

**Computer Technology and Software Eligible for
Export or Reexport under License Exception TSR
(Technology and Software Under Restriction)**

(Notice of inquiry - [67 FR 39675](#))

TSR 1 - Sun Microsystems	July 10, 2002
TSR 2 - Industry Coalition on Technology Transfer (ICOTT)	July 10, 2002
TSR 3 - Computer Coalition for Responsible Exports	July 10, 2002
TSR 4 - American Electronics Association (AEA)	July 10, 2002

Dated: June 4, 2002.

Madeleine Clayton,
Departmental Paperwork Clearance Officer,
Office of the Chief Information Officer.
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DEPARTMENT OF COMMERCE

Bureau of Industry and Security

[Docket No. 020514120-2120-01]

RIN 0694-AC63

Computer Technology and Software Eligible for Export or Reexport Under License Exception TSR (Technology and Software Under Restriction)

AGENCY: Bureau of Industry and Security, Commerce.

ACTION: Notice of inquiry.

SUMMARY: The Bureau of Industry and Security (BIS) is reviewing the current limit for use of License Exception TSR for exports and reexports of technology and software on the Commerce Control List (CCL) of the Export Administration Regulations (EAR) under Export Classification Control Numbers (ECCNs) 4D001 and 4E001. These ECCNs control technology and software that can be used for the development, production, or use of computers. The goal of this notice of inquiry is to collect information from industry that will assist BIS in evaluating whether the current TSR eligibility level of 33,000 Millions of Theoretical Operations per Second (MTOPS) for exports and reexports to most countries should be adjusted, taking into consideration the control level for the export of computer equipment and the control policies of other member countries of the Wassenaar Arrangement.

DATES: Comments must be received by July 10, 2002.

ADDRESSES: Written comments (four copies) should be sent to Sharron Cook, Regulatory Policy Division, Office of Exporter Services, Bureau of Industry and Security, Department of Commerce, 14th and Pennsylvania Avenue, NW., PO Box 273, Room 2705, Washington, DC 20230; or one copy E-Mailed to: scCook@bis.doc.gov; or faxed to 202-482-3355.

FOR FURTHER INFORMATION CONTACT: Sharron Cook, Senior Export Policy Analyst, Office of Exporter Services, Regulatory Policy Division, Bureau of Industry and Security, Telephone: (202) 482-2440.

SUPPLEMENTARY INFORMATION:

Background

The Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Arrangement) is one of four multilateral export control regimes in which the United States participates. The Arrangement's purpose is to contribute to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies (i.e., having civil and military uses) to prevent destabilizing accumulations of those items by countries of concern. The Arrangement establishes lists of items to which member countries are to apply export controls. Member governments implement these controls to ensure that transfers of the controlled items do not contribute to the development or enhancement of military capabilities that undermine the goals of the Arrangement, and are not diverted to support such capabilities. In addition, the Arrangement imposes some reporting requirements on its member governments.

The U.S. Government controls all items for export that are controlled multilaterally by the Arrangement. In general, the U.S. Department of Commerce administers export controls for dual-use goods and technologies controlled in the Arrangement, and the U.S. Department of State administers export controls on conventional arms.

Through the Export Administration Regulations (EAR), the Commerce Department controls the export and reexport of technology and software for the development, production, or use of computers with a Composite Theoretical Performance (CTP) greater than 28,000 Millions of Theoretical Operations per Second (MTOPS) under Export Control Classification Numbers (ECCNs) 4E001 and 4D001 of the Commerce Control List (CCL). Such technology requires a license, for national security (NS) reasons, to all destinations except Canada. However, ECCNs 4E001 and 4D001 provide that License Exception TSR (section 740.6 of the EAR) is available for exports and reexports of such technology and software: (1) For computers of unlimited CTP to 22 countries (former member countries of the Coordinating Committee for Multilateral Export Controls (COCOM) or former cooperating countries of COCOM) when the transaction meets certain eligibility criteria; and (2) for computers with a CTP less than or equal to 33,000 MTOPS to countries listed in Country Group B (Supplement No. 1 to part 740).

Under the Wassenaar Arrangement, there are currently three levels of sensitivity for computers and computer technology. Equipment, technology and software are controlled for computers with a CTP of 28,000 MTOPS on the Basic List, 75,000 MTOPS on the Sensitive List, and 150,000 MTOPS on the Very Sensitive List.

Historically, the U.S. has required a license for any item on the Wassenaar Very Sensitive List, and has made such items generally ineligible for license exceptions. However, in March of this year, BIS implemented a Presidential decision to allow exports and reexports of computers with a CTP of up to 190,000 MTOPS under license exception CTP to Computer Tier 3 Countries (see section 740.7(d)(1) of the EAR for a list of these countries) to reflect rapid technological advances in computing capability. The President's report to Congress stated that this change was to "promote our national security, enhance the effectiveness of our export control system and ease unnecessary regulatory burdens on both government and industry." Industry through the Regulations and Procedures Technical Advisory Committee (RPTAC), has requested that BIS raise the CTP limit for license exception TSR eligibility of technology and software for the development, production, and use of these computers. One reason stated by industry is that companies need a limit for technology and software corresponding to the limit for equipment in order to provide foreign nationals working in their U.S. and foreign manufacturing plants access to this technology and software.

The goal of this notice is to collect information from industry that will assist BIS in evaluating the current control level on the export of computer technology and software.

