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International Cooperation in the Peaceful Uses of Atomic Energy

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INTERNATIONAL COOPERATION IN THE PEACEFUL USES OF ATOMIC ENERGY

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Five years before this manuscript was written, the subject of international cooperation in the peaceful uses of atomic energy could scarcely have sustained more than a few short paragraphs. At that time, little attention was being given to the atom's peaceful uses, even domestically. Much of the relevant learning in the United States was still restricted by law to persons who had been thoroughly investigated and cleared. Legal barriers to communication across national lines were so high that furnishing Norway with a tiny quantity of the radioactive isotope iron 59 for metallurgical research had led to a divided vote in the AEC. Later this action had provided one of the counts in the charge of "incredible mismanagement" which Senator Hickenlooper leveled against the AEC when the Joint Committee on Atomic Energy investigated it in 1949.[1]

Today cooperation in the peaceful uses of atomic energy is occurring under bilateral agreements between the major atomic powers—the United States, the United Kingdom, and the Soviet Union—and many other nations. Schemes of cooperation on a regional basis are well advanced in Europe and are emerging elsewhere. A new international agency with an almost world-wide constituency, Communist China being the chief omission, has come into being. After a three-year interval, the second of two great international conferences for the exchange of knowledge concerning nuclear fission and thermonuclear fusion was held in Geneva in the past summer. At Geneva, American scientists went to great lengths to lay bare their scientific and technological discoveries, even—or perhaps especially—with respect to thermonuclear fusion. Restricted data on non-military matters are still not unknown, but their existence now interposes few obstacles to the dissemination of atomic knowledge or the sale of atomic equipment.

Yet the picture of harmonious international interchange can easily be overdrawn. The developments noted above have taken place during the unhappy period that we have aptly come to call the Cold War. The Cold War's influence on what has taken place has been pervasive, if sometimes obscure. The hope that atomic energy would come to

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1. The AEC's action was upheld by the Committee. Joint Committee on Atomic Energy, *Investigation into the United States Atomic Energy Commission*, S. REP. No. 1169, 81st Cong., 1st Sess. 41 (1949), Minority Views, S. REP. No. 1169, pt. 2, at 2, 81st Cong., 1st Sess. 2 (1949). (The dissenter in the Commission had been Commissioner Strauss.)

exert a unifying pressure on a divided world has been only partially realized.

The starting point for any account of the process of internationalizing atomic energy can well be taken as President Eisenhower's famous address to the United Nations General Assembly on December 8, 1953.[2] We have now all but forgotten that the greater part of that speech was a blood-chilling report on progress in atomic weaponry. What arrested the world's attention was the President's brief projection, at the close of his address, of an international agency devoted to furthering the peaceful uses of atomic energy and, hopefully, serving to absorb over time the nuclear stockpiles built up for military purposes.

The enthusiasm with which the President's skeletal proposal was greeted did not extend to the Soviet Union. In retrospect, the USSR's refusal to join forthwith in the task of creating the new agency appears to have been the main cause of the present lack of vitality in the only genuinely world organization that has been created for atomic purposes, the International Atomic Energy Agency. It was born too late. In the period between the President's speech and the USSR's decision to join in formulating the Agency's statute, a pattern of bilateral action was worked out, and the Atomic Energy Act of 1954 was shaped to fit it. Not only has the pattern proved acceptable; it has now been reproduced with a regional organization, Euratom, instead of a single state as a contracting party, thereby narrowing further the place for the Agency.

The danger in which the International Atomic Energy Agency now finds itself represents the chief problem to which this article can be directed; the task of describing the structures that are being erected for international cooperation must absorb most of the space available. Moreover, the treatment of any major problem in the atomic field is subject to the fact that developments concerning it are still in process. Before this manuscript is published, changes may occur to alter materially the grounds of foreboding concerning the Agency I shall report. Atomic energy affairs move at a rate better suited to the tempo of the daily press or the weekly newsletter than to that of the learned periodical.

BILATERAL COOPERATION

The United States Bilaterals: The United States does not stand alone as a sponsor of bilateral agreements for the peaceful uses of atomic energy, but its bilateral program is the furthest advanced and of most direct concern to American readers. Accordingly, since this article

2. U.N. Gen. Ass. Off. Rec. 8th Sess., Plenary 443 (A/N 470) (1953).

cannot deal in detail with all the bilateral programs, attention will be directed chiefly to the American.

Basic to our bilateral program was the United States Government's policy to spread the use of atomic energy among non-communist countries as rapidly as was consistent with economic and technological conditions and with considerations of national security. A single form of agreement could not serve for the execution of this policy since the needs of the countries with whom we wished to deal varied widely. For most of them, the immediate need was to build up a corps of knowledgeable people who could become expert in using radioisotopes, research reactors, and ultimately power reactors. For a smaller number of industrialized nations with actual or potential shortages in the conventional energy sources, the early use of atomic reactors to generate electrical energy was a practicable step. For them, a need for personnel training and research reactors also existed, but the more important objective was to secure nuclear fuel and the power reactors in which to burn it. This objective, to be sure, appeared more urgent in 1955 and 1956 than it does today when the prospect has dimmed that atomic power will shortly become competitive with fossil fuels.

The differences in national needs were reflected in two basic types of bilateral agreements: "research bilaterals" and "power bilaterals." The former proliferated in large numbers. Those negotiated before March 1956 adhered closely to the form established in the first of the series, the agreement with Turkey; those subsequently negotiated reflected some tightening in precautionary provisions.[3] The typical research bilateral called for the exchange of information (excluding "restricted data") concerning reactors, radioisotopes, and health and safety problems involved in their use and for the lease of a small quantity of enriched uranium for use in a research reactor. The maximum amount of enriched uranium which was made available under the typical research bilateral was 6 kg., plus pipeline requirements. The maximum enrichment was to be 20% except for very small amounts of more highly enriched uranium, plutonium, and U-233 for special research needs. Recently, additional amounts of highly enriched uranium have been leased for such needs to friendly nations adopting adequate safeguards against its diversion.[4]

With respect to the diversion risk and problems of health and safety, the research bilaterals have presented problems similar to those posed on a more serious scale by the power bilaterals. Therefore they will

3. For a useful compilation of the research bilaterals indicating their deviations from the two standard forms, see CCH ATOMIC ENERGY L. REP. ¶¶ 8002-8004 (1956). For a list of power bilaterals, see *id.* ¶ 8005.

4. See statement by Chairman L. L. Strauss, AEC Release No. A-92 (April 25, 1958), BNA ATOMIC INDUSTRY REP. 287:116.

not be separately considered in the following survey of problems posed by the power bilaterals.

(1) *Fuel Supply:* What has been perhaps the principal problem raised by the power bilaterals was of no concern in the case of the research bilaterals: the assurance that a sufficient quantity of enriched uranium would be provided to enable the purchasing nation to commit itself to the construction of a power reactor using enriched fuel. This problem was especially serious in view of the fact that, at the inception of the program, the United States was, and today still is, the only nation ready and willing to provide uraniuin enriched in the istotope U-235 in substantial quantities.[5]

To meet this need, President Eisenhower determined in February 1956 that 40,000 kg. of U-235 would be available for peaceful uses, and of this, 20,000 kg. could be used abroad.[6] This total, then estimated to be worth one billion dollars, was subsequently raised to 100,000 kg. with 50,000 kg. allocated for foreign use.[7]

The provision of just enough U-235 to permit a power reactor using enriched fuel to commence operation would scarcely justify the large, long-term investment entailed in building a power reactor. A country lacking assurance of a continuing supply of U-235 would be likely to choose reactors using natural, rather than enriched, uranium since the former is obtainable from a number of sources. Moreover, the British stand ready to provide efficient reactors which use natural uranium as fuel.

Our power bilaterals have met this problem by providing for the delivery of substantial quantities of enriched uranium not only initially but as the inventory is "burnt up" in the operation of the reactor.

5. In natural uranium, the fissionable isotope U-235 is present only to 0.7%; its separation is achieved by a gaseous diffusion process which calls for large and very costly plants. The United Kingdom and USSR have such plants, apparently on a much smaller scale than the American.

6. For the President's statement of Feb. 26, 1956 and an accompanying statement by AEC Chairman L. L. Strauss, see CCH ATOMIC ENERGY L. REP. ¶ 8201 (1956). The President described his determination as made pursuant to § 41.b of the Atomic Energy Act of 1954, 68 Stat. 919 (1954), 42 U.S.C. §§ 2011-2281 (Supp. III, 1956) (hereafter cited as the "Atomic Energy Act"). Section 41.b requires the President to "determine in writing at least once each year the quantities of special nuclear material to be produced under this section," and to "specify in such determination the quantities . . . to be available for distribution by the Commission pursuant to section 53 [Domestic Distribution] or section 54 [Foreign Distribution]." Since the amounts the President specified are to be made available over many years, the extent to which his 1956 determination may bind his successors is a matter of some uncertainty. Moreover, in 1957, § 54 was amended to require congressional assent to distributions to the International Atomic Energy Agency or "to any group of nations." 71 Stat. 455 (1957), 42 U.S.C. § 2074 (Supp. V, 1958).

7. For the President's statement of July 3, 1957 making additional U-235 available and an accompanying statement by AEC Chairman L. L. Strauss, see CCH ATOMIC ENERGY L. REP. ¶ 8207 (1957) (in the interim, the dollar value of U-235 has fallen substantially).

