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REPORT TO THE SECRETARY-GENERAL OF THE UNITED NATIONS RELATING TO RECOMMENDATIONS MADE BY THE CONFERENCE OF NON-NUCLEAR-WEAPON STATES

Note by the Director General

1. In December 1968 the General Assembly of the United Nations invited the Agency to report to the Secretary-General on the action taken in connection with recommendations contained in resolutions adopted the previous September by the Conference of Non-Nuclear-Weapon States [1].

2. The report which was consequently prepared was approved by the Board of Governors last June, when the Board requested the Director General to make the text available to the General Conference. It is accordingly attached hereto.

[1] General Assembly Resolution 2456 A (XXIII), para. 4. The resolutions of CNNWS are reproduced in United Nations document A/7277, pages 10-16.

SPECIAL REPORT TO THE SECRETARY-GENERAL OF THE UNITED NATIONS, PURSUANT TO GENERAL ASSEMBLY RESOLUTION 2456 A (XXIII), ON THE ACTION TAKEN BY THE INTERNATIONAL ATOMIC ENERGY AGENCY IN CONNECTION WITH THE RECOMMENDATIONS CONTAINED IN CERTAIN RESOLUTIONS ADOPTED BY THE CONFERENCE OF NON-NUCLEAR-WEAPON STATES

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NOTE

All sums of money are expressed in United States dollars.

*/ Throughout this report references to the resolutions adopted by the Conference of Non-Nuclear-Weapon States take the general form A. I. 1(a), in which "A" is the letter used to identify the resolution in document A/7277, the Roman numeral "I" identifies any separate operative part of the resolution, the Arabic numeral "1" any separate paragraph and "(a)" any separate sub-paragraph.

INTRODUCTION

1. By Resolution 2456 A (XXIII), paragraphs 3 and 4, the General Assembly invited the Agency to give careful consideration to the recommendations contained in certain resolutions adopted by the Conference of Non-Nuclear-Weapon States (CNNWS) [1] and to report on the action taken in this connection.

2. The Secretary-General of the United Nations transmitted the relevant documentation to the Agency, drawing its attention in particular to Resolutions E through N of CNNWS, and requested a report from the Agency by the end of July.

3. The Agency's Board of Governors, which under Article VI. F of the Statute has the authority "to carry out the functions of the Agency", accordingly gave initial attention to the matter at its meetings last February and approved the present report in June. In undertaking this task, the Board was conscious of the Agency's obligations under its relationship agreement with the United Nations to do what it could to meet the General Assembly's request. Indeed, the Board was pleased that the Assembly had thus provided and opportunity for the Agency's Members, almost all of which are also Members of the United Nations, to consider again in a different setting many of the fundamental matters to which CNNWS had devoted attention last year. On the other hand, the Agency has autonomy under its Statute; it is also the organization in the United Nations family which has the prime responsibility for international action to accelerate and enlarge the contribution that nuclear energy is already making and will increasingly make to the well-being of all mankind. The Board is of the opinion that the recommendations of CNNWS must be viewed by the Agency in the light of all these considerations.

4. Two of the recommendations, i.e. those concerning the role and functions of the Agency in relation to the use of nuclear explosions for peaceful purposes, and the composition of the Agency's Board of Governors [2] were also the subject of resolutions adopted by the Agency's General Conference, which in turn were noted by the General Assembly in Resolution 2457 (XXIII). In February the Board decided that these matters were of such importance that they required consideration by special ad hoc committees on which all Member States of the Agency would have the opportunity of being represented. At the meeting of the committee on the use of nuclear explosives for peaceful purposes 28 Members of the Agency were represented; a total of 50 Members participated in the meetings of the committee to review Article VI of the Statute.

5. The wide scope of the resolutions of CNNWS that have been referred to the Agency reflects the desire of countries throughout the world to increase the benefits they can derive from the peaceful uses of atomic energy at a time when nuclear technology is making rapid strides and finding its first large-scale applications in developing countries.

6. While the Agency is actively engaged in many of the activities referred to by CNNWS, the Conference's work will give a spur to existing programmes and help in the planning of new ones.

7. The concerted international effort that has already been made to spread the benefits of nuclear science and technology has probably no parallel in other branches of modern technology. Amongst the landmarks have been the three large International Conferences on the Peaceful Uses of Atomic Energy, held in 1955, 1958 and 1964 (and the fourth that is now being prepared for 1971); the setting up of the Agency itself in 1956 and of regional

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[1] Reproduced in United Nations document A/7277.

[2] Article VI of the Agency's Statute.

nuclear energy bodies such as the Inter-American Nuclear Energy Commission of the Organization of American States, the European Nuclear Energy Agency of the Organisation for Economic Co-operation and Development, and the European Atomic Energy Community at about the same time. Besides these international activities, large bilateral programmes of co-operation have helped to introduce 41 research reactors in developing countries, provided training for several thousand scientists and technicians outside their own countries and finances for nuclear power in the amount of several hundred million dollars.

8. From 1958 through 1968 the Agency itself has been able to draw on resources of approximately $115 million. Of these, approximately $38 million have been made available for direct aid to individual developing countries, and a substantial proportion of the remainder has been spent on work in the developing countries or on work of special interest to them. Under the Agency's programmes, a total of over 3000 scientists has been trained under fellowships and a further 1300 in training courses, more than 1000 experts have been sent into the field, equipment to the value of $5 million has been provided while over 17 300 scientists and technologists have taken part in 112 Agency seminars, conferences and symposia.

9. The Agency has, however, experienced difficulties in respect of the continuing failure to reach the target set for voluntary contributions from which its operational budget is financed. The recommendations of CNNWS which seek to increase the funds available for the financing of nuclear energy activities were accordingly received sympathetically by the Board which made a study of possible sources of financing [3].

10. In examining other individual recommendations made by the Conference it is apparent that certain of them are already being put into effect in some measure while others will require extensive preliminary studies and can only be given effect gradually. Still others are addressed to States rather than to the Agency as such, for instance, the recommendation that States should accept the Agency's Safeguards System and conclude agreements for its application to their own activities; nevertheless, this implies considerable effort by the Agency and preparations are already being made. Recommendations such as those concerning access to special fissionable material on a commercial basis and the related question of a fund of special fissionable material are now also being studied. Some recommendations will require the attention of the Agency for many years to come and by their very nature will be implemented gradually; this is the case, for example, with respect to those concerning the improvement and simplification of safeguards and the need for continuing efforts to compile and disseminate information on nuclear science and technology.

11. In these circumstances the present report should be regarded as a progress report. It will be brought to the attention of the Agency's General Conference at its thirteenth (1969) session, and relevant action taken by the latter will be described in this year's annual report of the Agency to the General Assembly. Continuing action in the years ahead will be reflected in subsequent annual reports.

