SUBCHAPTER D—ADDITIONAL PROTOCOL REGULATIONS

PART 781—GENERAL INFORMATION AND OVERVIEW OF THE ADDITIONAL PROTOCOL REGULATIONS (APR)

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§ 781.1 Definitions of terms used in the Additional Protocol Regulations (APR).

The following are definitions of terms used in parts 781 through 786 of this subchapter (collectively known as the APR), unless otherwise noted:

Access Point of Contact (A–POC). The individual at a location who will be notified by BIS immediately upon receipt of an IAEA request for complementary access to a location. BIS must be able to contact either the A–POC or alternate A–POC on a 24-hour basis. All interactions with the location for permitting and planning an IAEA complementary access will be conducted through the A–POC or the alternate A–POC, if the A–POC is unavailable.

Act (The). The United States Additional Protocol Implementation Act of 2006 (Pub. L. 109–401).

Additional Protocol. The Protocol Additional to the Agreement between the United States of America and the International Atomic Energy Agency for the Application of Safeguards in the United States of America, with Annexes, signed at Vienna on June 12, 1998 (T. Doc. 107–097), known as the Additional Protocol.

Additional Protocol Regulations (APR). Those regulations contained in 15 CFR parts 781 to 786 that were promulgated by the Department of Commerce to implement and enforce the Additional Protocol.

Agreement State. Any State of the United States with which the U.S. Nuclear Regulatory Commission (NRC) has entered into an effective agreement under Subsection 274b of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*).

Beneficiation. The concentration of nuclear ores through physical or any other non-chemical methods.

Bureau of Industry and Security (BIS). The Bureau of Industry and Security of the United States Department of Commerce, including Export Administration and Export Enforcement.

Complementary Access. The exercise of the IAEA's access rights as set forth in Articles 4 to 6 of the Additional Protocol (see part 784 of the APR for requirements concerning the scope and conduct of complementary access).

Complementary Access Notification. A written announcement issued by BIS to a person who is subject to the APR (e.g., the owner, operator, occupant, or agent in charge of a location that is subject to the APR as specified in §781.3(a) of the APR) that informs this person about an impending complementary access in accordance with the requirements of part 784 of the APR.

Host Team. The U.S. Government team that accompanies the International Atomic Energy Agency (IAEA) inspectors during complementary access, as provided for in the Additional Protocol and conducted in accordance with the provisions of the APR.

Host Team Leader. The representative from the Department of Commerce who leads the Host Team during complementary access.

International Atomic Energy Agency (IAEA). The United Nations organization, headquartered in Vienna, Austria, that serves as the official international verification authority for the implementation of safeguards agreements concluded pursuant to the Treaty on

the Non-Proliferation of Nuclear Weapons (NPT).

ITAR. The International Traffic in Arms Regulations (22 CFR Parts 120–130), which are administered by the Directorate of Defense Trade Controls, U.S. Department of State.

Location. Any geographical point or area declared or identified by the United States or specified by the IAEA (see ''*location specified by the IAEA*,'' as defined in this section).

Location-specific environmental sampling. The collection of environmental samples (e.g., air, water, vegetation, soil, smears) at, and in the immediate vicinity of, a location specified by the IAEA for the purpose of assisting the IAEA to draw conclusions about the absence of undeclared nuclear material or nuclear activities at the specified location.

Location-specific subsidiary arrangement. An agreement that sets forth procedures, which have been mutually agreed upon by the United States and the IAEA, for conducting complementary access at a specific reportable location. (Also see definition of ''*subsidiary arrangement*'' in this section.)

Location specified by the IAEA. A location that is selected by the IAEA to:

(1) Verify the absence of undeclared nuclear material or nuclear activities; or

(2) Obtain information that the IAEA needs to amplify or clarify information contained in the U.S. declaration.

Managed access. Procedures implemented by the Host Team during complementary access to prevent the dissemination of proliferation sensitive information, to meet safety or physical protection requirements, to protect proprietary or commercially sensitive information, or to protect activities of direct national security significance to the United States, including information associated with such activities, in accordance with the Additional Protocol.

National Security Exclusion (NSE). The right of the United States, as specified under Article 1.b of the Additional Protocol, to exclude the application of the Additional Protocol when the United States Government determines that its application would result in access by the IAEA to activities of direct national security significance to the United States or to locations or information associated with such activities.

NRC. The U.S. Nuclear Regulatory Commission.

Nuclear fuel cycle-related research and development. Those activities that are specifically related to any process or system development aspect of any of the following:

(1) Conversion of nuclear material;

(2) Enrichment of nuclear material;

(3) Nuclear fuel fabrication;

(4) Reactors;

(5) Critical facilities;

(6) Reprocessing of nuclear fuel; or

(7) Processing (not including repackaging or conditioning not involving the separation of elements, for storage or disposal) of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233.

Nuclear Material. Any source material or special fissionable material, as follows.

(1) *Source material* means uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235; thorium; any of the foregoing in the form of metal, alloy, chemical, or concentrate. The term source material shall not be interpreted as applying to ore or ore residue.

(2) *Special fissionable material* means plutonium 239; uranium 233; uranium enriched in the isotopes 235 or 233; any material containing one or more of the foregoing, but the term special fissionable material does not include source material.

Person. Any individual, corporation, partnership, firm, association, trust, estate, public or private institution, any State or any political subdivision thereof, or any political entity within a State, any foreign government or nation or any agency, instrumentality or political subdivision of any such government or nation, or other entity located in the United States.

Report Point of Contact (R–POC). A person whom BIS may contact for the purposes of clarification of information provided in report(s) and for general information. The R–POC need not be the person who prepares the forms or certifies the report(s) for submission to

BIS, but should be familiar with the content of the reports.

Reportable Location. A location that must submit an *Initial Report, Annual Update Report,* or *No Changes Report* to BIS, in accordance with the provisions of the APR, is considered to be a ''reportable location'' with reportable activities (see § 783.1(a) and (b) of the APR for nuclear fuel cycle-related activities subject to these reporting requirements).

Reporting Code. A unique identification used for identifying a location where one or more nuclear fuel cycle-related activities subject to the reporting requirements of the APR are located.

Subsidiary Arrangement (or General Subsidiary Arrangement). An agreement that sets forth procedures, which have been mutually agreed upon by the United States and the IAEA, for implementing the Additional Protocol, irrespective of the location. (Also see the definition of ''*location-specific subsidiary arrangement*'' in this section.)

United States. Means the several States of the United States, the District of Columbia, and the commonwealths, territories, and possessions of the United States, and includes all places under the jurisdiction or control of the United States, including any of the places within the provisions of paragraph (41) of section 40102 of Title 49 of the United States Code, any civil aircraft of the United States or public aircraft, as such terms are defined in paragraphs (1) and (37), respectively, of section 40102 of Title 49 of the United States Code, and any vessel of the United States, as such term is defined in section 3(b) of the Maritime Drug Enforcement Act, as amended (section 1903(b) of Title 46 App. of the United States Code).

Uranium Hard-Rock Mine. Means any of the following:

(1) An area of land from which uranium is extracted in non-liquid form;

(2) Private ways and roads appurtenant to such an area; and

(3) Lands, excavations, underground passageways, shafts, slopes, tunnels and workings, structures, facilities, equipment, machines, tools, or other property including impoundments, retention dams, and tailings ponds, on the surface or underground, used in, or to be used in, or resulting from, the work of extracting such uranium ore from its natural deposits in non-liquid form, or if in liquid form, with workers underground, or used in, or to be used in, the concentration of such uranium ore, or the work of the uranium ore.

Uranium Hard-Rock Mine (Closed-down). A uranium hard-rock mine where ore production has ceased and the mine or its infrastructure is not capable of further operation.

Uranium Hard-Rock Mine (Operating). A uranium hard-rock mine where ore is produced on a routine basis.

Uranium Hard-Rock Mine (Suspended). A uranium hard-rock mine where ore production has ceased, but the mine and its infrastructure are capable of further operation.

U.S. declaration. The information submitted by the United States to the IAEA in fulfillment of U.S. obligations under the Additional Protocol.

United States Government locations. Those locations owned and operated by a U.S. Government agency (including those operated by contractors to the agency), and those locations leased to and operated by a U.S. Government agency (including those operated by contractors to the agency). United States Government locations do not include locations owned by a U.S. Government agency and leased to a private organization or other entity such that the private organization or entity may independently decide the purposes for which the locations will be used.

Wide-area environmental sampling. The collection of environmental samples (e.g., air, water, vegetation, soil, smears) at a set of locations specified by the IAEA for the purpose of assisting the IAEA to draw conclusions about the absence of undeclared nuclear material or nuclear activities over a wide area.

You. The term ''you'' or ''your'' means any person. With regard to the reporting requirements of the APR, ''you'' refers to persons that have an obligation to report certain activities under the provisions of the APR. (Also see the definition of ''*person*'' in this section.)

§ 781.2 Purposes of the Additional Protocol and APR.

(a) *General.* The Additional Protocol is a supplement to the existing U.S.–IAEA Safeguards Agreement, which entered into force in 1980. It provides the IAEA with access to additional information about civil nuclear and nuclear-related items, materials, and activities and with physical access to reportable locations where nuclear facilities, materials, or ores are located (to ensure the absence of undeclared nuclear material and activities) and to other reportable locations and locations specified by the IAEA (to resolve questions or inconsistencies related to the U.S. Declaration). The Additional Protocol is based upon and is virtually identical to the IAEA Model Additional Protocol (see IAEA Information Circular, INFCIRC/540, at *http://www.iaea.org/Publications/Documents/Infcircs/index.html*), except that it excludes IAEA access to activities with direct national security significance to the United States, or to locations or information associated with such activities, and provides for managed access in connection with those same activities and to locations or information associated with those activities.

(b) *Purposes of the Additional Protocol.* The Additional Protocol is designed to enhance the effectiveness of the U.S.–IAEA Safeguards Agreement by providing the IAEA with information about aspects of the U.S. civil nuclear fuel cycle, including: Mining and concentration of nuclear ores; nuclear-related equipment manufacturing, assembly, or construction; imports, exports, and other activities involving certain source material (i.e., source material that has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched); imports and exports of specified nuclear equipment and non-nuclear material; nuclear fuel cycle-related research and development activities not involving nuclear material; and other activities involving nuclear material not currently subject to the U.S.–IAEA Safeguards Agreement (e.g., nuclear material that has been exempted from safeguards pursuant to paragraph 37 of INFCIRC/153 (Corrected) June 1972).

(c) *Purposes of the Additional Protocol Regulations.* To fulfill certain obligations of the United States under the Additional Protocol, BIS has established the APR, which require the reporting of information to BIS (as described in parts 783 and 784 of the APR) from all persons and locations in the United States (as described in § 781.3(a) of the APR) with reportable activities. This information, together with information reported to other U.S. Government agencies and less any information to which the U.S. Government applies the national security exclusion, is aggregated into a U.S. declaration, which is submitted annually to the IAEA. The APR also provide for complementary access at such locations in accordance with the provisions in part 784 of the APR.

§ 781.3 Scope of the APR.

The Additional Protocol Regulations or APR implement certain obligations of the United States under the Protocol Additional to the Agreement Between the United States of America and the International Atomic Energy Agency Concerning the Application of Safeguards in the United States of America, known as the Additional Protocol.

(a) *Persons and locations subject to the APR.* The APR, promulgated by the Department of Commerce, shall apply to all persons and locations in the United States, *except*:

(1) Locations that are subject to the regulatory authority of the Nuclear Regulatory Commission (NRC), pursuant to the NRC's regulatory jurisdiction under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*); and

(2) The following *United States Government locations* (see definition in § 781.1 of the APR):

(i) Department of Energy locations;

(ii) Department of Defense locations;

(iii) Central Intelligence Agency locations; and

(iv) Department of State locations.

(b) *Activities subject to the APR.* The activities that are subject to the recordkeeping and reporting requirements described in the APR are found in parts 783 and 784 of this subchapter (APR).

§ 781.4 U.S. Government requests for information needed to satisfy the requirements of the APR or the Act.

From time-to-time, one or more U.S. Government agencies (i.e., the Department of Defense, the Department of Energy, the NRC, or BIS) may contact a location to request information that the U.S. Government has determined to be necessary to satisfy certain requirements of the APR or the Act (e.g., clarification requests or vulnerability assessments). If the manner of providing such information is not specified in the APR, the agency in question will provide the location with appropriate instructions.

§ 781.5 Authority.

The APR implement certain provisions of the Additional Protocol under the authority of the Additional Protocol Implementation Act of 2006 (Pub. L. 109–401, 120 Stat. 2726 (December 18, 2006)). In Executive Order 13458 of February 4, 2008, the President delegated authority to the Department of Commerce to promulgate regulations to implement the Act, and consistent with the Act, to carry out appropriate functions not otherwise assigned in the Act, but necessary to implement certain declaration and complementary access requirements of the Additional Protocol and the Act.

PART 782—GENERAL INFORMATION REGARDING REPORTING REQUIREMENTS AND PROCEDURES

Sec.

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§ 782.1 Overview of reporting requirements under the APR.

Part 783 of the APR describes the reporting requirements for certain activities specified in the APR. For each activity specified in part 783, BIS may require that an *Initial Report*, an *Annual Update Report*, a *No Changes Report*, an *Import Confirmation Report*, a *Supplemental Information Report*, or an *Amended Report* be submitted to BIS. In addition, persons subject to the APR may be required to provide BIS with information needed to assist the IAEA in clarifying or verifying information specified in the U.S. declaration or in clarifying or amplifying information concerning the nature of the activities conducted at a location (see §§ 783.1(d) and 784.1(b)(2) of the APR for requirements concerning a *Supplemental Information Report*). If, after reviewing part 783 of the APR, you determine that you are subject to one or more APR reporting requirements, you may obtain the appropriate forms by contacting BIS (see § 782.5 of the APR). In addition, forms may be downloaded from the Internet at *http://www.ap.gov*.

§ 782.2 Persons responsible for submitting reports required under the APR.

The owner, operator, or senior management official of a location subject to the reporting requirements in part 783 of the APR is responsible for the submission of all required reports and documents in accordance with all applicable provisions of the APR.

§ 782.3 Compliance review.

Periodically, BIS will request information from persons and locations subject to the APR to determine compliance with the reporting and recordkeeping requirements set forth herein. Information requested may relate to nuclear fuel cycle research and development activities not involving nuclear material, nuclear-related manufacturing, assembly or construction activities, or uranium hard-rock mining activities as described in part 783 of the APR. Any person or location subject to the APR and receiving such a request for information must submit a response to BIS within 30 calendar days

of receipt of the request. If the requested information cannot be provided to BIS, the response must fully explain the reason why such information cannot be provided. If additional time is needed to collect the requested information, the person or location should request an extension of the submission deadline, before the expiration of the 30-day time period set by BIS, and include an explanation for why an extension is needed. BIS will grant only one extension of the submission deadline. The maximum period of time for which BIS will grant an extension will be 30 days. Failure to respond to this request could lead to an investigation of the person's or location's reporting and recordkeeping procedures under the APR.

§ 782.4 Assistance in determining your obligations.

(a) *Determining if your activity is subject to reporting requirements.* (1) If you need assistance in determining whether or not your activity is subject to the APR's reporting requirements, submit your written request for an activity determination to BIS. Such requests may be sent to BIS via facsimile to (202) 482–1731, e-mailed to *apdr@bis.doc.gov*, or hand delivered, submitted by courier, or mailed to BIS, in hard copy, to the following address: Treaty Compliance Division, Bureau of Industry and Security, U.S. Department of Commerce, Attn: AP Activity Determination, 14th Street and Pennsylvania Avenue, NW., Room 4515, Washington, DC 20230. Your activity determination request should include the information indicated in paragraph (a)(2) of this section to ensure an accurate determination. Also include any additional information that would be relevant to the activity described in your request. If you are unable to provide all of the information required in paragraph (a)(2) of this section, you should include an explanation identifying the reasons or deficiencies that preclude you from supplying the information. If BIS cannot make a determination based upon the information submitted, BIS will return the request to you and identify the additional information that is necessary to complete an activity determination. BIS will provide a written response to your activity determination request within 10 business days of receipt of the request.

(2) You must include the following information when submitting an activity determination request to BIS:

(i) Date of your request;

(ii) Name of your organization and complete street address;

(iii) Point of contact for your organization;

(iv) Phone and facsimile number for your point of contact;

(v) E-mail address for your point of contact, if you want BIS to provide an acknowledgment of receipt via e-mail; and

(vi) Description of your activity in sufficient detail as to allow BIS to make an accurate determination.

(b) *Other inquiries.* If you need assistance in interpreting the provisions of the APR or need assistance with APR report forms or complementary access issues, contact BIS's Treaty Compliance Division by phone at (202) 482–1001. If you require a written response from BIS, submit a detailed request to BIS that explains your question, issue, or request. Send the request to the address or facsimile included in paragraph (a) of this section, or e-mail the request to *apqa@bis.doc.gov*. To ensure that your request is properly routed, include the notation, ''ATTENTION: APR Advisory Request,'' on your submission to BIS.

§ 782.5 Where to obtain APR report forms.

Report forms required by the APR may be downloaded from the Internet at *http://www.ap.gov*. You also may obtain these forms by contacting: Treaty Compliance Division, Bureau of Industry and Security, U.S. Department of Commerce, Attn: Forms Request, 14th Street and Pennsylvania Avenue, NW., Room 4515, Washington, DC 20230, Telephone: (202) 482–1001.

§ 782.6 Where to submit reports.

Reports required by the APR must be sent to BIS via facsimile to (202) 482–1731 or hand delivered , submitted by courier, or mailed to BIS, in hard copy, to the following address: Treaty Compliance Division, Bureau of Industry

and Security, U.S. Department of Commerce, Attn: AP Reports, 14th Street and Pennsylvania Avenue, NW., Room 4515, Washington, DC 20230, Telephone: (202) 482–1001. Specific types of reports and due dates are outlined in supplement no. 1 to part 783 of the APR.

PART 783—CIVIL NUCLEAR FUEL CYCLE-RELATED ACTIVITIES NOT INVOLVING NUCLEAR MATERIALS

Sec.

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§ 783.1 Reporting requirements.

