

## THE LEGAL IMPLICATIONS OF HIGH TECHNOLOGY EXPORT CONTROLS FOR COMMERCIAL ACTIVITIES IN OUTER SPACE

Dr. Larry F. Martinez\*  
California State University  
Long Beach, CA 90840 USA

### Abstract

This paper examines the relationship between high technology export controls and states' ability to fully participate in commercial space activities and markets. The end of Cold War bloc alignments and the accelerating globalization of space enterprises are transforming the economic, regulatory and legal environments for commercial space activities. The Missile Technology Control Regime (MTCR), in particular, exemplifies the policy conflict between efforts to control the proliferation of certain weapons technologies and efforts to promote the expansion of international commercial space markets.

### Introduction

The disintegration of the Soviet Union and the accelerating globalization of space enterprises are factors transforming the commercial space regulatory and legal environment. During the early era of space exploration, activities were sponsored and carried out almost exclusively by governmental entities with domestically-developed technologies. The 1990s'

volatile "New World Order" has divorced the tight military-civilian-government technology bonds as countries openly promote independent commercialization of space industries.<sup>1</sup>

The dissipation of the Cold War has also eroded the justification for most technology export controls among the long-standing space powers. This has given new impetus behind the growing wave of high technology market liberalizations especially in the sectors of telecommunications and aerospace. The increasingly merger-friendly regulatory environment is creating a new breed of multinational space enterprise, one that seeks to combine commercial space technologies developed by firms in nations with widely divergent regulatory controls. Meanwhile the focus for technology control regimes is shifting from the East-West Cold War configuration to one designed to limit weapons technology proliferation to regional powers, as evidenced by multilateral actions taken following Iraq's ballistic missile attacks in the course of the 1990-91 Persian Gulf War.<sup>2</sup> Iraq, though is not alone as a user of ballistic missiles, because

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\* Asst. Professor of Political Science, Member of the IISL.

over 20 Third World nations possess short or medium-range surface-to-surface missiles, and six countries-Afghanistan, Egypt, Iran, Iraq, Libya, and Syria-have used missiles in warfare.<sup>3</sup>

## **I. The Policy Dilemma Between Implementing Technology Export Controls and Promoting Open Commercial Markets**

### **Background**

Until the early 1990s, the Cold War configurations of alliance institutions determined the technology control regime for commercial space activities. The Coordinating Committee for Multilateral Export Controls (CoCom) promulgated technology control rules for all NATO countries except Iceland, plus Japan and Australia.<sup>4</sup> The current policy and legal environments for space technology control regimes are shaped by technological and market factors:

**Technology:** To a greater extent than in perhaps any other major industrial sector, space-related *commercial* technology products and services share nearly identical characteristics with *military* products and services. In fact, in many cases they are essentially the same item. For example, the U.S. commercial space launch vehicles Titan, Atlas, and Delta, and the CIS-marketed launch vehicles Proton and Zenit originated as military intercontinental ballistic missiles. In

many cases, the same launch vehicle may launch a commercial or military satellite. The same manufacturer may supply the same customer (e.g., a government) with the same launch vehicle that would be used for launching either military, government/civilian, and commercial payloads. Even missiles designed solely for ballistic trajectories are used both for transporting military weapons as well as scientific microgravity and materials experiments. In effect, the dividing line between military, civilian, and commercial space products and services is extremely blurred.

**Markets:** The technological blurring contributes to jurisdictional ambiguities for distinguishing between military technology export controls and attempts to use governmental policy to protect commercial space markets. The military origin of commercial space products and services presents the trade policy dilemmas of the New World Order in perhaps their most salient manifestation. In short, the way in which states respond to this policy issue will determine the legal dimensions of international markets for space-related products and services; or will international space law provide guidelines for appropriate state behavior in these areas? Only one aspect is certain at this point - the policymaking process and the policies are coming under increasing scrutiny as the traditional bi-partisan consensus supporting the military industrial complex evaporates with the Cold War. Anticipating these trends, the U.S. National Academy of Sciences identified factors politicizing technology

controls as may be applied by the United States:

- \* The character of the international marketplace is evolving in such a way that diffusion of technology is rapid and global in scope.
- \* There is growing global market for dual use products, most of which embody advanced technology.
- \* Because trade is a steadily growing part of U.S. economic activity, policies that affect it are increasingly important to the overall U.S. economy.
- \* U.S. dominance over advanced technology is declining.
- \* Maintaining the vitality of all the Western economies has assumed greater importance for the national security of the United States.<sup>5</sup>

These factors may operate to increase the proclivity of political institutions to use national security justifications to implement policies satisfying economic objectives, i.e., promoting the competitiveness of national suppliers of commercial space launch services and payloads by restricting customers' access to competitors.