12. With a view to facilitating the General Assembly's discussion of these matters, this report deals individually by subject matter rather than by resolution with each major question referred to in Resolutions F through M of CNNWS.

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[3] See paras 73-107 below.

REPORT BY GROUP OF EXPERTS APPOINTED BY THE SECRETARY-GENERAL ON "ALL POSSIBLE CONTRIBUTIONS OF NUCLEAR TECHNOLOGY TO THE ECONOMIC AND SCIENTIFIC ADVANCEMENT OF THE DEVELOPING COUNTRIES"

Resolution G

13. The Agency is extending its full co-operation to the Secretary-General in the preparation of the report to the General Assembly, called for by Resolution G, on all possible contributions of nuclear technology to the economic and scientific advancement of the developing countries, and assigned the Deputy Director General for Technical Assistance and three other senior staff members to ensure the fullest administrative, technical and scientific support for the Group's work.

14. On the invitation of the Agency, the Group of Experts appointed by the Secretary-General held its first meeting at the Agency's Headquarters from 17 to 21 March 1969. The Agency arranged to provide the members of the Group in advance with full information about the Agency's work directed towards the scientific and economic advancement of the developing countries, including a review of the Agency's activities that was carried out by the Board of Governors in 1967 with the object of increasing its assistance to developing countries. The Secretariat also prepared and presented a series of detailed papers dealing with specific branches of nuclear science or technology and outlining:

(a) The potential benefits that could be achieved in the developing countries by the full application of the scientific discipline or technology concerned;

(b) The problems encountered by the Agency in its efforts to introduce the discipline or technology into the developing countries;

(c) The action that, in the Secretariat's view, it would be desirable to take in the next decade to overcome these problems; and

(d) The Agency's plans and programmes in this regard.

15. These presentations covered the following topics:

(a) Nuclear energy applications

(i) Nuclear power;

(ii) Nuclear desalination and agro-industrial complexes;

(iii) Peaceful nuclear explosions; and

(iv) Nuclear materials;

(b) Nuclear science techniques

(i) Nuclear applications in food and agriculture;

(ii) Nuclear applications in hydrology;

(iii) Nuclear applications in medicine and biology; and

(iv) Nuclear applications in industry;

(c) Overall nuclear contribution to scientific infra-structure and advancement in developing countries;

(d) Developing country participation in nuclear information exchange;

(e) Relevance of safeguards to the developing nuclear industry; and

(f) The International Centre for Theoretical Physics, Trieste.

16. At the first meeting, the Group of Experts prepared a draft outline of the report. The task of preparing the individual chapters of the report was allocated to the members of the Group. The Agency co-operated in particular by preparing two specific studies, namely, on prospects of small and medium nuclear reactors with special reference to developing countries, and on nuclear applications in food and agriculture with emphasis on food preservation.

17. The Agency also provided the services of a senior staff member to the United Nations Secretariat upon request, to assist in preparing a draft of the report for consideration by the Group at its second meeting, which was convened in New York from 16 to 27 June 1969, and was represented at this meeting by the Deputy Director General for Technical Assistance and Publications.

AGENCY SAFEGUARDS

Resolution F. 1, 2, 3 and 4

18. The first paragraph of Resolution F recommends the establishment under the Agency's Board of Governors of institutional machinery on safeguards of which both countries supplying nuclear materials, and Member countries, whether possessing nuclear facilities or not, shall form part. This recommendation has been brought to the attention of the Board.

19. The second paragraph of the resolution contains three recommendations regarding the objectives that should be followed in the process of improving and simplifying the Agency's Safeguards System [4]. These recommendations are commented on in paragraphs 24 to 34 below. A word should first be said about the continuing steps that are being taken to improve and simplify the system itself and the practices followed in its application.

20. The Safeguards System contains built-in requirements for periodic review in the light of the Agency's experience and of technological progress. The system at present in force is itself the result of a review started in 1964 of an earlier system adopted in 1961. New parts were added in 1966 and 1968.

21. The Board of Governors normally builds up and reviews the system by appointing working groups of specialists drawn from countries represented on the Board. It has been customary that any other Member State of the Agency may, if it wishes, send experts to participate in the deliberations. The recommendations of these working groups are subsequently studied and discussed in detail by the Board.

22. Within the Secretariat one of the two divisions in the Department of Safeguards is devoted exclusively to research development on safeguards and is at present beginning a full-scale systems analysis which will also draw upon systems analyses being made in Member States. Through a growing programme of research co-ordination and of research contracts, the Agency is helping to foster the development of new techniques in Member States and its own laboratory. At meetings of panels of experts, of which two or three are now being held each year, technical methods and safeguards practices for specific parts of the fuel cycle are developed or reviewed by leading authorities from the countries most advanced in nuclear technology. Since September 1968, groups of high-level consultants have been studying and developing criteria and practices that should be followed in applying the safeguards system under the Treaty on the Non-Proliferation of Nuclear Weapons. Their work is expected to lead to rationalization and standardization of safeguards practices for nuclear materials in the main types of nuclear facilities and in storage, transport, etc.

23. Sub-paragraph 2(a) of Resolution F specifies that:

> "The safeguard procedures should be simplified by the use of instruments and other technical devices at certain strategic points of the flow of nuclear materials, with a view to restricting the safeguarding operations to the necessary minimum."

Comment

24. This concept is also referred to in the Non-Proliferation Treaty. One of the objects of the Agency's safeguards research and development programme is to develop instrumentation that would enable it to concentrate attention on certain key points or to mechanize safeguards procedures to a greater extent; certain measuring instruments developed by Member States are in fact being used experimentally by the Agency.

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[4] INFCIRC/66/Rev. 2.

25. It is generally recognized however, that considerable effort and technological development will be essential before instrumentation can be used on a large scale, and that inspections by trained personnel will continue to be required for effective safeguards.

26. In the meantime, the Agency will continue to work towards the objective contained in this recommendation for the threefold purpose of making the application of safeguards as effective as possible, limiting to the minimum the need for the presence of inspectors and reducing the cost of safeguards.

27. With reference to the desirability of "restricting the safeguards operations to the necessary minimum", the present system contains the specific injunctions that "the Agency shall implement safeguards in a manner designed to avoid hampering a State's economic or technological development" and "the safeguards procedures ..... shall be implemented in a manner designed to be consistent with prudent management practices required for the economic and safe conduct of nuclear activities". These provisions are reflected in the practice of safeguards followed by the Agency. The system further prescribes that the number, duration and intensity of inspections "shall be kept to the minimum consistent with the effective implementation of safeguards".

28. Sub-paragraph 2(b) of Resolution F recommends:

> "Simplification of safeguards in respect to fissionable materials in small quantities for use in scientific research".