(a) *Initial report.* You must submit an *Initial Report* to BIS, no later than December 1, 2008 (see supplement no. 1 to this part), if you were engaged in any of the civil nuclear fuel cycle-related activities described in this paragraph (a) on October 31, 2008 or you were engaged in any such activities involving uranium hard-rock mines, including those that were closed down during calendar year 2008, (up to and including October 31, 2008). If you commenced any of the civil nuclear fuel cycle-related activities described in this paragraph (a) after October 31, 2008, you must submit an *Initial Report* on these activities to BIS no later than January 31 of the year following the calendar year in which the activities commenced (see supplement no. 1 to this part). You may report these activities as part of your *Annual Update Report*, in lieu of submitting a separate *Initial Report*, if you also have an *Annual Update Report* requirement that applies to the same location and covers the same reporting period (see paragraph (b) of this section). In order to satisfy the *Initial Report* requirements under this paragraph (a), you must complete and submit to BIS Form AP–1, Form AP–2, and other appropriate Forms, as provided in this paragraph (a).

(1) *Research and development activities not involving nuclear material.* You must report to BIS any of the civil nuclear fuel cycle-related research and development activities identified in paragraphs (a)(1)(i) and (a)(1)(ii) of this section. Activities subject to these APR reporting requirements include research and development activities related to safe equipment operations for a nuclear fuel cycle-related activity, but do not include activities related to theoretical or basic scientific research or to research and development on industrial radioisotope applications, medical, hydrological and agricultural applications, health and environmental effects and improved maintenance.

(i) You must complete Form AP–3 and submit it to BIS, as provided in § 782.6 of the APR, if you conducted any civil nuclear fuel cycle-related research and development activities defined in § 781.1 of the APR that:

(A) Did not involve nuclear material; and

(B) Were funded, specifically authorized or controlled by, or conducted on behalf of, the United States.

(ii) You must complete Form AP–4 and submit it to BIS, as provided in § 782.6 of the APR, if you conducted any civil nuclear fuel cycle-related research and development activities defined in § 781.1 of the APR that:

(A) Did not involve nuclear material;

(B) Were specifically related to enrichment, reprocessing of nuclear fuel, or the processing of intermediate or high-level waste containing plutonium, high enriched uranium or uranium-233 (where ''processing'' involves the separation of elements); and

(C) Were not funded, specifically authorized or controlled by, or conducted on behalf of, the United States.

(2) *Civil nuclear-related manufacturing, assembly or construction activities.* You must complete Form AP–5 and submit it to BIS, as provided in §782.6 of the APR, if you engaged in any of the activities specified in supplement no. 2 to this part.

(3) *Uranium hard-rock mining and ore beneficiation activities.* You must complete Form AP–6 and submit it to BIS, as provided in §782.6 of the APR, if your location is either a uranium hard-rock mine or an ore beneficiation plant that was in operating or suspended status (see §781.1 of the APR for the definitions of ''uranium hard-rock mine'' and uranium hard-rock mines in ''operating,'' ''suspended,'' or ''closed-down'' status).

(i) The *Initial Report* requirement for calendar year 2008 applies to:

(A) Uranium hard-rock mines or ore beneficiation plants that were in operating or suspended status on October 31, 2008; and

(B) Uranium hard-rock mines that have changed from operating or suspended status to closed-down status during calendar year 2008 (up to and including October 31, 2008). Mines that were closed down prior to calendar year 2008 and that remain in closed-down status do not have a reporting requirement.

(ii) You are required to submit an *Initial Report* to BIS, for any calendar year that follows calendar year 2008, only if you commenced operations at a uranium hard-rock mine or an ore beneficiation plant during the previous calendar year (e.g., the commencement of operations would include, but not be limited to, the resumption of operations at a mine that was previously in ''closed-down'' status). Otherwise, see the *Annual Update Report and No Changes Report* requirements in paragraphs (b)(1) or (b)(2) of this section. For example, you must submit an *Annual Update Report* to indicate the closed-down status of any uranium hard-rock mine that was indicated in your most recent report to be in either operating or suspended status, but at which you ceased operations during the previous calendar year.

(b) *Annual reporting requirements.* You must submit either an *Annual Update Report* or a *No Changes Report* to BIS, as provided in §782.6 of the APR, if, during the previous calendar year, you continued to engage in civil nuclear fuel cycle-related activities at a location for which you submitted an *Initial Report* to BIS in accordance with the APR reporting requirements described in paragraph (a) of this section.

(1) *Annual Update Report.* You must submit an *Annual Update Report* to BIS if you have updates or changes to report concerning your location's activities during the previous calendar year. When preparing your *Annual Update Report*, you must complete the same report forms that you used for submitting your *Initial Report* on these activities. However, additional report forms will be required if your location engaged in any civil nuclear fuel cycle-related activities described in paragraph (a) of this section that you did not previously report to BIS. The appropriate report forms for each type of activity that must be reported under the APR are identified in paragraphs (a)(1) through (a)(3) of this section. You must submit your *Annual Update Report* to BIS no later than January 31 of the year following any calendar year in which the activities took place or there were changes to previously ''reported'' activities (see supplement no. 1 to this part).

(2) *No Changes Report.* You may submit a *No Changes Report*, in lieu of an *Annual Update Report*, if you have no updates or changes concerning your location's activities (except the certifying official and dates signed and submitted) since your most recent report of activities to BIS. In order to satisfy the reporting requirements under this paragraph (b)(2), you must complete Form AP–16 and submit it to BIS, as provided in §782.6 of the APR, no later than January 31 of the year following any calendar year in which there were no changes to previously ''reported'' activities or location information (see supplement no. 1 to this part).

(3) *Additional guidance on annual reporting requirements.* (i) If your *Initial Report* or your most recent *Annual Update Report* for a location indicates that all civil nuclear fuel cycle-related activities described therein have ceased at that location, and no other reportable activities have occurred during

the previous calendar year, then you do not have a reporting requirement for the location under paragraph (b) of this section.

(ii) If your location ceases to engage in activities subject to the APR reporting requirements described in paragraph (a) of this section, and you have not previously reported this to BIS, you must submit an *Annual Update Report* covering the calendar year in which you ceased to engage in such activities.

(iii) Closed-down mines should be reported only once.

(c) *Import Confirmation Report.* You must complete Forms AP–1, AP–2 and AP–14 for each import of equipment or non-nuclear material identified in supplement no. 3 to this part and submit these forms to BIS, as provided in §782.6 of the APR, if BIS sends you written notification requiring that you provide information concerning imports of such equipment and non-nuclear material. These Forms must be submitted within 30 calendar days of the date that you receive written notification of this requirement from BIS (see supplement no. 1 to this part). BIS will provide such notification when it receives a request from the IAEA for information concerning imports of this type of equipment or non-nuclear material. The IAEA may request this information to verify that you received specified equipment or non-nuclear material that was shipped to you by a person, organization, or government from a foreign country.

(d) *Supplemental Information Report.* You must complete Forms AP–1, AP–2 and AP–15 and submit them to BIS, as provided in §782.6 of the APR, if BIS sends you written notification requiring that you provide information about the activities conducted at your location, insofar as relevant for the purpose of safeguards. These Forms must be submitted within 15 calendar days of the date that you receive written notification of this requirement from BIS (see supplement no. 1 to this part). BIS will provide such notification only if the IAEA specifically requests amplification or clarification concerning any information provided in the U.S. Declaration based on your report(s).

(e) *Reportable location.* A location that must submit an *Initial Report, Annual Update Report, or No Changes Report* to BIS, pursuant to the requirements of this section, is considered to be a reportable location with declared activities.

§ 783.2 Amended reports.

In order for BIS to maintain accurate information on previously submitted reports, including information necessary for BIS to facilitate complementary access notifications or to communicate reporting requirements under the APR, *Amended Reports* are required under the circumstances described in paragraphs (a), (b), and (d) of this section. This section applies only to changes affecting *Initial Reports* and *Annual Update Reports* that were submitted to BIS in accordance with the requirements of §783.1(a) and (b) of the APR. The specific report forms that you must use to prepare and submit an *Amended Report* will depend upon the type of information that you are required to provide, pursuant to this section.

(a) *Changes to activity information.* You must submit an *Amended Report* to BIS within 30 calendar days of the time that you discover an error or omission in your most recent *Initial Report* or *Annual Update Report* that involves information concerning an activity subject to the reporting requirements described in §783.1(a) or (b) of the APR. Use Form AP–1, and any applicable report forms indicated for the activities identified in §783.1(a) of the APR, to prepare your *Amended Report.* Submit your *Amended Report* to BIS, as provided in §782.6 of the APR.

(b) *Changes to organization and location information that must be maintained by BIS*—(1) *Internal organization changes.* You must submit an *Amended Report* to BIS within 30 calendar days of any change in the following information (use Form AP–1 to prepare your *Amended Report* and submit it to BIS, as provided in §782.6 of the APR):

(i) Name of report point of contact (R–POC), including telephone number, facsimile number, and e-mail address;

(ii) Name(s) of complementary access point(s) of contact (A–POC), including

telephone number(s), facsimile number(s) and e-mail address(es);

(iii) Organization name;

(iv) Organization mailing address;

(v) Location owner, including telephone number, and facsimile number; or

(vi) Location operator, including telephone number, and facsimile number.

(2) *Change in ownership of organization.* You must submit an *Amended Report* to BIS if you sold a reportable location or if your reportable location went out of business since submitting your most recent *Initial Report*, *Annual Update Report*, or *No Changes Report* to BIS. You must also submit an *Amended Report* to BIS if you purchased a reportable location that submitted an *Initial Report*, *Annual Update Report*, or *No Changes Report* to BIS for the most recent reporting period, as specified in §783.1(a) and (b) of the APR. Submit your *Amended Report* to BIS, as provided in §782.6 of the APR, either before the effective date of the change in ownership or within 30 calendar days after the effective date of the change.

(i) The following information must be included in an *Amended Report* submitted to BIS by an organization that is selling or that has sold a reportable location (use Forms AP–1 and AP–16 to prepare your *Amended Report*—address specific details regarding the sale of a reportable location in Form AP–16):

(A) Name of seller (i.e., name of the organization selling a reportable location);

(B) Reporting Code (this code will be assigned to your location and reported to you by BIS after receipt of your *Initial Report*);

(C) Name of purchaser (i.e., name of the new organization/owner purchasing a reportable location) and name and address of contact person for the purchaser, if known;

(D) Date of ownership transfer or change;

(E) Additional details on the sale of the reportable location relevant to ownership or operational control over any portion of the reportable location (e.g., whether the entire location or only a portion of the reportable location has been sold to a new owner); and

(F) Details regarding whether the new owner of a reportable location will submit the next report for the entire calendar year in which the ownership change occurred, or whether the previous owner and new owner will submit separate reports for the periods of the calendar year during which each owned the reportable location.

(ii) The following information must be included in an *Amended Report* submitted to BIS by an organization that is purchasing or that has purchased a reportable location (use Forms AP–1 and AP–2 to prepare your *Amended Report*):

(A) Name of purchaser (i.e., name of the new organization/owner purchasing a reportable location) and name and address of contact person for the purchaser;

(B) Details on the purchase of the reportable location relevant to ownership or operational control over any portion of the reportable location (e.g., whether the purchaser intends to purchase and to maintain operational control over the entire location or only a portion of the reportable location); and

(C) Details on whether the purchaser intends to continue existing civil nuclear fuel cycle-related activities at the reportable location or to cease such activities during the current reporting period.

(iii) If the new owner of a reportable location is responsible for submitting a report that covers the entire calendar year in which the ownership change occurred, the new owner must obtain and maintain possession of the location's records covering the entire year, including those records for the period of the year during which the previous owner still owned the property.

NOTE 1 TO §783.2(B): *Amended Reports* that are submitted to identify changes involving internal organization information or changes in ownership are used only for internal U.S. Government purposes and are not forwarded to the IAEA. BIS uses the information it obtains from *Amended Reports* to update contact information for internal oversight purposes and for IAEA complementary access notifications.

NOTE 2 TO §783.2(B): For ownership changes, the reportable location will maintain its original Reporting Code, unless the location is sold to multiple owners, at which time BIS will assign a new Reporting Code.

(c) *Non-substantive changes.* If you discover one or more non-substantive typographical errors in your *Initial Report* or *Annual Update Report*, after submitting the report to BIS, you are not required to submit an *Amended Report* to BIS. Instead, you may correct these errors when you submit your next *Annual Update Report* to BIS.

(d) *Amendments related to complementary access.* If you are required to submit an *Amended Report* to BIS following the completion of complementary access (see Part 784 of the APR), BIS will notify you, in writing, of the information that must be amended pursuant to §784.6 of the APR. Complete and submit Form AP–1 (organization information) and/or the specific report forms required by section 783.1(a) or (b) of the APR, according to the type(s) of activities for which information is being requested. You must submit your *Amended Report* to BIS, as provided in §782.6 of the APR, no later than 30 calendar days following your receipt of BIS's post complementary access letter.

(e) *Option for submitting amended reports in letter form.* If you are required to submit an *Amended Report* to BIS, pursuant to paragraph (a), (b), or (d) of this section, BIS may permit you to submit your report in the form of a letter that contains all of the corrected information required under this section. Your letter must be submitted to BIS, at the address indicated in §782.6 of the APR, no later than the applicable due date(s) indicated in this section (also see Supplement No. 1 to this Part).

§783.3 Reports containing information determined by BIS not to be required by the APR.

If you submit a report and BIS determines that none of the information contained therein is required by the APR, BIS will not process the report and will notify you, either electronically or in writing, explaining the basis for its decision. BIS will not maintain any record of the report. However, BIS will maintain a copy of the notification.

§783.4 Deadlines for submission of reports and amendments.

Reports and amendments required under this part must be postmarked by the appropriate date identified in supplement no. 1 to this part 783. Required reports and amendments include those identified in paragraphs (a) through (g) of this section.

(a) *Initial Report:* Submitted by a location that commenced one or more of the civil nuclear fuel cycle-related activities described in §783.1(a) of the APR during the previous calendar year, but that has not yet reported such activities to BIS. However, *Initial Reports* that are submitted to BIS during calendar year 2008 must describe only those activities in which you are engaged as of October 31, 2008, *except that* the description of activities involving uranium hard-rock mines must include any such mines that were closed down during calendar year 2008 (up to and including October 31, 2008), as well as mines that were in either operating or suspended status on October 31, 2008 (see §783.1(a)(3)(i) of the APR).

(b) *Annual Update Report:* Submitted by a reportable location—this report describes changes to previously reported (i.e., declared) activities and any other reportable civil nuclear fuel cycle-related activities that took place at the location during the previous calendar year.

(c) *No Changes Report:* Submitted by a reportable location, in lieu of an *Annual Update Report*, when there are no updates or changes to any information, excluding the certifying official and dates signed and submitted, since the previous report submitted by that location.

(d) *Import Confirmation Report:* Submitted in response to a written notification from BIS, following a specific request by the IAEA.

(e) *Supplemental Information Report:* Submitted in response to a written notification from BIS, following a specific request by the IAEA.

(f) *Amended Report:* Submitted by a reportable location to report certain changes affecting the location's most recent *Initial Report* or *Annual Update Report*.

SUPPLEMENT NO. 1 TO PART 783—DEADLINES FOR SUBMISSION OF REPORTS AND AMENDMENTS

Reports	Applicable forms	Due dates
Initial Report	Forms AP–1 and AP–2 and: —AP–3 or AP–4 for R&D activities;. —AP–5 for civil nuclear-related manufacturing, assembly or construction; and. —AP–6 for mining and ore beneficiation.	December 1, 2008 for: (1) Any activities in which you were engaged on October 31, 2008 and (2) uranium hard-rock mines that have changed from operating or suspended status to closed-down status during calendar year 2008 (up to and including October 31, 2008). For activities commencing after October 31, 2008, *Initial Reports* must be submitted no later than January 31 of the year following any calendar year in which the activities began, *unless* you are required to submit an *Annual Update Report* because of on-going previously ''reported'' activities at the same location—in that case, you may include the new activities in your *Annual Update Report,* instead of submitting a separate *Initial Report.*
Annual Update Report	Forms AP–1 and AP–2 and: —AP–3 or AP–4 for R&D activities;. —AP–5 for civil nuclear-related manufacturing, assembly or construction; and. —AP–6 for mining and ore beneficiation.	January 31 of the year following any calendar year in which the activities took place or there were changes to previously ''reported'' activities.
No Changes Report	Form AP–17	January 31 of the year following any calendar year in which there were no changes to previously ''reported'' activities or location information.
Import Confirmation Report.	Forms AP–1, AP–2, and AP–14.	Within 30 calendar days of receiving notification from BIS.
Supplemental Information Report.	Forms AP–1, AP–2, and AP–15.	Within 15 calendar days of receiving notification from BIS.
Amended Report: —Report information —Organization and location information. —Complementary access letter.	Form AP–1 and appropriate forms, as specified in §783.1 of the APR, for the type of report being amended.	Amended report due: —30 calendar days after you discover an error or omission in activity information contained in your most recent report. —30 calendar days after a change in company information or ownership of a location. —30 calendar days after receipt of a post-complementary access letter from BIS.

SUPPLEMENT NO. 2 TO PART 783—MANUFACTURING ACTIVITIES

The following constitute manufacturing activities that require the submission of a report to BIS, pursuant to §783.1(a)(2) of the APR.

(1) The manufacture of *centrifuge rotor tubes* or the assembly of *gas centrifuges*. *Centrifuge rotor tubes* means thin-walled cylinders as described in section 5.1.1(b) of supplement no. 3 to this part. *Gas centrifuges* means centrifuges as described in the Introductory Note to section 5.1 of supplement no. 3 to this part.

(2) The manufacture of *diffusion barriers*. *Diffusion barriers* means thin, porous filters as described in section 5.3.1(a) of supplement no. 3 to this part.

(3) The manufacture or assembly of *laser-based systems*. *Laser-based systems* means systems incorporating those items as described in section 5.7 of supplement no. 3 to this part.

(4) The manufacture or assembly of *electromagnetic isotope separators*. *Electromagnetic isotope separators* means those items referred to in section 5.9.1 of supplement no. 3 to this part containing ion sources as described in section 5.9.1(a) of supplement no. 3 to this part.

(5) The manufacture or assembly of *columns* or *extraction equipment*. *Columns* or *extraction equipment* means those items as described in sections 5.6.1, 5.6.2, 5.6.3, 5.6.5, 5.6.6, 5.6.7, and 5.6.8 of supplement no. 3 to this part.

(6) The manufacture of *aerodynamic separation nozzles* or *vortex tubes*. *Aerodynamic separation nozzles* or *vortex tubes* means separation nozzles and vortex tubes as described,

respectively, in sections 5.5.1 and 5.5.2 of supplement no. 3 to this part.

(7) The manufacture or assembly of *uranium plasma generation systems*. *Uranium plasma generation systems* means systems for the generation of uranium plasma as described in section 5.8.3 of supplement no. 3 to this part.

(8) The manufacture of *zirconium tubes*. *Zirconium tubes* means tubes as described in section 1.6 of supplement no. 3 to this part.

