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NUCLEAR EXPORT CONTROLS

A Comparative Analysis of National Regimes for the Control of Nuclear Materials, Components and Technology

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INTRODUCTION: PURPOSE OF THIS ASSESSMENT

Commercial nuclear companies that export goods and services from the United States have long pointed to the U.S. nuclear export control system as a major competitive disadvantage as they compete with their counterparts in nuclear supplier nations such as the Russian Federation, Japan, the Republic of Korea (ROK) and France.

Their concerns are based on a belief that the U.S. nuclear export control regime is:

(1) more complex and difficult for U.S. companies to navigate, impeding their ability to secure required licenses and authorizations for exports of nuclear services and commodities;

(2) significantly less efficient in processing export licenses than its counterparts in other nations, and

(3) more restrictive in its controls than the regimes of other nuclear supplier nations, causing potential customers to refrain from doing business with U.S. nuclear vendors and service providers and/or hindering the ability of the U.S. companies to execute and perform contracts with foreign customers.

In a November 2010 report on commercial nuclear exports, the Government Accountability Office (GAO) cited concerns that the U.S. export control regime imposes a competitive disadvantage on U.S. exports. GAO reported industry statements "that [the U.S. Department of Energy's (DOE)] Part 810 authorization regulations are vaguely defined and that DOE interprets its authority to include transfers of technology and technical assistance too broadly."[1]

The objective of this report is to evaluate whether U.S. commercial nuclear exporters do, in fact, face a competitive disadvantage because of the U.S. export control regime and, if such burdens exist, to identify them. This requires a comparative analysis of the commercial nuclear export control regimes of major supplier countries. The report provides an overview of four national regimes for the control of exports of nuclear materials, components and technology – those of Russia, Japan, ROK and France – and compares these regimes to the U.S. nuclear export control regime.

The report focuses on key aspects of nuclear export control, such as the structure and organization of regulatory systems, the scope of controls over nuclear and nuclear-related commodities and technology, types of licenses issued, license issuance requirements, processing times, and other distinguishing characteristics of each regime.

DISCLAIMER: *The summary of foreign laws and related comments in this report is based primarily on a summary of primary and secondary sources available in English, Russian and French as of June 2011, and is provided for the limited purpose of comparing these laws to the U.S. nuclear export regime. This report does not constitute legal advice for exporters, importers or other participants in nuclear commerce with respect to their obligations under U.S. or foreign export laws.*

[1] "Nuclear Commerce: Governmentwide Strategy Could Help Increase Commercial Benefits from U.S. Nuclear Cooperation Agreements with Other Countries," Government Accountability Office, November 2010.

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I. EXECUTIVE SUMMARY

Compared to the nuclear export control regimes of Russia, Japan, ROK and France, the U.S. regime is, in many respects, more complex, restrictive and time-consuming to navigate and fulfill.

Fundamental aspects of the U.S. export control regime were established over six decades ago – more than three decades prior to the creation of the Nuclear Suppliers Group (NSG).[2] During this time, the U.S. regime has evolved into a patchwork of requirements with layers of modifications. By comparison, the Russian, Japanese and ROK regimes are relatively modern and, in the case of the Japanese and ROK regimes, were recently amended to address post-9/11 non-proliferation concerns. The French regime is based, in part, on the European Union (EU) Dual-Use Regulation of 2009, as amended.

Whereas most of these regimes provide for a single export licensing agency to handle exports of nuclear commodities and technology, U.S. control of such items is divided among the Department of Energy (DOE), Department of State (DOS), Department of Commerce (DOC) and the Nuclear Regulatory Commission (NRC) – which administer four very different sets of regulations, coupled with a complex interagency review process. For U.S. exporters and their customers, navigating the bureaucratic maze for a U.S. export license presents a challenge in itself that has no parallel in the other countries surveyed in this study.

Although nuclear export control regimes in all major nuclear supplier nations are consistent with guidelines issued by the NSG, the U.S. regime contains additional restrictions. Unique and substantial hurdles for U.S. exporters result from the DOE's vaguely worded rules concerning "assistance to foreign atomic energy activities" (codified at 10 CFR Part 810). In contrast to the NSG-based technology controls of other regimes, DOE's Part 810 rule creates a more expansive and less predictable scope of jurisdiction. The U.S. export control regime is also distinguished by a legal requirement for bilateral nuclear cooperation agreements for transfers of source and special nuclear material, and by language in such agreements requiring U.S. consent for retransfers of certain U.S.-origin equipment, components and material, retransfers of material produced through the use of such items, and for any enrichment or reprocessing of such material.

Compared to the foreign regimes reviewed in this report, the U.S. regime imposes few deadlines for decision-making on export license applications. Although the Atomic Energy Act (AEA) requires the NRC to process export license applications "expeditiously" and endeavor to complete action within sixty days after the Executive Branch recommends that the license be issued, the consequence of missing this deadline is mainly that the applicant must be informed of the reason for the delay. The time consumed by the DOE for processing applications for a specific authorization to export nuclear technology and provide nuclear technical assistance to foreign entities ranges from six months to well over one year. The NRC usually requires a year or more to process license applications for initial exports of reactors, major reactor components and nuclear fuel, and approximately nine months for applications for subsequent exports.

As the Nuclear Energy Institute (NEI) has pointed out, in addition to making the U.S. system difficult to navigate, the division of jurisdiction over commercial nuclear exports contributes to the inefficiency of the U.S. regime. NEI has noted that balkanization of control among government agencies prevents some agencies, including DOE's National Nuclear Security Administration (NNSA), from accessing coordinated resources and using 21st century technologies to process, track and issue export licenses in an efficient manner. The NRC's and DOE's actual processing times for export license applications are also significantly longer than export license processing times mandated by Russian, Japanese and ROK law.

[2] The Nuclear Suppliers Group (NSG) is a voluntary membership organization, currently composed of 46 countries, which seeks to limit the proliferation of nuclear weapons through the implementation of guidelines for nuclear exports and nuclear-related exports.

As U.S. exporters of nuclear components and services have often observed, in the competitive global market for nuclear technology and consulting services, significant disparities in technology transfer policies amount to a competitive disadvantage for the exporter. The U.S. commercial nuclear export control regime has many features in common with the regimes of other leading supplier countries, but there are significant differences in complexity, restrictions, and processing time. These differences reinforce the concerns expressed by U.S. companies that the U.S. export control regime places them at a serious disadvantage next to their competitors in the international export market.

II. THE NUCLEAR SUPPLIERS GROUP GUIDELINES FOR NUCLEAR AND NUCLEAR-RELATED TRANSFERS

The Nuclear Suppliers Group (NSG) and the NSG Guidelines are important to an analysis of the international nuclear export regime. The NSG was created following India's nuclear test in 1974. The NSG first published its Guidelines in 1978. The guidelines apply to nuclear transfers for peaceful purposes to help ensure that such transfers are not diverted to unsafeguarded or nuclear weapons activities. The NSG Guidelines are designed to provide the means to facilitate peaceful nuclear cooperation in a manner consistent with international nuclear non-proliferation norms.

The NSG Guidelines are implemented by each participating government in accordance with its national laws and practices.

The NSG currently maintains two sets of Guidelines:

- Guidelines for Nuclear Transfers (INFCIRC/254, Part 1) (referred to in this report as "NSG Guidelines Part 1"), which govern the export of items that are especially designed or prepared for nuclear use ("Trigger List Items"). These items include: (i) nuclear material; (ii) nuclear reactors and equipment therefor; (iii) non-nuclear material for reactors; (iv) plants and equipment for the reprocessing, enrichment and conversion of nuclear material and for fuel fabrication and heavy water production; and (v) technology associated with each of the above items.
- Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology (INFCIRC/254, Part 2) (referred to in this report as "NSG Guidelines Part 2"), which govern the export of nuclear-related dual-use items and technologies. Dual-use Items are items that can make a major contribution to an unsafeguarded nuclear fuel cycle or nuclear explosive activity, but which have non-nuclear uses as well.

There are currently 46 NSG members. All of the countries discussed in this report – Russia, Japan, the ROK and France – are NSG members. All of the nuclear export control regimes discussed in this report are consistent with the NSG Guidelines. For this reason, it is useful to provide some baseline comparisons between the requirements of the NSG Guidelines and those of the U.S. nuclear export control regime.

Scope of Items Controlled

The U.S. nuclear export control regime was developed before the NSG Guidelines were promulgated and, for this reason, does not exactly match the Guidelines. The U.S. regime does comply with the Guidelines in substance, however:

- Trigger List Items are controlled in part by the NRC in accordance with its export-import rule (codified at 10 CFR Part 110) (for nuclear material, nuclear reactors and equipment, non-nuclear material for reactors, and certain components for sensitive facilities, as listed in the Appendices to Part 110), in part by the DOC in accordance with the Export Administration Regulations (EAR), Category 0 (for plants and equipment for the reprocessing, enrichment and conversion of nuclear material and for fuel fabrication and heavy water production), and in part by the DOE in accordance with its Part 810 regulations for technology associated with the above items.
- Dual Use Items are controlled by the DOC under the EAR.

Control lists provided under the U.S. nuclear export control regime, such as the NRC's illustrative list at Appendix A and the DOC's Commerce Control List (CCL), closely match the NSG Guidelines' control lists.

Similarly, the NSG Guidelines provide for controls over technology that are similar, in their objective, to DOE's controls over "assistance to foreign atomic energy activities" under DOE's Part 810 regulations.

The Guidelines provide that "[t]he transfer of 'technology' directly associated with any [controlled] item . . . will be subject to as great a degree of scrutiny and control as will the item itself," and control not only "technical data" but also "technical assistance," defined to include "instruction, skills, training, working knowledge, consulting services."[3] DOE's Part 810 regulations similarly control the provision of technical assistance and various forms of technical assistance to foreign entities.

One distinction, however, is that the NSG Guidelines define "technology" as information needed for the "development," "production" or "use" of controlled nuclear commodities, as these terms are defined in the Guidelines. This definition, also mirrored in the DOC's EAR, provides a higher threshold for controls over technology than Part 810, which, under DOE's interpretation, controls technical data that is simply related to key nuclear components. For example, the NSG Guidelines provide for controls over information used for the "development" (e.g. design, assembly), "production" (e.g. construction, testing, quality assurance) and "use" (e.g. operation, installation, maintenance) of a reactor coolant pump. By contrast, DOE's Part 810 regulations control technical information related to the coolant pump. This lack of precise definitions allows the DOE to apply its controls more broadly than the controls specified in the NSG Guidelines for transfers of technical data.

Deemed Export Rule

The DOC and the DOE have both adopted what is known as the "deemed export" rule, which holds that providing access to a foreign national located in the United States to controlled technology or software is deemed to be an export to that foreign national's country of citizenship. The "deemed export" rule has been particularly controversial with respect to DOE's Part 810 regulations. This is because DOE has generally followed the DOC's deemed export concept despite the fact that DOE's Part 810 regulations do not contain any reference to this concept and do not provide definitions of "foreign national" or any other guidance to the application of the deemed export concept.

The NSG Guidelines do not currently contain any references to the deemed export rule or any similar concept. However, the Guidelines provide the flexibility for suppliers to adopt additional restrictions in national legislation.

Retransfer Assurances

The NSG Guidelines provide that suppliers should transfer Trigger List Items and related technology only if these items (1) will not be used for nuclear explosive devices, (2) will be placed under effective physical protection, and (3) the recipient state has a full-scope safeguards agreement with the International Atomic Energy Agency (IAEA). Further, the NSG Guidelines require that suppliers obtain the recipient's assurance that, in the case of retransfer of Trigger List Items or items derived from them, the recipient of the retransfer will have provided the same assurances as those required by the supplier for the original transfer (i.e., peaceful use, physical protection and IAEA safeguards).

Retransfer assurances required by the U.S. nuclear export control regime often reach beyond the retransfer assurances required by the NSG Guidelines. Under the U.S. regime, nuclear material and major nuclear equipment are usually transferred under bilateral agreements for cooperation (known as "123 Agreements" because they are concluded in accordance with Section 123 of the Atomic Energy Act). Most 123 Agreements include a requirement that the recipient state obtain prior approval from the supplier country before retransferring to a third country items supplied under the agreement. This requirement to obtain supplier country approval is more restrictive and burdensome than the NSG requirement to obtain peaceful use, physical protection and IAEA safeguards assurances from the third party. This is because the latter types of assurances are standard and not controversial. A requirement to obtain supplier country approval, on the other hand, places the supplier country in a position to deny or delay such approval as it sees fit.

[3] INFCIRC/254/Rev.9/Part 1.

Similarly, as part of the process of obtaining assurances under the Part 810 licensing process, the U.S. government regularly requires recipient countries to provide assurances that U.S.-supplied technology will not be retransferred to a third country without prior U.S. Government approval.

III. THE U.S. NUCLEAR EXPORT CONTROL REGIME COMPARED WITH THE REGIMES OF OTHER LEADING SUPPLIER COUNTRIES

This analysis considers three aspects of the nuclear export control regimes in the Russian Federation, France, the ROK and Japan relative to the U.S. regime:

(1) ways in which foreign export control regimes are comparable to the U.S. regime

(2) ways in which the foreign regimes are less burdensome on exporters than the U.S. regime; and

(3) ways in which the foreign regimes are more burdensome than the U.S. regime.

Areas where Foreign Export Control Regimes Are Comparable to the U.S. Regime

Scope of What Is Controlled. All of the countries reviewed in this study closely follow the NSG Guidelines, and each country's control lists mirror the NSG's Trigger List and Dual Use List. Although the U.S. nuclear export control regime is not structured to conform to the NSG Guidelines, the U.S. regulations effectively control the same nuclear materials, equipment and technology as the Trigger List and the Dual Use List. For example, the illustrative list of controlled nuclear reactor equipment at 10 CFR Part 110, Appendix A, and certain categories in the DOC's Commerce Control List (CCL) closely follow the lists in the NSG Guidelines.

Specific Controls over Technology. All of the countries surveyed have adopted the NSG Guidelines' controls over technology, which include controls over the provision of technical data and technical assistance to foreign entities. These controls are very similar to DOE's controls over assistance to foreign atomic energy activities under Part 810. In addition, other nations have their versions of the "deemed export" rule. Russia and Japan clearly also control "deemed exports" of nuclear technical data. Japan recently amended its export law to establish expanded controls over technology transfers. These controls are strict, applying to transfers of technology by non-residents. Under the law, Japanese nationals are treated as non-residents if they have lived outside Japan for more than two years. In contrast, DOE's Part 810 controls apply only to U.S. companies and U.S. citizens and always treat U.S. citizens as U.S. nationals for purposes of the controls, as long as they maintain their citizenship.

Retransfer Consent Rights Pursuant to Bilateral Nuclear Cooperation Agreements. The United States, in its 123 Agreements, reaches beyond the NSG requirements for retransfer assurances by requiring prior consent from the supplier for retransfer of nuclear material and certain equipment beyond the territorial jurisdiction of the recipient.

In many instances, prospective purchasers of nuclear reactors, major components and nuclear fuel assign critical importance to such consent rights of the supplier nation. Such consent rights control the transfer of used fuel from the recipient country to third countries for storage, reprocessing or final disposition. Since countries that are establishing new nuclear power programs typically will not wish to construct expensive facilities for long-term storage or disposition of used fuel, they will likely need to export their used fuel for storage, reprocessing or final disposition. Accordingly, a supplier country's requirement that a recipient country obtain the supplier nation's consent is a very sensitive issue because recipient countries realize that their used fuel strategy could be disrupted by a failure to obtain supplier nation consent on a timely basis.

