is responding to both Departments in a single submission.

SIA maintains that the reform initiative launched by the President and conducted under the auspices of the National Security Council ("NSC") is important and timely and urges the Administration to move expeditiously to complete it. As the President himself said in his recent State of the Union Address, "We need to export more of our goods. Because the more products we make and sell to other countries, the more jobs we support right here in America." The export review and approval process has become so duplicative and sclerotic that the U.S.'s high technology manufacturers have become seriously disadvantaged in the international marketplace. Technology innovation and competition in the semiconductor industry is global and relentless. A delay in bringing a

product to market can mean lost sales and result in a company falling behind foreign competitors who do not face the same export-related administrative delays. The U.S. export control system often handicaps U.S. companies while providing little or no appreciable benefit to national security.

As a representative of the semiconductor industry as a whole, SIA will address the export control treatment of semiconductors or integrated circuits generally, leaving the treatment of particular devices along with accompanying foreign availability to individual companies.[1] Because integrated circuits and semiconductors present a special case with respect to an export control list, SIA will not directly comment on the criteria the U.S. Government has established to distinguish the types of end items that should be controlled at different levels for different types of destinations, end-uses and end-users.

Instead, SIA's comments will focus on the appropriate treatment of components and bringing a common structure to the CCL and the USML. The adoption of common structural principles for the treatment of semiconductor components will be a step toward clear and positive listing of integrated circuits based on objective criteria and facilitate the consolidation of the USML and CCL into a single, positive control list.

Principles Applicable to Export Controls

Despite the proposed rulemakings' attempt to confine the scope of the comments to control lists, SIA believes it is useful to begin a consideration of control lists by reiterating the principles that should inform any comprehensive reexamination of export controls:

- Concentrate on those items that have strategic significance to U.S. security interests. A vast array of items can make some limited contribution to military utility or create some degree of national security risk. For reasons of effectiveness, economic and technological cost and sheer practicality, export controls should not attempt to restrain broadly such relatively benign items. Instead, an effective export control system should address only those end items that have the potential to provide significant military advantage or can be a strategic differentiator.

- Do not attempt to restrict those items that by volume or distribution are not susceptible to control. Such efforts are futile and counterproductive. Consistent with this principle, export control reform should not result in more stringent restraints on items than those in place today.

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[1] SIA's comments are directed to national security controls, including considerations relating to anti-terrorism, weapons of mass destruction, missile technology, regional stability, firearms and crime control. Export controls for foreign policy or short supply will not be addressed as they pertain to special and variable circumstances that do not necessarily depend upon the content of the CCL and the USML.

- For all but the most dangerous munitions, do not impose export controls in the face of foreign availability or capability.

- Establish control lists that set forth precise, objective and positive criteria with respect to items subject to control. Amending the CCL and the USML to set forth such criteria is a primary objective of the current rulemaking; SIA strongly supports this effort.

- Simplify the licensing process (e.g., license applications, commodity justifications, classification request, advisory opinions, etc.) to maintain efficiency, transparency and predictability.

- Maintain a balance between national security interests on one hand and foreign trade and the U.S. economy on the other so as not to undermine unnecessarily the competitiveness of U.S. industry and its ability to provide the global technology leadership upon which U.S. defense forces depend.

- Seek to apply export controls on a multilateral and uniform basis.

The above principles are universal and should apply to all aspects of export controls, including revising the lists of controlled items.

In addressing export controls applicable to semiconductors for integrated circuits, it should be kept in mind that the underlying technology and the most advanced applications are now driven mainly by consumer products. While utilizing semiconductor technology, the defense sector accounts for only a small fraction of U.S. semiconductor output and military items rarely utilize the most advanced semiconductor technology. By being able to maintain a global leadership position, the U.S. semiconductor industry helps to assure that the United States and its allies will not fall behind other nations in information technology that is relevant to national security.

Principles Applicable to the Treatment of Integrated Circuits on a Control List

In addition to principles of general applicability, the listing of integrated circuits for purposes of export control should be derived from the special features or characteristics of integrated circuits. On this basis, two principles should apply to the classification of integrated circuits:

1. Component Treatment: An integrated circuit should be classified in a subsidiary category to the end item in which it is incorporated; it should not be listed in its own right but only as a component of an end item.

2. Control Criteria: An integrated circuit component should have to meet two criteria to qualify for control pursuant to a control list:

(i) it is an application specific integrated circuit ("ASIC") and is not a general purpose or general commercially applied component; and

(ii) it has identifiable technical parameters that are peculiarly responsible for the features that produce the military advantage or national security sensitivity in the end item in which the integrated circuit is incorporated.

Component Treatment

An integrated circuit is the most fundamental of electronic components. It is the smallest, irreducible building block for electronic systems. Although highly complex to produce, the essential operation of an integrated circuit is relatively simple – the switching of an electric current. Integrated circuits require an electrical current and a connection to other devices or components. In general, integrated circuits act upon some form of input (e.g., digital or analog signals or software instructions) and send output to other devices (e.g., a display, amplifier or other electronic component). This fundamental functionality of an integrated circuit is devoid of a military or munitions character.

The small size of an integrated circuit means that it is not generally susceptible to modification. Because the design and circuitry of an integrated circuit is burned into a material, typically silicon, and is tightly packaged, it is difficult to divert functions of an integrated circuit to unintended uses.

Integrated circuits come in a large number of forms that facilitate or contribute to a growing number of activities or applications, e.g., monitoring, communicating, storing, controlling, modifying, protecting, etc. The semiconductor content of electronic systems has also steadily increased over the last decades. As a result, each form or type of an integrated circuit covers a broad array of devices.

Lastly, integrated circuits are necessarily components. Integrated circuits have no utility or impact standing alone. In other words, they can serve only as components to other items. Their functionality and impact depend entirely upon the item to which they are connected or incorporated.

