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Nuclear Export Controls in India: A Review of Existing Systems and Prospects for Enhanced India-US Cooperation

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ABSTRACT

The objective of this paper is to review the governing system of export controls that India has created. The paper first focuses on the development and a description of India's nuclear control list. Then a description of the approval/denial process used within India to control the export of dual-use items is presented. The paper is a review of the existing system, and as such represents a resource for analysts to begin assessing vulnerabilities and techniques for strengthening Indian export control systems. Finally, the paper suggests some ideas for strengthening cooperation between the US and Indian governments in enhancing export controls. Possible increased cooperation could include working with trade and small business associations and institutes of foreign trade education to create greater awareness among key players – the small trading houses and suppliers likely to be handling sensitive materials.

¹Nuclear Export Controls in India: A Review of Existing Systems and Prospects for Enhanced India-US Cooperation

Gaurav Rajen

1.0 Introduction

This paper reviews the existing export control systems within India on restricted nuclear technologies and materials, focusing on India's nuclear control list development. The aim of the paper is to provide a description of the export controls system in India, and then suggest approaches for the Indian and the US governments to strengthen and create mechanisms for cooperative export controls actions.

2.0 India's Nuclear Control List Development

In early 1993, a "Small Group on Strategic Export Controls" was constituted by the Government of India to initiate the process of institutionalizing a system of controls over strategic exports from India. The Group finalized a list of items whose export was to be made subject to licensing. This list, described as the "Special Materials, Equipment and Technology (SMET)", was listed in the Export Import Policy announced on March 31, 1995, effective April 1, 1995 (Public Notice 68EXP(PN)/92-97).²

¹

² Nonproliferation Export Controls in India Update 2005, Gahlaut, Seema and Anupam Srivastava, Center for International Trade and Security, University of Georgia, Athens, GA, available at - <http://www.uga.edu/cits/documents/pdf/CITS%20India%20WV.pdf>

Effective from April 1, 1995, the Indian Department of Atomic Energy (DAE) also issued a list, under the Atomic Energy Act, 1962, of prescribed equipment and prescribed substances subject to export licensing by the DAE.

In 1999, a second Small Group on Strategic Export Controls was set up to review the implementation of the existing system and make recommendations for enhancing its effectiveness. Subsequently, effective from April 1, 2000, the Director General of Foreign Trade (DGFT) specified a list of Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET). The export of items in this list is prohibited, or permitted only under license. Treaty obligations after the Government of India joined and ratified the Chemical Weapons Convention in 1997 led to the necessity for creating SCOMET, by including "Chemicals" into the commodity classification. The category "Organisms" represented a consolidation and expansion of prior controls on pathogens and biological agents.

Under the SCOMET guidelines, the grant of a license requires greater scrutiny of the intended foreign entity (importer or exporter), including an expanded review of the documentation submitted (by the domestic importer or exporter) as part of the end-use and end-user certification process. The SCOMET List is notified in the Export Policy in Schedule 2 Appendix 3 of the Indian Tariff Classification (Harmonized System) - ITC (HS) - Classifications of Export and Import Items, 2002-2007.³

³ Current information on the SCOMET list is available on the web site of the DGFT at -

The current SCOMET list contains all dual-use items and technologies within eight categories, in which Category 0 is defined as “Nuclear materials, facilities and related equipment”. This category relates most directly to concerns regarding nuclear proliferation.

2.1 Description of Items Listed Under Category 0 in the Current Nuclear Control List

Items on the SCOMET list under category 0 are further organized into these sub-categories:

- Category 0A prescribed substances
 - 0A1 source material
 - 0A2 special fissionable materials
 - 0A3 other materials
- Category 0B prescribed equipment
- Category 0C technology

Category 0a1 includes source materials, defined primarily as uranium containing isotopes in a mixture as occurs in nature, depleted uranium, and thorium, and any of these in the forms of metal, alloy, chemical compound, or concentrate or any other substance or material. The list sets up prescribed quantitative limits for any period of twelve months for source materials. For example, natural uranium has a limit of 100 kilograms, and thorium a limit of 1000 kilograms.

Category 0a2 defines special fissionable materials, such as plutonium-239 and

others, and specifies that any quantity of special fissionable material is a prescribed substance. Category 0a3 is other materials which are defined as non-nuclear materials for reactors, nuclear related dual-use materials and such materials as may be determined by the central government as needed. These include deuterium, heavy water, nuclear grade graphite, zirconium with less than 2000 ppm of hafnium, beryllium and its alloys, compounds, and minerals (excluding certain categories of beryllium compounds such as in windows used for X-ray machines), and others. This category also includes alpha-emitting radionuclides having an alpha half-life of 10 days or greater but less than 200 years, other various forms of these alpha-emitters, and provides a detailed list of controlled alpha emitters.