Thus, in the bilateral with the Federal Republic of Germany,[8] the United States agrees to sell or lease uranium enriched up to 20% in the isotope U-235 (the maximum amount to which enrichment can safely be carried without rendering the fuel adaptable for weapons use). We limit the amount to be transferred during the ten year period of the agreement to 2,500 kg. of contained U-235, but, in calculating that amount, we subtract from the gross amount delivered all the contained U-235 in recoverable uranium returned by Germany to the United States or its nominee. The reason for this subtraction is that the fuel elements in a reactor using enriched fuel, which must be removed from the reactor after a period of use, are too valuable to treat as waste. Instead they can be reprocessed and a substantial part of the U-235 recovered for re-use. Their reprocessing requires a costly, complex plant, and the United States may therefore continue for some time to provide reprocessing service. The U-235 thus recovered, together with plutonium and waste fission products, would, in ordinary course, be kept by the United States, an equal amount of U-235 being supplied to the "customer" state.

The fuel thus supplied by the United States is not to be given away. The price for materials sold or, if leased, for materials consumed, is fixed by law at the level charged domestic users,[9] a table of prices depending on the degree of enrichment having been issued in 1956.[10] Moreover, the AEC has set a uniform figure at which it is prepared to buy back plutonium and U-233 recovered by it in reprocessing arrangements. This figure in the case of plutonium is $12.00 per gram; in the case of U-233, $15.00 per gram, both prices being fixed with a view to the respective elements' supposed value as fuels.[11]

(2) *The Risk of Diversion:* The relaxation of the tight security policy which prevented the export of nuclear fuels has not been complete. We are still concerned lest the fuel we supply be employed either in research on nuclear weapons or as nuclear explosives. All bilaterals contain limitations on the use of the information exchanged to peaceful uses, and elaborate precautions are prescribed to prevent the diversion of the nuclear fuels that we furnish to military uses.[12] Each con-

8. For the text of this bilateral, see CCH ATOMIC ENERGY L. REP. ¶¶ 7672-85 (1957).

9. Atomic Energy Act § 54, as amended, 71 Stat. 455 (1957), 42 U.S.C. § 2074 (Supp. V, 1958).

10. AEC, *Summary of General Terms and Conditions Governing International Transactions in Special Nuclear Materials* (Nov. 18, 1956), BNA ATOMIC INDUSTRY REP. 287:114, CCH ATOMIC ENERGY L. REP. ¶ 8204 (1956).

11. *Ibid.* The price for plutonium is much lower than the "guaranteed fair prices" for domestically produced plutonium which, until July 1, 1962 will range from $30 to $45 per gram, depending on Pu-240 content. 22 Fed. Reg. 3985, (June 6, 1958), BNA ATOMIC INDUSTRY REP. 223:15. This plutonium is purchased for weapons use.

12. Research bilaterals do not prescribe safeguards as fully as do power bilaterals which, of course, involve much greater quantities of fuel and hence

tracting government is required to keep title to the nuclear material, which we undertake to provide in quantities no greater than it currently requires, and to give us a first option either to purchase, or to designate a transferee for, any material produced in its reactors in excess of its non-military needs. It is also obligated to require operators to maintain records and to make reports sufficient to ensure accountability for the materials furnished. Fuel elements must be reprocessed in the United States or in a facility approved by the United States and may not be altered after their removal from the reactor until reprocessed. Moreover, the United States reserves the right to "review the design" of reactors and other equipment using materials supplied by it to assure "the effective application of safeguards." Finally, our inspectors are to be granted access, accompanied by personnel of the inspected state, to "all places and data necessary to account for" the nuclear materials provided under the agreement.

(3) *Health and Safety:* The risk of diversion is not the only hazard involved in providing nuclear materials for use abroad. If the recipient nation is lax in its handling of the materials, nuclear accidents may result which could readily be serious and might possibly be catastrophic. The United States, with the longest experience and an impressive record in the use of atomic safety measures, has therefore stipulated in the bilaterals for the right to consult with each contracting government "in the matter of health and safety."[13] In addition, however, a number of the power bilaterals provide that the contracting government indemnify and "save harmless" the United States with respect to any liability, including third-party liability, that may result from the action of the United States in leasing nuclear materials and fuel elements to the contracting country.[14] The Atomic Energy Act of 1954 requires all persons obtaining nuclear fuel from the United States Government under domestic license to agree to hold the Government harmless.[15]

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greater risk of diversion. The quotations in the text below are from art. X of the 1957 German power bilateral. CCH ATOMIC ENERGY L. REP. ¶ 7682 (1957). The first six of the power bilateral provided for the exchange of restricted data, and this necessitated extensive precautions against the leakage of classified information.

13. *Ibid.*

14. See, *e.g.*, art. VIII. H of the German power bilateral. CCH ATOMIC ENERGY L. REP. ¶ 7680 (1957). The liability covered is "any and all liability . . . for any cause whatsoever arising out of the production or fabrication, the ownership, the lease, and the possession and use of such special nuclear materials or fuel elements after delivery by the Commission . . . ." Agreements looking to sales contain disclaimers of representations and warranties.

15. Atomic Energy Act § 53.e(7) 68 Stat. 930 (1954), 42 U.S.C. § 2073 (Supp. V, 1958). Anderson-Price Act, 71 Stat. 576 (1957), 42 U.S.C. § 2073 (Supp. V, 1958), of the government indemnity and the limitation of liability provisions of that act. No "hold harmless" requirement is contained in § 54, governing foreign distribution of special nuclear materials. The domestic provision appears to have inspired the "hold harmless" clauses in the bilaterals.

(4) *Patents:* A fourth problem attacked by most of the power bilaterals is the allocation of patent rights derived from information communicated pursuant to a bilateral. Suppose, for example, as a result of disclosures made to an Australian research team under the Australian bilateral,[16] an atomic discovery is made and the Commonwealth of Australia obtains a patent to the invention under the Australian patent laws. The Commonwealth Government would be obligated by the bilateral to assign to the United States its rights in the invention under the United States patent laws. However, the Commonwealth would retain, for its governmental purposes, a royalty-free, non-exclusive, irrevocable license under the United States patent. At the same time, on the request of the United States Government, the Commonwealth would grant the United States a similar license for the latter's governmental purposes in Australia. The Australian Government is to be free otherwise to deal with Australian inventions in Australia and in third countries as it may desire, provided it does not discriminate against citizens of the United States.

If the United States Government were to obtain the rights to an invention on the basis of information supplied by the Australian Government, the latter would have rights in the invention corresponding to those obtained by the United States in the converse case outlined above.

It should be noted that the bilaterals do not assume that the only transactions to be conducted under them would be between the contracting governments. On the contrary, express provision is made for direct dealings between private citizens and corporations of the two countries, provided their respective laws and license requirements are obeyed.[17]

Execution of a bilateral not only provides a framework within which government information and technical assistance programs can be set up and private business conducted; it satisfies United States statutory prerequisites for the export of source materials, special nuclear materials, and utilization facilities from the United States to foreign countries.[18] Before a bilateral agreement can be effective, however, it has

16. For the United States-Commonwealth of Australia Agreement of Cooperation, effective May 28, 1957, see BNA ATOMIC INDUSTRY REP. 287:291; CCH ATOMIC ENERGY L. REP. ¶ 13,091 (1957).

17. For a typical provision to this effect, see art. VII of the German power bilateral, CCH ATOMIC ENERGY L. REP. ¶ 7679 (1957).

18. In each of these instances, the act requires that action be taken "pursuant to the terms of an agreement for cooperation . . . made in accordance with § 123." Atomic Energy Act § 54, 68 Stat. 931 (1954), as amended, 42 U.S.C. § 2074 (Supp. V, 1958) (special nuclear material), § 64, 68 Stat. 933 (1954), 42 U.S.C. § 2094 (Supp. III, 1956) (source material), § 103.d, 68 Stat. 936 (1954), as amended, 42 U.S.C. § 2133 (Supp. V, 1958) (export of commercial utilization or production facilities), § 104.d, 68 Stat. 937 (1954), 42 U.S.C. § 2134 (Supp. III, 1956) (export of utilization or production facilities for medical therapy, research, or development). An agreement for cooperation is not

to be certified by the President as providing adequate safeguards and as not constituting an unreasonable risk to the common defense and security, and it must be submitted to the Joint Committee on Atomic Energy at least 30 days before its effective date, provided the Congress is in session throughout this period.[19] Thus the Congress has retained a firm grip on the executive branch in such of its dealings with foreign nations as involve atomic energy.

The bilateral program had produced agreements with thirty-nine nations as of June 30, 1958, and agreements with four other nations were in process of ratification on the same date.[20] Of the bilaterals then in force, power agreements existed with 11 countries. Three of the countries having research agreements had also signed power agreements which were still in process of ratification. Most of the recent bilaterals included provisions taking cognizance of the creation of the International Atomic Energy Agency and providing for consultation to determine whether the parties would wish to modify their agreements and, in particular, to consider the desirability of the administration by the Agency of controls and safeguards.

Activity on the legal side had not been matched by equally extensive practical accomplishments. As of June 30, 1958, twenty-six research reactors had been or were being built by United States contractors for use abroad, eight being in actual operation.[21] Moreover, the United States had signed letters of commitment to sixteen countries, undertaking to pay half the cost of their reactor projects up to $350,000 each. In addition the AEC has been sponsoring a large training program for scientists and engineers from other nations, presumably chiefly those with whom we have bilaterals. This is now organized as the International School of Nuclear Science and Engineering, conducted in cooperation with the Argonne National Laboratory, North Carolina State College and Pennsylvania State University. A course in radioisotope techniques is conducted at the Oak Ridge Institute of Nuclear Studies for foreign students. New courses are being planned in reactor hazards evaluation, supervision and monitoring.[23]

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required for the export of by-product materials under Commission authorization.

19. Atomic Energy Act § 123, 68 Stat. 940 (1954), 42 U.S.C. § 2153 (Supp. III, 1956). By amendment of Pub. L. No. 85-681, 85th Cong., 2d Sess. § 4 (Aug. 19, 1958) the Joint Committee is authorized, by written resolution, to waive the 30-day period in whole or in part.