(9) The manufacture or upgrading of *heavy water or deuterium*. *Heavy water or deuterium* means deuterium, heavy water (deuterium oxide) and any other deuterium compound in which the ratio of deuterium to hydrogen atoms exceeds 1:5000.

(10) The manufacture of *nuclear grade graphite*. *Nuclear grade graphite* means graphite having a purity level better than 5 parts per million boron equivalent and with a density greater than 1.50 g/cm^3;

(11) The manufacture of *flasks for irradiated fuel*. A *flask for irradiated fuel* means a vessel for the transportation and/or storage of irradiated fuel that provides chemical, thermal and radiological protection, and dissipates decay heat during handling, transportation and storage.

(12) The manufacture of *reactor control rods*. *Reactor control rods* means rods as described in section 1.4 of supplement no. 3 to this part.

(13) The manufacture of *critically safe tanks and vessels*. *Critically safe tanks and vessels* means those items as described in sections 3.2 and 3.4 of supplement no. 3 to this part.

(14) The manufacture of *irradiated fuel element chopping machines*. *Irradiated fuel element chopping machines* means equipment as described in section 3.1 of supplement no. 3 to this part.

(15) The construction of *hot cells*. *Hot cells* means a cell or interconnected cells totaling at least 6 cubic meters in volume with shielding equal to or greater than the equivalent of 0.5 meters of concrete, with a density of 3.2 g/cm^3 or greater, outfitted with equipment for remote operations.

SUPPLEMENT NO. 3 TO PART 783—LIST OF SPECIFIED EQUIPMENT AND NON-NUCLEAR MATERIAL FOR THE REPORTING OF IMPORTS

1. REACTORS AND EQUIPMENT THEREFOR

1.1. COMPLETE NUCLEAR REACTORS

Nuclear reactors capable of operation so as to maintain a controlled self-sustaining fission chain reaction, excluding zero energy reactors, the latter being defined as reactors with a designed maximum rate of production of plutonium not exceeding 100 grams per year.

EXPLANATORY NOTE: A ''nuclear reactor'' basically includes the items within or attached directly to the reactor vessel, the equipment which controls the level of power in the core, and the components which normally contain or come in direct contact with or control the primary coolant of the reactor core. It is not intended to exclude reactors which could reasonably be capable of modification to produce significantly more than 100 grams of plutonium per year. Reactors designed for sustained operation at significant power levels, regardless of their capacity for plutonium production, are not considered as ''zero energy reactors.''

1.2. REACTOR PRESSURE VESSELS

Metal vessels, as complete units or as major shop-fabricated parts therefor, which are specially designed or prepared to contain the core of a nuclear reactor, as defined in section 1.1, and are capable of withstanding the operating pressure of the primary coolant.

EXPLANATORY NOTE: This is the list that the IAEA Board of Governors agreed at its meeting on 24 February 1993 would be used for the purpose of the voluntary reporting scheme, as subsequently amended by the Board. A top plate for a reactor pressure vessel is covered by this section 1.2 as a major shop-fabricated part of a pressure vessel. Reactor internals (e.g., support columns and plates for the core and other vessel internals, control rod guide tubes, thermal shields, baffles, core grid plates, diffuser plates, etc.) are normally supplied by the reactor supplier. In some cases, certain internal support components are included in the fabrication of the pressure vessel. These items are sufficiently critical to the safety and reliability of the operation of the reactor (and, therefore, to the guarantees and liability of the reactor supplier), so that their supply, outside the basic supply arrangement for the reactor itself, would not be common practice. Therefore, although the separate supply of these unique, specially designed and prepared, critical, large and expensive items would not necessarily be considered as falling outside the area of concern, such a mode of supply is considered unlikely.

1.3. REACTOR FUEL CHARGING AND DISCHARGING MACHINES

Manipulative equipment specially designed or prepared for inserting or removing fuel in a nuclear reactor, as defined in section 1.1 of this Supplement, capable of on-load operation or employing technically sophisticated positioning or alignment features to allow complex off-load fueling operations such as those in which direct viewing of or access to the fuel is not normally available.

1.4. REACTOR CONTROL RODS

Rods specially designed or prepared for the control of the reaction rate in a nuclear reactor as defined in section 1.1 of this Supplement.

EXPLANATORY NOTE: This item includes, in addition to the neutron absorbing part, the support or suspension structures therefor if supplied separately.

1.5. REACTOR PRESSURE TUBES

Tubes which are specially designed or prepared to contain fuel elements and the primary coolant in a reactor, as defined in section 1.1 of this supplement, at an operating pressure in excess of 5.1 MPa (740 psi).

1.6. ZIRCONIUM TUBES

Zirconium metal and alloys in the form of tubes or assemblies of tubes, and in quantities exceeding 500 kg in any period of 12 months, specially designed or prepared for use in a reactor, as defined in section 1.1 of this supplement, and in which the relation of hafnium to zirconium is less than 1:500 parts by weight.

1.7. PRIMARY COOLANT PUMPS

Pumps specially designed or prepared for circulating the primary coolant for nuclear reactors, as defined in section 1.1 of this Supplement.

EXPLANATORY NOTE: Specially designed or prepared pumps may include elaborate sealed or multi-sealed systems to prevent leakage of primary coolant, canned-driven pumps, and pumps with inertial mass systems. This definition encompasses pumps certified to NC–1 or equivalent standards.

2. NON-NUCLEAR MATERIALS FOR REACTORS

2.1. DEUTERIUM AND HEAVY WATER

Deuterium, heavy water (deuterium oxide) and any other deuterium compound in which the ratio of deuterium to hydrogen atoms exceeds 1:5000 for use in a nuclear reactor, as defined in section 1.1 of this supplement, in quantities exceeding 200 kg of deuterium atoms for any one recipient country in any period of 12 months.

2.2. NUCLEAR GRADE GRAPHITE

Graphite having a purity level better than 5 parts per million boron equivalent and with a density greater than 1.50 g/cm^3 for use in a nuclear reactor, as defined in section 1.1 of this Supplement, in quantities exceeding 3×10^4 kg (30 metric tons) for any one recipient country in any period of 12 months.

NOTE: For the purpose of reporting, the Government will determine whether or not the exports of graphite meeting the specifications of this section 2.2 are for nuclear reactor use.

3. PLANTS FOR THE REPROCESSING OF IRRADIATED FUEL ELEMENTS, AND EQUIPMENT SPECIALLY DESIGNED OR PREPARED THEREFOR

INTRODUCTORY NOTE: Reprocessing irradiated nuclear fuel separates plutonium and uranium from intensely radioactive fission products and other transuranic elements. Different technical processes can accomplish this separation. However, over the years Purex has become the most commonly used and accepted process. Purex involves the dissolution of irradiated nuclear fuel in nitric acid, followed by separation of the uranium, plutonium, and fission products by solvent extraction using a mixture of tributyl phosphate in an organic diluent. Purex facilities have process functions similar to each other, including: Irradiated fuel element chopping, fuel dissolution, solvent extraction, and process liquor storage. There may also be equipment for thermal denitration of uranium nitrate, conversion of plutonium nitrate to oxide or metal, and treatment of fission product waste liquor to a form suitable for long term storage or disposal. However, the specific type and configuration of the equipment performing these functions may differ between Purex facilities for several reasons, including the type and quantity of irradiated nuclear fuel to be reprocessed and the intended disposition of the recovered materials, and the safety and maintenance philosophy incorporated into the design of the facility. A ''plant for the reprocessing of irradiated fuel elements'' includes the equipment and components which normally come in direct contact with and directly control the irradiated fuel and the major nuclear material and fission product processing streams. These processes, including the complete systems for plutonium conversion and plutonium metal production, may be identified by the measures taken to avoid criticality (e.g., by geometry), radiation exposure (e.g., by shielding), and toxicity hazards (e.g., by containment). Items of equipment that are considered to fall within the meaning of the phrase ''and equipment specially designed or prepared'' for the reprocessing of irradiated fuel elements include:

3.1. IRRADIATED FUEL ELEMENT CHOPPING MACHINES

INTRODUCTORY NOTE: This equipment breaches the cladding of the fuel to expose the irradiated nuclear material to dissolution. Specially designed metal cutting shears are the most commonly employed, although advanced equipment, such as lasers, may be used. Remotely operated equipment specially designed or prepared for use in a reprocessing plant, as identified in the introductory paragraph of this section, and intended to cut, chop or shear irradiated nuclear fuel assemblies, bundles or rods.

3.2. DISSOLVERS

INTRODUCTORY NOTE: Dissolvers normally receive the chopped-up spent fuel. In these critically safe vessels, the irradiated nuclear material is dissolved in nitric acid and the remaining hulls removed from the process stream. Critically safe tanks (*e.g.*, small diameter, annular or slab tanks) specially designed or prepared for use in a reprocessing plant, as identified in the introductory paragraph of this section, intended for dissolution of irradiated nuclear fuel and which are capable of withstanding hot, highly corrosive liquid, and which can be remotely loaded and maintained.

3.3. SOLVENT EXTRACTORS AND SOLVENT EXTRACTION EQUIPMENT

INTRODUCTORY NOTE: Solvent extractors both receive the solution of irradiated fuel from the dissolvers and the organic solution which separates the uranium, plutonium, and fission products. Solvent extraction equipment is normally designed to meet strict operating parameters, such as long operating lifetimes with no maintenance requirements or adaptability to easy replacement, simplicity of operation and control, and flexibility for variations in process conditions. Specially designed or prepared solvent extractors such as packed or pulse columns, mixer settlers or centrifugal contactors for use in a plant for the reprocessing of irradiated fuel. Solvent extractors must be resistant to the corrosive effect of nitric acid. Solvent extractors are normally fabricated to extremely high standards (including special welding and inspection and quality assurance and quality control techniques) out of low carbon stainless steels, titanium, zirconium, or other high quality materials.

3.4. CHEMICAL HOLDING OR STORAGE VESSELS

INTRODUCTORY NOTE: Three main process liquor streams result from the solvent extraction step. Holding or storage vessels are used in the further processing of all three streams, as follows:

(a) The pure uranium nitrate solution is concentrated by evaporation and passed to a denitration process where it is converted to uranium oxide. This oxide is re-used in the nuclear fuel cycle.

(b) The intensely radioactive fission products solution is normally concentrated by evaporation and stored as a liquor concentrate. This concentrate may be subsequently evaporated and converted to a form suitable for storage or disposal.

(c) The pure plutonium nitrate solution is concentrated and stored pending its transfer to further process steps. In particular, holding or storage vessels for plutonium solutions are designed to avoid criticality problems resulting from changes in concentration and form of this stream. Specially designed or prepared holding or storage vessels for use in a plant for the reprocessing of irradiated fuel. The holding or storage vessels must be resistant to the corrosive effect of nitric acid. The holding or storage vessels are normally fabricated of materials such as low carbon stainless steels, titanium or zirconium, or other high quality materials. Holding or storage vessels may be designed for remote operation and maintenance and may have the following features for control of nuclear criticality: (1) Walls or internal structures with a boron equivalent of at least two percent; (2) a maximum diameter of 175 mm (7 in) for cylindrical vessels; or (3) a maximum width of 75 mm (3 in) for either a slab or annular vessel.

3.5. PLUTONIUM NITRATE TO OXIDE CONVERSION SYSTEM

INTRODUCTORY NOTE: In most reprocessing facilities, this final process involves the conversion of the plutonium nitrate solution to plutonium dioxide. The main functions involved in this process are: process feed storage and adjustment, precipitation and solid/liquor separation, calcination, product handling, ventilation, waste management, and process control. Complete systems specially designed or prepared for the conversion of plutonium nitrate to plutonium oxide, in particular adapted so as to avoid criticality and radiation effects and to minimize toxicity hazards.

3.6. PLUTONIUM OXIDE TO METAL PRODUCTION SYSTEM

INTRODUCTORY NOTE: This process, which could be related to a reprocessing facility, involves the fluorination of plutonium dioxide, normally with highly corrosive hydrogen fluoride, to produce plutonium fluoride which is subsequently reduced using high purity calcium metal to produce metallic plutonium and a calcium fluoride slag. The main functions involved in this process are: fluorination (e.g., involving equipment fabricated or lined with a precious metal), metal reduction (e.g., employing ceramic crucibles), slag recovery, product handling, ventilation, waste management and process control. Complete systems specially designed or prepared for the production of plutonium metal, in particular adapted so as to avoid criticality and radiation effects and to minimize toxicity hazards.

4. PLANTS FOR THE FABRICATION OF FUEL ELEMENTS

A ''plant for the fabrication of fuel elements'' includes the equipment:

(a) Which normally comes in direct contact with, or directly processes, or controls, the production flow of nuclear material, or

(b) Which seals the nuclear material within the cladding.

5. PLANTS FOR THE SEPARATION OF ISOTOPES OF URANIUM AND EQUIPMENT, OTHER THAN ANALYTICAL INSTRUMENTS, SPECIALLY DESIGNED OR PREPARED THEREFOR

Items of equipment that are considered to fall within the meaning of the phrase ''equipment, other than analytical instruments, specially designed or prepared'' for the separation of isotopes of uranium include:

5.1. GAS CENTRIFUGES AND ASSEMBLIES AND COMPONENTS SPECIALLY DESIGNED OR PREPARED FOR USE IN GAS CENTRIFUGES

INTRODUCTORY NOTE: The gas centrifuge normally consists of a thin-walled cylinder(s) of between 75 mm (3 in) and 400 mm (16 in) diameter contained in a vacuum environment and spun at high peripheral speed of the order of 300 m/s or more with its central axis vertical. In order to achieve high speed the materials of construction for the rotating components have to be of a high strength to density ratio and the rotor assembly, and hence its individual components, have to be manufactured to very close tolerances in order to minimize the unbalance. In contrast to other centrifuges, the gas centrifuge for uranium enrichment is characterized by having within the rotor chamber a rotating disc-shaped baffle(s) and a stationary tube arrangement for feeding and extracting the UF_6 gas and featuring at least 3 separate channels, of which 2 are connected to scoops extending from the rotor axis towards the periphery of the rotor chamber. Also contained within the vacuum environment are a number of critical items which do not rotate and which although they are specially designed are not difficult to fabricate nor are they fabricated out of unique materials. A centrifuge facility however requires a large number of these components, so that quantities can provide an important indication of end use.

5.1.1. ROTATING COMPONENTS

(a) *Complete rotor assemblies:* Thin-walled cylinders, or a number of interconnected thin-walled cylinders, manufactured from one or more of the high strength to density ratio materials described in the *Explanatory Note* to section 5.1.1 of this supplement. If interconnected, the cylinders are joined together by flexible bellows or rings as described in section 5.1.1(c) of this supplement. The rotor is fitted with an internal baffle(s) and end caps, as described in section 5.1.1(d) and (e) of this supplement, if in final form. However the complete assembly may be delivered only partly assembled.

(b) *Rotor tubes:* Specially designed or prepared thin-walled cylinders with thickness of 12 mm (0.5 in) or less, a diameter of between 75 mm (3 in) and 400 mm (16 in), and manufactured from one or more of the high strength to density ratio materials described in the *Explanatory Note* to section 5.1.1 of this supplement.

(c) *Rings or Bellows:* Components specially designed or prepared to give localized support to the rotor tube or to join together a number of rotor tubes. The bellows is a short cylinder of wall thickness 3 mm (0.12 in) or less, a diameter of between 75 mm (3 in) and 400 mm (16 in), having a convolute, and manufactured from one of the high strength to density ratio materials described in the *Explanatory Note* to section 5.1.1 of this supplement.

(d) *Baffles:* Disc-shaped components of between 75 mm (3 in) and 400 mm (16 in) diameter specially designed or prepared to be mounted inside the centrifuge rotor tube, in order to isolate the take-off chamber from the main separation chamber and, in some cases, to assist the UF_6 gas circulation within the main separation chamber of the rotor tube, and manufactured from one of the high strength to density ratio materials described in the *Explanatory Note* to section 5.1.1 of this supplement.

(e) *Top caps/Bottom caps:* Disc-shaped components of between 75 mm (3 in) and 400 mm (16 in) diameter specially designed or prepared to fit to the ends of the rotor tube, and so contain the UF_6 within the rotor tube, and in some cases to support, retain or contain as an integrated part an element of the upper bearing (top cap) or to carry the rotating elements of the motor and lower bearing (bottom cap), and manufactured from one of the high strength to density ratio materials described in the *Explanatory Note* to section 5.1.1 of this supplement.

EXPLANATORY NOTE: The materials used for centrifuge rotating components are:

(a) Maraging steel capable of an ultimate tensile strength of 2.05×10^9 N/m^2 (300,000 psi) or more;

(b) Aluminum alloys capable of an ultimate tensile strength of 0.46×10^9 N/m^2 (67,000 psi) or more;

(c) Filamentary materials suitable for use in composite structures and having a specific modulus of 12.3×10^6 m or greater and a specific ultimate tensile strength of 0.3×10^6 m or greater (''Specific Modulus'' is the Young's Modulus in N/m^2 divided by the specific weight in N/m^3; ''Specific Ultimate Tensile Strength'' is the ultimate tensile strength in N/m^2 divided by the specific weight in N/m^3).

5.1.2. STATIC COMPONENTS

(a) *Magnetic suspension bearings:* Specially designed or prepared bearing assemblies consisting of an annular magnet suspended within a housing containing a damping medium. The housing will be manufactured

from a UF_6-resistant material (see *Explanatory Note* to section 5.2 of this supplement.). The magnet couples with a pole piece or a second magnet fitted to the top cap described in section 5.1.1(e) of this supplement. The magnet may be ring-shaped with a relation between outer and inner diameter smaller or equal to 1.6:1. The magnet may be in a form having an initial permeability of 0.15 H/m (120,000 in CGS units) or more, or a remanence of 98.5% or more, or an energy product of greater than 80 kJ/m^3 (10^7 gauss-oersteds). In addition to the usual material properties, it is a prerequisite that the deviation of the magnetic axes from the geometrical axes is limited to very small tolerances (lower than 0.1 mm or 0.004 in) or that homogeneity of the material of the magnet is specially called for.

(b) *Bearings/Dampers:* Specially designed or prepared bearings comprising a pivot/cup assembly mounted on a damper. The pivot is normally a hardened steel shaft with a hemisphere at one end with a means of attachment to the bottom cap, described in section 5.1.1(e) of this supplement, at the other. The shaft may however have a hydrodynamic bearing attached. The cup is pellet-shaped with a hemispherical indentation in one surface. These components are often supplied separately to the damper.