Comment

29. The safeguards system does in fact allow for simpler procedures to be applied to fissionable materials in small quantities for use in scientific research. Facilities holding small quantities are not inspected. The frequency and content of routine reports is reduced in accordance with the significance of the material involved. The procedure for supplying small quantities was recently simplified by the Board of Governors by delegating additional authority to the Director General.

30. Sub-paragraph 2(c) of Resolution F recommends:

> "Incorporation in the agreements of the rules laid down against industrial risks, including industrial espionage, by the Statute of the International Atomic Energy Agency, the decisions of the Board of Governors and the directives of the Director General, particularly with regard to the possibility of challenging inspectors".

Comment

31. Rules against industrial espionage are incorporated in safeguards agreements with Member States. These rules stipulate inter alia:

(a) That the Agency shall "take every precaution to protect commercial and industrial secrets ....." "No member of the Agency's staff shall disclose ..... any commercial or industrial secret or any other confidential information coming to his knowledge by reason of the implementation of safeguards by the Agency". The only exception is that such information may be disclosed to the Director General or persons specifically designated by him who may need such information for their official duties; and

(b) "That the Agency shall not publish or communicate to any State, organization or person, any information obtained by it in connection with the implementation of safeguards". The only exception is that specific information may be given

to the Board or to staff members who need it for their official duties in connection with safeguards, but only to the extent necessary for the Agency to fulfil its safeguards responsibilities. The Board itself may decide to publish summarized lists of items being safeguarded but if it decides to have additional information published, it may not do so unless all States directly concerned agree.

32. The Secretariat maintains an effective system for security classification of papers pertaining to safeguards. This includes information which Member States indicate should be treated as confidential. Security measures are also automatically applied in respect of information obtained during inspections.

33. With regard to safeguards inspectors, the relevant rules may be summarized as follows:

(a) The designation of an inspector to carry out duties in a particular State is made in full consultation and with the explicit agreement of that State. The State may withdraw its approval at any time thereafter;

(b) The State may arrange for the inspector to be accompanied by representatives of the State concerned; and

(c) The use of any staff member for inspection purposes must be approved by the Board.

34. These rules are incorporated by reference in all safeguards agreements with the Agency and it is expected that these or similar rules will also be incorporated in safeguards agreements to be concluded under the Non-Proliferation Treaty. Furthermore, as all inspectors are staff members, they are bound by the relevant provisions of the Staff Regulations and Rules.

35. Paragraph 3 of Resolution F:

"urges the nuclear-weapon Powers to conclude with the International Atomic Energy Agency safeguard agreements consistent with the relevant rules".

Comments

36. It should be noted that two nuclear-weapon States (the United States of America and the United Kingdom of Great Britain and Northern Ireland) have indicated that after the Non-Proliferation Treaty is in force, they will permit the Agency to apply its safeguards on all nuclear activities except those that have a direct national security significance. These two Governments also concluded safeguards agreements with the Agency some time ago that placed specified facilities under the Agency's safeguards. [5]

37. In Resolution F.4 CNNWS expressed the view that it was essential:

"that rules should be drawn up to avoid duplication of safeguard procedures and consequent commercial discrimination".

Comments

38. The application on a world level of various international and national procedures with respect to safeguards has led to certain duplications where the same nuclear material or facility is subject to the requirements of several procedures simultaneously. This is clearly not inherent to any single system but results from the exercise of multiple controls, often for related or identical purposes.

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[5] For the texts of the agreements see documents INFCIRC/57 and INFCIRC/86 respectively.

39. It would seem highly desirable that such duplication be avoided in so far as possible. The extent to which bilateral arrangements are replaced by the Agency's single world-wide safeguards system and that regional arrangements are dovetailed into the Agency's system in such a way as to minimize duplication, will be of great importance in achieving this objective.

40. The difficulties which stand in the way of avoiding duplication in all respects should not, however, be overlooked. In many cases bilateral or regional safeguard arrangements antedate or are contemporary with the international safeguards of the Agency. They are sometimes the consequence of requirements of national legislation in Member States. In other instances, they are the direct result of multi-national agreements.

41. A growing number of bilateral arrangements are already being transferred to the Agency. Moreover, a significant step in the same direction was taken by the signatory countries to the Treaty for the Prohibition of Nuclear Weapons in Latin America (signed in Mexico on 14 February 1967). Rather than establishing a separate regional system of control, the Treaty provides that contracting parties shall negotiate agreements with the Agency for the application of its safeguards to their nuclear activities. The first such agreement was concluded recently between Mexico and the Agency and provides also for the suspension of any other safeguards arrangements to which Mexico and the Agency have been party.

NUCLEAR INFORMATION

Resolution H. I. 1, 2 and 3

42. The first paragraph of Resolution H. I calls upon the Agency

> "to continue its utmost efforts for compilation and dissemination of public information concerning the peaceful uses of nuclear energy, including those related to the peaceful application of nuclear explosions".

Comments

43. The Statute (Article VIII) prescribes that the Agency:

> ".... shall take positive steps to encourage the exchange among its members of information relating to the nature and peaceful uses of atomic energy and shall serve as an intermediary among its members for this purpose."

and that:

> "Each member should make available such information as would, in the judgement of the member, be helpful to the Agency."

44. Since the beginning, the Agency has had a major and steadily expanding programme to fulfil these requirements and to disseminate the information provided by Member States. Most new information is generated in the technically advanced countries that have extensive programmes in nuclear research and development. The Agency's role is thus that of a clearing house rather than of a generator of new information. The following is a summary of the services provided by the Agency.

Library service

45. The library now contains over 146 000 items in the form of books, periodicals, technical reports and films, constituting an extensive and up-to-date collection of information on all branches of nuclear science and technology. This is made available in the following ways:

(a) Member States are informed once a month of all main new acquisitions (e. g. books and films) and twice a month of more specialized material (e. g. technical reports); and

(b) Scientific institutions in any Member State may obtain any document or film in the library.

Conferences, symposia and other scientific meetings

46. Each year the Agency convenes about 12 major scientific meetings and about 30-40 smaller meetings. Annual attendance at symposia, conferences and seminars averages about 2500 participants.

47. Symposia and conferences are devoted to the free exchange of the latest information generated by research and development on the topic concerned. About half are held away from the Agency's Headquarters so as to facilitate participation by nationals of host Member States and countries in the region, and serve as a spur to local scientific development. Furthermore, the Agency has recently arranged to pay the travel cost of a limited number of participants from developing countries at each conference or symposium.

48. Seminars have a partially educational character and are often organized on a regional basis. Experts lead discussions, and groups of 50-100 persons exchange information on the problems that they face.