In these circumstances, where integrated circuits are small, dedicated ingredients that can have wide-ranging applications, logic and practicality call for focusing controls on the end item incorporating integrated circuits and not on the integrated circuits themselves. The derivative nature of integrated circuits means that they should not be set forth on a control list as independent defense articles or end items, but instead should be identified only in connection with the end items, systems, accessories or equipment in which they are incorporated.

Control Criteria

After identifying components with their end items, clear and objective criteria are needed to distinguish those components that warrant control, and hence should be listed, from those that do not warrant control. Once again, the connection between the component and the end item is crucial. Both of SIA's proposed control criteria sharpen the relationship between an integrated circuit component and the basis of control for the related end item.

First, the integrated circuit should be specific to the end item (2.(i) above). Like the end item which itself should be distinguishable from other end items, the integrated circuit component should be distinguishable from components that also serve other end items. In the semiconductor industry, this distinction is well established and understood. It is defined by ASICs or custom integrated circuits on the one hand, and "general purpose" or "general commercially applied" integrated circuits on the other.

An ASIC or custom integrated circuit serves a specific application, and, hence, has a compelling connection to the end item. The characteristics of an ASIC assure that there will be a distinct relationship between the integrated circuit component and the end item. In this regard, the longstanding definition of the JEDEC Solid State Technology Association for an ASIC is appropriate and should be used in connection with export control lists: "An integrated circuit developed and produced for a specific application or function and for a single customer." This definition captures a custom integrated circuit developed or produced to conform to a single customer's unique requirements. By utilizing existing industry terminology, exporters will have a clear basis upon which to classify an integrated circuit component.

In contrast, a general purpose integrated circuit is capable of being incorporated or utilized in more than one application. Similarly, a general commercially applied integrated circuit is, in fact, utilized in more than one application. "General purpose" is a standard term used in the semiconductor industry. "General commercially applied" is also a well understood term by exporters as a result of its usage by the Wassenaar Arrangement. If an integrated circuit is general in nature, there should be no justification to restrict its export.

The second control criterion (2.(ii) above) for the determination of the control status of an integrated circuit component should be the contribution that the ASIC makes to the function or features that cause the end item to be controlled. An integrated circuit component should be captured on a control list only if it is *peculiarly responsible for* enabling a military advantage or national security sensitivity of an end item as described in and through the objective criteria of the control list.

With respect to a component, "peculiarly responsible for" means a direct and proximate causal relationship that is a central, special or exclusive cause of a controlled feature or function (i.e., the objective technical criteria) of the end item in which the component is incorporated. Peculiarly responsible for is more than a necessary or

contributory cause. Instead, peculiarly responsible for is so closely and particularly connected to the controlled feature of the end item that a control status is justified for the component.

For example, suppose the controlled feature of an automobile is the ability to attain a speed of 300 mph. The radio is a component of the automobile but makes no contribution whatsoever to the speed of the automobile. The radio should not qualify as a controlled component. The tires are components that are essential to the automobile's movement and they do contribute to the achievement of a speed of 300 mph. But the tires do not provide the core capability or distinctly enabling contribution that accounts for the automobile reaching the 300 mph level. Even though they are "capable of" contributing to the automobile travelling at 300 mph, the tires should not qualify as a controlled component. In contrast, the engine, creates the power, particularly and directly, to enable the automobile to travel at a speed of 300 mph. The engine, therefore, is the component which provides the special, control capability that is peculiarly responsible for achieving the controlled speed of 300 mph. The engine should qualify as a controlled component.

By imposing a strict criterion related to the controlled technical parameters of the end item, ASICs that provide benign functions that are separate from or contribute only indirectly to the national security features of an end item, such as routine communications or memory capabilities, will not be captured as controlled components. See Exhibit 1 for examples of control determinations for integrated circuits on the CCL and the USML.

Application of the second control criterion will also assure that the control of an ASIC component is based on the function or the utility of the integrated circuit as it relates to the controlled features of an end item, not the form or fit of the integrated circuit. While end items have many specific requirements for components, including size, weight, pin-count, buses and connectors, these requirements are usually related to form and fit, and do not capture the actual function of the component.

If an integrated circuit component cannot meet these two control criteria, that is, it is a general purpose device or its technical parameters are not peculiarly responsible for the features or functionality that is the basis of control for the end item, the integrated circuit should not be captured by a control list.

SIA's recommended changes to the treatment of components on the control lists are consistent with the principles of the overall export reform effort and the Administration's interest in making the two control lists more positive. By linking an integrated circuit component to the end item in which it is incorporated, and in particular to the objective criteria of the end item that has led to the end item's inclusion on a control list, an exporter who understands the technical parameters, characteristics and capabilities of an ASIC component ordinarily will be able to determine its export control classification and jurisdictional status without having to consult the U.S. Government for an interpretation.

Recommended Structure for Revised U.S. Munitions List

With respect to integrated circuits, SIA generally supports the existing structure of the USML, that is, a structure made up of categories of end items (defense articles) each of which has a subcategory for components thereof. With a few notable exceptions, components are not classified as defense articles.

The two new criteria SIA proposes for integrated circuits could be readily incorporated into the USML. Application of the criteria would not require extensive effort to identify those integrated circuits for defense articles that qualify as components on the USML. Indeed, exporters would be able to measure integrated circuits under well established industry standards and in a manner that captures the critical contributions that a component makes to a defense article.