(c) *Molecular pumps:* Specially designed or prepared cylinders having internally machined or extruded helical grooves and internally machined bores. Typical dimensions are as follows: 75 mm (3 in) to 400 mm (16 in) internal diameter, 10 mm (0.4 in) or more wall thickness, with the length equal to or greater than the diameter. The grooves are typically rectangular in cross-section and 2 mm (0.08 in) or more in depth.

(d) *Motor stators:* Specially designed or prepared ring-shaped stators for high speed multiphase AC hysteresis (or reluctance) motors for synchronous operation within a vacuum in the frequency range of 600–2000 Hz and a power range of 50–1000 VA. The stators consist of multi-phase windings on a laminated low loss iron core comprised of thin layers typically 2.0 mm (0.08 in) thick or less.

(e) *Centrifuge housing/recipients:* Components specially designed or prepared to contain the rotor tube assembly of a gas centrifuge. The housing consists of a rigid cylinder of wall thickness up to 30 mm (1.2 in) with precision machined ends to locate the bearings and with one or more flanges for mounting. The machined ends are parallel to each other and perpendicular to the cylinder's longitudinal axis to within 0.05 degrees or less. The housing may also be a honeycomb type structure to accommodate several rotor tubes. The housings are made of or protected by materials resistant to corrosion by UF6.

(f) *Scoops:* Specially designed or prepared tubes of up to 12 mm (0.5 in) internal diameter for the extraction of UF6 gas from within the rotor tube by a Pitot tube action (that is, with an aperture facing into the circumferential gas flow within the rotor tube, for example by bending the end of a radially disposed tube) and capable of being fixed to the central gas extraction system. The tubes are made of or protected by materials resistant to corrosion by UF6.

5.2. SPECIALLY DESIGNED OR PREPARED AUXILIARY SYSTEMS, EQUIPMENT AND COMPONENTS FOR GAS CENTRIFUGE ENRICHMENT PLANTS

INTRODUCTORY NOTE: The auxiliary systems, equipment and components for a gas centrifuge enrichment plant are the systems of plant needed to feed UF6 to the centrifuges, to link the individual centrifuges to each other to form cascades (or stages) to allow for progressively higher enrichments and to extract the ''product'' and ''tails'' UF6 from the centrifuges, together with the equipment required to drive the centrifuges or to control the plant. Normally UF_6 is evaporated from the solid using heated autoclaves and is distributed in gaseous form to the centrifuges by way of cascade header pipework. The ''product'' and ''tails'' UF_6 gaseous streams flowing from the centrifuges are also passed by way of cascade header pipework to cold traps (operating at about 203 K (−70 °C)) where they are condensed prior to onward transfer into suitable containers for transportation or storage. Because an enrichment plant consists of many thousands of centrifuges arranged in cascades there are many kilometers of cascade header pipework, incorporating thousands of welds with a substantial amount of repetition of layout. The equipment, components and piping systems are fabricated to very high vacuum and cleanliness standards.

5.2.1. FEED SYSTEMS/PRODUCT AND TAILS WITHDRAWAL SYSTEMS

Specially designed or prepared process systems including: Feed autoclaves (or stations), used for passing UF_6 to the centrifuge cascades at up to 100 kPa (15 psi) and at a rate of 1 kg/h or more; desublimers (or cold traps) used to remove UF_6 from the cascades at up to 3 kPa (0.5 psi) pressure. The desublimers are capable of being chilled to 203 K (−70 °C) and heated to 343 K (70 °C); ''Product'' and ''Tails'' stations used for trapping UF6 into containers. This plant, equipment and pipework is wholly made of or lined with UF_6-resistant materials (see *Explanatory Note* to section 5.2 of this Supplement) and is fabricated to very high vacuum and cleanliness standards.

5.2.2. MACHINE HEADER PIPING SYSTEMS

Specially designed or prepared piping systems and header systems for handling UF_6 within the centrifuge cascades. The piping

network is normally of the ''triple'' header system with each centrifuge connected to each of the headers. There is thus a substantial amount of repetition in its form. It is wholly made of UF_6-resistant materials (see *Explanatory Note* to section 5.2 of this supplement) and is fabricated to very high vacuum and cleanliness standards.

5.2.3. UF_6 MASS SPECTROMETERS/ION SOURCES

Specially designed or prepared magnetic or quadrupole mass spectrometers capable of taking ''on-line'' samples of feed, product or tails, from UF_6 gas streams and having all of the following characteristics:

(a) Unit resolution for atomic mass unit greater than 320;

(b) Ion sources constructed of or lined with nichrome or monel or nickel plated;

(c) Electron bombardment ionization sources;

(d) Having a collector system suitable for isotopic analysis.

5.2.4. FREQUENCY CHANGERS

Frequency changers (also known as converters or invertors) specially designed or prepared to supply motor stators (as defined under section 5.1.2(d) of this supplement), or parts, components and sub-assemblies of such frequency changers having all of the following characteristics:

(a) A multiphase output of 600 to 2000 Hz;

(b) High stability (with frequency control better than 0.1%);

(c) Low harmonic distortion (less than 2%); and

(d) An efficiency of greater than 80%.

EXPLANATORY NOTE: The items listed in this section 5.2 either come into direct contact with the UF_6 process gas or directly control the centrifuges and the passage of the gas from centrifuge to centrifuge and cascade to cascade. Materials resistant to corrosion by UF_6 include stainless steel, aluminum, aluminum alloys, nickel or alloys containing 60% or more nickel.

5.3. SPECIALLY DESIGNED OR PREPARED ASSEMBLIES AND COMPONENTS FOR USE IN GASEOUS DIFFUSION ENRICHMENT

INTRODUCTORY NOTE: In the gaseous diffusion method of uranium isotope separation, the main technological assembly is a special porous gaseous diffusion barrier, heat exchanger for cooling the gas (which is heated by the process of compression), seal valves and control valves, and pipelines. Inasmuch as gaseous diffusion technology uses uranium hexafluoride (UF_6), all equipment, pipeline and instrumentation surfaces (that come in contact with the gas) must be made of materials that remain stable in contact with UF_6. A gaseous diffusion facility requires a number of these assemblies, so that quantities can provide an important indication of end use.

5.3.1. GASEOUS DIFFUSION BARRIERS

(a) Specially designed or prepared thin, porous filters, with a pore size of 100–1,000 Å (angstroms), a thickness of 5 mm (0.2 in) or less, and for tubular forms, a diameter of 25 mm (1 in) or less, made of metallic, polymer or ceramic materials resistant to corrosion by UF_6, and

(b) Specially prepared compounds or powders for the manufacture of such filters. Such compounds and powders include nickel or alloys containing 60 percent or more nickel, aluminum oxide, or UF_6-resistant fully fluorinated hydrocarbon polymers having a purity of 99.9 percent or more, a particle size less than 10 microns, and a high degree of particle size uniformity, which are specially prepared for the manufacture of gaseous diffusion barriers.

5.3.2. DIFFUSER HOUSINGS

Specially designed or prepared hermetically sealed cylindrical vessels greater than 300 mm (12 in) in diameter and greater than 900 mm (35 in) in length, or rectangular vessels of comparable dimensions, which have an inlet connection and two outlet connections all of which are greater than 50 mm (2 in) in diameter, for containing the gaseous diffusion barrier, made of or lined with UF_6-resistant materials and designed for horizontal or vertical installation.

5.3.3. COMPRESSORS AND GAS BLOWERS

Specially designed or prepared axial, centrifugal, or positive displacement compressors, or gas blowers with a suction volume capacity of 1 m^3/min or more of UF_6, and with a discharge pressure of up to several hundred kPa (100 psi), designed for long-term operation in the UF_6 environment with or without an electrical motor of appropriate power, as well as separate assemblies of such compressors and gas blowers. These compressors and gas blowers have a pressure ratio between 2:1 and 6:1 and are made of, or lined with, materials resistant to UF_6.

5.3.4. ROTARY SHAFT SEALS

Specially designed or prepared vacuum seals, with seal feed and seal exhaust connections, for sealing the shaft connecting the compressor or the gas blower rotor with the driver motor so as to ensure a reliable seal against in-leaking of air into the inner chamber of the compressor or gas blower which is filled with UF_6. Such seals are normally designed for a buffer gas in-leakage rate of less than 1000 cm^3/min (60 in^3/min).

5.3.5. HEAT EXCHANGERS FOR COOLING UF_6

Specially designed or prepared heat exchangers made of or lined with UF_6-resistant

materials (except stainless steel) or with copper or any combination of those metals, and intended for a leakage pressure change rate of less than 10 Pa (0.0015 psi) per hour under a pressure difference of 100 kPa (15 psi).

5.4. SPECIALLY DESIGNED OR PREPARED AUXILIARY SYSTEMS, EQUIPMENT AND COMPONENTS FOR USE IN GASEOUS DIFFUSION ENRICHMENT

INTRODUCTORY NOTE: The auxiliary systems, equipment and components for gaseous diffusion enrichment plants are the systems of plant needed to feed UF_6 to the gaseous diffusion assembly, to link the individual assemblies to each other to form cascades (or stages) to allow for progressively higher enrichments and to extract the ''product'' and ''tails'' UF_6 from the diffusion cascades. Because of the high inertial properties of diffusion cascades, any interruption in their operation, and especially their shut-down, leads to serious consequences. Therefore, a strict and constant maintenance of vacuum in all technological systems, automatic protection from accidents, and precise automated regulation of the gas flow is of importance in a gaseous diffusion plant. All this leads to a need to equip the plant with a large number of special measuring, regulating and controlling systems. Normally UF_6 is evaporated from cylinders placed within autoclaves and is distributed in gaseous form to the entry point by way of cascade header pipework. The ''product'' and ''tails'' UF_6 gaseous streams flowing from exit points are passed by way of cascade header pipework to either cold traps or to compression stations where the UF_6 gas is liquefied prior to onward transfer into suitable containers for transportation or storage. Because a gaseous diffusion enrichment plant consists of a large number of gaseous diffusion assemblies arranged in cascades, there are many kilometers of cascade header pipework, incorporating thousands of welds with substantial amounts of repetition of layout. The equipment, components and piping systems are fabricated to very high vacuum and cleanliness standards.

5.4.1. FEED SYSTEMS/PRODUCT AND TAILS WITHDRAWAL SYSTEMS

Specially designed or prepared process systems, capable of operating at pressures of 300 kPa (45 psi) or less, including:

(a) Feed autoclaves (or systems), used for passing UF_6 to the gaseous diffusion cascades;

(b) Desublimers (or cold traps) used to remove UF_6 from diffusion cascades;

(c) Liquefaction stations where UF_6 gas from the cascade is compressed and cooled to form liquid UF_6;

(d) ''Product'' or ''tails'' stations used for transferring UF_6 into containers.

5.4.2. HEADER PIPING SYSTEMS

Specially designed or prepared piping systems and header systems for handling UF_6 within the gaseous diffusion cascades. This piping network is normally of the ''double'' header system with each cell connected to each of the headers.

5.4.3. VACUUM SYSTEMS

(a) Specially designed or prepared large vacuum manifolds, vacuum headers and vacuum pumps having a suction capacity of 5 m^3/min (175 ft^3/min) or more.

(b) Vacuum pumps specially designed for service in UF_6-bearing atmospheres made of, or lined with, aluminum, nickel, or alloys bearing more than 60% nickel. These pumps may be either rotary or positive, may have displacement and fluorocarbon seals, and may have special working fluids present.

5.4.4. SPECIAL SHUT-OFF AND CONTROL VALVES

Specially designed or prepared manual or automated shut-off and control bellows valves made of UF_6-resistant materials with a diameter of 40 to 1500 mm (1.5 to 59 in) for installation in main and auxiliary systems of gaseous diffusion enrichment plants.

5.4.5. UF_6 MASS SPECTROMETERS/ION SOURCES

Specially designed or prepared magnetic or quadrupole mass spectrometers capable of taking ''on-line'' samples of feed, product or tails, from UF_6 gas streams and having all of the following characteristics:

(a) Unit resolution for atomic mass unit greater than 320;

(b) Ion sources constructed of or lined with nichrome or monel or nickel plated;

(c) Electron bombardment ionization sources;

(d) Collector system suitable for isotopic analysis.

EXPLANATORY NOTE: The items listed in this section 5.4 either come into direct contact with the UF_6 process gas or directly control the flow within the cascade. All surfaces which come into contact with the process gas are wholly made of, or lined with, UF_6-resistant materials. For the purposes of the sections in this supplement relating to gaseous diffusion items, the materials resistant to corrosion by UF_6 include stainless steel, aluminum, aluminum alloys, aluminum oxide, nickel or alloys containing 60% or more nickel and UF_6-resistant fully fluorinated hydrocarbon polymers.

5.5. SPECIALLY DESIGNED OR PREPARED SYSTEMS, EQUIPMENT AND COMPONENTS FOR USE IN AERODYNAMIC ENRICHMENT PLANTS

INTRODUCTORY NOTE: In aerodynamic enrichment processes, a mixture of gaseous

UF_6 and light gas (hydrogen or helium) is compressed and then passed through separating elements wherein isotopic separation is accomplished by the generation of high centrifugal forces over a curved-wall geometry. Two processes of this type have been successfully developed: The separation nozzle process and the vortex tube process. For both processes the main components of a separation stage include cylindrical vessels housing the special separation elements (nozzles or vortex tubes), gas compressors and heat exchangers to remove the heat of compression. An aerodynamic plant requires a number of these stages, so that quantities can provide an important indication of end use. Since aerodynamic processes use UF_6, all equipment, pipeline and instrumentation surfaces (that come in contact with the gas) must be made of materials that remain stable in contact with UF_6.

EXPLANATORY NOTE: The items listed in section 5.5 of this Supplement either come into direct contact with the UF_6 process gas or directly control the flow within the cascade. All surfaces which come into contact with the process gas are wholly made of or protected by UF_6-resistant materials. For the purposes of the provisions of section 5.5 of this supplement that relate to aerodynamic enrichment items, the materials resistant to corrosion by UF_6 include copper, stainless steel, aluminum, aluminum alloys, nickel or alloys containing 60% or more nickel and UF_6-resistant fully fluorinated hydrocarbon polymers.

5.5.1. SEPARATION NOZZLES

Specially designed or prepared separation nozzles and assemblies thereof. The separation nozzles consist of slit-shaped, curved channels having a radius of curvature less than 1 mm (typically 0.1 to 0.05 mm), resistant to corrosion by UF_6 and having a knife-edge within the nozzle that separates the gas flowing through the nozzle into two fractions.

5.5.2. VORTEX TUBES

Specially designed or prepared vortex tubes and assemblies thereof. The vortex tubes are cylindrical or tapered, made of or protected by materials resistant to corrosion by UF_6, having a diameter of between 0.5 cm and 4 cm, a length to diameter ratio of 20:1 or less and with one or more tangential inlets. The tubes may be equipped with nozzle-type appendages at either or both ends.

EXPLANATORY NOTE: The feed gas enters the vortex tube tangentially at one end or through swirl vanes or at numerous tangential positions along the periphery of the tube.

5.5.3. COMPRESSORS AND GAS BLOWERS

Specially designed or prepared axial, centrifugal or positive displacement compressors or gas blowers made of or protected by materials resistant to corrosion by UF_6 and with a suction volume capacity of 2 m^3/min or more of UF_6/carrier gas (hydrogen or helium) mixture.

EXPLANATORY NOTE: These compressors and gas blowers typically have a pressure ratio between 1.2:1 and 6:1.

5.5.4. ROTARY SHAFT SEALS

Specially designed or prepared rotary shaft seals, with seal feed and seal exhaust connections, for sealing the shaft connecting the compressor rotor or the gas blower rotor with the driver motor so as to ensure a reliable seal against out-leakage of process gas or in-leakage of air or seal gas into the inner chamber of the compressor or gas blower which is filled with a UF_6/carrier gas mixture.

5.5.5. HEAT EXCHANGERS FOR GAS COOLING

Specially designed or prepared heat exchangers made of or protected by materials resistant to corrosion by UF_6.

5.5.6. SEPARATION ELEMENT HOUSINGS

Specially designed or prepared separation element housings, made of or protected by materials resistant to corrosion by UF_6, for containing vortex tubes or separation nozzles.

EXPLANATORY NOTE: These housings may be cylindrical vessels greater than 300 mm in diameter and greater than 900 mm in length, or may be rectangular vessels of comparable dimensions, and may be designed for horizontal or vertical installation.

5.5.7. FEED SYSTEMS/PRODUCT AND TAILS WITHDRAWAL SYSTEMS

Specially designed or prepared process systems or equipment for enrichment plants made of or protected by materials resistant to corrosion by UF_6, including:

(a) Feed autoclaves, ovens, or systems used for passing UF_6 to the enrichment process;

(b) Desublimers (or cold traps) used to remove UF_6 from the enrichment process for subsequent transfer upon heating;

(c) Solidification or liquefaction stations used to remove UF_6 from the enrichment process by compressing and converting UF_6 to a liquid or solid form;

(d) ''Product'' or ''tails'' stations used for transferring UF_6 into containers.

5.5.8. HEADER PIPING SYSTEMS

Specially designed or prepared header piping systems, made of or protected by materials resistant to corrosion by UF_6, for handling UF_6 within the aerodynamic cascades.

This piping network is normally of the ''double'' header design with each stage or group of stages connected to each of the headers.

5.5.9. VACUUM SYSTEMS AND PUMPS

(a) Specially designed or prepared vacuum systems having a suction capacity of 5 m^3/min or more, consisting of vacuum manifolds, vacuum headers and vacuum pumps, and designed for service in UF_6-bearing atmospheres;

(b) Vacuum pumps specially designed or prepared for service in UF_6-bearing atmospheres and made of or protected by materials resistant to corrosion by UF_6. These pumps may use fluorocarbon seals and special working fluids.

5.5.10. SPECIAL SHUT-OFF AND CONTROL VALVES

Specially designed or prepared manual or automated shut-off and control bellows valves made of or protected by materials resistant to corrosion by UF_6 with a diameter of 40 to 1500 mm for installation in main and auxiliary systems of aerodynamic enrichment plants.

5.5.11. UF_6 MASS SPECTROMETERS/ION SOURCES

Specially designed or prepared magnetic or quadrupole mass spectrometers capable of taking ''on-line'' samples of feed, ''product'' or ''tails,'' from UF_6 gas streams and having all of the following characteristics:

(a) Unit resolution for mass greater than 320;

(b) Ion sources constructed of or lined with nichrome or monel or nickel plated;

(c) Electron bombardment ionization sources;

(d) Collector system suitable for isotopic analysis.

5.5.12. UF_6/CARRIER GAS SEPARATION SYSTEMS

Specially designed or prepared process systems for separating UF_6 from carrier gas (hydrogen or helium).