Many of the retransfer consent rights set forth in U.S. 123 Agreements are mirrored in bilateral cooperation agreements executed by Japan, the ROK and France. The only country studied that applies the less restrictive NSG retransfer requirement is Russia. However, some French bilateral agreements impose French consent rights regarding the retransfer of used fuel, produced by irradiating fresh fuel

supplied by countries other than France, in a French-supplied reactor or other reactor containing major components exported from France.

Areas where Foreign Export Control Regimes Are Less Burdensome for Exporters than the U.S. Regime

Complexity of Bureaucracy and Licensing Process. A review of the four foreign export control regimes demonstrates that the other nuclear supplier nations provide an efficient process for the review of export license applications and issuance of licenses for the export of nuclear commodities and technologies. Most of the countries have a single agency that is responsible for export licensing; some have an additional agency that may provide technical review, oversight and concurrence. For example, in Japan, all export licensing is handled through the Ministry of Economy, Trade and Industry (METI). In Russia, the Federal Service for Technical and Export Control (FSTEC) handles all of the administrative aspects of export licenses, while Rosatom provides technical input.

The complexity of the U.S. regime stems in large part from the number of U.S. agencies that have jurisdiction and are responsible for administering the controls over U.S. nuclear exports. Each of these agencies has promulgated its own rules, all of them complex and nuanced. In the United States, export control of nuclear materials, components and technology is administered by four key agencies:

- The U.S. Nuclear Regulatory Commission (NRC) administers controls over exports of nuclear reactors, components and materials, as well as fuel cycle facilities, in accordance with its export-import regulations, codified at 10 CFR Part 110.
- The U.S. Department of Energy (DOE) administers controls over exports of nuclear technology and technical assistance, in accordance with its regulations governing "assistance to foreign atomic energy activities" (10 CFR Part 810). Within the DOE, the National Nuclear Security Administration (NNSA) administers Part 810.
- The U.S. Department of Commerce's (DOC) Bureau of Industry and Security (BIS) administers controls over exports of commercial and "dual use" commodities and technology, including commodities and technology for the Balance of Plant (BOP), in accordance with the Export Administration Regulations (EAR), codified at 15 CFR Parts 730-774.
- The U.S. Department of State (DOS) administers controls over exports of military items, including commodities and technologies used in nuclear submarines and nuclear weapons, in accordance with the International Traffic in Arms Regulations (ITAR), codified at 22 CFR Parts 120-130.

Each of the four regulatory regimes is complex and decades-old. For example, the DOC was first given primary responsibility for administering and enforcing export controls on dual-use items by the Export Control Act of 1949. The DOE's Part 810 regulations, which date back to 1956, are unchanged in many fundamental respects.[4] The NRC's Part 110 regulations were first promulgated in 1978. The regulations have been amended infrequently.

The DOC export control regime is a maze in itself, with each commodity, related technology and software subject to the EAR classified by Export Control Classification Numbers (ECCNs) that comprise the Commerce Control List (CCL). In addition to difficulties in navigating the CCL's 10 categories and five product groups in each category, once an exporter determines the ECCN that may apply to a particular nuclear-related commodity, technology or software, the exporter then has to consult the Commerce Country Chart to determine whether a license is required to export a classified item to any particular

[4] On September 7, 2011, the U.S. Department of Energy (National Nuclear Security Administration) published a Notice of Proposed Rulemaking, which proposes to amend 10 CFR Part 810.

destination, review license exceptions and consider catch-all prohibitions for end uses, before he can determine whether a license is required. Even then, a detailed review of the EAR may not provide an exporter with a definitive answer, and the exporter must request a Commodity Classification from the DOC.

Despite the voluminous and complex nature of the DOC's EAR, DOE's Part 810 regulations are most often identified by U.S. exporters as the primary source of confusion, concern and delay. The Part 810 regulations, although concise, are based on vague statutory language that DOE's Part 810 regulations do little to clarify. Consequently, U.S. companies – even those with considerable experience in exporting nuclear technology – often find the requirements of Part 810 confusing.

These broadly drafted regulations require U.S. persons to obtain an authorization from the Secretary of Energy for activities that involve the "direct or indirect production of special nuclear material." DOE and its predecessor agencies have interpreted this requirement to apply to all technology related to light water reactors, because plutonium is produced during the irradiation of fuel in the reactor, as well as enrichment, reprocessing and heavy water technology. Because of the expansive wording of the DOE's Part 810 regulations, their applicability to many activities concerning nuclear power reactors is often not evident. DOE also imposes other requirements, such as controlling the provision of certain nuclear technology to foreign nationals within the United States, that are not expressly stated in the regulations. Finally, DOE has never issued formal guidance regarding its interpretation of the regulations, other than advisory opinions that the agency provides to individual exporters.

The allocation of nuclear export authority to four Federal entities – DOE, NRC, DOC and DOS – does not have a counterpart in other countries. The multiple agency structure, in addition to creating complexity and confusion for exporters, may also affect distribution of resources among the agencies to process export license applications efficiently. For example, the agencies responsible for administering nuclear export controls in Russia, Japan, the ROK and France are the trade control agencies of these countries – the equivalent to the DOC in the United States. These agencies, like the DOC, appear to have the budgets, resources and sophisticated systems that are necessary for administering export licenses in an efficient and timely manner. For example, Japan's METI has three divisions under its Trade Control Department that carry out defined export license functions. The DOE's NNSA, on the other hand, has a single office – the Office of International Regimes and Agreements – that is responsible for administering Part 810 controls. This office, currently comprised of three individuals who all have other functions and responsibilities within the NNSA, is severely understaffed to address the requests for Part 810 specific authorizations that it currently receives as a result of the global nuclear renaissance and U.S. companies' efforts to meet the increasing demand for nuclear-related services outside of the United States.

This general lack of resources has a significant impact on an agency's ability to process requests for export licenses efficiently, and frequently has a negative impact on the ability of vendors to win overseas contracts and perform those contracts. For example:

- The DOE does not have a transparent system for applicants to track the status of Part 810 applications and their processing. An applicant must repeatedly contact the Office of International Regimes and Agreements to inquire about the status. Once the application is no longer with the Office of International Regimes and Agreements, that office must make inquiries with other offices at NNSA or other agencies to determine the status of the application. Sometimes, this office is not in a position to provide accurate status updates because it depends on the accuracy of information coming from another office or another agency. This opaque process has a negative effect on exporters who must be able to make business decisions based on the status of their Part 810 applications. U.S. exporters are often under pressure to advise customers or potential customers of the timelines for receiving Part 810 approval, and are thus unable to comply with these requests.
- The DOE does not have an electronic system for filing export license applications such as the DOC's SNAP-R system. Electronic export license application systems are provided by some of the other

nations. For example, Yestrade, operated jointly by the ROK's Ministry of Knowledge Economy (MKE) and the Korea Strategic Trade Institute (KOSTI), allows for classification and issuance of export licenses for strategic items online. This type of online system enhances the efficiency and the ease with which exporters can apply for licenses.

The burdensome interagency review process required for issuance of Part 810 DOE authorizations and Part 110 NRC licenses also appears to be unique to the United States. Such a process exists in Russia, but only for exports of critical nuclear commodities, and the Russian process is made more efficient by a requirement for each agency to submit its views within 10 days and to focus only on its area of jurisdiction.

Finally, Section 57(b) of the Atomic Energy Act and DOE's Part 810 regulations require that each specific authorization issued under Part 810 must be signed by the Secretary of Energy. This requirement does not appear to be matched in any other nuclear export control regime and results in significant delays in the Part 810 authorization process.

The U.S. nuclear export licensing process suffers in some ways from its antiquity. The U.S. export control agencies have functioned as separate bureaucracies for decades. Other countries such as Japan, the ROK and Russia have nuclear export regimes that were established or heavily revised to address nuclear exports only during the past decade. These countries have had the benefit of creating export control regimes that focus on efficiency and take into account lessons learned and established international norms.

Export License Processing Time. Foreign supplier countries place a stronger emphasis than the U.S. on the importance of expediting the export licensing process. The Japanese, ROK and Russian regimes allow a range of 15-90 days for processing export license applications. The French regime is the only one that more closely approximates the U.S. regime by allowing nine months to process export applications.[5]

The Japanese, ROK and Russian regimes impose processing timelines by legislation or regulation, depending on the regime. In some cases, the regulators are provided with extensions to address additional questions and other issues. Even with these extensions, the regulators appear to be under an obligation to process the applications in a time period as close as possible to the mandated processing times.

In contrast, in the United States, the DOE's processing time for applications for a specific authorization to export nuclear technology and provide nuclear technical assistance to foreign entities ranges between six months to well over one year. The NRC usually requires a year or more to process license applications for initial exports of reactors, reactor components and nuclear fuel, and approximately nine months for applications for subsequent exports. In the United States, processing times are not mandated by legislation or regulations.[6] Executive Branch procedures established by the DOE, DOS and DOC, as required by the Nuclear Nonproliferation Act of 1978 (NNPA), specify time periods for actions by these agencies, the Department of Defense and the NRC for each step of the license review process. However, the procedures provide significant flexibility for agencies in reviewing and processing applications for export licenses and specific authorizations pursuant to 10 CFR Part 810. For example, the procedures do not provide a timeline for DOE to review and prepare an analysis and preliminary staff recommendation on each application for transmission to the agencies that must also review the application. And since the

[5] Information concerning the average time required by French export licensing authorities to process applications is not readily available.

[6] The Nuclear Nonproliferation Act of 1978 (NNPA) requires timely consideration of export license applications and calls for procedures that provide for the NRC to "immediately initiate review of any application" and "to the maximum extent feasible . . . expeditiously process the application concurrently with the executive branch review while awaiting the final executive branch judgment." Among other things, these procedures must also provide that the Commission "shall inform the applicant in writing of the reason for delay" if the Commission "has not completed action on the application within sixty days after the receipt of an executive branch judgment that the proposed export . . . is not inimical to the common defense and security." Sec. 126(b)(2) of the AEA, 42 USC 2155(b)(1). However, these provisions do not constitute a statutory deadline for the NRC's action.

procedures allow the reviewing agencies to determine that they require additional time to complete their review, the timelines envisioned by the procedures appear to be exceeded more often than they are met. As a result, few applications are processed within the timeframes envisioned by the Executive Branch procedures. In some instances, the time period required by the NRC to rule on license applications has not met deadlines specified in applicable 123 Agreements, such as the 123 Agreement with the European Atomic Energy Community (EURATOM).

Finally, the opportunity for members of the public to request a hearing or petition to intervene in NRC export licensing proceedings appears to be a unique feature of the U.S. export control regime that has in some cases acted as an impediment to the performance by U.S. vendors of contracts for the delivery of reactors and nuclear fuel. Some prospective foreign customers may perceive that this aspect of the NRC export licensing process will cause long delays in the issuance of export licenses, based on the record of the NRC's delay in the processing of certain export license applications in the 1970s and 1980s.[7] These delays resulted primarily from the legal ability of individuals and organizations to file petitions in opposition to applications for export licenses and the ensuing delay resulting from the NRC's consideration of the petitioner's arguments in support of the petition and the applicant's opposing arguments. In a few instances, opponents have challenged the NRC's denial of their petition to intervene in opposition to an export license application by filing petitions for review in a U.S. Court of Appeals. Our research did not disclose any comparable right of public participation in the foreign nuclear export licensing regimes.

Application of Technology Controls. DOE's Part 810 controls on exports of technical data and technical assistance are more broadly worded than the NSG's controls on information for the "development," "production" and "use" of controlled commodities. Thus, DOE has authority, under 10 CFR Part 810, to control a broader range of activities by U.S. persons than is provided by national laws that control technology exports based on the NSG Guidelines. For example, DOE has previously exercised control over economic analyses of nuclear technologies and procurement assistance to foreign nuclear power programs. The tailored definitions of "development," "production" and "use" under the NSG Guidelines would make it much more difficult to exercise this type of broad application of controls strictly on the basis of the Guidelines. The difference in the two approaches is most evident when comparing the DOC's technology controls with respect to "dual use" items, which essentially implement the NSG standard, to DOE's controls under Part 810. Experience with both sets of regulations suggests that the DOC's threshold for technology controls is higher than the DOE's threshold for applying its Part 810 rules.

Multiple Export Licenses. All of the foreign nuclear export control systems surveyed provide for multiple export licenses, in many cases to exporters with approved export compliance programs:

- The Russian regime provides for a multiple export license issued to exporters that have internal export control systems accredited by FSTEC for multiple exports of a certain type of commodity to one or more destinations, without the need to list specific end-users.
- The Japanese regime provides for bulk export licenses to exporters with internal control systems based on METI's Internal Compliance Program for multiple exports of less sensitive goods and technology to "White" countries.
- The ROK regime provides for a general comprehensive export license to exporters designated as "Compliant Traders," permitting multiple instances of export during a prescribed period of a specified item to Region A countries. The ROK regime also provides for a validated comprehensive export license, which permits multiple exports to Region B countries if such item will be directed continuously to the same importer.

[7] For example, NRC approval of Westinghouse's application to export a reactor to the Phillippines in 1977 took approximately 3.5 years.

- The French regime provides a global export authorization allowing an exporter unlimited shipments of specific items to specific recipients or countries.

The U.S. nuclear export control regime provides certain general licenses and authorizations. However, in the case of Russia and France, the multiple export authorizations appear broader than the general authorizations available to U.S. exporters under Parts 110 and 810 in that they are not restricted by country and, in Russia's case, allow for multiple exports to multiple destinations.

Requirement for a Bilateral Nuclear Cooperation Agreement. The U.S. Atomic Energy Act of 1954, as amended (42 USC 2153), and the NRC's export-import regulations (10 CFR Part 110) require, in effect, that a 123 Agreement be in force with the recipient nation (or group of nations) to satisfy the NRC's export criteria for exports of source material (natural uranium and thorium), special nuclear material (enriched uranium, U-233 and plutonium) and major nuclear power reactor components, as specified in items 1-4 of Appendix A to Part 110. A linkage between 123 Agreements and U.S. nuclear exports is established by section 123 of the Atomic Energy Act, which provides in pertinent part as follows: "No cooperation with any nation pursuant to [specified sections of the Act] shall be undertaken until" an agreement for cooperation has been submitted to Congress and has been brought into force. Limited exceptions to this mandate may be found, including the Secretary of Energy's issuance of specific authorizations pursuant to 10 CFR Part 810 to allow U.S. persons to assist power reactor programs in some countries (including Russia) that did not have an agreement for cooperation with the United States. However, the DOE's Part 810 regulations provide that the existence of a 123 Agreement is one of the key criteria evaluated in the issuance of a specific authorization. As knowledgeable DOS officials have noted, the U.S. statutory regime regarding nuclear exports "provides few tangible incentives to other countries to accept the controls that it requires."[8] The stringent controls required in 123 Agreements have in some cases hindered the conclusion of such agreements with other countries. Indeed, several 123 Agreements have required more than a decade to negotiate.

As discussed in Section IV of this report, the four countries surveyed do not require that a bilateral nuclear cooperation agreement be in place before nuclear exports are carried out. In practice, however, these countries have concluded bilateral nuclear cooperation agreements with most of the states that are significant importers of nuclear components and materials supplied by vendors in these countries. A chart listing these agreements is provided as Appendix C to this report.