## **II. The Problem of Proliferation and Technology Transfer: Technology, Know-How and Political Will**

Although there is an extensive number of theoretical concepts and hypothetical scenarios about technology transfer, there is relatively little agreement as to what types or breadth of controls would prove effective in preventing any particular transfer. In other words, stopping a transfer of technology resembles the intractable predicament which, in the parlance of nuclear war deterrence theorists, is often described as "the occurrence of a non-event." In short, it is extremely difficult to ascertain what is sufficient to stop something that has not taken place from happening. There are three clusters of factors that determine whether proliferation takes place.

### **\* Technology:**

This is the most visible of the three factors. The physical hardware for a competitive space launch capability include the missile components, launch pad facilities, and the required computer and guidance equipment and software.

### **\* Know-How:**

This aspect of technology transfer is information oriented. This is embodied in the people who work on the project in the form of their training and experience. The organizational skills required to administer a highly complex and inter-related set of programs designed to produce a very high risk technology cannot be over estimated.

### **\* Political Will:**

While the previous two aspects are derived from the *supply* of technology, the factor of political will is related to the *demand* for the transfer or development to take place, in other words, the willingness to expend political capital to accomplish a desired goal (i.e., gain a ballistic missile capability while paying the political costs incurred as other states undertake measures to prevent the transfer from taking place). The MTCR raises the political costs for the both the supplier and procurer by making it appear that such actions violate an international standard of behavior. As the NAS study pointed out, "[w]ide global diffusion of advance technology necessitates a fully multilateral approach to controls."<sup>6</sup> In essence, this is the role and function of the MTCR.

### III. The Missile Technology Control Regime

The Missile Technology Control Regime (MTCR) was signed by representatives of the Canada, Germany, Italy, Japan, France, United Kingdom, and the United States, on April 16, 1987. While not a treaty, the MTCR "establishes identical guidelines to be implemented by the members in accordance with their national legislation."<sup>7</sup> The guidelines apply to trade in all system for ballistic missile systems that are designed to exceed 300 kilometers in range or 500 kilograms payload capacity.

The hearings raised the issue of missile technology export restrictions posing a

barrier to states desiring to develop commercial space launch industries.<sup>8</sup> Clearly, the payload and range criteria encompassed in the MTCR would apply to commercial space launch vehicles. And since there may be no technological difference between a launch vehicle designed for commercial launches of payloads to orbit or the transport of warheads to military targets, the MTCR may have a direct impact on commercial space launch markets.

Mr. Richard A Clarke, Assistant Secretary for Politico-Military Affairs of the U.S. Department of State testified at a congressional hearing in 1989 as to MTCR's legal status:

Our primary vehicle for multilateral cooperation is the Missile Technology Control Regime--the MTCR .... The Regime is not a treaty and--in a technical sense--not even an international agreement. Like the Nuclear Suppliers Group, it establishes identical guidelines to be implemented by the members in accordance with their national legislation. The regime also provides for exchange of relevant information with the other partners as necessary and appropriate.<sup>9</sup>

In sum, the MTCR represents an multilateral attempt by the space powers to standardize the internal licensing procedures among the major aerospace technology exporting countries.

#### **IV. Status and Features of the MTCR**

The MTCR is the result of conferences among the major Western missile technology states that took place from 1985-87.

##### **Member Status**

The regime consists of 18 formal members: <sup>10</sup>

Australia  
Austria  
Belgium  
Canada  
Denmark  
Finland  
France  
Germany  
Italy  
Japan  
Luxembourg  
Netherlands  
New Zealand  
Norway  
Spain  
Sweden  
United Kingdom  
United States

Countries pledging to abide by the Guidelines:

Israel  
China

Countries expressing an intent to join:

Russia  
Argentina  
Brazil  
South Africa

Countries with ballistic missile production capabilities that have not announced an intent to comply with or to join the MTCR:

India  
North Korea  
Pakistan

##### **Features**

The MTCR consists of a set of Guidelines for controlling transfers of sensitive missile-relevant technologies, a Summary of the Equipment and Technology Annex, and the Equipment and Technology Annex itself.