EXPLANATORY NOTE: These systems are designed to reduce the UF_6 content in the carrier gas to 1 ppm or less and may incorporate equipment such as:

(a) Cryogenic heat exchangers and cryoseparators capable of temperatures of −120 °C or less, or

(b) Cryogenic refrigeration units capable of temperatures of −120 °C or less, or

(c) Separation nozzle or vortex tube units for the separation of UF_6 from carrier gas, or

(d) UF_6 cold traps capable of temperatures of −20 °C or less.

5.6. SPECIALLY DESIGNED OR PREPARED SYSTEMS, EQUIPMENT AND COMPONENTS FOR USE IN CHEMICAL EXCHANGE OR ION EXCHANGE ENRICHMENT PLANTS

INTRODUCTORY NOTE: The slight difference in mass between the isotopes of uranium causes small changes in chemical reaction equilibria that can be used as a basis for separation of the isotopes. Two processes have been successfully developed: Liquid-liquid chemical exchange and solid-liquid ion exchange. In the liquid-liquid chemical exchange process, immiscible liquid phases (aqueous and organic) are countercurrently contacted to give the cascading effect of thousands of separation stages. The aqueous phase consists of uranium chloride in hydrochloric acid solution; the organic phase consists of an extractant containing uranium chloride in an organic solvent. The contactors employed in the separation cascade can be liquid-liquid exchange columns (such as pulsed columns with sieve plates) or liquid centrifugal contactors. Chemical conversions (oxidation and reduction) are required at both ends of the separation cascade in order to provide for the reflux requirements at each end. A major design concern is to avoid contamination of the process streams with certain metal ions. Plastic, plastic-lined (including use of fluorocarbon polymers) and/or glass-lined columns and piping are therefore used. In the solid-liquid ion-exchange process, enrichment is accomplished by uranium adsorption/desorption on a special, very fast-acting, ion-exchange resin or adsorbent. A solution of uranium in hydrochloric acid and other chemical agents is passed through cylindrical enrichment columns containing packed beds of the adsorbent. For a continuous process, a reflux system is necessary to release the uranium from the adsorbent back into the liquid flow so that ''product'' and ''tails'' can be collected. This is accomplished with the use of suitable reduction/oxidation chemical agents that are fully regenerated in separate external circuits and that may be partially regenerated within the isotopic separation columns themselves. The presence of hot concentrated hydrochloric acid solutions in the process requires that the equipment be made of or protected by special corrosion-resistant materials.

5.6.1. LIQUID-LIQUID EXCHANGE COLUMNS (CHEMICAL EXCHANGE)

Countercurrent liquid-liquid exchange columns having mechanical power input (i.e., pulsed columns with sieve plates, reciprocating plate columns, and columns with internal turbine mixers), specially designed or prepared for uranium enrichment using the chemical exchange process. For corrosion resistance to concentrated hydrochloric acid solutions, these columns and their internals

are made of or protected by suitable plastic materials (such as fluorocarbon polymers) or glass. The stage residence time of the columns is designed to be short (30 seconds or less).

5.6.2. LIQUID-LIQUID CENTRIFUGAL CONTACTORS (CHEMICAL EXCHANGE)

Liquid-liquid centrifugal contactors specially designed or prepared for uranium enrichment using the chemical exchange process. Such contactors use rotation to achieve dispersion of the organic and aqueous streams and then centrifugal force to separate the phases. For corrosion resistance to concentrated hydrochloric acid solutions, the contactors are made of or are lined with suitable plastic materials (such as fluorocarbon polymers) or are lined with glass. The stage residence time of the centrifugal contactors is designed to be short (30 seconds or less).

5.6.3. URANIUM REDUCTION SYSTEMS AND EQUIPMENT (CHEMICAL EXCHANGE)

(a) Specially designed or prepared electrochemical reduction cells to reduce uranium from one valence state to another for uranium enrichment using the chemical exchange process. The cell materials in contact with process solutions must be corrosion resistant to concentrated hydrochloric acid solutions.

EXPLANATORY NOTE: The cell cathodic compartment must be designed to prevent re-oxidation of uranium to its higher valence state. To keep the uranium in the cathodic compartment, the cell may have an impervious diaphragm membrane constructed of special cation exchange material. The cathode consists of a suitable solid conductor such as graphite.

(b) Specially designed or prepared systems at the product end of the cascade for taking the U^{4+} out of the organic stream, adjusting the acid concentration and feeding to the electrochemical reduction cells.

EXPLANATORY NOTE: These systems consist of solvent extraction equipment for stripping the U^{4+} from the organic stream into an aqueous solution, evaporation and/or other equipment to accomplish solution pH adjustment and control, and pumps or other transfer devices for feeding to the electrochemical reduction cells. A major design concern is to avoid contamination of the aqueous stream with certain metal ions. Consequently, for those parts in contact with the process stream, the system is constructed of equipment made of or protected by suitable materials (such as glass, fluorocarbon polymers, polyphenyl sulfate, polyether sulfone, and resin-impregnated graphite).

5.6.4. FEED PREPARATION SYSTEMS (CHEMICAL EXCHANGE)

Specially designed or prepared systems for producing high-purity uranium chloride feed solutions for chemical exchange uranium isotope separation plants.

EXPLANATORY NOTE: These systems consist of dissolution, solvent extraction and/or ion exchange equipment for purification and electrolytic cells for reducing the uranium U^{6+} or U^{4+} to U^{3+}. These systems produce uranium chloride solutions having only a few parts per million of metallic impurities such as chromium, iron, vanadium, molybdenum and other bivalent or higher multi-valent cations. Materials of construction for portions of the system processing high-purity U^{3+} include glass, fluorocarbon polymers, polyphenyl sulfate or polyether sulfone plastic-lined and resin-impregnated graphite.

5.6.5. URANIUM OXIDATION SYSTEMS (CHEMICAL EXCHANGE)

Specially designed or prepared systems for oxidation of U^{3+} to U^{4+} for return to the uranium isotope separation cascade in the chemical exchange enrichment process.

EXPLANATORY NOTE: These systems may incorporate equipment such as:

(a) Equipment for contacting chlorine and oxygen with the aqueous effluent from the isotope separation equipment and extracting the resultant U^{4+} into the stripped organic stream returning from the product end of the cascade;

(b) Equipment that separates water from hydrochloric acid so that the water and the concentrated hydrochloric acid may be reintroduced to the process at the proper locations.

5.6.6. FAST-REACTING ION EXCHANGE RESINS/ADSORBENTS (ION EXCHANGE)

Fast-reacting ion-exchange resins or adsorbents specially designed or prepared for uranium enrichment using the ion exchange process, including porous macroreticular resins, and/or pellicular structures in which the active chemical exchange groups are limited to a coating on the surface of an inactive porous support structure, and other composite structures in any suitable form including particles or fibers. These ion exchange resins/adsorbents have diameters of 0.2 mm or less and must be chemically resistant to concentrated hydrochloric acid solutions as well as physically strong enough so as not to degrade in the exchange columns. The resins/adsorbents are specially designed to achieve very fast uranium isotope exchange kinetics (exchange rate half-time of less than 10 seconds) and are capable of operating at a temperature in the range of 100 °C to 200 °C.

5.6.7. ION EXCHANGE COLUMNS (ION EXCHANGE)

Cylindrical columns greater than 1,000 mm in diameter for containing and supporting packed beds of ion exchange resin/adsorbent, specially designed or prepared for uranium enrichment using the ion exchange process. These columns are made of or protected by materials (such as titanium or fluorocarbon plastics) resistant to corrosion by concentrated hydrochloric acid solutions and are capable of operating at a temperature in the range of 100 °C to 200 °C and pressures above 0.7 MPa (102 psia).

5.6.8. ION EXCHANGE REFLUX SYSTEMS (ION EXCHANGE)

(a) Specially designed or prepared chemical or electrochemical reduction systems for regeneration of the chemical reducing agent(s) used in ion exchange uranium enrichment cascades.

(b) Specially designed or prepared chemical or electrochemical oxidation systems for regeneration of the chemical oxidizing agent(s) used in ion exchange uranium enrichment cascades.

EXPLANATORY NOTE: The ion exchange enrichment process may use, for example, trivalent titanium (Ti^{3+}) as a reducing cation in which case the reduction system would regenerate Ti^{3+} by reducing Ti^{4+}. The process may use, for example, trivalent iron (Fe^{3+}) as an oxidant in which case the oxidation system would regenerate Fe^{3+} by oxidizing Fe^{2+}.

5.7. SPECIALLY DESIGNED OR PREPARED SYSTEMS, EQUIPMENT AND COMPONENTS FOR USE IN LASER-BASED ENRICHMENT PLANTS

INTRODUCTORY NOTE: Present systems for enrichment processes using lasers fall into two categories: Those in which the process medium is atomic uranium vapor and those in which the process medium is the vapor of a uranium compound. Common nomenclature for such processes include: *First category*—atomic vapor laser isotope separation (AVLIS or SILVA); *second category*—molecular laser isotope separation (MLIS or MOLIS) and chemical reaction by isotope selective laser activation (CRISLA). The systems, equipment and components for laser enrichment plants embrace:

(a) Devices to feed uranium-metal vapor (for selective photo-ionization) or devices to feed the vapor of a uranium compound (for photo-dissociation or chemical activation);

(b) Devices to collect enriched and depleted uranium metal as ''product'' and ''tails'' in the first category, and devices to collect dissociated or reacted compounds as ''product'' and unaffected material as ''tails'' in the second category;

(c) Process laser systems to selectively excite the uranium-235 species; and

(d) Feed preparation and product conversion equipment. The complexity of the spectroscopy of uranium atoms and compounds may require incorporation of any of a number of available laser technologies.

EXPLANATORY NOTE: Many of the items listed in section 5.7 of this supplement come into direct contact with uranium metal vapor or liquid or with process gas consisting of UF_6 or a mixture of UF_6 and other gases. All surfaces that come into contact with the uranium or UF_6 are wholly made of or protected by corrosion-resistant materials. For the purposes of the provisions in section 5.7 of this supplement that relate to laser-based enrichment items, the materials resistant to corrosion by the vapor or liquid of uranium metal or uranium alloys include yttria-coated graphite and tantalum; and the materials resistant to corrosion by UF_6 include copper, stainless steel, aluminum, aluminum alloys, nickel or alloys containing 60% or more nickel and UF_6-resistant fully fluorinated hydrocarbon polymers.

5.7.1. URANIUM VAPORIZATION SYSTEMS (AVLIS)

Specially designed or prepared uranium vaporization systems which contain high-power strip or scanning electron beam guns with a delivered power on the target of more than 2.5 kW/cm.

5.7.2. LIQUID URANIUM METAL HANDLING SYSTEMS (AVLIS)

Specially designed or prepared liquid metal handling systems for molten uranium or uranium alloys, consisting of crucibles and cooling equipment for the crucibles.

EXPLANATORY NOTE: The crucibles and other parts of this system that come into contact with molten uranium or uranium alloys are made of or protected by materials of suitable corrosion and heat resistance. Suitable materials include tantalum, yttria-coated graphite, graphite coated with other rare earth oxides or mixtures thereof.

5.7.3. URANIUM METAL 'PRODUCT' AND 'TAILS' COLLECTOR ASSEMBLIES (AVLIS)

Specially designed or prepared ''product'' and ''tails'' collector assemblies for uranium metal in liquid or solid form.

EXPLANATORY NOTE: Components for these assemblies are made of or protected by materials resistant to the heat and corrosion of uranium metal vapor or liquid (such as yttria-coated graphite or tantalum) and may include pipes, valves, fittings, ''gutters,'' feed-throughs, heat exchangers and collector plates for magnetic, electrostatic or other separation methods.

5.7.4. SEPARATOR MODULE HOUSINGS (AVLIS)

Specially designed or prepared cylindrical or rectangular vessels for containing the

uranium metal vapor source, the electron beam gun, and the ''product'' and ''tails'' collectors.

EXPLANATORY NOTE: These housings have multiplicity of ports for electrical and water feed-throughs, laser beam windows, vacuum pump connections and instrumentation diagnostics and monitoring. They have provisions for opening and closure to allow refurbishment of internal components.

5.7.5. SUPERSONIC EXPANSION NOZZLES (MLIS)

Specially designed or prepared supersonic expansion nozzles for cooling mixtures of UF_6 and carrier gas to 150 K or less and which are corrosion resistant to UF_6.

5.7.6. URANIUM PENTAFLUORIDE PRODUCT COLLECTORS (MLIS)

Specially designed or prepared uranium pentafluoride (UF_5) solid product collectors consisting of filter, impact, or cyclone-type collectors, or combinations thereof, and which are corrosion resistant to the UF_5/UF_6 environment.

5.7.7. UF_6/CARRIER GAS COMPRESSORS (MLIS)

Specially designed or prepared compressors for UF_6/carrier gas mixtures, designed for long term operation in a UF_6 environment. The components of these compressors that come into contact with process gas are made of or protected by materials resistant to corrosion by UF_6.

5.7.8. ROTARY SHAFT SEALS (MLIS)

Specially designed or prepared rotary shaft seals, with seal feed and seal exhaust connections, for sealing the shaft connecting the compressor rotor with the driver motor so as to ensure a reliable seal against out-leakage of process gas or in-leakage of air or seal gas into the inner chamber of the compressor which is filled with a UF_6/carrier gas mixture.

5.7.9. FLUORINATION SYSTEMS (MLIS)

Specially designed or prepared systems for fluorinating UF_5 (solid) to UF_6 (gas).

EXPLANATORY NOTE: These systems are designed to fluorinate the collected UF_5 powder to UF_6 for subsequent collection in product containers or for transfer as feed to MLIS units for additional enrichment. In one approach, the fluorination reaction may be accomplished within the isotope separation system to react and recover directly off the ''product'' collectors. In another approach, the UF_5 powder may be removed/transferred from the ''product'' collectors into a suitable reaction vessel (e.g., fluidized-bed reactor, screw reactor or flame tower) for fluorination. In both approaches, equipment for storage and transfer of fluorine (or other suitable fluorinating agents) and for collection and transfer of UF_6 are used.

5.7.10. UF_6 MASS SPECTROMETERS/ION SOURCES (MLIS)

Specially designed or prepared magnetic or quadrupole mass spectrometers capable of taking ''on-line'' samples of feed, ''product,'' or ''tails'' from UF_6 gas streams and having all of the following characteristics:

(a) Unit resolution for mass greater than 320;

(b) Ion sources constructed of or lined with nichrome or monel or nickel plated;

(c) Electron bombardment ionization sources; and

(d) Collector system suitable for isotopic analysis.

5.7.11. FEED SYSTEMS/PRODUCT AND TAILS WITHDRAWAL SYSTEMS (MLIS)

Specially designed or prepared process systems or equipment for enrichment plants made of or protected by materials resistant to corrosion by UF_6, including:

(a) Feed autoclaves, ovens, or systems used for passing UF_6 to the enrichment process;

(b) Desublimers (or cold traps) used to remove UF_6 from the enrichment process for subsequent transfer upon heating;

(c) Solidification or liquefaction stations used to remove UF_6 from the enrichment process by compressing and converting UF_6 to a liquid or solid form;

(d) ''Product'' or ''tails'' stations used for transferring UF_6 into containers.

5.7.12. UF_6/CARRIER GAS SEPARATION SYSTEMS (MLIS)

Specially designed or prepared process systems for separating UF_6 from carrier gas. The carrier gas may be nitrogen, argon, or other gas.

EXPLANATORY NOTE: These systems may incorporate equipment such as:

(a) Cryogenic heat exchangers or cryoseparators capable of temperatures of -120 °C or less, or

(b) Cryogenic refrigeration units capable of temperatures of -120 °C or less, or

(c) UF_6 cold traps capable of temperatures of -20 °C or less.

5.7.13. LASER SYSTEMS (AVLIS, MLIS AND CRISLA)

Lasers or laser systems specially designed or prepared for the separation of uranium isotopes.

EXPLANATORY NOTE: The laser system for the AVLIS process usually consists of two lasers: A copper vapor laser and a dye laser. The laser system for MLIS usually consists of a CO_2 or excimer laser and a multi-pass optical cell with revolving mirrors at both ends. Lasers or laser systems for both processes require a spectrum frequency stabilizer for operation over extended periods of time.

5.8. SPECIALLY DESIGNED OR PREPARED SYSTEMS, EQUIPMENT AND COMPONENTS FOR USE IN PLASMA SEPARATION ENRICHMENT PLANTS

INTRODUCTORY NOTE: In the plasma separation process, a plasma of uranium ions passes through an electric field tuned to the U–235 ion resonance frequency so that they preferentially absorb energy and increase the diameter of their corkscrew-like orbits. Ions with a large-diameter path are trapped to produce a product enriched in U–235. The plasma, which is made by ionizing uranium vapor, is contained in a vacuum chamber with a high-strength magnetic field produced by a superconducting magnet. The main technological systems of the process include the uranium plasma generation system, the separator module with superconducting magnet and metal removal systems for the collection of ''product'' and ''tails.''

5.8.1. MICROWAVE POWER SOURCES AND ANTENNAE

Specially designed or prepared microwave power sources and antennae for producing or accelerating ions and having the following characteristics: Greater than 30 GHz frequency and greater than 50 kW mean power output for ion production.

5.8.2. ION EXCITATION COILS

Specially designed or prepared radio frequency ion excitation coils for frequencies of more than 100 kHz and capable of handling more than 40 kW mean power.

5.8.3. URANIUM PLASMA GENERATION SYSTEMS

Specially designed or prepared systems for the generation of uranium plasma, which may contain high-power strip or scanning electron beam guns with a delivered power on the target of more than 2.5 kW/cm.

5.8.4. LIQUID URANIUM METAL HANDLING SYSTEMS

Specially designed or prepared liquid metal handling systems for molten uranium or uranium alloys, consisting of crucibles and cooling equipment for the crucibles, power supply system, the ion source high-voltage power supply system, the vacuum system, and extensive chemical handling systems for recovery of product and cleaning/recycling of components.

5.9.1. ELECTROMAGNETIC ISOTOPE SEPARATORS

Electromagnetic isotope separators specially designed or prepared for the separation of uranium isotopes, and equipment and components therefor, including:

(a) *Ion sources:* Specially designed or prepared single or multiple uranium ion sources consisting of a vapor source, ionizer, and beam accelerator, constructed of suitable materials such as graphite, stainless steel, or copper, and capable of providing a total ion beam current of 50 mA or greater;

(b) *Ion collectors:* Collector plates consisting of two or more slits and pockets specially designed or prepared for collection of enriched and depleted uranium ion beams and constructed of suitable materials such as graphite or stainless steel;

(c) *Vacuum housings:* Specially designed or prepared vacuum housings for uranium electromagnetic separators, constructed of suitable non-magnetic materials such as stainless steel and designed for operation at pressures of 0.1 Pa or lower;

EXPLANATORY NOTE: The housings are specially designed to contain the ion sources, collector plates and water-cooled liners and have provision for diffusion pump connections and opening and closure for removal and reinstallation of these components.