20. AEC, RESEARCH ON POWER FROM FUSION AND OTHER MAJOR ACTIVITIES 28-29 (Jan.-June 1958). (The volume's lengthy title conceals the fact that it is the AEC's 24th Semiannual Report, an omission certain to create difficulties for persons studying the AEC's activities.)

21. *Id.* at 30.

22. *Ibid.*

23. *Id.* at 57-58. As of June 30, 1958, the International School had been at-

The power reactor picture was less encouraging. No foreign power reactors had actually been constructed under bilaterals. A small pressurized water reactor (11,500 ekw) was being built at Mol, Belgium, and a much larger pressurized-water reactor similar to Yankee Atomic Electric's 134,000 ekw reactor was being planned for Milan, Italy.[24] Very recently a General Electric reactor has been endorsed by a panel of World Bank experts for construction in Italy.[25] Nuclear fuels have been shipped abroad in driblets for research purposes. The translation of the Euratom program into operating reactors remains several years in the future.

Bilaterals with the United Kingdom: The United Kingdom has entered into far fewer bilaterals than has the United States, but British power reactors fueled with natural uranium may, for a time at least, be more in demand than the more complex enriched uranium reactors developed in the United States. The bilateral between the United Kingdom and Italy appears likely to set the pattern for the United Kingdom bilaterals although the Italian agreement itself will doubtless be superseded by a more inclusive United Kingdom-Euratom agreement. The United Kingdom-Italian agreement provides for the sale of nuclear fuel, aid in acquiring reactors and in developing processing and reprocessing facilities, and the training of Italians in nuclear technology. Provision is made along the lines of the American bilaterals for safegnarding the use of the material and equipment sold so as to assure its employment solely for peaceful purposes.[26]

Bilaterals with the USSR: A program of bilateral agreements for cooperation with other Communist states was begun by the Soviet Union in 1955. Pursuant to this program, research reactors and cyclotrons are said to be operating in China, Poland, Rumania, East Germany, and Czechoslovakia. At the same time, research reactors are being assembled in Yugoslavia, "the Egypt Region of the United Arab Republic," and Hungary. The reactor type most commonly referred to is a 2000 kw water-moderated and cooled reactor, though two other sizes (6,000-10,000 kw and 1,700 kw) were also on display in Geneva.[27]

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tended by 328 foreign students from 43 countries; the Oak Ridge course, by 268 foreign students from 49 countries.

24. AEC, PROGRESS IN PEACEFUL USES OF ATOMIC ENERGY, 205-06 (July-Dec. 1957). (This volume is AEC's 23rd Semiannual Report.)

25. For a brief report of the arrangement for evaluation, see *id.* at 206-07. For a report of this action, see N.Y. Times, Oct. 16, 1955, p. 55.

26. The text of the United Kingdom-Italy bilateral appears in CMD. No. 349 (1958). For the Belgian bilateral, see CMD. No. 9632 (1955); for the German, see CMD. No. 9842 (1955). For a series of exchanges of notes with Norway regarding cooperation in the peaceful uses, see CMD. No. 9794 (1957), CMD. No. 245 (1957), and CMD. No. 277 (1951).

27. The developments are reported in an illustrated brochure distributed at the Soviet Pavilion in the Exhibition at Second International Conference at Geneva. USSR, ATOMIC ENERGY FOR PEACEFUL USES 3-5 (1958).

The Egyptian bilateral appears to be the only one negotiated with a non-communist country. It calls for a Soviet-equipped nuclear research center.[28] All of these agreements contemplate active training programs for scientists and engineers from the cooperating countries to be carried on in Russia, but the principal development to this end is noted below in the discussion of regional cooperation.

The Soviet bilaterals and the programs developed under them represent an impediment, from the communist side, to the effective operation of the International Atomic Energy Agency as a truly world-wide agency for atomic development. It is to the creation and structure of that body that we now shall turn.

THE INTERNATIONAL ATOMIC ENERGY AGENCY

The International Atomic Energy Agency (IAEA) is the product of protracted negotiations that were skillfully guided through three separate stages, following the inception of the idea in President Eisenhower's speech. Preliminary to these negotiations, however, correspondence took place between the United States and the Soviet Union which extended from March 1954, when the United States specifically proposed an "atoms-for-peace" agency to the USSR, until September of that year when the latter reluctantly indicated that it would consider international control of the peaceful uses of atomic energy separately from the problem of disarmament.[29] After General Assembly discussions in the fall of 1954, the United States submitted a draft of the Agency statute to an eight-power negotiating group, the other nations being Australia, Belgium, Canada, France, Portugal, the Union of South Africa, and the United Kingdom, the main Western states that were atomically developed or had substantial uranium deposits. Changes proposed by them were reflected in a new draft which was distributed on a confidential basis to the 84 states belonging to the United Nations and its specialized agencies. Continuing correspondence with the USSR and debates in the 1955 General Assembly led to a unanimous resolution in that body endorsing a plan to enlarge the negotiating group by the addition of Brazil, Czechoslovakia, India, and the USSR and to bring all 84 nations to a conference on the final text of the statute.

The negotiating group, thus enlarged, met for over seven weeks in

28. It was signed July 12, 1956, and is reported briefly in Soviet News, July 17, 1956, No. 3432 (London ed.).

29. For this correspondence, see *Atoms for Peace Manual*, S. Doc. No. 55, 84th Cong., 1st Sess., 266-83 (1954) and U.N. GEN. ASS. OFF. REC. 9th Sess., Annexes, Agenda Item 67, at 4 (Doc. A/2738) (1954). For an excellent summary of the negotiations for the IAEA, see Bechhoefer and Stein, *Atoms for Peace: The New International Atomic Energy Agency*, 55 MICH. L. REV. 747, 785-88 (1957). Their article also provides a valuable commentary on the IAEA statute.

the early spring of 1956. All delegations voted in favor of the amended statute as a whole though some reserved positions on particular issues. An agenda and rules of procedure for the 84-state conference were agreed upon, and, on October 26, 1956, the work of that conference, in which 82 states actually took part, culminated in the signing of an agreement by 70 states. All the participating states had supported the adoption of the statute.

The functions of the Agency which was brought into being when the statute was ratified by the United States[30] can be noted under four heads:

(1) The Agency was designed to serve as intermediary between the atomic "have-not" states and the atomic "haves," aiding the former to formulate projects for research on, or development and application of, atomic energy for peaceful purposes, and, in the case of the projects it approved, securing the nuclear materials and equipment for them and helping to secure the financing needed for their realization.[31]

(2) In aid of this function and, hopefully, as a means of reducing military stockpiles of nuclear fuels, the Agency was authorized to accumulate nuclear fuels for distribution among approved projects,[32] in other words, to use a term often employed in early discussions of the Agency's purposes but now well-nigh forgotten, to serve as a "bank" for nuclear materials. The bank function could still become important if many nations were using nuclear fuels supplied through the IAEA. They would be required to deposit with the Agency all the surplus nuclear materials, chiefly plutonium, produced in their reactors and not actually needed for "research or in reactors, existing or under construction."[33]

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30. The IAEA statute became effective when President Eisenhower signed the treaty on July 29, 1957, thereby satisfying the statute's requirement that it be ratified by at least three of the five atomic powers. For the text of the statute, see 51 AM. J. INT'L L. 466 (1957).

The United States was authorized to take part in Agency activities by the Participation Act of 1957, 71 Stat. 453 (1957), 22 U.S.C. §§ 2021-26 (Supp. V, 1958). The act provides that formal refusal by the Senate to ratify any amendment to the Agency statute will terminate the authority to participate.

31. These functions of the Agency are authorized by articles IX (supplying of materials), X (services, equipment, and facilities), and XI (agency projects) of the IAEA statute.

32. The member state providing "special fissionable materials" (the statute's synonym for "special nuclear materials") has the option whether itself to store the materials it makes available or, if the Agency agrees, to store them with the Agency. STAT. INT'L ATOMIC ENERGY AGENCY art. IX, A. It may not, however, require that its materials be kept separately by the Agency or "designate the specific project in which they must be used." art. IX, J. Probably the Agency would not do either voluntarily. The Agency is "responsible for storing and protecting the materials in its possession." art. IX, I.

33. Art. XII, A, 5 STAT. INT'L ATOMIC ENERGY AGENCY [hereafter STAT. INT'L] (Agency safeguards). Making this requirement is listed among the Agency's "rights and responsibilities" in connection with projects. Excess materials thus stored are to be returned promptly for use at the request of the member state producing them.

(3) In order to make sure that the materials it provided would be used only for peaceful purposes, the Agency was to establish and police a system of safeguards in each country to which it furnished materials[34] and, also, in countries which requested that service for the implementation of bilateral or regional agreements.[35]

(4) The Agency was to serve as an instrumentality for encouraging "the exchange and training of scientists in the field of peaceful uses of atomic energy,"[36] for disseminating information obtained from member states,[37] and for formulating health and safety standards and for applying them to its own operations and to operations in those countries receiving Agency assistance under projects or requesting the Agency's health and safety supervision.[38]

The Agency is authorized to acquire facilities needed for any of its functions.[39] Thus, if research in reactor design and operation were thought necessary to enable the IAEA to discharge its training and standard-making functions, there would be no legal obstacle to its acquiring a reactor to facilitate such studies.

The structure of the Agency was a greater source of debate than its functions, although the safeguards function had led to considerable discussion inspired by Indian objections. The problem in designing the Agency's structure was to assure an adequate representation of all the interest groups, political as well as economic, while giving sufficient assurance to the atomic "haves" without whose tangible support the Agency could discharge only limited functions. The point where these considerations came to the fore was in determining the composition of the Board of Governors, the principal policy-making organ of the Agency. The solution arrived at has produced a cumbersome instrumentality; a 23-man Board, 10 to be elected by the General Conference of all member states and 13 by the outgoing Board. The criteria by which member states are to be selected for the Board relate to the stage of advancement in atomic technology they have reached, their role as raw material suppliers, and their location in

34. STAT. INT'L art. XII.

35. STAT. INT'L art. III a, 5 (Functions). "The Agency is authorized . . . to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or, at the request of a State, to any of that State's activities in the field of atomic energy."