Reprocessing Consent Rights. In addition to retransfer consent rights, U.S. 123 Agreements require U.S. consent rights for reprocessing used fuel. U.S. 123 Agreements require that nuclear material transferred pursuant to these agreements and special nuclear material produced through the use of transferred nuclear material and certain equipment (e.g., plutonium that is produced through the irradiation of fuel in reactors) may only be reprocessed upon agreement of the parties.

A chart comparing reprocessing consent rights of the countries surveyed is provided as Appendix D. As shown in the chart, the U.S. is the only country of those surveyed to consistently include the reprocessing consent provision in its agreements:[9]

- The ROK included reprocessing consent language in its agreement with the UAE, but this requirement is not present in other publicly available bilateral agreements that we reviewed, such as its nuclear cooperation agreement with Argentina and the recent agreement between the ROK and Japan, which entered into force in January 2012.

[8] Ronald J. Bettauer, "The Nuclear Non-Proliferation Act of 1978," 10 LAW & POL'Y INT'L BUS. 1105, 1178 (1978).
[9] We refer only to "new" agreements concluded after the passage of the Nuclear Nonproliferation Act of 1978.

- Japan includes reprocessing consent language in its agreements with most, but not all, non-Nuclear Weapon States.[10] For example, its recently signed cooperation agreement with Kazakhstan does not include reprocessing consent language. Further, the Japanese government's clause is applicable only to transferred nuclear material and special fissionable material produced through the use of this material. Unlike U.S. nuclear cooperation agreements following enactment of the Nuclear Nonproliferation Act of 1978 (NNPA), it does not apply to special fissionable material produced through the use of supplied equipment.
- France and Russia have not included reprocessing consent language in their bilateral agreements for cooperation that we were able to review.

Many existing and aspiring nuclear energy nations regard the reprocessing of used nuclear fuel as a sovereign right that is recognized by Article IV of the NPT. Beyond the sovereignty issue, customer nations generally require flexibility in the management and disposition of used fuel. They recognize that consent rights exercised by a supplier nation may prevent them from reprocessing used fuel in domestic facilities or retransferring used fuel to another nation for reprocessing or other disposition. As models for fuel disposition are likely to evolve, government officials and utility executives in countries developing new nuclear power projects may prefer to avoid restrictions that could preclude future commercial benefits. In addition, far-reaching U.S. consent rights over reprocessing and enrichment have been of concern to some countries because they fear that such consent may not be provided on a case-by-case basis in a timely and predictable manner.[11] Rigid U.S. consent requirements for retransfers, enrichment and reprocessing activities make U.S. companies less desirable as suppliers.

Government-Industry Relationship and Government Participation in Export Promotion. A number of foreign export control regimes appear to be more favorable to exporters than the U.S. regime because the suppliers in such countries are primarily, if not exclusively, government-owned nuclear vendors. For example, the Russian regime requires the exporter to obtain assurances from the appropriate governmental authority of the end-user. This requirement streamlines the export application review process by placing the burden of obtaining governmental assurances on the exporter. However, this method appears to be possible only in a regime where the exporter was either owned by the government or had substantial governmental ties. A U.S. exporter, as a privately-owned company, is not in a position to obtain assurances from a foreign government.

In addition, foreign exporters that are government-owned are in a better position to understand the intricacies of national export control regimes and obtain expert opinions on the applicability of these regimes, as necessary. The government-industry relationship also provides for (1) encouraging that priority attention be given by licensing agencies to promulgation of regulations that are less likely to be burdensome on exporters, and (2) effective and efficient processing of export licensing applications, and thus enhancement of the exporters' ability to be competitive in foreign procurements for nuclear commodities and services.

Areas where Foreign Export Control Regimes Are More Burdensome than the U.S. Regime

Controls on Retransfers. The U.S. nuclear export control regime is not as strict as some of its counterparts with respect to retransfers of certain controlled items and technology. Foreign regimes such as the ROK and Japan are more strict than the United States in the conditions that they impose on

[10] The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) defines a "Nuclear Weapon State" (NWS) as a country that had manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1967. Thus, by this definition, the only NWS countries are China, France, Russia, the United Kingdom and the United States.

[11] "Historically, such consents have been accorded on a case-by-case basis, introducing great uncertainty into programs requiring multi-billion dollar investments." Jonathan B. Schwartz, "Controlling Nuclear Proliferation: Legal Strategies of the United States," 20 LAW & POL'Y INT'L BUS. 1, 43 (1988).

retransfers of controlled items, and also go beyond the requirements of the NSG Guidelines with respect to retransfers.

For example, U.S. DOE regulations and practice provide that DOE-controlled technology, once exported to a country not listed on the DOE's 810.8(a) restricted list, cannot be retransferred to countries listed in 10 CFR 810.8(a) (restricted countries) without prior U.S. Government approval. Conversely, as DOE officials have confirmed, DOE-controlled technology can be freely retransferred to non-810.8(a) countries. For example, DOE-controlled technology, once transferred from the U.S. to France (a non-810.8(a) country), cannot be retransferred to China (an 810.8(a) country) without U.S. Government permission, but can be retransferred to Japan (a non-810.8(a) country) without obtaining an authorization from DOE or other U.S. governmental approval.

In contrast, the ROK regulations require ROK government permission before a retransfer of ROK technology can occur to any destination. This means that a French company, for example, that purchases ROK-controlled nuclear technology cannot retransfer that technology to any destination without needing to obtain prior consent from the ROK government. This is a much more restrictive requirement than that contained in U.S. regulations and practice.

Likewise, the Japanese government has sought assurances from the United States that certain Japanese-controlled nuclear technology shall not be retransferred from the United States to any destination without prior consent from the Japanese government.

Both the ROK and the Japanese regimes also go beyond the requirements of the NSG Guidelines in their controls over retransfers. The NSG Guidelines provide that suppliers should retransfer Trigger List items only upon assurances from the recipient's government that in the case of retransfer, the recipient of the retransfer will provide the same assurances as those required by the supplier for the original transfer. This requirement is commonly satisfied by recipient countries by exchange of Notes Verbale that provide the requisite assurances or by reference to nuclear cooperation agreements. No prior consent by the country that supplied the items is required under the NSG Guidelines for retransfer of those items.

General Licenses. General export licenses provided under the Russian and French regimes are broader than those available under the U.S. system. The Part 110 and 810 general licenses and authorizations and the DOC's EAR provide U.S. exporters with the advantage of being able to export many items and related technology without obtaining prior approval from the U.S. Government. For example, under the Russian system, an exporter would require a license for an export of a minor nuclear reactor component such as a reactor pressure tube and related technology to any destination, including the U.S., EU countries or Canada. The NRC's regulations allow the export of a reactor pressure tube to 26 countries under a general license (i.e. no prior NRC approval), and the DOE's regulations allow export of technology related to reactor pressure tubes to countries, other than the 88 listed on the 810.8(a) restricted country list, under a general authorization (i.e. no prior DOE approval). Furthermore, the DOC's EAR provides for exports, without a license, of Balance of Plant (BOP) components to most destinations other than certain embargoed and otherwise restricted countries.

These general licenses are also more expansive than the bulk export licenses provided under the Japanese and ROK regimes. The Japanese and ROK multiple export licenses are similar in form to U.S. general licenses in that they are available for exports to a selected group of countries with a proven non-proliferation track record. However, these Japanese and ROK licenses require prior government approval and are only available to exporters with certified export compliance programs. The U.S. general licenses are available to any exporter and do not require prior government approval. In addition to the general licenses available under the U.S. nuclear export control regime, the specific licenses provided can also be very expansive. The DOE specific authorization can be issued for a broad scope of activities and is valid

for five (5) years, with additional five-year extensions. The NRC also may issue export licenses for exports of multiple items over a specified time period, typically up to five years.

Although the general licenses for minor reactor components available under the U.S. regime are in some respects more permissive in comparison to the general or bulk licenses available under other regimes, they have a narrow scope and would appear to benefit U.S. exports primarily where a U.S. vendor has supplied a complete nuclear steam supply system (NSSS). Since minor components needed for construction of the reactor would be embraced within the scope of the NRC specific license authorizing export of the reactor, this general license mainly benefits U.S. vendors with respect to subsequent supply of replacement components. Thus, this general license may not significantly assist U.S. vendors in competing for contracts except to the extent they are able to complete to provide such replacement parts.

IV. EXPORT CONTROL REGIMES OF SELECTED COUNTRIES

A. RUSSIAN FEDERATION

(1) General Basis for Export Control Regime

The export control regime of the Russian Federation was developed largely in the last decade. Before 1998, the Russian Federation did not have a comprehensive export control law.

Russia's export control regime was established under the auspices of the Federal Law on Military-Technical Cooperation of the Russian Federation with Foreign States of 1998 and the Federal Law on Export Control of 1999. In general, it establishes comprehensive controls that take into account Russia's trade-related objectives. Specifically, Russia's export control regime seeks to enable Russian exporters to sell goods to foreign markets while allowing Russia to comply with its international export-related commitments, including its obligations under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), as well as its obligations as a member of the Nuclear Suppliers Group (NSG).

The Russian Federation's nuclear export control regime is comprehensive and prescriptive.

(2) Legal Basis for Export Control Regime

Two laws govern the Russian nuclear export control regime: the Federal Law on Military-Technical Cooperation with Foreign States, and the Federal Law on Export Control. In addition, the Russian government periodically issues resolutions which incorporate supplemental regulatory documents providing highly prescriptive regulation of nuclear-related exports. Presidential Decrees also shape some of the controls. The controlled nuclear-related commodities and technologies are listed in two control lists, which correspond exactly to the NSG Trigger and Dual-Use Lists. The only observed variance from the NSG lists was the provision of more detail in the notes section of each item listed. The applicable laws, resolutions, decrees and control lists are listed in Appendix A.

(3) Responsible Authorities and Agencies

As with other export control regimes, several agencies of the Russian Government are involved in the Russian nuclear export control system. There is only one regulatory and licensing agency: the Federal Service for Technical and Export Control (FSTEC), which administers most aspects of nuclear export controls, with some input from the Export Council of State Atomic Energy Corporation, "Rosatom." Input from other branches of the government is only required for highly sensitive exports. This streamlined approach appears to allow for efficient processing of applications.

The roles and responsibilities of the relevant Russian authorities and agencies are:

- The President of the Russian Federation defines basic policy guidelines, ensures coordination among the various government agencies involved in the export control process and approves commodity and technology control lists.
- The Federal Assembly of the Russian Federation enacts laws in the field of export control.
- The Government of the Russian Federation (Prime Minister, Deputy Prime Minister and Federal Ministers) enacts resolutions regarding the export process, including licensing, and organizes the implementation of state policy in the field of export control.
- The FSTEC issues export and import licenses.
- The Export Council of State Atomic Energy Corporation, "Rosatom," takes part in the examination of

contracts for the supply of controlled commodities. Applications for export licenses are subject to the results of this examination.

- In cases of exports of "critical nuclear commodities" (equivalent to U.S. Sensitive Nuclear Technology and Restricted Data), the Ministry of Defense and the Ministry of Foreign Affairs also take part in the examination.[12]

(4) Applicability of Regime

The applicability of the Russian regime appears to be consistent with that of the United States and other nuclear export control regimes. In accordance with Resolution of the Government of the Russian Federation No. 973 of December 15, 2000, on the Export and Import of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technology, export controls of the Russian Federation apply to all legal and physical persons located within the jurisdiction of the Russian Federation who engage in the export of nuclear materials, equipment and technology.

Resolution No. 973 warns exporters explicitly that they cannot circumvent the export control regime by piecemeal exports of nuclear-related components.

(5) Export License Requirements

a. Types of Licenses

The Russian nuclear export control regime allows for the issuance of two types of licenses: single export and multiple export. The ability to obtain a multiple export license carries significant advantages for the exporter: once the license is obtained, the exporter can export a certain type of commodity to multiple destinations without a need to list the end-user. For example, a Russian company that manufactures a reactor coolant pump can obtain a multiple export license to export that reactor coolant pump to ten different companies in ten different countries without listing the specific companies on its license application. This type of license is not available in the U.S. regime. A U.S. exporter of a reactor coolant pump is required, under the NRC's Part 110 rules, to obtain a separate license for each export of that pump to specific end-users.

The types of licenses and the conditions they carry are described in more detail below:

Single Export License

- Issued for implementation of exports under a single contract and lists the country of end-user, the seller and the buyer.
- Validity: depends on circumstances, but not more than 1 year. The exporter can apply for extensions.

Multiple Export (General) License

- Issued for multiple exports of a certain type of commodity to one or more destinations. A specific buyer does not need to be listed. The license contains a limitation on the quantity of commodities that can be exported.
- Issued only by a decision of the Government of the Russian Federation (i.e., concurrences from several ministries required – see below for further discussion).
- Can be granted only to exporters that have internal export control systems accredited by FSTEC.
- General license for export of critical nuclear commodities (uranium with assay of 20 percent or higher, plutonium, equipment for chemical reprocessing of spent fuel, isotopic enrichment of uranium, production of heavy water, conversion of enriched uranium and plutonium, their main components,

[12] Resolution of the Government of the Russian Federation No. 973 of Dec. 15, 2000 on the Export and Import of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technology, as amended, at par. 10.

and technologies related to these materials, equipment and main components) can be issued only if such export is contemplated by a nuclear cooperation agreement.

- Validity: depends on circumstances, but not more than 1 year. The exporter can apply for extensions.

b. Conditions for Granting a License

The Russian nuclear export control regime imposes varying sets of conditions: conditions that apply to exports to Non-Nuclear Weapon States (NNWS) other than India that have a safeguards agreement with the IAEA, conditions that apply to exports to India, conditions that apply to exports to NNWS that do not have a safeguards agreement with the IAEA, and conditions that apply to exports of certain sensitive nuclear commodities to Nuclear Weapon States (NWS).

Some of the conditions for granting a license are the same as those of other nuclear supplier countries, such as the requirement for the recipient country to have a safeguards agreement with the IAEA. Other conditions are more specialized. For example, the exporter itself is responsible for obtaining peaceful use, retransfer and other assurances from the foreign government. This requirement allows for more efficiency in the process because it shifts the burden of obtaining foreign government assurances from the government bureaucracy to the exporter, which will likely proceed with more urgency in obtaining the assurances. However, this requirement can only work in a country such as Russia or France, where the nuclear industry is fully or mostly owned by the government. In the U.S., a private company such as GE or Westinghouse is unlikely to be in a position to obtain foreign government assurances.

As discussed further in this section, Russia's retransfer assurance requirements, as set out in the Russian regulations, mirror NSG requirements. However, nuclear cooperation agreements concluded between Russia and other countries may impose conditions that are stricter than those set out in the regulations. For example, the Russia-India agreement provides for the NSG-type of retransfer assurances (e.g., the recipient government will secure the same assurances from the third party that it provided to the exporting government) plus a requirement that the recipient government obtain the exporting government's consent prior to retransfers. This aspect of the Russia-India Agreement for Cooperation is attributable to the fact that India is not a party to the NPT. This retransfer consent provision of the Russia-India Agreement is not typical of other Russian nuclear cooperation agreements.

The conditions for granting a license are described in more detail below.

