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THE CONTROL OF THE PEACEFUL USES OF ATOMIC ENERGY

Plans announced by major industrial countries show that there will be an enormous increase in nuclear power development in the 1970s. The United States have announced that they are likely to have 150,000 MW of installed nuclear power stations by 1980. Britain is likely to have installed at least 20,000 MW and Western European countries at least 30,000 MW.

There is likely to be a concurrent development of uranium fuel fabrication and reprocessing plants devoted to the Civil Development of Nuclear Power.

The time is, therefore, ripe to consider the future of the control of the Peaceful Uses of Atomic Energy and to envisage how the control and safeguards system is likely to develop, bearing in mind that when several hundred nuclear power stations are in operation throughout the world it will be essential to develop the safeguards system in a way that interferes as little as possible with normal operational procedures and commercial practice.

The sole objective of the control of the Peaceful Uses of Atomic Energy is to prevent the diversion of fissile material from civil nuclear power programmes to military purposes. The fissile materials of importance are Pu-239, U-235 and U-233 (the latter not being of significance at the present time).

Two types of control are to be distinguished:

- (a) Safeguards advocated by the International Atomic Energy Agency in accord with its Statute of October 1956, viz:
"..... to ensure that special fissionable and other materials under its supervision or control are not used in such a way as to further any military purpose";
- (b) Safeguards referred to in drafts of the proposed Non-Proliferation Treaty which seeks to prevent the proliferation of nuclear weapons.

Pu-239 is bred from U-238 in the fuel elements of practically all types of reactors, the amount bred per megawatt-year of electrical power ranging from about 0.2 kg in the case of light water cooled enriched uranium reactors, to 0.5 kg in the case of natural uranium fuelled reactors - assuming an 80 per cent operating time. The potential plutonium outputs of reactors planned to be in operation in 1970 are given in Table 1.