

RECOMMENDED GOVERNMENT ACTIONS TO BALANCE THE ADVERSE IMPACT
OF ITAR ON U.S. SPACE-RELATED SCIENTIFIC RESEARCH
WITH THE NEEDS OF U.S. NATIONAL SECURITY

POSITION OF THE
UNIVERSITIES SPACE RESEARCH ASSOCIATION

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In the current times, more than ever before, space-related research is an international endeavor requiring strong and effective cooperation between the scientists and nations of the world. In this context, the U.S. Department of State is responsible for implementing the U.S. Arms Export Control Act and it does so through the International Traffic in Arms Regulations (ITAR). It is the interpretation of the current ITAR that essentially all spacecraft hardware elements (and most flight software) are munitions and hence are subject to ITAR restrictions. However, an increasing number of organizations involved in civil and commercial space programs have argued that the current regulations do not properly distinguish between widely available commercial technologies and truly sensitive, militarily significant space hardware. The result is a plethora of negative effects to the U.S. space program that contribute to making the U.S. less secure rather than more secure. Among these are

- Handicapping U.S. space research projects both technically and financially,
- Limiting or preventing U.S. participation in international space research collaborations,
- Diverting the interest of foreign partners away from the U.S. to alternative nations,
- Diminishing U.S. access to foreign expertise from increased restrictions on interactions by U.S. researchers with foreign colleagues,
- Significantly decreasing business opportunities for small U.S. space industry providers and U.S. university research groups,
- Reducing access to foreign facilities for calibration and testing,
- Compromising the quality of U.S. education in space studies at universities, and
- Giving rise to the development of technology more advanced than ours by other nations.

All of these effects have tended to reduce innovation in the U.S. space program, as the focus has increasingly been on secrecy and protection. Immediate problems stem from legislative changes in the last decade that decreased flexibility and increased costs for universities.

Beyond obvious commercial losses, ITAR has had chilling and inhibiting effects on basic space research. Such research—largely done at leading U.S. universities—normally involves detector instrumentation that ultimately is intended to fly on civilian (NASA or other) spacecraft. A consequence of the current ITAR (and its very strict interpretation and implementation) is to make university-built space hardware and flight software subject to the full force of ITAR export control restrictions and limitations of foreign science participation, to the great detriment of basic space research in the U.S. community. The recent National Research Council report, *Space Science and the International Traffic in Arms Regulations*ⁱ, calls attention to how the implementation of ITAR with respect to scientific satellites was dramatically altered by the Congress in 1999 by the report of the Cox Committeeⁱⁱ:

One of the many consequences of the Cox Committee Report was Congress's mandate that jurisdiction over export and licensing of satellites and related equipment and services, irrespective of military utility, be transferred from the Department of Commerce to the State Department and that such equipment and services be covered as defense articles under ITAR. Scientific satellites were explicitly included despite their use for decades in peaceful internationally conducted cooperative scientific research. It is widely recognized that the shift in regulatory regime from EAR [Export Administration Regulations] to ITAR has had major deleterious effects on international scientific research activities that depend on satellites, space hardware, and other items now covered under ITAR.

Future space research and exploration will be enhanced by the substantial and growing technological capabilities of nations other than the United States. For economic, scientific, and foreign policy reasons, therefore, it is vital that barriers to international collaborations by U.S. universities be reduced. USRA recommends that the following measures be undertaken by the government:

1. A top-to-bottom review and scrubbing of the items on the U.S. Munitions List (USML) and the Commerce Control List (CCL). The National Security Council should lead an interagency review with support from the Office of Science and Technology Policy to rationalize the lists. Additionally, legislation should be enacted to put responsibility back with the Executive Branch for determining articles and services to be included on the lists. The treatment of space articles in the current list is excessively comprehensive. The list has been described as covering “everything that flies” and includes articles that are of no military significance or that can be readily purchased in the open market in the U.S. and abroad. The categories of controlled technical data under both ITAR and EAR should be restricted to include only information that is truly of military value and that is not already available outside the United States.
2. Coherence between ITAR under the State Department and the EAR under the Commerce Department. EAR does a more rational job of dealing clearly with the definition of fundamental research than does ITAR. For example, EAR allows for

fundamental research in federal laboratories and industry; it clarifies the definition of fundamental research as research that is ordinarily published and in the public domain; it explains how classroom teaching of public domain material is not subject to controls; and it allows for specified kinds of pre-publication reviews of government-sponsored research without compromising the fundamental research exclusion. All of those items are more problematic under ITAR. The fundamental research exclusion and its relationship to “defense services” should be defined and implemented in a way that truly implements the letter and spirit of National Security Decision Directive 189.ⁱⁱⁱ