(1) Exports to Non-Nuclear Weapon States other than India

The exporter must have a provision in its contract with the foreign end-user that restricts the end-user from using the controlled commodity for production of nuclear weapons or other nuclear explosive devices.

The recipient country must have an agreement with the IAEA for the application of safeguards to all its peaceful nuclear activities.

The exporter must present to FSTEC assurances from an authorized governmental agency of the recipient country. The assurances can be presented to FSTEC on a spot basis, or by reference to corresponding provisions of a nuclear cooperation agreement between Russia and the recipient country. The assurances must provide:

- the controlled commodities shall not be used for production of nuclear weapons and other nuclear explosive devices or for any military purpose;
- the controlled commodities shall be subject to IAEA safeguards;
- the controlled commodities shall be physically protected in accordance with the IAEA requirements;
- the controlled commodities shall be re-exported or transferred beyond the jurisdiction of the recipient state to any other country only on the above conditions; and

- the following shall not occur without the written permission of Rosatom, in concurrence with FSTEC: (a) subsequent retransfer of facilities for chemical processing of irradiated fuel, the isotopic enrichment of uranium and heavy water production, major components and equipment produced for such facilities, and uranium enriched above 20 percent, plutonium or heavy water; (b) use or design of the controlled equipment for the production of uranium enriched above 20 percent, or use of transferred plants or technology for isotopic enrichment of uranium, as well as any other plant, based on this technology.[13]

(2) Exports to India

Exports to India are permitted only if controlled commodities will be used in nuclear installations under IAEA safeguards. The same assurances required for NNWS must be provided for exports to India.[14]

(3) Exports to States Which Do Not Have IAEA Safeguards Agreements in Place

The government of the Russian Federation will make specific, case-by-case approvals of exports to countries without IAEA Safeguards Agreements in place in limited circumstances, provided that the following conditions apply:

- the export does not contradict international obligations of the Russian Federation;
- the government of the end-user provides assurances that the transferred materials, equipment and technology shall not be used for nuclear explosive devices; and
- exported commodities will be used exclusively for the safe operation of existing nuclear installations, which are subject to IAEA safeguards.[15]

The required assurances can be presented to FSTEC through written assurances from the authorized agency of the government of the end-user or by applicant's reference to corresponding provisions of an international agreement between Russia and the recipient country. In the case that the applicant provides references to the international agreement, the applicability of the agreement to the proposed export must be confirmed by Rosatom.[16]

(4) Exports to Nuclear Weapon States of facilities for chemical processing of irradiated fuel, the isotopic enrichment of uranium and heavy water production, major components and equipment produced for such facilities, and uranium enriched above 20 percent, plutonium or heavy water

Such exports can be carried out only upon obtaining assurances from the recipient state that the controlled commodities:

- will not be used to produce nuclear weapons or other nuclear explosive devices, nor to achieve any military objective;
- will be provided with physical protection measures at levels not lower than the levels recommended by the IAEA; and
- will not be re-exported or transferred from the jurisdiction of the recipient country to any other country without prior written permission of Rosatom, in concurrence with FSTEC.[17]

Assurances are not required for exports of nuclear materials, equipment and special non-nuclear materials listed in Attachment 1 to Resolution of the Government of the Russian Federation No. 973 of December 15,

[13] Resolution of the Government of the Russian Federation No. 973 of Dec. 15, 2000, on the Export and Import of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technology, as amended, par. 5.
[14] Id.
[15] Id at par. 7.
[16] Id. at par. 8.
[17] Id. at par. 6.

2000 (includes byproduct materials exported for non-nuclear uses; small quantities of natural uranium, special nuclear material (SNM), deuterium and nuclear-grade graphite; and limited exports of zirconium tubes).[18]

6. License Application Process

The export license application process appears to be fairly burdensome and includes requirements for a multitude of supporting documents. These requirements appear to stem from the export control system's emphasis on placing the burden of paperwork and classification on the exporter.

Before an entity can apply for a license to export nuclear-related or dual-use commodities, it must obtain a classification of the commodity or technology. This classification stage is compulsory. The classification may be conducted through the exporter's Internal Control Program, as certified by the Ministry of Economic Development and Trade of Russia (MEDT), or via an accredited organization. For purpose of the classification, the exporter must provide a series of documents, including:

- Detailed information on the controlled commodities proposed to be exported.
- A confirmation of the end-use of the commodities proposed to be exported.
- Guarantees that the exporter will abide by intellectual property rights and state secret restrictions.

If the independent classification concludes that the commodity or technology is subject to export control, the applicant will submit to FSTEC an application for an export license. The application requirements differ depending on whether the exporter is applying for a Single Export or Multiple Export (General) License.

An application for a Single Export License must include:

(1) An official application form, signed by the head of the company or his representative.

(2) For companies – evidence of the company's status as a legal entity; for individuals – evidence of registration as an individual entrepreneur; if not an entrepreneur, identity and confirmation of employment and position.

(3) A copy of the applicant's tax registration certificate.

(4) A copy of the agreement with the foreign customer or other document confirming the intention of the parties, with date of issuance of contract copies and location of the original.

(5) A copy of the license for use of the controlled commodities, if such license is required by Russian legislation.

(6) Document providing the required assurances (by confirmation from an authorized governmental agency of the recipient country or by reference to corresponding provisions of a nuclear cooperation agreement).

(7) Additional requirements for exports of particular radioactive sources (americium-241, californium-252 and plutonium-239 with activity levels, respectively, 0.6 TBq 0.2 TBq and 0.6 TBq or greater) apply.

An application for a Multiple Export (General) License must include:

(1) A letter request for a Multiple Export (General) License.

(2) Full name of legal entity, its legal address, a notarized copy of a document confirming its registration, and a notarized copy of the certificate of tax registration.

(3) Names and descriptions of items proposed to be exported, their classifications, and the destination country(ies).

[18] Id. at par. 8.

(4) Proposed term of the license.

(5) A statement specifying whether the proposed exports will include information that constitutes a state secret.

(6) Where applicable, copies of the license from the Federal Service for Ecological, Technological and Nuclear Supervision Activity in the Field of Atomic Energy, issued by the manufacturer of the exported materials.

(7) Documents providing the required assurances.

a. Requirement for Nuclear Cooperation Agreement

A bilateral nuclear cooperation agreement is not required for exports of nuclear and nuclear-related materials, equipment and technology from the Russian Federation. However, under current Russian export practice, the existence of a nuclear cooperation agreement between the Russian Federation and the country of the end-user will greatly facilitate the application process. If a bilateral agreement is in place, the applicant can satisfy the requirements for peaceful use, IAEA safeguards, physical protection and retransfer assurances by reference to appropriate provisions of the agreement, rather than having to obtain such assurances from the appropriate foreign governmental authority.

The Russian Federation has entered into nuclear cooperation agreements with such countries as Armenia, Australia, Brazil, Bulgaria, Canada, Chile, Egypt, France, Indonesia, South Africa, South Korea, Syria, United States and Vietnam. Some of these agreements appear to have the purpose of establishing economic cooperation and promoting Russian nuclear exports, rather than serving as legal vehicles for such exports, particularly since Russian law and practice has allowed exports of nuclear material and components for power and research reactors to countries with which Russia did not have an agreement for cooperation. For example, Russia exported enriched uranium to the United States well before the United States and Russia executed a nuclear cooperation agreement in 2011. The same is true for Russia's longstanding supply of reactors and fuel to India before the execution of the Russia-India nuclear cooperation agreement in 2010.

7. Export and Re-export Restrictions

a. Country-Specific Restrictions

Under the Russian regime, additional export criteria apply to India and countries that do not have in place a safeguards agreement with the IAEA, as discussed above. However, unlike the United States and many other supplier nations, Russia does not maintain a "restricted countries" or a "generally authorized countries" list. This makes the Russian regime more restrictive in some respects and less restrictive in other respects than the U.S. regime.

The U.S. regime provides certain license exceptions, general licenses and general authorizations for exports of controlled nuclear material, equipment and technology to countries that have high non-proliferation standards, are members of the NSG and/or have concluded bilateral nuclear cooperation agreements with the United States. For example, the NRC's regulations at 10 CFR 110.26 provide for a general license (a license granted by regulations, with no requirement to seek prior approval from the NRC) for exports of nuclear components that are within the scope of items 5 through 9 of the NRC's illustrative list at Appendix A to 10 CFR Part 110, to 35 countries, almost all of which are members of the NSG and parties to nuclear cooperation agreements with the United States. Similarly, DOE's Part 810 regulations provide a general authorization for transfer of technical data and assistance that is not sensitive from a non-proliferation perspective, including commercial nuclear reactor technology, to countries not listed on the DOE's restricted country list at 810.8(a). Finally, DOC's Export Administration Regulations provide for a host of license exceptions and allow most DOC-controlled nuclear-related items to be exported to most destinations without a DOC license.

The Russian nuclear export control regime is more restrictive than its U.S. counterpart in this respect because it does not provide for similar license exceptions and general authorizations. Under the Russian regime, all items listed in the control lists are controlled to all destinations and require export licenses.

At the same time, the Russian regime is less restrictive in controlling exports to countries with which Russia does not have a bilateral nuclear cooperation agreement, many of which could not receive exports of major nuclear components and nuclear material from U.S. nuclear exporters. For example, under the Russian regime, export licensing requirements for nuclear exports to Vietnam are exactly the same as export licensing requirements for nuclear exports to France. Under the U.S. regime, however, a U.S. exporter of nuclear components cannot supply these components to Vietnam until the U.S. and Vietnam conclude a bilateral nuclear cooperation agreement. Further, the same U.S. exporter may face delays in obtaining a Part 810 specific authorization in order to engage in technical discussions with a Vietnamese company because the DOE considers the existence of a nuclear cooperation agreement with the recipient country to be one of the most important criteria in its review of whether to issue a specific authorization pursuant to 10 CFR Part 810.

b. Technology-Specific Restrictions

Russia, like the U.S., has adopted a "deemed export" rule. The release of controlled technology to a foreign national in the Russian Federation is "deemed" to be an export to the country of citizenship of the foreign national and triggers export control requirements.

Russian export regulations control the provision of technical data and technical assistance in accordance with the NSG Guidelines. As discussed in Section II of this report, the NSG Guidelines' definition of technology as information for the "development," "production" and "use" of controlled items provides for more circumscribed controls over technology than do DOE's vaguely worded Part 810 rules.

c. Re-Export Restrictions

The re-export restrictions provided under the Russian regime are consistent with the NSG Guidelines. As addressed above, the end-user must provide assurances that the controlled commodities or technology will be retransferred only if the following conditions apply: (a) peaceful use; (b) application of IAEA safeguards; and (c) physical protection. In practice, the end-user (customer) can satisfy these conditions implicitly by having in place a nuclear cooperation agreement with the country to which the Russian-controlled item shall be retransferred or by engaging in an exchange of diplomatic notes with the third country. No permission from the Russian government is required for the re-transfer.

These NSG-compliant retransfer controls are less restrictive than those imposed by the United States and some other countries, including Japan and the ROK, which, in addition to the conditions set out above, require that the country that is the recipient of the technology obtain supplier country approval before authorizing the retransfer of any supplied commodities or technology to third parties.

8. License Review Process and Timeframe

The Russian nuclear export control system provides for significantly shorter processing times than any licensing system under the U.S. regime. As previously discussed, the Russian systems place much of the burden of paperwork, classification and retransfer assurances on the exporter, reducing the agencies' role to review of information that is largely complete. Further, license application processing times are set by the Russian regulations and are significantly shorter than processing times under the U.S. system. These processing times are outlined below.

a. Single Export License

FSTEC will generally make its decision 3 days after it completes its examination of the application documents, but usually not more than 45 days from the date of receipt of the application and supporting documents. The 45-day period can be extended if the application is incomplete and additional information is required.

FSTEC is required to notify the applicant within 3 days of making the export license decision.

b. Multiple Export (General) License

No later than 10 days after the receipt of the application, FSTEC prepares a draft decision of the Government of the Russian Federation for concurrence by the Ministry of Foreign Affairs, the Ministry of Defense, the Ministry of Industry and Trade, Rosatom, the Federal Security Service of the Russian Federation and, if necessary, other federal executive bodies.

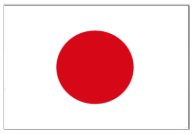
The time required for the approval of the draft decision shall not exceed 10 days from the date of receipt of the draft decision by each agency and Rosatom.

Each agency and Rosatom considers the draft decision only with respect to its own jurisdiction, without conditioning approval of the decision on issues that are within the purview of other agencies/Rosatom.

The decision is issued within 5 days from the receipt of all concurrences.

Total processing time prescribed by statute: ~25 days.

B. JAPAN



1. General Basis for Export Control Regime

Japan has a long-standing nuclear export control policy based on assurances for peaceful use and non-proliferation, including compliance with the NSG Guidelines. The Japanese nuclear export control system is based on Japan's Foreign Exchange and Foreign Trade Act, as well as several orders and ordinances. Interestingly, the Japanese regime commingles export controls over sensitive commodities and technology with controls over foreign exchange activities. Japan's lists of controlled nuclear material, equipment and technology are consistent with the NSG Guidelines' Trigger and Dual-Use Lists.

The Japanese nuclear export control regime was strengthened after September 11, 2001, and several high-profile cases of illegal exports of sensitive commodities by Japanese firms. The current regime recognizes the threat of nuclear proliferation and is based on the increased awareness that stringent export controls are needed to prevent the diversion of nuclear-related commodities and technology to weapons uses. Japan has cooperated with the United States on the strengthening of its export control regime and has also taken a leading role in encouraging other countries in Asia to enact comprehensive nuclear export control regimes by engaging in seminars and bilateral outreach activities, and by providing support for their establishment of export control regimes.[19]

2. Legal Basis for Export Control Regime

Although comprehensive in its controls, the Japanese nuclear export control system is not easy to decipher. A careful review of the legislation and regulations, as well as presentations given by the Ministry of Economy, Trade and Industry (METI), reveals a system of controls based on the NSG Guidelines and a strong commitment to non-proliferation and preventing diversion of nuclear material, equipment and technology for illicit uses. Aside from the legal structure of the Japanese regime, which is structured differently from the U.S. export control regime, the actual system of export controls in Japan is similar in many ways to the U.S. export control system administered by the DOC under the Export Administration Regulations (EAR).

Japan regulates the export of nuclear-related commodities and technology under a single piece of legislation – its general trade law, the Foreign Exchange and Foreign Trade Act, last amended in 2009. In accordance with the Act, the Japanese government has issued several cabinet orders that describe procedures for obtaining export licenses and approvals and include control lists. Further, METI issues ministerial-level ordinances that provide detail and interpretations of listed items.

Japan's list of controlled nuclear material, equipment, and technology is consistent with the NSG Guidelines' Trigger and Dual-Use Lists. A catch-all control, or end-use control, supplements the control list by subjecting items not on the control list to export license application requirements based on end use for the purposes of weapons of mass destruction (WMD) (e.g., based on reference to the Commodity Watch List) or destination to a company on the Foreign End User List. This catch-all exception is very similar to the catch-all exception and restrictions for exports to entities and individuals on Denied Persons and other restricted lists set forth in the EAR.

A detailed listing of the applicable Japanese legislation, orders, ordinances and control lists is provided in Appendix A.

[19] Hirofumi Tosaki, CPDNP, Japan Institute of International Affairs, "Export Controls in Asia: Unpopular But Indispensable Measures for Non-Proliferation and Development," presented at the First Meeting of the CSCAP Study Group on Countering the Proliferation of Weapons of Mass Destruction, May 28, 2005, Singapore.