36. STAT. INT'L art. III, A, 3, art. VIII (Exchange of Information): "A: Each member *should* make available such information as would, in the judgment of the member, be helpful to the Agency.

"B. Each member *shall* make available to the Agency all information developed as a result of Agency assistance . . . ." (Emphasis added.)

Section C requires the Agency to "take positive steps to encourage the exchange among its members of information . . . ."

38. STAT. INT'L art. III, A, 6, art. XI, E, 3, F, 2. Standards are to be established "in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned."

39. STAT. INT'L art. III, A, 7, art. IX, I, 1, 4, 5.

the eight major areas into which the statute divided the world. At present, the most advanced states are deemed to be the United States, the USSR, the United Kingdom, France, and Canada.[40]

The actual administration of the Agency is entrusted to a Director-General appointed by the Board with the approval of the General Conference and a staff of international civil servants independent of national influence.[41] The General Conference is to meet annually or in special sessions; it passes on the budget, membership privileges, and amendments to the statute (matters requiring a two-thirds majority) and may make recommendations to the Board on matters within the scope of the statute.[42]

The finances of the IAEA come from two sources, annual contributions of member states which are designed to cover the general operating expenses of the Agency, and charges imposed on each member state entering into a project agreement. These are to cover the cost of nuclear and other materials supplied it and the special costs of administering the projects other than the costs of the safeguards system.[43] The annual contributions are scaled, as are contributions to the United Nations, though the statute does not prescribe the use of the United Nations scale. The computation of special charges for project service obviously presents a problem in allocation. The states having projects must certainly pay the out-of-pocket costs which the IAEA incurs in supplying them, but these of course represent only a part of the total cost of administering the project system. It may be important for the Agency to absorb as many of the overhead costs of the project operations as the statute permits if it is to compete with bilateral arrangements for the supply of nuclear materials. If the United States continues to require that the IAEA pay it the same price for nuclear fuels and equipment as it charges nations purchasing under its bilaterals, a questionable position,[44] then the addition of the Agency's fees for supervision would render the Agency's projects a more expensive way of securing nuclear supplies. Under the bilaterals, the supplying powers absorb the cost of whatever administrative costs they incur. Consequently, ways should be found to hold IAEA fees to a minimum.

The safeguards provisions are sanctioned by the power of the Board to curtail or suspend its assistance to a violating state and to demand the return of such nuclear materials and equipment as the Agency had provided. Beyond these remedies, the Agency would have to depend

40. STAT. INT'L art. VI (Board of Governors). On the history of art. VI, Bechhoefer and Stein, *supra* note 29, at 754-55, 791.

41. STAT. INT'L art. VII (Staff).

42. STAT. INT'L art. V (General Conference).

43. STAT. INT'L art. XIV (Finance). Voluntary contributions are also contemplated.

44. BNA ATOMIC INDUSTRY REP. *News and Analysis,* 4:331.

chiefly on the machinery of the United Nations. Notice of non-compliance would be given to each member state and to the United Nations Security Council and General Assembly.[45] This might—or might not—lead to corrective action. If the issue were one susceptible of adjudication, the parties might consent to reference to the International Court of Justice.[46] If the Agency were a party, it could seek an advisory opinion from the court "on any legal question arising within the scope of the Agency's activities."[47]

When the Agency statute was opened for signing, a twelve-nation Preparatory Commission was created,[48] charged with making arrangements for the Agency's first General Conference, with designating the member states to serve on the first Board of Governors, and with making studies and recommendations on problems for consideration at the initial meetings of the Board, including a draft agreement governing the relationship of the IAEA to the United Nations and to the specialized agencies. Although much of the work of the Preparatory Commission perforce related to the organizational and housekeeping problems of a new agency, the last of its functions listed above bore upon a question that was beyond its power to solve definitively and which is still unsolved. The agreement, setting up a broad relationship between the United Nations and the Agency, implemented chiefly by reporting requirements,[49] could scarcely eliminate the prospect of jurisdictional conflict between the IAEA and the International Labor Organization (which is concerned to preserve its responsibilities with respect to workers in industries using radiation), the World Health Organization (which seeks to train specialists in health protection against radiation hazards and to study health problems in reactor location and waste disposal), the Food and Agricultural Organization (which is interested in promoting the use of radiation in agricultural research), and UNESCO (which would include the training of radiation specialists in its educational program), to mention only the principal competing agencies.

45. For provisions relating to the termination of assistance and withdrawal of materials, see STAT. INT'L art. XII, A, 7, C. For notification provisions, see STAT. INT'L art. III, B, 4. The General Conference, upon recommendation of the Board of Governors, may suspend a member by a two-thirds majority vote. STAT. INT'L art. XIX, B.

46. STAT. INT'L art. XVII, A.

47. STAT. INT'L art. XVII, B. Either the General Conference or the Board might request the opinion, but the power to do so is "subject to authorization" of the UN General Assembly.

48. STAT. INT'L Annex I (Preparatory Commission).

49. STAT. INT'L art. XVI (Relationship with other organizations). For the agreement with the UN, see U.N. GEN. ASS. RES. 1145 (XII) Annex, (1957). When other specialized agencies questioned the Agency's recognition as responsible for international activities concerned with the peaceful uses of atomic energy, the characterization was allowed to stand but a statement was inserted in the record that the Agency will have a leading position in the field. U.N. Doc. A/3620/Add. 1 (1957).

When, therefore, the Preparatory Commission introduced the Agency to world society with the first meeting of the General Conference in Vienna in October 1957, it was pushing the IAEA into a circle of jealous rivals, without being able to assure it the real backing of the United Nations Secretariat. Moreover, the constituency of nations to whom the Agency was answerable remained a deeply divided one. A dramatic move, a bold and imaginative program, the leadership of a scientific figure of world renown, might have won for the Agency a place on the world stage commensurate with the hopes that had originally been entertained for it. Instead, the new Board and Conference embarked on a contest over the election of the Director General (which was won by the American candidate, Representative W. Sterling Cole of New York, former Republican Chairman of the Joint Committee on Atomic Energy).[50] Soon power contests began between the Conference and the Board and between the Board and the Director General. These are not yet resolved, but they have already led the Board to busy itself with the manifold details of agency administration with which its structure renders it manifestly unsuited to deal. Before pursuing the Agency's difficulties further, we must turn to the rise of the regional atomic organizations. They are likely to exert a decisive influence in determining whether the IAEA can still have an important part in establishing an international regime for atomic energy.

Regional Cooperation

The area in which conditions were most propitious for atomic cooperation on a regional basis was clearly Western Europe. Not only did it have an industrial base sufficient to sustain a substantial atomic industry and much experience in the coordination of economic activities, but it also faced serious shortages in conventional energy sources in the not distant future. Moreover, the emancipation of atomic energy from total subservience to military uses came at a time when one major step toward European unification, the European Defense Community, had just been blocked and the product of another such step, the European Coal and Steel Community, was achieving well-merited recognition for success. The effect of these coincidences was to direct the thought of the champions of European unification toward economic, rather than political, goals and, in particular, to stress the significance of the problem of energy supply and the role that atomic energy might play in its solution.

Initiative in studying the European energy problem had already been taken by the Organization for European Economic Cooperation (OEEC), the body of seventeen European states which, as beneficiaries

50. AEC, *op. cit. supra* note 24, at 192.

of the Marshall Plan, had created OEEC in 1948. The primary purpose of OEEC had been to allocate American aid in such manner as to promote European economic development, but, as a long-term objective, it had sought to advance measures conducive to European economic unification. In June 1955, OEEC published a report on *Some Aspects of the European Energy Problem* by Louis Armand, then Chairman of the French National Railways. This report emphasized the great potentialities of atomic energy as a means of meeting Europe's future energy needs and also pointed out the importance of European cooperation in making atomic development possible.

Euratom: About the time of the OEEC report, the foreign ministers of the six states comprising the Coal and Steel Community (France, Germany, Italy, Belgium, the Netherlands, and Luxemburg), meeting in Messina, adopted a resolution calling for an ambitious program of economic integration.[51] Among the objectives was the creation of a common market and coordination in the development of energy sources, particularly atomic energy.

The Messina Resolution led in April 1956 to a report by a committee chaired by Belgium's Foreign Minister, Paul-Henri Spaak, in which plans for both the common market and an atomic energy authority, termed "Euratom," were outlined. This report was adopted by a foreign ministers' meeting in Venice in May 1956 as the basis for the preparation of draft treaties. Under the stimulus of the Suez affair, treaties creating a European Economic Community (EEC) and a European Atomic Energy Community (Euratom) were signed early in 1957 and before the end of the year were ratified by all six states. Both treaties became effective on January 1, 1958.

The structure of Euratom is modeled rather closely on that of the European Coal and Steel Community (ECSC).[52] The same states are members. Euratom vests its executive authority in a Commission of five whereas ECSC has a High Authority of nine, in each case the members being independent of their national governments. The governments in turn are assured of a voice in the affairs of each organization through the medium of a Council of Ministers, on which each

51. For a brief history of the genesis of Euratom, see the valuable article by Michel Gaudet entitled *Euratom* in a volume on atomic energy law and administration edited by Herbert Marks of Washington, to be published shortly by the Pergamon Press, Ltd., London. This will contain the most comprehensive materials relating to the international atom. M. Gaudet was Legal Counselor to President Paul-Henri Spaak for the drafting of the Euratom and EEC Treaties and has been Special Counselor to both Communities since January 1954.