In keeping with this structure, the current qualification for components of most defense articles – i.e., "specifically designed or modified" for a particular defense article – should be deleted.[2] For integrated circuit components, the qualification should be replaced by the two criteria proposed by SIA.

a. Deletion of certain radiation hardened integrated circuits

The structure of the USML is generally consistent in listing individual end items and a related subcategory of certain components thereof. The single and major exception where integrated circuits are listed as defense articles or end items is with respect to certain integrated circuits that meet specified radiation hardness criteria. These integrated circuits are listed independently as defense articles in Category XV(d) of the USML. This listing should be eliminated since integrated circuits should qualify for listing only as components to a particular end item.[3]

b. State Department Guidelines for list review

Several of the guidelines contained in the State Department Notice of Proposed Rulemaking are useful in moving towards an improved USML. Describe listed items in a "positive way" with "objective criteria or thresholds" is a constructive guideline that comports with the principles that SIA is advocating.

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[2] The U.S. semiconductor industry favors clear and defensible criteria in classifying items on a control list. At the same time, it should be emphasized that SIA member companies have had little difficulty applying the terms "specifically designed" and "specially designed" with respect to controls on integrated circuit components. Any difficulties arising from the use of these terms have been due to flagrant distortions of the meanings of these terms by others. Thus, specially designed has been construed to mean merely "designed for," or worse, "capable of" (see US v. Lachman, 387 F.3d 42 (1st Cir. 2004), p. 52). These interpretations have stripped the terms of any useful or recognizable meaning.

[3] It should be pointed out that the parameters for radiation-hardened microelectronic circuits set forth in USML Category XV(d) will need to be revised in the very near future, as they have been from time-to-time in the past, to prevent general purpose, civilian devices from being captured under munitions controls.

SIA must, however, take issue with several particular aspects of the guidelines. The call to avoid generic labels such as "components" is ill advised with respect to integrated circuits. It ignores reality and dismisses the most direct way to segregate those integrated circuits that may merit control from those that do not. Integrated circuits are, in fact, subservient and secondary to the defense articles in which they are incorporated. An acknowledgement of this threshold and derivative status is essential to a proper listing of integrated circuits.

SIA fully supports an approach that "de-emphasizes the significance of 'form' or 'fit' in determining whether an item is USML-controlled and focuses more on its functions, capability, performance, or characteristics." Form and fit do not yield military advantage or performance or capability of national security sensitivity. But neither do the performance or capability of an integrated circuit in the abstract, that is, apart from performance or capability in an end item to which national security sensitivity attaches.

The example set forth in the State Department notice of an integrated circuit that is controlled on the CCL because it falls within the technical description of ECCN 3A001 is insufficient. To be sure, control should not be determined simply on the basis of design or modification. But if it cannot, in fact, function in an end item that is controlled for military end use or national security sensitivity, then an integrated circuit should not be controlled regardless of its technical capabilities. The two should go together: the capabilities of the integrated circuit and the capabilities of the controlled end item.

Under the proposed SIA principles, the component is tied to the end item and control is based on the technical dimensions of the integrated circuit that account for the controlled features of the end item.

Finally, attempting to control integrated circuits on the basis of "types" of devices presents a highly tenuous connection to national security. Memory devices, compound semiconductors, field programmable devices, microprocessors, DSPs, etc., do not yield clear technical parameters that are obviously connected or sensitive to national security. Far simpler and more straight-forward is to focus on the end item and the application specific features that generate functionality that is of national security sensitivity.

c. <u>Appropriate tier for integrated circuit components</u>

The State and Commerce Departments' notice of proposed rulemaking sets forth criteria for placing an item into one of three tiers based, in part, on whether an item can provide a "critical," "substantial" or "significant" military or intelligence advantage or contribute to the indigenous development, production, use or enhancement of a Tier 1, Tier 2 or Tier 3 item. The terms "critical," "substantial" and "significant" while differing in degrees of severity remain highly subjective, undermining the attempt to create a system based on objective criteria. Attempting to assess an item on the basis of whether it has an impact on "a program or policy directly related to the national security" or on "scientific or technological developments relating to national security" is too vague to be meaningful.

Instead, SIA would urge the criteria for the three tier approach to be as follows:

- Tier 1 should be reserved for the few items of vital national importance such as weapons of mass destruction;
- Tier 2 should be reserved for defense articles and munitions items set forth on the USML; and
- Tier 3 should be reserved for dual-use items set forth on the CCL.

Both the State and Commerce Department notices also seek comment on what tier of the respective control lists an item should be classified.

While integrated circuits can make an important contribution to the functionality of an end item, they make a far less significant contribution than the end item itself and rarely merit the level of control of an end item. As a general matter, integrated circuits meeting the SIA criteria should qualify at least one tier below the tier in which the end item is classified. Thus, SIA recommends that integrated circuits, as components, should be placed no higher than Tier 3 in both a revised USML and CCL.

d. <u>"Bright line" between control lists</u>

The Administration seeks to create a "bright line" between the USML and the CCL in order to clarify jurisdictional determinations and reduce uncertainty. Over the decades, SIA has consistently endorsed the traditional standard for placing items on the munitions list: The item is "inherently military in character." When properly applied, this standard can appropriately define an item for the USML, a list that was to cover "arms, ammunitions or implements of war." The USML was intended for articles of war and subsequently modified to be "defense articles." Using "inherent military character" as the standard, it is quite feasible to measure various dimensions of an item to determine if it should be placed on the USML.[4]

Inevitably, there are gray areas and ambiguities in applying an inherent military character standard. But no reasonable application of this standard could elevate a mere integrated circuit to the status of an item that is inherently military in character. For integrated circuits there is a bright line between the USML and the CCL and that bright line would preclude any integrated circuits from being listed as defense articles on the USML. The desirability for such a bright line with respect to integrated circuits is all the

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[4] Problems with jurisdictional determinations for the USML were greatly compounded when in 1993 the International Traffic and Arms Regulations were amended to eliminate the inherent military character standard and replace it with a policy standard that, among other things, included that significant military applicability made control on the munitions list "necessary." By introducing discretionary policy elements into the qualifying standard, any objective definitional limits to the jurisdictional determination were eliminated.

more reason that any integrated circuit should be relegated at most to a subcategory of components with respect to the USML.

