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## CONTROLS OVER ATOMS-FOR-PEACE: SOME FACTS AND IMPLICATIONS FOR NUCLEAR DISARMAMENT\*

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One of the pressing exigencies of our time has been the establishment of international control procedures to assure that the immense power of the atom will not be unleashed for global destruction but will serve the peaceful pursuits of mankind. The finding of a generally accepted scheme has been greatly hampered by the well-known political, ideological, and other differences which divide the world arena today.

Thwarted in their efforts to achieve nuclear disarmament, Western and, in particular, American policy makers, set out to attain more limited goals, such as the conclusion of international control agreements to ensure that atoms destined for peaceful purposes will not be diverted to military uses. It was hoped that such procedure would keep the door open toward atomic industrial progress without enhancing the chances of proliferation of nuclear weapons. It was also hoped that the setting up of controls over the civilian applications of atomic energy would constitute a helpful step in creating institutions and practices which might be conducive to the eventual establishment of international controls over its military uses. The expected *quid pro quo* in terms of nuclear assistance, technological advancement and other benefits has made acceptance of foreign control procedures more palatable to many nations.

International control over atoms destined for peaceful purposes constitutes a large and complex order. If we look at the panorama of institutional arrangements, we find broad variations in regard to over-all structure, historical background, purpose, allocation of authority, methods and achievements.

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The control systems are incorporated in a network of international bilateral accords<sup>1</sup> as well as international multilateral agreements, such as those establishing the International Atomic Energy Agency (IAEA),<sup>2</sup> the European Atomic Energy Community (Euratom),<sup>3</sup> the European Nuclear Energy Agency (ENEA) of the Organization of European Economic Cooperation (OEEC), now known as the Organization of Economic Cooperation and Development (OECD).<sup>4</sup>

It has been said, with some justification, that no geographer in his right mind would have ever invented what used to be known as the British Commonwealth of Nations. As a parallel, perhaps it is not entirely inappropriate to observe that no lawyer would have likely devised the existing framework of international control systems over the peaceful uses of atomic energy with their manifold multiplications, especially with regard to their membership and their intricate differentiations in terms of the authority they exercise over certain designated people, resources, and institutions.

At the present time, international control in the field of atomic energy is still in its infancy due not only to the obvious fact that man's use of the atom is itself of a relatively recent origin but also to the fact that the establishment of such control over its military uses met with serious, if not insurmountable, obstacles in view of national rivalries, and security and defense

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1. Detailed discussions of the bilateral control systems may be found in Gorove, *Controls Over Atoms-for-Peace: U.S. Bilateral Agreements with other Nations*, 4 COL. J. TRANSNAT'L L. 181 (1966); Gorove, *Controls Over Atoms-for-Peace Under Canadian Bilateral Agreements with Other Nations*, 42 DENVER L. CENTER J. 41 (1965); Gorove, *Safeguarding Atoms-for-Peace: U. K. Bilateral Agreements with Other Nations*, 68 W. VA. L. REV. 263 (1966); Seaborg, *Existing Arrangements for International Control of Warlike Material—5: the United States Program of Bilateral Safeguards*, 2 DISARMAMENT & ARMS CONTROL 442 (1964).

2. For background information as well as recent appraisals, see Bechhoefer & Stein, *Atoms for Peace*, 55 MICH. L. REV. 747 (1957); Gorove, *Humanizing the Atom: Establishment of the International Atomic Energy Agency*, 3 N.Y.L.F. 245 (1957); Simsarian, *Inspection Experience Under the Antarctic Treaty and the International Atomic Energy Agency*, 60 AM. J. INT'L L. 502 (1966); Willrich, *Safeguarding Atoms for Peace*, 60 AM. J. INT'L L. 34 (1966).

3. A comprehensive account and evaluation of Euratom's control machinery is presented in Gorove, *The First Multinational Atomic Inspection and Control System at Work: Euratom's Experience*, 18 STAN. L. REV. 160 (1965). For briefer assessments, see Gorove, *Lessons From the Control of the Peaceful Uses of Atomic Energy in Euratom*, 1964 PROCEEDINGS OF THE AM. SOC'Y OF INT'L L. 136; VAN HELMONT, LE CONTRÔLE D'EURATOM, EXPOSÉ FAIT À L'ASSOCIATION ALLEMANDE DE POLITIQUE EXTÉRIEURE À BONN (Feb. 22, 1963, mimeo.).

4. For an informative article on ENEA's security control system, see Vignes, *Le Système de Contrôle de Sécurité de l'Agence Européenne pour l'Energie Nucléaire*, 7 ANNUAIRE FRANÇAIS DE DROIT INTERNATIONAL 555 (1961).

considerations — the paramount factors which determine nation-state policies in this age of ours. To these same factors we must also attribute the current, severe limitations on the purpose and scope of application of international controls over the peaceful uses of atomic energy.