3. Responsible Authority

METI is the single Japanese agency responsible for administering export controls and issuing export licenses. METI, whose functions are generally similar to those of the U.S. DOC, is also responsible for trade promotion. In addition, METI frequently conducts educational seminars on nuclear export controls for Japanese industry and Asia-wide.[20]

There are three units within METI, all under the Trade Control Department, responsible for export control administration: (1) the Security Export Control Policy Division, responsible for export control policy setting, legislation and overall administration; (2) the Security Export Licensing Division, responsible for issuing licenses; and (3) the Security Export Inspection Office, responsible for enforcement, inspections and educational activity to prevent illegal exports.

Channeling all of its export control efforts through a single agency allows the Japanese government to administer its export control system with minimal bureaucracy.

In addition, Japan's Center for Information on Security Trade Control (CISTEC) is a non-profit organization dedicated to the promotion of export controls in Japan. CISTEC functions as a link among government, industry and academia on export controls and non-proliferation. Specifically, CISTEC's mission is to make Japanese export control more efficient and effective, and it carries out this mission through a variety of activities, including providing advice to industry, classification of commodities and technologies, assisting companies with setting up compliance programs, compiling guidance on export controls, providing training seminars for businesses, publishing companies' results of self-classifications, and maintaining an online database of export control-related information.

4. Export License Requirements

a. Types of Licenses

The Japanese licensing system is similar to the Russian system in that it allows for issuance of licenses for multiple exports by exporters with approved internal control programs. The Japanese regime is stricter than its Russian counterpart in that it only issues multiple export licenses, known as "bulk export licenses," for exports of NSG dual-use items and only to 26 low-risk countries. Although this exact type of license is not available under the U.S. export control regime, the U.S. licensing requirements for NSG Dual-Use items are similarly permissive. In the United States, NSG Dual-Use commodities and related technology are controlled by the DOC in accordance with the EAR. Most of these items, although subject to the EAR, do not require a license for export, absent exports for embargoed destinations or exports for nuclear weapons or unsafeguarded uses.

Exports of all other controlled nuclear commodities and technology require an individual export license. The types of licenses available under the Japanese system and their periods of validity are as follows:

Bulk Export Licenses

(1) General Bulk Export License

- License under simplified application procedures for multiple exports of less sensitive goods and technology (e.g., NSG Part 2 items) from approved exporters to end-users in low-risk "White" countries (see "Restrictions by Country" below).
- In order to qualify for a bulk export license, exporters are required to: (1) establish and submit for METI approval an appropriate internal control system based on METI's Internal Compliance Program (ICP), (2) implement controls in strict compliance with the ICP, and (3) participate in specific seminars held by METI. Exporters are required to report their

[20] Office of International Affairs for Security Export Control, Trade and Economic Cooperation Bureau, "Government-Industry Outreach Activities."

compliance status to METI by answering questions in METI's "Export Control Compliance Self-check List." In addition, METI conducts on-site inspections on bulk export license holders.

- This license may not be used for the exports to or through Iran, Iraq, North Korea, Libya or Afghanistan.
- Validity: 3 years and can be extended for an additional 3-year period.

(2) Special Bulk Export License

- License under simplified application procedures for multiple exports of specific items (e.g., NSG Part 2 items) from exporters with registered ICPs to the same customers under a continuous trade relationship.
- Validity: 3 years and can be extended for an additional 3-year period.

(3) Special Bulk Export License for Overseas Subsidiaries

- License allowing a manufacturer to make repeated exports of specific items it manufactured to its overseas subsidiary (Subsidiary A) directly or through another overseas company (Subsidiary B) as an importer.

Individual Export License

- License required for all exports to which the bulk export license is not applicable: NSG Part 1 items, non-"White" countries, catch-all control.
- Validity: 6 months.

b. Conditions for Granting a License

METI examiners apply the following licensing criteria in evaluating export license applications:

- Will items actually reach the stated end-user?
- Will the stated end-user really use the item?
- Will the actual use exactly match the stated end-use?
- Will the stated end-user strictly control the item?

These considerations are similar to licensing criteria under the U.S. regime. Both regimes regulate commodities and technology based on the product, destination, end-user and end-use.

c. Requirement for Nuclear Cooperation Agreement

A nuclear cooperation agreement is not legally required for exports of nuclear and nuclear-related materials, equipment and technology from Japan. However, Japan has entered into a number of bilateral nuclear cooperation agreements with the United States and other countries, as noted below, and those agreements govern exports that are subject to their terms. Compared to countries such as the United States and France, Japan is party to relatively few bilateral nuclear cooperation agreements. However, in line with the Japanese efforts to boost commercial nuclear exports, Japan has become increasingly more active on the bilateral cooperation front, with four (4) bilateral nuclear cooperation agreements pending before the Japanese parliament.

The status of Japan's bilateral nuclear cooperation agreements is as follows:

In force: United States, United Kingdom, Canada, Australia, France, China, EURATOM, Kazakhstan, Republic of Korea, Jordan and Vietnam

Signed (yet to enter into force, under consideration by the Japanese parliament):

- Russia (May 2009)

Under negotiation:

- United Arab Emirates (substantially agreed)
- India, South Africa, Turkey (under negotiation)

As demonstrated in Appendix C, a review of the most recent Japanese bilateral nuclear cooperation agreements and those agreements pending before Japanese parliament reveals that Japan has adopted the form and requirements of U.S. agreements. For example, the cooperation agreements that Japan has signed with Jordan and Vietnam in the past year contain retransfer restrictions that, similar to U.S. nuclear cooperation agreements, include retransfer requirements that go beyond the requirements specified in the NSG Guidelines. These agreements provide that the recipient country must obtain the supplier country's approval before transferring the supplied item to another country ("third party"). In contrast, the NSG Guidelines only require that the recipient state must obtain assurances from the third party equivalent to those in the agreement between the supplier and the recipient (i.e., peaceful uses, IAEA safeguards and physical protection).

5. Export and Re-Export Restrictions

a. Restrictions by Country

As discussed above, the Japanese nuclear export control regime applies restrictions by country of end-user. Export destinations are divided into two categories: "White" countries and non-"White" countries.

"White" countries are 26 countries designated as low-risk due to NPT membership, participation in export control regimes, and use of catch-all controls. To qualify, a country must be a member of all four international export control groups: NSG, Australia Group (AG), Missile Technology Control Regime (MTCR), and the Wassenaar Arrangement (WA). The "bulk export license" is applicable to exports of nuclear commodities and technology to these countries.

The "White" countries are: Argentina, Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the ROK, Luxemburg, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, the UK, and the United States.

Nuclear exports to all other countries – the non-"White" countries – are subject to individual export license requirements.

b. Restrictions by End-Use

METI frequently requires exporters to obtain an end-use certificate from the end-user of the controlled commodity or technology that is proposed to be exported. The end-use certificate must include:

- Confirmation of item's end-use location and purpose/application;
- Certification of peaceful use; and
- Confirmation of no re-exports without exporter's prior written consent (original exporter to consult with METI regarding the retransfer).

c. Restrictions by End-User

Similar to the denied persons, entity and other restricted persons lists maintained by the U.S. DOC, METI maintains the End User List, a list of foreign entities that are considered to have engaged in activities related to the development, production, manufacturing or storage of WMD. If the export is to a listed entity, submission of an export license application is required unless it is obvious that the goods are not destined for use for WMD/military purposes.

d. Technology-Specific Restrictions

As is true of most NSG members, Japanese law applies NSG-compliant controls on exports of information and software, including technical data and technical assistance, for the development, production and use of controlled nuclear commodities. Technology or software transfers by intangible means, such as telephone, e-mail or facsimile are also controlled.

In addition, in 2009, the Japanese government made several major revisions to the Foreign Exchange and Foreign Trade Act. One of these revisions involved the enhancement of controls over technology transfers. Before 2009, when the Act was revised, Japanese legislation and regulations controlled transfers of technology by Japanese residents and held that a transfer of listed technology or software to a non-resident was subject to the license requirement if the transfer took place outside of Japan. The 2009 revisions to the Act were made, according to commentators, because of today's reality of technology transfer via electronic media and the globalized nature of business. The new legislation requires as follows:

(1) **Technology transfers from Japan to a foreign country.** Japanese law requires any person, resident or non-resident, to obtain a license when transferring listed technology from Japan to a foreign country. A license is not required, however, when the technology is for the person's own use in the foreign country. In accordance with this requirement, a U.S. citizen who is on business in Japan would be subject to the licensing requirement if s/he intends to transfer Japanese-controlled nuclear technology from Japan to another country.

(2) **Technology transfers within Japan.** Japanese law requires Japanese residents to obtain a license when transferring listed technology in Japan to a non-resident.

(3) **Technology transfers within a foreign country.** Japanese law requires Japanese residents to obtain a license when transferring listed technology in any foreign country. A license is not required, however, if the technology was sourced in a foreign country and the transaction is completed only in a foreign country.[21]

The definitions of "resident" and "non- resident" are as follows under the Japanese system:[22]

Category	Resident	Non-resident
Japanese nationals	A person residing in Japan A person working in Japan's diplomatic establishment abroad	A person who left Japan for the purpose of working in a foreign office A person who left Japan for the purpose of staying abroad for more than two years A person who has been staying abroad for more than two years
Foreign nationals	A person working in an office in Japan A person who has been staying in Japan for more than 6 months	A person residing in a foreign country A person who is an official of a foreign government or an international institution A diplomat, consul, or a person accompanying or serving the diplomat or consul

[21] Center for Information on Security Trades Central (CISTEC), "Overview of Japan's Export Controls," Feb. 2010.
[22] Id.

Category	Resident	Non-resident
Legal persons	Japanese corporations registered in Japan Foreign corporations' subsidiaries and other officers registered in Japan Japan's diplomatic establishments abroad	Foreign corporations registered abroad Japanese corporations' subsidiaries and other offices registered abroad Foreign governments' diplomatic establishments or international organizations in Japan

These definitions provide for controls that are in many ways stricter than those imposed by the U.S. deemed export rule.

For example, Japanese technology controls apply not only to residents, but also to non-residents. A U.S. citizen physically located in Japan who intends to export nuclear technology (including by intangible means, such as e-mail) to a third country, is required to obtain a license for such an export. These types of controls are consistent with DOE technology controls, but are stricter than those provided by Part 810 regulations. Part 810 regulations apply only to U.S. citizens and corporations organized in the United States.

A Japanese resident who has been living outside of Japan for more than two years is defined as a "non-resident" for purposes of application of technology controls. This means that residency outside of Japan for more than two years turns a Japanese citizen or resident into the equivalent of a "foreign national" under U.S. regulations. The DOE and DOC regulations do not impose this type of "residency" requirement.

e. Re-Export Restrictions

For Individual Export Licenses, METI may require the exporter to obtain a letter of assurance from the end-user.

In addition, even though this requirement is not evident in Japanese law, in practice, the Japanese government has recently required the government of the end-user to provide peaceful use and retransfer assurances before issuing a license for exports of NSG Trigger List items.

For example, in one case concerning transfers from Japan to a U.S. utility of proprietary technical information developed in Japan related to the specifications of nuclear fuel assemblies and non-fuel bearing components, METI requested the U.S. Department of State to exchange diplomatic notes with Japan (Notes Verbale) providing assurances from the United States that the technology and items derived from the technology would not be retransferred from the U.S. except to Japan without the prior written consent of the Government of Japan. The State Department transmitted this Japanese governmental request to the U.S. NRC, which in turn required the end-user (the U.S. utility) to provide such assurances to the NRC.

f. Other Restrictions and Conditions

All exporters must have an effective internal compliance program based on METI guidelines. Companies may face sanctions for failure to comply with the regulations.

6. License Application Process

In order to apply for an export license, an applicant is required to submit to METI the following:

Application form

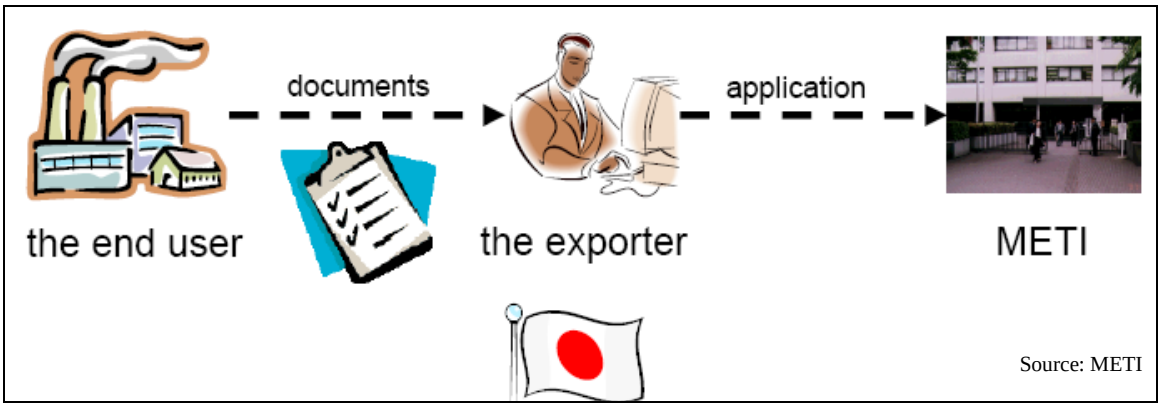
Supplementary details

- Name of manufacturer
- Quantity and value
- Outline of end use

Background documents (e.g., a written contract)

Other documents that may be required

- Details of commodity (e.g., catalog)
- Details of end-user (e.g., leaflet)
- Letter of assurance or end-use certificate by end-user
- Any other documents requested by METI



Source: METI

Consistent with the U.S. export control regime, the Japanese system also provides for advance consultations on export requirements. METI replies to inquiries from exporters on export licensing questions within 13 days, on average.[23]

7. Processing Time

METI's standard processing period for export license applications is 90 days after the filing of an application. This period is similar to DOC's processing time for export license applications in the United States. However, METI's processing of export licensing applications is much more expeditious than the NRC's processing of similar license applications (which can take up to one year) and DOE's processing of applications for specific authorizations pursuant to Part 810 (which can take 6-14+ months).

[23] Ministry of Economy, Trade and Industry, Japan, "Effective and Efficient Implementation of WMD Catch-all," Sep. 16, 2003, available at http://www.exportcontrol.org/library/conferences/1379/02-04-AOKI.pdf.

C. REPUBLIC OF KOREA (ROK)

1. General Basis for Export Control Regime

The ROK is by nature a trading country whose economic dependence on overseas trade has been reported to exceed 75 percent, an exceptionally high number among countries of similar or larger size. With respect to nuclear energy, the ROK has quickly grown from an importer of nuclear technology and components, in the 1970s and 80s, to a respected manufacturer of major nuclear power station components. Most recently, the ROK established itself as a nuclear vendor with KEPCO's entry into a contract to construct four APR1400 units in the United Arab Emirates (UAE).

About a decade ago, the ROK Government overhauled and strengthened its non-proliferation intuitions and practices and established the Korea Institute of Nuclear Nonproliferation and Control (KINAC). It also amended several of its laws and decrees to provide for controls on the exports of nuclear commodities that are in line with international standards.[24]

Despite these efforts, it appears that, in some important respects, the ROK nuclear export control regime is subject to some important uncertainties.