Recommended Structure for Revised Commerce Control List

The CCL should likewise be revised to treat components as a related category under the listing of end items. This will require more extensive amendment than that required for the USML. In particular, CCL Category 3 should be extensively amended.

Currently, ECCN 3A001.a broadly controls "General purpose integrated circuits" without regard to: (i) the particular end item to which the integrated circuits is associated; (ii) the particular application to which the integrated circuits is tied; or (iii) whether any specified technical parameters bear a compelling relation to controlled features or functionality of end item.

CCL Category 3 should be revised to set forth only particular electronics end items that are controlled, much like USML Category XI. Identification of controlled end items should be based on inherent military character and functionality relating to national security sensitivity. In particular, ECCN 3A001.a should eliminate individual, general purpose, integrated circuits set forth therein and broadly distributed in "subcategory A." Instead, identification and control of such integrated circuits should be based on their inclusion in a particular end item and their qualifying under the two criteria for control of integrated circuits proposed by SIA.

This change is wholly consistent with the principles of the export reform effort and the Administration's interest in making the control lists more focused and positive. By linking an integrated circuit component to the end item in which it is incorporated, and in particular to the objective criteria of the end item that has led to the end item's inclusion on the CCL, the Commerce Department will gain a much stronger nexus between the control of integrated circuits and national security sensitivity. At the same time, an exporter will be better able to determine the export control classification of an integrated circuit.

Software

Software for the development or production of an integrated circuit component should be controlled only if it is related to objective criteria for the end item in which an integrated circuit component is incorporated. That is, the software must be (i) peculiar to an ASIC component for the end item and not be a general commercially applied component and (ii) peculiarly responsible for enabling the feature of the ASIC that is directly related to an end item's control criteria.

Technology and Technical Data

Like software, technology and technical data for the development and production of an integrated circuit component should be controlled only if it is (i) peculiar to an

ASIC component for the end item and is not a general commercially applied component and (ii) peculiarly responsible for enabling the feature of the ASIC that is directly related to an end item's control criteria.

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Foreign Availability of Semiconductor Manufacturing Equipment and Integrated Circuit Components

In keeping with the basic principles that should inform the reexamination of export controls, the U.S. Government should not (i) attempt to restrict the export or reexport of those items that by volume, distribution or foreign manufacturing capability are not susceptible to control; and (ii) impose export controls in the face of foreign availability.

In its request for comments, BIS specifically seeks information regarding the availability of items listed on the CCL from outside of the United States and its close allies. It is clear that the capability to design and manufacture the semiconductor components described under CCL Category 3 (and Category 5) exists in many countries outside of the United States and its close allies. Indeed, every year, an increasing number of foreign companies in countries such as Taiwan and the People's Republic of China ("PRC") are able to manufacture semiconductor products at advanced technology nodes. This reality provides a concrete and immediate basis upon which to extensively amend CCL Category 3 such that general purpose and general commercially applied integrated circuit components are classified as EAR99.

Semiconductor equipment and materials ("SEM") used to manufacture integrated circuit components are globally available, particularly from a number of companies in Europe and Asia. Indeed, due to the wide availability of SEM, foreign semiconductor foundries, including those in the PRC, can fabricate highly advanced integrated circuits without using any U.S.-origin manufacturing equipment or technology.[5] In fact, numerous countries are home to fabrication facilities ("fabs") and foundries capable of producing integrated circuits on 300 mm wafers, the most advanced wafer size currently used domestically. See Exhibits 2 and 3.

Moreover, many of these same foreign fabs and foundries can produce integrated circuit feature sizes at or below 65 nm.[6] See Exhibit 4. Feature size is an important

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[5] *EE Times* reported that the Beijing's Institute of Computing Technology has developed an indigenous eight-core "Godson" processor which runs at up to a gigahertz and consumes 40W of power. The newest Godson processor was reportedly developed using 65 nm process technology from STMicroelectronics, an Italian-French company headquartered in Geneva, Switzerland. The 300 mm^2 Godson reportedly performs 128 gigaflops. Rick Merritt, "China's Godson MPU aims for 28-nm," *EE Times*, August 25, 2010.

[6] According to the US-Taiwan Business Council, Taiwan Semiconductor Manufacturing Co Ltd ("TSMC") will begin mass producing chips with its 28 nanometer (nm) process technology in the fourth quarter of this year and says it has a number of customers readying 71 chip designs for the technology. US-

factor in the production of integrated circuit components, since the smaller the feature size, the more transistors can be fit in the same amount of space. This typically results in integrated circuit components of smaller size, which cost less to manufacture in volume production and have better performance.

The semiconductor foundries found throughout the world are equipped to produce "on-demand" for third party chip designers. Rather than manufacturing and selling their own devices, foundries receive production orders from around the world and implement a manufacturing process optimized to fit a customer's needs. These foundries are highly flexible from a manufacturing and technology standpoint and able to accommodate the manufacture of products of many and varied applications.

Similarly, design capability and tools are dispersed widely throughout the world. Semiconductor design cell libraries are freely available both inside and outside the United States. Standard cell libraries are used by designers to create the digital-logic features of an integrated circuit component. In June 2009, *EE Times-China* conducted a survey of companies in the PRC involved in integrated circuit design. The survey concluded that 81 percent market their own brand of integrated circuits; 62 percent are primarily involved in ASIC designs; and 87 percent employ foundry services.[7] In short, advanced design capability is no longer restricted to the United States. In fact, the gap between the SEM technology found in the United States and that found around the world has been rapidly shrinking. See Exhibit 5. Many countries now have SEM technology the equal of that used by U.S. companies.