49. Smaller meetings such as panels, study groups and research co-ordination meetings are attended by experts invited by the Agency, generally on the nomination of Member States, and the cost of attendance is usually paid or partly paid by the Agency. They provide opportunities to exchange information in more highly specialized fields or, for example, between holders of Agency research contracts in a particular region.

50. In addition, the General Assembly assigned to the Agency the scientific responsibility for the Third United Nations International Conference on the Peaceful Uses of Atomic Energy in 1964 and the fourth to be held in 1971. These major conferences provide the opportunity for a comprehensive review of advances in nuclear science, have stimulated the publication of much information that had previously been kept secret and, in 1964, attracted approximately 2000 participants and a further 2000 observers.

51. Summing up, the Agency's meeting programme covers in a systematic way all branches of nuclear science and technology and promotes the fullest possible exchange of information between countries from all parts of the world.

Publications

52. The Agency is now one of the largest scientific publishers in Europe, issuing altogether about 30 000 pages of text each year, with a print-run of about 2500 copies. A considerable part of the publications are proceedings of the Agency's own conferences, seminars and other meetings, but the Agency also publishes various directories, guide books, technical reports and four journals:

(a) Atomic Energy Review (specially commissioned review articles on particular aspects of atomic energy);

(b) Nuclear Fusion (contributed and review articles on nuclear fusion, plasma physics, magnetohydrodynamics);

(c) Meetings on Atomic Energy (a world-wide list of meetings on atomic energy and space science); and

(d) IAEA Bulletin (information for the press and public on developments in the Agency and in Member States).

53. Several copies of each publication are distributed on a cost-free basis to each Member State and to the depository libraries nominated by Member States. Further copies are available to Governments at a reduced charge. Publications are also sold directly and through a network of sales agents; payment may be made in local currency.

Future programmes

54. In March 1970 the Agency will hold a symposium on the handling of nuclear information at which Member States will have the opportunity to review and explore the mechanisms used to promote this diffusion.

55. In 1970 the Agency will also bring into operation a computer-based International Nuclear Information System (INIS). Each Member State, or group of Member States, will identify all new nuclear information published in its territory or area and send a description and an abstract of each item to the Agency. If the item is not readily available for purchase, the full text of the report will also be submitted.

56. About 100 000 new items of literature are now produced each year in nuclear science and technology. The Agency will merge the descriptions of these items into a complete file which will then be copied and made available to Member States both on magnetic tape and in printed form. The system will operate on a twice-monthly cycle.

57. Member States will use the Agency's magnetic tape or the printed versions as the basis of national nuclear information systems. It will be possible to apply either computer or manual information-retrieval procedures to select those entries that respond to the needs of a particular scientist, institution or authority. The abstracts and, where appropriate, full texts will be distributed on microfiches to scientific institutions at a low price.

58. The objective of INIS is to ensure that any nuclear scientist or engineer will be made aware as quickly as possible of items of literature that might help him in his work. The first step is to provide each Member State with the basic "catalogue" from which the individual references can be extracted. At a later date, this service will be supplemented by one under which the Agency itself will use its computer to provide searches of the catalogue on direct request from scientists and scientific institutions.

59. Paragraph 2 of Resolution H. I recommends that the Agency:

> ".... study appropriate international arrangements to facilitate the exchange of scientific and technical information which has commercial or industrial value and is not publicly available, so as to make it possible for interested countries to know of the existence and outline of such information and to enable the interested parties to enter into negotiations about the acquisition of such information with the owners thereof; ...."

Comments

60. The situation is now totally different from what it was before 1955, when most information about the application of atomic energy was kept secret. Partly because of the stimulus of the first and second International Conferences on the Peaceful Uses of Atomic Energy, virtually all scientific information is now released as it is produced, and the Agency does not believe that any significant impediment exists. The main problem is to promote the diffusion of scientific information that has been released so that it can become available rapidly to the potential user. This is what the Agency's programmes are designed to do.

61. Also, most information of a technological character is no longer withheld for reasons of military secrecy. Clearly, nuclear-weapon States do withhold technological information about the production and use of nuclear weapons. There are also indications that information about the processes for the separation of uranium-235 (which can be used for either military or peaceful purposes) is being withheld for reasons of military security. However, it does seem clear that in other fields, such as reactor design, military secrecy is not itself preventing the spread of technological information.

62. Some technological information, particularly that involving manufacturing processes e. g. for reactor components or fuel, is nevertheless being withheld for commercial reasons. In this connection, the Agency's freedom of action is limited - for two principal reasons:

(a) Often the owners of commercial information are not Governments but private corporations or institutions; and

(b) The Agency's Statute requires the Director General and the staff to protect industrial secrets and other confidential information which the Agency may acquire by reason of its operations.

Nevertheless, it is believed that the Agency's activities do stimulate the voluntary release of information that had previously been kept secret for commercial reasons. At symposia and smaller meetings such information may be presented in order to gain national or industrial prestige, and the Agency's programme causes the owners of commercial secrets to assess the value of a secret against the prestige that they would obtain by releasing it.

63. It has been suggested that the Agency might take an initiative to establish whether new mechanisms are required to facilitate transfers of commercially restricted information. One possibility would be a mechanism by which the holders of such information could identify the topics covered and invite other interested organizations to negotiate commercial arrangements under which the information might be transferred. The Agency believes that this suggestion merits further exploration, and is considering calling a meeting to discuss it. The Agency proposes to consult with the European Nuclear Energy Agency and to approach the atomic industrial forums that have been established by private industry in some countries.

64. The third paragraph of Resolution H.1

> "invites the nuclear-weapon States to advise the Agency at regular intervals as to the possibility of their declassifying scientific and technical information which has become essential for the development of the peaceful uses of nuclear energy, as soon as there is no longer any reason for its classification on national security grounds, bearing in mind all the benefits to be derived from the dissemination of scientific knowledge".

Comment

65. The comments made above on Resolution H.1.2 are also relevant here.

THE USE OF NUCLEAR EXPLOSIVES FOR PEACEFUL PURPOSES

Resolutions H. I. 1, H. IV and L

66. Resolution H. IV recommends that the Agency:

> "in relation to the question of nuclear explosions for peaceful purposes, initiate necessary studies that are deemed advisable on its possible functions in this field".

Resolution H. I. 1, which deals with the Agency's information programme, also calls for the utmost efforts in compiling and disseminating information on the peaceful applications of nuclear explosions.