To ensure maximum public participation in the review process, comments are solicited for the next 30 days on the effect of the current CTP limit of 33,000 MTOPS for license exception TSR eligibility of technology and software for the development, production, and use of computers. BIS is interested in comments relating to the following:

(1) What is the purpose of U.S. companies in exporting technology and software for the development, production, and use of computers with a CTP greater than 33,000 MTOPS? Are the exports for transfers to U.S. subsidiaries, branches, or joint ventures that manufacture products abroad; sales to foreign manufacturers; or largely for release to foreign nationals for work

TSR-1
HHA

From: Hans Luemers <Hans.Luemers@sun.com>
To: <scook@bis.doc.gov>
Date: 7/10/02 2:16PM
Subject: Docket No. 020514120-2120-01 / Comments concerning TSR

Sharron,

Attached are Sun Microsystem's comments in response to the above Notice of Inquiry.

Kind regards
Hans Luemers

Ph.: (408) 276-3896

cc: <hans.luemers@sun.com>

Sharron Cook,
Regulatory Policy Division
Office of Exporter Services,
Bureau of Industry and Security
Department of Commerce
14th and Pennsylvania Ave. NW,
PO Box 273, Room 2705,
Washington, DC 20230

RE: Docket No. 020514120-2120-01
Computer Technology and Software Eligible for Export or Reexport Under
License Exception TSR (Technology and Software Under Restriction), Notice of
Inquiry

Dear Ms. Cook:

Sun Microsystems welcomes the opportunity to provide comments in response to this Notice of Inquiry. As a general matter, Sun strongly feels that the provision referenced in this Notice, the eligibility requirements for computer technology and software exports/reexports under License Exception TSR, is badly outmoded and places unnecessary restrictions on the internal operations of U.S. Information Technology firms.

A fundamental review of this rule, as well as related restrictions on the transfer of technology within U.S. global enterprises, is badly needed.

Sun's response to the specific questions in the Notice of Inquiry are as follows:

1 .Purpose of System Technology Exports

In the contemporary technological and competitive environment, all corporate functions, including research and development, are increasingly globalized. This is the result of a number of factors including availability of high-bandwidth communications, an increase in quality of technical and management training overseas; and the shortage of skilled engineering and management personnel in the U.S.

As a result, critical elements of computer research and development can now be accomplished outside of the U.S. U.S. companies must exploit the advantages of performing some of these activities overseas in order to remain competitive.

As no regulatory distinction currently exists between such activities performed by the subsidiaries of U.S. companies and exports or reexports to unrelated parties, an important impact of performance-based restrictions on TSR occurs with the regard to the flow of critical technical data within the company.

All non-U.S. nationals in these facilities in TSR-eligible countries are potentially subject to existing performance-based limitations. In addition, nationals of India, Israel, Taiwan, South Korea and a number of other significant countries in Country Group B are subject to similar restrictions. The resulting impact could be quite broad.

2. Competitive Impact

The impacts of the TSR limitations are far-reaching and are by no means limited to either the countries that are targets of the limits, or to their nationals. Moreover, while difficult to quantify, the limits impose permanent changes in the flow of technology and software within Information Technology companies, and therefore create permanent cost liabilities and drags on global competitiveness.

Negative impacts include:

#Segregation

Since some computer systems either do or may in the future exceed 33,000 MTOPS, a range of research and development activities may involve their “development and production.”

As a result, employees of facilities in countries subject to the performance cap and their nationals, may have to be segregated from the normal flow of technological information that forms the heart of a competitive research and development operation. Even in those cases where an individual license is obtained, inevitable license conditions mean that tailored internal control procedures must be put in place for these facilities and individuals and enforced permanently.

Leading-edge research environments are designed to reduce impediments to the free flow of ideas and technical information rather than to restrict them. Externally imposed limits on the internal flow of information such as the TSR cap create a permanent impediment to the exchange of ideas, the solution of problems, and ultimately on the ability to compete.

▪Lack of Flexibility

The enforcement of tailored internal control systems for individuals and facilities assumes an ability to predict the need for certain individuals to have access to and to participate in work involving technology above assigned limits. In a research environment, this predictability simply does not exist.

Control elements (IVL's, access restrictions, etc.) must be put in place in anticipation of involvement above the limit, often resulting in needless license application and review. Alternatively, limits on particular individuals' ability to access critical information hampers the ability of management to exploit their

knowledge and experience in developing and often unforeseen circumstances. When such impediments involve key managers or researchers, they can have a substantial negative impact on particular projects.

▪ Access Controls

In order to ensure that nationals of affected countries, or individuals working in facilities in such countries, are not exposed to unauthorized technical data, procedures and technical tools may have to be implemented to restrict access. Such procedures and tools affect on line systems and other potential modes of communication.

While access restrictions on sensitive business data are routinely employed within companies, the MTOPS restriction as a government-devised metric has no bearing on how data is organized in a research or business environment. As a result, restrictions must be crafted especially for this situation (as well as other export related restrictions for a range of other nationalities and situations), and must be adjusted as the restrictions change.

As technical data is now typically accessible for most facilities within the global enterprise, these customized restrictions must often be managed on a company-wide basis. These restrictions can be so complex and/or costly, that as a practical matter they cannot be implemented, meaning that the individual or facility is simply denied access to needed technical information.