Guidelines:

\* Goals of the MTCR: Point 1 of the Guidelines "Fact Sheet" states:

The purpose of these Guidelines is to limit the risks of nuclear proliferation by controlling transfers that could make a contribution to nuclear weapons delivery systems other than manned aircraft. The Guidelines are not designed to impede national space programs or international

cooperation in such programs as long as such programs could not contribute to nuclear weapons delivery systems.<sup>11</sup>

\* **Area of Application:**

These Guidelines, including the attached Annex, form the basis for controlling transfers to any destination beyond the Government's jurisdiction or control of equipment and technology relevant to the missiles whose performance in terms of payload and range exceeds stated parameters. Restraint will be exercised in the consideration of all transfers of items contained within the Annex and all such transfers will be considered on a case-by-case basis. The Government will implement the Guidelines in accordance with national legislation.<sup>12</sup>

\* **Controlled Items**

**Category I** items are those of "greatest sensitivity" and are listed in Annexes 1 and 2. Under Category I the following items are controlled:

- Complete rocket systems (including ballistic missile systems, space launch vehicles, and sounding rockets) and unmanned air vehicle systems ... capable of delivering at least a 500 kg payload to a range of at least 300 km as well as the specially designed production facilities for these systems.
- Complete subsystems usable in the systems [above] .. as follows, ... individual rocket stages;
  - reentry vehicles
  - Solid or liquid fuel rocket engines
  - Guidance sets
  - Thrust vector controls
  - Warhead safing, arming, fuzing, and firing mechanisms

**Category II** items are considered less critical and include:

- Propulsion components, propellants, and propellant production technology and equipment.
- Missile structural items
- Flight instruments, navigation equipment, software and flight control systems
- Avionics equipment
  - Ground support equipment
  - Test facilities

- Other items related to software, and reduced observables technologies

### Criteria for Evaluating Applications to Transfer

Point 3 of the Guidelines sets out the following criteria for evaluating requested transfers of items in both Categories I and II:

- \* Nuclear proliferation concerns
- \* The capabilities and objectives of the missile and space programs of the recipient state;
- \* The significance of the transfer in terms of the potential development of nuclear weapons delivery systems other than manned aircraft;
- \* The assessment of the end-use of the transfers, including the relevant assurances of the recipient states ... [that]
- \* Where the transfer could contribute to a nuclear weapons delivery system, the Government will authorize transfers of items in the Annex only on receipt of appropriate assurances from the government of the recipient state that:
  - \* The items will be used only for the purpose stated and that such use will not be modified nor the items modified or replicated without the prior consent of the United States Government;

- \* Neither the items nor replicas nor derivatives thereof will be transferred without the consent of the United States Government.<sup>13</sup>

### Analysis of the Criteria

The intent of the United State Government is to deny transfers except under the very stringent conditions listed above under points 5.A. and 5.B (preceding paragraph above). Although the objective of the Guidelines is to prevent nuclear weapons proliferation, the transfers are aimed not at the weapons themselves, but at the rocket delivery systems. *Although the MTCR is explicitly not intended to "impede national space programs," the technological overlap between military, government/civilian, and commercial space launch systems means that states desiring to develop a space launch industry and compete in international markets may find the MTCR a barrier to their full participation.*

### V. The MTCR and Space Trade Politicization: The Russia-India-United States Controversy

Responding to a purchase by the Indian Space Research Organization (ISRO) of Russian-built cryogenic motors, the United States government announced in May 1992 that it would embargo future exports of all U.S. space technology products to the ISRO. To quote a report by *Space News*:

The U.S. embargo was imposed in May in retaliation against India's contracted purchase of Russian rocket-engine technology. It includes all U.S.-made components for India's space program, whether for launch vehicles or satellites. American authorities said the Russian sale breaks an international accord against the spread of missile technology.<sup>14</sup>

The facts behind the transaction were reported by *Space News* as follows:

The U.S. action followed a January 1991 contract between the ISRO and the Russian Glavkosmos organization, which handled commercial space trade for the former Soviet Union.

Valued at slightly less than \$200 million, the contract calls for the delivery of two liquid fueled engines beginning in 1995. The engines are to be built specially for India's future Geosynchronous Launch Vehicle....

Rao [Director of the ISRO] said other developing nations that are considering their own

civilian space efforts will be tempted to hide their intentions as a result of the U.S. action.<sup>15</sup>

The Russia-India-United States controversy illustrates several legal issues raised by interpretation and application of the MTCR.

- \* What is the international legal basis for one nation to exert its technology controls over the activities of states that are not parties to the technology control agreements?