The widespread foreign availability of semiconductor design and fabrication capabilities means that semiconductor devices do not have the strategic significance they once had and are no longer worthy of existing levels of constraint. Most semiconductor devices are widely produced outside the United States and should not be placed on any control list.

Export Control Reform as it Relates to Multilateral Treaty Obligations.

SIA recognizes that reforming the export control system with respect to components may in some instances be in conflict with Wassenaar Arrangement controls or other multilateral obligations of the United States. SIA's position is that the NSC's export control reform effort should first seek to craft a viable export control system in keeping with U.S. national security needs. If export control reforms conflict with multi national obligations, the United States should then seek to adjust such obligations so as to

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Taiwan Business Council, *Semiconductor Report Third Quarter 2010*, pp. 10-11. TSMC has also reportedly announced that it will spend $803.76 million of next year's capex budget on research and development on 28 nm, 22 nm, and 14 nm technologies, while exploratory work on 10 nm and 7 nm technologies will begin in 2011. Id., p. 11.

[7] Survey available at: http://www.eet-china.com/STATIC/PDF/200909/2009_ICDH_Survey_ENG.pdf.

be able to implement a sound export control system rather than refrain from identifying needed changes because of prior commitments.

SIA appreciates the opportunity to comment on the proposed regulatory change and looks forward to continuing its cooperation with the U.S. Government on this subject. Please feel free to contact the undersigned or SIA's counsel, Clark McFadden of Dewey & LeBoeuf LLP, if you have questions regarding these comments.

Cynthia Johnson
Co-Chair, SIA Trade Compliance Committee

David Rose
Co-Chair, SIA Trade Compliance Committee

Exhibit 1.a - Example of Treatment of Semiconductor Components on Revised Control Lists

Three semiconductor components are incorporated in an sonar device which is classified as controlled equipment in USML Category XI.A.1.a.

Category XI – Military Electronics
A. Equipment, Assemblies, and Components Thereof
*** Technical parameter needed to determine which are controlled under ITAR.**

1. Military electronic systems as follows:
   a. (T2) Underwater sound systems used for detection, identification, or tracking with any of the following:
      i. Transmitting frequency thresholds below *xxx* KHZ and sound pressure levels above *xxx* dB*;
      ii. Ability to automatically track moving targets xxx*; or
      iii. Pulse formation other than continuous wave or frequency modulation xxx *.

Component 1 is a general purpose or general commercially applied microcontroller that is used in numerous end-items and applications.

While it is incorporated in the military sonar device, it does not qualify as a controlled component under the USML because it is not an application specific integrated circuit (ASIC), that is, it is not tied in a meaningful way to the application or function of the sonar device. It is also a general commercially applied component.

Component 2 is an ASIC that transmits the output of a sonar device to a display.

While Component 2 is an ASIC, it is not peculiarly responsible for enabling the objective criteria set forth under Category XI.A.1.a which provide military advantage to the sonar device and, therefore, does not qualify as a controlled component under the USML.

Component 3 is an ASIC that enables a sonar transducer to transmit at frequency thresholds below *xxx* KHZ and at sound pressure levels above *xxx* dB.

Component 3 is peculiarly responsible for enabling the objective criteria under Category XI.A.1.a.i that provide military advantage to the sonar device and, therefore, qualifies as a controlled component under the USML.

Exhibit 1.b - Example of Treatment of Semiconductor Components on Revised Control Lists

Three semiconductor components are incorporated in a sonar device which is classified as controlled equipment under ECCN 6A001.

CATEGORY 6 - SENSORS AND LASERS
6A001 Acoustic systems, equipment and components, as follows (see List of Items Controlled).
A. Equipment, Assemblies, and Components Thereof
a.1.e. Active individual sonars, specially designed or modified to detect, locate and automatically classify swimmers or divers, having all of the following:
a.1.e.1. Detection range exceeding 530 m;
a.1.e.2. Positioning accuracy of less than 15 m rms (root mean square) when measured at a range of 530 m; *and*
a.1.e.3. Transmitted pulse signal bandwidth exceeding 3 kHz;

Component 1 is a general purpose or general commercially applied microcontroller.

While it is incorporated in the sonar device, it does not qualify as a controlled component under the CCL because it is not an application specific integrated circuit (ASIC), that is, it is not tied in a meaningful way to the application or function of the sonar device. It is also a general commercially applied component.