2. Legal Basis for Nuclear Export Control Regime

a. *Primary Legislation and Regulations*

The ROK regulations are in many ways very similar to their Japanese counterparts. Some commentators have observed that Japan, the first exporter of nuclear commodities and technology in Asia, influenced the development of nuclear export control programs in other countries in the region.

The legal structure of the ROK nuclear export control regime is based on the Foreign Trade Act and the Technology Development Promotion Act. The Foreign Trade Act is the centerpiece of the regime and addresses all ROK trade control issues. Article 19 of the Act sets forth the regulations related to the export control of strategic goods, including nuclear materials and equipment. The Technology Development Promotion Act sets controls over the export of nuclear-related technology.

The Ministry of Knowledge Economy (MKE), which is responsible for the implementation of the Foreign Trade Act and the Technology Development Promotion Act, has issued several public notices under the Foreign Trade Act, including the "Consolidated Public Notice for the Export and Import of Strategic Goods," which provides a list of items controlled and sets out export licensing procedures.

The ROK control list, applicable to exports of nuclear equipment, materials, and technology, consists of the items listed in Table 2 (Dual-Use Items) to the Consolidated Public Notice on Export and Import, which is substantively identical to the Trigger List and Dual-Use List attached to the NSG Guidelines.

3. Responsible Authorities

There are three agencies in the ROK that are involved in the regulation of nuclear export controls:

- MKE regulates exports of strategic materials and technologies named in Parts 1-9 of Table 2 to the Consolidated Public Notice on Export and Import (corresponding to the Dual-Use List of Part 2 of the NSG Guidelines). These items are equivalent to dual-use items regulated by the DOC in the United States.

[24] Bong-Geun Jun, Ph.D., "U.S.-ROK Nuclear Energy Cooperation from Tutelage to Partnership: Nonproliferation Factor," Institute of Foreign Affairs and National Security (IFANS), Seoul, Presented to the U.S.-ROK Workshop On Nuclear Energy and Nonproliferation, January 20, 2010, Washington, D.C.

- The Ministry of Education, Science and Technology (MEST) regulates exports of strategic commodities and technologies named in Part 10 of Table 2 to the Consolidated Public Notice on Export and Import (corresponding to the Trigger List of Part 1 of the NSG Guidelines). These items are equivalent to the nuclear equipment and material regulated by the NRC and nuclear technology regulated by the DOE in the United States.
- The Korea Institute on Nonproliferation and Control (KINAC) evaluates export control applications over strategic goods and technologies.

In addition, the Korea Strategic Trade Institute (KOSTI) was established by the ROK government in 2004 to help companies manage business involving strategic items. An online service called "Yestrade," operated jointly by KOSTI and MKE, is entrusted by the ROK government with the task of making classifications of strategic items. Yestrade helps companies exercise export control voluntarily by providing relevant information online regarding classification, export licensing procedures, global trends and domestic regulations governing strategic items.

4. Export License Requirements

a. Types of Licenses

The ROK's regulations, similar to the Japanese and Russian regulations, provide for multiple export licenses called "Comprehensive Export Licenses" to exporters with approved export compliance programs, known as "Compliant Traders." Like the Japanese "Bulk Export Licenses," the ROK's "Comprehensive Export Licenses" allow for multiple exports of the same item to end-users in certain countries that are parties to multilateral export regimes, called "Region A" countries. The ROK regime also provides for "Validated Comprehensive Export Licenses" to countries that are not within Region A ("Region B" countries) as long as the export is directed continuously to the same end-user.

The types of licenses available under the ROK nuclear export control system and their periods of validity are detailed below:

Individual Export License

- License issued by relevant authority in response to an individual application to export strategic materials or technology.
- Validity: Strategic materials – one year; Strategic technology – duration of contracted period.

General Comprehensive Export License

- License issued by relevant authority to an exporter designated as a "Compliant Trader" permitting multiple instances of export during a prescribed period of a specified item to Region A countries (see country-specific restrictions below), or to Region B countries if such exporter has signed a consignment processing contract with a consignee located in Region A. These licenses are approved in accordance with the exporters' self-classification on the condition that the items are not used against world peace and security.
- Validity: As specified, up to three years.

Validated Comprehensive Export License

- License issued by relevant authority to an exporter designated as a "Compliant Trader" permitting multiple instances of export during a prescribed period of a specified item to Region B countries (see country-specific restrictions below), if such item will be directed continuously to the same importer.
- Validity: As specified, up to two years.

Re-Export License

- License issued by relevant authority to an individual seeking to re-export previously imported strategic materials.
- Not required for transfers of strategic technology in most cases
- Validity: One year.

Catch-All License

- License issued by relevant authority to an individual exporting an item not classified as strategic material but which has a high likelihood of being converted to the manufacturing, development, utilization or storage of weapons of mass destruction, and which the individual knows or suspects is intended for conversion to such uses.

b. Conditions for Granting a License

The ROK regime provides for two different sets of licensing conditions for nuclear exports: one set of conditions for exports of NSG Trigger List Items and another set of conditions for exports of NSG Dual-Use Items.

(1) **NSG Trigger List Items**. Licensing conditions for exports of NSG Trigger List Items, which apply to exports of Non-Nuclear Weapons States and re-exports to all destinations, are as follows:

- There must be in place a special agreement between the respective governments establishing responsibility and standards for transporting and packaging.
- The importing country must have implemented a full-scope safeguards agreement with IAEA or must have *de facto* implemented IAEA safeguards measures, except where the export is indispensable for the safe operation of existing facilities.
- Receipt of assurances from the recipient country that it will not permit re-export except upon the ex-ante request for prior approval from the ROK.
- Prohibition on export of enrichment facilities and technologies, and reprocessing and heavy water facilities and technologies.
- For matters other than those covered above, adherence to Part 1 of the NSG Guidelines.

(2) **NSG Dual-Use List Items**. Licensing conditions for exports of NSG Dual-Use List Items are as follows:

- Denial of export license when judged that a non-nuclear weapons state may use the item in activities not covered by IAEA safeguards.
- When licensing exports to Region B countries (see country-specific restrictions discussed below), end-user's submission of documents or certificate of end-user specifying purpose and place of end-use for the item, and guaranteeing that the item will not be used for activities not covered by IAEA safeguards and that the item cannot be re-exported to a non-member of the nuclear non-proliferation regime (i.e., Region B countries) without the consent of the ROK government.
- For matters other than those covered above, adherence to Part 2 of the NSG Guidelines.

c. Requirement for Nuclear Cooperation Agreement

ROK law does not expressly require a bilateral nuclear cooperation agreement for exports of nuclear and nuclear-related materials, equipment and technology. However, in practice, the ROK has entered into such an agreement before exporting major nuclear power-related components and nuclear fuel and uranium for the production of nuclear fuel.

The ROK has signed nuclear cooperation agreements with such countries as Argentina, Australia, Belgium, Brazil, Canada, Chile, Egypt, France, Japan, Kazakhstan, Romania, Russia, Turkey, Ukraine, the UK, the UAE and the United States.

Like the recent Japanese agreements, the more recent bilateral nuclear cooperation agreements executed by the ROK government are strikingly similar to U.S. agreements in their form and requirements. For example, the ROK-UAE agreement and the ROK-Argentina agreements both contain a requirement for the recipient state to obtain the supplier state's permission before retransferring the supplied item to a third party.

5. Export and Re-Export Restrictions

a. Restrictions by Country

For purposes of destination-based restrictions, the ROK nuclear export regime divides countries into two categories:

> Region A: Countries parties to all of the following multilateral export regimes: Wassenaar Arrangement; Nuclear Suppliers Group; Missile Technology Control Regime; Australia Group; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction; and Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction. These countries are: Argentina, Australia, Austria, Bulgaria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxemburg, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.
>
> Region B: Countries not parties to all of the above regimes.

As discussed above, the ROK export regime provides for issuance of Comprehensive Export Licenses to Compliant Traders for exports of the same commodity to end-users in Region A. More limited Comprehensive Export Licenses are available for exports to countries in Region B. These country-specific divisions are similar to those available under the Part 810 regime. However, as with the Russian and the Japanese regulations, the ROK regime is in some ways more restrictive and in other ways less restrictive than its U.S. counterpart. The ROK system does not provide for general licenses, as do the DOE and NRC regulations, but its system of multiple export licensing provides more efficiency and flexibility for multiple exports by validated exporters.

b. Restrictions by End Use

End-user restrictions provided in ROK legislation and regulation are standard and consistent with NSG Guidelines:

> Items must be intended for peaceful purposes; and
>
> Items must not be used in activities not covered by IAEA safeguards.

c. Restrictions by End User

In its license review, the ROK Government conducts an evaluation of trustworthiness of the importer, the ultimate consignee and the end-user. In addition, the ROK Government reviews whether the importer, ultimate consignee or the end-user is a "Disqualified Person" for trading strategic materials and technology.

d. Technology-Specific Restrictions

As in Russia and Japan, the ROK controls transfers of technical data and technical assistance in accordance with the NSG Guidelines. As discussed above, NSG-style controls over technology exports

appear to provide for less broad controls over exports of nuclear technical data and technical assistance than the loosely-worded Part 810 regulations.

Unlike the United States, the ROK regime does not provide for a "deemed export" rule. However, the export authority may impose necessary conditions on export.

e. Retransfer Restrictions

As discussed above, the ROK requires the importing country to provide governmental assurances that re-exports of ROK-controlled items will not occur without an "ex-ante" (prior) request for approval from the ROK Government. Unlike the Russian regime, the ROK does not place the burden of obtaining retransfer assurances on the exporter. Rather, similar to the U.S. regime, retransfer assurances are obtained in a government-to-government exchange.

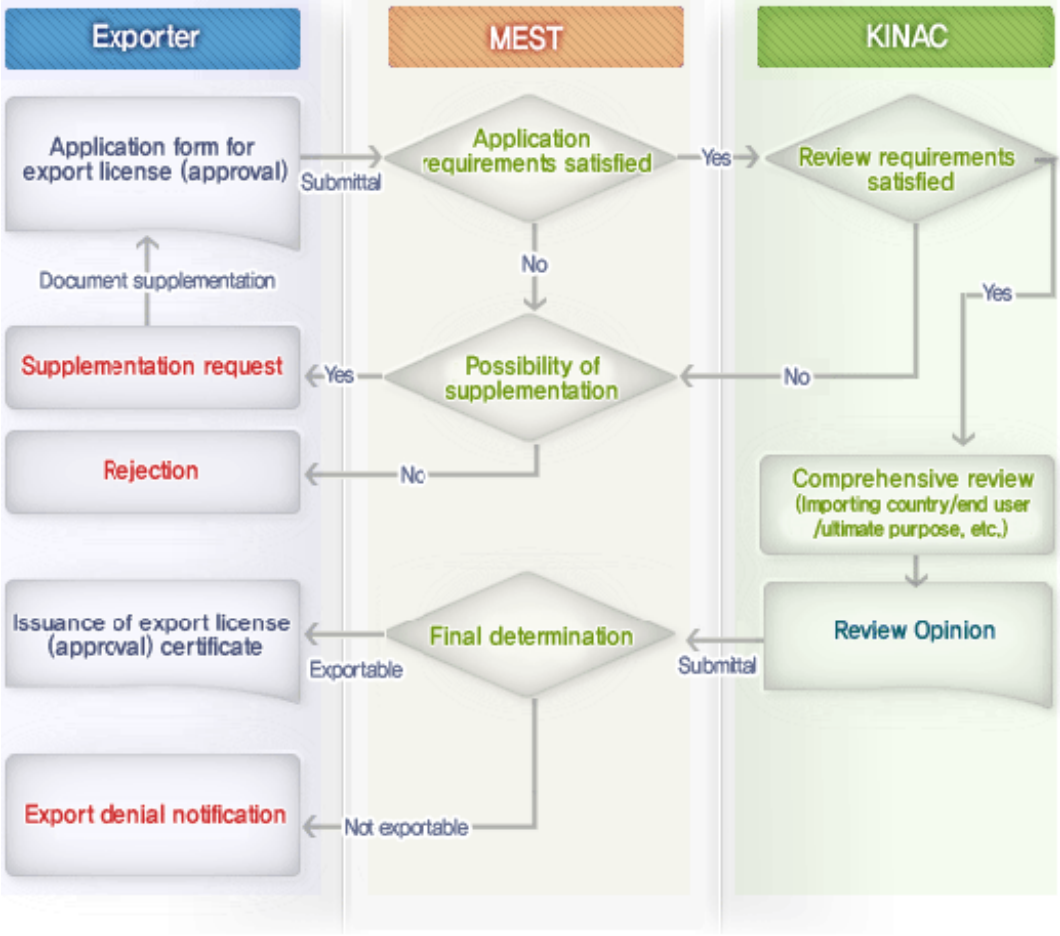
The ROK also requires the exporter to obtain from the end-user an End Use Certificate that provides that (a) the ROK-controlled commodity or technology shall be used only for the specified end-use and shall not be used for nuclear, chemical or biological weapons, and (b) the end-user "will not resell or re-export it or its derivatives. If it should be resold or re-exported with appropriate reasons, [the end-user] will get the prior acceptance from the exporter. (For the Nuclear Trigger items specified in the NSG Guideline Part 1, this prior acceptance is not necessary on the condition that exporter's government written permission is provided)." Part (b) of this language is extremely confusing and has not been clarified by the ROK government.

6. License Application Process

a. Application for a License

The ROK export licensing requirements for strategic commodities and technology (NSG Trigger List items) are demonstrated in the flowchart below. MEST is responsible for handling and conducting adequacy reviews of the applications, while KINAC provides comprehensive review of the end-user, the end-use and other substantive issues.

The ROK government has established an online system for submitting export license applications called Yestrade. Yestrade allows for classification and issuance of export licenses for strategic items online, minimizing paperwork and allowing for efficiency in the export licensing process. The system was designed to help enhance awareness regarding export control by offering information on basic guidelines for export and import activities and greatly improving the speed and efficiency of all related processes. According to the government's explanatory materials, this new system has made it possible for exporters to manage all their nuclear export licensing without visiting the government agencies.



Source: MEST

In order to apply for an export license, the exporter must submit via the online system the following documents:

Application form

- Separate application forms for materials and technology.

Specified supporting materials

Generally required

(1) Export letter of credit, export contract or informal export agreement

(2) Detailed statement of technological features of items to be exported

(3) Document such as manual, product brochure or list of specifications showing function and purpose of the item to be exported

(4) Import certificate issued by importing country, or statement by ultimate consignee and purchaser

(5) Certificate of exporter

(6) Certificate of end-user

Other documents deemed necessary by head of export control authority.

Export of strategic technology only: materials listed above, plus

- Draft of technology export contract in Korean and English
- Detailed statement of contents of application and of features of strategic technology to be exported

Export of specified permissible items to Region A countries:

- Waiver of items 1-6 above.

Export of item classified as strategic material by classification procedure:

- Waiver of items 2 and 3 above.

When importer, ultimate consignee, and end-user of item to be exported are identical:

- Waiver of item 4 above.

Export of NSG Trigger or Dual-Use List item to an NSG member country:

- Waiver of items 4-6 above.

Shipping of strategic material or equipment for purpose of receiving it back after repairing or renewal, or for temporary display:

- Waiver of item 4 above.