The MTCR Guidelines state specifically that they "are not designed to impede national space programs or international cooperation in such programs as long as such programs do not contribute to nuclear weapons delivery systems."<sup>16</sup> However, the Russia-India sale of cryogenic rocket motors and the U.S. embargo raised many questions as to whether the U.S. action was economically inspired. As *Space News* again reports:

Ray Vickery, a partner in the Washington law firm Hogan and Hartson, which works on U.S.-Russian space business deals, said the proposed sanctions "continue the pattern which this administration has followed of putting roadblocks in the way of cooperative ventures between the United States and Russia." ... Since the ISRO depends on a host of U.S. satellite components to build its remote sensing and communications



spacecraft, the sanctions could hamper their efforts to integrate and launch satellites. For example, ISRO imports components used on its INSAT-2 series from Hughes Space and Communications Group in Los Angeles.

Indian officials deny the engine has military applications, and accuse the U.S. government of trying to derail their deal to buy the rocket engine to protect U.S. commercial space interests.

[Dr.] Rao [Chair of India's Space Commission] ... maintains the sale is not a clear MTCR violation. "We and the Russians believe that we are not violating the MTCR as it is properly defined," Rao said. At a May 8 Moscow press conference, Glavkosmos chief Alexander Dunayev said since Russia has not signed the MTCR, it is not bound to its provisions... Rao said he takes a "rather strong objection" to the vague wording of the MTCR. "I could make the argument that a bullock cart violates the MTCR, if it could transport five nuclear weapons," he added.<sup>17</sup>

\* What is the legal status of a multinational space enterprise in view of the MTCR Guidelines?

Mr. Kenneth Schwetje's 1991 paper finds that U.S. domestic law differentiates between MTCR adherents or non-adherents in terms of the ability of the U.S. Government to impose sanctions.<sup>18</sup> Does this mean that the U.S. Government could use the MTCR as the basis for imposing sanctions against a multinational space enterprise because one of the consortium's member countries transferred Category I or II technology to a non-adherent?

\* What is the legal status of dual-use space technologies?

The technological overlap between military, governmental/civilian, and commercial space launch vehicles begs the question of a definitive demarcation. The MTCR does not establish a dividing line, since almost any space launch vehicle exceeding the range and payload limits could carry a nuclear weapon. In order to promote the expansion of international space markets, the status of dual-use space technologies needs to be defined.

## Notes

1. Readers are urged to consult F. Kenneth Schwetje's excellent contribution to the 1991 Colloquium on the Law of Outer Space, "U.S. Legislation to Implement the Missile Technology Control Regime." *Proceedings of the Thirty-Fourth Colloquium on the Law of Outer Space*, (Washington, D.C.: American Institute of Aeronautics and Astronautics, 1991), pp. 321-5.
2. R. Jeffrey Smith and Marc Fisher, "German Firms Primed Iraq's War Machine," *Washington Post*, July 23, 1992, A-1.
3. Jon B. Wolfsthal, "Factfile: The Proliferation of Ballistic Missiles," *Arms Control Today*, April 1992, p. 28.
4. In May 1992, following a decision by the CoCom, the U.S. Department of Commerce lifted most export controls to Hungary, removing it from the list of countries prohibited from receiving strategic exports. *Aviation Week and Space Technology*, May 11, 1992, p. 14.
5. National Academy of Sciences, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition*, (Washington, D.C.: National Academy Press, 1987), pp. 6-7.
6. *Id.*, p. 17.
7. U.S. Congress, House Committee on Foreign Affairs, July 12, 1989.
8. *Id.*
9. U.S. Senate Hearings on National Security Implications of Missile Proliferation, October 31, 1989.
10. *Id.*
11. The White House, *Guidelines for Sensitive Missile-Relevant Transfers*, April 16, 1987, Point 1. Exchange of Letters, April 7, 1987, announced on April 16, 1987. *Canada-France-Federal Republic of Germany-Italy-Japan-United Kingdom-United States: Agreement on Guidelines For The Transfer Of Equipment And Technology Related To Missiles*, 26 I.L.M. 599 (1987).
12. *Supra*, note 11.
13. *Supra*, note 11. Point 3. A-E, 5. A-B.
14. Daniel J. Marcus and Peter B. de Selding, "Embargo Threatens India's Space Program Schedule," *Space News*, July 20-26, 1992, p. 9
15. *Id.*
16. *Supra*, note 11.
17. Andrew Lawler, "U.S. Sanctions Target Indian, Russian Programs," *Space News*, May 11-17, 1992, p. 1.
18. *Supra*, note 1 at p. 323.