Comments

67. In September 1968 the General Conference of the Agency asked that a similar study be made and that the Board of Governors report thereon to the General Conference in 1969, at its thirteenth regular session. [6]

68. Subsequently the General Assembly of the United Nations adopted a resolution taking note of the Agency's action in this regard [7] and another resolution requesting the Secretary-General to prepare a report on the "establishment, within the framework of the International Atomic Energy Agency, of an international service for nuclear explosions for peaceful purposes, under appropriate international control". [8]

69. The Board of Governors first considered the matter at its meetings in February 1969 and felt that it was of sufficient importance to require study by a special ad hoc committee in which all Member States of the Agency would have the opportunity of being represented and presenting their views. It accordingly established such a committee and, to help prepare for it, the Director General, at the Board's request, circulated an analysis of the role that the Agency might play as well as information on the status of the technology of peaceful explosions.

70. The ad hoc committee met on 5 June and advised the Board on the preparation of the report requested by the General Conference. The Board concluded, inter alia, that activities in relation to peaceful nuclear explosions fall within the Agency's technical and statutory competence; that the Agency should approach the subject gradually, concentrating at first on the exchange of information; and that the existing range of services offered by the Agency, subject to subsequent review by the Director General, is adequate for providing assistance to Member States in connection with nuclear explosions for peaceful purposes.

71. The Director General, at the Board's request, communicated a copy of the report to the Secretary-General for his use in preparing the report requested by the General Assembly.

72. In this connection the Board has also taken note of Resolution L of CNNWS, which stresses the need for international arrangements aiming at regulating and controlling all explosions for peaceful purposes compatible with a comprehensive test ban treaty.

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[6] General Conference Resolution GC(XII)/RES/245.

[7] General Assembly Resolution 2457 (XXIII).

[8] General Assembly Resolution 2456 C (XXIII).

FINANCE FOR NUCLEAR ENERGY ACTIVITIES

Resolution H.II and I

73. Two resolutions of CNNWS relate to the problems of increasing the financial resources available to the developing countries through the Agency for nuclear energy development.

(a) Resolution H.II:

"Recommends that the Agency study further the ways and means of increasing the funds available for technical assistance, taking into full consideration the views of interested countries, particularly those of the developing countries, expressed in this Conference"; and

(b) Resolution I, in its operative paragraph:

"Recommends that the International Atomic Energy Agency should undertake to examine the basis on which arrangements can be made by the Agency to secure finances from international sources for the creation of a 'Special Nuclear Fund (SNF)' to be made available in the form of grants and low-interest-bearing loans, repayable over long periods of time, for financing the nuclear projects which have been found by the Agency to be technically feasible and economically viable in the territories of non-nuclear-weapon States which are members of the Agency, particularly those in the developing areas of the world, and which may make request to the Agency under the provisions of Article XI.B of the Agency's Statute".

74. The nature of a country's needs for technical assistance in nuclear activities depends to a great extent upon the stage of its economic and social development and the priority that its Government assigns to nuclear technology in its plan of development.

75. A country with no experience or training in the use of nuclear energy for peaceful purposes usually requires assistance in the form of fellowships and training courses in order to build up the cadre of trained staff it requires if it is to carry out an atomic energy programme. When such a staff is at least partially trained there are frequent requests for experts and equipment to undertake specific projects. Each such project helps to establish a programme in which counterpart staff may be used effectively when they return after completing fellowship training. During this stage it is frequently appropriate to carry out regional training projects or establish regional centres to meet the similar needs of several Members which are at the same stage of nuclear energy development and within the same geographical area.

76. Many developing countries are now advanced in the various specialized branches of nuclear technology. The energy needs of some of those countries make it necessary to carry out feasibility studies before planning the utilization of nuclear power. If a proposed power project is found to be technically feasible and economically viable, the developing country concerned must then consider taking the major step of heavy capital investment for nuclear energy.

77. Details regarding the part played by the Agency in furnishing Member States with technical assistance at each stage of development and the available sources of financing are given below in paragraphs 78 to 107. The available sources of financing are:

(a) The Agency's regular programme of technical assistance under the Operational Budget;

(b) The United Nations Development Programme Technical Assistance (UNDP(TA)) or Special Fund (UNDP(SF)) components;

(c) The International Bank for Reconstruction and Development (IBRD);

(d) Bilateral governmental arrangements; and

(e) Private investment sources.

The Agency's regular programme of technical assistance

78. The Agency's regular programme of technical assistance is financed from the Operational Budget and is entirely dependent upon voluntary cash contributions and contributions in kind.[9] Cash contributions are pledged each year and a target figure is established by the General Conference. Resolution GC(V)/RES/100, adopted by the General Conference in 1961, urged Members "to make voluntary contributions to the General Fund for 1962 and succeeding years in amounts that are at least the same percentages of the target for each year as are their assessed contributions to the Regular Budget", or, if this proves to be impossible, "to demonstrate their continued support of the Agency by making each year at least a token contribution to that Fund".

79. The target established and the voluntary contributions pledged for each year from 1959 through 1969 are shown in Table A below.

Table A

Voluntary contributions

Year	Established target (in millions of dollars)	Cash contributions pledged to the General Fund				
		Amount $	Percentage of target	Shortfall $	Number of Members pledging	Percentage of Members pledging
1959	1.5	1 183 044	78.9	316 956	41 of 70	58.6
1960	1.5	996 103	66.4	503 897	36 of 74	48.6
1961	1.8	1 261 200	70.1	538 800	37 of 77	48.1
1962	2.0	1 380 470	69.0	619 530	44 of 80	55.0
1963	2.0	1 437 394	71.9	562 606	40 of 85	47.1
1964	2.0	1 374 447	68.7	625 533	42 of 89	47.2
1965	2.0	1 330 589	66.5	669 411	55 of 94	58.5
1966	2.0	1 277 416	63.9	722 584	61 of 96	63.5
1967	2.0	1 431 823	71.6	568 177	62 of 98	63.3
1968	2.0	1 368 680	68.4	631 320	63 of 99	63.6
1969 a/	2.0	1 396 524	69.8	603 476	60 of 102	58.8

a/ As at 30 June 1969.

80. The target for such contributions has not been increased since 1962, largely because the combined Regular Budget assessment ratio of those Members pledging at or in excess of that ratio amounted to only about 25% to 30% of the total assessment ratio for all Member States and it was considered unlikely that those Members not pledging at all, or those now pledging below their assessment ratio, would increase their pledges merely because the target was increased. It seemed pointless to set a higher target if the net increase in resources were to be only about $25 000 for each increase of $100 000 in the target. The constant increase in prices since 1962 has caused a decline which now amounts to about $300 000 per year in the value of the resources available.

[9] The Agency's Statute provides that all voluntary contributions of cash shall be paid into a General Fund, which is then used to finance the Operational Budget.

81. Funds pledged to the General Fund have been used primarily for technical assistance, but about 10% to 15% of those funds has been used each year to finance the Agency's Laboratory and, during the earlier years of the Agency, to finance some research contracts. The balance has been available for fellowships, training courses and technical assistance projects (experts and equipment) under the Agency's regular programme of technical assistance.

