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COMMUNICATION RECEIVED FROM CERTAIN MEMBER STATES REGARDING GUIDELINES FOR THE EXPORT OF NUCLEAR MATERIAL, EQUIPMENT AND TECHNOLOGY

Nuclear Transfers

1. The Director General has received notes verbales dated 17 October 1996 from the Resident Representatives to the Agency of Argentina, Australia, Austria, Belgium, Bulgaria, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, the Republic of Korea, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, the Russian Federation, the Slovak Republic, South Africa, Spain, Sweden, Switzerland, Ukraine, the United Kingdom of Great Britain and Northern Ireland, and the United States of America relating to the export of nuclear material, equipment and technology. The Director General has received a similar note verbale dated 30 July 1997 from the Resident Representative to the Agency of Brazil.

2. The purpose of the notes verbales is to provide further information on those Governments' Guidelines for Nuclear Transfers.

3. In the light of the wish expressed at the end of each note verbale, the text of the notes verbales is enclosed. The attachment to these notes verbales is also reproduced in full in the enclosure.

*/ INFCIRC/254/Rev.2/Part 2/Mod.1 contains Guidelines for Transfers of Nuclear-related Dual-use Equipment, Material and related Technology.

5.2. Especially 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 UF_6 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' UF_6 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 Fee systems/product and tails withdrawal systems

Especially 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 UF_6 into containers.

This plant, equipment and pipework is wholly made of or lined with UF6-resistant materials (see EXLPANATORY NOTE to this section) and is fabricated to very high vacuum and cleanliness standards.

5.2.2. Machine header piping systems

Especially 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 EXLPANATORY NOTE to this section) and is fabricated to very high vacuum and cleanliness standards.

5.2.3. UF6 mass spectrometers/ion sources

Especially 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:

1. Unit resolution for atomic mass unit greater than 320;
2. Ion sources constructed of or line with nichrome or monel or nickel plated;
3. Electron bombardment ionization sources;
4. Having a collector system suitable for isotopic analysis.

5.2.4. Frequency changers

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

1. A multiphase output of 600 to 2000 Hz;

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

3. Low harmonic distortion (less than 2%); and

4. An efficiency of greater than 80%.

EXPLANATORY NOTE

The items listed above 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 UF6 include stainless steel, aluminium, aluminium alloys, nickel or alloys containing 60% or more nickel.