(d) *Magnet pole pieces:* Specially designed or prepared magnet pole pieces having a diameter greater than 2 m used to maintain a constant magnetic field within an electromagnetic isotope separator and to transfer the magnetic field between adjoining separators.

5.9.2. HIGH VOLTAGE POWER SUPPLIES

Specially designed or prepared high-voltage power supplies for ion sources, having all of the following characteristics: capable of continuous operation, output voltage of 20,000 V or greater, output current of 1 A or greater, and voltage regulation of better than 0.01% over a time period of 8 hours.

5.9.3. MAGNET POWER SUPPLIES

Specially designed or prepared high-power, direct current magnet power supplies having all of the following characteristics: capable of continuously producing a current output of 500 A or greater at a voltage of 100 V or greater and with a current or voltage regulation better than 0.01% over a period of 8 hours.

6. PLANTS FOR THE PRODUCTION OF HEAVY WATER, DEUTERIUM AND DEUTERIUM COMPOUNDS AND EQUIPMENT SPECIALLY DESIGNED OR PREPARED THEREFOR

INTRODUCTORY NOTE: Heavy water can be produced by a variety of processes. However, the two processes that have proven to be commercially viable are the water-hydrogen sulphide exchange process (GS process) and the ammonia-hydrogen exchange process. The GS process is based upon the exchange of hydrogen and deuterium between water and hydrogen sulphide within a series of towers which are operated with the top section cold and the bottom section hot. Water flows down the towers while the hydrogen sulphide gas circulates from the bottom to the top of the towers. A series of perforated trays are

used to promote mixing between the gas and the water. Deuterium migrates to the water at low temperatures and to the hydrogen sulphide at high temperatures. Gas or water, enriched in deuterium, is removed from the first stage towers at the junction of the hot and cold sections and the process is repeated in subsequent stage towers. The product of the last stage, water enriched up to 30% in deuterium, is sent to a distillation unit to produce reactor grade heavy water, i.e., 99.75% deuterium oxide. The ammonia-hydrogen exchange process can extract deuterium from synthesis gas through contact with liquid ammonia in the presence of a catalyst. The synthesis gas is fed into exchange towers and to an ammonia converter. Inside the towers the gas flows from the bottom to the top while the liquid ammonia flows from the top to the bottom. The deuterium is stripped from the hydrogen in the synthesis gas and concentrated in the ammonia. The ammonia then flows into an ammonia cracker at the bottom of the tower while the gas flows into an ammonia converter at the top. Further enrichment takes place in subsequent stages and reactor grade heavy water is produced through final distillation. The synthesis gas feed can be provided by an ammonia plant that, in turn, can be constructed in association with a heavy water ammonia-hydrogen exchange plant. The ammonia-hydrogen exchange process can also use ordinary water as a feed source of deuterium.

Many of the key equipment items for heavy water production plants using GS or the ammonia-hydrogen exchange processes are common to several segments of the chemical and petroleum industries. This is particularly so for small plants using the GS process. However, few of the items are available ''off-the-shelf.'' The GS and ammonia-hydrogen processes require the handling of large quantities of flammable, corrosive and toxic fluids at elevated pressures. Accordingly, in establishing the design and operating standards for plants and equipment using these processes, careful attention to the materials selection and specifications is required to ensure long service life with high safety and reliability factors. The choice of scale is primarily a function of economics and need. Thus, most of the equipment items would be prepared according to the requirements of the customer. Finally, it should be noted that, in both the GS and the ammonia-hydrogen exchange processes, items of equipment which individually are not specially designed or prepared for heavy water production can be assembled into systems which are specially designed or prepared for producing heavy water. The catalyst production system used in the ammonia-hydrogen exchange process and water distillation systems used for the final concentration of heavy water to reactor-grade in either process are examples of such systems. The items of equipment which are specially designed or prepared for the production of heavy water utilizing either the water-hydrogen sulphide exchange process or the ammonia-hydrogen exchange process include the following:

6.1. WATER-HYDROGEN SULPHIDE EXCHANGE TOWERS

Exchange towers fabricated from fine carbon steel (such as ASTM A516) with diameters of 6 m (20 ft) to 9 m (30 ft), capable of operating at pressures greater than or equal to 2 MPa (300 psi) and with a corrosion allowance of 6 mm or greater, specially designed or prepared for heavy water production utilizing the water-hydrogen sulphide exchange process.

6.2. BLOWERS AND COMPRESSORS

Single stage, low head (i.e., 0.2 MPa or 30 psi) centrifugal blowers or compressors for hydrogen-sulphide gas circulation (i.e., gas containing more than 70% H_2S) specially designed or prepared for heavy water production utilizing the water-hydrogen sulphide exchange process. These blowers or compressors have a throughput capacity greater than or equal to 56 m^3/second (120,000 SCFM) while operating at pressures greater than or equal to 1.8 MPa (260 psi) suction and have seals designed for wet H_2S service.

6.3. AMMONIA-HYDROGEN EXCHANGE TOWERS

Ammonia-hydrogen exchange towers greater than or equal to 35 m (114.3 ft) in height with diameters of 1.5 m (4.9 ft) to 2.5 m (8.2 ft) capable of operating at pressures greater than 15 MPa (2225 psi) specially designed or prepared for heavy water production utilizing the ammonia-hydrogen exchange process. These towers also have at least one flanged axial opening of the same diameter as the cylindrical part through which the tower internals can be inserted or withdrawn.

6.4. TOWER INTERNALS AND STAGE PUMPS

Tower internals and stage pumps specially designed or prepared for towers for heavy water production utilizing the ammonia-hydrogen exchange process. Tower internals include specially designed stage contactors which promote intimate gas/liquid contact. Stage pumps include specially designed submersible pumps for circulation of liquid ammonia within a contacting stage internal to the stage towers.

6.5. AMMONIA CRACKERS

Ammonia crackers with operating pressures greater than or equal to 3 MPa (450 psi) specially designed or prepared for heavy water production utilizing the ammonia-hydrogen exchange process.

6.6. Infrared absorption analyzers

Infrared absorption analyzers capable of ''on-line'' hydrogen/deuterium ratio analysis where deuterium concentrations are equal to or greater than 90%.

6.7. Catalytic burners

Catalytic burners for the conversion of enriched deuterium gas into heavy water specially designed or prepared for heavy water production utilizing the ammonia-hydrogen exchange process.

7. Plants for the conversion of uranium and equipment specially designed or prepared therefor

Introductory Note: Uranium conversion plants and systems may perform one or more transformations from one uranium chemical species to another, including: conversion of uranium ore concentrates to UO_3, conversion of UO_3 to UO_2, conversion of uranium oxides to UF_4 or UF_6, conversion of UF_4 to UF_6, conversion of UF_6 to UF_4, conversion of UF_4 to uranium metal, and conversion of uranium fluorides to UO_2. Many of the key equipment items for uranium conversion plants are common to several segments of the chemical process industry. For example, the types of equipment employed in these processes may include: Furnaces, rotary kilns, fluidized bed reactors, flame tower reactors, liquid centrifuges, distillation columns and liquid-liquid extraction columns. However, few of the items are available ''off-the-shelf;'' most would be prepared according to the requirements and specifications of the customer. In some instances, special design and construction considerations are required to address the corrosive properties of some of the chemicals handled (HF, F_2, ClF_3, and uranium fluorides). Finally, it should be noted that, in all of the uranium conversion processes, items of equipment which individually are not specially designed or prepared for uranium conversion can be assembled into systems which are specially designed or prepared for use in uranium conversion.

7.1. Specially designed or prepared systems for the conversion of uranium ore concentrates to UO_3

Explanatory Note: Conversion of uranium ore concentrates to UO_3 can be performed by first dissolving the ore in nitric acid and extracting purified uranyl nitrate using a solvent such as tributyl phosphate. Next, the uranyl nitrate is converted to UO_3 either by concentration and denitration or by neutralization with gaseous ammonia to produce ammonium diuranate with subsequent filtering, drying, and calcining.

7.2. Specially designed or prepared systems for the conversion of UO_3 to UF_6

Explanatory Note: Conversion of UO_3 to UF_6 can be performed directly by fluorination. The process requires a source of fluorine gas or chlorine trifluoride.

7.3. Specially designed or prepared systems for the conversion of UO_3 to UO_2

Explanatory Note: Conversion of UO_3 to UO_2 can be performed through reduction of UO_3 with cracked ammonia gas or hydrogen.

7.4. Specially designed or prepared systems for the conversion of UO_2 to UF_4

Explanatory Note: Conversion of UO_2 to UF_4 can be performed by reacting UO_2 with hydrogen fluoride gas (HF) at 300–500 °C.

7.5. Specially designed or prepared systems for the conversion of UF_4 to UF_6

Explanatory Note: Conversion of UF_4 to UF_6 is performed by exothermic reaction with fluorine in a tower reactor. UF_6 is condensed from the hot effluent gases by passing the effluent stream through a cold trap cooled to −10 °C. The process requires a source of fluorine gas.

7.6. Specially designed or prepared systems for the conversion of UF_4 to U metal

Explanatory Note: Conversion of UF_4 to U metal is performed by reduction with magnesium (large batches) or calcium (small batches). The reaction is carried out at temperatures above the melting point of uranium (1130 °C).

7.7. Specially designed or prepared systems for the conversion of UF_6 to UO_2

Explanatory Note: Conversion of UF_6 to UO_2 can be performed by one of three processes. In the first, UF_6 is reduced and hydrolyzed to UO_2 using hydrogen and steam. In the second, UF_6 is hydrolyzed by solution in water, ammonia is added to precipitate ammonium diuranate, and the diuranate is reduced to UO_2 with hydrogen at 820 °C. In the third process, gaseous UF_6, CO_2, and NH_3 are combined in water, precipitating ammonium uranyl carbonate. The ammonium uranyl carbonate is combined with steam and hydrogen at 500–600 °C to yield UO_2. UF_6 to UO_2 conversion is often performed as the first stage of a fuel fabrication plant.

7.8 Specially designed or prepared systems for the conversion of UF_6 to UF_4

Explanatory Note: Conversion of UF_6 to UF_4 is performed by reduction with hydrogen.

PART 784—COMPLEMENTARY ACCESS

Sec.

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§ 784.1 Complementary access: General information on the purpose of complementary access, affected locations, and the role of BIS.

(a) *Overview.* The Additional Protocol requires that the United States provide the IAEA with complementary access to locations specified in the U.S. declaration. The IAEA may request and be given complementary access to locations in the United States that are not included in the U.S. declaration as agreed to by the U.S. Government. The IAEA, upon request, will be granted complementary access to locations in the United States in accordance with the provisions of §784.3 of the APR, which describes the scope and conduct of complementary access.

(b) *Purposes authorized under the APR.* The APR authorize the conduct of complementary access, at locations in the United States, for the following purposes.

(1) *Declared uranium hard-rock mines and ore beneficiation plants.* Complementary access may be conducted, on a selective basis, to verify the absence of undeclared nuclear material and nuclear related activities at reportable uranium hard-rock mines and ore beneficiation plants (see §783.1(a)(3) of the APR).

(2) *Other locations specified in the U.S. declaration and locations requested by the IAEA that are not included in the U.S. declaration as agreed to by the U.S. Government.* Complementary access may be conducted at other locations specified in the U.S. declaration (i.e., locations required to submit reports to BIS pursuant to §783.1(a)(1), (a)(2), or (b) of the APR), and locations requested by the IAEA and agreed to by the U.S. Government, to resolve questions relating to the correctness and completeness of the information provided in the U.S. declaration or to resolve inconsistencies relating to that information.

(i) In the event that the IAEA has a question about, or identifies an apparent inconsistency in, information contained in the U.S. declaration (e.g., information based on reports submitted to BIS by one of these locations, pursuant to §783.1(a)(1), (a)(2), or (b) of the APR), the IAEA will provide the U.S. Government with an opportunity to clarify or resolve the question or inconsistency. The IAEA will not draw any conclusions about the question or inconsistency, or request complementary access to a location, until the U.S. Government has been provided with an opportunity to clarify or resolve the question or inconsistency, unless the IAEA considers that a delay in access would prejudice the purpose for which the access is sought.

(ii) Upon receipt of a request from the IAEA for clarification concerning information contained in the U.S. declaration, BIS will provide written notification to the U.S. location. The U.S. location must provide BIS with all of the requested information to clarify or resolve the question or inconsistency raised by the IAEA. Unless informed otherwise by BIS, the U.S. location will have 15 calendar days from its receipt of written notification to submit the required forms to BIS (see the *Supplemental Information Report* requirements in §783.1(d) of the APR).

(c) *Locations subject to complementary access.* All locations specified in the U.S. declaration and other locations requested by the IAEA and agreed to by the U.S. Government are subject to complementary access by the IAEA. In cases where access cannot be provided to locations specified by the IAEA, BIS may seek to provide complementary

access to adjacent locations or to satisfy the purposes of complementary access (see paragraph (b) of this section) through other means.

(d) *Responsibilities of BIS.* As the lead U.S. Government agency and point of contact for organizing and facilitating complementary access pursuant to the APR, BIS will:

(1) Serve as the official U.S. Government host to the IAEA inspection team;

(2) Provide prior written notification to any location that is scheduled to undergo complementary access;

(3) Take appropriate action to obtain an administrative warrant in the event that a location does not consent to complementary access;

(4) Upon request of the location, dispatch an advance team, if time and other circumstances permit, to the location to provide administrative and logistical support for complementary access and to assist with preparation for such access;

(5) Accompany the IAEA Team throughout the duration of complementary access;

(6) Assist the IAEA Team with complementary access activities and ensure that each activity adheres to the provisions of the Additional Protocol and to the requirements of the APR and the Act, including the conditions of any warrant issued thereunder; and

(7) Assist in the negotiation and development of a location-specific subsidiary arrangement between the U.S. Government and the IAEA, if appropriate (see § 784.5 of the APR).

NOTE TO § 784.1(d): BIS may invite representatives from other U.S. Government agencies to participate as members of the Advance and Host Teams for complementary access. The Host Team will not include employees of the Environmental Protection Agency, the Mine Safety and Health Administration, or the Occupational Safety and Health Administration of the Department of Labor.

§ 784.2 Obtaining consent or warrants to conduct complementary access.

(a) *Procedures for obtaining consent.* (1) For locations specified in the U.S. declaration and other locations specified by the IAEA, BIS will seek consent pursuant to IAEA complementary access requests. In instances where the owner, operator, occupant or agent in charge of a location does not consent to such complementary access, BIS will seek administrative warrants as provided by the Act.

(2) For locations specified by the IAEA where access cannot be provided, BIS may seek consent from an adjacent location pursuant to an IAEA complementary access request.

(b) *Who may give consent.* The owner, operator, occupant or agent in charge of a location may consent to complementary access. The individual providing consent on behalf of the location represents that he or she has the authority to make this decision.

(c) *Scope of consent.* (1) When the owner, operator, occupant, or agent in charge of a location consents to a complementary access request, he or she is agreeing to provide the IAEA Team with the same degree of access as that authorized under § 784.3 of the APR. This includes providing access for the IAEA Team and Host Team to any area of the location, any item on the location, and any records that are necessary to comply with the APR and allow the IAEA Team to accomplish the purpose of complementary access, as authorized under § 784.1(b)(1) or (b)(2) of the APR, except for the following:

(i) Information subject to the licensing jurisdiction of the Directorate of Defense Trade Controls (DDTC), U.S. Department of State, under the International Traffic in Arms Regulations (ITAR) (22 CFR parts 120 through 130)—see § 784.3(b)(3) of the APR, which states that such access cannot be provided without prior U.S. Government authorization; and

(ii) Activities with direct national security significance to the United States, or locations or information associated with such activities.

(2) The Host Team Leader is responsible for determining whether or not the IAEA's request to obtain access to any area, building, or item, or to record or conduct the types of activities described in § 784.3 of the APR is consistent with the Additional Protocol and subsidiary arrangements to the Additional Protocol.

§ 784.3 Scope and conduct of complementary access.

(a) *General.* IAEA complementary access shall be limited to accomplishing only those purposes that are appropriate to the type of location, as indicated in § 784.1(b) of the APR and shall be conducted in the least intrusive manner, consistent with the effective and timely accomplishment of such purposes. No complementary access may take place without the presence of a U.S. Government Host Team. No information of direct national security significance shall be provided to the IAEA during complementary access.

(b) *Scope.* This paragraph describes complementary access activities that are authorized under the APR.

(1) *Complementary access activities.* Depending on the type of location accessed, the IAEA Team may:

(i) Perform visual observation of parts or areas of the location;

(ii) Utilize radiation detection and measurement devices;

(iii) Utilize non-destructive measurements and sampling;

(iv) Examine relevant records (i.e., records appropriate for the purpose of complementary access, as authorized under § 784.1(b) of the APR), except that the following records may not be inspected unless the Host Team leader, after receiving input from representatives of the location and consulting with other members of the Host Team, determines that such access is both appropriate and necessary to achieve the relevant purpose described in § 784.1(b)(1) or (b)(2) of the APR:

(A) Financial data (other than production data);

(B) Sales and marketing data (other than shipment data);

(C) Pricing data;

(D) Personnel data;

(E) Patent data;

(F) Data maintained for compliance with environmental or occupational health and safety regulations; or

(G) Research data (unless the data are reported on Form AP–3 or AP–4);

(v) Perform location-specific environmental sampling; and

NOTE TO § 784.3(b)(1)(v): BIS will not seek access to a location for location-specific environmental sampling until the President reports to the appropriate congressional committees his determination to permit such sampling.

(vi) Utilize other objective measures which have been demonstrated to be technically feasible and the use of which have been agreed to by the United States (''objective measures,'' as used herein, means any verification techniques that would be appropriate for achieving the official purpose of complementary access, both in terms of their effectiveness and limited intrusiveness).

(2) *Wide Area Environmental Sampling.* In certain cases, IAEA inspectors may collect environmental samples (e.g., air, water, vegetation, soil, smears), at a location specified by the IAEA, for the purpose of assisting the IAEA to draw conclusions about the absence of undeclared nuclear material or nuclear activities over a wide area.

NOTE TO § 784.3(b)(2): The IAEA will not seek such access until the use of wide-area environmental sampling and the procedural arrangements therefor have been approved by its Board of Governors and consultations have been held between the IAEA and the United States. BIS will not seek access to a location for wide-area sampling until the President reports to the appropriate congressional committees his determination to permit such sampling.