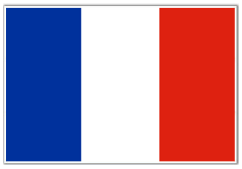
7. Processing Time

According to statements by the ROK government, the ROK regime provides for prompt consideration of applications for export licenses for nuclear commodities and technology. The processing time for export licenses is said to be generally 15 days. Further, exports of specified permissible items to Region A countries should average five days.

However, these processing times may be extended in order to provide for any of the following:

- Additional technological assessment of item in question
- Consultation with administrative bodies related to the export
- Consultation with the government of the importing country
- Local survey of the importing country

D. FRANCE



1. General Basis for Export Regime

France has historically been a major exporter of nuclear technology and equipment. Since the 1950s, France has signed bilateral nuclear cooperation agreements with a multitude of countries. The French government has a strong commitment to non-proliferation, is a member of the NSG and provides support for NSG initiatives. France's nuclear export control regulations are compliant with NSG requirements.

Similar to Russia, the French industry is largely government-owned and has influence on government policy with regard to nuclear export controls. According to knowledgeable commentators, this industry-government partnership allows for a nuclear export policy that, while compliant with international requirements, is highly focused on the promotion of the exports of French nuclear equipment, materials and services.[25]

2. Legal Basis for Nuclear Export Control Regime

The legal basis of France's regime for the control of exports of nuclear material, equipment and technology is the European Council Regulation No. 428/2009. As with other member states of the European Union (EU), France has incorporated the regulation into French law. The Regulation itself mirrors the NSG Guidelines. The nuclear material and equipment on the French control list are set forth in Annex I to EC No. 428/2009, which incorporates items from the NSG lists. The items contained in Annex IV to EC No. 428 are subject to additional restrictions.

A catch-all control, or end-use control, supplements the control list by subjecting items not on the control list to export authorization requirements based on suspected end-use as, among other things, nuclear weapons or explosive devices.

In addition, the French Government has issued a number of decrees and orders providing for licensing procedures for nuclear and nuclear-related goods and technologies.

French nuclear export control legislation and regulations are listed in more detail in Appendix A.

3. Responsible Authorities. There are two agencies that administer nuclear export control in France:

The Ministry of Economy, Industry & Employment, Dual-Use Goods Control Office (Service des Biens a Double Usage) (SBDU) handles most licensing activities.

The Inter-Agency Committee on Dual-Use Items (Commission Interministerielle des Biens a Double Usage) (CIBDU) evaluates most sensitive applications and sets export policy.

4. Export License Requirements

a. Types of Licenses

European Council Regulation No. 428/2009 created a Community General Export Authorization (CGEA). A CGEA is a general license authorizing the export of most controlled items (except those listed in Part 2 of Annex II to EC No. 428/2009, which include special fissile materials and sensitive nuclear technology) to seven countries: United States, Canada, Japan, Australia, New Zealand, Switzerland and Norway.

[25] Richard Cleary, American Enterprise Institute, "The French Civilian Nuclear Industry After the Roussely Report," 2010.

Whenever a CGEA is not applicable to an export, an EU Member State must issue a license to export nuclear commodities and technology outside of the EU. There are three types of export licenses in France. Two of these licenses, similar to those available under the Russian, Japanese and ROK regimes, allow for multiple exports of specified categories of items to specific destinations. The availability of these licenses lessens the burden on exporters.

Individual Export Authorization

- License granted by France to one exporter for exports to one specified end-user, if none of the below license types is applicable.
- Validity: two years, or as specified.

National General Export Authorization (NGA)

- License granted by France to one exporter for unlimited exports of certain specified categories of items (industrial goods, chemical products and graphite) and to specified destinations, but may not conflict with existing CGEAs or cover any items listed in Part 2 of Annex II to EC No. 428/2009.
- Validity: one year; automatically renewable for same exporter.

Global Export Authorization

- License granted by France to one exporter covering unlimited shipments of specific items to specific recipients (end-users or distributors) or countries.
- Validity: two years.

b. Conditions for Granting a License

The conditions for granting a license for nuclear exports are similar to those specified under other regimes. Unlike the U.S. regime, however, these conditions do not include the existence of a bilateral nuclear cooperation agreement with the government of the end-user. Export licensing conditions include:

- Obligations and commitments accepted under relevant international non-proliferation regimes and export control arrangements or relevant international treaties.
- Obligations under sanctions imposed by a common position or a joint action adopted by the European Council or the OSCE, or by a binding resolution of the United Nations Security Council.
- Considerations of national foreign and security policy.
- Considerations of intended end-use and the risk of diversion.

c. Requirement for Nuclear Cooperation Agreement

As discussed above, French export laws do not expressly require a bilateral nuclear cooperation agreement to satisfy applicable criteria in France for obtaining licenses to export nuclear and nuclear-related materials, equipment and technology from France. France, however, does routinely conclude cooperation agreements with nations to which it seeks to supply nuclear materials, equipment and technology. For example, France has concluded bilateral nuclear cooperation agreements with such countries as Algeria, Argentina, Australia, Brazil, China, Egypt, Hungary, India, Indonesia, Japan, Jordan, ROK, the Philippines, Portugal, Qatar, Russia, Sri Lanka, Turkey, Ukraine, the UAE and Vietnam. However, some of these agreements apparently stemmed from French foreign policy and trade objectives and were not necessary to satisfy French export licensing criteria.

5. Export and Re-Export Restrictions

a. Restrictions by Country

Nuclear material, equipment and technology may be transferred freely within the EU, except for items listed in Annex IV to EC No. 428/2009, which are subject to prior authorization. All other exports are subject to licensing requirements.

For purposes of the Regulation, there are two embargoed countries: Iran (Annex II to Regulation 423/2007) and North Korea (Regulation 329/2007).

b. Restrictions by End-Use

SBDU may require the exporter to provide an end-user certificate that should include: (1) a confirmation of item's end-use location and purpose/application, and (2) a confirmation of no re-exports to third countries.

In addition, as with all internationally accepted regimes, a catch-all control requires the exporter to obtain authorization to export non-listed items if they are believed to be destined for a weapons program or to countries subject to an arms embargo.

c. Restrictions by End-User

France's export licensing process requires examination of existing denials or prohibitions of other member states to determine if such denials were for an essentially identical transaction.

d. Technology-Specific Restrictions

Unlike U.S. regulations, the EU Regulation and the accompanying French decrees do not include any indication of a deemed export concept.

The Regulation does provide controls over nuclear technical data and assistance in accordance with the NSG Guidelines. Exports of nuclear technology from France generally require individual or global export authorization. Controlled exports of technology include transmissions of technology by electronic media, including fax, telephone, electronic mail or any other electronic means to a destination outside the European Community; making technology available in an electronic form to legal and natural persons outside the European Community; and oral transmission of technology when described over the telephone.

However, EU and French controls do <u>not</u> apply to supply of services or transmission of technology involving cross-border movement of persons where such persons are only providing their expertise and services.

e. Retransfer Restrictions

A model end-user certificate, as required by SBDU, contains a provision specifying the country of intended end-use and stating that the item(s) are not intended to be re-exported to third countries. In addition, the SBDU may require the submission of a certification of no re-exports that in some cases must include a supporting statement by the government of the end-user.

6. License Application Requirements

The application requirements for the various export licenses available under the French system are as follows:

a. Individual Export Authorization

- Application form
- Pro forma invoice
- Form for nuclear material
- If requested, end-user certificate

- If requested, technical documentation
- If requested, a certification of no re-exports

b. National General Export Authorization (NGA)

- Application form
- Exporter's written certification to comply with the rules governing the type of NGA sought

c. Global Export Authorization

- Exporter must be able to show a steady stream of external supply of controlled dual-use items
- Exporter must file a document describing its internal audit and due diligence program
- Application form
- List of dual-use items and recipients for which license is sought

d. Community General Export Authorization (CGEA)

- Application form

7. Processing Time

The statutory processing period for licensing application submitted through the French system is within nine months after filing of application. This is by far the longest processing period when compared to application processing times mandated by the Russian, Japanese and ROK regimes. It is also more lengthy than export processing times for DOC license applications (~45 days), but equivalent to turnarounds for NRC and DOE applications, although the latter can often take more than nine months to be processed and approved.

V. CONCLUSION

Although the export control regime of the United States shares common elements with those of France, Russia, ROK and Japan, in practice the U.S. regime has many features that make it more complex, restrictive and time-consuming from the perspective of U.S. suppliers. The trifurcated jurisdiction of the U.S. regime poses a confusing maze of regulations to U.S. exporters and contributes to the U.S. regime's inefficiency. Unlike the NSG-based technology transfer controls of other countries, the Part 810 regulation lacks specificity and clarity, resulting in an application of technology controls that is more expansive and less predictable than in the foreign regimes surveyed. The U.S. export control regime is also distinguished by a legal requirement for bilateral nuclear cooperation agreements for transfers of source and special nuclear material, and U.S. consent rights for certain equipment and material retransfers and reprocessing activities included in these agreements. The U.S. regime is unique in lacking a statutory or regulatory time deadlines for processing export licenses. The absence of a time requirement in the U.S. regime, combined with its bureaucratic complexity, has resulted in approval times that far exceed those of the other regimes surveyed – typically over one year. Putting U.S. suppliers at a further disadvantage, the U.S. government's promotion of commercial nuclear exports has been much more limited than the strong export coordination role played by the governments of other supplier countries.

The Obama Administration has recognized that the complexity of the archaic U.S. export control system often defeats its own purposes to facilitate legitimate trade with partners and prevent the diversion of sensitive technologies from intended users. In remarks on the U.S. export control system made on April 20, 2010, to the Business Executives for National Security, then-Secretary of Defense Robert Gates stated:

> *The problem we face is that the current system, which has not been significantly altered since the end of the Cold War, originated and evolved in a very different era with a very different array of concerns in mind. … The current arrangement fails at the critical task of preventing harmful exports while facilitating useful ones.*

Following Secretary Gates' remarks, the Administration launched the Export Control Reform (ECR) Initiative, with a stated objective of fundamentally reforming the U.S. export control system. The cornerstone of the ECR Initiative is to rebuild the two U.S. export control lists: the CCL, which forms part of the Export Administration Regulations, and the ITAR's U.S. Munitions List. The ECR Initiative's goal is to create a single control list, single licensing agency, unified information technology system, and enforcement coordination center.[26]

The Administration's export control reform, however, is focused solely on controls administered by the BIS and the DOS, which are applicable only to a small percentage of exports of nuclear power-related commodities and technologies. The NRC and DOE export control regimes, which control most U.S. exports of nuclear material, components and related technical data for nuclear power reactor and fuel cycle facilities, fall outside the ECR Initiative.

The DOE is in the process of revising its Part 810 regulations. A proposed revision of the rule published September 7, 2011, would not improve the features that harm the competitiveness of U.S. commercial nuclear exporters. Rather than focus DOE's efforts on controlling the technologies of greatest proliferation concern, the proposed rule would significantly expand the scope of technologies covered by the regulation. Although the proposed rule provides an expanded list of definitions, many of which are now consistent with the NSG Guidelines, the proposed rule would introduce several terms that are not defined or not consistent with the definitions in other U.S. export regulations. The proposed rule would harmonize definitions with the NSG guidelines, but DOE also proposes an explicit deemed export provision, which would cause the United States to differ from almost every other NSG member. Finally,

[26] *See* President's Export Control Reform Initiative, discussed in detail at http://www.export.gov/ecr/index.asp.

the proposed rule would not address the relative inefficiency of the Part 810 process and would, in fact, exacerbate delays by requiring specific authorizations for technologies not now covered, and for many more countries.

The DOE has indicated that it will issue a revised proposal to amend the Part 810 regulation. Whether the revised proposal will effectively address the burdens on U.S. exporters remains to be seen.

Apart from needed changes to U.S. export law and regulations, a promising area for reform in the U.S. nuclear export control regime is establishment of new procedures and priorities to substantially reduce the time U.S. agencies require to process license applications. Although the current time frames for licensing stem in part from the inter-agency coordination and public notice-and-comment processes, U.S. agencies should be able to increase the efficiency of their license processing through stronger Executive Branch coordination and emphasis on adherence to the time periods currently specified in the Executive Branch procedures. By signaling to potential customers that U.S. exports may be licensed on a schedule comparable to those of foreign export control regimes, such an improvement could significantly "level the playing field" for U.S. exporters in the near-term.

■

APPENDIX A: NUCLEAR EXPORT CONTROL LEGAL REGIMES BY COUNTRY

A. RUSSIA

Primary Legislation

Federal Law No. 114-F3 on Military-Technical Cooperation of the Russian Federation with Foreign States of Jul. 19, 1998 (amended on Oct. 25, 2006)

Federal Law No.183-F3 on Export Control of Jul. 18, 1999 (amended by Law. No. 196-F3 (Dec. 30, 2001), Law No. 58-F3 (Jun. 29, 2004), Law No. 90-F3 (Jul. 18, 2005), Law No. 318-F3 (Jan. 12, 2007))

Government Resolutions

Resolution of the Government of the Russian Federation No. 973 of Dec. 15, 2000 on the Export and Import of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technology (amended by Resolution No. 612 of Aug. 21, 2001, Resolution No. 731 of Oct. 3, 2002, Resolution No. 54 of Feb. 4, 2005, Resolution. No. 771 of Dec. 15, 2006, Resolution. No. 724 of Oct. 31, 2007, Resolution No. 806 of Nov. 6, 2008, Resolution No. 266 of Mar. 31, 2009, Resolution No. 484 of Jun. 15, 2009, Resolution No. 560 of Jul. 26, 2007, Resolution No. 826 of Oct. 12, 2010)

Resolution of the Government of the Russian Federation No. 1030 of Oct. 11, 1993 on the Control of Compliance with Obligations of the Use of Imported and Exported Dual-Use Goods and Services for Stated End-Uses (amended by Resolution No. 556 of June 3, 1995, Resolution No. 1548 of Dec. 11, 1997, Resolution No. 853 of Jul. 24, 1999, Resolution No. 635 of Aug. 29, 2001, Resolution No. 54 of Feb. 4, 2005)

Resolution of the Government of the Russian Federation No. 296 of April 16, 2001 on Approval of Regulations on Control over Foreign Trade Activities with Respect to Equipment, Materials and Technologies That Can be Used to Develop Missiles (amended by Resolution No. 704 of October 1, 2001, Resolution No. 731 of October 3, 2002, and Resolution No. 54 of February 4, 2005)

Resolution of the Government of the Russian Federation No. 447 of June 7, 2001 on Approval of Regulations for the Control over Foreign Trade Activities with Respect to Dual-Use Equipment, Materials and Technologies That Can be Used to Produce Weapons and Military Equipment (amended by Resolution No. 704 of Oct. 1, 2001, Resolution No. 731 of Oct. 3, 2002, and Resolution No. 54 of Feb. 4, 2005)

Resolution of the Government of the Russian Federation No. 462 of June 7, 2001 on Approval of Regulations for the Control over Foreign Trade Activities with Respect to Dual-Use Equipment, Materials and Related Technologies Used for Nuclear Purposes (amended by Resolution No. 731 of Oct. 3, 2002, Resolution No. 241 of May 15, 2004, and Resolution No. 54 of Feb. 4, 2005)

Presidential Decrees

Decree No. 202 of Feb. 14, 1996 of the President of the Russian Federation on Approving the List of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technologies Subject to Export Controls (as amended by Decree No. 32 of Jan. 21, 1997, Decree No. 468 of May 12, 1997, and Decree No. 1151 of May 5, 2000, and Decree No. 141 of Feb. 4, 2004).