52. *Id.* at 171; Hahn, *Euratom: The Conception of an International Personality,* 71 HARV. L. REV. 1001, 1007-08 (1958). For an English text of the Treaty Establishing the European Atomic Energy Community (Euratom), see 51 AM. J. INT'L L. 466 (1957). No effort will be made here to cite all the relevant provisions of the Euratom treaty.

member state has one seat. Ordinary operating decisions of the Council require a simple majority vote but, on issues of political consequence, voting is weighted, the scheme being to give a veto to any two of the three large countries or to all three of the Benelux countries. For amendments to the treaty, unanimity is required.

As a means of maintaining more direct contact with the peoples of the Community, Euratom, like the ECSC, has an Assembly comprised of 142 delegates appointed by the national parliaments pursuant to a plan whereby each large state has 36 seats, Belgium and the Netherlands, 14 each, and Luxemburg, 6. It is contemplated that, in time, election to membership in the Assembly will be by direct universal suffrage. The Assembly which ordinarily meets once a year considers the Commission's report and subjects that body to questioning. If a two-thirds majority votes to censure the Commission, all Commissioners must tender their resignations. In other respects, the Assembly's role is essentially advisory. The same Assembly is now serving all three Communities, Euratom, the EEC, and the ECSC.[53]

Still another institution which Euratom shares with the EEC and the ECSC is the Court of Justice, the same bench serving the three Communities. It is comprised of seven judges, aided by two advocates general, each appointed for a six-year renewable term by common agreement of the member states. The court has jurisdiction over alleged violations of the treaty by member states, over cases questioning the legality of acts of the Commission or Council which may be brought by member states or affected parties, and over cases involving interpretation of the treaty, including cases referred to it by national courts in which questions involving the treaty have been raised. The experience of the ECSC indicates that the Court of Justice can play an important part in the evolution of a true community, responsive to the rule of law.

Still another Euratom institution serving both EEC and ECSC is the Economic and Social Committee, a body of 101 members who are appointed unanimously by the Council of Ministers. Its functions are advisory only.

Euratom has many and substantial functions to discharge. The following succinct statement of them by a German legal writer is quoted from the *Harvard Law Review*:[54]

> Its functions are: developing research and ensuring the broadest dissemination of knowledge and techniques; establishing and enforcing

53. Provision has been made for this in the Convention Relating to Certain Institutions Common to the European Communities executed in Rome, March, 1957. The Convention also covers the Court of Justice and the Scientific and Economic Council. For its text, see 51 AM. J. INT'L L. 1000 (1957).

54. Hahn, *supra* note 52, at 1005. The aims of Euratom are discussed at some length in Gaudet, *supra* note 51.

> uniform safety norms for the protection of the population at large and the labor force; facilitating public and private investments and creating the fundamental installations necessary for the development of nuclear energy in the Community; providing for a regular and equitable supply of ores and fissionable materials for all users within the territorial limits of Euratom; assuring, by appropriate controls, the utilization in the Community's territory of nuclear materials in conformity with its purposes; exercising the exclusive proprietary rights of the Community under the treaty; and assuring wide outlets and access to the best technical means by creating a common market for nuclear materials and equipments, by authorizing unrestricted capital movements for nuclear investments, and by promoting freedom of employment for specialists within the Community.

The reference to "fundamental installations necessary for the development of nuclear energy in the community" relates to such facilities as gaseous diffusion and chemical reprocessing plants which would serve all or most of the member states. Euratom will leave to the states the responsibility of constructing their own reactors or of enabling their utility companies to do so. However, in providing fissionable materials, Euratom asserts a monopoly which is carried out by a subsidiary organization known as the Agency. As does the United States, Euratom takes title to all special nuclear materials. However, Euratom ceases to exert controls over such materials once they have been earmarked by a member state as being intended for defense purposes. At this point, protagonists of Euratom point out, a disarmament agreement is required for appropriate controls over atomic weapons. With respect to those nuclear materials which have not been allocated to military uses by a member, provision is made for the exercise of safeguards by the Community itself.

Shortly before the treaty negotiations had been completed, the foreign ministers requested M. Armand to join with a German and an Italian expert in estimating the quantities of atomic energy that Euratom, if created, could produce in the near future. The study conducted by "the three Wise Men," to use the name the newspapers fastened upon them, led to the startling conclusion that a nuclear electric plant with a capacity of 15 million ekw should be constructed by the end of 1967.[55] Even this would do no more than stabilize imports of fuel, chiefly oil, into the Euratom countries in the 1960's for power purposes. Subsequent developments suggest that the Euratom Board is planning to move forward at a somewhat less rapid pace, though the target of 15 million ekw has not been disavowed. Among the indications of reappraisal is the scale of the program which has recently emerged from the negotiations completed last spring between the AEC and Euratom.

55. Armand, Etzel & Giordani, *A Target for Euratom*, CCH ATOMIC ENERGY L. REP. ¶ 13,939 (1957).

Cooperation between Euratom and the United States: These negotiations, conducted by a joint United States and Euratom working party, produced three documents. The first was a brief agreement setting up, as a basis for more specific agreements, an "international arrangement" within the meaning of sections 11.1 and 124 of the Atomic Energy Act.[56] This agreement was signed on behalf of Euratom in Brussels on May 29, 1958 by the Euratom Commissioners, Euratom being "an international personality" with power to enter into agreements with non-member states, and in Washington by Secretary of State Dulles and AEC Chairman Strauss on June 19, 1958.

The second, the Memorandum of Understanding, was signed at the same time in Brussels and on June 12 in Washington, setting out the objectives and terms to be embodied in a specific agreement for cooperation to be executed under section 123 of the Atomic Energy Act.[57] The memorandum included by reference two attachments, Attachment A setting out the principles to govern the provisions of the agreement concerning fuel cycles and the guarantees to be given by the United States with respect to them, and Attachment B setting out the principles to govern the safeguards and control system.

The third was a draft agreement for cooperation between the United States and Euratom under section 123 of the Atomic Energy Act which, of course, followed closely but with greater generality the terms of the Memorandum of Understanding.[58] It was initialed at the same time as the basic agreement was signed.

To be effective under section 124, the basic agreement had either to be ratified as a treaty or approved by both houses of Congress. To satisfy section 123, it will be recalled, the Agreement for Cooperation had to be approved by the President with findings in writing by him that it would promote, and not represent an unreasonable risk to, the common defense and security. The Agreement would then have to be submitted to the Joint Committee and could not become effective for 30 days during which the Congress was in session, a period which an amendment to the act adopted only last summer[59] gave the Joint Committee on Atomic Energy power to waive in whole or in part.

56. For the text of the Agreement, see BNA ATOMIC INDUSTRY REP., *News and Analysis,* 54:51.

57. Memorandum of Understanding Regarding the Joint Nuclear Power Program Proposed between the European Atomic Energy Community (Euratom) and the United States of America, executed at Brussels on May 29, 1958, and at Washington on June 12, 1958, reprinted in AEC, *op. cit. supra* note 20, at 398-407 (app. 15), and BNA, *supra* note 56 at 54:52.

58. JOINT COMMITTEE ON ATOMIC ENERGY, 85TH CONG., 2D SESS., DRAFT AGREEMENT FOR COOPERATION BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE EUROPEAN ATOMIC ENERGY COMMUNITY (EURATOM) CONCERNING PEACEFUL USES OF ATOMIC ENERGY, PROPOSED EURATOM AGREEMENTS App. B, 22 (Comm. Print 1958) (with associated documents and materials).

59. Pub. L. No. 681, 85th Cong., 2d Sess. § 4 (Aug. 19, 1958), amending Atomic Energy Act § 123c.

The approval of the Agreement for Cooperation would not permit the AEC to provide the nuclear materials, or to expend the moneys, which participation in the joint cooperative program would require. By amendments to sections 54[60] and 261[61] the Congress had previously required its prior approval of such steps. Accordingly, what has come to be termed "a participation act" was needed. To this end the AEC submitted to the Joint Committee a draft bill embodying the Euratom Cooperation Act of 1958, seeking authorizations of appropriations, a necessary preliminary to an appropriation, for research and for the guarantees to be given with respect to the fuel cycles, the sale of U-235 and plutonium, and of the purchase of excess U-235 and plutonium from Euratom.[62]

Before the substantive provisions of the program are outlined, a summary report of the action taken by the Congress may be useful. The Congress approved the basic international arrangement by concurrent resolution.[63] The AEC submitted the draft Agreement for Cooperation informally, but, finding the auspices unfavorable, did not obtain the President's findings necessary for a formal submission. The Joint Committee, after hearings, reported, and the Congress passed, the Euratom Cooperation Act of 1958[64] which authorized the appropriation of a small fraction of the amount that the AEC had requested and a much smaller fraction of the amount the Agreement for Cooperation contemplated. The content of the Cooperation Act will be indicated more specifically below, but, first, the draft Agreement for Cooperation and the program it is designed to implement must be outlined.

The Program's Objective: The objective of the joint program is to enable Euratom member states to bring into operation about 1,000,000 ekw of installed nuclear capacity by 1963.[65] With this in view, the Agreement for Cooperation provides in article II for the construction and operation in the Community "of large-scale power plants using nuclear reactors of proven types" which have been "selected in accordance with technical standards, criteria . . . , and procedures developed by" the AEC and Euratom, the "technical and economic features"

60. 71 Stat. 455 (1957), as amended, 42 U.S.C. § 2074 (Supp. V, 1958) (special nuclear materials).

61. 71 Stat. 274 (1957), as amended, 42 U.S.C. § 2017 (Supp. V, 1958) ("sums . . . necessary to carry out cooperative programs").

62. For the text of the AEC draft bill, see PROPOSED EURATOM AGREEMENTS, *op. cit. supra* note 58, at 29.

63. S. RES. 116, approved, 104 CONG. REC. 16651 (1958); H.R. CON. RES. 376, approved, 104 CONG. REC. 17257 (1958).

64. Euratom Cooperation Act of 1958, Pub. L. No. 846, 85th Cong., 2d Sess. (Aug. 28, 1958). For the act's legislative history, see 1958 U.S. CODE CONG. & AD. NEWS at 4974. For the debates in the Senate, see 104 CONG. REC. 16651-58; in the House, see *id.* at 17258-61, 17264-66 (1958).