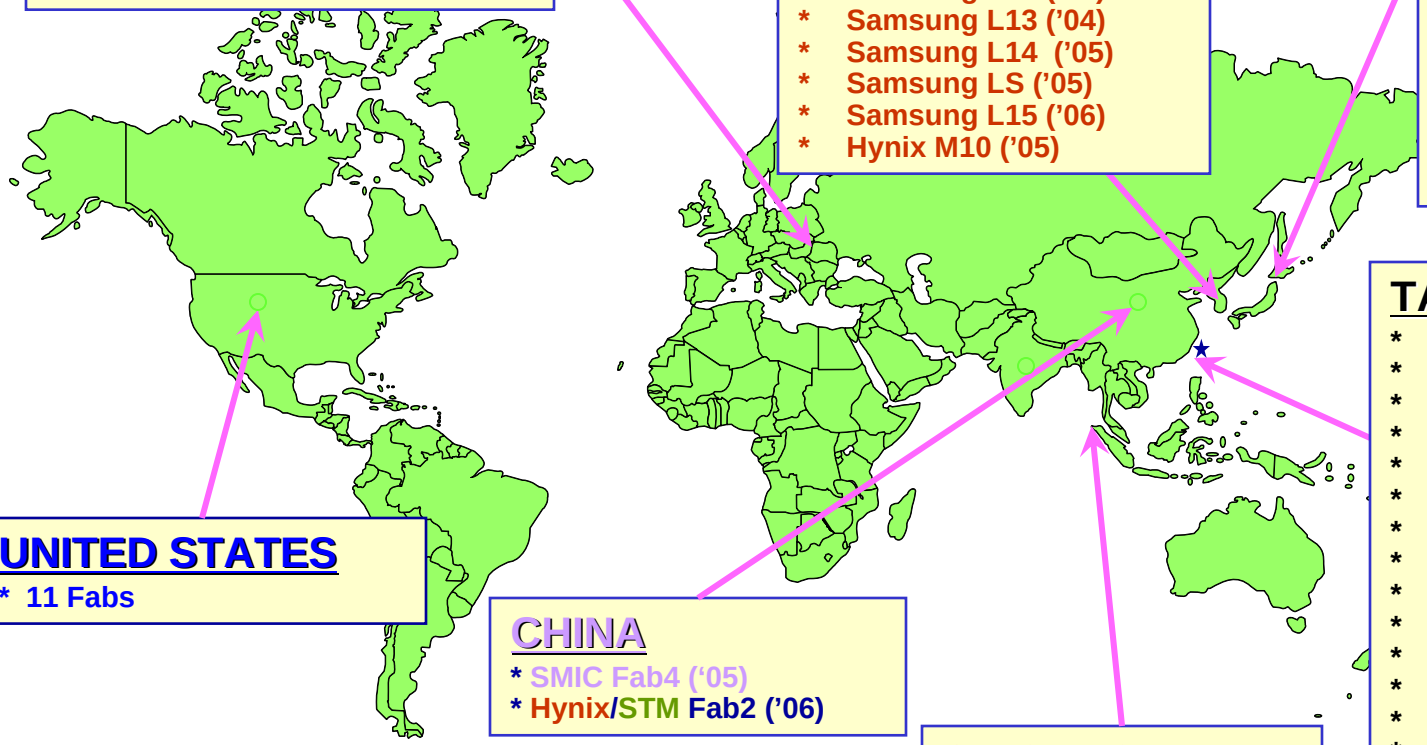
Component 2 is an ASIC that transmits the output of a sonar device to a display.

While Component 2 is an ASIC, it is not peculiarly responsible for enabling the objective criteria set forth under ECCN 6A001.a.1.e which provide national security sensitivity to the sonar device and, therefore, does not qualify as a controlled component under the CCL.

Component 3 is an ASIC that enables a sonar transducer to transmit a pulse signal bandwidth exceeding 3 kHz.

Component 3 is peculiarly responsible for enabling the objective criteria under ECCN 6A001.a.1.e.3 that provide national security sensitivity to the sonar device and, therefore, qualifies as a controlled component under the CCL.

Exhibit 2.a - Locations of 300 mm Wafer Fabs



EUROPE
* GlobalFoundries Fab1 ('06)
* Crolles2 ('03)
* Intel Fab24 ('04)
* Qimonda SC300 ('01)

KOREA
* Samsung L11 ('02)
* Samsung L12 ('03)
* Samsung L13 ('04)
* Samsung L14 ('05)
* Samsung LS ('05)
* Samsung L15 ('06)
* Hynix M10 ('05)

JAPAN
* Matsushita Uozu ('05)
* Renesas Fab2 ('01)
* Renesas Fab3 ('03)
* Sony Kyushu ('02)
* Sony Fab 2 ('04)
* Toshiba Oita ('04)
* Toshi/SanDisk Fab3 ('05)
* Toshi/SanDisk Fab4 ('07)
* Elpida E300 ('03)
* Elpida E200 ('07)
* NEC Yamagata ('04)
* Fujitsu Fab No.1 ('05)
* Fujitsu Fab No.2 ('07)
* Spansion SP1 ('07)

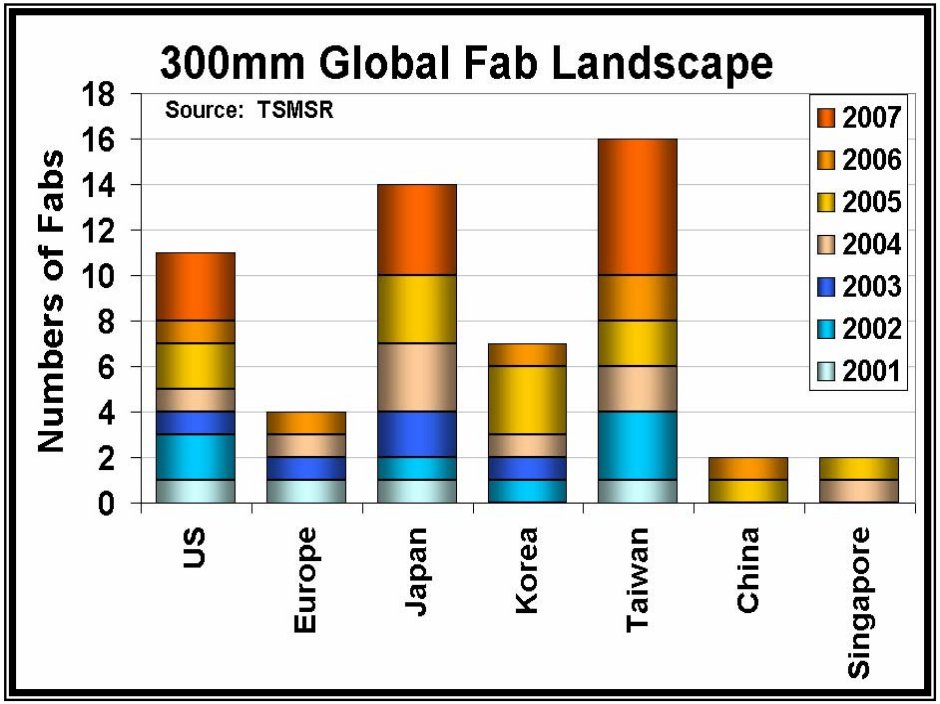
TAIWAN
* Inotera Fab1 ('04)
* Inotera Fab2 ('07)
* Nanya Fab3 ('07)
* Powerchip Fab 12A ('02)
* Powerchip Fab 12B ('05)
* Powerchip Fab 12M ('06)
* Rexchip R1 ('07)
* ProMOS Fab 1 ('07))
* ProMOS Fab 2 ('02)
* ProMOS Fab 3 ('05)
* ProMOS Fab 4 ('07)
* TSMC Fab 12 ('02)
* TSMC Fab 14 ('04)
* UMC Fab 12A ('01)
* Winbond FabA ('06)
* Winbond FabB ('07)