Category 0B describes prescribed equipment. Category 0B001 includes nuclear reactors; and their associated equipment, components, and systems specially designed, prepared, or adapted or used or intended to be used in such reactors. A listing of the types of equipment is provided, such as complete nuclear reactors, nuclear reactor vessels, nuclear reactor fuel charging and discharging machines, nuclear reactor control rods and equipment, nuclear reactor pressure tubes, zirconium tubes and assemblies of tubes in which the hafnium to zirconium ratio is 1:500 or less, primary coolant pumps, etc.

Category 0B002 describes plants for processing, production, concentration, conversion or recovery of prescribed substances (such as uranium, plutonium, thorium, deuterium, heavy water, tritium, lithium); associated equipment, components and systems specially designed, prepared or adapted or used or intended to be used in such plants. These

<http://dgftcom.nic.in/exim/2000/scomet.htm> (accessed on April 30, 2008). A detailed description of the SCOMET list is available at - <http://dgftcom.nic.in/exim/2000/not/not05/not1505.htm> (accessed on April 30, 2008).

include plants for production or concentration of deuterium, heavy water, ammonia crackers with operating pressures greater than or equal to 3 MPa, infrared absorption analyzers capable of 'on-line' hydrogen/ deuterium ratio analysis, etc.

Category 0B003 describes plants for reprocessing of irradiated nuclear fuel and equipment, components and systems specially designed, prepared or adapted or used or intended to be used in such plants. This list includes items such as irradiated fuel element chopping machines designed for remote operation, dissolvers capable of withstanding hot and highly corrosive liquid for dissolution of irradiated nuclear fuel and which can be remotely loaded and maintained, solvent extractors and solvent extraction equipment resistant to the corrosive effect of nitric acid, and other such specialized equipment.

Category 0B004 includes plants for treatment, handling, storage and transportation of radioactive wastes from nuclear reactors or from plants for processing source materials or special fissionable materials or from nuclear reprocessing plants; irradiated nuclear fuel; special fissionable materials, and equipment specially designed, prepared, adapted, or intended to be used for such purposes.

Category 0B005 lists all systems, associated equipment, and components for separation or enrichment of isotopes of uranium, plutonium, lithium or boron, other than analytical instruments, specially designed, prepared, adapted, used or intended to be used for such enrichment. These include, for example, gas centrifuges and assemblies and components specially designed or prepared for use in gas centrifuges,

specially designed or prepared auxiliary systems, equipment and components for gas centrifuge enrichment plants. Gaseous diffusion enrichment systems, aerodynamic enrichment plants, ion exchange enrichment plants, and laser-based enrichment plants, including their auxiliary systems are also included.

Category 0B006 specifies plants for the fabrication of nuclear reactor fuel elements, and equipment specially designed or prepared for such purposes. Examples of the items listed are fully automatic pellet inspection stations specially designed or prepared for checking final dimensions and surface defects of the fuel pellets; automatic welding machines specially designed or prepared for welding end caps onto the fuel pins (or rods); and automatic test and inspection stations specially designed or prepared for checking the integrity of completed fuel pins (or rods). This category also includes equipment for: 1) x-ray examination of pin (or rod) end cap welds, 2) helium leak detection from pressurized pins (or rods), and 3) gamma-ray scanning of the pins (or rods) to check for correct loading of the fuel pellets inside.

Category 0B007 lists plants or systems for production, handling, storage and transportation of radioisotopes in quantities exceeding 100 Curies (3.7×10^{12} Becquerel).

Category 0B008 includes neutron generators including neutron chain reacting assemblies and fusion assemblies of all kinds for producing fissile materials

Finally, Category 0C describes technology and software for the development, production or use of prescribed substances or prescribed equipment specified in 0A or 0B

3.0 Legal Basis for the Indian Nuclear Control List

The following Indian laws provide the legal basis for exercising export controls on items of nuclear proliferation concern:

- The Explosive Substances Act, 1908;
- The Environment Protection Act, 1986;
- The Export (Quality Control and Inspection) Act, 1963 Act No. 22 Of 1963
- [24th August, 1963.]
- The Atomic Energy Act, 1962, No.33 of 1962;
- The Customs Act, 1962;
- The Arms Act, 1959 and The Arms Rules, 1962
- The Foreign Trade (Development and Regulation) Act, 1992, which covers items not regulated by any other Act, as well as provides guidelines to implement existing export control regulations covering all dual use items.
- The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.

Detailed regulations and procedures have been created by the Government of India under the above Acts. Other regulations and procedures are detailed in Volume 1 of the 'Handbook of Procedures' (1 April 2002-31 March 2007) issued by the Ministry of Commerce and Industry. Various agencies of the Government are empowered to enforce the provisions of these laws that form the legal and regulatory basis of India's system of export controls.