65. See DRAFT AGREEMENT FOR COOPERATION, *supra* note 58, Preamble; Memorandum of Understanding, *supra* note 57.

being "considered and approved jointly" by both bodies. The agreement would not supersede the bilateral agreements which Euratom states now have with the United States, but it is anticipated that these will be renegotiated and a comprehensive agreement with Euratom take their place. In the meantime, national projects which had been planned under bilaterals might become Euratom projects, thereby benefiting by the more attractive terms provided by the Euratom Agreement and avoiding the loss of any time in renegotiation.[66]

Fuel Supply: The undertakings by the United States under the draft agreement are substantial. In article III it agrees to sell Euratom the net amount of 30,000 kg. of contained U-235 in uranium enriched up to 20% (a limited amount for testing and research reactors being enriched up to 90%). Of this amount, it is contemplated, though the documents do not specify, that 9,000 kg. will be provided on credit, secured by a lien on the uranium itself; 20,000 kg. will be provided to replace burn-up and 1,000 kg. for research purposes, all to be paid for in cash on a current basis.[67] Euratom is permitted by article III C, to distribute the nuclear fuel thus acquired to authorized users within the Community, but it will retain title to it, as the Euratom Treaty provides. Under article III D, "special nuclear material and other material recoverable from material returned to the United States for reprocessing will be returned" to Euratom; "unless otherwise agreed," but, if Euratom has an excess of special nuclear materials produced in reactors fueled with United States materials, then, under paragraph E, the International Atomic Energy Agency is granted a first option to purchase them at the United States' "announced fuel value price." If the IAEA does not take up the option, the United States "is prepared" to purchase at the same price.

The Fuel-Cycle Guarantees: The foregoing provisions designed to assure Euratom a firm supply of nuclear fuel meet only a part of the uncertainties involved in a program to construct reactors using enriched fuel. The fuel elements are very costly to fabricate. What performance can be expected of them before they must be removed for reprocessing? And what will be the cost of the reprocessing neces-

66. Transfers of reactor projects under existing agreements are explicitly permitted by the Draft Agreement, art. XIV, C, as well as by § 14 of the Memorandum. However, Senator Anderson declared in the debate, 104 CONG. REC. at 16652, that "no money provided by the proposed legislation is to be used to bail out any existing proposal." Specifically, he excluded "any project on which bids have already been received" and projects "on which contracts, either contingent or firm, have been entered into."

67. These data appear in a letter from AEC Chairman L. L. Strauss to Chairman C. T. Durham of the Joint Comm. on Atomic Energy, June 23, 1958, concerning the proposed Euratom Agreement. It is reprinted in S. REP. No. 2370, 85th Cong., 2d Sess. (1958), and in 1958 U.S. CODE CONG. & AD. NEWS, at 4976.

sary to separate the uranium and plutonium in the irradiated elements from the highly radioactive fission products which "poison" the elements and require their withdrawal from the reactors? Because firm figures cannot be quoted on these matters, the United States undertakes to guarantee certain costs and performance. The draft Agreement of Cooperation deals with these guarantees in terms of principle, but Attachment A to the Memorandum of Understanding, mentioned above, is quite specific. It sets, as an objective of the fuel cycle program, fuel elements for light-water cooled and moderated reactors the integrity of which is to be guaranteed "to an average irradiation level of 10,000 megawatt days for metric ton of contained uranium." Prices for fabrication are also set for two types of elements with 3% enrichment, one with stainless steel, and one with zirconium cladding. For each type, a "computed fuel-cycle cost" is to be agreed upon which includes all fabrication, inventory, burn-up, reprocessing, and transportation charges, less the credit for plutonium. Using these two types of elements for which prices are specified and the irradiation level stated above, a "standard fuel-cycle cost" is to be determined. The AEC undertakes to give guarantees as to performance levels and fuel element prices which, when combined with such guarantees and fabrication charges as the fuel element manufacturer may set, would result in a computed fuel-cycle cost equal to the standard cost. If the actual performance is better than that guaranteed, one half the savings in reprocessing and transportation costs will be credited to the AEC as an offset to any costs it has incurred as guarantor for the reactor as to which the savings are realized.

Capital Financing: The aid to be provided by the United States under the draft Agreement would not stop with the fuel-cycle guarantees. The capital cost of nuclear plants had been estimated at $350 million per kilowatt of installed capacity. The Agreement provides that up to $135 million of the $350 million total shall be provided by the United States as a long-term line of credit. Although the documents do not specify, the legislative history indicates the Export-Import Bank as the likely source of this capital.[68] Utility companies using the reactors are expected to furnish about $150 million, leaving the rest to be raised in the European money market, perhaps by the European Investment Bank.

Research Aid: Another important element of aid is in research and development assistance. The plan as embodied in article II of the Agreement called for a matching grant of $50 million by the AEC

68. See letter from AEC Chairman L. L. Strauss, *supra* note 67. On the floor, Senator Anderson said, "We do not seek by our action to have any action taken on what the Export-Import Bank must do." 104 CONG. REC. at 16651.

over a five-year period with the expectation that the program would be extended, with additional funds, for another five years.

Patent Protection: The draft Agreement for Cooperation contains provisions for the exchange of information (article VI) and the allocation of patent rights as to inventions "made or conceived in the course of or under the joint program" (article VII, A and B). In general these follow the pattern evolved in the bilaterals. However, a special provision (article VII, C) is included for patents on inventions used in the work of the joint program though not originating in it. This looks to agreements for reciprocal licensing on the part of the United States and member states as to patents so used if they either are owned by, or are subject to licensing rights in, the United States or member states. These provisions gain special importance from one of the principal motives the United States had in entering the Agreement, the opportunity to get more "clinical experience" in power reactor construction and operation than the United States reactor program would soon be likely to provide.

Third-Party Liability: The problem of third-party liability for injuries and property damage caused by nuclear accidents is also recognized in the draft Agreement for Cooperation. Article IX includes an undertaking by Euratom to "seek to develop and to secure the adoption, by the earliest practicable date, of suitable measures" to provide "adequate financial protection" to "equipment manufacturers and other suppliers as well as the participating utilities against now uninsurable risks." The article gives, as examples of such measures, "suitable indemnification guarantees, national legislation, international convention, or a combination" of these.

Safeguards against Diversion: A problem that for a time threatened to block agreement was the provision of safeguards against diversion of nuclear fuels to military uses. The main alternatives were three: inspection by the United States as under the bilaterals; inspection by the Agency under the provision in its statute authorizing it to police agreements other than its own at the request of the parties to them; and inspection by Euratom itself. The argument for the latter rested in part on the proposition that, in a regional organization, differences in interest among the member states would prevent any common scheme to divert nuclear fuels from national reactors. But considerations of prestige were also present: the Euratom nations wished to establish for themselves and the Community a position as nearly on a par with the great atomic "have" powers as possible. The latter were not subject to inspection by outsiders; why should Euratom be?

This view prevailed, with consequences to be considered shortly, and the draft Agreement for Cooperation, after forbidding the use of

any material or equipment transferred under it by unauthorized persons or for military purposes, including research, then imposes on the Community the responsibility for setting up a safeguards and control system designed to give maximum assurance that its restrictions will be observed.

Article XII on safeguards strives to reconcile with this action the respective concerns of the United States and of the IAEA by providing liberally for consultations and assistance. In the case of the IAEA, this looks to establishing a system reasonably compatible with the IAEA's own control system. Article XII is followed by a brief article reaffirming on behalf of the United States and the Community a "common interest in fostering the peaceful applications of atomic energy" through the IAEA and an intention that the joint program will benefit the IAEA and its member states.

The Congressional Action and its Effect: The approach of the Joint Committee to the Euratom program seems to have been conditioned by two factors. A majority of the Committee (not confined to the Democrats) have been at odds with the administration concerning the scope and pace of the domestic atomic program. They have resented administration opposition to proposals for action emanating from the Committee and regard this as inconsistent with the administration's readiness to support international programs.[69] The other aspect of the Committee's approach is its reluctance to give the AEC any greater freedom in developing programs than the necessities of the situation require.[70] This attitude, moreover, represents a continuing struggle between the Joint Committee and the AEC in which the latter has, by a succession of amendments to the Atomic Energy Act,[71] narrowed the discretionary authority of the Commission and enlarged its own freedom to intervene in matters which heretofore had been left to executive action.

(1) The first exception taken by the Joint Committee to the draft Agreement went to its limitation of the joint program to reactors of "proven types." Presumably this would have favored the pressurized water and boiling water reactors, developed by Westinghouse and General Electric respectively. The Committee preferred greater flexibility in the choice of reactors and struck the limitation from section 2(c) of the Cooperation Act. Moreover, it specified in a proviso to the same sub-section that two of the reactors constructed under the program might be completed two years later than the December 31, 1963 deadline in the draft agreement. Whether Euratom will share the Committee's—and much of the atomic industry's—interest in experi-

69. See *Trouble for Euratom?*, 5 FORUM MEMO 12 (Aug. 1958).
70. See *Congress Approves Euratom*, 5 FORUM MEMO 6 (Sept. 1958).
71. See, *e.g.*, the statutes cited *supra* notes 60 and 61.

mentation remains to be seen. If Euratom were to resist innovation, as, under the agreement, it legally might, the AEC would find itself unhappily in the middle of the controversy.