In general, limits on access to critical types of technical data has a cascading effect on the activities and hence competitiveness of the company. For example, the inability to utilize a key engineer, analyst or manager in some aspect of a project (particularly one in which he or she already has extensive experience) is likely to affect the time line for executing the project. That, in turn, could delay product introduction or have other adverse consequences.

Although companies make every effort to predict project requirements in advance and procure the necessary authorizations, the nature of the research environment dictates that a high degree of certainty cannot always be achieved. Adding to this problem is the fact that historically, license approvals have taken an excessive amount of time (sometimes 18 months or more), and when finally approved contain restrictive and arbitrary conditions that limit the activities of the employee despite the fact that his or her background has been thoroughly reviewed as part of the license approval process.

3 .Employee Percentages

The negative impact of TSR limitations far exceeds the percentage of relevant employees as compared to Sun's total employment base. All employees in design and manufacturing facilities TSR-eligible countries subject to the cap who have

potential access to controlled technology, meaning that both the scope of activity possible in these facilities as well as their productivity is limited by the controls.

In addition, individual employees who are nationals of Country Group B may also be affected to the extent that they are subject to the deemed export rule and are involved in projects involving systems exceeding 33,000 MTOPS. This primarily affects nationals of India and Israel. However, given the large number of countries in this group, the potential for impacts of this rule is great, and difficult to predict.

4. Foreign Availability

The definition of foreign availability for the purposes of establishing the efficacy of the TSR MTOP threshold is unclear, as the objectives of this control are no longer evident.

While performance-based controls on computer technology continue to be maintained by Wassenaar allies, the targets of Wassenaar controls are neither the countries listed in Country Group B nor their nationals. As a result, a great deal of variability exists in the controls that do exist, despite the fact that nominal controls are maintained at levels above the Wassenaar Basic List.

Japan is the major source of foreign availability for high performance computers. According to the Top 500 List maintained by the Universities of Mannheim and Tennessee, Japanese companies built 11 of the 50 of the world's highest performing computer systems, including the largest in the world, the NEC Earth Simulator.

NEC, Hitachi and Fujitsu continue to be very active in high performance architectures. While most work in this area appears to be done in Japan, all three companies have extensive research and manufacturing facilities in Country Group B. Fujitsu, for example, maintains research facilities in Malaysia, Taiwan, and Korea (in addition to the PRC). The scope of work in these facilities, and whether it relates to computer systems over 33,000 MTOPS, is unknown.

An important factor in determining the "availability in fact" of Japanese system technology is licensing structure and policy. MITI considers Iran, Iraq, Libya, and North Korea, as proscribed destinations. General Bulk Licenses are available for exports to members of the international export control arrangements, and other reduced licensing arrangements are available for other countries.

5./6. Performance Limits

The fact that the Government has recently chosen to increase the MTOPS-based threshold of License Exception CTP to Tier III to 190,000 MTOPS, added to the fact that the United States and Japan will seek to raise the Wassenaar decontrol

level to 190,000 MTOPS speaks to the need to change the current TSR eligibility level.

As a result, the time has come to eliminate performance-based thresholds for the formerly "Tier II" countries eligible for TSR, and to adjust the level to correspond to the current License Exception CTP level for Tier III (and the anticipated Wassenaar decontrol level), 190,000 MTOPS. In the longer term, we recommend eliminating the MTOP threshold for TSR entirely.

A technology access cut-off at 33,000 MTOPS (or at any other specific level) has no technical or engineering significance. Continued use of MTOPS or any other performance metric perpetuates the focus of controls on "computers" rather than "computing."

The mass-market availability of microprocessors and CPU boards, (the building blocks of the highest performing systems), availability of networking and clustering software, high-bandwidth communication, and the development of global interconnect standards, have combined to make "computing" impossible to control effectively. As a result, the obsolete system of hardware performance-based controls provides only the illusion of control while perpetuating competitive damage to IT producers and end-users.

An example of these trends can be observed in the increasing number of "self-made" high performance systems among the top 500 high performance systems. In 2002, for example, a system composed of 480 Athlon 1.2 GHz microprocessors was made operational at the GSIC Center of the Tokyo Institute of Technology. This system ranks 47th in terms of worldwide performance, was constructed in a university environment, and was not built by a commercial vendor.

Effective alternatives to performance-based controls already exist and could be improved if the traditional "hardware-centric" approach were abandoned. These include for focus on end-use/end-user controls including authoritative and responsible publication of all known bad end-users.

8. Additional Views

Sun strongly urges that the MTOPS performance threshold be eliminated as a criteria for TSR eligibility for computer system hardware and software for formerly Tier II countries, and that the MTOP restriction for Tier III countries be increased to 190,000 MTOPS.

In support of this view, we note:

- The performance limit itself is long out of date; License Exception CTP has long permitted hardware exports to Tier II countries with no performance limits and to Tier III at substantially higher limits.

- It is illogical to deny access to technology at arbitrary levels to countries and their nationals who pose no strategic threat to the United States, and to which there is no performance threshold for system sales.
- While a system of performance-based limits for computer technology exists within Wassenaar, it is widely recognized as being out of date, and is likely to be substantially changed before the end of the year.
- Nationals of India, Israel and other affected countries are heavily involved in research and graduate training in the U.S., are directly affected by the deemed export rule in this area, and are a key resource for U.S. companies.
- While the numbers of individuals affected by TSR limitations cited in this rule are small, the indirect and cumulative negative impact is potentially large. Such impacts include company-wide access controls, individual-based control programs, lack of flexibility and increased uncertainty.
- EPCI controls will continue to restrict the use of computer technology for proliferation applications in all countries.