3.1 India's Atomic Energy Act

The Indian Atomic Energy Act regulates activities related to the production and use of atomic energy, and provides the government with strict control over radioactive substances, technologies and information relating to such substances.

The export of Category 0 items in India's nuclear control list, which include controlled nuclear materials, nuclear-related other materials, equipment and technology, is regulated under the Atomic Energy Act, 1962, the rules framed and the notifications/orders issued by the DAE. The ultimate licensing authority for items in this category is the DAE. Further, any radioactive material in category 0a additionally attracts the provisions of the Radiation Protection Rules, 2004, made under the Atomic Energy Act, 1962 and the provisions of other applicable sections of the Atomic Energy Act, 1962.

4.0 India's System and the Nuclear Suppliers Group Guidelines

The Nuclear Suppliers Group (NSG) has set up guidelines for the export of items that are especially designed or prepared for nuclear use. These include: 1) nuclear material; 2) nuclear reactors and equipment meant for them; 3) plant and equipment for the reprocessing, enrichment and conversion of nuclear material and for fuel fabrication and heavy water production; 4) technology associated with each of these items. The NSG has set up separate guidelines for dual-use items that "can make a major contribution to an un-safeguarded nuclear fuel cycle or nuclear explosive

activity, but which have non-nuclear uses as well, for example in industry”.⁴

India’s latest legislation (passed in 2005) dealing with “ Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities)” states that the Act is meant to "to prohibit unlawful activities in relation to weapons of mass destruction (WMDs), their means of delivery and **related dual-use materials, equipment and technologies.**" (Emphasis added.) In seeking enhanced civil nuclear cooperation with the US, India has also made a commitment to make its export controls systems in accordance with the NSG guidelines.

An analysis of India’s nuclear control list (category 0 in the SCOMET list) has identified that India’s list controls equipment that has been “specially designed, prepared, or adapted or used or intended to be used” in nuclear systems. The definitions section of this list defines “specially designed” as “equipment, parts, components or “software” which, as a result of “development”, have unique properties that distinguish them for certain predetermined purposes. For example, a piece of equipment that is “specially designed” will only be considered so if it has no other function or use. Thus a piece of manufacturing equipment that is “specially designed” to produce a certain type of component will only be considered such if it is not capable of producing other types of components.” The way that India’s SCOMET list defines “usable in,” “usable for,” “usable as” or “capable of” qualifies the

⁴ The NSG guidelines are available on the NSG web site at – <http://www.nuclearsuppliersgroup.org>

“description of equipment, parts, components, materials, technology or “software” which are suitable for a particular purpose. There is no requirement that the equipment, parts, components, technology or “software” should have been configured, modified or specified for that particular purpose.” Thus, the SCOMET list in its definition of usability covers dual-use items, that is, items that can be used for a nuclear purpose but that need not have been specially designed for that purpose.

The language in India’s nuclear control list, therefore, does restrict dual-use materials, equipment and technologies, and is in accordance with the WMD-related Act passed in 2005, as well as India’s commitments to the US to have its export controls in accordance with the NSG guidelines

5.0 A Schematic of the Approval/Denial Process for an Application to Export a Restricted Item and the Agencies Involved

The Indian process for approval or denial of an application to export a restricted item has been described in a report by Seema Gahlaut and Anupam Srivastava in a report prepared by the Center for International Trade and Security at the University of Georgia, Athens, Georgia, in the United States.⁵

Important elements to consider in enhancing the Indian system of export

⁵ This figure is modified slightly and taken from the report on Nonproliferation Export Controls in India Update 2005, Gahlaut, Seema and Anupam Srivastava, Center for International Trade and Security, University of Georgia, Athens, GA, available at - <http://www.uga.edu/cits/documents/pdf/CITS%20India%20WV.pdf>

controls are to strengthen the laws and regulations that govern the approval of a license application, the technical assessment capabilities of the agencies involved in the approval/denial process, and the enforcement capabilities of the Indian customs and excise departments that will block any illegal attempts at export of controlled items. One of the key elements in this system is that of training and providing assistance to the exporter concerned. Self-regulation by exporters will be of great importance in an effective system of export controls. This is an element of the Indian export controls system that could benefit greatly through increased US collaboration and assistance.

6.0 Opportunities for US Collaboration

In this section, I propose avenues for enhanced Indian and U.S. government cooperation in strengthening export controls through training and outreach to Indian exporters, especially small businesses and trading companies..