(2) The Committee's chief contribution related to the fuel-cycle provisions. In section 4 of the Euratom Cooperation Bill, the AEC had sought the authorization of a $90 million appropriation to cover its liability for ten years under the guarantees which it would undertake in the draft agreement to give. When the bill came before the Joint Committee, it refused to authorize any appropriation for this purpose, but instead authorized the AEC, "within limits of amounts which may hereafter be authorized to be appropriated, to make contracts not exceeding a total contingent liability of $90,000,000." As the Committee's report makes clear the AEC may not enter into the contracts it is authorized to make until the necessary appropriations are authorized and passed.[72]

Reflecting further its hopes and fears, the Committee also added to section 4 a set of principles by which the AEC is to be guided—but not limited—in entering into guarantee contracts.

The AEC is admonished by the first to "encourage a strong and competitive atomic equipment manufacturing industry in the United States," producing diversified reactor parts and fuel elements. The second principle seeks to give greater specificity to the guarantee program by requiring that the guarantees be consistent with the act and "Attachment A to the Memorandum of Understanding," the document which, as was noted, develops the guarantee program in some detail. To tighten the program further, a third principle requires the AEC to publish "minimum levels of fuel element cost and life to be guaranteed by the manufacturer." A fourth principle requires a manufacturer to give as favorable a guarantee to the AEC as any other guarantee it has offered for any comparable fuel element within a reasonable time period," a period which the Committee intimates in its report might be only two months or so.[73] A final principle prescribes a rule as to patent rights. It requires a manufacturer whose contract with Euratom is guaranteed by the AEC, to give the AEC "a royalty-free, non-exclusive, irrevocable license for governmental purposes to any patents on inventions or discoveries made or conceived by the manufacturer in the course of development or fabrication of fuel elements during the period covered by the Commission's guarantee," even though the AEC pays nothing out on the guarantee. A strict reading of this provision would render it needlessly severe. Thus, it

72. The report declares that § 4 gives "only the authority for the Commission to proceed with plans to make contracts. Such contracts cannot be entered into until necessary authorization and appropriation authority is obtained from the Congress." See S. REP. No. 2370, *supra* note 67, at 4988.

73. See S. REP. No. 2370, *supra* note 67, at 4990.

would apply even though an invention was conceived in the fabrication of fuel elements for some other account, indeed, if the guaranty were still outstanding, after all fabrication for the AEC's account had been completed.

Whether in its concurrent striving for flexibility in engineering and for rigor in economics, the Committee may have impaired the effectiveness of the joint program, it is difficult at this point to say. One reason for uncertainty springs from the fact that the impact of the Joint Committees' principles which are to guide, but not to limit, is hard to estimate in advance. With its appropriations remaining unauthorized, the AEC may allow its responsiveness to guidance to reach the point of limitation. How serious the element of delay may prove is another imponderable.

(3) The Congress authorized in section 6 the sale of special nuclear materials in the amounts requested and also the buy-back arrangements contemplated by the agreement, including the AEC's request for specific authority to buy back 4,100 kg. of plutonium during the ten-year life of the program. However, since the Agreement for Cooperation was not adopted, the AEC can make no firm commitments, to say nothing of deliveries. In authorizing the sale of U-235 on a deferred payment basis, a proviso to section 5 of the act requires that the AEC obtain the equivalent of a first lien on any fuel delivered on credit.

(4) The act did not reduce the amount of capital financing contemplated but the Committee opined, in its report, that "adequate security arrangements should be obtained by the Export-Import Bank to protect its financial interest."[74]

(5) Aid for research and development was the only objective for which funds were actually authorized to be appropriated. Instead of the $10 million which the President had requested for the program's first year (the agreement calls for $50 million over five years to be matched by Euratom), the Committee, in section 3, approved $3 million, also to be matched. This thriftiness may hold the program back, particularly the formulation of plans on a sufficiently long-range basis. The $100 million five year total contemplated by the Agreement, however, leads one to wonder whether in estimating the capital costs of reactors, some of the research and development costs of reactor construction may not have been allocated to this joint research and development program.

(6) The act adds protection to the government to the third-party liability provisions of the agreement. Section 7 of the Cooperation Act directs the Government to take "such steps as may be necessary,

74. *Id.* at 4985.

including appropriate disclaimers or indemnity arrangements" in order to prevent the United States from being "liable for any damages arising out of, or resulting from, the joint program." Claims for indemnification under the Anderson-Price Act for injuries caused by nuclear incidents in the United States are excepted.

(7) The Joint Committee appears to have been content with the safeguards provisions despite their impact on the IAEA, to be discussed below.

One of the uncertainties left by the Joint Committee's heavy hand on the AEC's planning is whether the changes will require renegotiation of the Euratom Agreement for Cooperation. This seems probable though the alterations needed would not be major.[74a] Perhaps more serious, from the standpoint of Euratom, is the temper of the Congress. If the Agreement of Cooperation, though tailored to fit the Cooperation Act, is likely to be challenged when it has to run its thirty-day gantlet, next winter, Euratom may conclude to confine its cooperative activities to less complicated dealings with the more malleable British.[75]

Cooperation under OEEC Auspices: While the ECSC nations were bringing Euratom into being, the OEEC was endeavoring to create a more loosely articulated institution. In devising independent action, the OEEC has had to proceed as a body of 17 nations of which 6 (including 3 of the largest) were engaged concurrently in fashioning Euratom. Moreover, the largest non-Euratom OEEC member is the United Kingdom, a state slow to commit itself to Continental programs. In these circumstances, OEEC could not hope to follow the Euratom pattern closely.

Instead, OEEC has pursued a role more consistent with its customary policy of serving in a coordinating capacity and of meeting common needs by the provision of facilities which could not readily be supplied by individual nations. Under the direction of its Steering Committee, OEEC has established within the past year the European Nuclear Energy Agency in which responsibility for OEEC's nuclear program has been centered.[75a] OEEC has also provided for the creation of a chemical reprocessing plant, a facility urgently needed by the continental powers, to be constructed at the Belgian nuclear center at Mol in northeastern Belgium. The twelve nation $12 million corpora-

74a. Since the text above was written, a revised Agreement for Cooperation omitting reference to reactors of "proven types" and extending the completion date for two reactors for two years has been signed. See *New York Times,* Nov. 9, 1958, p. 1.

75. The Committee declares that it "does not intend that the British foreign atomic power efforts should be undercut." It notes that Euratom is negotiating with the British, S. REP. No. 2370, *supra* note 67, at 4984.

75a. ORGANIZATION FOR EUROPEAN ECONOMIC COOPERATION, STATUTE OF THE AGENCY, CONVENTION ON SECURITY CONTROL, CONVENTION ON THE EUROCHEMIC COMPANY (Paris 1957).

tion created for this purpose is known as Eurochemic. In addition, OEEC is planning to be associated in the management of a projected power reactor at Halden, Norway, an installation that can provide a training center for scientists and engineers from the OEEC countries.

OEEC has been active for more than a year in seeking a solution to the difficult third-party liability problem noted above which confronts its Euratom members with special urgency. The risk of a catastrophic nuclear accident has hung over the development of atomic power like a Damoclean sword. Thus far, less concern has been displayed by the communities from which the victims would come in the unlikely event of a serious accident than by the utilities and supplying firms that might be held liable for injuries to persons and property. Before 1957, industrial and electric utility firms in the United States had made plain their intention to abandon the atomic field rather than risk bankruptcy in such a disaster. The Anderson-Price Act, adopted in September of that year, sought to furnish both public and industrial financial protection by requiring liability insurance or other financial protection of reactor owners and providing, in addition to that, $500 million in government indemnity for liabilities incurred in domestic nuclear "incidents."[76]

Although few European governments seem likely to take part in indemnity plans, OEEC working groups have been considering proposals for a convention for its member states which would impose absolute liability for accidents but confine liability to the licensed operator of the nuclear installation involved. The amount of this liability would be limited to an amount equal to the total amount of liability insurance likely to be available to the operator.[77] Since this probably would not exceed $15 million, any big accident would require most of its victims to depend on the adequacy of national emergency relief and rehabilitation measures.

Whether an OEEC scheme along these or other lines will be adopted or a plan devised by Euratom will prevail instead, the resolution of the liability problem is probably essential to any large-scale participation by American industry in atomic power development in Europe. But the problem, it should be noted, is world-wide in incidence.

Given the location of the Euratom countries in the heart of the

76. The statutory euphemism. The indemnity provisions are chiefly in § 170 of the Atomic Energy Act, 71 Stat. 576 (1957), 42 U.S.C. § 2210 (Supp. V, 1958), added by the Anderson-Price Act, 71 Stat. 576 (1957), 42 U.S.C. § 2073 (Supp. V, 1958).

77. The OEEC groups have released no conclusions for publication. A study of the same problem (though not limited to Europe) has been undertaken by Robert E. Eichholz and associates under the auspices of the Harvard Law School and the Atomic Industrial Forum, Inc. Its preliminary report, *Financial Protection against Atomic Hazards: International Aspects* was published by the *Forum* in May, 1958.

OEEC territory, one cannot fail to wonder whether some or all of the non-Euratom states will not seek membership in Euratom. This would require the unanimous vote of the Euratom members.[78] Apart from the question of the Euratom attitude toward expansion, I have been told that non-Euratom states in OEEC are likely to be influenced on the issue of membership more by considerations relating to EEC's common market than by atomic policy. At present, the prospect of the common market looms much larger—and more controversially—on the European economic scene than do plans for atomic development. Interests that would oppose their country's participation in the common market would oppose its joinder in Euratom, not on grounds of atomic policy, but to avoid a possibly embarrassing precedent.

The Council for European Nuclear Research (CERN): In response to a more general plan initiated by Professor I. I. Rabi of Columbia University in June 1950, UNESCO's Natural Sciences Department sponsored a study of the feasibility of establishing a regional center for experimental high-energy physics in Europe where World War II had impeded the development of this field of study. Eleven Western European nations formed a provisional organization which was succeeded in September 1954 by the permanent body, the Council for European Nuclear Research.[79] Its headquarters are in Geneva where it has been constructing a cyclotron and a 20-30 bev synchrotron. It appears to be a highly successful example of international cooperation in advanced scientific research.