These MTOP restrictions on computer technology and software under TSR have been overtaken by both technological developments and geopolitical events, and are largely irrelevant to today's export control objectives. With the increasing globalization of U.S. enterprise and need to compete for a relatively small pool of talent, the burden lies with the Government to justify continuation of this restriction in its present form.

We would again wish to extend our thanks to the Department for the opportunity to provide comments.

Sincerely,

Hans Luemers
Director, International Trade Services

ICOTT INDUSTRY COALITION ON TECHNOLOGY TRANSFER

1400 L Street, N.W., Washington, D.C. 20005 Suite 800 (202) 371-5994

July 10, 2002

VIA E-MAIL (scook@bis.doc.gov) AND FIRST CLASS MAIL

Ms. Sharron Cook
Regulatory Policy Division
Office of Exporter Services
Bureau of Industry and Security
U.S. Department of Commerce
14th St. & Pennsylvania Ave., N.W.
P.O. Box 273, Room 2705
Washington DC 20230

Re: Notice of Inquiry-Computer Technology and Software Eligible for Export or Reexport Under License Exception TSR (Technology and Software Under Restriction), 67 Fed. Reg. 39675 (June 10, 2002)

Dear Ms. Cook:

The Industry Coalition on Technology Transfer (“ICOTT”) appreciates the opportunity to respond to the recent BIS notice of inquiry regarding the limit for use of License Exception TSR (“TSR”).

Currently, TSR is available to most countries for technology and software required for the development or production of computers whose composite theoretical performance (“CTP”) does not exceed 33,000 millions of theoretical operations per second (“MTOPS”).¹ The license exception level for computers themselves, however, recently has been increased to 190,000 MTOPS for most countries.² The latter increase-like its many predecessors in recent years—sensibly reflects rapid advances in computer technology.

A comparable increase should be made in the TSR limit, presumably at least to the same 190,000 level employed in License Exception CTP. Advances in computer technology are not

¹ For twenty-two countries, there is no CTP limit on the use of TSR. 15 C.F.R. pt. 774, supp. 1, ECCNs 4D001, 4E001.

² For most countries, there is no CTP limit on the use of License Exception CTP. 15 C.F.R. § 740.7.

limited to the United States and increasingly are global in their genesis and their reach. Increasingly, the technological superiority of United States firms derives significantly from their use of non-United States persons to develop computers. This includes foreign nationals who work at facilities within the United States as well as the use by United States companies of foreign facilities (employing foreign engineers) to develop new products. Given the ever increasing speed and ease with which new technology spreads, placing an unrealistic lid on what technology can leave the United States (or be communicated to foreign nationals working here) can only serve to place United States manufacturers at a competitive disadvantage with their competitors in other countries.

The Industry Coalition on Technology Transfer (ICOTT) is a nonprofit group of major trade associations (names listed below) whose thousands of individual member firms export controlled goods and technology from the United States. ICOTT's principal purposes are to advise U.S. Government officials of industry concerns about export controls, and to inform ICOTT's member trade associations (and in turn their member firms) about the U.S. Government's export control and embargo activities.

Sincerely,

Eric L. Hirschhom
Executive Secretary

ICOTT Member Associations

American Association of Exporters and Importers (AAEI)
Electronic Industries Alliance (EIA)
Semiconductor Equipment and Materials International (SEMI)
Semiconductor Industry Association (SIA)



July 10, 2002

Sharron Cook
Regulatory Policy Division
Officer of Exporter Services
Bureau of Industry and Security
U.S. Department of Commerce
14th and Pennsylvania Avenue, NW
Washington, DC 20230

Re: Notice of Inquiry: Computer Technology and Software Eligible for Export or Reexport Under License Exception TSR

Dear Ms. Cook:

On behalf of the Computer Coalition for Responsible Exports (“CCRE”), we are submitting this letter in response to the Commerce Department’s request for comments on whether the current TSR eligibility criteria need to be updated. *See Computer Technology and Software Eligible for Export or Reexport Under License Exception TSR*, 67 Fed. Reg. 39675 (June 10, 2002) (notice of inquiry). For the reasons discussed, we believe that: (1) the TSR threshold needs to be adjusted to correspond with the current Tier 3 computer hardware licensing limit (190,000 MTOPS); and (2) the TSR country groupings need to be updated to accurately reflect 21st century national security risks.

CCRE is an alliance of American computer companies and allied associations established to inform policymakers and the public about the nature of the computer industry-its products,

technological advances, and global business realities. Our members include Apple Computer, Inc., Dell Computer Corporation, Hewlett-Packard Company, IBM Corporation, Intel Corporation, NCR Corporation, SGI, Sun Microsystems, Inc., Unisys Corporation, AeA, the Computer and Communications Industry Association (CCIA), the Computer Systems Policy Project (CSPP), the Electronic Industries Alliance (EIA), the Information Technology Industry Council (ITI), and the Semiconductor Industry Association (SIA).

Our industry has a long history of cooperation with the U.S. government on security-related high technology issues, and we are committed to providing the Administration with information concerning rapidly changing technology and market conditions that is essential to developing effective U.S. export control policies. We hope that the attached comments will assist the Administration in evaluating the effectiveness of the current TSR license exception and the need for reform.