82. Requests for technical assistance in the form of experts and equipment have grown steadily since 1959, but since there has been no commensurate increase in the availability of financial resources, the percentage of assistance requested which could be approved by the Board of Governors each year has steadily declined, as shown in Table B below.

Table B

Technical assistance

Year	Value of requests received $	Value of assistance approved $	Percentage of assistance approved
1959	690 000	619 400	89.6
1960	1 150 000	599 200	52.1
1961	1 277 600	513 100	40.4
1962	1 530 000	757 600	49.5
1963	1 750 000	856 700	48.9
1964	2 400 000	804 600	33.3
1965	2 500 000	874 000	35.0
1966	3 000 000	902 000	30.0
1967	2 600 000	975 000	37.6
1968	3 600 000	977 000	27.1
1969	3 700 000	977 000	26.4

83. Requests for 51 projects in 28 Member States in 1968 and for 47 projects in 24 Member States in 1969 were not approved solely owing to lack of funds.

84. The disadvantage of relying entirely on pledges of voluntary cash contributions for the provision of technical assistance can be seen from the status of such pledges for 1969. By 30 June 1969 only 60 of the Agency's 102 Member States had made pledges as follows:

Table C

Pledges of voluntary contributions

Number of Members	Rate at which pledge for 1969 has been made	Assessment ratio %	Required by assessment ratio $	Amount pledged $	Shortfall or (surplus) $
19	In excess of assessment ratio	8.21	164 200	193 606	(29 406)
28	At assessment ratio	16.14	322 800	322 800	-
7	Below assessment ratio by less than $9000 ($400 to $8600)	6.25	125 000	102 967	22 022
6	Below assessment ratio by more than $9000 ($10 400 to $177 530)	61.30	1 226 000	777 151 a/	448 849 a/
60	Sub-total	91.90	1 838 000	1 396 524	441 476
42	No pledges yet announced for 1969	8.32	166 400	-	166 400
102	TOTAL	100.22 b/	2 004 400	1 396 524	607 876

a/ This figure includes the United States' matching contribution of $453 870 which would increase to $650 000 if all other contributions reached $1 350 000.

b/ Percentage exceeds 100% because four new Member States joined the Agency after assessment ratio had been established.

85. The Board and the General Conference have approached the problem of the shortfall from the target for voluntary contributions to the General Fund in the following ways:

(a) In Resolution GC(V)/RES/100 the General Conference invited Member States to make voluntary contributions in amounts that are at least at the level of their Regular Budget assessments. Following a recommendation made by the Board in February 1969, an urgent appeal for increased voluntary cash contributions was sent to all Member States in the hope that the number of Members complying with the resolution would increase to about 90% of the total membership. If this percentage is attained it may be possible to persuade those Members which now pledge at a level below their Regular Budget assessment ratio to increase their pledge enough to meet the goal established in 1961 by the General Conference;

(b) Each year since 1963 the Board has considered raising the target for voluntary contributions in the hope that those Member States which now contribute at their Regular Budget assessment ratio would continue to do so, thereby increasing the financial resources available for technical assistance. This course of action up to now has been rejected for the reasons mentioned above [10];

(c) The revision of Article XIV of the Statute to provide for consolidation of the present Operational Budget with the Regular Budget so that all approved programmes would be financed from assessments on Member States has been considered. This question has been the subject of lengthy discussion by the Board and the General Conference in the past, but the necessary support for such a revision was not forthcoming.

[10] See para. 80 above.

(d) Those activities other than technical assistance which are financed from the Operational Budget might be financed from the Regular Budget. In this connection the Board has decided, subject to approval by the General Conference, that the costs of operating the Agency's Laboratory should be gradually transferred to the Regular Budget beginning in 1970; this will release additional funds under the Operational Budget for technical assistance; and

(e) Member States might be encouraged to seek financial support for more of their nuclear energy projects from UNDP(TA) or, in the case of large projects, from UNDP(SF). This possibility is discussed below.

UNDP(TA)

86. The financial support received from UNDP(TA) which is administered by the Agency's Division of Technical Assistance has amounted to approximately $1 million annually for the past several years. UNDP(TA) finances only country programmes developed by national planning agencies. Atomic energy commissions (or the equivalent bodies) in each Member State should take full advantage of this possible source of funds. In many cases, the demands of more popularly oriented programmes for technical assistance, for instance support for improved health, education and food-producing activities in a developing country, may relegate nuclear energy projects to such a low priority that no such project can be carried out with the UNDP resources available for that country. In such cases the atomic energy officials request support from the Agency. There is little difference between the types of projects supported by UNDP and those financed from the Agency's Operational Budget.

87. In addition, UNDP(TA) provides funds for regional projects. Until the end of 1970, each participating organization will be allocated a sum equal to 16% of the resources it receives for country programmes. The Agency receives approximately $275 000 per annum to carry out its programme of regional projects. This sum is distributed by the Agency to the various regions to cover the cost of training courses and regional advisers.

88. The Governing Council of UNDP has decided that, as from 1971, target figures for regional and inter-regional projects will no longer be set, the funds normally reserved for such projects being retained by the Administrator. The implication of this new procedure is that in future requests for regional projects will originate in the countries concerned. Apart from the expression of governmental support through resolutions of intergovernmental bodies, requests will have to be formally endorsed by at least three interested Governments, which must state the arrangements they have made for participating in such projects, including their contributions towards local costs. Such projects drawn up by Governments will then be submitted to the Agency for technical endorsement and will be forwarded to the Administrator of UNDP for approval. It will therefore be up to the national atomic energy authorities to ensure that regional projects involving the use of nuclear techniques are developed and given sufficient priority to ensure that they receive the approval of the Agency and UNDP.

UNDP(SF)

89. One resolution of CNNWS suggested that UNDP(SF) should establish a special research and development programme for nuclear technology. The Administrator of UNDP has indicated that it will continue to be guided in evaluating nuclear projects by its usual criteria of soundness and priority.

90. UNDP(SF) has substantial financial resources available for technically feasible projects. The Agency has been the executing agency for only five Special Fund projects to date, although the Governing Council each year approves over a hundred new projects; these are usually large-scale projects involving considerable expenditure.

91. The Special Fund was set up to deal with an area of activity between small technical assistance projects and major capital aid projects. Its projects are largely in the nature of pre-investment studies, that is, studies designed to determine whether a good case can be made for investment. An example is the Agency's project in the Philippines, whereby the case for nuclear power in that country has been established.

92. The availability of UNDP(SF) financing should help materially in alleviating the shortage of funds facing developing countries when they reach the stage of development where pre-investment surveys of substantial magnitude are urgently needed. In such cases, every effort should be made to develop a plan of operation for submission to UNDP(SF) with a view to obtaining financial support. To date no project within the Agency's sphere of responsibility has been turned down by the Special Fund.