Regional Cooperation in Latin America: The Organization of American States (OAS) has had under consideration the creation of a regional atomic organization for the Western Hemisphere. In the present state of atomic development in Latin America, such a body would obviously have more functions in the facilitation of research and training than in the development of an atomic power program along either Euratom or OEEC lines. The OAS Council authorized in November 1957 the drafting of a statute to create an Inter-American Nuclear Energy Commission. This draft will doubtless be considered by the Council in its 1958 meeting.

In the meantime, the AEC has established the Puerto Rico Nuclear Center to be administered by the University of Puerto Rico under contract with the AEC. A pool reactor is to be completed there in late 1959 and other facilities provided for research and instruction. Various programs of instruction in Spanish are being established, and it seems

78. Euratom Treaty, *supra* note 52, art. 205.

79. For a report of the genesis of CERN, see Kowarski, *The Making of CERN—An Experiment in Cooperation,* 11 BULL. AT. SCI. 354 (1955).

likely that the Center will become one of the focal points for nuclear training in Latin America.[80]

Regional Cooperation in South Asia: Studies have been undertaken by the Colombo Plan nations of the feasibility of an Asian Nuclear Center to be located in Manila, with assistance from the International Cooperation Administration.[81] Thus far the actual realization of plans to this end has not been found practicable.

Regional Cooperation among Communist Countries: The Communist nations extend over such a vast area that it may be taking something of a liberty with the term to classify an activity embracing all of them as regional. However, this appears to be as convenient a point as any to report the cooperative activities centered in the Joint Nuclear Research Institute. The Institute was created in March 1956 by action of the USSR and Albania, Bulgaria, Czechoslovakia, Hungary, East Germany, China, North Korea, Outer Mongolia, Poland, and Rumania.[82]

The headquarters of the Institute are at Dubna near Moscow. The USSR transferred to it a 680 mev synchrocyclotron and a 10 bev synchrophasotron belonging to the Soviet Academy of Science. The work of the Institute is primarily in the field of theoretical physics. Its activities are administered by a director and two deputies elected by a majority vote of member states, and all states are represented on its scientific council. Each member state is to make an annual cash contribution to the Institute to meet its operating costs and to provide for its expansion.

THE PRESENT PLIGHT OF THE INTERNATIONAL AGENCY

While regionalism has been flourishing as the basis for cooperative arrangements, not only the position but the prospects of the IAEA have grown steadily less hopeful. Earlier in this article, four main functions of IAEA were identified. What promise of achievement does IAEA offer with respect to each of them?

(1) As an intermediary to enable "have not" nations to obtain nuclear fuel and equipment, IAEA has little now to offer. Its supply of pledged U-235, viz. 5,140 kg., would enable it to enter only two agreements of the scale of the German power bilateral. Neither Britain nor the USSR has displayed any readiness to increase their respective

80. For brief reports of these developments, see AEC, *op. cit. supra* note 24, at 217 and AEC, *op. cit. supra* note 20, at 26.

81. For very brief reports of these developments, see AEC, *op. cit. supra* note 24, at 218 and AEC, *op. cit. supra* note 20, at 27. See *Lack of Support for Asia Center*, 4 FORUM MEMO 23 (June 1957).

82. The creation of the Institution is reported, and plans for it outlined in the Soviet News, March 28, 1956, No. 3360. An invitation, since accepted, was sent at this time to North Viet Nam.

offers to it of 20 kg. and 50 kg. of U-235. Perhaps, in the absence of further offers by them, which, up to July 1, 1960, we are prepared to match,[83] Congress would vote to authorize the sale of more U-235 to the Agency; perhaps not. Moreover, as has been explained, fuel purchased through the Agency has to carry additional charges for IAEA services; fuel purchased through bilaterals does not. Our law does not permit us to offset these charges by reducing the price of fuel sold to the Agency.

The Communist delegates have already spotted this weak spot in our relationship. At the General Conference, they inveighed against profits in fuel charges, and called for preferential fuel prices for underdeveloped countries.[84] So far, however, the problem remains virtually academic. No customer had appeared at the Agency's shop until, at the General Conference session last fall, Japan asked for the Agency's assistance in obtaining three tons of natural uranium, reactor grade.[85]

(2) No nuclear fuel has actually been tendered to the IAEA for stockpiling. No such action is in prospect.

(3) The major function that the Agency could have performed, pending the emergence of active programs of atomic power development in the less developed countries, was the perfection of safeguards against diversion. Yet the Agency did not equip itself to perform this function and so was in a weak position when the Euratom opportunity arose. If the Agency had had a pilot safeguards program in operation—perhaps using an American reactor for demonstration purposes—the United States could have contested the Euratom position on safeguards more effectively. But, in any event, since U-235, guarantees, and capital funds tend to outweigh prestige, probably the IAEA could have had the job if we had accorded our off-spring determined support. We did not.

As things stand, despite the polite verbal gestures toward the Agency with which the United States-Euratom Agreement has been embellished, the IAEA has been rejected and discredited as an instrumentality for safeguards both by the nation that did most to bring the Agency into existence and by the principal nations that might have availed themselves of its services. What now will other nations do with respect to safeguards as they develop atomic power programs?

Fortunately, a development reported at the last General Conference session keeps some hope for IAEA safeguards activity alive. It was announced that the United States and Japan had agreed to ask the

83. The terms of our offer to IAEA appear in the amendment to § 54 of the Atomic Energy Act, 71 Stat. 455 (1957); 42 U.S.C. § 2074 (Supp. V, 1958).

84. See *Nations for Disagreements on Future Role of IAEA*, BNA ATOMIC INDUSTRY REP., News and Analysis, 4:331, 4:332.

85. *Id.* at 4:344 (1958).

IAEA to administer the safeguards provisions of their bilateral.[86] But for the non-Euratom OEEC states to follow this example would represent a failure to achieve parity with their Euratom neighbors, and this would be hard to take. And the Communist states are likely to obtain their nuclear fuels from the USSR which decries the imposition of controls on other nations, preferring, its delegate declares, to develop "a climate of trust."[87] India, the chief opponent of IAEA controls when the statute was being drafted, is not likely to accept them. If these countries are eliminated, few prospects remain in view.

(4) The remaining function open to the IAEA, that of providing fellowships, technical assistance, and coordinating services, is what has kept its large staff from lapsing into complete inactivity. The number of fellowships made available to it has been substantial, but one wonders whether an international agency represents an efficient instrumentality for this function. The problem of how to make work for the Agency has obviously concerned the United States (as well it might), and, at the second annual meeting of the General Conference, the American delegation was fertile in suggestions. Six specific proposals are reported to have been made by Chairman John A. McCone of the AEC, a United States delegate to the Conference.

The six proposals, as summarized in a Reuters dispatch to the *New York Times*,[88] related to "isotopes, safety, training, nuclear power, and exchange of information." A novel and potentially fruitful proposal was the AEC's offer to assign certain research projects to the Agency which would contract them out, at the AEC's expense, to scientific teams throughout the world, thereby tapping scientific talent not now available for atomic research. Chairman McCone also suggested an intensive program in the field of radioisotopes, presumably a research program under Agency auspices. He advocated "careful consideration of regional centers" for training.[89] He said that the Agency should carry out an "intensive and continuing survey of existing types of reactors, their costs, and criteria for introduction into new areas." He envisaged the Agency's development into "a major center for the collection and distribution of data" on the peaceful uses.

This conception of the Agency as the seat of important scientific activity is one that is not likely to be realized unless the Agency can attract to it mature scientists of stature and young scientists of great

86. *Ibid.*
87. *Ibid.*
88. N. Y. Times, Sept. 26, 1958, p. 6. News coverage of the General Conference was very meager.
89. A committee appointed to study the opportunity for a Latin American research and training center noted many difficulties but concluded that a general center might be established at a cost of $40,000,000 and an annual budget of $7,500,000, more than the annual budget of IAEA itself. A center specializing in one field might cost $7,500,000 and have an annual budget of $1,000,000. BNA ATOMIC INDUSTRY REP., *News and Analysis*, 4:343.

promise. Although the General Conference in its 1958 meeting, which ended on October 4, has voted to expand the Agency's staff and budget, the problem, always serious in an international agency, of establishing and maintaining a scientific staff of high caliber has not been solved and appears to have been intensified by the Agency's slow beginning.

In the 1958 meeting of the General Conference, friction between West and East was evident. A South African delegate foresaw "a crisis of confidence" in prospect.[90] The expanded budget was voted,[91] but the Agency appears to have been under fire as wastefully large.[92] Although the Director General looks to the expansion of the Agency's "general service" activities (as, for example, developing safety standards and solving such problems as the regulation of waste disposal and third-party liability)[93] the future of the Agency may depend more on its ability to provide "direct service," especially power projects in underdeveloped countries. Accordingly, the action taken by the 1958 Conference in authorizing a survey of the potentialities for nuclear power in the underdeveloped countries[94] may hold greater promise for the vitalization of the Agency than the more peripheral activities advocated by Director General Cole and Chairman McCone.

Few eventualities would be more harmful to the position of the United States, in seeking to maintain leadership in world atomic development, than to have the International Agency, that creature of President Eisenhower's initiative and our State Department's persistence, linger on in a state of growing ineffectuality or be extinguished by the *coup de grace* of the General Conference. Bold measures, including perhaps the transfer of the Agency to the United Nations and the renegotiation of many bilaterals, even conceivably the Euratom Agreement, may yet be necessary if a sorry ending is to be avoided.

90. See article cited *supra* note 85 at 4:333.
91. N. Y. Times, Oct. 5, 1958, p. 4.
92. See *ibid;* article cited *supra* note 85 at 4:333.
93. See note 85 *supra* at 4:332.
94. N. Y. Times, Oct. 5, 1958, p. 4.