Sincerely,



Dan Hoydysch
Co-Chair, CCRE



Rhett Dawson
Co-Chair, CCRE

Enclosure

INTRODUCTION

The Bureau of Industry and Security (BIS) has requested comments on whether License Exception TSR—which covers exports of dual-use technology and software relating to the development, production, or use of computers—needs to be adjusted to keep pace with changes in technology and multilateral export control policies. This letter provides CCRE’s response to the questions raised by the BIS.

In general, CCRE believes that performance-based computer export controls are inherently flawed because they cannot keep pace with rapid changes in technology. As the President has observed, such controls “have the shelf life of sliced bread.” But since the current system is now based on the MTOPS performance metric, the Administration needs to continually update computer knowledge controls to account for technological change and properly refocus export controls on the technologies that continue to represent genuine national security risks. Consistent with these objectives, the Administration needs to adjust the TSR License Exception as follows—

- The TSR threshold needs to correspond with the current Tier 3 computer hardware licensing limit (190,000 MTOPS); and
- The TSR country groupings need to be updated to accurately reflect 21st century national security risks.

We believe that these measures are important to promote America’s technological innovation and global competitiveness and, in turn, support DOD’s “run faster” strategy for military-technological preeminence.

I. U.S. Companies Need to Export Computer Technology and Software Above the Current TSR Limit in Order to Remain Globally Competitive

The BIS has posed a group of questions relating to the purpose of exporting computer technology and software, and the competitiveness impact of the current TSR level. As discussed below, the current TSR limit represents a substantial barrier to the U.S. computer industry’s global competitiveness and technological leadership.

Our industry's transfers of technology and software relating to the development, production, and use of computers involve both the exchange of knowledge within a U.S. company's global enterprise- including transfers to foreign nationals employees in the United States and transfers to overseas subsidiaries in "Group B" countries-as well as transfers to foreign joint venture partners and manufacturing subcontractors. The sharing of knowledge goes to the heart of our industry's research and development (R&D) activities and is fundamental to our global manufacturing and service operations.

In today's Networked World, rapid and accurate transfers of data and knowledge within global corporate enterprises have made 24/7 collaboration among employees not only possible, but absolutely essential to a company's survival. Similarly, in the area of manufacturing and services, the sharing of technical data and know-how is critical to the competitiveness of our industry. Finally, in order to acquire and develop next-generation technologies, U.S. computer companies need to employ the most talented scientists and engineers in the world, including foreign nationals. In the United States, for example, more than 46% of physical science PhDs that graduated from U.S. universities over the last decade were foreign nationals. The U.S. computer industry depends in substantial part on this pool of talent in order to fuel its technological advancement.

The current TSR limit disrupts our ability to efficiently share knowledge across our operations and threatens to have a serious impact on America's global competitiveness and technological leadership. For example, the current TSR limit stifles the ability of U.S. companies to effectively exploit its foreign national talent base. Many of our foreign national employees have developed valuable skills working on development projects below the 33,000 MTOPS threshold but are now inhibited from contributing their talent and know-how to follow-on development projects. Bearing in mind that the computer industry now produces commercial computer systems exceeding 190,000 MTOPS, the current TSR threshold of 33,000 MTOPS frustrates the effective utilization of our foreign national talent base and poses immeasurable opportunity costs for our R&D activities.

The inefficiencies generated by the current TSR limit also increasingly stifle U.S. companies' ability to efficiently integrate R&D, manufacturing and service activities across our global enterprise, and with manufacturing subcontractors. At the same time that foreign computer companies are optimizing their global operations, U.S. companies must configure their R&D, manufacturing, and service activities pursuant to outmoded TSR limits that cause gross inefficiencies and competitive disadvantages. The current TSR limit therefore hampers the U.S. computer industry's commercial competitiveness and threatens to prevent the timely development of next-generation computer technologies and products.

II. The Current MTOPS TSR Limit Will Increasingly Restrict The Ability of the Computer Industry to Use Its Foreign National Employees for the Development, Production, and Use of Commercial Computer Systems

The BIS has asked for estimates of the number of employees that will be affected by the current TSR limit in the coming years. While we cannot predict the exact number of employees likely to be affected in the future, we expect that the current TSR MTOPS threshold (33,000 MTOPS) will capture most commercial computer technologies in the near future. Accordingly, the impact of the current TSR level on U.S. commercial competitiveness and technological leadership will be even more severe going forward.

III. The Current MTOPS TSR Limit Fails to Account for the Foreign Availability of Computer Technology and Software and Existing Multilateral Controls

The BIS has also asked a series of questions relating to the foreign availability of computer technology above 33,000 MTOPS and the technology controls maintained by U.S. trade partners. As discussed below, we believe that the current TSR limit fails to account for these important factors.

The President's March 2002 decision to raise the Tier 3 computer hardware licensing limit was based on the recognition that 190,000 MTOPS commercial computer systems are now readily available from foreign sources. Consistent with this new reality, computer technologies exceeding 33,000 MTOPS are now also available from foreign sources, including Japanese computer companies, and the race to develop new technologies has become a fierce competition. To illustrate this point, one need only consider that Japan now occupies that #1 position on the

“Top 500 List of Supercomputers” and eight of the top ten firms receiving U.S. patents in 2001 were non-U.S. technology companies.