(3) *ITAR-controlled technology.* ITAR-controlled technology shall not be made available to the IAEA Team without prior U.S. Government authorization. The owner, operator, occupant, or agent in charge of the location being accessed is responsible for identifying any ITAR-controlled technology at the location to the Host Team as soon as practicable following the receipt of notification from BIS of complementary access (see § 784.4(a) of the APR).

(c) *Briefing.* Following the arrival of the IAEA Team and Host Team at a location subject to complementary access, and prior to the commencement of complementary access, representatives of the organization will provide the IAEA Team and Host Team with a briefing on the environmental, health, safety, and security regulations (e.g., regulations for protection of controlled environments within the location and for personal safety) that are applicable to the location and which must be observed. In addition, the organization's representatives may include in their briefing an overview of the location,

the activities carried out at the location, and any administrative and logistical arrangements relevant to complementary access. The briefing may include the use of maps and other documentation deemed appropriate by the organization. The time spent for the briefing may not exceed one hour, and the content should be limited to that which relates to the purpose of complementary access. The briefing may also address any of the following:

(1) Areas, buildings, and structures specific to any activities relevant to complementary access;

(2) Administrative and logistical information;

(3) Updates/revisions to reports required under the APR;

(4) Introduction of key personnel at the location;

(5) Location-specific subsidiary arrangement, if applicable; and

(6) Proposed access plan to address the purpose of complementary access.

(d) *Visual access.* The IAEA Team may visually observe areas or parts of the location, as agreed by the Host Team Leader, after the Host Team Leader has consulted with the organization's representative for the location.

(e) *Records review.* The location must be prepared to provide the IAEA Team with access to all supporting materials and documentation used by the owner, operator, occupant, or agent in charge of the location to prepare reports required under the APR and to otherwise comply with the APR (see the records inspection and recordkeeping requirements in §§ 786.1 and 786.2 of the APR and paragraph (b) of this section, which describes the scope of complementary access activities authorized under the APR) and with appropriate accommodations in which the IAEA Team can review these supporting materials and documentation. Such access will be provided in appropriate formats (e.g., paper copies, electronic remote access by computer, microfilm, or microfiche) through the Host Team to the IAEA Team during the complementary access period or as otherwise agreed upon by the IAEA Team and Host Team Leader. If the owner, operator, occupant, or agent in charge of the location does not have access to records for activities that took place under previous ownership, the previous owner must make such records available to the Host Team.

(f) *Managed access.* As necessary, the Host Team will implement managed access measures (e.g., the removal of sensitive papers from office spaces and the shrouding of sensitive displays, stores, and equipment) to prevent the dissemination of proliferation sensitive information, to meet safety or physical protection requirements, to protect proprietary or commercially sensitive information, or to protect activities of direct national security significance to the United States, including locations or information associated with such activities. If the IAEA Team is unable to fully achieve its inspection aims under the managed access measures in place, the Host Team will make every reasonable effort to provide alternative means to allow the IAEA Team to meet these aims, consistent with the purposes of complementary access (as described in § 784.1(b) of the APR) and the requirements of this section. If a location-specific subsidiary arrangement applies (see § 784.5(b) of the APR), the Host Team shall, in consultation with the owner, operator, occupant, or agent in charge of the location, implement managed access procedures consistent with the applicable location-specific subsidiary arrangement.

(g) *Hours of complementary access.* Consistent with the provisions of the Additional Protocol, the Host Team will ensure, to the extent possible, that each complementary access is commenced, conducted, and concluded during ordinary business hours, but no complementary access shall be prohibited or otherwise disrupted from commencing, continuing or concluding during other hours.

(h) *Environmental, health, safety, and security regulations and requirements.* In carrying out their activities, the IAEA Team and Host Team shall observe federal, state, and local environmental, health, safety, and security regulations and environmental, health, safety, and security requirements established at the location, including those for the protection of controlled environments within a location and for personal safety. To the extent practicable, any such

regulations and requirements that may apply to the conduct of complementary access at the location should be set forth in the location-specific subsidiary arrangement (if any).

(i) *Host Team to accompany the IAEA Team.* The Host Team shall accompany the IAEA Team, during their complementary access at the location, in accordance with the provisions set forth in this part of the APR.

(j) *Scope of authorized communications by the IAEA Team.* (1) The United States shall permit and protect free communications between the IAEA Team and IAEA Headquarters and/or Regional Offices, including attended and unattended transmission of information generated by IAEA containment and/or surveillance or measurement devices. The IAEA Team shall have the right, through consultation with the Host Team, to make use of internationally established systems of direct communications.

(2) No document, photograph or other recorded medium, or sample relevant to complementary access may be removed or transmitted from the location by the IAEA Team without the prior consent of the Host Team.

(k) *IAEA activities, findings, and results related to complementary access.* (1) In accordance with the Additional Protocol, the IAEA shall inform the United States of:

(i) Any activities that took place in connection with complementary access to a location in the United States, including any activities concerning questions or inconsistencies that the IAEA may have brought to the attention of the United States, within 60 calendar days of the time that the activities occurred; and

(ii) The findings or results of any activities that took place, including the findings and results of activities concerning questions or inconsistencies that the IAEA may have brought to the attention of the United States, within 30 calendar days of the time that such findings or results were reached by the IAEA.

(2) BIS will provide the results of complementary access to the owner, operator, occupant, or agent in charge of the inspected location to the extent practicable.

§ 784.4 Notification, duration and frequency of complementary access.

(a) *Complementary access notification.* Complementary access will be provided only upon the issuance of a written notice by BIS to the owner, operator, occupant or agent in charge of the premises to be accessed. If BIS is unable to provide written notification to the owner, operator, or agent in charge, BIS may post a notice prominently at the location to be accessed.

(1) *Content of notice*—(i) *Pertinent information furnished by the IAEA.* The notice shall include all appropriate information provided by the IAEA to the United States Government concerning:

(A) The purpose of complementary access;

(B) The basis for the selection of the location for complementary access;

(C) The activities that will be carried out during complementary access;

(D) The time and date that complementary access is expected to begin and its anticipated duration; and

(E) The names and titles of the IAEA inspectors who will participate in complementary access.

(ii) *Request for location's consent to complementary access.* The complementary access notification from BIS will request that the location inform BIS whether or not it will consent to complementary access. If a location does not agree to provide consent to complementary access within four hours of its receipt of the complementary access notification, BIS will seek an administrative warrant as provided in § 784.2(a)(1).

(iii) *Availability of advance team from BIS.* An advance team from BIS will be available to assist the location in preparing for complementary access. If the complementary access is a 24-hour advance notice, then the availability of an advance team may be limited. The location requesting advance team assistance will not be required to reimburse the U.S. Government for any costs associated with these activities. The location (in cooperation with the advance team, if available) will make preparations for complementary access, including the identification of any ITAR-controlled technology and/or national security information at the location (see § 784.3(b)(3) of the APR).

(2) *Notification procedures.* The following table sets forth the notification procedures for complementary access.

TABLE TO § 784.4(a)(2)

Activity	Agency action	Location action
IAEA notification of complementary access.	BIS will transmit complementary access notification via facsimile to the owner, operator, occupant, or agent in charge of a location to ascertain whether or not the location: (1) Grants consent to complementary access; and (2) Requests BIS advance team support (subject to availability) in preparing for complementary access. If the location does not inform BIS of its consent to complementary access, within 4 hours of the time it receives notification from BIS, BIS will seek an administrative warrant.	Location must inform BIS, within 4 hours of its receipt of complementary access notification, whether or not it: (1) Grants consent to complementary access; and (2) Requests BIS advance team support (subject to availability) to prepare for complementary access. Location not required to reimburse U.S. Government for assistance from the BIS advance team.
Preparation for complementary access.	If a BIS advance team has been requested and is available, it will arrive at the location to be accessed and assist the location in making logistical and administrative preparations for complementary access.	The location will engage in activities that will prepare the location for complementary access (e.g., identifying any ITAR-controlled technology or national security information at the location), either singularly or in cooperation with a BIS advance team if one has been requested and is available.

(3) *Timing of notification.* In accordance with the Additional Protocol, the IAEA shall notify the United States Government of a complementary access request not less than 24 hours prior to the arrival of the IAEA Team at the location. BIS will provide written notice to the owner, operator, occupant or agent in charge of the location as soon as possible after BIS has received notification from the IAEA.

(b) *Duration of complementary access.* The duration of complementary access will depend upon the nature of the complementary access request and the activities that will be conducted at the location. (See § 784.3(b) of the APR for a description of the types of complementary access activities authorized under the APR.)

§ 784.5 Subsidiary arrangements.

(a) *General subsidiary arrangement.* The United States Government may conclude a general subsidiary arrangement with the IAEA that governs complementary access activities, irrespective of the location (i.e., an arrangement that is not location-specific).

(b) *Location-specific subsidiary arrangement*—(1) *Purpose.* If requested by the location or deemed necessary by the U.S. Government, the U.S. Government will negotiate a location-specific subsidiary arrangement with the IAEA. The purpose of such an arrangement is to establish procedures for conducting managed access at a specific declared location. If the location requests, it may participate in preparations for the negotiation of a location-specific subsidiary arrangement with the IAEA and may observe the negotiations to the maximum extent practicable. The existence of a location-specific subsidiary arrangement does not in any way limit the right of the owner, operator, occupant, or agent in charge of the location to withhold consent to a request for complementary access.

(2) *Format and content.* The form and content of a location-specific subsidiary arrangement will be determined by the IAEA and the U.S. Government, in consultation with the location, on a case-by-case basis.

§ 784.6 Post complementary access activities.

Upon receiving the IAEA's final report on complementary access, BIS will forward a copy of the report to the location for its review, in accordance with § 784.3(k)(2) of the APR. Locations may submit comments concerning the IAEA's final report to BIS, and BIS

will consider them, as appropriate, when preparing its comments to the IAEA on the final report. BIS also will send locations a post complementary access letter detailing the issues that require follow-up action (see, for example, the *Amended Report* requirements in §783.2(d) of the APR).

PART 785—ENFORCEMENT

Sec.

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§785.1 Scope and definitions.

(a) *Scope.* This part 785 describes the sanctions that apply to violations of the Act and the APR. It also establishes detailed administrative procedures for certain violations of the Act. Violations for which the statutory basis is the Act are set forth in §785.2 of the APR. BIS investigates these violations, prepares charges, provides legal representation to the U.S. Government, negotiates settlements, and initiates and resolves proceedings. The administrative procedures applicable to these violations are described in §§785.3 through 785.19 of the APR.

(b) *Definitions.* The following are definitions of terms as used only in part 785 of the APR. For definitions of terms applicable to parts 781 through 786 of the APR, unless otherwise noted in this paragraph or elsewhere in the APR, see part 781 of the APR.

The Act. The U.S. Additional Protocol Implementation Act of 2006 (Public Law 109–401, 120 Stat. 2726 (December 18, 2006)).

Assistant Secretary for Export Enforcement. The Assistant Secretary for Export Enforcement, Bureau of Industry and Security, United States Department of Commerce.

Final decision. A decision or order assessing a civil penalty, or otherwise disposing of or dismissing a case, which is not subject to further administrative review, but which may be subject to collection proceedings or judicial review in an appropriate Federal court as authorized by law.

Office of Chief Counsel. The Office of Chief Counsel for Industry and Security, United States Department of Commerce.

Recommended decision. A decision of the administrative law judge in proceedings involving violations of part 785 that is subject to review by the Secretary of Commerce, or a designated United States Government official.

Report. For the purposes of part 785 of the APR, the term ''report'' means any report required under parts 783 through 786 of the APR.

Respondent. Any person named as the subject of a letter of intent to charge, a Notice of Violation and Assessment (NOVA), or order.

Under Secretary, Bureau of Industry and Security. The Under Secretary, Bureau of Industry and Security, United States Department of Commerce.

§785.2 Violations of the Act subject to administrative and criminal enforcement proceedings.

(a) *Violations*—(1) *Refusal to permit entry or access.* No person may willfully fail or refuse to permit entry or access, or willfully disrupt, delay or otherwise impede complementary access, or an entry in connection with complementary access, authorized by the Act.

(2) *Failure to establish or maintain records.* No person may willfully fail or refuse to do any of the following:

(i) Establish or maintain any record required by the Act or the APR;

(ii) Submit any report, notice, or other information to the United States Government in accordance with the Act or the APR; or

(iii) Permit access to or copying of any record by the United States Government that is related to a person's obligations under the Act or the APR.

(b) *Civil penalties*—(1) *Civil penalty for refusal to permit entry or access.* Any person that is determined to have willfully failed or refused to permit entry or access, or to have willfully disrupted, delayed or otherwise impeded an authorized complementary access, as set forth in paragraph (a)(1) of this section, shall pay a civil penalty in an amount not to exceed $25,000 for each violation. Each day the violation continues constitutes a separate violation.

(2) *Civil penalty for failure to establish or maintain records.* Any person that is determined to have willfully failed or refused to establish or maintain any record, submit any report or other information required by the Act or the APR, or permit access to or copying of any record related to a person's obligations under the Act or the APR, as set forth in paragraph (a)(2) of this section, shall pay a civil penalty in an amount not to exceed $25,000 for each violation.

(c) *Criminal penalty.* Any person that is determined to have violated the Act by willfully failing or refusing to permit entry or access authorized by the Act; by willfully disrupting, delaying or otherwise impeding complementary access authorized by the Act; or by willfully failing or refusing to establish or maintain any required record, submit any required report or other information, or permit access to or copying of any record related to a person's obligations under the Act or the APR, as set forth in paragraph (a) of this section, shall, in addition to or in lieu of any civil penalty that may be imposed, be fined under Title 18 of the United States Code, be imprisoned for not more than five years, or both.

§ 785.3 Initiation of administrative proceedings.

(a) *Issuance of a Notice of Violation and Assessment (NOVA).* Prior to the initiation of an administrative proceeding through issuance of a NOVA, the Bureau of Industry and Security will issue a letter of intent to charge. The letter of intent to charge will advise a respondent that BIS has conducted an investigation. The letter will give the respondent a specified period of time to contact BIS to discuss settlement of the allegations set forth in the letter of intent to charge. If the respondent does not contact BIS in the time period specified in the letter of intent to charge, the Director of the Office of Export Enforcement, or such other Department of Commerce representative designated by the Assistant Secretary for Export Enforcement, may initiate an administrative enforcement proceeding under this § 785.3 by issuing a NOVA.

(b) *Content of a NOVA.* The NOVA shall constitute a formal complaint and will set forth the alleged violation(s) and the essential facts with respect to the alleged violation(s), reference the relevant statutory, regulatory or other provisions, and state the maximum amount of the civil penalty that could be assessed. The NOVA also will inform the respondent of the requirement to request a hearing pursuant to § 785.4 of the APR.

(c) *Service of a NOVA.* Service of the NOVA shall be made by certified mail or courier delivery with signed acknowledgment of receipt. The date of signed acknowledgment of receipt shall be the effective date of service of the NOVA. One copy of each paper shall be provided to each party in the delivery. BIS files the NOVA with the Administrative Law Judge (ALJ) at the same time that it is sent to the respondent. The ALJ, in turn, will place the case on its docket and will notify both the respondent and BIS of the docket information.

§ 785.4 Request for hearing and answer.

(a) *Deadline for answering the NOVA.* If the respondent wishes to contest the NOVA issued by BIS, the respondent must submit a written request for a

hearing to BIS within 15 business days from the date of service of the NOVA. If the respondent requests a hearing, the respondent must answer the NOVA within 30 calendar days from the date of the request for hearing. The request for a hearing and the respondent's answer to the NOVA must be filed with the Administrative Law Judge (ALJ), along with a copy of the NOVA, and served on the Office of Chief Counsel, and any other address(es) specified in the NOVA, in accordance with §785.6 of the APR.

(b) *Content of respondent's answer.* The respondent's answer must be responsive to the NOVA and must fully set forth the nature of the respondent's defense(s). The answer must specifically admit or deny each separate allegation in the NOVA; if the respondent is without knowledge, the answer will so state and this will serve as a denial. Failure to deny or controvert a particular allegation will be deemed to be an admission of that allegation. The answer must also set forth any additional or new matter that the respondent contends will support a defense or claim of mitigation. Any defense or partial defense not specifically set forth in the answer shall be deemed to be waived, and evidence supporting that defense or partial defense may be refused, except for good cause shown.

(c) *English required.* The request for hearing, the answer to the NOVA, and all other papers and documentary evidence must be submitted in English.

(d) *Waiver.* The failure of the respondent to file a request for a hearing and an answer within the times prescribed in paragraph (a) of this section constitutes a waiver of the respondent's right to appear and contest the allegations set forth in the NOVA. If no hearing is requested and no answer is provided, a final order will be signed by the Secretary of Commerce, or by a designated United States Government official, and will constitute final agency action in the case.

§785.5 Representation.

An individual respondent may appear, in person, or be represented by a duly authorized officer or employee. A partner may appear on behalf of a partnership, or a duly authorized officer or employee of a corporation may appear on behalf of the corporation. If a respondent is represented by counsel, counsel shall be a member in good standing of the bar of any State, Commonwealth or Territory of the United States, or of the District of Columbia, or be licensed to practice law in the country in which counsel resides, if not the United States. The U.S. Government will be represented by the Office of Chief Counsel. A respondent personally, or through counsel or other representative who has the power of attorney to represent the respondent, shall file a notice of appearance with the ALJ, or, in cases where settlement negotiations occur before any filing with the ALJ, with the Office of Chief Counsel.

§785.6 Filing and service of papers other than the Notice of Violation and Assessment (NOVA).

(a) *Filing.* All papers to be filed with the ALJ shall be addressed to ''Additional Protocol Administrative Enforcement Proceedings,'' at the address set forth in the NOVA, or such other place as the ALJ may designate. Filing by United States certified mail, by express or equivalent parcel delivery service, via facsimile, or by hand delivery is acceptable. Filing from a foreign country shall be by airmail, via facsimile, or by express or equivalent parcel delivery service. A copy of each paper filed shall be simultaneously served on all parties.

(b) *Service.* Service shall be made by United States certified mail, by express or equivalent parcel delivery service, via facsimile, or by hand delivery of one copy of each paper to each party in the proceeding. Service on the government party in all proceedings shall be addressed to Office of Chief Counsel for Industry and Security, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Room H–3839, Washington, DC 20230, or sent via facsimile to (202) 482–0085. Service on a respondent shall be to the address to which the NOVA was sent, or to such other address as the respondent

may provide. When a party has appeared by counsel or other representative, service on counsel or other representative shall constitute service on that party.