UNITED STATES
* 11 Fabs

CHINA
* SMIC Fab4 ('05)
* Hynix/STM Fab2 ('06)

SINGAPORE
* UMC 12i ('04)
* GlobalFoundries Fab7 ('05)

Exhibit 2.b - 300mm Fabs in Operation by Year



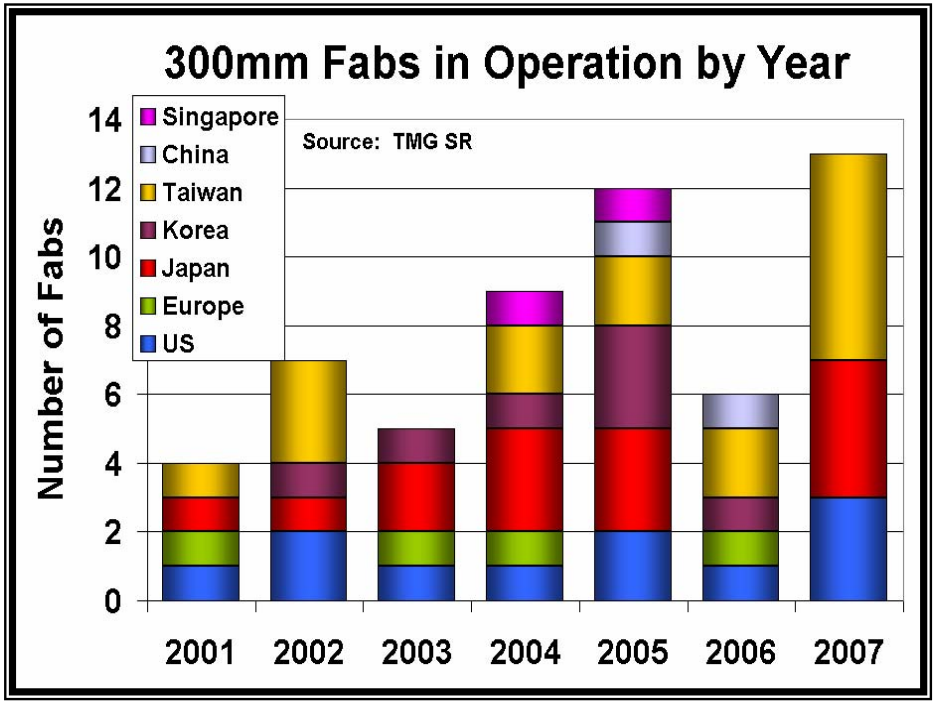
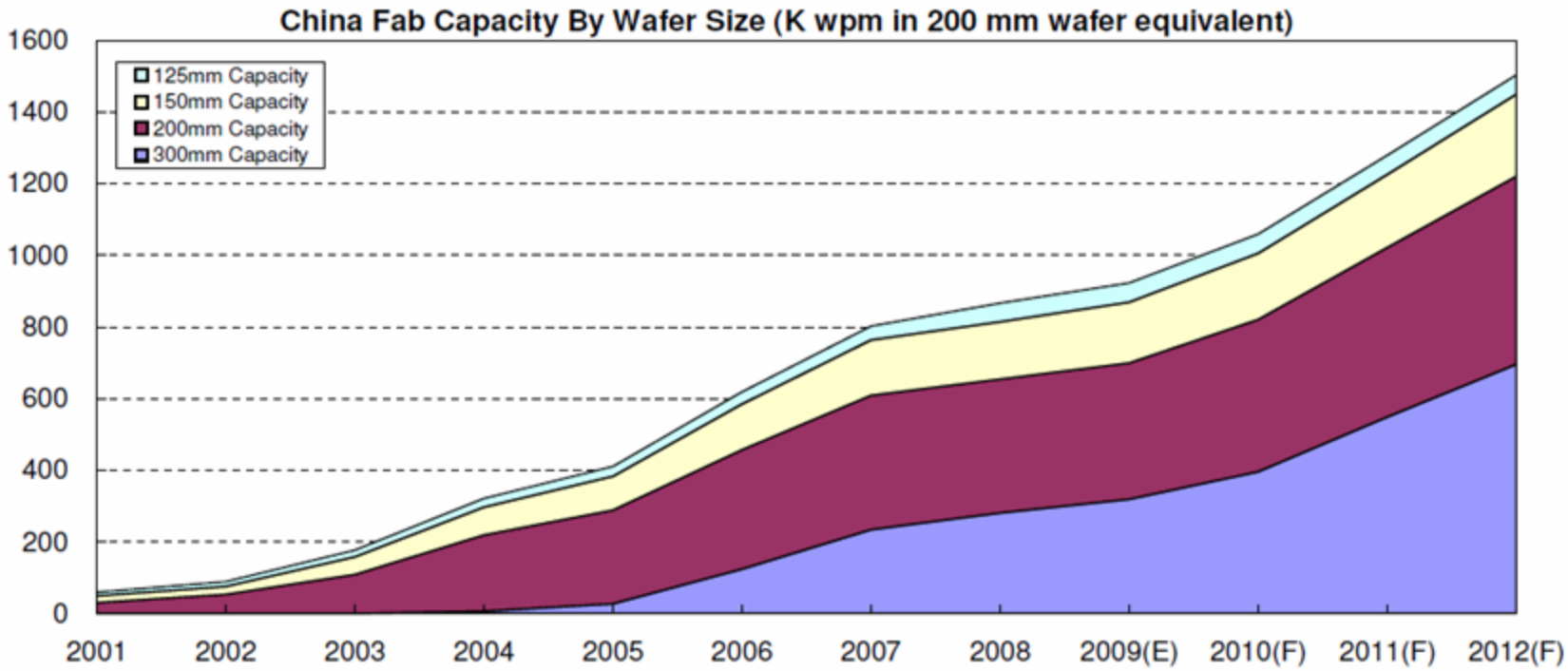