Furthermore, for more than a year, the multilateral consensus under the Wassenaar Arrangement has been that computer technology and software below the 150,000 MTOPS level are not “Very Sensitive.” Although this threshold is already outdated, the President’s decision to incorporate 150,000 MTOPS into the Wassenaar Arrangement reflects his assessment that computer technology and software below 150,000 MTOPS no longer present a meaningful national security risk. Consistent with this consensus view, we understand that Japan has already taken steps to release technology below 150,000 MTOPS.

In light of these developments, there is no national security reason not to raise the TSR MTOPS threshold to 190,000 MTOPS. Failure to act will serve only to place U.S. computer companies at a competitive disadvantage *vis-a-vis* foreign companies using comparable technologies.

IV. License Exception TSR Needs to Be Updated to Reflect Current Technology and National Security Realities

The BIS has asked for views on whether, and how, the TSR License Exception should be changed. For the reasons discussed, CCRE believes that (1) the MTOPS threshold needs to correspond with the current Tier 3 computer hardware licensing limit (190,000 MTOPS), and (2) the TSR country groupings need to be updated to accurately reflect 21st century national security risks.

A. The MTOPS Threshold Needs to Correspond with the Current Tier 3 Computer Hardware Licensing Limit (190,000 MTOPS).

There have been dramatic advances in technology and computing performance in recent years. In the space of a decade, the performance capability of commodity microprocessors has increased by a factor of 1,000 and microprocessor power continues to double every 18 months consistent with Moore’s Law. Furthermore, as the Defense Department noted in its February 2001 report on *Export Control of High Performance Computing*, “cluster technology, open

source software, and improved component interoperability enable users to easily integrate commodity hardware into large high performance computer systems.”

The problem with the current system is that, despite these revolutionary technological developments, the scope of existing knowledge controls has remained relatively static over time. When the TSR MTOPS limit was last updated in October 2000, it was set at a level that exceeded the Tier 3 computer hardware MTOPS threshold by a margin of 18% in order to “align the level with our domestic policy and our multilateral Wassenaar Arrangement obligations.” (65 Fed. Reg. at 60853) For the past 21 months, the TSR MTOPS threshold has remained unchanged while the associated computer hardware licensing levels have increased by a factor of seven. As a result, the TSR MTOPS limit is more than 82% below the current Tier 3 hardware licensing threshold of 190,000 MTOPS.

Due to regulatory inertia, computer knowledge controls have gone from restricting high-end technologies for supercomputers to capturing basic technologies relating to widely available commercial systems. As the Defense Science Board explains, such outmoded controls serve no achievable national security purpose and are actually counterproductive because they needlessly interfere with U.S. technological advancement:

Protection of capabilities and technologies readily available on the world market is, at best, unhelpful to the maintenance of military dominance and, at worst, counterproductive (e.g., by undermining the industry upon which U.S. military-technological supremacy depends).

The Administration therefore needs to increase the TSR MTOPS limit to 190,000 MTOPS commensurate with the current Tier 3 computer hardware licensing threshold established by the President in March of this year.

B. The TSR Country Groupings Need to Reflect 21st Century National Security Risks

The general framework for knowledge controls was developed during the Cold War era when the joint strategy of the United States and its allies was to deny technology to the Soviet bloc and destroy the underlying economic capacity of the Soviet Union. In this bipolar environment,

comprehensive technology embargoes administered by the Coordinating Committee on Export Controls (CoCom) represented an effective strategic weapon against a common enemy. Today, by contrast, the Soviet Union has collapsed, the United States has new allies, and economic globalization has replaced economic warfare.

Notwithstanding these important changes, License Exception TSR continues to be based on outdated Cold War national security assumptions. The Commerce Control List (4D001 & 4E001) affords favorable treatment to America's former Cold War allies but reflects unwarranted discrimination against other countries that are also strategic allies and trading partners with the United States. There is no TSR MTOPS limit for these 22 countries because they were former member countries of CoCom or former cooperating countries of CoCom. By contrast, many of today's "free world" countries—i.e., those that have been classified under computer hardware Tier 1 because they "do not pose proliferation or security threats to the United States" (66 Fed. Reg. at 5443)—still continue to be subject to a TSR MTOPS limitation. Since these countries no longer pose proliferation or security threats to the United States, there should be no TSR MTOPS limit for commercial computer technology and software exports to these destinations.

CONCLUSION

As the Defense Science Board has observed: "DoD is relying increasingly on the U.S. commercial advanced technology sector to push the technological envelope and enable the Department to 'run faster' than its competitors. . . . If U.S. high-tech exports are restricted in any significant manner, it could well have a stifling effect on the U.S. military's rate of technological advancement." Consistent with this analysis, the Administration needs to ensure that the TSR License Exception is updated to account for recent technological developments and national security realities:

- The TSR threshold needs to correspond with the current Tier 3 computer hardware licensing limit (190,000 MTOPS); and
- The TSR country groupings need to be updated to accurately reflect 21st century national security risks.