3. Streamlined, clear licensing procedures for university research. Licensing applications are considered on a case-by-case basis, and a university space-related activity may involve multiple controlled articles requiring multiple applications. Rationale is rarely provided for restrictive provisos or advisory opinions. Additionally, performance of defense-related services may require obtaining Technical Assistance Agreements. Approvals for space-related items or services can take several months. Similar delays for authorizations for students and exempt employees discourage participation. The burden is placed on universities to understand and comply with regulations. However, information provided by the Department of State and Department of Commerce is general and focuses on industry issues. With limited resources available to universities for guidance and the risk of criminal sanctions, universities take a very cautious approach, which adds further to administrative burdens and time delays. The Department of State and the Department of Commerce should 1) provide guidance for university research comparable to that provided for industry trade, 2) engage in dialogue with representatives of the university community through establishment of a Federal Advisory Committee chartered to provide advice on the application of export controls to space-related research, and 3) provide training relevant to the application of export controls to university research, including student research. Commodity jurisdiction rulings on whether an item or service is covered by the USML should also be posted on the Web to enable better understanding on what is subject to ITAR.
4. Rationalized regulation of items considered to be “re-exported.” The re-export problem often occurs when a U.S. science team is building a scientific satellite or planetary probe and the space mission includes an instrument or sub-system that is built by collaborators from abroad. After the foreign hardware is integrated into the full system in the U.S., as usually happens before testing and calibration, the foreign hardware is often returned to its builders for refurbishment or further calibration. But for that to happen ITAR now requires that the U.S. team obtain an export license to return the equipment to the people who built it. In fact, there have been instances where the U.S. team could not even give the foreign collaborators their instrument test data without ITAR approval. Such requirements add delays to project schedules and administrative burdens and costs, and they do little to enhance partnership. A possible concrete step would be to allow submission of a safeguards process with an initial license application that would avoid the need for later separate applications.

5. Extended fundamental research exclusion, which is now available only to institutions of higher learning, to cover federal laboratories, nonprofit organizations, and the industry partners of university science teams. The present arrangement, under ITAR but not under EAR, negates the intent of the exclusion for most space research projects because such projects are almost always collaborations between universities and other partners. As currently applied, the regulations lead to irrational situations, such as prohibiting a foreign graduate student from attending the design review for an instrument that the graduate student designed. The extension of the fundamental research exclusion should allow industry and national laboratories to work with universities for the purposes of fundamental research without the need for Technical Assistance Agreements.
6. Extension to selected agencies, such as NASA, authority to issue a well-circumscribed exemption similar to the Foreign Military Sales exemption accorded the Department of Defense. For activities conducted for the Department of Defense, there is a foreign military-sales exemption whereby commercial exports are exempt from the licensing requirements of ITAR, if they are in furtherance of a program between a U.S. government agency and a foreign government (a government-to-government program). A similar exemption should be granted to NASA so that exports by U.S. entities that are in support of an international collaborative space project that is being conducted under a formal government-to-government agreement can be excluded from ITAR licensing requirements.
7. Resolution of the problems arising from application of the Defense Federal Acquisition Regulation Supplement clause 252.204-7000 prepublication approval clause in government research contracts. The present process of including a mandatory contract requirement for approval before publication conflicts with the current implementation of the fundamental-research exclusion.

The product of these measures, both near and longer-term, will be regulations that restore the original intent of export control legislation and balance the vital needs of U.S. national security with the crucial role of university research in all aspects of future U.S. leadership in space.

About USRA: The Universities Space Research Association was established in 1969 by the National Academy of Sciences at the request of the National Aeronautics and Space Administration. USRA is a private, nonprofit consortium of 102 universities offering advanced degrees in space- and aeronautics-related disciplines. USRA's mission is to conduct leading-edge research, develop innovative technologies, promote education and policy across the breadth of space science, and operate premier science and technology facilities by involving universities, private industry and government.

ⁱ National Research Council, *Space Science and the International Traffic in Arms Regulations*, National Academies Press, Washington, D.C., 2008,

ⁱⁱ U.S. House of Representatives, U.S. National Security and Military/Commercial Concerns with the People's Republic of China, Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China, U.S. Government Printing Office, January 1999.

ⁱⁱⁱ In 1985, President Reagan signed National Security Decision Directive (NSDD) 189, which established "national policy for controlling the flow of science, technology, and engineering information produced in

federally-funded fundamental research at colleges, universities, and laboratories.” NSDD 189 defines fundamental research as

“basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.”

It describes the policy for control of fundamental research as follows:

“It is the policy of this Administration that, to the maximum extent possible, the products of fundamental research remain unrestricted. It is also the policy of this Administration that, where the national security requires control, the mechanism for control of information generated during federally-funded fundamental research in science, technology and engineering at colleges, universities and laboratories is classification. . . .

No restrictions may be placed upon the conduct or reporting of federally-funded fundamental research that has not received national security classification, except as provided in applicable U.S. Statutes.”

The policy, which formally recognizes the open nature of fundamental research, was reaffirmed by the national-security adviser to the president, Condoleezza Rice, in 2001.