Exhibit 3 - Growth of PRC Fab Capacity



Source: SEMI World Fab Forecast November 2010

Exhibit 4.a - Process Technology Road Map Forecast for Select Foreign Semiconductor Manufacturers

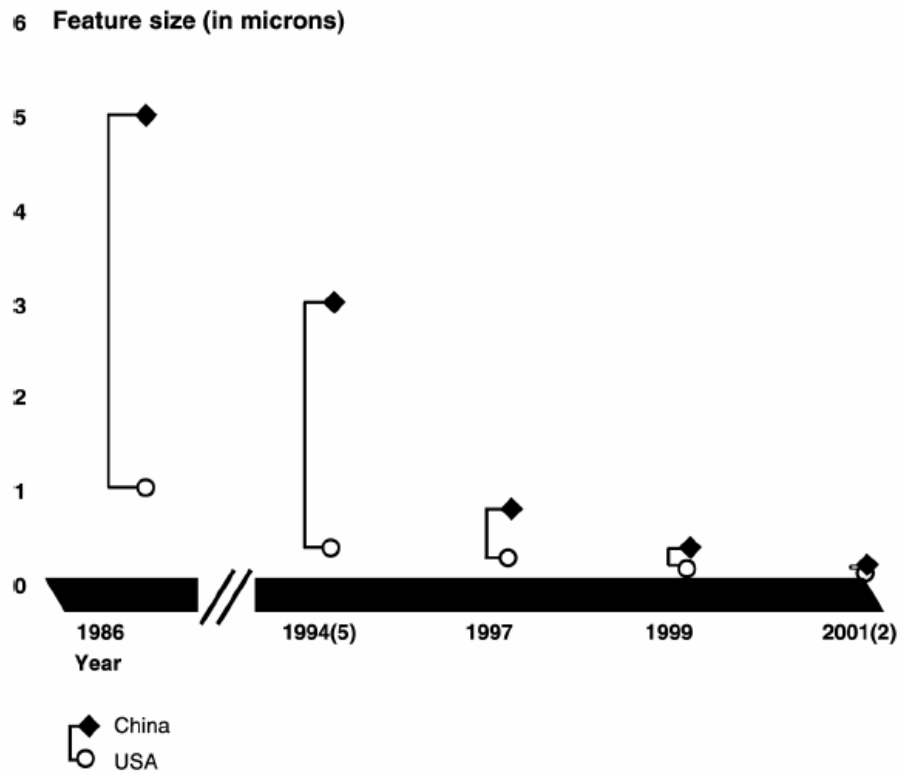
	Year	2010				2011				2012				2013		
	Q	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
TSMC[1] (Taiwan)		40 nm							28 nm							20 nm
Samsung (South Korea)		45 nm						32 nm								< 22 nm
SMIC (PRC)		65 nm								45/40 nm						32 nm

1. According to the US-Taiwan Business Council, Taiwan Semiconductor Manufacturing Co Ltd (TSMC) will begin mass producing chips with its 28 nanometer (nm) process technology in the fourth quarter of this year. TSMC has also reportedly announced that exploratory work on 10 nm and 7 nm technologies will begin in 2011. US-Taiwan Business Council, *Semiconductor Report Third Quarter 2010*, pp. 10-11.

Exhibit 4.b - Advanced Digital CMOS Foundries Can Be Found Worldwide

	130nm	90nm	65nm	45nm	28nm
Taiwan	✓	✓	✓	✓	✓
China	✓	✓	✓	✓	
Singapore	✓	✓	✓	✓	
Korea	✓	✓	✓	✓	✓
Germany			✓	✓	✓

Exhibit 5 - Semiconductor Manufacturing Technology Gap Between United States and People's Republic of China Has Been Rapidly Shrinking



Note: Complete data for the period between 1986 and 2002 were not available. The time scale was altered to show the years where data were available. Data for 2002 based on estimates. Data points for the years listed are as follows: China--5.00, 3.00, 0.80, 0.35, and 0.18 micron; United States--1.00, 0.35, 0.25, 0.18, and 0.13 micron.

Source: GAO analysis of data provided by semiconductor manufacturing facilities in China; the director of the Computer Aided Life Cycle Engineering Electronics Products and Systems Center, University of Maryland; Intel Corporation; and the International Technology Roadmap for Semiconductors.

Source: United States General Accounting Office, "Report to the Ranking Minority Member, Committee on Governmental Affairs, U.S. Senate: Export Controls Rapid Advances in China's Semiconductor Industry Underscore Need for Fundamental U.S. Policy Review," GAO-02-620, April 2002.