We believe that these measures are important to promote America's technological innovation and global competitiveness and, in turn, support DOD's "run faster" strategy for military-technological preeminence.



facsimile transmittal

To: LE SHARRON COON

Fax: 202 482-3355

From: A. TREGUIA

Date:

CC:

Pages: 9 WITH COVER

Re: TSR COMMENTS

Urgent

For Review

Please Comment

Please Reply

Please Recycle

Message:

601 Pennsylvania Avenue, NW, North Building, Suite 600 / Washington, DC 20004 / P: 202.682.9110 / F: 202.682.9111
www.aeanet.org American Electronics Association

The MTOP limit of 33,000 is terribly out of date and needs to be eliminated for most TSR-eligible countries, and increased to conform to anticipated decontrol levels for the remainder.

Direct evidence of this is provided by the fact that the MTOP threshold for License Exception CTP for Tier III has recently been raised to 190,000 MTOPS, and that it is anticipated that the United States will join Japan to recommend this as the Wassenaar decontrol level later this year. For most countries in the group (the former Tier II) the MTOPS limit for hardware exports under License Exception CTP has already been removed.

1.2 Transfers to Employees Based on Nationality and Residency Status

A second range of activities affected by TSR limits on hardware and software are on nationals of affected countries regardless of their location who are employees of U.S. firms. Such nationals are caught under the "Deemed Export" rule, and constitute a substantial portion of foreign nationals employed by U.S. IT companies (Indian nationals constitute the single largest group),

All of the negative impacts relevant to performance-based limits on TSR cited in regard to facilities apply to nationals of these countries as well. However, the negative impacts are potentially broader, as they affect specific individuals who may be employed at any location within a US. IT company.

Examples of such negative effects include the necessity to impose and manage company wide controls on access to specific categories of technical data (including on-line access), segregation of the employee from the normal exchange of data within the firm, internal control programs created on an individual basis, and lack of flexibility in employing valuable engineering and scientific resources.

The cost and complexity of enforcing such measures is compounded by the fact that the 33,000 MTOPS threshold (or any other such threshold) is government-derived and has no connection to engineering activities within companies. As a result, these control programs must be created and maintained specifically for TSR requirements.

These factors combine to make the negative impacts of the TSR restriction far exceed the number of employees subject to validated licensing requirements. Restrictions must be enforced on a company-wide basis and affect mission-critical employees and activities, As a result, although the negative impacts are hard to quantify, they are clearly significant.

AeA is aware that sources of computer system technology exist throughout Wassenaar member states, particularly in Japan. NEC, Hitachi and Fujitsu all

have systems among the top 500 in the list maintained by the Universities of Mannheim and Tennessee; the NEC "Earth Simulator" is now widely regarded as the highest capacity computer system in the world.

It is also known that US, Country Group B countries are not targets of Japanese export controls, and that a variety of open general authorizations are available to a range of countries in this group. However, **AeA** members do not have access to specific information on Japanese licensing policy relevant to transfers of technical data among subsidiaries and non-Japanese employees of Japanese firms. Such data is the key to determining foreign availability in the specific circumstances addressed by this notice of inquiry.

1.3 Joint Ventures and Contractors in Country Group B

Modern IT companies do not operate solely through integrated subsidiaries and employees, but also work with other companies and individuals to advance the state of the art. This includes university professors and graduate students, many of whom are not US citizens or permanent residents, research and development companies, and individual contractors. The archaic limit on License Exception TSR inhibits such transfers,

1.4 Retaining the Old Limit to TSR While Raising Other Limits Departs from Past Policy With No Justification

Prior increases to License Exception CTP limits have been accompanied by increases to License Exception TSR corresponding to the Wassenaar Very Sensitive List limitation. One of the first such increases did not raise License Exception TSR limits. When the Regulations and Procedures Technical Advisory Committee (RPTAC) and the Information Systems Technical Advisory Committee (ISTAC) pointed out this oversight to the Bureau of Industry & Security (**BIS**) and other agencies, **BIS** revised the regulations to raise the TSR limits.

Until this year, changes to CTP limits were accompanied by increases to TSR limits. **BIS** and its advisory agencies appear to have changed policy with the most recent increase without providing any justification to industry. **AeA** does not understand why there was this change since the availability of technology to manufacture computers up to 190,000 MTOPS was a major factor in increasing the License Exception CTP level to 190,000 MTOPS.

Industry is more globalized, not less, than at the time of prior CTP and TSR increases. The only justification for this apparent change in policy has been the inability to obtain interagency consensus. This is not a reasonable justification for altering such an important policy.

1.5 Country Group B Destinations Provide Little Threat

License Exception TSR only authorizes exports to Country Group B destinations, not to the PRC or other D:1 destinations. No strategic threat is represented by allowing proprietary exports of commonly available technology to Country Group B destinations.

7.6 Much Technology to Manufacture Computers at 190,000 MTOPS is in the Public Domain; There is No Strategic Threat to Allowing Proprietary Data under License Exception TSR to Country Group B

Computer scientists are free to publish and do publish thousands of papers on state of the art advances to development of faster computers. Indeed, for many products, the technology involved in manufacturing such computers is assembly of decontrolled parts and components.

Direct evidence of this can be found in the increasing number of "self-made" systems among the top 500 high performance systems worldwide. These are often assembled in university environments with publicly available technology without the assistance of companies. A recent example is the system assembled earlier this year at the Tokyo Institute of Technology, which ranks 47th worldwide in performance according to the Top 500 list maintained by the Universities of Mannheim and Tennessee,

Determining when License Exception TSR is needed is an art, as much of the proprietary technology deals with factors other than throughput or speed, such as mean time between failure and compatibility with specific software. Increases in the License Exception TSR limits in the past have made such fine distinctions irrelevant and U.S. industry has not been inhibited in sharing the technology among subsidiaries, employees, and strategic partners. The artificial retardation of License Exception TSR to archaic levels causes new difficulties for U.S. industry without any apparent strategic benefit.

