

# SAFEGUARDS FOR LARGE REACTORS

The IAEA Board of Governors, during its series of meetings last June, provisionally approved an extension of the Agency's safeguards system to nuclear reactors of 100 or more thermal megawatts and decided to submit the relevant procedures to the seventh regular session of the General Conference "for its consideration and appropriate action". The Board also decided that a general review of the whole safeguards system should be undertaken in 1964, with special attention to the provisions relating to the attachment of safeguards to equipment.

The extension would mean that Agency safeguards against the diversion to military ends of atomic materials and facilities would be applicable not only to small research and experimental reactors but also to large nuclear power plants.

The safeguards system, which has hitherto been applicable only to reactors with a thermal output of less than 100 MW, to nuclear material used and produced in these reactors and to small research and development facilities, came into effect after having been discussed at the fourth regular session of the General Conference in September 1960 and subsequently finalized by the Board in January 1961. A summary of the main principles and procedures of that system was published in this Bulletin in January 1961.

It was stated at that time that procedures covering other types of nuclear facilities would be developed as the need arose. Draft proposals for the extension of the safeguards to reactors of 100 or more thermal megawatts were considered by a special working group of expert representatives from eight countries who met in Vienna in February this year under the chairmanship of Dr. Gunnar Randers of Norway. (Apart from Dr. Randers, the members of the group were from Brazil, the Czechoslovak Socialist Republic, France, India, the USSR, the United Kingdom and the USA.) After a detailed study of certain proposals made by the Director General, a majority of the members of this group agreed on new provisions to extend the safeguards system to large reactor facilities.

It was felt that in order to extend the system to large reactors, it was not necessary to make extensive changes in the safeguards document already in force; what was mainly needed was to define large reactor facilities and to indicate which parts of the existing system should apply to them. This was done in the form of a draft addendum to the existing document and it is this draft addendum which has been submitted to the General Conference.

In an introduction to the addendum it is stated that the provisions of the existing safeguards system, except one or two specified sections, will also apply

to reactors of 100 or more thermal megawatts and to the source and special fissionable material\* used or produced in them. For these large reactor facilities, certain additional provisions have now been set forth. These are briefly summarized below.

The provisions for the attachment of safeguards will relate to all generations of special fissionable material produced in a large reactor facility. When safeguards are not attached to the facility itself, they will be attached to such fraction of the special fissionable material produced in it as equals the ratio of the fissionable isotopes present in the safeguarded material to the total amount of fissionable isotopes in the reactor. If this ratio is greater than 0.3, safeguards will be attached to all such material produced in the reactor.

As regards submission of reports and inspections, it is stated that the required frequency of routine reports for a large reactor facility will not exceed 12 a year. If requested, the State concerned will make available to the Agency progress reports on the construction of a large reactor facility; not more than four such reports will be required annually. The maximum frequency of routine inspections during and after the construction of a large facility will be as shown in the existing safeguards document or obtained by extrapolation from it. If such extrapolation indicates a frequency of more than 12 a year, the Agency's inspectors will have access to the facility at all times.

The Statute, which authorizes the Agency to establish and administer safeguards to ensure that its assistance is not used to further any military purpose, also provides that if requested it may apply safeguards to a State's own nuclear activities or to a bilateral agreement between two States. Last year the United States placed four of its reactors under the Agency's safeguards system. According to a decision taken in June this year, the safeguards provisions of the bilateral agreement between the United States and Japan for co-operation in the peaceful uses of atomic energy will now be administered by the Agency. An agreement to this effect negotiated between the Agency, Japan and the United States was approved by the Agency's Board of Governors during its June meetings. This agreement, it was pointed out, was the first of its kind, and during the discussion in the Board several Governors referred to it as a "break-through" in the international control of atomic energy for exclusively peaceful purposes.

\* Special fissionable material includes uranium-235, uranium-233, plutonium and enriched uranium, as distinct from source material which includes natural uranium, thorium and uranium depleted of its fissile isotope.