(c) *Date.* The date of filing or service is the day when the papers are deposited in the mail or are delivered in person, by delivery service, or by facsimile. Refusal by the person to be served, or by the person's agent or attorney, of service of a document or other paper will be considered effective service of the document or other paper as of the date of such refusal.

(d) *Certificate of service.* A certificate of service signed by the party making service, stating the date and manner of service, shall accompany every paper, other than the NOVA, filed and served on the parties.

(e) *Computation of time.* In computing any period of time prescribed or allowed by this part, the day of the act, event, or default from which the designated period of time begins to run is not to be included. The last day of the period is to be included in the computation unless it is a Saturday, a Sunday, or a legal holiday (as defined in Rule 6(a) of the Federal Rules of Civil Procedure). In such instance, the period runs until the end of the next day that is neither a Saturday, a Sunday, nor a legal holiday. Intermediate Saturdays, Sundays, and legal holidays are excluded from the computation when the period of time prescribed or allowed is 7 days or less—there is no cap on the period of time to which this exclusion applies, whenever the period of time prescribed or allowed by this part is computed in business days, rather than calendar days.

§ 785.7 Summary decision.

The ALJ may render a summary decision disposing of all or part of a proceeding on the motion of any party to the proceeding, provided that there is no genuine issue as to any material fact and the party is entitled to summary decision as a matter of law.

§ 785.8 Discovery.

(a) *General.* The parties are encouraged to engage in voluntary discovery regarding any matter, not privileged, which is relevant to the subject matter of the pending proceeding. The provisions of the Federal Rules of Civil Procedure relating to discovery apply to the extent consistent with this part and except as otherwise provided by the ALJ or by waiver or agreement of the parties. The ALJ may make any order which justice requires to protect a party or person from annoyance, embarrassment, oppression, or undue burden or expense. These orders may include limitations on the scope, method, time and place of discovery, and provisions for protecting the confidentiality of classified or otherwise sensitive information, including Confidential Business Information (CBI) as defined by the Act.

(b) *Interrogatories and requests for admission or production of documents.* A party may serve on any party interrogatories, requests for admission, or requests for production of documents for inspection and copying, and a party may apply to the ALJ for such enforcement or protective order as that party deems warranted with respect to such discovery. The service of a discovery request shall be made at least 30 calendar days before the scheduled date of the hearing unless the ALJ specifies a shorter time period. Copies of interrogatories, requests for admission and requests for production of documents and responses thereto shall be served on all parties and a copy of the certificate of service shall be filed with the ALJ at least 5 business days before the scheduled date of the hearing. Matters of fact or law of which admission is requested shall be deemed admitted unless, within a period designated in the request (at least 10 business days after service, or within such additional time as the ALJ may allow), the party to whom the request is directed serves upon the requesting party a sworn statement either denying specifically the matters of which admission is requested or setting forth in detail the reasons why the party to whom the request is directed cannot either admit or deny such matters.

(c) *Depositions.* Upon application of a party and for good cause shown, the ALJ may order the taking of the testimony of any person by deposition and the production of specified documents

or materials by the person at the deposition. The application shall state the purpose of the deposition and set forth the facts sought to be established through the deposition.

(d) *Enforcement.* The ALJ may order a party to answer designated questions, to produce specified documents or things or to take any other action in response to a proper discovery request. If a party does not comply with such an order, the ALJ may make a determination or enter any order in the proceeding as the ALJ deems reasonable and appropriate. The ALJ may strike related charges or defenses in whole or in part or may take particular facts relating to the discovery request to which the party failed or refused to respond as being established for purposes of the proceeding in accordance with the contentions of the party seeking discovery. In addition, enforcement by any district court of the United States in which venue is proper may be sought as appropriate.

§ 785.9 Subpoenas.

(a) *Issuance.* Upon the application of any party, supported by a satisfactory showing that there is substantial reason to believe that the evidence would not otherwise be available, the ALJ may issue subpoenas to any person requiring the attendance and testimony of witnesses and the production of such books, records or other documentary or physical evidence for the purpose of the hearing, as the ALJ deems relevant and material to the proceedings, and reasonable in scope. Witnesses shall be paid the same fees and mileage that are paid to witnesses in the courts of the United States. In case of contempt, challenge or refusal to obey a subpoena served upon any person pursuant to this paragraph, any district court of the United States, in which venue is proper, has jurisdiction to issue an order requiring any such person to comply with a subpoena. Any failure to obey an order of the court is punishable by the court as a contempt thereof.

(b) *Service.* Subpoenas issued by the ALJ may be served by any of the methods set forth in § 785.6(b) of the APR.

(c) *Timing.* Applications for subpoenas must be submitted at least 10 business days before the scheduled hearing or deposition, unless the ALJ determines, for good cause shown, that extraordinary circumstances warrant a shorter time.

§ 785.10 Matters protected against disclosure.

(a) *Protective measures.* The ALJ may limit discovery or introduction of evidence or issue such protective or other orders as in the ALJ's judgment may be needed to prevent undue disclosure of classified or sensitive documents or information. Where the ALJ determines that documents containing classified or sensitive matter must be made available to a party in order to avoid prejudice, the ALJ may direct the other party to prepare an unclassified and nonsensitive summary or extract of the documents. The ALJ may compare the extract or summary with the original to ensure that it is supported by the source document and that it omits only so much as must remain undisclosed. The summary or extract may be admitted as evidence in the record.

(b) *Arrangements for access.* If the ALJ determines that the summary procedure outlined in paragraph (a) of this section is unsatisfactory, and that classified or otherwise sensitive matter must form part of the record in order to avoid prejudice to a party, the ALJ may provide the parties with the opportunity to make arrangements that permit a party or a representative to have access to such matter without compromising sensitive information. Such arrangements may include obtaining security clearances or giving counsel for a party access to sensitive information and documents subject to assurances against further disclosure, including a protective order, if necessary.

§ 785.11 Prehearing conference.

(a) On the ALJ's own motion, or on request of a party, the ALJ may direct the parties to participate in a prehearing conference, either in person or by telephone, to consider:

(1) Simplification of issues;

(2) The necessity or desirability of amendments to pleadings;

(3) Obtaining stipulations of fact and of documents to avoid unnecessary proof; or

(4) Such other matters as may expedite the disposition of the proceedings.

(b) The ALJ may order the conference proceedings to be recorded electronically or taken by a reporter, transcribed and filed with the ALJ.

(c) If a prehearing conference is impracticable, the ALJ may direct the parties to correspond with the ALJ to achieve the purposes of such a conference.

(d) The ALJ will prepare a summary of any actions agreed on or taken pursuant to this section. The summary will include any written stipulations or agreements made by the parties.

§ 785.12 Hearings.

(a) *Scheduling.* Upon receipt of a valid request for a hearing, the ALJ shall, by agreement with all the parties or upon notice to all parties of at least 30 calendar days from the date of receipt of a request for a hearing, schedule a hearing. All hearings will be held in Washington, DC, unless the ALJ determines, for good cause shown, that another location would better serve the interest of justice.

(b) *Hearing procedure.* Hearings will be conducted in a fair and impartial manner by the ALJ. All hearings will be closed, unless the ALJ for good cause shown determines otherwise. The rules of evidence prevailing in courts of law do not apply, and all evidentiary material deemed by the ALJ to be relevant and material to the proceeding and not unduly repetitious will be received and given appropriate weight, except that any evidence of settlement which would be excluded under Rule 408 of the Federal Rules of Evidence is not admissible. Witnesses will testify under oath or affirmation, and shall be subject to cross-examination.

(c) *Testimony and record.* (1) A verbatim record of the hearing and of any other oral proceedings will be taken by reporter or by electronic recording, and filed with the ALJ. If any party wishes to obtain a written copy of the transcript, that party shall pay the costs of transcription. The parties may share the costs if both want a transcript.

(2) Upon such terms as the ALJ deems just, the ALJ may direct that the testimony of any person be taken by deposition and may admit an affidavit or report as evidence, provided that any affidavits or reports have been filed and served on the parties sufficiently in advance of the hearing to permit a party to file and serve an objection thereto on the grounds that it is necessary that the affiant or declarant testify at the hearing and be subject to cross-examination.

(d) *Failure to appear.* If a party fails to appear in person or by counsel at a scheduled hearing, the hearing may nevertheless proceed. The party's failure to appear will not affect the validity of the hearing or any proceeding or action taken thereafter.

§ 785.13 Procedural stipulations.

Unless otherwise ordered and subject to § 785.14 of the APR, a written stipulation agreed to by all parties and filed with the ALJ will modify the procedures established by this part.

§ 785.14 Extension of time.

The parties may extend any applicable time limitation by stipulation filed with the ALJ before the time limitation expires, or the ALJ may, on the ALJ's own initiative or upon application by any party, either before or after the expiration of any applicable time limitation, extend the time, except that the requirement that a hearing be demanded within 15 calendar days, and the requirement that a final agency decision be made within 60 calendar days, may not be modified.

§ 785.15 Post-hearing submissions.

All parties shall have the opportunity to file post-hearing submissions that may include findings of fact and conclusions of law, supporting evidence and legal arguments, exceptions to the ALJ's rulings or to the admissibility of evidence, and orders and settlements.

§ 785.16 Decisions.

(a) *Recommended decision and order.* After considering the entire record in the case, the ALJ will issue a recommended decision based on a preponderance of the evidence. The decision

will include findings of fact, conclusions of law, and a decision based thereon as to whether the respondent has violated the Act. If the ALJ finds that the evidence of record is insufficient to sustain a finding that a violation has occurred with respect to one or more allegations, the ALJ shall order dismissal of the allegation(s) in whole or in part, as appropriate. If the ALJ finds that one or more violations have been committed, the ALJ shall issue an order imposing administrative sanctions.

(b) *Factors considered in assessing penalties.* In determining the amount of a civil penalty, the ALJ shall take into account the nature, circumstances, extent and gravity of the violation(s), and, with respect to the respondent, the respondent's ability to pay the penalty, the effect of a civil penalty on the respondent's ability to continue to do business, the respondent's history of prior violations, and such other matters as justice may require.

(c) *Referral of recommended decision and order.* The ALJ shall immediately issue and serve the recommended decision (and order, if appropriate) to the Office of Chief Counsel, at the address in §785.6(b) of the APR, and to the respondent, by courier delivery or overnight mail. The recommended decision and order will also be referred to the head of the designated executive agency for final decision and order.

(d) *Final decision and order.* The recommended decision and order shall become the final agency decision and order unless, within 60 calendar days, the Secretary of Commerce, or a designated United States Government official, modifies or vacates it, or unless an appeal has been filed pursuant to paragraph (e) of this section.

(e) *Appeals.* The respondent may appeal the final agency decision within 30 calendar days after the date of certification. Petitions for appeal may be filed in the Court of Appeals for the District of Columbia Circuit or in the Court of Appeals for the district in which the violation occurred.

§785.17 Settlement.

(a) *Settlements before issuance of a NOVA.* When the parties have agreed to a settlement of the case prior to issuance of a NOVA, a settlement proposal consisting of a settlement agreement and order will be submitted to the Assistant Secretary for Export Enforcement for approval and signature. If the Assistant Secretary does not approve the proposal, he/she will notify the parties and the case will proceed as though no settlement proposal has been made. If the Assistant Secretary approves the proposal, he/she will issue an appropriate order, and no action will be required by the ALJ.

(b) *Settlements following issuance of a NOVA.* The parties may enter into settlement negotiations at any time during the time a case is pending before the ALJ. If necessary, the parties may extend applicable time limitations or otherwise request that the ALJ stay the proceedings while settlement negotiations continue. When the parties have agreed to a settlement of the case, the Office of Chief Counsel will recommend the settlement to the Assistant Secretary for Export Enforcement, forwarding a proposed settlement agreement and order, which the Assistant Secretary will approve and sign. If a NOVA has been filed, the Office of Chief Counsel will send a copy of the settlement proposal to the ALJ.

(c) *Settlement scope.* Any respondent who agrees to an order imposing any administrative sanction does so solely for the purpose of resolving the claims in the administrative enforcement proceeding brought under this Part. The government officials involved have neither the authority nor the responsibility for initiating, conducting, settling, or otherwise disposing of criminal proceedings. That authority and responsibility are vested in the Attorney General and the Department of Justice.

(d) *Finality.* Cases that are settled may not be reopened or appealed, absent a showing of good cause. Appeals and requests to reopen settled cases must be submitted to the Assistant Secretary for Export Enforcement within 30 calendar days of the execution of a settlement agreement.

§ 785.18 Record for decision.

(a) *The record.* The transcript of hearings, exhibits, rulings, orders, all papers and requests filed in the proceedings, and, for purposes of any appeal under § 785.16 of the APR, the decision of the ALJ and such submissions as are provided for under § 785.16 of the APR will constitute the record and the exclusive basis for decision. When a case is settled, the record will consist of any and all of the foregoing, as well as the NOVA or draft NOVA, settlement agreement, and order.

(b) *Restricted access.* On the ALJ's own motion, or on the motion of any party, the ALJ may direct that there be a restricted access portion of the record for any material in the record to which public access is restricted by law or by the terms of a protective order entered in the proceedings. A party seeking to restrict access to any portion of the record is responsible, prior to the close of the proceeding, for submitting a version of the document(s) proposed for public availability that reflects the requested deletion. The restricted access portion of the record will be placed in a separate file and the file will be clearly marked to avoid improper disclosure and to identify it as a portion of the official record in the proceedings. The ALJ may act at any time to permit material that becomes declassified or unrestricted through passage of time to be transferred to the unrestricted access portion of the record.

(c) *Availability of documents*—(1) *Scope.* All NOVAs and draft NOVAs, answers, settlement agreements, decisions and orders disposing of a case will be displayed on the BIS Freedom of Information Act (FOIA) Web site, at *http://www.bis.doc.gov/foia*, which is maintained by the Office of Administration, Bureau of Industry and Security, U.S. Department of Commerce. The Office of Administration does not maintain a separate inspection facility. The complete record for decision, as defined in paragraphs (a) and (b) of this section will be made available on request.

(2) *Timing.* The record for decision will be available only after the final administrative disposition of a case. Parties may seek to restrict access to any portion of the record under paragraph (b) of this section.

§ 785.19 Payment of final assessment.

(a) *Time for payment.* Full payment of the civil penalty must be made within 30 days of the effective date of the order or within such longer period of time as may be specified in the order. Payment shall be made in the manner specified in the NOVA.

(b) *Enforcement of order.* The government party may, through the Attorney General, file suit in an appropriate district court if necessary to enforce compliance with a final order issued under the APR. This suit will include a claim for interest at current prevailing rates from the date of expiration of the 60-day period referred to in § 785.16(d), or the date of the final order, as appropriate.

(c) *Offsets.* The amount of any civil penalty imposed by a final order may be deducted from any sum(s) owed by the United States to a respondent.

§ 785.20 Reporting a violation.

If a person learns that a violation of the Additional Protocol, the Act, or the APR has occurred or may occur, that person may notify: Office of Export Enforcement, Bureau of Industry and Security, U.S. Department of Commerce, 14th Street and Constitution Avenue, NW., Room H–4520, Washington, DC 20230; Tel: (202) 482–1208; Facsimile: (202) 482–0964.

PART 786—RECORDS AND RECORDKEEPING

Sec.

AUTHORITY: United States Additional Protocol Implementation Act of 2006, Pub. Law No. 109–401, 120 Stat. 2726 (December 18, 2006) (to be codified at 22 U.S.C. 8101–8181); Executive Order 13458 (February 4, 2008).

SOURCE: 73 FR 65128, Oct. 31, 2008, unless otherwise noted.

§ 786.1 Inspection of records.

Upon request by BIS, you must permit access to and copying of any record relating to compliance with the requirements of the APR. This requires

that you make available the equipment and, if necessary, knowledgeable personnel for locating, reading, and reproducing any record. Copies may be necessary to facilitate IAEA Team review of documents during complementary access. The IAEA Team may not remove these documents from the location without BIS authorization (see §784.3(j)(2) of the APR).

§ 786.2 Recordkeeping.

(a) *Requirements.* Each person and location required to submit a report or correspondence under parts 782 through 784 of the APR must retain all supporting materials and documentation used to prepare such report or correspondence.

(b) *Three year retention period.* All supporting materials and documentation required to be kept under paragraph (a) of this section must be retained for three years from the due date of the applicable report or for three years from the date of submission of the applicable report, whichever is later. Due dates for reports and correspondence are indicated in parts 782 through 784 of the APR.

(c) *Location of records.* Records retained under this section must be maintained at the location or must be accessible at the location for purposes of complementary access at the location by IAEA Teams.

(d) *Reproduction of original records.* (1) You may maintain reproductions instead of the original records, provided all of the requirements of paragraph (b) of this section are met.

(2) If you must maintain records under this part, you may use any photostatic, miniature photographic, micrographic, automated archival storage, or other process that completely, accurately, legibly and durably reproduces the original records (whether on paper, microfilm, or through electronic digital storage techniques). The process must meet all of the following requirements, which are applicable to all systems:

(i) The system must be capable of reproducing all records on paper.

(ii) The system must record and be able to reproduce all marks, information, and other characteristics of the original record, including both obverse and reverse sides (unless blank) of paper documents in legible form.

(iii) When displayed on a viewer, monitor, or reproduced on paper, the records must exhibit a high degree of legibility and readability. For purposes of this section, legible and legibility mean the quality of a letter or numeral that enable the observer to identify it positively and quickly to the exclusion of all other letters or numerals. Readable and readability mean the quality of a group of letters or numerals being recognized as complete words or numbers.

(iv) The system must preserve the initial image (including both obverse and reverse sides, unless blank, of paper documents) and record all changes, who made them and when they were made. This information must be stored in such a manner that none of it may be altered once it is initially recorded.

(v) You must establish written procedures to identify the individuals who are responsible for the operation, use and maintenance of the system.

(vi) You must keep a record of where, when, by whom, and on what equipment the records and other information were entered into the system.

(3) *Requirements applicable to a system based on digital images.* For systems based on the storage of digital images, the system must provide accessibility to any digital image in the system. The system must be able to locate and reproduce all records according to the same criteria that would have been used to organize the records had they been maintained in original form.

(4) *Requirements applicable to a system based on photographic processes.* For systems based on photographic, photostatic, or miniature photographic processes, the records must be maintained according to an index of all records in the system following the same criteria that would have been used to organize the records had they been maintained in original form.

§ 786.3 Destruction or disposal of records.

If BIS or any other authorized U.S. government agency makes a formal or informal request for a certain record or records, such record or records may not

be destroyed or disposed of without the written authorization of the requesting entity.

PARTS 787–799 [RESERVED]