93. Areas in which the financing of atomic energy applications from UNDP(SF) might be considered are fairly numerous, but the most practicable at the moment would seem to be:

(a) Feasibility and technical viability studies concerned with the introduction of nuclear power into a developing country. This type of project was supported in the Philippines. It is recognized that power production is the most capital-intensive activity in developing countries and UNDP(SF) is concerned only with the pre-investment stage;

(b) Exploitation of nuclear minerals. This consists of an intensification of existing geological surveys, systematic prospection and detailed sample analyses leading to a programme of actual exploitation, mining and prospection. Projects of this type, concerned with non-radioactive minerals, are sponsored by UNDP(SF) in many developing countries. Projects concerned with radioactive minerals are now under under consideration in several countries;

(c) Utilization of the sterile male technique in pest control and eradication. The current project for the eradication of the Mediterranean fruit fly in Central America is an example. The use of this technique against other pests is under consideration, but it must be recognized that when the technical and economic feasibility of this type of project has been established - that is when the investment stage is reached - funds will have to be sought from sources other than UNDP(SF);

(d) The establishment of mono-discipline institutes concerned, for example, with the application of nuclear research and training in agriculture. The Agency-assisted project in Yugoslavia and a current project in India are examples. Consideration could be given to institutes concerned with the prospects of development of new varieties of crops and institutes exclusively for radiation genetics; and

(e) Agro-industrial complexes. [11] Although these are, like power production, capital-intensive projects, feasibility and economic viability studies may be required at the pre-investment stage.

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[11] The concept is that of a very large nuclear power reactor centre around which would be clustered numerous energy-intensive industries including, for instance, desalination, fertilizer production, food processing and metallurgical, manufacturing and chemical plants.

Capital investment sources

94. Developing countries will require capital for investments in the mining and processing of nuclear materials and, later, the reprocessing of irradiated fuel, nuclear desalting and large-scale nuclear applications in the chemical industry. However, by far the greatest need will be for funds to finance nuclear power production, even assuming that the very modest expansion in production now foreseen is not exceeded. The installed capacity foreseen for 1980 is approximately as follows:

Africa	1 000 MW(e)
Asia (excluding Japan and China (mainland))	10 000 - 12 000 MW(e)
Latin America	5 000 - 7 000 MW(e)
	16 000 - 20 000 MW(e) [12]

In order to raise the installed capacity of nuclear plants in developing countries to 16 000-20 000 MW(e) a capital investment of $3-5 billion would be required.

95. The five power reactor projects carried out in developing countries have been financed bilaterally under favourable terms. The two Tarapur plants in India have been financed by a "soft" loan from the United States Agency for International Development at 3-4% interest, with a 40-year repayment period. The foreign exchange component of the KANUPP plant in Pakistan has been financed by Canada, partly by a grant and partly by a loan at 6% interest. The ATTUCHA project in Argentina has been financed by a loan at 6% interest with a 25-year repayment period and five years of grace. It cannot be assumed that such favourable bilateral financing will continue to be available after the first few pioneer plants are installed.

96. Within the United Nations family, only IBRD and its affiliates provide capital aid. IBRD's annual loans for electric power projects average about $300 million; in 1968 the total was $268 million, of which $254 million were regular IBRD loans and $14 million were "soft" loans from the International Development Association of IBRD.

97. IBRD applies normal banking criteria when considering all applications for loans. These criteria are not designed to take account of the indirect benefits which are likely to result from the introduction of a new technology like nuclear energy. These indirect benefits enable developing countries:

(a) To familiarize themselves with the technology which will become of major importance in the generation of electricity throughout the world in a few decades (The pioneering "uneconomic" nuclear power plant may often be the first step in a long-term programme whose economic viability has already been established.);

(b) To diversify the sources of fuel supply (This is bound to strengthen the bargaining position of the developing country concerned in buying fossil fuels from other countries.); and

(c) To promote scientific and technical progress and thus stimulate development in technology, engineering and scientific education.

[12] Totals cover existing ordered and planned plants; by 1980, it is expected that the output of conventional plants in these areas will be of the order of 300 000 to 350 000 MW(e).

Role of the Agency

98. The Agency provides the following services to promote nuclear energy development:

(a) A general assessment of the possible contribution of nuclear power to the economy of the country;

(b) A detailed pre-investment feasibility study for a specific power project. The Agency's own funds are insufficient for such projects which cost a minimum of $500 000 and UNDP financing would normally be needed; and

(c) Assistance with site selection, safety evaluation, bid analysis, start-up and commissioning of plant and training of staff.

99. It is stated in Article XI.B of the Statute that: "Upon request, the Agency may also assist any member or group of members to make arrangements to secure necessary financing from outside sources.... In extending this assistance, the Agency will not be required to provide any guarantees or assume any financial responsibility for the project." Thus, the Agency may serve as an intermediary and help the developing country to draw up proposals for specific projects and present them to the financing institution. It may also help in making arrangements for financing an important price component, i.e. nuclear fuel. But clearly, the Agency's role with regard to capital requirements is limited.

100. It is presumably to deal with this aspect of the problem that CNNWS recommended that the Agency should study the possibility of establishing a Special Nuclear Fund which would make "soft" loans or grants available to finance major nuclear technology projects that had been found to be technically feasible and economically viable.

101. This matter has been considered by the Board of Governors. It was the consensus in the Board that there is no prospect at present that those Member States whose support would be indispensable for the establishment and maintenance of such a fund would, in fact, be agreeable to its establishment. Some Member Governments were opposed in principle to the creation of an additional and special source of funds for financing a particular area of development, being of the view that the financing of capital projects of all kinds must be considered in terms of a country's over-all development priorities. The States concerned have also expressed the view that the creation of such a fund might lead to a reduction in the resources available from existing international or multi-agency sources of finance.

102. If it is the view of Member States that existing financial institutions should give special priority to nuclear projects, e.g. in the light of the considerations mentioned in paragraphs 89 and 97 above, it appears that this could be most appropriately achieved by their representatives taking the necessary action in IBRD, UNDP, etc.

Conclusions

103. The foregoing analysis shows that, as at present constituted, the Agency, although able to provide many useful ancillary services, can have little direct influence in arranging for the provision of capital finance for major nuclear technology projects.

104. With regard to the pre-investment study, that is, the detailed feasibility study, the costs also exceed the Agency's means and the decision to undertake a feasibility study is essentially one for the Government concerned, which can make the appropriate request to UNDP or call in a firm of consultants. In other words, pre-investment studies also involve decisions regarding priorities, which the Agency can only influence very marginally by offering advice.