Decree No. 36 of Jan. 13, 2003 of the President of the Russian Federation on Approving the List of Equipment and Dual-Use Materials and Technologies Used for Nuclear Purposes, Subject to Export Control

Control List

List of Nuclear Materials, Equipment, Special Non-Nuclear Materials and Related Technologies

Subject to Export Controls (corresponds to the NSG Trigger List).

List of Equipment and Dual-Use Materials and Technologies Used for Nuclear Purposes, Subject to Export Control (corresponds to the NSG Dual-Use List).

B. JAPAN

Primary Legislation

Foreign Exchange and Foreign Trade Act (amended 2009)

Orders and Ordinances

Export Trade Control Order (amended 2008) (applicable to commodities)

Export Trade Control Ordinance (amended 2005)

Foreign Exchange Order (amended 2008) (applicable to technology)

Ministerial Ordinance on Trade Relation Invisible Trade, etc. (amended 2007)

Ordinance of the Ministry Specifying Goods and Technologies Pursuant to Provisions of the Appended Table 1 of the Export Control Order and the Appended Table of the Foreign Exchange Order (amended 2008) ("Ordinance Specifying Goods and Technologies")

Control Lists

Article 1 of the Ordinance Specifying Goods and Technologies provides a list of nuclear material and equipment subject to Japanese export controls.

Technology for the design, manufacture, or use of the goods listed in Article 1 is controlled pursuant to the appended Table to the Foreign Exchange Order.

C. REPUBLIC OF KOREA

Primary Legislation

Foreign Trade Act (Amended by Act No. 8852, Feb. 29, 2008)

Technology Development Promotion Act (Amended by Act No. 8852, Feb. 29, 2008)

Decrees

Enforcement Decree of the Foreign Trade Act (Amended by Presidential Decree No. 21104, Nov. 5, 2008)

Enforcement Decree of the Technology Development Promotion Act (Amended by Presidential Decree No. 19719, Dec. 27, 2006)

Public Notices

Consolidated Public Notice for the Export and Import of Strategic Goods and Technology (Ministry of Knowledge Economy Public Notice No. 08-118) ("Consolidated Public Notice on Export and Import")

Consolidated Public Notice (Ministry of Knowledge Economy Notice No. 08-184, Dec. 11, 2008)

D. FRANCE

Primary Legislation

European Council Regulation (EC) No. 428/2009 (adopted 2009)

Decrees and Orders

Decree No. 292 of March 18, 2010 on licensing procedures for export, transfer, brokering and transit of goods and dual-use technology and skills transfer

Order of March 18, 2010 on export licensing, import and transfer of goods an dual-use technologies

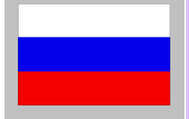
Decree No. 293 of March 18, 2010 on the general direction of competitiveness, industry and services

Decree No. 294 of March 18, 2010 establishing an interministerial commission of dual-use

Order of March 18, 2010 establishing a national service called "Service of dual-use"

Order on Decree of December 13, 2001 on the control of exports to third countries and the transfer to the Member States of the European Union of dual-use goods and technologies

APPENDIX B: COMPARISON OF NUCLEAR EXPORT CONTROL REGIMES

Country	Export Control Agencies	Country-Specific Restrictions	Nuclear Cooperation Agreement Requirements	Restrictions on Exports of Nuclear Technology	Retransfer Restrictions	Export Application Processing Time
United States 	• Department of Energy (DOE) (nuclear-related technology and assistance) • Nuclear Regulatory Commission (NRC) (nuclear reactors, fuel cycle facilities, components and materials) • Department of Commerce (DOC) (balance of plant and dual-use commodities and technology) • Department of State (DOS) (military items, including nuclear weapons and commodities for use in nuclear submarines)	• DOE – 810.8(a) list – specific authorization required for exports of non-public commercial nuclear technology and assistance • NRC – Specific license required for all commercial nuclear exports, except for exports of minor reactor components to 26 countries listed at 10 CFR 110.26; exports restricted to Afghanistan, Andorra, Angola, Myanmar, Djibouti, India, Israel, Libya, Oman, Pakistan; exports prohibited to Cuba, Iran, Iraq, N. Korea, Sudan, Syria • DOC – BOP exports to Cuba, Iran, Iraq, Israel, Libya, North Korea, Pakistan, Sudan and Syria require a license; EAR99 exports to unsafeguarded facilities (e.g. in India, Pakistan) require a license • DOS – exports of nuclear weapons and commodities for use in submarines restricted to most destinations	Nuclear Cooperation (Section 123) Agreement required for exports of major nuclear components, source material (natural uranium and thorium) and special nuclear material (enriched uranium, plutonium and U-233) to any country.	• Deemed export rule applies (DOE, DOC and DOS). • U.S. citizens providing Part 810-controlled assistance directly to foreign entities must obtain Part 810 specific authorization / file reports. • DOC has similar controls over technology transfers by U.S. individuals.	• Prior DOE approval required before Part 810-controlled technology can be retransferred to 810.8(a) countries or citizens of these countries. • USG consent required before U.S. nuclear components or fuel can be retransferred to third countries. • DOC may on a limited basis place certain retransfer conditions on licensee or end-user; reporting requirements may apply.	• Part 810 specific authorization: 6-14 months • Part 110 specific license: 12+ months for initial exports (substantially more if intervention, but inventions are very rare); >12 months for subsequent exports • DOC license: 45-60 days
France 	• Ministry of Economy, Industry & Employment – Dual-Use Goods Control Office (SBDU) (general licensing agency) • Inter-Agency Committee on Dual-Use Items (CIBDU) (sensitive applications and export policy)	• Other EU countries – dual-use items may be transferred freely within the EU, except for certain enumerated items (including nuclear technology) • Community General Export Authorization (CGEA) – general license for export of most controlled items applicable to U.S., Canada, Japan, Australia, New Zealand, Switzerland, and Norway • Embargoed countries – Iran, North Korea	Nuclear cooperation agreement not necessary to export controlled items.	• No deemed export rule. • Export of nuclear technology generally requires individual or global export authorization. • Controls apply to technology transfers by phone, fax, email, any other electronic means. • Controls do not apply to in-person supply of services or transmission of technology.	• SBDU may require execution of end-user certificate prohibiting re-exports.	All applications: 9 months
Republic of Korea 	• Ministry of Knowledge Economy (MKE) (dual-use equipment, material and technology) • Ministry of Education, Science and Technology (MEST) (NSG Trigger List equipment, material and technology)	• More restrictive application and licensing requirements for exports to countries (“Region B countries”) not parties to all of the following regimes: Wassenaar Arrangement; Nuclear Suppliers Group; Missile Technology Control Regime; Australia Group; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction; and Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction.	Laws and regulations do not expressly require nuclear cooperation agreement to export controlled items.	• No deemed export rule. • Application for export of controlled technology requires submission of export contract and detailed statement of features of exported technology.	• End-user certificate/government assurance requirement prohibits re-exports without prior ROK consent (but not required if exporting dual-use items to Region A countries or NSG member countries).	• Generally: 15 days • Application for export of specified items to Region A countries: 5 days
Japan 	• Ministry of Economy, Trade and Industry (METI)	• 26 “White” countries – bulk export license applicable, catch-all control inapplicable unless informed otherwise • Non-”White” countries – individual export license applies	Laws and regulations do not expressly require nuclear cooperation agreement not necessary to export controlled items.	• Deemed export rule applies for any transfers of controlled technologies by a Japanese national to a non-resident. • Controls also broadly apply to any cross-border transfer of sensitive technologies by any persons (Japanese residents or non-residents).	• METI may require provision of governmental assurances and execution of end-user certificate prohibiting re-exports without original exporter’s prior written consent.	Standard processing period: 90 days
Russia 	• Federal Service for Technical and Export Control (FSTEC) - issues export and import licenses • Rosatom - takes part in the examination of the contract for supply of controlled commodities	• Additional licensing requirements apply to exports to India and to countries that do not have a full scope safeguards agreement in place with the IAEA.	Nuclear cooperation agreement not necessary to export controlled items.	• Deemed export rule applies.	• The same assurances that apply to the original transfer must be obtained for subsequent retransfer to third countries.	• Single Export License: up to 45 days • Multiple Export License: up to 25 days

APPENDIX C: NUCLEAR AGREEMENTS FOR COOPERATION BETWEEN SUBJECT SUPPLIER AND CUSTOMER COUNTRIES

		CUSTOMER COUNTRIES				
		India	**Czech Republic**	**United Kingdom**	**Republic of Korea**	**Japan**
SUPPLIER COUNTRIES	**United States**	Agreement for Cooperation in force, signed Aug. 3, 2007	Agreement for Cooperation between the European Atomic Energy Community (EURATOM) and the U.S. (Jul. 11, 1995)	Agreement for Cooperation between EURATOM and the U.S. (Jul. 11, 1995)	Agreement for Cooperation in force, signed Nov. 24, 1972	Agreement for Cooperation in force, signed Nov. 4, 1987
	France	Agreement for Cooperation in force, signed Sept. 30, 2008	Agreement for Cooperation in force, signed May 19, 2011	Agreement for Cooperation in force, signed Feb. 15, 1965	Agreement for Cooperation in force, signed Apr. 4, 1981	Agreement for Cooperation in force, signed 1981
	Russia	Agreement for Cooperation in force, signed Mar. 12, 2010	Agreement for Cooperation in force, signed Dec. 4, 1994	Agreement for Cooperation in force, signed Sept. 3, 1996; supplementary agreement June 26, 2003	Agreement for Cooperation in force, signed May 31, 2001	Agreement for Cooperation in force, signed May 12, 2009
	Republic of Korea	Agreement for Cooperation signed Jul. 25, 2011	Agreement for Cooperation in force, signed Mar. 16, 2001	Agreement for Cooperation in force, signed Nov. 27, 1991		Agreement for Cooperation in force, signed Dec. 12, 2010
	Japan	No agreement in force	Agreement for Cooperation between the Government of Japan and EURATOM, signed Feb. 27, 2006	Agreement for Cooperation between the Government of Japan and EURATOM, signed Feb. 27, 2006	Agreement for Cooperation in force, signed Dec. 12, 2010	

APPENDIX D: COMPARISON OF RETRANSFER AND REPROCESSING CONSENT RIGHTS UNDER AGREEMENTS FOR COOPERATION

Country	Illustrative Agreement(s) for Cooperation (AFC)	Retransfer Consent Rights	Reprocessing Consent Rights	Applicable Defined Terms
United States 	• U.S.-Japan Peaceful Nuclear Cooperation Agreement (Jul. 1988) • Other U.S. 123 Agreements entered into following the enactment of the Nuclear Nonproliferation Act of 1978 closely follow the provisions of the U.S.-Japan Agreement. The definition of "Equipment," which determines the scope of the consent rights regarding special nuclear material produced in non-U.S. obligated fuel through the use of supplied equipment, is not the same in all such Agreements.	"Material, nuclear material, equipment and components transferred pursuant to this Agreement and special fissionable material produced through the use of such material, nuclear material or equipment may be transferred only to persons authorized by a receiving party or, if the parties agree, beyond the territorial jurisdiction of the receiving party."	"Nuclear material transferred pursuant to this Agreement and special fissionable material used in or produced through the use of material, nuclear material or equipment so transferred may be reprocessed if the parties agree."	• "'Equipment' means any reactor as a complete unit, other than one designed or used primarily for the formation of plutonium or uranium-233, and any other items specified in Part A of Annex A of this Agreement." • "Reactor pressure vessels: Metal vessels, as complete units or as major shop-fabricated parts therefore, which are especially designed or prepared to contain the core of a reactor and are capable of withstanding the operating pressure of the primary coolant." • "'Component' means a component part of equipment or other item, so designated by agreement of the parties."
France 	• France-UAE Peaceful Nuclear Cooperation Agreement (2008) • France-Brazil Peaceful Nuclear Cooperation Agreement (Oct. 2002)	"The Party considering a retransfer or a transfer should obtain prior consent from the initial supplier: a) For any retransfer of facilities, equipment or technology . . . provided under this agreement; b) For any transfer of facilities or equipments derived from the facilities or equipments mentioned in paragraph a) or designed from the technology mentioned in the paragraph a) above."	None	• "Equipment" means the major components specified in paragraphs 1, 4, and 7 of Annex B of the [NSG] Guidelines.
Republic of Korea 	• ROK-UAE Peaceful Nuclear Cooperation Agreement (2009) • Japan-ROK Peaceful Nuclear Cooperation Agreement (Jan. 2012) • ROK-Argentina Peaceful Nuclear Cooperation Agreement (Oct. 1997)	"Nuclear material, material, equipment, and technology transferred pursuant to this Agreement and special fissionable material produced through the use of any such nuclear material, material, or equipment shall not be transferred to an unauthorized person or, unless the Parties agree in writing, beyond the jurisdiction of the receiving Party. An arrangement to facilitate the implementation of this provision may be established by the Parties."	• **ROK-UAE Agreement:** "Nuclear material transferred pursuant to this Agreement and nuclear material used in or produced through the use of nuclear material or equipment so transferred shall not be reprocessed unless the Parties otherwise agree." • Other agreements (e.g. Argentina) do not place restrictions on reprocessing.	• "'Equipment' means any facilities, equipment, or components listed in Annex B of the [NSG] Guidelines."
Japan 	• Japan-Kazakhstan Peaceful Nuclear Cooperation Agreement (Mar. 2010) • Japan-Russia Peaceful Nuclear Cooperation Agreement (May 2009) (*pending approval before Japanese parliament*) • Japan-ROK Peaceful Nuclear Cooperation Agreement (Jan. 2012) • Japan-Jordan Peaceful Nuclear Cooperation Agreement (Feb. 2012)	• **Most Japanese Agreements:** "Nuclear material, material, equipment and technology transferred pursuant to this Agreement, equipment based on technology and nuclear material recovered or produced as a by-product shall not be transferred or retransferred beyond the jurisdiction of the State of the supplying Party, unless prior written consent of the supplying Party is obtained." • **Japan-EURATOM Agreement:** "Nuclear material. . . shall not be retransferred . . . unless the receiving Party is provided with the assurances of fulfillment of the conditions set out in Annex B to this Agreement in an appropriate way [peaceful use, safeguards, physical protection, and securing equivalent assurances from third parties prior to retransfer], or unless, in the absence of such assurances, the prior written consent of the supplying Party is obtained."	• **Most Agreements between Japan and with NNWS (except for Kazakhstan)**: "Nuclear material transferred pursuant to this Agreement and nuclear material recovered or produced as a by-product shall not be enriched or reprocessed within the jurisdiction of the [NNWS], unless the Parties otherwise agree."	• "Equipment" means major items of machinery, plant or instrumentation, or major components thereof, which are specially designed or prepared for use in nuclear activities, and which are listed in Part B of Annex A [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, primary coolant pumps, nuclear reactor internals, heat exchangers, neutron detection and measuring instruments, fabrication and conversion plants]."
Russia 	• Russia-Brazil Peaceful Nuclear Cooperation Agreement (1998)	"Re-exports will be made only in accordance with [peaceful use, IAEA safeguards, physical protection conditions] and in the case of uranium enriched to more than 20% (twenty percent), plutonium and heavy water, re-exports may only be made with the written consent of Russia."	None	Not applicable.