The various control systems which have come into existence not only reveal some striking parallels but also exhibit many curious dissimilarities. While the over-all objective of safeguards is generally the prevention of diversion of designated items from peaceful to military purposes, the criteria distinguishing such purposes or uses have not been circumscribed. However, many bilateral agreements, as well as some IAEA discussions, have borne out the changing nature and relativity of such criteria and have provided certain clues for their determination, in addition to ENEA's limited delineation, according to which military purpose includes the use of special fissionable materials in weapons of war and excludes their use in reactors for the production of electricity and heat or for propulsion.<sup>5</sup>

Apart from the general aim of assuring nondiversion from peaceful to military purposes, international control frequently has such concomitant lesser objectives as the prevention of losses and unauthorized transfer of materials, the nonalteration of irradiated fuel elements' form and content, the approval of reprocessing, and the return of fuel to the supplying party.<sup>6</sup>

In case of the ENEA, control applies basically only to the operation of joint undertakings and to materials, equipment, facilities, and services which are made available by the agency or under its supervision.<sup>7</sup> The IAEA control system is even more restricted, applying primarily only to cases where assistance is provided by the agency or at its request, or under its supervision.<sup>8</sup> It is, of course, possible both in the ENEA of OECD and in the IAEA to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or to any activities of a requesting state in the field of atomic energy.<sup>9</sup>

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5. See art. 17 of the Convention on the Establishment of a Security Control in the Field of Nuclear Energy of Dec. 20, 1957 [hereinafter cited as Security Control Convention], reprinted in 53 AM. J. INT'L L. 1018, 1025 (1959).

6. See, for instance, Gorove, *Controls Over Atoms-for-Peace: U.S. Bilateral Agreements with Other Nations*, 4 COL. J. TRANSNAT'L L. 181, 186, 187, 191 (1966).

7. Security Control Convention art. 1(a).

8. Stat. Int'l Atomic Energy Agency [hereinafter cited as IAEA Stat.], art. III, ¶ A(5).

9. Security Control Convention, art. 1(b); IAEA Stat. art. III, ¶ A(5).

Euratom, in a sense, constitutes an exceptional system in that it pledges to ensure nondiversion of materials from peaceful to military uses basically only if the community entered into an agreement to this effect with a third country or an international organization, or in the case where the user, whose declared intention was peaceful utilization, failed to notify the agency of his change of purpose and actually used the materials for military objectives. Apart from this, the purpose of Euratom's safety control is to satisfy itself that ores, source materials and special fissionable materials are not diverted from their intended uses (whatever these uses may be) as stated by the users.<sup>10</sup>

Furthermore, the system applied by the community specifically excludes control of any materials which are intended for the purposes of defense insofar as they are in the course of being specially prepared for such purposes or which, after being so prepared, are, in accordance with an operational plan, installed, or stocked in a military establishment.<sup>11</sup> Within these general limitations, however, the safety network of Euratom is broader in coverage than its ENEA and IAEA counterparts since the control applies to all other atomic undertakings of the member states.<sup>12</sup>

The control systems reveal substantial differences in terms of the composition of the various organs as well as in terms of the degree and complexity of the formal and effective control exercised by them. The wide gamut of variables has been brought about by the peculiar characteristics of each machinery and the circumstances in which each system was born. On the other hand, except in those few cases where there is sufficient confidence among the parties to justify a simple written pledge, the regular control methods employed by the supervising bodies — such as the examination of the design of installations, the maintenance of accounting records, the transmission of periodic reports and on-the-spot inspection — exhibit more similarities than differences.<sup>13</sup> The reason for this must be sought in the

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10. Art. 77 of the Treaty Establishing the European Atomic Energy Community (Euratom), 298 U.N.T.S. 171, substantially reproduced in 51 AM. J. INT'L L. 955 (1957) [hereinafter cited as Treaty].

11. Treaty art. 84.

12. For details, see Gorove, *The First Multinational Atomic Inspection and Control System at Work: Euratom's Experience*, 18 STAN. L. REV. 160, 164 (1965).

13. Examples of bilateral agreements which contain no control provisions but satisfy themselves with a mere written pledge may be found in Gorove, *Controls Over Atoms-for-Peace: U.S. Bilateral Agreements with Other Nations*, 4 COL. J. TRANSNAT'L L. 181, 189 (1966).

fact that the various types of control have been patterned after the bilaterals which, in turn, have aimed at eventual consistency with the safeguards procedures of the IAEA. This was the result of advance planning and coordination, prompted not only by enlightened United States leadership but by the equally enlightened readiness of other powers to follow suit.<sup>14</sup>

The actual application and choice of the particular control procedures depends greatly on the nature and amount of materials involved, the scope and character of each project, the chances of diversion, the techniques available for detecting violations, the cooperation of the receiving authorities, and many other factors, such as the type of installations involved and even considerations of moderation and balancing of interests.