105. The only stage at which the Agency has the means to give financial assistance for major projects is the first stage, when projects are initiated and their broad lines and potential value can be assessed.

106. The funds which the Agency uses for this purpose, as well as for introducing and expanding the use of nuclear techniques, are chiefly provided under its regular technical assistance programme. As these resources are very limited, it is all the more necessary that they be used in a manner which will make the greatest impact. It has been found over the years that this can be achieved by using them as "seed money" to initiate programmes and projects that can, if necessary, be continued for a longer period under UNDP(TA) or UNDP(SF).

107. An increase in the Agency's resources would, therefore, have a cumulative effect in introducing the applications of nuclear energy into developing countries.

SPECIAL FISSIONABLE MATERIALS

Resolutions H.III.1 and J.II.1

108. By Resolution J.II.1 CNNWS requested

> "the General Conference of the International Atomic Energy Agency to consider at its next meeting the establishment of a fund of special fissionable materials for the benefit of non-nuclear-weapon States and, in particular, of developing countries".

Further, in Resolution H.III.1 the Conference recommended that:

> "the Agency study the most effective means of ensuring access to special fissionable materials on a commercial basis".

109. In the ligh of this request, the Director General is including an item on the subject in the provisional agenda for the next session of the Agency's General Conference which will be held in September 1969. It is to be foreseen that a summary of such action as the Conference may decide to take will be included in the Agency's annual report to the General Assembly for the current year.

110. To assist the Conference, the Board is providing it with a paper recalling what the Agency has so far been able to do to facilitate the commerce in special fissionable materials between its Members. The paper presents the terms and conditions under which such materials are available through the Agency from the three chief producing Members. It draws attention to the fact that 5140 kg of uranium-235 contained in enriched uranium, as well as 3 kg of plutonium, constitute the nucleus of a fund of special fissionable materials which have been made available to the Agency for its Members. There have been some 65 transactions involving this fund, but all have been in fuel for research reactors or in very small quantities of materials for research. About 5000 kg of uranium-235 contained in enriched uranium are still available to the Agency but this quantity is insufficient for the lifetime fuelling of a large power reactor.

111. The paper also draws attention to the fact that prices of supply through the Agency are the same as those for supply on a bilateral basis. However, since 1959, when the material was made available, the other terms and conditions of bilateral supply have been developed and liberalized. Member States producing special fissionable materials have therefore been asked whether they would now be prepared to supply enriched uranium through the Agency on the same general conditions as those applying to bilateral supply. The Governments concerned have also been asked whether they would be prepared to increase their allocations of enriched uranium for supply through the Agency.

COMPOSITION OF THE BOARD OF GOVERNORS

Resolutions H.V and K

112. On the assumption that the Agency would examine at an appropriate time the composition of its Board of Governors, with a view to adapting it as might be necessary in the light of the new functions the Agency is called upon to assume under the Non-Proliferation Treaty, CNNWS recommended that representation on the Board be broadened "so as to reflect equitable geographical distribution and the view of a broad spectrum of the developing countries". [13] A few days later the Agency's General Conference adopted a resolution in which it requested the Board to review that Article of the Agency's Statute - Article VI - which lays down how the Board is to be constituted and function. [14]

113. At the end of February 1969 the Board took steps to meet the General Conference's request, having in mind also the recommendations with regard to its future composition that CNNWS had made. On this occasion three of the Agency's Members introduced preliminary papers containing suggestions for changes in the present composition of the Board. The Board decided to set up an ad hoc committee of the whole for the purpose of the review, inviting those Members of the Agency not serving on the Board to be represented at its meetings.

114. The committee's first four meetings, which were held from 15 to 17 April and at which a total of 50 Members were represented (nearly half of the total membership, it is to be noted), were primarily devoted to a broad exchange of views. Some consideration was also given to the three written suggestions referred to in the preceding paragraph, as well as to others that were presented orally. At two further meetings on 3 and 4 June respectively the committee first examined three new suggestions that had been submitted by Members and then proceeded to elaborate a report to the Board.

115. The burden of this report was that changes in Article VI of the Statute had become necessary, that many Members were of the view that a modest increase in the Board's present size of 25 Members was desirable, but that further study and negotiation would be needed in order to devise an amendment that could command the wide acceptance required to bring it into effect. After considering this report on 12 June, the Board decided to transmit it to the General Conference as an interim report on its review of Article VI, and to inform the Conference of its intention to continue its study "as an urgent matter" with a view to proposing an amendment to the Article as soon as it was able to do so. [15]

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[13] See Resolutions H.V and K respectively.

[14] Resolution GC(XII)/RES/241. It is to be noted that the General Assembly subsequently took note of this resolution in paragraph 2(a) of its own Resolution 2467 (XXIII).

[15] The Board's resolution on the subject, to which is annexed the committee's report, is reproduced in document GC(XIII)/408, which will be before the General Conference when it reconvenes next September.

TRAINING AND RESEARCH

Resolution M

116. In Resolution M, CNNWS requests

> "all nuclear-weapon States and those non-nuclear-weapon States which are in a position to do so, to provide access for students and scientists for purposes of training and acquisition of knowledge on a non-discriminatory basis to their scientific institutions and nuclear establishments engaged in research and development of the peaceful uses of nuclear energy".

117. The resolution is thus addressed to States rather than to the Agency. However, information regarding the facilities made available to the Agency for training and research in the development of the peaceful uses of nuclear energy may be of interest.

118. From the start of the Agency's fellowship programme in 1958 until the end of 1968 an aggregate number of 3300 scientists and technologists were trained under regular or long-term fellowships awarded by the Agency. Apart from some training at the Agency's laboratories, nearly all these fellowships were in facilities made available by Member States. Within this total figure, 1400 of the fellowships awarded were "Type II", that is to say, fellowships of which the costs were met by the host country.

119. About 50% of all technical assistance funds (including resources in kind) available to the Agency, including those available under UNDP, were spent on fellowships and training. This proportion was considerably higher in the early years and has since levelled off at about 40% of the funds (about 300 fellowships a year). It must be borne in mind that the relative proportion as between fellowships and other components of the technical assistance programme (experts and equipment) is set by Governments and not by the Agency.

120. Besides fellowships of the classical type, the Agency offers special training facilities through the Centre for Theoretical Physics in Trieste; since 1958 it has organized 87 training courses attended by a total of about 1300 students; and it arranges special research fellowships and scientific visits for advanced training.

121. The most popular topics in which training has been sought are nuclear engineering and technology; nuclear physics; the application of isotopes and radiation in medicine and agriculture; and nuclear chemistry.

122. Other fields in which training is offered include general atomic energy development; prospecting, mining and processing of nuclear materials; application of isotopes and radiation in biology; the application of radioisotopes in other fields such as hydrology and industry; and safety in nuclear energy.