6.1 Treaties and Agreements that create opportunities for US assistance

UNSCR 1540 states –

- “*Recognizing* that most States have undertaken binding legal obligations under treaties to which they are parties, or have made other commitments aimed at preventing the proliferation of nuclear, chemical or biological weapons, and have taken effective measures to account for, secure and physically protect sensitive materials, such as those required by the Convention on

the Physical Protection of Nuclear Materials and those recommended by the IAEA Code of Conduct on the Safety and Security of Radioactive Sources

- *Recognizes* that some States may require assistance in implementing the provisions of this resolution within their territories and invites States in a position to do so to offer assistance as appropriate in response to specific requests to the States lacking the legal and regulatory infrastructure, implementation experience and/or resources for fulfilling the above provisions;
- *Calls upon* all States to promote dialogue and cooperation on nonproliferation so as to address the threat posed by proliferation of nuclear, chemical, or biological weapons, and their means of delivery.”

The Convention on Physical Protection states –

- States Parties shall co-operate and consult as appropriate with each other, directly or through international organizations, with a view to obtaining guidance on the design, maintenance and improvement of systems of physical protection of nuclear material in international transport.

Bilateral Agreements

Authority sought by the President from the US Congress regarding India-US Civil Nuclear Cooperation Agreement states in part:

- “India is ensuring that the necessary steps are being taken

to secure nuclear materials and technology through the application of comprehensive export control legislation and regulations, and through harmonization and adherence to Missile Technology Control Regime (MTCR) and Nuclear Suppliers Group (NSG) Guidelines”

The India-US civil nuclear cooperation agreement (currently under negotiation, and authorized conditionally by the US Congress depending on India meeting certain obligations) will create new opportunities for the Indian and US governments to cooperate in strengthening export controls in keeping with the above statement by the US President. Along with this bilateral agreement, the other listed treaties and conventions also create opportunities for enhanced Indian and US government cooperation in strengthening export controls. I propose that two areas on which such cooperation could focus are – 1) working with Indian federal educational institutions that promote and teach trade practices; 2) working with Indian small business and trade associations.

6.2 Institutionalizing Education in Export Controls

There is an opportunity to institutionalize training courses in export control by working with organizations such as the Indian Institute of Foreign Trade (IIFT), started in 1963 by the Government of India in New Delhi. The IIFT is India’s premier institution providing training on foreign trade. Currently the IIFT (based on a perusal of

the IIFT web site)⁶ has no training courses specifically on export control. The IIFT, and specifically its Center for Trade in Technology, could be a key partner in such an effort. The IIFT has signed an MoU with the United Nations Conference on Trade and Development (UNCTAD) to serve as a regional training entity, and cooperation with the IIFT could have a multiplier effect in South and Southeast Asia. Enhanced Indian and US government cooperation in export controls could assist institutions such as the IIFT, or other suitable alternative institutions, to make export controls training a part of their core curricula.

6.3 Assessment of Needed Assistance on Export Controls Based on Input from Indian Trade Associations

A key element of enforcing controls on restricted items are small to medium sized specialty manufacturers, small importers, resellers of foreign technology, and small exporters. Establishing partnerships with appropriate Indian organizations could help assess their training needs in export controls.

An organization within India that would make an extremely suitable partner is the Federation of Indian Export Organizations (FIEO).⁷ The FIEO is the apex body of Indian export promotion organizations and was set up jointly by the Indian Ministry of Commerce and private trade and industry organizations in 1965. The FIEO includes as its

⁶ The web site of the IIFT is available at - <http://www.iift.edu/iift/index.asp>

⁷ The web site of the FIEO is available at - <http://fieo.org/> (accessed on May 14, 2007).

members key councils in India that deal with the trade of materials and technologies of concern to an export controls regime. Some of these are, for example –

- Chemical and Allied Products Exports Promotion Council
- Engineering Export Promotion Council
- Electronics and Computer Software Export Promotion Council
- Overseas Construction Council of India
- The Plastics Export Promotion Council

In April 2007, for example, the FIEO organized a training course for its members in collaboration with Pinkerton Consulting and Investigations India on the US-led Customs Trade Partnership Against Terrorism (C-TPAT).⁸ The FIEO represents a single point of entry into providing export controls training to a multitude of small businesses and industries as well as trading houses in sectors that are of concern.

7.0 Conclusions

This paper has provided information on the governing system of export controls that India has created. It has focused on the development and a description of India's nuclear control list. More detailed analyses of the approval/denial process used within India to control the export of dual-use items will allow analysts to begin assessing vulnerabilities and techniques for

strengthening Indian export control systems. In this context, I have suggested some ideas for strengthening cooperation between the US and Indian governments in enhancing export controls. Possible increased cooperation could include working with trade and small business associations and institutes of foreign trade education to create greater awareness among key players – the small trading houses and suppliers likely to be handling sensitive materials. Working with such Indian partners will ensure that US assistance is of maximum value and acceptable to the Indian government and business communities.

⁸ From the April 2007 newsletter of the FIEO, available at - <http://fieo.org/fieonews/2007/april/ctpa.html> (accessed on April 30, 2008).



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