All control systems seem to have been set up with a realization of the fact that where the possibility of violation is great and the expected advantage is substantial, the need for rigorous efforts of detection is most imperative.

While stringent safeguards over nuclear materials and facilities are likely to reduce the chances of diversion, available evidence seems to indicate that there is no completely foolproof system in existence which would automatically guarantee the detection of all evasions at once, a fact which all international security controls over the peaceful uses of atomic energy have taken into account. To be sure, new devices may revolutionize the art of detection, but it is impossible to place and keep inspectors all the time at locations where fraud may be perpetrated and, even then, the element of human fallibility would remain.

On the whole, the various control systems have operated smoothly, without serious difficulties. The fact that no diversion or misuse, to my knowledge, has been discovered or reported, if such is the case, may not necessarily be due to the efficiency of the inspection and control system. In some instances, it may be due to the fact that the incentive for fraud has not been particularly great since nuclear materials are in relative abundance.

Insofar as sanctions are concerned, while most control systems require requests by the control organization for remedial steps before applying punitive measures for noncompliance, and

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14. Compare 3 *Background Material for the Review of the International Atomic Policies and Programs of the United States*, Report to the Joint Committee on Atomic Energy, 86th Cong. 2d Sess. 851 (Comm. Print 1960).

make provision for professional secrecy as well as reparation of damage, it is noteworthy that, in the IAEA, unlike Euratom or the ENEA, only the recipient state can challenge the decisions of the international control authority and invoke, if necessary, the disputes procedure provided for in the IAEA Statute or in the relevant agreement.<sup>15</sup> In the bilateral agreements there are no provisions included for arbitral or judicial settlement, largely because disputes have not been regarded as amenable to such procedures.<sup>16</sup>

Turning to an evaluation of international control over the peaceful uses of atomic energy, it appears, on the one hand, that its fundamental purpose — the slowing down of proliferation of nuclear arms — has been an intermediary and negative concept short of a better solution acceptable to all states concerned. On the other hand, the acceptance by many nations of the bilaterals and, subsequently, in many cases, of the regional and IAEA safeguards, seems to constitute a significant wedge in the formerly impregnable wall of sovereignty.

One lesson from Euratom's experience which may have some implications for disarmament is that, even in such a closely knit regional group as the community — composed of states having similar backgrounds, with many common interests and strong economic affiliations — controls could only be extended to areas not touching upon vital national security interests, which still seem to be the most significant impediments in the way of acceptance of such controls. Thus it has not been possible to set up an all-embracing control system to ensure exclusively peaceful uses of the atom or to surrender ultimate control enforcement to the community.

In most general terms, the case of international control over the peaceful uses of atomic energy seems to underscore five essential points, namely, that progress in this sensitive area is likely to be made: (1) if national security interests are not adversely affected; (2) if there are some tangible incentives, actual or potential, present to counterbalance deterrents; (3) if carefully chosen and extremely limited objectives are set; (4) if a delicate organizational and operational network of checks

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15. Consult IAEA Stat. art. XVII, ¶ (A); Treaty, art. 83(2), ¶ 3, art. 144(b), art. 146, art. 148, ¶ 3; Security Control Convention, art. 13(a).

16. See, for instance, Gorove, *Controls Over Atoms-for-Peace Under Canadian Bilateral Agreements With Other Nations*, 42 DENVER L. CENTER J. 41, 48 (1965).

and balances is conceived by a careful allocation of the various types and degrees of authority in terms of people, resources (values) and institutions; (5) if solutions are attempted on a step-by-step basis.

Should some progress be made with regard to a more general acceptance of international control (even a Euratom-type of "conformity" control) over some or all peaceful nuclear materials, or with regard to the transfer of such materials, this would undoubtedly constitute a significant development, even though such an eventuality would still be a far cry from permitting similar controls over nuclear materials destined for military purposes. This impelling truism, which has been reinforced by Euratom's experience, should put us on guard not to underestimate the challenging difficulties which are likely to beset any attempt to achieve controlled disarmament, particularly in the nuclear field.

In sum, it would appear that the various international control systems which have sprung into being have not only made many nations accustomed to the formerly unpalatable idea and practice of international inspection, but have also provided an invaluable testing ground for the concrete assessment of techniques and procedures of international verification in a highly complex and extremely sensitive area. Thereby, they have laid the foundations for institutional patterns and experiences which appropriate disarmament arrangements providing for international verification could ill-afford to disregard.