

irradiated nuclear reactor fuel, which are capable of withstanding hot, highly corrosive liquids, and which can be remotely loaded and maintained;

- c. Counter-current solvent extractors and ion-exchange processing equipment specially designed or prepared for use in a plant for the reprocessing of irradiated natural uranium, depleted uranium or special and other fissile materials;
- d. Process control instrumentation specially designed or prepared for monitoring or controlling the reprocessing of irradiated source and special and other fissile materials.

NOTE:

A plant for the reprocessing of irradiated nuclear reactor fuel elements includes equipment and components which normally come into direct contact with and directly control the irradiated fuel and the major nuclear material and fission product processing streams.

3103. Nuclear reactors, i.e., reactors capable of operation so as to maintain a controlled, self-sustaining fission chain reaction, and equipment and components specially designed or prepared for use in connection with a nuclear reactor, including:

3103. a. Pressure vessels, i.e., 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 and are capable of withstanding the operating pressure of the primary coolant, including the top plate for a reactor pressure vessel;
- b. Fuel element handling equipment, including reactor fuel charging and discharging machines;
- c. Control rods, i.e., rods specially designed or prepared for the control of the reaction rate in a nuclear reactor, including the neutron absorbing part and the support or suspension structures therefor, and control rod guide tubes;
- d. Electronic controls for controlling the power levels in nuclear reactors, including reactor control rod drive mechanisms and radiation detection and measuring instruments to determine neutron flux levels;
- e. Pressure tubes, i.e., tubes specially designed or prepared to contain fuel elements and the primary coolant in a nuclear reactor at an operating pressure in excess of 50 bars (atmospheres);
- f. Coolant pumps, i.e., pumps specially designed or prepared for circulating the primary coolant of nuclear reactors;
- g. Internals specially designed or prepared for the operation of a nuclear reactor, including but not limited to core support structures, thermal shields, baffles, core grid plates and diffuser plates;
- h. Heat exchangers.

NOTES:

1. Each Government will use its discretion in determining whether or not a component is specially designed or prepared for use in connection with a nuclear reactor.
2. Governments may permit, as administrative exceptions, the shipment of water-cooled and moderated civil nuclear power reactors, including major components therefor and initial shipments of fuel and moderators therefor, provided:
 - a. The reactor is designed to use uranium fuel of 20% or less enrichment;
 - b. Fuel to be provided shall be uranium of 20% or less enrichment;
 - c. The reactor is not designed for marine propulsion.

(For "software", see Item 3301.)

3104. Plants specially designed for the fabrication of nuclear reactor fuel elements and specially designed equipment therefor.

NOTE:

A plant for the fabrication of nuclear reactor fuel elements includes equipment which:

- a. normally comes into direct contact with or directly processes or controls the production flow of nuclear materials;
- b. seals the nuclear material within the cladding;
- c. checks the integrity of the cladding or the seal; *and*
- d. checks the finish treatment of the solid fuel.

3105. Plants for the production of heavy water, deuterium or deuterium compounds, and specially designed or prepared equipment and components therefor, as follows:

3105. a. Plants for the production of heavy water, deuterium or deuterium compounds, as follows:
 1. Hydrogen sulphide-water exchange plants;
 2. Ammonia-hydrogen exchange plants;
 3. Hydrogen distillation plants;
- b. Equipment and components, as follows, specially designed or prepared for:
 1. Hydrogen sulphide-water exchange process:
 - a. Tray exchange towers;
 - b. Hydrogen sulphide gas compressors;
 2. Ammonia-hydrogen exchange process:
 - a. High-pressure ammonia-hydrogen exchange towers;
 - b. High-efficiency stage contactors;
 - c. Submersible stage recirculation pumps;
 - d. Ammonia crackers designed for pressures of more than 3×10^6 pascal (30 bar);
 3. Hydrogen distillation process:
 - a. Hydrogen cryogenic distillation towers and cold boxes designed for operation below 35 K;
 - b. Turboexpanders or turboexpander-compressor sets designed for operation below 35 K;
 4. Concentration of heavy water to reactor grade (99.75 % deuterium oxide):
 - a. Water distillation towers containing specially designed packings;
 - b. Ammonia distillation towers containing specially designed packings;
 - c. Catalytic burners for conversion of fully enriched deuterium to heavy water;
 - d. Infrared absorption analysers capable of on-line hydrogen-deuterium ratio analysis where deuterium concentrations are equal to or more than 90 %.

3106. Plants for the production of uranium hexafluoride (UF₆) and specially designed or prepared equipment and components therefor, as follows:

3106. a. Plants for the production of UF₆ ;
- b. Equipment and components, as follows, specially designed or prepared for UF₆ production:
 1. Fluorination and hydrofluorination screw and fluid bed reactors and flame towers;
 2. Distillation equipment for the purification of UF₆.

C. NUCLEAR-RELATED EQUIPMENT

3201. Neutron generator systems, including tubes, designed for operation without an external vacuum system and utilising electrostatic acceleration to induce a tritium-deuterium nuclear reaction.

NOTE:

Governments may permit, as administrative exceptions, the shipment of tubes and systems covered by this Item, provided:

- a. They are for civil use;
- b. The Government of the exporting country has previously submitted details of such equipment to the Committee, who have agreed that it should be eligible for administrative exception treatment. The Committee shall reach a final decision on each application within 45 days of the receipt of a detailed data sheet, including a complete technical description. Questions may be raised up to the 30th day inclusive and the 45-day period will be suspended from the time when questions are raised until answers are received thereto.

N.B.:

The following tubes and systems, specifically described in the documents referenced below and with the characteristics set forth therein and in the accompanying brochures, are eligible for administrative exception treatment under this Note:

Neutron generator tube type 18600

(See Doc. 4215.58/5)

Elliot Hiletron fast neutron radio therapy equipment

Elliot P type neutron generator and corresponding tube