2. Answers to Questions Posed in the NOI

The following summarizes the best available information in the short time provided to answer the questions posed in the NOI. We may supplement these responses as more information becomes available,

(1) What is the purpose of U.S. companies in exporting technology and software for the development, production, and use of computers with a CTP greater than 33,000 MTOPS? Are the exports for transfers to U.S. subsidiaries, branches, or joint ventures that manufacture products abroad; sales to foreign manufacturers; or large/y for release to foreign

nationals for work designing and developing new products in the United States?

The computer industry conducts R&D on a global basis, 24 hours a day, seven days a week, This is **essential** to ensure a steady supply of engineering talent and to reduce costs. The 33,000 MTOPS level is almost two years out of date. Although the 33,000 MTOPS level once captured technology related to the highest performance computers, it now captures technology related to desktop computers.

All three are involved, as described above. The first objective of US. companies is to be free to "talk to themselves". Most technology transfers are to foreign national employees located in the United States and employees located in wholly-owned subsidiaries outside the United States. Transfers to joint ventures and strategic partners outside the United States are also important.

(2) If the exports of software and technology are largely to foreign nationals for work in designing and developing new products in the United States, what is the economic and competitiveness impact on U.S. industry of maintaining the current TSR level? Does maintaining the current level impair the timely introduction of new products into the market?

The current TSR level makes it difficult for foreign national employees to participate in the development of the next generation of products. Licensing lead times delay product introduction cycles, and licensing conditions make it difficult if not impossible for foreign national employees to fully participate in engineering teams.

(3) What percentage of current employees is restricted by TSR limits? What percentage is expected to be limited in 2-3 years? In 5-7 years?

The current percentage varies by company, Future percentages are based on supply and demand and are difficult to predict. It is worth noting that 46% of the physical science PhDs that graduated from U.S. universities over the last decade were foreign nationals, Moreover, the numbers of employees restricted by the rule do not fully reflect the impact on companies, as the flow and availability of technical data throughout the enterprise may be affected in mission-critical areas,

(4) What is the foreign availability of technology and software for the production, development, and use of computers with a CTP greater than 33,000 MTOPS?

Japan is expected to issue regulations later this month permitting Japanese companies to transfer technology and software up to 150K MTOPS. As BIS and the President noted in justifying the CTP level increases to 190,000, technology to string together many computers to operate at the 190,000 levels exists in the

public domain. As pointed out earlier, an increase of the Wassenaar decontrol level to 190,000 MTOPS is likely to be recommended by both Japan and the United States this **year**, making the late implementation of the 150K "very sensitive" threshold by **Japan** redundant,

(5) What controls do U.S. trade partners maintain on the export of technology and software for the development, production, and use of computers? What are the MTOPS limits and do our trade partners use license exceptions or other licensing measures?

In Wassenaar countries, technology controls generally correspond to the Wassenaar decontrol, sensitive, and very sensitive list levels. Licensing vehicles (which may include "open", "general", and "bulk-type" licenses) vary from country to country depending on level of technology. Nothing restricts other Wassenaar partners from raising levels for any such authorizations.

(6) In light of recent changes in architectures and technology, what performance levels can be identified for TSR limits? What alternate methods or metrics should be considered for technology and software control under TSR?

The TSR threshold should be eliminated for all countries in the current Tier I group. The threshold for the remainder should correspond to the current Tier 3 computer hardware licensing limit (190,000 MTOPS). With respect to computer technology, there should at minimum be a license exception for transfers to employees and subsidiaries of U.S. companies and bulk licensing for companies headquartered in Tier I and II countries, using the model for encryption technology under License Exception ENC and ELAs.

(7) Any other information relevant to the current 33,000 MTOPS TSR level.

The TSR level was designed to capture technology related to "supercomputers". It now controls technology related to desktop computers, This is a de facto change in U.S. Government policy. No justification has been given for this change, (See other discussion in Part 1 above,)

3. Recommendations

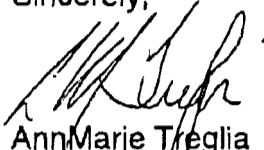
The strategic purpose of the MTOP limit on TSR eligibility for computer technology and software is no longer clear, given the geographic scope of the controls. Enforcement of reexport controls and the direct product rule relevant to TSR-ineligible countries and EPCI restrictions make it redundant for most countries in Country Group B. The MTOPS limitation is also badly out of date, and continues to apply to countries for which performance thresholds for hardware exports have been radically increased or eliminated altogether.

TSR 4
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As thfs control has a disproportionate negative impact on the global operations of U.S. IT companies, AeA strongly urges that the MTOPS performance threshold be eliminated as a criteria of TSR eligibility for formerly "Tier II" countries in Country Group B. For "Tier III" countries, AeA recommends setting the TSR limit at the current License Exception CTP hardware limit (and the anticipated Wassenaar decontrol level) of 190,000 MTOPS.

We again appreciate the ability to provide comments on the TSR requirements.

Sincerely,



AnnMarie Treglia
Director, International Trade Regulation